MEAT MYTHCRUSHERS
SETTING THE RECORD STRAIGHT
When the U.S. Department of Agriculture was created by Congress in 1862, it was called "The People's Department" because nine out of 10 Americans lived on the farm. Today, fewer than five percent of Americans live on farms. The majority are separated from farming by multiple generations. This means that for many people, the news media, books and movies are their sources for information about how America's food is produced.

One fact is certain: American food production is a modern miracle. In the U.S., people spend less than six percent of their disposable income on food. In Canada, that number is nearly 10 percent. And in countries like Pakistan, the number approaches 50 percent.

U.S. food is also more abundant and varied than anywhere in the world. Choices abound from ethnic favorites to low-fat and fat-free options to organic and natural products. Just ask anyone who visits the U.S. for the first time about his or her impression of the American grocery store and you will surely hear that Americans are truly blessed by the bounty of the food supply.

America's bounty isn't reserved for our country alone. The U.S. exports seven percent of its beef supply, 18 percent of its pork supply and 18 percent of its poultry supply. Our modern, efficient food production system is essential in meeting future demands for food. The global population is expected to increase from 6.8 billion to nine billion by 2050. The demands are real, yet there is a movement under way in America to slow food production and return to old-fashioned and less efficient means of production.

This doesn't sit well with those who recognize global food needs. Nina Fedoroff, former technology advisor to Secretary of State Hillary Clinton and former director of the Agency for International Development said, "We have six-and-a-half-billion people on the planet, going rapidly towards seven. We're going to need a lot of inventiveness about how we use water and grow crops.

Still, Americans' lack of connection to food production has made many people susceptible to the claims of those who long for the food production systems of the past. Movies like "Food, Inc." and "Fast Food Nation" have romanticized rural life and slower, less efficient forms of agriculture. They have left some people with an impression that U.S. food is produced by an uncaring machine, rather than millions of people who feed their families the very same food they sell to their customers.

In 2010, the American Meat Institute conducted a poll to determine whether key myths included in popular media were believed by the American public. This brochure contains some of the most popular myths — and the facts associated with them. This brochure has been reviewed by the American Meat Science Association (AMSA) for accuracy and includes detailed references to support statements. AMSA is a professional society that provides the forum for all interests in meat — commercial, academic, government and consumer — to collaborate in a scientifically-based atmosphere addressing the needs of the production, processing and marketing segments of industry, the consuming public, its own members and others in the biological and nutritional sciences.


MYTH: Meat Costs A Lot More Than It Used To

FACT: Much has been made in recent years about rising meat prices, and from a short term perspective, prices have gone up a bit because of the recent drought and other factors contributing to higher corn prices such as ethanol policy. But if you look at prices over the last 25 years, it tells a different story. In 1980, we spent 31 percent of our grocery budget on meat, today that number is closer to 21 percent.[1]

Overall in the United States, we spend just six percent of our disposable income on food.[2] In Europe the number is closer to 10 percent and in developing countries it can be as high as 45 percent or more.

DIG DEEPER... The lower cost of meat and poultry in the U.S. has to do with our well-developed, efficient meat and poultry production system. Today we are able to raise animals that produce more meat than ever before and processing facilities have improved their efficiency and reduced waste.

The low cost of food in the U.S. provides Americans flexibility to use their income in a variety of ways whether it's to buy a home, join a gym or get the newest electronics. While meat and poultry cost less here than in other nations, Americans, on average, eat the recommended amount of meat and poultry, according to federal nutrition data.

ANIMAL WELFARE MYTHS

MYTH: The Type Of Housing Pigs Are Raised In Is A Primary Determinant Of Their Welfare

FACT: The American Veterinary Medical Association (AVMA) has looked closely at all of the pig production systems and detailed the pluses and minuses of each. [1]

Overall AVMA did not find significant differences in the stress levels of sows in the different systems. Productivity or the ability for the animals to grow was also similar in the various systems. It goes back to the overall management of the system that makes the biggest difference in those factors. [2]

In any system, the care a farmer provides is key. A well-managed system of any kind is going to be superior to a poorly managed system of any kind.

DIG DEEPER... Housing systems for pigs are designed to meet several objectives. First and foremost, farmers want their animals to be safe, healthy and comfortable. For pigs, this often means indoor housing to protect them from predators and disease and keep them warm in the winter and cool in the summer. In the case of sows, there are many options including outdoor systems, indoor group housing and individual housing sometimes referred to as crates. Each has their own advantages and drawbacks in terms of animal welfare.

The gestation period for a sow or time that they would live in an individual housing system is typically 114 days, or 3 months, 3 weeks, and 3 days. When sows are pregnant, they require a great deal of individualized care and adequate nutrition to support their developing litter.

The advantages of a gestation stall system are that animals are able to get better individualized diet, water and other care. The stalls also reduce aggression between the animals which can occur when they’re together in an open pen. This helps to prevent injuries to the animals. The disadvantages are the animals aren’t able to move as freely as they are in group housing, restricts their ability to perform foraging behaviors, and have less direct social interaction with other sows.

[1] https://www.avma.org/KB/Policies/Pages/Pregnant-Sow-Housing.aspx
ANIMAL WELFARE MYTHS

MYTH: Monitoring Of Animal Welfare In Meat Plants Is Inadequate

FACT: No other sector of animal agriculture has the level of oversight that the U.S. meat packing industry has. Under the Humane Slaughter Act [1], all livestock must be treated humanely. They must be given water at all times, given feed if they are held at a plant for an extended period and they must be handled in a way that minimizes stress. Federal veterinarians monitor animal handling continually and may take a variety of actions — including shutting a plant down — for violations.

DIG DEEPER... In addition, in the late 1990s, a thriving commercial auditing business evolved based upon standards written for the industry by animal welfare expert Temple Grandin, Ph.D., professor of animal science at Colorado State University. Independent auditors evaluate plants for major retail grocery and restaurant chains according to Grandin’s standards to provide additional oversight. Failed audits can result in lost contracts.

Beyond federal and commercial compliance, extensive research has shown that humane handling of livestock creates better finished products. Rough handling can cause bruises that need to be trimmed. It also causes quality defects like pale, soft, watery pork and blood spots in beef. These are direct costs to meat companies. Strong ethical, regulatory and economic incentives exist to handle animals humanely.

While there have been instances in which those handling livestock in plants and farms have failed to meet these standards, it is important to remember that these are the exceptions. The industry has a demonstrated commitment to animal welfare and data collected by Dr. Grandin has shown a sustained improvement over time in welfare indicators.[2]

ANIMAL WELFARE MYTHS

MYTH: Livestock Are Aware And Afraid They Are Going To Be Slaughtered

**FACT:** Based on research from leading animal welfare expert Temple Grandin, Ph.D., and others, animals are unaware they are about to be slaughtered when arriving at a processing facility. Grandin notes that cows will behave the same whether they are going into a veterinary chute on the farm or in a processing facility, a strong indication that they do not know they are going to be slaughtered. Other research shows that pigs watching stunning and slaughter of another pig had little or no change in heart rate, cortisol or endorphin levels. When they are afraid, animals will back up or refuse to move forward. The most likely causes of agitation in processing facilities are distractions such as lighting problems, air blowing towards the animals, movement or high pitched noise.

A lone animal by itself in a chute may also become agitated because he is separated from his herd mates. That’s why it is important to handle animals in groups.

**DIG DEEPER...** Humane handling of livestock has many important benefits. First, it is our ethical obligation to handle animals humanely. Also, mishandling animals can lead to meat quality issues. Stressful events can cause quality problems like "bloodshot" in beef or produce pale, soft and watery pork, both of which are unattractive to consumers and require that parts of the meat be trimmed away. Plants with optimal animal handling produce higher quality meat.

Good animal handling also enhances safety for workers. Animals that become agitated due to rough handling can injure workers – and themselves.

Calm animals also are less likely to damage equipment – but a stressed or struggling animal might.

For these reasons, plants do everything possible to create calm, low-stress atmospheres that work with – rather than against – animals’ natural instincts. The benefits of these practices to workers, to meat quality, to equipment and most importantly to livestock are well-documented by scientific research.

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FACT: The 80 percent number that is commonly used by critics of antibiotic use in livestock and poultry is extrapolated from Food and Drug Administration (FDA) data on how much antibiotics are sold in the U.S. every year for human and animal use. Because there is currently no solid data on antibiotic use in human medicine, this calculation is a guess at best. The FDA has specifically said that the numbers shouldn’t be compared, but many continue to use it anyway.

Antibiotic resistance is a very complicated topic that is being addressed in both animal agriculture and human medicine. There is very little overlap between the antibiotics used for livestock and poultry and the antibiotics used for people. The most common antibiotics used in people are in the penicillins family, while ionophores are the most commonly used antibiotics in animals. In fact ionophores are not used at all in people. In most cases, commonly used antibiotics in people are not commonly used in animals and vice versa.

In September 2013, the Centers for Disease Control and Prevention (CDC) released a new report called Antibiotic Resistance Threats in the United States. In releasing the report, CDC Director Thomas Frieden, MD, said, “Right now the most acute problem is in hospitals. And the most resistant organisms in hospitals are emerging in those settings, because of poor antimicrobial stewardship among humans.” According to the report, 50 percent of all the antibiotics prescribed for people are not needed or are not optimally effective. The report expressed concern about the use of antibiotics for growth promotion in animal production and said they should be phased out. This effort is underway with the support of the meat industry.

