



Conflict Mitigation

Methods

Construction

Budgets



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Sturdy Stone Walls

Construction

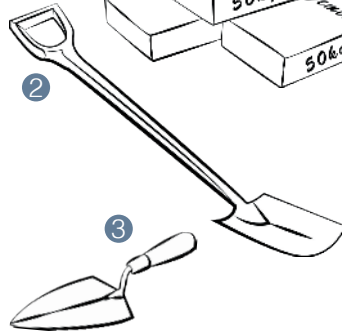
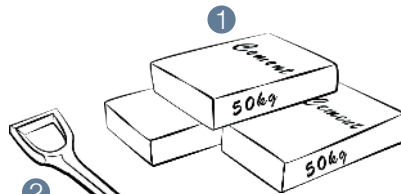


Constructing a sturdy stone wall is relatively cheap and proves to protect water installations from elephant damage. But it's hard physical work! With approx. 6 strong men you probably need 3-4 days to finish the wall. Follow the steps carefully!

Material Checklist

For 1 wall

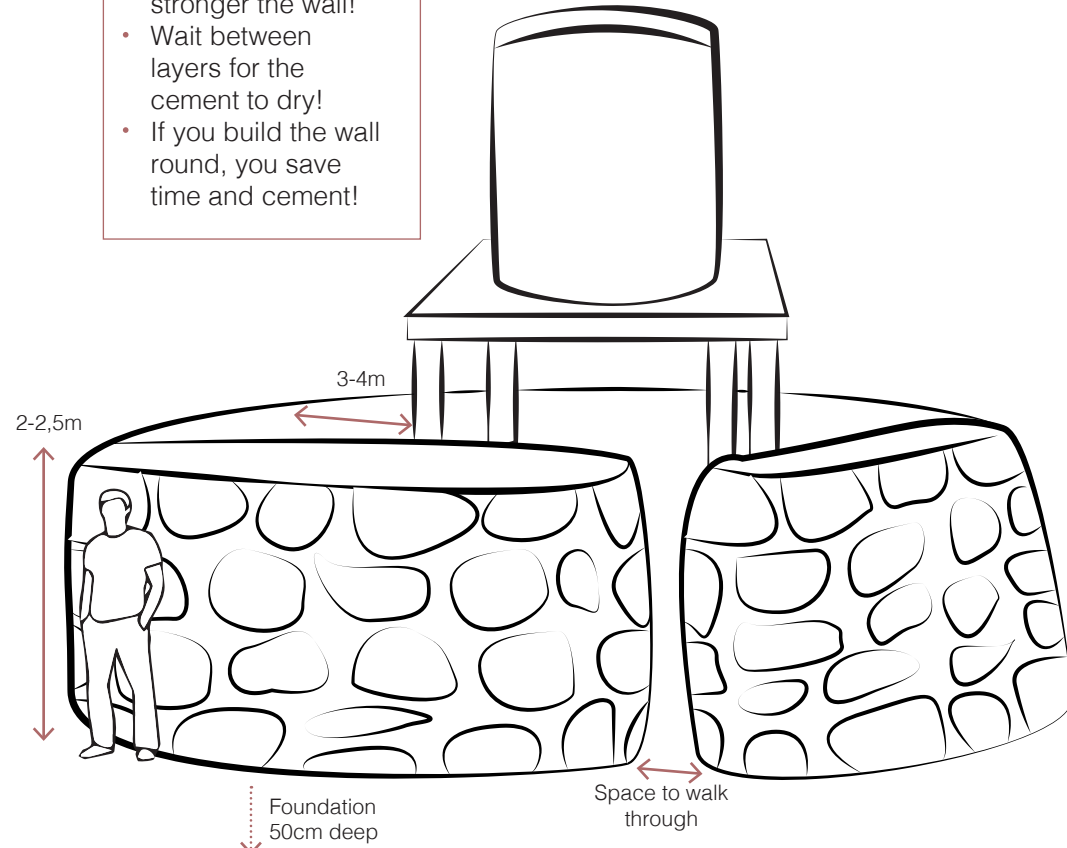
- 1) 40 bags of cement (N\$120 each)
- 2) Spade
- 3) Trowel
- 4) Wheelbarrow
- 5) Pickaxe
- 6) Gloves
- 7) A lot of water
- 8) Loads of sand
- 9) Many rocks
- 10) Manpower



Top tip:

- The more cement you use, the stronger the wall!
- Wait between layers for the cement to dry!
- If you build the wall round, you save time and cement!

