

HOW TO BUILD A DEER OR ELK-PROOF FENCE

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This information is intended to assist agricultural producers who wish to build a fence to protect their produce or property from deer and/or elk (ungulates). The following specifications meet the fence-design requirements for the Big Game Prevention Program. Saskatchewan Environment uses the Big Game Damage Prevention Program to cost-share the cost of building fences with producers. The designs included have been proven to exclude deer and elk when properly constructed and maintained.

1. PLANNING YOUR UNGULATE-PROOF FENCE

Before you start building determine your immediate and long-term requirements. Consider these questions:

Is your operation at its maximum operating size or are you likely to expand and will need additional storage area in the foreseeable future?

Could locating the fence enclosure in a different area better serve your needs?

Can existing structures be incorporated into the enclosure design?

Will one large enclosure be suitable or would two or more smaller enclosures be preferable?

Once you are confident that you know what size of enclosure will serve your needs and where it should be located, you will have to determine a fence design. Experience has shown that deer and elk will not jump fences that are 2.1 – 2.4 m (7 - 8 ft) high. The recommended fence height is 2.4 m (8 ft).

BASIC FENCING SPECIFICATIONS

1. Suggested size of treated posts – 3.7 m (12'), 12-15 cm to diameter (5" - 6")
2. Depth of post hole – 1 m (3.5')
3. Minimum height of fence – 2.1 m (7')*
4. Recommended height of fence – 2.4 m (8')
5. Maximum size mesh opening – 17.5 X 30 cm (7" X 12")*
6. Distance between posts – 4.9 – 7.3 m (16' to 24')
7. Distance wire mesh above ground – 5 cm (2")*
8. Suggested brace wire - 12 gauge high tensile.
9. Suggested staples – 5 cm (2") barbed.

* Indicates these specifications must be met to be eligible for funding under Saskatchewan Environment's Big Game Damage Prevention Program.

Plan your fence project by deciding on all the particulars involved including the optimum post spacing, the type, number, location and the size of the gates. Line braces are not required for stackyard and smaller acreage horticulture fences.

In order to determine how many fence posts will be required you will need to know the length of each side of the planned enclosure so determine the layout and measure the sides as carefully as possible. Draw up a simple plan of your ungulate-proof fence using an overhead view. Don't forget to include corner braces and gate assemblies. This will enable you to obtain an accurate count of the number of posts you will require. This plan will also help you decide how many rolls of wire will be needed.

You will also need to plan how you will drill the necessary postholes. The type of soil and the availability of augers or pounders will influence how the posts are erected. Most individuals will have experience with fence building and will know what equipment will work best in their area. If you are not sure, discuss your fencing situation with a neighbour who has experience or contact a post or wire supplier for advice. If possible, arrange to visit a landowner who has completed an ungulate-proof fence. You may receive valuable tips and shortcuts that will assist you with your planning.

2. MATERIAL REQUIREMENTS

The following is a list of material that will be required:

a) Wire Mesh

- 2.1 – 2.4 m (7'-8') in height depending on the species being excluded.
- Mesh openings with no larger than 17.5 cm (7 in) between the horizontal lines so that animals cannot choke or become tangled.
- Preferably high tensile 12 gauge.
- Many landowners are choosing game farm fence.

b) Treated Posts

- 3.7 m (12') treated posts with a 12 – 15 cm (5" – 6") top diameter are recommended.
- Pointed posts may or may not be required.

c) Gates

- Steel frame gates should be large enough to allow the passage of the largest farm machinery that might require entrance.
- Gates should be approximately 15 cm (6") above the ground. If animals try to squeeze under the gate during the winter, hang 5 cm X 10 cm (2" X 4") sweeps on the bottom of the gate.

d) Staples, Tension Wire, Spikes

- 5 cm (2") barbed staples are recommended.
- 12 gauge high-tensile wire is recommended for tension on gates and corner braces.

- Adequate sized spikes (usually 15 cm (6")) will be required for building corner braces and gates.

e) Fence Wire Stretcher

- Most landowners make a simple fence wire stretcher by wrapping and tying off mesh around a piece of pipe and attaching chains to the pipe and then to a tractor.
- Another useful fence stretcher can be made using two 5 cm X 10 cm (2" X 4") or preferably 10 cm X 10 cm (4" X 4") boards. The wire mesh is wrapped around one board then the other board is sandwiched together with bolts, clamping the wire. A chain attached to the top and bottom of the boards is then hooked to a tractor and the mesh is stretched tight.
- Factory manufactured stretchers are also available. Some wire suppliers have these available for loan.
- Tension and height can be controlled by attaching the fence stretcher to the bucket of a front-end loader equipped tractor.