DIG DEEPER... It is true that more antibiotics are used in animals than humans, but there are far more animals in the U.S. than people. There are more than 90 million cattle, 5.3 million sheep, 66 million hogs, 200 million turkeys and eight billion chickens on U.S. farms. The combined weight of livestock and poultry in the U.S. is roughly 3.5 times that of the combined weight of American men and women. A 1,200 pound steer is equal to roughly six men. If a steer needs treatment for pneumonia, logic will tell you that it will require a larger dose than a person. Similarly, it is logical that our combined U.S. livestock and poultry herds and flocks will require more antibiotics by volume than our combined human population.


ANTIBIOTICS MYTHS

MYTH: Denmark Has Eliminated Antibiotic Resistance By Banning Use Of Antibiotics For Growth Promotion

**FACT:** If you look at the data, the ban has reduced overall antibiotic usage in Denmark by 26 percent between 1998 and 2009, but the animal health outcomes have generally not been positive. In animals, death and illness rates have increased. As such, the amount of antibiotics used to treat animal disease increased 223 percent.

From a public health perspective, antibiotic resistance in animals in Denmark has decreased since the ban. This, however hasn’t translated to a reduction in antibiotic resistant infections in humans. Research has shown that *E. coli* and *Salmonella* resistance to several antibiotics has increased in humans. That suggests that the ban has not had a significant public health impact.¹

**DIG DEEPER...** In the U.S., USDA Food Safety and Inspection Service (FSIS) sampling data indicate that the amount of bacteria on raw meat and poultry products are decreasing across the board—not increasing as has sometimes been reported.² The objective of every meat and poultry processor is to eliminate pathogenic bacteria on products before they reach the consumer. The National Antibiotic Resistance Monitoring System (NARMS) also shows that the bacteria found on some raw meat and poultry are declining in the wake of changes in meat and poultry production practices. A recently published scientific report found that among specific pathogens, resistance to several of the critical antibiotic classes has not expanded. Furthermore, any bacteria, whether antibiotic resistant or not, is killed through proper cooking, so a significant food safety benefit from the elimination of antibiotic use is not expected.

¹ [http://jac.oxfordjournals.org/content/52/2/159.full](http://jac.oxfordjournals.org/content/52/2/159.full)
ANTIBIOTICS MYTHS

MYTH: Antibiotics Are Used In Animal Agriculture To Cover Up For Unsanitary Conditions

FACT: Numerous studies investigating the difference between conventional agriculture and organic production have found no difference in bacterial contamination between the farms or antibiotic resistance in the bacteria.[1]

Just like people, animals can get sick with illnesses like the flu, pneumonia, skin infections and more. Most pet owners have experienced the need to give their cats and dogs antibiotics to treat infections. Livestock and poultry are no different. Antibiotics are used for treatment and they’re used for prevention at times when a herd is at particular risk for infection. This often allows producers to use fewer antibiotics than if the whole herd got sick. In some cases antibiotics have been used as growth promotants, but the Food and Drug Administration passed a guidance phasing out that use by 2016, and also increasing the involvement of veterinarians to prescribe antibiotics when needed.[2]

DIG DEEPER... Any farmer or rancher involved in animal agriculture has significant incentive to be good stewards to their animals and keep them in sanitary conditions that promote their health. After all, those animals are their livelihood.

Animals in any production system tend to live in herds or small groups, share water and feed troughs, and seek close contact with one another by licking, laying on each other and even rubbing snouts and noses. This can spread illnesses rapidly. Sometimes, veterinarians recommend using antibiotics to prevent diseases at times when livestock are particularly at risk, like during weaning from the mother or transportation. Swift, preventive and proactive actions often mean an animal will receive fewer antibiotics than they would have if they had not received a preventive dose.

ANTIBIOTICS MYTHS

MYTH: Antibiotics Are Primarily Used For Growth Promotion

**FACT:** Based on industry data, only 13% of antibiotics are used for growth promotion and this practice is being phased out. In 2013, the Food and Drug Administration (FDA) requested that the use of antibiotics for growth promotion be halted by 2016. Every company who produces antibiotics medically important in human medicine for animals has committed to this plan and they will withdraw their products for growth promotion use. Additional guidance requirements also mean that all therapeutic uses of antibiotics to treat, control, or prevent specific diseases will take place under the oversight of licensed veterinarians.

The FDA guidance also requires approval of an antibiotic before it is used in animals in a process similar to the way human medications are approved. If use of an antibiotic in animals poses a risk to humans, FDA will not approve that antibiotic for animal use. The FDA also determines the safe dosage and timing of antibiotic use in animals to guard against excessive antibiotic residues remaining in meat that could pose a risk for human health.

After companies have made these changes to their labels eliminating the use of their products for growth promotion, it will be illegal to use those antibiotics in feed to promote growth. The antibiotics that previously had an over-the-counter approval will also need a veterinary prescription like the newer animal antibiotics to be administered for a particular use.

Veterinarians will take a number of factors into account when prescribing antibiotics for use in animals including the effectiveness of an antibiotic at preventing an infection and how it might impact the health of the animal and herd.

**DIG DEEPER...** Just like people or our pets, livestock and poultry get sick. Not providing antibiotics when needed would harm animal well-being and could cause a more widespread infection in other animals in a home, herd or flock.

Animals tend to live in herds or small groups, share water and feed troughs, and seek close contact with one another by licking, laying on each other and even rubbing snouts and noses. This can spread illnesses rapidly. Sometimes, veterinarians recommend using antibiotics to prevent diseases at times when livestock are particularly at risk, like during weaning from the mother or transportation. Swift, preventive and proactive actions often mean an animal will receive fewer antibiotics than they would have if they had not received a preventive dose.


ANTIBIOTICS MYTHS

MYTH: Animal Agriculture Is The Biggest Contributor To Antibiotic Resistance

FACT: Though the Centers for Disease Control and Prevention (CDC) emphasized the need for good antibiotic stewardship among livestock and poultry farmers, according to the CDC’s 2013 report on Antibiotic Resistant Threats in the United States [1], the number one contributing factor to the development of antimicrobial resistance is overuse in humans. In a 2013 press conference, CDC’s Director Michael Frieden, M.D., said, “The most acute problem is in hospitals. And the most resistant organisms in hospitals are emerging in those settings, because of poor antimicrobial stewardship among humans.” [2] The CDC estimates that half of antibiotic prescriptions written to people are unnecessary.

The Food and Drug Administration (FDA) and CDC have each made antibiotic stewardship a key part of their work. They are working with health care providers to encourage proper antibiotic use for conditions that antibiotics can effectively treat. For instance, doctors are being encouraged not to give antibiotics for common colds or coughs, because evidence has shown that antibiotics are not an effective treatment.

On the animal side, FDA has issued guidance to eliminate the use of antibiotics for growth promotion purposes. Under FDA guidance, antibiotics to treat, control or prevent important in human medicine illnesses in animals will need to be prescribed by a veterinarian.

DIG DEEPER... Antibiotic resistance is a complex issue, but any antibiotic use in any setting potentially contributes to it. Each time an antibiotic is given to people or animals, sensitive bacteria are destroyed; however, bacteria that are resistant or tolerant to the antibiotic may only be injured or suffer no ill effects. These bacteria may then be left to grow and multiply. The CDC says repeated and improper uses of antibiotics are primary causes of the increase in drug-resistant bacteria. This happens because bacteria that survive an antibiotic are potentially able to adapt and fight off the same antibiotic if exposed again.

It is important to recognize that antibiotics designed for bacterial infections are not effective in treating viral infections like colds and flu. Patients should talk with their doctors about whether an antibiotic is an appropriate treatment for their illness. It’s also important to follow the instructions when taking an antibiotic. Don’t skip doses or stop taking it if you feel better, and don’t take someone else’s prescription. These steps can all help reduce antibiotic resistance.

When it comes to meat safety, meat from animals that have received or not received antibiotics are both equally safe to consume, because animal antibiotics require a withdrawal from the antibiotic a certain amount of time prior to slaughter so the antibiotic may clear the animal’s system.

But for those who are concerned, many meat companies offer a “raised without antibiotics” or an organic option in the meat case. Either way, any bacteria, whether antibiotic resistant or not, are killed through proper cooking of the meat. You should always check doneness with a meat thermometer to ensure it has been cooked to the proper temperature.

It is also important to recognize that antibiotic residues in meat are very rare. Under FDA rules, farmers and ranchers must wait a defined period to send animals to market if they have been given antibiotics. In meat and poultry plants, USDA inspectors sample carcasses and organs to ensure no residue violations are found – and they almost never are, with 99 percent of samples testing negative. [3]

Some people have expressed concern about methicillin-resistant *Staphylococcus aureus* (MRSA) in meat products. According to CDC, the most serious MRSA infections are usually attributed to exposure during healthcare and the remainder are typically community acquired through contact with an infected person. As the CDC’s web site notes, "Anyone can get MRSA through direct contact with an infected wound or by sharing personal items, such as towels or razors, that have touched infected skin. MRSA infection risk can be increased when a person is in activities or places that involve crowding, skin-to-skin contact, and shared equipment or supplies. This might include athletes, daycare and school students, military personnel in barracks, and those who recently received inpatient medical care." [4]

CDC does not consider MRSA a foodborne pathogen; it is a human contact pathogen. But remember, bacteria on meat and poultry, whether antibiotic resistant or not, are destroyed through cooking. That means that basic safe handling practices in the kitchen, like hand washing, separating raw and ready-to-eat foods and thorough cooking, are your best line of defense.

