

Farmers Club Charitable Trust Bursary - Report to Trustees

Visit to Malawi to study on Bokashi composting 18th July – 29th July 2011

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Abstract

Agriculture remains a main activity in Malawi. As with the rest of the world, the challenges in Malawi are to produce more food under growing resource limitations such as water, fertilisers and energy. These challenges are sometimes doubled coupled with political conflicts. One way to overcome this is to rely on renewable sources of fertiliser such as Bokashi which is derived from animal manure and plant material that has been composted. The visit to Malawi involved visiting farmers to learn about Bokashi and to liaise with local academics and potential funders in order to engage in a dialogue to establish collaboration with Cranfield University and Bunda College in Malawi.

Introduction

Agriculture remains the backbone of the economy of Malawi. Malawi export earnings are largely from tobacco, tea, coffee and a few other cash crops. Of late, maize has also proved to be an income earner to the country as it has been exported to neighbouring countries. Maize is the staple food for Malawians. It is cultivated mostly by smallholder farmers with very limited resources. Over the years the main threat to smallholder farmers has been the declining soil fertility and the increasing cost of inorganic fertilisers.

According to the African Research Institute (2007), at round \$30 per 50 kg for the 2006/07 agricultural season, the commercial price of fertilisers is beyond the means of most smallholder farmers. In Malawi with the progressive increment of the fertilizer prices (\$80 per 50 kg bag) for the 2008/09 season, most smallholder farmers have resorted to organic fertilisers (compost) as an alternative to chemical fertilizers. This is despite the Agricultural Input Subsidy Programme (AISP) that the government of Malawi is implementing. Under the AISP, resource poor farmers receive input vouchers/coupons to buy seeds and fertilisers at reduced prices of \$3.5 per 50 kg bag (Wa Muntharika, 2009). With 22% of the population living on less than \$84 per year (Africa Research Institute, 2007), a lot of smallholder farmers qualify to be called 'resource poor' farmers though only a few benefit from the AISP.

According to the World Bank (2007), over 50% of the budget of the Ministry of Agriculture and Food Security is allocated to pay for the procurement of the inputs. Much of the funds for the subsidy programme and the administration of the programme are paid by donors (World Bank, 2007). Because of the overwhelming numbers of beneficiaries and the cost associated with the procurement of the inputs, farmers receive smaller quantities of the inputs e.g. fertilisers. Compost in this case is used to supplement the subsidised fertilisers for the AISP beneficiaries whilst for those non beneficiaries 'resources poor farmers' compost is the only option they have for a chance of having bumper yields.

With escalating fertiliser prices and increasing demand on food production, Malawian farmers have to rely on renewable sources of fertilisers and compost offers this opportunity. Malawian farmers have been applying a specialist type of compost known as 'Bokashi'. Bokashi is made from a mixture of a number of ingredients and these include charcoal/ash, maize bran, top soil, dung and water sometimes depending on availability yeast and sugar can also be used. It is mixed and left out in the open. Ideally it takes between 8-14 days to mature depending on the materials used and weather conditions.

Aim

To explore options on using alternative sources of fertilisers to establish crops to meet growing food demand

Objectives

- To learn from local farmers how Bokashi is made and their perception of its use as a source of fertiliser
- To interact with local academics to explore options for potential collaboration with Cranfield University
- To explore funding options from local and international sources of funding

Details of meeting with people

The duration of stay in Malawi was close to two weeks. Dr Patson Nalivata from Bunda College is my local contact and assisted me to settle in. The initial few days I spent visiting

Bunda College where I had the pleasure of visiting the Soil Science Department and met Dr Nalivata's colleagues. I had a good discussion with academics at Bunda about my research ideas on utilising an alternative source of fertiliser such as Bokashi to meet crop nutrient requirements and they were very supportive of that idea. I also gave a lecture to colleagues and students at Bunda on my research ideas and engaged in a stimulating discussion. I met with the Principal of Bunda College and discussed options for PhD projects and also potential funding from international sources such as the EU or DFID.

Whilst being at Lilongwe, capital of Malawi, I also visited some donor organisations such as JICA (Japanese International Cooperation Agency). Bokashi is actually a technology that is derived from Japan and JICA have been very instrumental in training local farmers on how to make and apply it to soil. Bokashi in Japanese means 'fermented organic matter'.

I also visited an officer who is working on a project known as Research Into Use funded by DFID. He was able to provide a good insight on on-going project and was able to provide some feedback on my thoughts about Bokashi.

