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LOCAL PLANNING FOR AGRICULTURE:  
A NEW CHARGE TO THE PLANNING PROFESSION

by

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Professor Clinton J. Andrews

and approved by

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## **ABSTRACT OF THE DISSERTATION**

Local Planning for Agriculture: A New Charge to the Planning Profession

by BRIAN JAMES SCHILLING

Dissertation Director:

Professor Clinton J. Andrews

New Jersey, known today for its dense urbanization, maintains a rich agrarian heritage that is still prominent in many parts of the state. Development pressures in the latter half of the twentieth century, however, transformed New Jersey's agricultural landscape and continue to present challenges to remaining farms. The future of the state's rural landscape and farming industry will depend largely on the mitigation of intensifying suburbanization pressures and the ability of farmers to adapt to changing market opportunities.

While the federal farm bill has been the dominant image of American farm policy since the 1930s, this dissertation presents rationale for the decentralization of farm policy across state, and more pertinently, local governments. It is argued that greater emphasis on local planning for agricultural retention and development will more effectively address the needs of a diverse agricultural industry, preserve the localized public goods and open space amenities conferred by agriculture, and ameliorate the impacts of suburban growth on the farming industry.

New Jersey presents an interesting case study of local agricultural planning and policy. It is the most densely populated and highly urbanized state in the nation, yet despite decades of attrition and displacement agriculture still represents nearly one-fifth of the state's

land base. The state is well known for its progressive state-level agricultural policy and ambitious farmland preservation program. Adaptability and innovation have been requisites for success within the state's farming community in the face of increased competition for farmland, rising farmland values, and changes in the sociopolitical environment occurring at the rural-urban interface.

A thirteen municipality region in northern Burlington County provides the geographic context for empirical analysis of the extent of local planning and policy development for agriculture. This region comprises several of the most agriculturally intensive municipalities in the state. A general conclusion of this research is that significant opportunity remains for greater integration of agriculture in comprehensive municipal planning. This finding is particularly important because of the powers granted to municipalities under New Jersey's home rule doctrine to influence land use and promulgate regulation.

## **Acknowledgments**

The completion of this dissertation was a long journey. Completing my doctorate, and more specifically this dissertation, on a part time basis while juggling full-time work and family obligations was challenging. Robert Frost wrote about the road less traveled. There were many times that it would have been easier to travel the more worn path; I did not and in the end I believe it has indeed made all the difference.

There are many, many people to whom I owe a debt of gratitude and extend my sincere appreciation for their guidance and encouragement. I must start with my dissertation committee. I deeply appreciate the patience and insight of my major advisor, Clint Andrews, and the time, input, and critical feedback provided by Bob Burchell, Don Krueckeberg, Soji Adelaja, and Mark Robson. They truly challenged me to think deeper about issues that I thought I understood well and forced me to explore alternative perspectives. This dissertation was most certainly strengthened through their mentorship. I regret that the untimely passing of Professor Krueckeberg preceded the completion of this work; it was strengthened by his thoughtful input.

In Burlington County, I would like to acknowledge several people for providing me with the opportunity to conduct research in the county's "farm belt." I applaud the county's leadership for integrating agriculture into their smart growth planning efforts. This proactivity and foresight continues to keep Burlington County in the national limelight when it comes to agricultural retention. I would like to particularly acknowledge several dedicated and professional individuals in the Burlington County Department of Economic Development and Regional Planning, namely Mark Remsa (director), Bob Kull (regional planning coordinator), and Dave Hojsak (principal planner), as well as county farmland

preservation coordinator Susan Craft (prior to assuming her statewide responsibilities) for their tireless efforts to positively shape growth and conservation within their county.

I am indebted to many in the state's agricultural industry for deepening my understanding and appreciation of the issues facing the farming industry. My deepest appreciation goes out to the many farmers in Burlington County that shared so generously their time and insights. To borrow from Thomas Jefferson, these cultivators of the earth are some of the finest people I know and I am honored to call many of them friends. Among them are Bill and Dee Dee Petit, Roger Kumpel, Steve and Abbott Lee, Bill Haines, Phil Prickett, Denny Roohr, and Dave and Lisa Specca. I wish to pay special respect to Neil Robson, a quiet and unassuming leader in the agricultural community, who was taken from us too early.

I express similar gratitude to our state's dedicated agricultural leadership. While many individuals have my gratitude, I would particularly like to acknowledge Secretary of Agriculture Charles Kuperus, my friend and former Secretary of Agriculture Art Brown, State Agriculture Development Committee Executive Director Susan Craft, state farmland preservation coordinator Tim Brill, New Jersey Farm Bureau President Rich Nieuwenhuis, New Jersey Farm Bureau Executive Director Peter Furey, and NJDA Division of Agricultural and Rural Resources Director Monique Purcell.

Helen Heinrich deserves particular mention for the "real world" education she has provided me over the years about agriculture and planning. The farming community is extremely fortunate to have such a knowledgeable friend and advocate for their interests. I gratefully acknowledge the opportunity to work with her on a series of studies in northern Burlington County as part of an overall smart growth planning effort in the region, and the impact of this collaboration on guiding my doctoral research.

I consider myself very fortunate to have many good friends and colleagues at Cook College. The list of people that have provided encouragement to me as I pursued my doctorate seems endless as I reflect back over the years. At the top of the list are Soji Adelaja and Peggy Brennan. I credit (and admittedly at times blamed) Soji for convincing me to pursue my doctorate. I thank him for his constant support, mentorship, and unwavering belief in me. He has a true gift for seeing the potential in people that is often hidden to them. There were many times when work and personal commitments threatened to squelch any hope of completing this dissertation. I was fortunate to go through this program with Peggy; there were countless times where we provided each other with the support or perspective needed to continue on. I am thankful for her friendship.

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For longer than I wish was the case, my wife, Adriane, and my children, Gwen and

Ryan, sacrificed in order for me to earn my doctorate, but did not complain. At the end of the day, more than anything else, it is their support that allowed me to complete this dissertation.

//BJS



## **Dedication**

For my children, Gwenyth and Ryan, who allowed me to maintain a sense of perspective throughout this experience. And for my wife, Adriane, for her love and patience.

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## **Chapter 1**

### **Introduction**

The history of suburbanization is the history of agriculture's decline in New Jersey. While known today for its industrialization, New Jersey possesses an agrarian heritage that is still evident in many parts of the state. Increasingly, however, it is coming into question whether farming, as both a land use and as an industry, will endure into the future. The progression of large-lot suburban subdivisions and strip malls that sprout from once productive farmland is testimony to the effects of development pressures on the state's agricultural industry. What's more, the viability of remaining farms in New Jersey, the most urbanized and densely populated state in the nation, appears to be eroding. Farm profitability in New Jersey is on a downward trend, young farmers are not replacing retiring farmers, and farmland values are skyrocketing.

It would be erroneous to ascribe suburbanization as the only contributing factor to farming's decline in New Jersey. Indeed, such a presumption would be myopic in its dismissal of global macroeconomic influences and market-based transformations in the structure of the state's, and Nation's, agricultural industry. It is nevertheless true that the harbingers of continued agricultural decline do have some linkage to the manner in which development is occurring in once predominantly agricultural parts of the state, and to the policy decisions that are being made, or not made, in support of farming. If the retention of an agricultural industry in New Jersey is desired, then policy interventions, particularly at the local level, are required to control the external influences adversely affecting agriculture and proactive strategies are needed to bolster farm viability.

## **Sprawl, Smart Growth and Agriculture**

The reversal of the rural-urban migration patterns typifying the post-World War II period signaled the dawning of a new set of pressures on rural-agricultural areas across the United States. Accelerated by post-war prosperity, as well as federal transportation infrastructure programs and policies encouraging home ownership, the nation experienced unprecedented conversion of agricultural lands to residential and other forms of development from the 1950s onward to satisfy the demands of a population growing in both affluence and mobility. Over time, America witnessed the ascendancy of a new pattern of land-extensive, placeless, spatially separated suburban development which later became known as “suburban sprawl.” New Jersey has long been an exemplar of this pattern of development.

Sprawl eludes any formal definition, but is generally defined as a low-density, automobile-dependent pattern of development that is both fiscally inefficient and land-extensive. The 1980s and 1990s shepherded in a new era in land use planning that attempted to respond to the perceived ill effects of this pattern of development dominant in the post-war era. Dubbed variously as “new urbanism” (Duany *et al.* 2000; Leccese and McCormick 1999), “conservation design” (Arendt 1999), and other rubrics, these planning philosophies embody an ethos that emphasizes the conservative use of land for well-planned development. These planning strategies can be classified under the aegis of “smart growth”, an encompassing term generally used to describe any number of planning efforts to optimize growth and development patterns vis-a-vis desired environmental, fiscal, social, and land use objectives.

In practice, smart growth typically revolves around the delineation of lands for limited or no growth, and lands designated for more concentrated growth. Smart growth

programs often involve systems of incentives and disincentives to channel growth along desired courses while preserving lands with unique historic, cultural, or natural features. Equitable implementation and sensitivity to the rights of private property owners are frequent challenges encountered in the advancement of these objectives.

Within smart growth discourse, a specific thread focuses more precisely on the preservation of the farmland resource. Agriculture has frequently emerged as a victim of sprawl as farmers either opt for the financial rewards of selling land to developers or succumb to the business climate pressures accompanying residential development. The 2002 Census of Agriculture reports that 9,924 farms remain in New Jersey, operating more than 805,000 acres of farmland (National Agricultural Statistics Service). This is equivalent to roughly 17 percent of the state's land base. These figures also reflect a loss of two-thirds of the farms and more than half of the farmland acreage existing in 1950.

Organizations including the American Farmland Trust, United States Department of Agriculture, and private watch groups point to the alarming loss of prime farmland to development across the U.S. Sorensen *et al.* (1997) specifically identify the Northern Piedmont and the New England/Eastern New York Upland (southern part) as among the most threatened agricultural areas in the country. These regions rank number 2 and 10, respectively, out of 181 major land resource areas in the U.S. and include Hunterdon, Morris, Somerset, Bergen, Essex, Hudson, Passaic, Sussex, Union, and Warren counties in New Jersey. Collectively these 10 counties contain 40 percent (roughly 319,000 acres) of New Jersey's farmland. Further troubling is the fact that the heavily agricultural southern New Jersey counties are adjacent to the Mid-Atlantic Coastal Plain area (comprising a large part of Delaware and Maryland) which was identified by Sorensen and her colleagues as the

ninth most threatened agricultural region in the U.S.

New Jersey is often heralded for its proactivity in the smart growth arena, being among the minority of states with a comprehensive state plan.<sup>1</sup> Further, New Jersey's financial commitment to open space/farmland preservation is virtually unmatched in the U.S. In 1998, New Jersey voters overwhelmingly approved a referendum calling for a constitutional amendment appropriating \$98 million annually for ten years (1999 to 2009) toward the preservation of 1 million acres of land for recreation, farming, and historic purposes. Half, or 500,000 acres, of this preservation goal comprises farmland.<sup>2</sup> In 1999, legislation was passed implementing this program and establishing the Garden State Preservation Trust as the administrative body for the initiative.

The funding commitment for open space and farmland preservation is also evident at the local levels. Through the November 2004 ballots, all of New Jersey's 21 counties and 210 of the state's 566 municipalities had passed open space/farmland preservation funding programs, often in the form of a dedicated property tax, (Schilling *et al.* 2004). In November 2004 alone, New Jersey voters passed 30 out of 35 ballot questions authorizing new or expanding existing dedicated taxes. All told, these county and municipal taxes generate an

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<sup>1</sup> See, for example, *Planning for Smart Growth: 2002 State of the States* by Johnson *et al.* (2002).

<sup>2</sup> Revised expectations stemming from the rapid rise in farmland values suggests that achievement of the 1 million acre goal may not be realistic. Through January 2008, the State Agriculture Development Committee reports that 1,653 farms and more than 163,000 acres of farmland have been permanently preserved through either easement purchase or fee simple acquisition by state/local governments or private groups (SADC 2008).

estimated \$202.9 million for land preservation.<sup>3</sup>

### **Planning for Agriculture**

Thomas Jefferson (1743-1826) viewed the farmer as the foundation of American democracy and a symbol of virtue and good morals. Utopian thinkers from Ebenezer Howard (1850-1928) to Frank Lloyd Wright (1867-1959) wrote of various visions of urban development and farming harmoniously co-existing. Howard's utopian ideal comprised garden cities lying nestled within large agricultural belts which sustained urban dwellers. Wright's vision of "Broadacres" was built on decentralized populations sustaining themselves through farming in an urbanless environment.

Agriculture continues to receive frequent mention within the planning community, most often as either a victim of overdevelopment or as a potential beneficiary of smart growth. Agricultural retention is often cited as a primary outcome of proper planning or smart growth; however, the means to the end are often left unspoken. Within the planning literature there is a notable void when it comes to comprehensive *planning for agriculture*. Pothukuchi and Kaufman (2000) point more generally to the limited coverage of the broadly defined food system in the leading planning journals, suggesting the need for greater emphasis on promoting community food systems within the profession. Their analysis of 22 U.S. city planning agencies demonstrated a relatively low level of engagement in food-related issues in professional practice.

Similarly, in the *Journal of the American Planning Association*, attention has

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<sup>3</sup> Data compiled by Nicole Goger, Research Associate at the New Jersey Farm Bureau. Published in *This Week in Farm Bureau* newsletter, November 6, 2004.



periodically been placed on issues such as open space and farmland preservation (see, for example, Wright 1994; Nelson 1992; Daniels 1991; Heimlich 1989; Daniels and Nelson 1986) and agricultural zoning (Coughlin 1991). However, examination of other underlying needs of agriculture as an industry have not been addressed. A groundswell of theorists and practitioners has emerged who argue for the need to control sprawling forms of development that have come to dominate in recent decades.<sup>4</sup> It is clear that rooted in much of this discourse is an underlying desire to preserve farmland and other lands conferring rural amenities. What is less clear is the extent to which the preservation of farming as a local industry is embraced as a planning goal. It is often ambiguous whether a distinction is even made between the two objectives.

This dissertation argues that local governments have significant opportunity to clarify and advance agriculture retention objectives through appropriate planning. The construct for this argument flows from the theory of fiscal federalism, which addresses the division of government functions across multiple levels of government. It is premised on the belief that a tiered system of government is best suited for aligning the needs of society with the level of government most appropriate for delivering on such needs. Andrews (2002) notes

[w]ithin a multi-level structure one can centralize some responsibilities in order to reduce interjurisdictional spillovers, ensure equity, enforce universal norms and pool risks; yet one can decentralize other responsibilities in order to...match policies to local circumstances...

Agriculture has a long history of public policy interventions, mostly at the federal

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<sup>4</sup> Johnson *et al.* (2002) note that *The Costs of Sprawl - Revisited* (1998) by Robert Burchell and others contains references to more than 500 articles published on sprawl between 1970 and 1998.

level although recent decades have seen greater state-level involvement in agricultural policy. At the federal level, national security concerns and an ideology favorable toward the retention of small family farms drove the passage of agricultural price support programs in the early and mid-1900s to protect American farmers from economic downturns, natural disasters, and other events that could drive farms out of business. At the state level, particularly at the urban-rural interface, policies have been enacted to protect farmers from the detrimental effects of suburbanization and to increase the compatibility of agricultural and non-agricultural land uses through the adoption of policies such as differential property assessment and right-to-farm protections. Most states have such policies today.

The principal focus of this dissertation is, however, advancing the case that need and opportunity exists for greater local government involvement in planning for agriculture. While the context for analysis is New Jersey, many of the arguments advanced will be transferable to other regions. As will be elucidated further, several factors speak to the need for greater localized involvement in policy making for agriculture. Among them are the localized spillover benefits agriculture conveys (grounded in the presumption that lower levels of government will be better able to align the preferences of their constituencies and the preservation of such amenities), the heterogeneity that exists within and across states in terms of the nature and scale of farming operations (which creates a divergence in farm policy needs), and lastly the power held by municipal governments to shape localized business environments and land use.

It is for these reasons that this dissertation seeks to demonstrate that it is arguably at the local level of government that sound planning for agriculture is most needed, but largely absent, in New Jersey. In contrast, agriculture often seems to be chalked up as a residual of

good planning - “don’t develop it and it will stay.” Put differently, many authors and planning practitioners seem to assume that simply not developing farmland ensures the continuation of farming.

In this dissertation, I explore another perspective and argue that agriculture must be planned for. I offer that viable farms and a healthy agricultural sector are not necessarily the outcomes of simply maintaining the farmland resource. I will, in fact, argue that land use planning will generally fall short of articulated farmland preservation goals if underlying farm viability is not explicitly considered. I advance the position that the best way to preserve farmland is to promote the long-term viability of farming and, that for farming to be viable, farms need to be sustainable in economic, environmental, social, and political terms. In short, I shall advocate that the viability of farms and farming must receive greater attention from the planning community if the retention of farms and an agricultural industry are desired policy goals. Agriculture can no longer remain a stranger to the planning profession.

### **Research Questions**

The purpose of this dissertation is to explore the need for greater involvement of local governments in New Jersey to proactively advance agricultural retention and development objectives. The dissertation is structured to answer two primary questions: one normative, one empirical.

The first research question is as follows. Should local governments assume greater responsibility for advancing farm viability objectives? Examined within the theoretical framework of fiscal federalism, my hypothesis is that local (defined herein as primarily

municipal level) governments do indeed have an important role to serve in setting both the necessary and sufficient conditions for agricultural viability and retention. Toward this end, the nature, purpose, and evolution of federal and state government farm support policies will be reviewed, followed by a rationale for more engaged local government involvement. The argument for more active local government involvement in farm policy will be based on the need to preserve the localized spillover benefits conveyed by agriculture and mitigate localized negative externalities of population growth and non-agricultural development on farm viability. The argument will also be framed within a discussion of the heterogeneity of farming operations, and hence farm policy needs, across and within states.

The second research question is more empirical in nature. Are local governments in New Jersey providing both the necessary and sufficient conditions for farm viability? I posit that *farmland* preservation is not tantamount to *agricultural* preservation. Clearly farmland is a necessary condition for farming, and many states and localities have developed aggressive farmland preservation programs. However, the premise maintained in this dissertation is that agricultural retention requires more than a focus on the land use dimensions of agriculture and that local governments have considerable power to positively shape a climate conducive to farm viability. My hypothesis is that local governments in New Jersey are not fully capitalizing on the opportunities to advance policies supportive of farm viability. I test this hypothesis using data from the agriculturally intensive northern region of Burlington County, New Jersey.

## **Organization of Dissertation**

This dissertation is organized into three primary sections. Chapters 2 and 3 present

a conceptual framework for this research. Chapter 2 establishes a working definition of “agricultural viability” in order to properly frame subsequent discussions of the goals of planning for agriculture. Under the aegis of fiscal federalism, Chapter 3 provides a theoretical framework for discussing the devolution of powers and policy making responsibilities across multiple layers of government.

Chapters 4 through 8 illustrate the roles of various levels of government in the retention and development of agriculture in the United States. Chapter 4 provides an overview of the American agricultural sector, from both a land use and industry perspective. It also summarizes the progression of federal farm policy over the past 150 years, with an emphasis on the “modern” era of farm policy which began in the 1930s. Chapter 5 examines the role of state governments in advancing agricultural retention objectives. Key New Jersey agricultural policies, including differential assessment, farmland preservation, and right to farm statutes are specifically examined. State planning initiatives are also reviewed. Chapters 6 through 8 present the rationale for greater local government involvement in agricultural planning and policy development. Under the theoretical framework of fiscal federalism, central arguments considered include the ability of local governments to be more responsive to the needs of a diverse and highly heterogeneous agricultural industry (explored in Chapter 6), preserve localized spillover benefits or public goods (Chapter 7), and recognize and mitigate the impacts of suburban expansion on the farm sector (Chapter 8).

Lastly, Chapters 9 through 11 present findings of an empirical analysis of local governments’ efforts to plan for the future of agriculture and promulgate effective industry retention and development policies. Chapter 9 sets the geographic context for the research and presents a detailed description of the thirteen municipality region in Burlington County,

New Jersey, delineated as the study area. Chapter 10 summarizes a review of local municipal master plans and land use provisions from the perspective of agricultural development. Chapter 11 similarly examines the extent to which other local ordinances are cognizant of agricultural development objectives, with particular emphasis on right to farm language.

Chapter 12 provides concluding thoughts on the need for local government engagement in planning for agriculture.

## Chapter 2

### Framing the Discussion on Agricultural Viability

This dissertation proposes that opportunity, and arguably need, exists for more proactive local government policy to advance agricultural retention objectives. The two basic premises advanced are that (1) farm retention policies must go beyond farmland preservation and consider the underlying viability of farming operations and (2) the multi-tiered nature of the United States political structure results in a delineation of roles and responsibilities for farm retention across the federal, state, and local levels of government. This latter topic is the subject of Chapter 3.

This chapter builds the thesis that the preservation of *farmland* is not necessarily tantamount to the preservation of *farms* and *farming*. This distinction is intended to be more than semantics. Policy making and planning for agriculture's future cannot be based upon ambiguously defined goals. Rather, successful planning requires explicitly defined goals. In the case of agricultural retention, it is important, for example, to distinguish between a desire to retain a viable agricultural industry versus a desire to preserve farmland solely for the open space amenities and sense of rural character it confers.

As will be developed in this chapter, agricultural viability is a useful theoretical construct for framing agricultural policy discourse. However it is one that lacks direct empirical measurement and is context specific. In other words, "viable agriculture" may have distinct meanings and different requisite conditions across jurisdictional boundaries. This poses a challenge for the planning process. The following sections therefore develop a working definition of "farm viability" to frame this dissertation's arguments in favor of

more focused local planning for agriculture, and offer a set of requisite conditions or characteristics useful for understanding the nature of a viable agricultural industry.

### **What is Farm Viability?**

The term “farm viability” has become ubiquitous in recent years as a chorus of voices nationwide has begun advocating the need to make agriculture more sustainable as both a business and a land use. The term resonates positively across many stakeholder groups and appears to have implied meaning that agricultural retention efforts need to transcend preserving farmland, or at minimum protecting it from development, and focus also on the farm business itself. Yet a clear definition of the term is largely lacking in policy discourse.

In common parlance *farm profitability* and *farm viability* are often used synonymously. The economic performance of a farm is generally not an insignificant metric of its potential viability; however, it is posited in this dissertation that it is not the only consideration. Rather, the economic sustainability of a farm operation is only one component that needs to be considered when attempting to understand the viability of a farm.

The high priority often placed on the profitability of farms as an indicator of the health of the industry is at first contemplation difficult to reconcile with the economic realities of farming. Data from the 2002 Census of Agriculture document that the net cash return from farming in New Jersey, for example, averaged only \$15,074 per farm (National Agricultural Statistics Service 2004). As a rough point of comparison, the median household income for the state was \$55,146 in 1999. Further, more than six out of ten (62 percent) of all New Jersey farms failed to generate a net profit from farming in 2002, suggesting a motive for remaining in farming other than positive cash flow. This economic reality holds



true at the national level also as 53% of all U.S. farms reported negative cash returns in 2002.

The formation of the viewpoint that farm profitability is tantamount to farm viability is, however, easily rationalized. Acknowledging the dangers of making overly broad generalizations, the types of farmers that remain actively engaged in traditional agricultural networks (i.e., farm bureau, county boards of agriculture, commodity associations, Rutgers Cooperative Extension, etc.) are often either individuals seeking to earn a living from the farm or, at minimum, operate under a profit motive even if farm income is not the sole source of household income. It is generally these individuals that are most visible during agricultural research and whose voices are most often heard.

As will be discussed further in Chapter 6, industry statistics suggest, however, that there are a large number of farms - perhaps even a majority of farms - for whom it seems implausible that agricultural revenues and profit are sufficient to meet basic living needs. Historic analysis shows that low revenue farms nevertheless persist over time, suggesting that agricultural profit maximization is not always of paramount concern and may not be the only factor influencing farm viability.

The large number of low revenue/low profit farms (and farms reporting net losses) in New Jersey and nationally strongly suggests that profitability may be too limiting as a litmus test for forecasting the long term viability of many farm operations. Broad generalizations of the “adequate” level of profitability may therefore be less salient points of discussion. For some, farming is the sole source of household income and profitability is imperative. For many others, farm income is only a component of total household income, with the spouse and/or the farm operator working off farm to produce a stable level of

income and provide health care and other benefits. For yet others, rural lifestyle preferences and sufficient non-farm income may relegate farm-based revenue generation to a lesser or even inconsequential concern. Even net losses from farming may be tolerable due to the property tax savings afforded by farmland assessment and the implicit value placed on rural amenities. In other instances, long-term wealth being developed through land appreciation may be the primary reason for continuing to farm at a loss (Adelaja and Schilling 1995).

Accepting the proposition that the motivations for farming vary, it should be clear that this diversity makes the establishment of a solely economics-centric definition of farm viability both difficult and, arguably, impractical. Remarks about the diversity of U.S. farms made by the Economic Research Service's Bob Hoppe at the Farm Foundation's 2000 National Public Policy Education Conference are particularly poignant and are worth repeating. Quoting from a 1944 article in the *Journal of Farm Economics*, he notes

With so much diversity among farms the averages for all farms are of little significance. Such items as average income per farm and per farmer as commonly presented include hundreds of thousands of units which do not accord with the concept of a farm which is in the minds of most of the people using these data. Data are included for thousands of farmers who have retired to small acreages; for many suburban estates owned by men of large income whose contributions to agricultural income is nevertheless insignificant... Yet the concept in the mind of the user of such data more often than not is that of a fairly substantial commercial farm such is common through the great crop-producing areas of the country.<sup>5</sup>

As illustration of the variability in farmers' goals and motivations, even among "small farms", consider the findings from a 1995 Farm Costs and Returns Survey (see Hoppe

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<sup>5</sup> Quoted from Benedict, M.R., E.F. Elliott, H.R. Tolley, and C. Taeuber. 1944. "Need for a New Classification of Farms." *Journal of Farm Economics*, 26(4): 694-708.

2000; see also Duffy and Nanhou 2002; Perry and Johnson 1999).<sup>6</sup> The survey found that maintaining a rural lifestyle was a top priority for most small farm operators. Operations defined by the USDA's Economic Research Service as "limited-resource farms" and "low-sales farms" also prioritized surviving market conditions and adverse weather on par with rural lifestyle preferences. Small farms falling into the higher sales classes designated in the study, as well as the larger "commercial farms", reported that farm survival (in economic terms) was most important.

In a similar vein, University of California-Davis extension economist Steven Blank poses a pertinent question in the title of his 2002 *Choices* article, "Is Agriculture a Way of Life or Business?" This question is germane to, if not the central issue in, much agricultural policy discourse. Blank ultimately renders a simple answer to his own question; agriculture is, in fact, often both a way of life and a business. He poses the possible motivations for farming in economic terms: profit maximization and utility maximization. Farmers, he posits, pursue one - or both - of these objectives. Blank makes the following observation

...agriculture is both a way of life and a business. More precisely, it is a way of life to –possibly –all participants, but it is a business only to some. Large-scale commercial farms clearly act like businesses. However, many of those farm operators may also view their businesses as a desirable way of life. On the other hand, rural residence farms are hobbies that operators must subsidize with earnings from off-farm services.

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<sup>6</sup> The Economic Research Service has developed "small farm" typologies that are delineated on the basis of product sales, operator occupation, and for some classes, the breakdown of farm-based and nonfarm-based income and farm assets (see, for example, Hoppe *et al.* 2000). In its report, *A Time to Act*, the National Commission on Small Farms defined a "small farm" as one which produces less than \$250,000 in gross farm product sales.

### **A Working Definition of Farm Viability**

The previous discussion sets the tone for my argument that farm viability is about more than farm profitability. The challenge now lies in establishing a broader view of farm viability that will provide the basis for the balance of this dissertation and hopefully broaden thinking in local farm policy discourse.

A starting point is found in the concept of sustainable agriculture. “Sustainable agriculture” is often used popularly to connote the employment of specific agricultural practices that are compatible with environmental integrity. The philosophy or ideology of sustainable agriculture often emphasizes the responsible use of farmland resources to minimize impacts on the environment, natural ecology, and surrounding communities. It represents a backlash against perceived ills of modern “industrial” agriculture, including soil depletion, water contamination, reliance on chemicals, hormones, and antibiotics in production, and the dissolution of family farming and the ideals it embodies. Today, in the common vernacular, sustainable agriculture is often associated with smaller-scale, low-input agriculture, including organic production.

The view taken herein is that sustainable agriculture is in actuality a broad concept, with the environmental focus existing as only one of several key components that contribute to or detract from the ability of a farm or farming system to persist over time. Feenstra *et al.* (1997), of the University of California-Davis’ Sustainable Agriculture Research and Education Program, provide a framework for sustainable agriculture as a broader concept integrating three primary goals: environmental health, economic profitability, and social and economic equity. A modification of this framework provides the basis of the definition and interpretation of farm viability used in this dissertation.

A working definition of farm viability is offered as follows. *Farm viability* is a state in which a farm is capable of meeting, on an ongoing basis, the financial and non-financial goals of the farm household while adapting to, and remaining compatible with, the broader environmental, political, and social context within which it operates. This definition is most applicable at the level of the farm management unit. The broader concept of *agricultural viability* refers to a state wherein agriculture is economically, socially, politically, and environmentally sustainable as a land use and as an industry.<sup>7</sup> A normative rationale for this framework follows.

Adelaja (1990) articulates well the concept of economic sustainability in his economic-centric definition of a viable farm as one which “generates sufficient income to meet farm operating expenses, capital replacement costs (machinery, equipment, buildings, and infrastructure), principal and interest payments on borrowed funds and family living expenses.” This definition has an important nuance in that it emphasizes the financial performance of the farm operation and its ability to meet both business and family living expenses on an ongoing basis, not necessarily profits.

Aside from economic performance issues internal to the farm, the definition of farm viability adopted herein also recognizes several external contextual factors that can impact the success or failure of farming operations. Environmental sustainability emphasizes the importance of continued access to and growing competition for critical natural resource

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<sup>7</sup> In 1987, the United Nations’ World Commission on Environment and Development (commonly dubbed the Brundtland Commission) released *Our Common Future* which defined sustainable development as “[meeting] the needs of the present without compromising the ability of future generations to meet their own needs.” The term sustainability is used herein in that spirit to imply an ability to perpetuate over time.

inputs (e.g., land, water) necessary for farming. It also highlights an increasing expectation of the farmer to be a responsible steward of natural resources (land, clean water, wildlife habitat, etc.). These expectations are manifest in a number of state environmental regulations, as well as increased funding for federal agricultural stewardship programs.<sup>8</sup>

Social sustainability may be explained as re-establishing (or retaining) the public's awareness, knowledge, and appreciation of farming and the private and public goods and services it produces. This may be argued as a particularly important and challenging endeavor in a state as highly urbanized and developed as New Jersey. Fundamental to many of the "right-to-farm" conflicts in the state is a lack of understanding and communication between the non-farm public and the farm sector. Social sustainability can be exemplified by a movement toward a culture of understanding between the farm and non-farm communities, as opposed to a state of tension and antagonism whereby farmers view intrusions of "city folk" into rural-agricultural areas as problematic and new residents of farming regions object to the negative aspects of commercial agriculture.

As the population shifts increasingly away from agrarianism, the need for the farm community to proactively engage the public on issues related to agriculture will grow. Farmers need to view their non-farm neighbors not as potential litigants, but as potential customers for farm products and services as well as the local political constituency that creates the policy environment within which they operate. The process of engaging the

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<sup>8</sup> Examples of stewardship programs authorized under recent federal farm bills and administered by the USDA include the Environmental Quality Incentive Program (EQIP) which provides technical and financial assistance to farmers for installing or improving conservation practices, and the Wildlife Habitat Incentives Program (WHIP) which provides cost sharing for projects to develop or improve wildlife habitat.

public, educating them about farming, and compromising to the needs and concerns of non-farm neighbors will go far in ensuring the social sustainability of agriculture and a continuation of the long history of support New Jerseyans have shown for state level farm retention policies.

In the same manner that farming needs to remain socially sustainable, it also needs to remain politically sustainable. Farmers, as owners of a substantial amount of land in the state, historically enjoyed a level of political clout that ensured favorable consideration of agriculture's needs within state and local regulatory environments. As more and more non-farmers assumed positions on local governing bodies and zoning and planning boards, the political position of farmers was in many cases displaced. As this transition occurred, the political economy of local decision making changed drastically. As non-farm residential development in the state escalated, the tolerance for the negative externalities of swine farming, for example, diminished. Some towns subsequently adopted ordinances barring commercial pig operations.

Local farming communities need to ensure that their needs are understood and their voices are heard. New residents entering town form a local political constituency that will in many cases be uninformed (perhaps unsympathetic) to the necessary practices for profitable commercial farming. This apathy toward farming will invariably be reflected in the evolution of a local regulatory environment which may constrain or raise the costs of farming.

### **Characteristics of Farm Viability**

While comprehensive planning for agriculture at the local level is generally lacking

in New Jersey and elsewhere in the United States, there is a growing number of county and regional studies that have begun considering the needs, challenges, and opportunities of agriculture - including the need for more proactive and informed local planning and policy to support farm viability.<sup>9</sup> Comparison of efforts to support agriculture is challenged by the variability in the nature of farming across regions, as well as in the socio-political and economic context within which it exists.

While this context-specificity limits the transferability and applicability of certain ideas or programs, recent examples of regional agricultural development initiatives were reviewed as part of this research. Specifically considered were examples of agricultural retention and development activities in Hillsborough and Miami-Dade counties in Florida (see, Evans and McGuire, 1996; Hillsborough Agricultural Task Force, 1997; Freilich *et al.*, 2002; Holland *et al.*, 2002), the Connecticut River Valley in Massachusetts (American Farmland Trust 2001 ), Chester County in Pennsylvania (Bazan, Keen and Mohr 2002), Ontario and Saratoga counties in New York (see, respectively, Ontario County Agricultural Enhancement Board 2002; Berton, 2003), Maryland (Scarfo 1990), and New Hampshire (New Hampshire Office of State Planning 2000). Several seminal agricultural policy studies in New Jersey were also reviewed (see, for example, NJDA 2003; Decter *et al.* 1994;

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<sup>9</sup> A statewide summit on farmland preservation was hosted at Cook College on March 3, 2006. Monique Purcell (Director of the New Jersey Department of Agriculture's Division of Agriculture and Natural Resources), Tim Brill (Planning Manager for the State Agriculture Development Committee), and the author (in the capacity of Associate Director of the Food Policy Institute) organized and presented at a session focused on the need for local planning for agriculture. In his keynote address American Farmland Trust president Ralph Grossi commented that New Jersey is far ahead in both discourse and action related to planning for farming's future, specifically noting "most of the country is not planning for agriculture."



FARMS Commission 1994; Heimlich 1991; Lopez *et al.* 1988; NJDA and NJDEP 1980; Blueprint Commission 1973.)

These studies revealed a number of recurring themes. Most studies pointed toward a variety of factors that are converging to place pressure on farms in their respective regions. Among them are the influence of macroeconomic and global factors (e.g., trade policies, emerging markets, and international restructuring of agricultural production) and mounting population and development pressures in once rural-agricultural areas.

Interestingly, all of the studies fell short of offering a clear definition of farm viability. One rationalization for this deficit may be that farm viability is an unobservable variable, similar in concept to the frequently discussed concept of community quality of life. While not measurable directly, indicators of quality of life such as low crime, good schools, high incomes, adequate local services, and low property taxes are measurable. Similarly, observable factors that either contribute to, or detract from, farm viability may be conceptualized. Indeed, all of the studies reviewed proposed a range of strategies that would advance outcomes that are commonly viewed indicators or metrics of farm viability. Among these are:

1. The ability to engage in on-farm supplemental income generating opportunities (e.g., agritourism).
2. Adequate control of wildlife damage to crops and farm buildings;
3. The ability to engage in direct marketing of farm products (and support for related concepts of institutional and citizen "buy local" programs);
4. Access to adequate water supplies;
5. Utilization of proper farm waste and nutrient management practices;
6. Equity protection (i.e., preservation of farmland values);
7. Access to sufficient and affordable labor;
8. The presence of a favorable local business/regulatory climate;
9. Protections against nuisance complaints and lawsuits;
10. Affordability of farm property taxes;
11. Affordability of farm inputs (including farmland);

12. The ability to invest in new farm technologies and modernization;
13. Access to farm management training expertise;
14. The ability to engage in value-added enterprises
15. Access to capital necessary to support agricultural entrepreneurship and innovation;
16. Access to new markets;
17. Succession planning for the inter-generational transfer of farms;
18. Mitigation of growth pressures and spatial conflicts through the utilization of equitable growth management policies that do not limit uses of private property;
19. Public awareness and appreciation of the importance of local agriculture (and agricultural issues);
20. The synchrononization of the expectations of new rural residents with the realities life in rural/agricultural areas;
21. Cultivation of new and young farmers (and future agricultural leaders);
22. Preservation of critical and threatened farmland resources.
23. Farmer engagement in the process of planning for agriculture (e.g., through agricultural advisory committees).

Many of these studies also spoke to the process of advancing farm viability objectives, acknowledging the need to incorporate agriculture in local comprehensive planning, from a land use and economic development perspective. Of particularly interesting note, in 2001 New York Governor George Pataki initiated a statewide effort to improve coordination between state and local government. The agricultural industry was featured in a section of the final report, *State and Local Governments Partnering for a Better New York*. It advanced the principle that communities need to plan for agricultural viability and not view farmland as vacant land, while funneling growth where it can be best accommodated by existing infrastructure and services. Impressively, the report argued that communities need to have a vision for local agriculture, a goal that (as will be argued later in this dissertation) needs to be achieved in New Jersey.

**Summary**

Interest in promoting farm viability is a growing facet of policy discourse in New Jersey, and indeed many other places across the U.S. A review of existing studies and policy initiatives, however, shows that clear articulation of policy goals and implementation strategies are often lacking. Rooted in this problem is a frequent omission of an outcome measure. What is farm viability?

This chapter advances a working definition of farm viability to frame this dissertation research and provide a basis for informed discussions on farm viability. The next chapter presents a conceptual framework for delineating the responsibility for advancing farm viability objectives across different tiers of government, from the federal level down to the local level.

## **Chapter 3**

### **A Conceptual Framework for Local Involvement in Planning for Agriculture**

This chapter introduces the concept of fiscal federalism to set the conceptual underpinnings of the proposition that governmental responsibility for developing and implementing agricultural retention policies is multi-tiered and that local governments do, in fact, have an important role to play. Empirically, New Jersey provides an interesting geopolitical context for such an analysis due to the state's history of aggressive and forward thinking state-level farm retention policy, as well as its strong tradition of home rule (i.e., devolution of significant powers to local levels of government). For this reason, the basis for municipal power, in New Jersey and elsewhere, is also briefly explored.

#### **The Theory of Fiscal Federalism**

Influential political thinkers, philosophers, and scholars including Montesquieu and de Tocqueville, notable American political figures such as James Madison and Thomas Jefferson, and regarded contemporary authors (among them Richard Musgrave, Wallace Oates, and Charles Tiebout) have postulated about the merits and challenges inherent in alternative models of multi-tiered governance. The United States operates under a federal system whereby certain powers are held by the federal (central) government while other powers are retained by the states. Since the existence of independent states predated the drafting of the U.S. Constitution, considerable powers that are not explicitly granted to the federal government generally remain, by constitutional default, a matter of state sovereignty.

A voluminous body of literature, both theoretical and empirical, focuses on the

political-economic aspects of government organization. A central inquiry in this literature, and one that was debated back at the time of the Founding Fathers, is the extent to which powers should remain vested within a strong centralized government structure or decentralized among various sub-national government units.<sup>10</sup>

The concept of fiscal federalism provides a useful theoretical basis for examining the appropriate delegation of authority across government levels (see, for example, Musgrave 1959; Oates 1972, 1999). Nations are complex social systems with a heterogeneity of divergent and often competing interests. A multi-tiered government structure is often posited to be the most effective and efficient structure for delivering on the preferences and needs of diverse constituencies. The basic theory goes as follows.

Certain needs of society will be best met by the highest level of government (in the U.S. context, the federal government). These needs often take the form of collective goods, or goods with significant positive and broad ranging externalities. The classic example is national defense. Others may include establishing and enforcing societal norms of conduct and policies governing interstate and international commerce. Because of its larger size, a strong centralized government structure is also viewed as being able to more effectively pool

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<sup>10</sup> The Federalist papers written (under pseudonym) by Alexander Hamilton, James Madison, and John Jay in the 1780s are illustrative of the early thinking on the best organizational form of governance in the young United States. In the post-Revolution period, societal sentiment was obviously uneasy at the thought of an overly strong centralized government. Yet the Articles of Confederation were found to be too permissive in terms of the grant of sovereign power (or more accurately, perhaps, the retention of sovereign power) among the states. This tension was manifest in the positions of the federalists who wanted a stronger centralized government and the antifederalists who favored relatively more autonomy for the states expressed during efforts to gain support for the ratification of the Constitution.

risks associated with large and complex infrastructure projects and more efficiently provide certain goods through sheer scale economies relative to smaller, more localized governments. Similarly, due to issues of Tiebout mobility (Charles Tiebout's construct that people will "vote with the feet" and move across polities to find an optimal level of goods and service provision vis-a-vis taxation), it is also theorized that the federal government should assume the lead role in income redistribution programs (Oates 1999).

Sub-national levels of government, on the other hand, are better equipped to more efficiently meet the more refined needs of a local populace for public goods with a relatively circumscribed range of public benefits (e.g., parks or open space). Tiebout mobility also provides a theoretical basis for a local government's greater accountability to the needs and preferences of its immediate constituency. In furtherance of this prediction, scholar Wallace Oates (1972) advanced the "decentralization theorem" which argues that under certain conditions (i.e., wherein economies of scale and market spillovers are not considered) the decentralization of public functions is more efficient than a centralized system for the delivery of public goods at the local level. Stated more clearly by Oates (2004) himself

...under certain prescribed...conditions, a varied pattern of local outputs in accordance with local tastes will be Pareto superior to an outcome characterized by a centrally determined, uniform level of output across all jurisdictions.

The conceptual framework of this dissertation may be nested within the thread of discourse on the division of responsibilities across multiple tiers of government. What are the appropriate roles of the federal, state, and - more germane to this dissertation - local levels of government in promoting agricultural industry retention and development? This research will demonstrate that the retention of viable agricultural operations needs to

consider both land use management and business development dimensions, as well as geographically circumscribed spillover costs and benefits, that are often shaped to a significant extent at the local level.

As subsequent chapters will show, several factors speak to the need for greater localized involvement in policy making for agriculture. First, in a home rule state such as New Jersey, land use and many other local regulatory issues are ultimately determined at the local level. The presence or absence of favorable local business climates for farming is critical to the maintenance or disruption of a viable farm sector, especially in urbanizing areas. However, there is tremendous heterogeneity in agriculture across and within state boundaries. “One size fits all” farm policies are unlikely to be effective in meeting the needs of the diversity of farms that exist in New Jersey, let alone the United States. Second, agriculture produces goods and services that are traded in private markets (e.g., crops and livestock products), but farms also generate substantial positive, yet often localized, externalities (e.g., open space amenities) that are often highly valued by the public. Under the theoretical aegis of fiscal federalism, it is the local level of government that is more apt to properly align the maintenance of these public goods with local preferences. Third, expanding development pressures characteristic in New Jersey, and elsewhere, since the 1950s often impose negative external costs on farm operations. As will be discussed in greater detail, a myriad of localized issues arise as the urban-agricultural boundary expands, including rising farmland values, right to farm conflicts, changes in water and land allocation dynamics, wildlife displacement, to name a few.

### **The Basis for Municipal Government Power**

In light of this dissertation's focus on the role of local government in planning for agriculture, it is useful to briefly consider the basis of municipal government authority. New Jersey has a strong "home rule" tradition, meaning that the state has granted considerable powers to county and local levels of government. This becomes especially germane in the context of agricultural policy making in light of the ability of county and municipal governments in New Jersey to regulate land use and other aspects of the local business environment important to commercial farming.

The historical context for how political powers are delineated across levels of government is an interesting one. The United States, as a political entity, has powers that are expressly delineated in the Constitution. States retain all other powers not specifically held by the national government. This is provided for in the Tenth Amendment of the United States Constitution, which states that "[t]he powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively, or to the people."

Individual states can further devolve powers to lower levels of government (i.e., counties or municipalities). The United States Constitution does not make any reference to the powers of municipalities. Local governments are generally viewed as "creatures of the state", created by and regulated by the states within which they are located. The determination of whether a municipal government possesses a given power is often rooted in the interpretation of the 1868 decision by Iowa Supreme Court Judge John Dillon in *Clark v. City of Des Moines*. Dillon's opinion stated:

It is a general and undisputed proposition that a municipal corporation possesses and can exercise the following powers, and no others: first, those granted in express words; second, those necessarily or fairly implied in or incident to the powers



expressly granted; third, those essential to the accomplishment of the declared objects and purposes of the corporation—not simply convenient, but indispensable. Any fair, reasonable, substantial doubt concerning the existence of a power is resolved by the courts against a corporation, and the power is denied.

Dillon wrote *Commentaries on the Law of Municipal Corporations* in 1872 which, coupled with his reputation as a preeminent scholar on municipal law contributed to the widespread adoption of “Dillon’s Rule” by other state supreme courts and the U.S. Supreme Court in ensuing years. This opinion remains today an important basis for determining the power relationships between states and municipalities. If a power is not specifically delegated to a local government through a charter or enabling legislation, Dillon’s Rule provides that that power is not held by the municipality.

Dillon’s doctrine has its roots in his inherent distrust for local governments, which stemmed from his perception of pervasive local corruption existing during his time. As Richardson (1998) notes, Dillon’s Rule reflects a belief in the courts that “state control of local government power was necessary to combat crime-boss rule of cities and other ills that were threatening democratic governance.”

In marked contrast to Dillon’s Rule is the concept of “home rule.” Home rule represents a grant of power from the state to the local government. The concept of home rule gained momentum in 1875, beginning in Missouri, as a response to the increasing complexity in state governance posed by the growth in the number and size of municipalities in the late 1800s. There are essentially two mechanisms for transferring the power of home rule to municipalities: through a provision in a state constitution or, as was the case in New Jersey, through legislative action.

New Jersey’s home rule tradition dates to the early part of the twentieth century. The

Home Rule Act of 1917 established New Jersey as a home rule state, meaning that municipalities have been delegated substantial powers to regulate land use in the interest of public health, safety, and welfare through localized planning and the adoption of municipal ordinances. As one prime and relevant example, land use planning and regulation in New Jersey is almost exclusively within the province of municipal authority.<sup>11</sup> The basis for this power lies in the New Jersey Municipal Land Use Law (MLUL), passed in 1975. The MLUL provides statutory authority for municipalities to create planning boards and zoning boards of adjustment, prepare comprehensive master plans, and pass ordinances to guide the growth and development of their communities.

## Summary

Fiscal federalism provides a useful theoretical framework for discussing the allocation of responsibilities for promoting farm viability and agricultural retention across multiple levels of government. This framework organizes the information examined in this dissertation as a response to the first research question (that is, should local governments assume greater responsibility for advancing farm viability objectives?).

Prior to addressing this question, the roles and responsibilities of the federal and state

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<sup>11</sup> The Pinelands and recently designated Highlands regions of the state are good examples of areas with regional planning authorities holding considerable power over local land use planning. The Highlands Water Protection and Planning Act (see P.L.2004, c.120 (C.13:20-3)) created the Highlands Water Protection and Planning Council to comprehensively plan for the protection of water and other resources in an approximately 800,000 acre regional planning area known as the New Jersey Highlands. The plan calls for the delineation of both a preservation area (wherein more stringent controls will be in place to curtail development and preserve resources) and a planning area. C.13:20-8 charges the Council with the preparation of the regional master plan.

governments in advancing agricultural retention and development objectives will first be examined in the following chapters. The conceptual arguments for the decentralization of agricultural policy will then be discussed in Chapters 6 through 8. These arguments center around the increased efficiency with which a local government can accommodate the diversity of farming needs and interests that become evident at the sub-federal level, and control for spillover benefits and costs that flow from, or impact upon, agriculture.

## **Chapter 4**

### **An Overview of Agriculture and Federal Farm Policy in the United States**

This chapter begins a discussion of the roles of various levels of U.S. government in agricultural retention and development, beginning with the federal government. Under the framework of fiscal federalism, it is predicted that there will be a centralization of farm policy functions within the federal government related to risk pooling, provision of goods or services with broad ranging spillover benefits, and establishment and upholding of societal (or, relevant in this instance, industry) norms. The following review of federal farm policy bears out this *a priori* expectation.

What follows is a brief exposition of the federal government's role in establishing macro-level farm policy. The ensuing narrative shows that agriculture has long been viewed as both a land use and an industry of strategic national significance, as evidenced by the considerable focus that the federal government has placed on the well being of the nation's farms for more than a century. Also presented in this chapter are data that demonstrate the farm sector's continued national importance.

#### **Agriculture and the National Landscape**

Federal farm policy since the 1930s has been largely focused on the "industry" aspects of agriculture, as opposed to agriculture's land use dimensions. This is not especially surprising, as it is widely accepted that the United States does not have a

comprehensive national land use policy.<sup>12</sup> Quite the contrary, decisions about the use and management of land are mostly relegated to lower levels of government (excepting, of course, lands under federal ownership and management such as national parks and preserves). This is notable given the land extensiveness of agriculture in the U.S.

The United States (excluding Hawaii and Alaska) covers approximately 1.94 billion acres and is blessed with an abundance of highly productive farmland. To help understand land use transitions occurring in the nation, the USDA's Natural Resources Conservation Service (NRCS), in partnership with Iowa State University's Statistical Laboratory conducts a National Resources Inventory (NRI) every five years to assess conditions and trends of soil, water, and related resources on non-federal lands in the United States.<sup>13</sup> The 2002 NRI provides detailed current information on the land use and ownership characteristics of the U.S. land base and demonstrates the importance of agriculture across the national landscape (Table 4-1).

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<sup>12</sup> Clinton-era interior secretary Bruce Babbitt argues the need for a more focused federal land use policy in his recent book, *Cities in the Wilderness*. He contends that there are land use related issues of national interest (e.g., flood control, management of interstate rivers, water rights, protection of ecologically or historically important natural resources, endangered species, etc.) that warrant federal leadership in land use regulation. He further points at clear instances, whereby the federal government has significantly influenced land use outcomes in the United States. Among them are federally supported transportation infrastructure programs, wetlands reclamation policies and projects, and the application of federal endangered species protections.

<sup>13</sup> The NRI was being conducted in 5-year intervals from 1982 through 1997. The consistency in the sampling methodology and variables collected allow for time series analysis of NRI data across the 1982, 1987, 1992, and 1997 surveys. The NRCS began conducting annual surveys in 2001, with the most recent data available for 2002. The 2001 and 2002 surveys utilized a smaller sample than the 5-year NRIs. However, the survey still provides "nationally consistent statistical data" on land use trends and patterns, permitting longitudinal analysis at the national scale.

**Table 4-1: Land Ownership and Use in the United States.**

<b>Land Ownership/Use</b>	<b>Area</b>	<b>Percent of Total Area</b>	<b>Percent of Non- Federal Land</b>
<i><b>Federally Owned Land</b></i>	<i><b>401.9 million acres</b></i>	<i><b>21.3%</b></i>	<i><b>N/A</b></i>
<i><b>Non-Federally Owned Land</b></i>	<i><b>1,485.4 million acres</b></i>	<i><b>78.7%</b></i>	<i><b>100%</b></i>
Farmland	922.6 million acres	48.9%	62.1%
Cropland	368.4 million acres	19.5%	24.8%
Land in CRP	31.6 million acres	1.7%	2.1%
Pasture Land	117.3 million acres	6.2%	7.9%
Range Land	405.3 million acres	21.5%	27.3%
Forest	404.9 million acres	21.5%	27.3%
Developed	107.3 million acres	5.7%	7.2%
Other Rural Uses	50.6 million acres	2.7%	3.4%
<b>Total (All Land Area)</b>	<b>1,887.3 million acres</b>	<b>100.0%</b>	<b>N/A</b>

Source: USDA Natural Resource Conservation Service (2002 National Resources Inventory).

The federal government owns approximately 21 percent (402 million acres) of land, mostly concentrated in the western states. Agriculture accounts for nearly half (49 percent) of the conterminous U.S. land area, and 62 percent of non-federally owned land.<sup>14</sup> This equates to more than 922 million acres. Forested land accounts for another 21 percent of the land base (405 million acres, or 27 percent of non-federally owned land). Nationwide, more

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<sup>14</sup> Under the NRI definition, agricultural land comprises cropland, pasture land, rangeland, and land enrolled under the Conservation Reserve Program.

than 107 million acres (6 percent of all land, 7 percent of non-federal land) have been developed.<sup>15</sup>

### **Farmland Loss: A Growing National Concern**

The protection of agriculture and the retention of farmland and farms is an issue of growing national importance. Despite the fact that all 50 states have adopted farmland protection programs in one form or another, U.S. population growth and, more pertinently, the pattern of development that has accompanied such growth is consuming farmland at alarming rates. A review of 2002 and earlier NRI data reveal that the rates at which developed land area is increasing and farmland area is decreasing are both rising. For example, in the decade from 1982 to 1992, an average of 1.4 million acres of land was converted to development annually. Between 1992 and 2002, more than 2 million acres per year were developed, an increase in the average annual rate of conversion of 47 percent.

NRI data also reveal that between 1982 and 1992, the United States experienced an average net loss of nearly 2 million acres of agricultural land each year. Over the course of the following decade, an average of 2.7 million acres of agricultural land was lost annually, an increase in the average loss per year of almost 37 percent. The data show clearly that development is often the culprit in terms of farmland loss and reflect an increase in the rate

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<sup>15</sup> Developed land consists of residential, industrial, commercial, and institutional land; construction sites; public administrative sites; railroad yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment plants; water control structures and spillways; other land used for such purposes; small parks (less than 10 acres) within urban and built-up areas; and highways, railroads, and other transportation facilities if they are surrounded by urban areas. Also included are tracts of less than 10 acres that do not meet the above definition but are completely surrounded by urban and built-up land.

at which development is occurring on agricultural lands. The American Farmland Trust (2003) observes that the annual rate at which agricultural land was converted to developed uses between 1992 and 1997 was 51 percent higher than during the 1982-1992 period.

Despite these declines, the Nation clearly maintains a vast farmland resource and most experts do not foresee a significant diminution in the Nation's agricultural production capacity in the near term. However, development pressures on agricultural regions are escalating and the Nation's highest quality, most productive farmland is increasingly being lost or threatened by encroaching development.

The American Farmland Trust finds that a substantial portion of the Nation's food production occurs on lands threatened by development (Sorensen et al. 1997). The nation's 1,210 most urban influenced counties currently produce the majority of the nation's fruits (86 percent), vegetables (86 percent), and dairy products (63 percent).<sup>16</sup> More than one-third of the Nation's meat and grain production is similarly in the path of development.

### Loss of Prime Farmland

The number of farmland acres being lost in the U.S. is clearly troubling, however, more problematic is the fact that the Nation is losing its highest quality farmland at the

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<sup>16</sup> The AFT's finding that a disproportionately large percentage of the Nation's fruit and vegetable production is located in urban-influenced counties raises an interesting question of path dependence. Has development encroached upon areas historically intensive in terms of fruit and vegetable production, or have suburbanization pressures encouraged farmers to transition to higher value crops in response to rising land and other operating costs? Or, is this a market response triggered by increasing proximity to consumer bases and markets? As will be discussed in later in this dissertation, New Jersey agriculture has undergone tremendous structural and compositional changes in recent decades, changes spurred in part by urbanization effects.



fastest rate. The United States Department of Agriculture's Natural Resources Conservation Service, the primary federal agency responsible for monitoring and protecting the nation's soils resources, classifies soils in terms of eight Land Capability Classes. Soils in Land Capability Class I and selected soils under Land Capability Class II are classified as "prime" agricultural soils, meaning they have few, if any, limitations for use in farming. Farmland is also categorized as being of statewide importance, local importance, and unique importance.

The 1997 NRI found that 331.9 million acres of prime farmland remain in the United States, an amount equal to roughly 24 percent of total (non-federal) rural land. According to the American Farmland Trust (2003), prime farmland is being converted at a rate 30 percent higher than non-prime farmland. In most instances, these agricultural lands are being lost to urbanization. For instance, at the national level, 3.6 million acres of prime farmland were lost from 1992 to 1997. Of this, more than 3.2 million acres (89 percent) was converted into developed uses. This is not surprising since prime farmlands tend to be flat and well-drained, making them suitable for development.

The conversion of prime farmland represents the loss of an irreplaceable natural resource and results in the farming of lands less suitable for agriculture. These more marginal lands have lower productivity, generally require more inputs (i.e., water, fertilizers) to increase productivity, and are often more prone to erosion due to slopes or poor soil structure. Thus, pulling marginal lands into production is undesirable from both farm profitability and environmental standpoints.

The American Farmland Trust's *Farming on the Edge* initiative (Sorensen *et al.* 1997) documented the pressure on the Nation's farmland based on analysis of 1997 and

previous periods' NRI data. Tracking the impacts of new development pressures on agricultural lands in all fifty states, AFT identified regions with high quality farmland (designated by the Natural Resources Conservation Service as either "prime" or "unique") that face high and low development pressures.<sup>17</sup> Analysis was conducted of each of the 181 Major Land Resource Areas (MLRAs) in the U.S., large geographic regions defined by the USDA based upon a homogeneity of physical features such as climate, soils, water, and types of farming activity.

The result of AFT's study was a national map depicting areas of high quality farmland facing imminent threat of conversion due to advancing development pressures. In total, 127 of the 181 MLRAs were found to have farmland facing imminent development pressure. The study identified the top twenty most threatened agricultural regions and provided a poignant view of the imperilled nature of farming in many regions of the country (Table 4-2). The 20 most threatened MLRAs account for 76 percent of the coterminous land base, but 95 percent of prime farmland. They also account for 51 percent of U.S. fruit production, 39 percent of vegetable production, and 28 percent of dairy production (in terms of 1997 agricultural sales).

Of specific relevance to this dissertation, two of the most threatened MLRAs, the Northern Piedmont (2<sup>nd</sup> most threatened) and the New England and Eastern New York Upland - Southern Part (10<sup>th</sup> most threatened), include portions of New Jersey and encompass a significant portion of the state's farmland base and agricultural production.