ANTIBIOTICS MYTHS

MYTH: Antibiotic Use In Livestock Production Is Increasing And This Is A Human Health Risk

FACT: Antibiotic use in livestock and poultry production is strictly regulated by officials at the U.S. Food and Drug Administration (FDA) and meat and poultry is inspected in plants by the U.S. Department of Agriculture to ensure that it complies with all federal safety rules. Issues surrounding antibiotic use and resistance are extremely complex and involve both human and veterinary use. While recent news has focused on veterinary antibiotic use, many experts have cautioned against overuse of antibiotics in humans for decades.

In the 1940s, antibiotics became available in general medicine. One decade later, the medical community cautioned in medical journals against the overuse of antibiotics to treat illnesses for which they were not warranted because scientists recognized even then that overuse in humans had the potential to create resistant strains.

DIG DEEPER... Concerns about the overuse of antibiotics in humans continued throughout the following decades. A 1999 study of pediatricians in the journal Pediatrics [1] found that more than half of doctors reported writing 10 or more antibiotic prescriptions in the past month that they believed to be unwarranted and did so in response to parental pressure. Similarly, research involving interviews with patients reveals that patients often exaggerate symptoms and pressure doctors to secure a prescription for antibiotics even when it is not needed. By and large, those interviewees believed that antibiotics were needed to treat everything but the common cold. [2]

Just as antibiotics, used judiciously, are important in ensuring human health, they also are important in ensuring animal health. Antibiotic use in livestock production has been relatively steady over time, but in responding to concerns about the development of new, antibiotic resistant bacteria, attention seems to have shifted toward agriculture. For more than 40 years, antibiotics regulated and approved by the FDA have been used to treat sick animals, prevent illness and maintain the health of animals.

And in all cases, they must be used properly. In livestock and poultry, antibiotics may be used to treat, control and prevent diseases. Some antibiotics offer an added benefit of enhancing livestock and poultry growth when administered, but, according to a 2007 survey, only an estimated 13 percent of antibiotics are used in growth promotion and this is being phased out.

Some critics argue that the use of antibiotics in food animals could create strains of bacteria that are resistant to antibiotics and ultimately infect humans, but years of research have failed to prove that this evolution is occurring or that it is risking human life. One often-cited statistic comes from

the Union of Concerned Scientists, which claims that 70 percent of antibiotics produced in the U.S. are fed to livestock, a statistic they cannot possibly calculate considering that antibiotic use in humans is not tracked. Even so, one would expect the 302 million head of American livestock and 8 billion American chickens and turkeys to require more antibiotics than 309 million people who weigh a fraction of a full grown steer and far less than a typical market hog.

Many cite Denmark, where non-therapeutic antibiotic use was banned, as the model. But the elimination of antibiotics at the health maintenance level in Denmark has not led to a substantial impact on the incidence of antibiotic-resistant food-borne illness in humans.

According to an article by risk assessment expert and former USDA Deputy Under Secretary for Food Safety Scott Hurd, DVM, Ph.D., of Iowa State University, "There seems to be little evidence after 10 years that public health has improved since the Danish ban on growth promoting and preventive antibiotics."

Additionally, according to Hurd, although many predicted that a ban on growth promotion and preventive antibiotic uses would reduce total antibiotic consumption in livestock, the Danish government reported that "for production animals consumption [of therapeutic antibiotics] has increased gradually by 110 percent from 1998 through 2008." And the therapeutic antibiotics that are now being used are considered more important in human medicine. Overall, Hurd says the data suggest that the antibiotics previously used for growth promotion were preventing a great deal of illness, especially in pigs.

MYTH: It Takes 2400 Gallons Of Water To Make A Pound Of Beef

**FACT:** The 2400 number may have been true 30 to 40 years ago, but modern beef production has improved significantly over time as better husbandry practices have actually reduced water usage. Today it takes 441 gallons of water to produce one pound of boneless beef. [1]

The large numbers often cited also rely on averaged global data. Other nations use more water than we do in the United States to raise livestock.

**DIG DEEPER...** While 441 gallons might sound like a lot, it is important to keep this number in context compared to other products. It takes 713 gallons of water to make one cotton t-shirt, 39,090 to manufacture a car and 36 million gallons a day leaks from the New York City water supply system. [2] Beef producers are always looking for ways to reduce their water use but while also maintaining a high level of care for the animals.

One way you can lower the water usage related to beef production is to choose grain fed beef.

Grain fed animals grow to the market size 226 days faster than grass fed, so grass fed beef ends up using a lot more water. But it’s also important to consider ways you’re using water in everyday life. Just letting a faucet drip at one drip per second can use 3,000 gallons of water a year.

**MYTH: Livestock Have A Greater Negative Environmental Impact Than Cars**

**FACT:** The United Nations (UN) erred in making this statement several years ago and unfortunately, it has taken on a life of its own and is widely reported even though the organization acknowledged its mistake. In 2010, UN officials said that they would recalculate the number based on this error and re-release a new number.

U.S. Environmental Protection Agency (EPA) data show that all of agriculture contributes 7 percent of America’s greenhouse gas emissions while livestock production accounts for 9 percent of greenhouse gas emissions. By contrast, transportation accounts for 27 percent.

Research at Washington State University, Cornell and other universities shows that beef production has evolved and, over time, has required fewer and fewer natural resources to raise the same wholesome products that help us continue to feed a growing global population.

Consumers needn’t worry. Like all people, cattle producers have a vested interest in protecting the environment in which they live and increasingly, they are producing more beef with fewer resources.


MYTH: Larger Modern Cattle Operations Today Have A Greater Negative Environmental Impact Than Small, Local Operations

FACT: Many studies show quite the opposite. Agriculture operations of any size can be managed in environmentally sound ways. But modern operations can benefit from sophisticated environmental controls.

A 2010 Washington State University[1] study examined modern beef production and found that since 1977 advances in production practices resulted in 13 percent more beef with 13 percent fewer animals. The study found that modern beef production uses 30 percent less land and 20 percent less feed.

These findings make some sense considering that when more cattle are together in a controlled environment, feed is provided and manure is managed through sophisticated systems, which reduce environmental impact.

DIG DEEPER... Interestingly, new research[2] from the University of California Davis underscored how modern practices can help the environment. Researchers there studied two groups of cattle in a feedlot setting. One group utilized modern technology while the other did not. The first group generated 31 percent less greenhouse gas emissions than those without implants or additives.

In addition, Washington State research also shows that pound-for-pound, beef produced with grain produces significantly less greenhouse gas emissions than grass-fed beef. A grain diet is more easily digestible than the cellulose fibers of grass, producing less methane.

According to the research, it takes 226 more days for grass-finished cattle to reach market weight than grain-finished cattle, meaning that each pound of grain-finished beef requires:

- 45 percent less land
- 76 percent less water
- 49 percent less feed
- While generating 51 percent less manure
- and 42 percent fewer carbon emissions

[1] Environmental Sustainability of Beef Production Has Improved Considerably over Last 30 Years, WSU Expert Says, Washington State University, August 1, 2011.
MYTH: Local Meat And Poultry Are Safer And Better For The Environment Than Food That’s Been Trucked A Long Way

FACT: While the familiarity of a local producer may have an appeal, it doesn’t necessarily mean that meat is safer or more environmentally friendly. From an efficiency perspective, larger operations that are concentrated can take advantage of economies of scale. Some larger operations have access to more sophisticated technologies to protect the environment that smaller operations may not be able to afford. Those potential benefits that a larger operation can offer to the environment may outweigh the downside of trucking meat a long distance. In addition, transportation costs for local systems are often small scale, which can be much less fuel efficient than a larger transportation systems. [1]

From a safety perspective pathogens can't distinguish between small and large operations. In fact large operations are often better equipped with food safety technologies that small, local producers may not have.

DIG DEEPER... Today, livestock and poultry tend to be produced in the climates that are suited to their species and breeds. Poultry thrives in the Southeast. Cattle are suited to Midwestern and Western climates. Consumers in those regions shouldn’t be the only ones who get to enjoy affordable meat. Our system allows everyone around the country to have access to quality meat and poultry.

MYTH: Going Meatless One Day A Week Can Have A Significant Environmental Impact

**FACT:** The data shows that reducing meat consumption one day per week as recommended by the Meatless Monday campaign has a negligible impact on greenhouse gas emissions. According to the Environmental Protection Agency (EPA), just 3.4 percent of greenhouse gas emissions are from livestock agriculture, with beef contributing 1.4 percent. If all Americans were to cut out beef one day a week, this would reduce their carbon footprint by just .2 percent. Considering that energy production and transportation are responsible for 31 and 26 percent respectively, individual changes within these areas can have a much more significant impact. Overstating the impact of livestock production can distract consumer attention from areas with the potential to have far greater environmental impact.

