

## Designing a Fence

Tips for Small Acreages in Oregon

### A Strong Fence Equals Peace of Mind

Fencing can be the third highest investment, after buildings and property. Yet it's comforting to know where your animals are and that they will be there when you come back. Fences control animal movement, define property boundaries, and increase property value. However, fences can also create new problems. Consider how a planned fence may harm wildlife, limit equipment access, harbor weeds, and affect adjoining neighbors. Read on to find out about fence types, layout, and safety for you, your animals, and wildlife.

### What Type of Animals are You Keeping In or Out?

The kind of fence you choose will depend on your resources and the animals you are controlling:

- *Certain animals require strong fences.* Coyotes and young cattle require a stronger fence than sheep or goats. Sheep with heavy coats need multiple wires to hold them. Pigs need low wires to keep them from rooting out. Dairy cows need less of a fence. Animal groups with mixed sizes may need a higher or lower height with closer wire spacing.
- *Horses and llamas have special needs.* Horses are fast, physical animals that see small items poorly and need tall, highly visible fencing. A startled horse can run into a single wire and be severely injured. Llamas will not challenge a fence as much, but have large, protruding eyes that can be injured by sharp points. For these reasons, barbed wire should never be used with horses or llamas.
- *Wildlife may be injured or killed by barbed or woven wire.* Smooth wire is safer for wildlife than barbed or woven wire. Space smooth wire at 16, 22, 28, and 40 inches from the ground to allow antelope, deer, and elk to get through with reduced damage to themselves and the fence. The 12-inch gap between the top two wires keeps animals from getting tangled in the wires. Determine whether this wire spacing will hold your livestock.
- *A high number of animals in a small area will need a stronger fence.* Permanent, wooden fences are often used for corrals and barnyards. Temporary electric fences, with two to three wires, are effective in larger areas such as pastures.
- *The stronger the temptation on the other side of the fence, the stronger the fence needs to be.* Strong fences are needed to separate cows from weaning calves, intact males from breeding females, and hungry animals from lush crops.

### Fence Laws in Your Community

Fences keep animals off roads and out of crops. On designated "open range," the property owner is responsible for fencing neighboring livestock out. On designated "closed range," the livestock owner is responsible for fencing livestock in and will be liable for loose animals that damage crops, cars, or people. Contact the Oregon Department of Agriculture at (503) 986-4681 to find out the range designation in your area.

When installing a new fence, maintain good neighbor relations by surveying your property lines and installing a legal fence. Some local ordinances may require permits, prohibit fence chargers, and specify fence types, heights, and setbacks next to roadways, railways, and between neighbors. Contact your local building official for more information.

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*"Good fences make good neighbors."*

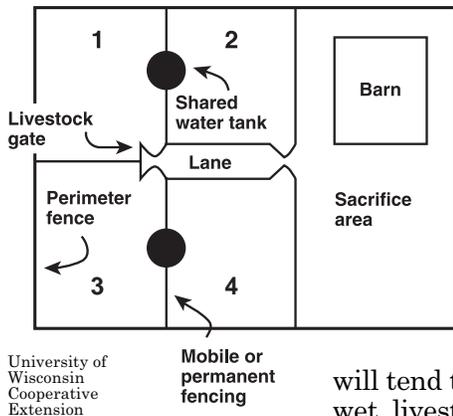
- American proverb

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## Designing Paddock Fencing

Your property is unique and will require a fence layout that fits your resources, animals, and site conditions. Here are some key points:



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- a) **Paddock location.** Never locate a paddock over the septic system. The drainfield needs uncompacted soil and vigorous grass to work properly. Locating paddocks on the south, east, or west sides of buildings will dry out paddocks quicker than those located on the north sides.
- b) **Paddock shape.** The more square, the better. Livestock will group near the gate in a long, narrow paddock. The result is uneven grazing. Temporary electric wires can shorten up long fields. However, when space is limited, long paddocks make better exercise areas for horses.
- c) **Paddock position on slopes.** Run paddocks across slope. If paddocks run up and down a hill with water at bottom, animals will tend to undergraze the top half and overgraze the bottom. If bottomlands are wet, livestock will tear up the sod. Instead, separate hilltops from valleys and run paddocks across the slope.
- d) **Gate location.** Put the gate in the paddock corner nearest the barn. Here's what happens when gates are placed in the corner away from the barn: animals see the herd heading down the lane, head for the ungated corner, and mill around.
- e) **Lanes.** Short and narrow lanes will leave more room for growing forage. A 12-foot wide lane will serve a herd of 35 cattle or 350 sheep. An 18- to 24-foot-wide lane serves larger herds. Locate lanes in dry areas and install the lane using a gravel layer over geotextile fabric.
- f) **Stockwater location.** Locate watering sites away from ditches, streams, and ponds. Watering sites often concentrate livestock, manure, and mud. Livestock will graze more evenly and trample less forage if water is provided in each paddock. For an inexpensive and portable stock tank: cut a 55-gallon plastic barrel in half and outfit it with a water float and garden hose. See the fact sheet "Managing Stockwater in Pastures and Streamside Areas" in this series for more details on providing stockwater.

