

## **ANNEX D**

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### **YAM FARMING, CROP DEVELOPMENT AND INFORMATION SERVICES**

**Report of a Workshop held at the Agricultural Department,  
Kintampo North**

**7<sup>th</sup> October 2005**

# **YAM FARMING, CROP DEVELOPMENT AND INFORMATION SERVICES**



**REPORT OF A WORKSHOP HELD AT THE AGRICULTURAL  
DEPARTMENT, KINTAMPO NORTH  
ON 7<sup>TH</sup> OCTOBER 2005**

**Hosted by  
Ministry of Food and Agriculture, Kintampo North  
&  
The Decentralised Environmental Action Research Project**



**The DEAR  
Project**

**DECENTRALISED ENVIRONMENTAL ACTION RESEARCH**

# **YAM FARMING, CROP DEVELOPMENT AND INFORMATION SERVICES**

Edited and transcribed by  
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Report of a Workshop held at the Agricultural Department, Kintampo North

7th October 2005

**DEAR Project**

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## **INTRODUCTORY REMARKS**

Prof Kojo Amanor  
University of Ghana and DEAR Project:

The DEAR Project is a research project concerned with natural resource management. We have been working in the Kintampo District over the last 2-3 years. Our main concern is that environmental management should be based on information and dialogue. What we see is that often environmental management is not based on information. We do not find out the conditions that people work under. Policy makers make decisions about how resources should be managed. Often these policies do not suit the conditions of the people.

What we are trying to do is to promote a way to manage the natural resources in which the people making the policies at the district will base it on the information they collect. They will also provide information to the farmers and other rural producers rather than telling them. When we provide information to the farmers their knowledge increases and they are in a better position to make decisions on what to do. When we have an informed policy process the farmers will put demands on government services for information about how to improve their ways of doing things and the policy makers will make decisions based on discussions with the people about their needs. In the Kintampo District, we have been working with charcoal burners and yam farmers and we have also been working with the District Administration and Area Councils.

Our work with the District Administration and Area Councils has been to develop a survey and create a database to provide information from all the settlements on what the inhabitants are doing, which can be used to make policies. We have had several meetings and workshops with charcoal burners in different settlements and we have brought them together at the District so that they put forward their demands to the District administrators.

Today, we have brought yam farmers from New Longoro and Babatokuma Area Councils. We have brought MOFA, District MOFA director, researchers from Kumasi CRI doing research on yam varieties, and we have brought NGOs who are working on developing services for farmers and services that will meet the needs of farmers. In our work in the District, we have seen that the Agricultural Director is sympathetic to yam farmers in the district. So we feel confident that in today's meeting we will make progress in coming together to develop a new programme on yam farming which can be implemented in the District.

In the first session of this workshop, the researchers, development agencies and NGOs will present what they are working on and trying to achieve.. We want you the farmers to listen very carefully to what they say. If there is anything that you do not understand, please tell them you do not understand and let them to explain. No one should feel shy or embarrassed because if you feel shy, you can't learn. When they are

speaking we want you to be thinking about one question which is “how can what they are saying help my situation?” If it doesn’t help you then why doesn’t it help? If you see that what they are saying is good, say it and explain why it is good. If they say something also that you do not agree with be plain and tell them that you do not agree with them and state the reasons for your disagreement.

Over the last two years we have been coming around to you in your various communities asking many questions and taking a lot of your time. Some people even say they thought we were police officers coming to arrest them so they avoided us. In the second session the second session we, (that is the DEAR Project) will present to you what we have learnt from you on yam farming and its problems in the District. After that we are going to turn the floor over to you the farmers. We want you to say something about how you do your yam farming in your various settlements. We will also like to hear from you if you think what we say is correct, if you disagree, and if there are some things you think we have missed out which are important. We would also like you to discuss what you think is the way forward. In this session, we want the researchers; development workers and NGOs present here to listen very carefully to what the farmers will say. We want them to be thinking of how best to help you from what you have said. How their scopes can be used to further your yam farming. After that we will go for lunch and over lunch we will like them to be thinking about these issues. After lunch when we come back, we want them to conclude the workshop, telling us what they have learnt and in the light of this what they think can be done in the district to improve the lot of yam farmers. We will finish with a discussion on this.

## **THE WORK OF THE MINISTRY OF FOOD AND AGRICULTURE IN KINTAMPO NORTH**

C. Ameyaw Oduro  
MOFA Director, Kintampo North District

Sometime ago there was a workshop like the one we are witnessing here today and the floor was opened for everyone to express his or her views. There was a gentleman present at the function. This gentleman though he was more knowledgeable than all the participants present because he had just come out of the university. There was a brief introduction of all the participants and it got to the turn of this gentleman. He mentioned his name and added that 'I have just come out of the University of Ghana.' There was an old man at the corner who also mentioned his name and his title as Professor Emeritus. So this gentleman realised that after all he was not the most knowledgeable person there.

A similar thing is here today. I can see a lot of farmers present. I do not know what I will say about yam farming that you farmers don't know. Some of you were farming yam even before I was born. As I stand here before you, I am not going to talk about how to do yam farming and the problems associated with it. It will come from you, as indicated by the director of DEAR project. Mr Otoo is also here and since he is a researcher - I think he has done a lot on yams - so he will be the best person to answer your questions on problems in yam farming.

What I want to talk about is what the Ministry of Food and Agriculture (MOFA) is doing to assist farmers to improve upon their trade. As you are all aware, MOFA is supposed to assist farmers to improve upon their farming activities. In view of this, we desire to be in constant touch with the farmers. The District has been divided into operational areas. In each of these areas is stationed an extension officer. It is the responsibility of the extension officer to see to it that the farmer succeeds in all agricultural ventures. We have identified yam, maize and cassava as very important crops in this District. Because of this we always want to be in constant touch with our farmers to discuss issues concerning their farms. We also work with them concerning their livestock. In most cases, when we identify the problems of the farmers, what we can do in our capacity we do that but what is beyond us we refer to specialists, such as Mr Otoo and co. to do research on it and advice us accordingly. What I have seen is that because there has not been much research on yam issues we, who come into contact with the farmers, lack expert advice on yams. In view of this we don't usually discuss such issues with the farmers because we don't have adequate knowledge on the topic. The little we know we are able to give, but it is deficient.

When we compare what we have done with crops such as cassava, maize and beans in the District to that of yam we must accept that it is woefully inadequate. This is due to the fact that we lack the requisite knowledge to impart onto the farmers. Even with the little that we know about yam that we can offer to the farmers to increase their seedling stock, which is called the yam 'mini-set', we have educated the farmers a lot on this, but they



have not accepted it. Maybe the farmers think the traditional way of making seedling is better than this technology that we are talking about. Although we lack the knowledge and techniques in yam farming, we have been able to assist a few yam farmers to improve on their farming activities particularly on how to make mounds, and spacing of mounds. It must be understood that yams do not do well on all types of soils. They do better on particular ones and very poor on others, so we have discussed this with the farmers.

Again, we have taught them how best to intercrop. We have also been able to assist the farmers to control some diseases and pests that affect their crops on their farms. Although we have done this we think it is not adequate. However, yam farmers in the District need to be commended because in spite of all the inadequacies we have seen that the desire to cultivate yam is there. This may be due to the fact that the land fertility and the rainfall pattern all favour yam cultivation. Again, because we live on a major highway, it makes marketing of the produce very easy. However, prices are sometimes very low. It is in light of this that we brought the concept of Rural Enterprise Programme to assist the farmers in marketing their produce by trying to establish a factory to process the yam into flour. We have been pursuing this for the past two years and although it hasn't materialised, it has led to the creation of yam co-operatives. Since the co-operatives are growing rapidly, it is our hope that if MOFA and the District Administration collaborate more, it will solve some of the problems of the yam farmers in the District.

## **DISCUSSION**

**Thomas Okrah, Asantekwa:** During the director's presentation he mentioned that we the farmers have refused numerous calls to come for training on how to increase our yam seedlings. I would be very happy if we would be able to acquire this new technique and add it to our traditional way of producing seedlings in order to increase yam production. But my problem is that there will be no market when production is increased.

**Steven Obour, Yaara:** I will like to thank the director or his presentation. I want to speak on what affects me. In most cases concerning the distribution of extension officers, Busuama and Yaara are always neglected and we don't have anyone to give us such training programmes. So I want to plead with him that he should use his good office to get us an extension officer.

**Monica Amponsaa, Dawadawa:** During the director's presentation he mentioned that if you plant cassava this year and you want to convert the same piece of land to yam farming you encounter pests and diseases. It is true. In the olden days our grandparents rotated the land e.g. when they plant cassava this year, next year they will cultivate leguminous crops, which they say is fertilizer, which increases the fertility of the soil. Again, after you have cultivated your cassava, slash the leaves and burn them and a lot of potash is added to the soil but this is not practiced religiously

in recent times. In my opinion bad yield is not only due to soil fertility. When you harvest your yam sometimes you detect some white rashes on the yam. This type of yam will not grow well when you plant it. My question is that can we get some assistance in the form of chemicals to kill the pests and diseases that attack our crops?

**Sampson Addae, Dawadawa:** I want to add to what the woman just said. You may plant the yam and get a good yield but when you harvest you will see rashes all over the tubers. In this case, you can't do anything with such yams, which means that you have lost about 400 to 500 of yam. Such yams are only good for consumption and in some cases you cannot even consume many of them before the rest will rot. We are therefore appealing to the researchers and experts here to assist us to find a solution to this problem.

**C. Ameyaw Oduro (MOFA Director):** If I look at the trend of the questions, I am sure that Mr Otoo will bail me out during his presentation. Where I want to respond is the Busuama issue. Frankly speaking we are all concerned about that. We are aware that if the extension officers are in the communities they are able to assist the farmers tremendously. We have divided Kintampo North into 13 areas. This implies that we require 13 personnel to man each of these areas. However, as I speak to you now, there are only 5 extension officers in the district. These five people cannot work in all the 13 areas. We have therefore sent a request to the regional director of MOFA in Sunyani to assist us with some officers. Fortunately, I hear there are some people coming on transfer from other regions to this region and I am sure that some will be posted here. There was an extension officer at Busuama, but unfortunately, he has been transferred and there has been no replacement. I hope the moment some of the extension officers come we will secure one of them for you.

Concerning the multiplication of the yam seedlings, this is one of the areas that MOFA has worked very hard on in the district. What I have realised is that most farmers don't accept this technology. What I said was that the farmers prefer their own traditional technology to the one we have developed, including the processes of getting the seedlings traditionally and of using trees to support staking. What I want to advise is that even though you have your traditional way of getting the yam seedlings, it would be better to get new technologies so that you can add it to what you already know. There is a woman in Hohoe in the Volta Region who has specialised in yam seedling production. She has done it for a long and she is now well off. She does not cultivate tubers of yam for sale. She researches into the seedlings and produce them for sale.

