

# Fencing to Protect Stored Hay from Deer and Elk

by Chris Onstad, Toole County Extension Agent  
and Jim Knight, Extension Wildlife Specialist

Deer and elk can be destructive to stored hay. Whether the hay is next to your home or in a remote location, deer and elk can locate the hay by smell as well as sight. They are particularly attracted to stored hay when the snow is deep and their natural food sources are difficult to reach.

**O**f all the methods used to keep deer and elk from hay, exclusion is the method most likely to keep them at bay. Methods such as repelling chemicals, frightening with gas exploders and hazing are short-term and/or expensive, and have limited success. Shooting is also an option, but normally is governed by hunting regulations.

An integrated pest management plan using several types of control methods would provide the greatest success in reducing wildlife damage to stored hay. The purpose of this guide is to provide information on the fencing aspect of a full scale management program.

## Is it worth the cost?

Before constructing any type of fence, it is best to determine whether the cost will exceed the damage. This is often referred to as the benefit-cost ratio and is simply calculated by dividing the value of wildlife damage by the cost of the fence. If the value is greater than 1.0, then construction of the fence would provide economic benefits. Other considerations, such as child safety and aesthetic qualities, also influence the decision of what type of fence to use. There are two variations to consider when discussing fencing techniques: repellent and barrier. Repellent fences are not as permanent as barrier fences, but tend to be less costly in comparison.

Calculating the benefit/cost ratio will help determine what type of fence will be the best for your operation (Table 1).

## Barrier fences

Barrier fences are often used in areas where hay is permanently stored and heavy wildlife pressure occurs annually. These fences have traditionally been constructed of wood. However, wood fences are expensive, difficult to build, require high maintenance and have a relatively short life compared to other types of barrier fences.

Galvanized metal stock panels can be used to protect stored hay. They are attached to posts away from the stack and placed one on top of the other.

## Woven wire fences

Woven wire fences (Fig. 1) are fairly expensive and difficult to construct, but require very little maintenance. Start the

fence with rigid corner assemblies and place 14- to 16-foot-long posts approximately four to six feet in the ground. Line posts should be 15 feet apart for elk and up to 30 feet apart for deer. Fasten a section of 48-inch woven wire to the outside of corner posts with steel staples, at ground level. Applying 100 pounds of tension, fasten the rest of the woven fence to the post with steel staples. Repeat this procedure around the fence until complete. Two strands of smooth or barbed wire can be attached to the upper section of the post to get the desired height of 9 or 10 feet.

A less expensive but less stout woven wire fence can be constructed using T-posts to hold the woven wire. Extend the height of the fence by using 3/8-inch fiberglass rods, which will hold 2 strands of wire above the woven wire fence (see sidebar, p. 3).

If wooden posts are used, a 3/8-inch hole can be drilled in the top to hold the fiberglass rods.

## Repellent fences

Repellent fences are normally constructed of wire charged with electricity. High-tensile electric fences can provide an alternative to permanent woven wire fences.