**DIG DEEPER...** Much of the attention on the impact of livestock production on greenhouse gas emissions can be traced to the 2006 United Nations report, "Livestock’s Long Shadow" [1] which cited livestock’s contribution to greenhouse gas emissions at 18 percent, higher than transportation. However, further research has shown that because of that report’s focus on worldwide agriculture, it overestimated the regional impact, particularly in developed nations such as the United States. The report also produced its numbers for the livestock sector by adding up emissions from farm to table, including the gases produced by growing animal feed; animals’ digestive emissions; and processing meat and milk into foods. But its transportation analysis did not similarly add up emissions from well to wheel; instead, it considered only emissions from fossil fuels burned while driving. [2]

A new United Nations Food and Agriculture Organization (FAO) initiative entitled “Livestock Environmental Assessment and Performance (LEAP) Partnership” has been designed to promote an exchange of data and information, technical expertise and research geared towards improving and harmonizing the way in which livestock food chains are assessed and monitored. [3]

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1. [http://www.fao.org/docrep/010/a0701e/a0701e00.HTM](http://www.fao.org/docrep/010/a0701e/a0701e00.HTM)
FOOD SAFETY MYTHS

MYTH: Foodborne Bacteria Are Unique To Animal Agriculture

**FACT:** According to the Centers for Disease Control and Prevention (CDC), foodborne illness is actually more common in produce than in animal protein products. In a recent CDC report, researchers found that 46 percent of foodborne illnesses were linked to produce, most often leafy greens. We’ve seen several outbreaks in recent years related to spinach, cantaloupe, peppers and other produce. These outbreaks have involved many common pathogens we’re familiar with in the meat and poultry industry including *E. coli* O157:H7, *Salmonella* and *Listeria*.

Certainly foodborne illnesses are linked to meat and poultry products, but they’re not the only source or even the most common source. Foodborne illness is an issue across the food system that everyone is working to improve.

The CDC reports that the majority of illnesses in produce is due to norovirus, a common virus that can cause vomiting and diarrhea and is sometimes known as the “cruise ship virus.” Norovirus is more likely contracted through human contact with the foods. In fact, sick food handlers specifically caused 53 percent of the foodborne norovirus outbreaks by contaminating food and may have contributed to another 29 percent of the outbreaks. More than 80 percent of outbreaks involved food prepared in commercial settings, such as restaurants, delis or in catering businesses. In some of those other cases where we’ve seen *Listeria* in cantaloupe, for example, there were insanitary conditions in produce packing houses, according to the Food and Drug Administration.

According to the most recent CDC data, meat and poultry are responsible for 22 percent of foodborne illnesses in the U.S., so that’s why it may seem like you hear more about meat and poultry in the news than other products. The meat and poultry industry has made significant advances in recent years in reducing foodborne pathogen rates. In fact, there have been no recalls of ready-to-eat meat and poultry due to a human infection with *Listeria monocytogenes* since 2003. Overall, USDA data show that pathogen rates are decreasing in meat and poultry products.

**DIG DEEPER...** The best weapon against foodborne illness is education and information. Nothing in life is risk free, but relative to other nations, North America enjoys a very safe food supply. To ensure that food is safe to eat when served, take some simple precautions to reduce risk.

- Wash produce thoroughly; wash your hands before and after handling food.
- Keep meat and poultry and ready-to-eat foods like salads or cheeses separate in the kitchen and use different cutting boards when preparing them.
- Cook meat and poultry thoroughly to recommended temperatures and use a meat thermometer to verify doneness.
- Store your leftovers within a couple of hours.

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MYTH: If Meat Turns Brown, That Means It Is Spoiled

**FACT:** Red meat products are somewhat like sliced apples. Their color can change rapidly – even though the product is still safe and wholesome. In fact, retail stores often discount red meat products that have changed color but are still safe and wholesome – and well within their shelf life. These color changes in foods like apples and meat are the result of chemical changes caused by oxygen exposure. [1]

The untouched surface color of fresh meat such as cherry-red for beef is highly unstable and short-lived. When meat is fresh and protected from contact with air (such as in vacuum packages), it has the purple-red color that comes from myoglobin, one of the two key pigments responsible for the color of meat. When exposed to air, myoglobin forms the pigment, oxymyoglobin, which gives meat a pleasant cherry-red color. The use of a plastic wrap that allows oxygen to pass through it helps ensure that the cut meats will retain this bright red color. However, exposure to store lighting as well as the continued contact of myoglobin and oxymyoglobin with oxygen leads to the formation of metmyoglobin, a pigment that turns meat brownish-red.

Color is also not an appropriate indicator of whether meat is cooked. The only clear way to tell if meat is cooked thoroughly is to use a meat thermometer to ensure it has reached the recommended internal temperature for that meat.

DIG DEEPER... Beyond color change, there are ways you can tell if your meat is spoiled. Spoilage is a process that occurs over time and is the result of the growth of spoilage bacteria. There is no one point in time where a product is fresh and wholesome and then suddenly becomes spoiled. Changes in color can be an indicator that the process is beginning, but color change alone does not mean the product is spoiled. The most potent indicator of spoilage is an off odor. A spoiled product also can be sticky or tacky to the touch, or it may be slimy. If meat has developed these characteristics, it should be discarded. A use-by date on a package can also be a good guideline.

Some meat may also show an iridescent sheen. This is because meat contains iron, fat, and other compounds. When light shines on a slice of meat, it splits into colors like a rainbow. There are various pigments in meat compounds that can give it an iridescent or greenish cast when exposed to heat and processing. Wrapping the meat in airtight packages and storing it away from light will help prevent this situation. Iridescence does not signal decreased quality or safety.

USDA generally recommends the following

- Raw ground meats, all poultry, seafood, and variety meats can be refrigerated 1 to 2 days.
- Raw roasts, steaks, and chops (beef, veal, lamb, and pork) can be refrigerated for 3 to 5 days.
- Cooked meat, poultry, and seafood can be stored in the refrigerator 3 to 4 days.

FOOD SAFETY MYTHS

MYTH: Meat Is Less Safe Today Than It Was In The Past

**FACT:** Meat safety can be evaluated in a number of ways. One way is by counting bacteria levels. All raw agricultural products contain bacteria, but during processing, the meat and poultry industry seeks to reduce these levels as much as possible and then urges careful handling and thorough cooking to ensure that no harmful bacteria remain when food is served.

**DIG DEEPER...** Federal data from the U.S. Department of Agriculture (USDA) document steep declines in bacteria on meat and poultry.

For example, the presence of *E. coli* O157:H7 in fresh ground beef declined by more than 90 percent over the last decade to approximately one-third of one percent of ground beef samples tested. That means that the pathogen will only be found in approximately 1 in 1000 samples.

*Salmonella* on fresh pork has declined by 80 percent since 2000, while *Salmonella* on chicken has declined by 60 percent since 2000.

An environmental pathogen called *Listeria monocytogenes* that can contaminate a range of protein foods has also declined markedly on ready-to-eat meat and poultry products. Between 2000 and 2009, *L. monocytogenes* decreased more than 80 percent and now is found in less than one half of one percent of samples tested.

And all of these declines have occurred just as efforts to find harmful bacteria have increased and as the ability to find them has improved dramatically through better diagnostic technologies.

Foodborne illness trends also offer clues about the safety of the U.S. food supply. In 2011, the Centers for Disease Control and Prevention (CDC) announced that foodborne illnesses are declining. In particular, the CDC said that the U.S. had achieved its Healthy People 2010 public health goal of less than one *E. coli* O157:H7 illness per 100,000 people.[1]

Notably, these declines have occurred as public health tracking of these infections has expanded significantly. In 1993, for example, almost no state tracked *E. coli* O157:H7 infections in people. Today, every state in the U.S. routinely monitors the incidence of these infections and reports to federal officials. Still, data show declines, which is very encouraging.

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FOOD SAFETY MYTHS

MYTH: Inspectors Only Visit Meat Plants Occasionally

**FACT:** Few industries in America are regulated and inspected as comprehensively as meat and poultry plants. U.S. meat packing plants where livestock are handled and processed are inspected continuously. Large plants may have two dozen inspectors on site in a two-shift day. Plants that process meat or poultry, but do not handle live animals are inspected daily.

These inspectors have a wide range of authority. They may cite plants for non-compliance forcing changes in procedures; prevent the use of certain equipment; condemn meat products that they deem to be unsafe or mislabeled; seize and detain meat products; and withdraw inspectors from plants, which forces the plant to cease operating. A review of USDA records will show that they use their powers frequently.