Another contributor also complained about the marketing of the produce. The role of the queen mother and middleman affect farmers greatly. We have negotiated with the District Administration to come out with something like farmers market with yam farmers as our main focus. This will enable the farmers to sell their produce to whoever they want to, without middlemen and queen mothers. We are still negotiating and very soon it will materialise. I will leave the pests and diseases for Mr Otoo to tackle during his presentation.

## **RESEARCH ON YAMS AT CROP RESEARCH INSTITUTE**

Emmanuel Otoo  
Crop Research Institute  
Fumesua, Kumasi

At the Crop Research Institute, our main role is to conduct research and development of yams and their yields, pests and diseases. We try to improve the varieties of yams that exist. Our aim is to breed new varieties of yam that will attract a good market. However, one of the problems we have encountered is the mixing up of yam varieties and the difficulties in getting access to pure varieties to work on. Traders frequently pass off inferior varieties as Pona, the premium yam variety. It is only after you have cultivated and harvested the yam that you will detect that, for instance, Muchumudu was substituted for Pona.

Ghana is second to Nigeria in yam cultivation in the world, followed by Cote d'Ivoire, Benin and Togo. However, when it comes to exports Ghana has been the leading exporter of yam in the world with 36 percent of exports, since the other West African nations largely produce for domestic consumption. Nigeria produces about 90 percent of yams in the world, but most of this is consumed domestically. Because of the problem of mixing up of varieties and lack of quality control, countries in South America are now leading yam exports. Costa Rica and Brazil have invested a lot in yam research and have now taken over the export market from Ghana.

Yam is an important crop in Ghana. In terms of the area under cultivation, 6.32% of Ghana's arable land is used for yam cultivation. Yam makes a significant contribution of about 16% of the value of Agricultural Gross Domestic Product (AGDP). However, little priority has been given to research on yams and researchers have not been able to come out with improved varieties that are high yielding and able to withstand pests and diseases.

Normally, what we do is to experiment with the farmers on improving varieties. After that, new varieties are tested by experts before they are recommended and then released to farmers. Our analysis shows there is a potential to increase the yields of yam from the average of 12 t/ha to between 65-70 t/ha. At present farmers are only getting about 20 percent of the potential yield of yams. Three new yam varieties (CRI PONA, MANKRONG PONA and CRI KUKRUPA) were formally released in May 2005. These new yam varieties are all high and stable yielding, pest and disease tolerant, have good culinary characteristics.

Most yams in Ghana are produced under a system of shifting cultivation. Every year farmers make new yam farms. As a result, the area under yam cultivation increases every year, but this is not reflected in an increase in the yields (see Figure 1). The quantity of yam we produce is always constant while the acreage increases yearly. This necessitated the research and development of the new yam varieties.

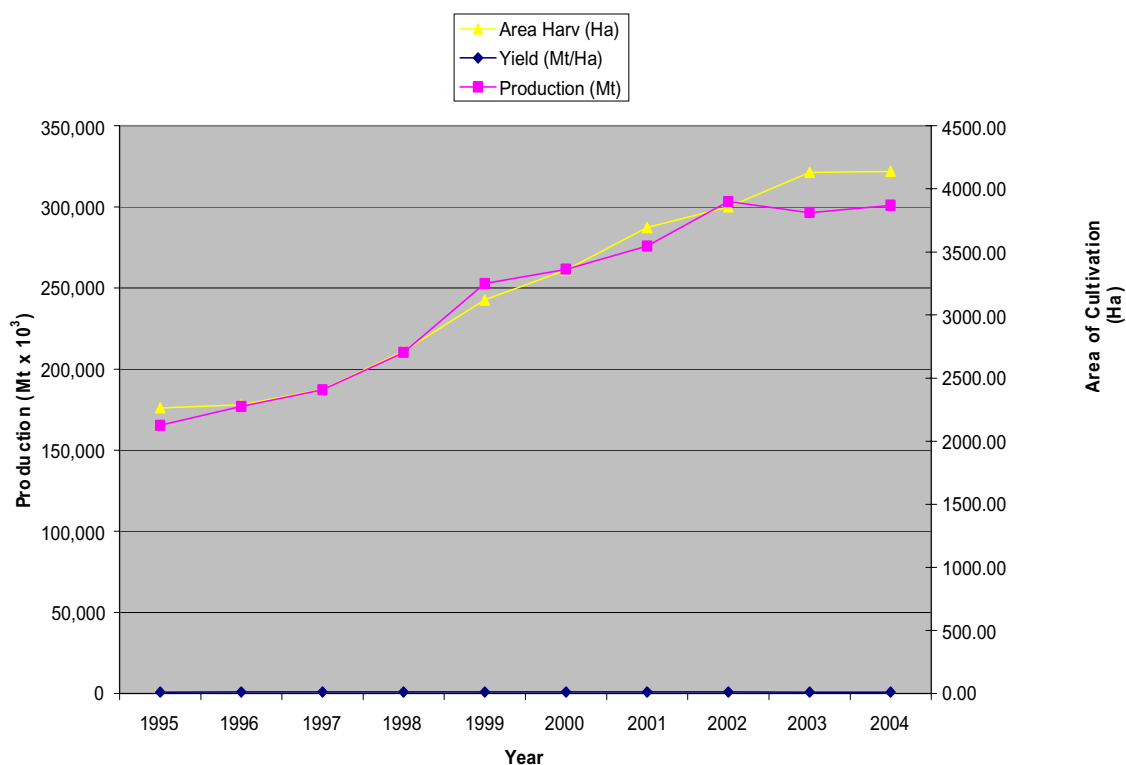


Fig.1. Yield, Production and Area Harvested of Yams in Ghana (1995-2004)\*

We are aware that farmers find it difficult to get sticks for staking their yams, so one of our objectives was that the new variety that we produce should be able to do well without being staked. We also did not lose sight of the taste of the yam because it was very important. For instance, there is a variety of yam called "Auntie Akosua" It is *Asobayire* (forest yam) and it is said that "Auntie Akosua is not beautiful but her food tastes good." We are keen on the taste. These are all the factors we take into consideration in breeding new yams.

### Yam breeding programme

In the first place, we brought some varieties that the farmers cultivate to our centre to cross them. I hope you are aware that within each variety there are male and female. We just used the factors to consider selecting a marriage partner and transferred that knowledge to the yam varieties to be crossed. This included size, taste, colour, texture, smoothness and so on. We continued with the experimentation of the good qualities of different varieties. We also thought of including the farmers because of their vast experience in yam cultivation so that we could learn from them too. We collected yam from various parts of the Ghana including Kintampo, Bodwease, Wenchi and other places to get seedlings of yam varieties. Some of the yams also flower so we collected some of these too. We went to Nigeria, Togo, La Cote d'Ivoire and even Costa Rica among others to collect yam varieties.

We had the opinion that if we are able to get a large collection of different varieties, we will be able to get good quality from these varieties and add it to ours. Unfortunately, we lacked the funds to be able to involve as many yam farmers in Ghana in the research as we had wanted. We collected 66 local varieties and 37 IITA introductions, which we cross, bred. We met with the farmers to identify the type of yam each will prefer. We brought all these together before embarking on the breeding programme. We did a lot of experiments and we brought farmers from various parts of the country to come and select the varieties they would prefer after it had flowered. When the yams were harvested, we brought them back to come and identify what they selected on the farm and if they still wanted that and their reasons for selecting or rejecting them. We recognise the vast experience in yam cultivation that farmers have so we always want you to make an inputs into our programme. We also boiled and had a taste of the various varieties of yam for people to select the ones the preferred based on their taste. Gradually, we produced 36 varieties that were considered good. We sent these varieties to the farmers to cultivate them on their on their own farms and evaluated them. Sometimes the farmers suspect that when they are away we do something to the crops which results in them growing well. We wanted to find out how the varieties perform on farmers plots. We distributed the varieties to farmers in the Bodwease in the Central Region (Coastal Savannah), Fumesua (Forest) and Wenchi (Forest-Savannah Transition). Out of these 36 varieties that we produced, three were excellent, based on data we collected on establishment, morphological characteristics, pest and diseases vulnerability, yield, and culinary characteristics (taste, texture and aroma).

### **New yam varieties**

The first of these varieties is what we named CRI PONA. The name is derived from CRI because we produced it. We also call it KUP 2000(2)001, which stands for Kumase Pona. When we came to collect the yam varieties, we grouped all the Pona together and researched into them looking at how they performed on farm, how resistant they were to disease, and their taste characteristics. This included Wenchi Pona, Kintampo Pona and Tamale Pona. We realised that some types of Pona were better than others. After analysing all the types of Pona, we realised that the KUP 2000(2)001 Pona was the best. Its rate of germination was better than the rest as was its yield. The taste was also not different from the Pona we know. The CRI Pona is able to withstand pests and disease as well as harsh weather conditions, has excellent taste, nice aroma and is very mealy. It matures within 7-8 months. If you don't "prick out" by the eighth month you can harvest your yam complete, but if you want to prick-out, you can do it in the fifth month. Normally we don't do the "pricking-out", so by the eighth month your yam will be ready. When we completed our research, we realised that the variety we have produced can be consumed locally as well as exported.



**Fig. 2 CRI Kukupa- a multiple tubering, high yielding land**



**Fig. 3 Pyramidal Staking**



**Fig. 4 Short stakes**



**Fig. 5 Trellis staking**

The main reason for bring out the second variety of yam was to produce a variety that was suitable for multiple tubering and which could produce 4-6 tubers in one mound (see fig. 2). This is good for the export market. This variety is late maturing (8-9 months). This type of yam has smaller longer leaves than Pona, which has broad leaves. We then tested this with the variety "brass" which is found around Bodwease and is very sweet and strong.

We saw that "Dente" was very popular around Wenchi and these areas so we tested Dente against our second variety. In the Kumasi area we tested it against Dorban. We already know the high yielding capability of the second variety, but when we tested it for taste we realised that its taste did not match that of Pona. However, there are also many varieties on the market that do not match the taste of Pona, such as Teela, Larebekor, Lili and Dente, but they continue to be sold on the market because they have other good qualities. Although the taste is not as good as Pona, its high multiple tubering yields makes it acceptable to farmers and gives it market value. During our experiencing with the farmers on the fields, we came into contact with a farmer from the North who told us that when he was young his father had a variety called "Kukupa" which was similar. We then named this variety also CRI Kukupa. This is the second variety that we produced:

The main objective for producing the third variety was to produce an early maturing (7-8 months). We worked together with extension officers in the Bodwease area in the Central Region, to test it against Dente, Pona and Brass. The result was not all that bad. It was resistant to all the diseases mentioned earlier. This variety is also white with some yellowish traits and the taste is good. In fact, the difference between this variety and Pona is not that great. This variety was tested in a village in the Bodwease area called Makrong where the farmers were enthusiastic about it that they requested that the variety should be named after them. So it is called Makrong Pona. It is early maturing and high yielding.

