

Taste and Nutritional Differences of Non-Factory Farmed vs. Factory Farmed Eggs and Poultry

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Summary:

We set out to determine the health and taste differences between free range and factory farmed eggs and poultry products for the benefit of the consumer. There is an extensive amount of information available on the different farming methods, labeling terms, health and taste for egg and poultry products. We have found that there are health and taste differences present in free range eggs and poultry in comparison to the factory farmed options. The free range eggs are higher in vitamins, minerals, and lower in cholesterol, while free range poultry is found to be leaner and tougher due to the chickens more active lifestyle and natural diet. A cartoon strip was created focusing on this topic and as sent to various newspapers and food blogs.

Video Link: <https://www.youtube.com/watch?v=ExNK3HnB3EU>

Is there really a difference in the taste, nutrition, and environmental factors, between factory and free-range poultry and eggs?

Egg & Poultry Farming Definitions: (SB)

When shopping in the dairy aisle or poultry section at the local grocer, supermarket or mega store, consumers are bombarded by a broad range of misleading farming terms and claims. The average consumer does not know the difference between farming terms like store-brand, cage-free, free-range, natural, or organic. Due to consumer's minimal knowledge on such terms, big farms and farming companies are taking advantage of consumers by developing misleading terms and sometimes false claims to persuade their purchases. The government regulates only organic products on egg cartons, so terms such as free range can vary from farm to farm (PETA, 2013). Below are a list of factual and government backed definitions for eggs and poultry.

The way hens are raised varies greatly and with this variation comes a broad range of misleading terms with the main three being: cage-free, free-range, store brand or conventional. Some consumers purchase the cage-free or free-range carton of eggs over the store brand option believing that they are making the more humane and healthier choice, but little do they know that

is not always the case. A “cage-free” egg means that the hens are not kept confined in cages and they can engage in many of their natural behaviors like walking, laying eggs and opening their wings, but beak cutting is permitted. For cage-free eggs there is no third-party auditing system to ensure that these standards are upheld or the coops are sanitary. A “free-range” egg is defined by the hen had access to the outdoors, but that does not mean the outdoor space was large enough for the hens or the hens ever went outside; there are no government standards or third-party auditing system in free-range egg production according to The Humane Society. Most free-range hens are housed without cages inside barns. During a free-range hen’s life it has outdoor access, but no requirements or standards have been put into place for the length of time outdoors or the quality of the land which the bird has access to. Since they are not caged, they can engage in many natural behaviors such as nesting and foraging. For both cage-free and free-range birds, no restrictions have been put into place for what they can be fed. Both types of birds appear on their products packaging to be the better options, but their diets are not government regulated, they are subjected to beak cutting and starved to accelerate the molting process.

The eggs purchased at supermarkets that do not have labels or they have supermarket store brand are known as conventional eggs. Conventional hens beaks are clipped and are treated extremely poor; the average battery cage allows the hen less than a half a square foot which equates to about 67-76 square inches which is nearly 25 square inches smaller than a legal size piece of paper (Humane Society, 2013). Laying hens spend about 95 percent of their lives in these cages which restricts the hen from spreading its wings and most other movements. These conventional hens are housed in these battery cages inside windowless warehouses with some containing as many as 100,000 caged chickens. The conventional farmed birds never see sunlight, and are fed a diet of corn waste and chemicals. When purchasing eggs and mostly any products, consumers need to do their research on labeling terms, as well as, the company or farm which they are purchasing from to truly get the facts.

As described above for hens, there is no requirement for the duration and quality of time that chickens which are raised for their poultry must spend outdoors. The USDA Inspection Service states that an animal may be labeled “free-range” if the producer can demonstrate to the inspection officers and the agency itself, that the hen has been provided with outdoor access (USDA). This vague and loose requirement allows for easy abuse of the term in poultry labeling and may mislead the general public to believe they are purchasing a poultry product of a higher quality than in actuality. When purchasing poultry products and especially turkeys for thanksgiving, there are six labeling terms commonly seen which can be misleading. Poultry and egg companies, along with the rest of the food industry work to make consumers believe that their products come from a safe, “natural”, and humane environments to persuade their purchases.

