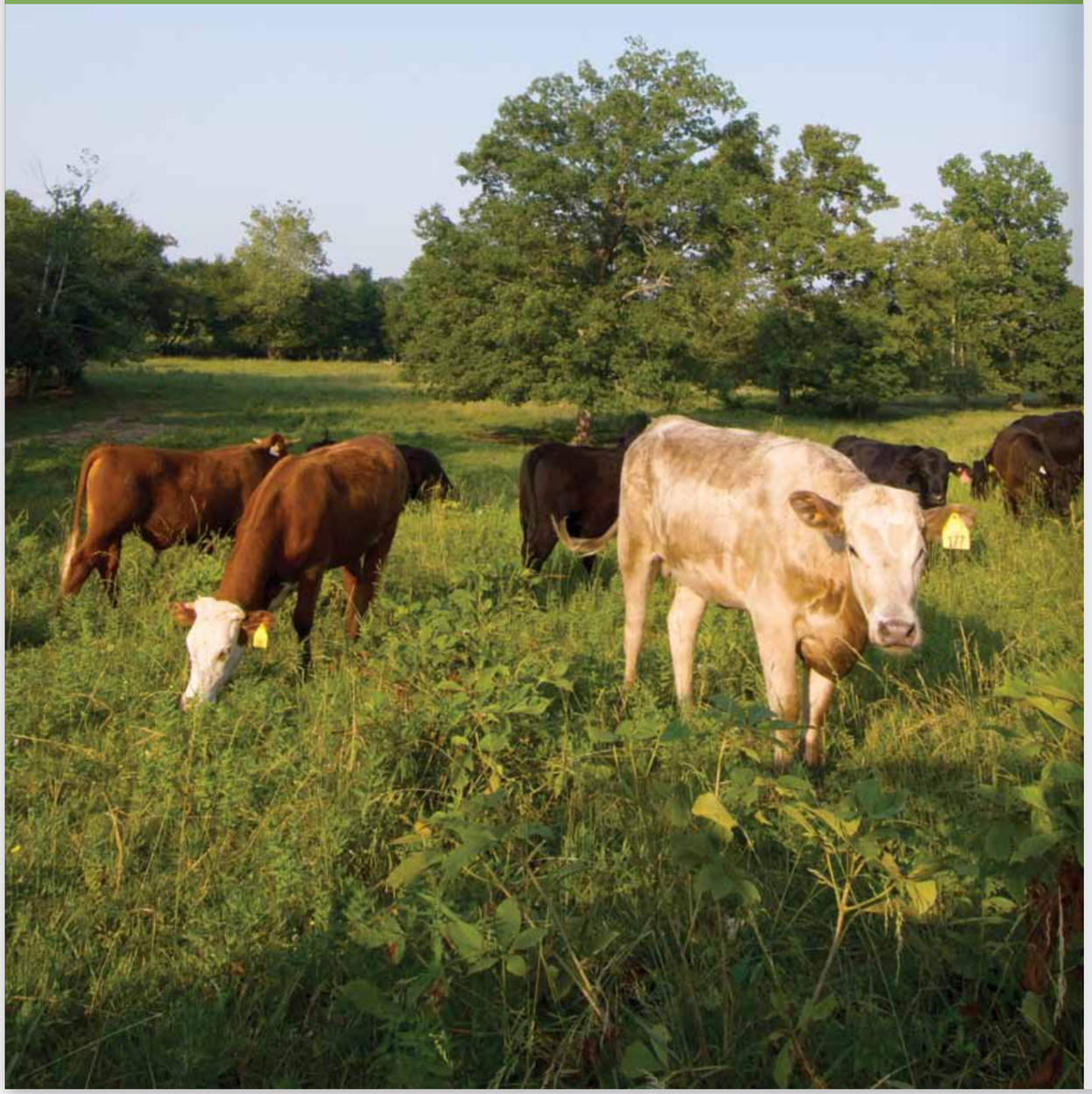
The Grassfed Primer

Your guide to the benefits of grassfed beef



The fact that you are reading this booklet means that you care about where your food comes from

Introduction

If there's a buzzword in meat and dairy these days, it's "grassfed". And once a buzz starts, confusion soon follows as anxious marketers and producers do their best to capitalize on demand by providing consumers with what they want — or at the very least making it appear that way.

The range of products, labels and brands that make grassfed claims is increasing all the time. But what exactly does the term "grassfed" mean? And how can you be sure that the meat, milk or cheese you buy really comes from animals that are raised in the way that you would expect? Because the sad reality is that some of the meat you can buy probably shouldn't be labeled grassfed at all.

Animal Welfare Approved has written *The Grassfed Primer* to cut through the confusion surrounding the term grassfed and to help you understand the wide benefits that *real* grassfed farming systems can have for the environment, for farm animal welfare, and for the health of you and your family. The fact that you are reading this booklet means that you care about where your food comes from and the farming systems used to produce it. So we also want to highlight the hidden costs of "cheap meat" and damaging impact that intensive farming has on the environment, on animal welfare, and on human health.

Animal Welfare Approved standards require that all animals are raised on pasture or range, so we will always support grassfed products over industrial or intensively grainfed meat and dairy products. Why? Because we know that grassfed products are better for you, better for farm animals, and better for the environment. We always ensure that our standards — and any claims that we make — are backed up by objective science. This report is part of our drive to make balanced and honest information easily available to all.

What do we mean by grassfed?

In food production, the term "grassfed" almost always relates to domesticated ruminant animals — such as cattle, sheep and goats — that produce most of the meat and milk we consume today.

