

# Natural, Grassfed and Organic Beef

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Health consciousness is an ever increasing concern – in the political, environmental, social and personal health arenas. As Americans attempt to eat healthier, producers respond and new products appear in the marketplace - beef is no exception.

As natural, grassfed and organic beef become more visible in meat markets, on menus, and in the media, producers and consumers

alike have questions relative to production specifications, market potential and nutrient content.



Many of these new beef products claim nutritional or wholesomeness superiority over traditionally produced beef. Science-based, peer-reviewed nutrition research reviews do not support such claims. Natural, grassfed and organic beef refer to production systems that yield beef products which are similar in nutrient content, safety and wholesomeness to traditionally produced beef. Supporting evidence in the scientific literature includes:

“No evidence of a difference in content of nutrients and other substances between organically and conventionally produced crops and livestock products was detected for the majority of nutrients assessed in this review suggesting that organically and conventionally produced crops and livestock products are broadly comparable in their nutrient content.”<sup>1</sup>

“In summary, our comprehensive review of the published literature on the comparative health outcomes, nutrition, and safety of organic and conventional foods identified limited evidence for the superiority of organic foods. The evidence does not suggest marked health benefits from consuming organic versus conventional foods, although organic produce may reduce exposure

to pesticide residues and organic chicken and pork may reduce exposure to antibiotic-resistant bacteria."<sup>2</sup>

"A recent systematic review of peer-reviewed evidence published in the past 50 years concluded that organically and conventionally produced foodstuffs are broadly comparable in their nutrient content."<sup>3</sup>

"No direct evidence of a clinically relevant nutritional difference between organic and conventional milk or produce exists."<sup>4</sup>

Van Elswyk and McNeill<sup>5</sup> suggest that comparisons of nutritional characteristics of beef from U.S. grass/forage-fed and grain-finished cattle should be on a mg/100 g rather than a percentage of total fat basis. These authors also encourage extreme caution when comparing beef from different production systems due to the "heterogeneity that exists between countries with regard to pasture type, forage availability and cattle breeds."

A team of Texas AgriLife researchers recently reported that "contrary to popular perception, ground beef from pasture-fed cattle had no beneficial effects on plasma lipid."<sup>6</sup>

Results of a Texas Tech/USDA study<sup>7</sup> found "no difference in cholesterol content between grass-fed and conventionally produced steaks." When finished to the same degree of fatness, nutrient content of beef products is very similar across the different production systems.

Without question, food produced by American ranchers and farmers is safe and wholesome – perhaps the best in the world. As evidence thereof, consider these economic figures:

"American consumers enjoy the safest, most abundant, and most affordable food supply in the world at less than 11 percent of income."<sup>8,9</sup>

"Food *affordability*, the combination of food cost *and* consumer purchasing power, rather than just the absolute cost of food, is perhaps the most meaningful criteria by which to evaluate or compare food costs. USDA-ERS data shows a declining trend in food expenditures, from 22.7% of annual disposable money income in 1929 to 11.8% in 2009."<sup>9</sup>

The intent of this paper is to help beef producers and consumers better understand the basic similarities and differences between traditional, natural, grassfed and organic beef production systems (see Table 1).

### **Traditional**

Over 90% of domestically produced beef comes from traditional production systems – cows consuming primarily forages, their calves grazing alongside until weaning at 5-8 months of age. Upon weaning, beef calves typically:

- are pastured as stocker cattle in a grazing system, then moved to a feedyard for finishing as described below or,

- are moved directly to a feedyard for finishing on a complete, nutritionally balanced, high concentrate diet.

As feedyard placement weights increase, the portion of beef produced from grazing forages increases as well.

Health Management – Primary focus is on preventative health care including vaccinations, and biosecurity measures.

- Antibiotic use is primarily therapeutic.
- An ionophore may be fed to improve feed efficiency (and reduce methane production).
- Growth promoting implants may be used to enhance weight gain and improve feed efficiency.

Marketing – Auction markets remain the primary avenue for marketing feeder calves and market cows and bulls<sup>10,11</sup>. Other options include direct sale, video or internet offerings and retained ownership.

