

# High-Tensile Woven Wire Fences for Reducing Wildlife Damage

Fact Sheet FS889

## Cooperative Extension

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Where wildlife is abundant and/or crops are high value, fencing can be an effective tool for excluding deer and small mammals. High-tensile woven wire (HTWW) fences provide a physical barrier that keeps wildlife outside the protected areas. HTWW fencing is effective in reducing crop damage in areas that have moderate to high wildlife pressure, and can be low maintenance and long-lived when properly installed.

**Important note: It is critical to properly install high-tensile woven wire fences!** During installation, the fence is tightened to hundreds of pounds of tension. This requires properly installed ends, corners, and brace post assemblies. If installation is substandard, the corner posts and ends will have a tendency to be “pulled-out”. Properly installed, HTWW fences can provide 20 plus-years of near maintenance-free performance.

As with any commercial fencing design, lumber and labor constitute the major costs. Costs range from \$4.50–\$7.50 per foot depending on terrain, the number of corners, height of fence, and the number and style of gates needed. **Remember: Rigid brace assemblies—ends, corners, and gates, make up the backbone of all high-tensile fence systems.**

## Frequently Asked Questions About Wildlife Fencing

**How high should I build my fence to keep deer out?**

The height of a deer fence is critical to reducing deer crop damage. However, fence height has a major impact on the cost of installation. Woven wire deer fences eight feet high are generally considered nearly 100% effective in fields with significant deer crop depredation. However there are several considerations when determining fence height: for example, availability of other food sources, deer population and value of crops grown.

The higher the fence the longer the post needed, substantially increasing cost. The use of woven wire fencing, with additional high tensile smooth wires above, as noted in Diagram 3, can be an effective method of reducing cost while still providing an effective fence. Utilizing high tensile smooth wires near the top of the fence is considered effective since deer do not have enough momentum to compromise the fence near the top

of their jump. Smooth wires spaced nine inches apart above 6-1/2 feet yielding a finished fence height of eight feet or higher have proven effective for New Jersey farmers as determined in the Rutgers University deer fence farmer survey 2005 NJ Supplemental Deer Fencing Program Evaluation Survey and On-site Evaluation Results.

The height range of farmer installed deer fencing generally is from seven to 10 feet.

### Why is the planning stage important?

It is important to lay out your fence design in advance to determine:

- the scope of work required to prepare the fencing site;
- the location of corners and gates;
- the high and low points along the fence line (to allow for proper line post locations);
- the number of corner, line, and brace posts required; and
- the amount of HTWW needed.

### Do I need a permit to put up a fence?

Many areas require a variance or permit due to height restrictions on fences. “Right-to-Farm” ordinances may also be applicable. Always check the local ordinances by contacting the town clerk or zoning officer for information before you start construction.

### Should I use a contractor or do it myself?

If you have the labor and equipment (tractor, auger or post driver), you can save approximately 50% of the cost of the fence by doing it yourself.

Do not take shortcuts; build it right the first time. Use the proper wire, posts, gates, and construction techniques. Improperly installed fences greatly increase long term costs and reduce effectiveness.

### Where do I find a contractor?

Focus on contractors that specialize in wildlife “exclusion” type fencing. Wildlife fence dealers and distributors, ads in farming publications, word of mouth, the Internet, and the Yellow pages are good places to start when seeking out contractors. Ask about the contractor’s experience and references, and ask to see installations.

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Make sure you compare the same materials between contractors (one contractor may seem less expensive than another because the materials may be different, e.g. wire tensile strength, number of horizontal and vertical wires, and galvanizing class [class III recommended for long life]).

Evaluate the equipment used to install the fence, e.g. heavy-duty equipment to ensure proper post and fence installation vs. hand tools.

### How many years will the HTWW fence last?

If appropriate materials and construction techniques are used, the fence can last 25–30 years. (Remember to amortize fence costs based on its life expectancy.)