The term free-range means the chicken or turkey was allowed access to the outdoors, but this term does not require that the birds go outside. A farmer from the United States tells PETA that most chickens raised for their meat in this country are not bred only for their ability to consume large amount of feed and low activity level, so that the birds put on weight as fast as

possible. With the chickens rapid weight gain they are unable to move causing them stay next to their feed trough for constant feedings which minimizes time till slaughter, allowing the farmer to process more chickens (PETA, 2013). A study done on a free-range farm in the United Kingdom with approximately 800,000 chickens found that even with the outdoor access regulations the country mandates for birds, 85% of the flock did not observe the full 8 mandated outdoor hours (PETA, 2013). The next term used is organic which does not yet have a set definition, but the USDA must approve products which claim to be organic. Organic poultry products have been regulated by the USDA since 2002 and must come from animals who are not given antibiotics or growth hormones”(PETA, 2013). According to USDA regulations farms, processors, and distributors are required to be subjected to inspection prior to the usage or printing of “organic” of their labels; however, studies have found that a minimal 2 percent or less of chickens are raised to the USDA standards (PETA, 2013). A free-range poultry label, like a n organic poultry or egg label does not ensure that the animals were treated properly or better than those raised on a factory farm. The next term “antibiotic-free” or “no antibiotics” requires the bird to be raised without the use of antibiotics which is approved by the Food Safety Inspection Service by requiring producers to supply “sufficient” documentation to show the animal was raised without antibiotics.”(19) The next term frequently used is “hormone free” or “no hormones” which implies synthetic hormones were not used, but hormones are never allowed to be used. This claim should never be applied to poultry, unless it’s followed by a statement that explains federal law prohibits the use of these hormones (turkey talk). The fifth term used is natural, which means that it was minimally processed and artificial color or taste added, as well as no chemical preservatives. And the last term is “minimal processing” which implies processes used to preserve or make the poultry more edible such as smoking, roasting, freezing, drying, or fermenting, can be considered minimal or physical alterations like separating the turkey into parts (turkey talk). These misleading terms fool consumers into believing the farming methods like cage-free or organic are better than conventional farming , but in reality they tend to be just as bad and nutritionally the same.

Health Benefits & Nutrition: (SB)

There are many claims sometimes directly on product packaging, especially eggs and poultry claiming one is more nutritious than the other. Below are scientifically supported nutrition facts for both eggs and poultry. In comparing eggs the results seemed to vary from farm to farm, but the average free-range egg in comparison to caged eggs show a quarter to a third less cholesterol, a quarter less saturated fat, two-thirds more vitamin A, three times more vitamin E, seven times more beta-carotene and twice the amount of omega-3 fatty acids (Gaia). Other tests performed have found that free-range eggs have nearly six times the amount of vitamin D and significantly more B vitamins in comparison to store brand eggs. The yolk from an egg is known to be a good source of two antioxidants, lutein and zeaxanthin important for eye health. In store brand and caged eggs, the yolks are generally noted to be pale and a watery yellow due to the waste products from the grain industry used in the animal feed and contain much less of the antioxidants (Health Ambition). In truly free-range eggs consumers will find much deeper yellow and orange color yolks which indicate a high amount of the antioxidants. A study done by the Department of Poultry Science of North Carolina State University compared free-range eggs

to caged-eggs. The study examined the effect of having access to the outdoors or being housed in cages had on the hens. The results show all of the nutrients, except for cholesterol were affected; specifically, total fat and essential fatty acids increased in the free-range eggs (Anderson, 2011). The total fat difference found between the two eggs is a difference of good health fats known as HDL cholesterol which are important in reducing LDL cholesterol which is the bad cholesterol; by lowering the ones LDL cholesterol and increasing their HDL cholesterol they decrease their risk of coronary artery disease and stroke decrease directly.

Some of the methods used in factory farming can adversely affect human health. A method which is routinely used in factory farming is to give the livestock antibiotics with every meal to help control food borne illness, but also accelerates and promotes the weight gain of the animals. When this practice becomes continuous, it creates a risk of developing drug resistance bacteria inside the animal's intestines. According to the Union of Concerned Scientists, only about a 30% of the antibiotics used in the country are administered to humans to treat diseases and the other remaining 70 percent are given to U.S. livestock to protect against the unnatural and unhealthy conditions of factory farming. The population of livestock which is not raised in confinement has been shown to rarely require antibiotics, but because factory farming has grown show large it has become dependent on the use of the antibiotics to prevent foodborne illness and other sorts of contamination. By not eating factory farmed products consumers are eliminating unnecessary antibiotics and other toxins in their bodies; such antibiotics can jeopardizes human health by causing diseases that are difficult or impossible to cure by aiding in the creation of mutant bacteria which are immune to many antibiotics. On the other hand, an article which studied the bacterial profiles of poultry animals which are considered free-range, organic and all-natural are just as likely to carry Salmonella when comparing factory raised poultry (NALDC).