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<sup>17</sup> Under the NRCS classification, soils of unique importance are not of prime, statewide, or local importance but are suitable for special crops such as cranberries that require unique soil types for production.

**Table 4-2: Ten Most Threatened MLRAs Identified in Farming on the Edge.**

Major Land Resource Area	Description	Rank
Sacramento & San Joaquin Valleys	Central California	1
Northern Piedmont	Primarily parts of Maryland, New Jersey, Pennsylvania & Virginia	2
Southern Wisconsin & Northern Illinois Drift Plain	Parts of Illinois and Wisconsin	3
Texas Blackland Prairie	Eastern part of Texas	4
Willamette & Puget Sound Valleys	Parts of Oregon and Washington	5
Florida Everglades & Associated Areas	Southern tip of Florida	6
Eastern Ohio Till Plain	Primarily parts of Ohio	7
Lower Rio Grande Plain	Southern Texas	8
Mid-Atlantic Coastal Plain	Primarily parts of Delaware and Maryland	9
New England & Eastern New York Upland, Southern Part	Primarily parts of Connecticut, Massachusetts, New Hampshire, New Jersey, New York and Rhode Island	10

Source: Adapted from Sorensen *et al.* (1997).

### The Economic Importance of American Agriculture

More than 200 years ago, Thomas Jefferson commented often and eloquently on the important place farmers and agriculture held in the early years of the Nation's history. Jefferson viewed agriculture as the foundation for democracy, with farmers the epitome of good, productive, and virtuous citizens. He has been quoted as stating that "the cultivators of the earth are the most virtuous citizens, and possess most of the *amor patriae*."<sup>18</sup> He further viewed agriculture as the basis of the young United State's budding economy. In a

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<sup>18</sup> Published in The Writings of Thomas Jefferson, Memorial Edition (Lipscomb and Bergh, editors). Accessed at <http://etext.lib.virginia.edu/jefferson/quotations/index.html>.

1787 letter to George Washington, Jefferson noted that “agriculture... is our wisest pursuit, because it will in the end contribute most to real wealth, good morals and happiness.”<sup>19</sup>

Today, the United States remains endowed with an abundance of farmland which supports a level of agricultural diversity and productivity unrivaled by most other countries. As discussed previously, farmland is clearly a dominant land use and vital natural resource at the national level, which helps explain in part the policy attention imparted upon the industry. At the same time, agriculture is also an important segment of the economy, albeit one that has been displaced over the years (in relative terms) by other industries as the Nation has developed and the nature of food production, processing, and distribution has evolved.

Decomposition of current U.S. gross domestic product data, at first glance, calls into question whether Thomas Jefferson’s views on the economic importance of agriculture have contemporary relevance. Over the past century, and most notably the last half century, the relative economic importance (i.e., the proportional contribution of agricultural production to national gross domestic products) has declined. Bureau of Economic Analysis data show that U.S. gross domestic product (GDP) exceeded \$10.4 trillion in 2002. Production agriculture contributed only \$70.8 billion (0.7 percent) to total U.S. gross domestic product. In isolation of other linkages of the food production and distribution chain, the contribution of crop and animal production is dwarfed by other industry sectors.<sup>20</sup>

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<sup>19</sup> *Ibid.*

<sup>20</sup> Economic figures on production agriculture alone belie the importance of the industry in the United States. Jones and Hallberg (1998) note that the complexity and interdependence within the food production and distribution system necessitates a broader

National-level data also conceal a concentration of the agricultural economy in several large farming states (Table 4-3). In fact, 40 percent of U.S. farm GDP is generated by California, Texas, Florida, Iowa, and Washington. California's agricultural GSP alone is \$12.6 billion (18 percent of the U.S. total). National data also do not reveal the differences in the relative economic importance of farming across states. Whereas farming accounts for only 0.7 percent of national GDP, the industry is proportionally more important in the smaller rural state economies in the West, South, and Midwest regions.

National employment trends are also an interesting indicator of the marked transitions that have occurred in American economy. For instance, about nine out of every ten people lived on a farm in the early years of the United States. By 1900, less than half of the population lived on farms. Since the turn of the twentieth century, the percentage of Americans living on farms has dwindled. Spurred by the technological innovations of the Industrial Revolution, the Nation's rising agricultural productivity required fewer people working on the farm to sustain a growing population.<sup>21</sup> Today, less than 2 percent of the U.S. population lives on farms, producing the food and fiber needed to sustain both domestic and international consumers.

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view of agriculture that extends beyond crop production and animal husbandry. Farming is, in fact, the foundation in a large food and fiber *system* that includes farm input suppliers, commodity processors and manufacturing firms, distribution and storage facilities, exporters, points of retail sales, and a host of ancillary support services. Collectively, these activities contribute an estimated \$1.24 trillion, or 12.3 percent, of national gross domestic product according to USDA economist Edmondson (2004). He notes that the employment contributions of the national food and fiber system are more substantial, estimating that food and agribusiness firms employ 23.7 million people, or one out of every six American jobs.

<sup>21</sup> The average American farmer now produces enough food and fiber to support 144 people (American Farm Bureau Federation 2005). This compares to 115 people in 1980, 46 people in 1960, and 19 people in 1940.

**Table 4-3: Farming's Contribution to Gross State Product, by State (2002).**

State	GSP - Farms (\$ billion)	% of U.S. Farm GDP	% of State GSP	State	GSP - Farms (\$ billion)	% of U.S. Farm GDP	% of State GSP
California	\$12.62	17.8%	1.0%	Alabama	\$1.10	1.5%	1.1%
Texas	\$5.88	8.3%	0.9%	North Dakota	\$1.09	1.5%	6.4%
Florida	\$3.66	5.2%	0.8%	South Dakota	\$1.06	1.5%	4.7%
Iowa	\$3.42	4.8%	4.0%	Mississippi	\$0.83	1.2%	1.5%
Washington	\$2.48	3.5%	1.2%	New Mexico	\$0.77	1.1%	1.8%
Illinois	\$2.28	3.2%	0.5%	Tennessee	\$0.72	1.0%	0.4%
Minnesota	\$2.25	3.2%	1.3%	Montana	\$0.70	1.0%	3.5%
Wisconsin	\$2.22	3.1%	1.3%	Virginia	\$0.68	1.0%	0.3%
Nebraska	\$2.10	3.0%	4.1%	Louisiana	\$0.50	0.7%	0.4%
North Carolina	\$1.82	2.6%	0.7%	New Jersey	\$0.44	0.6%	0.1%
Georgia	\$1.72	2.4%	0.6%	South Carolina	\$0.44	0.6%	0.4%
Arizona	\$1.70	2.4%	1.1%	Utah	\$0.42	0.6%	0.7%
Idaho	\$1.63	2.3%	4.9%	Maryland	\$0.41	0.6%	0.2%
Pennsylvania	\$1.55	2.2%	0.4%	Wyoming	\$0.31	0.4%	1.8%
Oregon	\$1.51	2.1%	1.5%	Hawaii	\$0.29	0.4%	0.9%
Oklahoma	\$1.49	2.1%	1.9%	Connecticut	\$0.22	0.3%	0.1%
Kansas	\$1.40	2.0%	1.8%	Massachusetts	\$0.19	0.3%	0.1%
Arkansas	\$1.36	1.9%	2.2%	Vermont	\$0.18	0.3%	1.1%
Michigan	\$1.32	1.9%	0.4%	Maine	\$0.18	0.2%	0.5%
Colorado	\$1.29	1.8%	0.8%	Nevada	\$0.16	0.2%	0.2%
New York	\$1.28	1.8%	0.2%	Delaware	\$0.14	0.2%	0.3%
Ohio	\$1.28	1.8%	0.4%	West Virginia	\$0.72	0.1%	0.2%
Missouri	\$1.27	1.8%	0.8%	New Hampshire	\$0.61	0.1%	0.1%
Kentucky	\$1.19	1.7%	1.1%	Alaska	\$0.26	<0.1%	0.1%
Indiana	\$1.14	1.6%	0.6%	Rhode Island	\$0.23	<0.1%	0.1%

Source: Bureau of Economic Analysis, modified June 23, 2005 (accessed, July 8, 2005).

The industrialization of the U.S., and the accompanying shift away from a

predominantly agrarian economy, is inextricably linked to farm productivity. Increasingly sophisticated cultivation practices, resource stewardship, and scientific breakthroughs in pest management, plant genetics, and modern biotechnology continue to fuel productivity gains in U.S. agriculture. The evolution of agricultural and food technologies quickened during the second half of the twentieth century, supporting levels of farm productivity not previously experienced at any other point in history. Wellesley College Professor Robert Paarlberg notes that the progress of agricultural innovation and productivity in the last century alone has surpassed that experienced over previous millennia:

If a farmer from Old Testament times could have visited an American farm in the year 1900, he would have recognized—and had the skill to use—most of the tools he saw: the hoe, the plow, the harrow, the rake. If he were to visit an American farm today, he might think he was on a different planet. (Paarlberg and Paarlberg 2000).

According to USDA economist Eldon Ball, increased input utilization “has typically been the dominant source of economic growth for the U.S. economy as a whole and for most of its producing sectors” (Ball 2005). Agriculture has not followed this pattern of growth over the past several decades. Ball notes that farm output is now 2.6 times the level it was in 1948; however, input use has actually declined, making such growth attributable to gains in productivity.

As noted earlier, the human resources devoted to agriculture have declined substantially over the past century as Americans have moved off the farm to pursue other endeavors. Ball similarly found that capital inputs have declined since 1981 and land in farming has steadily declined throughout much of the century. Material inputs (i.e., energy, chemical inputs) have increased since 1948; however, the net contribution of all four inputs to growth in agricultural output was slightly negative, leaving output growth over the 1948-

2002 period entirely attributable to productivity growth.<sup>22</sup> These productivity changes are attributed to changes in the economies of scale, changes in efficiency, and changes in available technology. Public investments in agricultural research have also fueled productivity growth; however, Ball notes that real returns on such investments have flattened since the 1980s.

### **The U.S. Agricultural Trade Balance**

The U.S. is currently the world's largest agricultural exporter - and the largest agricultural importer. The USDA's Economic Research Service estimates that production from about one-third of U.S. cropland moves into export channels (USDA ERS 2000). In 2004, more than \$63 billion worth of farm products was exported to other countries (Table 4-4).

Agricultural export activity generates substantial domestic economic activity and contributes positively to the foreign trade balance. Whereas the United States has consistently run a trade deficit since 1976, agricultural exports have exceeded agricultural imports every year since the early 1960s (U.S. Census Bureau 2002). In 2004, while the U.S. trade deficit surpassed \$650 billion, the agricultural trade surplus exceeded \$9 billion.

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<sup>22</sup> Ahearn *et al.* (1998) provide a comparative analysis of productivity changes in agriculture and non-farm businesses and reach similar conclusions. Between 1948 and 1994, real annual output growth for non-farm businesses was nearly twice that of agriculture (3.38 percent versus 1.88 percent). However, input usage fueled the majority (2.31 percent) of output growth in non-farm businesses whereas agricultural inputs actually declined by 0.06 percent.



**Table 4-4: The United States' Agricultural Trade Balance.**

<b>Year</b>	<b>Total Trade Balance (\$ billion)</b>	<b>Agricultural Exports (\$ billion)</b>	<b>Agricultural Imports (\$ billion)</b>	<b>Agricultural Trade Balance (\$ billion)</b>
1970	\$3.4	\$7.3	\$5.8	\$1.6
1980	(\$19.5)	\$41.8	\$17.4	\$24.3
1990	(\$101.7)	\$39.6	\$22.3	\$17.2
1995	(\$158.7)	\$56.0	\$29.3	\$26.8
1996	(\$170.2)	\$60.6	\$32.6	\$28.1
1997	(\$181.5)	\$57.1	\$35.2	\$21.9
1998	(\$229.8)	\$52.0	\$35.7	\$16.3
1999	(\$328.8)	\$48.2	\$36.7	\$11.5
2000	(\$436.1)	\$53.0	\$39.2	\$13.8
2001	(\$411.9)	\$55.2	\$39.5	\$15.7
2002	(\$471.6)	\$54.8	\$42.0	\$12.8
2003	(\$532.4)	\$61.4	\$47.5	\$13.9
2004	(\$650.9)	\$63.4	\$54.2	\$9.2

Source: U.S. Census Bureau, Statistical Abstract of the United States, 2002 edition (Table 1278) and 2006 edition (Table 1288).

The farm trade surplus peaked at \$28.1 billion in 1996, falling with the onset of the global financial crisis and subsequent deterioration of U.S. foreign trade in the late 1990s. The agricultural trade balance recovered from this disruption, however, agricultural trade data released by the USDA's Economic Research Service for 2004 suggests a significant contraction in the agricultural trade surplus (Brooks 2005). While agricultural exports reached a record high in 2004 (\$63.4 billion, up \$2.0 billion over 2003), the rise in agricultural imports was even more pronounced (\$54.2 billion, \$6.7 billion more than in 2003). The agricultural trade surplus therefore amounted to \$9.2 billion in 2004, down from

\$13.9 billion in 2003.

### **A Brief History of United States Farm Policy**

The appropriate role of the federal government in agriculture has long been, and remains, the subject of contentious debate. Irrespective of any ideological divides over this issue, the fact remains that the federal government has played a critically important role in the evolution of U.S. agriculture for more than two centuries and continues to place considerable focus, and dollar resources, into sustaining the industry.

Today, direct federal financial support for American farmers is arguably the most common conception of U.S. “farm policy.” Supply control and price support programs date back to the time of the Great Depression and the passage of the first farm bill, the Agricultural Adjustment Act of 1933. However, the federal government has played a significant role in the development of the national farm sector since the country’s inception. USDA economist Anne Effland (2000) provides an informative summary of U.S. farm policy goals over the last two centuries, creating a typology of four overlapping “policy eras” in U.S. agriculture: federal land distribution (in the late 1700s through the 1800s), education and research (early/mid 1800s through the early 1900s), information and marketing assistance (late 1800s through the early/mid 1900s), and farm income support (early 1900s through present).

### **Federal Land Distribution and Settlement**

In the 1700s and 1800s, the newly founded federal government focused on occupying and developing its expanding territory. The transfer of new federal lands to private owners was viewed as a potentially major revenue source. However, the relatively slow privatization of public lands prompted the government to liberalize laws governing the sale of federally owned land by lowering prices, reducing credit terms, forgiving debt and so forth.

The secession of the South (which largely opposed free distribution of federal lands) from the Union in 1860 cleared the way for the passage of the landmark Homestead Act of 1862. The Homestead Act, signed by President Lincoln, was a pivotal federal policy that allocated land, at no cost, to private owners provided they settled and farmed the land. Under this law, a head of a household could file for a “quarter-section” of land, equivalent to 160 acres. At the end of five years, the individual was granted ownership of the property provided that a house was constructed and at least 10 acres was farmed. While the law was officially repealed in 1976 with the passage of the Federal Land Policy and Management Act, the policy of land transfer was largely in effect until the end of the 1800s.<sup>23</sup> Hindsight shows that land speculators and railroads were major beneficiaries of federal land allocation policies, such as those established under the Homestead Act. Nevertheless, by 1900 roughly 600,000 farmers had received clear title to more than 80 million acres of land.<sup>24</sup>

As an interesting historical sidenote, debate over federal land distribution reflected

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<sup>23</sup> At the time of repeal, provisions were put in place to allow homesteading in Alaska until 1986.

<sup>24</sup> See, [http://www.nps.gov/home/homestead\\_act.html](http://www.nps.gov/home/homestead_act.html) for more information.

a deep running political divide of the time along two primary ideological lines. On one side were those that advocated selling large parcels, at high prices, in order to maximize public revenues (and lower taxes). Implicit also in this approach was a selection process that favored individuals with the economic means to actually develop acquired lands. On the other side were advocates of the broad distribution of small parcels to a large number of farmers. Such diffusion was seen as an avenue for not only territorial settlement and development, but also the establishment of an independent citizenry. This latter ideal was embodied in the Homestead Act and clearly epitomizes the agrarian ideal maintained by Thomas Jefferson; large numbers of independent landowners, deriving their well-being and livelihood from the land.

The romantic notion embodied in American culture of the “small family farm” also has its roots in the outcome of this ideological debate. According to Anne Effland (2000), the Homestead Act “created a precedent of Federal support for an independent family farm system, which has continued to be a prominent goal of farm policy.” This ideal is manifest today in current farm policies designed to mitigate fluctuations in farm family incomes and stabilize rural economies.

### **An Expanded Federal Role in Agricultural Research and Education**

As increased accessibility to federal lands swelled the U.S. farm population through the early 1900s, a growing need for education and scientific research in many facets of agricultural production emerged. The “public good” nature of early agricultural research, however, required the intervention of the federal government. Further, the rapidly growing industrialization of the United States characteristic of the nineteenth century was enabled by

the productivity of American farmers. As more of the population left the farm and devoted time and resources in the manufacturing sectors, continued productivity growth in agriculture emerged as an essential ingredient in the Nation's economic development and expansion.

Dating as far back as the early 1800s, those within the agricultural community began recognizing the need for productivity enhancing research to encourage agricultural industry development and support farm incomes. Farmers began organizing agricultural societies to exchange information on new production technologies and innovations. The New Jersey Agricultural Society, for example, was established in 1781 and claims to be the oldest such society remaining in the nation.

The proliferation of farms and agricultural organizations in the newly settled federal land in the western territories expanded the need for agricultural research. Existing farms in older, more established regions of the country (notably the southern and eastern states) realized the competitive implications of the new farms establishing themselves in the western states. This was particularly true in the major commodity sectors such as wheat. In the older regions, poor (by today's standards) land stewardship and cultivation practices eroded the productive capacity of lands. Research on fertilizers, crop rotations, and other production technologies was seen as necessary to revitalize older farming regions.

Under the Lincoln presidency, a number of other historic pieces of legislation influencing the agricultural industry were passed. Aside from marking the passage of the Homestead Act, 1862 was a noteworthy year in agriculture due to the creation of the United States Department of Agriculture and the land grant college system. Later years saw the creation of additional critical agricultural research and outreach infrastructure with the

establishment of a national system of state agricultural experiment stations (1887) and the Cooperative Extension Service (1914). The rationale for this type of federal involvement in agriculture was largely predicated on the belief that the government had an obligation to help older farming regions in the U.S. compete on a level playing field with the growing number of new farms in the West, which it had helped spur, and the recognition that to ensure sufficient national food production, scientific advances in agriculture must be made accessible to the large and diffuse agricultural production system (Effland 2000).

Many studies have found strong, positive correlation between public and private sector agricultural research and the substantial growth in agricultural productivity in the U.S. discussed earlier in this chapter. A recent review article by USDA economist Keith Fuglie and Paul Heisey (2006) found “strong and consistent evidence that [public] investment in agricultural research has yielded high returns per dollar spent.” A similar study by respected agricultural economists and academicians Wallace Huffman and Robert Evenson (2006) yielded a similar conclusion, finding that the median estimate of the annual social rate of return to investments in agricultural research is 45 percent.<sup>25</sup> Fuglie and Heisey derive mathematically that a rate of return of this magnitude implies that a one dollar investment in agricultural research generates ten dollars of benefit across the economy.

As briefly noted previously, the rationale for public expenditure on agricultural research reflects not only the importance of maintaining a viable agricultural sector and domestic food sufficiency, but also the economic quandary of public goods (e.g., those

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<sup>25</sup> The authors note that farmers have not been the only beneficiaries of such investments. By discussing a social rate of return, the authors of various studies also estimate the benefits of agricultural research that accrue to other industries (e.g., the food industry sectors) and the public at large (e.g., lower food prices).

conferring significant spillover benefits to parties not directly investing in the research). Further, there are often significant time lags between investments in research and the realization of benefits from new knowledge or technology.

### United States Department of Agriculture

Today's United States Department of Agriculture (USDA) has its early roots in the U.S. Patent Office. In 1839, Congress passed an act establishing the Agriculture Division within the Patent Office of the Department of State. Its function was to collect agricultural statistics and serve other functions for the advancement of the industry. At that point in history, the large majority of patent issues involved agriculture, the primary industry of the time.

The United States Department of Agriculture (referred to by President Lincoln as the "People's Department") was created on May 15, 1862 through the Department of Agriculture Organic Act. Its first commissioner was not a member of the President's cabinet. It was not until 1889 that Congress elevated the USDA to an executive department and the Secretary of Agriculture became a cabinet-level position.

Today, the USDA oversees a wide range of programs, from federally supported hunger relief and nutrition programs (school breakfast and lunch programs, food stamps, and programs for women, children, and infants) to rural development assistance programs to new market development. The agency also regulates meat, poultry, and egg products to ensure consumer safety and monitors plant and animal health. USDA programs such as the Conservation Reserve Program and Wetlands Reserve Program are focused on conserving the Nation's soil, water, wildlife, and other natural resources. The Forest Service falls under

the USDA auspices and is responsible for managing the nation's forest and grassland resources. The USDA continues to support extensive research, both basic and applied, on a broad range of issues spanning genomics, human nutrition, new production technologies, and policy research to name a few.

### The American Land Grant System

Two pivotal pieces of federal legislation created a system of land grant universities across the United States. The land grant system was created with a tripartite mission of formal academic instruction, research, and outreach to bring the benefits of higher education and scientific research to a broader base of U.S. citizens, including those for whom such education was largely unavailable..

The Morrill Act of 1862, introduced by Vermont Senator Justin Morrill, required the donation of public lands for the purpose of establishing "land grant" colleges. Each state received 30,000 acres per congressional delegate. The Act required proceeds from land sales to be invested, with interest generated being allocated specifically to

the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts.

A second Morrill Act in 1890 provided additional funds for land grants and contained a provision stating that such monies would not be available to any state or territory for "the support and maintenance of a college where a distinction of race or color is made in the admission of students." One proviso in the act, however, enabled states to establish separate institutions for Black students provided that funds received by the state were divided



equitably between such institutions. These are commonly known today as “1890 institutions.” According to the National Association of State Universities and Land-Grant College (NASULGC), its 2005 membership included 76-land grant universities. Of these, 18 are 1890 schools.

The Hatch Act (1887) established federally funded state agricultural experiment stations at the land grant colleges and universities to conduct a wide array of research for the betterment of agriculture. While historically reliant upon “formula” funding that accounted for factors including the number of farms in the state, the budgets of state experiment stations are evolving. Components of formula funding include allocations authorized under the Hatch Act (for broadly defined agricultural purposes), McIntire-Stennis funds (for forestry related issues), and Smith-Lever funds (extension activities). However, in recent years experiment station faculty are increasingly being required to pursue funding through federal (and other) competitive grant programs.

The mandate for agricultural research under the Hatch Act has been interpreted very broadly and continues to evolve with the needs of the food and agricultural industries and society. Areas of research outlined on the USDA’s Cooperative State Research, Education, and Extension Service website include soil and water conservation; plant and animal production and health; processing, distribution, safety, and marketing of food and agricultural products; forestry (including urban forestry); aquaculture; home economics and family life; human nutrition; rural and community development; sustainable agriculture; molecular biology; and biotechnology. Even further broadening the scope of experiment station research is the authorization to conduct research of specific local, regional, or national concern.

The final component of the modern day land grant system was put in place with the creation of the Cooperative Extension Service in 1914 under the Smith-Lever Act. The Cooperative Extension Service is a partnership between the USDA and the land grant college system designed to disseminate the research of the land grants and state experiment stations to society. Funding is provided through a combination of federal, state, and local monies.

### **Supporting Agricultural Markets**

By the late 1800s and early 1900s, urban-rural (industrial-agricultural) wealth disparities began becoming evident. Evolving from a subsistence-based system of agricultural production, greater farm productivity and the evolution of urban manufacturing centers forced agriculturalists in the United States to become more reliant on markets for their surplus products. Accompanying this transition, farmers and their incomes now needed to contend not only with the unpredictability of natural conditions, but also the vagaries of marketplace fluctuations. Farmers began demanding federal assistance in agricultural development beyond basic scientific research.

The new focus of farmer lobby efforts emphasized a federal role in promoting greater parity between agricultural and non-agricultural growth through the provision of market development assistance and infrastructure development to facilitate the movement of agricultural products to market. Agricultural cooperatives were also exempted from antitrust laws, enabling farmers to act cooperatively in the purchase of inputs and marketing of farm products. New programs were created within the USDA, as well as the Cooperative Extension Service, to support these endeavors.

Today, USDA actively supports a variety of efforts related to agricultural marketing

and promotion, as well as new market development (both domestically and abroad). The USDA's Agricultural Marketing Service, for example, provides farm product price and market information, oversees programs supporting commodity-specific promotion (e.g., beef, milk, etc.) and marketing orders, creates products standards (e.g., organic certification), and purchases agricultural products from producers that enter the National School Lunch program. USDA-AMS also administers product grading programs (e.g., USDA "prime beef" or USDA "grade A" eggs) and provides product testing and analytical services to ensure the nation's agricultural products meet domestic and international quality and safety standards, as well as nutritional labeling requirements. As the global market expands and nations strive for a more liberalized trade environment, the USDA-AMS supports U.S. farmers in efforts to establish export markets for their products.

### **Direct Federal Support of Agriculture**

Modern farm policy, generally recognized as a system of price support and supply management policies, has its origins in the New Deal policies advanced by Franklin Delano Roosevelt. Upon assuming the presidency in 1933, Roosevelt embarked on an ambitious set of national policies to revive the nation from the Great Depression. During Roosevelt's historic "first 100 days", many New Deal policies were set into motion. Of direct relevance to agriculture was the passage of the Agricultural Adjustment Act (AAA) of 1933, the first U.S. farm bill, which marked the beginning of modern farm subsidy programs.

Since the AAA, the primary mechanism for establishing broad, federal farm policy has come in the form of subsequent national farm bills. In total, 15 farm bills have been passed by Congress. From the early 1970s to present, most farm bills have been omnibus

bills containing numerous provisions amending permanent laws established in the 1930s and 1940s. These farm bills authorize more than farm subsidy programs, providing the foundation for a large number of programs aimed at resource conservation, rural development, nutrition, agricultural research, energy policy, forestry, and foreign trade. Nevertheless, the dominant aspect of farm policy discourse centers around direct federal government commodity payments to farmers.

Debate over federal price and income support programs has intensified in recent years. Such debate has been exacerbated in part by evolving international free trade objectives and policies, and intensified further by the highly concentrated distribution of program dollars within commodity sectors and regions of the U.S. Questions about wealthy (seemingly non-farmer) recipients of farm subsidy payments have also surfaced.<sup>26</sup> Critics of current farm subsidy policy often argue that such policies were drafted for a unique point in U.S. history that no longer exists. For example, Cain and Lovejoy (2004) note that roughly one-quarter of the population was in farming during Depression-era America when the Agricultural Adjustment Act was passed, making more poignant the fact that gross farm income declined 52 percent between 1929 and 1932. Today, less than 2 percent of Americans derive their livelihoods from farming.

### **Future U.S. Farm Policy**

While ideologies and philosophies over the appropriate role of the federal

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<sup>26</sup> Environmental Working Group, a not-for-profit watchdog group, compiles information on farm subsidy recipients (see [www.ewg.org/farm](http://www.ewg.org/farm)). The group asserts that over the past twelve years, 10 percent of farm subsidy recipients collected 75 percent of the \$177 billion in farm subsidies tracked over that time.

government in farm policy have clashed for over 200 years, Effland (2000) sums it up well:

Although resolution of these conflicts has been different in each period, throughout the years a remarkably consistent public consensus has remained: that the problems inherent in farming warrant public support.

The future direction of U.S. farm policy is unclear. Recent farm bills have marked a transition toward a more liberalized global trade environment and increased emphasis on resource conservation and stewardship. American Farmland Trust president, Ralph Grossi, provides a glimpse of what future federal farm policy may look like. During an address at Rutgers University's Cook College in March 2006, he noted one possible scenario which would involve (1) a shift away from income supports in the form of commodity payments and toward risk management tools such as revenue insurance, (2) a greater emphasis on farm conservation and stewardship practices, and (3) more support for innovation, entrepreneurship, and new market development.<sup>27</sup> He argued the need to "tie dollars to managing risk, stewardship, and opening new markets" in order to increase U.S. farm competitiveness in an increasingly global market. He further noted that attrition in any industry is acceptable, but there needs to be a focus on new entrants as they transition into agriculture.

The United States Congress was unable to pass a scheduled new farm bill in 2007. The inability to do so has led to the passage of two extensions to the previous farm bill, the 2002 Farm Security and Rural Investment Act which expired in September 2007. Several "marker bills" emerged during the course of the farm bill discussion, however agreement

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<sup>27</sup> Cook College is the land grant arm of Rutgers, the State University of New Jersey. As part of a university reorganization in 2007, it was renamed the School of Environmental and Biological Sciences.

between the Executive and Legislative branches was slow to manifest. Featured prominently in the discussion was the future direction of U.S. farm subsidies (and U.S. agriculture in the context of a liberalized global trade environment), as well as energy policy, nutrition, and resource conservation.

In June of 2008 Congress approved the Food, Conservation and Energy Act of 2008, overriding a presidential veto.<sup>28</sup> The public cost of this farm bill is \$289 billion, with nutrition and hunger relief initiatives accounting for nearly two-thirds of the allocated funding. Containing fifteen titles, the farm bill is a massive and complex piece of legislation that will require substantial effort to fully implement. Examples of notable changes in policy emphasis or new programs follow.

In terms of direct farm support programming, one major departure from past policy was the establishment of a pilot Average Crop Revenue Election (ACRE) which protects farmers against downturns in revenue (price multiplied by yield), rather than downturns in prices alone (which could be accompanied by substantial increases in revenue if yields are high). Advocates tout this as a major success in shifting away from less efficient and costly subsidy programs toward a more market-oriented mechanism for protecting farm incomes from unforeseen hardships. Conservation funding under the 2008 farm bill increased by more than \$4 billion to support farmland preservation, soil and water stewardship, wildlife habitat protection, and other conservation goals. The bill also contains provisions encouraging the local production and consumption. The goal of shortening food chains

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<sup>28</sup> The Act was actually approved in May 2008, however, one of the fifteen titles (the trade title) was inadvertently omitted from the bill presented to, and vetoed by, President George W. Bush. Congress therefore again passed the farm bill in June 2008 to ensure all fifteen titles were properly represented and again overrode the presidential veto.

reflect a desire to reduce the environmental impact and energy intensity of food production and distribution, strengthen food safety protections, and promote more healthful diets. A final noteworthy component of the 2008 farm bill is the focus on renewable energy under Title IX. Renewable energy generation from farms (e.g., in the form of bio-fuel, wind or solar technologies) is recognized as both a new market and economic development opportunity for American farmers as well as a strategy for pressing forward with the national goal of energy independence.

### **Summary**

This chapter illustrates the importance of agriculture at the national level from both land use and economic perspectives. It provides a basic understanding of the rationale for, and nature of, roles of the U.S. government in developing and protecting the farm industry since post-colonial settlement. Whether rooted in concerns over national food self-sufficiency, a modern embodiment of the Jeffersonian ideal, or interest in the protection of national farmland resources, the retention of small, predominantly family owned farms persists as a major U.S. policy goal.

As introduced in the preceding chapter, fiscal federalism predicts federal government role in farm policy focused on the provision of “collective goods”, risk pooling, and large infrastructure investments. A review of federal farm policy over the past two centuries validates this prediction.

While farm subsidy programs dominate much of the discourse on national farm policy, the U.S. government’s early focus was on the disposition and settlement of new territories. Occurring mostly in the 1700s and 1800s a principal aim at this time was national

economic development, an objective advanced substantially through the establishment of small farming operations across newly opened western lands.

The scientific and technical needs of a largely agrarian economy were reflected in the efforts of the federal government to support agricultural research. The role of the government in research provision was, and indeed today remains, relevant in light of its public good nature. In many instances, “consumption” of the beneficial outcomes or returns from research cannot be limited (i.e., to those conducting or financing the research) or can only be limited for a finite period of time under agreements governing intellectual property. Therefore, economic theory would predict an underallocation of societal resources to such research.

Hindsight shows the value of U.S. investments in agricultural research and is suggestive of the detrimental impact its absence would have had on the Nation’s development. Several federal bills in the 1800s and early 1900s established a national system of land grant colleges and state experiment stations and remain major milestones in U.S. history and a foundation for modern agricultural research and education. This national infrastructure fueled remarkable growth in agricultural productivity through the transfer and implementation of scientific and technical advancements in production practices, farm technologies, pest and disease control, and resource management to millions of U.S. farmers. Higher levels of farm productivity resulted in growing product surpluses and allowed the migration of human resources from the farm sector into other industries, supporting U.S. industrialization and economic expansion.

Product surpluses also placed downward pressure on commodity prices, necessitating the development of new markets, especially foreign markets. The U.S. government



macroeconomic farm policy today has a sharp focus on international trade and market development, as well as various aspects of trade policy (e.g., food safety and the protection of domestic animal and plant health). Yet an increasingly open and liberalizing global market environment, coupled with the productivity levels of U.S. farms and domestic policies that support farm production and subsidize distribution and other factor costs, continue to result in flat or even declining prices in many farm commodity sectors. This has contributed to the maintenance of the prevailing system of income support programs that date to the 1930s.

Current farm subsidy and disaster payment programs represent a magnitude of risk pooling that presumably only the U.S. government can accommodate. Similarly, USDA programs focused on child nutrition (e.g., National School Lunch Program or WIC) are significant federal investments to mitigate food insecurity among children in low and moderate income families.

With this context for the federal government's current and historic role in farm policy, it is useful to next consider the role of the state. In some instances, federal resources flow to the states (e.g., through land grant universities, state departments of agriculture, state natural resource conservation or rural development offices of the USDA, etc.). This provides greater ability for federal resources to be aligned most appropriately with the needs and priorities of individual states. States have also adopted legislation or policies that suit the specific needs of their agricultural industries.

The next chapter refines the discussion of agricultural policy to the state level through an examination of New Jersey's efforts to retain and develop its remaining farming industry. New Jersey is the most urbanized state in the nation and, as such, provides an

interesting laboratory for examining policies to support an agricultural industry faced with intense pressure from suburbanization.

## **Chapter 5**

### **State-level Policies Supporting Agriculture in New Jersey**

The past five decades have seen considerable convergence in several state-level farm policies. Since the 1960s, nearly all states have implemented policies that provide a legal basis for farmers' right to farm, lower the farmland property tax burden, and provide a mechanism for permanently preserving farmland. While certainly similar in purpose and intent, there is nevertheless a level of variability in the development and implementation of such laws across states that is reflective of the diverse characteristics of agriculture throughout regions of the nation. Through the 1990s, a similar convergence emerged across the concerns of state and local governments, special interest groups, and agricultural leaders over the Nation's declining and increasingly fragmented farmland base has resulted in a renewed sense of urgency to retain remaining farms. This has manifested in efforts across a number of states (New Jersey among them) to promote smart growth, in which is often embedded a goal of protecting farms and farmland.

This chapter examines the foundation of state agricultural policy in New Jersey and provides context for later discussions of the roles of and need for local government involvement in agricultural retention and development. A focus is placed on the three primary state policies identified above, as well as the inclusions of agricultural retention within statewide planning initiatives.

## **The Foundation of Agricultural Policy in New Jersey**

While generally not viewed as an “agricultural state” New Jersey is nevertheless well-recognized for its proactive and innovative policies supporting farming. Over the past fifty years the State of New Jersey has adopted a number of pivotal state-level policies that promote agricultural viability and support agriculture as both a land use and as an industry.

The development of New Jersey’s contemporary farm policies dates to the middle of the twentieth century. It was at this time that New Jersey policy makers began to recognize an urgent need to mitigate the intense pressures that growth and development in the state were placing on the farming industry. A growing and dispersing population created significant demand for developable land, a demand most often met by converting agricultural lands. A realization dawned that public intervention was required to stabilize the loss of farmland and was manifest in the early statewide policy initiatives of the 1950s through the 1970s. However, while the retention of farmland was viewed as necessary to ensure the option of future agricultural production in the state, farm industry leaders and policy makers also recognized the need to understand and mitigate other pressures that were growing and threatening the business of agriculture.

Table 5-1 provides a chronology of selected state initiatives focused on the retention of agriculture in New Jersey. Arguably the most significant legislative milestones were set with the establishment of state policies for differential assessment (1964), right to farm protection (1983 and 1998), and farmland preservation (1983). With the passage of the Farmland Assessment Act in 1964, New Jersey became one of the earliest adopters of a statewide program of differential assessment for agricultural land. However, as will be discussed hereafter, the establishment of farmland assessment was an arduous process which

endured legal challenges and ultimately necessitated a constitutional amendment. The genesis of the state's farmland preservation and right to farm programs similarly dates before 1983. A series of grassroots initiatives in the 1970s and 1980s paved the way for what is today among the most successful farmland preservation programs in the Nation. Over the same time period, the underpinnings of a state right-to-farm law were also established.

In addition to these foundational statewide agricultural programs, there are other initiatives worthy of mention when one considers the commitment New Jersey has made to maintaining a viable, working agricultural landscape. For example, the farm community has been proactive in attempting to shape its own future through the establishment of a state-funded Jersey Fresh quality grading and promotional program for New Jersey farm products. A nationally visible program, the Jersey Fresh concept has been emulated in a number of other states. The returns to the program, in the form of higher farm revenues, have been significant and overall the program has been better than cost neutral to the state (see Adelaja, Nayga and Schilling 1994 and Govindasamy et al. 2004 for analysis of the estimated returns on the public investment in the Jersey Fresh program).

Another example of both the responsiveness to industry need and the progressivity of agricultural leaders is found in the development of an Agricultural Economic Recovery and Development Initiative (AERDI) in the early 1990s when farm profitability was severely depressed through economic recession. AERDI encompassed a series of programs, including grants to farmers for investment in farm equipment and modernization, farm management training courses, and an extensive policy research agenda. Shortly thereafter, the industry

**Table 5-1: Chronology of Selected State Policies and Initiatives Supporting Agriculture in New Jersey.**

<b>Year</b>	<b>Policy/Initiative</b>
1961	Green Acres Land Acquisition Act is passed
1962	The Farmland Assessment Committee is appointed by Governor Richard J. Hughes
1964	Farmland Assessment Act is passed
1971	Governor Cahill creates a Blueprint Commission on the Future of New Jersey Agriculture
1973	Report of the Blueprint Commission on the Future of New Jersey Agriculture is released
1974	Green Acres Land Acquisition and Recreation Opportunities Act is passed
1976	Agriculture Preserve Demonstration Program Act is passed
1979	Pinelands Protection Act is passed/Pinelands Commission established by executive order
1980	Grassroots: An Agriculture Retention and Development Program for New Jersey is released
1981	Farmland Preservation Bond Act is passed
1983	Agricultural Retention and Development Act establishes state farmland preservation program
1983	Right to Farm Act is passed
1984	Jersey Fresh promotional program is created by the New Jersey Department of Agriculture
1985	New Jersey State Planning Act is passed.
1989	Burlington County Transfer of Development Rights Demonstration Act is passed
1989	Open Space Preservation Bond Act is passed
1991	Agricultural Economic Recovery and Development Initiative is advanced
1992	State Development and Redevelopment Plan is adopted
1992	Green Acres, Clean Water Farmland and Historic Preservation Bond Act is passed
1993	State Transfer of Development Rights Bank Act is passed
1994	FARMS Commission report is released (creating a strategic plan for New Jersey Agriculture)
1995	Green Acres, Farmland, Historic Preservation and Blue Acres Bond Act
1998	Right to Farm Act is amended
1999	Garden State Preservation Trust Act is passed
2003	Agricultural Smart Growth Plan for New Jersey is released by the NJ Dept. of Agriculture
2004	Statewide Transfer of Development Rights Act is passed
2004	Highlands Water Protection and Planning Act is signed into law

leadership and Cook College faculty engaged in a comprehensive strategic planning initiative under the auspices of the FARMS Commission.

New Jersey is also recognized as a national leader in terms of adopting innovative planning and smart growth policies, several of which have direct impacts on agricultural retention and preservation. While not without criticism and controversy within the agricultural community, the New Jersey State Development and Redevelopment Plan (originally adopted in 1992 with revisions in 2001 and others forthcoming), the Pinelands Comprehensive Management Plan, and the Highlands Water Protection and Planning Act are three examples of major land use policies that have substantially altered the fabric of land use and development in the state. These planning efforts have significantly limited (or, in the case of the Highlands, will limit) growth in areas deemed important for conservation. The tenuous balance that is difficult to strike is, however, the extent to which such programs should go in advancing broadly defined social interests at the expense of private property rights.

Building in part upon the lessons learned under AERDI, FARMS Commission and earlier grassroots initiatives, the Agricultural Smart Growth Plan was developed in 2003 by the New Jersey Department of Agriculture. Advanced as a “roadmap for agriculture in the 21<sup>st</sup> century” the plan is designed to inform and be integrated within smart growth planning efforts developed by other state agencies and localities. An evolving component of this effort, for example, is the department’s agricultural smart growth tool kit that is a compendium of guidance documents, land use planning tools, and model ordinances. The toolkit also serves as a gateway to information on the state farmland preservation and transfer of development rights programs, loans and grants for smart growth planning,

agricultural economic development strategies, and programs designed to link producers and consumers.

The balance of this chapter elaborates on the goals, procedural aspects, and legislative history of the three pivotal New Jersey agricultural policies described in this opening section. Given the thrust of this dissertation, an overview of the state planning process in New Jersey is also provided as a basis for more prescriptive discussions of the role of local planning for agriculture advanced later in this dissertation.

### **Differential Assessment of Agricultural Land**

Former New Jersey Secretary of Agriculture Arthur R. Brown calls the Farmland Assessment Act of 1964 “hands down, the most fundamentally important state policy directly supporting the financial viability of farming in New Jersey” (Brown 2006).<sup>29</sup> The act allows qualified farmland to be assessed for taxation purposes based upon its current use value in agriculture, rather than its full market value. New Jersey was among the earliest adopters use value assessment for agricultural lands (Maryland was the first in 1956). Today, differential assessment programs have been enacted in 49 states (with Michigan being the lone exception) and are foundational policies supporting agriculture in urbanizing areas.

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<sup>29</sup> Roughly a decade after the passage of the Farmland Assessment Act, the Blueprint Commission on the Future of New Jersey Agriculture found that differential assessment had “unquestionably [made] it possible for production farming to continue in our urbanizing state.” Indeed, while causality is difficult to establish, the rate of farmland loss dropped dramatically after the adoption of the law. Analysis by the author shows that New Jersey lost an average of 31,000 acres of farmland annually between 1950 and 1964. Since the adoption of the farmland assessment act in 1964, the rate of farmland loss has averaged 8,800 acres per year.



The impetus and rationale for the use of differential assessment for farmland is common across all areas wherein urbanization impacts upon agricultural lands. Historically, the value of farmland in predominantly agricultural regions primarily reflected its productivity in agriculture (i.e., capitalized agricultural returns from the land). As development demand expands into agricultural areas, competition for land increases farmland values. Subsequent public investments in road infrastructure, sewer and water lines, and other public services, as well as speculation on future development uses of land, result in further appreciation in farmland value. At the same time, as development approaches and penetrates into agricultural regions, the level of public services (police and fire protection, schools, capital improvements, etc.) required to accommodate a growing population expands local government budgets. The compounding effects of higher land values and more costly public service requirements result in higher property tax bills for farmers and a commensurate downward pressure on farm profitability.

Agricultural differential assessment programs allow tax assessors to consider only a property's use value in farming, ignoring the capitalized value of future development options.<sup>30</sup> By considering only farmland's agricultural use value, farm property taxes are reduced to levels more commensurate with the land's level of agricultural productivity. An additional rationale for applying use value assessment to farmland is tax equity. Differential assessment programs bring greater parity between the taxes farmers pay and the local and school services they consume. For example, the non-residential portion of a farm does not

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<sup>30</sup> One academic study suggests that, on average, 82 percent of New Jersey farmland value is due to future development potential (Plantinga et al.2002). Nationally, the authors estimate only 9 percent of average U.S. farmland value is due to the development option.

generate school children, nor does it generate additional demand for libraries, capital improvements, emergency services, or other local services.<sup>31</sup>

### **Background on New Jersey's Farmland Assessment Act**

The history of differential assessment in New Jersey is an interesting one. The pressures from suburban development on the agricultural land base and farming community were well-recognized by the time the 1950s and 1960s arrived. Even prior to 1964, the assessment of farmland in New Jersey was routinely based on its use value in agriculture. This practice, while informal, was premised on the view that farmland taxation would be both more equitable relative to the consumption of local services and more in line with farmers' ability to pay (see, for example, Koch, Morrill, and Hausamann 1967).

The assessment of farmland based on agricultural use value, however, was challenged in the 1957 New Jersey Supreme Court case of *Switz v. Middletown Township*. The court found that the practice stood in violation of the "uniformity clause" of the state constitution which required that all real property in a municipality be assessed according to the same standard of valuation and taxed at the same general tax rate. This finding required the immediate cessation of use value assessment and forced many municipalities to revalue property for tax assessment purposes. Pursuant to the revaluations, agricultural

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<sup>31</sup> This argument is supported by numerous cost of community service studies which examine the public costs and revenues associated with different land uses. American Farmland Trust (2002) compiled cost of community services studies from 83 local governments conducted across the nation. The authors found that even with differential assessment, farmland and forest land is a good tax ratable. Across the 83 studies examined, the median cost of local services consumed per dollar of local property tax revenue generated by farmland and forested land was \$0.36.

property tax bills were raised substantially, reducing the profitability of many of the state's farms.

The New Jersey Assembly, recognizing the economic repercussions on the farm sector, advanced a bill that required the value of agricultural lands to be determined based upon use value in agriculture. The legislation said, in part, that land actively devoted to agricultural use "shall not be deemed to include prospective value for subdivision or non-agricultural use." This bill resulted in differential use assessment in New Jersey under Section 23, Chapter 51, Laws of 1960.

The constitutionality of this new law was challenged in 1962 in *Switz v. Kingsley*. The outcome was the same as in the 1957 case. The New Jersey Supreme Court again ruled that differential use assessment was unconstitutional, nullifying the law. Following this ruling, Governor Hughes convened the Farmland Assessment Committee to examine the issue of farm property taxation and provide recommendations. The committee reported on the benefits and challenges of agriculture in New Jersey and concluded that agricultural retention in the state should be viewed as a priority. It further recommended the introduction of a bill that would amend the Constitution to allow "land actively devoted to agriculture or horticultural uses" to be assessed at use value.

Responding to the committee's recommendations, on March 18, 1963, Senate Concurrent Resolution Number 16 was introduced, providing for a constitutional amendment. It passed unanimously in both the Senate and Assembly and, on November 5, 1963, a public referendum was floated to approve a constitutional amendment enabling differential assessment for farmland. The referendum was approved by nearly 71 percent of voters and Senate Bill Number S-303 was signed into law, authorizing the amendment to

the New Jersey Constitution under Article VIII, Section I, Paragraph 1.

Dr. George W. Luke, professor emeritus in the department of agricultural economics at Cook College, wrote a detailed report on the first ten years of the state's farmland assessment program in 1976. Dr. Luke served on Governor Hughes' Farmland Assessment Committee and provides a number of insights into the deliberations and compromises that went into the committee's recommendations and the ultimate passage of the 1964 legislation. He chronicled some of the key legal challenges and other issues faced during the first decade of the program's implementation. Among the interesting points of contention was the delineation of exactly who (or more precisely, *what land*) should be subject to enrollment under the program. "The committee concluded that defining a farmer in modern terms was more difficult than defining the land which he farmed" (Luke 1976). Deliberations spanned a number of proposals. Some advocated for all open spaces, others for lands meeting specified size and revenue generation thresholds. The constitutional amendment ultimately reflected the consensus of the Committee and directed the state's Legislature to enact laws

to provide that the value of land, not less than 5 acres in area, which is determined by the assessing officer of the taxing jurisdiction to be actively devoted to agricultural or horticultural use and to have been so devoted for at least the 2 successive years immediately preceding the tax year in issue, shall, for local tax purposes, on application of the owner, be that value which such land has for agricultural or horticultural use. Any such laws shall provide that when land which has been valued in this manner for local tax purposes is applied to a use other than for agriculture or horticulture it shall be subject to additional taxes in an amount equal to the difference, if any, between the taxes paid or payable on the basis of the valuation and the assessment authorized hereunder and the taxes that would have been paid or payable had the land been valued and assessed as otherwise provided in this Constitution, in the current year and in such of the tax years immediately preceding, not in excess of 2 such years in which the land was valued as herein authorized.

Three primary qualification and implementation provisions contained in the 1964 Farmland Assessment Act were outlined in the constitutional amendment. First, a property

must consist of a minimum of five acres to qualify. This requirement was advocated by the Committee to ensure inclusion of the large number of poultry farms existing at the time (many of which were small in terms of acreage) and small fruit and ornamental operations. Second, a property must be actively devoted to agricultural or horticultural use for at least two years before being eligible for farmland assessment. As will be discussed, guidance for the determination of “actively devoted to agricultural or horticultural use” was not contained in the amendment. Third, a tax recapture clause (now termed a “rollback” provision) was advanced that required the payment of additional taxes if land previously enrolled under farmland assessment transitions to a non-agricultural use. The level of such payments was to be calculated as the difference between what was paid under differential assessment and what would have been paid under full market assessment for the two years preceding the transition.

The procedure for the determination of “active devotion to agricultural or horticultural use” was not specified in the constitutional amendment. This was addressed through the establishment, via statute, of a minimum revenue requirement. The Farmland Assessment Act provides that a parcel of land 5 acres or more in size will be deemed “actively devoted to agricultural or horticultural use” when it generates \$500 in revenue from agricultural activity.<sup>32</sup> Acceptable sources of revenue defined include gross sales of agricultural or horticultural products produced on the land, payments from soil conservation

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<sup>32</sup> More accurately, the law states that active devotion to agriculture requires that the land in consideration must have averaged at least \$500 per year for the two years immediately prior to the tax year in question or “clear evidence of anticipated yearly gross sales...amounting to at least \$500.00 within a reasonable period of time.” The latter qualification recognizes the lag in revenue generation associated with perennial crops and some livestock.

program, and fees from breeding, raising or grazing livestock. It is incumbent upon the local assessor to determine whether the property in question is actively devoted to agricultural or horticultural use. Applicants must, as defined by statute, own the land in question and submit an application for farmland assessment (an FA-1 form) on an annual basis, on or before August 1.

The decision about the appropriate revenue level was not easily reached. Concerns about land speculation and other program beneficiaries that were not seen as bona fide farmers were expressed throughout the Farmland Assessment Committee's deliberations. Ultimately, a \$500 revenue requirement was recommended to protect against the exclusion from the program of semi-retired farmers only generating subsistence levels of income and part-time farmers. However, in the years immediately following the act's passage, some legislators unsuccessfully attempted to append an income test to the program, requiring an applicant for farmland assessment to derive a minimum proportion of income from farming (a 1968 proposal called for a 50 percent threshold, a 1969 proposal expanded on this recommendation by requiring that the applicant also reside on the property in question). Recurring proposals for an even higher requirement have been introduced, albeit unsuccessfully through present time.

The inclusion of a rollback provision in the constitutional amendment and Act, a stipulation emulated by other states, was similarly not without contention. The Committee advocated that at the time land under farmland assessment changes use (i.e., ceases being actively devoted to agricultural use), that "some of the taxes forgiven by the Farmland Assessment Act" should be reclaimed as a deterrent to land speculation (Luke 1976). It was believed that such a provision would also serve to remediate some of the tax impact likely

to be experienced by a municipality as land transitioned out of agriculture to other uses that may create higher demand for local services. While there was internal debate over the length of the rollback period, the committee recommended a 2-year rollback period. Longer periods were considered, however, it was anticipated that a longer rollback would lack acceptance of the provision within the farm community and more specifically provide a disincentive for older farmers to enroll in the program. A change in ownership does not trigger a rollback payment provided that the land remains “actively devoted.”<sup>33</sup>

Despite often recurring public misconceptions, New Jersey’s farmland assessment program does not relieve a qualified landowner from paying property taxes altogether, nor does it exempt farmers from paying property taxes on the farm residence or other improvements. Rather, the statute authorizes the assessment of property based upon the agricultural productivity of the land as determined by the Farmland Evaluation Advisory Committee (FEAC). The FEAC was established by the Farmland Assessment Act and charged with determining a range of farmland productivity values, on an annual basis, that reflect land’s use value in agriculture.<sup>34</sup>

The FEAC develops a matrix of land values that reflect the capitalization of net farm income attributable to the land for each county. Each county matrix comprises five different land classes and five soil groups. The land classes are cropland harvested, cropland

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<sup>33</sup> The adopted provision required a rollback penalty to be paid for the year of conversion plus the two years preceding the change of use. While viewed as a two year rollback this is, in essence, a three year rollback - a slight departure from the committee’s recommendation.

<sup>34</sup> The FEAC comprises the Dean of Cook College, the New Jersey Secretary of Agriculture, and the Director of the Division of Taxation.

pastured, permanent pasture, non-appurtenant woodland (woodland which can only qualify for farmland assessment if it is managed for the production of trees and forest products in accordance with a woodland management plan filed with the Department of Environmental Protection), and appurtenant woodland (woodland that is part of an otherwise qualified farm and is not managed for production, but rather functions as a buffer, windbreak, watershed area, and so forth). All of the state's soils are classified into one of five soil productivity groups (ranging from very productive farmland to very poor farmland) that are based upon a classification scheme developed by soils expert Dr. John Tedrow (formerly of Cook College). Statewide productivity values for lands falling in Group B ("good farmland") developed by the FEAC for 2005 ranged from \$840 (cropland harvested) to \$31 (appurtenant woodland). When these assessment levels are compared to the average market value of New Jersey farmland in 2005 (\$10,500 per acre), the financial benefit farmland assessment confers to qualified landowners becomes clear.

#### Changes to the Farmland Assessment Act

The basic acreage and revenue requirements for farmland assessment, as well as the rollback provision, have remain unchanged since 1964.<sup>35</sup> While legislative proposals for changing the eligibility criteria have surfaced periodically over literally decades,

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<sup>35</sup> This has lead to considerable public and legislative discussion over the subsequent years about the increasing leniency of the eligibility criteria and, from some, allegations these criteria contribute to unintended participation in the program by land developers or wealthy individuals with large estates but little or no intention of farming. Yet, a 2004 Fairleigh Dickinson PublicMind poll demonstrated the continued public support for the differential assessment of qualified farmland for tax purposes, with 83 percent of those surveyed stating that it was appropriate for farmers to receive reduced taxes on land raising agricultural products (Schiemann 2004).



fundamentally these criteria have remained static. However, there have been a number of small procedural changes to the Farmland Assessment Act, and three substantive revisions.

In 1973, an additional revenue requirement was added whereby land devoted to agricultural or horticultural use that is in excess of 5 acres is required to generate average revenue of \$5.00 per acre for at least the two years immediately preceding the tax year in question in order to be considered “actively devoted.” For woodland and wetland, the additional revenue requirement was set at \$0.50 per acre. These criteria remain in effect.

In 1986, the Act was again modified to address the significant amount of woodland acreage being enrolled under farmland assessment. A new provision required owners of land “devoted exclusively to the production for sale of tree and forest products” (non-appurtenant woodland) to establish and comply with a woodland management plan. The plan must conform with the requirements set by the Department of Environmental Protection’s Division of Parks and Forestry.

Most recently, in 1995, the definition of agricultural use contained in the Act was expanded to include the boarding, raising, rehabilitating, and training of livestock animals. Previously, the statute only recognized the breeding and grazing of livestock as an agricultural use. The amendment also directed the FEAC to calculate “imputed grazing values” for lands used for livestock grazing, providing such lands were attached to property otherwise qualifying for farmland assessment.

### **Background on the Right to Farm and Farmland Preservation in New Jersey**

In 1971, Governor William T. Cahill directed the establishment of a Blueprint

Commission on the Future of New Jersey Agriculture. The impetus for the Commission was found in resolutions adopted by delegates at the State Agricultural Convention outlining concerns for the future of farming in the state. In transmitting the final report of the Commission to the Governor in April 1973, Secretary of Agriculture Phillip Alampi noted the objectives of the Commission were to "find ways to maintain production of commodities consumers want, to encourage orderly and timely development, and to preserve taxpaying open space which, in turn, provides for clean air, water recharge, recreation, and outdoor beauty." Agricultural policy of later years was motivated by a quite similar set of goals.

The Blueprint Commission, led by Secretary Alampi, first began its work by establishing task forces to examine various components of the state's agriculture industry, including business climate, research and education, production, marketing, and other issue areas. Among the key findings of the Commission was that while farmland assessment had slowed substantially the loss of farmland in the state, farming businesses were operating in an environment of impermanence. The so-called "impermanence syndrome" in agriculture was characterized by short-term decision making, reduced business investment, and slower adoption of new technologies. The premise of the Commission was that the reversal of this shortened planning horizon in farming would be accomplished by establishing a permanent farmland base (a "permanent land preserve" in the Commission's words) and making it feasible for farmers to farm such land profitably.

Guided by this observation, the Blueprint Commission set early groundwork for the establishment of New Jersey's farmland preservation and right to farm programs. It clearly saw the critical importance of stabilizing and maintaining the state's farmland base as a necessary condition for future agricultural activity. Stating that "[land] is absolutely essential

to long run viability of the agricultural industry," the Commission also noted the vital role agricultural lands played in promoting social interests, whether they be rooted in maintaining aesthetics, air and water quality and recharge, local food and fiber production, or taxpaying open space. This point provided a rationale for public investment in agricultural retention.

Among the notable achievements of the Commission was, however, its focus on not only the farmland resource, but also the business climate facing farmers. The Commission noted "while assuring a permanent land base on which to farm is paramount, this action must be accompanied with certain reforms or improved attitudes to assure that agriculture can continue." The Commission was cognizant of the need to eliminate impediments to farming in the state that, in its terms, were "avoidable." With regard to sustaining the agricultural industry into the future, the Commission wrote

...we must use a two-headed spear. One must be pointed at the physical problem of finding a way to make farming and farmland more permanent, and the other, at the economic, social, and political forces which create man-made handicaps which, unlike the natural vicissitudes of soils, insects, diseases, and weather, are quite avoidable.