### Utilities and hazards?

Before you dig, call 1-800-272-1000. IT'S THE LAW! This is a free service for marking underground utilities.

### What about gates?

There are several types of gates to consider which vary in costs, quality, and ease of use. Remember, choose convenient gate locations during your planning phase.

Manual gates, such as livestock gates and pipe gates, must be constructed and installed with the same attention to detail as the rest of the fencing system. Wildlife will compromise the fence at gate areas if gate selection is inappropriate. (A manually closing gate can also aid in reducing trespass and vandalism to fields where this is a problem.)

Electric gate openers are available, but they can be expensive and difficult to maintain.

Cattle grates, instead of gates, provide easy vehicle access, but are expensive. (Consider doing it yourself to save on costs.) Inquire about cattle grate effectiveness among users.

## General Construction Guidelines for High-Tensile Woven Wire Fences

Ends and corners are the most important part of the fence construction. The posts should be at least 5–6" in diameter, and installed 36–40" below grade.

When auguring is the installation technique, it is very important to tamp the bottom of the hole tight. This should also be done during the back-fill process.

If posts are augured in, they should be set with a wood block or wire "spider" at the bottom (see Diagram 2). These help "anchor" the post.

The length of the brace at corners should be twice the height of the fence. The high-tensile brace wire must be installed opposite the direction of the pull of the fence.

Use good quality posts, CCA #40 treated *Southern or Northern pine*. (CCA #40 treated poplar or oak posts may present problems.)

Posts should be spaced 25–30' apart depending on terrain, and set in the ground a minimum of 36".