**DIG DEEPER...** USDA currently employs 8,000 inspectors to oversee 6,200 plants. According to USDA, today they have one of the lowest inspector vacancy rates in recent history and meat and poultry plants are being directly inspected more closely than ever.
FOOD SAFETY MYTHS

MYTH: Grass-Fed Beef Is Safer Than Beef From Cattle Finished On Corn And Grains

FACT: Extensive research has shown that beef from grass-fed and corn-finished cattle is equally safe. While some unreliable online sources claim that grass-fed cattle have lower levels of *E. coli* O157:H7 in their intestines, studies show that there is no difference in the prevalence of *E. coli* O157:H7 in live animals fed a variety of diets. [1]

DIG DEEPER... In fact, organic and natural methods don’t seem to impact bacteria in the gut either. In 2009, researchers examined the incidence of pathogenic *E. coli* O157:H7 in organic and naturally raised cattle and concluded, "Our study found similar prevalences of *E. coli* O157:H7 in the feces of organically and naturally raised beef cattle, and our prevalence estimates for cattle in these types of production systems are similar to those reported previously for conventionally raised feedlot cattle." [2]

While a very small USDA study[3] of a handful of cattle in 1998 initially suggested that feeding cattle hay could reduce *E. coli* O157:H7, that small study’s findings were never able to be duplicated in larger research. More than a decade later, a large, accumulated body of research strongly suggests that *E. coli* O157:H7 appears to be a natural bacterium found in the gut of cattle regardless of production system.


FOOD SAFETY MYTHS

MYTH: Meats That Have Been Tenderized Are Less Safe

FACT: Tender meat is highly prized by consumers. To meet that demand, North American livestock producers and processors utilize a variety of production management practices and processing techniques. One basic technique used to ensure meat is tender is meat tenderization. Even before the practice began in processing plants, consumers, butchers, retailers and chefs commonly tenderized meat with forks, mallets and meat tenderizing ingredients. Interestingly, this technique is commonly taught in culinary schools as it is so simple, yet so effective.

So why do we need to tenderize meat? Each animal muscle has a purpose, just like human muscles. For instance, leg muscles have to be strong to support the animal’s weight. Typically, the weight-bearing muscles have a higher amount of connective tissue because they contain strong protein. But connective tissue in meat is not desirable as it is tough and doesn’t usually result in a positive eating experience. Mechanically tenderizing the meat physically breaks apart the connective tissue. This simple act helps to ensure the tenderness of the meat product when cooked, which is especially important for cuts with higher quantities of connective tissue.

The most basic type of mechanical tenderization machine uses many tiny blades to break apart the connective tissues. Also, it is common for meat processors to use solutions like marinades in conjunction with the mechanically tenderizing process to add seasonings or further increase the palatability of the product.

Like the larger meat supply, tenderized meats are widely produced and have a good safety record but any time raw meat is handled, there is an increased opportunity for cross contamination – whether in homes, restaurants and meat counters. That is why when meat is tenderized in a plant, increased antimicrobials are commonly applied to the outside of beef before it is tenderized to ensure safety when cooked and consumed. Available information indicates that no reported illness outbreaks have been associated with products produced in the U.S. that were mechanically tenderized alone.

While some concerns have been raised about tenderization of products that also use a marinade solution, U.S. Department of Agriculture (USDA) scientists and public health experts continue to study the process thoroughly. USDA scientists in 2008 stated that the risk of illness from E. coli O157:H7 in tenderized beef steaks is “not significantly higher” than intact beef steaks. USDA recommends that mechanically tenderized meat be cooked to 145 degrees Fahrenheit which is a medium rare degree of doneness and then held for three minutes before consuming. This rest period ensures any pathogenic bacteria that may be present are destroyed through the continued cooking that takes place during the rest period.

DIG DEEPER... If a seasoning or tenderizing solution has been added, the product must state it on the front of the package and the ingredient statement must make clear any ingredients that are used. Starting in 2016 any tenderized products will also need to be labeled as such. Tenderized products are most commonly sold to food service providers, but they are also sold at supermarkets and other outlets. At this time, less than seven recalls have been linked to products that were mechanically tenderized. Since no system is perfect, continual checks are run by meat companies and when needed, improvements are put in place to ensure the safest product is being produced. The meat industry examines information from any outbreak and recall to determine how to prevent this from happening again. Available information indicates these outbreaks resulted from process control failures or improper handling and preparation.

[2] USDA, Ask Karen
[3] AMI Fact Sheet, Mechanically Tenderized Meat
FOOD SAFETY MYTHS

MYTH: Superbugs Are On Most Meat And Poultry Products

**FACT:** A true superbug is very rare in nature and even more uncommon on meat and poultry products. A superbug is a bacterium that will make you sick and is resistant to all antibiotics. Some recent reports have claimed finding superbugs on meat and poultry products by saying a bacteria found is resistant to at least one antibiotic, but by nature many bacteria are resistant to at least one antibiotic, but can easily be treated with other antibiotics.

The Food and Drug Administration (FDA) has said that it is an oversimplification to say that resistance to any single antibiotic is a risk to human health. [1]

Overall, USDA sampling data show that bacteria on raw meat and poultry products are decreasing across the board - not increasing. [2] The objective of every meat and poultry processor is to eliminate pathogenic bacteria on products before they are consumed.

Some consumers have also expressed concern about residues in meat and poultry products as a result of antibiotic use on the farm, but there are very strict rules about withdrawal periods for animals who are given antibiotics. This means that a certain amount of time must pass between when an animal is given an antibiotic and when the animal is processed so that the antibiotic can get out of the animal’s system. USDA tests for antibiotic residues and if they are found the product is not allowed to enter the food chain.

DIG DEEPER... Proper cooking is a sure fire way to ensure there are no antibiotic resistant bacteria on meat and poultry products. Whether antibiotic resistant or not, all potentially harmful bacteria are killed when meat and poultry are cooked to the proper cooking temperature.

MEAT PROCESSING MYTHS

MYTH: Ordinary Household Ammonia Is Used To Make Some Hamburgers

FACT: This inaccurate notion has been spread by some movies and TV personalities. Ammonia is naturally occurring, found in the human body, beef, other proteins, and virtually all foods. It plays an important role in the body's nitrogen cycle and in helping the body synthesize the protein. It also maintains the pH level that the body needs.

One form of ammonia - ammonium hydroxide - is used in processing foods like baked goods, cheeses, chocolates and some beef products. This is not the same type of ammonia in household cleaners. It is classified as safe by the U.S. Food and Drug Administration (FDA) and is approved in most other countries, including the European Union. When used for meat processing, ammonium hydroxide creates an environment that is unfriendly to pathogenic bacteria, such as E. coli O157:H7 and provides a significant food safety benefit.

DIG DEEPER... Boneless Lean Beef Trimmings, Finely Textured is made through a process that facilitates separation of lean and fat portions of the beef. One company uses a tiny puff of ammonium hydroxide gas as part of the process in order to destroy pathogenic bacteria, such as E. coli O157:H7. The lean meat is then frozen rapidly. This lean beef can be added to other ground beef during the grinding process and is an excellent way to harvest additional lean meat and foster sustainable processes.

REMEMBER THESE FACTS:

1. Ammonia and ammonium hydroxide exist naturally in our bodies and in meat.
2. Ammonium hydroxide is approved in most countries for food processing by agencies like the FDA.
3. When it is used in beef processing in the U.S., it is done under government inspection, through the United States Department of Agriculture (USDA).
4. It is used to make beef safer.
MEAT PROCESSING MYTHS

MYTH: 'Glue' Is Used To Hold Some Meat Together

FACT: Transglutaminase is a protein that is used to bind ingredients together in many foods. In meat products, for example, it can help hold bacon around a filet mignon to create a bacon wrapped filet or it can help hold several smaller cuts together to make a larger cut that can be sliced.

Unfortunately, the clever nickname “meat glue” has made transglutaminase sound much more exciting that it is.

The U.S. Food and Drug Administration (FDA) recognized transglutaminase as safe and it has been safely used for many years. Canada, Australia and many European countries also recognize this as a safe food processing aid. Transglutaminase is not classified as an allergen. Still, when it is used, it will appear on the ingredient label.

DIG DEEPER... Think of a whole beef tenderloin. It has a pointed end and a thicker end – much like a cone. The disadvantage of this is that when slicing and serving tenderloin, it’s difficult to serve the same size portion. This is particularly important in food service and restaurants where consistent portion sizes are critical.

A meat processor could lay two tenderloins over one another, point to point, and add transglutaminase which makes the cuts bind together. The product can then be portioned to a standard serving size, and cooked for a more consistent and enjoyable eating experience.

Because transglutaminase binds several smaller pieces together, products that use it will be labeled as “chopped” or “formed.” These products need to be cooked like a ground product to 160 degrees F.
MEAT PROCESSING MYTHS

MYTH: The Two Things You Never Want To See Made Are Laws And Sausages

FACT: In contrast to the popular saying, the process of making sausage is extremely clean and not particularly complicated. It starts with cuts of meat similar to what you find in your grocer’s case and with trimmings, small cuts of meat that result when the larger pieces are cut into steak. These are ground into small pieces and placed in a mixer. High speed, stainless steel choppers blend the meat, spices, ice chips and curing ingredients into an emulsion or batter. The mixture is continuously weighed to assure a proper balance of all ingredients. The mixture is then pumped into an automatic stuffer/linker machine, where it flows into casings.

While rumors suggest that hot dogs use “everything but the oink,” it is uncommon today for manufacturers to use variety meats – like hearts or livers in hot dogs. When they are added, the package will clearly state “with byproducts” or “with variety meats.” The particular variety meat used also will be listed in the ingredient statement.

