SDSU Extension

BEEF

Chapter 57

Pasture Fences: Basics

Pete Bauman

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The objective of this chapter is to highlight variations in fence and water systems and to challenge the reader to explore options for fence and water management that are economically and environmentally efficient, effective, and adjustable. It is not our intent to provide a 'how to' guide to constructing various fences or water systems, that information is readily available in the form of manufacturer specifications and through various livestock websites, magazines, etc. This chapter will include information on:

- Exterior Fences
  - Introduction to South Dakota fence law
  - Exterior fence design

Introduction

The history of fencing to control livestock or protect crops is an age-old tale colored with examples of stone, wood, and natural features. As livestock management expanded across the vast prairies of the American west, the shift from open range to titled ownership of property through programs like the Homestead Act of 1862 resulted in a major transition in the way the western plains were grazed. The desire to control the movements of domestic livestock, protect crops, and reduce the competition from wild grazers such as bison and elk left early farmers and ranchers searching for products that would help tame the wide expanses of open prairie.

In the mid-1800's, fence designs were influenced by natural products, the cultivation and distribution of thorny plants such as Osage Orange from the southern states to create 'thorny hedgerows' to control livestock. From this influence rose the concepts of barbed wire, first introduced by Michael Kelly in 1862 and later refined by Joseph Glidden and others in 1873 (Lienhard 1988-2004). Likely no other product influenced the cattlemen's ability to control his herd more than that of the barbed wire fence, and the evidence of its historical and modern significance is obvious across the plains (Figure 1).

Key Points

- Pasture and/or rangeland are staple components to most beef operations, and the infrastructure necessary to utilize pastures centers on fence and water management.
- Successful beef producers will recognize the importance of managing where, how, and when cattle graze.
- Basic perimeter fence placement must start with legal considerations.
- Inadequate perimeter fences can lead to unnecessary input costs, issues with public safety, and uncontrolled breeding.
- Many resources are available to assist producers with developing adequate pasture fences.

Figure 1: Historic barbed wire fence. *Photo by Pete Bauman.*

The management of pasture and rangeland in beef production continues to evolve as producers advance in their knowledge of livestock and grassland ecology. In South Dakota, pasture and rangeland are staple components to most beef operations, and the infrastructure necessary to efficiently and effectively utilize pasture centers primarily on fence and water management. Advances in fence technology coupled with sophisticated grazing plans have shaped innovative fence and water management strategies across South Dakota and the region.

South Dakota's pasture landscape looks much different today than in the days of the Homestead Act. Alternative land uses such as farming, settlement, and the building of towns, roads, railroads and other infrastructure coupled with federal and state landholdings has influenced the landscape in ways unimagined by the pioneer cattleman. These land use changes have created both challenges and opportunities. As alternative land uses continue to fragment grassland landscapes, the days of fencing pastures on section lines and 160-acre quarter sections with a single creek, stock dam, or dugout as a water source have given way to isolated, odd-shaped pastures that may not have a natural water source.

Producer interest in improving livestock performance coupled with advances in grazing science, range management, and wildlife conservation has encouraged the practice of rotating livestock through pastures during the growing season as an alternative to season-long continuous grazing (Walton et al. 1981). In simple terms, livestock overabundance or poor distribution of livestock can have negative impacts on range and pasture plant communities, soil, and overall health (Coughenour 1991). Successful beef producers will recognize the importance of managing where and how cattle graze.

Although the economic and ecological value of rotational grazing systems is largely dependent on stocking rates (Briske et al. 2008), most producers do subscribe to some form of rotation to accomplish various pasture condition or animal performance objectives. Modern beef producers perceive some type of grazing rotation strategy as a viable, often necessary alternative. Grazing rotations require the use of interior cross fences. Cross fencing pastures with traditional permanent materials such as four-strand barbed wire is costly. The evolution of cross fence design renders use of traditional materials unnecessary, allowing for the innovative use of semi-permanent or temporary movable fences to develop nonpermanent grazing systems.