The work of the Blueprint Commission set groundwork in place for the passage of the Agriculture Preserve Demonstration Program Act of 1976 (N.J.S.A. 4: 1B-1 et seq.), the antecedent of New Jersey's current farmland preservation program. This act called for the allocation of \$5 million in Green Acres monies to fund a pilot easement purchase program for farmland in four Burlington County communities. While the program held the promise of stopping the conversion of participating farm properties, agricultural leaders were very aware that land preservation alone was not sufficient for the continuation of agriculture. Two years later, in 1978, Senate Bill 450 (introduced by Senator Yates) provided the first

formal “right to farm” protections in New Jersey; however, the protections only extended to farms in the Agriculture Preserve Demonstration Program. Even when the demonstration program ended later that year, S-450 persisted. Senate Agriculture Committee hearings held the following year pointed to the need for continued and more expansive right to farm protections in the state.

Public Law 1979 C234 called for the New Jersey Department of Agriculture and New Jersey Department of Environmental Protection to develop recommendations for a farmland preservation program in New Jersey and other strategies for agricultural retention. These recommendations were conveyed in the 1980 report *Grassroots: An Agriculture Retention and Development Program for New Jersey* (NJDA and NJDEP 1980). The Grassroots Report set the stage for the development and adoption of the Agriculture Retention and Development Act (ARDA) and the Right to Farm Act. These early efforts culminated during the 1983 State Agricultural Convention, at which Governor Thomas H. Kean signed both laws, each now recognized as a pivotal state policy that, in concert with farmland assessment, provide a strong basis for farming in New Jersey. At the signing, Governor Kean commented that

[e]very year the pressure to develop farmland is heavier. Every year, New Jersey seems to lose a few more farms. If we want to keep New Jersey green, we’ve got to keep a balance between reasonable, necessary development and the preservation of good farmland. (Excerpted from a press release issued by the Governor’s Office on January 26, 1983).

Interestingly, the two acts originated from the same piece of proposed legislation. While they were ultimately separated, they were passed concurrently. In fact, the ARDA contained specific language stating that while the act would go into effect immediately, it

would remain inoperable until the Right to Farm Act was passed.

The separate passage of the two acts did, however, create some ambiguities and structural challenges that were identified in detail in a study commissioned by the New Jersey Department of Agriculture (see Adelaja *et al.* 1996). These were namely issues of rule making authority, staffing for the State Agriculture Development Committee which oversees both the right to farm and farmland preservation programs, and program funding. While the Right to Farm Act created the State Agriculture Development Committee and gave it responsibility for the right to farm program, it did not articulate the SADC's rule making authority, ability to hire staff, or funding details for the program.<sup>36</sup> The ARDA did specify rule making authority for the SADC, but seemingly only for agriculture retention issues. The Adelaja study identified and clarified the problems with the program - both structurally and legally - and recommended alternatives for the structure of the right to farm program to address these deficiencies. Many of the shortcomings of the act were rectified in the 1998 amendments to the Right to Farm Act.

### **The Right to Farm in New Jersey**

The State of New Jersey passed the Right to Farm Act in 1983 (N.J.S.A. 4:1C *et. seq.*), with significant amendments made in 1998 based in large part on a comprehensive study of the legal and institutional aspects of the program conducted at Cook College (see Adelaja *et al.* 1996). The Right to Farm Act provides commercial farmers with strong

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<sup>36</sup> The New Jersey State Agriculture Development Committee is a body "in but not of" the New Jersey Department of Agriculture. The SADC consists of eleven members and is chaired by the New Jersey Secretary of Agriculture.

protections against both restrictive municipal ordinances as well as public and private nuisance actions. However, to receive such protections, a farm operation must meet certain eligibility criteria (i.e., meet the definition of a “commercial farm” as specified in the act), be in compliance with generally accepted agricultural practices, and operate in conformance with federal and state laws. A farming activity will not be protected if it poses a direct threat to public health or safety.

The legislative findings section of the original act notes that agricultural retention is in the best interest of the State and that “several factors have combined to create a situation wherein the regulations of various State agencies and the ordinances of individual municipalities may unnecessarily constrain essential farm practices” (N.J.S.A. 4:1C-2). It was further found that the State should, as a matter of policy, “protect commercial farm operations from nuisance action, where recognized methods and techniques of agricultural production are applied...”.

The impetus behind the legislation was found in the recognition, articulated a decade earlier by the Blueprint Commission, of the implications of demographic and land use changes on the socio-political context within which agriculture was operating. As the farmland base dwindled and farmers became an increasingly smaller political minority in the state, local government officials (and a growing number of non-farm residents) were becoming less aware of the realities and needs of commercial farming. Consequently, experience and common sense predicted a likely rise in the incidence of local (and State) government regulations that were insensitive to the needs of farming, or worse, overly restrictive. Similarly, demographic transitions would continue to raise tensions between farm and non-farm neighbors, strains that could erupt into legal complaints and nuisance

actions filed against farmers engaged in normal agricultural practices.

New rural residents, attracted by the promise of rural tranquility, tend to be unpleasantly surprised by the realities of farming, including dust, smells from livestock and manure, chemical applications on crops, equipment noises early in the morning or late into the night, air cannons that scare off wildlife, or slow moving farm vehicles impeding passage on local roads. However, right to farm issues run both ways. As exurbanites relocate to more rural locales, it is not uncommon for farmers to experience problems with littering, trespass or even vandalism and theft.<sup>37</sup> Domestic pets may harass or injure livestock. Children may damage crops. First hand accounts have been shared with the author by a farmer in Burlington County whose neighbor disposes of yard debris over his own fence into the farmers' "empty" field. In one instance, several yards of clothesline became tangled in his harvesting equipment, leading to several hours of downtime during a harvest.

The right to farm free of unwarranted nuisance complaints, conflicts with neighbors, and inappropriate regulatory obstacles is consistently identified as an essential part of the formula for a healthy, economically viable agricultural sector in New Jersey. Delegates of the 2004 New Jersey Farm Bureau Convention identified the right to farm as among the most critical policy issues facing farmers (surpassed in 2004 only by property rights concerns prompted by the Highlands Act and downzoning decisions). Delegates of the 2005 State Agriculture Convention specifically passed a resolution expressing their strong and continuing support of right to farm efforts in the state. Similar resolutions have been

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<sup>37</sup> These are more matters of limited enforcement of existing state and local laws. They are nevertheless a source of tension and potential conflict between the farm and non-farm communities.

mainstays of both conventions for at least a decade.

While all states have passed some form of right to farm law since 1963 (American Farmland Trust 1997), New Jersey's Right to Farm Act is now viewed as among the strongest in the Nation (NJDA 2003). The 1998 amendments to the Act included a powerful provision specifically stating that the state right to farm law can preempt municipal authority. Section C.4:1C-9 specifically states that

*[n]otwithstanding the provisions of any municipal or county ordinance, resolution, or regulation to the contrary [emphasis added], the owner or operator of a commercial farm, located in an area in which, as of December 31, 1997 or thereafter, agriculture is a permitted use under the municipal zoning ordinance and is consistent with the municipal master plan, or which commercial farm is in operation as of the effective date of P.L.1998, c.48 (C.4:1C-10.1 et al.), and the operation of which conforms to agricultural management practices recommended by the committee and adopted pursuant to the provisions of the "Administrative Procedure Act"... or whose specific operation or practice has been determined by the appropriate county board, or in a county where no county board exists, the committee, to constitute a generally accepted agricultural operation or practice, and all relevant federal or State statutes or rules and regulations adopted pursuant thereto, and which does not pose a direct threat to public health and safety may:*

- a. Produce agricultural and horticultural crops, trees and forest products, livestock, and poultry and other commodities as described in the Standard Industrial Classification for agriculture, forestry, fishing and trapping;
- b. Process and package the agricultural output of the commercial farm;
- c. Provide for the operation of a farm market, including the construction of building and parking areas in conformance with municipal standards;
- d. Replenish soil nutrients and improve soil tilth;
- e. Control pests, predators and diseases of plants and animals;
- f. Clear woodlands using open burning and other techniques, install and maintain vegetative and terrain alterations and other physical facilities for water and soil conservation and surface water control in wetland areas;
- g. Conduct on-site disposal of organic agricultural wastes;
- h. Conduct agriculture-related educational and farm-based recreational activities provided that the activities are related to marketing the agricultural or horticultural output of the commercial farm; and
- i. Engage in any other agricultural activity as determined by the State Agriculture Development Committee and adopted by rule or regulation pursuant to the provisions of the "Administrative Procedure Act"...



The 2002 New Jersey Supreme Court decision in *Township of Franklin v. den Hollander* marked a landmark victory in the agricultural community's effort to protect farmers' right to farm in New Jersey.<sup>38</sup> It tested, and upheld, the preemption provision added through the 1998 amendments, reaffirming that a county agriculture development board (CADB) or SADC has primary authority for determining the appropriateness of an agricultural practice or activity on a commercial farm.<sup>39</sup> The court was careful to note, however, that neither a CADB nor the SADC had *carte blanche* right to dismiss local regulations. According to Marci Green, the SADC's Chief of Legal Affairs, in assessing a right to farm issue the CADB or SADC must give "appropriate consideration and deference to municipal standards" and balance the needs of the farm operation in question against municipal concerns over public health and safety. Further, the court stated that preemption of a local ordinance needs to be based upon a "legitimate agriculturally-based reason" for non-compliance. The *den Hollander* decision also reiterated that the CADBs and SADC have primary jurisdiction over local complaints against farmers.

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<sup>38</sup> David den Hollander is a nurseryman in Hunterdon County. The case involved Franklin Township's concern that den Hollander's operation had a level of impervious cover that was in excess of what zoning allowed. Neighbors similarly objected to the extent to which the operation had impermeable sources (presumably from an aesthetic perspective). den Hollander and other agricultural bodies argued that the Hunterdon County Board of Agriculture should determine the appropriateness of the operation's practices, however, the township did not seek the board's determination on the matter. When legally challenged, a trial judge found in favor of the municipality and noted that the state's Right to Farm law did not preempt local zoning and site plan authority. An appellate court decision later reversed this decision.

<sup>39</sup> There are 18 county agriculture development boards in the state (Essex, Hudson, and Union counties do not have a CADB). The CADBs are the county level partners, with the SADC, responsible for implementing right to farm and farmland preservation programs within their respective counties.

The Right to Farm Act also contains language stating that there will be an “irrebuttable presumption” that qualified commercial farms operating in conformance with accepted agricultural practices will be protected from both private and public nuisance complaints.

In all relevant actions filed subsequent to the effective date of P.L. 1998, c.448 (C.4:1c-10.1 et al.) there shall exist an irrebuttable presumption that no commercial agricultural operation, activity or structure which conforms to agricultural management practices recommended by the committee...or whose specific operation or practice has been determined by the appropriate county board [or the SADC] to constitute a generally accepted agricultural operation or practice, and all relevant federal or State statutes or rules and regulations adopted pursuant thereto and which does not pose a direct threat to public health and safety, shall constitute a public or private nuisance, nor shall any such operation, activity or structure be deemed to otherwise invade or interfere with the use and enjoyment of any other land or property.

What constitutes accepted or normal agricultural management practices (AMPs) is the determination of the State Agriculture Development Committee or the relevant county agriculture development board. At present time, the SADC has formally developed and adopted nine AMPs covering issues related to apiary, poultry, food processing by-product land application, commercial vegetable production, commercial tree fruit production, natural resource conservation, on-farm composting, wildlife fencing, and aquaculture. Two AMPs governing equine and agritourism practices are currently under development.

When a question arises about the acceptability of a given agricultural practice a farmer can approach their CADB (or SADC in the cases of Essex, Hudson, or Union) and seek a determination of whether a specific practice is deemed acceptable. A farmer may also request a “site specific” AMP as a means of proactively establishing the acceptability of an agricultural practice or activity and avoiding future legal conflict. Such site specific AMPs

requests are subject to procedural rules developed by the SADC. In making its determination, the CADB or SADC may consult with subject matter experts from the New Jersey Department of Agriculture, New Jersey Agricultural Experiment Station, Rutgers Cooperative Research and Extension, the State Soil Conservation Committee, and others deemed appropriate. According to public records available from the SADC, since February 1999, 59 site specific AMP requests have been made. Most were determined at the level of the CADBs.

### **Farmland Preservation in New Jersey**

The Agriculture Retention and Development Act of 1983 provides the legal foundation for the state's farmland preservation program, authorizes the creation of county agriculture development boards, and contains provisions for cost sharing programs to support soil and water conservation. As noted previously, this act was passed at the same time as the New Jersey Right to Farm Act. Both the right to farm and farmland preservation programs are administered by the State Agriculture Development Committee.

The county agriculture development boards are responsible for the delineation of agricultural development areas, regions of contiguous land within which agriculture is a preferred use and is likely to prosper. These areas are the basis for prioritizing farmland preservation efforts. Interestingly, as evidence of the farm community's concern over equity protection, the ARDA specifically specifies that designation as an agricultural development area does not constitute or imply exclusive agricultural zoning (which would effectively eliminate all other uses of land).

Farmland preservation offers several benefits to participating farmers. The purchase

of development rights provides an influx of money that can be used for capital improvement and farm modernization, debt reduction, and so forth. Preserved farms also receive protection against the exercise of eminent domain by the government as well as nuisance complaints. For example, the ARDA states that any public body seeking to condemn property within an agriculture development area must file a notice with the CADB and SADC for their evaluation of the potential impacts of agriculture within the area. Preserved farms also receive preferential treatment in times of emergency water and energy restrictions.

With more than 134,000 acres preserved at a public expense of nearly \$705 million (through March 2005), New Jersey's farmland preservation is often heralded as among the most ambitious and successful in the United States. As will be demonstrated late in this section, funding levels for farmland and open space preservation are substantial, particularly following the adoption of the Garden State Preservation Trust Act in 1998. The SADC utilizes several different farmland preservation programs, including county easement purchases, direct easement purchases, fee simple purchases, and an eight-year preservation program. It also provides funding (up to 50 percent of fee simple or easement purchase costs) to non-profit organizations pursuing land acquisitions.

The county easement purchase program is by far the most active of the farmland preservation programs administered by the SADC. Under this program, farmland is subject to two independent appraisals (both subject to review by a State appraiser) to determine the difference between the market value of the land and its use value in agriculture. This provides the basis for the value of the development rights, or easements. Farmland owners sell the development rights on their land to the county. Development restrictions "run with

the land”, prohibiting development and limiting the use of land to agriculture for all subsequent owners. Typically, the SADC will provide grants to the county to cover from 60 to 80 percent of the easement purchase cost. The average proportion funded by the SADC is about 66 percent (SADC 2005). The SADC can also acquire easements directly from the farmland owner when circumstances warrant (e.g., a shortage of local preservation funds or a need for an expedited closing).

The SADC also can acquire farmland outright through fee simple purchase program. Under this option, the entire property (and all associated property rights) are purchased by the SADC. This approach is preferred in instances where a parcel is in immediate danger of conversion and the landowner does not wish to retain ownership. Purchased farms are subsequently sold at auction, minus development rights. A benefit of this preservation option is the ability for other interested farmers to acquire farmland at prices reflective of agricultural value rather than full market value.

The SADC has developed criteria for evaluating and prioritizing farms for preservation funding. Among the criteria are (i) the imminence and severity of development threat, (ii) soil quality, (iii) the proportion of tillable acres, (iv) boundaries and buffers around the parcel (i.e., is there other preserved acreage), (v) local commitment to agriculture, (vi) farm size, (vii) agricultural density, and (viii) input from the county agricultural development board. A farmland owner can raise the priority ranking of his/her farm by offering to discount the easement costs below the appraised value.

For landowners not interested in permanent preservation, an eight-year easement program is also available through the SADC. While farmland owners do not receive monetary compensation for participation in the eight-year easement program, they become

eligible for cost-sharing programs for soil and water conservation projects. Farms in this program also receive protections against nuisance complaints, zoning changes, and eminent domain actions.

In 1999, an important addition to farmland preservation policy in New Jersey was advanced in the form of the Farmland Preservation Planning Incentive Grant (PIG) program. The PIG program is authorized under N.J.S.A. 4:1C-43.1 and allows the SADC to issue grants to counties and municipalities for the preservation of blocks of farmland. The goal of the PIG program is to preserve large, contiguous tracts of farmland in project areas defined by counties or municipalities. Interested counties or municipalities must submit PIG applications to the appropriate county agriculture development board for review and approval before the application is forwarded to the SADC for consideration.

The SADC ranks all PIG application based upon several established criteria, including the degree of local commitment to agriculture, the presence of a local agricultural advisory committee, the existence of a farmland preservation master plan element (for municipal applicants), and establishment of a dedicated funding source for farmland preservation. According to the SADC's planning manager, the utilization of the PIG program has steadily increased since its inception (Brill 2006). An important aspect of the PIG program is its emphasis on not only land preservation, but also the requirement that applicants demonstrate a commitment and support for agriculture as an industry.

#### State and Local Funding for Farmland Preservation

New Jersey's Green Acres Program was created in 1961 to address the need for recreational space and conservation in the state. Since that time, New Jersey voters have

supported nine different Green Acres bond acts, totaling \$1.42 billion in funding, to support farmland, open space, and historic preservation and recreational development (Table 5-2).

The first New Jersey Green Acres Bond Act was approved in 1961 by 59 percent of voters statewide (Table 5-3). While the referendum failed to get approved by a majority of voters in Hunterdon, Salem, and Sussex counties, \$60 million was nevertheless allocated to support State and local land acquisition. Each of the subsequent eight bond acts was similarly passed, although support was not universal across all counties in early years. A majority of voters in Salem County, for example, did not approve a bond issue until 1987. Similarly, bond approval was not garnered several times in Cumberland, Hunterdon, Sussex, and Warren counties before 1987. The 1987, 1989, 1992, and 1995 referenda passed in all 21 counties (by a high of 72 percent statewide in 1992). The last three referenda alone authorized \$710 million for preservation activity.

**Table 5-2: Summary of Green Acres Bond Acts (1961-1995).**

<b>Year</b>	<b>Funding Amount</b>	<b>Purposes</b>
1961	\$60 million	\$40 million - State acquisition and development \$20 million - local acquisition (50/50 matching grants to municipalities and counties)
1971	\$80 million	\$40 million - State acquisition \$40 million - local acquisition
1974	\$200 million	\$100 million - State acquisition and development \$100 million - local acquisition and development
1978	\$200 million	\$100 million - State acquisition and development \$100 million - local acquisition and development (50% for urban areas)
1983	\$135 million	\$52 million - State acquisition and development \$83 million - local acquisition and development
1987	\$35 million	Green Trust only
1989	\$230 million	\$80 million - State acquisition and development \$120 million - Green Trust acquisition and development
1992	\$200 million	\$80 million - State acquisition and development \$100 million - Green Trust acquisition and development
1995	\$280 million	\$105 million - State acquisition and development \$120 million - Green Trust acquisition and development \$30 million - Blue Acres \$15 million - Non-profit matching grant for land acquisition \$10 million - recreational development at Liberty State Park
<b>Total</b>	<b>\$1,420 million</b>	

Source: New Jersey Department of Environmental Protection, Green Acres Program.



**Table 5-3: Public Approval for Green Acres Bond Acts.**

<b>County</b>	<i>Percent of Voters Approving Green Acres Bond Act</i>								
	<b>1961</b>	<b>1971</b>	<b>1974</b>	<b>1978</b>	<b>1983</b>	<b>1987</b>	<b>1989</b>	<b>1992</b>	<b>1995</b>
Atlantic	65%	67%	59%	53%	63%	64%	72%	72%	65%
Bergen	60	70	55	56	61	61	72	74	71
Burlington	59	66	62	63	62	65	76	72	70
Camden	59	60	57	62	57	60	72	75	67
Cape May	58	59	54	52	62	64	70	71	65
Cumberland	53	59	45	35	51	56	61	65	56
Essex	62	76	60	57	66	66	76	75	72
Gloucester	52	58	56	56	57	62	71	77	68
Hudson	62	63	56	63	66	61	70	75	68
Hunterdon	31	56	48	49	61	64	72	67	71
Mercer	57	67	54	57	66	66	72	72	71
Middlesex	61	66	55	56	61	62	71	71	66
Monmouth	58	63	57	60	66	68	71	71	69
Morris	63	75	57	56	63	65	77	72	70
Ocean	56	63	55	54	58	56	64	67	66
Passaic	56	64	43	51	53	58	66	70	68
Salem	49	43	39	43	48	54	56	63	57
Somerset	63	69	58	57	62	68	77	73	69
Sussex	49	54	44	38	48	61	72	72	66
Union	63	75	56	53	61	62	70	72	67
Warren	56	44	40	39	50	57	67	70	63
<b><i>New Jersey</i></b>	<b><i>59</i></b>	<b><i>67</i></b>	<b><i>55</i></b>	<b><i>56</i></b>	<b><i>61</i></b>	<b><i>62</i></b>	<b><i>71</i></b>	<b><i>72</i></b>	<b><i>68</i></b>

Source: Compiled by the author from the Manual of the Legislature of New Jersey (various years).

For many years, concern existed over the lack of a stable funding source to support land preservation efforts in New Jersey. Each bond required voter approval, creating a

degree of uncertainty that made long term planning for preservation difficult. In 1998, Governor Christine Todd Whitman, embracing recommendations from the Governor's Council for New Jersey Outdoors, articulated a goal of preserving one million acres of farmland and open space in New Jersey. In July 1998, Senate Concurrent Resolution 66 (introduced by Senators DiFrancesco and Martin) and Assembly Concurrent Resolution 109 (introduced by Assemblymen Lance and Corodemus) was passed. These resolutions called for a constitutional amendment enabling the appropriation of state sales tax revenue to create a stable funding source for historic and land preservation purposes for a period of ten years.

In the November 1998 elections, New Jersey voters passed, by a wide margin, a referendum calling for a constitutional amendment which effectively provided for a stable source of funding for open space, historic, and farmland preservation for a period of ten years. The amendment was codified in the New Jersey Constitution as Article 8, Section 2, Paragraph 7 and dedicates \$98 million of state sales tax revenues annually for ten years (beginning July 1, 1999 and ending June 30, 2009) specifically for these purposes. The amendment authorizes the issuance of up to \$1 billion in revenue bonds, backed by the earmarked funds. With solid public support, the New Jersey Legislature developed and adopted the Garden State Preservation Trust (GSPT) Act in 1999.

Consistent with past referenda to secure land preservation funding, New Jersey voters strongly supported this ballot item. As was the case with the 1987, 1989, 1992, and 1995 bond referenda, the referendum authorizing the passage of the GSPT Act was approved by a majority of voters in every county. Statewide support for the Act topped 66 percent of voters, with approval ratings ranging from 56 percent in Cumberland County to 73 percent in Hunterdon County (Table 5-4).

The Act created the Garden State Preservation Trust to issue bonds for preservation and to serve as the administrative body for developing funding allocations and procedures. The funding allocation specified in the Act requires that funds first be used for debt service on outstanding bonds. The Trust must allocate \$6 million for historic preservation purposes. The remaining funds are then split between the state Green Acres program (60 percent) and the state farmland preservation program administered by the State Agricultural Development Committee (40 percent). The funding allocation under the GSPT has been the subject of some debate in recent years as urban legislators have expressed an interest in shifting a greater proportion of funding to urban districts for urban parks.

**Table 5-4: Voter Approval in the 1998 Referendum on the Establishment of the Garden State Preservation Trust.**

<b>County</b>	<b>Percent Approval</b>	<b>County</b>	<b>Percent Approval</b>
Atlantic	57%	Middlesex	65%
Bergen	71	Monmouth	65
Burlington	68	Morris	72
Camden	68	Ocean	57
Cape May	63	Passaic	66
Cumberland	56	Salem	63
Essex	69	Somerset	68
Gloucester	65	Sussex	71
Hudson	65	Union	65
Hunterdon	73	Warren	59
Mercer	68	<b><i>Statewide Totals</i></b>	<b><i>66</i></b>

Source: Manual of the Legislature of New Jersey, 1999.

According to Michael Catania, President of Conservation Resources, Inc., the pace

of expending funds authorized under the GSPT Act is ahead of the projected schedule (Catania 2006). Authorized funds may be expended one to two years before the 10 year limit specified in the act. Preservation interests are now aligning to explore strategies for authorizing another stable funding source for land preservation. Despite the depletion of state funding, significant land preservation funding continues to be raised by local governments.

Following the November 2004 ballots, 210 municipalities and all 21 counties in New Jersey had adopted some form of funding program to support farmland, open space, and/or historic preservation. Most often this was in the form of a dedicated property tax. All counties except for rural Cape May and Cumberland counties and densely populated Hudson County have municipalities with dedicated preservation taxes (Table 5-5). According to Nicole Goger, Research Associate at the New Jersey Farm Bureau, local and county land preservation taxes generated nearly \$203 million in 2003. Of this amount, county tax revenues comprised \$143.7 million, while municipalities generated \$59.1 million.

Tax collections from the county open space tax programs are substantial and continue to grow. Many counties have raised the millage of existing taxes in recent years. Data from the New Jersey Department of Environmental Protection's Green Acres program suggests that county revenues alone will exceed \$157.1 million in 2004, with county tax rates ranging from \$0.01 per \$100 in several counties to a high of \$0.06/\$100 in Warren County.

**Table 5-5: Local Land Preservation Taxes in New Jersey (as of November 2004).**

<b>County</b>	<b>Year Tax Approved (or Increased)</b>	<b>Estimated Tax Collection (2003)</b>	<b>Number of Municipalities with Tax (2004)</b>	<b>Percent of Municipalities with Tax (2004)</b>
Atlantic	1990/1998	\$5,015,000	3	13%
Bergen	1998/2003	\$9,500,000	20	29%
Burlington	1996/1998	\$9,500,000	19	48%
Camden	1998	\$2,345,000	6	16%
Cape May	1989	\$2,400,000	0	0%
Cumberland	1994	\$514,000	0	0%
Essex	1998	\$5,346,000	9	41%
Gloucester	1993/2000/2004	\$5,000,000	11	46%
Hudson	2003	\$3,500,000	0	0%
Hunterdon	1999	\$5,278,000	16	62%
Mercer	1989/1998/2004	\$8,000,000	10	77%
Middlesex	1995/2001	\$18,476,000	10	40%
Monmouth	1987/1996/2002	\$16,000,000	17	32%
Morris	1992/1998/2001	\$30,000,000	29	74%
Ocean	1997	\$6,252,000	11	33%
Passaic	1996	\$2,780,000	6	38%
Salem	2002	\$560,000	3	20%
Somerset	1989/1997	\$12,475,000	12	57%
Sussex	2000	\$2,239,000	9	38%
Union	2000	\$6,985,000	2	10%
Warren	1993/1999/2002	\$4,878,000	17	77%
<b>Total</b>	<b>N/A</b>	<b>\$157,040,997</b>	<b>210</b>	<b>37%</b>

Source: Steve Jandoli, New Jersey Department of Environmental Protection, Green Acres Program.

The secured availability of state funds through the Garden State Preservation Trust Act, the cost sharing requirements of the state's farmland preservation program, and the escalating cost of land spurred many municipalities to adopt their own mechanisms for funding land preservation. Nearly 90 municipalities have established dedicated land preservation taxes since 2000, clearly reflecting the catalytic effect of the GSPT on local dedicated tax adoption. Recent years have also seen many municipalities raising the level of previously established land preservation taxes in order to better leverage available state monies and offset increasing easement costs.

The recent influx of state and local dollars into farmland preservation is reflected in the significant amount of farmland that has been preserved since 2000. The first farm property was preserved under the state program in 1985. Through the end of March 2005, 1,238 farms comprising 134,249 acres have been preserved under the various SADC programs. The large majority of acreage has been preserved under the county and SADC easement purchase programs. The amount of acreage preserved annually increased substantially after the inception of the Garden State Preservation Trust. Closings on approximately two-thirds of the farms and more than half of the total farmland acreage preserved in New Jersey under the state program have occurred between 1999 and early 2005.

While farm properties have been preserved in 17 counties and 138 municipalities, there are clear geographic concentrations of activity (Table 5-6). In terms of acreage preserved, Burlington County is the leader (19,637 acres), followed by Salem and Hunterdon counties. The total cost of easement and fee simple purchases has exceeded \$704.8 million, 66 percent of which was funded by the state farmland preservation program.

**Table 5-6: Summary of Farmland Preservation Activity (through March 31, 2005).**

County	No. of Towns	No. of Properties	Preserved Acres	Total Cost	Cost per Acre	State % of Cost
Atlantic	6	26	1,885	\$5,493,061	\$2,780	80%
Bergen	3	3	233	\$6,896,066	\$15,562	80%
Burlington	11	163	19,637	\$92,387,534	\$4,705	55%
Camden	3	7	467	\$11,741,401	\$25,145	52%
Cape May	6	37	2,444	\$10,745,775	\$4,398	64%
Cumberland	10	87	11,854	\$18,937,268	\$1,598	78%
Gloucester	9	79	7,886	\$30,044,678	\$3,810	65%
Hunterdon	14	180	17,556	\$114,624,531	\$6,529	71%
Mercer	6	78	6,208	\$47,676,467	\$8,344	69%
Middlesex	4	35	3,985	\$38,228,796	\$10,905	70%
Monmouth	8	90	9,343	\$88,927,446	\$9,520	69%
Morris	10	73	4,900	\$70,516,416	\$14,391	53%
Ocean	4	28	2,262	\$8,256,301	\$3,650	68%
Salem	8	131	18,084	\$33,026,514	\$1,826	85%
Somerset	8	54	5,419	\$47,130,215	\$8,697	65%
Sussex	11	66	9,595	\$26,265,041	\$2,737	70%
Warren	17	101	12,491	\$53,958,658	\$4,320	71%
<b>State</b>	<b>138</b>	<b>1,238</b>	<b>134,249</b>	<b>\$704,856,167</b>	<b>\$5,250</b>	<b>66%</b>

Source: State Agriculture Development Committee, April 2005.

### **New Jersey State Development and Redevelopment Plan**

New Jersey is among the minority of states that have developed a statewide plan to guide growth and development. The State Planning Act of 1985 (N.J.S.A. 52:18A-196) created the New Jersey State Planning Commission and the Office of State Planning (which was subsequently reorganized during the McGreevey administration as the Office of Smart Growth within the Department of Community Affairs). The Act mandated the development of a State Development and Redevelopment Plan (State Plan) for coordinating statewide growth, development, and resource conservation. The Act noted that

New Jersey, the nation's most densely populated State, requires sound and integrated Statewide planning and the coordination of Statewide planning with local and regional planning in order to conserve its natural resources, revitalize its urban

centers, protect the quality of its environment, and provide needed housing and adequate public services at a reasonable cost while promoting beneficial economic growth, development and renewal...

The view that a statewide planning process is needed emerged from concerns that New Jersey's resource base and quality of life were in jeopardy due to prevailing patterns of growth. Increasing traffic congestion, air and water pollution, deteriorating urban centers, local fiscal crises, a diminishing farmland base, and stresses on natural resources were outward manifestations of a largely haphazard pattern of unplanned growth that was dominant in the state in the post-war period. Suburban sprawl was responsible for gutting New Jersey's cities, consuming increasing acreage for new subdivisions, destroying community character, and raising costs of public services and infrastructure.

The first State Development and Redevelopment Plan was adopted in 1992, then revised and adopted again in 2001. Statewide planning is a daunting task and involves an extensive "cross acceptance" process that seeks to establish consensus on elements of the plan between all levels of government and interested private sector parties.<sup>40</sup> The process is also designed to promote consistency between State Plan goals and county and municipal planning. The eight primary goals outlined in the 2001 State Plan are to:

- (1) Revitalize the State's Urban Centers and Areas
- (2) Conserve the State's Natural Resources
- (3) Promote Beneficial Economic Growth, Development and Renewal
- (4) Protect the Environment
- (5) Provide Adequate Public Services at Reasonable Cost

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<sup>40</sup> The planning process entails three phases: the development of a Preliminary Plan, an Interim Plan, and a Final Plan. Cross-acceptance initiates once the Preliminary Plan is released. After cross-acceptance, an Interim Plan is released which is subject to a number of public meetings and a comment period. An impact assessment of the State Plan is conducted based on the Interim Plan. Following this phase a Final Plan is adopted.



- (6) Provide Adequate Housing at a Reasonable Cost
- (7) Preserve and Enhance Historic, Cultural, Open Space and Recreational Lands and Structures
- (8) Ensure Sound and Integrated Planning Statewide

At the heart of the State Plan implementation process in New Jersey is a state plan policy map that delineates broad planning areas that “share certain characteristics and strategic intentions.” The most basic premise underlying the plan is a desire to direct growth into areas most capable of accommodating new development and population (various “center” designations in the terms of the State Plan), while protecting areas of natural and environmental importance.

The State Plan identified several major planning areas, each with different policy and planning objectives: Metropolitan (PA1), Suburban (PA2), Fringe (PA3), Rural (PA4), Rural-Environmentally Sensitive (PA4B), and Environmentally Sensitive (PA5). Each planning area contains a policy objective related to agriculture, however, PA 4 (Rural) and PA 4B (Rural/Environmentally Sensitive), are the primary areas in which an active agricultural industry is most encouraged. The policy on agriculture for PA4 reads as follows:

Guide development to ensure the viability of agriculture and the retention of farmland in agricultural areas. Encourage farmland retention and minimize conflicts between agricultural practices and the location of Centers. Ensure the availability of adequate water resources and large, contiguous tracts of land with minimal land-use conflicts. Actively promote more intensive, new-crop agricultural enterprises and meet the needs of the agricultural industry for intensive packaging, processing, value-added operations, marketing, exporting and other shipping through development and redevelopment.

To advance the goals and intent of the State Planning Act, the current State Plan contains 19 Statewide Policies intended to “improve both the planning and the coordination

of public policy among all levels of government.” The State Planning Act cited a specific need for statewide planning to advance “agriculture and farmland retention.” More than semantics, this implicitly recognizes the need for policies oriented to both the retention of the physical farmland resource and securing the future of an agricultural industry. This involves both the mitigation of uncontrolled development’s impacts on the farmland base and proactive policies to bolster the farming industry directly. This sentiment is embodied in Statewide Policy 15, the agriculture policy of the plan, which seeks to

[p]romote and preserve the agricultural industry and retain farmland by coordinating planning and innovative land conservation techniques to protect agricultural viability while accommodating beneficial development and economic growth necessary to enhance agricultural vitality and by educating residents on the benefits and the special needs of agriculture.

Several aspects of the language contained in this Statewide Policy on Agriculture are important. First, the policy specifies the preservation of the *agricultural industry* (in addition to the retention of farmland) as a statewide policy. This recognizes the importance of focusing on the industry of agriculture, not just the farmland resource. Second, the protection of *agricultural viability* via coordinated planning and innovative land conservation techniques again emphasizes the importance of recognizing agriculture as an economic activity and underlying needs to maintain profitable and viable farms. Third, the policy explicitly acknowledges the need for *accommodating beneficial development and economic growth necessary to enhance agricultural vitality*. This statement again reinforces the business and economic nature of farming. Finally, the need for *educating residents on the benefits and the special needs of agriculture* recognizes the importance of increasing the compatibility of farming and non-farm uses as such uses are increasingly coming into close

proximity with each other.

There are 23 specific policies outlined under the Statewide Policy on Agriculture. These policies are quite comprehensive and provide an invaluable, albeit underutilized, resource for municipalities interested in encouraging and retaining farming as both an industry and as a land use. Notable about the 23 policies is the fact that they focus not only on farmland preservation, but also encompass a broad range of policy and planning considerations regarding the business of farming and agricultural landscape. Among these are the need for agricultural economic development (i.e., capital access, marketing, agribusiness diversification, value added enterprises, agritourism), intergenerational succession of farms, right to farm protections, innovative land use and design techniques to reduce pressures on the farm base and conflicts between farmers and non-farmers, worker training, and industry promotion.

In addition to Statewide Policy 15, the agricultural community is also keenly interested in the equity provision in the state plan (Statewide Policy 1) which focuses, in part, on the potential impacts on property values likely to result from plan implementation. As major landholders in the state, farmers are concerned that State Plan implementation will lead to restrictions on their properties (oftentimes located in areas designated under the plan as rural or environmentally sensitive) and subsequent losses of value. The 2001 State Plan's Statewide Policy 1 (Equity) states:

Where implementation of the goals, policies and objectives of the State Plan affects the reasonable development expectations of property owners or disproportionately affects the equity of other citizens, agencies at all appropriate levels of government should employ programs, including, for example, compensation, that mitigate such impacts to ensure that the benefits and burdens flowing from implementation of the State Plan are borne on an equitable basis.

...It is the position of the State Planning Commission that the State Plan should neither be used in a manner that places an inequitable burden on any one group of citizens nor should it be used as a justification for public actions that have the effect of diminishing equity. It is also the position of the Commission that the achievement, protection and maintenance of equity be a major objective in public policy decisions as public and private sector agencies at all levels adopt plans and policies aimed at becoming consistent with the State Plan.

The above passage establishes the concept of equity as one of fundamental fairness; no group should disproportionately benefit from, nor be burdened by, the implementation of the State Plan. However, the Equity Policy also clearly acknowledges the different meanings of equity expressed by various residents across the state. Urban residents, for example, may perceive equity as lying in reinvestment in deteriorated city infrastructure and revitalization of central business districts. The prevailing view of equity held by rural landowners, and farmers in particular, is that the private costs of growth management should not fall disproportionately upon their shoulders. This speaks to a second conception of equity that is used throughout this dissertation, which involves the protection of farmland asset values.

The importance the farming community places on the equity policy is difficult to overstate. Concern over equity protection is longstanding, with strong reference being made to this principle in the Blueprint Commission report of 1973. It again assumed a prominent position in the 2003 Agricultural Smart Growth Plan (a preface to the report identified equity preservation as an “underlying tenet” in the plan) and is consistently a major policy position advanced at both the State Agriculture Convention and the New Jersey Farm Bureau Convention each year.

The combination of planning principles and policy recommendations in the State

Plan can combine to effectively shape a positive environment for agriculture in New Jersey. The “rural valley” planning scenario portrayed in the 2001 State Plan, for example, depicts the conversion of a rural region comprising 1,000 acres of farms, woodland, and open spaces into a sprawling series of 300 residential lots constructed under conventional zoning consuming much of the valley. This is portrayed as the development pattern likely to occur under unplanned growth (termed “trend”) growth. It contrasts markedly from the pattern that would result from development guided by the State Plan. The planned outcome would accommodate the same 300 units but clustered in a village setting, maintaining 85 percent of the valley in its rural form. The plan calls for flexible zoning and design standards to accomplish this goal.

The scenario described above focuses on an effective use of innovative land use planning that can preserve agricultural lands while simultaneously accommodating growth. However, the critical importance of the State Plan’s approach to agricultural retention lies in the fact that it considers factors that extend beyond simply stabilizing the land base. It emphasizes the need to mitigate tensions between the farm and non-farm community. It acknowledges agriculture as a business by considering issues such as access to capital to support farm expansion and modernization or business diversification as well as the possible need for supporting input/supply or market infrastructure. Related to this point, the policy recommends the inclusion of agriculture in local economic development planning, which pays rewards to the farming community as well as local employment and tax base. Importantly, it is cognizant of the fact that agricultural support is not a passive endeavor nor one that ends with the preservation of farmland. The policy calls for proactive local policy development that is responsible in terms of social interests while providing an agriculturally-

friendly regulatory atmosphere. It also recognizes the stewardship role served by farms and encourages the use of agricultural infrastructure to protect environmental integrity and amenities. Finally, it notes the importance of actively encouraging awareness and appreciation of farming and its importance to the locality and state.

### **Agricultural Smart Growth Plan for New Jersey**

The Agricultural Smart Growth Plan was developed in 2003 by the New Jersey Department of Agriculture to advance the implementation of the State Plan and provide direction to local governments interested in supporting agriculture. The plan has five interrelated components that provide more detailed guidance and tools to municipalities seeking to retain an active agricultural industry and implement the agricultural policies of the State Plan: farmland preservation, innovative conservation planning, economic development, natural resource conservation, and agricultural industry sustainability.

The development of the agricultural smart growth plan involved extensive participation and vetting within the farm community. Secretary of Agriculture Charles M. Kuperus charged a Agricultural Smart Growth Working Group to develop a plan that would provide a “roadmap for agriculture in the 21<sup>st</sup> century” and integrate into overall statewide planning efforts. Delegates at the 2003 State Agriculture Convention passed a resolution supporting the concept of an agricultural smart growth plan. Extensive debate - provided in comments during the convention and pervasive discussion outside of the formal proceedings - reflected a unified mandate from the farming community that the plan emphasize the need for proactive planning and policy solutions to stem farmland loss and promote farm viability without diminishing farmland values or land equity. Downzoning

and advocacy of large lot zoning as a countermeasure against farmland loss was adamantly opposed. What resulted is an underlying value within the Agricultural Smart Growth Plan that equity preservation be paramount in any planning for agriculture's retention.

## **Summary**

New Jersey's state level agricultural policies provide a solid foundation from which local governments can advance farm retention strategies. The Farmland Assessment Act established arguably the most critical policy supporting farm profitability by mitigating the remarkable appreciation in New Jersey farmland values over recent decades. A strong Right to Farm law provides responsible farmers with legal protection against merit-less nuisance complaints and inappropriately restrictive local ordinances. New Jersey's farmland preservation program has preserved 17 percent of the state's remaining farmland, making it among the most successful in the Nation and keeps future options for farming open. New Jersey's state planning efforts similarly try to balance growth and conservation objectives in a fiscally and environmentally responsible manner. Among the current state plan's objectives is the protection of the state's farmland base and strengthening of the farming industry.

All of these state policies, however, can fall short of their potential if local implementation is inadequate. Take, as an example, farm property taxation. Despite having the farmland assessment statute, municipalities and local assessors still may influence the tax bill of farms by the manner in which it assesses farm structures (farmland assessment only applies to the land devoted to agriculture). Farm structures are supposed to be assessed using specific standards set forth in the Real Property Appraisal Manual for New Jersey

Assessors released annually by the Division of Taxation's Field Assistance and Appraisal Unit. Failure to do so can lead to higher assessments on single-use farm structures and discourage farmer investment in building or maintaining such structures.

As another example, ensuring and protecting a farmer's right to farm goes beyond having a state statute. A farmer successfully defending against a neighbor's nuisance suit is an inferior outcome to the avoidance of such a conflict. Both parties expend time and possibly financial resources, and experience stress and tension that may outlive any formal litigation. A municipality can help avert right to farm conflicts by reinforcing the state statute with a local ordinance or establishing a policy of alerting new home buyers of the realities of living in rural areas.

The advancement of an effective agriculture retention agenda in New Jersey can be effectuated through synergistic state and local policy development and planning working in tandem. Indeed, it may be predicated upon such coordination. In many cases, state policy provides the constitutional or statutory authority for programs administered locally; however, it does not ensure adequate local implementation.

The State Development and Redevelopment Plan similarly provides state-level direction and guidance for municipalities. It is prescriptive in terms of actions that local governments can take to support agriculture. The plan provides a mechanism for coordinating efforts to protect inter-jurisdictional resources, such as farmland, with spillover benefits. New Jersey's home rule tradition, however, confers responsibility for operationalizing the plan to individual communities. Plan implementation will ultimately be advanced or constrained by the efforts of local governments.



## **Chapter 6**

### **The Diversity of New Jersey Agriculture**

The preceding two chapters outlined the broad foundation of federal farm policy and key New Jersey agricultural policies. This, and subsequent chapters turn now to the question of “why?” Why is it advantageous to have decentralized levels of farm policy in the United States? Arguments for the need for the delineation of policies across multiple layers of government will be organized along two lines. The first, and the subject of this chapter, is the premise that lower levels of government will be more capable of aligning public policies with localized needs and priorities. This argument will be developed based upon an examination of the diversity of agriculture across the United States, and even within the geographically small state of New Jersey. A second rationale for a multi-tiered policy framework, the management of both positive and negative externalities, will be developed in Chapters 7 and 8.

The gross state product statistics in Table 4-3 provide a glimpse at the variability in the scale and relative economic importance of agriculture across the fifty states, highlighting a stark contrast between the industrial economy of New Jersey and the more rural economies of the Dakotas, Idaho, Iowa or Nebraska. At a macro-level, agriculture’s contribution to the New Jersey economy is only one-seventh of the industry’s share of the national economy (0.1 percent versus 0.7 percent). Even at a more micro-level, agriculture in New Jersey (and other Northeast states) is quite dissimilar from agriculture in the Midwest or South in terms of the composition of agricultural production, scales of operations, product marketing, and cost structure. Similarly, farmers in New Jersey also operate in a socio-political and

geographic context stingingly different from farmers in more rural states, having to contend with the challenges (and opportunities) of operating in the most densely populated and urbanized state in the nation. Yet it is arguably the midwestern and southern images of agriculture that are dominant in the minds of many federal policy makers during farm policy discourse.

This chapter provides an overview of New Jersey agriculture intended to demonstrate the the heterogeneity of farm operations within the state. A historical perspective on the dynamics of farming in New Jersey, exemplified by transitions that have occurred in the size and composition of the industry since the mid-twentieth century, is also presented. Borrowing from the old colloquialism, the only constant in New Jersey agriculture has indeed been change as the industry has responded to changes in the surrounding physical landscape, socio-political environment, and market opportunity. Lastly, a broader contextual understanding of the industry is also developed by contrasting the structure and composition of New Jersey's farm sector with the national industry.

### **A Snapshot of New Jersey's Farm Sector Today**

The 2002 Census of Agriculture reported that New Jersey has 9,924 farms producing crops and raising livestock on more than 805,000 acres of farmland. The market value of all farm products sold and government payments to farmers in 2002 totaled more than \$754.3 million. The large percentage of farm revenue is derived from horticultural crops, supporting the general characterization of New Jersey as a "specialty crop" state. Specialty crops, as defined under the federal Specialty Crop Competitiveness Act passed in 2004, include fruits, vegetables, tree nuts, nursery crops, and floriculture. These commodities tend

to be higher value products (on a per acre basis) and are not covered under traditional USDA commodity support programs. Hence, government payments to New Jersey farmers are a small component of farm income.<sup>41</sup>

Tables 6-1 and 6-2 show the composition of New Jersey agriculture, by commodity sector. Operations specializing primarily in the production of greenhouse, nursery, floricultural, and sod products presently account for nearly one-quarter (23 percent) of all farms and 101,109 acres of farmland. This sector is the most rapidly growing segment of the New Jersey farm economy in recent decades and generated 48 percent of all farm cash receipts in 2002. These operations also generate the most income per acre (\$3,523, on average) relative to other sectors.

The vegetable and fruit industries are also important sectors of New Jersey's agricultural industry. In 2002, there were 937 vegetable farms and 605 fruit and berry farms in the state. Vegetable farms operated nearly 115,000 acres and generate sales in excess of \$171 million. Fruit farms operated almost 79,000 acres and produced products with a market value of \$91 million. Surprising to some is the fact that New Jersey is among the national leaders in terms of the production of a number of horticultural products. For example, according to the New Jersey Field Office of the National Agricultural Statistics Service, in

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<sup>41</sup> A 2004 PublicMind poll conducted by Fairleigh Dickinson found that 45 percent of survey respondents believed that "most New Jersey farmers are subsidized by the government" (another 18 percent "did not know"). In actuality, New Jersey farmers receive relatively little in terms of government payments. In 2002, 582 farms received approximately \$4.4 million in 2002, which is equivalent to less than 1 percent of total gross farm income. These payments included payments under the Conservation Reserve Program and Wetlands Reserve Program (\$135,000) and other non-specified federal programs (\$4.3 million). Farms specializing in dairy products and oilseed/grain production received about 71 percent of government payments made to New Jersey farmers.

2003 New Jersey ranked:

- 2<sup>nd</sup> in blueberry production (40.0 million pounds).
- 3<sup>rd</sup> in bell pepper production (88.2 million pounds).
- 3<sup>rd</sup> in cranberry production (48.0 million pounds).
- 4<sup>th</sup> in head lettuce production (15.8 million pounds).
- 5<sup>th</sup> in peach production (62.0 millions pounds).
- 6<sup>th</sup> in cucumber production (60.0 million pounds).
- 7<sup>th</sup> in squash (summer and winter) production (31.4 million pounds).
- 8<sup>th</sup> in tomato production (68.2 million pounds).
- 9<sup>th</sup> in snap bean production (8.1 million pounds).

**Table 6-1: Composition of New Jersey's Farm Sector by Commodity Sector (2002).**

<b>Commodity Sector</b>	<b>No. of Farms</b>	<b>Land in Farms (acres)</b>	<b>Average Size of Farm (acres)</b>
<b>All Farms</b>	<b>9,924</b>	<b>805,682</b>	<b>81</b>
Greenhouse, Nursery, & Floriculture Production	2,285	101,109	44
Animal Aquaculture & Other Animal Production	1,831	58,216	32
Other Crop Farming	1,689	132,601	79
Vegetable and Melon Farming	937	114,989	123
Oilseed and Grain Farming	658	175,147	266
Beef Cattle Ranching and Farming	657	46,013	70
Fruit and Tree Nut Farming	605	78,959	131
Sheep and Goat Farming	503	14,231	28
Poultry and Egg Production	283	13,984	49
Cattle Feedlots	214	10,790	50
Hog and Pig Farming	133	5,358	40
Dairy Cattle and Milk Production	129	54,285	421

Source: Census of Agriculture, 2002.

Note: Commodity sector is determined based on the North American Industry Classification System.

**Table 6-2: Economic Characteristics of Farms by Commodity Sector (2002).**

<b>Commodity Sector</b>	<b>Market Value of Agricultural Products Sold (\$1,000)</b>	<b>Market Value of Agricultural Products Sold per Acre</b>
<b>All Farms</b>	<b>\$754,312</b>	<b>\$936</b>
Greenhouse, Nursery, and Floriculture Production	\$356,162	\$3,523
Vegetable and Melon Farming	\$171,278	\$1,490
Fruit and Tree Nut Farming	\$91,249	\$1,156
Dairy Cattle and Milk Production	\$34,422	\$634
Animal Aquaculture and Other Animal Production	\$27,631	\$475
Oilseed and Grain Farming	\$26,343	\$150
Poultry and Egg Production	\$26,178	\$1,872
Other Crop Farming	\$14,630	\$110
Beef Cattle Ranching and Farming	\$3,122	\$68
Cattle Feedlots	\$935	\$87
Hog and Pig Farming	N/A	N/A
Sheep and Goat Farming	N/A	N/A

Source: Census of Agriculture, 2002.

Note: Commodity sector is determined based on the North American Industry Classification System. The market value of agricultural products sold figure of \$754 million includes government payments of \$4.4 million and will differ from pure sales volume data reported elsewhere in this chapter.

Given their national significance, a further note on the state's cranberry and cultivated blueberry industries is warranted. New Jersey is an important producer of both berries on a national and global scale. Both industries are heavily concentrated in the Pinelands region where sandy and acidic soil conditions are conducive to the cultivation of the berries. Cranberry production primarily occurs in Burlington County, while blueberry production is largely in Atlantic County with some acreage in Burlington County and lesser production elsewhere. In fact, Hammonton, New Jersey (Atlantic County) boasts being the "Blueberry Capitol of the World" and is home to Atlantic Blueberry Company, the largest cultivated blueberry farm in the world. Nearby Whitesbog is credited as the birthplace of blueberry cultivation, largely through the pioneering breeding and cultivation efforts of

Elizabeth White and Dr. Frederick Coville.

Many of New Jersey's larger farms tend to be engaged in the production of grains and oilseeds (i.e., wheat, corn, soybeans) or dairy products. The states's 658 oilseed and grain farms operate more than 175,000 acres of land, with the average farm comprising 266 acres. However, as shown in Table 6-2, these operations tend to generate lower revenue per acre than other commodity sectors. Another large portion of the state's farmland base is devoted to the production of "other crops", which comprise mostly hay and silage products, as well as some seed crops, herbs, and spices. These, too, tend to be farms generating a relatively lower level of revenue per acre. More than 16 percent of New Jersey farmland, or 132,601 acres, was devoted to these crops in 2002.

New Jersey has a large number of relatively small farm operations (in terms of both acreage and sales volume) engaged in the production of aquaculture products, equine, bees, rabbits, and other non-specified animals (listed in Tables 6-1 and 6-2 as "animal aquaculture and other animal production"). Equine operations, which range from small one or two animal pleasure operations to the larger breeding farms are a significant component of this sector. Statewide, 878 farms report having some form of equine animal(s), with equine-related sales of more than \$18.3 million.<sup>42</sup>

As will be further discussed in the following section, the relative importance of animal husbandry in New Jersey has largely been displaced in recent decades. Nevertheless,

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<sup>42</sup> These data, 878 farms and \$18.3 million in revenue, are not comparable to the data provided in Table 6-2. These data encompass all operations with equine animals. The data in Table 6-2 refer only to those operations classified under NAICS 1129 that specialize in "other animal production" (including equine), meaning that the production of animals not classified elsewhere provides for the largest portion of the farm's revenue.

despite dramatic decline over the past several decades, there are still 129 dairy operations in New Jersey, operating on more than 54,000 acres and selling \$34.4 million worth of dairy products. The 657 beef cattle operations operate another 46,000 acres of farmland, but generate only \$3.1 million in revenues.

Lastly, while Census data point show the existence of several hundred operations primarily engaged in small animal or poultry production, most tend to be very small with the majority of economic activity concentrated among a small number of farms. For example, only four of New Jersey's poultry operations produce more than half of the sector's sales output. Similarly, one hog operation and two sheep/goat operations account for more than half of the revenues generated in these respective industry sectors.

### **An Industry in Transition**

When the history books are written on New Jersey a century from now, it is unlikely they will testify to the rich agrarian heritage of the state. The past - and current - importance of agriculture in New Jersey is often obfuscated even to lifelong New Jerseyans, not to mention those looking in from beyond the state's borders, or those whose only image of the state is framed while traversing the industrialized expanses along the northern end of the New Jersey Turnpike. The state nickname of "The Garden State" is all but lost on those who view the state as little more than wall-to-wall urban development and turnpike exits.

New Jersey does nevertheless maintain deep agrarian roots that extend back to the early days of colonization.<sup>43</sup> As a territory under British rule, New Jersey was known as one

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<sup>43</sup> Several authors have written extensive histories on New Jersey agriculture. Notable examples include Hubert Schmidt (1973) *Agriculture in New Jersey* and John

of the Bread Colonies due to the significant production of grain crops for export to Britain. In places, only remnants of this agrarian past are still evident today. Silent artifacts of agriculture's historic prominence are scattered across the state in the form of abandoned grain silos, skeletonized barns, and, for the careful observer, overgrown natural boundaries encircling one-time livestock pastures. In yet other places, agriculture remains a vital economic activity and active land use despite many decades of industry attrition.

The twentieth century indeed brought remarkable change to the state's farming sector. From the beginning of the twentieth century, farm numbers and land in farms declined drastically.<sup>44</sup> The number of farms in New Jersey peaked in 1900 at 34,650 (Table 6-3). Land in farms was at an historic high several decades earlier, in 1870, when nearly 3 million acres of land was committed to farming. The loss of farms and farmland progressed relatively steadily from 1900 through 1950. In the middle and latter half of the 1900s, however, the loss of agriculture in New Jersey quickened alarmingly. From 1900 to 1950, the state lost 28 percent of its farms and 39 percent of its farmland base. From 1950 to 2002,

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Cunningham (1955) *Garden State: The Story of Agriculture in New Jersey*, and Charles Harrison (2007) *Tending the Garden State: Preserving Agriculture in New Jersey*.

<sup>44</sup> First conducted in 1850, the Census of Agriculture is the best available source of longitudinal data on United States agriculture. Prior to 1997, the Bureau of Census in the U.S. Department of Commerce was responsible for conducting the Census of Agriculture. The USDA's National Agricultural Statistics Service now has responsibility for the agricultural census, conducting it every five years. The census has defined a "farm" differently over the years, making analysis over time difficult and imprecise as data across various census periods may not be directly comparable. Since 1978, a farm, for census purposes, has been defined as "any place that had, or normally would have had, \$1,000 or more in total agricultural product sales during the census year." A farm does not necessarily need to be a contiguous tract of land, provided multiple parcels are reported by the farmer as one management unit.



New Jersey lost 60 percent of its farms and more than half, 53 percent, of farmland acreage. Much of this decline occurred in the 1950s and 1960s.

Nationally, the relative loss of farms between 1950 and 2002 was slightly higher than in New Jersey. The 3.5 million farms lost in the U.S. over the past fifty years amount to a decline of 62 percent. However, the 261.7 million acre reduction in the national farmland base over this same period represented a decline of only 22 percent, substantially lower than that experienced in New Jersey. This reflects the fact that the average U.S. farm has grown in size over the past five decades while New Jersey's average farm size has steadily declined.

**Table 6-3: Historic Data on New Jersey Farms and Farmland.**

Year	Number of Farms	Land in Farms (acres)	Year	Number of Farms	Land in Farms (acres)
1850	23,905	2,752,946	1940	25,835	1,874,402
1860	27,460	2,983,525	1950	24,838	1,725,441
1870	30,652	2,989,511	1959	15,459	1,379,002
1880	34,307	2,929,773	1969	8,493	1,035,678
1890	30,828	2,662,009	1978	7,984	987,309
1900	34,650	2,840,966	1987	9,032	894,426
1910	33,487	2,573,857	1997	9,101	832,600
1920	29,702	2,282,585	1997(R)*	10,045	856,909
1930	25,378	1,758,027	2002	9,924	805,682

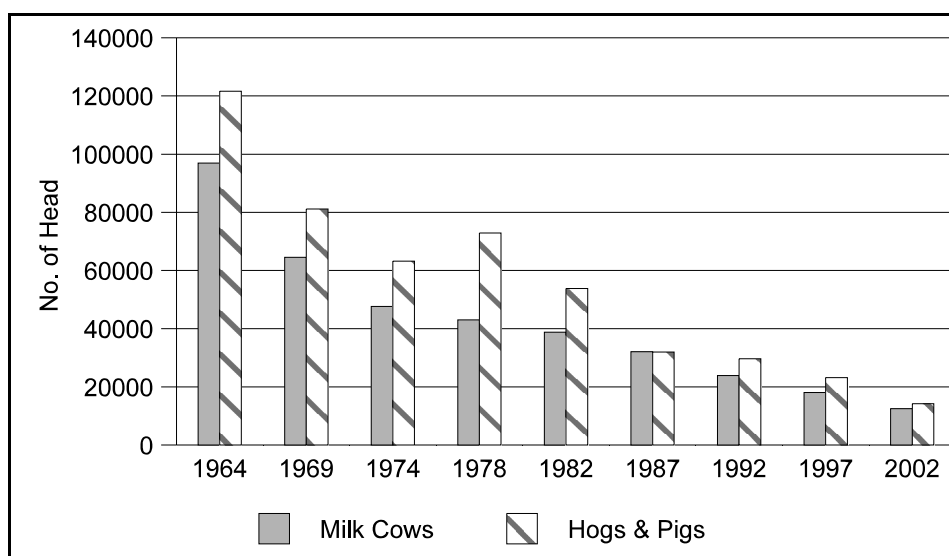
Source: Compiled by the author from the Census of Agriculture, various years.