Most landowners utilize new material when building their ungulate-proof fence but suitable used material can be considered, particularly good quality posts. All material used should have a life expectancy of 20-25 years.

Obviously it is very important to determine how much material is required. After doing so, the landowner should contact as many suppliers as possible, to compare prices. Prices can vary significantly from one supplier to another. Don't forget to determine shipping costs and exact supply dates.

3. LAYING OUT THE FENCE

When determining the location for your fence you should consider how it will fit into your farming/ranching operation. Some individuals require fences primarily to protect their feed while others incorporate the fence into their feeding regime. While most ungulate-proof fences are built at the primary stackyard, some operators build smaller fences at a variety of locations. Frequently existing buildings, slab barriers or other fences are also utilized as components of the ungulate-proof fence.

If possible, locate the fence as far away from ungulate habitat as possible. The fence-site should also be located in a spot that is not vulnerable to flooding. If necessary, the land should be leveled and low areas filled.

Once the site is suitable, the corners of the fence should be established and posthole locations measured and marked. Some individuals lay out the fence line with binder twine and simply measure off each hole as the previous one is completed. Other people prefer to mark each spot with a small stake.

4. BUILDING AN UNGULATE-PROOF FENCE

a) Posts and Corners

All posts must be pressure treated. Experience has shown that the best post for building ungulate-proof fences is 3.7 m (12') long and has a 12 – 15 cm (5"-6") top diameter. These longer, heavier 3.7 m (12') posts involve more work, but still go into the ground like standard fence posts. Rocks are a headache, regardless of the size of the post.

Either tractor mounted PTO or hydraulic 25 – 30 cm (10" – 12") augers are generally used for drilling holes. Poles are then dropped into the hole, straightened with a level and tamped into place; 3.7 m (12') posts can be also be pounded into the ground, provided a large enough post pounder is available. Occasionally custom fence contractors who have such equipment are hired to pound posts.

Some soil types allow the operator to drill a smaller 15 cm (6") hole, fill it with water and then use the bucket on a front-end loader to push the post into the hole.

Usually posts that are driven or pressed into the ground must be pointed. Some suppliers sell pointed posts or the landowner can use a chainsaw to sharpen one end.

Posts must be tamped securely to ensure that they do not lean. The optimum material for tamping is crushed rock as this material compacts quickly and holds well. Obviously dirt from the hole can be also used, as well as a mixture of dirt and gravel. Some landowners cement the posts into the ground but treated posts may rot at the ground line if cement is used.

Bracing is extremely important. Corners and gates must be properly braced, as they are the key components of a large fence. Consider using extra heavy posts on corners and gates. Good bracing ensures that the fencing material (wire) can be properly stretched and will remain tight. Place the brace post as far as possible from the corner post (3.7 – 4.9 m (12' – 16')) and place the horizontal brace post down from the top of each by about 30 cm (12"). A double wrap of twelve-gauge, high tensile, wire should be used from just above the spot where the horizontal brace is joined to the outside post to the bottom of the corner post. Examples of corner bracing are shown in Figure 1. Line braces are not required and may reduce the effectiveness of the fence by reducing the amount of spring in the wire.