Ruminants are a group of plant eating mammals that have evolved a highly complex three or four chambered stomach, enabling them to efficiently digest large amounts of grass, forage or other cellulose-rich plant materials that we, as humans, cannot digest. Ruminants can thrive on not only the grass you see growing in fields and hillsides, but also on preserved forages such as hay, baleage and straw. Although pigs and chickens can be pasture-raised — and will often eat some grass or forage — they are actually omnivores (meaning they eat both plants and animals) and will eat plant material, insects, grubs and even carrion. In fact, they could not survive for very long on a grass-only diet. So when you see the term grassfed it should always refer to cattle, sheep, goats and bison.

Traditionally, all farm animals were pasture-raised, but since the 1950s the way we farm has changed dramatically — particularly the way we farm livestock. Today, intensive "factory farming" systems dominate domestic U.S. beef production and most of the beef consumed in the U.S. will have come from intensive farming systems called Concentrated Animal Feeding Operations (also known as CAFOs). Here, literally thousands of cattle are brought together and reared to slaughter weight in large-scale, closely confined farming systems where the cattle have no grazing access to pasture or growing green vegetation. Instead, they are fed an intensive grain-based diet which is designed to maximize their weight gain in as short a time as possible.

Although it is less common to keep sheep and goats in feedlots, most intensively reared sheep and goats are routinely fed grain as part of their diet in order to maximize growth and productivity. Grain is also a key component in the diet of the modern dairy cow, the majority of which are also managed in similar intensive "zero grazing" farming systems where the cows have no routine grazing access to pasture or growing green vegetation.

For clarity, *The Grassfed Primer* defines grassfed animals as animals that are fed 100 percent grass and forage from weaning to slaughter, and that are raised outside on pasture or range for the whole of their lives, except in cases of emergency or extreme weather.

How do I know it's grassfed?

If you ask most people to explain what they think "grassfed farming" means, they will almost always describe a pastoral farming scene where animals are raised outdoors on pasture, rather than in intensive feedlots. Yet despite the apparent assurances that a grassfed label might offer, the reality is that many of the so-called grassfed systems in existence today actually fall well short of public expectations. This is because the requirements for keeping animals on pasture can vary significantly between the different grassfed labels.

The problem is that a number of the so-called grassfed labels which have recently sprung up may actually hide farming systems that *allow* feedlots for at least part of the animal's life. For example, some well-known retailers have set up their own grass-based beef standards which require participating farmers to ensure their animals spend at least two thirds of their lives on pasture. At first glance this may seem reasonable. But when you realize that this could mean that the animals may spend a third of their lives in barren confinement on a feedlot system, you'd be right to question whether this beef should be labeled grassfed at all.

Similarly, the United States Department of Agriculture (USDA) definition of grassfed — which was introduced in 2007 — only requires farmers to ensure their animals have access to the outdoors during the grass growing season. This means that farmers in some states could confine their animals for as much as six months of the year in what is essentially a feedlot — yet still label their products as grassfed — just as long as they feed their animals grass and forage.

The USDA also allows these so called grassfed farmers to feed a grain supplement to their cattle. While we know that feeding cattle small quantities of grain is not usually a problem, we also know feeding cattle an intensive grain-based diet can cause serious health and welfare problems (see part III). Yet the USDA sets no limit whatsoever on the amount of grain supplementation that is allowed, just as long as the percentage of grain fed is stated somewhere on the grassfed label. Of course, there is nothing to stop the farmer or processor making sure that the total percentage of grain fed appears in much smaller size letters than the headline grassfed on the packaging.

It might also surprise you to know that some of these so-called grassfed labeling programs permit questionable farming practices — such as the routine use of antibiotics — and do little to address other unsustainable farming systems such as inadequate manure management systems that can cause environmental pollution. These practices are prohibited under the Animal Welfare Approved standards.

When you see the Animal Welfare Approved and the American Grassfed Association (AGA) logos together on a food product, you can be absolutely confident that the farmers have followed strict rules which mean they must ensure their animals have *continuous* access to outdoor pasture. In other words, Animal Welfare Approved farmers can only bring their animals indoors in the event of an emergency or in extreme weather conditions, when there is a clear welfare benefit to the animal being indoors. And you can rest assured that no feedlot or farm confinement feeding systems can ever use the Animal Welfare Approved logo to sell their products — that's a guarantee.

It's important for consumers to understand why grassfed is a claim that really should meet the highest standards. Animal Welfare Approved standards require a predominately grass and forage diet and pasture-based management system because we know that it is in the best interests of the animals. And it probably won't surprise you to find out that what is best for the animals is also best for our health — and for the health of our planet.

A single modern feedlot can hold tens of thousands of cattle

The history of meat

U.S. feedlot systems are the largest and most concentrated in the world. Less than 5 percent of the nation's feedlots produce 80–90 percent of all U.S. beef consumed. But while feedlots have provided us with ever-cheaper meat, we now know that these unsustainable farming systems have resulted in very real animal welfare, environmental, and human health problems. So how did these intensive livestock systems gain such dominance?

Humans first started to domesticate animals about 11,000 years ago to ensure a steady supply of meat and dairy in their diet. Sheep and goats were the first animals to be domesticated, followed by cattle and pigs as humans became more settled. These four species provided a large portion of what Neolithic man needed to survive and thrive — manure to fertilize fields and crops, as well as milk, wool, meat, leather, and fats.

Cattle were first introduced to the Americas by Europeans, primarily as draft animals and for their skins and tallow. In 1620, there were an estimated 500 head of cattle in Virginia, rising to 30,000 by 1639. During the 1800s, however, the popularity of beef began to rise significantly and, by 1865, there were approximately five million longhorn cattle in Texas alone, although the main market for beef remained in the north and east of the country — far away from the ranches. Some cattle were driven east but there was often fierce opposition from those whose land had to be crossed.