N\$5000
per big
stone wall



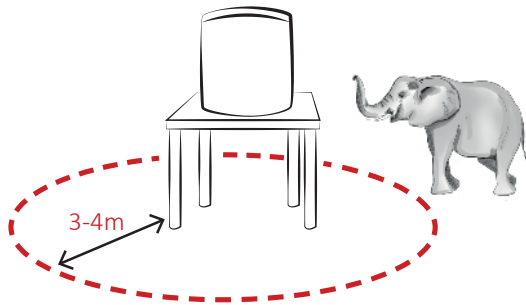
Illustrations and photos: © EHRA
More info: www.desertelephant.org

By providing protection for your water installation AND creating a waterpoint for the elephants, conflicts can be avoided. Elephants will come only to drink and move on afterwards.



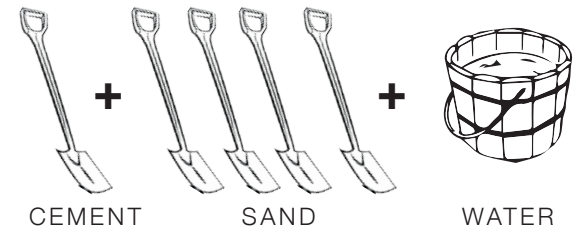
1 Mark the ground

Mark the ground around the water point where the wall is to be built. Make sure that there is at least 3-4m between the water installation and the wall to ensure that the elephants can't reach over it.



3 Mix cement

Mix cement: Mix a ratio of 1 spade of cement and 4 spades of small grain sand with water to a thick paste. Make sure it's not too liquid as it wouldn't stick to the rocks.



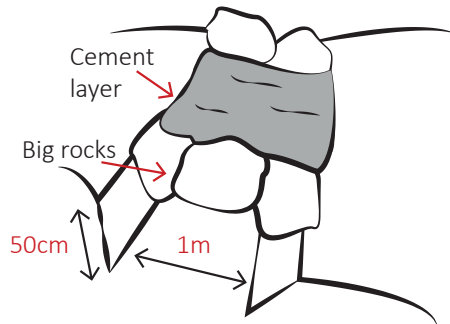
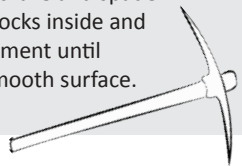
Mix 1 spade cement + 4 spade of sand + water.



Mix to a thick paste! Not too liquid!

2 Dig the foundation

Dig the foundation: Dig at least 50cm deep and 1m wide using pickaxe and spade. Lay very big rocks inside and cover with cement until you have a smooth surface. Let it dry!



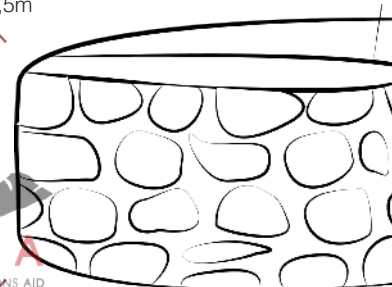
After layering the big rocks in the foundation, cover the rocks with cement. Make the surface SMOOTH!



3 Lay the bricks

Lay the biggest rocks at the bottom to ensure stability of the wall. You can use smaller rocks as you build up. Build **at least 2m high** and leave a small space for you to walk through.

2-2,5m



Use **GLOVES** to protect your hands!



White Rock Barrier

Elephants will avoid walking on pointy rocks!

N\$1700 per white rock barrier



Construction



Constructing a white rock barrier is very easy and cheap. Depending on how many people help you, it might take a couple of days to finish the barrier.

Material Checklist

For 1 rock barrier

- 1) White paint (20l - N\$500)
- 2) Brushes
- 3) Petrol (for cleaning brushes)
- 4) Pointy rocks
- 5) Manpower



Remember:

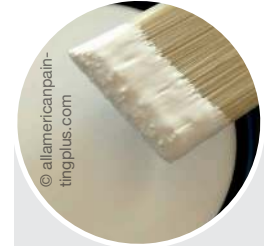
- As white is reflecting in the sun, it can hurt the elephant's eyes.
- Elephant feet are very sensitive. Walking on white pointy rocks is very uncomfortable for them and they will, if possible, avoid it.
- **But:** If you put a white rock barrier around a vegetable garden, elephants might be motivated enough to walk over the white rock barrier, no matter how uncomfortable this may be for them!