When we started out on the research, we began with 300 yam varieties, which we scaled down to 36. From those 36 we tested on the farmers' fields we came out with five new varieties. When experts came to analyse the five varieties, three were approved to be released to farmers for cultivation. You have seen the process. It is not easy to come out with a variety you recommend for farmers to cultivate.

### **The problem of staking**

One of our objectives we are working towards is to create a variety that does not need staking. As I indicated above, 6.32 % of the total cropped area in Ghana is used for yam cultivation. Every year we increase the size of our yam farms by 80%, but the yield is almost constant only about 2.75% increase. If we continue to expand this way there will be no land for other activities even to build.

Yam cultivation has significant adverse effects on the soil and the environment. Yam production is characterised by shifting cultivation on a yearly basis in search of fertile soils and stakes. In a small survey that we

conducted, we realised that yields decline severely if we do not stake yams. Without stakes we only get about 20 percent of the expected yield. But staking has been identified as a major contributor to deforestation. Staking is seen as an inherent constraint on yam production. It is not only laborious (20% of all work in yam production) but also very costly and scarce, especially at places like Bodwease where the entire tree population has been felled. One bamboo stick cost ₦1,000.00 on the farm, and you will have to hire labour to carry it to the roadside before you hire transport to convey it to your farm to stake. When yams are grown as a sole crop, yield is increased by staking by between 34 and 105%. An irregular response to staking has been found when yams are planted with other crops. Traditionally, farmers either adopt the parkland system of farming or leave it non-staked especially when large acreages are involved. We made attempts to solve this problem by finding varieties that can perform without staking.

Some of the improved options for staking are:

- pyramidal staking (see fig.3), in which several stakes are trailed to a single stake;
- short stakes (see fig 4) in which stakes are cut less than one metre high is another option -which is prevalent in the Guinea Savanna;
- and a trellis system (see fig 5) in which up to 20 yams can be trailed along a horizontally placed pole.

We decided to test all the yam variety without staking. We realised that water yams can do well without staking. When the leaves are spread out on the ground, they ensure maximum interception of sunlight (photosynthetic efficiency). However when leaves are placed on the ground they can easily develop diseases. This implies that variety of yams that are not staked should be disease resistant. These were some of the things we considered. When the yams do not produce a very vigorous cover of leaves, such as white yams, this also creates spaces for weeds to grow. We are continuing with our research on breeding yams that will perform without being staked.

## **Conclusion**

In our research, we are trying to produce varieties of yam that meet the following requirements:

- High yielding under both staking and non-staking conditions;
- Pest and disease tolerant;
- High consumer acceptability;
- Suitable for both local and export markets;
- Highly profitable to cultivate, and above all
- Environmentally friendly.

But we have to test them for a long time before we recommend them to the farmers. We are hoping that very soon we will be able to bring them out and distribute to all farmers to improve their yield.



## DISCUSSION

**Nana Kwao Adams (ABOFAP):** How are we going to produce seedlings of the new varieties that you have produced? Are we going to do mini-set or we are going to use the traditional way?

**Emmanuel Otoo:** Whichever way you choose, you are going to get the seedlings but what you should not forget is that some yams have been crossed.

**Unknown participant:** During Mr Otoo's presentation, he mentioned that our yam used to do well but now the situation has changed. In the times when yam used to do well, the land was very fertile but our grandparents have cultivated the land intensely up to our time and our generation is also doing likewise. This means that the soil has lost its fertility. In the past, when you step on the soil after it has rained it sinks. But today, the soil is hard and the yam in the soil finds it difficult to go deep into the ground and therefore does not grow big. How can we ensure that the land become fertile as it used to be during the days of our grandparents?

**Emmanuel Otoo:** We understand what you are saying. Your problems are two big ones. One is that the fertility of the land has declined and secondly, irregular rainfall has rendered the topsoil so hard. I am very happy with your question this indicates that you are a real yam farmer. This is because yam cultivation is not like that of cassava. With the latter, a long root develops first before it fattens to become the root but yam is directly the opposite, it grows bigger as it moves deep into the soil. If the topsoil is hard, it cannot grow bigger. The fact is that the topsoil is not hard when the land is fertile. Such a soil looks a bit darker. There are certain things in the soil, which help to soften the soil and serve as food for the crop you have planted. These things that are missing have resulted in the infertile state of the soil. There are some techniques and procedures that help to restore the land and this include fertilizer application. However, there are rumours that when you apply fertilizer to yams it destroys them, the taste changes and its rots early too. We can also use compost, cow dung and fowl droppings, all these will help increase the fertility of the soil. We can even use them side by side with the fertilizer if we wish. When you use these things, they help to retain the water in the soil and prevent it from being hard. I will plead that you listen to the extension officers when they come to educate you on such things. It will help tremendously if you comply with such directives.

**Eric Osei, DEAR:** I want to know whether you considered making mounds as part of your research in terms of size and spacing.

**Emmanuel Otoo:** Yes, we considered that but with making mounds as a gentleman earlier on said if you want to get big tubers you make the bigger mounds. However if you even make big mounds and the soil lack those things that we are talking about, the moment it rains the soil is washed away by the rain and your yam expose. When this happens, your yam cannot grow bigger.

**Unknown participant:** What are the merits and demerits in intercropping your yam with cassava?

**Emmanuel Otoo:** I am sure that we have all cultivated yam before as well as cassava. I suppose the woman's question is related to the soil fertility.

It is a very good practice in the sense that the yam will get some stakes to climb. We are also aware that cassava provides a lot of shade so if we don't take care it will prevent the yam getting light and that will not make the yam grow well. Because one of the crops likes more nutrients and the other very little their combination is quite good. In fact, we have started doing some studies on it in regard to the quantity of cassava to plant on each mound. We are still working on it to come out with the recommended number of cassava plants on each yam mound.

**Mathew Kofi Kewa, Asantekwa:** I want to add a little to what Mr Otoo has just said. Intercropping yams with cassava is not a good practice. Yam requires a lot of wind so if you intercrop with cassava, the cassava will receive all the wind and this may result to low yield. However, if you still want to do this then you will have to be very careful in the time you plant each of the crops. For instance, if you plant your yam in March, by August it is matured so at this time you can put as many as three cut stems of cassava on each mound and it will not affect it.

**Joyce Agyeiwaa, Dawadawa:** In Mr Otoo's presentation, he mentioned that they have produced yam variety, which are high yielding, and disease resistant. Since we farmers do not have that variety yet, should we wait until we get some? Or do they have some assistance that will help us to get hold of it?

**Emmanuel Otoo:** The diseases we are talking about are of two kinds. One appears whitish on the tubers (scale insects). There are insecticides available that can treat that. This means that you will have to treat your seedlings before planting. The other disease makes the yam to grow small and round and not long and big as we desire. This one also can be treated. However, what we have realised is that when you leave the waste of the seedling on the farm, they will help to increase the quantity of the disease in the soil. That is why we recommend treatment before planting. Most of you practice that, when you cut the seedling then you smear the exposed surface with some ash. You can also add insecticide so that you put it down to dry well before you plant it. All these practices help the seedling you have planted to grow well.

## **CARE INTERNATIONAL'S PROGRAMME WITH FARMERS IN NORTHERN GHANA**

David Sumbo  
(CARE International – Tamale)

I am going to make a brief presentation on what "Care International" is doing particularly in Northern Ghana. CARE has programmes in Northern Ghana and Southern Ghana and Brong Ahafo is considered part of Northern Ghana so far as we are concerned. We work in different areas including health, education, HIV/AIDS and Agriculture and natural resource management. In Northern Ghana, our emphasis is on agriculture and natural resource Management.

There are 3 projects in Northern Ghana and all these are aimed at reducing poverty among farmers particularly in the rural areas. We have a lot of principles that guide our work and I will like to share them with you before I go to what exactly we are doing.

We know that farmers are very knowledgeable. They know what they are about so they have a lot of knowledge that we can learn from and build on. The way they organise themselves at the family and community levels can be used as a good point of working with them to ensure that whatever we do with them stays and remain with them. However, they also need to be linked to scientists and other service providers or interventions will not lead to poverty reduction. So in our work what we strive for is how to get a balance between what farmers and the community know and what outsiders and stakeholders know so that we can put our heads together to improve upon our lives. We also believe that there needs to be collaboration between many organisations if we are going to get the farmers out of poverty. We collaborate with District Assemblies, MOFA, research institutions and other organisations that are interested in improving upon their lot. So these are the things that guide us.

In the agricultural sector we have realised that, as the Director of Agriculture has said, there are insufficient extension throughout the country. We did a study, which indicated that each extension officer is responsible for about 1,000 farmers. Farmers are usually scattered all over the place. Meanwhile the ratio is supposed to be one extension officer to 40 farmers. What we are trying to do in our work is to get the farmers to organise in such a way that they can provide the services they require for themselves, instead of relying all the time on the extension officers who are not even available.

What we realised was that even in communities where there are extension officers farmers often contact other farmers when they have a problem rather than going to the extension officer. If there are farmers within the communities who can provide some of these services, the other farmers will readily use their services. We are working with 20 communities in which we bring them together to analyse their problems and identify farmers within the community who are already knowledgeable. Most of

them have identified soil fertility and livestock diseases as the major problems. The community come together and develop criteria for selecting the people who they want to head them and agree how to compensate these people for providing them with these services.

Members of the group also provide support in areas that they are knowledgeable, and identify areas in which they need support to strengthen their knowledge. We will help them identify the organisation that can help them to gain this knowledge and arrange for them to come and give training. Those who get that knowledge can then train and support the other farmers. So when this is done they agree with the community how to share the Knowledge and skills with the rest of the community. They agree on a programme of training, the days and times when this training will be done, and the type of compensation the trainers will get. Through this process, the communities that we work with have realised that their access to services have increased. One of our partners here will share their experiences very soon.