The real McCoy

Joseph McCoy was a livestock trader in Chicago at this time. He wanted to bring the longhorn cattle from Texas to Chicago in order to distribute them to the east. McCoy knew that the railroad companies were eager to carry more freight. As the Kansas/Pacific railway ran past a frontier village, McCoy built a hotel, stockyard, office and bank in the village, which became known as Abilene — one of the first cow towns. Cattle were driven from Texas to Abilene where they were then taken east by train. Between 1867 and 1881, McCoy sent more than two million cattle from Abilene to Chicago. (His reputation for reliability is one explanation offered as the origin of the expression "the real McCoy.")

The early 20th century

As the 20th century dawned, the cattle industry was still heavily reliant on the railroads, the stockyards and the packers. Even at this early stage, the export market was important to the U.S. beef industry. The First World War prompted an increase in European demand for beef — a call to which the cattlemen duly responded.

Shortly after the War, however, came the stock market crash and the Great Depression. Following the devastating impact of the Great Depression on U.S. farming, in 1934, the government attempted to manage the supply of basic commodities through the Agricultural Adjustment Act. Through this Act, farmers were paid to reduce acreage or supplies of basic commodities, and price supports were established based on 1910–1914 prices. Congress approved cattle as a basic commodity and appropriated $63 million for a purchase-and-slaughter program. Within eight months the government purchased 8.3 million cattle, reducing the national herd by 11 percent, marking the beginning of government involvement in U.S. agricultural markets.

World War II — and beyond

After World War II, a massive road building project — and the subsequent surge in car use — encouraged the growth of the suburbs, as well as the rapid expansion in the number of new "fast food" restaurants that were making beef, and particularly burgers, the number one food choice. After the end of rationing, the consumption of beef in the U.S. nearly doubled.

Up until the 1940s, most U.S. beef farmers would have raised cattle on a basic grass or forage diet, as countless generations of farmers had done before them. But by the late 1940s, a small number of farmers and agricultural companies were beginning to exploit the fact that they could fatten cattle far more quickly on a grain-based diet than on grass. This practice was still largely limited at this time as feed grain was in short supply and therefore expensive for most farmers. In addition, the feeding of grain to cattle was problematic because it was known to cause a range of health and welfare problems.

However, the introduction of penicillin and other antibiotics to livestock farming systems during the 1950s made it increasingly possible for farmers to manage cattle in far greater numbers and at much higher stocking densities than ever before, and to feed them a more intensive grain-based diet to fatten them more quickly. Antibiotics allowed farmers to control some of the health and welfare problems which would otherwise have occurred as a result of the high density of cattle and the unnatural grain diets they were being fed.

In the mid 1950s, a Texas scientist created a hybrid of sorghum (a grain mainly used in the U.S. as cattle feed) that effectively doubled the potential yields of the grain almost overnight, giving the emerging feedlot systems an important boost in U.S. agriculture. Over the next few years, the heartland went from a feed grain deficit to a feed grain surplus, and the shift from grassfed to feedlot beef production began in earnest. In 1935, the USDA reported that only 5.1 percent of cattle in the U.S. were fattened in feedlots; by 1963, this number had risen to more than 65 percent.

The "Great Grain Robbery"

In 1972, the future of U.S. cattle was inadvertently thrust into the hands of the Soviet Union, cementing

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the future of intensive beef production in the U.S.A. Later dubbed the "Great Grain Robbery", Secretary of Agriculture, Earl Butz, engineered the sale of 25 percent of the nation's grain harvest to the Soviet Union in order to drive up domestic grain prices. It worked, and prices surged as farmers raced to plant more. The purchase of the U.S. grain harvest by the Soviets was all part of Butz's master plan — he was championing a new food production system that promoted overproduction, with the sale of any excess overseas. His message to farmers was "get big — or get out." Before Butz's tenure, over-production had prompted the government to pay farmers to take land *out* of production until prices rose once again. However, Butz saw this as a restriction on the free market. Instead, he exhorted farmers to plant "from fence row to fence row," no matter what the need. In response, farmers continued to plant and to flood the market with corn, soy and grain, even as overabundance was driving prices ever lower — for Butz had a plan for that, too.

To guarantee income to farmers when prices dropped below production costs, Butz engineered direct payments — also known as subsidies — to the farmers to make up the difference. These direct payments were only intended as a temporary measure until the overseas markets, exemplified by the Soviet Union sale, opened up and took any excess production at supposedly premium prices. But these overseas markets never fully developed to the point where they were able to offset the overproduction of crops in the U.S. Despite being originally introduced to encourage the free market, the irony is that Butz's "temporary" subsidies subsequently became entrenched in the Farm Bill.

Between 1995 and 2009, U.S. taxpayers paid out over a quarter of a trillion dollars in subsidies to its farmers — hardly the actions of a government that supposedly supports the free market. Of course, the excess grain produced by farmers as a result of the subsidies had to go somewhere and much of it was sold as cheap feed grain, further fueling the expansion of the specialized beef feedlots and the supply of ever-cheaper meat.

Beef grading

Corn is very high in carbohydrates. Feeding cattle a diet of excess corn that is very high in carbohydrates leads to a high level of fat in the meat. This fat is not the "good" omega-3 fat but rather the "bad" omega 6 fat. However, feedlot beef producers are actually rewarded for this high fat meat through the USDA grading system.

Today, most U.S. beef is sold with a USDA Quality Grade. While this grading system ensures a uniform supply of beef of a certain quality, and that farmers receive a price commensurate with the perceived quality of the livestock they produce, the USDA grading system clearly favors beef from intensive grainfed livestock systems over grassfed.

