FIELD REPORT ON MAIZE DEMOSTRATION FARM

BY
Prof. Daniel Obeng Ofori
Dr. Phyllis Opare
Dr. Michael Lartey and
James Agyei-Ohemeng

JANUARY 2015

SUMMARY

As part of the activities of the project "Strengthening Innovations and Technology Dissemination for Sustainable Development in Cereals, Cocoa and Coffee Value Chains in Western and Eastern Africa" (SATTIFS) in Ghana, a maize Demonstration Farm was establishedat Tanosoin the Techiman South District of the Brong Ahafo Region of Ghana from August to December 2014. Eleven (11) volunteer farmers were actively involved in all the operations that were carried out in the farm. The Demonstration Farm was established to:

- Demonstrate to farmers the best technologies locally available in maize production.
- Provide a learning platform for farmers to apply these technologies on their farms.
- Interact with famers and select them for the Farmer Field Schools.

The Farm, under the overall coordination of CITED staff at UENR was supervised by one of the Techiman South District Agricultural Extension Officers. Theestablishment of the Demonstration Farm was part of a Trainer of Trainers for Farmer Field Schools intended to train local farmers in the effective use of current and appropriate technologies in the maize production value chain. The emphasis was on the correct application of production inputs that would sustain the environment as well as maximize maize production in the field. These technologies were, inter alia, seed varieties, plant population, soil tillage, fertilization, weed control, insect and disease control, and postharvest management practices. Three maize varieties namely, Obatanpa, Abrohoma, and Golden maize also known as Yellow Maize were planted using the recommended cultural and agronomic practices. The participating farmers were convinced through the activities carried out on the Demonstration Farm that by using the appropriate technologies and techniques acquired they could significantly increase maize productivity on their individual farms. This would increase their incomes and improve their economic and social well being. Overall, the farmers were very appreciative of the training given to them by the project. They, however, emphasized the need for the development of sustainable maize postharvest management system in Ghana with focus on efficient storage and marketing to enable maize farmers obtain good price for their produce.

1.0 INTRODUCTION

The "Strengthening Innovations and Technology Dissemination for Sustainable Development in Cereals, Cocoa and Coffee Value Chains in Western and Eastern Africa" is a project aimed at building capacity in science, technology, and innovation in these regions to boost food security and socio-economic development. It is being implemented in several communities in the BrongAhafo and Ashanti Regions of Ghana. The Ministry of Food and Agriculture, cocoa and maize farmers, artisans, processors and other practitioners in the cocoa and maize value chain have been identified as key stakeholders to participate in the research and as beneficiaries of the training and the research outcomes of this project.

Maize is the most important staple crop in Ghana and accounts for more than 50 percent of total cereal production in the country. It is the second most important crop in the country after cocoa. The bulk of maize produced goes into food consumption and it is certainly the most important crop for food security. The development and productivity of the livestock and poultry sectors could also depend on the maize value chain since maize is a major component of poultry and

livestock feed. This is a report on a successful maize Demonstration Farm which was established at Tanoso in the Techiman South District of the Brong-Ahafo Region of Ghana as part of the SATTIFs project. The Demonstration Farm was established to demonstrate to farmers the best technologies locally available in maize production; provide a learning platform for farmers to apply these technologies on their farms and interact with famers and select them for the Farmer Field Schools.

2.0 METHODOLOGY

The Maize Demonstration Farm was establishedat Tanosoin the Techiman South District of the Brong Ahafo Region of Ghana from August to December 2014. Eleven (11) volunteer farmers were actively involved in all the operations that were carried out in the farm (Table 1).It was a participatory joint learning platform to ascertain how the appropriate use of technologies and proper practices can influence the yield of maize in the locality. The field that was obtained was later discovered to be a tract of unproductive land that locals were unwilling to grow maize on it. However, through the efforts of the participating farmers and the Agric Extension Officer, a healthy crop with appreciable yield was obtained. The schedule of the various activities carried out on the farm is shown in Table 2.