\* The 2002 Census employed a revised methodology. Data from 2002 are not directly comparable to data from previous census periods. Data for 1997 were revised to reflect the use of the 2002 methodology.

In addition to the general decline in farm numbers and farmland acreage, some

industry sectors, for example dairying, experienced significant displacement in New Jersey, some to the point of near obsolescence. Other sectors such as nursery have emerged in response to changing market dynamics and thrived in an increasingly suburban environment. The fact that New Jersey's leading agricultural sectors have changed numerous times over the past several decades reflects both the dynamism and adaptability present within the state's farm sector, as well as broader structural shifts in the geographic pattern of food production and consumption.

A prime example of the compositional changes in New Jersey agriculture centers around livestock husbandry. Census of Agriculture data show that in 1964, agricultural product sales in New Jersey were split evenly between livestock and crop products. In 2002, crops accounted for nearly 90 percent of the market value of agricultural products sold in New Jersey. Figure 6-1 reveals that precipitous declines in livestock numbers have occurred steadily over the past forty years. For example, from 1964 to 2002, the number of milk cows in the state dropped from nearly 97,000 to 12,497. The number of hogs and pigs similarly dropped from 121,644 to 14,162. In similar fashion, the once dominant poultry industry also experienced sharp reductions in bird inventories. According to the Census of Agriculture, the number of layers in 1964 exceeded 7.1 million while meat chickens numbered 1.3 million. By 2002, New Jersey farms reported only 1.8 million layers (most of which are concentrated in three large operations) and fewer than 41,000 meat birds. These declines were induced in part to the incompatibility of certain livestock practices (swine production is a good example) with residential subdivisions, and in part to economic pressures created as the industrial structure of these sectors changed.

**Figure 6-1: Trend in New Jersey Numbers of Hogs and Milk Cows (1964-2002).**

Source: Census of Agriculture, various years.

Accompanying the decline of the historically significant dairy and poultry sectors was expansion in the production of higher value horticultural crops. Today, the largest segment of the New Jersey farm industry comprises businesses specializing in the production of nursery, greenhouse, and floriculture products. This sector accounted for 48 percent of total farm product sales in 2002 (Table 6-4). Just 20 years earlier, this sector represented only 21 percent of total sales, slightly behind the sales volume of vegetable producers. As noted by Adelaja, Brumfield, and Schilling (1996), the rapid emergence and growth of this industry was fueled by the high revenues per acre yielded by ornamental products and the high demand for such products exerted by urban and suburban residents.

Vegetable production was the leading commodity area in 1982 with a 22 percent market share. In 2002, vegetable production still accounted for 22 percent of all farm

product sales in New Jersey, however, the sector had been displaced as the largest sector by nursery production. While share of total production has remained virtually unchanged, vegetable revenues in New Jersey have been declining in recent years.

**Table 6-4: Leading Commodity Sectors in New Jersey (1982 and 2002).**

<b>Sector</b>	<b>Pct. of Total Farm Product Sales - 2002</b>	<b>Pct. of Total Farm Product Sales - 1982</b>
Nursery, greenhouse & floriculture	48%	21%
Vegetables, melons, and potatoes	22%	22%
Fruits & berries	12%	15%
Grains	4%	11%
Dairy	4%	15%
All other sectors	11%	16%

Source: Author's calculation based on data from the Census of Agriculture, 2002 and 1982.

Fruit production was the third largest sector in both 1982 and 2002, however, revenue share fell from 15 percent in 1982 to 12 percent in 2002. It is difficult to determine if this drop in share of state farm revenue is reflective of a true compositional shift in New Jersey agriculture or a result of several years of severely depressed prices in the cranberry market. According to the New Jersey Agricultural Statistics Service, New Jersey is generally the third or fourth largest cranberry producing state in the U.S., producing 480,000 barrels in 2003 or about 8 percent of U.S. production. In 1997, the value of utilized cranberry production surpassed \$32.9 million in New Jersey. The following year revenues dropped precipitously by 58 percent to \$13.7 million due to sharp declines in prices created by over supply. In 1999 industry revenues fell further and bottomed out at \$7.1 million. Since then, revenues have risen modestly and in 2004, preliminary estimates places revenue at \$13.7

million. In 2003, the largest fruit crops in New Jersey based on sales were blueberries, peaches, cranberries, apples, and strawberries.

Table 6-4 documents the relative decline of the grain and dairy industries over the past twenty years. In 1982, grains and dairying accounted for 11 and 15 percent, respectively, of total farm revenues in New Jersey. In 2002, each accounted for only 4 percent. The decline of the dairy industry is well documented. Adelaja *et al.* (1997) found that a primary factor in the industry's decline in New Jersey is the high and continually rising cost of farmland.

Like dairy, grain production also tends to be a relatively land extensive, low value per acre production activity whereby profitability strategies generally involve economies of scale; capital and other fixed investments are spread over a larger production area while variable costs are kept relatively low. In New Jersey, high and rising farmland values, coupled with generally flat or declining grain prices have pinched the profitability of many grain operations. The magnitude and duration of recent price effects driven by the emergence of alternative markets for grains (e.g., demand for corn for biofuels processing) remains unclear.

### **Current Industry Structure**

Not unlike the national industry, New Jersey agriculture is marked by significant market concentration; a proportionately few operations account for a substantial share of the economic output. According to the 2002 Census of Agriculture, 7 very large farms generate 10 percent of total farm product sales in New Jersey. The 142 largest farms produce more than half of farm sales and the 454 largest operations account for 75 percent of sales volume.

The distribution of farms by sales class provides a similar sense of the concentration of economic activity within the industry (Table 6-5). While accounting for 71 percent of all farms, agricultural operations producing sales totaling less than \$10,000 in 2002 represented less than 2 percent of total farm-gate sales. Small revenue farms nevertheless are an important part of the agricultural landscape of New Jersey, controlling nearly one-third of all farmland acreage. In marked contrast, the 6 percent of farms with sales in excess of \$250,000 accounted for 80 percent of total industry sales volume and operated about 30 percent of the state's farmland base.

**Table 6-5: Distribution of New Jersey Farms by Sales Volume (2002).**

<b>Sales Class</b>	<b>No. of Farms</b>	<b>% of Farms</b>	<b>Market Value of Products Sold (\$1000)</b>	<b>% of Value of Products Sold</b>	<b>Land in Farms (acres)</b>	<b>% of Land in Farms</b>
Less than \$10,000	7,044	71.0%	\$13,743	1.8%	244,287	30.3%
\$10,000 to \$49,999	1,440	14.5	\$32,695	4.3	131,646	16.3
\$50,000 to \$99,999	381	3.8	\$27,068	3.6	60,236	7.5
\$100,000 to \$249,999	463	4.7	\$74,253	9.8	125,004	15.5
\$250,000 to \$499,999	256	2.6	\$89,890	11.9	95,098	11.8
\$500,000 to \$999,999	176	1.8	\$118,039	15.6	68,978	8.6
\$1,000,000 or more	164	1.7	\$398,624	52.8	80,433	10.0
<b>All Farms</b>	<b>9,924</b>	<b>100.0</b>	<b>\$754,312</b>	<b>100.0</b>	<b>805,682</b>	<b>100.0</b>

Source: Census of Agriculture, 2002.

Industry concentration is also evident in terms of agriculture's physical landscape. Statewide, the average New Jersey farm is 81 acres in size; however, median farm size is only 22 acres. The large disparity between average and median farm size is explained by the

frequency distribution of farm size provided in Table 6-6. One quarter of farms in the state are below 10 acres in size; 70 percent are fewer than 50 acres in size. While these relatively smaller farm holdings account for only 14 percent of land in farms, they produce nearly 23 percent of all farm sales. At the other end of the size spectrum, the 116 farms comprising at least 1,000 acres account for only 1 percent of all farms but control more than one-fifth of the farmland base and account for one-sixth of farm product sales.

**Table 6-6: Distribution of New Jersey Farms by Farm Size (2002).**

<b>Size Class</b>	<b>No. of Farms</b>	<b>% of Farms</b>	<b>Market Value of Products Sold (\$1000)</b>	<b>% of Market Value of Products Sold</b>	<b>Land in Farms (acres)</b>	<b>% of Land in Farms</b>
1 to 9 acres	2,511	25.3%	\$49,525	6.6%	15,494	1.9%
10 to 49 acres	4,481	45.2	\$119,853	15.9	95,198	11.8
50 to 99 acres	1,235	12.4	\$81,761	10.8	84,709	10.5
100 to 499 acres	1,353	13.6	\$267,241	35.4	279,361	34.7
500 to 999 acres	228	2.3	\$110,977	14.7	157,504	19.5
1,000 + acres	116	1.2	\$124,955	16.5	173,416	21.5
<b>All Farms</b>	<b>9,924</b>	<b>100.0</b>	<b>\$754,312</b>	<b>100.0</b>	<b>805,682</b>	<b>100.0</b>

Source: Census of Agriculture, 2002.

New Jersey's very large farms (1,000 + acres) tend to specialize in grains, fruits, vegetables, and dairy. Grain and oilseed production is one example of agricultural production that continues to rely on economies of scale to achieve greater economic returns. The relatively low per acre returns necessitate the diffusion of capital expenditures over a larger production area. While often thought of as relatively more land intensive operations,

in 2002, 23 fruit farms were 1,000 or more acres in size. These include the large berry farms, particularly cranberry operations that comprise a substantial amount of upland forested acreage needed for water supply for bogs.

### **The Economics of Farming in New Jersey**

An available and commonly used measure of farm profitability is total net cash income. The Census of Agriculture shows that total net cash farm income in New Jersey totaled \$149.5 million in 2002, an average of \$15,074 per farm. While this level of analysis is often the depth with which examination of farm viability in New Jersey is conducted, it does not in fact provide a particularly useful or representative characterization of financial status of the state's farming operations. This aggregate figure reflects both income earned by farms reporting net gains and income lost by farms operating with a profit loss. Aggregate farm sector data fail to tell the full picture and mask considerable variability within the agricultural industry. It is only with decomposition that the data yield some interesting insights into the nature and structure of the state's agricultural industry.

The \$149.5 million in net cash income reported in 2002 is a net value that reflects both the net gains and net losses of farm operations. The 3,803 farms reporting net gains collectively earned \$234.6 million in net cash income, while the remaining 6,117 farms reporting net losses collectively lost \$85.1 million (Table 6-7). For farms with net gains, the average net cash income reported was \$61,687. What is immediately evident is that 20 percent of farms with net gains of \$50,000 or more (761 operations) account for 89 percent of the positive net cash returns reported by New Jersey farmers. A large number of farms (1,797 operations, or 47 percent of those reporting net gains) earn less than \$5,000, again



suggesting the varied motivations held by those operating farms in the state.

For farms with net losses, the average loss was \$13,906. About 15 percent of the 6,117 farms reporting net losses in 2002 lost less than \$1,000. Two-thirds lost less than \$10,000. While not empirically tested, the hypothesis maintained by many is that farms generating small economic returns, or even losses, often remain in farming due to lifestyle preferences and the financial ability to do so that is afforded by farmland assessment.

What is surprising at first glance, however, is the fact that 341 farms lost more than \$50,000 in 2002. Closer analysis shows that these operations largely comprise “other livestock” farms, nursery/greenhouse operations, and fruit farms (collectively, these sectors account for about 60 percent of operations losing \$50,000 or more). In the case of “other livestock” farms, it is reasonable to assume that many of the farms reporting large net losses are equine facilities for whom cash flow is not smooth. Equine animals take multiple years to raise to a level of maturity needed for economic gain. In the intervening years, expenses are incurred with little or no revenue offset. These operations may also be owned by affluent persons maintaining pleasure horses. Similarly, fruit and nursery operations may experience periods of net loss as expenditures are made on perennial crops that are non-productive for several years.

These statistics may elicit a knee-jerk response that farming in New Jersey is untenable on financial grounds. This reaction needs to be tempered by the argument presented in Chapter 2 that operators’ motivations for farming vary, as do their expectations of economic returns. Nevertheless, a disconcerting trend evident over the past four census periods is the decline in the number and proportion of farms reporting net gains from farming (Table 6-8). In 1987, 4,266 farms, 48 percent of those operating in the state,

reported net gains from farming. Both the number and percentage of farms with gains dropped over subsequent years to only 3,803 farms (38 percent of all farms) in 2002.

**Table 6-7: Breakdown of Farms by Net Cash Returns from Farming (2002).**

<b>Net Gains from Farming</b>	<b>No. of Farms</b>	<b>Pct. of All Farms</b>	<b>Net Cash Income (\$1000)</b>
<\$1,000	826	8.3%	\$356
\$1,000 to \$4,999	971	9.8	\$2,388
\$5,000 to \$9,999	399	4.0	\$2,899
\$10,000 to \$49,999	846	8.5	\$20,266
\$50,000 +	761	7.7	\$208,688
<b>Total</b>	<b>3,803</b>	<b>38.3</b>	<b>\$234,597</b>
<b>Net Losses from Farming</b>	<b>No. of Farms</b>	<b>Pct. of All Farms</b>	<b>Net Cash Income (\$1000)</b>
<\$1,000	915	9.2%	(\$429)
\$1,000 to \$4,999	1,818	19.3	(\$4,979)
\$5,000 to \$9,999	1,357	13.7	(\$9,780)
\$10,000 to \$49,999	1,686	17.0	(\$34,242)
\$50,000 +	341	3.4	(\$35,632)
<b>Total</b>	<b>6,117</b>	<b>61.7</b>	<b>(\$85,063)</b>

Source: Census of Agriculture, 2002.

**Table 6-8: Trend in Farms Reporting Net Gains from Farming, 1987-2002.**

<b>Year</b>	<b>No. of Farms Reporting Net Gains from Farming</b>	<b>Pct. of Farms Reporting Net Gains from Farming</b>
1987	4,266	47.2%
1992	4,234	46.6%
1997	4,099	45.1%
2002	3,803	38.3%

Source: Census of Agriculture, 2002.

### **New Jersey Farming in the National Context**

New Jersey agriculture is often not viewed as an agricultural state of any notable importance within the national context. It does not compare with the highly agricultural states of California, Florida, Texas or the farming states of the Midwest. In 2002, New Jersey ranked 38<sup>th</sup> in number of farms, 45<sup>th</sup> in total land in farms, 42<sup>nd</sup> in cropland acreage, and 49<sup>th</sup> in both average and median farm size (Table 6-9). Only 17 percent of the state's land base remains committed to farming (43<sup>rd</sup> in the U.S.). Reflecting the relatively higher value of the products produced in New Jersey, the state ranks 39<sup>th</sup> in both market value of farm products sold and in net cash income from farming.

With only 7,417 square miles of land area, New Jersey is small by comparison to most other states. Only Connecticut, Delaware and Rhode Island are smaller. It is therefore difficult to develop a full and accurate profile of the state's agricultural industry on the basis of the more commonly used metrics of farm industry size (number of farms, farmland acreage, market value of products sold, etc.). What is easily lost in such analysis is the state's high level of agricultural productivity. Comparing New Jersey agricultural data to other states on a normalized basis, for example sales or net returns per acre, reveals a

markedly different picture. As shown in Table 6-9, New Jersey is among the most productive states as measured by sales per acre (4<sup>th</sup> highest) or net cash income from farming per acre (5<sup>th</sup>). New Jersey farmers generate, on average, more than four times the sales per acre than the typical U.S. farmer.

It is also interesting to note that New Jersey ranks 12<sup>th</sup> in the total value of farm products sold directly to consumers for human consumption (this figure does not take into account the significant volume of nursery and ornamental stock sold through direct market channels). This is often attributed to the competitive advantage New Jersey farmers hold vis-a-vis farmers in more rural regions's in terms of their proximity to a large, affluent, and diverse metropolitan population. While market access is indeed a locational advantage (see discussion of "market effects" of suburbanization in Chapter 8), New Jersey farm production is largely seasonal and does not conform to the demands of large food retailers seeking 52-week supply contracts. As U.S. food retailing has become more consolidated, this problem has been exacerbated from the standpoint of New Jersey farmers. Large chain store purchasing decisions are increasingly removed from the local levels and centralized. Such decisions are further removed from the influence of "buy local" campaigns such as Jersey Fresh and more heavily based on price and supply certainty.<sup>45</sup> Moving product into wholesale channels often fails to return price points acceptable to farmers. Therefore, direct marketing through retail stands, community farmers markets, community supported

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<sup>45</sup> A good example is found with peaches. The author served on a statewide peach marketing task force created by the New Jersey Department of Agriculture from 2004 to 2005. Peach growers, as well as produce buyers from the large food retail chains, consistently raised these issues as barriers to increased in-state sale of New Jersey produce through the major supermarket chains.

agriculture (a model allowing consumers to purchase shares of farm output), and pick-your-owns has emerged as a viable business strategy for many New Jersey farms.

**Table 6-9: New Jersey's Rank in Key Agricultural Measurements (2002).**

<b>Farm Sector Statistic</b>	<b>New Jersey</b>	<b>United States</b>	<b>NJ Rank</b>
State population (2000 Census)	8,414,350	281,421,906	9 <sup>th</sup>
State land area (sq. miles)	8,722	3,794,083	47 <sup>th</sup>
Number of Farms	9,924	2,128,982	38 <sup>th</sup>
Land in Farms (acres)	805,682	938,279,056	45 <sup>th</sup>
Percent of land in farming	17%	41%	43 <sup>rd</sup>
Average Farm Size (acres)	81	441	49 <sup>th</sup>
Median Farm Size (acres)	22	120	49 <sup>th</sup>
Cropland (acres)	547,668	434,164,946	42 <sup>nd</sup>
Market value of agricultural products sold (\$1000)	\$749,872	\$200,646,355	39 <sup>th</sup>
Market value of agricultural products sold per acre (\$)	\$931	\$214	4 <sup>th</sup>
Market value of products sold direct to consumer (\$1000)*	\$19,126	\$812,204	12 <sup>th</sup>
Net cash income from farming (\$1000)	\$149,535	\$40,514,055	39 <sup>th</sup>
Net cash income from farming per acre (\$)	\$186	\$43	5 <sup>th</sup>

Source: Derived from data in the 2002 Census of Agriculture.

\* Market value of agricultural products sold direct for human consumption.

Differences between New Jersey agriculture and farming in other states extend beyond marketing practices, size, and scale. The composition of the farming sector in New Jersey is distinctly different from the overall national farm sector. As noted previously, New Jersey farmers have made the transition to higher valued horticultural and ornamental products in recent decades as a strategy for remaining economically viable. This is reflected in Table 6-10, which shows that more than 80 percent of New Jersey's agricultural output,

as measured by market value of products sold, is derived from the nursery, vegetable, and fruit sectors. In contrast, only one-fifth of U.S. agricultural market volume is derived from these sectors. At the national level, the largest industry sectors are cattle and calves, grains and oilseeds, and poultry.

**Table 6-10: Ranking of Commodities Based on Market Value of Products Sold in 2002: New Jersey and the United States.**

<b>Commodity</b>	<b>Pct. of Sales New Jersey</b>	<b>Pct. of Sales United States</b>
<b>All Farms</b>	<b>100.0%</b>	<b>100.0%</b>
Nursery, Greenhouse, Floriculture, and Sod	47.6%	7.3%
Vegetable, Melons, Potatoes, and Sweet Potatoes	22.4%	6.4%
Fruit, Tree Nuts, and Berries	11.6%	6.9%
Grains, Oilseeds, Dry Beans, and Dry Peas	4.0%	19.9%
Milk and Other Dairy Products from Cows	3.9%	10.1%
Poultry and Eggs	3.5%	11.9%
Horses, Ponies, Mules, Burrows, and Donkeys	2.4%	0.7%
Other Crops and Hay	1.6%	4.0%
Cattle and Calves	0.9%	22.5%
Other Animals and Animal Products	0.8%	0.4%
Cut Christmas Trees and Short-Rotation Woody Crops	0.5%	0.2%
Hogs and Pigs	0.3%	6.2%
Aquaculture	0.3%	0.6%
Sheep, Goats and Related Products	0.2%	0.3%
Tobacco	0.0%	0.8%
Cotton and Cottonseed	0.0%	2.0%

Source: Census of Agriculture, 2002.

## Summary

This chapter outlined the nature of New Jersey agriculture, making apparent the diversity that exists within the sector. It is this diversity, both within the state and within the context of the national industry, that suggests the inadequacy of a “one size fits all” approach to farm policy. Macro-level farm policy at the federal level cannot address the

unique local circumstances within which farms operate. This is perhaps most clearly evidenced by the compositional differences outlined in this chapter; the New Jersey farming industry, for example, is much less focused upon basic commodity production (e.g., cattle, poultry, grains, and oilseed crops) than the Nation as a whole. In contrast, higher value specialty crop production is a dominant aspect of the New Jersey farming industry.

Compositional disparities between the New Jersey and United States agricultural sectors reflect underlying differences in the socio-political, geographic, and market characteristics across the nation. This subject will be discussed further in Chapter 8 in the context of suburbanization's influence on agriculture. Importantly, they also have operational impacts and policy implications. For example, as noted earlier in the chapter, New Jersey farms tend to be much smaller than the national average and the expansive farms of the agricultural Midwest. Dominated by specialty crop producers, New Jersey's agricultural industry is more typified by smaller, more intensive farming operations. Differences extend beyond the physical size of operations, however, as many small and medium sized fruit, vegetable and nursery operators rely more on direct marketing of products than commodity markets. Specialty crop production practices also tend to be more diverse, often requiring higher input intensity (e.g., chemicals, energy, and labor) and on-farm infrastructure.

For reasons ranging from cost efficiency to environmental stewardship to market attraction/differentiation, a growing number of farmers in New Jersey have incorporated or are exploring models of reduced input usage. Examples include transitioning to certified organic production, adopting integrated pest management practices, engaging in various forms of on-farm direct marketing that allow consumers to select and harvest their own

products, and investing in on-farm energy production and resource conservation technologies (e.g., greenhouse tailwater treatment and recovery systems or drip irrigation systems). Similarly, high production costs (particularly relating to farmland and labor) have propelled many farmers toward vertical integration (e.g., packaging or processing) as a means to add value to basic agricultural products. Two examples of value added activity in New Jersey agriculture are the development of a peach cider from off-grade peaches, and a microwave-ready asparagus package.

These and other structural and operational adaptations in the New Jersey farming industry have frequently necessitated policy responses at a far more localized level than existing federal farm policy. Examples of this point may be found in the evolution of farmland preservation, farmland assessment, and right to farm policies in New Jersey. The rapid urbanization of New Jersey's agricultural regions spurred the development and aggressive funding of a the state's farmland preservation program. Successful by national standards, the program has preserved nearly one-quarter of the state's remaining farmland base. An ongoing challenge is found, however, in the need to balance the objectives of the program to preserve land for a variety of future agricultural uses with farmers' current need for farm flexibility and adaptability (all the while remaining mindful of the general public's sentiments toward uses of preserved farmland and their continued willingness to invest in farmland preservation).

This challenge is presently seen in debate over the extent to which impermeable surfaces should be allowed on preserved farms. Grounded often in the public eye as an issue of aesthetic appeal or among conservationists as an issue of soil degradation, surface water clean up, or groundwater recharge, the placement of impervious coverage on preserved



farmland is often viewed as antithetical to the purpose of the program. Farmers caught in the debate point to the need for the flexibility to develop and use one's farmland in a manner most conducive to the viability of the farm business.<sup>46</sup> A review of reports and recorded minutes of the State Agriculture Development Committee in recent years shows that this issue is frequently most relevant for farms engaged in greenhouse production, equine activity, and on-farm direct marketing, all uses requiring a generally higher level of built structure. A similar and newly emerging tension is evolving in terms of the extent to which infrastructure supporting solar and wind energy production should be allowed on preserved farms.

The State Agriculture Development Committee is currently working to clarify impervious cover issues on preserved farms and may potentially address such issues through policy or regulation. Impervious cover limitations established under the federal Farm and Ranch Land Protection Program (e.g., a farm preserved with federal FRPP monies is limited to 2 percent impervious cover, with provisions allowing a waiver of up to 6 percent under certain circumstances) are generally seen by farming interests in New Jersey as too restrictive given the nature of the state's farming operations. As such, the SADC generally limits the use of FRPP funds as cost shares on projects initiated by conservation group partners that seek to limit the amount of soil disturbance or impervious cover on farms through terms in their own deeds of easement.

Another example of the need for adaptability farm policy to changing industry

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<sup>46</sup> It is the author's opinion that such discourse is, at its core, reflective of divergent images of farmland as an undeveloped land use as opposed to a working landscape developed to the extent and nature demanded by agricultural production.

dynamics is found with New Jersey's farmland assessment program. As noted in the previous chapter, the Farmland Assessment Act's definition of "agricultural use" was expanded in 1995 to include the boarding, training and rehabilitation of livestock as a response to the growth of equine activity in the state. Which uses of land should be subject to differential assessment is a long standing question in New Jersey, one dating back to Governor Hughes' Farmland Assessment Committee. The question remains open today. Currently, there is consideration of a further expansion of "agricultural use" to encompass the production of solar and wind energy and, by extension, allow lands devoted to such activities to be qualified for farmland assessment.

A final example offered in support of the proposition that localized agricultural policy is important to the retention of a viable agricultural industry involves the structure of the right to farm program. The law's administrative provisions allow for the development of agricultural management practices by the SADC, as well as site specific agricultural management practice determinations by the county agricultural development boards, in order to clarify the scope and nature of protected agricultural activities and practices. Growth in the number of equine facilities across New Jersey prompted the SADC to promulgate guidelines for acceptable (hence legally protected) equine activities. The expansion of agritourism similarly provided impetus to the SADC to clarify the nature and appropriateness of such activities, as well as the extent of and conditions required for their protection under the Right to Farm Act. The Committee is currently working on developing a formal agricultural management practice for agritourism.

It has been argued in this chapter that the diversity and dynamism of New Jersey agriculture represents one reason that farm policy must transcend the political boundaries

of the federal, state and local governments. Further arguments for the devolution of power and responsibility for agricultural retention and development will be presented in the following two chapters on the basis of managing the positive externalities associated with agriculture, as well as the spillover costs suburban development imposes upon the farm industry.

## Chapter 7

### **The Preservation of Farm Amenities as a Rationale for State and Local Farm Policy**

Commodity agriculture is the classic example of the theory of “perfect competition” used in many economics textbooks. In a perfectly competitive market, long-term production outcomes are Pareto efficient, implying that societal welfare can not be improved by a reallocation of resources. In other words, production decisions are consistent with societal preferences regarding optimal product quantity (allocative efficiency) and maximize the level of output from a given set of inputs (productive efficiency). Classic economics literature also acknowledges, however, that perfect competition in its purest sense is a theoretical ideal. In reality, markets are not perfectly competitive and Pareto optimality is not realized.

Previous chapters highlighted both the land use and economic dimensions of agriculture in the national and New Jersey contexts. The economic data examined, however, only reflect the value of agricultural products sold through private market transactions between many farm businesses and buyers. The data fail to convey the value of non-market amenities that derive from the Nation’s extensive farmland resource. Economic theory predicts a socially sub-optimal allocation of resources to an activity (e.g., land for agricultural production) when the activity generates a public good or goods with spillover benefits (also known as positive externalities). The correction of such market failures, or market inefficiencies, within the agricultural sector is presented in this chapter as another rationale for public involvement in agricultural retention. Of specific focus is the provision of localized spillover benefits as a justification for decentralizing government policy making

responsibility for agricultural retention and development. This argument is most germane in more urbanized regions that have experienced significant loss of agricultural resources and rural amenities.

### **An Economic Rationale for Protecting Non-Market Amenities of Agriculture**

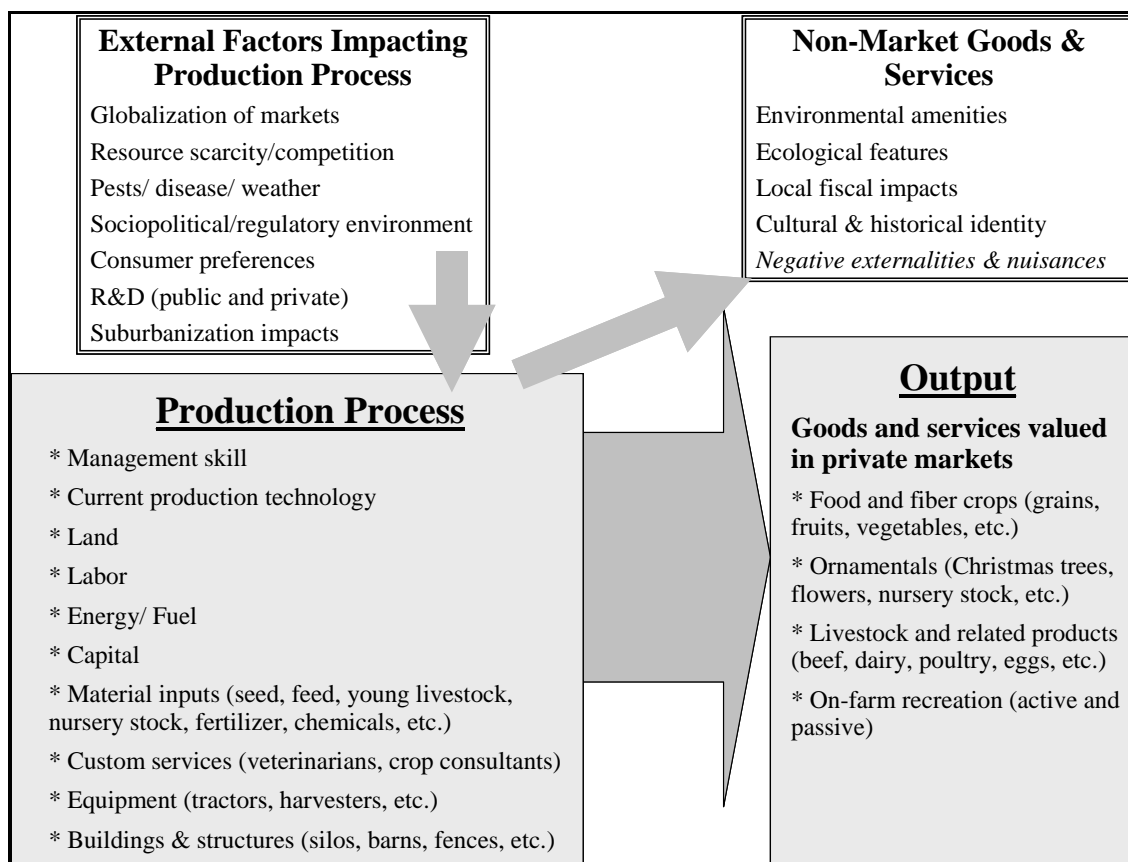
To frame the forthcoming discussion, a schematic depicting the process and outcomes of agricultural production is provided in Figure 7-1. At the operator level, commercial farming involves the use of privately managed inputs, technology, and managerial talent for the production of agricultural outputs sold in private markets. Outputs from the production process include a variety of agricultural goods and services that are valued and sold in private markets.

Figure 7-1 also shows that the agricultural production process itself is influenced by exogenous factors including global macroeconomic factors and shifting consumer preferences. Examples of both factors can be found by referring again to New Jersey's large blueberry and cranberry industries. On one hand, the documented health benefits of compounds naturally occurring in these berries supported significant new product development in the past decade in response to surging domestic and international consumer demand. On the other hand, however, significant new acreage of both crops is being established in other countries, adding supply in the global marketplace.

As highlighted in Chapter 4, the federal government also has significant influence on U.S. farming by sponsoring agricultural research, expanding international markets, ensuring food safety, and protecting plant and animal health. Examples of the latter role can be found in the federal government's program to protect the U.S. beef industry from bovine

spongiform encephalopathy (“mad cow disease”) and its aggressive efforts to re-establish international confidence in the American beef supply following the first documented case of the disease in U.S. cattle in 2003. Similar efforts are made to protect against the introduction of exotic plant diseases that could impact agricultural crops.

**Figure 7-1: Externalities in Agricultural Production.**



The empirical analysis presented later in this dissertation demonstrates the range of responsibility for creating the local regulatory environment for farming across lower levels of government. The case will be made that local governments in a home rule state have substantial ability to, for example, determine the extent to which agriculture is recognized

and encouraged as a locally desired land use, mitigate conflicts between incompatible land uses, or promote agricultural economic development. Similarly, local governments can minimize pressures for agricultural land conversion through the manner in which new growth and development is managed at the rural-urban interface.

The schematic in Figure 7-1 also depicts a range of non-market goods and services that flow from agricultural production. These include scenic views, wildlife habitat, breaks in development, water and air recharge area, and a defining sense of space and cultural character. As will be demonstrated in the balance of this chapter, the public good nature of farms' open space and other non-market amenities, while difficult to quantify, is often highly valued by residents and provides a strong underpinning for the public's support for agricultural retention policies.<sup>47</sup> While the retention of open space amenities flowing from a single farm will fail to provoke national concern, their retention often attracts substantial localized interest.

### **Agricultural Spillover Benefits and Allocative Inefficiency**

A well-functioning land market will allocate land to various uses according to its highest and best use.<sup>48</sup> Viewed as only a productive asset in a properly functioning

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<sup>47</sup> It is clearly recognized that commercial farming may also produce negative externalities (e.g., chemical runoff, animal odors, noise). Failure to account for such spillover costs in private production decisions provides another economic rationalization for public intervention aimed at mitigating such externalities through either regulatory or market (e.g., tax) mechanisms. Reciprocally, agriculture may also be *impacted* by the spillover costs of other activities. As discussed in detail in Chapter 8, the impacts of suburbanization is a prime example.

<sup>48</sup> The following discussion assumes that a rational landowner is seeking maximum economic returns (or utility) from his or her land.

competitive market, farmland's value will reflect the capitalized economic rents derived from the production of agricultural goods and services (see, for example, Ricardo 1996; Libby and Irwin 2003). In other words, land price will equal the discounted sum of net returns from farming generated in perpetuity. If this value exceeds the comparable value determined for a developed use, an efficient market will allocate the land to farming. Of course, these relationships are not static. The value of agricultural rents may vary over time due to changes in the intrinsic features of the land (e.g., soil quality) or changes in commodity produced, production technologies, or the incorporation of new services and goods into the agribusiness. Similarly, the relative value of non-agricultural uses may change in response to surrounding demographics or infrastructure investments (e.g., sewer or transportation) in adjacent areas.

A study at Harvard's John F. Kennedy School of Government by Plantinga *et al.* (2002) finds that future development rents contribute only 9 percent of average U.S. farmland value; in New Jersey the proportion was found to be 82 percent, the highest of any state. This begs the question, why should any land be allocated to farming in New Jersey when the option for development is oftentimes more economically advantageous? The answer lies in the exclusion of non-market farmland amenities from consideration in the economic calculus described above.

Libby and Irwin (2003) distinguish between two types of farmland amenities: private goods (the value of which can be captured by the land owner in a market transaction) and public goods which are non-exclusive and non-rival in consumption. Examples of the former include the provision of hunting privileges, access to farmland for recreational pursuits, and opportunities for picking one's own fresh produce on the farm. Public good



amenities, on the other hand, may include scenic viewsheds, environmental and ecosystem services, and the retention of community identity and heritage. The authors note that “public good services of privately owned land are secured through policy” since the private market will not provide a landowner with the economic incentives to provide such services.

Regarded agricultural economist Sandra Batie similarly notes that farmland is a multi-functional resource, providing a number of public goods and positive externalities, the value of which are not priced in private markets and therefore not capitalized into farmland values (Batie 2003).<sup>49</sup> What results is a classic market failure where “products” exist from which members of society can derive benefit without paying for their provision. Thus, from the perspective of a social planner charged with maximizing social welfare, there will be an under-allocation of land to farming by private market mechanisms.

A common remedy for the under-provision of farm-based goods or services by the private market is some form of policy intervention (see, for example, Libby and Irwin). Batie (2003) notes that in Europe, public support for agricultural policies is generally more ardent when it is tied to the retention of social benefits provided by agriculture rather than simply bolstering production. The most basic type of intervention is a subsidy of either consumption (to increase demand) or production (to increase supply). The question then becomes, are people willing to pay to ensure a socially desired level of a good (farmland)?

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<sup>49</sup> “Multifunctional agriculture” is a European concept used to distinguish between market-based (basic food and fiber production) and non-market benefits of farming (see, for example, Batie 2003; Josling 2002).

### **Public Support for Agricultural Retention in New Jersey**

A number of authors have attempted to measure the public's commitment to the preservation of agriculture and related amenities. Methodologies have included hedonic pricing, contingent choice, and contingent valuation approaches. Studies that attempt to quantify an individual's willingness to pay for the use or preservation of a resource or amenity for which a functioning market typically does not exist suffer from several limitations. Among the most notable weaknesses of the approach is the fact that actual purchase behaviors are generally unobserved. An expressed willingness to support the retention of a scenic vista, for example, is not necessarily rooted in a respondent's ability to pay, nor does it necessarily translate into an actual commitment of personal resources toward the cost of preserving an amenity if the opportunity to do so is presented. Further, findings from public willingness-to-pay studies tend to be applicable only within a very narrow context.

In October 2004, 906 New Jersey adults responded to a Fairleigh Dickinson University PublicMind poll conducted to assess New Jerseyans' knowledge, views, and perceptions relating to farming in the state.<sup>50</sup> The results confirmed what was largely surmised by most agricultural policy experts: New Jerseyans seem to "like" agriculture and are supportive of efforts to retain farming in the state. They tend to acknowledge the importance of farming to themselves and the state, but have diminishing knowledge of farming and the issues faced by farmers.

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<sup>50</sup> The telephone survey was conducted from October 15-24, 2004 with a randomly selected statewide sample of New Jersey residents aged 18 years or older. The sampling error was +/- 3.3 percent at the 95 percent level of confidence.

The large majority of people participating in the survey reported that they had visited a New Jersey farm, most often for the purpose of purchasing farm products. Almost 6 in 10 residents associated the state nickname (“The Garden State”) with the farming industry. An almost universal finding was the view that agriculture is important to New Jersey residents on a personal level. More than 9 out of 10 (94 percent) of respondents indicated that farming and farmland preservation was “very important” or “somewhat important” to them. Similarly, 85 percent felt that “farming should play a valuable role” in the future of the state, while an even larger majority of respondents believe that it is becoming more difficult for farmers to remain in business in New Jersey.

While public polling provides a useful pulse of popular opinions on an issue, findings need to be considered with the proverbial grain of salt. Outside of methodological limitations (question wording, non-sampling error, etc.), such polls do not necessarily provide an accurate indication of how (or even whether) an individual’s stated support of an issue will translate into actual support.

Public support of purchase of development rights programs is, in contrast, a tangible expression of public support for the retention of agricultural lands and associated amenities. Rather than a *stated* preference (yielded by both contingent valuation and willingness-to-pay approaches), support for the use of public funds for farmland and open space preservation is a *revealed* preference (see, for example, Kline and Wichelns 1994). People are “voting with their pocketbooks” and making decisions that could bind them to paying for farmland preservation through bonds or local dedicated taxes.

As summarized in Chapter 5, New Jerseyans have a long history of voting for state policies that devote tax dollars to the purchase of farmland easements or fee simple

acquisition of farmland in order to maintain the resource in perpetuity. All nine public bond referenda for farmland and open space funding since 1961 were all passed by New Jersey voters by a wide margin (from 55 to 72 percent). The four 1987 and 1995 referenda and the Garden State Preservation Trust referendum in 1998 passed in all 21 counties, urban and rural alike. This is a more tangible expression of support for farm (or at minimum, farmland) retention in the state, as is the fact that residents in more than 200 municipalities have opted to self-tax themselves at the local level to generate land preservation monies.

This manifestation of support is compelling in light of the current political and fiscal climate. It is well publicized that New Jersey has the highest property tax burden (measured on a per capita basis) in the U.S. At a time when many are calling for a constitutional convention to reformulate the state's property tax structure, self-imposed tax increases to fund land preservation are a clear signal of the importance placed on preserving New Jersey's remaining farmland and open spaces.

### **Agriculture in Urbanizing Areas: What Does the Public Value?**

The public support garnered since the 1960s, and more vocally since the mid-1990s, offers tangible insight into the value New Jersey residents place on agricultural retention. The pervasiveness of such support across rural, suburban, and urban communities is noteworthy given the uneven spatial distribution of agricultural resources in the state. Examination of farmland assessment records shows that a majority of New Jersey municipalities have some amount of land devoted to agricultural use; however, few can be

characterized as agricultural towns.<sup>51</sup> This section explores the basis for such broad public support along two paths. The first explores the issue of rurality itself from a sociological perspective and the inherent value many place on rural environs as the antithesis of urban. The second focuses more precisely on the amenity benefits associated with agriculture valued by the public.

### **Sociological Aspects of Public Preferences for Agriculture**

The Jeffersonian ideal of a nation comprising many small, independent agrarian land owners formed an ideological foundation in the early days of the United States. Following the American Revolution, much of the new Nation's populace and land base was devoted to farming, providing prerequisite in the mind of Jefferson and others for the establishment of a democracy. Agrarianism persisted as a dominant demographic, geographic, and economic model throughout much of the U.S. over the next century.

Some of the Nation's early notable thinkers held an anti-urban bias. The post-independence-era value that many agrarianists (Jefferson included) held for farming was rooted in the facts that (1) ruralness was a defining characteristic of the United States that differentiated it from its European heritage and (2) farmers were "by their very nature and by virtue of their surroundings independent, moral, and patriotic" (Danborn 1996). These attributes were seen as requisites for the success of the new republic.

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<sup>51</sup> Analysis of farmland assessment records for the 2006 tax year show that 45 percent of New Jersey municipalities have no land devoted to agriculture. Roughly 38 percent of municipalities have between 1 and 24 percent of their land base in farming; another 11 percent have between 25 and 49 percent of their land area in agriculture. Less than 7 percent of New Jersey communities have the majority of their land base committed to agricultural production.

Anti-urban biases persisted even after the establishment of U.S. democracy, even when agrarianism became less of an important factor in civil, economic, and political terms. As the Industrial Revolution brought unprecedented industrial growth and economic restructuring, city environments were increasingly castigated for a number of urban ills that accompanied “progress.” Logan (1996) notes the perpetuation and intensification of the urban bias as cities were seen as a “defilement of nature and a moral scourge.” These anti-urban sentiments provided a platform for pro-agrarianism as farming and rural living were seen as refuges from city life.

The 1920s represented a demographic tipping point in the U.S. For the first time, the urban population equaled that living in rural areas. The once rural majority was now supplanted by a growing urban population. The inexorable shift in population to urban centers (and later to the suburbs) persisted into the new millennium, moving most Americans further and further away from their agrarian roots; most are now several generations removed from farming. Accompanying this demographic shift was an economic transition that saw agriculture become a diminishing proportion of the American economy.

The reversal of the U.S. urban migration that began occurring in the second half of the twentieth century was prompted by several influences, not the least of which was a renewed interest in removing oneself from the negative aspects of urban living in favor of a more rural lifestyle and the perceived amenities it confers. Urbanites valued agricultural and other rural areas as potential retreats from urban life. Pope and Goodwin (1984), for example, demonstrate that the market value of farmland cannot be explained fully by productive and speculative components. They argued the presence of a third contributor to farmland values, *consumptive demand*, which is reflective of an innate desire to get back to

nature, enjoy a rural lifestyle, and consume rural amenities.

In 1995 a national symposium was convened, drawing experts from across the disciplines - sociology, landscape architecture, planning, political science, economics, and others - to discuss the juxtaposition of rural policy and popular conceptions of rurality and its underlying values.<sup>52</sup> Several salient themes emerged to explain the contemporary value placed on rurality by Americans. They provide insight into the popular support state and local policies to support and sustain agriculture have garnered in New Jersey and other urbanized locales.

In the proceedings of this conference, Thomas Rowley (1996) notes that “rurality connotes intrinsic value” for many Americans. Some values, he asserts, are positive associations (pastoral, bucolic, untamed), while others are negative (desolate, backward, isolated). Acknowledging the latter point, early federal land policies were heavily focused on the disposition and “improvement” of untamed lands and wilderness as a basis for national economic development and settlement. While popular perceptions of some rural areas as “backwards” persist today, there is arguably less mental imagery of rural lands as dangerous, untamed places. Today, rurality is assuming its place as a retreat from modern life and the vagaries of urban, and suburban, environments. As Rowley notes, the value of rurality is often defined as the antithesis of urban. He further observes “nostalgia for rural roots increases during periods of rapid social and economic change.” In Howarth’s terms, “societies that invest heavily in progress also sentimentalize rural ways” (Howarth 1996).

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<sup>52</sup> A synopsis of selected papers was published in *Rural Development Perspectives* (Volume 12, No. 1). These papers offer many interesting and cross-disciplinary views of the perceived value of rurality and are liberally referenced herein.

In New Jersey, the surge in public consciousness and concern over the future of agriculture in the state that began in the 1960s and 1970s indeed coincides with a rapid pace of development and transformation in the state's physical and economic landscape.

Rowley makes a simple point that "Americans value rurality for what it is, what it is not, and what they *believe* [emphasis added] it is or is not." This speaks of course to the point that rural is not urban. It also speaks to the point that rurality offers natural and other features that resonate positively with the public. It leads to the realization that support for rural or agricultural retention policies can be built upon a basis of either anti-urban or pro-rural sentiment. However, it also raises an interesting consideration that what Americans perceive about agriculture - and the foundation of their preferences for rurality - may be based on the "mythology and symbolism of rural places rather than on reality" (Logan 1996). Logan goes on to note that "rural America has the special advantage of being the place where most of us don't live anymore, which frees us to reconstruct it in our imagination." In his sense, rurality itself has become a simulacrum.

Despite his warning that, for many Americans, rurality may be improperly contextualized, Logan notes that the appeal of ruralness remains. "We attribute to rural America those values that we most fear have been lost in our city and suburban way of life...these values are encapsulated in powerful visual images" (Logan 1996). He further offers that among the values inherent in views of rurality are: hard work, family, community, nature, and safety. There is a sense of romanticism with which many urbanites and suburbanites view the countryside. As Danborn argues, some view America's farm families as comprising people living "genuine lives" where liberty and equality are sacrosanct and individualism and a sense of community can coexist.



Farming maintains rich cultural and historical roots in New Jersey. While the state has a long and prominent industrial history, its agrarian heritage dates back even farther. There appears to be a driving motivation to retain this agricultural heritage within a broad segment of the non-farm populace. Whether this desire is rooted in an appreciation and understanding of the reality of agriculture and rural life or is predicated on the “mythology and symbolism” of rurality does little to obscure the fact that New Jersey residents value the state’s remaining rural places.

### **Non-Market Amenities of Agriculture**

As discussed previously, agriculture at the rural-urban interface provides many non-pecuniary benefits. For example, farms provide rural amenities including pastoral scenery, breaks in development, and wildlife habitat. They confer environmental benefits including air purification, water recharge, and flood containment. As New Jersey residents increasingly demand open space and its associated amenities, the retention of agricultural lands for non-economic and quality of life purposes is becoming increasingly desirable. Many of these amenities derive directly from the farmland resource. In New Jersey, farmland represented approximately 55 percent of the state’s remaining stock of privately owned open space in the mid-1990s (Decter, Adelaja and Meagher 1994).

Gardner (1977) wrote a seminal paper arguing that there are three primary motivations for farmland retention programs: (1) to preserve agricultural resources, (2) to preserve environmental resources, and (3) to control growth. Subsequent literature similarly suggests that the adoption of state and local programs to fund farmland preservation are influenced by a confluence of public objectives related to the preferences for preserving local

agricultural industries and lifestyles, maintaining rural character, protecting local environmental attributes, and meeting growth control objectives.

Purely agrarian motivations for farmland preservation typically revolve around maintaining access to locally produced food and sustaining farming as a way of life. This is one of the most cited motivations for state farmland preservation programs. At least 30 states make reference to "food security" in their farmland preservation enabling legislation (Hellerstein *et al.* 2002). This is further emphasized by the importance of soil productivity in the selection and prioritization criteria for farmland preservation in many state programs.

Foltz and Larson (2002) note that maintaining access to locally grown food is a dominant motivator for farmland preservation support among some segments of the population, but is not an over-riding factor.<sup>53</sup> In an expansive national review study, Hellerstein *et al.* (2002) found that 29 out of 48 state farmland preservation programs made reference to the environmental services provided by farmland as a motivation and goal of the programs. A survey of Rhode Island residents by Kline and Wichelns (1996) found that

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<sup>53</sup> It is interesting to speculate whether interest in retaining local productive agricultural capacity will assume greater weight in future support for farmland preservation due to heightened concerns over terrorism and food safety. Since 9/11, for example, there has been elevated discussion over the potentiality of bioterrorism acts directed at Americans through the contamination of food supplies, destruction of crops and livestock, or the targeting of food production, processing, and distribution infrastructure. While this has caused consternation within the domestic security and emergency preparedness arenas, the extent to which this concern resonates with Americans is not completely clear. Wimberley *et al.* (2003) from North Carolina State University had a survey on food safety in the field when the 9/11 attacks occurred. After modifications to the instrument, later respondents were asked about their concern over food safety before and after the attacks. A markedly higher proportion of people expressed concern over the safety of the Nation's food supply following the attacks. More recent examination of the national mindset of terrorism in the food supply shows that the typical American does not view this with any real alarm (see, for example, a recent national study by Hallman *et al.* (2005) examining American perceptions of agroterrorism).

environmental objectives (i.e., protecting groundwater, preserving natural places, and maintaining wildlife habitat) were the primary factors in determining support for farmland preservation programs in that state. Aesthetic benefits (preserving scenic viewsheds and rural character) and recreational options (e.g., hunting, fishing, hiking, and other active or passive recreation) also often play a significant role in public support for farmland preservation (Krieger 1999; Kline and Wichelns 1996).

Finally, several studies (see, for example, Kline and Wichelns 1996; Duke *et al.*, 2002; Krieger 1999; and Kline and Wichelns 1994) have found that another motivation for supporting farmland preservation is the view that it serves as a growth management tool. Hellerstein *et al.* found that 18 states' enabling legislation for farmland preservation made specific reference to its ability to control or channel development. Furuseth (1987) earlier found that the public often views farmland preservation and growth as mutually exclusive, tending to favor either one or the other.

Recent years have seen a groundswell of support for smart growth and a general acknowledgment of the ill consequences of unplanned, sprawling growth. Much discourse has focused on the negative externalities and potentially untenable fiscal implications of prevailing patterns of development. In a highly urbanized state such as New Jersey, it is not unreasonable to theorize that the desire to preserve farmland for its agricultural production value may often be subordinate to the maintenance of open space, environmental, and ecological amenities or an interest in growth management.

Increasing interest is being paid to the fiscal consequences of unplanned growth in the United States. Local property tax issues in New Jersey, for example, have dominated state public policy discourse in recent years as increased tax burdens have imposed

considerable hardships on middle and lower income households. Interest in land preservation represents a reversal of the prevailing logic maintained by local officials in the past, an unwavering belief that “growth is good” and that growth was synonymous with progress. “Chasing ratables” was seen as a way of maintaining a stable tax base.

Poorly planned development, however, often imposes a number of undesired external costs to a community, including increased traffic congestion, air and water pollution, loss of open space amenities, and diminished sense of place and community. Rising property taxes are also a common accompaniment to sprawling forms of development due to increased demand for public investment in infrastructure (i.e., roads and sewers), local public services (i.e., fire and police services) and public education.

Numerous studies have found that agricultural land, even when under differential assessment, is a good tax ratable because it contributes more in tax revenues than it consumes in local services (see, for example, American Farmland Trust 1993, 1994; Freedgood 1994; Burchell *et al.* 1985). In contrast, residential development, often the competing use for farmland in urbanizing areas, is typically a poor tax ratable.

American Farmland Trust reviewed fiscal impact (or cost of community services) studies in 83 communities across the United States. The median revenue-to-expenditure ratio for farmland and forested land across these studies was 1.00:0.36 (Freedgood 2002). In other words, the typical community pays only 36 cents to provide local public services for farmland properties for every dollar such properties generate in property tax revenue. All 83 studies found farmland to be a good ratable; the cost of services consumed per dollar of tax revenue generated ranged from \$0.02 to \$0.99. In marked contrast, the review found that the median revenue-to-expenditure ratio for residential development was 1.15:1.00 (a

typical home consumes \$1.15 in services for each dollar it pays in property taxes).

Several fiscal impact studies conducted in New Jersey provide consistent findings. On a statewide level, Adelaja, Schilling and Menzo (1997) report that for every dollar of revenue generated by farmland in New Jersey, only \$0.55 worth of services is consumed. In 1998, American Farmland Trust conducted cost of community services studies in five communities in Monmouth County, New Jersey (Freehold Township, Holmdel Township, Middletown Township, Upper Freehold Township, and Wall Township). A summary of the findings of these studies is provided in Table 7-1. The expenditures per dollar of revenue generated by farmland, forested land, and open lands in these communities ranged from \$0.33 (Freehold) to \$0.66 (Holmdel). For residential properties, between \$1.14 and \$1.51 were spent on local services per dollar of property tax revenue generated. A 1996 fiscal impact study of development and farmland in Mansfield Township (Burlington County) found a revenue:cost ratio of 1:0.27 for farmland.

**Table 7-1: Revenue-to-Expenditure Ratios for Selected Monmouth County Townships.**

<b>Township</b>	<b>Residential Properties (excluding farmhouses)</b>	<b>Commercial and Industrial Properties</b>	<b>Farmland, Forested Land, and Open Land</b>
Freehold	1.00 : 1.51	1.00 : 0.17	1.00 : 0.33
Holmdel	1.00 : 1.38	1.00 : 0.21	1.00 : 0.66
Middletown	1.00 : 1.14	1.00 : 0.34	1.00 : 0.36
Upper Freehold	1.00 : 1.18	1.00 : 0.20	1.00 : 0.35
Wall	1.00 : 1.28	1.00 : 0.30	1.00 : 0.54

Source: Freedgood (2002).

**Summary**

In a free market economy, goods with significant spillover benefits will be provided at a level sub-optimal in relation to societal demand for such goods if solely subject to the decisions of private actors in the marketplace. The socially optimal provision of goods conferring positive externalities is often a justification for public sector involvement in the market.

Agricultural land is a prime example of a “good” which confers benefits not readily valued in private markets. Public support for farmland retention and preservation programs may derive from a desire to retain local food production capacity, rural amenities, ecological and environmental attributes, or culturally and historically significant elements of a community. In an urbanized state such as New Jersey, farmland preservation may also be supported as an alternative to the consequences of undesired growth and development. This may be an especially strong motivator for public financing of agricultural retention efforts in areas facing rapid conversion of farmland and open spaces into more intensive development. As demonstrated in the next chapter, land use transitions in New Jersey have been striking in recent decades with substantial increases in the built environment occurring in most counties. Intensifying development pressures and changing land uses present several challenges to farming operations and efforts to promote the agricultural industry’s continued viability.

## Chapter 8

### Suburbanization in New Jersey and its Impacts on Agriculture

Contrary to what is often gleaned from current popular discourse, suburbanization is not a phenomenon new to the latter half of the twentieth century. It may be argued, however, that the *nature* and *scale* of United States suburbanization during this period has no precedent in world history. Contemporary U.S. suburban development conjures images of residential and commercial subdivisions that are land-consumptive, low-density, automobile dependent, fiscally inefficient, homogenous (in terms of use as well as class and race), and bland. The moniker “sprawl” has emerged to characterize this pattern of development dominant in the post-war era.

Sprawl is a paradox, simultaneously denounced for its social costs yet implicitly embraced through the actions of countless individual home buyers. In this sense, it is an example of the “fallacy of composition” principle at work; what is good for the individual may not necessarily be good for all. As each successive subdivision expands suburbia, the benefits and values sought by suburbanites are eroded. Yet the hegemony of a free market system, advances in information and communication technologies, public policies, and cultural values and ideologies continue to support this pattern of development in the United States.

American Farmland Trust (2002) notes that sprawl has “spread over the land, hollowing out cities, gridlocking suburbs and destroying the countryside.” As suburbs continue to expand outward, rural/agricultural areas face growth pressures which manifest in rising farmland values (and property taxes), increased conflicts between farms and

residential neighbors, and farmland fragmentation. Suburbanization is clearly not the only force bearing down on American agriculture; but it is often the most visible since new houses and commercial businesses are typically the uses that supplant farms.

This chapter examines the nature of recent development patterns and land consumption in New Jersey. The inexorable expansion of new built uses in New Jersey over past decades has been remarkable and, to a large extent, fueled by the conversion of agricultural lands and other greenfields. However, in addition to reducing the area of land available for agricultural production, suburbanization also has had indirect impacts on farming explored. These effects on production agriculture are similarly explored as further rationalization for sub-federal policy involvement in agricultural retention and development.

### **Growth and Development in New Jersey**

Post-World War II development in New Jersey followed a course characterized by dispersion as growing affluence and transportation advances opened the peripheral regions of the state and led to the depopulation of New Jersey's urban centers. These population patterns have profoundly influenced the state's physical landscape and, more pointedly, the agricultural land base. At the turn of the twentieth century, approximately 2.8 million acres (58 percent) of New Jersey's land area was committed to agriculture. As the 1900s progressed, so too did urbanization. By 1910, 200 thousand more acres of farmland had transitioned to non-agricultural use. Changes in the agricultural landscape at that time were most profound in counties located in the northeastern region of New Jersey. Between 1890 and 1910, for example, the proportion of Bergen County's land base devoted to farming fell from 54 to 35 percent (Schmidt 1973). Today, farmland accounts for less than one percent



of the county's land area.

The second half of the twentieth century was a time of substantial transformation in New Jersey agriculture, defining to a great extent the farm landscape of today. As shown previously, since 1950 alone New Jersey has lost nearly 15,000 farms and 920,000 acres of farmland (see Table 6-3), land converted most often to built uses. This translates into a loss of roughly 60 percent of farms and 53 percent of farmland in the past fifty years alone.