**Natural, grass-fed and organic are pre-harvest beef production systems.**

### **Natural**

Many foods are described as being “natural”. To use the term “natural” on a food label, USDA requires adherence to three specifications, all of which pertain to the post-mortem handling/processing of beef. The USDA specifications require a natural product:

- 1) must be minimally processed;
- 2) cannot contain any artificial ingredients and,
- 3) cannot contain any preservatives.

By this definition, most fresh, traditionally produced beef qualifies as natural.

In the retail case, this definition applies to beef that does not have an ingredient label (products with marinade, tenderizer or other additives require a label). If there is no ingredient label on the package, it is assumed the beef is natural.

However, most branded beef programs have additional requirements for their specific “natural” beef products. At the present time, there are over 30 companies that purchase cattle and/or produce beef that qualifies as natural<sup>9</sup>.

Health Management – Primary focus is on preventative health care including vaccinations, and biosecurity measures. Natural beef programs may have a variety of brand-specific requirements. Some examples include:

- a) no antibiotic use (known as “never ever” programs)
- b) limited antibiotic use (known as “not lately” programs; most programs prohibit antibiotic use within the last 100 days prior to harvest.)
- c) ionophore use may (or may not) be allowed
- d) use of growth promoting implants is generally not allowed
- e) use of feed containing animal protein or fat may not be allowed

Marketing – To qualify for a natural branded program, some level of source and management verification is required. Consequently, most cattle that qualify for natural beef programs are sold:

- as feeder, stocker or fed cattle through an alliance with one of the natural branded beef programs or
- direct from producer to a packer, retailer or consumer.

Adherence to the requirements of a branded natural beef program is overseen and enforced by the branding company's management or a representative thereof.

## Grassfed

Grassfed beef has more than one definition.

According to USDA the term 'grass fed' applies to "ruminant animals and the meat and meat products derived from such animals whose diet, throughout their lifespan, with the exception of milk (or milk replacer) consumed prior to weaning, is solely derived from forage which, for the purpose of this claim, is any edible herbaceous plant material that can be grazed or harvested for feeding, with the exception of grain.



Animals cannot be fed grain or grain products and must have continuous access to pasture during the growing season.

Hay, haylage, baleage, silage, crop residue without grain, and other roughage sources may also be included as acceptable feed sources. Consumption of seeds naturally attached to forage is acceptable.

However, crops normally harvested for grain (including but not limited to corn, soybean, rice, wheat and oats) are only eligible if they are foraged or harvested in the vegetative state.

Routine vitamin and mineral supplementation may also be included in the feeding regimen. If incidental supplementation occurs due to inadvertent exposure to non-forage feedstuffs or to ensure the animal's well being at all times during adverse environmental or physical conditions, the producer must fully document the supplementation that occurs including the amount, frequency and the supplements provided." <sup>13</sup>



cow/calf operation.

The American Grassfed Association (AGA) <sup>14</sup> further defines their products:

- a) Animals having been, from birth to harvest, fed on grass, legumes and forages and,
- b) Animals having not been: creep fed as calves, fed for extended periods in confinement, or finished on grains.

Cattle must be born on or purchased from an AGA certified grassfed

AGA partitions grassfed beef products into two categories: grassfed and grass pastured. AGA grassfed and grass pastured cattle "must be maintained at all times on range, pasture or in paddocks with at least 75% forage cover or unbroken ground for their entire lives." Further, such cattle "cannot be fed stockpiled or harvested forages while on a 'sacrifice' pasture for more than 45 days per calendar year."

**Grassfed** - animals must be maintained on 100% forage diets with no exposure to any non-forage supplements. Animals may only be fed approved non-forage supplements to ensure the animal's well-being during periods of low forage quality or inclement weather.

Lifetime supplement intake guidelines (dry matter basis) are as follows:

Year 1 total intake ..... 50 pounds

Year 2 total intake ..... 80 pounds

Year 3 and thereafter total intake ..... 120 pounds

Total lifetime supplement intake by grassfed cattle should not exceed 250 pounds.

**Grass Pastured** – Requirements for grassfed cattle apply. In addition, grass pastured cattle may be fed approved non-forage supplements at a rate of 0.5% of body weight (20% of daily intake) during the growth stage (birth to start of finishing phase) and 0.75% of body weight (30% of daily intake; DM basis) during the finishing phase. Here, finishing is defined as the last 200 pounds gained before harvest.

