

MWPS-66

Cow-Calf Production IN THE U.S. CORN BELT



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COW-CALF PRODUCTION IN THE U.S. CORN BELT

CHAPTER 1



Introduction and Book Overview

Cow-calf production in the U.S. Corn Belt is very important to American agriculture. Not only is it a major supplier of beef animals for U.S. feedlots, and a market for Midwestern grain, but, as Table 1-1 shows, this geographic area also is home to more than 230,000 cow-calf operations.

Cow-calf production is an integral part of farming in much of this area. Although exact statistics are not available, cow-calf production is a part of the overall activities in many farming operations since it makes use of seasonably available labor and also allows cows to glean corn residues left after fields have been harvested. It has the advantage of being able to make profitable use of marginal land that should not be used for cultivation because of environmental reasons but can still safely serve as pasture for cow-calf production.

This handbook deals primarily with raising beef calves in the Corn Belt. It does not discuss feedlot finishing of beef cattle, which is covered extensively in *Beef Housing and Equipment Handbook*, MWPS-6. The first chapters of the book apply the basic concepts of planning and development to cow-calf operations.

Chapter 2, *Farmstead Planning*, discusses concepts such as locating roads and buildings to minimize wind and snow problems. The chapter also deals with farm road construction and presents suggestions to minimize biosecurity and environmental issues that can affect livestock production.

Chapter 3, *Utilities for Cow-Calf Operations*, provides details about electrical requirements, including electric fences, lighting needs, and standby power needs. It also discusses lightning protection, which is a significant concern in the Midwest for cattle in fenced pastures. Chapter 4, *Water and Watering*

TABLE 1-1.
Number of cow-calf operations (with one or more cows) in selected Midwestern states.

STATE	AVERAGE HERD SIZE, 2007*	NUMBER OF BEEF COWS THAT HAVE CALVED—JAN, 2011**	APPROX. NUMBER OF COW-CALF OPERATIONS***
Illinois	28.9	352,000	12,180
Indiana	18.4	213,000	11,576
Iowa	46.0	840,000	18,261
Kansas	57.9	1,478,000	25,527
Kentucky	30.5	1,023,000	33,541
Michigan	13.6	99,000	7,279
Minnesota	27.6	360,000	13,043
Missouri	39.8	1,968,000	49,447
Nebraska	102.9	1,772,000	17,221
North Dakota	95.3	880,000	9,234
Ohio	17.0	290,000	17,059
South Dakota	119.1	1,610,000	13,518
Wisconsin	18.2	265,000	14,560
Total	47.3	11,150,000	235,614

* USDA APHIS, Vet Services, & Nat. Animal Health Monitoring System, May 2009 (Beef 2007-08, Part III: Changes in the U.S. Beef Cow-calf Industry, 1993-2008)

** Cattle (ISSN: 1948-9099), January 28, 2011, (NASS), Agricultural Statistics Board

*** Number of operations approximated by dividing the number of cows that calved (2010) by the average herd size in 2007.

Systems, lists the water requirements for production and explains how to utilize various water resources for cattle. It also covers the construction of delivery systems to supply water to animals. The chapter provides typical examples of designs for water systems.

Chapter 5, Fences and Gates, covers permanent and temporary fencing needed for pasture and dry lots. It provides explanations of fence construction, including electric fencing and farm gates for cattle.

Chapter 6, Lots and Housing, covers siting recommendations for cow-calf facilities, as well as design recommendations for the various housing needs on a cow-calf operation. The chapter discusses calving facilities and housing for young calves. It also briefly covers building environment, including insulation, ventilation needs, and fire protection.

Chapter 7, Dealing with Harsh Environments, covers the management of a cow-calf operation over the wide range of temperatures and weather conditions experienced in the Corn Belt. Of particular concern in most of the Midwest are mud, shade in the summer, and protection from wind and snow in winter.

Chapter 8, Handling Facilities, begins with a brief discussion of a cow's unique psychology, which must be considered when designing handling facilities. It includes recommendations for sizing and designing handling facilities.

Chapter 9, Manure Management, discusses the amounts of manure to be expected from animals in various stages of growth and production and explains how to prevent manure nutrients and organic matter from reaching ground and surface waters. The chapter also covers the control of runoff from lots and other heavy use areas.

The next two chapters deal with forage, feeding, and feed storage. Chapter 10, Forage Management, discusses concepts helpful in producing the best economic yields and explains how to make the best use of forage, which is an important feed resource. Chapter 11, Feeds and Feed Storage, provides typical feed requirements for cow-calf production, including pasture, hay, silage, and grain. The chapter also covers recommendations for feed storage, feed mixing, feeders, and feeding methods.

Chapters 12 through 19 present various aspects of reproduction, nutrition, breeding and calving, and herd health. Chapter 12, Body Condition Scores and Reproduction, explains how reproductive efficiency is such a critical component in the profitability in a cow calf enterprise. It also shows how body condition

scores (BCS) can be used as a "composite management tool" to determine if the cow's environment is in balance with her nutrient needs.

Chapter 13, Nutritional Management, discusses nutrient requirements by stage of production. Chapter topics include limit-feeding hay, supplementation, and a "how to calculate" section. Chapter 14, Breeding Programs, presents the process of designing a breeding program to match the environment and marketing system. In addition, the chapter discusses genetic terminology, mating systems, selection of sires, and genetic abnormalities. Chapter 15, Calving Management, discusses factors affecting dystonia, calving assistance, neonatal calf care, and post-calving complications.

Chapter 16, Herd Health, shows how a herd health management program can result in healthier, better performing cattle, and assure customers that they are receiving a safe, wholesome product. The chapter shows how good herd health management also can result in substantial economic benefit to the producer.

