

CSIR-FOOD RESEARCH INSTITUTE



CSIR-FR/GRATITUDE PROJECT

**TRAINING REPORT OF YAM FARMERS AND AGRICULTURAL EXTENSION
AGENTS ON YAM CURING, SPROUT CONTROL AND STORAGE IN TECHIMAN**



Held at

Dery Hotel, Techiman, Brong Ahafo Region on 12th September, 2013

By

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ACRONYMS

AEA	-	Agricultural Extension Agent
CSIR	-	Council for Scientific and Industrial Research
FRI	-	Food Research Institute
NADMO	-	Natural Disaster Management Organization
UoG	-	University of Greenwich
SODIA	-	Social Development and Improvement Agency

Summary

The CSIR-Food Research Institute under the auspices of the Social Development and Improvement Agency (SODIA) organized a Yam Stakeholders Training Workshop for yam farmers and Agricultural Extension Agents in Techiman. The training workshop was conducted on 12th September, 2014 at the Dery Hotel, Techiman in the Brong Ahafo Region. Participants were 35 yam farmers and 38 AEAs from the districts of Techiman, Wenchi, Tanoso, Kekemoaso, Nkoranza South and North, Kimtampo South and North, Banda, Bui, Oforikrom, Tano South and North, Toabodom, Tain and Odokor Nkwanta, all in the Brong Ahafo Region.

The training was purposed to disseminate three technologies developed under Work Package 2 of the GRATITUDE Project to yam farmers and AEA's on how to effectively cure wounded yams, delay sprouting of stored yams and storage of yams in improved yam barn. Participant agreed that the training workshop was very timely and the three technologies they have learnt would be employed in their yam improvement practices.

CHAPTER ONE

1.0 Introduction

A Yam Stakeholder Training Workshop was held for yam farmers and Agricultural Extension Agents at Dery Hotel, Techiman in the Brang Ahafo Region of Ghana on 12th September, 2014. The training was organized by Council for Scientific and Industrial Research-Food Research Institute (CSIR-FRI) and Social Development and Improvement Agency (SODIA) under the GRATITUDE Project. The aim of the workshop was to train farmers and retailers on how to effectively cure wounded yams, delay sprouting of stored yams and store yam in improved yam barn, which has been developed under the GRATITUDE Project by the CSIR-Food Research Institute. As part of dissemination of technologies developed under the GRATITUDE Project, this training workshop was organized to transfer three technologies developed under the Work Package 2 of the GRATITUDE Project.

The GRATITUDE Project is a three years project which is being sponsored by the CSIR-FRI, UoG and NRI and is aimed at making Gains from the Losses of Root and Tuber crops with emphasis on cassava and yam. It is meant to address challenges in the production, handling and processing of root and tuber crops and also find solution to the huge waste which is generated by the processing of root and tuber crops. The program is being implemented by United Kingdom, Nigeria, Ghana, Thailand and Vietnam.

1.1 Participants

The training workshop was attended by 35 yam farmers and 38 AEAs from districts within Brong Ahafo Region. The districts were Techiman, Wenchi, Tanoso, Kekemoaso, Nkoranza South and North, Kimtampo South and North, Banda, Bui, Oforikrom, Tano South and North, Toabodom, Tain and Odokor Nkwanta. Trainers were Dr. Charles Tortoe and Mr. Solomon Dowuona. SODIA was represented by Mr. Azzizu Issifu (Figures 1 and 2).

1.2 Welcome Address

In his welcome address Mr. Azizu Issifu thanks the participants for attending the training workshop. He indicated that the training workshop will offer them the opportunity to learn and improve on yam practice in Ghana. He challenged them to take keen interest in the training. He informed them that the focus of the training is on yam although the GRATITUDE Project worked on two crops as yam and cassava.



Figure 1: Section of the farmers' participants at the training workshop



Figure 2: Section of the AEA's participants at the training

1.3 Opening Remarks

In his opening remarks, Dr. Charles Tortoe of the CSIR-Food Research Institute informed participant that the CSIR-FRI is one of the thirteen institutes of the CSIR mandated to undertake demand driven research into food processing, preservation and utilization of our local foods to support the local food industry. He informed them of the GRATITUDE Project and its sponsors and emphasized the fact that, the aim of the project is to maximize gains from losses of root and tubers. He stated that the GRATITUDE Project is working on cassava and yam but the emphasis is on yam for the training workshop. He informed participants that the CSIR-FRI under the project has developed three technologies aimed at the storage, sprouting and wounded yams. Participants were informed that yam has a lot challenges from cultivation to harvesting through to the market and it is in this view that this training is organized to equip them with knowledge on how to overcome these challenges. He called for the involvement of all during the question and discussion time.