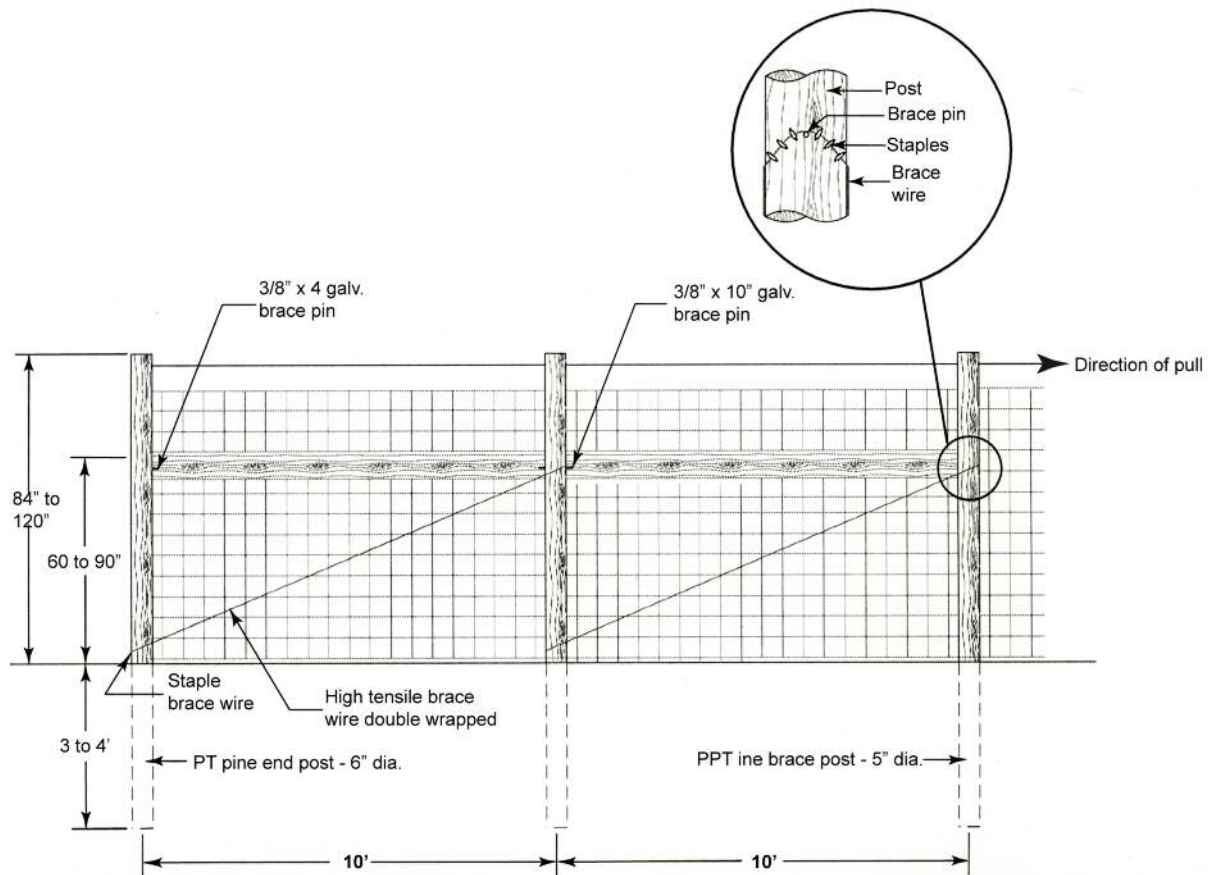


Diagram 1: Double Horizontal Brace Assembly for Corners

Line posts need to be set at high and low points along your fence line. Low points must be anchored (see Diagram 2) to reduce potential for pulling out of the ground.

Only use posts to support the fence. A fence should stand on its own. Trees or other means of support are generally not a good idea. Remember, longevity and low maintenance are what lower the cost of a fence over time!

## Auguring vs. Driving Posts

Auguring can be more readily accomplished due to the lower cost and availability of post augers. The post drivers utilized for HTWW fences are generally heavy-duty and capable of driving 5-6" diameter posts 4 ft into the ground.

Drivers can be either tractor or truck mounted. Post driving leaves the soil undisturbed, with no need to backfill holes. Installation is quick. Truck mounted post-driver accessibility can be difficult.

Auguring is time consuming due to the need to back-fill holes. In addition, you will need to anchor corners, low points, and ends (see Diagram 2).

Rocks: For each site, soil/rock considerations are important in the decision to drive or auger posts. (Attempting to drive posts in rocky soils can result in shattered posts.)

## Do-it-Yourself Installation of High-Tensile Woven Wire

A good way to handle HTWW is to roll it out close to the line of posts. Make sure the more closely spaced line wires are at the base of the fence.

Splicing, initial tensioning, adjusting to dips and gullies, final tensioning, and stapling are all critical aspects of HTWW fence construction. It is vital that you consult installation guides or videos.

