

## DROPPERS FOR WIRE FENCES

This Factsheet looks at the options for droppers for high tensile smooth wire and barbed wire fences.

### GENERAL REQUIREMENTS

After fence wires have been strung and tensioned, it is apparent that between fence posts the wires could be spread open and livestock pass through. The wider the post spacing, the easier it is to spread the fence wires. To prevent this and make the fence secure, fence line posts could be spaced very close together. However, to reduce material and installation costs, and to maintain fence flexibility and integrity, battens can be installed between the posts. These battens are called stays or droppers and are used on all types of wire strand fences, electric and nonelectric.

**Functions** The functions of a fence dropper are:

- to maintain fence wire spacing between posts
- to add fence visibility between posts

Good fence droppers must perform these two functions and should also:

- be strong enough to resist breaking under livestock pressure
- be able to be securely fastened to the fence wires
- not damage the fence wire
- be able to be installed at low cost (i.e., quickly and easily)
- be available at a low purchase cost

Many droppers are also easily adapted to fences of varying wire numbers and spacings rather than being made for one specific fence design.

**Installation** Droppers are installed after the fence wires have been fully tensioned. They should be installed so they do not touch the ground to maintain the fence flexibility and upright position of the dropper. Dropper spacing will vary depending on the livestock pressure on the fence, but for most fences the spacing will be no greater than ten feet. Spacings as close as five feet may be used on pen or feedlot fences. See Factsheet 307.260-1 *Livestock Control – Non-Electric Fence Designs* and 307.260-2 *Livestock control – Electric Fence Designs* for fence designs with dropper spacings..

**Types of Materials** Most droppers are made of either wood or metal, but other materials such as plastic rods or pipe are used.

The following illustrates commonly used dropper designs on barbed and high tensile smooth wire fences.

## WOODEN DROPPERS

Wood is the most commonly used material as it is plentiful, low cost, easily worked, durable and provides good visibility when properly sized.

### Wooden Droppers for Barbed Wire

The majority of barbed wire fences use wooden droppers, sometimes simply tree branches, etc. available along the fence right-of-way. Because of the surface texture of barbed wire (two twisted strands of wire with frequent barbs) droppers can be simply wire tied (tightly). They seldom slide under livestock pressure when properly tied as shown in the photo at right. Low tensile (soft) wire is used for the tie wire as it is easy to knot. This wire should be galvanized for long life.



**Wooden Dropper on Barbed Wire**

### Wooden Droppers for Smooth Wire

Securely attaching droppers to smooth wire is more difficult than to barbed wire. Wooden designs all have a slot, notch, hole or other method of gripping the fence wire. In addition they may also be wire tied on. Simply tying on a stick, as can be done for barbed wire, is generally not sufficient. However the first design shown below has proved effective.

The following six designs are used on smooth wire. Where required, use a tie wire of low tensile (soft) galvanized wire.

**Wire-Tied Cedar** While normal or casual tying of wooden droppers to smooth wire is ineffective, this method has been proven to work. Cedar, being soft, is “imprinted” by the wire when tied tightly. Cedar also tends to have little shrinkage as it dries, so the dropper will not loosen. Use cedar with a cross section slightly larger than for other (stronger) wood.



**Wire-tied Wooden Dropper on HTSW**

## Wooden Droppers for Smooth Wire (continued)

**Angled Slots (all on same side)** A dropper of 1 1/2 in. by 1 1/2 in. material has slots cut 10 degrees off horizontal, 1/8 in wide (saw blade width) by 5/16 in. deep. All the slots are on the same side of the dropper (wire tension is not affected by dropper installation). It grips the fence wire due to the angle of the slot. This design, while effective, may be prone to failure if livestock pressure is great enough to force the wire out of the slot. The slots can be cut all in the same direction or the slot angle can be cut in an alternating angle pattern (as shown) for increased retention to the fence wires.



Angled Slot Dropper on HTSW

**Angled Slots (on opposite sides)** The same material and slot size as the previous dropper but the slots are on opposite sides. This requires the dropper to be woven into the fence wires which improves dropper attachment under livestock pressure. However it also increases wire tension as the “path” of the fence wire is slightly increased. The slots may or may not be cut in alternate directions as the previous dropper. Each dropper may be woven into the fence wires in the same manner or in an alternating manner. Wire tension is greatest when the alternation weave is used.



Angled Slot Dropper on HTSW

**Horizontal Slots / Wire-Tied** The same material size is used as the previous droppers but with horizontal slots that are cut shallower (3/16 in.). This design uses the slot to locate the fence wire on the dropper but is wire tied for security. This adds to the installation time (costs). Multiple slots can be cut so the dropper can be attached to various fence designs (various numbers of wires and wire spacings).

Note that when these slotted wooden droppers are used on moderate or heavy livestock pressure fences they require relatively defect-free hardwood as the slots weaken the dropper. Lower grade woods will require larger cross sectional sizes. Also note that the angled slot designs are made for a specific fence design (number of wires and wire spacings).

