

Defining Grass Genetics

by Gearld Fry

The livestock of early America survived and thrived on a diet of grass and forages. The meat, eggs and dairy products that people consumed came from these animals. By the 1930s grain started being considered as a potential feed source for livestock. As corn fields expanded over the nation's landscape, so too did the popularity of feeding the golden grain to livestock. It was around the 1960s when the commercial feedlot system took control of the cattle industry. They became the only game in town and dictated what type of cattle was marketable and how livestock producers would be compensated or penalized for their efforts.

Early feedlot systems were owned and operated by local farmers who were feeding their own cattle to supply a local, year round fat finished market. The grazing type of cattle of those days only required 60 to 80 days of grain to fatten. After compensatory gain was reached, those animals would start putting on back fat very quickly. Animals by twelve months of age would often carry .25 inches, which is what you want today in a grassfed animal. Somewhere between 14 and 18 months, these cattle could accumulate .35-.50 inches of back fat, reaching a 4 to 5 yield grade. Today, cattle that have .40 inches of back fat get discounted at the sale barn.

As time passed, producers became more knowledgeable about mixing rations and feed management. Those more interested in penning up cattle and bringing the plentiful grain to them soon learned that narrow, taller, later maturing animals with little or no back fat performed better in that environment. The larger framed, bigger boned animal would have faster rates of gain over a longer period than the shorter, wider, more balanced animal that fattened too quickly. Transitioning to animals that could stay on grain for 120 days was a big plus for the farmer who marketed grain.

During the later part of the twentieth century, chemical companies developed bovine synthetic growth hormones (ear implants) that stimulated more growth while suppressing the deposit of fat. The results were that cattle could stay in the feedlots even longer and produce larger carcasses.

The feedlot philosophy of producing beef gained full steam by the 1940s. In 1948, a large group of cattle (30,000 head) were gathered together in Dodge City Kansas to be transported by rail to feedlots in the Chicago area. From that point on, the idea of feeding grain to both beef and dairy has steadily gained in popularity. Production agriculture was up and running. Order buyers were paying more money for larger, taller, later maturing calves, so naturally the commercial beef producers kept the bigger cows for their breeding herds and used taller, later maturing bulls to produce their yearly calf crop. The grass genetics that produced smaller framed, wider animals quickly lost favor and faded from the landscape.

The slaughter companies quickly established markets and delivery systems. A bulk of these markets was dominated by a price structure created by the rapid growing fast food movement demanding large amounts of grind (burger). This fast food industry used its purchasing power to dictate price margins. Cattle and corn as well as other farm products (food) were now being traded as commodities and prices were regulated without considering the farmer and his cost of production. It even came to the point where the cattlemen/farmers were told to cut operating expenses. They were forced to settle for low profit margins if they wanted to continue raising livestock. These are the same markets (no regard for producer profit) and price structures that handicap and even destroy today's family farms.



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Cattle producers in America willingly changed their breeding programs in order to supply the genetics for the feedlot industry. In the early 1950s, the cattle industry determined it necessary to import Continental and European animals. The intent was to crossbreed these animals with American cattle in order to produce taller, longer, later maturing cattle that would have hybrid vigor. They brought the most money at the stockyard. Growth became primary and meat quality became a non-issue.

The constant out crossing thus continually diluted the prepotent gene pools that had effectively utilized grass. Animals were now heterozygous in their genetic make-up and lost was consistency and quality control. Even today, it is uncertain of how many pure blood strains of seedstock truly exist.

Grass genetics is rugged genetics. A majority of early American cattle were of the dual-purpose style or body type. They were valued for both their meat and milk production. Records can be found of many outstanding linebred herds of beef and dairy cattle that existed in this country up until around the mid 1960s. Pictures from old herd books and encyclopedias portray those animals as having nearly the same physical structure or phenotype, yet still maintaining individual breed characteristics. Our forefathers selected for that style of animal because of their efficient conversion of forages into the meat and milk they needed to feed their families. These animals were built for functionality and longevity and they rarely got sick. Until economic pressure and circumstances turned livestock and grain into commodities there was little change in cattle genetics. There was no reason to change a system that worked.

