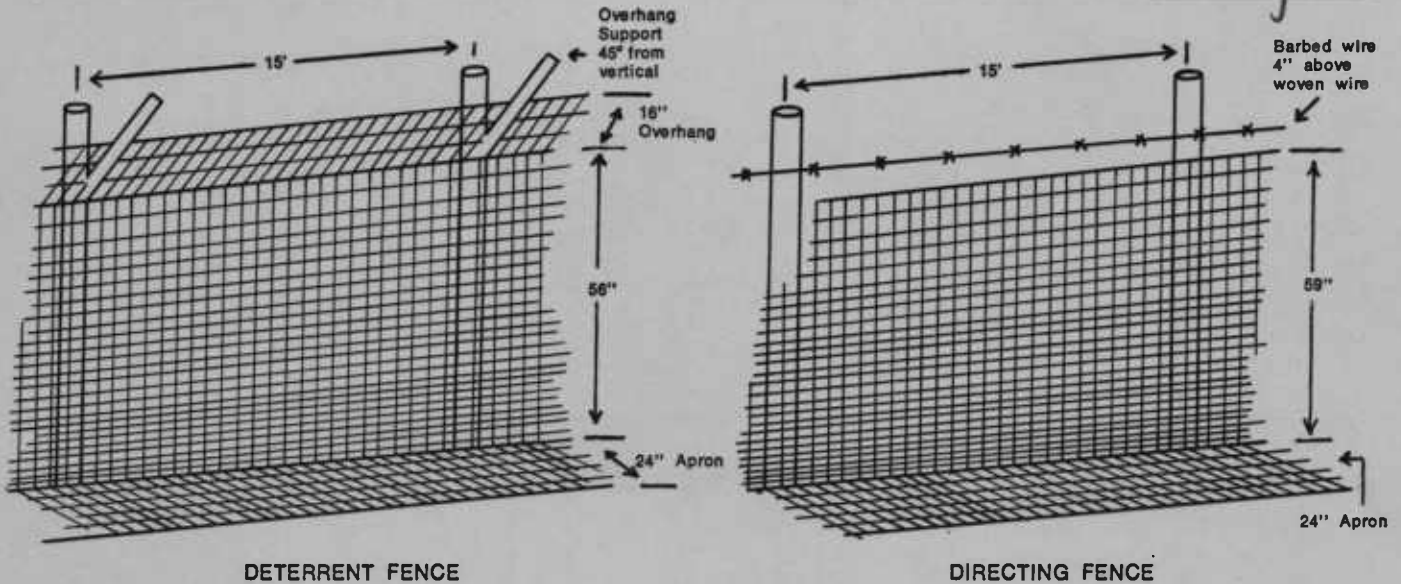


Fencing Against Coyotes

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DETERRENT FENCE

DIRECTING FENCE

Changes in social, economical, and environmental factors have contributed to reduced predator control programs in recent years. The continuing management trend away from labor-intensive practices compels the livestock producer to turn to alternatives for protecting livestock. One alternative method being used to reduce livestock losses is predator fencing.

Two fence designs tested in Oregon are the predator-directing fence and the predator-deterrent fence. The directing fence is not designed to be "coyote-proof," but rather to discourage some coyotes from crossing, and to direct other coyotes to cross at identifiable locations, making the job of trapping these coyotes easier. The fence causes predators to leave signs (hairs rubbed off on fence, holes dug under fence) when crossing the fence, allowing trappers to be more effective when placing traps and snares. This fence has been used by a number of western Oregon sheep growers who say it has significantly reduced their losses.

The deterrent fence forms a physical barrier between sheep and coyotes. Only an exceptional coyote could cross it. The fence, though not an absolute deterrent, should provide a high degree of protection to livestock. It also functions as a directing fence. It was more effective than the predator-directing fence when tested with coyotes in penned tests at Oregon State University. The deterrent fence is currently being

field tested on sheep ranches in Oregon, and at time of printing, lacks a field-tested stamp of approval.

Fence design and requirements

The fences are similar in design and appearance. Both are attached to wooden posts at approximately 15-foot intervals. Both have a woven wire apron attached to the bottom, extending outward from the fence, which prevents coyotes from digging under. Horizontal wires of the woven wire for the upright portion of the fence are 1½ inches at ground level, progressing to 4 inches at the top of the fence. The upright woven wire for the directing fence is 59 inches high, and a single strand of barbed wire is stretched 6 inches above it. Upright woven wire for the deterrent fence is 72 inches high. The top 16 inches of this fence are bent outward to fit upon the outriggers placed on each fence post. This overhang deters coyotes from jumping or climbing over the fence.