Chapter 17, Non-ambulatory (Downer) Animals, Euthanasia, and Proper Disposal, includes issues such as the humane treatment of animals that cannot be restored to health. It also discusses the proper handling of animal mortalities on farms.

Chapter 18, Arthropod Pests: Insect Control, deals with control of insects and ticks. This chapter covers in some detail the various management techniques available to producers. Chapter 19, Vertebrate Pests and Predators, deals with the various control methods for rodents, birds, and other wildlife pests that can carry disease into the herd.

The next two chapters discuss worker safety and marketing. Chapter 20, Beef Operation, Safety, and Health, discusses worker safety and the possible dangers to those who work in and around cow-calf operations. In addition to identifying the potential injuries that can occur while working around large, sometimes temperamental animals, the chapter discusses safety concerns related to working with feeding and manure handling equipment and the liability issues that can arise with hired workers. Chapter 21, Value Added Marketing, shows how marketing is a critical business component of any cow-calf operation and one that is often most challenging to producers. The chapter covers the options available to most Midwestern cow-calf operations.

The final chapter, Chapter 22, A Cow Herd Management Calendar, breaks down management tasks first

by stage of production and then by time of year. When the stage of production and season management calendars are used together, they identify a relatively complete list of management considerations.




Several chapters include a list of resources related to the chapter's main topic. The book ends with an appendix that includes such items as a forage

production calendar, practical examples of designs discussed in the chapters, and a worksheet for taking an inventory of hazards found on a cattle farm.

One last note about this handbook—although written for cow-calf operations in the Corn Belt, much of the material covered in this book is directly applicable to the rest of the U.S.



TABLE 12-1.
Description of Cow Body Condition Score (BCS).

BCS	DESCRIPTION
1	<p>EMACIATED—The cow is severely emaciated and physically weak. Bone structure of shoulder, ribs, top line, hooks and pins are sharp to the touch and easily visible. Little evidence of fat deposits or muscling. Cattle in this score are extremely rare and are usually inflicted with a disease and/or parasitism. Carcass fat content would be approximately 4 percent.</p>
2	<p>VERY THIN—The cow appears emaciated, similar to 1 above, but not weakened. Muscle tissue seems severely depleted in the shoulder, over the loin, and through the hindquarters. The spinous processes feel sharp to the touch and are easily seen. Carcass fat content would be approximately 7 percent.</p>
3	<p>THIN—The cow is thin with no fat in the brisket. There is evidence of muscle depletion over the shoulder, loin, and back and through the hind quarter. The foreribs have slight evidence of fat deposition. Vertebrae of the spine are easily visible and can be identified individually by touch. Spaces between the processes are less pronounced than cows in a BCS 2. Carcass fat content would be approximately 9 to 11 percent.</p>
4	<p>BORDERLINE—The cow appears thin, with the twelfth and thirteenth ribs easily visible, especially in cows with a big spring of rib. Movement of the muscles in the shoulder is prominent just under the hide as the animal moves. Vertebrae of the backbone are slightly visible and can be easily palpated with slight pressure. The transverse processes (along the edge of the loin) are still very sharp if palpated. Muscle tissue is not significantly depleted over the shoulders and loin or through the hindquarters. Carcass fat content would be approximately 15 percent.</p> <p>Photo courtesy of W. E. Pinchak, Texas AgriLife Research.</p> 
5	<p>MODERATE—The cow may be described as moderate to thin. There is little evidence of fat present in the brisket. A thin layer of fat covers the muscles in the shoulder and the movement appears slightly fluid. The last two ribs, (twelfth and thirteenth) can only be seen if the cow has less than normal gut fill. The spinous processes are smooth and are not visible, but they can be palpated with firm pressure. The hooks and pins are covered with a layer of fat. Areas on each side of the tail head are fairly smooth but not mounded. Carcass fat content would be approximately 18 percent.</p> <p>Photo courtesy of W. E. Pinchak, Texas AgriLife Research.</p> 
6	<p>GOOD—The cow exhibits a smooth appearance throughout. Some fat is deposited in the brisket. A layer of fat covers the muscles in the shoulder, and the movement appears fluid. The ribs are fully covered by fat and cannot be detected visually. There is noticeable sponginess over the foreribs just behind the shoulder. Firm pressure is required to feel the spinous processes. Hindquarters are plump and full. There is noticeable sponginess on each side of the tail head, and fat can be easily palpated over the pins. Carcass fat content would be approximately 22 percent.</p> <p>Photo courtesy of W. E. Pinchak, Texas AgriLife Research.</p> 
7	<p>FLESHY—The cow appears in very good flesh. The brisket is full. A layer of fat covers the muscles in the shoulder, and the movement appears fluid. The ribs appear smooth, and there is a uniform layer of fat from the forerib to the last rib. The top line is starting to take on a square appearance due to fat cover. There are pones of fat on either side of the tail head, and the pins are embedded in a layer of spongy fat. Fat content of the carcass is approximately 27 percent fat, which is similar to the amount of carcass fat in a steer or heifer that grades USDA Choice.</p>
8	<p>OBESE—The neck appears short and the brisket is distended. A thick layer of fat covers the muscles in the shoulder, and movement is very fluid. The cow appears very square and blocky over the top line due to excessive fat. Fat cover is thick and spongy. There are large fat pones on both sides of the tail head. Carcass fat content would be approximately 30 percent.</p>
9	<p>VERY OBESSE—These cows are very obese and are rarely seen. Bone structures are difficult to identify. These cows also have a heavy deposition of fat in the udder. Animal mobility may be seriously impaired. Carcass fat content would be approximately 35 percent.</p>