Poliwire electric fencing systems as farm-based deterrents for elephant crop-raiding

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ELEPHANT CONNECTION RESEARCH PROJECT

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Electric Poliwire as an Elephant Deterrent

Technical aspects of Installation

Poliwire electric fencing systems

Small, solar-powered farm-based fencing systems:

- to deter elephants from individual fields yet allow them to continue to move through the landscape

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Benefits of poliwire as a HEC mitigation method

- **Low impact** - poliwire is unsuitable for use as a wildlife poaching snare due to its flexibility; thereby eliminating collateral damage seen in some other HEC fencing projects
- **Effective deterrent** - shown to deter elephants immediately, with herd members hesitant to challenge the Poliwire again
- **Portable** - easy to erect for a few months during each crop-growing season

    -> this reduces elephant encounters over time and thus habituation levels

    -> reduces wear and tear on equipment
- **Low cost** – approximately USD $350 per system

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Objective: to mitigate the impact of elephants on the livelihoods of small-scale subsistence farmers:

- trial new, farm-based elephant deterrents to reduce crop losses from elephant damage

- focus on low-cost, low-labour solutions that have minimal impact on the environment/ecology

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Results: Prior to construction of Poliwire electric fencing systems approximately 50% of elephant visitations (n=40) over previous months resulted in maize crop-raiding events; after construction, this statistic changed dramatically, with zero out of 13 elephant visitations resulting in crop-raiding events.

Outcome: *Poliwire Electric fencing* provides an additional deterrent method for use in HEC management, especially in areas where elephants may have become habituated to other methods

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Technical aspects of Installation

STEP 1

- Field/Crop circumference ≤ 1 km (~15 acres)
- Bush posts 15 m apart
- Single-strand poliwire to encircle field
- Poliwire on insulators attached to each post 1.7 m above ground
- Flagging between posts esp. for night-time visibility

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STEP 2

- Equipment stored in farm building adjacent to field (to prevent theft)
- Poliwire extended 500 m each direction from farm building
- Energizer
- Battery 12V/18ah
- Solar charge controller

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STEP 3

- Connect solar panel to battery via solar charge controller
- Install 3 earth rods into the soil & connect to the Energiser
- Connect Energiser to Poliwire
- Voltage runs 500 m each direction away from building to ends of Poliwire

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STEP 4

- Farmer training
- Multimeter to check battery charge
- Fence tester to check poliwire voltage
- Voltage should be a minimum of 7.0 kV to deter elephants over time

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STEP 5

- Prepare for a bumper harvest

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Applications & Considerations

- Poliwire = high resistance to electric current
- Suitable for small farms with crop circumference of approx 1 km
- Season & Soil type: poorer earthing in drier seasons/soils
- Availability of equipment: www.stafix.co.za
- Elephant habits
- Farmer behaviour
- Technical support

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Technical aspects of Installation

Qty	Item
65	Bush posts [one post every 15 metres]
2	Poliwire - 500 m rolls [=1000 metres]
1	Energiser – up to 3-Joule
1 bag	Insulators - nail-on (150)
1	Fence voltage tester
4	Copper or steel rods - earth spikes (approx. 80cm)
1	Battery - sealed lead acid 12V/18ah
1	20 W solar panel
1	Solar charge controller - 10A
1	Multimeter (test battery voltage)
20 mt	Electrical wire - 10m red & 10m black (2.5 mm)
1	Builders line - 100 m roll - to tie insulators to posts
1	Hammer
1	Flat Screwdriver (3 mm)
1	8 inch wire side-cutter

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