Efficiency of these fences may be improved by: increasing the fence height, increasing the width of the apron, reducing mesh size, and burying the apron. Some coyotes use corner braces in climbing over fences, so it is necessary to keep corner braces as low to ground level as possible. Increasing the width of the overhang, especially at fence corners, will help deter coyotes from crossing the deterrent fence.

Materials and costs are similar for both fences.

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Fencing Materials and Costs per Mile of Fence.

Materials		Costs
<i>Directing fence</i>	<i>Deterrent fence</i>	
59" woven wire, 14 gauge, 6" stay, horizontal wires 1½-4". 32 10 rod rolls	72" woven wire, 14 gauge, 6" stay, horizontal wires 1½-4". 32 10 rod rolls	\$1,440.00—Deterrent fence 1,244.00—Directing fence
1 strand barbed wire		100.00—Directing fence only
8' wood posts	8' wood posts	1,070.00
15' intervals	15' intervals	
Braces, wire, staples	Braces, wire, staples	20.00
	Overhang supports 2"x2", bolts, nuts, washers	70.00—Deterrent fence only
Apron of new or used wire	Apron of new or used wire	?

The cost of materials for the apron is not listed for either fence because of the variability possible. With new wire, material costs approach \$600 per mile using a 24-inch apron. If used woven wire is available from an existing fence, then material costs for the apron are lower. Woven wire used for aprons should be of the same dimensions as upright wires.

The cost of materials is difficult to reduce. Bulk buying by several individuals may help. Use of lower-quality materials is not recommended because it could increase maintenance costs. Material cost can be reduced by cutting and curing your own posts. A good reference for the types of wood best suited for posts and post treatment is Oregon State University Extension Circular 887, "Selecting and Preserving Fence Posts."

Labor has not been calculated into any of the estimated costs. Labor is a big expenditure that varies with the labor force available and the type of terrain to be fenced. Family labor reduces the cash outlay, but the actual cost of family labor varies for each operation and must be assigned a dollar value. Labor costs may approach \$1,400 per mile. Maintenance costs on these fences will approach \$175 per mile annually, based on 36 hours of maintenance at \$4.00 per hour, plus \$30.00 for vehicle and supplies.

Factors influencing feasibility of fencing

Decrease feasibility	Increase feasibility
Mountainous terrain	Valley terrain
Low predation rate	High predation rate
Low forage production	High forage production
Low stocking rate	High stocking rate

Determining feasibility of fencing

Predator fencing must pay for itself to justify its use. The following calculations will help you decide if your sheep losses due to dog and coyote predation are high enough to justify building a fence. Calculations are based on a 20-year life expectancy for the fence, and the assumption that predator fencing will nearly eliminate losses to predators.

$$\bullet \text{ Annual cost of fence} = \frac{\text{fence costs (materials, labor, loan interest)}}{\text{life expectancy of fence}} + \text{maintenance costs per year}$$

$$\bullet \text{ Number of sheep that must be saved each year to justify costs} = \frac{\text{annual cost of fence}}{\$ \text{ value of sheep per head}}$$

Example: Fence one section, requiring 4 miles of fencing, using a deterrent fence

Fence materials:	\$10,400
Labor :	6,400
Interest on loan of \$16,800:	4,000
	\$20,800

$$\text{Fence cost per year} = \frac{\$20,800 \text{ fence cost}}{20\text{-year life expectancy}} = \$1,040$$

Maintenance cost per year = \$600.00

$$\text{Total cost per year} = \$1,040 + 600 = \$1,640$$

Value of sheep per head = \$40.00

$$\text{Number of sheep to be saved each year to justify cost of building and maintaining a predator fence} = \frac{1,640}{40} = 41 \text{ sheep}$$