Before you start to lay out rocks, you might want to put a simple fence up, if you haven't got one standing yet.



Collect big, pointy rocks and lay them out in front of your fence/ house/ garden. Make sure, that the pointiest side is facing upwards.



For it to be as effective as possible, create a **3-4m wide barrier**.

Now, paint all of the **rocks white!** Be generous with the paint!



Beehive Fence



- Check first, if your area can support bees! Bees need enough water and food (flowers, crops and trees)
- Check, if your honey will be edible: Honey made from Euphorbia damarana plants are highly toxic!

Construction



Constructing a beehive fence demands good planning and commitment. Building the fence is relatively easy if you follow all steps carefully. Only a correctly built fence is effective.

Material Checklist

For 1 Fence

- 12 beehives a N\$400
- 12 beehive dummies
- 48 strong posts
- 500m strong wire
- 4inch nails
- Iron sheets

For 12 KTBH Beehives

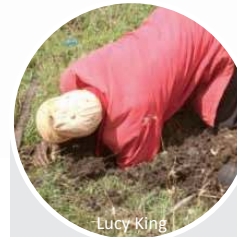
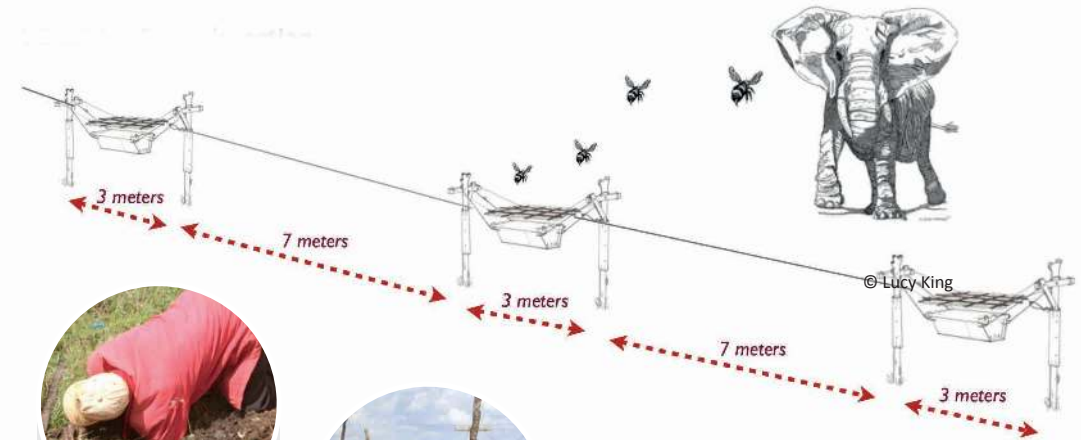
- 4 x 9mm Plywood 2,4m x 2,1m
- Cedar/ Grewia wood
- Wood glue
- Sandpaper
- 1inch nails
- Coffee wire
- Strong wire
- 3 x corrugated iron sheets 3m x 1m

Maintenance Tips

1. Keep your **posts strong** and replace old ones
2. Provide **water** and **shade** for the bees - A stick within prevents bees from drowning
3. **Clean** the empty beehives regularly to prevent pests

Elephants will run from the sound of disturbed honey bees!

N\$20,000 per beehive fence



Measure field and dig 0,75m holes for 2m long posts in a 7m-3m-7m repeating pattern. Hammer in stones around the base of the post.



Link beehives to each other using strong wire, ensuring wire is on the inside of the posts. Hang thatched roofs from the posts to keep the hives shaded and cool.



Use 2D dummy hives cut from plywood sheets between each real hive to trick elephants into thinking there are more bees, reduce costs, and extend the length of your beehive fence.



Wear protective clothing to harvest honey. Try not to disturb or damage the brood chamber. Check before, if you are allergic to bee stings!

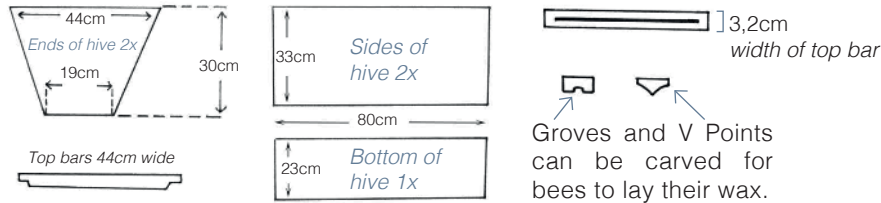


Filter honey into clean jars in a hygienic environment.