The organized grading of beef by the Federal Government dates back to 1923 when the USDA began to grade beef carcasses to ensure a uniform quality in contract beef purchases for railroad companies, large hotels, hospitals, and ultimately chain stores and retail meat dealers. By 1925, an organized effort was under way within the livestock and retail meat industry to establish a beef grading and stamping service for all federally inspected slaughter plants to make the benefits of a grading service available to all consumers. As a result, in 1926, the Secretary of Agriculture introduced the beef grade standards as the Official United States Standards for Grades of Carcass Beef. In the 1950s, the standards for "Prime" and "Choice" grades were adjusted. In 1955, USDA graders stamped 50 percent of interstate beef, 40 percent of lamb, and 20 percent of veal. By 1960, 78 percent of all red meat was graded. In 1970, the percentage of USDA graded beef rose to 89 percent, and by 1983 reached 96 percent.

The USDA primarily grades meat by the amount of marbling — or intramuscular fat — that is present. Cuts of meat with the greatest amount of fat within the grain of the meat are awarded the highest grades. Graders evaluate the amount and distribution of marbling in the rib eye muscle at the cut surface after the carcass has been ribbed between the 12th and 13th ribs. The top three grades are defined as "Prime," "Select," and "Choice."

Meat advertising has almost always focused on the grade of the beef — particularly "Prime" and "Choice" — with the implication that the "best" beef is the beef with the best grading. The problem is that grassfed beef doesn't tend to meet the marbling standards of these higher grades. This is because feeding grain to cattle increases the amount of marbling in the beef, meaning that the grading system automatically favors beef animals that are fed high levels of grain or corn — and not the leaner grassfed beef.

This doesn't mean that grassfed beef isn't high quality, flavorful or nutritious; it simply means that it doesn't have the same level of fat or marbling found in grainfed beef. We now know that the fats from grainfed cattle are much higher in omega-6 fatty acids — a type of fatty acid that has been shown to promote obesity and heart disease when eaten in excess.

The concentration of the livestock industry

Over the last 50 years, we have seen a gradual reduction in the importance of livestock on the farm. In the 1920s and 1930s, there were 6.5–6.8 million farms in the U.S.; of those farms, 83 percent had cattle, 75 percent had hogs, and 8 percent raised sheep. In 1959, the number of farms had decreased to 3.7 million, and of those, 72 percent were stocked with cattle and calves, 50 percent had hogs, and a little less than 10 percent had sheep. By 1997, the number of farms in the U.S. had fallen to 1.9 million, and only 69 percent kept some livestock. But while we have seen a decline in the number of farms raising livestock, we have seen a massive concentration of livestock production into the hands of fewer, larger, and highly specialized units.

From its rather modest beginnings in the 1920s, today's U.S. feedlot system is the largest and most concentrated in the world, with less than 5 percent of the nation's feedlots marketing 80–90 percent of all U.S. beef. A single modern feedlot can hold literally thousands of cattle. The Adams Land and Cattle Company in Broken Bow, Nebraska is reportedly the nation's largest feedlot, with a capacity of 85,000 cattle on 600 acres. Between 1995 and 2010, the company received over $1,110,000 in farm subsidy payments.

Over the last 60 years, technological advances, new hybrid crop strains, and (with hindsight) shortsighted U.S. agricultural policy decisions have resulted in a fundamental change to the way that U.S. farmers have raised domesticated ruminants. These developments have combined to fuel the rapid expansion of the industrialized feedlot systems that supply almost all of the beef eaten in America today. But this has not come without its costs.

Antibiotic-resistant bacteria now kill thousands of people in the U.S. each year — and the situation is getting worse

The problem with feedlots

A growing body of scientific research shows that CAFO's or feedlot systems are responsible for a wide range of animal welfare, human health, and environmental concerns. Indeed, the entire intensive livestock system spells disaster on all fronts.

Animal health and welfare

Ruminants are truly remarkable creatures, having evolved the ability to thrive on nutritionally poor grasses and other marginal plant materials that other animals — including humans — cannot readily digest. But while it's not necessarily harmful to occasionally feed ruminants small quantities of grain, when they are fed large quantities of grain they can suffer from serious diet and digestion-related problems such as acidosis (a serious form of bovine heart burn which can lead to diarrhea, ulcers, liver disease, and general ill health) and "feedlot bloat".

Feedlot bloat is a major cause of sudden death among cattle in feedlots today and is responsible for the unnecessary death of thousands of cattle each year. It occurs when the diet contains too much starch and too little roughage. This affects the cattle's normal digestive system, preventing the natural expulsion of gas (burping). As a result, the stomach inflates like a balloon — often very quickly — compressing the animal's lungs and other internal organs. If the animal is not treated swiftly it can suffocate to death. Mortality from bloat on feedlots can be up to 3 percent. This might not sound like much, but when you look at the number of animals raised on feedlots across the U.S. it amounts to the death of thousands and thousands of animals each year.

Studies suggest that at least 30 percent of all cattle raised on feedlots also suffer from liver abscesses. But rather than change diets to prevent cattle from being affected in the first place, feedlot managers choose to add antibiotics to diets to keep the cattle alive growing despite the fact that they are suffering. Respiratory diseases are another common problem among cattle on feedlots. As feedlots are barren environments, the cattle often stand in dirt lots. This creates a lot of dust — both from the soil itself and from dried manure on the surface. Studies have shown that dust particles in feedlots are associated with an increased incidence of cattle pneumonia because the dust load stresses the respiratory system, making the cattle more susceptible to bacterial and viral pathogens. Some feedlots use water sprays to try and dampen the dust but there is no getting away from the fact that respiratory problems will always be an issue when animals are kept in dusty, barren conditions. Again, the response to this problem is to give the animals more medication, rather than changing the production system that is making them sick.

Antibiotic resistance and the rise of *E. coli*

So we've established that a grain-based diet can cause severe health problems in cattle. But scientists are increasingly concerned that grain-based beef production is also putting human health at direct risk.