What we have realised is that instead of always waiting for veterinary officers, as an example, to come and attend to those who have livestock problems. Thee farmers are taught basic animal health care, including such things as dressing wounds, de-worming livestock and preventing some parasites. The farmers are able to do these things by themselves and in the end they have healthier animals and are able to sell them at better prices. It has also helped them to rediscover some of their indigenous knowledge that was getting lost, such as the indigenous knowledge of treating certain types of animal diseases and of regenerating soil fertility. It has also improved their relationship with MOFA. For instance, if an officer has to cover 10 villages carrying out basic things that farmers can do there is a lot of pressure of them. Now that the farmers know how to do many of these things the pressure ion extensions staff has come down. This way of doing things has also reduced their cost of access to services. Prior to this, people had to travel long distance to access certain types of information from their agricultural officers or other service providers but now the people are located right in their community so the cost of these services has considerably come down.

It has also helped farmers to know who provides particular services within the district because have organised for a in which all the different service providers within the District are brought together, such as MOFA, the Forestry Service, and all other people who need to support them in their work. So when they come and talk to them then they know where to go for assistance for specific problems. So it has improved their knowledge of the various service providers and their location. Some farmers have even started documenting their experiences in the form of songs. In one of the communities they have formed a drama group, which go round to share with communities nearby the benefit they derived by organising themselves and accessing services from the various service providers.

We are working to increase the communities we work with next year from 20 to 30. This is based on the benefits that those that we are working with

have derived. Our work has increased the confidence of farmers and encouraged them to take the initiative in looking for support whether is by way of financial support, inputs or technology that they require to improve their lives.

## **DISCUSSION**

**Unknown participant's comment:** I also have livestock. From November to December my birds die a lot and I end up losing but I am a woman I don't have the skills and techniques to keep the birds well. I will be glad if you will educate me on what I need to do?

**David Sumbo (CARE International):** We have a similar thing up north. The number of birds one farmer may have may not be many, which makes it expensive for each individual to buy the drug. But when the farmers come together as a group they can come together as a group, you can share the cost which will be more moderate for you. But the problem is how to organise yourselves.

**Lawrence A'naba, Veterinary Officer, (MOFA):** We have been told that we should not feel shy but ask any questions that bother us. But before that, I want to add something to what Sumbo said. I think it has been published that the fowl disease is there and the drugs have been brought here. We have distributed it to all the Agric Officers in the communities, so wherever you are, contact them and they will assist you. You can also come to our office for assistance. It is not all that difficult to administer. We will train you to go and do it so if you have not heard about it then tell others. What I want to ask is about the activities of Care International.

During Mr Sumbo's presentation, he elaborated on what they are doing in the communities they are working in. What about those of us here have similar problems? Do we also stand the chance of benefiting from their services or he is just telling us what they do elsewhere?

**David Sumbo:** His question or concern is well taken. What is happening is that, as I have explained, Brong Ahafo falls into Northern Ghana operation. Currently, we are working in the Wenchi and Techiman districts on pilot projects. We are hoping that when we expand them we will move into neighbouring districts, particularly here, because when we come from Tamale we pass through Kintampo to Techiman and beyond. It will be easy to work with areas that are nearer, before we move out, so, certainly there is the potential of working in this District, depending on the opportunities that will come out from this workshop.

## **THE WORK OF ABRONO ORGANIC FARMERS PROJECT, (ABOFAP) at OFORIKROM-TECHIMAN**

NANA KWAO ADAMS  
(ABOFAP)

Abrono Organic Farmers Project (ABOFAP) came into existence in 1992. Our parents are farmers and we are also farmers so we decided that if we are able to organise ourselves to come together we can support our members. Initially we were very small but now we have grown bigger and we can do a lot of things. Our focus is on natural resource management. This is because we are farmers so when the soil loses its fertility we will be at a loss. We also have to protect what God has given us because we have no alternative livelihoods. So we protect our water bodies. We operate within the Brong Ahafo Region and sometimes beyond. But our main focus is Brong Ahafo and we are based in Techiman District in a village called Oforikrom on the Techiman-Nkoranza trunk road.

Our objective is to ensure that we get food and some income in our various homes and families. Our elders say poverty is close to madness, so if we are able to get food to eat and some income to buy our other basic needs, then we are through. We have similar objective like CARE International and as the old adage goes "birds of the same feather flock together". We have collaborated and we are now partners. One of the things we do is to find how to use indigenous knowledge and combine that with modern technology in farming. Before the advent of technology, we were farming. This implies that there was knowledge before modern technology came into being so we pick the positive aspects of the two and blend them.

We also try to teach farming techniques, because where there are no extension officers there will no one to offer services to farmers who need them. The extension officers are very vital in our operations but they are very scarce. So, we have to look for ways of helping ourselves. Most farmers have rich experience and knowledge but they cannot teach. We are therefore looking at how to gain more knowledge to complement what we already have, so that we can teach and also know how to access services when we are in need. We are also look at managing natural resources. In Kintampo you have the waterfalls and this is something that you should protect, so that it can attract tourists. We want to protect natural resources as well as generate income for the people. We give education on all these things including farming practices without using chemical fertilizer. Where there is the need to use the chemical fertilizer we give education on that to use them cost effectively. Some people incur a lot of debt in applying the chemicals.

We lack the knowledge as to how to use protective clothing, mixing of chemicals, and also if we spray the chemicals, we do not know when it is safe to harvest and consume so most people get food poison when they consume the contaminated food. If we spray today, tomorrow we harvest, and take it to the market. When we send the chemicals home we do not

keep them well. In my village, one young twin died and the other one ended up in hospital because they drank pesticides that were kept in a Fanta bottle, which they mistook for a beverage. In another instance, a farmer mixed farm chemicals in a in a saucepan on the farm and after planting maize forgot to clean it. The family used the same pan to cook on the farm the following day, and some of them ended up at the Sunyani government hospital. We were fortunate that no lives were lost. In the olden days cocoa farmers had chemicals they used to kill the big trees on their farms. My father was a cocoa farmer at Nsuta and they did that to kill all the big trees and their cocoa flourished. When the trees died edible mushrooms germinated at the base of the trees. People ate the mushrooms and ended up with problems. Some even died. Thos who ate cocoyam leaves that germinated around the tree also became seriously sick. Some of the cocoa trees also died. There are always long term effects when chemicals are used, but because we do not know all these we readily accept and use them. We use these chemicals as a last resort. We therefore teach and emphasise on organic farming practices, and the use of traditional technology.

Today, there are many varieties of canned tomatoes on the market. When you buy one can and you check the quantity of pure tomatoes in it, some have 28%, 30% and 32%, which is the highest percentage. The remaining 68% or 70%, it is not written on the container and we do not know it. I don't know if people have been taking this into consideration. As a result of these things that we eat into our system, we have ended up with a wide range of illnesses today. Presently, illnesses associated with the rich affect the poor - but this was not the case in the past. Some of all these illnesses are as a result of the food that we eat.

When we apply fertiliser, it supplies food to the crop and not the soil. The soil will have to eat and be rich before it can also supply food to the crops. The use of chemical fertiliser contributes to the soil getting hard. This makes it very difficult for our yams to grow well. There are also some living organisms in the soil that contribute to the soil fertility but continuous use of chemicals has killed all of these animals. For instance, worms contribute greatly to the soil fertility but chemical fertilisers kill them. Although the chemical fertiliser enables us to get good yields, it brings us illness when we consume such contaminated foods. If chemical fertiliser is not good, then what alternative do we have? We can produce fertilizer on our own farms as well as kill pests that destroy our crops. I also mentioned that we also teach some skills for alternative livelihoods to support us when our crops have not matured. These include bee keeping and poultry to provide the family with eggs and meat for consumption as well as income. We again teach food banking so that we can preserve our crops and sell them in the lean season to get more money. During the harvest season most of our crops do not have a good price on the market so we teach farmers how to store their maize so that they can sell it during the lean season and get more money. Again we teach farmers how to get financial assistance through the inventory credit programme (ICP). We educate farmers to see that farming is a profession. In most cases when you go to the rural communities and ask unemployed people to come out, almost everybody will do so, but when you investigate further

you will get to know that almost all of them are farmers. This implies that although we are farmers we don not classify it as a form of employment but as unemployment. We educate people to understand that farming is a form of employment because we teach them how to plan. Currently, if I ask any farmer here to estimate the amount of money spent on his/her farm now, it is only the money he/she has paid to hired labour that can be accounted for. All his efforts on the farm cannot be quantified. We therefore teach the farmers to document these things, not only by way of writing or reading - there are other ways that information can be kept. We link farmers to service providers. Our organisation cannot do everything. We have nothing, but we can link you to where the resources are so that you can access them. We don't work alone, we collaborate with other agencies that provide service, such as MOFA and others.

## **DISCUSSION**

**Stephen Obour, Yaara:** I will want to thank Nana Adams very much because all the presenters here have said a lot but Nana said something that is the most important thing we farmers here are yearning for. He said that they link farmers to service providers to give farmers assistance and the biggest problem of farmers is their inability to access financial assistance. We need money to expend our farms. Nana only mentioned the point and never expended on it. He even mentioned that they provide assistance to livestock production but the type of assistance he did not say. We need the assistance so I will plead with us farmers gathered here that we should organised ourselves very well and invite Nana to come and give us in-depth knowledge into their activities. I want to thank him very much and I know that when we invite him he will come.



## **REPORT ON DEAR PROJECT'S RESEARCH INTO YAM FARMING**

Prof. Kojo Amanor  
University of Ghana and DEAR

In this session I am going to give a report on some of the findings we have found out about yam production in Kintampo District from the research we have been doing.

As Mr Otoo mentioned, yam is one of the most important crops in Ghana. It is the second most valuable crop only to cassava. Yam contributes more to the agricultural wealth of the country than cocoa. But yam receives little attention in agricultural research spending. Only about 5 percent of all the time researchers spend in carrying out research on agriculture is allocated to the root and tuber crops, which includes yam, cassava, cocoyam, and plantain. These crops (the roots and tubers) account for nearly 60% of the agricultural wealth of Ghana. We find the same in the Kintampo District that yam is the most important crop yet the most emphasis on agricultural extension is on tree plantations, mostly cashew, teak and mango. With crop, there is more emphasis on maize than yams. So why does yam not get high priority? Why is it not more important in research?

One reason is that yam is produced under a rotation-based system; shifting cultivation and the agricultural system want to replace shifting cultivation with permanent system.

The second reason is that yam is mainly grown for domestic consumption; it is not one of the main export crops like cocoa, cashew or teak and the government is focusing on export crops. The third reason is that yam is a difficult crop for researchers to work on. It is not easy to reproduce new planting materials like with maize and cowpeas. It doesn't easily adapt to modern inputs like fertilizer. The taste in yam is very important and consumers buy very specific varieties, such as pona, because of their particular taste and texture. Many consumers only want to purchase Pona. Thus, unlike other crops taste cannot be compromised to achieve higher yields or other characteristics. Attempts to grow yam on permanent plots attracts a lot of diseases and pest problems.