Enjoy or sell the honey for a good price!

1 Plywood preparation

- 9mm Plywood comes in 2,4m x 2,1m
- > Can make 3 x 80cm long beehives
- Make 44cm long top bars stripes out of natural wood (Cedar, Grewia)
- > Must be 3,2cm wide!



2 Construction of KTBH beehive

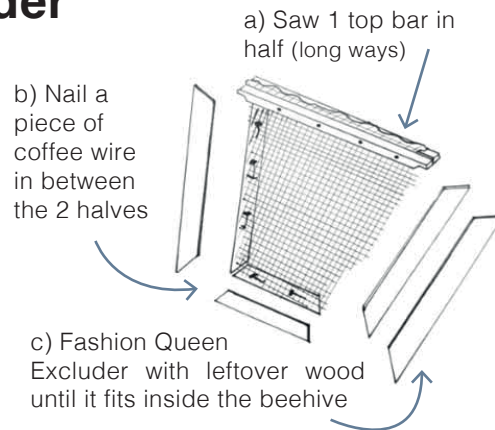
- Sand down edges until they are smooth
- Simple wood glue can be used to seal the pieces together
- Nail the pieces together with 1inch nails



3 Queen excluder



Nail the coffee wire tightly! Its holes are small enough to not let the queen enter.



4 Fitting the queen excluder

b) Leave space for 6 top bars btw. the hive entrance & the excluder

a) Thin strips of wood nailed to the inside of the hive for the top bars to sit neatly

d) Drill holes in each corner for hanging hive

c) Drill 2 holes into the front of the beehive for the bees' entrance to the hive

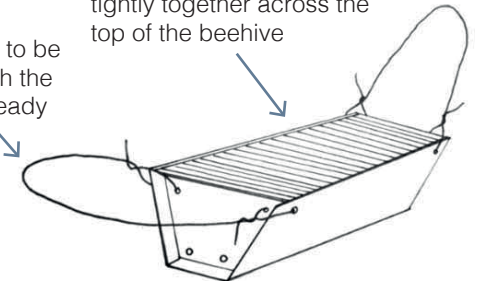


! The top bars must be exactly 3,2cm wide which is the proven distance apart that bees like to make their comb. This includes a small gap that the bees leave to pass between combs.

5 Sealing the hive

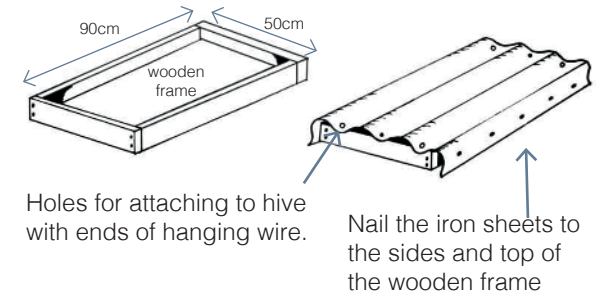
a) The top bars should fit tightly together across the top of the beehive

b) Strong wire to be looped through the drilled holes ready for hanging



6 The roof

A waterproof roof is essential to keep the bees dry. Corrugated iron sheets are ideal for this. You need to make the roof wider and longer than the hive for full protection. 3x1m iron sheets can roof 4.5 beehives if you cut each roof sheet into 1m x 65cm strips.



Holes for attaching to hive with ends of hanging wire.

Nail the iron sheets to the sides and top of the wooden frame

Protective bee clothing

1



- Minimise disturbance: work quietly, only lift one top bar out at a time and use smoke to calm the bees.
- Cover exposed skin to prevent stings (beekeeping suit)
- A wire mesh hat *or* cut open an old flour sack and sew mosquito netting across the opening.
- Cover your arms with a shirt, or blanket and wear gloves and shoes.

Smoking the hive

2



- Puff some smoke over the top bar hives for a minute or two.
- The smoke will cause the bees to consume some of their honey and this slows them down and makes them easier to handle.
- With each top bar smoke the bees to stop them becoming aggressive.
- A smoker can be bought from any beekeeping supply shop *but* you can also make your own
- Good smoking material is dry elephant dung and dry twigs.
- Make sure you don't direct a lit flame towards the hive or you could burn the bees!