The most basic type of mechanical tenderization machine uses many tiny blades to break apart the connective tissues. Also, it is common for meat processors to use solutions like marinades in conjunction with the mechanically tenderizing process to add seasonings or further increase the palatability of the product.

DIG DEEPER… The entire process is carefully regulated and inspected for wholesomeness by the U.S. Department of Agriculture. Inspectors make sure the meat is processed and handled safely and that everything in the package is labeled correctly. [1]

**MEAT PROCESSING MYTHS**

**MYTH: It Is Always Better To Buy Ground Beef That Has Been Ground From Whole Muscle**

**FACT:** When cattle are processed into beef carcasses and later into the cuts that consumers enjoy, like sirloin steaks, filet mignon and ribeyes, small pieces are and we call these pieces beef trimmings. These pieces are often the smaller pieces of the larger cut away that cannot be sold on their own so they are ground up to be sold as ground beef.

There are several advantages when using trimmings to make ground beef including:

- Different cuts contain different amounts of lean and fat. By mixing together various pieces, processors are able to produce ground beef at lean/fat ratios that consumers demand such as 80 percent lean and 20 percent fat (80/20) or 90/10.

- Grinding together trimmings reduces the cost of ground beef. Whereas a whole muscle cut such as a rib-eye might run $8-$10 a pound, which many consumers would consider a high price to pay for a burger or taco meat, ground beef made with trimmings is significantly less expensive.

- Trimmings make up approximately 15-20 percent of the meat from an animal on average. Using trimmings is the responsible and sustainable thing to do to get the most out of each animal and also means fewer animals need to be slaughtered to keep up with demand for ground beef, while generating 51 percent less manure and 42 percent fewer carbon emissions.

Ground beef provides an economical source of protein for consumers that can be used in several recipes based on lean content.

**DIG DEEPER...** While some on-line sites and media personalities have popularized the idea that beef is somehow safer when ground in a retail store as opposed to in a plant from trimmings, these is no basis for this statement. In fact, when meat arrives in a retail store already packaged, it is subject to less handling.

According to USDA, "In a USDA-inspected plant, trimmed beef destined for grinding is tested for the presence of E. coli. However, primal cuts, such as steaks and roasts, are usually not tested. When stores or consumers grind these primal cuts, it’s possible that pathogens may be present on the raw beef, and neither you nor meat market employees can see, smell, or taste dangerous bacteria. In addition, USDA-inspected plants have Sanitation Standard Operating Procedures that cover policies such as the cleaning of grinding machines and the handling and chilling of ground beef. Consumers and stores might not follow such stringent sanitary procedures." [1]

**MEAT PROCESSING MYTHS**

**MYTH: Advanced Meat Recovery Is Unnatural**

**FACT:** Advanced Meat Recovery (AMR) was developed 20 years ago as a way to remove meat from bones. This technology doesn’t break or crush bones. It simply rubs beef or pork off the bones automatically without the use of a knife. The process gives meat a softer, finer texture. Beef and pork derived using AMR equipment is added to other products like sausage, pepperoni and hot dogs.

Using these products helps prevent waste, which helps keep meat and poultry affordable. Harvesting as much meat and poultry as we can from livestock and poultry also means that we need fewer animals to feed people, which reduces environmental impact.

**DIG DEEPER...** Removing meat from bones by hand is extremely time consuming and can increase the cost of food. Advanced meat recovery systems are another way to prevent waste and maintain meat’s affordability. USDA oversees meat derived by advanced meat recovery. Regulations say that meat produced using these systems can contain no more than 150 milligrams (mg) of calcium per 100 grams product (within a tolerance of 30 mg. of calcium). Products that exceed the calcium content limit must declare on the label that they are “mechanically separated.”

AMR systems also help reduce the repetitive motion that hand trimming requires, which can cause injury to workers.
MEAT PROCESSING MYTHS

MYTH: Mechanically Separated Poultry Is Used In Processed Products And Isn’t Labeled

**FACT:** When cuts of poultry are removed from bones, small pieces of poultry meat remain on the bone. Hand removal of these small pieces is extremely difficult, so specialized machines can be used to remove the remaining poultry meat. The poultry meat removed by such machines is called mechanically separated poultry (MSP).

MSP has been used in poultry products since the late 1960s. In 1995, a final rule on mechanically separated poultry said it was safe and could be used without restrictions, though it must be labeled as “mechanically separated chicken or turkey” in a product’s ingredient statement.

In terms of nutritional value, MSP is essentially the same as breast or thigh meat. It has the same protein levels, but the pieces of poultry that are removed from the bone to make MSP are too small to form a stand-alone whole-muscle poultry cut. Because MSP is derived from poultry meat that is close to the bone, it can have slightly higher calcium content when compared to whole muscles.

**DIG DEEPER...** There are several benefits of using the machines to remove poultry to make MSP. For instance, the machines reduce repetitive motion injuries in workers and help, at the same time, to keep poultry products affordable by preventing unnecessary waste. It allows poultry producers to get the most meat out of each animal which enhances environmental stewardship and increases sustainability.

In contrast to some rumors, MSP is not typically used to make chicken nuggets. However, it may be used in some processed products like bologna and hot dogs. MSP is suited to these products because removing it from bones creates a softer consistency that works well in a product that is blended with other ingredients and cooked.
MEAT PROCESSING MYTHS

MYTH: Using Machines And Other Technology To Process Meat Is Unnatural

**FACT:** By 2050, we will need 100 percent more food to feed our growing population, but the Earth is not growing to give us more farmland. According to the United Nations, 70 percent of the food that we need will simply have to come from new technologies that enhance our efficiency and productivity. [1]

Machines that help us better remove meat from carcasses are among the many food technologies used for efficiency, safety and cost. In the old days, oranges were squeezed to deliver orange juice. Today, we have automated that process for the most part. But we still call the juice that results from machine squeezing orange juice.

The same goes for meat. USDA has very technical definitions of meat. It's defined by its chemical and nutrition composition and even something called cellular structure.

If the meat that is derived from a machine is comparable to the meat that is derived by knife trimming, it's simply called beef or pork.

**DIG DEEPER...** There are many benefits to utilizing technology to process meat. At the plant level, it benefits workers by reducing the intricate trimming that is required to remove meat from bones and can require a lot of repetitive motion that can cause worker injuries.

Also, when an animal gives its life to feed us, we want to be sure that we use all that it can offer and waste as little as possible. Ethically it is the right thing to do.

Preventing waste also reduces the number of animals needed to feed people, which reduces environmental impacts and keeps meat and poultry affordable and meat's nutrition accessible to more people.

**MEAT PROCESSING MYTHS**

**MYTH: The Use Of Celery Powder To Cure Some Meats Is Misleading**

**FACT:** In order to be considered “cured,” cured meats must contain a form of nitrite. Sodium nitrite is a safe, government-approved curing ingredient that gives cured meats their characteristic taste and color. Without nitrite, cured meats won’t have the taste and appearance that makes ham taste and eat like ham or salami taste and eat like salami.

Celery powder is naturally rich in nitrate, which is closely related to nitrite and performs the same curing functions when added. Celery powder can be used in any cured meat and is often used as a curing agent for natural or organic products as well.

Current USDA regulations require that meats cured with celery powder to be called “uncured” to distinguish them from conventionally cured products. Packages of meats cured with celery powder often say “No nitrates or nitrites added,” but also contain a statement “other than those which naturally occur in celery powder.” Many in the food industry believe a more accurate way to describe the products would be to call them “cured,” but still must comply with the regulations as written, which require them to be called “uncured.”

**DIG DEEPER...** The use of nitrate and nitrite to cure meat also has a significant food safety benefit by preventing the growth of *Clostridium botulinum* which causes botulism, one the deadliest foodborne illnesses. While the myth that nitrite is linked to various diseases persists, studies have shown that not only are nitrate and nitrite safer at the levels used, they also can have significant health benefits.
MEAT PROCESSING MYTHS

MYTH: It’s Unnatural For Ground Beef To Be Made Of Meat From More Than One Animal

**FACT:** Not true, and to understand why, one must understand how ground beef is made and the food safety strategies that are used.

Just like orange juice might come from multiple orange trees, a jar of apple sauce might contain apples from numerous trees or a gallon of milk might come from more than one cow, your ground beef might come from multiple cattle.

When a large carcass is cut into steaks and roasts, small pieces called trimmings result. Trimmings are simply the pieces that are trimmed from larger cuts and look like the beef stew meat you might find in your grocer’s case. These are perfectly wholesome and nutritious cuts of beef, but they are smaller than a normal cut and ideal for grinding. To make the most of the trimmings, they are ground together in certain fat to lean to fat proportions to make ground beef in formulations like 80 percent lean/20 percent fat or 90 percent lean/10 percent fat.

Half of all the beef consumed in North America is consumed as ground beef. It tends to be one of the more economical beef options in the meat case and gives consumers a wide variety of meat options.

**DIG DEEPER...** Like all beef, beef trimmings are produced under federal inspection. When trimmings are ground together, this grinding is also done under federal inspection. Many countries have established sampling programs to verify the safety of these products. In the case of the United States, the U.S. Department of Agriculture (USDA) samples ground beef and the trimmings for *E. coli* O157:H7 as well as other Shiga toxin-producing *E. coli* [1] and processors run their own tests for *E. coli* and other bacteria as part of standard food safety management programs.