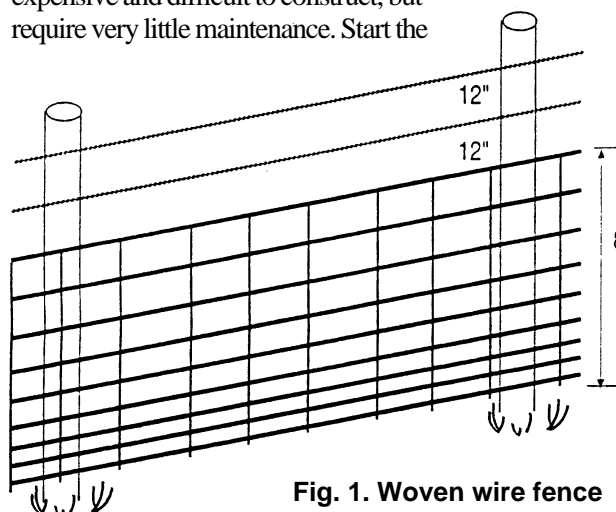


Fig. 1. Woven wire fence

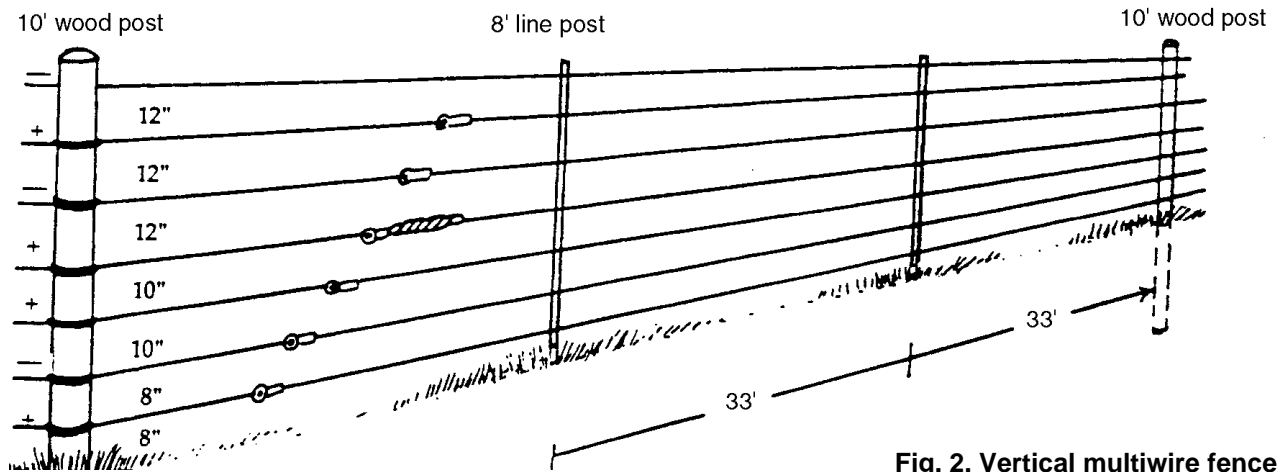


Fig. 2. Vertical multiwire fence

They are still difficult to construct, but are less expensive than the woven wire fences and can provide the control needed for deer and elk exclusion. However, more maintenance is required. As with all electric fences, it is important that it be seen so that large animals like elk do not knock it down, but instead receive a repelling shock and thus learn to avoid the fence.

The fences may be marked with colored ribbons or other highly visible material. Keeping a clear 12–15 foot border around the fence makes it more visible. For electric fences, it is important that the animal receive a significant shock. To increase the effectiveness of the fences, applying a mixture of peanut butter and molasses to the positively charged wires will increase the effectiveness of any electric fence. In many of the fences where traditional wood posts are used, metal T-posts with extensions can be used to reduce the cost of the fence.

### Vertical multiwire fences

Multiwire fences are one of the more economical and effective type of fences for preventing damage to stored hay from deer and elk (Fig. 2). Vertical fences consist of 7 strands (72 inches tall) of smooth high-tensile wire supported by conventional posts. The procedure for building this type of fence is similar to other high-tensile fences. Begin with sound corner assemblies and add wires. The bottom wire should be 8 inches above the ground. The distance between lower wires should be 8 inches, increasing to 12 inches

between the top wires. Alternating wires should have opposite charges, keeping in mind that the top one should be negative for lightning protection. This type of fence can be effective for high pressure from deer and moderate pressure from elk. Again, metal T-posts with extensions can be used to reduce the cost of the fence.

### Slanted multiwire fences

This unique variation to a standard multiwire fence can be used when high pressure of deer and elk are present and the value of the hay is worth the added cost (Fig. 3). Start with a sound corner assembly with at least five feet of post above the ground and eight feet apart. There are typically seven wires, spaced 12 inches apart, in this setup. Angle braces will need to be placed at 60- to 90-foot intervals along the fence with battens every 30 feet to maintain distance between wires. Attach a low-impedance fence charger so that charges are alternated between adjacent wires.

### The “sweet and simple” fence

The “sweet and simple” fence is a temporary and very inexpensive fence for repelling deer and elk from hay storage. Begin with sturdy corner posts and fiberglass rods for line posts at 40 foot intervals. String a single strand of 17-gauge smooth wire (polywire/polytape can be substituted for metal wire) at 2.5 feet above the ground and apply 50 pounds of tension. Attach 3 x 4 inch strips of foil to wire at 3 to 4 ft. intervals, using strips of cloth tape. Apply a 1:1 mixture of peanut butter and vegetable oil (or molasses) to the tape strips and fold the foil over the tape. This type of fence can also be made with two wires, one at 12 inches and another at 36 inches. Connect the wire(s) to the positive post of the grounded fence charger. Because this fence only has one or two wires, baiting of the wire is extremely important so that wildlife learn by the shock to avoid the fence.