To stop the inevitable spread of disease among the closely confined cattle, and to ensure animals achieve slaughter weight in twice the normal amount of time, the routine use of antibiotics has been commonplace on feedlots for decades. According to the 1999 National Animal Health Monitoring System (NAHMS) Feedlot Report, 83 percent of feedlots used some form of antimicrobial treatment in feed or water. Almost 100 percent of feedlots surveyed in the study used injectable antibiotics to treat respiratory problems, while over 12 percent of cattle were treated simply to prevent — and not treat — respiratory disorders. But while the use of antibiotics in farming has helped to significantly increase the availability of cheap beef, we now know that this practice has led to the unintended development of antibiotic-resistant bacteria among farm animals. As a result, the range of effective antibiotics available today to treat key bacterial infections in humans, such as MRSA and *E. coli*, is rapidly diminishing.

Feeding excessive amounts of grain to cattle creates an unnaturally acidic environment in their digestive systems, resulting in the rapid growth of certain acid loving — and human health threatening — bacteria in the cattle's gut, such as *E. coli* 0157:H7. We know that CAFO cattle are fed low doses of antibiotics to prevent the outbreak of diseases that would inevitably spread rapidly among the thousands of confined animals. However, scientists have found that the harmful bacteria in the cattle's gut, such as *E. coli* 0157:H7, are now developing resistance to the antibiotics that were supposed to control them, and are emerging as "superbugs." If these harmful bacteria contaminate the meat during the slaughter process, and a food poisoning outbreak occurs, the drugs that we depend upon to make us better no longer work. Antibiotic-resistant bacteria now kill thousands of people in the U.S. each year — and the situation is getting worse.

You might think that the best way to prevent antibiotic resistance would be a total ban on the use of antibiotics in livestock farming, as is required under National Organic Program (NOP) and some other welfare programs' standards. But sadly, a total ban on the use of antibiotic treatments can often lead to serious welfare problems for the animals. It is also worth pointing out that the welfare programs that do ban antibiotics do not ban the use of feedlots or restrict the amount of grain that can be fed to cattle. So although these animals may not be contributing to human health problems via antibiotic resistance, they may well be suffering from the very health problems that low doses of antibiotics were designed to prevent, such as painful rumen lesions and liver abscesses. The solution to the development of antibiotic-resistant bacteria is not to stop treating

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these affected animals but to switch to sustainable farming systems that prevent these animal health and welfare problems from occurring in the first place.

Environmental concerns

Ever since the United Nations Food and Agriculture Organization released a report in 2006, which attributed 18 percent of the world's man-made greenhouse gas emissions to livestock farming, there have been calls for a reduction of the amount of meat in our diets — or even to stop meat production altogether. But is this really the only solution to this dire problem? And what is the difference between grassfed and grainfed cattle when it comes to issues like climate change?

All cattle produce methane as part of their normal digestive process. The problem is that methane is many times worse than carbon dioxide (CO_2) in terms of greenhouse gases. Despite being present in the atmosphere at far lower concentrations than CO_2, methane is responsible for an estimated 20 percent of the greenhouse effect. In response to growing criticisms about the greenhouse gas emissions associated with livestock farming, proponents of feedlots claim that intensive grainfed beef production is far more "efficient" — and therefore more "environmentally friendly" — than grassfed systems. Indeed, a number of reports suggest that feeding cattle vast amounts of grain to make them grow as fast as possible increases the efficiency of production, therefore reducing the amount of greenhouse gas emitted per pound of beef produced. Their basic calculation suggests that intensive feeding systems produce the lowest emissions.

However, when you look more closely at such reports, you find that they do not take into account the massive energy and oil costs associated with growing and transporting grain to the feedlot. Putting aside the earlier health and welfare issues, we know that growing the vast quantities of grain used to feed livestock in this country requires huge quantities of chemical fertilizer, the production of which in turn requires huge quantities energy in the form of fossil fuels. Because of this dependence on petroleum, one researcher has estimated that a typical U.S. steer will, in effect, consume 284 gallons of oil in his lifetime.

If you increase the number of cattle in feedlots, you also need to increase the production of grain required to feed them. Producing more grain will require more artificial fertilizers; more artificial fertilizers means increased oil consumption and increased greenhouse gas production. Nitrous oxide — a by-product of nitrogen fertilizer production — is nearly 300 times more potent a greenhouse gas than CO_2. Around two thirds of all nitrous oxide emissions in the world come from agriculture.

Even in the most efficient modern fertilizer factories, the combined CO_2 and nitrous oxide emissions associated with the manufacture of artificial nitrogen fertilizer is equivalent to 6.7 tons of CO_2 for every ton of nitrogen fertilizer produced.

Feedlot systems are also not immune from criticisms over methane production. In fact, the methane formation from the vast lagoons of manure produced by the cattle on each and every feedlot is a huge environmental problem. When manure is deposited naturally on a field or properly composted it produces little methane. But when millions of gallons of manure are stored in open pits or lagoons, further anaerobic fermentation takes place, producing considerable amounts of methane and nitrous oxide.

Ironically, some strategies put forward to reduce methane could actually increase the amount of nitrous oxide that is produced. As mentioned above, the feedlot industry promotes its system on the grounds that it reduces methane production. Yet feeding cattle high levels of certain grains — for example distiller's grain — can actually *increase* the amount of nitrogen in their manure by up to a third when compared with animals on low- or no-grain diets. Between manures and fertilizers, more than a quarter of feedlot greenhouse gas emissions are related to nitrous oxide. Lastly, it might also surprise you to know that scientists are now finding that grassfed farming systems can actually have a net *positive* effect on greenhouse gas emissions, as discussed below.

Diet related ill health

Proponents of feedlots argue that intensive farming systems offer the only way to produce the volume of meat that is in demand and, in particular, to meet the future food needs of the growing global population. But as well as the hidden costs to the environment, the negative effects on animal welfare, and the threat to antibiotic effectiveness outlined above, these arguments ignore the fact that our addiction to cheap meat, sugar, fats and dairy products also have long-term health implications for societies everywhere.