Honeycomb

3



- Don't harvest the brood chamber!
- Harvesting from the honey chamber of a hive will provide you with sheets of pure wax comb filled with hone
- Selling the honey in whole comb fetches a high price.
- If you prefer pure honey, cut the honey comb into a bucket lined with a simple mesh material.
- Any fabric with small holes in will do to drain the honey from the comb. Either leave the honeycomb overnight to drain or squeeze the comb to release the honey.
- The left over wax is also a valuable to make candles.

Honey Harvesting

When time comes to harvest your honey, please make sure you follow the next steps. These steps will help you ensure your own safety and to get the purest honey possible from your hives. Honey harvesting demands good preparation. Start with step number 1 !



4

Elephant friendly honey



- Honey harvested from beehive fences has been coined as 'Elephant- Friendly Honey'.
- The elephants are deterred from entering farms during their natural foraging activities
- Simple labels can be made for honey jars to advertise the unique source of the honey and this will attract interest and support for more beehive fence projects.
- Keep a record of how many kilos of honey is taken from each hive.

Chilli Fences

Construction



Chilli fences require **very good maintenance** to be effective. Chilli paste should be applied frequently - every day during the rainy season and every 3 days when crops in your garden reach maturity.

Material Checklist

Chilli paste for 30m fence

- 1 kg fresh chilli pods
- (50g tobacco powder)
- 500g waste grease
- 500ml waste engine oil
- Squares of material (from an old rag/ shirt)
- 80m rope
- 4 x 3m long poles

Mix all ingredients together into a thick **chilli paste!**



Top tip:

Use **gloves** while handling chilli!