Table 1. Farmers that participated in the Demonstration Farm

Name of Farmer	Farmer Based Organization	SEX
1. IDDRISU INUSHA	NYAME NA YE	MALE
2. AMADU ISSIFU	NYAME NA YE	MALE
3. KARIM ALIDU	NYAME NA YE	MALE
4. OKU DIIN	NYAME NTI	MALE
5. KWAME BILE	NYAME NTI	MALE
6. FRANCIS KUUNSOYIRI	NYAME NTI	MALE
7. BONIFACE DERY	SUNTAA NUNTAA	MALE
8. OSMAN FUSEINA	SUNTAA NUNTAA	FEMALE
9. GLADYS SAAN-EGA	SUNTAA NUNTAA	FEMALE
10. VICTORIA DANAA	SUNTAA NUNTAA	FEMALE
11. ASIBI KWAKU	SUNTAA NUNTAA	FEMALE

Table2. Production protocol of maize atTanoso Demonstration Farm

DATE	ACTIVITY
18TH AUGUST, 2014	LAND CLEARING
19TH AUGUST 2014	APPLICATION OF ORGANIC MANURE (FOWL DROPINGS)
20TH-21ST AUGUST, 2014	GATHERING OF WEEDS AND FIELD LAYOUT DEMARCATION
22ND AUGUST, 2014	PLOWING
23RD AUGUST, 2014	FIELD INSPECTION AND INTERACTION WITH 10 FARMERS
25TH AUGUST, 2014	PLANTING
4-5TH SEPTEMBER, 2014	1ST WEEDING
8TH SEPTEMBER, 2014	1ST FERTILIZER APPLICATION
24 – 26TH SEPTEMBER, 2014	2ND WEEDING

29TH SEPTEMBER, 2014	2ND FERTILIZER APPLICATION
30 -31ST OCTOBER, 2014	3RD WEEDING (EARTHING-UP)
23RD DECEMBER, 2014	HARVESTING
3RD JANUARY 2015	THRESHING AND BAGGING

2.1 Land Preparation and Planting

The land was prepared after negotiating by the Agricultural Extension Officer, Abdulai Salifu. Land clearing using manual labour was done and the weeds were collected and field lay out was plotted (Fig. 1). Afterwards fowl droppings were spread out on the land to boost the soil nutrient content. The field was ploughedin the presence of the selected farmers for joint learning. Plantingwas done on August 25, 2014 at the period when groundwater and soil temperature were suitable.Planting was scheduled such that the heat and water sensitive growth stage of maize (i.e. the flowering stage) did not coincide withthe period of drought.

Planting depth of maize varies from 5 to 10 cm, depending on the soil type and planting date. As a rule, planting should be shallower in heavier soils than in sandy soils.Planting was done by the participating local farmers (Figs.2, 3, 4, 5) who were selected for joint learning so that they would apply the technologies on their respective farms.

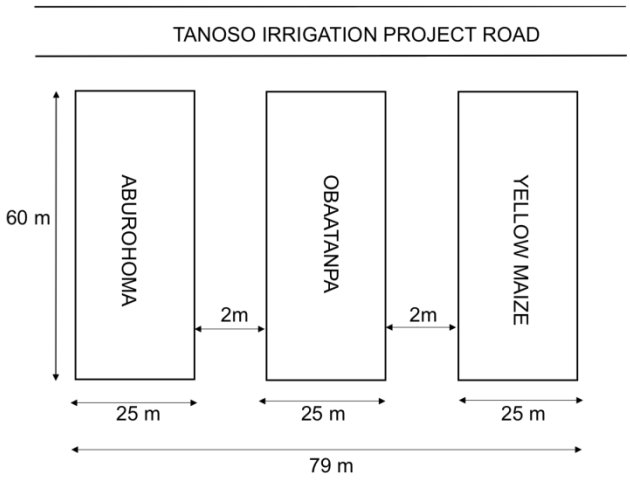

Fig 1. Field layout of maize plot at Tanoso in the Techiman South District

Fig 2: Local Farmers involved in the field Demonstration Farm

Fig 3: Participating farmers a) sorting maize before planting and b) actual planting