CHAPTER TWO

2.0 Training

Dr. Charles Tortoe, in a presentation, showed the participants how important yam is to Ghanaians as a staple food, the benefits it brings to the country in the form of foreign exchange earnings. He stated that Ghana export approximately 27,000mt of yams to countries like the UK, Netherland, USA and Japan. Participants were informed that as at 2013, Ghana produced about 6.68 million metric tonnes of yam per annum. He informed them that yam production as compared to other crops was second to cassava with 14million metric tonnes, followed by plantain, palm fruit and maize accordingly. He told them that the production of cassava is more as compared to yam because yam production is very laborious and capital intensive than cassava. He stated that Ghana comes only second to Nigeria which produces 35million metric tonnes of yam per annum as at 2013.

The participants were taken through safe handling of yams from production, harvesting, sorting, packing and transportation to the market or the yam barn for storage. He also showed the participants the enormous benefits that come with using the improved yam barn to that of the traditional barn, which allow the stored tubers to be attacked by pest, insects, rodents and other animals that stray into it. He indicated that tubers kept in the improved yam barn keeps longer on the shelves than that of the traditional storage barn. Participants were taught techniques on how to delay sprouting in yam tubers using of 600ppm potash solution. Participants were also taught how to cure wounded yam to avoid infection through the wounded site by yam wound pathogens. The participants were told to create enabling environment for yam marketing, seek regular training, improved the yam markets and source for financial support (Figure 3-5).



Figure 3: Dr. Tortoe making a presenting at the training



Figure 4: AEA contributing during discussion



Figure 5: A farmer contributing during question time

2.1 Demonstration of curing and sprout control techniques

A technologist with the CSIR- Food Research Institute, Mr. Solomon Dowuona demonstrated the curing and sprouts control strategies to the participants. For the curing of wound healing, he artificially created wounds on wholesome tubers and showed the participants how to cure the wounds using jute sack for duration of 5 to 7 days. With a 600ppm potash (burnt cocoa pod) solution he taught the participants the techniques involved in sprout control. He immersed the apical portion of the yam tuber into the 600ppm potash solution and kept it in for 60 to 120 seconds. The yams were then removed from the chemical solution and ready to be stored in a dry and well ventilated yam storage barn (Figure 6-10).



Figure 6: Demonstration of curing by Mr. Dowuona



Figure 7: Demonstration of curing to the farmers



Figure 8: Demonstration of sprout control to farmers



Figure 9: Farmers examining potash



Figure 10: Yams curing under jute sack and a tuber that has been treated with 600ppm of potash

CHAPTER THREE

3.0 Farmers Contributions, Questions and Answers

1. How can we manage harvesting of yam to avoid flooding the market with yams?

By forming strong Yam Farmers Associations to manage harvesting of yams. AEAs can also be involved to give technical assistant on harvesting and also yam seed acquisition.

2. Which yams can be put into the improved storage barn? Is the freshly harvested tubers or older tubers?

The freshly harvested tubers are the ones appropriate for storage.

3. How can the 600ppm of potash be weighed without a scale?

Approximately, half a tea spoon. Further, farmers can contact their AEAs for assistance

4. If you have more than one wound on a tuber of yam and you are curing, which side should face upwards?

The side with more wounds should face upwards.

5. Where can wound healing be done?

A dry shady place which is well ventilated. The place should not be assessable to goats, sheep and cattle and should be well sealed.

6. Does the minisets seed grows and mature well?

Yes, the treated minisets does better than the untreated yam seeds.

7. Government must assist yam farmers with money so they can wait for the right harvesting time. Money to pay school fees and buy books for our children had often pushed us to harvest early yams.

The Government is doing well for farmers as there are now funds available for farmers such as EDIF and BULSA funds. Other support is also available at the District Assemblies for farmers groups. Yam farmers are advised to form groups within their districts to access some of these funds.

8. The owners of cattle that invade farm lands have to be reported to NADMO.
9. Farmers should be given soft loans through the banks. The loans should only be assessable through the AEA's since they know the farmers.
10. Financial support to yam farmers to avoid taking money from traders to cultivate yam.
11. When soft loans are given to farmers through the AEA's, payment can be guaranteed.
12. Farmers must form association to coordinate their activities.

3.1 AEA's Contributions, Questions and Answers

1. Apart from the potash, did CSIR-FRI test the effect of neem leaf extract?

Other plant extracts were used in the experiment including neem leaves, neem seeds, sweetpotato leaves out of which potash turns out to be the best.

2. It is known facts that increase in temperature increases microbial growth. When the injured yams are covered with the sack, is it not going to generate heat to cause the yam to rot?

Materials like polypropylene and straw alongside jute sack were used for the experiment. The temperature and humidity was monitored over the period of study after which jute sack was chosen to be the best. It gave a temperature between 35.0°C – 37.0°C and average humidity of 80.0 %rh

3. Can mouse jump to enter the barn.

The structure should be located at a good place and far from bushy areas to prevent jumping of mice into the structure.

4. Why is the project not being located at different districts so that different environmental conditions can be looked at?

The project did not make provision for that. The project may want to look at that if it is extended.

5. Do you have to treat the structure before storing yam in it?

The wood could be treated, it does no harm to it.

6. Can we increase the number of sacks used in wound healing?

Yes, the sacks must cover all the stored yams completely.

7. Can the curing yams be arranged in the jute sack?

No, you cannot arrange it in the sack.