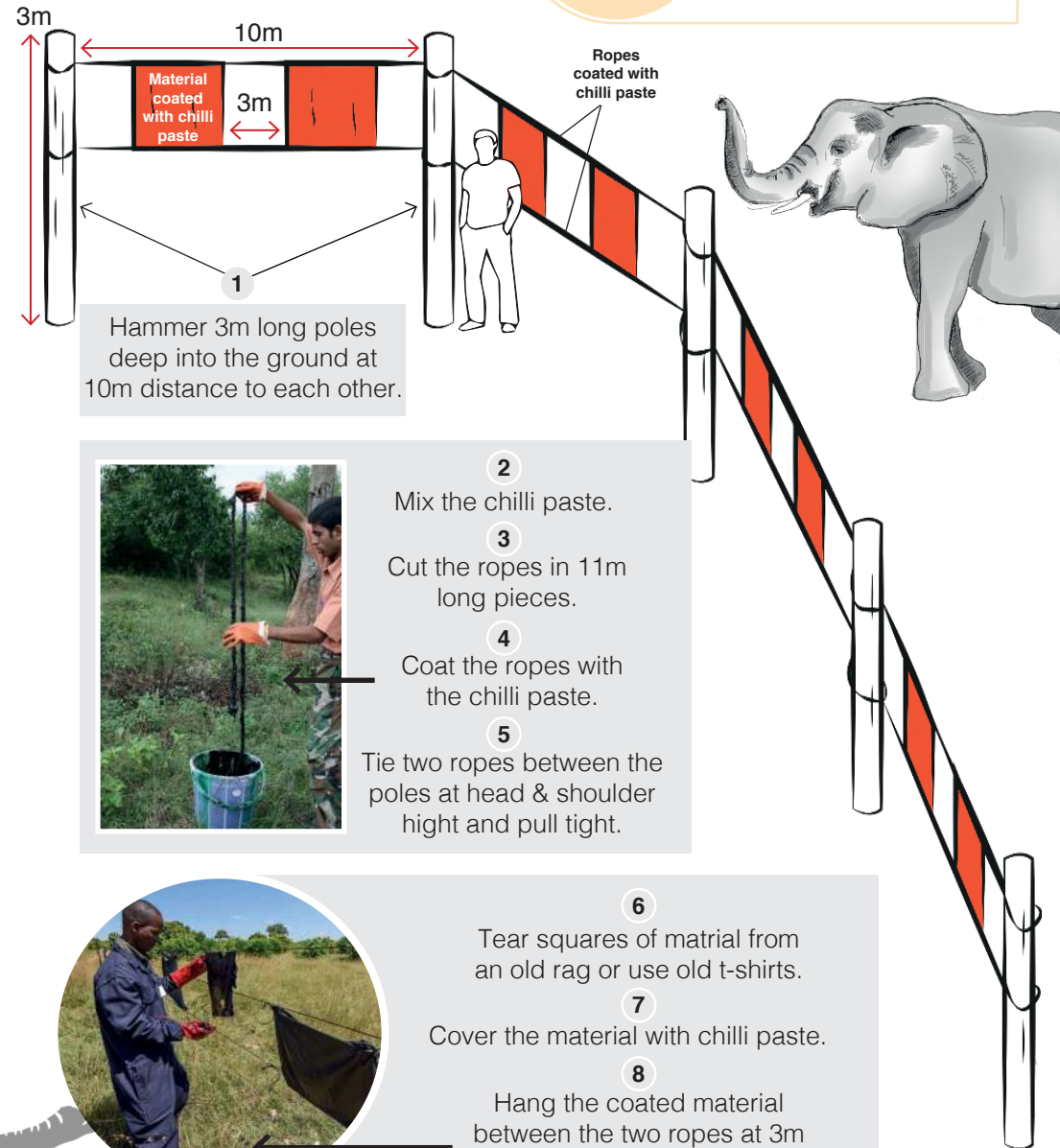


Avoid any contact with your eyes and other sensitive parts!



Reapply chilli paste frequently!

approx. **N\$550** per 1 acre (4000m²)



Farmers building a chilli fence around crops.

More info:
www.honeyguide.org
www.ecoexistproject.org
www.maraelephantproject.org

Chilli Smoke



Put all ingredients in the condom and twist shut with only the fuse exposed. Farmers can light the fuse on the bomb when they see an elephant approaching their farm. When lit, throw the condom and it will burst open with a bang spraying a cloud of chilli powder into the air. The smell is enough to make the elephant retreat.



Chilli bomb

Material Checklist

For 1 chilli bomb

- 1 condom stuffed with:
- 3 teaspoons of crushed chilli
- 3 teaspoons of soil
- 1 firecracker



Chilli dung cake

Material Checklist

For 1 chilli dung cake

- Fresh cow dung
- Wooden pole
- 100g chilli pods
- 100g waste chilli seeds
- Waste material



Break the chilli pods and mix with fresh cow dung and all other ingredients. Roll into a ball and place on a wooden pole, close to an elephants entry point. Set it alight in the evening when elephants are most likely to raid.

Burning chilli is a good way to keep elephants away. They hate the smell, which irritates their nose. Chilli smoke also masks the smell of water and foods stored in houses!



Chilli bricks

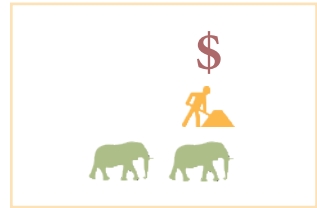
Material Checklist

For 1 chilli brick

- 1kg ground chilli
- 2kg cattle or elephant dung
- Gloves

More info:

www.resolv.org
www.biglife.org
www.elephantpepper.org
www.maraelephantproject.org



Mix ingredients in a bucket with a little water and shape into bricks with a small depression on the top. Dry in the sun! Put a few glowing coals in the dip and let them burn around field boundaries.



Chilli tins

Material Checklist

For 1 chilli tins

- 100g chilli pods (spicy)
- 5 x 5litre old tins with lids
- wire
- 50g dry hay
- 50g coal
- Waste material: grass, hair, paper etc.



Make holes in the tins and fill the bottoms with coal and dry hay. Add 10-12 broken chilli pods, tobacco powder and waste material. Cover with lids and hang from the farm boundary using the wire.



Safety

- Careful not to set the farm on fire! Use gloves while handling chilli!
- Make sure, the wind is not blowing towards you but towards the elephants. - Otherwise this method is not effective.

Lion & Elephant Lights

Material Checklist

Flashing light fence

- 1) Solar panel
- 2) Car battery
- 3) Inverter
- 4) Connections
- 5) Switch
- 6) Flashing lights (christmas lights or LED bulbs)



Why?

Flashing lights around your house/ farm/ garden makes elephants and predators (such as lions) believe, that humans are guarding the place with torches. This is enough for them not to approach.