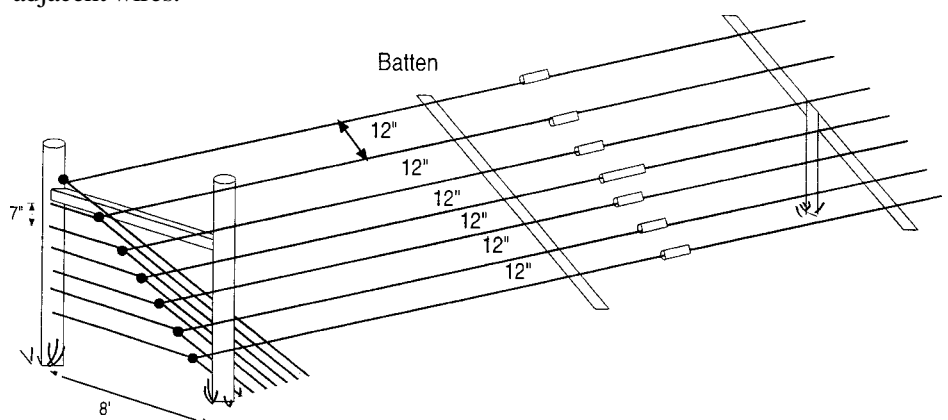


Fig. 3. Slanted multiwire fence

## Gates

Gates for electric fences should also be wired to carry an electrical charge. For single or double wire fences, simple electrical wire fence connectors would



*Using drilled-out insulators, a T-post 4 feet high can be extended to 6 feet.*

### Extending fence height

Constructing a 6-foot high fence usually results in having to buy 8-foot T-posts for the line and 8- to 10-foot posts for the corners.

One way to save money on the T-posts is to use an existing T-post for the bottom 4 feet and add a 3/8-inch fiberglass rod for the top 2 feet. To support the fiberglass rod, use a brand of plastic insulator that snaps onto T-posts and has a plastic pin to retain the wire. Remove the pin, drill the holes out to 3/8 inch, and insert the fiberglass rod in the holes to extend your T-post as shown above.

A fiberglass rod costs about a dollar as compared to over three dollars for an 8-foot T-post. If you are using wood posts, drill a 3/8-inch hole in the top of the post. Insert the rebar or fiberglass rod in the hole to extend the height of the post.

suffice. On multiwire fences where a livestock panel is likely to be used, two posts can be fastened to opposite ends of the gate with wires attached to them as on the regular fence. A positive wire from the fence can be loosely attached to any of the wires on the gate with a piece of insulated wire. This allows gate movement. Attach additional wires from the live wire on the gate to others on the gate to provide electricity to all wires. At this point, all wires on the gate will be positively charged.

### Chargers and grounders

High-quality low-impedance chargers delivering more than 5,000 volts powered by AC or battery are recommended. AC power supplies are normally the cheapest power source and the most reliable. In most situations, battery and/or solar chargers are necessary.

Charging the fence should be done as soon as a section of the fence is built (if not all built in one day). The charger should not be turned off once the fence is completed lest deer and elk learn that the fence can be penetrated, decreasing the effectiveness of the fence. Routine voltage checks and maintenance are also important to make sure the fence is working properly. Where child safety is a concern, timers can be added to turn the charger off during times when children are exposed to the fence.

The electrical system should be well grounded at the charger by driving four

to six ground rods five feet deep and six feet apart. Connect the ground post of the fence charger and the negative fence wires to the grounding system.

Identify the electric fence with warning signs by placing one sign per side on smaller storage areas, and one sign every 200 feet for larger storage areas.

### Other types of hay storage protection

A short-term solution to protecting hay can be done by wrapping plastic barriers around the hay itself. These materials come as 6-mil black plastic or as a netting made of polyethylene. The barriers are attached to stacks of hay by tying baling twine around pebbles enclosed in a fold of plastic at the top of the sheet and tying the loose end of the twine to baling twine on the hay bales. The netting is simply stretched around the hay for protection. Where strong winds prevail, these materials are susceptible to damage.

Wildlife agencies sometimes recommend a snow fence (Tensar®), which is available in 8 x 100 foot sections that are wrapped around the hay. This is supposed to be longer-lasting and more durable than the plastic or netting wraps.