Figure 1. Examples of Corner Braces

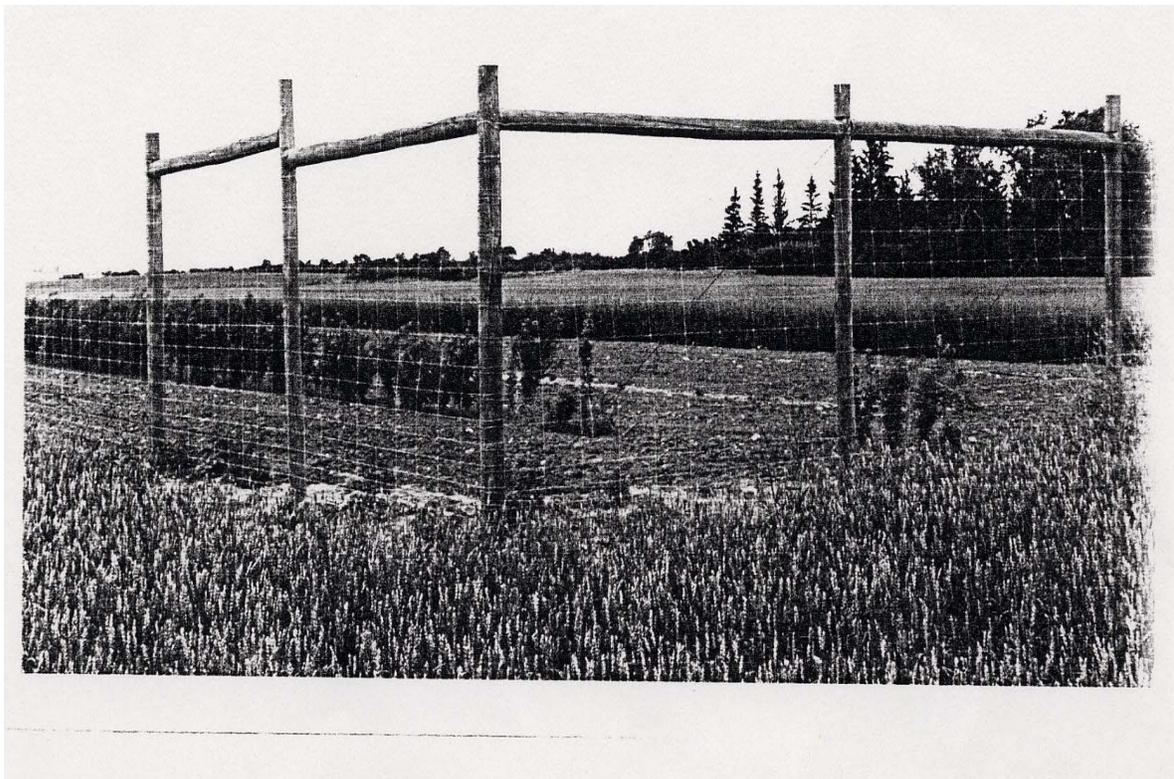
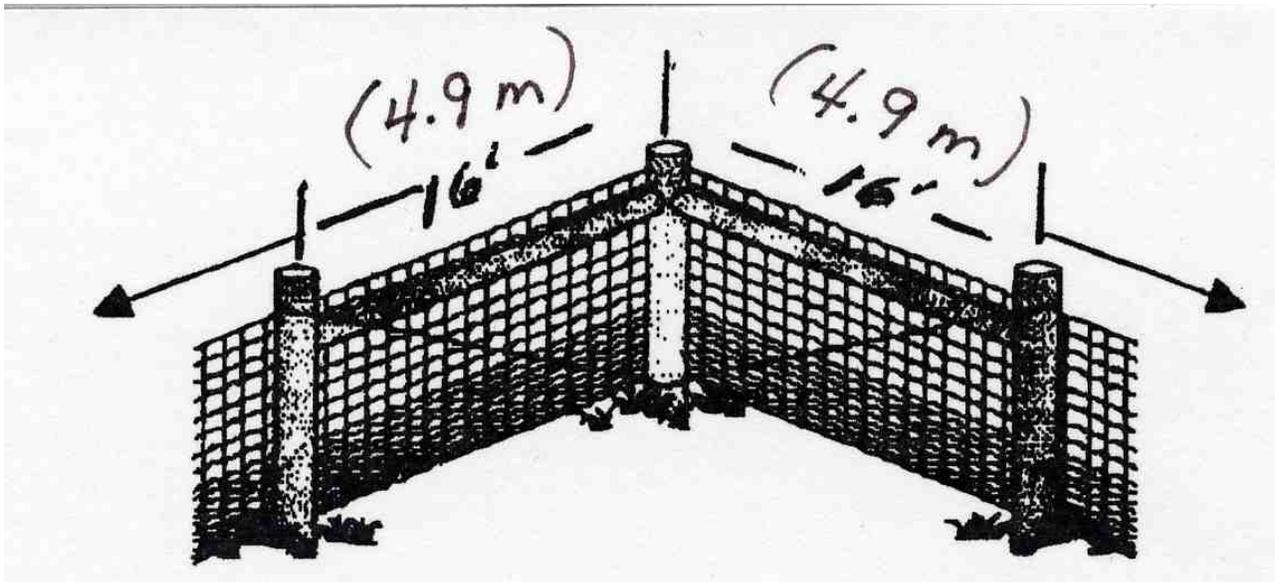
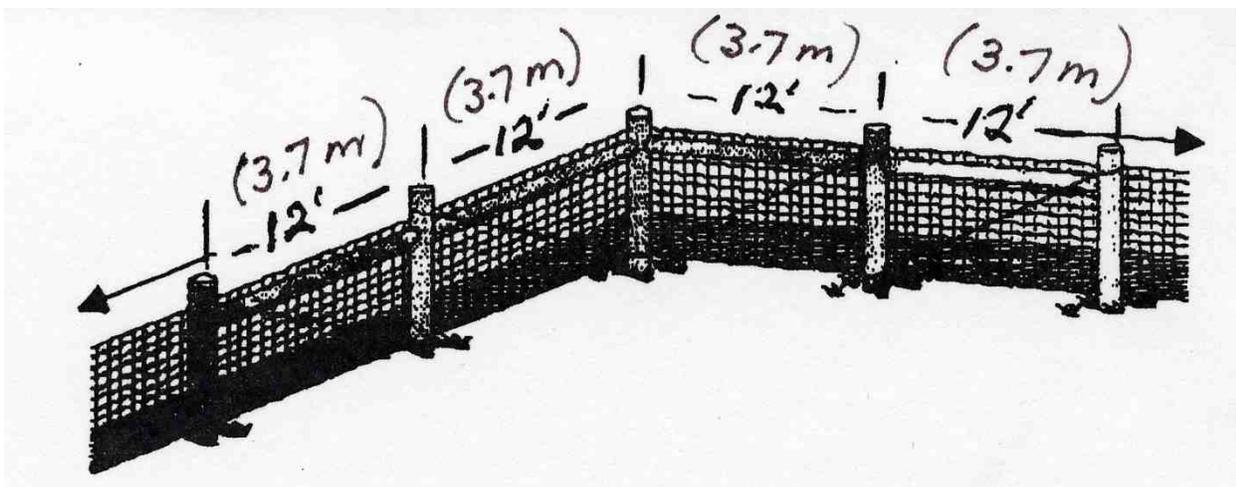