The feeding of hay, haylage, balage, silage, forage products, crop residue without grain and roughage is not limited. The feeding of approved roughage products including dry beet pulp, corn cobs, cotton burrs or hulls (almond, cottonseed, peanut or soybean) is not limited.

Health Management - Primary focus is on preventative health care including vaccinations and biosecurity measures. Most grass-fed programs specify:

- no therapeutic or sub-therapeutic antibiotic use (a "never ever" program)
- no growth promoting implants
- no ionophores

Cattle that are injured or become ill typically receive therapeutic [antibiotic] treatment and are marketed as traditionally produced beef.

From an animal well-being standpoint it is critical that cattle (in these non-traditional production systems) which become ill, injured or burdened with internal and/or external parasites be treated in a timely manner and with the most effective product, regardless of whether or not the treatment will prevent them from being retained in a grassfed programs.

Marketing – Forage-fed cattle grow slower than similar cattle in a traditional system. Consequently, most grassfed cattle are harvested at an older age and sometimes a lower weight than those in a traditional or natural production system.

Carcass fat may not be bleached white in color. Depending on the quality and type of forage grazed during the 120 days immediately preceding harvest, carcass fat may be from pearl white to yellow (caused by beta carotene from green forages is stored in fat tissue).

**Compared to conventional, marketing natural, grass-fed and organic beef is more intensive and more involved.**

Whole muscle cut size and dimension may be different than traditional or natural beef, due primarily to the lower harvest weights.

Note: In contrast to traditional and natural beef, grassfed (and organic) beef is also imported from other countries. Seldom can U.S. grass-fed product compete with imports on a cost per pound basis. Exporting countries (ex. Uruguay) have a lower cost of production due to lower land, labor and other input costs.

Marketing – To qualify for a grassfed branded program, source and management verification is required. Consequently, most cattle that qualify as grassfed beef are sold direct from the producer through a packer/processor to a:

- wholesaler
- retailer or
- consumer.

Compliance with the requirements of a grassfed beef program are often monitored by on farm/ranch visits and audits performed by the affiliated marketing alliance or a certifying agency.

## **Organic**

Organic beef production and marketing is defined by USDA standards developed for all food labeled as “organic”.<sup>15</sup>



Organic beef production requires more time, effort and documentation than the other production systems described herein. Livestock production and handling standards, outlined in USDA's National Organic Program (NOP)<sup>15</sup> include:

\* Animals for slaughter must be raised under USDA certified organic management from the last third of gestation to harvest.

\* Diets must contain feedstuffs that are certifiably 100% organic. Forages, cereal grains and oilseeds (ex. cotton, canola, soybean) must be grown without the use of synthetic fertilizers, herbicides or pesticides. Initially, organic crop production is preceded by a three year period of abstaining from the use of “prohibited substances” (for a list see National Organic Program standards).

Preference will be given to the use of organic seeds and planting stocks. Nonorganic seeds/stock may be used in specific instances and with NOP approval.

Use of genetically modified (GMO) crops is prohibited.

- \* Dietary vitamin and mineral supplements are allowed as warranted.
- \* Use of growth promotants or antibiotics (for any reason) is strictly prohibited.
- \* Organically produced cattle must have access to the outdoors, including access to pasture. Daily intake requirements call for a minimum of 30% of their daily intake come from standing forages during the growing season. Temporary confinement is allowed for reasons of health, safety, stage of production or to protect soil or water quality.
- \* Animals must be handled and processed under USDA organic certification.

Health Management - Primary focus is on preventative health care including vaccinations, and biosecurity measures. According to NOP standards, producers must not withhold treatment from a sick or injured animal; however, animals treated with a prohibited medication may not be sold as organic. Upon recovery, treated cattle are marketed as traditionally produced beef.

Marketing – As mentioned above, cattle must be processed and handled under USDA certification, *from the last third of gestation to consumer purchase*. Consequently, organic beef moves from farm or ranch of origin through a well defined, traceable, certifiable processing, handling and marketing chain.