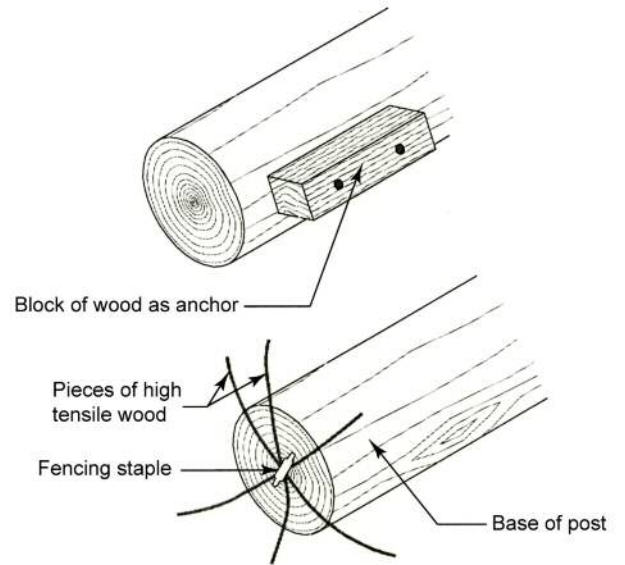


Diagram 2: Block and Spider - to help set post

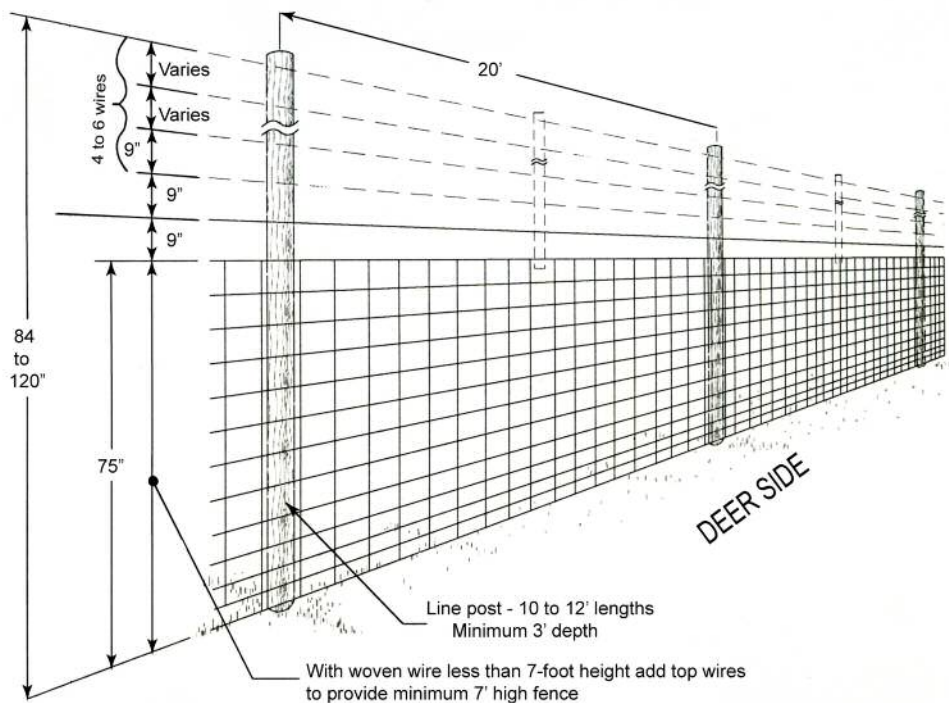


Diagram 3: High Tensile Woven and Smooth Wire Non-Electrical Deer Fence

## Fencing Materials: Cost Ranges in New Jersey (2000)

### Lumber (Southern or Northern Pine CCA-treated #40 posts)

5-6" diameter:	4-5" diameter:
12'-\$20.00	12'-\$14.00
10'-\$16.00	10'-\$9.50
8'-\$ 9.00	8'-\$8.00

### Wire (all wire is high-tensile)

Woven wire fencing: Available in 6', 7', and 8' heights in 330' rolls. Prices vary from \$145-\$350 depending on height, number of horizontal wires, distance between vertical stay wires and style of knots (e.g. fixed-knot, hinge-lock, solidlock, etc.). High-tensile smooth wire (12-1/2" gauge, class three galvanized) 4,000' roll - \$65-\$72.

### Accessories

1-3/4" Barbed staple: 50 lb pail:	\$40-\$50
Stretcher bar puller:	\$95-\$120
Fence stretcher bar and puller:	\$110-\$140
Wire reel (spinning Jennie):	\$60-\$80

Seven-foot and eight-foot high-tensile woven wire fence designs and other wildlife fencing options are on display at the Snyder Research and Extension Farm in Pittstown, New Jersey. They are part of Rutgers University Extension Outreach/Center for Wildlife Damage Control. For further information, call Snyder Farm at 908-730-9419.

This fact sheet does not provide complete information on proper installation of HTWW fencing. It is only intended to provide preliminary information for individuals considering exclusion-type fencing for their farms, properties, parks, etc.

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