Figure 1. (Continued)

Shared post corner brace (for changes from 60 to 90 degrees)



Adding a second brace panel



b) Stringing Wire

Unrolling fence material can be one of the toughest jobs in fence building. Seven or eight foot rolls of game farm fence are very awkward and heavy. The simplest method of unrolling wire is to push the roll of wire along the ground, outside of the posts. This requires at least 3.1 m (10') of clearance around the perimeter of the fence so that the wire can roll.

A better method of unrolling wire is to put a length of pipe through the center of the roll and attach a chain to each end so that the roll can be pulled by hand or by using an ATV or a tractor. This also requires a clear perimeter.

If building fence in rolling land, ensure that no gaps are left under the bottom wire. Sometimes the ground under the fence is so irregular producers have to weigh the bottom wire down by wiring rocks to it. Small pieces of wire mesh can also be used to fill in small gaps that deer might crawl under. Extra posts might be required to eliminate significant gaps.

Factory tools for splicing and tying off high tensile wire are generally available, free of charge, from wire suppliers. An equivalent tool can be made at home by taking a 15 cm (6") long piece of 13 or 19 mm ($\frac{1}{2}$ " or $\frac{3}{4}$ ") flat iron and drilling a 4.8 mm ($\frac{3}{16}$ ") hole 2.5 cm (1") from one end. When starting a roll of fence wire, cut the vertical strands so that there is about 45 – 60 cm (1.5' – 2') of horizontal wire. Bend each strand of wire around a post, leaving about 15 cm (6") of extra wire. Insert the end of the wire through the hole in the tool, push the tool down to the original wire and wrap several times. The result, shown in Figure 2, is a tight, strong tie-off.

The fence should be stretched only until the tension kinks (see kink in the horizontal wire in Figure 2) partially straighten. This will ensure the fence remains flexible on impact and will compensate for extreme weather conditions.

