A Beginner's Guide to Portable Electric Fencing

A summary of an interview with Stephanie Sexton, Product Manager at Premier 1 Supplies

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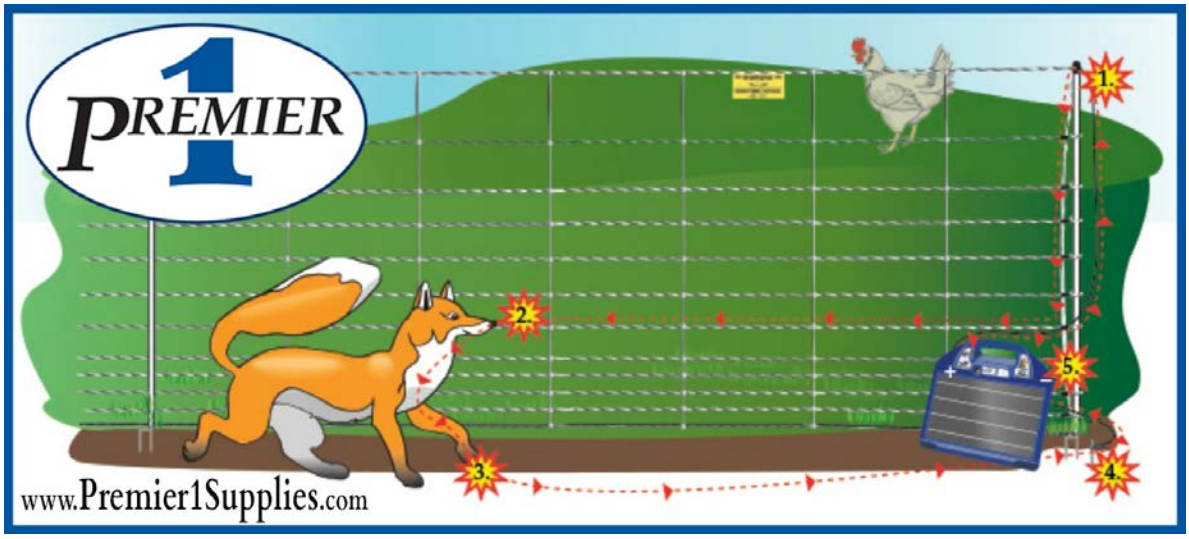
May 2017

How does electric fence work?

Electric net fencing is a mesh net made up of electric wires carrying a current. The current is supplied to the fence by an energizer. When the energizer is pulsing, it sends an electric current down the fence line.

If the animal touches the electric net, then the animal receives a shock by completing an electrical circuit. The current travels through the animal via the animal's feet, which are in contact with the soil, and the moisture in the soil then carries that current back to the ground rod which is attached to the energizer, thereby completing the circuit.



What if the ground is dry and can't complete the circuit?

If you have very dry, very rocky, or very sandy ground that doesn't hold moisture well, then essentially the electrical circuit is never completed. The energizer puts a current down the fence line, the animal touches it, the current goes through the animal to their feet and but since there's no moisture in the soil, the circuit isn't completed and nothing happens. The animal doesn't feel any electrical current. They're basically being insulated, because there's no moisture in the soil.

There are a couple of ways to counteract this problem. If the soil is just moderately dry or moderately sandy, a lot of times a wide impedance energizer will work better than a low impedance energizer, and might be able to counteract some of that lack of moisture, more on that a little later.

If the soil is super dry and really can't grow much green vegetation, then you will probably have to go to what's called a positive-negative fence. That fence is where one wire is positively charged and connected to the energizer. The next wire down from that, usually only two or three inches apart depending on the species that we're trying to keep in or out, is a grounded wire that's connected back to the ground system of the energizer. When the animal touches both the positive and the grounded wire, they'll get a shock. It doesn't really matter what they're standing on, because the circuit is completed in the fence itself, the ground doesn't come into play.

Energizers and Impedance

There are basically three types of energizers: low impedance, wide impedance and high impedance.

High impedance energizers are an older style energizer first hitting the market around 30 years ago. They were the first ones out, and a lot of our grandparents used those on wire fences, and they work very well on wire fences. They had a lot of heat associated with them though, so they could burn you easily, and they could start fires easy, often burning surrounding vegetation back. This was the problem, when a lot of vegetation contacted those fences, all of the current was being drained away and there wasn't much left for when the animal touched the fence making this style less effective than new models.

Low impedance energizers were first developed around 25 years ago, and in contrast to high impedance energizers, they work spectacularly well when there's a lot of green vegetation contacting the fence. The difference is in how the current is delivered down the fence. Their pulse shape is very rapid to its highest point, and so it could get through that vegetation and still shock whatever you're trying to keep in or out.