Yam is an important crop and farmers have been successful in cultivating it, and have much knowledge on the subject. It deserves much attention. In Kintampo, yam is the most important crop in the district. In a survey we carried out in New Longoro Area, 7 out of 10 farmers grow yam. This includes 9 out every 10 men grow yam. The second most important crop in New Longoro is cassava. 6 out of every 10 farmers grow it. Groundnut is the third most important crop. Six out of every 10 farmers grow it, including four out of every 10 men grow it and nine out of every 10 women grow groundnut. From the statistics above, it is obvious that yam is the most important crop for men while groundnut is for women in the New Longoro Area.

When we look at the Babato Area, 7 out of 10 farmers plant yam, including 9 out of every 10 men and 3 out of every 10 women. Cassava is the second most important crop, followed by groundnuts, maize and rice in that order. And then okro, pepper and cowpeas are also important for women but less than two out of 10 people make tree plantations. However, at New Longoro more people about 1 in every 4 farmers make tree plantation.

Although yam can be considered a traditional crop, there is considerable change in the way people mange yams from what occurred in the past. The way yam is being produced and the varieties that are produced have changed. One of the big changes is that a lot of farmers produce yam with other crops, particularly cassava. In the New Longoro area most farmers now plant yam together with cassava. In the past this was not the case. In the Babato area yam is planted with cassava, maize, rice and with vegetables, such as okro and tomato, by some women.

The varieties of yam that have been planted have also changed. Some of the old varieties have become scarce and some new water yam varieties have become dominant. The most common variety now cultivated is the variety of wateryam known as Seidubile. In New Longoro 8 out of every 10 farmers are growing Seidubile and in the Babato area about 5 out of every 10. In the New Longoro area, the second most important variety is Lopre and the third one is Mononyo, a new variety of white yam. Pona is only produced by about 2 out of every 10 farmers in the New Longoro area. In the Babato area, the second most important yam is Pona and 4 out of every 10 farmers cultivate it. And the third one is Mononyo followed by Afebetua. White yams are more important in the Babato area than at New Longoro. They are also the preferred yam for eating, unlike in New Longoro where Seidubile is the staple food. Akaba used to be the dominant water yam, it is now not very important because of the introduction of Seidubile.

Farmers do not cultivate a single variety but plant several of them together. Most farmers grow more than three different varieties on one particular farm. But many of the yam varieties are not popular on the market. There is no market value for them and market conditions have resulted in the decline of several varieties.

At New Longoro the most common yam grown together are Seidubile, Teela Mononyo and Lopre. At Babato the most popular combinations are Seidubile, Asobayire, Pona, Liili, Lopre, Teela and Mononyo. Farmers combine both water yam and white yam on a particular farm. They combine the varieties that can stand more hard conditions such as drought, declining soil conditions etc. They combine white yams, which mature early, with water yam which can take nine months to a year to mature. They combine white yams, which do not store well, with water yams that can store longer.

Why have there been changes in the varieties people cultivate? One reason that was given was the declining environment. The farmer's plant hardier yam which can do better in less fertile soil conditions which do not

require a long resting period of the soil like the older varieties where the soil is left sometimes for 20 years before you come back. A second reason is that farmers respond to market demands. Some varieties of white yam and water yam have gone out because of lack of market demands. The urban markets have a very strong preference for some particular types of yam like Pona and they are not interested in wateryam.

A third reason is that farmers grow varieties that are high yielding. Seidubile has become very important because it is high yielding. To get more yields too farmers plant yam with other crops. In the first session, Kewa made a point that where farmers plant cassava together with yam it has some effect on the yam yields. But what may also happen is that some of the varieties may do well with the cassava but some of the other ones may begin to fade out. So Seidubile may continue to do well with cassava, but Seidubile is a strong yam and perhaps a variety like Pona begins to suffer from the cassava. More research needs to be done on this. So what has been happening is that varieties are beginning to compete and the strongest are winning and the weaker ones are losing.

Another major problem is that the yam planting material is very expensive. Some farmers have said is that if you lose your planting material it is very difficult to get it back. It is interesting that Seidubile has become the most common yam because this one is easy to produce. You can cut it into lots of small pieces. So it is easy to lose the rare varieties that your grandfathers and grandmothers gave to you that don't have a market, because once they become scarce it is difficult to get it back again. They only survive because people make a decision to deliberately preserve them in remembrance of their fine taste.

A fifth reason may be the changing nature of the fallow that as population increases people have less land to let it regenerate. But our research also shows that there is no crisis of yam production in the Kintampo area. Yam farmers are still using long fallows. A lot of them are using between 5 to 10 and over 10 years to fallow. And there are still plenty of trees on the land. People can still find an environment with lots of small trees to use for staking. One problem that may come about is that the way land is divided between men and women is changing. In the past, men used to do the yam and women do groundnut, so the man will clear the land and the yam farm and the following year he will leave the farm for the woman to come and make her groundnut farm. But now a lot of men have seen that there is a lot of money in groundnut, cassava and maize so instead of leaving the land for his wife he will divide it into two and give the smaller portion to the woman to cultivate and will go and plant his groundnut, maize and cassava on the bigger portion of land. When that happens, the women do not get sufficient land. This leads to extended cultivation, instead of letting the farm plot fallow after cultivating groundnuts women prolong cultivation, following the groundnuts with maize, and then okro and cassava. Every year the same plot is cleared and the trees cut. Nevertheless, there are still many trees in the Kintampo district and this is because people have been farming yam and encouraging trees to regenerate.

The nature of yam production also creates a lot of pressures on yam farmers when it is integrated into commercial markets. Yam is an expensive crop to grow and it requires a lot of labour in clearing and preparing the land. White yams require more tending and labour than water yam. The peak labour period is October and December. This is also the main clearing season for yam plots as a result the farmers are forced to sell their white yams quickly in order to get money to clear their farms and make mounds. The white yams are also very delicate, they don't store well and they are easily bruised. Farmers want to quickly off-load their white yams when they are in good condition. Other farmers take loans from the market women during the lean season for clearing. In return for the credit they have to give their yams to the women at cheap prices. This results in market flooding and low prices for white yam in this period.

The other problem is that yams are bulky and the traders normally will not come to the farm to buy. The farmers have to go and look for a tractor to take their produce to the market and it costs a lot of money. Meanwhile the market women know that the farmers have spent a lot on transport and can't afford to take the yams back to the village, so they can give the farmers low price, which the farmers will be forced to accept, no matter how much they complain. Although water yam stores better, it is not popular in the main urban markets.

Farmers are in a difficult situation. If they focus on white yam they will be forced to market their crops early in the year at which time there are plenty of other people marketing their crops. There is so much white yam in the market before December that they can't get good prices for their crops to reflect the high cost of production. Between February to May the white yams that have been stored begin to spoil. By this time those farmers who have concentrated on white yam do not have yams to eat. Those farmers, who focus on water yam, can get food to eat throughout the year. But when they take the crop to the market they get low prices or there is no market for their crop. This means that the profit from yam does not reflect in the labour and cost of production. And when you have a bad year, where the rains don't come when they are supposed to come, you don't get any yield then you have lost the planting material. So these conditions create pressures on the white yams and those farmers who are having a hard time find themselves being forced to into the water yams rather than the white yam.

These are some of the reasons that are resulting in the difficulties in yam production and the changes in varieties, which cannot all be explained on declining environmental conditions, lack of trees and declining soil fertility. In bad years there is no support for farmers. The cost of producing yams and the cost of the planting materials are the major problems of the farmers.

Mr Otoo mentioned that yam cultivation was destroying the environment because of the system of rotating the land. From our experiences we don't think that this is the main problem.

There are problems in yam production but the systems in yam work. It is good to introduce new varieties and that is already happening. But the new varieties need to fit into the way farmers are already farming rather than into new non-existent systems. If you create new varieties that need to be farmed on permanent plots without shifting the land many farmers will be reluctant to introduce the new varieties because they don't fit into the way they know how to farm. Farmers will be reluctant to intrude these practices because their way of doing things continues to work within their system. There is no proof that permanent yam cultivation will work. They tried it at the State Farms in Wenchi in the 1960s, and they had problems of getting staking materials. They tried to plant the yams without stakes and the yields were so low they had to give up producing yams. When you go to those permanent agricultural areas around the state farms, everyone has abandoned permanent cultivation in that area now, and no trees have regenerated. It is rather on those permanent mechanised agricultural estates that the most damage has been done, where people find it difficult to farm today and the whole area has been transformed into grassland. There is no yam farming area where a comparable environmental disaster can be found.

The other interesting fact is that in different areas people cultivate yam in completely different ways. Farmers grow yams in this area under many small trees and people are complaining that the soil is becoming less fertile and that yields are declining. But when you go to the Northern Region people grow white yams in open grassland. They don't use trees to stake their yams and they plant them more densely than here. When you go to Atebubu I hear they are planting yams with very short fallow and that they even use fertilisers. We do not know the reasons for all these differences. But I think it will help us the researchers to understand why they do things differently and it would be useful to compare the different yam systems in Ghana and bring farmers together to exchange notes on their experiences and practices

If we create new varieties which are very resistant to diseases and erratic rainfall, we may end up with the same situation as Seidubile where these yams will become dominant and their market price won't be good because the market will prefer some other varieties. We need to breed the new tolerant varieties but we also need to find ways of preserving the old ones too and studying all of them together, and also to find ways of producing planting material cheaply that can help farmers to maintain their varieties of yam.

## FARMER DISCUSSIONS

**Monica Amponsaah, Dawadawa:** During the presentation, it was mentioned that there are a lot of trees here, which sustain yam cultivation in this area. I am not an indigene of Dawadawa but I am from Nkoranza. What I have realised is that there are many trees here at Dawadawa, as said earlier, but the farmers in this area attempt killing all the trees on the land - even the small ones when they are preparing the land for planting. This is due to the fact that they want trees for staking and also they do not want shade on their farms. I am saying this to help us, the farmers. When I came to Dawadawa to farm, some people asked me why I have left some trees on my farm without killing them. The answer is that if you want your soil to maintain its fertility constantly, do not kill the smaller trees but rather prune them. When you do this, by the time the trees have begun to regrow their branches, the yams vines have grown up them. They form a canopy above the branches of the tree. When you do this, you can leave the land to fallow for about 3 years and when you come back you will get a good fertile land to cultivate. My farm is just by the roadside at Dawadawa and people can attest to what I am saying. Some farmers believe that you can only get a good yield when you kill all the trees on the farm. If you do that, you only destroy the land.