## Designing Fencing Near Streams

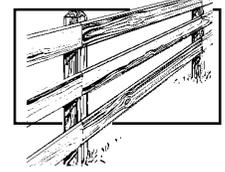
Animals wade in streams for water, shade, and fly relief. However, livestock can contract hoof rot and water-borne diseases, trample wildlife habitat, destabilize streambanks, and cause water pollution. A fence creates a buffer between the land and open water with many benefits. Keep these tips in mind when designing a near stream fence:

- a) **Fence location.** The wider the buffer, the greater the benefits will be for cleaner water, wildlife habitat, and reduced streambank erosion. Place the fence as far from the stream as possible. Fences placed closer than ten feet will bring few benefits and are more likely to be damaged from floods. Cost-share programs will require a generous buffer. See the fact sheet *Managing Near Streamside Areas with Buffers* in this series, for more information on designing buffers.
- b) **Fence type.** Fencing areas that are frequently flooded can be a challenge. The most economical option is to install a temporary one-strand or permanent high tensile electric fence. Don't use woven wire fence that is more likely to trap debris, injure wildlife, and be damaged in a flood.
- c) **Fence features.** When you install an electric fence in a frequently flooded area, include line switches. The switches allow you to shut off power to wires until floodwaters recede. Use pinlock insulators to reduce trash collection on wires and damage during floods. The insulators allow you to place wire on top of posts or to drop wire to the ground. Mow grass under electric fences, as needed.
- d) **Riparian pastures.** In some situations, a near stream or riparian pasture may be created to control weeds and produce forage. Work with a grazing professional to successfully carry out this special practice.

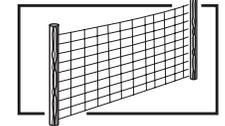
## Types of Fences

Fence Type	Features	Initial Cost and Maintenance
<b>Wood Plank</b>	High strength, visibility Attractive, often used for horses or cattle near buildings Use offset electric wire to prevent horses chewing on wood	Expensive High upkeep for wood and paint
<b>Woven Wire</b>	High strength, visibility, available in different mesh sizes Add top board or wire for tall animals, add electric wires for sheep and goats with horns Unsafe for wildlife, consider using only in small areas close to buildings	Expensive Moderate upkeep
<b>Plastic</b>	Moderate strength, not for cattle Safe for horses and llamas	Expensive Low upkeep, no painting
<b>High-tensile Electric</b>	High strength, lower visibility Used for wide variety of animals Cost-effective compared to others	Moderate Moderate upkeep to retighten wire and cut back vegetation
<b>Barbed wire</b>	High strength, low visibility Never electrify barbed wire Unsafe for horses, llamas, and wildlife	Moderate Low upkeep to retighten wire
<b>Electric wire</b>	Psychological not physical barrier, animals need to be trained to respect wire Low visibility, electric "tape" may be used to increase visibility Permanent or temporary fence. Ideal for subdividing fields into smaller paddocks for pasture management	Inexpensive Moderate upkeep to retighten wire and cut back vegetation

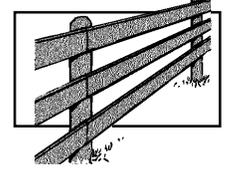
Wood plank



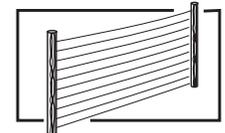
Woven



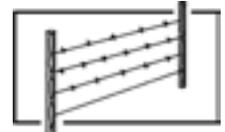
Plastic



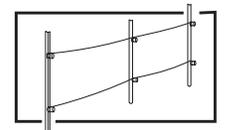
High Tensile



Barbed



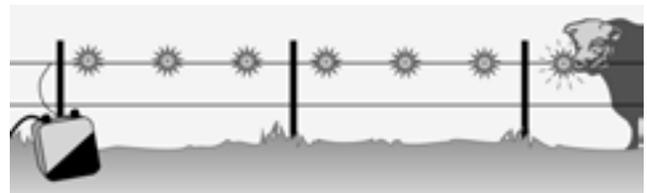
Electric



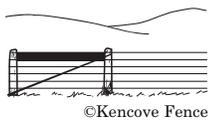
## Shocking Facts about Electric Fencing