The type of animal that produces pounds of beef in the feedlot was described earlier. So what does an animal with the correct grass genetics look like? There are two specific physical features that an animal must possess to efficiently utilize grass. These two features that are present in many species of animals (cattle, sheep, horses, buffalo, and even swine) and characterize them as designed for that purpose are wide shoulders and a deep chest. These two traits are required for both the male and female if the animal is to grow, maintain, and reproduce on a diet of grass. Wide shoulders and a deep chest provide ample room for the proper development and function of the heart and lungs. Oxygen and blood flow are never restricted. The respiratory and cardiovascular systems can work to full capacity—critical for efficiency.

Wide shoulders and a deep chest make up the balanced body that will have better muscle structure, more consistency in intramuscular fat, and be higher in reproduction performance. The balanced body of a bovine female suited for grassfed beef production will have a frame score of 3–4 and the male can have a frame score of 4–5. Animals larger than this will be later maturing and have higher maintenance requirements. Wider stature animals are generally more docile, have more muscle mass and will be lower maintenance because of the fact they easily maintain body condition.

Cattle with the proper genetics to be sustainable on grass will have thicker hides that enable them to adapt to temperature changes and other weather conditions. An oily sheen on the hair coat is a natural insect repellent. A wide face and muzzle is needed to ingest larger bites of grass. Large nostrils and a convex shaped head are important components to an efficient respiratory system. A deep flank indicates fertility and the ability to finish on grass.

For an animal to get his daily-required dry matter intake from pasture, it must be able to traverse the terrain and move with ease. Therefore strong, sound structured legs that are placed at the four corners of the body are crucial. Hooves are to be free of malformations (long or curved toes) and disease.



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The digestive system and endocrine (pituitary, thyroid, adrenal, pancreas glands plus the testes and ovaries) system have to be working correctly and in unison if the animal is to develop to its potential. The ruminant was designed to digest forages, not large amounts of concentrated energy (seeds/grain) or fermented feeds. These types of feedstuffs change the rumen pH as well as the type of microorganisms in the digestive tract. When the digestive system is disrupted negative reactions occur that affect reproduction, growth, and immune response which can be costly to correct.

Cattle with the proper genetics to perform on grass can go into a feedlot system and gain as well as cattle with grain type genetics. However because of their efficient feed conversion, the grass genetic animals upon completing the compensatory gain at around 60–80 days (assuming maturity has been reached) is ready for slaughter. At this point muscle growth is complete and feed is converted to fat stores.

The grain genetic animal that fits the bill for the feedlot system which continually gains muscle mass for 120+ days cannot go to pastures and do well. The majority of them will not maintain body condition, stay healthy, reproduce on a regular schedule, produce milk, or finish on a total grass operation.

In summary, grass genetics is not a specific cattle breed parse but it is a specific body type. Wide shoulders and a deep chest are paramount for the purpose of utilizing your grass. Now if your intention is to produce grain fed beef, then the taller, narrower, later maturing animal will continue to gain and produce pounds of meat by staying on corn for longer periods. This is the plus for the feedlot industry. As a side note—purity of genetics regardless of species of animal or feeding system is vitally important to create animals that are predictable and viable for the intended purpose. Limited, well planned crossbreeding has its benefits. But with continued dilution of genetic lines, you loose control. Properly built, pure, paternal gene pools will produce just as many pounds as crossbreeding.

Building a herd, a gene pool that effectively utilizes forages is not reverting back to the stone ages of livestock production. I see it as common sense. Grass is basically a free, God given raw material that is converted into meat and milk products by the best possible method available—the ruminant. It is a system that has worked previously for decades at keeping this nation healthy—both its people and its economy. The feedlot industry controlled by the commodity market has created a monster that has become too expensive to feed. If you want to get back to a true pasture based livestock production system, I applaud you. But make no mistake about it; you'll need the right genetics to make it work. Thank God there still exists superior grass-based genetic herds scattered about this planet and slowly but surely they are making a comeback.

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