The choice of maize varietiescould contribute greatly to a reduction in the risk of crop failure and shouldconstitute an important part of production planning. Three varieties of maize were chosen for this trial – Obatanpa, Abrohoma, and Golden maize also known as Yellow Maize. TheObatanpa is open-pollinated (OPV),quality protein maize (QPM) variety with superior nutritional quality compared to the normal maize varieties such as Dodzi, Dorke SR, Abeleehi and Okomasa. Quality protein maize varieties are, therefore, highly recommended for human consumption and livestock feeding. The Abrohoma and Yellow maize are normal OPV varieties, but with different maturity dates. The Abrohoma is an heirloom variety preferred by many farmers because they store better than the newer varieties. Yellow maize though high yielding was initially introduced for the poultry industry and is only now being accepted as human food.

Fig 4: Planting of maize and sprouted maize after one week

Fig 5: Three varieties of maize planted on the field

3.0 Weed Control

Successful cultivation of maize depends largely on the effective weed control. Weed control during the first six to eight weeks after planting is crucial, because weeds compete vigorously with the crop for nutrients, water and light during this period. The annual yield loss in maize because of weed problems is estimated to be approximately 10 %. The presence of weeds during harvesting may slow the process, contaminate grain with seeds, transmit odours to grain to reduce grain quality or may incur additional cost for the removal of seeds. Weeds were removed mechanically, by hoe or by hand. No inorganicweedicide was applied throughout the study. Mechanical control of weed by weeding with hoes was done(Fig. 6). However, both organic and inorganic fertilizers were applied to boost crop growth and development (Fig. 7).

Fig 6: Weed control and fertilization in the field

Fig 7: Fertilizer application and manual weed control

4.0 RESULTS

Good agricultural practices were carried out on the farm with the participating farmers resulting in maximum crop growth and development (Fig. 8).

Fig 8: Three varieties of maize (Abrohoma, Obaatanpa and Yellow maize)

4.1 Harvesting

The field was inspected before harvesting (Fig. 9). The maize cobs were harvested manually and sorted into varieties before they were dehusked, shelled and bagged mechanically on the farm (Figs. 10, 11).

Fig 9: Inspecting the Maize Field before harvesting

Fig 10: The men did the cutting and the women did the gathering and sorting.

Fig 11: Mechanically dehusking, shelling of Maize on the field and demonstrating a hermatic bag for storage of maize

5.0 Lessons Learnt

Interestingly, SATTIFS Project through the establishment of the Demonstration farm has broken a myth in the study site. An old man going to his own farm during the harvesting of our maize stood by our farm and said ***"you people are wonderful because this is the first time over the past many years that this place is yielding crops. Nobody plants here to harvest this much".***The farmers who participated in our study also agreed with this assertion. The interesting part was that the participating farmers wereconvinced that the use of appropriate technology had brokenthe myth surrounding the land which we used for the Demonstration Farm. Thus,**'SATTIFS has used technology to break a myth'**

6.0 Conclusion

Overall, the farmers were very appreciative of the training given to them by the project. They, however, emphasized the need for the development of sustainable maize postharvest management system in Ghana with focus on efficient storage and marketing to enable maize farmers obtain good price for their produce. The establishment of the Demonstration Farm gave us the opportunity to identify farmers that would be selected for the Farmer Field School which would be organized in 2015. In all, 60 farmers would be selected (Table 2).

Table 2: Farmer Field School selection per District

District	No. of Farmers
Techiman	20
Nkoranza	20
Wenchi	20

Each farmer would be provided with inputsby the project to develop an acre on their own farms using the technologies and techniques available locally and being promoted by the Ministry of Food and Agriculture. In this way, participating farmers would be encouraged and guided to replicate the Field School experience. At the end of the season each farm would be assessed to see if the technologies applied produced better yields than the fields in which they used the

traditional production methods.The Farmer Field School would be undertaken under the supervision of the District Agricultural Extension Officers.