An electric fence creates a fear barrier rather than a physical one for animals. Electric fences are often used in permanent high-tensile fences along the perimeter and as temporary single or double strand fences to divide pastures. Points to keep in mind about electric fences include:

- The main components are posts, wires, and insulators. Accessories include the charger and grounding rods. New Zealand chargers are more efficient with less fire danger than "zapper" chargers.
- The fence creates an electric circuit that runs from the energizer, over the wires, through moist ground and returns to the grounding rods. In this example, the wet earth is half the circuit. Sandy or dry soils don't conduct electricity very well. In these areas, a grounded return wire may be needed to close the circuit.
- Anything touching the wire can drain the charge to the ground and decrease the shocking power of the fence. Electric fences need to be inspected periodically to remove grasses and tree limbs that are touching the wires.
- Animals need to be trained to respect electric fences. A single wire inside a small pen will quickly teach animals. Horses monitor fence current and need a fence that is continuously charged.

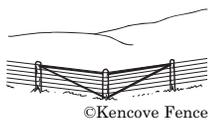


## Fencing - Key Parts



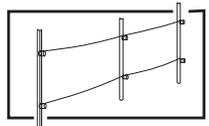
### End Posts

Wire fences can exert up to 4,000 pounds of pressure on posts located at the end of a fence line. End posts need to be braced, made of steel or stout wood, and buried deeply to withstand this kind of pressure. Bury posts with half the post length above ground and half below ground. If setting posts by hand, return in a month to tamp settled soil. Driven posts are up to five times stronger than if hand set.



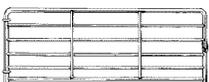
### Brace Posts

The brace post (H-brace) is the anchor that provides the strength to end posts. Brace posts are needed at the ends, corners, and on long runs on all fences, except wood rail and plastic types. A double brace (HH-brace) assembly will take wire pull in both directions.



### Line Posts

Line posts are used to withstand animal pressure and maintain wire spacing. They may be made out of wood, steel, plastic, or fiberglass.



### Gates

Gates should be sturdy and at least 16 feet wide for field equipment and lime, hay, or gravel trucks. Provide a people entry gate next to the main one to discourage fence climbing. For horses, consider secure latches that are "horse proof," but are easy to reach from horseback.

## Safe Fences

### For You:

- Locate underground and overhead utilities before installing a fence. Call the Oregon Utility Notification Center at (800) 332-2344, to make sure there are no gas, water, or electric lines where you plan to dig postholes.
- Wear heavy leather gloves and eye protection when installing a fence.
- Wear a dust mask and hearing protection when sawing or driving treated wood posts.
- Never install electric fences under power lines.
- Notify neighbors, visitors, and small children about electric fences and instruct others on disconnecting the energizer in an emergency.
- Post warning signs on electric boundary fences as required by law.

### For Livestock:

- Avoid sharp edges on gates, fences, and chutes that can cause injuries. Signs of hazardous fencing are shiny skin or bruises found under hair tufts. Sharp edges are found on nails, bolt ends, exposed pipe ends, and the tops of metal T-posts. Pipes with diameters larger than 3 inches are less likely to injure animals.
- Equip gates with tiebacks to prevent gates from swinging into alleys and catching animals between gate end and fence.
- Horses and llamas are inquisitive and will injure themselves on a poorly designed fence. Horses can get their legs caught between brace posts and fence wire. Block off this space or run woven fabric on the occupied side of the fence. Ask your fence dealer for more information on protecting these animals.



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- Local farm supply store or fence material catalogs may have details on installing a fence.
- Fence contractors install fences. Look in the yellow pages in the phone book under "Fences." Get several bids and check references.
- The local soil and water conservation district (SWCD), USDA-Natural Resources Conservation Service (NRCS), and local watershed council may provide on-site technical advice and cost-share funding for fences that manage pastures and protect near stream areas. Contact your local SWCD, NRCS, and watershed council offices for details.
- Oregon State University Extension Service provides assistance on fencing that manages pastures and protects near stream areas. Contact your local office for more information.