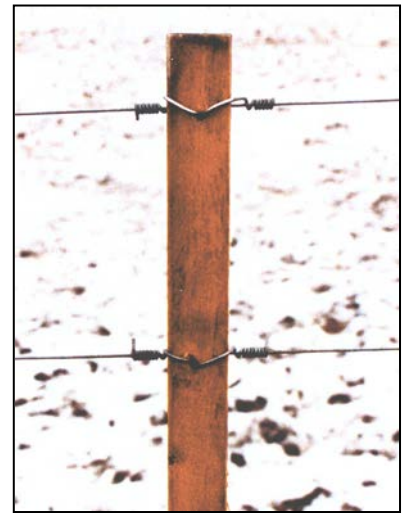


Horizontal Slot Dropper on HTSW

## Wooden Droppers for Smooth Wire

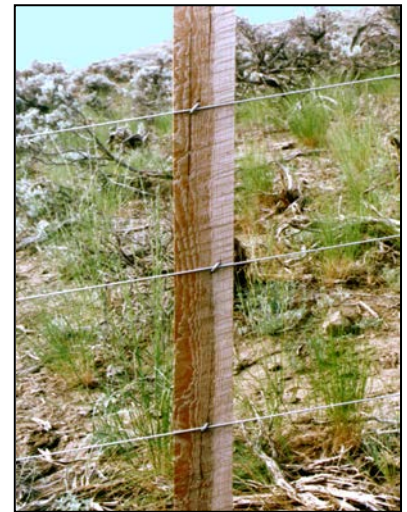
(continued)

**Drilled Hole / Wire-Tied** A 1 in. by 3 in. board has 3/8 in. holes drilled that match the number and spacing of each fence wire. A 12 in. piece of “soft” wire (approximately 12 ½ ga) is bent in half (like a long staple). The dropper is attached to each fence wire with one “staple” that is placed over the fence wire, through the dropper hole and the “staple” ends bent back and twisted onto the fence wire. This provides a secure dropper and the dropper size offers good visibility and strength. Installation time is similar to the horizontal slot/wire tied design. They can be readily made on farm of rough sawn boards that are gang-drilled to suit the number and spacing of fence wires.



**Drilled Dropper on HTSW**

**Stapled On** Any of the previous material sizes can be stapled on instead of slotting or wire tying on. This, however, requires seasoned wood (green wood will dry, shrink, and become loose) and usually more effort. If the staple angle is alternated for each fence wire (turned to the left and then to the right - contrary to standard stapling theory) more wire gripping can be achieved. Also the vertical alignment of the staples should be staggered so as to prevent the dropper from rotating under pressure. The staples (use barbed staples?) must be driven “home”. These can be low cost droppers but good attachment is not always possible.



**Staple on Dropper on HTSW**

## METAL DROPPERS

### Metal Droppers for Barbed Wire

This material is used in either a wire or sheet metal form (usually galvanized steel). Strength and visibility vary compared to wood as discussed below.

Twist on wire droppers are used on fences because of the ease of installation and because they are universally adapted to fences (they are made to suit any fence). However they do not have two important dropper requirements; they lack strength (they deform under low livestock pressure and stay deformed) and have low visibility. They are generally not recommended except for low-pressure fences.

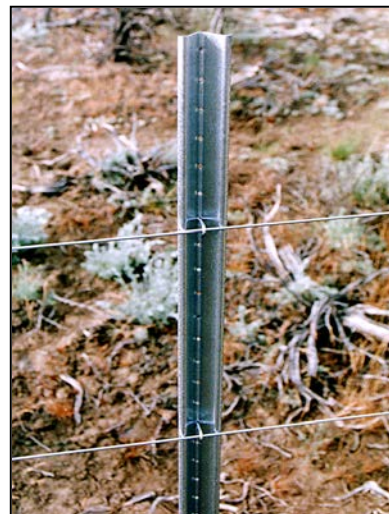


**Metal Dropper on Barbed Wire**

## Metal Droppers for Smooth Wire

Twist on wire droppers are also not suitable for smooth wire fences because of low strength, poor visibility and they are easily moved sideways on smooth wire by livestock. However, a formed sheet metal design is used.

**Vee-Shaped / Clip-On** A notched sheet metal dropper was once available but they were weak and scraped the wire galvanizing. Currently, a vee-shaped cross section dropper (with rolled edges where it contacts the fence wire) is used that is adequate. A nail is inserted through a hole in the vee and bent over the fence wire to secure the dropper onto each fence wire (one nail per fence wire). Multiple holes make the dropper adaptable to any fence design. Some dropper bending may occur under moderate to high livestock pressure. Dropper purchase cost may limit its use, however, it is generally quick to install and has good visibility.



**Metal Dropper on HTSW**

## OTHER DROPPER MATERIALS

Most wood and all metal droppers are not suitable for use on electric fences. Although many electric fences use no droppers, when they are used they must be nonconducting (unless all fence wires are electrified). Fibreglass or plastic materials are therefore often chosen. As little contact is expected by livestock on an electric fence, attachment of droppers is not as great a concern as on nonelectric fences.

### Pultrusion Rod

This material is a fibre reinforced plastic formed by pulling through a mold (pultruded). Various colors and sizes are available for good visibility and strength. The material will weather well and will not be affected by water. They are tied onto the fence wires.

### Polyethylene Pipe

Small diameter polyethylene pipe can be slotted and wire pinned between two strands of electric fence wire to act as a low cost dropper.

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