MOZAMBIQUE CONSERVATION FOUNDATION

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Conservation Agriculture

INTRODUCTION

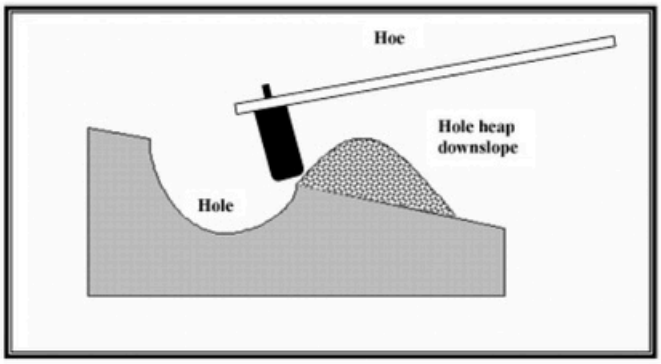
The main objective of the conservation agriculture project is to help educate local communities within the various regions of our conservation areas to practice a more sustainable form of agriculture rather than the slash and burn methods that have been practiced for generations. The current method is to deforest a heavily wooded area and utilize this area for one season then move to another heavily wooded area after depleting the minerals in the soils and so on.

This form of shifting cultivation is extremely hazardous to the natural fauna & flora as most of our regions are semi wetland areas with limited woodland area which is diminishing rapidly and will be gone soon unless we do something about it.

We aim to sign up various farmers within the local communities to benefit from our agricultural technicians who will travel around weekly and check on their respective crops and help with technical knowledge and advice on their respective crops.

We also intend to have a demo plot in each major village of roughly 1 hectare in size that we will manage and maintain with the simple methods listed below to prove to the local communities that they can improve their yields by up to 500% if they utilize these simple methods alleviating a lot of the famine in the area due to poor yields because of practicing antiquated farming methods.

These demo plots will be done annually in the same plots to prove that it is not necessary to practice shifting cultivation to the local communities.



IMPLEMENTATION

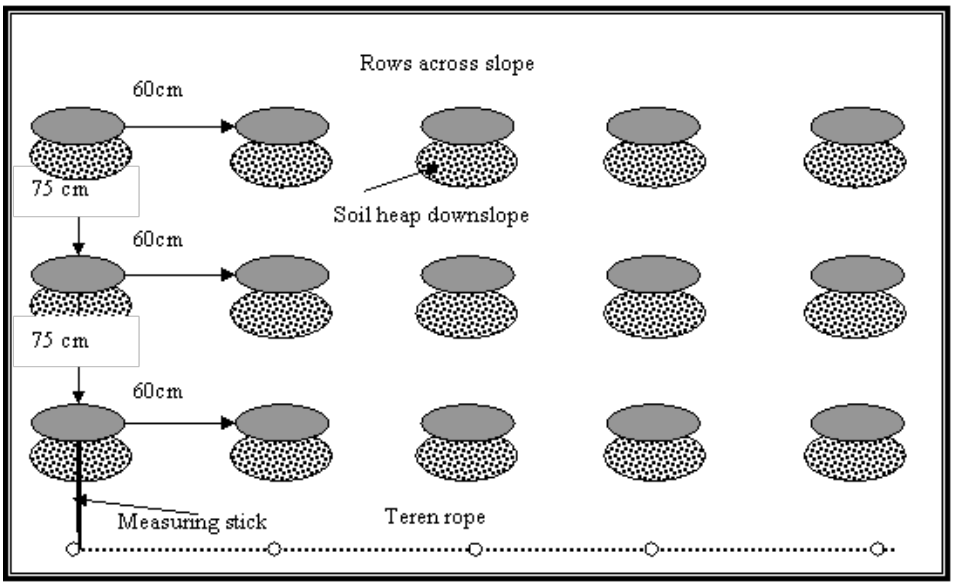
A) Tools Required	*B) Land Preparation*
• Hoes • Measuring Cups • Measuring sticks • String & bottle tops • Fertilizer or Manure • Seed	• Do not plough • Do not burn • Stump & clear • Keep weed free • Rows on contour • Hole out @ 60x75cm • Holes – hoe width – 8cm deep – soil goes down slope side • Holes – 15cm deep with manure • Complete by end October in Summer rainfall areas

C) Liming

- Based on soil analysis
- Place evenly across base of hole

D) Fertilization

- Based on yield targets & resources
- Ensure fertilizer or manure is available by end October to apply before rains
- Ideally 12ml cup DAP or tin of manure
- Place evenly across bottom base of hole
- Cover slightly till required seed planting depth remains
- Wait tell decent rains – see below



E) Planting

- After good rains from 15th November
- Soon after rains – within 2 days
- 3/hole ultimately thinned to 2/hole – 44,000 plants/ha
- In straight line across the row
- Planting depth – matchbox length maize
- Cover carefully level to the surrounding soil surface

- **Suggested planting dates for maize for Southern Hemisphere summer rainfall areas:**

Total amount of Rainfall received	*Planting date*
100 mm	*1st week November*
85 mm	*2nd week November*
75 mm	*3rd week November*
50 mm	*4th week November*
30 mm	*1st week December*

F) Weed Control

- Get them when they are small – 1 inch 3 days vs 1 ft 12 days
- This gives several rest days vs never catching up
- Weed free throughout
- 2 hours / day
- Hoe just below surface – cut off roots – except for creeping grasses which to effectively eradicate must be sprayed.