Secondly, there are also many varieties of cassava just like am. My most important crop is cassava. So the moment I prepare my mound and plant my yam I do likewise with my cassava. There is a cassava variety called "apenkyene". This variety does not form a canopy so you can plant the two crops at the same time and by the time you harvest your yam, the cassava will also be mature for harvesting. There are other varieties of cassava, which form a canopy, so if you are not careful and you plant both at the same time, the cassava will have a negative effect on your yam. With the varieties that produce a canopy, if you plant your yam between December and March, by June or July you can plant the cassava and it will not destroy the yam. What I have realised is that since farmers want the most yield from their crops, they tend to kill all the trees, which creates problems.

When I was at Nkoranza the yam variety I used to cultivate most was Dorban. I liked it very much so I brought some here to plant, but it did not do well here. Every land has the varieties that do well on it. That is what I have to say.

**Kojo Amanor:** Which varieties are you cultivating now?

**Monica Amponsaah:** Like I said the Dorban does not grow well here. The varieties I grow are those you mentioned - Mononyo - and I am a woman so I have little Pona - I also have Dente, Afebetua, Seidubile, Dahobor and Akaba. I brought the Dahobor from Nkoranza but as much as I tried, it did not do well.

**Unknown participant's comment:** As regards the shifting cultivation that you described during your presentation, I will attribute that to the way the land was utilised by our forefathers, and it has now gotten to our

turn. Spear grass is the most important enemy of every farmer because if you want to farm on the same piece of land you would be taken aback by the growth of spear grass on the land, which makes it difficult for us to do so. This will compel you to move onto a different land. That is my contribution.

**Fabia Deborah, Dawadawa:** As has been said, yam is the most important crop in the district. If you look critically at yam cultivation, from June-December, farmers are financially broke but that is when they need money to work. In view of this, some go to the traders for loans so when they harvest their yams they are used to spay back their loans. This may result in the situation where a farmer may always cultivate a big farm but always wallow in abject poverty. What I want to know is that is there an opportunity for us to get some financial assistance so that we can prepare the land and do everything i.e. harvest the crops and sell them at our own time?

**Samson Addae, Dawadawa:** During Prof Amanor's presentation, he mentioned that there are certain times that we waste money in vain, in the sense that when we start preparing the land we uproot grass, prepare mounds. Maybe, we took loans to do that. Now we have harvested our crops, instead of selling and getting profit, we rather sell them cheap and incur debt. When this happens instead of increasing our farm size, it rather results in a decrease. Whenever there are loans for farmers, yam farmers are excluded with the explanation that yam is an annual crop. Sometimes they tell us that there will be no rains so we will run at a loss. I do not know if it will be for the government to grant us loans so that we do not owe the market women. I believe that we will be able to store our crops a little longer [if we have loans] so that we sell and make some profits so as to increase the yam business.

**Mathew Kofi Kewa, Asantekwa:** During Prof Amanor's presentation he mentioned how important yam is to the country. I am disappointed. I want to ask the experts in agriculture Why is it that the government always focuses on cocoa farmers while sidelining us yam farmers?

**Participant's Comment:** In my opinion the Director of Agriculture has done his best. He meets us from time to time and he has been encouraging us to form groups so that we can benefit from assistance. I hope those who have been able to do this have received some form of assistance. That is why all the presenters keep repeating that we should organise into groups so that when assistance comes we can also access it.

**Nana Kwao Adams (ABOFAP):** I want to add to that. During Mr Otoo's presentation, he mentioned that the crops like cocoa (and others) are receiving much attention because there is a lack of knowledge on cultivating them. In spite of all the problems farmers face, they are able to produce more yams. Sometimes there is even a glut on the international market. This results in the government taking yam for granted. It is pre-occupied with crops that are scarce on the market. Yam farmers have a lot of knowledge. The problem is how to market them at a good price. If yam is being bought at the price maize is being bought all of

you yam farmers would have been wealthy people, but since yam is abundant on the market, when the buyers come, they “use their left leg to ask the price”. It is because of the knowledge you have about the crop that government hasn’t been so keen in your activities.

**Mathew Kofi Kewa, Asantekwa:** What I want to add is that agricultural research has shown that we should do permanent farming but what we have learnt from our forefathers is that if you cultivate the same piece of land continuously you will spend more time weeding. If for instance, last year you weeded your land twice before harvesting, this year you are going to weed it 3 or 4 times before harvesting. If you do not do that you will not get a good yield. Secondly, if it doesn’t rain well you will not get a good yield. That is why we rotate the land as you have said.

**C. Ameyaw Oduro, MOFA Director:** What the gentleman has just said is perfectly right. What happens is that in the soil there is what is called the seed bank. The weeds produce seeds that are lodged in the soil and they wait for the right time to germinate. In the first year of farming you kill all the trees. The moment you do this you permit sunrays to penetrate the soil. This will energize the seeds to germinate. As you continue to till the land you allow air to enter the soil, which helps the seeds there to germinate. When we go to the forest we will see that because of the canopy there is no undergrowth. This is because the canopy has prevented the sun to reach the land to energize the seeds to germinate. In the forest also we do not always disturb the soil so the seed there is dormant. But the moment you clear the land to allow the sun’s rays to penetrate the soil it is bound to germinate.

But it is not true that the government do not care about yam farmers. I am very sure that the government is interested in the activities of all farmers. It, therefore, looks for ways to assist the farmers. The fact is that there are certain crops that the government fixes a definite price for. I quite remember that in 1989, there was famine in Angola so the government decreed that nobody should sell a bag of maize below 5000 but some of the farmers sold it between 2000 and 3000. For the crops that the government they can do that. But it will be difficult to do that for the crops purchased by private people. That is why the government hasn’t fixed prices for yams. However, we know that you don’t cultivate only yam. Some have mango and cashew farms. In this district we give assistance to cashew farmers. We give loans for you to cultivate your farm. The loan is not given to you because of your cashew farm. When you plant the cashew it will take about three years to fruit and you intercrop them with yams, maize etc. This money is given to you to cultivate crops on your farm. So if you are a yam farmer and you have cashew plantation, you are entitled to see us for assistance. However, we do not assist individuals, only groups. At the moment there are some negotiations with those in authority for financial assistance, and I strongly believe that yam farmers will be included, but, I repeat, we don’t give loans to individuals only to groups. We are hoping that by the end of this month, if what we are able to seal the deal, we will be able to inform you accordingly.



**Nana Kwao Adams (ABOFAP):** I want to add to what the director has just said. There are a number of NGOs around giving assistance and support to yam farmers. At Fiaso, they are the first to harvest yam in Ghana if you ever have heard of the name. It is on the Techiman-Nkoranza trunk road. The farmers there also wanted financial assistance as you are seeking. But they had already formed the group and they came to see us and at that time the loan was being given in Accra. So the farmers we are working with in Brong Ahafo came to see us and we took up the issue. They gave the yam farmers loans and the farmers have harvested their crops and repaid the loans. In answer to the question the woman posed as to how financial assistance could be accessed when your crops are not matured, you can get support provided you have organised yourselves into groups. These NGOs are all over in the Brong Ahafo Region and not only in the Techiman District. They are in Wenchi, Nkoranza, and Kintampo is inclusive. Farmers have come from far away to benefit so if yam farmers in Kintampo are able to organise themselves into groups they can assist you. Each farmer benefited ₵5,000,000.00 and some even took more than that. They will come and assess your work and see what you are doing.

I made mention that we teach other vocations that we can attach to our farming. This includes beekeeping. We do not purchase bees on the market and you do not feed them too. It is just a little skill that you require and the profit is good because you will sell the honey as well as the wax. If you are able to get two boxes you can harvest at least two and half gallons per year and a gallon of honey is currently sold at ₵140,000.00. So you can do this to support yourselves during the lean season. You do not need to employ labour and you do not feed the bees too. All you need is the boxes and other things, which are inexpensive. We teach the farmers all these so they could support themselves. The bees also enhance good yield when we put them on our farms, especially cashew. They contribute to the cashew to bear more fruits. By this, we are also protecting our natural environment and resources. These opportunities exist for you. The organisation I mentioned that grant loans is called ECLOG. They have established an office at Techiman to serve the whole Brong Ahafo Region. We do not have money to give you but when you are well organised we can recommend you to them for assistance.

**Joseph Manu, Mansie:** During Mr Otoo's presentation, he mentioned that before they came out with the yam variety that they have produced, they collected different varieties from other countries. My question is can these yam varieties survive on all the different soils in different places?

**Emmanuel Otoo:** I am glad this question has come up. The fact is that we are aware that the environmental factors around Techiman, for example, is similar to that of Nkoranza. We know that the whole Brong Ahafo Region is in the Forest Transition Zone. We cannot do research in every place in Ghana so what we do is that we select an environment we deem common to a lot of places to conduct our research. When we do it that way there is the hope that because the soils and rainfall, sunshine and other factors at all these places are similar when we conduct research

in one place, the variety can survive in all of such places. If they are very different, we select places with similar characteristics to conduct our research there. If you consider the research at Bodwease, it is a Coastal Transition Zone and soil and rainfall patterns differ from that of Fumesua. While Fumesua is a forest zone, it is also different from forest transition zone such as Kintampo.

What we did was to select one coastal area, a forest area and selected another forest transition. If we had funds, it would have been better to conduct some of the studies here in Kintampo, Wenchi and Techiman before the variety was bred. However, because we did not have enough funds to do all these we had to select. There is nothing wrong with testing the new variety here, although we selected other areas for the research. In fact from our studies, the yams varieties we have do well in the forest and coastal areas. We have the expectation that it will do well here. That is our expectation. But on the ground we do not know. There will be nothing wrong with bringing samples here to test with the dominant varieties here. Then you can make the decision yourselves. I would be happy to see all the farmers here try this variety. I will be proud that more people are cultivating the variety that we have produced. It is good that we have gathered here after our discussions we will see how best every farmer will get this variety.

**Robert Nii Amartey, Kintampo Yam Farmers Association:** All of us gathered here are yam farmers and I want to take this opportunity to inform the other farmers that there is a Yam Farmers Association in Kintampo here. We are registered, have a constitution and membership cards. I am the chairman and the secretary is also here. We should all be aware of the existence of this association. When you come to the MOFA director you will see everything. This is what I have to say.

**Abukari, Dawadawa:** I want some clarifications on the “mini-set” technology. Will our local yams here be good or that or is it only the new varieties that the CRI produced. Can the director throw more light on that?

**C. Ameyaw Oduro, MOFA Director:** The yam mini-set is a technology to increase the seedling stock. You will have to plan in advance. In the first place you have to know when you want to cultivate the seedling that you are producing. Assuming you want to plant the seedling in March next year. When you harvest the yam, there is something called ‘dormancy’ and during this period it does not germinate. This period is about 3 months. It is also this period that the yam also loses some of its water content. With the month March on your mind, count three months backwards and that will be January. This implies that you should have harvested your seedlings you want to plant in March.