Exterior Fences

Basic perimeter fence placement must start with legal considerations. First among these is an understanding of how property boundaries and historic land use can impact current and future fence placement. Of particular importance are historic or current agreements with neighbors. In the vast majority of cases, four-strand barbed wire is the accepted norm for perimeter fences across South Dakota. Since design and installation of four-strand barbed wire is common, we will not dedicate much space to its description or use. We will however highlight alternatives that producers may want to consider.

Introduction to South Dakota fence law: Each state has its own versions of fence and land law; the same is true in SD. It is beyond the scope of this section to summarize or interpret all laws pertaining to fence installation and use. However, we will highlight a few basic laws every livestock producer should be aware of. We encourage producers to consult appropriately qualified individuals for interpretation of fence law.

Laws pertaining to fences in South Dakota can generally be found under Title 43: Property of SD Codified law. Within Title 43 are several chapters that deal more specifically with fences. Specifically, SD livestock producers managing fence and livestock

on pasture should be aware of the following chapters related to fencing:

43-23 Partition Fences. This chapter generally defines the framework for legal fence between properties and the rights and responsibilities of affected parties in regard to erecting and maintaining adequate fence lines. These laws basically state that each party is responsible for half of the fence, but does allow for some discretion in relation to the benefit derived by either party. In addition, 43-23-3 allows for any fence mutually agreed upon by affected parties to serve as a legal fence. Of note is 43-23-9.1 which addresses issues of possession of real property. Landowners should be aware of issues with fence lines that are not consistent with property lines and how those fence lines can affect property and land use rights.

43-24 Local Option Woven Wire Fences. This chapter is similar to 43-23, but allows for woven wire fences.

43-17 Water Boundaries and Riparian Lands. 43-17-35 specifically discusses the erection and use of fences along waterways, navigable waterways, and installation of gates for these waterways. This section also addresses how federal designation of a navigable waterway affects fence construction. This section will be of particular interest to producers who maintain pasture fences on the Missouri River, James River, Boise des Sioux River, and the lower five miles of the Big Sioux River. Excellent information that further explains these fence laws can be found at the South Dakota Department of Environment and Natural Resources website http://denr.sd.gov/des/wr/fence.aspx.

Title 34-13: Easements and Servitudes. Address fences on easement properties.

More information on SD fence law can be accessed through the state Legislature's South Dakota Codified Laws website related to Title 43: Property. The website allows for searching key words. Simply enter 'fence' for a list of all laws pertaining to fences. http://legis.state.sd.us/statutes/DisplayStatute.aspx?Statute=43

Exterior fence design: A sturdy perimeter fence is generally a very important part of an efficient pasture operation. Inadequate perimeter fences can lead to unnecessary input costs (supplies, labor, time gathering escaped livestock, and managing livestock injuries). In addition issues with public safety (cattle on roads) and uncontrolled breeding can lead to additional risk, expense, and poor neighborhood relations. Maintenance needs of perimeter fences often reflect the 'pressure' associated with the grazing management scheme. Poor quality perimeter fences coupled with high stocking pressure where forage is limited can result in livestock continuously testing the integrity of perimeter fences (Figure 2).

Figure 2: Well maintained barbed wire fences are the most common perimeter fence in South Dakota, especially where the fence is mutually utilized by neighbors (top). Also common along roadways or low-pressure areas are barbed wire fences in various states of disrepair but of which the functionality is relatively intact (bottom). *Photo by Pete Bauman.*

When repairing and/or replacing perimeter fences it is important to consider whether the existing fence is legally located. Placement can be especially important in cases of a new fence or where land ownership may have changed hands. It is not uncommon for a new landowner to order a survey of his/her acquisition only to discover that historic fence lines do not follow legal property boundaries. Meanders from a few feet to several hundred yards or more can occur.