Factors Affecting Taste: (KM)

Taste Sensations, Smell and Flavor:

Taste is defined as the “sensation of flavor perceived in the mouth and throat on contact with a substance.” Taste receptor cells are located in taste buds on the tongue and respond to five basic tastes- sweet, salty, sour, bitter, and umami. Once tastants are recognized by a specific receptor the chemical message is converted to an electrical stimulus and transported to the brain. The taste quality is then identified and the degree of liking or disliking is perceived.

Flavor is the intermingling of taste, olfactory (smell), and trigeminal sensations (spicy, hot, cold, burning etc. sensations). Unlike with taste sensations, there are thousands of volatile components that receptors in the nose can perceive and this is why a majority of what humans perceive as flavor is really smell (~90%). The section of the brain responsible for sorting incoming volatile compounds and recognizing smells is the olfactory bulb. The olfactory bulb is located directly next to another important brain region-the hippocampus, which serves the function of sorting memories. The close proximity of these two regions is a large reason why

certain smells and foods trigger specific memories in the brain (for example, smelling tomato sauce evokes a memory of your grandma because she always makes tomato sauce at her house).

Eggs:

There are many possible variables that can affect the taste of eggs independent of farming condition. Some factors that must be taken into account before looking at the farming conditions are climate, hen breed, disease status, and diet. Climate change has an impact on the amount of food consumed by hens and their disease state. Hens thrive their best at ambient temperatures, and the risk of disease increases when exposed to both too high and too low temperatures. Therefore, hens at the optimal climate will thrive best and provide eggs of the highest quality. Hen breed is thought to play a large role in final egg characteristics although the exact mechanism for this is unknown.

The diet a hen consumes is thought by many to be the only real factor that scientifically can explain why there may be a difference in taste between hens bred in different conditions. Strong poultry feed flavors is thought to be one of the most important variables in determining final egg flavors. A chicken's flavor is mainly seen in its fatty sections because fat based molecules become dissolved in the lipid area and are difficult for the bird to get rid of as compared to water soluble vitamins and molecules which are easily utilized by the bird. Therefore, there is a chance that if the bird does incorporate flavorful fat based molecules via its diet that it could be expressed in the fatty portions of the bird including the yolk region (Palmer, 2013). Therefore, any fat-soluble substances and spice oils can potentially be detected in the eggs of poultry fed these diets. This is why some omega-3 fortified eggs can have a slight fishy flavor if the birds are fed fish oils in their feed. Most chicken feeds contain neutral flavors however to alleviate this problem in both chicken and egg products.

Finally, the lifestyle of the bird may be another potential variable that plays into the final taste of the egg product. Egg color is definitely affected by the availability of the birds to forage outside and eat flowers and insects that give the egg yolks a noticeably more orange color. However, in terms of taste, not much is known about how egg quality is affected. Mario Batali, another well-known chef, endorses that view and explained that the pasture lifestyle allows the birds to eat many different bugs and grubs and he chalks that up to their "superior" taste. However, this information must be taken with a grain of salt since no wide scale taste test on various egg types has been performed yet to validate this information.

There are some definite differences in the chemical properties of eggs fresh out of the backyard compared to older ones found in the supermarket. The fresher the egg translates to a higher standing yolk and tighter whites; these properties can affect the texture of the egg. Eggs have a long shelf life therefore the factory farmed eggs picked up by average consumers from the supermarket could be up to 60 days old before they begin going bad. However, as for a difference in taste between eggs that are older as compared to fresher, there is no conclusive evidence that a difference exists. Keep in mind however, that many aspects of the person's physical state at the moment including mood, atmosphere and company can affect people's perception of food taste. (The Food Lab, 2010). Therefore, there is much more at play with this

topic than is currently known about and much more research will need to be performed before a conclusive statement can be made about whether there is a difference in the taste of farm-raised eggs as compared with conventionally farmed ones.

