BIOCHAR FARMING

SUBA BIOCHAR FARMERS SELF GROUP

PETER ONGELE

SINDO VILLAGE, SUBA DISTRICT

- Semi arid area, located in Nyanza Province, Kenya along L. Victoria.
- Population (Viable people to feed): 1, 900 (2009)
- Depression of land that stretches approximately 20 KM
- Sindo is divided into; Eastern zone (black sandy soils), Western zone (old red volcanic soils)
- The soils are generally deficient and marginal
- Rainfall: Long rains (Mar-Jun), short rains (Oct-Dec)
- No defined soil management policy. Farming is traditional in methodology.

FARMERS IN SINDO VILLAGE

- Majority of land users are poor farmers (over 70%): these people live below $1 USD a day.
- None is involved in projects aimed at self sustenance to remedy global food crisis
- In the community economy, the end does not justify the means!

THE CHALLENGE TO AGRICULTURE, SINDO

- Unsound farming methods: Invalid use of cover crops, mulches, compost or animal manures
- Limited knowledge on viable seeds to be grown in Sindo
- Low literacy and language barriers (for foreigners)
- Long droughts
- Domestic animals deaths
- Morbidity due to HIV/AIDS, Malaria and other contagious waterborne diseases
- Access to expert support from organizations and agricultural facilities e.g. food security, Nutrition, health etc.

THE PROBLEM:

- Low food supply
- Low Rainfall
- Changes in demographics
- Changing work ethics
- Westernization influences

- Cash cropping, and dependency on cash from crops rather than local food production
- Limited agricultural professional support

SUBA BIOCHAR FARMERS SELF-HELP GROUP, SINDO VILLAGE

Started in 2008 as Farmers participatory Research Approach on "Biochar".

OBJECTIVES;

- To promote the Suba Biochar Farmers in acquiring farming technologies for better food security status
- Uplifting food security status by practicing meaningful farming system e.g. organic farming through irrigation and seasonally
- Identify the best options to address local limitations with the use of Biochar
- Provides a gateway for greater involvement and adoption of Biochar for soil amendment

THE BIOCHAR POTTER PLANTS TRIAL, 2008

- The experiments were aimed at testing if Biochar could suppress the growth/infection of striga weed in local soils
- Soils treatments included;
  - Charcoal dust + soil
  - Charcoal dust + Animal manure +soil
  - Calcium Nitrate (CN) + Soil
  - Animal manure + Soil
  - Untreated soil (as control)
- All pots were infested with Striga weed seeds

Potted plants with Striga weed

Sprouting Striga weed in a pot

THE BIOCHAR POTTER PLANTS TRIAL, 2008

RESULTS

- After two months the following were realized;
  - The growth rate was highest with Animal manure + charcoal dust + soil treatment
  - Followed by Animal manure + soil
  - Followed by CN + Soil
  - Followed by charcoal dust + soil
  - Followed by animal manure + soil
  - The untreated soil had the least growth rate

THE BIOCHAR POTTER PLANTS TRIAL, 2008

RESULTS

- The average height of the maize after every week was 3-5cm
- The mixture of CN + soil had the thickest maize stem with closest leave axis
- Striga weed population were lowest in the charcoal dust + manure + soil treatment with 21 striga on the 28th day after planting

THE BIOCHAR POTTER PLANTS TRIAL, 2008

RESULTS

- Animal manure + soil had 65 striga weed on average
- CN + Soil had 75 striga weed
- Charcoal dust + soil had 45 striga weed
- Untreated soil only 89 striga weed

THE BIOCHAR POTTER PLANTS TRIAL, 2008

- CONCLUSIONS
- Charcoal dust + animal manure + soil had the least infestation of striga weed
- Soil only was most infested with striga weed

FARM TRIAL – SMALL SCALE

- Small scale trial was carried out on 2 plots of 5x5m
- The treatment was Biochar + animal manure
- The control plot was not treated
- Both plots were infested with striga weed

- The plot treated biochar + animal manure did well compared to the control plot

THE BIOCHAR FARM TRIAL, 2009

- Experiments were planned to be carried out in one planting season each year for three years
- Carried out among 14 local farmers who were also members of Brethren Church of Assembly
- Farmers were all given hybrid maize seeds
- 7 farmers were asked to plant maize on untreated farm (1/2 Acre) as control
- 7 farmers planted the maize on farms (1/2 Acre) treated with biochar and manure (1:2 ratio)
- At harvest, each farmer offered 100 plants for scientific observation and sampling

THE BIOCHAR FARM TRIAL

Measurements:

- The height of the overall plant
- The weight of the maize with and without ear pods (dried for 2 weeks)

Striga weed on a control maize farm

Striga on an untreated sorghum farm

Vegetable garden treated with biochar + animal manure

THE BIOCHAR FARM TRIAL

Vegetable Cultivation;

- Farmers have used biochar to increase output
- Results have shown little infections on the leaves and roots where biochar has been applied in the soil
- The vegetables have healthy leaves with biochar treatment

