

The Kentucky Beef Industry

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Throughout the history of the United States, the American cattle industry has played an important role in the country's growth and economic well-being. As the largest segment of the American agricultural economy, the cattle industry comprises approximately 1.23 million businesses with cattle, including beef and dairy cattle. An estimated 1.064 million farmers and ranchers raise beef cattle in the United States.

Cattle and calves are produced in more states and regions of the country than any other commodity. Beef cattle can be found in all 50 states, and 34 states have at least 10,000 cattle farms and ranches. The dominant beef production region in the United States runs across a band of states from Montana to Texas and throughout the Southeast. Texas, Missouri, Oklahoma, Nebraska, South Dakota, Montana, Kansas, Kentucky, Tennessee, and Florida account for 58.4 percent of the nation's beef cow population.

The cattle business, almost four times larger than any other sector of animal agriculture, accounts for nearly 25 percent of all cash receipts from agricultural marketings, amounting to some \$40 billion annually. U.S. cattle producers are also the world's most efficient and productive: with less than 10 percent of the world's beef animals, they produced 24.9 percent of the world's beef supply in 1994.

Our Beef Cattle History

Cattle have been a major part of Kentucky's agriculture for more than two centuries. In the early 1780s, settlers who poured across the Appalachian Mountains brought cattle with them. These early cattle, which were also used for milk and draft, were mostly "mongrels," predominately of Devon ("Rubies") or Spanish blood. As early as 1784, cattle also were being driven from the south branch of the Potomac to the glades of what is now Kentucky for summer pasture.

Many of the early cattle were kept near cabins and ate "switch cane," which grew wild among large trees. However, in 1792, Kentuckian Thomas Goff was on a trip to Virginia and saw his horse eating a strange grass (bluegrass) in the Powell Valley. He brought some seed back to Kentucky. Bluegrass, along with corn, later became the base of the cattle feeding program. Cattlemen wintered their 2-year-old steers on shocked corn, put them on bluegrass in the spring and summer, then fed them corn until February when the drive to the market began. Cattle were driven to markets in the East, generally at the speed of about seven miles a day.

In 1785, a family named Patton migrated to Kentucky (near Winchester) and brought a bull exported from England and some grade heifers. Later they brought into Kentucky a "full-blooded" (possibly Shorthorn) bull and cow...Mars and Venus. Through several years of selective breeding, they developed the "Patton Stock," which became the foundation of some early Kentucky breeding stock.

Shorthorn cattle were first imported into Virginia in 1783, and purebred Shorthorn cattle soon appeared in Kentucky. Their popularity increased rapidly, and Kentucky breeders established the Shorthorn herd book and record association—the first in the United States.

Famous statesman and politician Henry Clay is credited with bringing the first Herefords to Kentucky in 1817. However, their popularity did not increase like the Shorthorns. That same year, Lewis Sanders, of Bourbon County, imported four pairs of Shorthorns, one pair of Longhorns, and one pair of Herefords. These Shorthorn cattle, which had numerous descendants, became known as the "seventeens" in reference to the year 1817.

By 1837, the Shorthorns were immensely popular. Many producers feared they would become inbred and fail to pass on desirable traits. They were crossed with other breeds, especially Longhorns from the South. Longhorns were later discriminated against by packers, causing a good deal of panic among Kentucky producers who had crossed their cattle with Longhorns.

About 1888, the Shorthorn business collapsed to a great degree and Herefords swept to popularity, not necessarily because of superior hardiness but because "Shorthorn breeders had been selling pedigrees instead of individuals."

As early as 1840, Kentuckians were aware of the state's potential to produce forage. Cattlemen in the Barrens (between the Green and Cumberland rivers) stated, "grass can be the only basis for our cattle industry. We can never be a stock raising country to any extent until we change our system of farming. We must grass our lands and plow less."

By the 1850s, a system of marketing that centered around "court day" had evolved in Kentucky. Each county court usually held session one day a month at the county seat. Kentuckians came to town to conduct legal business, buy supplies, and sell their products, including cattle. Cattle were moved into town, along with other equipment, to be traded-on or auctioned off. One of the best known court days occurred in Paris, where as much as \$250,000 worth of cattle, horses, and mules changed hands in a single day.

Cattle numbers steadily increased in Kentucky's Bluegrass area. Bourbon, Clark, Madison, Fayette, and Shelby counties each had 10,000 to 12,000 head of cattle during the 1840s and 1850s.

The first comprehensive cattle inventory was taken in Kentucky in 1920 (see Table 1-1). At that time, there were only 65,000 beef cows in the state, but there were 161,000 steers over 1 year old and 197,000 other calves (not kept for milk). The 1942 inventory recorded the first big increase in beef cows (105,000 head), while steers over 1 year old had decreased since 1920.