Then about 20 years ago, Premier 1 and a partner energizer manufacturer in Germany developed what was called a wide impedance energizer. The difference here is again in the how the current is delivered down the fence. If you were to look at the electric pulse coming from a wide impedance energizer its curve is not quite as rapid to rise as a low impedance and not quite as long as the old high impedance energizers. The wide impedance is a mixture between

a high and a low, and for areas that are a little bit drier or sandier, those wide impedance energizers can make a difference.

What if there is too much vegetation?

If there is a lot, or very tall, vegetation then you will have to clear out a path for the fence. The less grass and less vegetation that you have touching the fence, the better the shock value is going to be, and also be available when an animal touches it. The more maintenance you can do with vegetation, the better off you're going to be. Common methods for clearing a path for the fence are string trimmers and flail mowers.

How to select the right type of netting?

A six step process for selecting the correct type of Premier 1 electric netting.

1. State what species are you trying to keep inside the fence?
2. Determine whether the fence will be temporary or semi-permanent?
3. Determine the height of the netting?
4. Do you want single or double spike posts?
5. Do you want a standard net or a plus net?
6. How long of a roll do you want, and will the weight of that length of fence be manageable?

Step 1: State what species are you trying to keep inside the fence?

Each type of electric netting is slightly different. Post spacing, horizontal wire spacing, vertical wire spacing, number of wires, and fence height are all variable and are dependent on which species of animal you are fencing in.

Step 2: Determine whether the fence will be temporary or semi-permanent?

A temporary fence is one in which the fence is going to be moved every few days, every week, or fairly often. A semi-permanent fence is going to be left in place for, say, a month or more. The nets are pretty much the same as far as the temporary and semi-permanent net portion of it, but the posts are a little bit different.

Semi-permanent fencing will have posts which are little bit bigger in diameter and the built in spikes on the post will go a little bit deeper into the ground.

When you're going to move a fence often, you want the fence to be as workable as it can be as far as ease of movement, meaning: How well a single person can handle the moving of the net? How easy it is to install it and to uninstall it? How easy and quick it is to setup and get tension properly.

An average person can only handle so much when it comes to a bundle of posts when they're moving the nets. If that bundle gets too big in a person's hand then they're much more likely to drop the post out of alignment. That's going to lead to customer frustration and more time involved to put the fence in place. Depending on your strength, mobility, and build, fence weight and bulk may be a big factor in which fence you choose.

The temporary nets with the smaller posts will be much, much easier for folks to move successfully and fairly quickly as opposed to the semi-permanent nets.

Most of Premier 1 temporary nets will be in longer rolls, and semi-permanent fences will be in shorter rolls.

Step 3: Determine the height of the netting?

The best way to determine this is to start by asking - How much of a predator issue do you have, and how big are the predators in your area? If you have bigger predators, like coyotes, maybe some wolves, large dogs, and overall big animals, then Premier recommends going with a 48 inch height, rather than a 42 inch height.

Step 4: Do you want single or double spike posts?

A double spike net has two spikes on the end, and will give folks more support if they're in a lighter weight soil. Double spike posts will keep that net upright a little bit more often than a single spike would if you're going in to a loamy type soil. You can also step on a double spike net and step it in to the ground.

Despite that, for most people it's easier to get a single spike in the ground by pushing it in. Particularly, if you're going into a rocky type of ground, a single spike is easier to get in than a double spike.

Step 5: Do you want a standard net or a plus net?

With Premier 1, a plus net brings the line posts closer together versus a standard net. The closer line posts help to eliminate some of the sag, and make the fence easier to maintain.

Step 6: How long of a roll do you want, and will the weight of that length of fence be manageable?

With Premier 1 the standard nets are in longer rolls compared to the plus nets. So it again goes back to how much can you handle as you're moving netting around the pasture area. Plus nets in shorter lengths will be easier to handle versus longer rolls of standard net – rolled up there is just a lot less bulk in the shorter rolls.

Can a single person setup temporary fence?

It depends. Depending on their size and/or physical activity level they could move a semi-permanent fence, but it would be easier a lot of the time with two people involved. In general shorter rolls are less bulky and easier for one person to manage.

A Basic Pastured Poultry Setup:

How much fence?
You would need one roll or more rolls of nets depending on how often you're going to move, the fencing, how many animals you're going to put inside the enclosure, how big of an area you want to enclose, and how you will do your moves.

Single Set of Fence Moves:
Given that you only have a single set of fence, when you go to move those animals, you have to do something to contain the animals, so you can take your fence down and then move the fence. If you have a structure, like a chicken tractor or something, you temporarily put them into that, being a safe and secure environment, so you can then move the fence.