As our diets have changed over recent decades in response to the ever-increasing availability of cheaper meat and dairy products, devastating diet-related diseases — such as obesity, heart disease, Type 2 diabetes and diet-related cancers — have reached near epidemic levels in the U.S. and many other countries. In 2008 in the U.S., 33.8 percent of adults were diagnosed as clinically obese. Between 1980 and 2008, obesity among pre-school age children (2–5 years of age) increased from 5 percent to 10.4 percent. During the same period, obesity among 6–11 year olds increased from 6.5 percent to 19.6 percent, and among 12–19 year olds increased from 5 percent to 18.1 percent. According to a study of national costs attributed to both overweight and obesity, medical expenses associated with these conditions accounted for 9.1 percent of total U.S. medical expenditures in 1998, and may have reached as high as $78.5 billion ($92.6 billion in 2002 dollars). The same problems are now emerging as other countries adopt the Western diet; diet-related heart disease and stroke have already taken over as the two leading causes of death in low and middle income countries.

Our food and farming policies should be based on a strategy that aims to ensure no one in the world is going hungry by 2050, not a future of continuing hunger, diet-related ill-health and huge increases in greenhouse gas emissions from intensive livestock farming and increased global consumption of cheap meat. While this doesn't mean we all have to stop eating meat *per se*, the reality is that we do need to decrease the amount of low-welfare, intensively reared feedlot meat that we eat.

We also need to ensure that the meat we *do* eat is from farming systems that do not damage the earth, harm our health, and result in poor animal welfare. The solution to feeding the world is not to further intensify our livestock production systems, or to seek ways of further exploiting our livestock to feed our insatiable habit for cheap and unsustainable meat. The solution lies in changing how we farm and feed ourselves.

The search for an alternative

As people become aware of the negative impacts of intensive beef production on the environment, human health, and animal welfare, they start to question the choice of meats that are widely available in supermarkets. People are also recognizing that, given the amount of money paid to large agribusinesses in subsidy payments, this so-called cheap meat actually comes at a high premium to taxpayers. The resurgence of interest in grassfed beef and lamb is being driven by people in the U.S.who want new farming systems that respect the animals and the land, where the costs are transparent, and where their safety and that of their families is properly considered. And they are finding answers to all these concerns on the managed pastures of real grassfed farmers.

Grassfed, health, welfare and environment

Over the last 10 years the growing public awareness of the real costs of intensive livestock farming has stimulated a resurgence of interest in pasture-raised, grassfed meat. We already know that grassfed is the natural option for ruminants and that their digestive system is perfectly adapted to convert grass and other roughage into meat and dairy products. But did you know that there are significant nutritional differences between the meat of grainfed and grass-fed meat, and that grassfed farming systems have a potentially vital role to play in helping to mitigate the impact of climate change?

Better for us...

Grassfed beef is not only lower in overall fat and in saturated fat, but it has the added advantage of providing more omega-3 fats. Studies from around the world have shown that meat from grassfed animals has two to four times more omega-3 fatty acids than meat from grainfed animals. Omega-3s are often called "good fats" because they play a vital role in every cell and organ system in the human body. It might surprise you to know that, of all the fats, they are also the most heart-friendly. Indeed, people who have ample amounts of omega-3s in their diet are less likely to have high blood pressure or an irregular heartbeat. These crucial healthy fats are most plentiful in flaxseeds and fish, and are also found in walnuts, soybeans and in meat from animals that have grazed on omega-3 rich grass.

Interestingly, scientists have also found that even if cattle start their lives on grass they immediately begin losing the health benefits, such as the omega-3s stored in their tissues, when they are taken off grass and shipped to a feedlot for fattening on grain. As a consequence, the meat from feedlot animals typically contains 50–85 percent less omega-3s than meat from grassfed livestock.

Conjugated linoleic acid (CLA) is another "good" fat worth examining. When ruminants are raised on fresh pasture alone, their meat and milk contains three to five times more CLA than similar products from animals fed grain-based diets. Scientists now believe that CLA may be one of our most potent defenses against cancer. In laboratory animals, a very small percentage of CLA — a mere 0.1 percent of total calories — greatly reduced tumor growth. Other studies have shown that a study group of hamsters fed a diet of CLA had lower amounts of LDL (low density lipoprotein) in the blood, as well as a reduced risk of developing early aortic atherosclerosis. Another study from Iran found that adults with rheumatoid arthritis showed a significant decrease in blood pressure after CLA additions to their diet.

Research has also shown that grassfed meat is higher in vitamin E than meat from grainfed animals and — surprisingly — higher than that of grainfed animals that were given high doses of synthetic vitamin E supplements. In humans, we know that natural vitamin E in the diet is linked with a lower risk of heart disease and cancer.

Better for the environment...

You will often here proponents of feedlots saying that grainfed beef is more efficient than grassfed because you need less land and less time to raise each animal; or that grassfed beef is less environmentally friendly than feedlot beef because the digestion of poor quality forages in the rumen results in the production of more methane.

As discussed before, these arguments fail to take into account all the greenhouse gas emissions from growing and transporting the feedlot grain in the first place. But scientists are now recognizing that grassfed farming systems can actually have a net *positive* effect on greenhouse gas emissions. Indeed, the Institute of Environmental Research and Education states that any potentially negative consequences of methane emissions from grassfed cattle is more than offset by the fact that the grazing of the pasture itself actually reduces greenhouse gases through a process called carbon sequestration.