Table 1-1. Kentucky Cattle Inventory for Selected Years (000 head)

Year	Beef cows	Milk cows	Steers ¹
1920	65	455	161
1930	45	498	98
1940	80	555	140
1950	187	661	149
1960	515	561	197
1970 ²	1055	379	230
1980	1106	244	221
1990	1040	210	180

¹ Refers to steers over 1 year of age or, in later years, steers over 500 lbs.

² Beef cow numbers actually peaked in 1975 at 1,429,000

It is likely no coincidence that the buildup of beef cow numbers in the 1940s occurred along with the introduction of Kentucky 31 tall fescue. This new grass grew anywhere, prevented erosion, and could be used to support the growing cow herd.

As Kentucky moved into a grassland system of cattle production, emphasis changed from the grazing and feeding of mature steers to a cow-calf system of production. Corn Belt cattle feeders turned to the South as a major supplier of feeder cattle. Kentucky, Tennessee, and Virginia provided the largest numbers of these calves.

During the 1950s, the production of feeder calves increased as farmers realized beef cow herds made efficient use of available pasture land. However, many nondescript cows scattered across the state were not yielding quality feeder calves. Dr. W.P. Garrigus of the University of Kentucky introduced the Kentucky Cow-Calf Plan, which suggested the use of these cows to produce baby beef. This widely adopted program emphasized the use of quality beef bulls and led to the upgrading of beef cattle from many "family milk cows."

Kentucky beef cow numbers doubled in the '50s and again in the '60s. On January 1, 1970, the beef cow population numbered more than 1 million head. This increase in beef cow numbers was perhaps the most dynamic development in Kentucky agriculture during that period.

The physical appearance of beef cattle also has changed over time. Early British cattle, which were used mainly for draft and milk, were large-framed, late maturing, and not

"finished" until they were 3 or 4 years old. Producers attempted to reduce size and hasten maturity and ability to fatten earlier. This trend intensified from the mid '30s to the mid '50s as smaller, earlier maturing, and earlier fattening cattle were selectively bred. By the late 1950s, this practice had been taken to extreme, and breeding stock were excessively small and fat.

In the mid 1960s, the beef cattle industry began to move toward cattle that could be grown to desirable slaughter weights without becoming too fat. The feedlot performance of Charolais crossbred steers in the 1960s created an awareness of the lean growth potential of the European breeds of cattle. In the late '60s, breeders began selecting within their breeds for larger framed, growthier, and leaner cattle. The use of other European breeds also increased at that time.

This intense selection for large-framed, lean cattle was also taken to extreme and caused concern because of carcass size, carcass grade, maintenance cost, and efficiency of resource utilization. Presently, selection emphasis is toward lean cattle of moderate frame with easy fleshing ability.

Kentucky survived the "market crash" in 1974, and, in recent years, Kentucky has shown the largest increase in beef cow numbers in the United States while other states generally have declined.

Kentucky presently has the 13th largest cattle herd in the United States at 2.65 million head as of January 1, 1996. Kentucky's beef cow herd is the eighth largest in the United States (the largest east of the Mississippi River) with 1.165 million beef cows.

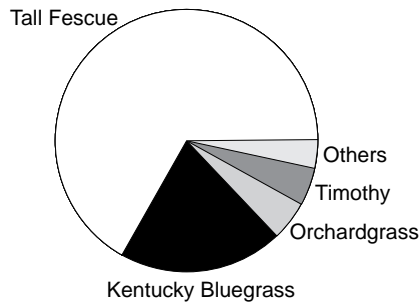
According to recent data, beef cattle are produced on 45,000 (50.6 percent) of Kentucky's 89,000 farms. The economic impact of the production from these operations is significant. Sales of cattle and calves generated \$648 million in cash receipts to Kentucky's farmers during 1994, accounting for 20.1 percent of total farm cash receipts, second only to tobacco.

Our Resources

Kentucky is ideally suited for cattle production. The main feed for cattle is a renewable resource Kentucky has in abundance—**forages**. The majority of the state's terrain favors cattle production over row crops. Kentucky farms cover 14 million acres, with approximately half of that occupied by forage grasses and legumes. Our natural resources and climate permit the growth of most cool-season and warm-season species. Water is readily available in all areas of the state, and we have a relatively long growing season.

A major percentage (83 percent) of the feed units for beef cattle comes from forages, and livestock and livestock products account for 51 percent of Kentucky's agricultural cash receipts. Cash hay also accounts for 24 percent of the total crop value in the state. In addition, forages play a major role in soil conservation, seed production, and aesthetics.