If you want to do mini-set too, it takes 7-8 months for it to be ready so from January count 7-8 months backwards. This means that if you plant your mini-set it will take about 7-8 months to mature and you harvest and preserve for 3 months before planting. This means that it takes a whole year to prepare the yam seedling for planting. I hope you understand

that. You therefore have to plan very well towards it. You also asked if your local yam could also be used for the mini-set. Yes you can do that. Yam behaves like a father and his children living under the same roof. As long as you continue to remain under your father's roof you have no say on a whole range of issues.

It is your father who makes decisions in the house. It is the same way with yam; provided the head is, there it will be very difficult for any part of it to germinate. However, if the head is taken is taken off, any part can germinate because there are buds all over the tuber. So if you want to cut them into smaller pieces, all the pieces will germinate. Whether the piece is large or small, there are buds that can germinate. But the best yam recommended for this is the smaller tuber. What we have realised is that it is very difficult to use Pona to do the mini-set. We have tried on so many occasions but there is no breakthrough. The researchers are still working hard at that under R-TIP. You can use all varieties of yams to do the mini-set but I will not recommend Pona for you. We know you farmers are knowledgeable so if any of you can find a way of coming out with this, I hope that person will be very famous.

**Philip Kwasi, Dawadawa:** Now we are being encouraged to form associations and to increase production of yam but we already have a glut on the market. What will happen if we increase production?

**Emmanuel Bayo Okrah, Secretary, Kintampo Yam Farmers Association:** The government has motivated us by informing us that they are procuring a machine that can process the yam into flour and this has motivated us to increase our yield. We have also organised ourselves. I am sure there are only a few farmers here who are not aware of this. Now Mr Otoo has informed us about the new variety that they have developed, which can even be exported. Prof. Amanor also mentioned the fertility of the land. These are not our major problems now. Our problem is when the factory will commence operation. The Deputy Minister of Trade and Industry was here, and he expressed the fear that the quantity of yam we are producing now will be far below capacity of the factory, because in the first 3 months of operation, all the yam in this area will be utilised so we should expand our farms. Now we haven't expanded our farms and we are facing a glut what will happen when we expand since there is no support from anywhere. At the moment, if you even go for a loan to expand your farm there is much risk involved. Another major problem is how to get to the foreign market so that we can export the yams. Mr Otoo mentioned that the yams they have produced would be good for the international market. I want to know if with his experience he can select at least one of our local varieties that will do well on the international market and recommend it to the farmers.

**Emmanuel Otoo:** You have said it all. We are all aware that we cannot preserve our Pona for a long period. If we intend to export then it will be very difficult. But the most interesting aspect is that there are efforts going on here to bring some machines to process yam. For the researcher, our main concern is to know what will happen in the next 10 years and plan towards that

For instance, concerning staking and permanent cultivation that we are talking about, if you continue to do shifting cultivation, as you continue to practice there will be a time that you cannot move further because where you will be going is not good or the land will not be available. Our vision is that there will come a time when the soil nutrients you are getting today will be no more unless you add something to the land. The nature of our work is that it takes about 7-10 years to conduct a research programme, so if we are not able to anticipate what will happen in the next 7-10 years then your research will be useless when we complete.

When you consider the Atebubu area where they are using fertilizer to cultivate yam now, maybe the problem is that they cannot rotate the land any longer. Here you are fortunate that fertile land is in abundance and there are also a lot of tree for staking so you can continue to practice the traditional method. But the fact is that you cannot continue with this forever. I am glad to be part of this programme. I have been educated and also gained a lot of insight. I am also happy that what we are doing here is in the right direction. Because those farmers who know they would not stake prepared their mounds densely, this enables the leaves to cover the mounds to control weeds. So when you look at the Tamale area where they do not use stakes the mounds are very close to make the weeds cover all over the mounds which helps to conserve water because the micro climate there is cold. You farmers with practical experience know this. But one major fact is that if we are bent on eradicating poverty we have to change the way in which we make our farms and produce yams. It is not these two and three acre farms that we should be cultivating. We have to expand our farms. The yams should yield bigger than they are doing now.

That time is coming very soon, looking at the speed at which Ghana is developing. We should just pray that these factories will come so that we can process the excess. When you go to Nigeria and other countries they have these flour industries based on yams. Even the little that you produce, which we say is not enough, is what is flooding the international market and they are stopping us from bringing in more. We are producing under capacity and even this we cannot absorb. The best solution is for us to process yams, because we cannot preserve them for long. Everybody here likes Pona, so why can't we acquire a machine that can process Pona so that throughout the year everybody can take Pona. People who have returned from the developed countries come to tell us that Ghana's Pona has premium price. But can we supply Ghana Pona every time on the international market? We should think about the future.

**Eric Osei, DEAR:** With the formation of the association, and in the absence of the processing machine and forgetting the international market you can still get market locally. My idea is that your association have executives, who should go round looking for markets. You can target the boarding schools and hospitals. This is what most of the market women do and they get fat profits. If a school says it wants about 10,000 tubers of pona, I definitely know no individual here can provide that but with the association, if each member should bring 100 tubers, that quantity can be

realised, and the price will also be higher than selling them on the open market. So that you share the money depending on the quantity one contributed. This can even be a source of revenue mobilisation for the association because it is very difficult to collect dues so you can all agree that for instance, you deduct ₦10,000.00 from each hundred tubers of yam you sell and I am sure that the association will be able to generate funds for their activities. It can even help the association to source for financial assistance. This is because before you are given loans the financial institutions will like to see your membership, active ones of course the executives, your bankers and your financial statement. These will help to convince them that if they grant you loans you will pay.

**Unknown participant:** Our resource persons have acknowledged that our yams rot quickly. We are very keen to cultivate white yams but because of this, the moment we harvest, we are eager to dispose them off in good condition. I want to know if they can help us to preserve them for a longer time.

**Emmanuel Otoo:** So far, no. But we are still trying to find a way out. It is a major research area and we are trying to see how best we can do that.

**Sulemana Baliden, Atta Akura:** During Prof. Amanor's presentation, he mentioned the names of a wide variety of yams, which marvelled me. I have been pondering over this all this while because this man is not a yam farmer and he is able to do this really marvels me. The fact is we yam farmers have a big problem. It is because of this problem we have that is why we farmers see farming as not being a full-time employment. Ideally we should go in for specialisation. If you cultivate Pona, then your farm should be Pona farm but what we find on our farms is that the farm is overloaded with a variety of yams. On one farm, there is Seidubile, Mononyo, Pona, Afebetua, and so on. So, at the end of the day the farmer cannot get even one hundred tubers each of the varieties he has cultivated. How do you send such a mixture of yams to the market and expect to get a good price? If we are able to identify our yam preference and cultivate it, I hope we will be able to get much higher price for our produce.

Secondly, the shifting cultivation or rotation practices are contributing factors. Ideally, when you harvest your yam, the land should be left to fallow but this is not the case, we immediately cultivate other produce such as maize on the land. Because we lack financial assistance and we do our farms mainly on subsistence level our proceeds are not able to take us through the year, let alone expand our farms. This leaves us in perpetual poverty. The cost of yam production is very high nowadays so even if one mound does not do well, it is a loss to the farmer but because we do not keep any records we don't regard such things. I will therefore advice my fellow farmers that they should select the variety they want to cultivate and practice professionalism instead of the try and error that we have been doing all this while which has not done us any good. If you want to plant Liile, do just that you will bear me out that those farmers who are farming this way get better markets than we do. The first harvest, he

hires a tractor and send the yams to the market to sell to defray his debt. All the subsequent trips will then be his profit. We should be sincere to ourselves, who here has sent a tractor load of yams to the market? Nobody.

**Afua Dari, Atta Akura:** Most often, it is the customers who allow themselves to be cheated by the market women. When a customer goes to the market to buy Pona, and there is Mononyo and Larebekor, which the traders call "Okyiri Kumasi", because Mononyo is bigger, you select that one. So the customers should also help themselves to know the yam varieties.

**Kojo Amanor:** I want to ask the Director something. Is it possible to introduce something like an annual yam fair at the harvest season? So that we can get to know all the varieties, give prizes for the best yams of different varieties and we can try to make the lesser-known varieties to be well known.

**C. Ameyaw Oduro (MOFA Director):** At the moment, at the Assembly Sub-Committee meeting we are trying to do something like that. We are trying to do two things. One is the farmers market and the other one is the agricultural show. We think the yam farmers will play a major role in the agricultural show.

**Kojo Amanor:** Is it possible to get a special day for yam?

**C. Ameyaw Oduro:** Yes, that will also be taken into consideration. It will be something like a yam festival where farmers will be asked to bring to the durbar different varieties that they have so that we will select the best ones and give awards.

**Kojo Amanor:** They can also exchange different yams so that they can go and try them.

**C. Ameyaw Oduro:** I will carry that idea to the Agricultural Sub-Committee. We will be meeting next week.

**Hannah Mansah, Mansie:** I am a woman and a farmer. The charcoal burners have cut all the trees on the land I had this year to farm on. Because of this, all my yams withered-off during the dry season. The little that remained failed to form tubers in the mound. That is the Lopre and Pona. I lost all. The Seidubile was able to survive because its water content was much higher. Now the white yam we cultivate does not grow well where there are no trees for staking or in the fallow land. Again the type of land our husbands allocate to us in recent times is the one that they have cultivated continuously for at least two years and has lost its fertility. This does not allow us women to gain much from our farming. That is why we are not able to increase the quantity of yams.

All the trees should not be cut. At least the charcoal burners must spare the smaller ones so that we can use it for our staking.

**David Sumbo (CARE International):** My question goes to Prof. Amanor. During his presentation he talked about the fact that women are given less fertile land and the fact that men are even shifting more into the production of groundnut and maize. I want to know whether he also delved into the issues of land tenure. Again are there are other factors that really influence yam production beyond the environmental factors? With land tenure, the length of time you can stay on a piece of land, the size of the farm and even the type of crops to produce.

**Kojo Amanor:** The land isn't really a big problem in this area. There is still plenty of land available and it is easy to get for a long period of time. If you are a local citizen you have the right to establish rights through clearing and farming the land without permission. If you are a migrant, you just pay an annual tribute and give some yams at the end of the harvest season to pay the yearly tribute.

**David Sumbo:** So when you take or you are given a piece of land at the end of the year when you pay your tribute with yams do you pay something else in addition?

