

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, total cost, and annual ownership cost. In addition, the shape of the paddocks affects the amount of materials needed and labor required for construction of the fence.

This publication compares the costs of building a quarter-mile (1,320 feet) straight perimeter fence with four different types of permanent fencing plus temporary interior fencing. These are: woven wire, barbed wire, high-tensile non-electric, high-tensile electrified and temporary interior fencing.

The type of fencing selected varies by personal choice and the species of livestock to be confined. In general all configurations shown can be used with cattle, woven wire and high-tensile electrified 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 *Costs of Cattle Fencing for Grazing Areas* (see references at the end of the article). Costs were adjusted to 2011 prices provided by a number of Iowa retailers, although prices may vary. Labor was valued at \$15.05 per hour for woven wire and \$16.25 per hour for barbed wire, the average fence building custom charges reported in AgDM File A3-10, 2011 Iowa Farm Custom Rate Survey. These charges include the cost of equipment and tools for building fence, as well as labor. Gates are not included in the 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 the following five configurations.

Woven Wire Fence

The woven wire fence (see Table 1) employs a brace that uses two 8-inch diameter posts and

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

Item	Amount	Cost per unit	Total cost
Wood posts (8-inch diameter)	4	\$ 28.00	\$ 112.00
Wood posts (4-inch diameter)	57	9.00	513.00
Steel posts (6.5 feet)	55	5.00	275.00
Staples and clips	10 pounds	1.80	18.00
Barbed wire (12-gauge)	1,320 feet	.06	79.20
Woven wire (48 inches)	1,320 feet	.70	924.00
Labor and equipment	42 hours	15.05	<u>632.11</u>
Total			\$ 2,553.31
Total per foot			\$ 1.93

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

Item	Amount	Cost per unit	Total cost
Wood posts (8-inch diameter)	4	\$ 28.00	\$ 112.00
Wood posts (4-inch diameter)	57	9.00	513.00
Steel posts (6.5 feet)	55	5.00	275.00
Staples and clips	10 pounds	1.80	18.00
Barbed wire (12-gauge)	6,600 feet	.06	396.00
Labor and equipment	39 hours	16.25	<u>633.75</u>
Total			\$ 1,947.75
Total per foot			\$ 1.48

a 4-inch diameter 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 (see Table 2) are similar to the woven wire fence except that five strands of 12-gauge 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 (see 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. 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 is to set posts 30 feet apart and place two stay rods in the wire between each set of posts. Cost would be reduced about \$85 for every 1,320 feet of fence, or \$0.064 per foot.

High-tensile Electrified Wire Fence

The high tensile electrified fence (see 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

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

Item	Amount	Cost per unit	Total cost
Wood posts (8-inch diameter)	6	\$ 28.00	\$ 168.00
Wood posts (4-inch diameter)	65	9.00	585.00
Staples	10 lb	1.80	18.00
Springs	8	7.00	56.00
Strainers	8	3.50	28.00
High tensile wire	10,560 feet	.025	264.00
Labor and equipment	32 hours	16.25	<u>520.00</u>
Total			\$ 1,639.00
Total per foot			\$ 1.24

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

Item	Amount	Cost per unit	Total cost
Wood posts (8-inch diameter)	6	\$ 28.00	\$ 168.00
Wood posts (4-inch diameter)	4	9.00	36.00
Steel posts (6.5 feet)	52	5.00	260.00
Insulators	285	35.00	99.75
Springs	5	7.00	35.00
Strainers	5	3.50	17.50
High tensile wire	6,600 feet	.025	165.00
Energizer	.25	110.00	27.50
Cut-out switch	1	7.50	7.50
Ground/lightening rods	4	16.00	64.00
Labor and equipment	18 hours	16.25	<u>292.50</u>
Total			\$ 1,172.75
Total per foot			\$.89

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, assuming 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.

If substituting polytape for polywire, the total will increase by about \$40 because polytape costs about twice as much as polywire. If substituting high-tensile wire for polywire, the cost will increase by about \$125-\$150 (change includes switching to five-eighths inch diameter fiberglass posts).

Electrified Polywire Fence (for interior use)

The polywire fence (see 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, assuming that such a unit would be used to energize at least a mile of fence.

Estimating Annual Ownership Costs

Annual ownership costs for each type of fence are shown in Table 6. In addition to the initial material, labor and construction costs, owners need to determine depreciation and maintenance costs required over the useful life of the fencing.

Ownership costs for polywire and polytape are more difficult to estimate than for other types of

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

Item	Amount	Cost per unit	Total cost
Wood posts (4-inch diameter)	2	\$ 9.00	\$18.00
Fiberglass posts (3/8-in x 4 feet)	33	1.75	57.75
Insulators	2	.80	1.60
Post clips	42	.30	12.60
Polywire	1,320 ft	.03	39.60
Energizer	.25	110.00	27.50
Cut-out switch	1	7.50	7.50
Ground/lightening rods	4	16.00	64.00
Labor and equipment	2 hr	16.25	<u>32.50</u>
Total			\$ 261.05
Total per foot			\$ 0.20
Cost for adding 1 strand of polywire (wire, clips, insulators)		53.80	53.80
			or .04 per foot

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

Item	Woven Wire	Barbed Wire	Hi Tensile Non-Electric (8-strand)	Hi Tensile Electric (5-strand)	Electrified polywire
Estimated useful life (years)	20	20	25	25	4
Average annual maintenance (% of initial cost)	8%	8%	5%	5%	5%
Depreciation	\$ 128	\$ 97	\$ 65	\$ 47	\$ 65
Interest on investment (4%)	102	78	65	47	10
Maintenance	<u>204</u>	<u>156</u>	<u>182</u>	<u>59</u>	<u>13</u>
Total cost/year	\$ 434	\$ 331	\$ 214	\$ 150	\$ 88
Total cost/foot/year	\$ 0.33	\$ 0.25	\$ 0.16	\$ 0.12	\$ 0.07

fencing. The non-wire/tape components have an estimated life of 25 years; the polywire and polytape will likely last about four to five years. Based on these estimates, the annual ownership cost for a polywire or polytape fence is approximately \$0.06-\$0.07 per foot.

A Lawful Fence

Chapter 359A.18 of the Iowa Code states: A lawful fence in Iowa shall consist of:

1. Three rails of good substantial material fastened in or to good substantial posts not more than ten feet apart.
2. Three boards not less than six inches wide and three-quarters of an inch thick, fastened in or to good substantial posts not more than eight feet apart.
3. Three wires, barbed with not less than thirty-six iron barbs of two points each, or twenty-six iron barbs of four points each, on each rod of wire, or of four wires, two thus barbed and two smooth, the wires 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 not more than fifty-four nor less than forty-eight inches in height.
4. Wire either wholly or in part, substantially built and kept in good repair, the lowest or bottom rail, wire, or board not more than twenty nor less than sixteen inches from the ground, the top rail, wire or board to be between forty-eight and fifty-four inches in height and the middle rail, wire, or board not less than twelve nor more than eighteen inches above the bottom rail, wire or board.

5. A fence consisting of four parallel, coated steel, smooth high-tensile wire which meets requirements adopted by ASTM International (formerly, American Society of Testing and Materials) including but not limited to requirements relating to the 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 forty inches in height.

6. Any other kind of fence which 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

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