I also met the Director and some other senior officers of the Land Resources Department in Lilongwe. These are the policy makers and they were very keen on my project idea. It was also indeed a pleasure to learn that most of them have done their MSc at Cranfield University! They were stating the use of Bokashi has great potential but the challenge lies in getting some of the feedstock such as cattle manure which is only available in some part of the country where there is livestock husbandry. They were also stating that there needs to be a protocol to produce Bokashi so that there is consistency in the product and farmers can use it with greater confidence. I was pleased to know that the government is being supportive of my ideas.

I also met donor agencies such as Irish Aid, European Union Regional Office, German Development Agency (GIZ) and Citizen Network for Foreign Affairs (an US based donor). I made attempts to visit other donor agencies and the World Bank but failed to get an appointment to meet the relevant officers.

Details of site visit

I also visited three farmers in the northern, central and southern Malawi as shown in Figure 1 below.



Figure 1: Map of Malawi showing three main geographical regions where farmers were visited

The comments from farmers from the three main regions are shown below :

1. Farmer 1 in Kasungu – demonstrated about the making of Bokashi. He said that the required feedstock for making Bokashi are virgin top soil, leguminous crop residue, yeast, ash, charcoal, water and animal manure (shown in Figure 2). The farmer said that he is now using less inorganic fertiliser since adding Bokashi. He was trained by JICA in 2004. Bokashi is mostly applied to establish 1 days for maize and vegetable crops. Bokashi can also be easily stored and it is usually better to make it during the rainy season as it is easier to get water.

The farmers also saw evidence of worms after a few days of setting up of the Bokashi pile. Figure 3 shows a Bokashi pile when all raw ingredients have been thoroughly mixed. The temperature of the Bokashi pile is measured crudely by sticking in a knife as shown in Figure 4.



Figure 2: Raw ingredient required to make Bokashi



Figure 3 : Bokashi pile allowed to mature from 8 – 14 days



Figure 4 : Knife inserted into a Bokashi pile as a ‘probe’ for crude measurement of temperature

2. Farmer 2 in Mzuzu - demonstrated quickly how to make Bokashi. This farmer was very innovative and made Bokashi into pellets (Figure 5) so that it was easier for application to soils. Bokashi was stored and applied to grow maize. Figure 6 shows the lady farmer who was innovative in making these pellets with others and regional Farm Officer.



(a)

(b)

Figure 5 : (a) Bokashi pellets stored in rubble sacks (b) Close up of some Bokashi pellets



Figure 6 : Lady farmer in the centre who was instrumental in making Bokashi pellets together with co-workers and regional Farm Officer (in black jacket)

3. Farmer 3 in Blantyre – this was an excellent site for all types of compost that are used in Malawi such as Bokashi, Chimato (Figure 7a), Box compost (Figure 7b), Pit compost (Figure 7c) and liquid manure (Figure 7d). There is a canal on this site which could be ideal for Bokashi demonstration due to easy access to water. Figure 8 shows a typical maize field applied with Bokashi. The farmers also practice conservation agriculture which includes covering soil surface with maize stover and residue to reduce evaporation and weeds. There will be no ridges in this case and seeds will be sown immediately in the soil. There is also a part of the land where there is a pit and in added with manure and covered. Then a legume is planted in the middle of the pit and 4 corn seeds in each side of the pit. This is an interesting way to ensure N fixing by the legumes together with nutrient supply from the compost.



Figure 7 : Various composting options available at Farmer 3 site in Blantyre – (a) Chimato, (b) Box compost, (c) Pit compost and (d) liquid manure



Figure 8 : Maize field applied with Bokashi

Conclusions

I have found this trip to be extremely helpful for me to gain a better insight on agricultural challenges in Malawi. I have also been able to learn on how Bokashi is made and how we could potential learn from this and apply it in UK context. I have also made some good contacts with donor agencies for potential future funding sources to ensure that the collaboration is sustained. I have been able to obtain some very useful photos and materials that I could use as case study when teaching at Cranfield University.

Events after coming back from Malawi

I have submitted two grants to the Africa Nuffield Programme on training farmers on Bokashi in Malawi in collaboration with Dr Nalivata. Unfortunately I was unsuccessful on both occasions. However now I have been fortunate to be involved in a WaterAid MSc project on composting and recycling of solid waste (including human waste) in Tanzania which although is not related to Bokashi but is keeping me involved in a related theme in an African context. I will continue to seek funds to engage in collaborative activities with colleagues in Malawi.

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