G) Thinning

- Thin to an average of 2 plants / hole
- Thin weakest plant or middle plant if 3 emerge
- Leave 3 in the hole where 1 emerges on the previous hole so there are as average of 2/hole

H) Top dress fertilizer

- 1 @ knee height – depending on yield requirements – 5ml cup
- 2 @ before tassling – depending on yield requirements – 5ml cup
- Min of 10cm from stem base on upside

I) Topping

- Once fully mature
- Break off above cobs

J) Post-harvest stalk lodging

- Stand on base of stem pushing down between rows
- Improves blanket & helps reduce weeds
- Breaks life cycle of maize stalk borer

K) Post-harvest weed control

- Keep lands weed free
- 1 pigweed produces 600,000 seeds
- This year's weeds are next year's crop failures

L) Rotations

- Practise crop rotations with legumes such as beans, soyas, groundnuts
- Allocate 1/3rd of land area to be under rotation
- Eg. Beans 1/3rd, 2/3rd maize
- Rotation reduces pests & improves soil structure & fertility.

Alternative Crop technology adjustment guidelines								
	Crop	**Maize**	**Groundnuts**	**Sunflower**	**Cotton**	**Sorghum**	**Soyabeans**	**Cowpeas**
Seed Rate	kg/ha	30	80	6	25	10	80	80
Spacing	Rows	75	37.5	75	75	75	75	75
	In-row	60	4	60	60	10	10	10
Plant depth	cm	5	3	2	2	2	2	2
Plant	Seeds/hole	3	1	3	4-6	1	1	2
Thin to	Seeds/hole	2	1	2	1-2	1	1	1
Population	Plants/ha	44,444	333,333	44,444	33,000	133,333	133,333	133,333
Target yield	tons/ha	5-7	1.5-2	2-2.5	2-2.5	2-2.5	1.5-2	1.5-2
Compound Fertiliser	Cup size ml	#12	#8	#5	#8		#5	#5
	Rate kg/ha	293	196	122	196		122	122
Top dress Fertiliser	1) Cup size ml	#8		#5	#5	#12		
	2) Cup size ml	#5						
	Rate kg/ha	256		98	98	144		
Lime	Rate kg/ha		200					

SIMPLE TECHNOLOGY

Technology	*Advantages*
A) Do not burn (30-100% decaying plant residue surface cover)	• *Reduced raindrop impact & crusting* • *Reduced runoff –from 90% with conventional vs 6% with cover* • *Better infiltration ie. 10% vs 94%* • *Reduction in soil erosion – 30t/ha vs 0.6t/ha* • *Reduced evaporation* • *Moderation of soil temperatures – better germination & seedling growth* • *Soil fauna and flora encouraged* • *Better root system close to surface* • *Organic nutrients available* • *Improved yields* • *Stable yields in dry seasons* • *Reduction in weed population*
B) Do not plough	• *Minimize soil disturbance called zero or minimal tillage* • *Improved soil structure* • *Increased soil water holding capacity* • *Reduced erosion* • *Improved soil fauna and flora – both aerobic & anaerobic* • *Reduced effort* • *Reduced cost – input costs halved & tractor costs 1/3rd* • *Planting very soon after rains* • *Roots & organisms bind soil & prevent slumping downwards and across the slope.*

GOOD MANAGEMENT

There are many areas where there is a substantial saving of resources with Farming including soil, moisture, nutrients, land preparation time & costs. However, in order for Farming to be successfully implemented the management must be improved.

a) On time

- *Hole preparation in off season*
- *Collecting manure, ground cover, seed & Fertilizer well in advance of the planting season*
- *Planting date - 22nd Dec longest day length – lose 120kg yield per day planted after end November*

b) To high standards

- *Population density, spacing, depth, straight rows, 3 seeds in a row etc.*
- *Weed free stands*

c) Minimal wastage

- *Water, soil, nutrients, fertilizer, labour, sunlight, market, time.*

Farmers should be taught the basic principles of planning ahead to be able to meet critical deadlines & evaluating their yields & standards at regular intervals.