Grinding safe and inspected trimmings together results in a safe product. A single, whole muscle cut like a chuck roast can also be ground into a safe ground beef product. The mere fact that one comes from a larger piece and another comes from smaller pieces, however, does not impact food safety or quality of the ground beef.

NUTRITION AND HEALTH MYTHS

MYTH: Americans Eat Too Much Meat And Its Saturated Fat Content Leads To Heart Disease

**FACT:** The U.S. Dietary Guidelines recommend that Americans consume five to seven ounces from the Protein Foods Group per day depending upon age, gender and level of activity. The National Health and Nutrition Examination Survey ("NHANES") indicates that men consume 6.9 ounces of meat and poultry, while women consume approximately 4.4 ounces. [1]

And while meat does contain saturated fat, those limiting saturated fat intake should know that approximately 40 cuts of meat qualify for the government definition of "lean" [2] and contain less than 10.5 grams of fat, less than 4.5 grams of saturated fat and less than 95 mg of cholesterol. Fat in meat also has substantial portions of both mono- and polyunsaturated fat — so-called “good fats” — as well, a fact that many people do not realize.

**DIG DEEPER...** The Protein Foods Group of the Dietary Guidelines is the only category consumed in the proper quantity. [3] Fruits, vegetables and whole grains are under-consumed while discretionary sugars and fats are over-consumed.

In terms of saturated fat concerns, a very large 2010 study from the Harvard School of Public Health found “there is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of Coronary Heart Disease or Cardiovascular Disease”. [4]

In addition, important new research shows that meals that include meat are associated with a sense of satisfaction and lasting hunger control, which can help prevent the weight gain that can cause weight-related health issues. [5]

What many studies have shown, and what common sense suggests, is that moderation in the diet is likely the most prudent approach for a healthy lifestyle.

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MYTH: Americans Get The Most Nitrite From Cured Meats

FACT: When added to cured meats, nitrite plays a very important role in preventing the growth of *Clostridium botulinum*, which can cause the deadly disease botulism. Still, less than five percent of sodium nitrite intake comes from cured meats like ham, bacon and hot dogs. Ninety-three percent comes from vegetables like lettuce, spinach, celery, cabbage, beets and from human saliva.

DIG DEEPER... In fact, research conducted during the last 20 years has uncovered the fact that the body makes nitrite as part of its healthy, normal nitrogen cycle. As a reference, consider that a spinach salad and a ham sandwich contribute the same amount of nitrite to the diet.

Some of the nitrate found in leafy green and root vegetables like spinach, beets, celery and lettuce is converted to nitrite when it comes into contact with human saliva. When it is swallowed, the nitrite becomes nitric oxide — an essential and critical compound used by the body to maintain normal blood pressure levels, fight infection and support the nervous system. Even naturally cured meat products contain nitrite because they use ingredients like celery juice/powder as a natural curing ingredient that are rich in naturally occurring nitrate and nitrite.

While some people question whether nitrite from vegetable or saliva sources is different from the nitrite that is added to cured meats, experts like Jeff Sindelar, Ph.D., University of Wisconsin, say emphatically: "Where you receive it (nitrite) actually makes no difference because nitrite is nitrite. In other words, the nitrite derived from celery or other vegetables is exactly same as the nitrite found in cured meats."
NUTRITION AND HEALTH MYTHS

MYTH: Nitrite In Cured Meat Is Linked To Diseases Like Cancer

FACT: The U.S. National Toxicology Program (NTP), which is considered the "gold standard" in determining whether substances cause cancer, completed a multi-year study in which rats and mice were fed high levels of sodium nitrite. The study found that nitrite was not associated with cancer. NTP maintains a list of chemicals found to be carcinogenic. Sodium nitrite is not on that list. [1]

DIG DEEPER... Not only does nitrite NOT cause cancer, scientists at the National Institutes of Health [2] and the University of Texas Health Science Center at Houston have discovered that nitrite actually has health benefits. When nitrite's safety was questioned in the 1970s, scientists had not yet discovered that the human body makes nitrite as part of its normal, healthy nitrogen cycle. While this is surprising to many people who for years have thought they should avoid dietary nitrite, study after study has shown that nitrite can:

- Regulate blood pressure [3]
- Prevent injury from heart attack [4]
- Prevent brain damage following a stroke [5]
- Prevent preeclampsia in pregnant women [6]
- Promote wound healing [7]
- Promote successful organ transplantation [8]
- Treat sickle cell anemia [9]
- Prevent gastric ulcer [10]

While conducting research for the National Institutes of Health Heart, Lung and Blood Institute, Marc Gladwin, M.D., said "The idea it's bad for you has not played out." [11] Indeed, Gladwin's group found that infusing nitrite into patients with a variety of health conditions was an inexpensive and extremely effective treatment.

MYTH: Grass-Fed Beef Is More Nutritious Than Beef From Cattle Finished On Corn And Grains

**FACT:** Grass-fed beef has slightly lower levels of saturated fat than corn fed beef. While grass-fed beef does have slightly higher levels of omega-3 fatty acids than cattle finished on corn and grain, neither type of beef is a rich source of omega-3s compared to fish. Salmon, for example, contains 35 times more omega-3s than beef. Whether these differences translate to a truly meaningful health benefit in the context of a varied diet has not been established.

**DIG DEEPER...** Interestingly, new research from Texas A&M University [1] found that men who consumed corn-fed beef improved their cholesterol levels while men who consumed grass-fed beef experienced no change.

"There really were no negative effects of feeding ground beef from the pasture-fed cattle," said the study’s director Dr. Stephen Smith. "We did see many positive effects in men that consumed ground beef from corn-fed cattle. The ground beef from the USDA Prime cattle increased HDL cholesterol and LDL particle diameter. Both effects are protective against cardiovascular disease. The Prime ground beef also decreased insulin, so it may have some protective effect against type II diabetes."

Both grass-fed and corn-finished beef are among the most nutrient-dense foods available and both are good choices. Consumers should choose the one that they prefer. "And if you are looking for omega-3s, you need to go to the fish products," says Benjy Mikel, Ph.D., professor of animal science at Mississippi State University.

MYTH: Processed Meat Is Unhealthy And Should Be Avoided

FACT: Processed meats come in many different formulations to meet a variety of nutrition needs — whether it’s low fat, fat-free, lower sodium or even gluten-free products — and play a meaningful role in a moderate, balanced diet.

Processed meat certainly has been stigmatized in recent years, but it’s important to remember that all meat must be processed before it is consumed. It can be processed in a plant, where it is cut, seasoned and cooked. Or consumers can buy meat fresh and take it home and process it in the kitchen. They may add salt, seasonings and spices. They may cut it, trim it and cook it. Meat processors do the same thing, except they do it under the watchful eye of federal inspectors, according to strict regulations and on a larger scale.

Sometimes the ingredients a processor might use — all of which must be included on the label — may have different names, but often they serve the same purpose. For example, a processed meat product like a meatball may have oat protein added to it, while at home, a consumer may add bread crumbs or oatmeal to hold the meatball together. But these ingredients are essentially the same.

DIG DEEPER... While some studies have been widely reported alleging a link between processed meats and cancer, many others have found quite the opposite, yet they have received much less publicity. One of the largest studies ever done [1] in which data from 14 major studies was pooled found that there was no association between red and processed meat and cancer. Furthermore, a comprehensive, 2010 review of the evidence [2] on processed meat and colon cancer concluded that there was insufficient evidence to support a link between the two.

The best advice is to enjoy processed meats as part of a balanced diet.

FACT: Meat is not an essential part of the diet, but it does offer a number of nutrition benefits that cannot be replaced without other dietary changes. Protein is a necessary part of the diet and meat and poultry are considered complete proteins meaning they provide all the essential amino acids needed for health. You’d have to eat a wide variety of plant protein sources over the course of a day or several days to get all the amino acids you can get from meat in one meal. Meat is also rich in absorbable essential vitamins and minerals. Meat and poultry products are uniquely rich sources of iron, zinc, and vitamin B12 as well as selenium, choline, vitamin B6, thiamine, niacin, and riboflavin. Vitamins like iron and zinc are more easily absorbed from meat than they are from vegetable sources.

DIG DEEPER... Some people claim that we are eating far too much meat in our diet, but Federal data shows that we’re currently eating the correct amount of protein based on the Dietary Guidelines for Americans. On average, we eat 6.08 oz of protein a day. The Dietary Guidelines recommend 5-7oz. It’s the only category that’s being eaten in the correct amounts.

Research also shows that protein offers weight loss benefits through a higher degree of satiety or "satisfaction" from hunger, which means people are less inclined to snack between meals, compared to carbohydrate or fat.

NUTRITION AND HEALTH MYTHS

MYTH: Sodium Reduction In Processed Meat Products Is As Simple As Removing Salt From The Recipe

**FACT:** Sodium serves several roles in processed meats, most importantly food safety. Sodium helps inhibit growth of dangerous bacteria like *Listeria* in particular. Sodium reduction must be done carefully to ensure no undue food safety risks are created. Sodium also improves the tenderness of some cuts and helps bind together products like sausage or bologna, giving them the texture that consumers have come to expect.