Another method of preventing wildlife damage to high-quality alfalfa is possible if you have large straw bales on hand. Essentially, a

*[continued over]*

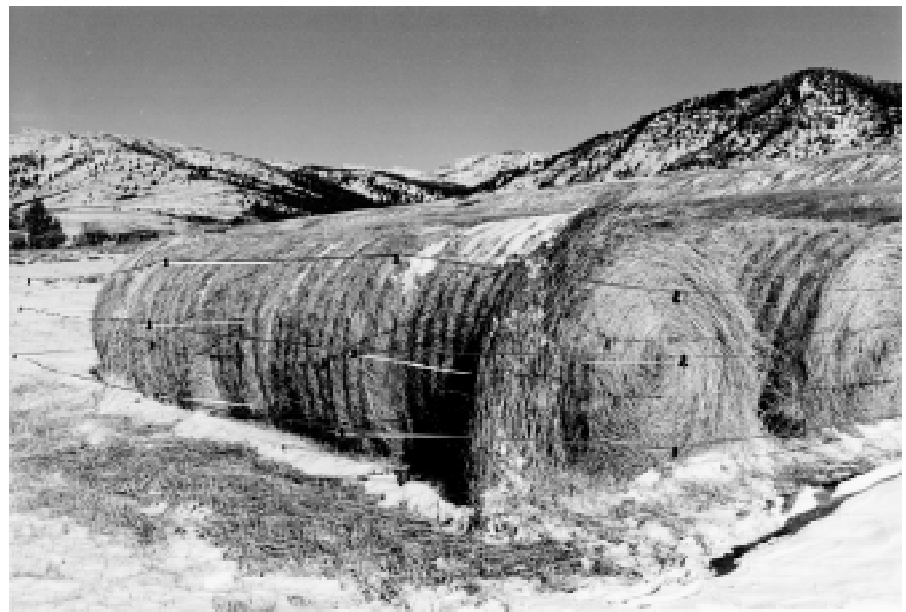
**Table 1: Various fence types and their costs**

Type of fence	Cost per foot *
Woven wire	\$ 2.00 – 4.00
Multiwire (7 wire)	0.28 – 1.50
Slanted multiwire (7 wire)	0.75 – 2.00
Offset	0.30 – 0.45
Sweet and simple (1 wire)	0.11 – 0.20
Frozen ground (5 wire)	0.11 – 0.40

\* Cost is for materials and charges without labor.

[continued from p. 3]

straw fence is built around the alfalfa. Place the alfalfa in the middle, then stack straw bales around the perimeter of the alfalfa, constructing a wall at least 10 feet tall. You will need to move a couple straw bales to get to the alfalfa or install a gate. The straw will likely sustain some damage, but the quality alfalfa will be protected.



**Fig. 4. When the ground is frozen, rebar or fiberglass rods can be used to hold electric fence wires.**

**Note**

*This information is provided for educational purposes only. Reference to commercial products or trade names does not imply an endorsement of them by the Montana State University Extension Service.*

**Frozen ground fence**

The frozen ground fence is useful when driving posts into the ground is impossible because of frost or rocky conditions. Temporary single- or multiple-wire fences can be built.

Haystacks can be protected with electric fence even if the ground is frozen. Instead of using T-posts to hold the wires in place, steel or fiberglass rods may be used. The rods, which are sturdy enough to hold the wires away from the hay,

are poked horizontally into the hay bale itself, with insulator and wire (or polywire) attached (see Fig. 4). The same principles apply for charging the wires on this fence as any of the corresponding single wire or multiwire fences discussed here. Insulators can be attached to rebar so the wires do not ground out.

Be sure to keep a 12–15 foot open border around the outside of the fence to make it easy for the animals to see the wire.

**Copyright © 2001 MSU Extension Service**

We encourage the use of this document for nonprofit educational purposes. This document may be reprinted if no endorsement of a commercial product, service or company is stated or implied, and if appropriate credit is given to the author and the MSU Extension Service. To use these documents in electronic formats, permission must be sought from the Ag/Extension Communications Coordinator, Communications Services, 416 Culbertson Hall, Montana State University-Bozeman, Bozeman, MT 59717; (406) 994-2721; E-mail - [publications@montana.edu](mailto:publications@montana.edu). To order additional publications call your local county Extension agent, or visit [www.montana.edu/publications](http://www.montana.edu/publications).



The programs of the MSU Extension Service are available to all people regardless of race, creed, color, sex, disability or national origin. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, David A. Bryant, Vice Provost and Director, Extension Service, Montana State University, Bozeman MT 59717.

**File under Wildlife  
A-5 (Big Game Animals)  
Issued October 2001  
(10210001001SF)**