Poultry:

The taste of poultry is potentially affected by a few important variables including their breed, sex, diet, and manner of cooking. Poultry is made up of mostly protein and some fat; it is commonly broken up into two categories- light meat and dark meat. Muscles that are used frequently in the birds, such as the legs and thighs, need a more consistent supply of oxygen as compared to less used muscles and therefore have more myoglobin (the protein that transports oxygen) contributing to their characteristic dark color. For chickens, the most prominent white meat region is located in the chest area; this is because chickens do not usually sustain flight for long periods of time and therefore they do not need the highly oxygenated myoglobin proteins that are associated with muscles used for endurance activities. Ducks on the other hand fly much more than chickens so their chest muscles must be supplied with more oxygen to sustain their long journeys. Therefore, all meat from ducks is dark meat (Dark Meat vs. White Meat, 2012).

One variable that may affect the final taste of poultry is the breed. One study carried out by the Animal Science department at Hainan University in China, was trying to determine the differences in protein expression profiles between two different breeds of chicken-the Korean native chicken and commercial broilers. It was found that a meat's final flavor is developed primarily in the aging process of the meat after death. At this time many chemical reactions occur leading to distinct flavors upon cooking. (De Liu et. al, 2013). They used 2-dimensional (2-D) gel electrophoresis and matrix-assisted laser desorption-ionization time-of-flight (MALDI-TOF) mass spectrometry to compare and contrast different types of protein present in each type of chicken that could potentially contribute to the difference in flavors between each. In layman's terms this means that because different breeds of chickens contain different genes and therefore proteins this leads to differing tastes in final cooked poultry products. The inherent different protein sequences in varying chicken breeds allows for new combinations and intermingling of cellular components as the killed meat is aged which leads to new flavor generation and differing tastes.

The majority of factory-farmed chickens are fed a diet that consists of corn for carbohydrates, soy for protein, and a vitamin and mineral supplement. According to a Valley News article about chicken feed and flavors, it seems that the source of carbohydrate for the birds affects the final texture and taste. They discovered that changing the carbohydrate nutrient source of birds from corn to wheat or sorghum, the testers perceived the corn as having better taste and texture qualities (Palmer, 2013). Based on this preliminary study, it would seem that the source of carbohydrate that the poultry is being fed may affect the final texture and taste of the food. However, there were no sources given for this article so a further investigation into why this was the case could not be completed. It may be inferred from the De Liu et al. article however, that because different carbohydrates are broken down into different end products, these

end products will react uniquely with amino acids during degradation resulting in a multitude of varying flavors being generated in the final poultry product.

Farm-raised chickens eat much of the same feeds as conventionally farmed ones, however theirs is more complex since they are allowed to forage outside and therefore their diets are enriched with all sorts of flowers, bugs, and insects. No experiments have been done yet to determine if any of these additions affect the flavor of poultry products. However, as we've discussed before, the flavor of chicken is largely tasted in their fat stores. Using these facts, it is evident that the only types of substances that can affect a chicken's flavor are those that are soluble in fat. However, even this fact does little to endorse the view that a farm-raised chicken's diet makes it tastier because the majority of the poultry eaten in the United States is chicken, specifically chicken breast, which is the leanest part of the bird (i.e. contains very little fat). On top of that, farm raised chickens, since able to move around more than factory farmed ones, are considerably leaner birds and therefore contain even less fat and therefore less flavors present in the fat are consumed.

Animal Cruelty: (JD)

Animal Cruelty can exist in a number of ways. At industrial farm sites, the goal is often to produce the largest amount of meat in the most efficient way. This may mean that the animal's quality of life is not considered, because the company's main priority is making money to support their business. Within the poultry business, it is highly likely that birds are being kept in dangerous battery cages, taking a great toll on their bodies. Male birds are often killed because they have no use in the egg business, or they are slaughtered for their meat. According to People for the Ethical Treatment of Animals (PETA), chickens are the number one animal killed for food in the U.S., but there are no federal laws to protect them, even though many Americans would support such laws (PETA, 2013). Although laws may not exist right now to protect these innocent creatures, choosing to buy from local, small business farmers that use cage-free and free-range methods, can help you rest easy knowing that your money is not supporting these cruel acts.

