



# Cattle Producer's Handbook

Range and Pasture Section

536

## An Introduction to High-tensile, Smooth-wire Electric Fencing

John R. Lacey, *Extension Range Management Specialist*  
Montana State University

Fencing is a valuable tool for controlling animal distribution and improving rangeland and pasture management. The ideal fence should have a low capital cost, be easy to install, have a long life, have low maintenance cost, and be stock-proof. Electric fences have long been viewed as temporary structures in range operations. Only recently has the technology necessary for permanent electric fences been developed.

Permanent electric fences often are used in intensive grazing systems. They differ from conventional electric fences in that they are constructed with two or more wires, which may or may not be individually charged. The use of two-wire electric fence can result in a 25 to 50 percent savings in labor and material costs, compared to conventional, four-strand, barbed wire fencing. This fact sheet presents tips to help plan and construct durable electric fences for livestock control.

### Principle of Electric Fencing

The principle involved in controlling animals with electric fencing is "rule-by-fear." It takes few contacts before animals learn to avoid electric wire fences. Electric fence is largely a psychological barrier, not a physical one as is barbed wire.

Livestock should be trained with electric fences before they are released in a pasture situation. This may be accomplished by constructing an electric fence inside a regular corral and penning the stock over night.

### Advantages and Disadvantages

High-tensile electric fencing has several advantages over barbed wire. If properly constructed, it lasts longer, requires less maintenance, causes less animal injury, is

less restrictive to wildlife management, and costs less. The cost advantage is greatest in rough terrain. Contrary to popular belief, experience indicates that electric fencing is a useful tool in rough terrain.

While ranchers and livestock have lived with barbed wire for 100 years, electric fencing technology has evolved largely during the last two decades. This suggests a need for an initial demonstration on how to install the fence and how to train livestock to respect it. Electric fences also need to be inspected more frequently than do barbed wire fences. However, smooth wire is safer than barbed wire for livestock and wildlife. Never use barbed wire when building an electric fence.

The following safety tips are also recommended during construction, operation, and maintenance of electric fences:

1. Mark fences with warning signs every 300 feet (especially single-wire fences).
2. Locate fences to avoid contact with power lines or communication equipment.
3. Never hook up an electric fence ground to a power pole grounding system.
4. Maintain a respectable distance from the fence during electrical storms.
5. Do not install or repair the fence while the energizer is on.

### Components

Components of an electric fence include an energizer, wire, wire strainer, posts, insulators, stays, and proper braces. Each part must operate continuously for successful operation.

*Reprinted with permission from Great Plains publication GPE 5210.*