**“Organic” requires USDA certification, involves audits and requires more time, effort and documentation than other beef production systems.**

Within Texas, the USDA's National Organic Program (NOP) is managed and audited by the Texas Department of Agriculture, Organic Certification Program.<sup>16</sup>

### **Economics**

It is beyond the scope of this paper to include a detailed economic analysis of the four beef production systems discussed herein. Production goals and costs are unique to each operation, so comparisons between operations or across production systems are difficult without some type of standardization. However, the following generalizations seem accurate:

- By definition, natural (N) beef production is very similar (and in many cases identical) to traditional production. Brand specifications (such as no ionophore, no growth promotants) often result in some loss of efficiency and/or increase in cost of production. Differentiation from traditional beef production in promotion and the marketplace represents some amount of additional expense to the system.
- Slower growth rates and lower harvest weights associated with grassfed (GF) production result in less production efficiency and greater production cost (compared to C and N) per unit of product. Total system pasture cost is inherently greater since cattle (stocker and finishing cattle) are grazed for much longer periods of time compared to C and N systems. Likewise, greenhouse gas (methane) production is directly related to grazing time. Cattle that endure periods of less than optimal weight gain will produce a larger carbon footprint. Differentiation from other production systems in promotion and the marketplace is an additional expense to the system.
- Availability and cost of organically certified forages and feedstuffs is a significant concern for Texas producers considering organic (O) production. Precluding the prudent and environmentally sound use of technology such as synthetic fertilizers, herbicides, pesticides, growth promotants and pharmaceuticals results in an increased cost of production (ex. lower production per unit of input, increased labor cost) for organic beef. Differentiation from other production systems product in promotion and the marketplace is an additional expense to the system. The documentation required for O food production, preparation for audits and compliance with the processing and handling requirements all represent additional cost for an O production system.

Beef producers considering a different production system should carefully consider the options and their respective requirements. Like breeds of cattle, it is not (and need not) be “one kind fits all” when it comes to producing beef.

## Summary

The current trend in consumer preferences indicates continued growth in demand for natural, grassfed and organic beef products; no doubt, the availability of such products has resulted in the retention of beef consumers that would otherwise have abandoned beef as their source of animal protein. Long-term success of the U.S. beef industry depends on customers repeatedly voting on beef with their food dollars.

However, promotion of any one product at the expense of beef from the other production systems is not in the best interest of the U.S. beef industry.

**Promotion of any one product, at the expense of beef from other production systems, is not in the best interest of the U.S. beef industry.**

Quoting from an article entitled “*Brown eggs, grain and truth in marketing*” by John Maday<sup>17</sup>,

*“If consumers want brown eggs, sell them brown eggs.  
But market them as brown eggs, not anti-white eggs.”*

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**Table 1. U.S. Beef Production Systems**

System	Description		
	Preweaning	Postweaning	Finishing
Traditional	Cows and calves subsist primarily on forages – either by grazing or consuming harvested forage such as hay or silage. Supplements of plant origin are provided during times of [forage] nutrient deficiency.	Calves may continue a grazing program until forage or market conditions and/or production objectives dictate a move to the feedyard. Otherwise, calves move directly from their farm/ranch of origin to a cattle feedyard.	Cattle are fed a complete balanced grain-based diet until reaching the desired harvest endpoint (weight and/or degree of fatness).
	<i>USDA specifications*</i>		
Natural	Same as traditional	Same as traditional	Same as traditional
	<i>Natural involves post-harvest handling and refers to a product that contains no artificial ingredients or added color and is only minimally processed (processes limited to those that do not alter the raw product).</i>		
Grassfed	Supplementation is limited to times of adverse environmental or physical conditions. Amount, frequency and type of supplement provided must be documented by producer.	Supplementation is limited to times of adverse environmental or physical conditions. Amount, frequency and type of supplement provided must be documented by producer.	Cattle are fed to harvest endpoint on any edible herbaceous plant material that can be grazed or harvested for feeding, with the exception of grain. Consumption of cereal grains (corn, wheat, oats, barley) or grain sorghum is prohibited.
Organic	Forages and supplements must be organically produced (and handled where applicable).	Forages and supplements must be organically produced (and handled where applicable).	All ingredients in the finishing diet must be organically produced (and handled where applicable).

\*In addition to USDA specifications, natural, grassfed and organic programs may restrict or prohibit certain animal, forage, health and nutrition management options that are approved for use in traditional production systems.