Elephant Lights



Blinking christmas lights (21m long; 200 LED lights):
N\$200

Lion Lights



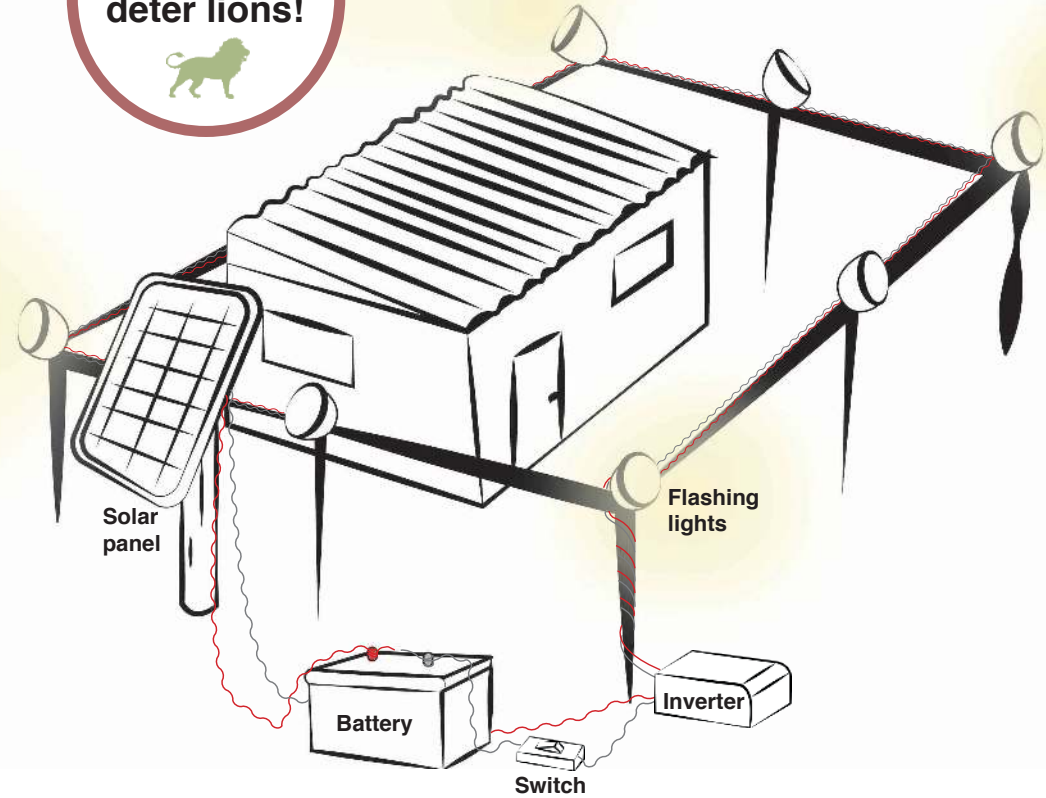
Solar panel 200w:
N\$2500
Car battery:
N\$1200
LED lights:
N\$200 / light



Also effective to deter lions!



N\$5500
per lion lights
N\$500
per elephant lights



Construction



Constructing a fence with elephant lights can be very cheap and effective if you choose blinking christmas lights! Some come with a small solar panel to charge the lights. This has not been tested on lions yet! **Fences with lion lights** can be expensive. **Lights need to flash!**

Electric Fences

Material Checklist

For your electric fence

<input type="checkbox"/> Wooden poles & wires	<input type="checkbox"/> Controller	N\$2000
<input type="checkbox"/> Outriggers	<input type="checkbox"/> Switch	
<input type="checkbox"/> Energiser	<input type="checkbox"/> Alarm monitor	N\$3000
<input type="checkbox"/> Car battery	<input type="checkbox"/> Solar panel 200w	N\$2500

Construction



The most effective elephant barriers IF they are

1. Suitably designed
2. Well managed and maintained
3. Fully supported by all stakeholders and the community! The fence should surround your farm but NOT cut off key waterholes!

1

Treat the 3m long poles with insecticide or engine oil to prevent termite invasions. Hammer the poles deep into the ground at 4m distance to each other.

Solar panel:

Converts sunshine into electricity! Keep in the sun!

2

Earth wire:

The earth wire should be buried just in front of the electric fence.

High tensile live wires:

The high tensile live wires are connected to the energiser.

3

Energiser:

The energiser sends electricity from the battery down the live fence.

Battery:

Stores electricity generated by the solar panel.



Safety

1. Keep electric fences away from water!
2. Never electrify barbed wire!
3. Do not short-cut the fence
4. Put signs up to warn people
5. Always disconnect power supply before spraying crops or mending the fence!
6. Do not ground the fence within 15m of a buried telephone line or utility ground rod!

approx.
N\$12000
+ annual
maintenance
costs