Cruelty of Battery Cages:

Turkeys, chickens, and other birds raised for their meat and eggs, are often kept in battery cages, specifically within factory farm settings. These cages are usually extremely small, and can have both a physical and psychological effect on them. Birds have pneumatic bones, which are part of the skeletal system and help them breathe. If a bird is restrained to the point where its breastbone cannot move in and out, the chicken can suffocate (Cantor, 2011). In addition, birds have a natural instinct to practice perching, roosting, scratching, and foraging but cages do not let the animal express these needs. Research shows that hens become frustrated when they do not have access to a perch, and will go out of their way to find a perch. Also, when a bird does not

have access to the outdoors to practice foraging, they may practice abnormal feather pecking. Despite these harsh conditions, up to 95 percent of egg-laying hens in the United States are kept in battery cages (Shields).

Killing of the Males and Cutting Female's Beaks:

Egg culling is the killing of chicks that have no use. This is common in the egg industry, because male hens are not useful to the business, so they are killed. According to Environmental Organizers' Network, male chickens are often killed in brutal ways within factory farm settings because they are of no value in the egg industry (Environmental Organizers' Network). According to Farm Sanctuary, 260 million male hens are killed annually (FarmSanctuary). Females have their beaks removed as young chicks, often with a hot blade. This is to prevent them from picking at their feathers due to the stressful environment of a factory farm. This procedure may not only be painful during the removal, but it may also cause chronic pain later on, because the beak houses a lot of nerves (FarmSanctuary). The United Poultry Concerns, Inc. explains debeaking in a slightly different way. They state that it is a temporary pain that will ultimately benefit the group of chickens, because birds can exhibit "cannibalistic" pecking (Debeaking).

Strain on the Body:

A broiler is a type of chicken in the meat industry that is raised for the meat on its bones. When birds like chicken, turkey, duck, and more, are forced to grow at an unnaturally fast rate, and cannot support the weight gain, it can be a terrible stress on their fragile bodies. Birds are animals that are meant to fly, so naturally, they have bones that are hollow, in order to create a more efficient and lightweight skeletal system. Having extra weight on their bodies can put serious strain on these hollow bones, often causing immobility and broken bones. PETA explains through Associated Press, that these skeletal problems can lead to ascites, a disease where vital organs such as the heart and lungs cannot keep up with the excessive growth rate, eventually leading to death. Additionally, the bird's cardiovascular system cannot supply oxygen quickly enough. Another common way that these animals die is they become unable to reach their water due to the excess weight, so dehydration occurs (PETA, 2013). Within the poultry industry, large scale corporations can easily lose sight of the fact that they are dealing with a living, breathing organism; when the main goal is to make money, the chickens are treated inhumanely, causing great harm to their delicate bodies.

Environmental factors: (JD)

The Fischbach's a family of five who raises poultry on their land, discuss the benefits of pasture farming for the environment. Some of these benefits are that it is a local small scale farm which means less land is required, and less equipment is needed to maintain this land. On pasture poultry farms, the manure can be used as fertilizer, which decreases the use of chemicals when growing vegetables, and other animals can graze safely. The family says they have a lot of customers, and because the relationship is more intimate, they can share with those people where their food is coming from, and teach them the impact that this type of farm has for the environment (Sustainable Agriculture Research and Education, 2012).

For the Consumer: (JD)

It is important for consumers to know where they can make purchases if they want to support local or cage free/free range poultry products. Where the product was farmed can mean great differences in taste, humanity, and environmental factors. Below, there is information listed as to where the consumer can make certain purchases, as well as a comparison of prices. You can find the following lists provided; restaurants that do not use factory farmed products, store brands that are known for their factory farms as well as ones that are not, and a list of where you can find local farms near you. It is easy to be tricked by the websites of many companies, because they are all trying to sell their products by making the company look good. They will often have pictures of clean farms with happy animals, and will mention "sustainability." Hopefully, this section will provide you with the resources you need in order to make better choices.

Restaurants That Do Not Use Factory-Farmed Products:

Chipotle; Chipotle partakes in a campaign called "Food with Integrity." It means that they use quality ingredients that come from humanely treated animals and farmers, as well as a respected environment. (Chipotle Mexican Grill).

Whole Foods; Whole Foods supermarkets have a new animal welfare rating program developed by Global Animal Partnership that tells customers how the animals were raised. The highest rating is a green 5 which means that the animal was treated humanely, was raised on a small farm, lived on pasture with at least 75 percent vegetation, and was overall healthy. (Stop Factory Farms).

Wolfgang Puck restaurants; none of the animal products used in Wolfgang Puck's restaurants are from factory farms (Stop Factory Farms).

