

Estimated costs for livestock fencing

Fencing costs are one of the most expensive aspects of livestock grazing. The type of fence constructed greatly impacts the cost per foot as well as total cost of the fence. In addition, the shape of the paddocks affects the amount of materials needed and labor required for construction.

This publication compares the costs of building a 1/4-mile (1,320 feet) straight perimeter fence with woven wire, barbed wire, high-tensile non-electric, and high-tensile electrified, and temporary interior fencing.

The type of fencing selected depends on personal preference and the species of livestock to be confined. In general, all configurations shown can be used with cattle. In addition, woven wire and high-tensile electrified fencing can be used with sheep, and woven wire can be used with hogs.

The list of materials needed for each type of fencing is from information developed at the University of Nebraska (see references on back page). The cost of supplies and labor in this analysis were adapted from several other publications, also listed on the back page. All costs were adjusted to 2005 prices based on information provided by a number of Iowa retailers. Labor was figured at \$13.60 per hour, the average fence-building labor charge reported in the *2005 Iowa Farm Custom Rate Survey*, FM 1698. Gates were not included in any estimates.

Fencing can be configured in many different ways using various types of fencing materials. The examples in this publication provide a general comparison between five configurations: woven wire, barbed wire, high-tensile non-electric wire, high-tensile electrified wire, and electrified polywire.

Woven wire fence

The woven wire fence (table 1) requires a brace that uses two 8-inch diameter posts and a 4-inch diam-

eter cross-brace at each end. Posts between the braces are steel "T" posts alternated with 4-inch diameter pressure-treated wood posts. All posts are spaced 12 feet apart with one strand of barbed wire at the top.

Barbed wire fence

Materials for the barbed wire fence (table 2) are similar to the woven wire fence except that five strands of barbed wire are substituted for the woven wire and single strand of barbed wire.

High-tensile non-electric wire fence

The high-tensile non-electric fence (table 3) uses eight strands of 12.5-gauge high-tensile wire on 4-inch diameter pressure-treated wood posts. Posts are 20 feet apart. The bracing uses three 8-inch diameter posts and two 4-inch diameter cross braces on each end. Wire tension on this fence is maintained with springs and ratchet-type tensioning devices.

An alternative would be to set posts 30 feet apart and place two stay rods in the wire between each set of posts. Cost would be reduced about \$65 for every 1,320 feet of fence, or \$0.05 per foot.

High-tensile electrified wire fence

The high-tensile electrified fence (table 4) uses five strands of 12.5-gauge high-tensile wire with three charged and two grounded wires. Bracing uses three 8-inch diameter posts and two 4-inch diameter cross braces on each end. With the exception of brace posts, steel "T" posts spaced 25 feet apart are used.

One-quarter of the cost of an electric energizer is included in the cost of the 1,320 foot fence on the basis that such a unit would be used to energize at least a mile of fence. Wire tension on this fence is maintained with springs and ratchet-type tensioning devices.

Electrified polywire fence (interior use only)

The polywire fence (table 5) uses one strand of polywire. With the exception of the end posts, fiberglass rod posts are used and spaced 40 feet apart. One-fourth of the cost of an electric energizer is included in the cost of 1,320 feet of fence on the basis that such a unit would be used to energize at least a mile of fence.

If substituting polytape for polywire, the total will increase by about \$30–\$35 because polytape costs about twice as much as polywire. If substituting high-tensile wire for polywire, the cost will increase by about \$75 (the change includes switching to 5/8-inch diameter fiberglass posts).

Estimating ownership costs

In table 6, an estimated average annual ownership cost for each type of fencing is shown. Costs include depreciation, interest, and maintenance.

The ownership cost of polywire and polytape is more difficult to estimate than for other types of fencing. The non-wire/tape components have an estimated life of 25 years; the polywire and polytape will likely last only about four to five years. Based on these estimates, the annual ownership cost for a polywire and polytape fence is approximately \$0.03–\$0.04 per foot.

A lawful fence

With the exception of the electrified polywire fence, all fences described in this publication appear to meet the legal definition of a lawful fence in Iowa. According to Chapter 359A.18 of the Iowa Code, a lawful fence consists of any one of the following:

1. Three rails of good substantial material fastened in or to good substantial posts not more than 10 feet apart;
2. Three boards not less than 6 inches wide and 3/4-inch thick, fastened in or to good substantial posts not more than 8 feet apart.