### **Recent Population Growth and Development in New Jersey**

New Jersey is today recognized as the most densely populated and heavily developed state in the United States. With 8.41 million residents in 2000, New Jersey is the ninth most populated state in the nation. Comprising only 7,419 square miles, this equates to a population density of 1,134 persons per square mile. Density in northeastern counties proximate to New York City (Hudson, Essex, Bergen, Union) tends to be substantially higher than the state average. Hudson County, with more than 13,000 people per square mile, is among the most densely populated counties in the entire Nation.

Population growth in the already densely populated Northeast region has not kept pace with the rest of the United States over the past two decades (Table 8-1). The United States population grew by 9.8 and 13.1 percent, respectively, in the 1980s and 1990s. The already heavily populated Northeast, in contrast, grew by only 3.4 and 5.4 percent during these decades. The region's share of national population declined from nearly 22 percent in 1980 to 19 percent in 2000.

Over the past two decades, New Jersey did not experience a rate of growth on par with the national average, however, the state did grow faster than the Northeast region. In

the 1980s, New Jersey's population increased by 5.2 percent (ranked 27<sup>th</sup> in the U.S.) . In the following decade, the state population grew by 8.6 percent (ranked 34<sup>th</sup>). Proportional measures of New Jersey population growth somewhat obscure large changes in the actual numbers of new residents due to the state's already large population base. For example, in the period 1990 to 2000, New Jersey ranked 14<sup>th</sup> in the nation in terms of absolute population growth, adding 684,000 new residents.

**Table 8-1: New Jersey Population Growth: Regional and National Context.**

State	Population (1000s)			Pct. Chg. 1980-1990	Rank	Pct. Chg. 1990-2000	Rank
	1980	1990	2000				
Connecticut	3,108	3,287	3,406	5.8%	26	3.6%	47
Maine	1,125	1,228	1,275	9.2%	20	3.8%	46
Massachusetts	5,737	6,016	6,349	4.9%	28	5.5%	41
New Hampshire	921	1,109	1,236	20.4%	6	11.5%	22
<b>New Jersey</b>	<b>7,365</b>	<b>7,748</b>	<b>8,414</b>	<b>5.2%</b>	<b>27</b>	<b>8.6%</b>	<b>34</b>
New York	17,558	17,991	18,976	2.5%	35	5.5%	42
Pennsylvania	11,864	11,883	12,281	0.2%	45	3.3%	48
Rhode Island	947	1,003	1,048	5.9%	25	4.5%	45
Vermont	511	563	609	10.2%	19	8.2%	38
<b>Northeast</b>	<b>49,136</b>	<b>50,828</b>	<b>53,594</b>	<b>3.4%</b>	<b>N/A</b>	<b>5.4%</b>	<b>N/A</b>
<b>United States</b>	<b>226,546</b>	<b>248,791</b>	<b>281,422</b>	<b>9.8%</b>	<b>N/A</b>	<b>13.1%</b>	<b>N/A</b>
<i>Northeast</i>							
<i>Pct. of U.S.</i>	<i>21.7%</i>	<i>20.4%</i>	<i>19.0%</i>	<i>-5.8%</i>	<i>N/A</i>	<i>-6.8%</i>	<i>N/A</i>
<i>NJ as Pct. of U.S.</i>	<i>3.3%</i>	<i>3.1%</i>	<i>3.0%</i>	<i>-4.2%</i>	<i>N/A</i>	<i>-4.0%</i>	<i>N/A</i>
<i>NJ as Pct. of Northeast</i>	<i>15.0%</i>	<i>15.2%</i>	<i>15.7%</i>	<i>1.7%</i>	<i>N/A</i>	<i>3.0%</i>	<i>N/A</i>

Source: Author's calculations based on population data collected by the U.S. Census Bureau.

While New Jersey's state-level population growth may have been relatively modest within the national context, several New Jersey counties ranked among the most rapidly

growing in the nation (Table 8-2). In fact, 19 counties ranked in the top quartile among the 3,141 counties in the United States in terms of *absolute* population growth between 1990 and 2000; 13 counties were among the top 10 percent while 7 ranked in the top 5 percent. Due to the large population bases existing in most New Jersey counties by 1990, *relative* (percentage) growth rates for the state's counties tended to be comparatively lower than absolute growth rates. Eleven New Jersey counties ranked in the top 50 percent in terms of relative growth (Somerset and Ocean ranked in the top quartile).

Population projections suggest a continuation of development pressures on the rural-agricultural regions of the state (Table 8-3). The New Jersey Department of Labor projects that another 522,750 residents will live in New Jersey in 2010 (vis-a-vis the base year of 2000). Much of the state's anticipated population growth will occur in the affluent central counties of the state: Monmouth, Ocean, Middlesex, Somerset, and Morris.

**Table 8-2: Ranking of New Jersey's Counties: Absolute Population Growth (1990-2000).**

<i><u>Population</u></i>			<i><u>Population Change (1990-2000)</u></i>		
County	April 1, 1990	April 1, 2000	Absolute	U.S. Rank	Growth Percentile
Middlesex	671,780	750,162	78,382	76	<b>Growth in top 5% of all U.S. counties</b>
Ocean	433,203	510,916	77,713	77	
Monmouth	553,124	615,301	62,177	109	
Bergen	825,380	884,118	58,738	122	
Somerset	240,279	297,490	57,211	126	
Hudson	553,099	608,975	55,876	134	
Morris	421,353	470,212	48,859	154	<b>Growth in top 10% of all U.S. counties</b>
Passaic	453,060	489,049	35,989	212	
Union	493,819	522,541	28,722	257	
Burlington	395,066	423,394	28,328	264	
Atlantic	224,327	252,552	28,225	265	
Mercer	325,824	350,761	24,937	292	
Gloucester	230,082	254,673	24,591	293	<b>Growth in top 25% of all U.S. counties</b>
Essex	778,206	793,633	15,427	419	
Hunterdon	107,776	121,989	14,213	448	
Sussex	130,943	144,166	13,223	480	
Warren	91,607	102,437	10,830	550	
Cumberland	138,053	146,438	8,385	660	
Cape May	95,089	102,326	7,237	722	
Camden	502,824	508,932	6,108	814	
Salem	65,294	64,285	-1,009	2,982	

Source: U.S. Census Bureau (<http://www.census.gov/population/www/cen2000/phc-t4.html>).

**Table 8-3: New Jersey County Population Projections (2000-2010).**

County	2000	2010 (Projected)	(2000-2010)	
			Change	Pct. Change
<i>New Jersey</i>	<i>8,414,350</i>	<i>8,937,100</i>	<i>522,750</i>	<i>6.2%</i>
Atlantic	252,552	274,400	21,848	8.7%
Bergen	884,118	928,800	44,682	5.1%
Burlington	423,394	464,700	41,306	9.8%
Camden	508,932	530,900	21,968	4.3%
Cape May	102,326	106,600	4,274	4.2%
Cumberland	146,438	148,900	2,462	1.7%
Essex	793,633	787,000	(6,633)	-0.8%
Gloucester	254,673	278,200	23,527	9.2%
Hudson	608,975	605,700	(3,275)	-0.5%
Hunterdon	121,989	139,900	17,911	14.7%
Mercer	350,761	362,700	11,939	3.4%
Middlesex	750,162	804,300	54,138	7.2%
Monmouth	615,301	685,400	70,099	11.4%
Morris	470,212	520,600	50,388	10.7%
Ocean	510,916	575,700	64,784	12.7%
Passaic	489,049	503,800	14,751	3.0%
Salem	64,285	66,200	1,915	3.0%
Somerset	297,490	348,600	51,110	17.2%
Sussex	144,166	162,100	17,934	12.4%
Union	522,541	530,700	8,159	1.6%
Warren	102,437	111,900	9,463	9.2%

Source: New Jersey Department of Labor.

### **Recent Trends in Urban Land Area**

The proportion of total state area under development in 1997 was higher in New Jersey (34 percent) than in any other state in the Nation. The percentage of state area classified as developed in New Jersey according to the *Statistical Abstract of the United States* is nearly 3 times the Northeast region's average and 7 times the U.S. average (Table 8-4).

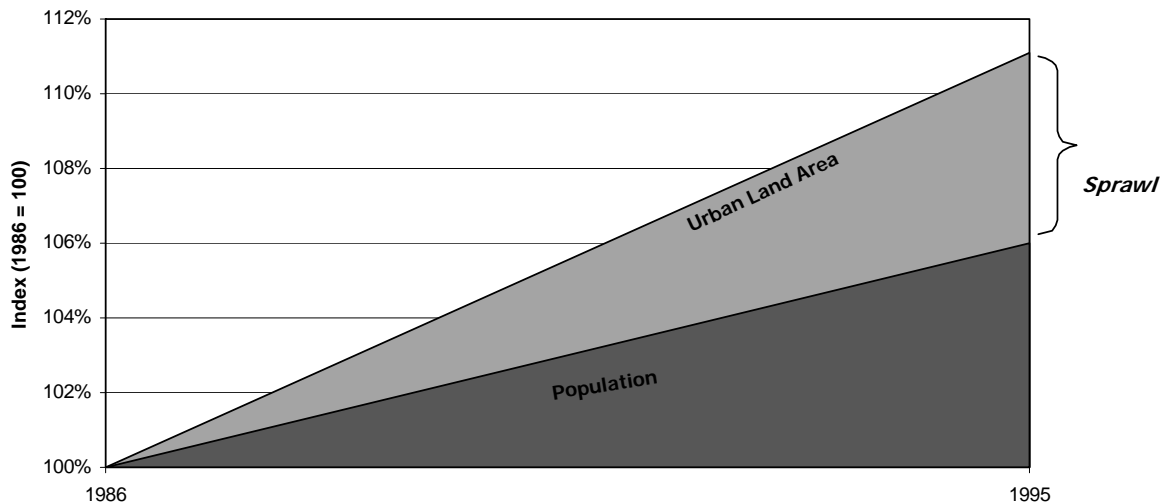
**Table 8-4: Percentage of State Surface Area Under Development (1997).**

<b>State</b>	<b>Total Surface Area (1000s of acres)</b>	<b>Developed Land (1000s of acres)</b>	<b>Pct. of Total</b>
Connecticut	3,195	874	27.4%
Maine	20,966	712	3.4%
Massachusetts	5,339	1,479	27.7%
New Hampshire	5,941	589	9.9%
New Jersey	5,216	1,778	34.1%
New York	31,361	3,184	10.2%
Pennsylvania	28,995	3,983	13.7%
Rhode Island	813	201	24.7%
Vermont	6,154	318	5.2%
<b>Northeast</b>	<b>107,980</b>	<b>13,118</b>	<b>12.1%</b>
<b>United States</b>	<b>1,941,823</b>	<b>97,745</b>	<b>5.0%</b>

Source: U.S. Census Bureau, *2001 Statistical Abstract of the United States*.

The comparison of changes in New Jersey's population growth with available measures of developed or urban land use yields an interesting visual representation of the trend in land consumption in New Jersey in the 1980s and 1990s (Figure 8-1 and Table 8-5). Land use/land cover data developed by the New Jersey Department of Environmental Protection show that New Jersey's urban land area grew by 133,972 acres, or 11.1% over the 1986-1995/97 period. State population increased by 333,589 residents, or only 6%. In all but three counties (Middlesex, Ocean and Somerset), the proportional change in urban land area exceeded the proportional change in population. The differential in these relative changes was greatest in rural Salem, Warren, and Hunterdon counties where open land is more abundant.

**Figure 8-1: Illustration of New Jersey Sprawl: Growth in Urban Land Area and Population (1986 to 1995).**



In 1995, there existed roughly 0.17 acres of urban land uses per person in New Jersey. If development patterns follow the same path in coming years, and assuming this ratio remains constant for the next decade or so, this suggests that approximately 113,000 acres of additional land will need to be converted to development in order to accommodate the population growth expected in New Jersey between 2000 and 2010. Table 8-6 provides a county-level breakdown of this approximation of potential demand for developable land. Farmland acreage (remaining in 2002) is also provided as a point of reference. While this an oversimplified analysis, it does begin to convey some sense of the pressure on New Jersey's farmland base that may be expected to manifest in coming years.

**Table 8-5: County-Level Changes in Urban Land Area and Population (1986 to 1995).**

	Urban Land Area (acres)		Change (1986-'95)	Pct. Change	Population		Change (1986-'95)	Pct. Change
	1986	1995			1986	1995		
<i>New Jersey</i>	<i>1,208,553</i>	<i>1,342,525</i>	<i>133,972</i>	<i>11.1%</i>	<i>7,622,161</i>	<i>8,083,242</i>	<i>461,081</i>	<i>6.0%</i>
Atlantic	47,480	53,171	5,690	12.0%	209,388	239,212	29,824	14.2%
Bergen	107,401	109,529	2,128	2.0%	840,309	855,242	14,933	1.8%
Burlington	77,234	90,746	13,512	17.5%	377,941	411,890	33,949	9.0%
Camden	64,950	69,236	4,286	6.6%	492,957	509,582	16,625	3.4%
Cape May	25,627	29,022	3,395	13.2%	90,130	100,405	10,275	11.4%
Cumberland	32,363	36,471	4,109	12.7%	135,700	144,829	9,129	6.7%
Essex	62,288	62,834	546	0.9%	815,669	783,308	(32,361)	-4.0%
Gloucester	50,023	58,678	8,654	17.3%	211,362	243,752	32,390	15.3%
Hudson	22,605	23,477	872	3.9%	565,714	578,889	13,175	2.3%
Hunterdon	45,806	57,100	11,294	24.7%	99,166	114,049	14,883	15.0%
Mercer	52,506	60,139	7,633	14.5%	318,557	337,476	18,919	5.9%
Middlesex	93,510	101,340	7,830	8.4%	644,175	709,223	65,048	10.1%
Monmouth	109,011	122,420	13,408	12.3%	538,786	583,899	45,113	8.4%
Morris	97,827	108,591	10,764	11.0%	420,439	445,308	24,869	5.9%
Ocean	77,467	88,385	10,918	14.1%	400,987	471,243	70,256	17.5%
Passaic	43,505	45,109	1,604	3.7%	460,696	479,717	19,021	4.1%
Salem	20,002	22,845	2,843	14.2%	64,362	65,095	733	1.1%
Somerset	62,646	73,452	10,807	17.3%	219,603	267,163	47,560	21.7%
Sussex	35,424	42,445	7,021	19.8%	124,284	138,574	14,290	11.5%
Union	54,456	54,919	462	0.8%	504,481	507,430	2,949	0.6%
Warren	26,419	32,617	6,197	23.5%	87,455	96,956	9,501	10.9%

Source: Land cover data from the New Jersey Department of Environmental Protection. Population data from New Jersey Department of Labor, State Data Center.



**Table 8-6: Projected Growth in Urban Land Area, by County (2000 to 2010).**

<b>County</b>	<b><u>Projected Change,</u></b> <b><u>2000-2010</u></b>			
	<b>Avg. Urban Area per Person (1996)</b>	<b>Population</b>	<b>Urban Land Area</b>	<b>Farmland Acreage (2002)</b>
<i>New Jersey</i>	<i>0.17</i>	<i>522,750</i>	<i>113,154*</i>	<i>805,682</i>
Atlantic	0.22	21,848	4,856	30,337
Bergen	0.13	44,682	5,722	1,283
Burlington	0.22	41,306	9,100	111,237
Camden	0.14	21,968	2,985	10,259
Cape May	0.29	4,274	1,235	10,037
Cumberland	0.25	2,462	620	71,097
Essex	0.08	(6,633)	N/A	153
Gloucester	0.24	23,527	5,664	50,753
Hudson	0.04	(3,275)	N/A	0
Hunterdon	0.50	17,911	8,967	109,241
Mercer	0.18	11,939	2,128	25,070
Middlesex	0.14	54,138	7,736	21,824
Monmouth	0.21	70,099	14,697	47,198
Morris	0.24	50,388	12,287	17,233
Ocean	0.19	64,784	12,151	12,239
Passaic	0.09	14,751	1,387	1,526
Salem	0.35	1,915	672	96,238
Somerset	0.27	51,110	14,052	36,237
Sussex	0.31	17,934	5,493	75,496
Union	0.11	8,159	883	182
Warren	0.34	9,463	3,183	78,042

\* New Jersey total is calculated as the sum of county projections.

Moreover, the growing amount of acreage enrolled in farmland and open space preservation programs, the delineation of environmentally sensitive lands, and the growth restrictions in the Pinelands and Highlands combine to make it inevitable that pressures on the remaining farmland base will intensify. As will be discussed in the following section, growth pressures will, of course, directly impact agriculture through competition for land. However, other less visible pressures on the industry will emerge as residential and other forms of development move into closer proximity to - and are interspersed among - the

state's remaining farms. An understanding of these challenges, as well as opportunities, created as the urban-rural boundary shifts is an important precursor to the development of effective planning strategies to promote farming as a viable industry and continued land use.

### **The Impacts of Suburbanization on Farming**

Across the Nation, many state and local governments are focusing on the challenge of stemming farm and farmland loss and, more proactively, promoting farm viability. Often the problem is cast in the context of protecting farming from the influences of increasing development pressures. While the threat of growth and development is often the most evident pressure to those viewing agriculture from the local level, it is important to understand that development pressures, available natural resources, and local public policies are only part of the complex forces that affect the domestic agriculture industry today. The structure and performance of the entire U.S. food system is also driven in large part by national and global economic influences, new technologies, shifting demographics, changing markets and consumer preferences, and other macro level factors. In the USDA's 2002 report *Food and Agricultural Policy: Taking Stock for the New Century*, it is noted that

[the dynamism of the food system] reflects changes in our society - globalization of markets and culture, advances in information and biological (and other) technologies, fundamental changes in our family structure and workforce - and extends throughout the network of food marketing, distribution, trade, and consumption.

[these trends] reflect today's realities and are leading to a fundamental restructuring of the food system and a much different business environment for food and agriculture in the future.

These forces continue to shape and reshape the complex and inter-related functions of food and fiber production, processing, distribution, and consumption. This, in turn,

requires adaptation in the practices of farming to meet changing trade requirements, food safety requirements, as well as consumer demands for various food attributes (diversity, convenience, safety, environmental friendliness, health conveyance, etc.). The USDA report goes on to state that

[o]ur system has served this nation exceedingly well in the past, the result of far-sighted planning and investment - and it is our responsibility to reappraise and further develop that foundation to meet the needs of the future.

This responsibility for planning and investment for agriculture must occur at all levels of government, from federal down to municipal, to ensure the future competitiveness and sustainability of farming. In rural areas experiencing rapid suburbanization and accompanying socio-political changes planning proactively for agriculture is challenging. State and local policy makers are faced, however, with the reality that the agricultural landscape remaining fifty years from now will depend in large part on the actions taken, or not taken, today.

The balance of this chapter reviews the impacts of suburbanization on agriculture that have been identified and researched for several decades by academicians and policy experts. Empirical data on these impacts are presented to contextualize the New Jersey experience in terms of farm decline and to set the stage for the local agricultural policy discussions presented in forthcoming chapters.

### **The Cycle of Agricultural Decline**

Within an urban/suburban context, there exists a relatively well defined and predictable cycle of agricultural decline. This is not to suggest that farm transition and loss are necessarily the inevitable outcomes of growth and development adjacent to, or within, predominantly agricultural regions. It is intended to illustrate a generalized relationship between nonagricultural development and farm conversion.

The initial state is one in which agriculture is the primary land use. Rural character and amenities draw new residential and associated development. The immediate impact is the reallocation of some portion of the farmland base to accommodate new residences, commercial uses, and attendant infrastructure. Most often, development occurs on the best farmland since it is flat, well drained, and well suited for immediate construction. For all intents and purposes, once farmland is removed from farming and developed for nonagricultural use it is irreversibly lost. The stock of a finite natural resource is therefore permanently reduced.

With the expansion of urban and suburban boundaries agricultural regions begin experiencing new actors and new dynamics in local land markets. Developers begin competing with farmers for land and bidding up land prices. Competition for water may also become an issue. As will be discussed shortly, the resulting market prices of farmland (even preserved farmland) are often moved beyond the range economically feasible for most farmers. As nonagricultural land demand raises land prices, remaining farmers also begin to view their property as something other than a productive asset, realizing the rising opportunity cost of maintaining their land in farming and contemplating the merits of “cashing in” on a large source of non-liquid wealth.

As Daniels and Bowers (1997) note, new and future residents tend to see rural land as an amenity and a place to live, not as a factor of production. While urbanites and suburbanites are drawn into rural areas by their rurality, newly established residents quickly realize that farmland is not simply a passive land use but part of a working landscape. What often follows is tension between farmers and non-farm neighbors. New residents seeking respite in a pastoral environment object to slow moving farm vehicles impeding their travel, chemical applications on crops, noise from farm machinery early in the morning or late at night, odors from livestock and animal waste, and dust raised by plowing. Farms with retail outlets or agritourism activities may create local traffic, parking issues, noise, and general commotion that new residents did not envision. Complaints may be registered with local officials; lawsuits may even be filed against farmers to enjoin certain activities seen as nuisances by new community residents. From the farmer's perspective, new neighbors may create trespass problems and even commit vandalism against farm equipment, crops, or livestock.

As incrementally more land is devoted to nonagricultural use, farmland prices comprise a greater and greater amount of future development value, further raising prices. More land exits farming, making less land available for farmers. More farms go out of business, leaving fewer farms to support the farm supply and market infrastructure which, too, invariably declines. More conflicts between farm and nonfarm interests may arise. This may even evolve into the adoption of new local ordinances that are ambivalent or even restrictive to farming. Efforts to sanitize agriculture - to encourage conformity with the public's ideal preconceptions of agriculture - may be undertaken as certain farm practices are limited or prohibited.

As more residences are constructed the cycle perpetuates until the transformation of the region is complete. Farming becomes displaced. Irony lies in the fact that the rural character and agrarianism that originally attracted residential interest begins to fade to obsolescence.

An understanding of the conceptual basis of the impacts of suburbanization on the agricultural industry is a useful and necessary starting point for policy development aimed at farm and farmland retention. What follows is a more detailed theoretical examination of both the direct and indirect effects of suburbanization of farming identified by leading scholars in the field. Empirical evidence of the manifestation of these theorized effects is also presented.

### **The Direct and Indirect Impacts of Suburbanization on Farming**

A useful conceptual framework for typologizing the impacts of suburbanization on agriculture may be found within the research of Berry (1978) and subsequent extensions of his work made by authors including Lopez, Adelaja, and Andrews (1988), Daniels and Bowers (1997), and Larson, Findeis, and Smith (2001). All of these authors identify both direct and indirect impacts associated with suburban advancement into historically agricultural areas. The direct impact of suburban growth is the transition of farmland out of agriculture to meet the demand for residential, commercial, industrial development and the accompanying support infrastructure.

The previous review of national and New Jersey farmland trends demonstrates that farmland resources are being lost at alarming rates as urban pressures expand into the rural-agricultural periphery. It is estimated that between 1960 and 1990, the U.S. lost an average

of 1 million acres of farmland to urban expansion or rural development every year (Heimlich and Anderson 2001). Since the 1950s, New Jersey has lost more than half of its farmland base to other uses.

The expansion of boundaries between urban lands and farm regions also leads to an increasing level of fragmentation within once contiguous blocks of farmland. As farms regions become more fragmented with interspersed non-agricultural uses, farm management becomes more complex. These complexities are manifestations of types of several indirect influences suburban expansion has on agriculture. For example, new land uses are accompanied by demographic and socio-political changes that may alter the local regulatory climate for farming. Changes in the spatial alignment of agricultural and non-agricultural uses may impact the technical or managerial efficiency of farms. Private construction and public infrastructure investments may introduce speculative elements into local farmland markets as new, competing uses for farmland emerge. While well-established academic and practitioner literature generally identifies these as adverse impacts on agriculture, suburbanization does potentially bring positive market opportunities for farmers. A deeper exploration of each of these indirect impacts of suburbanization on agriculture follows.

### **The Regulatory Impacts of Suburbanization**

Under the Lopez *et. al.* framework, regulatory impacts imply a reduction in the political strength of the farm community necessary to maintain a favorable local regulatory climate and avoid private and public nuisance actions. Berry (1977) notes that as suburbanization proceeds into agricultural regions

changes in farmers' status in their communities occur as they become a less significant proportion of the population, both as a fraction of the population and as an economic and political force.

One consequence of the changing political dynamic noted by Berry is the increased propensity for conflict between farmers and new suburban residents over objectionable by-products of commercial agriculture. New subdivisions in rural areas hold great appeal for many potential residents due to pastoral scenery, open spaces, less congestion, and other amenities of rural living. However, normal commercial farming activities often produce externalities that may decrease the utility of suburbanites seeking rural passivity, including noise, animals odors, dust, chemical drift, and slow-moving tractors on roadways. Roadside markets, pick-your-own operations, and on-farm tourism events may similarly create seasonal traffic congestion and parking problems. These nuisances, from the resident's perspective, may provide the basis for lawsuits, injunctions, and potentially changes in local ordinances that limit or prohibit certain agricultural practices.<sup>54</sup> Increased incidence of such "right-to-farm" conflicts between farmers and non-farm neighbors is a major threat to farm viability due to the potential time and expense associated with resolving and mitigating such

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<sup>54</sup> The prohibition of concentrated animal operations (i.e., swine production) in some New Jersey communities is illustrative of this outcome.



tensions (see, for example, Lapping, Penfold and Macpherson 1983; Lopez *et al.* 1988; Lisansky, Andrews and Lopez 1988; Heimlich 1991; Adelaja *et al.* 1996).

Lisansky (1986) notes that as non-farmers gain footholds in local political offices, zoning boards, and planning boards, the regulatory climate often becomes less favorable for certain types of agricultural practices. As a result non-farmers may

attempt to restrict or eliminate certain agricultural practices because they find them offensive (e.g., livestock odors), consider them nuisances (e.g., carbide cannons for scaring birds from the fields), think they are dangerous (e.g., aerial spraying of pesticides)...

Adelaja and Sullivan (1998) estimated the costs of right to farm conflicts to be on the order of \$30 million per annum in New Jersey. At the time of their study, this was equivalent to nearly 4 percent of New Jersey's total farm cash receipts and 17 percent of aggregate net farm income.

### **The Technical Impacts of Suburbanization**

Within rural areas, the displacement of agriculture as a dominant land use and subsequent fragmentation of farmland blocks may diminish production efficiency, an effect Berry and Lopez *et al.* dub the "technical effect" of suburbanization on farming. For example, it is not uncommon for larger farms to comprise multiple non-adjacent properties. Moving farm equipment between fields located in an increasingly fragmented and suburbanizing region often becomes more time consuming due to the inadequacy of new road infrastructure for safe movement of agricultural machinery (e.g., due to narrow road shoulders, bridge weight limits, or the placement of immovable road appurtenances such as signs or mailboxes too near the roadway).

Proximity to increasing numbers of non-farm neighbors may similarly impact farm productivity and efficiency as farmers experience right-to-farm issues, or alter normal farm practices in an attempt to avoid such conflicts. For example, in an effort to “keep the peace” with neighbors, a farmer may adjust the hours during which farm machinery is operated or change plans. Chemical applications may be modified to accommodate residents’ concerns. Non-farm residents may similarly be frustrated by the inconvenience of commuting behind slow moving equipment, prompting farmers to limit the movement of heavy machinery on public roadways during peak commuting times.

Farm management and efficiency may be also be affected substantially, albeit more indirectly, by changes in the public conscience as ex-urbanites move into rural regions. For instance, a critical problem facing New Jersey agriculture is farmers’ constrained ability to manage wildlife damage (whitetail deer, geese, blackbirds, and increasingly bear are common culprits in New Jersey) due to public sentiment toward wildlife management practices (e.g., hunting). Practical safety concerns exist about employing such practices near residential areas where children or domestic animals may be placed at risk.

Stories abound within the farming industry of trespass and vandalism problems as rural communities suburbanize. Farmers report equipment damage resulting from residential debris blown or directly deposited onto their farms. Domestic cats or dogs harass or injure agricultural livestock. Crop damage may occur on farms due to trespassers unknowingly trampling immature plants or people riding dirt bikes and all-terrain vehicles across “open” fields.

Farmers also share countless experiences with crop theft. One Middlesex County grain farmer shared an encounter with a “suburban mother and her children in a minivan”

parking on the shoulder of a secondary road bounding one of his corn fields. The farmer recounts how the woman began breaking off cornstalks (to be used as fall harvest decorations) and loading them into her van. When confronted by the farmer about the theft, the woman became indignant and countered that the farmer was being petty about the incident since he “ha[d] a whole field of them.” The same farmer recalled a more humorous story of a woman taking a number of corn stalks from his field and driving off. His teenage son proceeded to follow the person to her nearby home, exited his truck, and began digging up an ornamental shrub in front of the home. When confronted by an angry husband, the son asked simply what the difference was between his action and that his wife. The husband, in good nature, conceded the point and paid for the corn stalks. These stories reflect a common lack of public recognition of farmland and crops as privately owned resources and the impact of crop damage or theft on farmers’ livelihoods.

### The Point of No Return: Critical Mass in Agriculture

Underlying public discourse on state and local agricultural retention is often a concern that minimum thresholds for agricultural viability exist. The concept of a ‘critical mass’ is based on the idea that a minimum spatial concentration of agricultural activity exists, and that once farming activity drops below this level agriculture will become non-viable and unsustainable. Less farm activity in a region will, for example, lead to a reduction in agricultural support businesses on the input side (farm equipment, seed, feed, agricultural chemicals, etc.) and increase the management time and cost associated with obtaining farm inputs (Derr, Small, and Dhillon 1977; Lopez, Adelaja, and Andrews 1988; Daniels and Bowers 1997; Larson, Findeis, and Smith 2001). On the output side, an eroding farm base

can also be expected to correlate with a decline in primary food processors, produce distributors, and other firms handling agricultural production. This, too, will increase the management time and transportation costs incurred by the farm as it attempts to market output.

In theory, at some point below a critical level, agricultural decline will gain momentum and agriculture will invariably cease to be sustainable within a localized region. To date, however, this remains a conceptual argument since criteria defining critical mass are noticeably lacking. Defining a critical mass for agriculture arguably suffers from two challenges. The first challenge lies in defining the spatial parameters for examining critical mass. The concept suggests a minimum level of agricultural activity (farms, farmland, etc.) per unit of area (municipality, county, state, etc.). While geographic information system (GIS)-based and other land use databases are evolving, defining spatial delineations for policy analysis continues to rely most frequently upon established geopolitical boundaries due to data availability. However, agricultural systems, much like natural systems of waterways, wetlands, wildlife habitat, or other natural features, transcend polities. Municipal or county level analysis of critical agricultural mass therefore becomes less useful.

The second challenge involves the reality that agriculture, particularly in many northeastern states, is highly heterogeneous. This makes a unitary prescription for critical mass difficult. This lack of homogeneity makes it impractical to establish an acreage or spatially-based critical mass criterion that is applicable across, for example, land-intensive fruit, vegetable, and ornamental production as well as land-extensive grains, hays, and other field crops.

Despite these challenges, Daniels and Lapping (2001) review the issue of critical mass and prescribe three criteria for measuring critical mass: farmland acreage, farm sales, and preserved farm acreage. In examining the issue of critical mass, the authors contend that public resources devoted to farmland preservation should be allocated in a manner to protect a critical mass of agriculture that may be viable and sustainable. This stands in contrast to the use of such funds in heavily urbanized or suburbanizing regions in which the prospect of maintaining a viable agricultural industry is questionable and open space preservation is a primary goal.

The authors define 40,000 hectares (100,000 acres) as the minimum area of farmland required in a county to maintain a viable agricultural sector. The second measure is \$50 million in farm output per year. The third measure is the preservation of at least 8,000 hectares (20,000 acres) of farmland. Embodied in the latter criterion is the assumption that preserved acreage will include large contiguous blocks of farmland that will deflect the impact of surrounding development (i.e., sewer line extensions), stabilize the farmland base, and promote farm investment.

The criteria suggested by Daniels and Lapping imply that the large majority of counties in the Northeast do not have the requisites for agricultural sustainability. Analysis shows that the farmland acreage and farm sales requirements (100,000 acres and \$50 million, respectively) are beyond the current size parameters for most counties in the region.<sup>55</sup>

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<sup>55</sup> The third requirement, 20,000 acres of preserved farmland is not being considered since this is more of a variable condition influenced by state and local public policy. The minimum acreage and sales requirements, however, are less variable (in terms of expansion) due to the generally irreversible nature of farmland loss. Thus, these two criteria are being viewed as the true limiting factors in the subsequent analysis of critical mass in the Northeast.

Table 8-7 provides the distribution of Northeast counties by land in farms, as reported in the 1997 Census of Agriculture (the census which was current at the time of the study). Of the 217 counties in the Northeast states, all but two (Hudson County, New Jersey and Bronx County, New York) have some level of agricultural activity. In several other counties (i.e., New York, Kings, Queens, and Richmond counties in New York and Suffolk County in Massachusetts), farm activity is negligible (less than 50 acres of land devoted to farming). Only 76 counties (35 percent) had at least 100,000 acres of farmland remaining in 1997. The median farmland acreage for all counties in northeastern states was 73,418 acres. The leading counties in the region were Saint Lawrence County, New York (396,406 acres), Lancaster County, Pennsylvania (391,836 acres), Steuben County, New York (348,971 acres), Aroostock County, Maine (324,887 acres), and Bradford County, Pennsylvania (306,737 acres).

**Table 8-7: Distribution of Northeast Farms by Farm Size (1997).**

<b>Land in Farms (acres)</b>	<b>Number of Northeast Counties</b>	<b>Pct. of Northeast Counties</b>
0-24,999 acres	45	20.7%
25,000-49,999 acres	38	17.5%
50,000 -99,999 acres	58	26.7%
100,000-149,999 acres	38	17.5%
150,000-199,999 acres	21	9.7%
200,000-249,999 acres	9	4.1%
250,000-299,999 acres	3	1.4%
300,000+ acres	5	2.3%
All	217	100.0%
<div> <div>MIN</div> <div>0 acres</div> </div> <div> <div>MAX</div> <div>396,406 acres</div> </div> <div> <div>Median</div> <div>73,418 acres</div> </div>		

Source: Author's calculation based on 1997 Census of Agriculture data.

Table 8-8 provides a distribution of counties in the Northeast by farm sales (reported as “market value of agricultural products sold”). Only 66 (30 percent) of Northeast counties had farm sales of at least \$50 million in 1997. The five leading counties, all in Pennsylvania, were Lancaster County (\$766.7 million), Chester (\$342.9 million), Berks County (\$247.8 million), Franklin County (\$195.0 million), and Lebanon County (\$171.1 million). The median farm sales for counties in the region was \$29.1 million in 1997.

**Table 8-8: Distribution of Northeast Farms by Farm Sales (1997).**

<b>Farm Sales (\$1000)</b>	<b>Number of Northeast Counties</b>	<b>Pct. of Northeast Counties</b>
\$0-24,999	93	42.9%
\$25,000-49,999	58	26.7%
\$50,000 -99,999	49	22.6%
\$100,000-149,999	10	4.6%
\$150,000-199,999	4	1.8%
\$200,000 +	3	1.4%
All	217	100.0%
MIN (\$1000)	\$0	
MAX (\$1000)	\$766,743	
Median (\$1000)	\$29,107	

Source: Author's calculation based on 1997 Census of Agriculture data.

Of the 217 counties in the Northeast, only 46 (21 percent) have at least 100,000 acres of farmland and \$50 million in farm product sales (Tables 8-9 and 8-10). The largest numbers of counties meeting the critical mass parameters for farmland acreage and farm sales advanced by Daniels and Lapping are found in New York (24 counties) and Pennsylvania (16 counties), the states in which most of the region's agricultural activity is concentrated.

Three Vermont counties (Addison, Franklin, and Orleans) meet both critical mass criteria. In Maine, only Aroostook County meets the criteria (324,887 acres and \$109.6 million in sales). In Massachusetts, only Worcester County meets the criteria (103,400 acres, and \$57.9 million). In New Jersey, only Burlington County meets the criteria (103,667 acres and \$87,535 in sales). There are no counties in Connecticut, New Hampshire, or Rhode Island meeting both of these critical mass criteria.



**Table 8-9: Evaluation of Northeast Counties Relative to Critical Mass Criteria Defined by Daniels and Lapping.**

State	Number of counties	<u>Number of Counties Meeting Critical Mass Criteria</u>		
		Land in farms > 100,000 acres	Farm sales > \$50 million	Meet Both Criteria
Connecticut	8	0 (0.0%)	2 (25.0%)	0 (0.0%)
Maine	16	3 (18.8%)	2 (12.5%)	1 (6.3%)
Massachusetts	14	1 (7.1%)	3 (21.4%)	1 (7.1%)
New Hampshire	10	0 (0.0%)	0 (0.0%)	0 (0.0%)
New Jersey	21	2 (9.5%)	6 (28.6%)	1 (4.8%)
New York	62	36 (58.1%)	26 (41.9%)	24 (38.7%)
Pennsylvania	67	30 (44.8%)	24 (35.8%)	16 (23.9%)
Rhode Island	5	0 (0.0%)	0 (0.0%)	0 (0.0%)
Vermont	14	4 (28.6%)	3 (21.4%)	3 (21.4%)
<b>Northeast</b>	<b>217</b>	<b>76 (35.0%)</b>	<b>66 (30.4%)</b>	<b>46 (21.2%)</b>

Source: Author's analysis of 1997 Census of Agriculture data.

The assessment of Northeast counties based on the Daniels-Lapping critical mass criteria does not portray an optimistic view of agriculture in the region. Only one in five counties in the region meet the revenue and acreage criteria (inclusion of the farmland preserved criterion would undoubtedly drop this number further). Still lacking, however, is a more quantitative analysis of the correlation between counties meeting or not meeting these thresholds and metrics of farm viability. Such analysis, which is an area of planned research, would be useful in establishing the empirical validity of agricultural critical mass arguments.

**Table 8-10: List of Counties in the Northeast with a Minimum of 100,000 Acres of Farmland and \$50 Million in Farm Sales (1997).**

New York	Pennsylvania	Vermont	Maine	Massachusetts	New Jersey
Cattaraugus	Adams	Addison	Aroostook	Worcester	Burlington
Cayuga	Bedford	Franklin			
Chautauqua	Berks	Orleans			
Chenango	Bradford				
Clinton	Centre				
Columbia	Chester				
Delaware	Crawford				
Erie	Cumberland				
Genesee	Erie				
Jefferson	Franklin				
Lewis	Lancaster				
Livingston	Lebanon				
Madison	Northumberland				
Niagara	Perry				
Oneida	Somerset				
Onondaga	York				
Ontario					
Orleans					
Otsego					
St. Lawrence					
Steuben					
Washington					
Wayne					
Wyoming					

Source: Author's calculation based on 1997 Census of Agriculture data.

### **The Speculative Impacts of Suburbanization**

Speculative impacts refer to “distortions in agricultural production decisions caused by development pressures” (Lopez *et al.* 1988). As suburbanization extends into historically agricultural areas and development pressures increase, farmland values appreciate and farmland assumes a speculative element, taking on the characteristic of a financial asset rather than a productive asset (Berry 1978; Lopez *et al.* 1988; Lisansky 1986; Lisansky *et*

*al.* 1988; Heimlich and Barnard 1992; Daniels and Bowers 1997). What results is a so-called “impermanence syndrome.” Farmers’ planning horizons are effectively truncated due to the anticipated future sale of farmland and significant capital gains from land sales. Symptomatic of this sense of impermanence is reduced investment in farm infrastructure, lack of responsiveness to market signals, and deferred farm repairs and maintenance. Investments in farm modernization and new technologies are also curtailed. Farm efficiency and productivity inevitably suffer, adding to the farm’s inertia toward an exit from agriculture.

As farmland in a region dwindles, so too does its agricultural use value in both absolute and proportional terms (e.g., relative to the value of the development option). This is due to the expectation that farm costs will move inversely with the amount of farmland in an area due to the impermanence syndrome, as well as, economies of scale in both agricultural input and output sectors. Reduced farm productivity is in turn capitalized into lower agricultural land value. At the same time, increasing development demand places upward pressure on farmland values and shifts the composition of farmland value from predominantly agricultural use to development use value. At some threshold point the value of farmland in agriculture will be eclipsed by the value of farmland in a non-agricultural use and economic theory will predict the conversion of farmland to its new “highest and best use.”

At the rural-urban interface, farmland value is typically many times higher than its agricultural use value alone. In a national study of the relationship between agricultural land values and development potential, Plantinga, Lubowski, and Stavins (2002) found that 9 percent of the current average value of U.S. agricultural land was due to future development

potential (Table 8-11). In the Northeast, this proportion tended to be considerably higher. In New Jersey, 82 percent (the highest percentage in the Nation) of farmland value was attributed to future development potential.

**Table 8-11: Estimated Proportion of Farmland Value Attributable to Development Potential.**

State	Total Value of Agricultural Land in 1997 (\$ million)	Development Value as Pct. of Total Value	Rank
New Jersey	\$5,430	82%	1
Connecticut	\$2,126	81%	2
Massachusetts	\$2,697	65%	3
New Hampshire	\$941	30%	5
Pennsylvania	\$17,039	24%	9
Rhode Island	\$275	19%	12
New York	\$9,214	18%	13
Maine	\$1,420	15%	18
Vermont	\$1,914	15%	19
United States	\$863,352	9%	N/A

Source: Plantinga, Lubowski, and Stavins (2002).

Empirical examination of the extent of “impermanence” in New Jersey farming (and the correlation between farmland values and impermanence), is not a primary focus of this research. Nevertheless, available data do raise an interesting question of whether farmers in the state are investing in their operations to an extent equal to farmers operating elsewhere in the U.S. In 1999, the average farm in New Jersey expended less on capital purchases

(\$18,206) than the typical U.S. farm (\$20,685) or Northeast farm (\$20,751) (Table 8-12).

Considerable caution is required in making interstate comparisons of agricultural capital investment patterns, however, due to the markedly different composition of New Jersey agriculture vis-a-vis farming in other regions.

**Table 8-12: Average Capital Purchases on Farms in the United States, Northeast, and New Jersey (1999).**

<b>Capital Purchases per Farm</b>	<b>United States</b>	<b>Northeast</b>	<b>New Jersey</b>
<i><b>Total Capital Purchases</b></i>	<b>\$ 20,685</b>	<b>\$ 20,751</b>	<b>\$ 18,206</b>
Land & Irrigation Improvements	\$ 5,765	\$ 4,104	\$ 4,041
Buildings and Structures	\$ 17,260	\$ 15,580	\$ 11,776
Tractors and Self-Propelled Machinery	\$ 17,650	\$ 14,180	\$ 8,241
Other Farm Machinery	\$ 7,655	\$ 8,141	\$ 6,042
Automobiles and Trucks	\$ 10,641	\$ 9,487	\$ 11,942
Livestock Purchased for Breeding	\$ 9,432	\$ 14,011	\$ 5,005
Other Capital Purchases	\$ 4,759	\$ 5,721	\$ 13,553

Source: Data derived from 1999 Agricultural Economics and Land Ownership Survey (USDA, National Agricultural Statistics Service).

The growing demand for land for development in New Jersey has placed continued upward pressure on farmland values over the past several decades. From 1960 to 2000, aggregate net farm income per acre increased by 314 percent in New Jersey (Table 8-13). The average value of farmland, however, rose by more than 1240 percent. Adelaja and Schilling (1995) posit that, for some farmers, the primary motivation for remaining in farming is the accumulating wealth being generated in the land asset. Such appreciation may serve to mitigate the impulse to exit agriculture when operating at a loss or minimal profit level in the short to intermediate term.

**Table 8-13: Indices of Net Farm Income and Average Value of Farmland and Buildings in New Jersey (Selected Years).**

Year	Net Farm Income per Acre (\$)	Index of Net Farm Income per Acre	Average Value of Farmland and Buildings per Acre (\$)	Index of Average Value of Farmland and Buildings per Acre (\$)
1960	\$64.52	100.00	\$528	100.00
1970	\$58.77	91.09	\$1,092	206.82
1980	\$90.29	139.95	\$2,947	558.14
1990	\$209.66	324.95	\$4,634	877.65
2000	\$267.11	414.00	\$7,100	1,344.70

Source: Adelaja, Schilling, and Menzo (1999, New Jersey Agricultural Statistics Service (2001), and USDA Economic Research Service (2002). ERS data obtained at: <http://usda.mannlib.cornell.edu/reports/nassr/other/plr-bb/land0802.txt> on December 4, 2002.

### **The Market Impacts of Suburbanization**

Finally, despite the negative ways in which growth and development impact agriculture, suburbanization also brings potentially important market opportunities to farmers. Once the dominant form of food marketing, direct marketing of agricultural products to consumers has largely been displaced by the evolution of a highly efficient and increasingly technologically advanced food distribution system. This system has increased the distance between most Americans and the source of their food. The growth in consumption of processed foods has similarly reduced American direct-from-farm purchases of food products (Gale 1997). Today, in New Jersey as well as many other regions where farming is now occurring at an urban interface, direct farm marketing is resurgent as farmers attempt to reach consumers through roadside stands, farm markets, pick-your-own operations, and other venues.

Direct marketing offers a number of benefits to farmers, as well as consumers. First, offering farm products direct-to-consumer provides farmers with the opportunity to capture a larger share of the consumer food dollar by eliminating the middlemen whose services constitute much of the marketing margin. Conventional farm marketing has evolved to the point where farmers primarily sell products wholesale at a fraction of retail price levels. According to the USDA's Economic Research Service, American farmers receive an average of only 19 cents of the consumer's food dollar, with the balance going to other actors in the food marketing and distribution chain. Research by Govindasamy *et al.* (1998) documented higher profitability among New Jersey farmers that engage in innovative marketing practices, including direct marketing to consumers and agritourism. For smaller farms that cannot realize economies of scale in production, direct and niche marketing are often critical to farm survival.

From a consumer viewpoint, the perception of superior product quality and satisfaction of "buying locally" also motivate consumers to buy directly from farms. Gale (1997) also notes that heightened concerns about food safety and environmental issues have encouraged consumer interest in buying foods directly from local farms.<sup>56</sup> Specifically in the case of consumers desiring organic production techniques, direct interaction with farmers provides a sense of confidence and reassurance that appropriate growing techniques are

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<sup>56</sup> While groups, including American Farmland Trust, point to the persistent threat of development to the Nation's food production, most experts do not foresee any looming diminishment in domestic agricultural capacity or food security. There is a growing level of discourse in agricultural policy focused on the issue of "local food systems" that emphasizes the importance of local food production and community "food sheds." Advocates argue that localized food production is more energy efficient, environmentally friendly, and conducive to local agricultural retention.

being employed. In the aftermath of 9/11, questions arose about the integrity and safety of the domestic food supply from deliberate acts of contamination. Such concern would also seemingly renew interest in localized food production.

Second, direct marketing is one strategy for marketing diversification. On one hand, it provides an alternative to selling products at wholesale prices. In many instances, advance buying contracts in a retail market characterized by an increasing level of consolidation and dominance by large companies preclude smaller growers from even receiving contracts due to inadequate production volumes. Large supermarket chains may bypass them in favor of larger growers more capable of meeting volume targets on a less seasonal basis. In other cases, direct-to-consumer sales may offer an avenue for moving off-grade products that do not meet minimum size or other grading standards. In either case, direct marketing may offer a degree of risk mitigation as multiple marketing channels are employed.

Third, interaction with consumers provides farmers with instantaneous feedback on the types of farm products and services demanded by consumers in their local market areas. This includes not only types of farm products, but also farm production methods (i.e., organic) as well as farm activities that are more recreational in nature (i.e., agritourism). As an example, growing ethnic diversity in New Jersey and elsewhere in the United States creates demand for non-conventional produce varieties that meet the cultural preferences of recent immigrants. The growing Hispanic market is a major trend shaping decisions in the entire food retail industry. These demographic changes translate into market opportunities for farmers willing to adapt to emerging markets. Lyson *et al.* (1995) argue that small farms, which are more likely to engage in direct marketing, have a greater ability to respond to new market demands for specialty products.



Finally, direct marketing reunites consumers with an agrarian heritage that is, for most, long forgotten. Direct marketing offers diverse opportunities for consumers, ranging from pick-your-own activities or cut-your-own Christmas tree operations to simply purchasing fresh local produce at a roadside stand or community farmers' market. While this provides a form of entertainment, it also offers pragmatic benefits from the standpoint of farm viability. As farmers and non-farmers are brought into positive contact (as opposed to conflict), an environment of mutual appreciation and understanding is fostered.

#### Status of Direct Marketing in New Jersey

New Jersey farmers rely disproportionately more on direct marketing opportunities than their counterparts in many other states. In 2002, 1,769 farms sold more than \$19.1 million worth of agricultural products direct-to-consumer; this figure includes only agricultural products sold for 'human consumption' and does not take into account items such as nursery and ornamental products or Christmas trees. Whereas New Jersey ranks only 39<sup>th</sup> in the value of farm products sold, it ranks 12<sup>th</sup> in farm direct marketing sales. The state's reliance on direct-to-consumer sale of farm products is further shown by the fact that New Jersey represents roughly 2.4 percent of national direct farm marketing sales, more than six times higher than its value share of national farm output.

Direct-to-consumer sales of farm products in New Jersey are on the rise. Census of Agriculture data document that, from 1992 to 2002, the number of farms engaged in direct marketing rose by 261 farms (17 percent). More impressively, direct-to-consumer farm sales grew by nearly \$8 million. This represented an astounding sales growth of 71 percent over the ten-year period.

Several New Jersey counties are among the national leaders in direct-to-consumer marketing of farm products. In total, twelve New Jersey counties ranked in the top 100 counties nationally (Table 8-14). With more than \$3 million in direct marketing sales, Burlington County leads all New Jersey counties and ranks 28<sup>th</sup> among U.S. counties.

**Table 8-14: County Leaders in Farm Direct Marketing (2002).**

<b>County</b>	<b>Value of Farm Products Sold Directly to Consumers (\$ million)<sup>1</sup></b>	<b>U.S. Rank<sup>2</sup></b>
Burlington	\$3.11	28 <sup>th</sup>
Gloucester	\$2.18	50
Hunterdon	\$1.79	71
Monmouth	\$1.68	81
Morris	\$1.59	88
Warren	\$1.54	95
Salem	\$1.25	124
Sussex	\$0.92	192
Cumberland	\$0.78	230
Middlesex	\$0.78	233
Cape May	\$0.72	255
Mercer	\$0.69	267
<sup>1</sup> Value of products sold for <i>human consumption</i> only. <sup>2</sup> Rank is out of the 2,785 U.S. counties with reported sales from farm direct marketing in 2002.		

Source: 2002 Census of Agriculture, New Jersey.

## Summary

This chapter concludes a discussion of the rationale for public intervention, and more specifically local government involvement, in agricultural retention and development.

Arguments in favor of decentralized policy were presented along three primary lines: (1) agriculture in the U.S. is highly heterogeneous, (2) agriculture provides localized public good amenities highly valued by residents, and (3) prevailing patterns of growth and development often bring adverse consequences (and some opportunities) to farms at the rural-urban fringe.

As demonstrated in this section, suburbanization in New Jersey has been a dominant force for several decades. Population growth and dispersion, as well as an increasingly land-consumptive pattern of development, have resulted in substantial losses of farmland acreage. Further, remaining farms in suburbanizing locales face a variety of challenges associated with changing land use, socio-political, and market dynamics that are localized in nature.

The roles of the federal and state governments in farm policy have now been examined (the latter from a New Jersey policy perspective). The case for a local government role in agricultural policy has similarly been constructed. What remains is an assessment of actual local government efforts to address farm industry needs and support industry retention and viability. The remaining chapters are devoted to this topic and present analysis of farm policy and retention strategies in the agriculturally intensive northern corridor of Burlington County, New Jersey.

## **Chapter 9**

### **Planning for Agricultural Viability: A Case Study of Northern Burlington County**

This chapter begins an empirical analysis of local agricultural policy in New Jersey, focusing on 13 municipalities comprising the northernmost Burlington County. Known locally as the Route 206 Farm Belt, this region remains among the most agriculturally intensive corridors in the state. Driving along Route 206, which traverses the region from north to south, provides a clear indication of the importance of agriculture to the area's identity and physical landscape. The present day working landscape reflect centuries of farming practices carried out, in many cases, by farm families dating back many generations. Farming continues to provide a defining sense of place and holds an important position in the region's economy, culture, and heritage.

The selection of a state as highly urbanized as New Jersey for a case study of local agricultural policy may appear paradoxical; however, it is the frequent juxtaposition of urban and rural dynamics across the state that makes the selection interesting. While the state is rooted in agrarianism, the past half century has seen substantial displacement of the agricultural industry and farmland loss. As previously introduced polling and bonding referenda data show, remaining farms are highly valued by residents across the state as sources of local food production and myriad open space amenities. On the other hand, favorable public opinion does not negate the challenges experienced by farmers as they operate their businesses in the midst of suburbia and continually shifting urban-rural boundaries.

Home rule adds further interest to the analysis of local agricultural policy making in New Jersey. While New Jersey has a progressive state-level agricultural policy framework, local governments have significant powers to shape local business climates and land use. The will, knowledge, and ability to effectively promulgate supportive farm policy, however, is subject to demographic and socio-political dynamics that tend to be more variable and subject to more rapid change at the local level than at the state level. At the same time, local policy making can be more nimble and responsive to emerging dynamics, and their implications for agriculture.

### **Overview of Burlington County Agriculture**

Located in the south-central part of the state, Burlington County extends from the Delaware River to the west to the Atlantic ocean to the east. Comprising 827 square miles, it is the largest of New Jersey's 21 counties, and one with an extensive farming history. Native Americans were actively farming in the region, which they named Matinicum, prior to the arrival of British Quakers in the early 1600s, and the Swedes thereafter. The settlers found the region's soils well suited for a wide range of agricultural products, including fruits, vegetables, and grains. As Europeans began inhabiting the region, the combination of European and Native American farming practices provided the basis of a vibrant industry. Early settlers adopted Native American farming practices (i.e., crop rotations to avoid soil depletion) and introduced Old World crops and farming techniques. Livestock husbandry and poultry production also became prevalent. Proximity to urban markets (i.e., Philadelphia) provided farmers with a level of market access that combined favorably with natural conditions to support industry development.

As the twentieth century dawned, the Census of Agriculture documented 2,549 farms in the Burlington County operating on 343,096 acres (Table 9-1). This represented approximately two-thirds of the total county land base. By the middle of the century, the county had lost more than one-quarter of these farms and farmland area had declined by 40 percent to less than 208,000 acres.

The most recent (2002) Census of Agriculture data reveal that Burlington County has 906 farms remaining today, operating on 111,237 acres of farmland. Farmland now accounts for only one-fifth of the county's land base. These means that in the past 100 years, the county has lost 64 percent of its farms and 68 percent of its farmland. Similar to statewide land use changes, much of this loss occurred since the 1950s. Yet despite years of farm attrition, Burlington County remains among the most agriculturally important counties in New Jersey. Based on 2002 Census of Agriculture data, Burlington County ranks 1<sup>st</sup> in farmland acreage, 2<sup>nd</sup> in market value of farm products sold (behind only Cumberland), 2<sup>nd</sup> in harvested cropland acreage (behind Salem), 3<sup>rd</sup> in number of farms (behind Hunterdon and Sussex), and 3<sup>rd</sup> in net cash income from farming (behind Cumberland and Atlantic).

Examination of the ownership structure of the county's large farmland base shows that the county has more farms comprising at least 1,000 acres (n=32) than any other county in New Jersey (Table 9-2). These large farms comprise more than 52,300 acres, nearly half of the entire county farmland base. Nearly two-thirds of Burlington County's farmland, almost 72,000 acres, is operated by the 62 largest farms. The distribution of farm sizes in the county has important implications for farmland preservation planning since the actions and decisions of a few Burlington County farmers could have significant impacts on the future agricultural landscape of the county.

**Table 9-1: Historic Data on Farms and Land in Farms in Burlington County.**

<b>Year</b>	<b>Farms (Number)</b>	<b>Avg. Farm Size (Acres)</b>	<b>Land in Farms (Acres)</b>
2002	906	123	111,237
1992	816	119	97,186
1982	743	152	112,689
1974	708	202	142,751
1964	1,070	154	164,835
1954	1,835	113	207,618
1945	1,629	108	176,242
1935	2,122	103	219,273
1925	2,132	86	183,940
1910	2,389	121	287,816
1900	2549	135	343,096

Source: U.S. Census of Agriculture, various years.

The presence of many very large farms in the county is reflected in the fact that average farm in Burlington is higher than the statewide mean (123 acres versus 81 acres). However, median farm size for both the state and county is 21 acres, pointing to the presence of many small farms. Twenty-six percent of the county's farms are less than 9 acres in size, but they operate only 1 percent of farmland in the county. The large number of small farms is generally attributable to two factors: the emergence of the nursery/greenhouse industry and the proliferation of residential farms engaging in small-scale production.

**Table 9-2: Frequency Distribution of Burlington County Farms by Farm Size (2002).**

<b>Acres</b>	<b>Farms</b>	<b>Pct. of Farms</b>	<b>Land in Farms</b>	<b>Pct. of Land in Farms</b>
1 to 9	240	26%	1,443	1%
10 to 49	387	43%	7,831	7%
50 to 99	112	12%	7,943	7%
100 to 499	105	12%	22,059	20%
500 to 999	30	3%	19,640	18%
1000 to 1999	25	3%	36,761	33%
2000+	7	1%	15,560	14%
All Farms	906	100%	111,237	100%

Source: U.S. Census of Agriculture, 2002.

In 2002, the county's farms generated agricultural output with a farm-gate value of more than \$83 million.<sup>57</sup> Not unlike the statewide industry, the market value of agricultural output in the Burlington is relatively concentrated. Roughly two-thirds of the total value of farm production in Burlington County is generated by only 35 farms each producing annual sales in excess of \$500,000 (Table 9-3). Only Cumberland, Salem, Gloucester, and Atlantic counties have more farms in this size class. In contrast, approximately two-thirds of all Burlington County farms generated sales of less than \$10,000 in 2002. While often the source of contention, these small farms nevertheless contribute significantly to the physical, economic, and political landscape of Burlington County agriculture. Some of these small

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<sup>57</sup> This economic impact expands considerably when one considers the economic linkages to other industries and "ripple effects" as the personal income earned in the farming sector moves through the economy. Previous IMPLAN analysis by the author found that the farm sector contributed an estimated \$135 million to the county economy in 1997 when economic linkages to other industries were considered.



revenue farms are operated by retired farmers or farm widow(er)s. Some are small or part-time operations that supplement a primary non-farm source of household income, while others are motivated to farm due to lifestyle preferences.