Dual Sets of Fence Moves:
The advantage of having a second set of fence is when you are moving your animals, the second set of fence is already set up. When you're ready to move the animals you just open up the first set of fence, move the animals into the second set, then roll up the first set, leap frog the second set, and set it up adjacent to the second set where the animals are now. The first set of fence then becomes the new second set and you are ready for your next move. Then you just repeat this process down the pasture.

Additional Equipment Needed:

1. The energizer (more on that below)
2. Extra support posts for your end corners and major directional changes
3. An electric fence tester to test if the fence is properly energized

Selecting an Energizer:

Buy for the long term – make a good investment for today and down the line. Think about not just what I'm going to energize today, but what am I maybe going to do in a couple of years. If you're going to try to buy one energizer for all of that, be realistic in what you think you're going to be using it for.

Then look at the species that you're fencing in or out – is the energizer big enough to adequately work for that species?

How many joules for the energizer?
A good rule of thumb is if we're talking about netting you want at least a quarter joule unit (a quarter joule output) for one roll of net. Half a joule unit will normally power between three to four rolls of nets depending on the vegetation load. If you want to go a little bigger, that's okay, it's not going to hurt anything, but you will be spending more money.

How to choose between brands?
Compare warranties between brands, these can vary greatly. Also look for the released joule level. There are two types of joules that manufacturers will rate energizers on. One is stored and one is released. Released is the key factor, because that's what the baseline joule level is in terms of what the energizer can put out down the fence.

Be careful of too many bells and whistles. If the device has a lot of bells and whistles, make sure that you're going to utilize them if you're going to pay for them. If you just want an energizer to electrify your fence, and it's going to work 365 days a year and you're not going to fiddle with many of the buttons that are offered on energizers these days, then just buy a no-frills energizer.

Three Types of Energizers: Plugged In, Battery, Solar

Plugged In:
These are always the least expensive and usually the least maintenance. They are less costly to get more power, so maybe step up just a little bit in a joule level.

Can you get power to the unit? If you have a temporary enclosure that you're going to be moving around a lot, how far is the furthest move from your plugin? Is that distance between your energizer and where your furthest installation site is manageable with insulated lead out wire that's run on the ground or buried in the ground? If so, and if it's safe and it makes sense, then go with a plugin energizer. If you don't have plugin power or it is too far, then go with battery or solar.

Battery:
In a straight batter energizer, the producer is recharging that battery from the electrical grid. In essence, you're taking the place of the solar panel. If you go this route, then you need to think about how much your time is worth keeping up with the battery and how much effort is going to be put into either switching the batteries out with another battery or taking that battery back to the shop to recharge it.

What about battery life?
It all of that depends on how the battery is cared for: Is it kept fully charged? Is it allowed to be overheated in the summertime? Is it allowed to be frozen in the wintertime? What happens when the battery goes into storage? How are they being re-charged? All those factors affect the longevity of a battery. Normally, we're in that three to five year lifespan on a 12 volt battery.

Solar:
Solar energizers will always be more expensive than straight battery energizers, because you have a solar panel involved. If you don't want to deal with recharging a battery all of the time, and you don't have plugin power nearby, then this is the best option.

Common Fence Installation Issues and Mistakes

Not installing the fence tight enough.
As you move down the fence line, you want to make sure that each line post is pulled as tight as it can before you move on to the next line post and the next section of netting.

How much sag is OK?
The amount of sag is going to be dependent on other variables in the fence line. If you have a saggy fence and you don't have any vegetation in contact with it, then it isn't going to be much of a problem if it's not touching the ground. If you have a saggy fence that's in contact with a lot of wet vegetation, then that sag is going to be pretty serious.

Not testing the fence.
Is the fence hot? How do you know? Did you purchase an electric fence tester?

Losing too much voltage down the fence line?
Once the fence is set up, check the voltage at the end of the fence before the animals go into the enclosure.

How much voltage is enough?

If you can get 3,000 volts to the end of the fence line, then regardless of whatever else is happening on the fence line, you're probably okay. When that voltage level drops below 3,000 volts, then we've got to get back out on the fence and maintain the fence and get rid of some of those voltage losses that are happening on the fence line.

Not energizing a psychological barrier fence.

Animals will approach the fence, not get shocked, and challenge the fence. Then you run the risk that they get tangled in it, break through it, or predators come through it.

Not buying a large enough energizer.

Premier 1 recommends at least a quarter of a joule (output) unit for one roll of net or poultry net. Of all the species, poultry net is the hardest to electrify, because the horizontal wires that are electrified are the closest to the ground.

How to Train Animals to Electric Fence

If the animals that we're trying to enclose with electric are not used to electric, then what Premier would recommend is that you put the fence up inside of a secure physical barrier, get it electrified, test it to make sure that it's properly electrified, and let the animals inside. Then encourage some contact with the animal and the fence. You want them to experience the memorable impression that this is an ouch fence, which should prevent them from challenging the fence in the future.