Meat scientists have been working on ways to reduce sodium in meat products without impacting the safety of the product by using other ingredients, but they have to make sure those ingredients don’t also significantly change the taste or texture of the meat.

**DIG DEEPER...** Many companies are reducing sodium in their products either with low sodium offerings highlighted on the package or by gradually reducing sodium in the products over time. In fact, half of processed meat and poultry products have had their sodium reduced in recent years. The amount of sodium in any product can be found on the nutrition facts panel, so consumers can use this as a guide when purchasing meat products.
LIVESTOCK PRODUCTION MYTHS

MYTH: BSE is a Common Threat to Animal and Human Health

**FACT:** The incidence of Bovine spongiform encephalopathy (BSE) worldwide has decreased significantly to a fraction of their peak levels in the early 1990s. Back then, there were tens of thousands of animal cases in the UK alone.\(^1\) In 2013, worldwide there were seven reported cases, none in the U.S. and none in Canada.\(^2\) In fact, the World Organization for Animal Health designated U.S. BSE status as negligible risk, the lowest risk classification.\(^3\)

The U.S. has a multiple firewalls strategy to prevent BSE.\(^4\) The Food and Drug Administration (FDA) has banned feeding cattle protein derived from ruminant animals because this was identified as a risk factor for BSE. When cattle arrive at a processing facility, they are inspected by veterinarians looking for signs of the disease. If an animal shows any potential sign of the infection, it is not processed for meat. And when cattle are slaughtered, tissues or organs that could carry disease are removed by trained personnel. These include skull, brain, trigeminal ganglia, eyes, spinal cord and the dorsal root ganglia from cattle 30 months of age and older as well as small intestine and tonsils from cattle of all ages.

The most recent U.S. BSE cases were considered to be the atypical variety. Typical is used to describe a case of BSE when an animal has contracted the disease through one of the common risk factors such as transmission through feed. Atypical cases may be a distinct strain of prion disease. Unlike typical BSE, cases of atypical BSE may occur spontaneously and they are very sporadic, similarly to how dementia occurs in humans.

There have been only 60 cases of atypical BSE worldwide and only among older cattle. A World Organization for Animal Health review panel studied atypical BSE and concluded that the risk was no different than for BSE and no changes were needed in the measures that protect animal and human health from this disease.\(^5\)

**DIG DEEPER...** If beef from an infected animal did get through the multiple firewalls designed to prevent BSE, people would not be at risk from eating it. The BSE agent accumulates primarily in brain and spinal cord tissue in infected cattle. Evidence suggests that the same agent causes BSE and variant Creutzfeldt-Jakob Disease, the neurological disorder that affects humans. However, vCJD is not the same as so-called “sporadic” CJD, which strikes older people worldwide at a rate of about one in every million people for unknown reasons. About 200 cases of variant CJD have been identified worldwide since BSE was first recognized in 1986. Most have occurred within the United Kingdom. It is widely believed consumption of BSE infected tissue is the cause of BSE. This underscores how rare the disease is and lends support to the theory that development of variant CJD may require a combination of exposure to the BSE agent and a certain genetic predisposition. In the United States, brain, spinal cord and other specified risk materials are banned for human consumption.

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LIVESTOCK PRODUCTION MYTHS

MYTH: The Use Of Modern Technologies To Raise Animals Has Done More Harm Than Good

FACT: Just as technology has enhanced the way we live our everyday lives whether it’s through improved connectivity or making things like cars safer, technology has done the same for us on the farm with a variety of methods to sustainably and humanely produce more high quality meat from fewer animals. This allows us to feed our growing population while utilizing fewer natural resources and having a smaller environmental impact. And of course the use of technology helps keep products affordable for the 95 percent of Americans who consume meat and poultry. Today’s farmers produce 262 percent more food with two percent fewer inputs (labor, seeds, feed, fertilizer, etc.), compared to farmers in 1950. [1]

While individual farmers may choose to return to a time without modern farming technologies, if everyone were to do so, we could not produce the amount of food we need today. It would take more land, more natural resources and more people to maintain our current level of production without technology. Over the past 30–40 years we’ve seen the population grow, but overall there’s fewer farmers to do the work to feed that population. Farm and ranch families make up just two percent of the U.S. population today and one American farmer feeds about 155 people worldwide. In 1960, one farmer fed 25.8 people. So, if you consider the economics of it, forgoing modern technologies would mean the availability of food would significantly decrease and food prices would increase.

Today’s food supply is the safest, most affordable it has ever been with significant improvements in animal welfare and worker safety. Much of this is being achieved through improvements in technology that have allowed us to build very efficient animal production and meat processing systems benefiting animals and consumers in the US and across the world.

DIG DEEPER... Whether or not farmers and ranchers use technology, they all take pride and responsibility for how they treat their animals; after all, those animals are their livelihood. No matter what system you use to raise animals, there are tradeoffs, but systems are always developed with animal welfare and food safety in mind. Take indoor facilities for example. When you move an animal indoors, you provide them shelter from storms, sun, heat and cold, as well as protection from predators, and also remove some of the environmental concerns that could impact food safety. We’ve practically eliminated trichinae from pork by moving animals indoors and improving feeding and production technology in the way they’re raised.

There is also significant oversight of the technologies we use on farms today. Any medicines administered to animals must be approved by the Food and Drug Administration. Farmers also work with veterinarians to determine the best way to care for animals whether broadly with nutrition or more specifically when animals need vet-medical consideration and care.

LIVESTOCK PRODUCTION MYTHS

MYTH: Hormone Use In Poultry Production Poses A Health Risk To Consumers

FACT: Federal law prohibits the use of hormones in poultry production.

Polling data showed that many consumers were confused about when hormones were used in livestock and poultry production and about their safety. This is clearly stated on package labels when a "no added hormone" claim is made. It is important to understand that all multi-cellular organisms contain hormones, whether they are beef, broccoli, eggs, soybeans — or people. No food or living thing can be "hormone-free," despite marketing claims that may suggest this to be so. Livestock and poultry can be grown without added hormones, but they cannot be hormone-free.

DIG DEEPER... In the case of poultry, bird size has increased significantly over the last several decades. This is due to advances in breeding, animal nutrition and animal care that ensure that only the heartiest birds with the greatest potential to yield the most food are produced.

Just as a citrus farmer strives to plant trees that will yield the most fruit, poultry producers also breed the birds that yield the most meat. This environmentally beneficial practice requires fewer birds, less animal feed and, in turn, less waste to produce the same amount of meat and poultry. It is also more economically sustainable for the farmer, which translates to affordable food for consumers.
LIVESTOCK PRODUCTION MYTHS

MYTH: Hormone Use In Pig Production Poses A Health Risk To Consumers

**FACT:** Federal law prohibits the use of hormones in pig production.

Between 1980 and 2005, changes in genetics and feeding programs have reduced "days to harvest" — or the time required to grow a pig to full weight — by 15 percent and increased lean muscle by 45 percent. This growth has nothing to do with hormones like estrogens because they are simply not used.

**DIG DEEPER...** As in poultry production, producing pigs with more muscle (and in turn more meat) reduces environmental impact and enhances the economic sustainability of farms for future generations.

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Livestock Production | Meat MythCrushers

LIVESTOCK PRODUCTION MYTHS

MYTH: Hormone Use In Beef Production Is A Health Concern

**FACT:** Hormones like estrogen are used in modern beef production to increase the amount of beef that can be harvested from cattle. However, these hormones are the same as, or synthetic versions of those naturally produced by cattle. The estrogen that is used in beef production, for example, is used at levels that are a fraction of what is found in soybean oil, soybeans, eggs and what is produced by the human body.

**DIG DEEPER...** Consider that a pound of soybean oil contains 900,000 nanograms of estrogen. Compare that to 1.9 nanograms per pound found in beef produced using hormone implants and 1.7 nanograms per pound in non-implanted beef. [1]

While some people cite Europe's ban on hormone-treated beef from the U.S. as evidence that hormones are a concern, Europe's own scientists have affirmed that hormone use in cattle production is safe. Unfortunately, European political bodies have rejected the science and refused to lift the ban. Because high quality U.S. beef is produced more efficiently and economically, it is a prime competitor to European-produced beef.

MYTH: Feeding Cattle Corn Is Unnatural

FACT: Feeding corn to cattle is natural. Some people mistakenly believe that corn or grain-fed cattle never eat grass. That's just not true. Nearly all cattle eat grass for most of their lives. Some cattle have their diets enhanced with corn and grain for the last few months of their lives. This is typically done in feedlots, but may happen on ranches, too.

DIG DEEPER... Cattle enjoy corn and benefit from its nutrition. While some proponents of grass feeding only claim that cattle should not eat corn, they neglect to mention that corn is the seed of a grass. When placed in a pen with a choice of consuming grass or a corn or grain based feed, cattle will always choose to consume corn.

Remember, also, that when cattle are "finished" in feedlots, their diets are carefully supervised and monitored by expert bovine nutritionists to ensure that they are completely balanced, which maximizes health and growth. Cattle raised on pasture alone consume what they choose and these diets are more difficult to control and can be nutritionally less complete for the animal.