**Table 9-3: Frequency Distribution of Burlington County Farms by Sales Class (2002).**

Sales Category	Number of Farms	Pct. of Farms	Sales (\$1,000)	Pct. of Sales
Less than \$10,000	574	63.4%	\$1,157	1.4%
\$10,000 to \$99,999	203	22.4	\$7,818	9.4
\$100,000 to \$249,000	59	6.5	\$9,197	11
\$250,000 to \$499,999	35	3.9	\$11,789	14.2
\$500,000+	35	3.9	\$53,293	64
<b>Total</b>	<b>906</b>	<b>100.0 %</b>	<b>\$84,253</b>	<b>100.0 %</b>

Source: U.S. Census of Agriculture (various years).

The composition of the region's agricultural sector continues to evolve. In 2002, the "green industry" dominated Burlington County agriculture. Nursery, greenhouse, floriculture, and sod products now account for nearly half of all farm revenues (Table 9-4). Fruits, berries, and vegetables account for another third of total production value. Livestock production, once significant in the region, has been relegated to a relatively nominal station in terms of overall county production.<sup>58</sup>

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<sup>58</sup> Census and historical records document the past importance of animal agriculture in Burlington County. For example, Burlington was once known for the production of work horses and swine. In 1832, a Mansfield Township farmer fattened a hog to 1,611 pounds, a record of the time. Cattle and dairy husbandry was also historically important until advancements in transportation and refrigeration enabled lower-cost producers from the

**Table 9-4: Burlington County Farm Commodity Mix (2002).**

<b>Commodity</b>	<b>Pct. of Sales (2002)</b>
Nursery, greenhouse, floriculture & sod crops	46%
Fruits, nuts and berries	20%
Vegetables, sweet corn, melons & potatoes	13%
Grains	7%
Dairy	5%
Equine	5%
Other crops & hay	1%
Cattle and calves	<1%
Christmas trees	<1%
Poultry and related products	<1%
Other livestock (incl. sheep and aquaculture)	<1%
Hogs and pigs	<1%
Total	100%

Source: 2002 Census of Agriculture.

Census of Agriculture data show that Burlington County accounts for 11 percent of total statewide crop output (in terms of value of production) and an equal proportion of livestock revenues. Burlington County accounts for a disproportionately larger share of

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Corn Belt to out-compete East Coast farmers. In the 1920s Burlington County was a national leader in poultry production - both layers and meat birds. The Jersey Black Giant breed originated in the county and was, at the time, the largest chicken breed. This contributed to the rise of the county as the largest capon producer in the U.S. in 1923.

equine production (24 percent), grains (19 percent), fruits and berries (19 percent), and milk and dairy products (16 percent).<sup>59</sup>

According to 2001 data from the New Jersey Agricultural Statistics Service, Burlington County is the leading producer of soybeans and cranberries in New Jersey. The county ranks second in sweet corn and blueberry production and third in the production of corn for grain and nursery stock. The county also is among the top producers of wheat, apples, tomatoes, asparagus, cabbage, milk, and peaches.

The county's current commodity mix reflects production decisions influenced considerably by opportunities to enhance the economic returns through direct marketing. Burlington farmers have long capitalized on the competitive advantage created by access to major urban markets along the East Coast by producing vegetables, fruits, poultry products, and other farm goods meeting local consumer demand. The direct marketing of farm products for human consumption (i.e., excluding nursery stock, Christmas trees, and other non-consumables) totaled \$3.1 million in 2002 . This is higher than any other county and represents 16 percent of total statewide farm direct marketing revenue. More impressive is the fact that Burlington County ranked 28<sup>th</sup> nationally (out of more than 3,100 U.S. counties) in direct marketing sales in 2002, and 5<sup>th</sup> in 1997.

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<sup>59</sup> The county's share of state fruit and berry revenues fell sharply from 1997 due to the financial difficulties in the cranberry market (in 1997, the county generated 32 percent of fruit and berry revenues statewide).

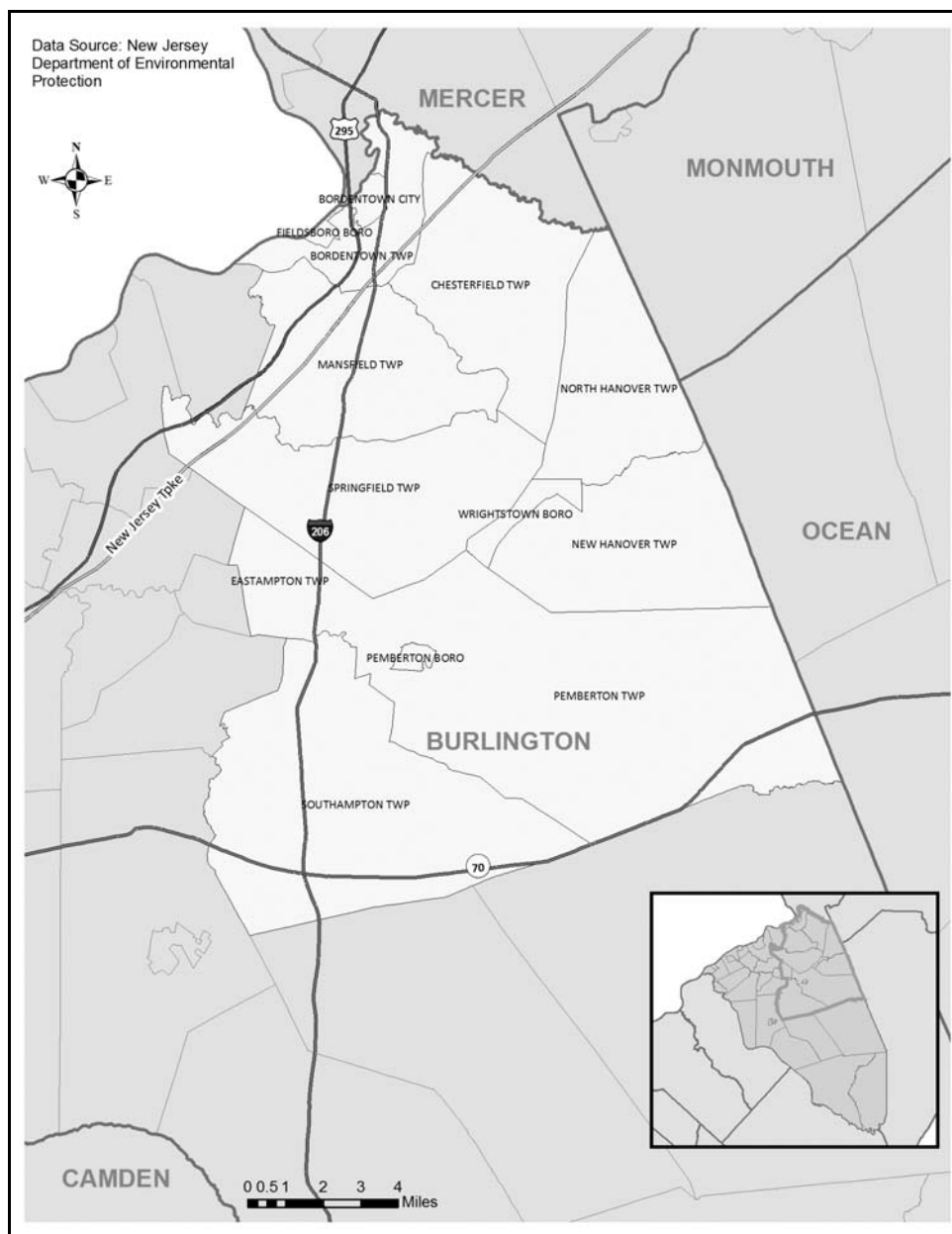
### **The Route 206 Farm Belt**

The Farm Belt is defined by county executives and planning officials as the 13 municipalities along Route 206 that lie north of Route 70. It includes Bordentown City, Bordentown Township, Chesterfield Township, Eastampton Township, Fieldsboro Borough, Mansfield Township, New Hanover Township, North Hanover Township, Pemberton Borough, Pemberton Township, Southampton Township, Springfield Township, and Wrightstown Borough (Figure 9-1).

This rural character of the Farm Belt is shared by the neighboring municipalities to the east, Upper Freehold Township (Monmouth County) and Plumsted Township (Ocean County). Both communities, Upper Freehold in particular, have very active farmland preservation programs. Historically agricultural Medford and Tabernacle townships, located in the south-central part of the county adjacent to Southampton Township, maintain a strong rural character, but face intensifying development pressures.

On the other hand, the Farm Belt is proximate to heavy urbanization along the north, south, and west outskirts of the region. To the north of the Farm Belt lies the large and relatively heavily developed Hamilton Township (Mercer County). To the west/southwest lie Burlington County's urbanized river communities located along the Route 130 corridor. Mount Holly (the county seat), Mount Laurel, Moorestown, Cinnaminson, and Maple Shade border the region in the central/southwestern part of the county. The southeastern part of the Farm Belt (Pemberton Township) shares a border with and Manchester Township (Ocean County). Manchester experienced rapid population growth from the 1960s through the 1990s as several retirement communities were developed in the township.

**Figure 9-1: Burlington County New Jersey's Route 206 "Farm Belt."**



Source: New Jersey Department of Environmental Protection. Map created by Lucas Marxen, Rutgers Food Policy Institute.

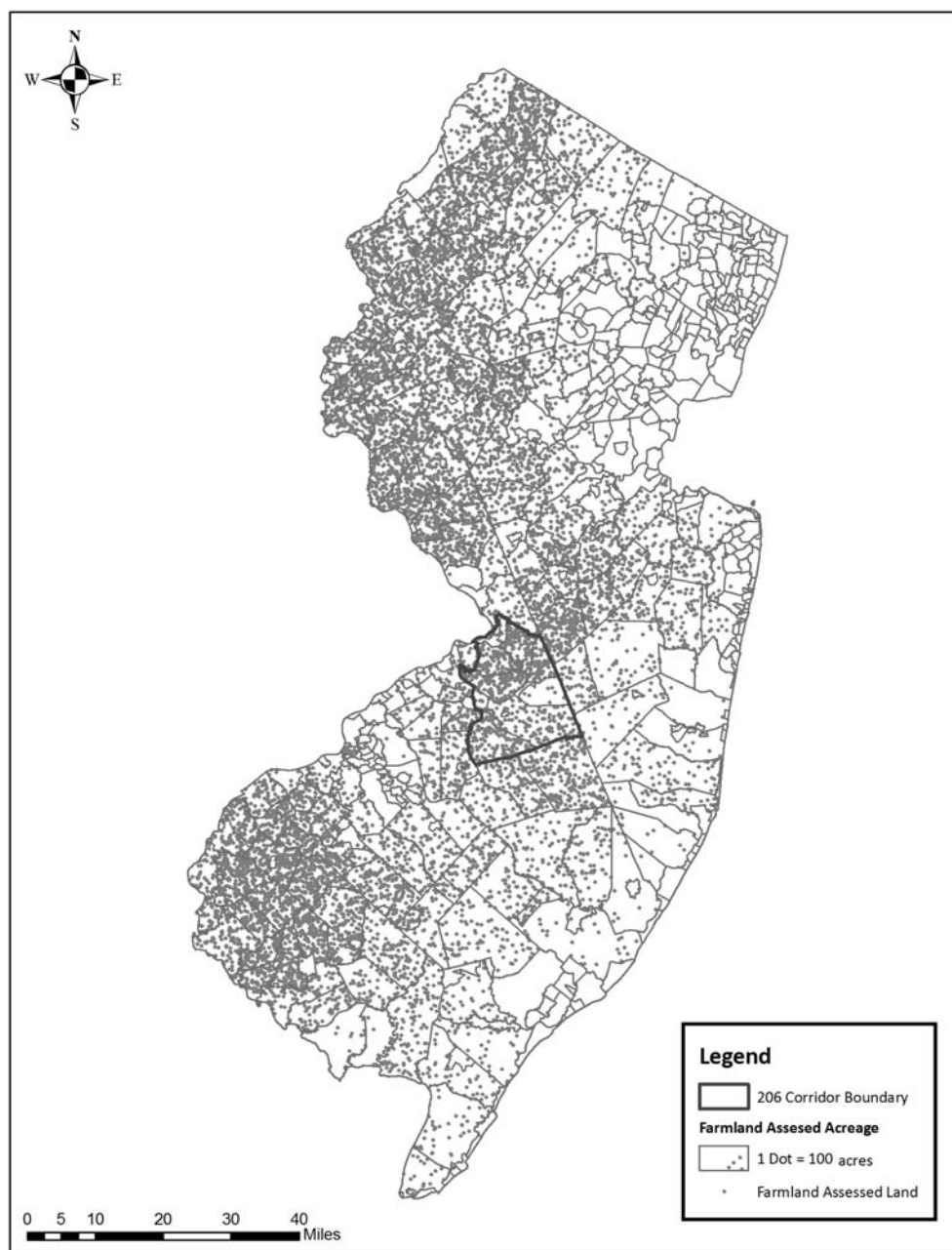
The delineation of Burlington County's Route 206 Farm Belt as the geographic focus of this study was predicated upon several factors. First, as noted in the preceding section, Burlington County remains intensively agricultural in nature.<sup>60</sup> Spatial analysis of farmland assessed acreage in New Jersey reveals that a significant amount of this agricultural activity is located in northern Burlington County farm belt, constituting one of several important farmland clusters in New Jersey (Figure 9-2). The rurality of the region is further evidenced by the dominant planning area designations under the State Development and Redevelopment Plan. Forty-five percent of total Farm Belt land area is classified under Planning Area 4 (rural); this proportion of area rises to 85 percent if land falling under the jurisdiction of the Pinelands Commission is excluded.

The Route 206 Farm Belt comprises approximately 152,000 acres, or 29 percent of total county area. However, 46 percent of the county's total farmland assessed acreage (roughly 68,000 acres) is concentrated in the farm belt communities (Table 9-5). The intensity of agriculture in this corridor is further conveyed by the fact that 45 percent of the total farm belt land base was farmland assessed during the 2001 tax year. Several communities have an even higher percentage of land devoted to agricultural use. For

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<sup>60</sup> Acknowledging the cautionary note on critical mass provided in Chapter 8, Burlington County is the only New Jersey county that meets the Daniels-Lapping critical mass criteria (100,000 acres of farmland, \$50 million in farm output per year, and 20,000 acres of preserved farmland). The most recent Census of Agriculture shows that Burlington County has 111,237 acres of farmland and a total market value of agricultural products sold in excess of \$83 million. The total acreage of farmland preserved in the county is difficult to determine due to the presence of several active land preservation programs including a transfer of development rights program, growth restrictions in the Pinelands (which extends into the southern/central part of the county), and the conventional farmland preservation program. The latter program alone, through April 2005, had preserved more than 19,600 acres of farmland.

**Figure 9-2: Distribution of Farmland Assessed Property in New Jersey.**



Source:

New Jersey Agricultural Statistics Service, Farmland Assessment data, 2001 Tax Year. Map created by Lucas Marxen, Rutgers Food Policy Institute.

example, more than 60 percent of Mansfield and North Hanover townships' land area is farmland assessed. In Chesterfield and Springfield townships, the proportion of farmland assessed land rises to over 70 percent. These municipalities are recognized as among the most agriculturally intensive in the entire state.

**Table 9-5: Agricultural Profile of Burlington County's Farm Belt.**

<b>Geography</b>	<b>Total Area (Acres)</b>	<b>Land Under Farmland Assessment (Acres)</b>	<b>Pct. of Land Under Farmland Assessment (%)</b>
Route 206 Farm Belt	152004	68011	44.7%
Burlington County	519783	148364	28.5%
New Jersey	4777834	1136258	23.8%
Farm Belt as Pct. of County	29.2%	45.8%	N/A

Source: Source: 2001 New Jersey farmland assessment records.

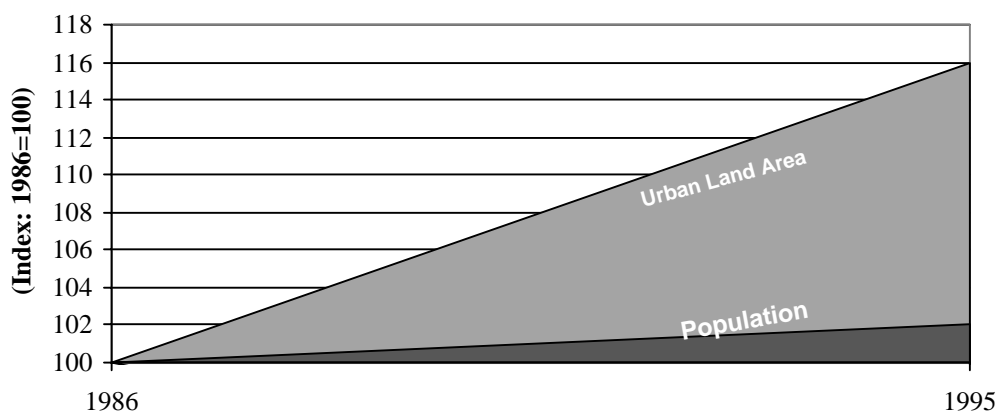
A second reason for selecting the Farm Belt region for this policy analysis stems from the diverse growth and land use dynamics prevailing in the region. While agriculture remains a dominant element in the region's landscape, urbanization pressures on the farmland base have grown significantly over recent decades. As noted in Chapter 8, urban land area in Burlington County rose by 17.5 percent between 1986 and 1995, while the county's population increased by only 9.0 percent. Figure 9-3 provides a graphic representation of the even greater disparity in the rate of population growth and the rate of urban land growth in the Farm Belt. Over this same period, total urban land area in the farm belt increased by 16 percent. Population in these 13 communities grew by only 2 percent,



however, suggesting an increasingly land consumptive pattern of development in the region.

Analysis shows that much of this urban land expansion involved the conversion of farmland.

**Figure 9-3: Disparity in Urban Land Growth and Population Growth in the Farm Belt (1986-1995).**



Source: Graphic developed by author with data compiled from New Jersey State Data Center (population data) and NJDEP (urban land use/land cover data).

The third, and perhaps most significant, factor supporting the delineation of the Farm Belt for this policy analysis is the progressivity of agricultural retention efforts and regional planning within the region and county. Burlington County has long been nationally recognized as a front runner in farmland preservation. The county was the focal point for early farmland preservation efforts initiated under the 1976 Agriculture Preserve Demonstration Program Act. A decade later, two of the county's municipalities (Chesterfield and Lumberton) were designated as demonstration sites under the 1989 Burlington County Transfer of Development Rights Demonstration Act.<sup>61</sup> A number of

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<sup>61</sup> Chesterfield Township is nationally known for its TDR program, which has moved toward implementation in recent years. In 2005, the development of Old York Village began

prominent Burlington County farmers have served in statewide leadership positions, including the State Board of Agriculture. At least one prominent Farm Belt farmer was active on the State Agriculture Development Committee during its formative years of the statewide farmland preservation program.

From the inception of the statewide farmland preservation program in 1983 through April 2005, more than 19,630 acres of farmland have been preserved through easement and fee simple purchases, more than in any other New Jersey county (SADC 2005). According to Deborah Bowers, a national expert on farmland preservation and publisher of *Farmland Preservation Report*, this places Burlington among the top ten most successful farmland preservation programs in the country. Examination of SADC farmland preservation closings shows that 94 percent, or 18,412 acres, of preserved farmland acreage is concentrated in the Farm Belt region. Chesterfield and Springfield townships have among the most aggressive preservation programs in the entire state. Through early 2005, these communities alone had preserved more than 8,500 acres of farmland. North Hanover and Mansfield have each preserved more than 2,000 acres.

Of particular interest to this research is the fact that agricultural retention and development features prominently on the planning agenda of County leadership. Since the late 1990s, the Burlington County Board of Chosen Freeholders has been engaged in regional planning for smart growth in the northern part of the county, outside of the largely growth-restricted Pinelands region in the southern part of the county. Specifically, planning has been focused along two corridors (spatially defined around Routes 130 and 206). The

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in the receiving area located in the northern part of the township.

Route 206 corridor plan is heavily focused on agricultural viability within the region. A review of these planning efforts follows.

### **Regional Planning in Northern Burlington County**

Burlington County is actively engaged in innovative and forward-thinking planning. The Route 206/Farm Belt planning effort is the most recent step toward comprehensive regional planning in the northernmost part of the county. The County was an early proponent of farmland preservation and at the frontier of innovative land use protection with its designation as a pilot site for a transfer of development rights program in the late 1980s. More recently, the County won accolades for their Route 130 Corridor Plan (focused on the communities along the Delaware River), receiving awards from both the American Planning Association-New Jersey Chapter, as well as the New Jersey Planning Officials.

The development of a Route 130/Delaware River Corridor Regional Strategic Plan was charged in 1995 by the Burlington County Board of Chosen Freeholders. Subsequently renamed the River Route Revitalization Program, the plan sought to revitalize the twelve communities adjacent to the Delaware River and traversed by Route 130 in the western part of the county. The 16-mile long corridor extended from Cinnaminson Township and Palmyra Borough in the southwest to Florence Township in the north. According to Mark Remsa, Director of the Burlington County Department of Economic Development and Regional Planning, the region had been plagued by a steady economic decline and deteriorating quality of life and reduced investment over the past several decades.

The planning process was an extensive, county-facilitated effort that spanned more than two years before being finalized in 1998. Participatory in nature, it was based upon

substantial grassroots involvement, engaging citizens and municipal officials. State agencies were also solicited for input. The Route 130/Delaware River Corridor Regional Strategic Plan was completed in two primary phases: (1) an analysis of regional constraints and opportunities Analysis (completed in late 1997) and (2) a recommendations report in late 1998. In April 1999, the New Jersey State Planning Commission endorsed the county's corridor plan. This was a major milestone since it opened the way for state funding to help implement the plan.

The current focus is now on updating the corridor plan (an effort advanced by the most recent round of State Plan cross acceptance) and marketing the corridor as the "Burlington County River Route." Redefining the region's identity from the 'Route 130 Corridor' to the 'River Route' was a key step in reinvigorating investment in these communities. Freeholder Vincent R. Farias notes the transforming the region's image is vital to business attraction and increased residential appeal, and sees it as an opportunity to "underscore the historic, recreational, and other assets that the River Route has to offer" (Burlington County press release, November 4, 2004).

The marketing and branding effort will be a cooperative effort between the Burlington County Freeholders and the Burlington County Bridge Commission. A major economic uplift occurred with the siting of the RiverLINE light railway in the corridor, a line extending from Camden to Trenton with connections to other transit systems. According to Remsa, upwards of \$1 billion in new residential and commercial investment was spurred by the establishment of the new transit system. The county's goal is to expand upon the economic investments being made in the area and to further capitalize upon the RiverLINE (which was not in place at the time the corridor plan was developed.)

On April 18, 2000, the Board of Chosen Freeholders initiated the next step in their planning agenda, submitting a successful proposal to the New Jersey Department of Community Affairs for a Smart Growth Planning Grant. The grant was requested to support a strategic plan to balance growth and development with preservation and agricultural concerns in the northern part of the county, east of the Route 130 Corridor/River Route. In the proposal, the freeholders announced their desire to

avoid the detrimental impacts that suburban sprawl has on rural areas, which exist within the county, by creating a blueprint and action plan for smart growth that balances growth and development with preservation in [the farm belt].

The nature of the challenges and goals in this part of the county were recognized as being significantly different from those in the Route 130 Corridor. Whereas the previous planning initiative focused on revitalizing older, more urbanized communities, the Farm Belt corridor plan focused on the rural-agricultural communities traversed by Route 206. Convenient and well-developed road infrastructure has contributed to residential and non-residential growth pressures on this region. North-south running roadways include the New Jersey Turnpike, Route 130, Route 206, and Route 295. Major east-west roads include Routes 537, 38, and 70, increasing accessibility to Philadelphia.

The Route 206 Farm Belt Corridor planning proposal was an effort to protect decades worth of state, county, and local investments in farmland preservation. As previously noted, the majority of preserved farmland is located in farm belt communities. Director Remsa notes the inherent tension between farm retention objectives and the concurrent need to address myriad other challenges ranging from failing residential septic systems to increasingly overburdened local roadways (many established in the “horse and wagon” era)

to unemployment to declining businesses. These pressures have been exacerbated by the level and nature of new residential development, which has taken the form of both large planned developments (i.e., in Mansfield Township) and scattered subdivisions.

Adding further complexity to regional planning in the Farm Belt is the need to consider the unique land use dynamics and constraints imposed by the Pinelands Comprehensive Management Plan in the southern part of the planning area.<sup>62</sup> Roughly 72,000 acres (47 percent) of the Farm Belt, mostly in New Hanover, Pemberton Township, Southampton, and Wrightstown Borough, is within the Pinelands region. Pinelands growth management regulations stand to shift growth pressures toward the northern part of the county, adding greater urgency to the freeholders' interest in launching a regional planning initiative for the Farm Belt.

The Freeholders' proposal for a regional smart growth plan in the Farm Belt comprised multiple objectives, including analysis of land development and land use patterns, demographic trends, watershed issues, economic composition, transportation and circulation issues, housing, and community service needs. The plan also encompassed regional visioning exercises, visual/aesthetic preference modeling, build-out analysis, and local fiscal impact analysis. Importantly, given the rural-agricultural nature of the region, the plan also called for an understanding of the current nature of agriculture in the region and the requisites for farm viability. Procedurally, the planning process was "bottom-up" and

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<sup>62</sup> The Pinelands covers roughly 930,000 acres in parts of Atlantic, Camden, Cape May, Cumberland, Gloucester, Ocean, and Burlington. Congress created the Pinelands National Reserve in 1978 to protect the region's unique ecosystems and a large aquifer from the impacts of development. New Jersey legislators passed the Pinelands Protection Act in 1979 for a similar purpose. The Pinelands Comprehensive Management Plan, designed to advance the goals of the Act, designates areas for growth, preservation, and agriculture.

“consensus-oriented.” Similar to the previous Route 130 plan, it emphasized active participation by residents and municipal representatives. The freeholders’ proposal emphasized the point that

...the strategic plan will not be a county plan, but a plan prepared by the Board and the municipalities. The plan is not intended to usurp or supplant municipal master plans and zoning ordinances. Rather, it is intended to be a vision document with key recommendations and strategies that...will achieve the vision.

On January 8, 2003, Helen H. Heinrich, a professional planner and agricultural policy expert, and the author were approved by the Burlington County Freeholders board to develop the agricultural viability component of the Route 206 Farm Belt smart growth plan. The charge from the county was to identify policies and approaches to encourage farm retention and the viability of agriculture in the region. This required developing data and information on the farm sector in the Farm Belt needed by a Route 206 Farm Belt Steering Committee to (1) identify a balance between smart growth, farmland preservation, and viable agriculture in the region; (2) develop a sound understanding of the agricultural industry today and the infrastructure, resources, and land use patterns needed for the industry to survive; (3) identify constraints and opportunities for agriculture in the region to exist alongside development; and, develop a vision of agriculture in the Route 206 Farm Belt for the future. Study recommendations were to be integrated into overall planning for smart growth in the corridor.

In approving the study, Freeholder Director William S. Haines, also the owner of a large cranberry farm in the county, commented to the assembled group that “we have spent \$50 million to preserve open space. We have failed in that if we don’t make it viable for farmers.” Throughout the planning process, similar sentiments regarding a clear distinction

between preserving the farmland base and the agricultural industry were expressed by members of the Freeholders Board and county economic development and regional planning staff. Freeholder Haines noted in one local media account:

From day one we have said that our goal was not just to preserve farmland, but to preserve farming as an industry in Burlington County (quoted in *The Times*, December 1, 2005).

### **A Profile of Agriculture in the Farm Belt**

Figure 9-4 shows the prevailing land use patterns in the farm belt, based upon 1995/1997 land use land cover data. The agricultural intensity is evident, particularly in Chesterfield, Springfield, North Hanover, Mansfield, and Southampton townships. Four small, urbanized farm belt municipalities have little or no agricultural activity, notably Bordentown City and Fieldsboro Borough in the northwest portion of the region along the Delaware River, Pemberton Borough in the south/central region, and the military areas of Wrightstown Borough and New Hanover Township. The large amount of land reflected in Figure 9-4 as forest and wetlands in the south/southeastern portion of the farm belt falls within the Pinelands boundary.

As discussed previously, 45 percent of the farm belt land area is actively devoted to agricultural use according to 2001 farmland assessment records. Countywide, less than 29 percent of land is under farmland assessment. Further demonstrating the agricultural intensity of the region is the fact that these 13 communities account for:

- 41,800 acres (63 percent) of harvested cropland in Burlington County.
- 4,869 acres (59 percent) of permanent pasture land in the county.
- 2,165 acres (50 percent) of the county's cropland under pasture.



- 567 acres (73 percent) of equine-related land in the county.

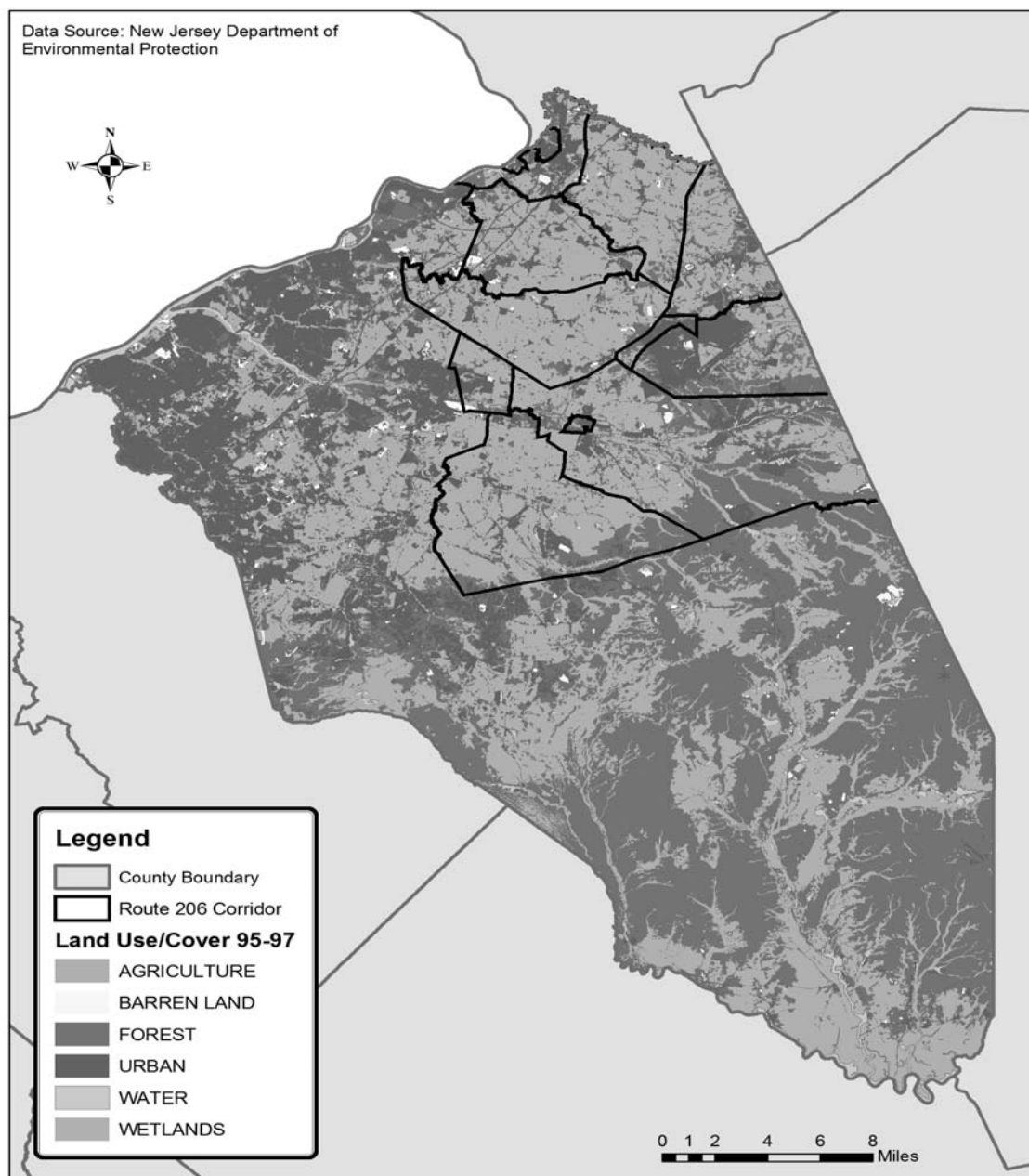
While data on Burlington County's farm sector provide some inferences about the nature of farming within the Farm Belt, adequate data are not available to characterize the economic and demographic features of agriculture at the sub-county level. Farmland assessment records (FA-1 forms) submitted on an annual basis provide the best source of municipal level data on the use of land "actively devoted to agricultural or horticultural use."

Table 9-6 provides a breakdown of harvested cropland in 2000. Not surprisingly, grain and hay crops are the dominant crops based on cultivated acreage.<sup>63</sup> Higher value sod, nursery, blueberry and cranberry production are also notable. The localized importance of blueberry and cranberry production in the southern parts of the region is a reflection of the crops' unique growing requirements, namely the acidic well drained soils of the Pinelands.

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<sup>63</sup> Data tabulated by the author from 2001 farmland assessment data provided by the New Jersey Agricultural Statistics Service.

**Figure 9-4: Land Use in the Burlington County Farm Belt (1995/1997).**



Source: New Jersey Department of Environmental Protection. Map developed by Lucas Marxen, Rutgers Food Policy Institute.

**Table 9-6: Crops Harvested in the Farm Belt - Ranked by Acreage (2000).**

<b>Crop</b>	<b>Acres Harvested</b>	<b>Crop</b>	<b>Acres Harvested</b>
Soybeans	16,885	Asparagus	53
Corn For Grain	5,990	Melons	49
Other Hay	3,584	Sweet Pepper	48
Cultivated Sod	2,172	Bedding Plants	46
Wheat	1,959	Strawberries	42
Rye For Grain	1,665	Sorghum	40
Alfalfa Hay	1,564	Snap Beans	38
Blueberry	1,395	Squash	33
Trees & Shrubs	1,219	Radishes	26
Cranberries	907	Spinach	23
Corn For Silage	872	Lettuce	19
Cut Flowers	696	Peas	19
Other/Mixed Vegetables	569	Other Ornamental Crops	16
Sweet Corn	531	Non Bearing Fruit & Berries	15
Christmas Trees	528	Other Fruits & Berries	15
Pumpkins	433	Eggplant	14
Rye - Cover	393	Cucumbers	10
Tomatoes	323	Grape	8
Other Field Crops	242	Nut	8
White Potatoes	238	Sweet Potato	7
Barley For Grain	185	Wheat - Cover	6
Oats For Grain	152	Lima Beans	5
Other - Cover	140	Grass For Silage	4
Cabbage	90	Pear	4
Carrots	77	Blackberry	1
Apple	71	Other Berries	1
Peach	69	Parsley	1

The concentration of agriculture in the farm belt region is inexorably linked to the area's rich farmland soils. NRCS soil surveys show that more than 47,049 acres of the farm belt's non-urban land area is classified as Class I or II.<sup>64</sup> Soils falling into NRCS Soil Capability Class I have few limitations for farming, while Class II soils have moderate limitations for farming that may necessitate the use of moderate conservation practices. Thus, while accounting for only 29 percent of county area, the Farm Belt contains 49 percent of the county's non-urban Class I and II soils (Table 9-7).

**Table 9-7: Class I and II Soils in the Farm Belt (Non-Urban Uses Only).**

	Non-Urban Land Uses	
Soils classified by NRCS Land Capability Class	Farm Belt	Farm Belt as % of County
<b>I</b> (Few, if any, limitations for farming)	7546	52%
<b>IIe</b> (Moderate limitations for farming due to erosion)	13,767	70%
<b>IIs</b> (Moderate limitations due to soil structure/rooting zone)	3,867	20%
<b>IIw</b> (Moderate limitations for farming due to water)	21,869	52%
<b>Total</b>	<b>47,049</b>	<b>49%</b>
Source: Soil Survey Geographic database, NRCS, USDA.		

A smaller subset of soils are considered "prime farmland." According to NRCS classifications, such land has the "best combination of physical and chemical characteristics" for crop production. NRCS soil surveys document the Farm Belt has 56,768 acres of prime farmland soils. This equates to 37 percent of the region's land area. Superimposing

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<sup>64</sup> Soil surveys show that 60,494 acres of Class I and II soils exist in the region, however, only 47,049 are classified as non-urban uses.

1995/1997 land use/land cover data over the soil maps shows that 12,435 acres of prime farmland in the farm belt are now under urban uses, leaving only 44,333 acres of prime soils remaining. In summation, the Farm Belt accounts for 53 percent of all prime soils surveyed in the county (across all land uses), and 61 percent of the county's remaining, non-urban prime soils. These prime soils are largely concentrated in the northern part of the farm belt (Figure 9-5).<sup>65</sup>

## Summary

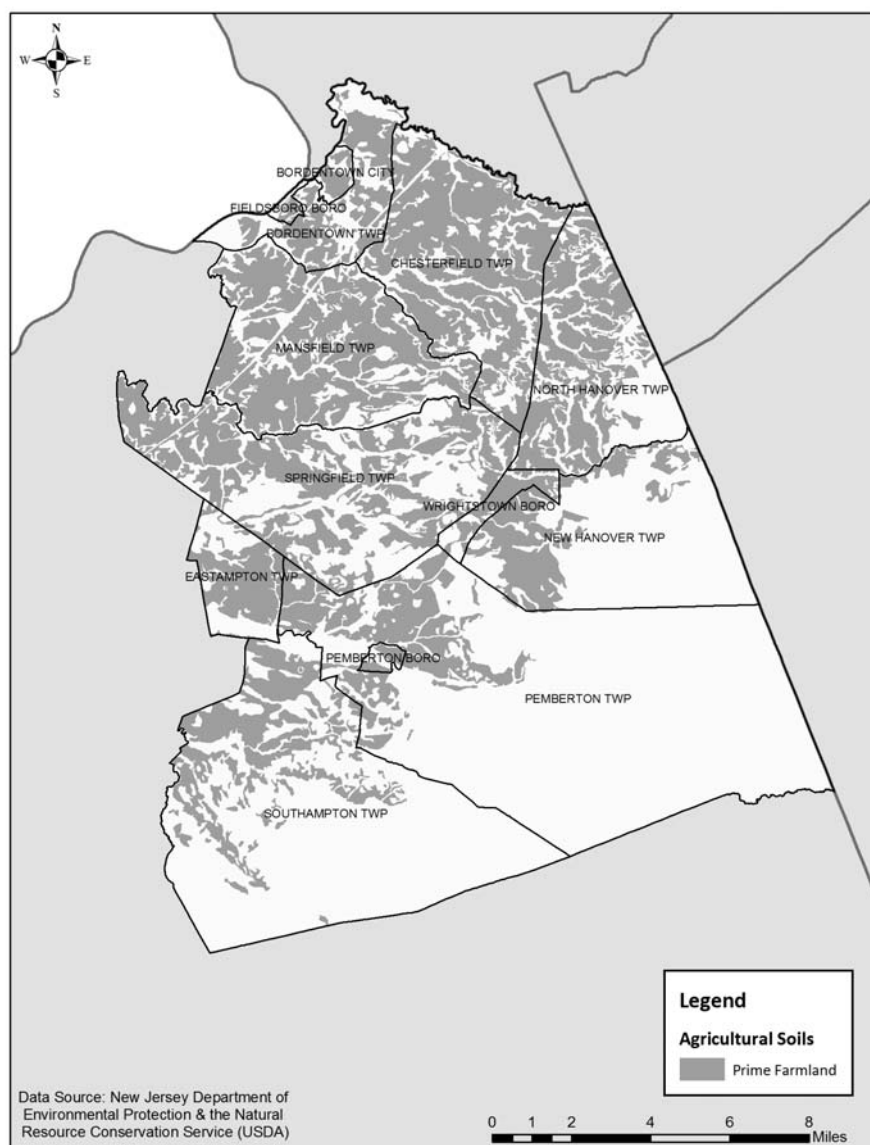
Farmers in Burlington County increasingly face challenges from growth and development pressures that have expanded into the county's agricultural areas, imposing additional costs and creating new challenges to their continued viability. Controlling the impacts of new development, shaping policies and regulations that do not unduly burden farmers, and ensuring the infrastructure needed to support agriculture are all within the powers of local government. Whether farming as an industry remains viable in Burlington County in the coming years and decades may well be determined in large part by the action or inaction of local leaders to recognize the needs of agriculture and engage in supportive planning and policy making. County leaders appear to understand this, as evidenced by the county's aggressive farmland preservation efforts and the County Freeholders' initiation of a smart growth planning effort in the Route 206 Corridor that incorporated agriculture. The

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<sup>65</sup> As the map in Figure 9-5 shows, the southern portion of Southampton, and the eastern portions of Pemberton and New Hanover townships, and the southeastern part of North Hanover - an area roughly coinciding with the Pinelands - have little or no prime farmland. However, these regions do have farmland of unique importance (i.e., sandy, acidic soils) that are necessary to support blueberry and cranberry production.

question really becomes one of how actively is agriculture being considered and advanced in local planning.

**Figure 9-5: Prime Farmland Soils in the Farm Belt (All Land Uses).**



Source: New Jersey Department of Environmental Protection. Map developed by Lucas Marxen, Rutgers Food Policy Institute.

## **Chapter 10**

### **The Need for Comprehensive Local Planning for Agriculture:**

#### **Empirical Evidence from the Burlington County Farm Belt**

Interest in more comprehensive local planning for agriculture is gaining some momentum in New Jersey, spurred by the efforts of industry leadership to promote acceptance that agricultural retention requires more than the preservation of farmland. Recognition of this need is not new, but its mainstream acceptance and awareness has been slow in developing. A quote from Robert Coughlin, a regarded expert on urban fringe agriculture, is contained in the Grassroots Report (1980). Writing in the late 1970s, he noted

In public debate, often little distinction is drawn between the objectives of saving farmland and saving farming...It is perfectly possible that all the prime farmland in a region could be saved but that farming would cease.

One could arguably write the same caution today.

Forty years of state policy has provided a bedrock for sustaining agricultural viability. Now the responsibility is being shared more directly with local levels of government. Recent state policy changes have increased pressure on municipalities to plan more comprehensively for agriculture. The State Plan endorsement process and the SADC's Planning Incentive Grant program both prescribe actions that municipalities can take to actively support farming. The Planning Incentive Grant requires, for example, that a municipality incorporate a farmland preservation element in its master plan as a requisite for consideration for state farmland preservation monies allocated under that particular program.

Under home rule doctrine, local governments can exert significant control over the future physical land use, economic, environmental, and social dynamics within their jurisdictions. Deciding whether farmland preservation is a local priority or, more expansively, agricultural retention is desired falls within community prerogative. The municipal master plan provides both the tool and a process for identifying such community objectives, as well as the legal mechanism for organizing local resources and establishing necessary policy frameworks required to realize such goals.

### **The Basis of Local Planning - The Municipal Master Plan**

New Jersey's Municipal Land Use Law enables a municipal planning board to prepare a local master plan "to guide the use of lands within the municipality in a manner which protects public health and safety and promotes the general welfare" (N.J.S.A. 40:55D-28). The municipal master plan documents existing conditions within a community and provides a comprehensive blue print for future uses of land. It provides the basis for local land use regulations, including zoning, and other ordinances. It is therefore the beginning point for any effort to comprehensively plan for all land uses within a community, including agriculture.

New Jersey's MLUL requires that a municipal master plan and accompanying land use regulations be reviewed every six years. While the local planning board is responsible for preparing the master plan, public input must be obtained through at least one public hearing. The master plan outlines community objectives regarding the development of public infrastructure, new housing, or commercial or industrial uses. It similarly outlines plans for the conservation of open space, environmental resources, or sites of historic and



cultural significance. The process of developing or updating the municipal master plan provides opportunity for citizens and local officials to debate and articulate their values and preferences for the future economic, social, and aesthetic character of their community, and establish a common vision for a community's future.

The MLUL is prescriptive in terms of the composition of a local master plan and outlines fourteen separate elements for inclusion in a plan. Only two components, however, are required: a statement of objectives and a land use element. The former represents a "statement of objectives, principles, assumptions, policies and standards upon which the constituent proposals for the physical, economic, and social development of the municipality are based" (N.J.S.A. 40:55D-28b(1)).

The land use element must state how it relates to the statement of objectives and any optional master plan elements. It must also describe existing and proposed uses of land - including agriculture. The land use element is grounded within the context of specified development objectives and includes a review of natural conditions and resources (soils, topography, water, woodlands, flood plains, etc.), existing and proposed location and intensity of development, zone plans, existing and proposed airport locations, and standards of desired population density and development intensity (N.J.S.A. 40:55D-28b(2)).

While municipalities are required to incorporate only the above two elements into their master plans, the MLUL specifies twelve other optional elements that may be incorporated into local master plans (Table 10-1).<sup>66</sup> Important, from an agricultural perspective, is a town's option to adopt a farmland preservation element. According to the

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<sup>66</sup> In 2008, the MLUL was amended to allow local planning boards to include an optional green buildings and environmental sustainability element in municipal master plans.

MLUL, the farmland preservation element should document all farm properties, provide a map of agricultural lands, and specify a plan for preserving farmland acreage through easement purchases and other preservation alternatives. This element should also include a statement demonstrating the commitment of the municipality, through its ordinances, to support and promote agriculture as a business. This is an important requirement since it forces a municipality to broaden its focus from farmland to the farming industry. However, according to State Agriculture Development Committee planning manager Timothy Brill, only 45 New Jersey municipalities have incorporated a farmland preservation element to date (Brill 2006). To place this in perspective, examination of farmland assessment records show roughly 330 municipalities have agricultural land. This creates an *a priori* expectation that the opportunity for more comprehensive local planning for agriculture is greater than the current reality.

**Table 10-1: Optional Master Plan Elements Defined by New Jersey’s Municipal Land Use Law.**

Optional Master Plan Elements	
1.	Housing plan element
2.	Circulation plan element
3.	Utility service plan element
4.	Community facilities plan element
5.	Recreation plan element
6.	Conservation plan element
7.	Economic plan element
8.	Historic preservation plan element
9.	Recycling plan element
10.	Farmland preservation plan element
11.	Transfer of development rights element
12.	Appendices or separate reports containing the technical foundation for the master plan and its constituent elements

Source: Municipal Land Use Law, Chapter 291, Laws of N.J. 1975.  
NJSA 40:55D-1 et seq. (Updated February 2005).

### **An Empirical Assessment of Local Master Plans in the Farm Belt**

How does a community begin to incorporate agriculture fully into its comprehensive planning? It begins with a decision to do so; or the lack of such a decision. American Farmland Trust's Jerry Cosgrove notes in the preface to its *Guide to Local Planning for Agriculture in New York* that "failure to plan for the future is in fact a choice, although one by default." Once a municipality commits itself to planning for agriculture's future, several basic steps need to be taken. It begins with gaining an understanding of the current status and the desired status within the industry. What do we have? What do we want? What is needed to keep what we have or get what we want?

Translating this from common parlance into a more formal framework provides the basis for the assessment of local efforts to plan for agriculture in the Farm Belt. The components of this framework include an evaluation of the extent to which local master plans:

- (1) assess the current nature of agriculture in the community;
- (2) establish clear and specific goals for agricultural retention and development;
- (3) consider and, where appropriate, integrate agricultural considerations into relevant master plan elements and municipal code provisions; and,
- (4) adopt specific agricultural retention policies and programs.<sup>67</sup>

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<sup>67</sup> Jackson-Smith (2002) identifies three broad components that should enter into the process of developing an "agricultural element" within a local plan, which are similar to those advanced herein: an inventory of agricultural resources, an assessment of community priorities and specific goals or objectives, and an elaboration of specific programs or policies needed to achieve defined goals and objectives.

### **Assessment of the Current Nature of Farming - An Agricultural Inventory**

Following Jackson-Smith (2002), inventorying a town's agricultural resources is a precursory step that should be implemented prior to any efforts to articulate agriculture-related goals. As highlighted in Chapter 9, Burlington County's agricultural industry is diverse in terms of the scales of operation, commodity production, production methods, marketing channels, farming practices, and farmer demographics. Further, the motivations for farming vary and are difficult to ascertain without primary research. This is a critical point, which is often missed.

Arguably the most significant first step municipal officials can take in support of agriculture is making the commitment toward understanding the nature of agriculture in their jurisdiction. This requires not only the collection and analysis of secondary data but also solicitation of input from farmers, agricultural leaders, Extension faculty, agricultural support businesses, and other local or state sources of expertise. Shaping policies that can effectuate positive impacts on local farming businesses often are not "off-the-shelf" solutions; they need to be customized to the particular nature of agriculture and needs of farmers within a given locality.

The local master plan of each Farm Belt municipality was acquired and reviewed. While goals regarding farming were identified in local master plans in the Farm Belt region, a current detailed status of existing farming activities was notably absent from all master plans examined. Similarly lacking was any sort of historical context for the importance of agriculture in the respective communities. The longstanding importance of agriculture in the region makes the omission of this information from the local master plans more stark.

Detailed information on the size, status, nature, and trends of agriculture in the county were compiled as part of the agricultural component of smart growth planning effort within the Route 206 Farm Belt (see, Heinrich and Schilling 2004a, b). Between 2003 and 2005, the author presented various agricultural data to members of the Farm Belt Agricultural Advisory Committee and Route 206 Farm Belt Plan Steering Committee, as well as local and county government officials, planners, residents, local media, and farmers. Despite the prevalence of agricultural activity within the region, the level of familiarity with these data, as well as their sources, was very limited or non-existent. Most commonly, knowledge of agriculture within the audiences with whom the author spoke was limited in scope to the nature of specific farm operations, anecdote, or “top line” data from Census of Agriculture. A thorough understanding of the composition and size of the County and region’s farm sector, as well as farm distribution (in terms of size), operator characteristics, and industry trends was generally absent.

### **Development of Clear and Well-Articulated Goals and Objectives**

The question often emerges, why does agriculture deserve “special treatment?” What makes it so different from other industries? These are important questions well worth asking. Chapters 6 through 8 focused on these questions at a general level, however, the exercise of discovering context-specific answers is valuable for a municipality. It forces discourse which will bring clarification and definition to local goals and objectives related to farming and agricultural retention.

Defining as a goal the preservation of rural character - even the preservation of farmland - is decidedly different from the goal of preserving a thriving, economically viable

farming industry. Jackson-Smith identified five broad types of agricultural goals extracted from an examination of master plans in several dozen towns in Wisconsin.

- Preservation of farmland
- Preservation of farming and farms
- Protection of rural or agricultural character
- Protection of environmental and natural resources
- Prevention of incompatible land uses and conflict

His list is parallel to the types of goals contained in the master plans of Farm Belt communities. While not necessarily mutually exclusive of each other, these goals have the potential for markedly different outcomes and may necessitate different approaches to planning.

Master plans in the Farm Belt were found lacking in several basic areas. While a clear vision for a viable agricultural sector was not present to any real extent in master plans reviewed in the region, agriculture did feature in master plan goals and objectives across the region. The language varied, but spoke in either general or at times in specific terms about pro-agricultural objectives. Some municipalities (i.e., Bordentown Township) reiterated language from the MLUL, stating as a goal

to provide sufficient space in appropriate locations for a variety of *agricultural*, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all New Jersey citizens. (Emphasis added).

A variety of other goals, many quite broad and generalized, were found in master plans within the region. Some communities noted a desire for maintaining their rural character (see, for example, Pemberton Township) or “predominantly agricultural nature”

(i.e., Southampton Township). These types of policy objectives lack focus on the retention of the agriculture industry. Somewhat more prescriptive are the goals in master plans written by Eastampton, Mansfield, and North Hanover townships, which emphasize the importance of preserving farmland. Chesterfield Township identifies the use of its transfer of development rights program to address development pressures on farmland as a goal.

Some municipalities (i.e., Chesterfield, Mansfield, and Springfield townships) do identify goals relating more to the business of agriculture (i.e., a desire to support agricultural viability, continuing agricultural uses). Springfield Township emphasizes the goal of agricultural viability now and into the future, with its master plan designating agriculture as a primary land use in all parts of the community.

### **Integration of Agriculture into Master Plan Elements and Land Use Regulation**

Agriculture was largely absent from most master plan elements in all Farm Belt municipalities. As discussed in the conclusion of this dissertation, this is truly a missed opportunity to proactively promote agricultural development. An unanticipated omission in the master plans of Farm Belt communities was any reference to the two most critical State Plan policies impacting farming: Policy 1 (equity) or Policy 15 (agriculture). In particular, the failure to reference the Statewide Policy on Agriculture and the 23 strategies listed thereunder is notable in light of the fact that the municipalities are required to assess the consistency of their plans with the State Plan.

North Hanover and Mansfield townships referenced agriculture in their master plans' conservation plan element. Very surprisingly, only North Hanover Township was found to have a farmland preservation element consistent with the requirements provided under the

MLUL. It outlines how the municipality supports its farming industry through various plans and ordinances. For example, it highlights the township's Residential Agricultural Zone, which encompasses about three-quarters of the municipality, and its permissiveness regarding farm structures (including temporary housing for farm workers). The element also cross references the township's right to farm ordinance, specifically pointing to the new homeowner notification provision (i.e., informing new residents of the proximity to and realities of commercial agriculture).

The North Hanover farmland preservation element goes into further detail on key agricultural trends, including the prospect of ethanol production (ongoing discussions are taking place on the location of an ethanol facility in southern New Jersey), agritourism, and direct marketing. It also notes the transitions in the types of production taking place, including shifts toward equine and nursery operations. Importantly, the element also specifies strategies for developing the agriculture industry. Key examples of strategies include engaging farmers to better understand the existing industry and its needs and conducting public outreach and education about farming. The element also mentions a possible collaboration with agricultural advisory committees in surrounding communities to examine regional possibilities for agricultural development. The inter-municipal focus mentioned in the North Hanover farmland preservation element is both noteworthy and laudable. Only Eastampton, Mansfield, and Springfield townships acknowledge the regional nature of farming and farming issues. In particular, their master plans recognize the existence of, or potential for, zoning and right to farm conflicts across municipal borders.

Zoning and other land use development policies can be permissive or restrictive in terms of agricultural activity. For example, in evaluating the 'farm friendliness' of



communities in the Farm Belt, the extent to which agriculture is designated as a permitted use in zoning was considered. Springfield Township is the most permissive, with agriculture articulated as a permitted use in all seven of its zones (Table 10-2). Mansfield Township also considers agriculture as a permitted use in all zones, although with some restrictions. The urban communities (Bordentown City and Pemberton Borough) do not consider agriculture as a permitted use in any zone. Fieldsboro and Wrightstown have agriculturally related activities listed as permitted uses in only one zone.

The designation of agriculture as a permitted use (as opposed to a conditional or nonconforming use) can influence the ease with which a farmer operates, expands, or modifies his farming enterprise. For example, zoning may place parameters on the types of agricultural activities in which one may engage, limit the bulk dimensions or placement of farm structures, limit hours of operation, or dictate buffering requirements. If agriculture exists as a nonconforming use in a zone, the farmer is “grandfathered in.” However, existing as a nonconforming use, rather than a permitted use, would likely require the farmer to obtain a variance from the zoning board of adjustment prior to changing an aspect of his operation governed by the zoning ordinance. In essence, existing as a nonconforming use is tantamount to existing in a zone where one’s activity is not intended as a long-term use.

**Table 10-2: Agriculture as a Permitted Use in the Farm Belt.**

<b>Municipality</b>	<b>Number of Zones Where Agriculture or Related Activity is a Permitted Use</b>	<b>Number of Zones in Municipality</b>
Bordentown City	0	7
Bordentown Township	7	19
Chesterfield Township	1	6
Eastampton Township	2	13
Fieldsboro Borough	1 (allows related activities)	9
Mansfield Township	11	11
New Hanover Township	6	7
North Hanover Township	4 (+ 3 allow related activities)	7
Pemberton Borough	0	8
Pemberton Township	13	25
Southampton Township	9	16
Springfield Township	7	7
Wrightstown Borough	1 (allows related activities)	11

Source: Adapted from Heinrich and Schilling (2004b).

### **Adoption of Agriculture Retention and Development Policies**

The extent to which municipalities are capable of protecting lands in threat of conversion is another important factor to consider. As of December 2004, seven Farm Belt municipalities had created some form of local land preservation program (Table 10-3). The region has been very aggressive in preserving farmland; 163 farms and 19,637 acres are preserved in Burlington County under the farmland preservation program.<sup>68</sup> The thirteen

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<sup>68</sup> Another 651 acres spanning 8 properties were preserved through Chesterfield's transfer of development rights program.

Farm Belt communities account for 91 percent of the farms and 94 percent of the farmland preserved in the entire county.

**Table 10-3: Farmland Preservation Mechanisms in the Farm Belt.**

<b>Municipality</b>	<b>Farmland Preservation Mechanism/Funding Source?</b>
Bordentown City	No
Bordentown Township	Yes (tax)
Chesterfield Township	No (but has TDR program)
Eastampton Township	Yes (tax)
Fieldsboro Borough	No
Mansfield Township	Yes (bonding)
New Hanover Township	No
North Hanover Township	Yes (tax)
Pemberton Borough	No
Pemberton Township	No
Southampton Township	Yes (tax)
Springfield Township	Yes (tax)
Wrightstown Borough	No

The protection of farmland and other open spaces through easement or fee simple purchases are popular and effective alternatives; however, there is both the cost and in most cases a time factor. Another mechanism that is increasingly being employed in many communities as a land use management tool is the use of zoning to decrease permissible building densities in areas deemed desirable for retention. This is commonly referred to as downzoning. In some instances (i.e., Mount Laurel), communities have even resorted to the

use of eminent domain to remove property from development.<sup>69</sup> As will be discussed more in Chapter 12, both tools are controversial in terms of their effectiveness and equitability. Indeed, equity preservation is at the top of the list of policy issues concerning farmers in recent years. Irrespective of any divide on the perceived effectiveness of zoning as a land protection mechanism, the fact is that the use of downzoning is largely opposed by the farming community and may alienate farmers from efforts to plan for agriculture.<sup>70</sup>

Residential cluster provisions and transfer of development rights (TDR) programs are two examples of growth management/land preservation tools that also address landowner equity protection concerns. Until recently, Chesterfield Township (and Lumberton Township, south of the study area) were the only municipalities in New Jersey with municipal transfer of development rights programs.<sup>71</sup> Pemberton Township, Southampton Township, and Pemberton Borough have cluster provisions,. These provisions both address the need to protect farmland resources from development pressure and recognize equity considerations in land management. Chesterfield also has direct language in its master plan that acknowledges the importance of asset value to farming operations.