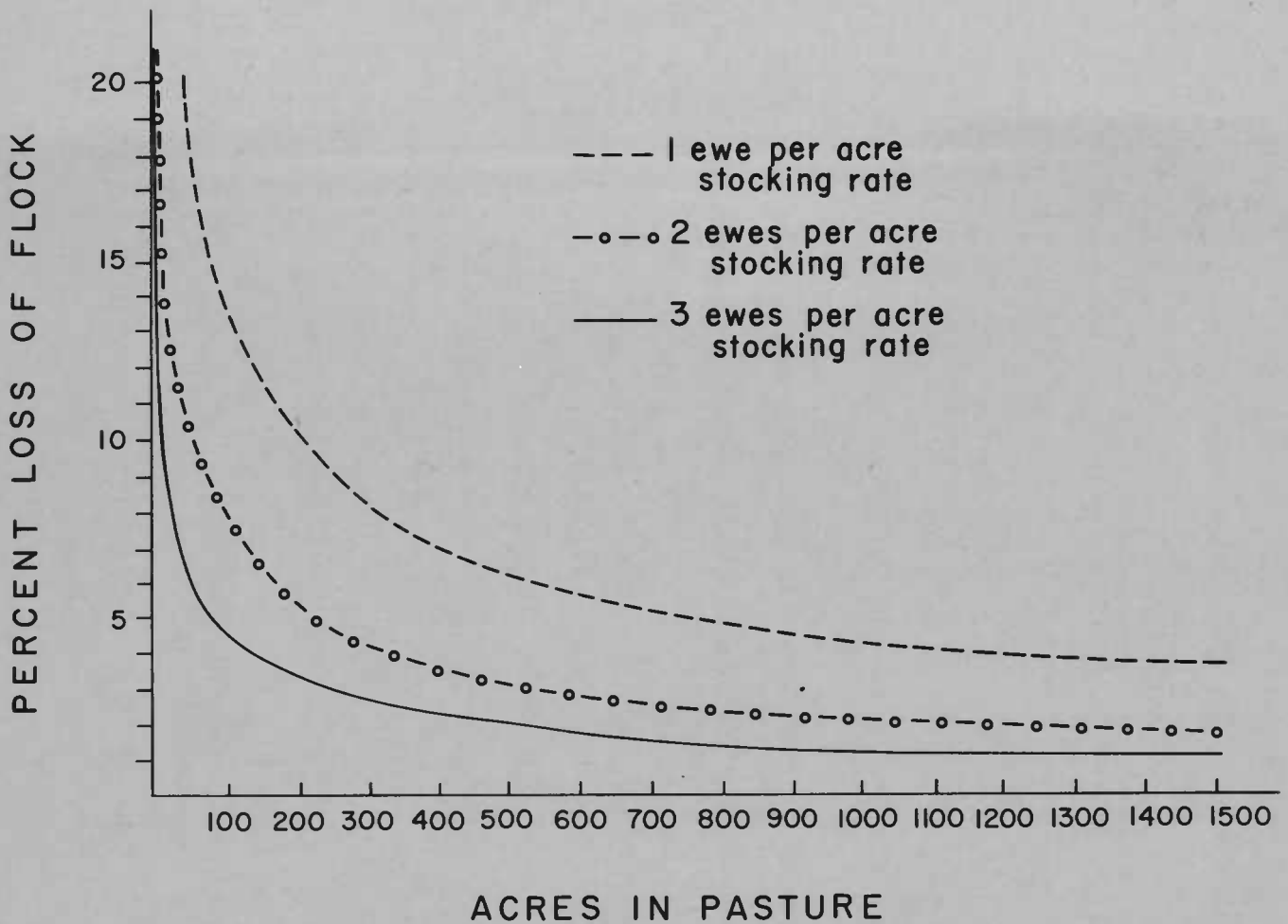
Thus, if you grazed sheep in a one-section pasture and had losses averaging more than 41 sheep a year, then you would be justified to build the fence.

You can get a first approximation of justification for building a fence by using the graph on the following page.

We have provided information for stocking rates of one, two, and three ewes (with lambs) per acre. To determine what your predation losses must be to justify building a predator fence: Locate your acreage on the bottom line; go up to your stocking rate; go directly left to obtain the percent of the flock lost to predation. You will need this percentage, or greater, of predator losses to justify building a predator fence.

Examples:

- Seventy-five acre pasture with a stocking rate of two ewes/acre requires 8.3 percent, or greater, loss to predation.
- Two-hundred acre pasture with a stocking rate of one ewe/acre requires 10 percent, or greater, loss to predation.



- Four-hundred acre pasture with a stocking rate of three ewes/acre requires a 2.5 percent, or greater, loss to predation.

The graph was built assuming average value of sheep was \$40 a head; fence costs were \$3,900 per mile. Your costs will be somewhat different and you may expect to get more or less than \$40 per head of sheep. So, for a more accurate estimate for justification, you should use the calculations above. You may wish to enclose a small pasture with a direct-

ing or deterrent fence and use it as a night-holding pasture, as a lambing pasture, and/or a pasture for use when predation losses are expected. This will reduce the amount of land enclosed by the fence, resulting in lower fence costs, but the sheep will not be protected full-time with this arrangement.

Predator fencing is an alternative method of protecting livestock from coyotes, but fencing must be evaluated for each livestock operation. Fencing is not applicable to all operations, but has been economically justifiable to some sheep producers in Oregon.