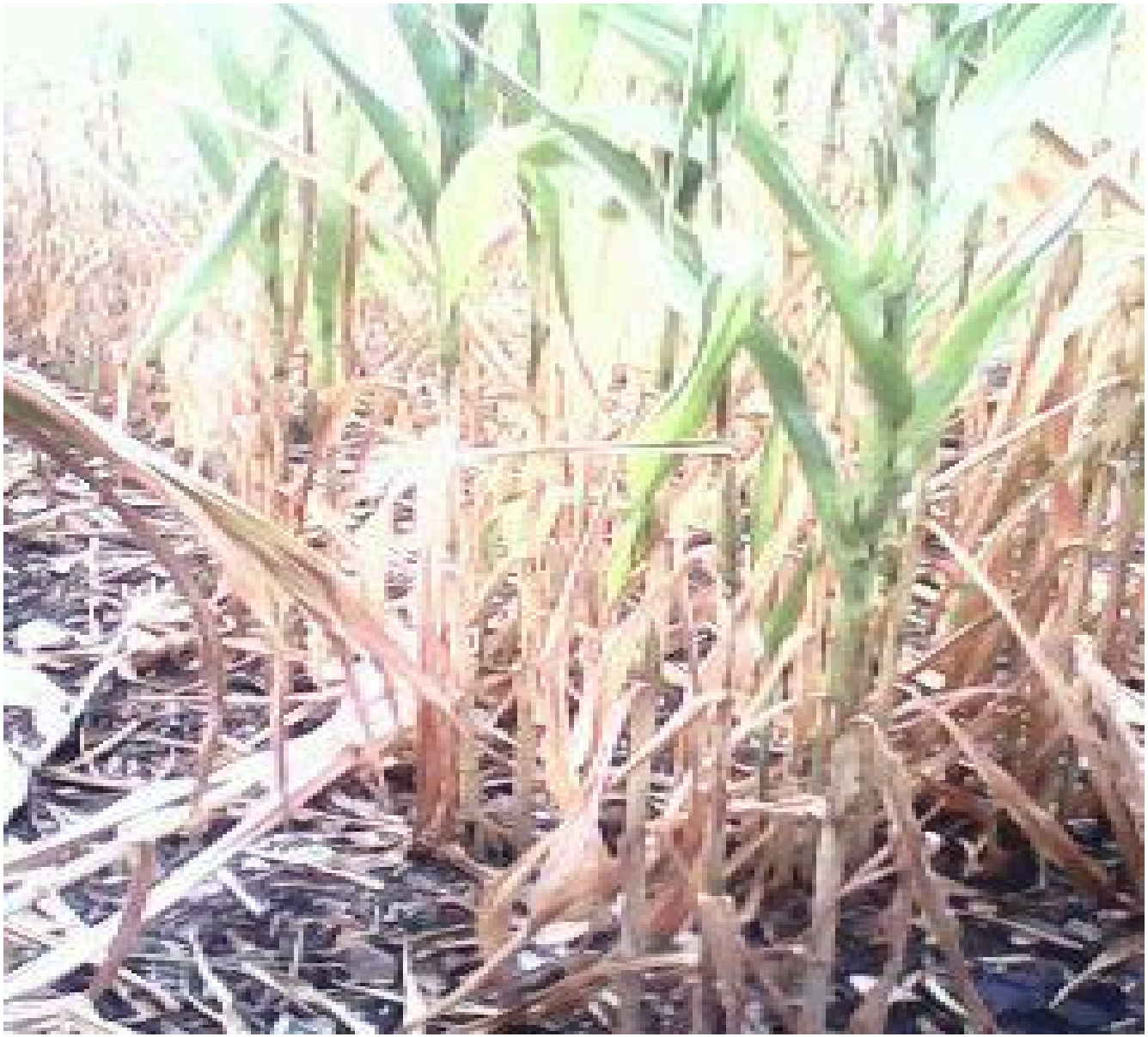
RESULTS

- Year I – the farmers with treated should observed a 300% increase in farm yields
- Year II – did not add biochar+ manure but realised another 300% in productivity
- Year III – there were no harvest because of very hot seasons

CONCLUSION

- Biochar + animal manure is the best and most affordable solution to striga weed in Suba
- Farmers can easily adopt to use of biochar + animal manure for better crop produce
- There is need for further training on organic farming and weed management in Suba

Withed crops in 2011



FUTURE PLANS

- Provide farmers with small TLUD gasifier cookstoves for domestic use
- Train farmers on use of large TLUD gasifiers (200L barrel) for making biochar out of agricultural residue
- Carry out training seminars on organic farming (using manure and biochar), small and large TLUD stoves for biochar production
- Get funding to carry out Year IV for the third set of data

OTHER FUTURE PLANS

- Growing horticulture along the lake shore by irrigation.
- Production of cereal crops through organic farming.
- Commercial production of tree nursery establishment.
- Commercial production of poultry keeping.
- Commercial production of bee keeping.
- Growing of Napier grass for the animals and for commercial.