Planning for agriculture requires careful evaluation of all municipal provisions with respect to their impact on encouraging or impeding the practice of agriculture. There are

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<sup>69</sup> *Mount Laurel Township v. Mipro Homes, LLC* was decided by the New Jersey Appellate Court in August 2005, supporting the finding that a municipality could indeed use the power of eminent domain to preserve land and prevent development.

<sup>70</sup> Both the New Jersey Department of Agriculture and New Jersey Farm Bureau have formal written policies, derived from their respective state conventions, outlining their opposition to the practice of downzoning.

<sup>71</sup> Municipalities falling within the Pinelands also have a density transfer option through the Pinelands Development Credits route.

many specific aspects to consider in the land use/land development ordinances, the relevance of which will be dictated by the nature of agricultural operations in the municipality. For example, what are the allowances for agricultural fencing needed to protect against wildlife damage? Are there buffer provisions that may help prevent or mitigate conflicts between farms and adjoining land uses (i.e., residential housing)? Is raising livestock animals considered a permitted use? (Some New Jersey municipalities, including Southampton do not allow swine operations within the polity.) What policies exist governing the permissibility of second housing opportunities on farms?<sup>72</sup> How are agricultural accessory uses (i.e., signs, farm markets and other buildings, fencing, labor housing, etc.) defined? Mansfield Township was found to be most encompassing in its definition, noting permissible accessory uses as “anything incidental to farming.”

### **Process, Process, Process...Engaging the Farm Community**

The preceding analysis of Farm Belt master plans focused on the content aspects of planning for agriculture. In terms of process, there is need for, albeit challenge inherent in, farmer participation in planning for agriculture to overcome the common lack of familiarity with farming many local officials possess. Given the grassroots nature of state level policy making in New Jersey, many farmers are active in the policy making process. However, this most often assumes the form of participation with the state or county boards of agriculture, the State Agriculture Development Committee, county agriculture development boards, New

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<sup>72</sup> Many farms are multi-generational, requiring housing for parents and grown children sharing in the responsibilities of the farm. Housing for seasonal and non-seasonal farm labor is also often needed. One large Farm Belt farm faced considerable difficulty when he attempted to provide housing for his hired farm labor.

Jersey Farm Bureau, or commodity associations. The common characteristics of these forums is that they comprise primarily farmers. Local planning for agriculture, on the other hand, requires greater involvement with the non-farm community and local officials.

The need for farmer participation in the planning process is made clearer by the land use and demographic characteristics of the state. As noted in Chapter 8, while many municipalities in New Jersey *have* agriculture, most can no longer be characterized as “agricultural” communities. Farmland as a proportion of the land base and farmers as a proportion of the population have both dwindled. Even in the relatively small number (7 percent) of municipalities that have more than half of their land base in agriculture, farmers do not comprise the majority of the local population. Statewide, the demographic data make this point more starkly. In a state with more than 8.8 million residents, there are slightly more than 9,900 farms. Further, only about half (52 percent) of farm operators identify farming as their principal occupation. These data are suggestive of the clear importance of active participation in planning for agriculture by the farming community since the very large majority of citizens and elected officials in most towns are no longer involved in farming and are generally not sufficiently informed about agricultural issues.

A key challenge in planning for agriculture is ensuring that farmers are engaged early in the process. Tension and divisiveness will inevitably result if the planning process does not solicit or ignores input from the local farm community. Farmers across New Jersey often express concern and frustration when faced with the prospect of having decisions about issues germane to their livelihoods made for them without their input. On the other hand, efforts to engage farmers in the process may result in frustration on the part of local officials

and planners. Some farmers may view such efforts as token (“my input won’t really matter”) or receive requests for their participation with skepticism or outright mistrust.

In the current political environment in New Jersey many farmers feel alienated from the local policy making and planning process due to growing municipal reliance on downzoning, a policy tool vehemently opposed by the farming community in the state.<sup>73</sup> It nevertheless remains critical to find ways to ensure that farmers are at the table when planning for agriculture. It will help ensure not only a more effective course of action, but also help to establish acceptance and buy-in of policies or programs within the farm community.

For its part, the agricultural community also must make a concerted effort to remain engaged in local planning, developing ordinances, and participating in local governance. It is not incumbent upon the non-agricultural community to unilaterally seek to understand the agricultural industry. Reciprocity in such efforts is important in order to help promote knowledge and understanding of the benefits - as well as undesirable realities - associated with commercial farming, the impacts of local zoning and other regulatory decisions, and the role that the public can play in actively supporting local farms.

The composition of local governing bodies is a potentially important indicator of a municipality’s ability to understand, and respond to, the needs of the farming industry. As major owners of real property in New Jersey for centuries, farmers have historically played an important role in local governance. Among the more pivotal local bodies for which an agricultural perspective is important are the local governing body (i.e., township committee

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<sup>73</sup> One report at the New Jersey Farm Bureau’s 2005 convention noted that more than 90 communities in the state have used downzoning since the late 1990s.

or council), planning board, and zoning board of adjustment. These units of government will have active roles in defining and implementing community vision, planning goals, and local land use and other ordinances. However, as farming has declined in many parts of New Jersey over time, the number of farmers serving on local decision making bodies has similarly declined.

At the time of this field research, consultation with municipal clerks in the respective communities found that all but Bordentown Township and Eastampton Township had agriculturalists involved with one or more of these committees (Table 10-4). Several of the more rural Farm Belt communities still have significant, active farmer participation in local governance. The mayor of Springfield Township is a well-respected farmer and recognized agricultural leader (a past CADB president and early member of the SADC). The mayor of Chesterfield Township is a former farmer, having recently sold his farm. Farmers also served on the local governing committees in Southampton and New Hanover townships. Most often, farmer participation in local governance was found via the planning or zoning boards. In at least one town, Chesterfield, a farmer was a member of the local environmental commission. The formation of a local agricultural advisory committee can augment farmer involvement in local governing bodies, or compensate for its absence. In recent years, the presence of a formal agricultural advisory committee has become a requisite for certain state farmland preservation monies (i.e., funding allocated under the Planning Incentive Grant program). An agricultural advisory committee can be instrumental in assisting local policy makers in understanding the different types and scales of agricultural activities that exist within a municipality, as well as the challenges and opportunities facing the local (and broader) agricultural community.



**Table 10-4: Farmer Involvement in Local Governance in the Farm Belt (Rural Towns Only).**

<b>Municipality</b>	<b>Farmers Engaged in Formal Local Government Bodies*</b>	<b>Agricultural Advisory Committee Present?</b>
Bordentown Township	No	No
Chesterfield Township	Yes (committee, planning board, environmental committee)	Yes
Eastampton Township	No	No
Mansfield Township	Yes (multiple boards)	No
New Hanover Township	Yes (committee; others?)	No
North Hanover Township	Yes (joint planning board/zoning board of adjustment)	Yes
Pemberton Township	Yes (zoning board of adjustment)	No
Southampton Township	Yes (committee, planning board, zoning board of adjustment)	No
Springfield Township	Yes (committee, planning board, zoning board of adjustment)	Yes

\* Determined as farmer(s) holding a seat on town council, planning board, or board of adjustment.

The Appendix 6.4 of the April 2004 State Plan Endorsement Guidelines specifies that a local agricultural advisory committee should comprise 3 to 5 residents of the municipality, appointed by the local governing body. The guidelines further specify that the composition of the committee should be such that the majority of members are actively engaged in farming and own a portion of the land they farm. The committee should report to the local planning board and provide input, in conjunction with the local open space committee, on

issues pertaining to land acquisition. Ideally, an agricultural advisory committee would also be empaneled to be representative of the diversity of farm scales, types, and operator characteristics within the community.

Despite their importance, consultation with municipal officials in the nine rural Farm Belt communities in which agriculture exists revealed that only three, Chesterfield, North Hanover, and Springfield townships, had standing agricultural advisory committees. It should also be noted that the Burlington County Department of Economic Development and Regional Planning convened an agricultural advisory committee to guide the development and implementation of the agricultural element of the Route 206 Farm Belt smart growth plan. The committee met regularly and also channeled information to a broader Route 206 Farm Belt Steering Committee charged with broader oversight of the regional planning occurring within the area.

Overall, Table 10-4 paints a relatively optimistic picture, therefore, of the presence of farmers in local policy making or advisory capacities within most of the rural Farm Belt communities.<sup>74</sup> With the exception of Bordentown and Eastampton townships, all communities had some farmer representation via either an agricultural advisory committee and/or service on one or more of the major local governing bodies. North Hanover and Springfield townships have farmers participating formally in local governance as well as empaneled agricultural advisory committees.

Lastly, input and involvement from farmers can also be garnered on a more *ad hoc* basis. Examples may include periodic focus groups or surveys of farmers to gain their views

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<sup>74</sup> It is worth noting that one Burlington County Freeholder is also a prominent farmer in the county.

on certain issues (i.e., as noted previously, North Hanover appears to be considering this option). Local officials and planners may also benefit from meeting with county or state-level farm organizations (i.e., New Jersey Department of Agriculture, New Jersey Farm Bureau, county board of agriculture) or attending regularly scheduled meetings of such organizations. They may also hold periodic “listening sessions” with local farmers.<sup>75</sup> It is not being proposed that these strategies replace the establishment of an agricultural advisory committee, but rather complement such efforts.

## Summary

A systematic review of master plans and land use ordinances within the Route 206 Farm Belt corridor communities conducted between late 2003 and early 2005 reveals a general lack of specificity in terms of plans and strategies for agricultural retention and development. While farmland preservation goals have been aggressively pursued, consideration of the opportunities for industry protection and growth is generally more limited.

Given the historic and current agricultural intensity of the Farm Belt, it is somewhat surprising that local planning for agriculture is not more well-articulated, focused, and proactive. Municipal governing bodies, planners, and farmers themselves have not developed a clear vision of agriculture as an industry and permanent land use. Rather, the vocabulary of local master plans is often telling, as goals of “maintaining rural character”

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<sup>75</sup> Listening sessions were an effective strategy employed by the United State Department of Agriculture to solicit public input for the Farm Bill. Sessions were held in almost all states and were useful, particularly in the Northeast, for identifying the plurality of views and issues in American agriculture.

are advanced and farmland is frequently discussed in the context of “vacant” or “undeveloped” land.

It is only *somewhat* surprising that planning for agriculture is generally inadequate in the Farm Belt because most local master plans are developed and oriented toward urban and suburban issues, lacking adequate detail on agriculture even in the more rural communities.<sup>76</sup> While perhaps explainable, this omission is nevertheless troublesome since planning for agriculture begins with the local master plan. It is also a pervasive one, as previous statewide and county studies document.<sup>77</sup>

Incorporating agriculture into a master plan is not a simple task. It is a complex undertaking given the range of considerations required and the fact that, in many communities, agriculture has been displaced to such an extent that local understanding of the industry has waned. As argued in this chapter, efforts to more effectively plan for agriculture at the local level need to consider issues of both content and process.

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<sup>76</sup> Personal observation as well as expert consultation support this argument. There are relatively few planning firms in New Jersey that develop and revise a large number of local master plans. (Personal consultation with Monique Purcell, Director of the Division of Agricultural and Rural Resources in the New Jersey Department of Agriculture.)

<sup>77</sup> See, for example, the FARMS Commission report from the early 1990s and research conducted by Adelaja, Heinrich, and Brooks (with assistance from the author) in Somerset County that supported the development of that county’s Farmland Preservation Master Plan in 2000/2001.

## **Chapter 11**

### **Ensuring a Farmer's Right to Farm**

Agriculture contributes to the aesthetic character of rural landscapes that is often highly prized by residents. This is reflected in the common inclusion of agricultural retention in stated master plan goals. As the preceding chapter suggests, however, challenge lies in effectively incorporating functional agricultural retention language into master plan elements or local land use ordinances.

Both landscape preservation and business preservation objectives can be simultaneously advanced by a local government through the adoption of a wide range of ordinances that affect the ability of farmers to farm. Depending on local circumstances and the nature of farming in the municipality, examples of other ordinances that might impact farming are those governing noise, soil removal, wildlife control (or, relatedly, firearm discharge), signs, odor generation, littering, trespassing, fuel storage, domestic animals, and vandalism. In some cases, local provisions (i.e., those governing noise or odor generation) may cover issues that would ultimately fall under the aegis of the state Right to Farm Act if a conflict ever arose.

In some instances, local plans or ordinances may “inappropriately” (citing language in the state Right to Farm Act) restrict normal agricultural practices or activities. These restrictions may be inadvertent, resulting from limited recognition of the consequences of uniform enforcement of local provisions across all land uses. For example, common farm practices of culling deer or other wildlife that damage crops, removing soil to create irrigation ponds, or placing signs for on-farm retail markets are all (generally) subject to

municipal authority. Regulating these practices on farms in the same manner as they are enforced on residential property may not be prudent from an agricultural retention standpoint. In other instances, adjacent neighbors may object to certain farm practices or by-products of farming.

In other instances, local ordinances may be laxly enforced due to resource constraints and more pressing issues. However, failure to enforce an ordinance on littering or control of domestic animals, for example, may disproportionately affect farmers. It is common to see refuse from passing automobiles strewn across fields. Residential neighbors may dispose of yard and other waste in “vacant” farm fields or associated woodland. In a similar manner, domestic pets may pose some degree of danger to children or other residents, but generally the threat is not especially pronounced since owners are inclined to exercise caution to avoid such risks. Yet unleashed dogs or outdoor cats are known to periodically harass or injure farm livestock.

While many aspects of local regulation may impact farming, the most proactive and potentially powerful measure a municipality can take to support farming is the adoption of a strong right to farm ordinance. While technically, the adoption of a local right to farm ordinance remains optional, for all practical purposes, the establishment of such an ordinance has become a requisite for participation under certain state farmland preservation programs (e.g., the planning incentive grant program). The April 2004 Plan Endorsement Guidelines approved by the State Planning Commission similarly emphasize the importance of local acknowledgment of the right to farm. These guidelines state that a municipality should

[h]ave in place a *meaningful* (emphasis added) Right-to-Farm ordinance that is in conformance with the Right-to-Farm Act and no more restrictive than the State's model ordinance, including regular notices to all residents and land owners.<sup>78</sup>

While New Jersey has a strong state Right to Farm law, the adoption of local right to farm ordinances is beneficial for several reasons. First, beyond merely recapitulating provisions in the state statute, the process of adopting a local ordinance is a valuable exercise for gaining an understanding of the nature of commercial farming, its needs, and the potential issues and conflicts that surround the proximate co-existence of farming activities and other non-farm activities. Second, the adoption of a strong right to farm ordinance provides not only legal protection to farmers engaged in responsible agricultural practices, but also a psychological sense of assurance that agriculture is a desired and supported activity in the community. Third, while a local right to farm ordinance clarifies the legal rights of farmers, it also defines their responsibilities. As discussed in Chapter 5, the courts have emphasized that right to farm protection does not award farmers “carte blanche.” Farmers only receive protection when they are responsibly engaged in normal agricultural practices as determined by the county agriculture development board (or SADC). Fourth, the existence of the Right to Farm Act, as well as a local right to farm ordinance, may have a “prophylactic value” (see Hamilton 1992; Adelaja *et al.* 1996) by virtue of the ability to preempt conflict by clearly outlining the legitimacy and permissibility of farming activities. Adelaja *et al.* note that “in many cases, the law has acted as a deterrent to the escalation of

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<sup>78</sup> The definition of “meaningful” is clearly subjective. A study of the right to farm in New Jersey conducted by Adelaja *et al.* (1996) found that 125 municipalities had, at that time, some form of local right to farm ordinance. The study authors found, however, that the “teeth” put into right to farm ordinances varied significantly.

conflict into litigation over farming activities.” Lastly, a municipality may opt to be more permissive than the state Right to Farm Act in terms of the protections bestowed to farms following accepted farming practices.

### **Review of Right to Farm Ordinances in the Farm Belt**

A checklist of right to farm elements was developed as an assessment tool against which each Farm Belt municipality’s right to farm ordinance was evaluated. The checklist, adapted from the evaluation framework developed by Heinrich and Schilling (2004b), comprised 28 key provisions contained in the State Right to Farm Act (as amended in 1998) and the SADCs’ model right to farm ordinance. Evaluation criteria fell within three primary classifications: (i) presence of agricultural definitions (4 provisions), (ii) specification of permissible agricultural activities (21 provisions), and (iii) delineation of conflict resolution/mediation procedures (3 provisions).

The assessment of municipal right to farm provisions Farm Belt communities was made more difficult by the fact that they were sometimes codified in multiple locations, including both land use ordinances and general ordinances. This can be potentially problematic. For example, it makes the location of right to farm protections less accessible to local officials, farmers, and interested residents. Containing all applicable right to farm protections within one ordinance reduces search time and presents a complete view of the range of protections afforded to farmers. Further, placement of right to farm language within a broader ordinance may, intentionally or unintentionally, imply a circumscribed range of applicability. Placing right to farm language within the context of the zoning ordinance, for example, and specifying only certain zones within which the protections apply violates the



state statute. As noted previously, a municipality may adopt an ordinance that is more permissive than the state Right to Farm Act, but it cannot be less permissive. All farms that meet the Right to Farm Act definition of a “commercial farm” and comply with accepted farming practices, irrespective of their location within local zoning designations, are afforded the full protections authorized under the Right to Farm Act.

Generally speaking, right to farm provisions found in municipal ordinances within the Farm Belt were often not consistent with language in either the state Right to Farm Act or the SADCs’ model right to farm ordinance. The more urban communities (Bordentown City, Fieldsboro Borough, Pemberton Borough, and Wrightstown Borough), not surprisingly, did not have well-defined right to farm language of any form in their ordinances (Table 11-1). The evaluation of Springfield Township and North Hanover Township revealed that these communities, respectively, had 24 and 17 key right to farm elements either fully or partially defined in their local ordinances. Chesterfield Township had 12 full or partial elements. All other communities had fewer than 10 elements.

### **Agricultural Definitions**

Included in the right to farm assessment was an evaluation of whether four agricultural definition contained within either the state Right to Farm Act or SADC model ordinance were present: “commercial farm”, “farm management unit”, “farm market”, and “pick-your-own operation.” Clear definitions of key agricultural terms are critical for the appropriate implementation and enforcement of local regulations, including right to farm and zoning

**Table 11-1: Evaluation of Municipalities in the Farm Belt Based on Model Right to Farm Elements.**

<b>Municipality</b>	<b>Full Elements</b>	<b>Partial Elements</b>
Bordentown City	0	0
Bordentown Township	5	4
Chesterfield Township	9	3
Eastampton Township	4	0
Fieldsboro Borough	0	0
Mansfield Township	3	3
New Hanover Township	2	1
North Hanover Township	14	3
Pemberton Borough	0	0
Pemberton Township	3	0
Southampton Township	5	3
Springfield Township	21	3
Wrightstown Borough	0	0

Source: Heinrich and Schilling (2004b).

provisions. In the latter case, local zoning generally prohibits uses within a zone that are not “expressly permitted” in the zoning ordinance. Conversely, a lack of definition can create confusion, as illustrated by the potentially multiple interpretations of the term “commercial farm.” Under the state Right to Farm Act a commercial farm is defined as

(1) a farm management unit of no less than five acres producing agricultural or horticultural products worth \$2,500 or more annually, and satisfying the eligibility criteria for differential property taxation pursuant to the “Farmland Assessment Act of 1964...or (2) a farm management unit less than five acres, producing agricultural or horticultural products worth \$50,000 or more annually and otherwise satisfying the eligibility criteria for differential property taxation pursuant to the Farmland Assessment Act of 1964.”

This definition stands in contrast to the more liberal federal definition of a farm used by the National Agricultural Statistics Service as “any place that had, or normally would have had, \$1,000 or more in total agricultural product sales during the census year.” Further complicating the matter is inclusion of the reference to farmland assessment eligibility criteria (5 acres and a base of \$500 in revenue, plus additional revenue for each subsequent acre).

While all nine of the agricultural Farm Belt municipalities, and one of the urban communities, defined ‘farm’ or ‘agriculture’ in their codes, none conformed entirely to the definition provided in the Right to Farm Act. The variability in existing definitions is also interesting to note. Several municipalities (e.g., Bordentown Township, Eastampton Township, North Hanover Township, and Southampton Township) use the farmland assessment eligibility criteria as the delineating factor. Interestingly, Mansfield Township defines a farm as being at least 6 acres in size. In explaining this definition to the author, a local official noted that farmland assessment requires that qualified parcels need to be at least 5 acres in size with at least an additional 1 acre devoted to the farmstead. This latter assumption is erroneous; the Act contains no such provision. Similarly, New Hanover Township also defined a farm as comprising at least 5 acres, with a proviso that a farm must be at least 6 acres if a house is present on the property. Surprisingly, intensively agricultural Chesterfield Township defined a farm more restrictively as “one or more lots with at least 10 acres devoted to the raising of agricultural products...”. Aside from New Hanover, the urbanized communities had no apparent definition of a farm in local codes.

A number of interesting caveats were found in the definitions of agriculture-related terms. For example, Southampton Township specifically excluded piggeries from its farm

definition. This is an historic artifact of times when commercial hog production was a more significant activity in the state. Such exclusion has been observed in many municipal codes, reflecting the incompatibility of residential living and certain by-products of commercial swine production. Interestingly, Southampton also defines a “farmette” as “a lot with less than five (5) contiguous acres that may or may not contain farming activities.” No legal recognition of this terms exists under the Right to Farm Act.

Proper application of the Right to Farm Act’s definition of “commercial farm” requires clarification of the concept and definition of “farm management unit.” Increasingly, farms in New Jersey are fragmented, bisected for example by utility easements, roads, and subdivisions. The Right to Farm Act accounts for this reality by defining the “farm management unit” in operational terms as “a parcel or parcels of land, whether contiguous or noncontiguous, together with agricultural or horticultural buildings, structures and facilities, producing agricultural or horticultural products, and operated as a single enterprise.” This term was largely absent, either verbatim or in concept, from the codes examined in Farm Belt municipalities.

In addition to the basic definition of a commercial farm, Right to farm Act also provides a rather complex definition of a “farm market” as

a facility used for the wholesale or retail marketing of the agricultural output of the commercial farm, and products that contribute to farm income, except that if a farm market is used for retail marketing at least 51% of the annual gross sales of the retail farm market shall be generated from sales of agricultural output of the commercial farm, or at least 51% of the sales area shall be devoted to the sale of agricultural output of the commercial farm, and except that if the retail farm market is located on land less than five acres in area, the land on which the farm market is located shall produce annually agricultural output or horticultural products worth at least \$2,500.

The complexity and specificity of the farm market definition stems from an interest in clearly differentiating a market primarily engaged in the marketing of a farm's output from other forms of retail establishments that could conceivably be constructed on the farm without any clear nexus to the agricultural enterprise. This becomes particularly germane within the context of farmland assessment qualification and farmland preservation (i.e., delineation of exception areas and conformity with deeds of easement). With the Census of Agriculture reporting that 1,769 farms sold products "directly to individuals for human consumption" in 2002, it is evident that the issue of farm markets must be clearly defined.

The concept of a farm market was generally not well defined in municipal codes. Chesterfield referenced the Right to Farm Act's definition of a farm market, but with an operation limitation of nine months per year. Other communities (including Eastampton, North Hanover, Southampton) make reference to "farm stands" as permitted uses in only certain zones or accessory uses to agriculture.

Lastly, the definition of "pick-your-own operation" is provided in the model right to farm ordinance drafted by the State Agriculture Development Committee as "a direct marketing alternative wherein retail or wholesale customers are invited onto a commercial farm in order to harvest agricultural, floricultural or horticultural products." When the New Jersey Right to Farm Act was strengthened through amendment in 1998, a new rule was also established by the SADC to specifically address the issue of pick-your-own operations and clarify the extension of right to farm protection to such activities. Pick-your-owns offer the public an opportunity to engage in the agricultural experience and represent a subset of the

expanding universe of “agritourism” activities offered on New Jersey farms.<sup>79</sup> The term was undefined, however, in Farm Belt codes.

### **Permissible Activities**

The Right to Farm Act can preempt municipal regulation, a notable power in a home rule state. N.J.S.A. 4:1C-9 states that farm operations (meeting the criteria described above) may engage in a range of permissible agricultural activities “[n]otwithstanding the provision of any municipal or county ordinance, resolution, or regulation to the contrary...”. If a farmer is within accepted agricultural practice, municipal or county regulation cannot by law impede its implementation.

The Right to Farm Act articulates eight specific permitted activities for farm operations that are otherwise in compliance with federal and state law (refer to the overview of Right to Farm in Chapter 6). A ninth provision states that a qualified farm may “engage in any other agricultural activity” as determined by the SADC.

The SADC model right to farm ordinance outlines seventeen permitted uses, noting that the list is not intended to set limits on the range of permitted activities). Eight uses are taken directly from the list of permitted activities articulated in the Right to Farm Act. In some cases, uses were derived from those in the Act. For example, the Act lists as a protected activity the operation of a farm market, including the construction of associated building and parking areas. The ordinance expands this to include allowances for attendant

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<sup>79</sup> At the 2004 New Jersey Agricultural Convention the State Board of Agriculture approved the addition of agritourism as a new economic development strategy in the New Jersey Department of Agriculture’s Economic Development Strategies.

signage. Additional activities specified in the model ordinance include:

- Housing and employment of necessary farm laborers.
- Erection of essential agricultural buildings, including those dedicated to the processing and packaging of the output of the commercial farm and ancillary to agricultural and horticultural production.
- The grazing of animals and use of range for fowl.
- Construction of fences.
- The operation and transportation of large, slow-moving equipment over roads within the [jurisdiction].
- Use of any and all equipment, including but not limited to: irrigation pumps and equipment, aerial and ground seeding and spraying, tractors, harvest aides, and bird control devices.
- The operation of a pick-your-own operation with attendant signage.
- The application of manure and chemical fertilizers, insecticides and herbicides.
- Installation of wells, ponds and other water resources for agricultural purposes such as irrigation, sanitation and marketing preparation.

In addition to specified activities, two additional criteria were added to the evaluation checklist. The first was a statement of the obligations of farm operations seeking right to farm protection (i.e., conformance with applicable federal and state law, AMPs, etc.). The second was a statement (derived from the model ordinance) that permitted agricultural activities may be performed on holidays, weekends, or at night and that they may produce attendant or incidental noise, odors, dust and fumes.

The evaluation of the range of permitted activities specified in the right to farm provisions of Farm Belt municipalities is summarized in Table 11-2. Broadly speaking, municipal ordinances in the Farm Belt were neither specific nor prescriptive about the nature of agriculture activities permitted under right to farm statutes (state or local). Among the more commonly included provisions were statements about the permissibility of fence construction (8 of 13 municipalities), animal grazing (7 of 13), and farm labor housing (6 of

13). Surprisingly, only 5 municipalities clearly articulated the protected right of commercial farms to produce agricultural or horticultural crops. The same number specified, usually to only a partial extent, the requirements that must be met by a farming operation to qualify for right to farm protections.

Fewer municipalities (four, in each case) identified the rights of farms relating to construction of essential farm-related buildings, equipment usage, farm market operation, soil replenishment, and manure or chemical application. Four municipalities also codified specific language that notifies community residents that commercial farming may occur during evening hours, early in the morning, and weekends or holidays and that such activities may generate unpleasant by-products such as dust, noise, and odors.

All local codes were silent on the issue agritourism, a notable exclusion in light of the growth in such activities statewide in recent years. Also notable in its admission is a statement that farms are entitled to engage in all other activities deemed by the CADB or SADC to be in compliance with normal and accepted agricultural management practices, either as determined by rule or site specific determinations. This could potentially lead to an erroneous conclusion that farming activities not specifically listed in local right to farm ordinances are impermissible and result in unnecessary dispute.



**Table 11-2: Summary of Model Right to Farm Ordinance Elements in Farm Belt Municipalities' Ordinances.**

Permissible Activities (Paraphrased from Act/Ordinance)	No. of Farm Belt Municipalities with:	
	No Element	Full/ Partial Element
Production of agricultural or horticultural crops, etc.	8	2/3
Housing/employment of farm laborers	7	3/3
Erection of essential buildings	9	2/2
Grazing of animals/use if range for fowl	6	3/4
Construction of fences	5	8/0
Operation and transportation of equipment	11	2/0
Use of equipment	9	3/1
Processing/packaging of output of the commercial farm	10	3/0
Operation of farm market with signage, building, parking	9	3/1
Operation of pick-your-own operation with attendant signage	11	2/0
Replenishment of soil nutrients/improvement of soil tilth	9	3/1
Control of pests	10	3/0
Clearing of woodlands using open burning and other techniques	12	1/0
Installation of vegetation/terrain alterations, facilities for conservation, etc.	11	2/0
On-site disposal of organic agricultural wastes	10	3/0
Application of manure and chemicals	9	4/0
Installation of wells, ponds and other water resources	12	1/0
Agriculture-related education and farm-based recreational activities	13	0/0
Engagement in any other agricultural activity as determined by SADC	13	0/0
Expectations of farmers (meet eligibility criteria for protection)	8	1/4
Statement of when farm activities may take place/farm by products	9	4/0

Source: Adapted from Heinrich and Schilling (2004b).

### **Conflict Resolution Guidance and Procedures**

In addition to protecting farmers against the effects of overly or inappropriately restrictive municipal regulations, the Right to Farm Act is designed to also preempt or limit conflicts and complaints stemming from perceived or actual nuisances stemming from commercial farms. The statute notes the need to “provide a proper balance among the varied and sometimes conflicting interests of all lawful interests in New Jersey.” The Act contains clear language that ensures this protection for eligible commercial farms in the form of its “irrebuttable presumption” clause (discussed in Chapter 8) which states that farms conforming with acceptable agricultural management practices will not be deemed a private or public nuisance.

Protection of agricultural activities under the Right to Farm Act, however, does not negate the opportunity for potentially costly and contentious conflict to arise. The Act outlines a formal conflict resolution process to address disputes involving commercial farms, directing aggrieved parties to submit a written complaint with the relevant CADB (or SADC in the three counties without a county board) before filing an action in court.

The procedural aspects of the complaint process and, if applicable, the process for appealing the decision of the CADB or SADC are clearly outlined in the Act and related administrative rules. First, the relevant CADB or SADC will confirm that the subject farm meets the criteria for a commercial farm and is in compliance with accepted agricultural management practices. Generally, an evaluation of pertinent supporting materials and a site assessment provides sufficient basis for a decision to be rendered. If an agricultural management practice related to a contested activity or practice is not in place, the CADB will seek clarification on the acceptability of the activity or practice from the SADC. CADB

decisions can be appealed to the SADC. Decisions of the SADC are final, with only the option of an appeal to the Appellate Division of the state's Supreme Court.

In addition to the formal conflict resolution process, the SADC staff has also developed an informal conflict resolution process in the form of its voluntary Agricultural Mediation Program. The extent to which the program is employed is not readily apparent since centralized reporting of its use is not currently maintained.

The inclusion of clearly defined conflict resolution measures in municipal ordinances can prevent significant burdens from being imposed on the farm community, local officials, and residents. However, only two municipalities appear to have any language - partial at best - pointing to the "irrebuttable presumption" that farms engaged in accepted management practices shall not be construed as nuisances. None of the municipalities had any apparent language in municipal codes that identified the CADB (or SADC) as the point of first contact for disputes over commercial farming activities.

The SADC's model right to farm ordinance also suggests the value of a "good neighbors" policy. The appeal of rural-agricultural locales draws new residents, many of whom are unacquainted with the realities of agriculture or rural life. Attracted by aesthetic and amenity characteristics, less congestion, and a more serene environment, many new residents quickly realize that agricultural landscapes are working, not passive, landscapes. The premise of a good neighbors policy is that advising home buyers relocating in or near an agricultural area of the realities of rural life and commercial farming will enable them to make more informed decisions about their residential selections.

Seller disclosure/buyer notification can be effectuated through a mandatory disclosure statement signed at the time of real estate transfer and filed with the deed. The

SADC's model ordinance contains a disclosure statement that specifies that the property in question is near land actively devoted to commercial agriculture (or, more specifically, in an SADC certified Agricultural Development Area). The statement emphasizes that certain farming practices may result in noise, odors, dust, machine operation, and other potentially concerning effects. It also highlights the existence of both the formal conflict resolution process and voluntary mediation program available to address any agriculturally-related disputes that may arise.

Only three farm belt municipalities (Springfield, North Hanover, and Chesterfield) were found to have mandatory disclosure statements for properties in or around agricultural areas. Section 215-99 of Springfield Township's zoning code (as amended by Ordinance 96-3) contains a provision on "notice of farm use" requiring a mandatory notice of farming activities as a requisite for new subdivision approvals. The stipulation also requires a waiver for objections against farming activities (which implicitly are understood as being in compliance with accepted management practices by reference to the municipality's right to farm ordinance) which generate noise, odors, dust and fumes or occur at times that might be construed as inconvenient by residential neighbors.

Chesterfield has a chapter in its municipal code book devoted to "Agricultural and Farming Activities" in which it states as a purpose the promotion of

a good neighbor policy by advising purchasers and users of property within 500 feet from the lot line of any agricultural operation of the potential discomforts associated with such purchase or residence. It is intended that, through mandatory disclosures, purchasers and users will better understand the impacts of living near agricultural operations and be prepared to accept attendant conditions as the natural result of living in or near land actively devoted to commercial agriculture (or in an agricultural development area, meaning an area identified by a county agriculture development board... and certified by the State Agriculture Development Committee).

The disclosure process is effectuated by requiring developers to advise, through their deeds, buyers of the township's right to farm ordinance in deeds. The planning board is authorized to enforce this requirement by conditioning subdivision or site plan approvals.

One of the more proactive 'good neighbor' policies identified in New Jersey is found in Upper Freehold Township in Monmouth County, adjacent to the northern part of the Farm Belt. In 1998, Upper Freehold adopted a code of country living that provides a clear expression of the municipality's philosophy regarding its rural community character (Table 11-3). Ordinance 43-98 amended the township code to recognize and embrace the locality's rural character. It emphasizes that local services should be provided only when "absolutely necessary and affordable to the taxpayers" and that the municipality's rural atmosphere is an important part of its appeal to existing and new residents. It makes known the township's philosophy regarding the advantages and sacrifices the maintenance of a rural character will confer. Lastly, the code reiterates the township's commitment to right to farm and actually directs the township clerk to provide a copy of both the country code and right to farm ordinances to "each and every citizen who registers to vote in Upper Freehold Township, each and every citizen who seeks a Building Permit and each and every citizen who pays taxes in Township Hall and/or seeks advice on the quality of life in Upper Freehold Township and/or seeks copies of our Land Use Ordinances."

Another notable effort to bring conformity between the expectations of new rural residents and the realities of rural living was advanced by the Illinois Farm Bureau in their 23-page *The Code of Country Living*.

Living in the country can be a wonderful way of life - if your expectations are in-line with reality. Reality seldom measures up to the romanticized version of almost any idea or ideal- as is frequently discovered by those who move from an urban setting to the country.

The publication, while too detailed for casual public consumption, details the positive and negative attributes of country living in order to more properly frame expectations of potential new residents. The document is not agriculture-centric, but the concept of informing public expectations is entirely germane and easily transferable to the issue of right to farm.

### **Summary**

Efforts to promote awareness of the legal protections afforded to responsible farmers engaged in normal agricultural practices have expanded considerably in recent years. However, the variable but generally limited nature of clear, consistent right to farm language in ordinances within Farm Belt municipalities demonstrates the need for more active outreach to communities seeking to retain a viable agricultural industry. Several resources exist to advance this goal.

The New Jersey Department of Agriculture's Agricultural Smart Growth Plan identifies the adoption of strong local right to farm ordinances, accompanied by the dissemination of notices of such protections to residents, as among the proactive strategies for sustaining local agricultural industries. The NJDA plan also encourages greater utilization

**Table 11-3: Upper Freehold Township “Country Code” Ordinance.**

*Reproduced hereunder is an excerpt from Upper Freehold Township’s Ordinance 43-98 (“Country Code”) adopted by the township committee on August 6, 1998:*

Section 2. The Policy Statement of Upper Freehold Township with respect to its rural environment and country living is herein set forth:

This document expresses the Philosophy of Upper Freehold Township Residents. The residents of this Township have either been raised here and chosen to stay or moved here because they enjoy the "rural life". This community has shown a strong commitment to remaining rural by: committing a portion of their tax dollars to Farmland Preservation, foregoing services taken for granted in suburban and city areas, and traveling the extra distance for the necessities.

Many residents have moved to this area because the "rural atmosphere" of their former hometown has been lost to development. Others may be rural newcomers escaping the suburbs and cities. These residents must remember not to expect perfectly paved roads, water and sewer service, a local police department, municipal trash pick-up, and other "luxuries". Residents in a rural community will endure the slow-moving farm machinery on the road, early morning tractor noise, and perhaps unpleasant odors of natural fertilizers for the sake of maintaining the country life.

If you are considering this area as your home, please remember that the snowplow may not come as often as you may feel necessary; the supermarket will always be at least a one-half hour ride away. The New Jersey State Police have been providing us with excellent coverage and all necessary special services and we hope to continue that relationship as long as possible. As a member of this community you will have to contract for trash removal with a private vendor and on two occasions during the year you will be permitted to bring your larger, bulk waste to the Municipal Garage during a Township Clean-up Week and Weekend. In exchange for your participation in providing these services to your family we will insure a tax rate without the high costs associated with maintaining equipment and employing personnel to deliver these services.

You will sometimes have to pay a price to remain a rural community ...residential development and farmland assessed properties do not provide the rateables of commercial development.

Farmland-assessed property provides a community with open space; owners enjoy a reduced property assessment, however, the entire municipality benefits from this acreage that will have no impact on the local school district. Property owners that sell development rights pursuant to the Farmland Preservation Act insure that farming will continue in New Jersey. The residential development must be controlled in consideration of the services it demands. New homes, new roads, new or expanded schools ...and as we all know, the present funding of education through property taxes is a strain on the residents of New Jersey. The increased traffic through Upper Freehold Township that has been a result of development in surrounding communities has put pressure on local residents by compelling us to improve these roads for the sake of the safety of all citizens.

It is with this ideology that the Township Committee of Upper Freehold Township does hereby adopt this Code as a notice to all present citizens and future citizens of this community that Upper Freehold Township Officials will continue the philosophy in their policy and procedure to provide its constituents with a Country Lifestyle.

of the formal and informal mediation services afforded by the SADC and the associated county boards as a viable mechanism for reducing tensions and legal conflict between farmers and their neighbors, and their associated costs.

As noted in this chapter, the SADC has promulgated a model right to farm ordinance to address what has historically been a lack of guidance to municipalities on such matters (see, for example, Adelaja *et al.* 1996). However, it is nevertheless reasonable to predict an escalation of right to farm issues across the state in response to several reasons. One primary factor is that CADBs are actively encouraging municipalities to adopt right to farm ordinances to enhance their competitiveness for state farmland preservation dollars. However, such ordinances vary significantly in their strength and inclusivity, either by intentional design, lack of guidance, or misinterpretation of the state statute.

Another impetus for increased conflict is the fact that agricultural operations are constantly adopting new production and marketing practices in response to changes in the industry and market. The Right to Farm Act, and subsequent case law, defines the county agricultural development boards (and ultimately the SADC) as having primary jurisdiction for addressing complaints against farms operating within accepted agricultural practices. However, the SADC is under-staffed in this program area. Consequently, changes in the industry outpace the ability of the SADC develop rules that clarify the appropriateness of new agricultural activities (for example, an agricultural management practice for agritourism is needed, but has not been finalized). This problem is exacerbated as suburbanization continues to expand into rural areas, bringing an increased number of challenges to the acceptability of various agricultural practices.



## **Chapter 12**

### **A Charge for the Planning Profession**

There is no clear consensus on how New Jersey earned the nickname of the “Garden State.” Among the more prominent attributions places the origin of this moniker in the words of Camden attorney Abraham Browning spoken more than a century ago at the 1876 Centennial Exhibition in Philadelphia. In his remarks, Browning compared New Jersey to “an immense barrel, filled with good things to eat and open at both ends, with Pennsylvanians grabbing from one end and the New Yorkers from the other.”

While known today more for its industrialization and urbanization, New Jersey is still the Garden State. New Jersey farmers still produce an abundance of agricultural products that are enjoyed by consumers in the metropolitan area and beyond. New Jersey is still among the leading producers nationally - in some case internationally - of several types of fruits and vegetables. Agriculture is still an important industry to the state of New Jersey and its residents for non-pecuniary reasons. In addition to providing access to fresh, locally produced farm products, New Jersey farms maintain much of the rural character and open space amenities the state’s residents have actively sought to protect for half of a century.

The loss of each successive farm to housing or commercial development is, in all practical senses, permanent. Farms in New Jersey, and elsewhere, succumb each year to a host of factors ranging from low commodity prices and changing markets, to the fickleness of Mother Nature. For many New Jersey farmers these factors are exacerbated by pressures from new development and consequent changes in the socio-political climate. New Jersey’s

projected population growth suggests of continuation of there pressures on the state's remaining agricultural base as the amount of remaining land suitable for further development dwindles. As the literary great Mark Twain is credited with saying "buy land, they're not making it anymore." However, the manner in which such growth is accommodated, and its impacts on agriculture, can be influenced by proactive thought and action.

Daniel Webster once implored "let us not forget that the cultivation of the earth is the most important labor of man." It is often human nature to take for granted things which are plentiful. At present time United States farmland remains in abundance and the Nation's food and fiber production capacity is the envy of most other countries. The United States remains a food sufficient society. The current and historic agricultural prosperity of the U.S. makes it difficult to conceive of a day when the average American will pause with doubt or uncertainty over his continued access to safe and affordable food.

In the comfort of our current environment, it is wildly speculative to place anything other than an infinitesimal probability on the occurrence of a domestic or world event that would destabilize the Nation's domestic food sufficiency. Yet even in the absence of a "doomsday" scenario wherein America's agricultural system becomes diminished or destabilized by a man-induced crisis, socio-political or macroeconomic shock, or major climatic event, the truth remains that New Jerseyans want to retain agriculture in the state and within their communities. Some of this preference is rooted in an appreciation of having access to fresh, local farm products. Much of this desire is linked to a well-established recognition that agriculture provides myriad ecological and environmental functions, rural amenities, and passive or active recreational opportunities. More simply, farming is a part

of the cultural and historic fabric of New Jersey and continues to contribute broadly to the quality of life enjoyed by New Jersey residents.

As has been demonstrated in this dissertation, New Jersey is often a leader when it comes to agricultural retention policies. The state is a front runner in farmland preservation. It was an early adopter of differential assessment for farmland and has among the strongest state right to farm laws in the U.S. New Jersey set the early standard for farm products promotion with its Jersey Fresh program. New Jersey is among the few states that are actively engaged in meaningful efforts to promote statewide smart growth through an ambitious and proactive land use agenda which seeks to accommodate growth while protecting natural, cultural, and historic resources and maintaining a high quality of life for residents. The goal of agricultural retention is identified prominently in this plan.

Importantly, the State of New Jersey has taken steps that go beyond simply preserving farmland resources and focus on retaining an *agricultural industry*. More steps are required, perhaps at a brisker pace. As has been emphasized, ensuring continued access to a sufficient base of farmland is a necessary condition for maintaining a viable agricultural industry, but is not a sufficient condition. The State, its 21 counties, and its 566 municipalities all are empowered in various ways to plan for economic development and the use and development of the physical landscape. Agriculture has too often been under-addressed or even ignored in such planning efforts at the local levels of government, a disconcerting trend in a strong home rule state.

The American Farmland Trust has, in recent years, begun advocating to local governments the need for proactive local agricultural planning. However, clear guidance on process and content is generally lacking since variability in the nature of agriculture, local

cultures, socio-political strength of farmers, and municipal governance effectively precludes a “one-size-fits-all” approach to planning.

Wisconsin, New York, and New Hampshire have recent ‘planning for agriculture’ publications geared to municipal governments. For instance, *Planning for Agriculture in Wisconsin: A Guide for Communities* was developed by University of Wisconsin Cooperative Extension and the Wisconsin Department of Agriculture, Trade and Consumer Protection. The motivation behind the document was the recent passage of a Comprehensive Planning Law which will require “all programs, actions, and decisions affecting land use [to be] consistent with the locally adopted comprehensive plan in order for the community to continue making land use decisions” (*Ibid.*). The law specifies that comprehensive planning must encompass nine different elements, one of which is agriculture. *A Guide to Local Planning for Agriculture in New York* similarly provides detailed advice and case studies to localities seeking to plan for agriculture.

The New Hampshire Coalition for Sustaining Agriculture, New Hampshire’s Office of State Planning, and University of New Hampshire Cooperative Extension also developed a resource kit for planners, *Preserving Rural Character Through Agriculture*, aimed at assisting communities interested in adopting farm-friendlier policies. A checklist, “Is Your Town Farm Friendly?”, was developed as a self-evaluation tool for any town interested in assessing the agricultural compatibility of their current regulatory environment, including the master plan, land use practices, and other policies. It is a useful tool for examining a locality’s commitment to farming and demonstrating options that can be incorporated to make a municipality’s regulatory environment more conducive to commercial farming.

Among the evaluation criteria are several points raised in this research which direct a town to consider whether it:

“...ha[s] a detailed section on agriculture in the Town Master Plan?”

“..allow[s] agricultural uses in more than one zoning district?”

“...allow[s] flexibility in regulations to accommodate the unusual needs of agricultural businesses?”

If the answer to any one or more of these questions is “no”, legitimate questions would begin arise as to the farm-friendliness of the community in question.

New Hampshire’s resource kit grounds the need to preserve agriculture to an underlying recognition of the industry’s direct (i.e., sale of farm products) and indirect (i.e., links to rural tourism) economic contributions, role in defining the state’s landscape, and provision of agricultural products, services, and other rural amenities. The impetus behind the development of the guide included a concern for the impact of development on the perpetuation of these benefits. The developers of the tool kit also note that:

To maintain rural character in New Hampshire is to sustain agriculture, *both as a vital part of the visual landscape and as a viable profession* (emphasis added).

Despite the need, local planning for agriculture has been slow in evolving in New Jersey. Advocacy by the New Jersey Department of Agriculture and others is making some headway in this regard; but there remains a long road to travel. The northern region of Burlington County was selected for an empirical assessment of the extent to which planning for agriculture at the local level is occurring due to its agricultural intensity, leadership in farmland preservation, and proactive regional planning. The finding of limited inclusion of

agriculture in local planning efforts in Farm Belt municipalities does not bode well for the prospect that other communities in New Jersey are faring any better.

To be effective, efforts to sustain agriculture as an industry in New Jersey must follow an integrative approach that goes beyond simply preserving farmland in the path of development or attempting to apply land use tools to the problem of farmland loss. While unquestionably important, these efforts must be part of a comprehensive framework for promoting the underlying viability of farms. To retain agriculture, farming needs to remain economically, socially, politically, and environmentally sustainable as a land use, a business, and as an industry.

Accepting this supposition leads to several important charges to the planning profession. Ultimately, the use of land in New Jersey is most influenced at the local level. While state policy can suggest direction or provide incentive to follow a particular course, for the most part the successful retention of farms and the preservation of a vital and sustainable agriculture industry will be rooted in the commitment of local officials to encourage and support the activity of farming.

### **A Charge to the Planning Profession**

Agriculture cannot remain a stranger to the planning profession. Planners need to recognize agriculture as a land use and industry and be cognizant of the challenges, needs, and opportunities facing the farming community. Planners have a broad role to play in terms of agricultural retention; as mediators of locational conflicts creating tension between farmers and non-farmers, as the stimulators of agricultural industry development, and as the implementors of sound land use policy. While not posited as a panacea for farm decline, the

central premise in this research has been that local planning needs to broaden its view of agricultural preservation from a focus on stabilizing the farmland base and engage in informed, proactive, and more comprehensive efforts to promote agricultural development.

Planners can actively reshape a common conception of agricultural land as an interim land use. Farmland is neither “vacant” nor “undeveloped” land; it is, in fact, land that has been developed for the purpose and to the extent and specifications necessary for supporting agricultural production. As such, it constitutes a working landscape that may have attributes that belie the sense of rural tranquility and passivity that attracts many ex-urban residents drawn by the prospect of serene country living. A lack of understanding, or perhaps acceptance, of this argument at the local levels of government in New Jersey is an historic reality, as evidenced by the following passage from the 1980 “Grassroots” report:

...a review of current local zoning ordinances suggests that agriculture tends to be “the leftover use” [with attribution given to former Cook College Extension Specialist John Hunter] which often receives little positive concern.

Municipal governments go through extensive efforts planning for new residential and commercial development, attraction of ratables, and the development or preservation of local amenities. The omission of agriculture from such processes is myopic given the economic and landscape impact of agriculture on many communities across the Garden State, farming’s contributions to the quality of life enjoyed by New Jerseyans, and the strong public support expressed for agricultural retention. Such omissions may not be purposeful exclusion, but rather reflect limited awareness of the opportunities and approaches to more fully integrate agriculture into local planning.

### **Local Planning for Agriculture: Where to Begin?**

Good planning begins with good information. Effective planning for agriculture requires a solid base of information and an understanding of the past, current, and projected patterns of agriculture within a community. For example, understanding local land market dynamics (i.e., farmland values and development pressures), land tenure, and concentration of farmland ownership will help local officials determine priorities for farmland preservation and associated funding requirements. As previous analysis showed, decisions regarding the future use of the majority of Burlington County's farmland base will be made by a very few individuals.<sup>80</sup> Lifelong New Jerseyans can appreciate how quickly the demand for development can appear, intensify, and create rapid transitions in once rural or early-stage suburban areas. Concentrated control over the future disposition of large tracts of land brings the reality that the loss of a few key farms may dramatically impact the future landscape of an entire community.

Planning for agriculture in a community should begin with "knowing what you have." A comprehensive farm inventory should include:

- the number and location (lot and block) of all farm properties,
- farmland acreage and its distribution within the municipality,
- land tenure (amount of land that is owned versus leased),
- key commodities (in terms of sales volume and acreage),
- distribution of farms by size and sales class,
- related agribusiness infrastructure supporting production and marketing,
- the economic contributions of farming and allied agribusinesses,

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<sup>80</sup> As previously calculated, almost two-thirds of the county's farmland, nearly 72,000 acres, is concentrated in the 62 largest farms (those with 500 acres or more). Nearly one-half (47 percent) of the farmland base is controlled by the 32 largest farms.



- farmland values,
- farmer demographics (i.e., age and principal occupation of primary farm operators),
- summary of preserved farmland properties.

The physical resources needed to support farming should also be documented. Important considerations include soils profiles (i.e., proportion of farmland considered prime), water quality and availability, topography, depth to seasonal high water table, location of drainage and irrigation systems, and important wildlife habitat. Similarly, relationships of the local agricultural sector to broader (i.e., county or regional) farming patterns and land use plans should be identified. A good example would be documenting portions of a community's farmland base designated as part of an Agriculture Development Area by the CADB or the status of local farmland preservation priorities vis-a-vis the SADC's strategic farmland preservation targeting plan. The designation of key agricultural lands under the New Jersey State Development and Redevelopment Plan should also be outlined.

Finally, comprehensive planning for agriculture should also entail careful evaluation of the needs of commercial farm enterprises as well as the identification of key impediments, concerns, threats, and opportunities perceived by local farmers. What resources do farmers need to capitalize on emerging opportunities (i.e., value added enterprises, direct marketing, agritourism, etc.)? What business impediments can be reduced through local action? Are there regulatory obstacles that the municipality itself is creating, either knowingly or unknowingly, and, if so, how can they be mitigated? What locational conflicts exist? What are farmers' planning horizons in agriculture? Do they have business succession plans?

What is the imminence of development threat? These are but a few of the potential questions that can be posed to local farmers through surveys or in organized meetings.

A farm inventory can to a large extent be initiated through use of secondary data. Readily available data sources include local tax assessors, farmland assessment records, New Jersey Agricultural Statistics Service publications, federal Censuses of Agriculture, local historical societies, and soil surveys available through the Natural Resources Conservation Service. Increased access to GIS technologies and data layers have greatly facilitated such analysis. Primary data collection can be scalable to available financial and human resources. Surveys or interviews can target farmers, farm leaders, and experts from a wide array of organizations, including:

- county boards of agriculture,
- county agriculture development boards,
- agricultural agents in Rutgers Cooperative Research and Extension),
- agricultural lenders (Farm Service Agency, First Pioneer Farm Credit),
- New Jersey Department of Agriculture personnel,
- New Jersey Farm Bureau staff,
- State Agriculture Development Committee staff,
- county or local officials responsible for planning, economic development and resource conservation, and
- agricultural commodity associations.

Municipalities can also work with the relevant county agricultural development boards to understand right to farm issues or county and state preservation priorities and design more appropriate and well informed local funding strategies. Municipalities are well advised to consider possible synergies that may exist between farmland preservation and open space or historic preservation efforts. For example, greenways can be established under open space preservation programs in a manner that maximizes contiguous preserved acreage and provides buffers between agricultural operations and residential subdivisions.

### **Capitalizing on Missed Opportunities in the Master Plan**

The responsibility for shaping New Jersey's physical landscape is largely delegated to municipalities under the Municipal Land Use Law. With this local authority, however, comes the responsibility to draft municipal master plans. The local master plan provides the legal basis for zoning and other ordinances that significantly shape future land use, as well as the economic and social fabric of a community.

The process of inventorying agricultural resources described above represents a critical input for planning for agriculture because this information provides a common, baseline understanding of a municipality's farm sector. It also informs the development of sound assumptions in the municipal plan about the ideal future of local agriculture and provides a starting point for public discussion and community visioning exercises.

While the development or updating of a master plan provides a unique forum for a local community to establish a clearly defined vision for agriculture, it appears to be an often underutilized opportunity as evidenced by the lack of agricultural vision statements in Farm Belt municipalities. While challenging, a consensus-oriented visioning process can be advanced through the use of common planning techniques such as charrettes. Computer aided visual preference modeling is also a valuable tool for evaluating the appeal of alternative futures.

Once a vision for agriculture is solidified, the municipal planning process can proceed with the formation of goals and objectives that will provide an implementation framework. As noted in Chapter 10, a statement of goals and objectives is one of only two required master plan elements outlined by the MLUL (the other is a land use element). However, it is arguably the most critical since it provides the foundation and rationale for

all other plan elements. While the terms goal and objective are often used interchangeably, a meaningful distinction exists when they are discussed in the context of the municipal plan. A goal should be a broadly defined statement of a desired outcome, or future state. An objective, in contrast, should be a more discrete statement that is tangible and actionable. The completion of an objective represents advancement toward a broader goal. For example, a goal may be to “preserve the town’s prime farmland.” Objectives that may advance this goal would include the adoption of a dedicated land preservation tax or passage of a bond.

Predicated upon a clear vision for agriculture, and well articulated goals and objectives, comprehensive local planning for agriculture may proceed through the integration of farm retention and development considerations within both the required land use element and the optional master plan elements specified in the MLUL (see Table 10-1). The nexus between agricultural retention and the land use element in a community's master plan is clear. By documenting the current natural conditions, as well as current and anticipated future uses of land, the land use element establishes a basis for zoning and associated land development ordinances. As a major land use in New Jersey, agriculture will obviously feature prominently in the documentary aspects of the land use element. The important question is whether the prescriptive language in the element will be conducive to proactive agricultural development. For example, will agriculture be recognized as a permitted use in all zones? Will certain agricultural development practices (e.g., fencing, construction of single-purpose farm structures, etc.) be treated restrictively, or permissively?

Inclusion of agriculture in the optional master plan elements is less frequent, representing a missed opportunity to advance industry objectives. The extent and depth to which agriculture can justifiably be considered within the optional elements will vary across

localities; however, nearly 60 percent of New Jersey municipalities have land devoted to farming. Yet, as previously noted, relatively few municipalities in New Jersey have adopted farmland preservation elements in their plans. This is arguably the most targeted effort a community can make given the prescriptive composition of this element outlined in the MLUL and state farmland preservation program guidance documents.

Given that farmland is often among the prime "open spaces" targeted for preservation it is also intuitive that the conservation and transfer of development rights elements would typically have applicability within broader efforts to retain agriculture. The conservation element would detail, for example, prioritized target properties, preserved acreage goals, possible acquisition mechanisms and partners, and funding requirements. It is under this element that the interrelationship between the built environment and conservation goals can be examined. Agriculture can feature prominently, for example, in the protection of view sheds that enhance community aesthetics. Similarly, farm stewardship contributes to wildlife habitat, water recharge, and wetlands/stream corridor protection. Increasingly national and state discourse is focusing on the opportunity for expanding renewable energy production on farms, through solar, wind, or biomass conversion technologies. Good planning can build upon a natural synergy between farm retention and a variety of local conservation goals.

Any municipality interested in employing a transfer of development rights program to manage growth and preservation must go through an intensive planning process and steps prescribed in the 2004 Statewide Transfer of Development Rights Act. Among them is the formal adoption of a TDR element in the municipal master plan. The element must present population and growth projections, discuss anticipated infrastructure requirements, and detail

both density sending and receiving areas. Farmland is among the land types frequently targeted for protection (e.g., designated as a sending area). At present time, the statewide TDR is largely non-functioning despite the Legislature's intent to have this equity preservation tool available to landowners affected by growth restrictions under the Highlands Act. However, the tool remains a viable option and one that may gain traction if statewide monies for land preservation via easement and fee simple acquisitions are not replenished.