Store Brands that Have Negative Reputations:

Tyson Foods Inc.; Tyson has been known for animal abuse at their factory farms (Stop Factory Farms).

ConAgra; Tyson supplies them, they own the well-known Butter Ball brand, and their hens are subject to cages that are way too small (Stop Factory Farms).

Smithfield Foods Inc.; Smithfield's website has a page called "Commitments" which explains how they use sustainability in their practices involving animals, workers, food quality and more (Smithfield). Smithfield Foods earned a poor reputation when they became a billion dollar global industry. Their treatment of the environment earned them negative attention from many activists. According to Ralph Deptolla, author of *Smithfield's journey to sustainability: A work in progress*, the company is learning from its mistakes, and trying to make things better (Deptolla 2011).

Store Brands with a Good Reputation:

Organic Prairie; This brand can be found in many stores. Their chickens and turkeys are allowed all day access to bare ground and pasture (Humanitarian.org 2013)

Applegate; This brand can be found at your local Target, Acme, Shoprite, etc. They provide mostly frozen products and deli meat, but their products are organic and free range (Humanitarian.org 2013)

Murray's; Murray's sells chicken and turkey products in grocery stores. All products are from farms in Pennsylvania, and are Certified Humane (Humanitarian.org 2013).

Where to Find a Local Farm Near You:

No matter where you live, there are online sources that can help you find local farms near your home, if you prefer to go the alternate route from the typical carton of grocery store eggs or pre-packaged bird. This list will provide you links to farms in New Jersey that sell poultry products.

- Eat Wild is a website that lets you search by your state for local farms, which can be a useful tool (<http://www.eatwild.com/products/>).
- This publication from the New Jersey Agricultural Experiment Station gives a list of New Jersey poultry farms by county (<http://njaes.rutgers.edu/pubs/publication.asp?pid=E234>).
- Goffle Road Poultry Farm in Wychoff, NJ. <http://www.gofflepoultry.com/products.html>
Products:
Birds (broilers, capons, roasters, fryers, turkeys etc.)
Poultry parts (breasts, legs, drumsticks, thighs, etc.)
Specialty Items (Sausage, cutlets, and chopped meat)
- Nature's Own Farm in Columbus, NJ
<http://naturesownfarm.com/index.html>
Products:
Chicken- \$3.25/lb
Eggs- \$3.50 per dozen
- Cherry Grove Farm in Lawrenceville, NJ

<http://www.cherrygrovefarm.com/our-farm/our-products/>

Products:

Pasture Raised Eggs

- Simply Grazin in Skillman, NJ

<http://simplygrazin.com/>

Products:

- Burningheart Farm in Hackettstown, NJ

<http://www.burningheartfarm.com/node/3>

Products:

Pasture organic chicken- \$6.50/lb

Pasture organic eggs- \$6.50/dozen

Pasture organic heritage turkey- \$68 to \$98 depending on weight

- 7th Heaven Farm LCC in Tabernacle, NJ

<http://www.7th-heavenfarm.com/index.html>

Products:

Turkeys- \$6.50/lb

Chicken- \$5.50/lb

Eggs- \$4.50/dozen

Conclusion: (JD)

With all of the provided information about eggs and poultry, making a decision can prove to be quite difficult when considering taste, nutrition, chemicals, hormones, the environment, and animal welfare. Although the grocery store is probably the most convenient option for most typical families, they may have to travel the extra mile in order to obtain fresh, cruelty-free, eggs and poultry. Which type is best for you may depend on personal preferences.

It seems that for those who care about the welfare of the animal as well as freshness of the product, the best option is a local non-factory farm. The use of chemicals and hormones is probably less likely on a local farm as well. As far as taste, the scientific evidence showing the difference between the various options is lacking. Chickens that are kept in cages with limited access to the outdoors (typically in factory farms), will have less muscle due to lack of exercise, potentially leading to meat that is more tender. If you prefer a tougher texture, free range may be the way to go.

Price can vary greatly depending on which option you choose. A dozen generic brand eggs from your local supermarket cost around \$2.50, while free range/cage free eggs from that same store may be about one dollar more. If you were to pick up your eggs from a local farm, the price seems to range from about \$3.50 to \$4.50. These price differences are not very significant.