At least four or five of the horizontal wires should be stapled to each post. The top and bottom wires must be stapled. Some landowners staple every horizontal wire. All lines should be stapled on corner and gateposts and the staples sunk into the post to hold the wire. Staples on line posts should be left out far enough to allow the wire to move between the post and staple. Five cm (2') barbed staples should be used.

Figure 2. Example of an Efficient Method of Attaching Wire to Posts



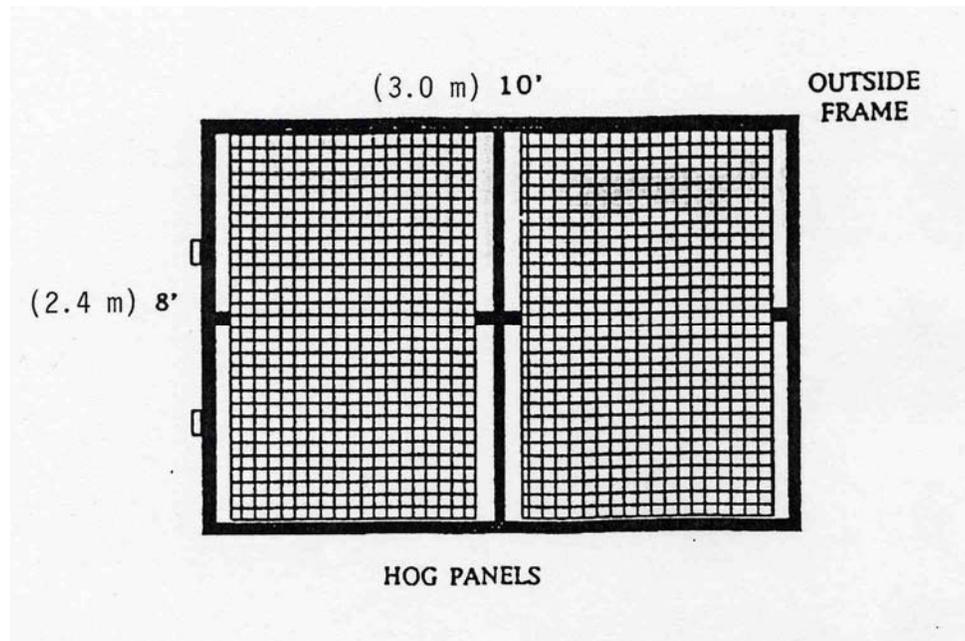
c) Gates

The landowner should have enough gates to ensure that he or she can easily enter and leave the compound. Gates should be large enough to easily allow large machinery to enter and leave. Most operators find that a 6.1 m (20') gate is optimum. Since large gates are very heavy, gateposts should be oversized and well braced. Many landowners obtain used telephone posts or similar heavy posts for their gates and corners.

Wrapping the fence mesh over a metal frame provides a secure gate, which is not heavy. An alternate material is concrete mesh or any suitable wire mesh that can be welded or wrapped to the metal frame.

Many landowners have built a simple, proven gate that was designed for this purpose (Figure 3). Tubing that is 3.8 cm (1.5") square is welded together to make a frame that is 2.4 m (8') high and 3.0 m (10') long. Reinforcing vertical and horizontal cross braces are then welded in place. Then 4.9 X 1.4 m (16' X 4 1/2') steel hog panels are cut in half to make two 2.4 X 1.4 m (8' X 4 1/2') panels. These panels are welded vertically onto the frame. Simple hinges can be made by welding a 10 cm (4") piece of 2.5 cm (1") inside diameter pipe onto opposing sides of the two panels. Then a ready rod gate hanger can be made, inserted through the gatepost and the gates hung and leveled.

Figure 3. Simple Gate Panel Design



A simple, effective, method of hanging gates is to use a 36 cm (14") length of 19 mm ($\frac{3}{4}$ ") ready rod with the head of a 19 mm ($\frac{3}{4}$ ") bolt welded to one end. Thread a 19 mm ($\frac{3}{4}$ ") nut up to the bolt then drill suitable size holes in the gatepost. Insert through the rod through the post. Place another 19 mm ($\frac{3}{4}$ ") nut on the ready rod so that you have a nut on each side of the post. You can control how much ready rod protrudes by tightening the nuts and the gate can then be leveled. An additional gate design is shown in Figure 4.

Figure 4. Simple Gate Latch Design



Ungulate-Proof Gate

