

LIVESTOCK PREDATION PREVENTION PROJECT (LPPP)

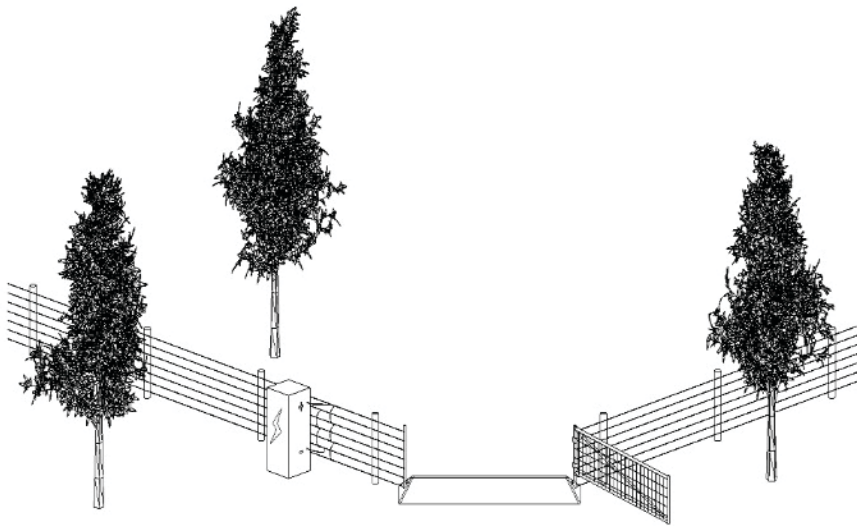
PREDATOR RESISTANT LIVESTOCK PENS

As tested by Manitoba producers cooperating with the Manitoba Livestock Predation Prevention Pilot Project



mbbeef.ca | 204-772-4542

Livestock producers who are concerned about coyotes, wolves or bears attacking their livestock may want to consider a predator resistant fence made with either seven high tensile electric wires or predator page wire with apron and a predator proof gate. The pilot project pen testing was completed on eight Manitoba farms during the years 2021–2023. Results indicate that the five acre predator resistant pen was indeed effective at stopping predator attacks on livestock.



Background:

The concept of predator resistant pens is not new, as wood, chain link, steel and concrete have been employed for as long as there have been livestock. What has changed is the pen size need by livestock operations and the knowledge of what specifications will be effective. Producers with hundreds of cows or ewes do not believe that thousands of feet of chain-link is affordable. Predator fences with multiple electric wires and alternating wires with current and ground can provide a formidable pen for even the most tenacious predators.

LPPP Predator Resistant Pen Statistics:

1. Tested on 8 commercial Manitoba farms.
2. 5 beef farms, 3 sheep farms.
3. Average head protected by pen: 96 females plus calves/lambs.
4. 100% of producers felt the steel gate with concrete threshold was successful.
5. 87% of cooperators believed that the pens saved livestock from predation.
6. 87% of cooperators would rebuild the pen if it was damaged or destroyed.
7. 43% of producers with electric fencing needed to disconnect the bottom wire as it grounded out during the season.
8. 87% of cooperators would recommend other producers with predator concerns build a pen for themselves.

Predator Resistant Pens

Predators: Wolves and coyotes, and some reduction of bear access as these animals could climb the gate used in the pilot project. For bear-resistant electric fencing specifications and recommended predator-resistant gate installations, check out the *Living with Predators Resource Guide for Electric Fencing to Deter Predators* at <http://lwwf.org/>.

Livestock: Beef cattle, dairy cattle, goats, sheep* (*reduced animal control of sheep with full wool on electric pens).



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Pilot Project Costs of building 5 acre, seven-wire pens (2021)

Item	Cost
12.5 gauge wire 1866 feet x 7 wires x 7 cents a foot	\$910
7 foot posts (100)	\$620
8 foot posts (6)	\$78
Wood brace rails (10)	\$161
Tighteners, insulators	\$347
Solar energizer	\$462
Gate (custom built)	\$385
Concrete threshold	\$485
Misc. staples/spikes	\$200
Total without labor	\$3,648.00



Seven-wire electric fence with alternating hot and ground wires.

Design of Pilot Project Electric 7 wire pen:

1. Wires: high tensile wires starting 3 inches above ground, 3 spaced six inches apart to 21 inches high, then the remaining 4 wires spaced 12 inches apart for a total height of 69 inches tall.
2. Post spacing was no further than 20 feet apart, but on uneven terrain the posts needed to be close enough to allow wire to maintain 3" of ground clearance.
3. Bottom wire carries electric charge from a fencer to shock predators who try to dig under the wire. Alternating wires up the post will be positive-negative-positive, so squeezing between wires will give strong shocks.
4. Alternating wires were powered by an electric fencer, while alternate wires are grounded to earth.
5. Gates had a solid threshold under the entire length of the gate. The project used a 17 foot long custom concrete curb, with hole pockets at each end for steel gate posts with tight spacing to the gate.
6. Gate was a rectangular 5 feet tall and 16 feet long with tight corners and 2 inch square mesh, so no part of the gate can be climbed though or around.
7. Pen fencing should be done on corridors which are levelled, and managed so that manure, grass growth or old fence wires or debris will not contact the electrified wires and ground them out.



Pilot project predator resistant gate with 2 inch welded mesh, and tight fitting corners.