Grass is a perennial crop — in other words, it grows every year. As cattle and other ruminants graze pasture they stimulate the grasses to grow and produce more leaves. As the grass grows it absorbs more CO_2 from the atmosphere and creates a mass of roots under the ground, effectively storing the CO_2 it has absorbed in a much more stable form of carbon within the soil, where it can remain for centuries. This process is called carbon sequestration and scientists have now established that grasslands are more efficient than trees in sequestering carbon from the atmosphere. In fact, researchers now think that raising cattle on pastures, and restoring grasslands, could play a vital role in locking atmospheric CO_2 in the soil, slowing the global warming process.

A recent Australian study concluded that the cattle farming industry in Queensland was nearly carbon neutral because the carbon sequestration from the growth of vegetation and accumulation of soil carbon actually offset the total greenhouse gas emissions from farming operations. Similarly, French researchers have produced an estimate of the rate of soil carbon sequestration in sheep grazing pasture, which could offset emissions from the farming operation.

Animal Welfare Approved and others see grass-based farming as a vital method for sequestering more atmospheric carbon and reducing overall global emissions. Estimates suggest that, with proper management, ranchers and farmers could achieve a two percent increase in soil carbon levels on existing agricultural, grazing and desert lands over the next two decades. Some researchers hypothesize that just a one percent increase in grass-based farming could be enough to capture the total equivalent of the world's greenhouse gas emissions. That one percent increase would cover a vast area — but that shouldn't stop us making a start.

Greater efficiency by reducing "wastage"

Aside from the potential for grassfed systems to capture CO_2, a number of reports state that raising healthy, fertile animals with a longer lifespan could help to reduce greenhouse gas emissions by reducing the "wastage" of animals in modern industrialized farming. One of the major drawbacks of the feed-lot system is the fact that not only does it fail to promote good health, but it actively encourages poor health. Working to improve the general health and fertility of our livestock would reduce the need to cull animals from the herd, as well as reduce the number of replacement animals that a herd needs to carry to ensure that productivity is maintained, thereby reducing overall greenhouse gas emissions.

The life of a dairy cow is often measured by the number of lactations she gives. Roughly once a year the dairy cow will have a calf and start to produce milk. This milk production cycle — or lactation — lasts around 10 months, after which the cow has a couple of months break before she has her next calf and begins her next lactation. Most intensive dairy cows tend to have around three lactations before they are slaughtered – usually due to health problems that are affecting their ability to get in calf or to produce milk. Yet scientists have established that by increasing the lifespan of each of these dairy cows by just *half* a lactation — from an average of about three to about three and a half lactations — would reduce methane emissions from each individual cow by three percent. In Europe, the cows in grass-based organic dairy systems can often achieve eight lactations. Just think of the reduction in methane emissions that farmers could achieve by simply ensuring that their animals live at least this long.

Grassfed, health, welfare and environment

Working to improve the overall health and fertility of livestock would not only improve animal welfare, reduce veterinary treatment costs, and lower antibiotic use, it would also reduce greenhouse gas emissions by maintaining the farm productivity levels which is, of course, reduced when any animals experience periods of poor health. A recent study estimated that if cow fertility was restored from the level found in 2003 to the level in 1995, methane emissions from the dairy industry would drop an incredible 10–15 percent.

If our grassfed animals are inherently healthy and longer lived than intensively produced feedlot animals, then choosing meat and dairy products from grassfed farming systems is a simple way for consumers to support more sustainable farming systems and help to reduce greenhouse gas emissions.

Soil quality

We should be mindful of Franklin D. Roosevelt's statement, "the nation that destroys its soil destroys itself" — a statement from 1937 that remains as relevant today as it ever did. Soil health is intimately linked to plant, animal and human health. Allowing animals to graze helps improve soil quality. The action of the animals walking over the pasture helps to trample manure and other organic matter into the soil. This makes the soil more fertile and better able to support the grass and forage. Grazed land also has better soil stability and far greater numbers of beneficial organisms such as earthworms than land used to grow soy or corn.

The stability of the soil — and the high levels of organic matter from pasture land — all help to bind the soil together, so there is much less chance of soil erosion, nutrient run-off or pollution of ground water from grazed pastures than cropped land. Soil erosion is a big problem — it is estimated that the US loses three billion tons of nutrient-rich topsoil every year as a result of conventional farming of corn and soy. Run-off of fertilizers, soil erosion, and animal waste from industrial farming are believed to be largely responsible for creating so-called dead zones in the Gulf of Mexico and Chesapeake Bay, by overloading the water with nutrients and causing toxic algae blooms.

Organic and grassfed?

Finally, it's important to remember that grassfed is not the same as organic. While organic beef comes from animals that were probably fed less grain than the industry norm, organic animals will typically still spend their last months in feedlots where they are fed grain before slaughter. Even if the grain is produced organically, we know that feeding large amounts of grain to ruminant animals can result in many of the health and welfare problems noted above, while the banning of antibiotic treatment under the organic standards means that there is a real risk that some of these health and welfare problems will go untreated. We also know that cattle raised on grass will immediately begin losing the health benefits when they are moved to feedlots for fattening on grain.

But just as organic does not mean grassfed, grassfed does not mean organic. Grassfed animals sometimes graze on land that has been treated with synthetic fertilizers and even sprayed with herbicides. Unless the meat label specifically states that it is both grassfed and organic, it isn't.

We need to break our addiction to unsustainable, low-welfare, intensively raised feedlot meat

Summary

The fact that you are reading this document means that you recognize that food and farming has to change. Intensive farming systems are polluting the ground, water and air, causing huge health and welfare problems for both animals and humans, and contributing significantly to climate change. We hope that *The Grassfed Primer* has helped to explain the problems with feedlot farming systems — but also the significant solutions that *real* grassfed farming can offer.

We know that producing meat from true grassfed systems not only improves the health and welfare of farm animals, but that grassfed systems are far less likely to cause environmental pollution. We also now know that grassfed farming has a potentially vital role to play in helping to reduce greenhouse gas emissions through carbon sequestration, where CO_2 is locked in the living soil. Grassfed meat and dairy products also offer real human health benefits in terms of higher levels of omega-3s, CLAs and vitamin E, as well as reducing the risk of *E. coli* infection.