Figure 1-1



Kentucky's forage base consists of cool-season grasses and legumes. Four grasses compose the vast majority of our forage land, with Kentucky 31 tall fescue occupying the largest number of acres (Figure 1-1). Red, ladino, and white clovers (Figure 1-2) are by far the dominant legumes found in Kentucky's hay and pasture fields.

A Plan for the Future

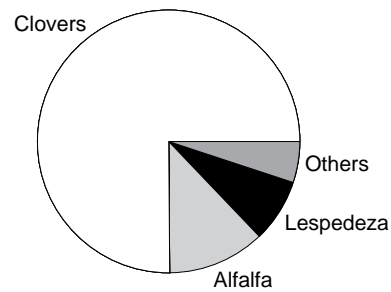
There is still room for growth and improvement in the Kentucky beef industry. Information compiled during the development of the Ag Project 2000 Master Plan for Kentucky Agricultural Economic Development indicated that beef cattle production has the greatest potential for growth within Kentucky's agricultural economy and could be the leading sector of future cash receipts for Kentucky's farmers. Two actions most likely to cause this growth to be realized are increasing cattle numbers and adding value to the calves produced. It was felt that one of the best ways to fulfill Kentucky's beef industry potential is to increase beef cattle numbers while increasing profitability through integrated resource management (IRM). As a result, the UK College of Agriculture Administration formed the Kentucky Beef IRM Coordinating Committee in early 1995.

Kentucky's Beef IRM Effort

The integrated resource management concept was first introduced in Kentucky in 1981. Since that time, several impact application demonstrations have been conducted, primarily by members of the beef Extension group. However, it has been apparent that in order to have maximum impact, an IRM educational effort must be a true integration of disciplines and also must be conducted on a state-wide basis.

In 1995, a small group of Extension personnel—composed of specialists from agronomy, animal science, and agricultural economics along with a county Extension agent for agriculture—was charged with the responsibility of developing an integrated resource management educational program for the beef industry in Kentucky. This committee has devised an action plan for implementing this new type of Extension educational activity. This plan includes defining the audience and developing a mission statement complete with emphasis areas and implementation strategies.

Figure 1-2



Kentucky Beef IRM Mission Statement

The Kentucky Cooperative Extension Service (KCES) Beef Integrated Resource Management (IRM) program will change the Kentucky beef industry in a measurable, positive way by providing a dynamic educational program that benefits the maximum number of beef producers with small, medium, and large herds. This program will use an integrated approach to provide the beef industry of Kentucky (beef producers, allied industry, KCES agents) with interdisciplinary, unbiased, research-based training and resource materials to enhance an individual's ability to make decisions.

Mission emphasis is on sustainability through:

- information integration
- environmental soundness
- goal development by producers
- profitability
- consumer-acceptable products
- quality of life in rural Kentucky

Strategies to fulfill mission:

- I. In-service education for Extension personnel—better training according to their needs.
- II. Educational opportunities for beef producers—to be offered to various size producers with differing levels of expertise to improve their knowledge.
- III. Integration and evaluation of existing beef Extension programs—from an integrated resource management standpoint.

Kentucky beef producers generally have two important reasons for raising beef cattle on their farms: (1) available land or roughage resources and (2) beef cattle require less labor than other livestock enterprises (making the cow-calf enterprise complementary to off-farm employment). Enjoyment in raising cattle may also be an important reason. The typical Kentucky beef herd has about 25 cows (86 percent of all herds have less than 50 cows) and one bull, uses land not suitable for row crops, may be characterized as a "loosely managed operation," and may have no defined calving season. Practices known to improve beef productivity and efficiency have not been widely adopted by Kentucky farmers.

As discussed earlier, two components of Kentucky's beef industry most likely will have the greatest impact on the industry meeting its potential: increasing numbers and adding value to current production. Kentucky's fescue-based forage base can support a large number of cattle. As a renewable resource, forage can only be utilized by ruminant animals like cattle to bring an economic return to the state. However, this resource requires better and more efficient management to support potential beef numbers. If managed properly, Kentucky's forage can produce feeder cattle more economically than that of other states, giving Kentucky producers an advantage. The latest management techniques and practices to accomplish this task are discussed at length in this reference book.

Adding value to Kentucky beef calves can be accomplished in several ways. Increasing weaning weights, producing uniform calves of similar weights, improving marketing methods and information, and producing consumer-acceptable calves can all add value to Kentucky's calves before they leave the farm. Each of these topics is discussed in detail in later sections of this book.

In an effort to provide Kentucky beef cattle producers the best information available on profitable and efficient beef cattle production, this beef manual was developed as part of the IRM effort. This reference book was written by specialists in beef nutrition, beef cattle breeding, beef reproduction, forages, veterinary science, and production economics. The goal is to help Kentucky's beef producers realize greater profits from their beef enterprise regardless of the size of the operation and/or the expertise of the producer.

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