While the TDR and conservation elements are relatively more apparent opportunities for municipalities to better consider the current and future needs of agriculture in their plans, agriculture can be included in all plan elements. The following discussion presents representative examples. There is opportunity, for instance, to consider agriculture within the context of the housing plan element. The Fair Housing Act (1985) requires a municipality to adopt a housing plan element within its master plan if it wishes to receive protection against exclusionary zoning litigation under the aegis of COAH (Zorn 2004). Policy proposals have surfaced in recent years that advocate for the consideration of non-seasonal farm labor housing toward a municipality's affordable housing obligation. Housing elements focus on a variety of residential needs and present opportunity to consider and plan for seasonal and non-seasonal farm labor needs within the community.

The master plan housing element also has implications for the intensification or mitigation of development pressures on farmland. Among the six parts required in the housing element is one that outlines the most appropriate sites for affordable housing based on the adequacy of existing and planned water and sewer infrastructure and environmental constraints. A well crafted housing plan element can therefore not only address the local

needs for shelter within the community, but also preempt pressure on the farmland resource and spatial conflict between residential and farm uses.

The adequacy of transportation infrastructure is another critical statewide issue. The questionable financial tenability of New Jersey's Transportation Trust Fund has been much publicized in recent years. Road infrastructure across New Jersey is, or is rapidly becoming, outdated and below necessary capacity. On a more localized level, rapid growth has resulted in numerous choke points across the state in communities with transportation infrastructure ill-designed for the levels of growth experienced in recent years. This often exacerbates troubles faced by farmers attempting to move farm equipment. For example, slow moving farm tractors and harried commuters at times create points of tension between the farmer and the non-farm public that may escalate to issues of roadway safety. Narrow roadways and bridges, bridge weight limits, or traffic patterns may also limit the range of feasible routes for moving farm equipment between fields. In a similar vein, sign and pole placement, ditch location, guard rails, and other fixed roadside objects may impede the movement of farm machinery between farm parcels. The transportation plan element is an opportunity to consider such logistical (and public safety) issues.

Another example of how the master plan can incorporate agriculture is through the utility service plan element. The intent of this element is to force consideration of water supply issues, drainage and flood control investments, sewage/wastewater management, and other related infrastructure needs. Clearly most forms of farming are heavily dependent upon access to adequate clean water for production. What may not be as readily considered is the fact that many farm properties have made substantial investments - often long ago - in tile drainage systems and ditches that, when properly maintained, can mitigate excess

surface water flow. Alternatively, neglect and abandonment of such systems, as may occur when farm properties change ownership, may alter surface water runoff patterns.

Communities also have the option of incorporating community facilities plan and recreation plan elements into their master plans. According to the MLUL the community facilities element is intended to highlight existing and proposed public (i.e., libraries, police stations, and hospitals), educational, cultural, and historic sites and facilities. The establishment of agricultural recreation venues is becoming an increasingly popular farm viability strategy. The growing reliance on agritourism revenues by farmers and expanding "agri-tainment" opportunities for the public may represent a potential win-win scenario for both farmers and the community; if properly planned and developed.

In a similar fashion, many New Jersey farms have been in operation for several generations and are in and of themselves of local historic significance. Farming is the oldest industry in New Jersey. Historic farm buildings, agricultural innovations, and prominent farmer-leaders contribute richly to the state's history. Notable events in history, including Revolutionary War battles, and early settlement patterns share an intertwined past with farms throughout the state. In addition to historic preservation, careful planning can link these historic and cultural resources with recreation and economic development objectives. Such opportunities may be identified and documented in the historic preservation plan element and coordinated, as appropriate, with state or federal historic preservation planning.

Production agriculture, agribusinesses, food processing and distribution businesses, input suppliers, and a host of ancillary services contribute to the economic fabric of many New Jersey communities and the aggregate state economy. In addition to providing employment and local ratables, the recruitment of agribusinesses can create synergies with



existing farm operations, as well as post-farm gate firms. The range of agriculture-related economic linkages is broad, encompassing farm retail venues, pick-your-own operations, large animal veterinarians, agritourism, equine riding lessons and boarding, and wineries just to name a few. These opportunities can be advanced by their inclusion in a local master plan's economic plan element.

Farms may also feature into local planning for waste disposal and recycling. The current regulatory environment remains ambiguous with respect to food recycling; however, on-farm recycling of vegetative food waste may be a future opportunity. Historically, plate waste (including that generated at Rutgers University) has been sent to hog feeding operations. The application of treated sludge on farm fields or leaf composting may serve not only as a soil amendment, but can also help address a waste disposal issue and potentially provide a source of income to farmers in the form of tipping fees.

Lastly, a local master plan should also outline inter-regional dependencies and relationships of local farming- both advantageous and threatening - within the broader spatial and political context. The MLUL specifies that the local master plan must express how it relates to the master plans of the County and contiguous municipalities, the State Development and Redevelopment Plan, the county's solid waste management plan, and (if applicable) the Highlands regional master plan. Inter-governmental cooperation in a home rule state is an ongoing challenge facing effective planning. As noted previously, it was not apparent that any of the Farm Belt communities studied acknowledged or referenced the State Plan's policies on agriculture. Again, this is a missed opportunity for bringing specificity to community efforts to outline steps for proactively supporting agriculture.

### **Specification of Agricultural Policies and Programs**

A decision to plan for agriculture should result in targeted industry development strategies specifically designed for the realities, needs, and aspirations of the local farming industry. The types of initiatives will vary based on local context (i.e., the size and types of farms as well as availability of funding and other resources). Full enumeration of the possible range of programs would be practically infeasible given the diversity in community characteristics and agriculture across New Jersey. Two examples of policies or programs with relatively broad applicability would certainly be the establishment of a funding mechanism for preserving farmland and the adoption of a strong right to farm ordinance.

A wide range of other local programs can, however, be implemented to support farms. Farm Belt municipalities had a noted lack of detail in their local master plans, codes, and ordinances with respect to such policies. The development of practical, effective, and context-specific programs or policies to support local farms requires creativity and an understanding of the nature and needs of farms in the area, however, there are several generalized efforts that are broadly applicable.

Empowering farmers to capitalize on new market opportunities and outlets is a basic form of support that municipalities can extend to farmers. Former New Jersey Secretary of Agriculture Arthur Brown notes that for New Jersey farmers “production is not the problem, the challenge lies in marketing” (Brown 2006). As wholesale channels are lost to New Jersey farmers and market prices trend down, direct marketing is a critical strategy for many farmers to “cut out the middle man” and capture a greater return from their products.

Communities can encourage and facilitate local purchasing of local farm products through various programs, including community farmers’ markets in public spaces or CSAs

(community supported agriculture).<sup>81</sup> The popularity of farmers' markets has grown dramatically in New Jersey within the last decade. Establishing a local farmers' market provides benefits to not only area farmers, but it also creates hubs for community interaction and fosters awareness of local farming. Many farm retail outlets and farmers' markets are certified to accept WIC vouchers for purchases of farm products, linking farmers with low income and food insecure populations in the community.

Local officials can also expand economic development and business attraction efforts to target businesses that support agriculture. A farm sector needs assessment would be a useful first step in defining such strategies. Similarly, conducting a township or regional SWOT (strengths, weaknesses, opportunities, threats) analysis would assist in targeting the most viable types of businesses for the area. One step a municipality or county can readily take to better understand opportunities for agricultural economic development is including (or, more proactively, recruiting) farmers into local chambers of commerce and other economic development committees.

Municipal officials can support efforts to educate the local community about the benefits and realities of commercial farming. New Jersey Farm Bureau and the New Jersey Department of Agriculture have increased their efforts to communicate with the public about agriculture through the hiring of public information officers and public relations consultants. Similar efforts can be made through local media (farming related stories are often viewed as local interest pieces). Organizing press familiarization tours of farms is one specific

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<sup>81</sup> Community supported agriculture is a strategy for linking farmers directly with consumers. When a consumer joins a CSA he buys a share of the farm's output for the coming year. Several CSAs are in operation in New Jersey, some of which are linked to organic farms.

action that can be taken. Public events centered around agriculture, or held on farms, can also be used to create positive interaction and forums for educating residents about their local farms.

Such efforts may pay dividends in terms of even generating interest in farming. Farm demographic trends point to the importance of cultivating the next generation of New Jersey farmers. For every six farmers over the age of 65 in New Jersey, there is only one farmer under the age of 35. While there is no quick fix to this growing generational gap, municipalities can do their part by encouraging youth to get acquainted with farming through local educational programming (i.e., 4-H, FFA). The New Jersey Agricultural Society also sponsors Agriculture in the Classroom program for elementary school age children.

Communities (perhaps in conjunction with the appropriate CADB) may also play a role in developing young agricultural leaders through sponsoring young farmers interested in leadership development programs. The New Jersey Agricultural Leadership Development Program is a two year program (now hosting its sixth class) sponsored by the New Jersey Agricultural Society, Cook College, and other agricultural associations. The program develops public speaking and leadership skills, provides networking opportunities, and introduces participants to the state and federal legislative process. Many of today's current and emerging agricultural leaders in New Jersey have completed the program.

### **Challenges in Planning for Agriculture**

An important aspect of planning for agriculture is an up-front acceptance of one fact - it will not always be easy. There are several challenges to consider. First, planning for agriculture should begin before it is visibly "needed". Development pressures can manifest

and intensify very quickly and unplanned/unexpected growth can transform a rural place rapidly. Efforts to plan for agriculture may be spurred during a time of perceived crisis, however, this is not the optimal time.

Further, development pressures, right to farm conflicts, and the externalities of agriculture (both positive and negative) do not cease at polity borders. Planning for agriculture requires regional planning and inter-municipal cooperation and coordination. The diffusion of planning power across New Jersey's 566 minor civil divisions, 21 counties, and several regional planning authorities creates substantial challenge for efficient and effective multi-jurisdictional planning.

There may even be difficulty in gaining consensus on something that, at face value, is seemingly as straight forward as determining what is, or is not, agriculture. Within the farming community itself there is disagreement over what is agriculture. "Traditional" agriculturalists may not view equine operations or some nurseries as farming. Commercial farmers may dismiss part-time farmers as not "real" farmers. It may also be difficult to reach agreement on what types of agriculture are wanted within a municipality. Do local residents want a large scale hog operation or other type of confined feeding operation? Will residents accept an open grain field, but reject rows of greenhouses? In Mercer County, a contentious issue emerged around the development of an aquaculture facility on preserved farmland, an activity viewed as too "industrial" by some neighbors.

As noted earlier this chapter, a significant problem lies in the fact that even if interest in promoting agriculture exists, municipalities often lack the knowledge of agriculture needed to proactively develop appropriate farm support policies. Further, clear guidance to municipalities for developing farm-friendly policies (policy templates, model ordinances,

and other ready-to-use tools) has been generally unavailable. Part of this can be overcome by the active participation of farmers in the planning process.

Empaneling an effective agricultural advisory committee requires strategic consideration. Like any community, farming has its opinion leaders that should be brought into the process of planning for the industry's future. Ideally, the committee should be comprised such that it reflects the diversity of farmers in the municipality. Factors including commodity, size, farmer age, marketing and production practices (i.e., direct marketing, organic production), and primary farmer occupation (i.e., full- versus part-time farming) should be considered to maximize the diversity and representativeness of the committee.

Additional individuals with expertise in agriculture or agricultural policy should also be sought. Farm policy in New Jersey is heavily grassroots-oriented. Most counties have a county board of agriculture, a county agriculture development board, Farm Bureau directors, and faculty or staff from Rutgers Cooperative Research and Extension that bring not only extensive knowledge of the farming community, but also a bridge to state-level policy insights that can help inform local policy making. Careful consideration of the realities of farming life and the constraints it imposes on farmers' availability is also important. Planning committee meetings during key planting or harvest times will ensure little or no participation by the farmer members of the committee.

While planners may recognize and value the merits of participatory planning, they may also confront resistance in their efforts to engage farmers. The farming community is often a bastion of conservative values and independence. Some farmers may value less government in their lives. Others may be inherently distrustful of the planning process or

doubt that their input will be heeded. Land management is a fertile ground for this tension to manifest.

Land equity may be the most polarizing issue between the farming community and those advancing growth management objectives. Engagement of farmers in local planning for agriculture may suffer from a growing level of alienation and frustration within the farm community over perceived inequities associated with the implementation of state and local growth management policies. Past and current experience with state or local growth management plans and policies fuels farmers' concern and may be a significant source of apathy toward local planning processes. For example, farmers in the Pinelands have argued since the implementation of the Comprehensive Management Plan that they bear a disproportionately high burden for conservation and growth management in more than one million acres in southern New Jersey, in the form of property devalued through growth restrictions. Their counterparts in the northern counties now adamantly voice the same concern over the Highlands Act and the failure of the State Legislature to implement equity preservation (e.g., a functioning TDR program) or create compensatory mechanisms to offset diminished land values, as called for in the enabling legislation.

Downzoning, or large lot zoning, passed as a strategy to curb sprawling development and preserve open land is a particularly interesting example of the tension between local efforts to advance strategies perceived to be beneficial from a land use/growth management perspective and the interests of many farmers. The debate has escalated since the late 1990s and continues today. Advocates and opponents of the practice disagree at a fundamental level about large lot zoning's effect on the landscape and whether it curtails or creates sprawl.

The impacts of downzoning on affected landowners is similarly an issue for which consensus is elusive. Gottlieb and Adelaja (2004) developed a theoretical model that predicts properties subject to downzoning will lose value while adjacent properties will appreciate in value due to the increased likelihood that rural amenities will remain intact. Empirical evidence of this effect on New Jersey farmland is generally lacking. Samuels (2004) examined the effects of actual or simulated downzoning in six municipalities and concluded that reducing development densities did (or would) reduce farmland values by up to 77 percent.

The impact of property value diminution on farming is debated with equal intensity. New Jersey farmers have strongly opposed the use of downzoning as a means to reduce development or lower the costs of farmland preservation. Some object on the ideological ground that such practice is tantamount to unconstitutional "taking" of land. Others express concern that a reduction in the value of their farmland may limit their ability to collateralize debt and access personal and business credit. Yet others point to the impacts on their personal wealth, noting that the value farmland resources stabilizes personal net worth amidst fluctuating agricultural markets and provides a source of retirement or emergency income.

### **Concluding Thoughts**

It may be overused hyperbole to say that agriculture is now at a crossroads, yet this dissertation is nevertheless a call to action. Farmers in New Jersey face challenges today, as they have since ground was first broken for cultivation. The vicissitudes of weather, disease, and pestilence have always plagued farmers and will continue to do so. Changing



market dynamics are similarly not new. The evolution of New Jersey's agricultural composition is evidence of the dynamic nature of consumer markets and shifting competitive advantages in production. Today the manifestation of these challenges is arguably assuming a new look in the form of growing economic integration and interdependence of national economies and movement toward a world economy.

If there is a sense of renewed urgency in the argument for innovative farm policy and proactive, agriculture-friendly planning in New Jersey it is not even linked to an argument that suburbanization represents a new threat to farming. It is rooted in the fact that the types and extent of pressures that suburbanization places on farmers are more advanced in New Jersey than virtually anywhere else, and they are intensifying. Many commercial farmers' grasp on a reasonable level of farm profitability is tenuous at best and many question how much longer they will remain in agriculture. The tipping point for many may well be the extent to which the presence or absence of accommodating local policy places more or less constraint on their ability to respond to market conditions, adopt innovative marketing and production practices to meet emerging opportunities, and co-exist with a growing non-farm population.

As more and more agricultural resources are lost, the more difficult it will be to retain a sustained, viable agricultural industry in New Jersey. For example, farmland scarcity and competition over land resources will further raise farmland prices to levels inaccessible to new and young farmers, making it more difficult to attract new entrants into the industry. The industry's political clout will erode at the state level as organizations like New Jersey Farm Bureau lose members. Similarly at the local level, as farmers continue to shrink as a proportion of the population, it can be expected that local regulatory climates will become

less sensitive to the needs of farming and public tolerance of perceived negative external effects of farming may evaporate. Technical resources will decline as resources are reallocated within the land grant system. Agribusinesses supporting farmers will find themselves with a base of clientele insufficient to warrant their continued presence in the state. In some instances, the loss of a farm will be rooted in the simple fact there will be no successor for the business, from within the farm family or otherwise, that sees farming as a vocation of interest. All of these factors have been on the radar screen of agricultural leaders and policy makers concerned about farming's future in New Jersey for several decades now. The magnitude of the problem has, however, grown since the time of the Blueprint Commission. It is simply a matter of numbers. New Jersey has only one-third the number of the farms operating in 1950 remaining today. Only half of the farmland acreage existing in 1950 now remains. To a large extent, the number of farms remaining in ten, twenty, and fifty years from now will depend at least in part by the actions - or inaction - of today's farmers, agricultural leaders, state policy makers, and local officials.

In the opening passage of this dissertation it was noted that the history of suburbanization has been the history of agriculture's decline in New Jersey. It is important to realize that agricultural decline is not the inevitable accompaniment to future suburbanization. New Jersey agriculture has faced decline and pressures continue to mount on the state's remaining agricultural operations. The retention of agriculture in New Jersey will not be a by-product of good planning; if the farming industry is to remain viable in the state it will be because it was the focused goal of good planning. It is time to comprehensively plan for agriculture's future.

## Bibliography

Adams, M. and J. Freedgood. 1998. *The cost of community services in Monmouth County, New Jersey*. Northampton, MA: American Farmland Trust.

Adelaja, A., F. Brooks, H. Heinrich, P. Hayes, and K. Friedman. 1996. The right to farm in New Jersey: A legal, institutional and social analysis. *New Jersey Agricultural Experiment Station Publication No. SR 02529 961*. New Brunswick, NJ: New Jersey Agricultural Experiment Station.

Adelaja, A., F. Brooks, T. Miller and M. Taslim. 1997. Structure and performance of new jersey's dairy industry: Policy recommendations for a sustainable future. *New Jersey Agricultural Experiment Station Publication No. SR 02532-96-1*. Rutgers The State University of New Jersey, Ecopolicy Center, New Brunswick, NJ.

Adelaja, A., R. Brumfield and B. Schilling. 1996. Share analysis of drivers of growth in the ornamental industry: A case study of New Jersey. *Acta Horticulturae*, 429:301-307.

Adelaja, A., D. Derr, and K. Rose-Tank. 1989. Economic and equity implications of land-use zoning in suburban agriculture. *Journal of Agricultural Ethics*, 2, 97-122.

Adelaja, A. and K. Friedman. 1999. The political economy of the right to farm. *Journal of Agricultural and Applied Economics*, 31(3): 565-579.

Adelaja, A., R. Nayga Jr. and B. Schilling. 1994. Returns to the Jersey Fresh promotional program: An economic analysis of the effects of promotion expenditures on agricultural cash receipts in new jersey. *New Jersey Agricultural Experiment Station Publication No. SR 02134-1-94*. Trenton, NJ: New Jersey Department of Agriculture.

Adelaja, A. and B. Schilling. 1995. Recent economic performance of New Jersey agriculture: The 1989-93 recession and prospects for post-recession recovery. *Ecopolicy Report No. AERDI94-8-95-3*. New Brunswick, NJ: Rutgers The State University of New Jersey, Department of Agriculture, Food and Resource Economics and The Ecopolicy Center.

Adelaja, A., B. Schilling and G. Horzempa. 1994. The agriculture, agribusiness and fisheries industries of New Jersey: Profiles, economic contributions, major issues and policy recommendations. Report prepared for the Economic Master Plan Commission: Task Force on Agriculture, Agribusiness and Fisheries.

Adelaja, A., B. Schilling and J. Menzo. 1997. Farmland assessment in New Jersey: Effects of revisions in eligibility requirements on land use, open space and municipal finance, Volume 1 and 2. *Ecopolicy Report No. AERDI94-2-97-1, New Jersey Agricultural Experiment Station Publication SR 02529-96-4*. New Brunswick, NJ: Rutgers The State University of New Brunswick, Department of Agriculture, Food and Resource Economics and The Ecopolicy Center.

Adelaja, A. and K. Sullivan. 1998. *The viability of agriculture at the urban fringe*. (Working paper). New Brunswick, NJ: Rutgers The State University of New Jersey, Department of Agricultural, Food and Resource Economics.

Ahearn, M., J. Yee, E. Ball, and R. Nehring. 1998. Agricultural productivity in the United States. *Agriculture Information Bulletin No. 740*. Washington DC: U.S. Department of Agriculture, Economic Research Service.

American Farm Bureau Federation. 2005. *Farm facts*. Retrieved from <http://www.fb.org/brochures/farmfacts/>.

American Farmland Trust. 1992. *Does farmland protection pay? The cost of community services in three Massachusetts towns*. Washington DC: American Farmland Trust.

American Farmland Trust. 1993. *The cost of community services in Madison Village and Township, Lake County, Ohio*. Washington DC: American Farmland Trust.

American Farmland Trust. 1994. *Farmland and the tax bill: The cost of community services in three Minnesota cities*. Washington DC: American Farmland Trust.

American Farmland Trust. 1997. *Saving American farmland: What works*. Northampton, MA: American Farmland Trust.

American Farmland Trust. 2003. *Why Save Farmland?* Farmland Information Center Bulletin.

American Farmland Trust. No date. *Growing together: A strategic plan for integrating agriculture and growth management in the Connecticut River Valley of Massachusetts*. Northampton: American Farmland Trust.

American Farmland Trust and the U.S. Conference of Mayors. 2002. *Town meets country: Farm-city forums on land and community*.

Andrews, C. 2002. Industrial ecology and spatial planning. In R. U. Ayres and L. W. Ayres, (Eds) *A handbook of industrial ecology*. Cheltenham UK: Edward Elgar Publishing.

Arendt, R. 1994. *Rural by design: Maintaining small town character*. Chicago, IL: APA Planners Press.

Arendt, R. 1999. *Growing greener: Putting conservation into local plans and ordinances*. Washington DC: Island Press.

Ball, E. 2005. Ag productivity drives output growth. *Amber Waves*, 3(3):6-7.

Batie, S. 2003. Multifunctional attributes of northeastern agriculture: A research agenda. *Agricultural and Resource Economics Review*, 32(1):1-8.

Bazan, E.J, J.C. Keene, and N Mohr. 2002. *Saving the farm, saving the farmer: Securing a future for agriculture in Chester county*. Chester, PA: Chester County Development Council and Chester County 2020 Trust.

Beaton, W.P. 1991. The impact of regional land-use controls on property values: The case of the New Jersey pinelands. *Land Economics*. 67(92):172-94.

Beck-Dudley, C. and J. MacDonald. 1995. Lucas v. South Carolina Coastal Council, takings, and the search for the common good. *American Business Law Journal* 33(2):153-178.

Beierlein, J. G., K. C. Schneeberger, and D. D. Osburn. 2003. *Principles of agribusiness management, 3rd edition*. Prospect Heights, IL: Waveland Press, Inc.

Benedict, M.R., E.F. Elliott, H.R. Tolley, and C. Taeuber. 1944. Need for a new classification of farms. *Journal of Farm Economics*. 26(4): 694-708.

Berry, D. 1978. Effects of suburbanization on agricultural activities. *Growth and Change* 9(3):28.

Berton, Valerie. 2003. *Planning ahead for agriculture*. American Farmland Trust. Summer 2003. Pp. 14-18.

Blank, S. 2002. Is agriculture a way of life or business? *Choices* 17(3): 26-30.

Braswell, M. K. and S. L. Poe. 1995. Private property vs. federal wetlands regulation: Should private landowners bear the cost of wetlands protection? *American Business Law Journal* 33(2):179-234.

Brighton, D. 1996. *The effects of land development and land conservation on property taxes in Connecticut towns*. Salisbury, VT: Ad Hoc Associates.

Brill, T. 2006. Interview by the author. 3 March.

Brooks, N. 2005. *U.S. agricultural trade update, FAU-98*. Washington DC: U.S. Department of Agriculture, Resource Economics Division, Economic Research Service.

Brown, A. R. 2006. Interview by the author. 17 January.

Brownstone, D. and A. DeVany. 1991. Zoning, returns to scale, and the value of undeveloped land. *Review of Economics and Statistics*, 73:699-704.

Burchell, R. 2002. The costs of sprawl - 2000. 2002. *Transit Cooperative Research Program Report 74*. Washington DC: Transportation Research Board, National Research Council.

Burchell, R. and D. Listokin. 1980. *Practitioner's guide to fiscal impact analysis*. New Brunswick, NJ: Rutgers, The State University, Center for Urban Policy Research.

Burchell, R., D. Listokin, and W. Dolphin. 1985. *The new practitioner's guide to fiscal impact analysis*. New Brunswick, NJ: Rutgers, The State University, Center for Urban Policy Research.

Burlington County Route 130/Delaware River Corridor Steering Committee. 1998. *Route 130/Delaware river corridor strategic plan, Volumes I and II*. Mount Holly, NJ: Burlington County Board of Chosen Freeholders.

Burlington County Board of Chosen Freeholders. 2000. *Smart growth planning grant application: The preparation of a strategic plan of the extension of the Route 130/Delaware River corridor and the Route 206/Farmbelt corridor*.

Burlington County Office of Land Use Planning and NJ Association of Environmental Commissions. 1996. *The fiscal impacts of development vs. farmland in Mansfield Township*. Mount Holly, NJ: Burlington County Office of Land Use Planning.

Catania, M. 2006. Interview by the author at the New Jersey Food Policy Summit. 3 March.

Christman, J. 1994. *The myth of property: Toward an egalitarian theory of ownership*. New York: Oxford University Press.

Claassen, R. 2003. Emphasis shifts in U.S. agri-environmental policy. *Amber Waves*, November, pp. 39-44.

Coughlin, R. E. 1991. Formulating and evaluating agricultural zoning programs. *Journal of the American Planning Association* 57(2):183.

Cumberland County Agriculture Development Board. 1991. *The agricultural enterprise district - Incentives for open space and farming viability for Cumberland County*. Bridgeton, NJ: Cumberland County Agricultural Development Board and the County of Cumberland Department of Planning and Development.

Cumberland County Agriculture Development Board, Farm Credit of South Jersey, and the USDA Farmer's Home Administration. 1992. *Potential impacts of the New Jersey state plan on farmland equity: An analysis of Cumberland County*. Bridgeton, NJ: Cumberland County Department of Planning and Development.

- Cunningham, J. T. 1955. *Garden State: The story of agriculture in New Jersey*. New Brunswick: Rutgers The State University of New Jersey Press.
- Dana, S. T. and S. K. Fairfax. 1980. *Forest and range policy, second edition*. San Francisco: McGraw Hill.
- Danborn, D. 1996. Why Americans value rural life. *Rural Development Perspectives*, 12(1):15-18.
- Daniels, T. 1991. The purchase of development rights: Preserving agricultural land and open space. *Journal of the American Planning Association* 57(4):421.
- Daniels, T. 1997. Where does cluster zoning fit in farmland protection. *Journal of the American Planning Association*, 63(1):129-137.
- Daniels, T. 1999. *When city and country collide: Managing growth in the metropolitan fringe*. Washington DC: Island Press.
- Daniels, T. 2000. Integrated working landscape protection: The case of Lancaster County, Pennsylvania. *Society and Natural Resources*, 13:261-271.
- Daniels, T. and D. Bowers. 1997. *Holding our ground: Protecting America's farms and farmland*. Washington DC: Island Press.
- Daniels, T. and M. Lapping. 2001. Farmland preservation in America and the issue of critical mass. Paper presented at the American Farmland Trust National Conference, Chicago, IL.
- Daniels, T. and A. C. Nelson. 1986. Is Oregon's farmland preservation program working? *Journal of the American Planning Association* 52(1):22-32.
- Decter, S, A. Adelaja, and L. Meagher. 1994. *Into the 21<sup>st</sup> century: Strategic planning for New Jersey's agriculture future* (Staff report). New Brunswick, NJ: Rutgers The State University of New Jersey, Ecopolicy Center, New Brunswick, NJ.
- Derr, D., L. Small and P. Dhillon 1977. Criteria and strategies for maintaining agriculture at the local level. *Journal of Soil and Water Conservation* 32:118-122.
- Dimitri, C., A. Effland, and N. Conklin. 2005. The 20<sup>th</sup> century transformation of U.S. agriculture and farm policy. *USDA Economic Research Service Economic Information Bulletin No. 3*. Washington DC: United States Department of Agriculture.
- Duany, A., E. Plater-Zyberk, and J. Speck. 2000. *Suburban nation: The rise of sprawl and the decline of the American dream*. New York: North Point Press.

Duffy, M. And V. Nanhou. 2002. *Factors of success of small farms and the relationship between financial success and perceived success*. Paper presented at the 3<sup>rd</sup> Annual Small Farms Conference, Albuquerque, NM.

Duke, J. M., T.W. Ilvento, and R.A. Hyde. 2002. Public support for land preservation: Measuring relative differences in Delaware. *Department of Food and Resource Economics Report No. RR02-01*. Newark, DE: University of Delaware.

Dye, T.R. 1966. *Politics, economics, and the public: Policy outcomes in American states*. Chicago: Rand McNally and Company.

Edmondson, W. 2002a. Economic activity triggered by food and agricultural trade. *Rural America*, 17(1):45-48.

Edmondson, W. 2002b. Food and fiber system important part of economy. *Rural America*, 17(1):42-44.

Edmondson, W. 2004. Economics of the food and fiber system. *Amber Waves*, 2(1):12-13.

Effland, A. 2000. U.S. farm policy: The first 200 years. *Agricultural Outlook AGO-269*. Washington DC: United States Department of Agriculture, Economic Research Service.

Epstein, R. A. 1985. *Takings: Private property and the power of eminent domain*. Cambridge, Massachusetts: Harvard University Press.

Evans, C. and J. McGuire. 1996. *The contribution of agribusiness to Hillsborough County, Florida*. Boca Raton, FL: Farming for the Future.

Farmland Evaluation Advisory Committee. 1990. *Farmland assessment handbook for New Jersey assessors*. Trenton, NJ: State of New Jersey Department of Treasury, Division of Taxation.

Farmland Evaluation Advisory Committee. 2004. *Productivity values for 2005 tax year*. Trenton, NJ: State of New Jersey Department of Treasury, Division of Taxation.

FARMS Commission. 1994. *Into the 21<sup>st</sup> century: Strategic planning for New Jersey's agricultural future*. New Brunswick, NJ: Rutgers The State University of New Jersey, Ecopolicy Center.

Feenstra, G., C. Ingels, and D. Campbell. 1997. *What is sustainable agriculture?* Davis, CA: University of California, Sustainable Agriculture Research and Education Program.

Fishman, R. 1987. Bourgeois utopias: Visions of suburbia. In S. Campbell and S. Fainstein (Eds.) *Readings in urban theory*. Malden, MA: Blackwell Publishers.



Foglesong, R. E. 1986. *Planning the capitalist city*. Princeton: Princeton University Press.

Foltz, J. and B. Larson. 2002. *Public support for farmland preservation programs: empirical evidence from Connecticut*. Madison, WI: University of Wisconsin-Madison, Department of Agriculture and Applied Economics.

Freedgood, J.L. Tanner, C. Mailler, A. Andrews, and M. Adams 1994. *Farmland pays its way: A review of cost of community services studies*. Washington DC: American Farmland Trust Fact Sheet.

Freedgood, J. 2002. Cost of community services studies: Making the case for conservation. *American Farmland Trust Fact Sheet*. Washington DC: American Farmland Trust.

Freilich, R.H, T. Smith, E. Paster, and Freilich, Leitner and Carlisle. 2002. Analysis of agriculture land retention strategies. In *Miami-Dade county agricultural retention study*. University of Florida Institute of Food and Agricultural Studies.

Fureseth, O. J. 1985. Local farmland conservation programmes in the U.S.: A study of California counties. *Applied Geography* 5: 211-227.

Furuset, O. J. 1987. Public attitudes toward local farmland protection programs. *Growth and Change*, 18: 49-62.

Gale, F. 1997. Direct farm marketing as a rural development tool. *Rural Development Perspectives*, 12(2):19-25.

Gardner, B.D. 1977. The economics of agricultural land preservation. *American Journal of Agricultural Economics*, 59: 1027-1036.

Gerckens, L. C. 1994. American zoning and the physical isolation of uses." *Planning Commission Journal*, 15 (Summer):10-14.

Gleason, E.F., A.S. Bogdon, and R.E. Land. 1999. Toward a new understanding of rental housing in America. *Housing Policy Debate*, 10(1):1-8.

Goger, N. Research Associate, New Jersey Farm Bureau. 2005. Interview by the author. 25 February.

Gottfried, H. 1996. Corridors of value: Rural land in rural life. *Rural Development Perspectives* 12(1):11-14.

Gottlieb, P. and A. Adelaja. 2004a. *Impacts of down-zoning on land values: A theoretical approach*. (Working paper) New Brunswick, NJ: Rutgers, The State University of New Jersey, Department of Agricultural, Food and Resource Economics.

Gottlieb, P. and A. Adelaja. 2004b. *The political economy of downzoning*. Presented at the American Agricultural Economics Association Annual Meeting, Denver, Colorado.

Govindasamy, R., A. Pingali, F. Hossain. 1998. Income distribution comparison of farms with innovative activities: A probabilistic approach. *Rutgers Cooperative Extension Report*. New Brunswick, NJ: Rutgers The State University of New Jersey.

Govindasamy, R., M. Zurbruggen, J. Italia, A. Adelaja, P. Nitsche and R. VanVranken. 1998. Farmers' markets: Producers' characteristics and status of their businesses. *New Jersey Agricultural Experiment Station Publication No. P-02137-6-98*. New Brunswick, NJ: New Jersey Agricultural Experiment Station.

Govindasamy, R., Schilling, B., Sullivan, K., Turvey, C., Brown, L. & Puduri, V. 2004. Returns to the Jersey Fresh promotional program: The impacts of promotional expenditures on farm cash receipts in New Jersey." New Brunswick, NJ: Rutgers, the State University of New Jersey, Department of Agricultural, Food and Resource Economics and Food Policy Institute.

Green, M. 2005. Right to Farm Act resolves disputes in most densely populated state. *New Jersey Law Journal*, 180(8): 1-3.

Gribbins, J. J. 1962. *Manual of the legislature of New Jersey, 1962*. Trenton, NJ: MacCrellish & Quigley Co.

Gribbins, J. J. 1972. *Manual of the Legislature of New Jersey, 1972*. Trenton, NJ: MacCrellish & Quigley Co.

Gribbins, J. J. & E. J. Mullin. 1976. *Manual of the Legislature of New Jersey, 1976*. Trenton, NJ: MacCrellish & Quigley Co.

Grossi, R. 2006. Address at 1<sup>st</sup> Annual Farmland Preservation Summit. New Brunswick, NJ: Rutgers The State University of New Jersey, Cook College.

Haight, D., J. Cosgrove, and K. Ferguson. 2005. *American Farmland Trust's guide to local planning for agriculture in New York*. Saratoga Springs, NY: American Farmland Trust.

Hamilton, N. D. 1992. Right to farm law revisited: Judicial consideration of agricultural nuisance protections. *Journal of Agricultural Taxation and Law*, 14:195-228.

Heiman, M. K. 1988. *The quiet evolution: Power, planning and profits in New York state*. New York: Praeger Publishers.

Heiman, M. K. 1989. Production confronts consumption: Landscape perception and social conflict in the Hudson valley. *Environment and Planning D: Society and Space*, 7(2): 165-178.

Heimlich, R. 1989. Metropolitan agriculture: Farming in the city's shadow. *Journal of the American Planning Association*, 55(4):457-466.

Heimlich, R. 1991. Agriculture adapts to urbanization. *Food Review*, 14(1):21-25.

Heimlich, R. and W.D. Anderson. 2001. Development at the urban fringe and beyond. Impacts on agriculture and rural land. In *Economic Research Service Agricultural Economic Report No. 803*. Washington DC: Government Printing Office.

Heimlich, R. and C. Barnard. 1992. Agricultural adaptation to urbanization: Farm types in northeast metropolitan areas. *Northeastern Journal of Agricultural and Resource Economics* 21(1):50-60.

Heinrich, H. 2005. Interview by author.

Heinrich, H. and B. Schilling. 2004a. *Agriculture in Burlington County's Route 206 Farm Belt: A Review of Farm Industry Economics*. Report submitted to the Burlington County Department of Economic Development and Regional Planning.

Heinrich, H. and B. Schilling. 2004b. *Agriculture in Burlington County's Route 206 Farm Belt: Current Industry Status and Trends*. Report submitted to the Burlington County Department of Economic Development and Regional Planning.

Hellerstein, D., Nickerson, C. J., Cooper, Feather, P., Gadsby, D., Mullarkey, D., Tegene, A., & Barnard, C. 2002. Farmland protection: The role of public preferences for rural amenities. *Agricultural Economic Report No. AER815*. Washington DC: United States Department of Agriculture, Economic Research Service.

Henneberry, D. and R. Barrows. 1990. Capitalization of exclusive agricultural zoning into farmland prices. *Land Economics*, 66:249-258.

Heyer, F. 1990. Preserving rural character. *Planning advisory service report number 429*. Chicago, IL: American Planning Association.

Hillsborough County, FL Agriculture Task Force. 1997. *Final report to the county commissioners*. Tampa, FL: Hillsborough County Economic Development Department.

Holland, J., M. Lauer and B. Beshoff. 2002. Agricultural economic development strategies. In *Miami-Dade county agricultural retention study*. University of Florida Institute of Food and Agricultural Studies.

Hoppe, R. 2000. *ERS Small Farm Typology*. Paper presented at the Farm Foundation's 50<sup>th</sup> National Public Policy Education Conference, Albany, NY.

Hoppe, R. 2001. Structural and financial characteristics of U.S. farms: 2001 family farm report. *Agriculture Information Bulletin No. 768*. Washington, DC: Economic Research Service, Resource Economics Division.

Hoppe, R., J. Perry, and D. Banker. 2000. ERS farm typology for a diverse farm sector. *Agriculture Information Bulletin No. 759*. Washington DC: United States Department of Agriculture Economic Research Service.

Howarth, W. 1996. The value of rural life in American culture. *Rural Development Perspectives* 12(1):5-10.

Illinois Farm Bureau. 1999. *The code of country living*. Bloomington, IL.

Irwin, E. G., C. J. Nickerson, and L. Libby. 2003. What are farmland amenities worth? *Choices* 3<sup>rd</sup> Quarter:21-23.

Jackson, K. 1985. *Crabgrass frontier: The suburbanization of the United States*. New York: Oxford University Press.

Jackson-Smith, Douglas. 2002. *Planning for agriculture in Wisconsin: A guide for communities*. Madison, WI: University of Wisconsin Cooperative Extension.

Jacobs, H. M. 1998a. Preface. In H. Jacobs (Ed.) *Who owns America? Social conflict over property rights*. Madison, WI: University of Wisconsin Press.

Jacobs, H. M. 1998b. The 'Wisdom,' but Uncertain Future, of the Wise Use Movement. In H. Jacobs (Ed.) *Who owns America? Social conflict over property rights*. Madison, WI: University of Wisconsin Press.

Jacobs, H. M. 1998c. The impact of state property rights laws: Those laws and my land. *Land Use Law and Zoning Digest* (March 1998) [on-line publication].

Jandoli, S., title Planning and Information Management Bureau, Green Acres Program, New Jersey Department of Environmental Protection. 2005. Interview by the author. 25 February.

Johnson, D., P. E. Salkin, and J. Jordan. 2002. *Planning for smart growth: 2002 state of the states*. American Planning Association.

Jones, K. G. And M. C. Hallberg. 1998. Measuring agriculture's contribution to an economy. *Farm Economics* (Sept./Oct.).

Josling, T. 2002. Competing paradigms in the OECD and their impacts on the WTO agriculture talks. In L. Tweeten and S. R. Thompson (Eds.), *Agricultural policy for the 21<sup>st</sup> century*. Ames, IA: Iowa State University Press.

Kline, J. and D. Wichelns. 1994. Using referendum data to characterize public support for purchasing development rights to farmland." *Land Economics*, 70: 223-233.

Kline, J. and D. Wichelns. 1996. Public preferences regarding the goals of farmland preservation programs. *Land Economics*, 72: 538-549.

Koch, A. R. 1986. The second ten years of farmland assessment - Issues from 1974-1984. *New Jersey Agricultural Experiment Station Publication No. P-02412-1-86*. New Brunswick, NJ: Rutgers The State University of New Jersey, Department of Agricultural Economics and Marketing.

Krieger, D. J. 1999. Saving open space: Public support for farmland protection. *Center for Agriculture in the Environment Report No. WP99-1*. Northern Illinois University.

Krueckeberg, D. A. 1995. The difficult character of property: To whom do things belong? *Journal of the American Planning Association*, 61(3):301-309.

Krueckeberg, D. A. 1999. The grapes of rent: A history of renting in a country of owners. *Housing policy debate*, 10(1): 9-30.

Kunstler, J. H. 1993. *The geography of nowhere: The rise and decline of America's man-made landscape*. New York: Simon and Schuster.

Kunstler, J. H. 1996. *Home from nowhere: Remaking our everyday world for the 21<sup>st</sup> century*. New York, NY: Simon and Schuster.

Lapping, M. and J. Fitzsimons. 1982. Beyond the land issue: Farm viability strategies. *GeoJournal* 6(6):519-524.

Lapping, M., G. Penfold, and S. Macpherson. 1983. Right to Farm law: Do they resolve land use conflicts? *Journal of Soil and Water Conservation*, 38:465-467.

Larson, J. M., J. L. Findeis, and S. M. Smith. 2001. Agricultural adaptation to urbanization in southeastern Pennsylvania. *Agricultural and Resource Economics Review*, 30(1):32-43.

Leccese, M. and K. McCormick. 1999. *Charter of the new urbanism*. McGraw Hill.

Legg Mason Realty Group, Inc. 1993. *A study of economic impacts of land use regulations on the business of farming in Maryland*. Baltimore, MD.

Libby, L. W. and E. G. Irwin 2003. Rural amenities and farmland values. In Charles B. Moss and Andrew Schmitz (Eds.) *Government policy and farmland markets: The maintenance of farmer wealth*. Iowa: Iowa State University Press.

- Libby, L. 2000. Farmland as a multiservice resource: Policy trend and international comparisons. *Proceedings of the International Symposium on WTO New Round Agricultural Negotiations*. Tapei, Taiwan: Taiwan Council of Agriculture.
- Lisansky, J. 1986. Farming in an urbanizing environment: Agricultural land use conflicts and Right to Farm. *Human Organization*, 45(4):363-371.
- Lisansky, J., M. Andrews, and R. Lopez. 1988. The determinants of Right to Farm conflicts. *Rural Sociology*, 53(2):246-255.
- Lockeretz, W. 1987. *Sustaining agriculture near cities*. Soil and Water Conservation Society.
- Lockeritz, W. 1989. Discussion: Land markets and landowners. In R.E. Heimlich (Ed.) *Land use transition in urbanizing areas research and information needs*. Washington DC: United States Department of Agriculture, Economic Research Services.
- Logan, J. R. 1996. Rural America as a symbol of American values. *Rural Development Perspectives* 12(1):19-21.
- Lopez, R., A. Adelaja, and M. Andrews. 1988. The effects of suburbanization on agriculture. *American Journal of Agricultural Economics*, 70(2):346-358.
- Luke, G.W. 1976. *Actively devoted: The first decade of the New Jersey Farmland Assessment Act*. New Brunswick, NJ: Rutgers The State University of New Jersey, Department of Agricultural Economics.
- Lyson, T.A., G.W. Gillespie, Jr. and D. Hilchey. 1995. Farmers' markets and the local community bridging the formal and informal economy. *American Journal of Alternative Agriculture*, 10(3):108-112.
- McEvoy, A. 1998. Markets and ethics in U.S. property law. In H. Jacobs (Ed.) *Who owns America? Social conflict over property rights*. Madison, WI: University of Wisconsin Press.
- Meltz, Robert. 1995. The property rights issue. *Congressional Research Service Report for Congress*. January 20, 1995. Retrieved from <http://www.cnire.org/nle/econ-11.html>.
- Moss, C. B. and A. L. Katchova. 2005. Farmland valuation and asset performance. *Agricultural Finance Review*. Unpublished manuscript. Retrieved from <https://netfiles.uiuc.edu/katchova/www/papers/Asset.pdf>.
- Mullin, E. J. 1979. *Manual of the legislature of New Jersey, 1979*. Flemington, NJ: The Democrat Press.

Mullin, E. J. 1984. *Manual of the legislature of New Jersey, 1984*. Princeton, NJ: Century Graphics, Inc.

Mullin, E. J. 1990. *Manual of the legislature of New Jersey, 1990*. Princeton, NJ: Century Graphics, Inc.

Mullin, E. J. 1993. *Manual of the legislature of New Jersey, 1993*. Newark, NJ: Skinder-Strauss Associates.

Musgrave, R. A. 1959. *The theory of public finance*. New York: McGraw-Hill.

National Agricultural Statistics Service. 2004. *2002 Census of Agriculture: New Jersey state and county data. Volume 1, Geographic Area Series, Part 30*. Washington, DC: United States Department of Agriculture.

National Agricultural Statistics Service. 2004. *2002 Census of Agriculture, Geographic Area Series (United States)*. Washington DC: United States Department of Agriculture.

National Agricultural Statistics Service. 2004. *Land values and cash rents 2004 summary (Farm real estate: Average value per acre, by region and state)*.

National Commission on Small Farms. 1998. A time to act: A report of the USDA national commission on small farms. *Miscellaneous Publication 1545 (MP-1545)*. Washington DC: United States Department of Agriculture.

Natural Resources Conservation Service. United States Department of Agriculture. 2005. *National resources inventory*. Retrieved from <http://www.nrcs.usda.gov/technical/NRI/>.

Natural Resources Conservation Service, United States Department of Agriculture. 2005. *Land Cover/Use*. Retrieved from [http://www.nrcs.usda.gov/technical/land/cover\\_use.html](http://www.nrcs.usda.gov/technical/land/cover_use.html).

Natural Resources Conservation Service, United States Department of Agriculture. 2005. *Prime Farmland*. Retrieved from <http://www.nrcs.usda.gov/technical/land/prime.html>.

Nelson, A. C. 1992. Preserving Prime Farmland in the Face of Urbanization: Lessons from Oregon. *Journal of the American Planning Association* 58(4):467.

New Hampshire Coalition for Sustaining Agriculture. 2000. *Preserving rural character through agriculture: A resource kit for planners*. North Haverhill, NH: University of New Hampshire Cooperative Extension.

New Jersey Agricultural Experiment Station. 2006. *New Jersey Agricultural Experiment Station Annual Report (2004-2005): Partnering for a Better New Jersey*. New Brunswick, NJ: Rutgers The State University of New Jersey, Cook College.

New Jersey Agricultural Statistics Service. 2002. *Farmland Assessment Act of 1964, the thirty-third report of data from FA-1 forms for 2001 tax year*. Trenton, NJ: New Jersey Department of Agriculture.

New Jersey Agricultural Statistics Service. 2004. *Farmland Assessment Act of 1964, the thirty-fifth report of data from FA-1 forms for 2003 tax year*. Trenton, NJ: New Jersey Department of Agriculture.

New Jersey Agricultural Statistics Service. Various years. *Agricultural statistics annual report*. Trenton, NJ: New Jersey Department on Agriculture.

New Jersey Blueprint Commission. 1973. *Report of the blueprint commission on the future of New Jersey agriculture*. Trenton, NJ: New Jersey Department of Agriculture.

New Jersey Department of Agriculture. 2003. *Agricultural smart growth plan for New Jersey*. Trenton, NJ: New Jersey Department of Agriculture.

New Jersey Department of Agriculture. 2004. *2004 Economic development strategies*. Trenton, NJ.

New Jersey Department of Agriculture. 2005. *2005 Economic development strategies*. Trenton, NJ.

New Jersey Department of Agriculture and New Jersey Department of Environmental Protection. 1980. *Grassroots: An agriculture retention and development program for New Jersey*. Trenton, N.J.

New Jersey Department of Agriculture and New Jersey Division of Taxation. 2001. *New Jersey's Farmland Assessment Act: A primer on basic requirements*. Trenton, NJ.

New Jersey Farm Bureau. 2003. *New Jersey Farm Bureau 2003 policies*. Trenton, NJ.

New Jersey Farm Bureau. 2004. *New Jersey Farm Bureau 2004 policies*. Trenton, NJ.

New Jersey Farm Bureau. 2005. *New Jersey Farm Bureau 2005 policies*. Trenton, NJ.

New Jersey Future. 1999. *1999 Sustainable state project report*. Trenton, NJ.

New Jersey State Farmland Evaluation Advisory Committee. 2001. *Productivity values for the 2002 tax year*. Trenton, NJ: New Jersey Division of Taxation.

New Jersey State Legislature. 1964. *The Farmland Assessment Act*. N.J.S.A. 54:4-23.1 et.seq.



New Jersey State Legislature. 1975. *Municipal Land Use Law* (with ammendments through 2005). Chapter 291, Laws of NJ.

New Jersey State Legislature. 1983. *The Agriculture Retention and Development Act*. N.J.S.A. 4:1C-11 et. seq

New Jersey State Legislature. 1986. *The State Planning Act*. N.J.S.A. 52:18A-196.

New Jersey State Legislature. 1998. *The Right to Farm Act*. N.J.S.A. 4:1C-1 et. seq.

New Jersey State Planning Commission 2001. *The New Jersey state development and redevelopment plan*. Trenton, NJ: New Jersey Department of Community Affairs, Office of State Planning.

New Jersey Supreme Court. 2002. A-12-01 (NJ 5-20-2002) Twp. of Franklin, etc v. den Hollander, et.al.

Nelson, A. C. 1992. Preserving prime farmland in the face of urbanization. *Journal of the American Planning Association*, 58(4):467-488.

Nelson, A. C. . 1990. Economic critique of U.S. prime farmland preservation policies. *Journal of Rural Studies*, 6(I):2.

New York Office of the Lieutenant Governor. 2001. *State and local governments - partnering for a better New York*. Albany, NY: Office of the Lieutenant Governor.

Oakland, W. and W. Testa. 1995. *Does business development raise taxes?* Federal Reserve Bank of Chicago, March/April.

Oates, W. E. 1972. *Fiscal federalism*. New York: Harcourt Brace Jovanovich.

Oates, W. E. 2004. *Toward a second-generation theory of fiscal federalism*. Working paper.

Ontario County Agricultural Enhancement Board. 2002. *Report of the Ontario county agricultural enhancement board to the Ontario county board of supervisors concerning the review of agricultural district # 6*. Canandaiga, NY: Ontario County Planning Department.

Paarlberg, D. and P. Paarlberg. 2000. *The agricultural revolution of the 20<sup>th</sup> century*. Ames, IA: Iowa State University Press.

Pendall, R. 1999. Do land-use controls cause sprawl? *Environment and Planning B: Planning and Design*, 26(4):555-571.

Perry, J. and J. Johnson. 1999. What makes a small farm successful? *Agricultural Outlook* November, 7-10.

Plantinga, A., R. Lubowski, and R. Stavins. 2002. The effects of potential land development on agricultural land prices. *John F. Kennedy School of Government Working Paper Series RWP02-122*. Boston, MA: Harvard University.

Plantinga, A. J., R. N. Lubowski, and R. N. Stavins. 2002. The effects of potential land development on agricultural land prices. *Journal of Urban Economics* 52: 561-581.

Pope, C. A. and H. L. Goodwin, Jr. 1984. Impacts of consumptive demand on rural land values. *American Journal of Agricultural Economics* 66:750-754.

Porter, J. C. and Gilman, F. E. 2001. *Preserving old barns*. University of New Hampshire Cooperative Extension.

Pothukuchi, K. and J. Kaufman. 2000. The food system: A stranger to the planning profession. *Journal of the American Planning Association* 66(2): 113-124.

Ricardo, D. 1996. *Principles of political economy and taxation*. Amherst, New York: Prometheus Books.

Richardson, Jesse. 1998. Variation on: "Mother, may I?: Dillon's Rule." Virginia: Virginia Polytechnic Institute and State University, College of Agriculture and Life Sciences, Department of Agricultural and Applied Economics.

Richardson, Jr., Jesse J. 2003. Downzoning, Fairness and Farmland Protection. *Journal of Land Use*, 19(1):59-90.

Rowley, T. 1996. The value of rural America. *Rural Development Perspectives* 12(1):2-4.

Salamon, S. 1998. Cultural dimensions of land tenure in the United States. In H. Jacobs (Ed.) *Who owns America? Social conflict over property rights*. Madison, Wisconsin: University of Wisconsin Press.

Samuels, Michael. 2004. *The impact of downzoning on agricultural land value in New Jersey*. Clarion/Samuels Associates report to New Jersey Farm Bureau.

Scarfo, R.A. 1990. *Cultivating agriculture: A report of current trends and future viability of farming in Maryland's metropolitan fringe*. Baltimore, MD: Maryland Office of Planning and the University of Maryland.

Schiemann, J. W. 2004. *New Jersey Farm Bureau survey of New Jersey Residents: Report of significant findings*. Fairleigh Dickinson University PublicMind Poll.

Schilling, B. J. 1994. *The analysis of the impacts of section 404 on the New Jersey cranberry industry: An examination of the efficiency and effectiveness of wetlands regulation*. Unpublished Masters thesis. New Brunswick, NJ: Rutgers The State University of New Jersey, Department of Agriculture, Food, and Resource Economics.

Schilling, B. J., Lucas Marxen, and Benjamin Onyango. 2004. *Political economy of local land preservation taxes in New Jersey*. Paper presented at the Northeast Agricultural and Resource Economics Association and Canadian Agricultural Economics Society Annual Meeting. Halifax, Nova Scotia, Canada.

Schilling, B. J. and Kevin P. Sullivan. 2005. *The Economic Contributions of New Jersey's Food System, 2002*. Unpublished manuscript. New Brunswick, NJ: Rutgers The State University of New Jersey, The Food Policy Institute.

Schluter, G. and W. Edmondson. 2000. Agriculture and the rural economy: Where is agriculture important? *Rural Conditions and Trends*, 10(2):17-21.

Schmidt, H. G. 1973. *Agriculture in New Jersey: A three hundred year history*. New Brunswick: Rutgers The State University of New Jersey Press.

Skinder-Strauss Associates. 1996. *Manual of the legislature of New Jersey, 1996*. Newark, NJ: Skinder-Strauss Associates.

Skinder-Strauss Associates. 1999. *Manual of the legislature of New Jersey, 1999*. Newark, NJ: Skinder-Strauss Associates.

Somerset County Agriculture Development Board. 2001. *Agriculture retention and development master plan*. Somerville, NJ: Somerset County Agriculture Development Board.

Somerset County Agriculture Development Board. 1993. *Agricultural investment opportunities in Somerset county*. Somerville, NJ: Somerset County Board of Chosen Freeholders.

Sorensen, A. A., R. P. Greene and K. Russ. 1997. *Farming on the edge*. American Farmland Trust, Center for Agriculture in the Environment.

State Agriculture Development Committee. 2005. *Adopted agriculture management practices*. Retrieved from <http://www.state.nj.us/agriculture/sadc/amps.htm>.

State Agriculture Development Committee. 2005, March. *Farmland preservation progress*. Retrieved from <http://www.state.nj.us/agriculture/sadc/farmprogress.htm>.

State Agriculture Development Committee. 2005. *Site specific agricultural management practice determinations*. Retrieved from <http://www.state.nj.us/agriculture/sadc/rtfssamptable.htm>.

Stewart, Patrick A. and Lawrence W. Libby. 1997. Determinants of Farmland Value. Center for Agriculture in the Environment, American Farmland Trust.

Strong, A. L., D. R. Mandelker and E. D. Kelly. 1996. Property rights and takings. *Journal of the American Planning Association* 62(1):5-16.

Sullivan, K. P. 1998. *Agricultural policy issues at the urban fringe: Farm viability, chemical usage, and planning horizon*. Unpublished masters thesis. New Brunswick, NJ: Rutgers The State University of New Jersey, Department of Agricultural, Food and Resource Economics.

Thomas, H. L. 1991. *The economic benefits of land conservation*. Dutchess County Planning Department.

United States Census Bureau. 2002. *Statistical Abstract of the United States: 2002, 122<sup>nd</sup> edition*. Washington, DC.

United States Census Bureau. 2005. *2002 Economic Census: Manufacturing, New Jersey*. Geographic Area Series (New Jersey). Washington, DC.

United States Census Bureau. 2005. *2002 Economic Census: Wholesale trade*. Geographic Area Series (New Jersey). Washington, DC.

United States Census Bureau. 2005. *2002 Economic Census: Retail trade*. Geographic Area Series (New Jersey). Washington, DC.

United States Census Bureau. 2005. *2002 Economic Census: Accommodations and food service*. Geographic Area Series (New Jersey). Washington, DC.

United States Department of Agriculture. 2002. *Food and agricultural policy: Taking stock for the new century*. Retrieved from <http://www.usda.gov/news/pubs/farmpolicy01/fpindex.htm>.

United States Department of Agriculture, Economic Research Service. 1999. *The 1998 agricultural resource management study*. Agricultural Income and Finances. Washington DC.

United States Department of Agriculture, Economic Research Service. 2000. *U.S. Agricultural Trade Update*. Washington DC.

United States Supreme Court. 1922. *Pennsylvania Coal Co. V. Mahon*. U.S. 393, 416.

Weibe, K. D., A. Tegene, and B. Kuhn. 1998. Land tenure, land policy, and the property rights debate. In H. Jacobs (Ed.) *Who owns America? Social conflict over property rights*. Madison, Wisconsin: University of Wisconsin Press.

Westcott, P., C. E. Young, and J. M. Price. 2002. The 2002 farm act: Provisions and implications for commodity markets. *USDA Economic Research Service Agriculture Information Bulletin No. 778*. Washington, DC: United States Department of Agriculture.

White, J. 1988. Large Lot Zoning and Subdivision Costs: A Test. *Journal of Urban Economics*; Vol. 23, 370-384

Wimberley, R. C. *et al.* 2003. *Food from our changing world: The globalization of food and how Americans feel about it*. Retrieved from [North Carolina State electronic bulletin] <http://sasw.chass.ncsu.edu/global-food/foodglobal.pdf>.

Woodward, C. R. 1930. *Agriculture in New Jersey*. New York: American Historical Society, Inc.

Wright, J. B. 1994. Designing and applying conservation easements. *Journal of the American Planning Association* 60(3): 380.

Zorn, J. L. 2004. *Complete guide to planning in New Jersey, 2<sup>nd</sup> edition*. New Jersey Chapter, American Planning Association.

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- 1/1999 - 5/1999: Adjunct Instructor (Microeconomics, Directed Research), Department of Agricultural, Food and Resource Economics, Cook College, Rutgers University.
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