We need to break our addiction to unsustainable, low-welfare, intensively raised feedlot meat. And we can start by choosing meat or other livestock products from truly grassfed systems, which can bring real benefits to us all, not only through eating a healthier product, but also by helping to protect the planet for future generations. When you see the Animal Welfare Approved and the American Grassfed Association (AGA) logos together on a food product you can be absolutely confident that you are buying high welfare, 100 percent grassfed meat.

We hope that *The Grassfed Primer* will help you identify meat and dairy products from grassfed farms. And the next time you hear someone saying that feedlot systems are more efficient, or that grassfed farming is less environmentally friendly, we hope this document has primed you with all the information you need to set them straight.

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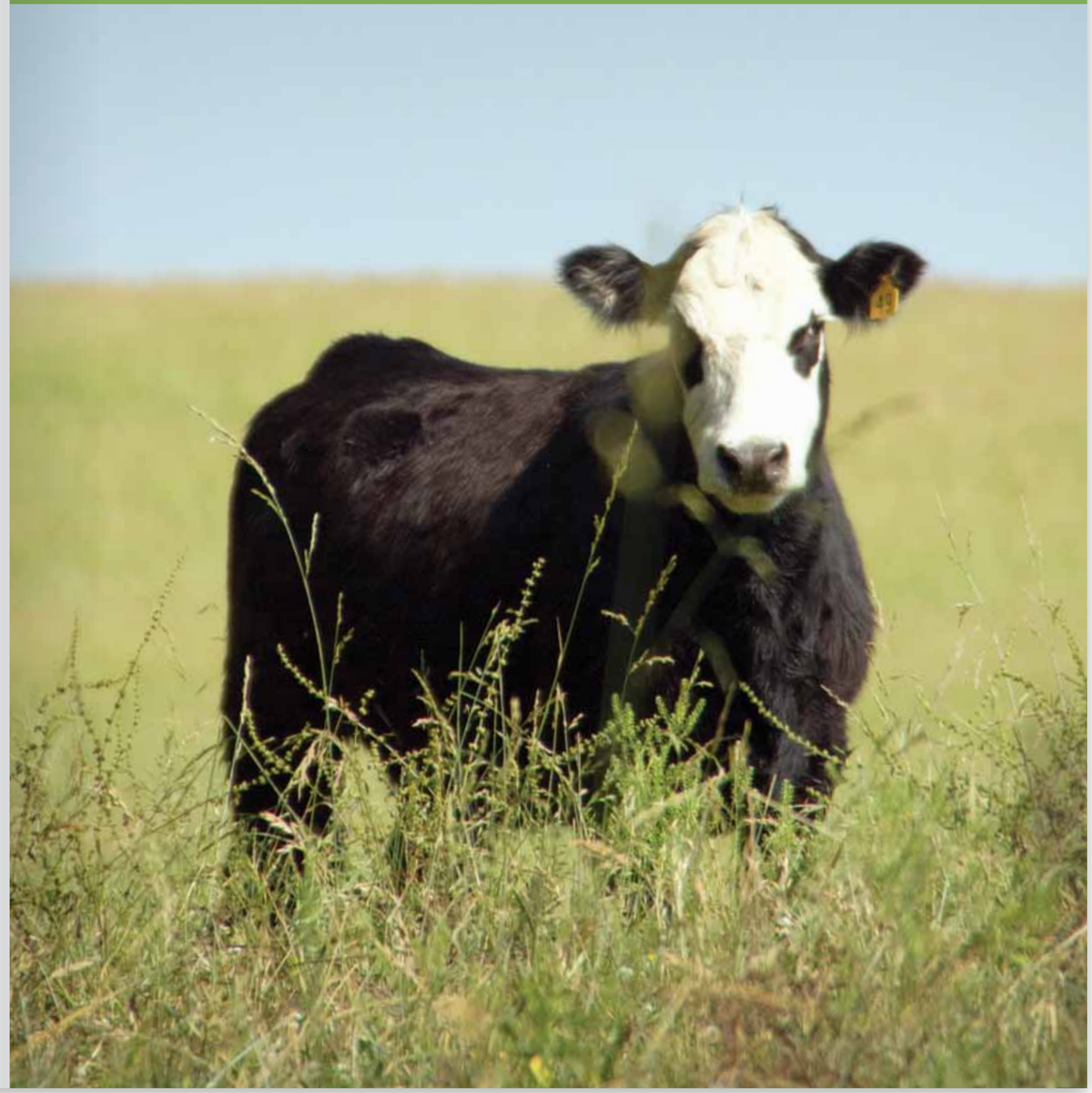

Animal Welfare Approved (AWA) is a national nonprofit organization that audits, certifies and supports farmers raising their animals according to the highest welfare standards, outdoors on pasture or range. Called a "badge of honor for farmers" and the "gold standard," AWA has come to be the most highly regarded food label when it comes to animal welfare, pasture-based farming and sustainability. All AWA standards, policies and procedures are available on the AWA website, making it one of the most transparent certifications available.

AWA's online directory of farms, restaurants and products enables the public to search for AWA farms, restaurants and products by zipcode, keywords, products and type of establishment. Visit www.AnimalWelfareApproved.org/product-search

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The photographs in this guide were taken at Animal Welfare Approved Rain Crow Ranch, located in the rolling hills of southern Missouri. Rain Crow Ranch is a family farm, owned and operated by Mark and Dr. Patricia Whisnant, together with their six children. Dr Whisnant is president of the American Grassfed Association and co-founder of American Grass Fed Beef, the name under which they market their beef. The Whisnant's cattle are born, raised and finished on open grass pastures and never put in a feedlot.

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