



## Field Guide 2

### ELEPHANT AWARE FARMING: Protecting Food for Your Family

Elephants are intelligent animals and similar to people in many ways. We all need water, food and space to live. But sharing space with elephants can be difficult! These field guides aim to give some ideas and tips about how we can coexist together more harmoniously and reduce conflicts that arise between people and elephants.

When an elephant comes into a field and damages crops it can ruin a family's entire supply of food. One way to protect your family's food supply from elephants is to try "Elephant Aware" ways to farm. These include using a set of techniques that can improve crop yields while also making your fields less attractive or disruptive to elephants.

## Elephant Aware Farming



Try **Conservation Agriculture** to grow more crops in a smaller area that is easier to protect from elephants and livestock.



Choose a **field location away from an elephant corridor**.



**Improve your soils** through conservation agriculture to avoid having to look for new field sites further into the bush and closer to elephants.



**Farm in a cluster area** that can be protected from elephants with one combined chilli and electric fence.



**Plant crops appropriately** – plant crops elephants don't like on the outside of your field with more vulnerable or attractive crops in the middle.



**Try a variety of methods** to protect your field to create a set of barriers.



**Be aware of elephant behaviours** to help protect yourself.





## WHAT IS CONSERVATION AGRICULTURE (CA)?

CA is a way of farming that improves efficiency, productivity, and food quality, while ensuring farmers have food now and in the future.

### CA has three principles:



Minimum mechanical soil disturbance;



Permanent organic soil cover with crop residues or cover crops;

Crop rotation between grain and legume crops.



### WHY PRACTICE CA?

CA can improve crop yields and lead to early harvesting. This can help farmers keep their fields, crops, and food supply safe from elephants.

### BENEFITS of CA



Increased yields



Smaller farms and fencing needed to protect crops



Earlier harvesting



Reduced production costs, e.g. fertilizer and fencing



Improved physical and chemical properties of soil so soil nutrients improve year on year, preventing the need to move to new fields.



Reduced surface runoff and lower soil erosion

## CONSERVATION AGRICULTURE PRACTICES

### BASIN:



Permanent shallow planting basins - 15cm by 35 cm wide and 15 cm deep.



Basins should be spaced 35cm from each other in rows. Parallel rows of basins should be 70cm apart.



Manure or compost is mixed with the soil in the basin and mulch placed around the basins.



Basins are re-dug in the same place each year - preferably during the dry season to maximise the growing season.



Seeds are planted in the basins before or during the first rains.

**Advantages** - Only the soil in the basin will be disturbed, leaving the surrounding soil untouched and less exposed to erosion and nutrient loss. The basins also improve water infiltration and harvesting. They also allow for better root penetration beyond shallow 'hard pan' layers. In theory only the crops planted in the basin will benefit from the applied nutrients.



## DIGGING BASINS



## BASIN



## RIPPING:



Ripping entails using a ripper to create a deep but narrow groove in the soil where the manure is applied and the seeds are planted.



Performed before the rains and seeds sowed before or during the first rains.



Ripped lines should be in the same place every year and the soil in between remains undisturbed.



On the undisturbed soils, a layer of mulch is placed or cover crop planted to create ground cover, reducing weed growth and retaining soil moisture.

## Advantages

- Workload is spread during the year, the growing season is maximised, and the permanent planting furrows generate a softer and a more nutrient rich soil.

This technique also improves water infiltration.



## RIPPER FURROWING



## MULCHING:



Mulching involves using a thick layer of organic matter (mulch), grass, weeds or leaves - covering at least 30% of the surface.



Use the materials around your field. If you are using weeds, make sure they do not have seeds and are very dry before placing on your beds so that they do not grow again.



Break dry material into smaller pieces.



When sowing seeds, mulch over the entire planted area to keep top layer of soil moist, until they germinate.



Once plants germinate remove some mulch to filter light through.



Keep a 2 cm space around your plants free from mulch. This will stop the mulch from rotting into your plant roots.



If your mulch has decomposed or blown away, reapply.



For proper management of mulch, livestock should not be allowed to graze on the fields.

## Advantages

- It protects the soil, moderates soil temperatures and creates a climate favourable to the micro fauna. Mulch suppresses weeds and the decomposing organic matter is an important source of additional nutrients.



### MULCHED AREA



## CROP ROTATION:



Crop rotation with nitrogen-fixing legumes – the basins or ripped lines that have been used to grow grains, e.g. Sorghum, Millet or Maize should be used for growing beans, groundnuts or cow peas the following year.



Crops with high nutrient demand should be rotated with less demanding crops or legumes, which replenish soil nutrients.



Crop rotation also serves as weed and pest control.



Crops that are competitive may help to weaken weeds and reduce the seed bank.



Crop rotation suppresses the propagation of many host specific pests and diseases.

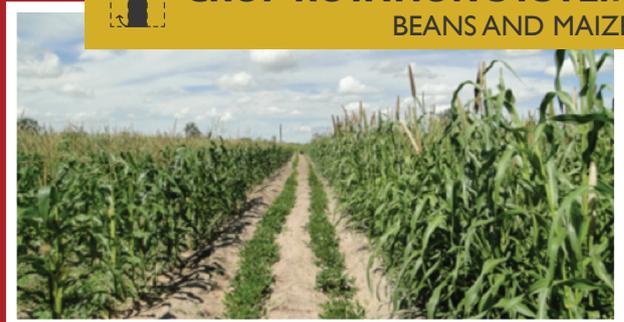
## Record Keeping

It is important to keep records of your crop cultivation. Records include: when you plant, what you plant, where the rows of basins or ripped lines are, when you weed, how much you are harvesting, and so on. This will be key to your learning about what works and to ensure you plant in the same basins or lines and rotate your crops appropriately.



### CROP ROTATION SYSTEM

BEANS AND MAIZE



## Combined Agroforestry – complimenting CA

Agroforestry is a way of improving agricultural productivity through improving soil nitrogen by planting trees in amongst your crops. Nitrogen fixing in the soil and leaf fall that provides mulch both add to the soil nutrients by trees like *Faederbia albida*, which sheds its leaves at the beginning of the summer when the crops grow.