8. Can other materials be used to cure?

Jute sack is the best so far.

9. How do you teach a farmer who is unlettered to weigh 600mg or 0.6g of potash without a scale?

Teach the farmer to used teaspoon: half, quarter or full teaspoon.

10. Did you try using a knap sack to spray the 600ppm potash solution?

Using a knap sac will be an extra burden to the poor farmer, and also there may be weedicides residues in the knap sac before spraying on the yams.

11. What is the dimension of the structure?

The height is 42.1m, the length is 26.7m, the base is 9.9m and the height from the floor to the base is 2.3m.

12. What material was used to roof the storage structure?

The roof is thatched. We used grass straw. This ensures that too much heat is not generated within the structure.

13. Have the potash been tested?

Yes, it has been tested and should be applied only to ware yams and not seed yam.

14. What is the best way to assist a yam farmer?

- **Provide him with seed yams.**
- **Build an improved storage barn for the yam farmer.**
- **Soft loans will help immensely.**

CHAPTER FOUR

4.0 Remarks by participants at the training

Participants were very much enthused about the training workshop held and thanked the organizers for such a training which brought together yam farmers and AEAs to learn how to heal wounds on yams, delay sprouting and the proper way to store yams. A participant appealed to the organizers to invite other farmers and AEAs from other yam growing parts of the country to benefit from such training.

4.1 Lessons Learnt

- Yam farmers agreed to employ all three technologies they have learnt into improving yam.
- Yam farmers have to form associations to access training and financial support.
- AEAs agreed to teach farmers all the technologies they have learnt during the training workshop.
- The GRATITUDE project must assist farmers financial to build the improved yam storage barn.
- The GRATITUDE project must conduct more training workshops in all the yam growing districts to ensure proper dissemination of all the technologies learnt.

4.2 Closing remarks

In wrapping up, Mr. Azzizu Issifu, a representative from SODIA appealed to the participants to put the three technologies they have learnt during the training into practice. He tasked the farmers to form associations at the district level so that SODIA could assist them.

Appendix 1: AEs Attendance list

S/N	NAME OF PARTICIPANT	LOCATION	AGE	CONTACT
1	Abdulaw Salifu		34	
2	Adomako Samuel		58	
3	Martin Francis Arko		50	
4	Fosu Martin		28	
5	Prince Godwin Atsemho		52	
6	Datual Y. Philip		34	
7	Addai Kwao Micheal		28	
8	Felicia Akudago		28	
9	Effah Lawrence		40	
10	Enock Agyemang		28	
11	Abobia A. Emmanuel		26	
12	Kombert Damlum		32	
13	Ofori Adjei Y. Samuel		38	
14	Mavis -Ann Emefa Nunekpeku		27	
15	Solomon Gagbo		45	
16	Daniel Gyimah		43	
17	Suleman Y. Mahama		28	
18	Adu Kweku		30	
19	Dokurugu Abukari		31	
20	Fremont Akapala		55	
21	Codjoe Augustine		55	
22	Nantua Bernard		32	
23	Asamoah Owusu Sekyere		30	
24	Kavaarpuo		31	
25	Stephen Forson		28	
26	Linda Gyamfi		27	
27	Ampofowaa Martha		28	
28	Emmanuel Essel		26	
29	George Obeng Takyi		27	

30	Mary Darkowaa	29
31	Frimpong Priscilla	29
32	Atisi Andoh	53
33	Hamza Abdulai	50
34	Cecilia Ama Oforiwaa	45
35	Achaa Frimpong	40
36	Daniel Kofi Adjei	48
37	Juliet Gyamita	47
38	Gyan Anthony	52

Appendix 2: Farmers Attendance list

S/N	NAME OF PARTICIPANT	LOCATION	AGE	CONTACT
1	Anaktaba Dasah		46	
2	Owusu Mensah			
3	Amadu Danola		37	
4	Moses Afao Adjei		67	
5	Akua Serwah		63	
6	Awadwa Goerge		45	
7	Gyan Fordour Caxton		54	
8	Nanguo Albanus		43	
9	Wiafe K. Nicholas		47	
10	Asamoah Augustine		64	
11	Gladys Abaa		48	
12	Manu Akwabena Stephen		23	
13	Inuboh Mitinoh		45	
14	Georgina Adu		48	
15	Amma Gyaah		62	
16	Gerald Gyebuni		43	
17	Yaw Dapaa		45	
18	Clement Tanye		45	
19	Francis Kantinka		35	
20	Opoku Buabeng		45	
21	Geogina Danso		40	
22	Sharifa Agyeiwaa		28	
23	Abierela Anataba		25	
24	Mensah Nabu		35	
25	Mumuni Lagigo		63	
26	Abdulai Yakuba		50	
27	Dongi Paul		42	
28	Awuti Gabriel		41	
29	James Bagbin		57	

30	Confort Nsiah	50
31	Yakubu Yussif	40
32	Amporowaa Confort	35
33	Zakaria Muhammed	53
34	Abdulai Mussah	35
35	Serwah Nyarko	38