Although it can vary depending on where you live, a standard frozen Butterball turkey weighing around 10 pounds would cost just under 20 dollars, while a fresh one would be around 25 to 30 dollars. As seen in some of the examples above, a fresh turkey or chicken from the farm could cost as much as \$6.50 a pound, with one farm selling turkeys close to 100 dollars. It is important to search for farms in your area in order to determine the price differences between farm fresh and grocery store products.

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Spreading the Word about Poultry and Eggs:

In order to educate the New Jersey population about the similarities and differences between factory farmed and free range/local chickens and eggs we created the cartoon below and sent it to several newspapers including the Targum, Medium, and Star Ledger, hoping that they would print it to create awareness about the issues relating to chickens raised in different environments. Additionally, we sent a letter to Sandra Boynton, the well-known author, asking if she would review our cartoon and possibly consider using the idea in future work. Our third attempt to help create awareness and reach the public was by submitting the cartoon with a small synopsis to two food and health focused blogs: EatLiveRun and Kath Eats. Finally, we reached out to a website called Beginningfarmers.org (<http://www.beginningfarmers.org/>). It is a compilation of resources for those in the farming industry. We requested that they review our cartoon and possibly post it on the blog. Here is the letter to Sandra Boynton as well as the cartoon, found below:

Dear Ms. Boynton,

Attached is a comic strip that I participated in creating with 2 other students and our Professor Dr. Julie Fagan to make consumers think twice about their purchase of this year's Thanksgiving turkey. Our professor introduced us to your work, and we thought it was really great. We want to get the word out about the potential benefits of buying local, free-range poultry and eggs because they can be healthier, more flavorful, and environmentally friendlier than its store brand counterpart. We thought you might be interested because of the artwork you create involving farm animals. Maybe this could be an idea for your work in the near future; because you write children's books, this idea could be transformed in a way that kids would understand. Thank you for listening!

Sincerely,

Jillian Dorsey, Kate Malvetti, Sunny Brower and Dr. Julie Fagan
School of Environmental & Biological Sciences
Rutgers University



Letters to the Editor:

By Jillian Dorsey

With Thanksgiving approaching soon, most families will start to think about what kind of dishes they are going to cook for this holiday that revolves largely around food. Most people may not even think twice about where their turkey came from. Surprisingly, where you get your poultry from can have a great impact on its taste and nutritional value. And for those who consider themselves environmentally friendly to both the land and the animals that live on it, buying your poultry products from an average supermarket may not be your best option.

It is unfortunate that poultry products sold in most stores come from large, industrial-like factory farms. Well-known, large companies that utilize factory farms often keep birds in cramped cages, and overfeed the birds to the point where they cannot even support their own weight. If you choose to buy from a local farm this year, you can probably rest assured that you are doing what's better for the animals and the environment. You may even enjoy the taste of these birds and their eggs a bit more, because they graze on pasture and are healthier overall.

Sent to The Star Ledger (JD)

By Sunny Brower

With Thanksgiving around the corner, turkeys will be great supply at your local grocery store. Some food for thought when purchasing your bird for the big day, many of the turkeys offered at your local supermarket are not raised in a green pasture where they are allowed to roam or have a big red barn to live in. Instead, majority of the store brand turkeys for sale in your local grocer are raised to have such large breasts they cannot move, are housed in extremely overpopulated and unsanitary coops, and are feed a corn-based diet laced with antibiotics which goes against their natural omnivore diet. Not only are these farming methods not animal friendly, but less nutritious. Studies show that pastured-based locally farmed poultry is far more nutritious than their conventional counterpart being richer in antioxidants; including vitamins E, beta-carotene, and vitamin C and contain far more Omega-3 fatty acids. With this knowledge

perhaps, maybe for the first time, you will opt to purchase a turkey from your local poultry farm over the store brand or conventionally farmed Butter Ball at the grocery store.

Sent to Rutgers Medium (SB)

By Kate Mavetti

My name is Kate Malvetti and I am a senior studying Food Science at Rutgers University. I am currently working on a service project with several other people where we are gathering the facts about the differences between factory farmed and free-range poultry and eggs products. We hope to provide a concise guide for consumers that will illustrate the differences between factory and free-range farming practices and whether or not these differences affect the taste quality and nutrition of these foods. As part of our service project we have drawn out a funny, seasonal cartoon to increase awareness about some of the environmental differences between both farming methods and would love it if you could print it in your paper. The cartoon is attached to this email.

Sent to Rutgers Targum (KM)