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Other Considerations:

1. Livestock guardian dogs patrolling the predator resistant pen would be an even stronger deterrent against predators.
2. Expanding a predator resistant pen can be achieved very cost effectively. If a pen is built with thoughts of future expansion, simply adding extra posts and high tensile wire is very inexpensive. The most expensive components such as gates, water sources and electric fencer will be already in place once the first pen is built. As such, gates and water sources should be located strategically so that a future expansion will be easily completed. Inner fences inside of a predator proof pen can be regular, non-fortified fences, so building larger and putting in cross fencing, and multiple pens can be accomplished, and still be safe as the large perimeter fence will control the predators.

Limitations of seven-wire Electric Fence Pens:

- If electrified wires ground out in manure, mud, debris or water, the entire fence will have reduced power or no power and be completely ineffective.
- In areas where there is high traffic and muddy ground, the soil will punch out, and push up into the hot wires. These areas should have the bottom hot wire replaced with welded wire, or fixed knot galvanized mesh fence to prevent predators from digging underneath.
- Getting in and out of the pen can be the weak point; tight fitting gates with a dig proof threshold under the gate are necessary. Multiple gates are sometimes needed for management reasons, which can increase costs.
- Newborn calves who run out of fear or lack of aim may not perceive the fence as a barrier, and may hit the fence and run straight through. This generally corrects itself as the calf gains better vision and coordination which generally occurs within the first week of life. Calves raised in electric wire pens often have a lifelong respect for electric fences which would be considered a desirable result.

Pilot Project Costs of building 5 acre, page wire with apron pens (2023)

Item	Cost
Apron wire 71" tall w/ 22" wide apron, 6 rolls, 1866'	\$7,976
Apron wire pickup USA only	\$300
Gripple tensioners	\$391
7 foot posts (100)	\$620
8 foot posts (6)	\$78
Wood brace rails (10)	\$161
Gate (custom built)	\$595
Drill stem threshold	\$300
Hog panel	\$60
Misc. staples/spikes	\$200
Total without labor	\$11,311.00

Design of Stay Tuff Apron wire fence:

1. Apron wire: Stay Tuff model ST-868, Fixed Knot Class 3. Horizontal apron, 22" wide, vertical height 71 inches. With 12 gauge hi tensile top and bottom, 12.5 gauge lines.

Note 1: Stay Tuff Wire is not available in Canada. Stay Tuff wire was sourced from North Country Mercantile in Minot, North Dakota. Order was by special order that was built upon order and brought in from Texas. Lead time was over a two-month wait. Crossing the Canada -US border was very easy, with wire readily accepted for import, and only had to pay GST and PST on the wire.

Note 2: Stay Tuff 868 rolls are large and heavy, a regular full size 2500 pickup can only carry 6 rolls maximum with original pallet wrapping without an accompanying trailer. Trailer conveyance is strongly advised with 1500 size pickups.

2. Post spacing will be no further than 20 feet apart, but on uneven terrain the posts need to be close enough to keep bottom wire on the ground.
3. Gates have a solid threshold under the entire length of the gate. The project used a 17 foot long custom built three-drill stem threshold with hole pockets at each end for steel gate posts with tight spacing to the gate. Gate has a galvanized hog panel underneath the threshold to prevent digging under.

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4. Gate is a rectangular gate 5 feet tall and 16 feet long with tight corners and mesh, so no part of the gate can be climbed through or around.
5. Pen fencing should be done on levelled ground, and outside of fence should not be a high traffic area as the 22" apron could cause a snaring hazard for livestock feet.
6. Note this fixed knot wire required tensioning of all 16 line wires. This is a challenging process and it needs to be tensioned at least once per 330 feet, or more often on uneven ground. Tensioning it easiest to tighten with the use of Gripple one way tensioners. While these can cost up to \$60 per join, they are extremely effective for tightening and maintaining fence.
7. A predator resistant pen with an apron is an extremely robust fence when built with good bracing and tightened properly. However apron wire is the main cost component of the fence, and as such, larger fences do not get less expensive per foot when building longer and larger pens.

Limitations of Apron Wire Fencing

- Cost of materials is more costly than electric multiwire options, however apron wire will require much less maintenance.
- Effort to install fence is quite high as rolls are large and cumbersome, and multiple people are helpful to stand up fence, and considerable effort is required to tension the 16 line wires.
- Apron wire fencing should not be installed next to busy alleys or areas where hoofs could punch into the ground, as the apron could snag hooves. Light pasture or no pasture is recommended against the outside apron side of the fence.



Predator resistant gate with drill stem threshold and hog panel as a dig-proof base.



Stay Tuff 868 wire fence with apron installed on a multi-acre paddock on a beef farm in Manitoba.

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Project Participant Feedback

"The pen is working to stop predation, the only thing we should have done is built it around 80 acres instead of 5 acres."

– *Moosehorn beef producer*

"I would like the rest of my corrals done with this fence to protect all of my cattle"

– *Baldur beef producer*

"The electric pen works! The only changes I would make is to put posts closer together, and fill in low areas, so the wire doesn't need to go through low areas and ground out when the ground gets wet."

– *Fisher Branch sheep and beef producer*

For more information on the Manitoba Livestock Predation Prevention Pilot Project and other Risk Mitigation Practices please visit <https://mbbeef.ca/>



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