Table 1. Construction costs for woven wire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	4	\$ 22.00	\$ 88
Wood posts (4-in diameter)	57	9.30	530
Steel posts (6.5 ft)	55	3.69	203
Staples and clips	10 lb	1.80	18
Barbed wire	1,320 ft	.037	49
Woven wire (48 in)	1,320 ft	.40	528
Labor (estimated)	42 hr	13.60	<u>571</u>
TOTAL			\$ 1,987
TOTAL PER FOOT			\$ 1.51

Table 2. Construction costs for barbed wire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	4	\$ 22.00	\$ 88
Wood posts (4-in diameter)	57	9.30	530
Steel posts (6.5 ft)	55	3.69	203
Staples and clips	10 lb	1.80	18
Barbed wire	6,600 ft	.037	244
Labor (estimated)	39 hr	13.60	<u>530</u>
TOTAL			\$ 1,614
TOTAL PER FOOT			\$ 1.23

Table 3. Construction costs for high-tensile non-electric wire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	6	\$ 22.00	\$ 132
Wood posts (4-in diameter)	65	9.30	605
Staples	10 lb	1.80	18
Springs	8	4.50	36
Strainers	8	2.50	20
High-tensile wire	10,560 ft	.0225	238
Labor (estimated)	32 hr	13.60	<u>435</u>
TOTAL			\$1,483
TOTAL PER FOOT			\$1.12

Table 4. Construction costs for high-tensile electrified wire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	6	\$ 22.00	\$ 132
Wood posts (4-in diameter)	4	9.30	37
Steel posts (6.5 ft)	52	3.69	192
Insulators	285	.15	43
Springs	5	4.50	23
Strainers	5	2.50	13
High-tensile wire	6,600 ft	.0225	149
Energizer (priced over 4 yr)	1/4	200.00	50
Cut-out switch	1	9.00	9
Ground/lightning rods	4	9.00	36
Labor (estimated)	18 hr	13.60	<u>245</u>
TOTAL			\$ 927
TOTAL PER FOOT			0.70

Table 5. Construction costs for electrified polywire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (4-in diameter)	2	\$ 9.30	\$ 19
Fiberglass posts (3/8-in X 4 ft)	33	1.59	52
Insulators	2	.80	2
Post clips	42	.25	11
Polywire	1,320 ft	.026	34
Energizer (priced over 4 yr)	1/4	200.00	50
Cut-out switch	1	9.00	9
Ground/lightning rods	4	9.00	36
Labor (estimated)	2 hr	13.60	<u>27</u>
TOTAL			\$ 240
TOTAL PER FOOT			\$ 0.18
Cost of adding 1 strand of polywire (wire, clips, insulators)		35.00	\$ 35 or .03 per ft

Table 6. Annual average ownership cost by fence type (Based on a 1,320 ft. fence)

Item	Woven wire	Barbed wire	High-tensile nonelectric (8-strand)	High-tensile electric (5-strand)
Estimated useful life (yr)	20	20	25	25
Average annual maintenance (% of initial cost)	8%	8%	5%	5%
Depreciation	\$ 99	\$ 81	\$ 59	\$ 37
Interest on investment	79	65	59	37
Maintenance	<u>159</u>	<u>129</u>	<u>74</u>	<u>46</u>
TOTAL COST/YEAR	\$ 338	\$ 274	\$ 193	\$ 121
TOTAL COST/FOOT/YR.	\$ 0.26	\$ 0.21	\$ 0.15	\$ 0.09

3. Three wires—barbed with at least 36 two-point iron barbs or 26 four-point iron barbs—on each rod of wire, or of four wires (two barbed and two smooth) to be firmly fastened to posts not more than two rods apart with not less than two stays between posts, or with posts more than one rod apart without such stays, the top wire to be 48-54 inches in height.
4. Wire either wholly or in part, substantially built and kept in good repair with the lowest or bottom rail, wire, or board 16-20 inches above the ground; the top rail, wire, or board 48-54 inches in height and the middle rail, wire, or board 12-18 inches above the bottom rail, wire, or board.
5. A fence consisting of four parallel, coated steel, smooth high-tensile wires that meets requirements adopted by the American Society of Testing and Materials, including but not limited to requirements that relate to grade, tensile strength, elongation, dimensions, and tolerances of the wire. The wire must be firmly fastened to plastic, metal, or wooden posts securely planted in the earth. The posts shall not be more than two rods apart. The top wire shall be at least 40 inches in height.
6. Any other kind of fence that the fence viewers consider to be equivalent to a lawful fence or which meets the standards established by the Department of Agriculture and Land Stewardship by rule as equivalent to a lawful fence.

References

The following materials were used to develop cost and supply estimates for this publication:

- “Comparative costs of fence construction,” in *Rangelands* 10(5):224-226.
- “Electric fencing,” in *Rangelands* 9(4):153-155.
- “Fencing strategies for livestock producers: An analysis of comparative costs of traditional and high-tensile fences,” in the *Journal of the American Society of Farm Managers and Rural Appraisers* 50(1):52-57.
- *Fence Systems for Grazing Management* by Jim Gerrish, published by the University of Missouri Forage Research Center, Linneus, Mo.
- *Fencing Systems for CRP Land*, CRP-8, by Dan Morrill, Grant Wells and Shawn Shouse, published by Iowa State University Extension, August 1996.
- “Low cost diagonal fence strainer,” in *Rangelands* 7(1):24-27.

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