Figure 3: Modification of a four-strand barbed wire perimeter fence with an electrified 'hot' wire for additional negative reinforcement (left). Three to four-strand electrified high-tensile wire perimeter fences are becoming more common as materials and installation methods continue to be refined (right). *Photo by Pete Bauman.*

Some small meanders are likely the simple consequence of technological limitations of previous landowners, while large meanders may be the result of some previous verbal or written agreement between neighbors to fence around wetlands, creeks, or other topographic features. Changing historic fence lines in these situations may require legal interpretation if contested by one or more neighbors. Landowners should be aware that legal interpretation may or may not place the new fence on the surveyed boundary. Before investing in fence replacement and/or survey costs, it is important to consult with neighbors to consider potential costs and benefits associated with moving historic fence lines (see section on fence law above).

There are a great variety of philosophies related to what an adequate perimeter fence should look like, but generally a high-quality, long-lasting fence is the goal. Most perimeter fences are still constructed of four-strand barbed wire, but many producers are experimenting with three to four-strand high-tensile electric fence for perimeter use as an alternative to barbed wire (Figure 3). Much of the success of any fence involves negative reinforcement. In the case of either barbed wire or electric, the animal experiences some discomfort when contacting the fence, thus avoiding the fence in the future. Producers must take care to adequately maintain electric perimeter fences, ensuring the fence is kept clear of power-robbing debris and vegetation. This is an additional time/labor investment that should be considered in the planning phase.

Topography, physical features, and winter snow load should be evaluated when determining what type of perimeter fence to install (Figure 4).

Although many livestock producers choose to handle perimeter fence repairs themselves, many

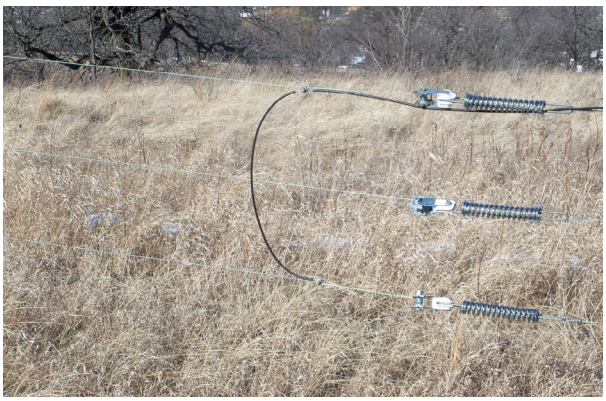

Figure 4: Various combinations of spring tensioners, insulators, and jumper wires can be utilized in combination to customize a high-tensile electric perimeter fence. Insulated springs and jumper wires can isolate the center wire, leaving it 'cold' while the top and bottom are 'hot'. Tensioners can be relaxed during winter to avoid snow damage if necessary (left). Wetlands and heavy vegetation should be avoided if possible in order to reduce maintenance expenses on barbed wire and electric fences. Welded cattle panels and wood posts can provide long-term solutions when fencing through difficult areas. Notice the pigtail insulators installed on the top of the fence posts to provide power across the wetland. *Photos by Pete Bauman and Joe Blastick.*

have turned to contracting with professional fence installation companies for large fence projects where time, labor, or equipment may be limited. Budgeting for fence installation, repairs, and replacement should be a consideration of any farm or ranch management plan. Taking advantage of various pasture walks, tours, or organized grazing events can provide producers with valuable fence installation tips and techniques that are best learned from a trained professional (Figure 5). For the producer or landowner who chooses to install their own fence, equipment may be available for rent through a local fence materials retailer or agricultural cooperative.

Finally, as part of a comprehensive fence plan, wildlife must be considered from both an economic and ecological standpoint. Economically, planning fences to reduce or eliminate damage from wildlife will result in improved efficiency through reduced labor and materials. Ecologically, wildlife friendly fences decrease wildlife injury and mortality, thus improving the overall integration of ranch priorities and objectives. See the *Wildlife Friendly Fencing* section of the *Pasture Fences: Innovations* chapter of this book.

Figure 5: Professional fence contractors offer speed, efficiency, and specialized equipment to quickly install fences (left). Students at the annual Grazing School hosted by the South Dakota Grassland Coalition learn proper high-tensile installation techniques from a professional (right). *Photos by Pete Buman.*

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