**C. Ameyaw Oduro:** It depends on the area. Sometimes they do sharecropping, you cultivate and at the end of the season you share the crops with the landlord on either *abunu* (half shares) or *abusa* (one third to landlord and two thirds to tenant). Sometimes too you hire the land and you just pay the money to the landlord but if you take the land from the chiefs they don't normally take money but at the end of the year what ever you get you give the chief a thank you. There are so many tenure systems.

**Kojo Amanor:** The administrator of stool lands also collect ₦50,000.00 from migrant farmers from which the chiefs receive royalties. I also want to say that the problem of the women is the clearing of the land. The men are responsible for clearing the land or hiring people to clear it. When they finish clearing they plant their yams the first you before giving it to women to continue farming. The cost of clearing or the labour is the major constraint. So it is not that the land is not there, but that many women depend upon men to clear the land and lack the capital to hire labour their own labour.

**Lawrence A'naba:** I have two questions one to Prof. Amanor and one to Mr Otoo. Prof. Amanor made mention in his presentation that we have a lot of trees in this Kintampo area and that yam farmers contributed to it. But sometime ago when you were talking about charcoal burning and yam cultivation in the district I think you were playing an advocacy role and you asked which of them was degrading the environment more whether, yam production or charcoal burning? And there were some contrasts of some pictures, which say that yam cultivation, contribute to the degradation of the environment. So in this case what he has come out with that yam farmers contribute to the vegetation cover, what role do the yam farmers play? They don't actually reforest the land when they kill the

trees to get stakes for yam production. I want to know what role they played in the tree cover of the land.

With regards to Mr Otoo, he mentioned some of the problems in yam cultivation to include high varietal instability in the yams and the erosion of the climatic base. As you are bringing in new varieties from other countries in the long term are there any strategies in place to ensure that these things don't re-occur even as we bring in new varieties? Because with time, as Prof. Amanor said, some of the problems are socio-economic so I don't know if these things will not re-occur as we introduce new varieties.

**Emmanuel Otoo:** My response is that as a research institution, we try to keep the pure genetic material. So what we do is that if we import the variety the first thing we do is to keep sample in our laboratory in the form of Tissue culture procedures. So we know the pure variety so the ideal thing is that even when we bring the variety to the farmers to cultivate with time they will mix-up. So from time to time we should be able to come out with the pure one and push it into the system. At any point in time we will be able to give you the pure variety we brought and the hybrid we have produced. That is our work. However if we are a bit sophisticated we will be able to maintain it in the market but as it is new we cannot guarantee that it will not be corrupted. The only guarantee is that we have a source where you can get the pure one.

**Kojo Amanor:** In the poster you were referring to we had three different pictures, the state farms, the yam farm and the charcoal. It was not meant to say that yam farmers destroy the environment but that anything you do to make a living changes the world. So if charcoal burners are being given a bad name for destroying the environment by cutting trees, don't all farmers, including mechanised farmers, cut trees to farm. Now, if you say the yam farmers cut the trees for stakes, can anyone farm without changing the land? Can anyone farm inside a forest without changing anything?

There is no crop that you can just plant under a forest and it will grow well. If there was you still have to weed the under growth before you do your planting so we can still say that you are destroying the natural environment. So anytime you do any activity you change what is there but the question is in the long term does it lead the deterioration of the environment? Or does it lead to some changes, which allow their activities to go on sustainably. In the case of the yam farming, the yam farmers need trees for stakes and also the fertility of the land. That is the way they practice it in this area. Without that the yam farming cannot survive. When you see where they do the yam farming there are a lot of small trees in those areas, so somehow they reproduce the environment they need. Kanton has been doing a lot of research looking at the regeneration of trees on yam farms and the practices of the yam farmers, so maybe he will like to say something.

**Kanton Tontieh, DEAR:** What we have been doing on farms is studying whether the trees that are burnt or cut regenerate. What we found out



was that they regenerate through coppicing. So if you go to a yam farm which has been cultivated for one year and no crop has been grown there after the harvest, you see that the rate of regeneration is faster than where after the yam has been harvested other crops have been planted for several years.

After the yam has been harvested the trees regenerate the regeneration also depends on how the land was weeded. If you use a hoe then you will get much smaller trees coppicing than if you use a cutlass. In the case of yam farming there is some form of regeneration that is why after three or four years the farmer can go back to the fallow and cultivate it. Then the way the farmers also cut the trees is also a contributing factor. They cut the younger trees at some level, they do not just burn them. So after some time, those trees are able to regenerate faster to nourish the land.

When the trees are cut, they regenerate from the base, the stem or the root. If you use a hoe, anytime you cut a root, each of the two cut ends will coppice. That is why there are more regeneration on land where the hoe is used to clear the land than the use of cutlass. So the more the hoe cuts the roots the more coppicing we get from the roots. Even if you practice continuous coppicing, there is regeneration. Those of you who have had the opportunity to see the poster, you will see that at Branam state farm, where every part of the whole tree is removed to allow tractors to plough, regeneration is very poor. You can't see anything on the land it is just a grass field. But for a yam farmer, he only burns the stem so the energy is stored in the root. So the roots are in the ground and the stem is either killed or burnt. After sometime the roots at the base will coppice. The yam farmer doesn't do stumping compared to the state farms where there has been mechanisation. The MOFA director was also trying to explain the apical dormancy in yam. It is the same with trees. Cutting them in certain ways gives the opportunity for other parts of the stem to coppice.

**Mbete Umooja, Dawadawa:** I think we have discussed many issues at this meeting but my question is on yam diseases. In my community we cultivate a wide variety of yams. Currently, there are yam diseases, which are spreading very fast, such as yam rashes. At the moment I know about three people who have stopped farming because of these diseases. We are also interested in this new variety of yam. But if we don't get a cure for the old diseases they will also attack the new varieties. What will we do when this happens? Since Mr Otoo is here, I know he can assist us with that. My second concern is how to get market for our produce and financial assistance. How can the resource persons here assist us?

**Emmanuel Otoo:** Concerning the pests and diseases I think the seed treatment helps us. What we can do is that we will incorporate Kintampo into our next phase of the project. This is a complete package including seed treatment, hot water therapy and others so that we establish a pilot project here to do what we have done in other areas. With the pest and diseases we use the seed treatment and chemicals to manage them but Nana Kwao Adams has just made us aware of his dislike for chemicals. We also know that when you prepare compost sometimes centipedes

harbour in them. This means that we have a real problem. Sometimes they are in the form of termites and they disturb a lot. Normally, if you know that your field has these problems; people use hot water and other things to destroy their nest. We should also make conscious effort to treat the seed yams.

## **FINAL COMMENTS**

**Emmanuel Bayo Okrah, Secretary, Kintampo Yam Farmers Association:** Now we have all agreed that we should form an association of yam farmers but what we want is accountability from our executives. Researchers should double their efforts in their quest to find cure for the diseases of our yams. The resource persons should also help to create marketing avenues for us so that we can sell our produce and get profit. There are local associations in all the communities and we want all of them to join together to make the District Association very strong. We are in need of financial assistance so the resource persons here should help us. There should be a conscious effort to secure the yam-processing machine since it will help to alleviate our plight.

**Ameyaw Oduro (MOFA DIRECTOR):** We have advised you to organise yourselves into associations so that you can access resources available. Assistance is given to groups and not to individuals. It will also enable you to receive the necessary attention from the authorities concerned. The idea of purchasing the processing machine is still on course. It hasn't been abandoned. We are still holding consultations with those concerned and we will keep you informed accordingly. We are trying to get more extension officers like I indicated earlier. Meanwhile I charge you to make adequate use of those we have at the moment. My office is always opened. Whenever you have problems, you can come to me if it is within my means and if it is beyond me I will refer to the appropriate quarters.

**Nana Kwao Adams (ABOFAP)** We encourage you to form farmer networks. This will enable you to exchange information with people from other communities. When you form your association you can bring your proposals to us and we will also link you to the needed resources.

**David Sumbo (CARE International):** As the previous speakers said, you should form associations. We can put up a proposal to include this area when we are expanding our programme. We will train your leaders to train you.

We will also link you to other associations so that you can learn from other communities and if possible form a national association. This will help you when you put up your demands to the government.

**Emmanuel Otoo (Crops Research Institute):** I will try my best to provide a few tubers of the new variety for you. The research is still on going and we hope to do more. We are a government institution and therefore under resourced. We are looking for sponsorship to expand our research. It is good that we are here we want to collaborate with other

institutions and service providers. We do hope something better will come out of today's meeting.

**Kojo Amanor (DEAR Project):** We want you farmers to develop your own programmes for the association. This can enable you to network with farmers in other regions to learn from them. When you are free you can come to the DEAR Project office. Our staff is there to assist you whenever necessary. You can also take the opportunity to acquaint your selves with what we are doing. We will like to thank you all very much for coming.

## PARTICIPANTS

NAME	SEX	SETTLEMENT/ORGANISATION
Martha Affrah	F	Asantekwa
Ama Asuela	F	Asantekwa
Margaret Mansa	F	Asantekwa
Deborah Mansa	F	Asantekwa
Banijo Okrah E.	M	Asantekwa
Kwabena Kumah	M	Asantekwa
Kwabena Nyanu	M	Asantekwa
Bio Kuma	M	Asantekwa
Mathew Kofi Kewa	M	Asantekwa
Joseph K. Manu	M	Asantekwa
Kuma Peter	M	Asantekwa
Rebecca Kintor	F	Asantekwa
Kwasi Kra	M	Asantekwa
Nichdemous Nsiah	M	Asantekwa
Nkrumah Joseph	M	Asantekwa
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Aminu Kwarubi	M	Atta Akura
Iddirisu Gyibirim	M	Atta Akura
<b>Yiyee Moban</b>	M	Atta Akura
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Alhassan Adam	M	Atta Akura
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Afua Dari	F	Atta Akura
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Francis Nyimaku	M	Dawadawa
Trigbe Umooja	M	Dawadawa
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Patrick Nsiah	M	Dawadawa

Sierzoolaa David	M	Dawadawa
Akua Ujare	F	Dawadawa
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Emmanuel Koro	M	Mansie
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Mansa Hannah	F	Mansie
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Emmanuel Bayo Okrah	M	Yam Farmers Association, Kintampo
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David Sumbo	M	CARE-Tamale
Effah Appiah	M	Cash Enterprise, Kintampo
Paul Ayewkolo	M	MOFA
Joseph Yelibora	M	MOFA
Ameyaw Oduro	M	MOFA
Opoku Kwadwo Eric	M	MOFA
Opoku Beatrice	F	MOFA
Comfort Adobea	F	MOFA
Forgor Charles	M	MOFA
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Kanton Tontie	M	DEAR
Kojo Amanor	M	DEAR
Opoku Pabi	M	DEAR