

Maintenance

Maintaining the fence visibility is part of the maintenance and animal training programme. Electric fences are not maintenance free. Each component should last for the expected life of the entire fence. The different prices between the most expensive item and the cheapest one does not affect significantly the total cost of the entire fence. If using inferior materials the CDP fence will not be effective for a very long time. Once the fence is erected, continual maintenance is very important. The fence must be periodically checked. The electric power must also be checked regularly with the help of a voltmeter or control light (live light) hanging on the fence, which tells you through a flash if it is still working. A yearly check of the earth system of the energiser is also required.

Training

The whole idea of predator training is to get them to investigate the fence in a slow and cautious manner, in order to get the first shock on the nose. If the shock is delivered to the back of the head, animals often react by lunging forward rather than backing up. There are several ways to help a predator to raise its nose on the fence. Baits (chicken wings) can be hung up on the live wire on the fence. There is no need that the predator grabs directly the bait, it is enough if it put its nose close enough to it. The strength of the first shock will often determine how the animal is going to react to the fence in the future.

Conclusion

If we want to develop sustainable farming practice (improving the soil fertility, maintaining or increasing biodiversity, paying attention to maintain clean water and air) then we need the domestic herbivores to help us to reach this goal. But this can only be achieved if we are able to protect domestic animals in an effective way against large carnivores. Permanent electric fencing costs so little and it is so easy to build up that we should spend enough time and buy material of good quality to do the work well. Otherwise there will be many reasons that the fence will not serve to its purpose. Our ability to think and develop new ideas to prevent carnivore damage is the only limitation that the electric fencing has.

Operation of Power Fences: Some Practical Advise

by
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The following is a quick overview of some of the most important elements associated with the use of electric fences.

How does an electric fence work?

An electric fence stops animals because of the fear of an electric shock. Therefore, the most important thing in a electric fence is electrification.

For a better circulation of the electricity, the resistance R1, R2 and R3 - resistance of the conductor, of the surrounding factors, and of the soil - have to be as low as possible.

R1 – the conductor

Only the wires should be responsible for the transport of the electrical current. The other parts of the fence (e. g. poles) have to be insulated (fibreglass, plastic). However, the wires have a resistance R. Use of a good alloy, wires with a sufficient diameter, and several parallel wires in a fence all contribute to reduce the resistance.

R2 – resistance connected to the environment

Any contact with vegetation will increase the resistance. It is linked with the number of wires and is therefore smaller in fences with just one wire (cows, horses...) than in fences with 3-5 wires (sheep, goats...) with wires in contact with the vegetation. Keeping fences vegetation free will require constant maintenance.

R3 – resistance of the soil

The grounding is a crucial point for an effective electric fence (see Fig. 1). The resistance connected to the grounding system has to be as low as possible (0 Ohm). First of all the quality of the grounding is dependant on the type of soil.

Depth of the grounding system: Place at least 3 galvanized rods of 1-2 m length at a distance of 3 m from each other into the soil.

Stony soil: Look for a crack in the rocks!!, or try to spread the grounding system over a large surface (e.g. galvanized grid).

To insure that the circuit is complete and that the current is going back to the energizer (aggregate), the contact between the grounding system and the soil should be as high as possible. This is very important for both the efficiency of the system and for the amount of pain

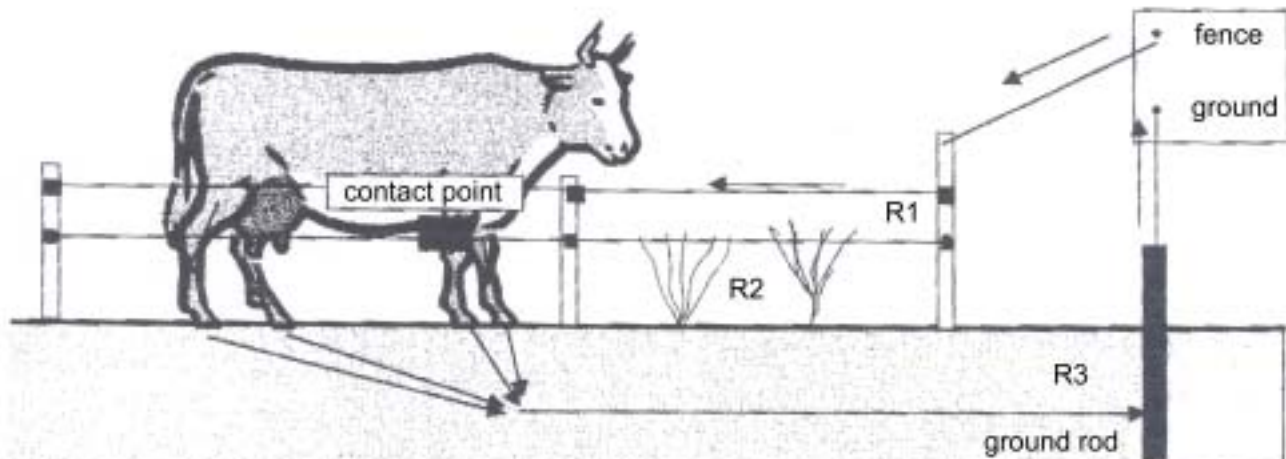


Fig. 1: Circulation of electric current in the fence.

felt by animals that touch the wires. For a simple test of the whole system, you can measure the volts with a voltmeter on the grounding rods. It should be as low as possible, ideally 0 Volts but less than 300 Volts is ok (if you touch the rods you don't feel anything).

To improve the grounding system in a dry season or in dry soils the rods can be regularly doused with water or you can use bentonite to improve the conductivity and keep the soil around the grounding rods wet. Under extremely dry conditions one of the wires can be directly connected to the ground. This will provoke a short circuit if the animal is touching one of the wires (fence and soil).

The energizer

The principle of an energizer is to increase the initial tension -12V or 220V up to several thousand volts - and to transform the direct or alternative current into an electric impulse.

There are three types of power sources (220 Volt and 12 Volt):

1. Battery (12 V)
2. Solar (12 V)
3. Mains supply (220 V in most European countries); with and without a compensator.

The compensator estimates the resistance of the fence system and adapts the amount of energy that is needed for an adequate impulse.

The resulting impulse is of no danger to humans. The voltage required to deter cows and horses from passing the fence is about 2500 Volts. For the less sensible sheep a minimum current of 4000 Volts is needed. For excluding large carnivores a higher voltage is needed (see accompanying articles).

Installation of an electric fence system

There is a minimum of maintenance for an electric fence system. To keep this work as low as possible there are some important principles:

- Build an open circuit: in an open circuit you know the starting point and the end of the fence. This will allow you to control the current at the two extreme points. So you will find the source of loss very quickly. In a closed circuit it is almost impossible to find the loss.
- To be able to do quick controls of the fence you should isolate long electric fences in sections.
- Check the joins between the wires: use the same steel in order to avoid oxidation that will prevent the current from passing (rust is an insulator!).
- Connect the energizer with conductors through the air so you have a better control of the system.
- The same thing for the barrier: make sure that the ends are not electrified while open. Connect the two ends of the fence at the barrier also with a conductor via air.

The electrification of a fence is a question of methodology. If it's respected, the maintenance is very easy and it will stop the animals from passing.

Problems and Limitations of Electric Fences

- Inadequate earthing
- Bad or corroded connections on the earth return or live wires
- Long and thin wires
- Long distances of single wire fences
- Rusty wires, rusty earth poles
- Untrained animal standing on dry insulating soil or stone and touching only the live wire
- Leakage through poor insulation or excessive vegetation growth on the fence

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