

Transfer of Crop Research Knowledge to Small Farmers, with emphasis on Eastern Africa

TAA East Anglia Annual seminar at NIAB, Cambridge, 16th May 2017

Two papers were presented: the full texts will be published in *Agriculture for Development* No 31, Summer 2017. See <http://www.taa.org.uk/publications.asp?menuld=4>.

The following paragraphs summarise the discussions that followed each presentation (prepared by Martin Evans)

1. Supporting Smallholders in Improving Wheat Cultivation, by Tinashe Chiurugwi (NIAB) et al, presented by Dr Lesley A Boyd (NIAB)

A participant observed that wheat breeders in Kenya are very suspicious of new [plant breeding] technology, such as the use of molecular genetic markers. This was partly ascribed to the sometimes uneasy relationship between some of the CGIAR-supported international centres, such as CIMMYT, and the national research institutes. There can be professional jealousy, an unwillingness to collaborate and so on; petty behaviour that needed 'heads knocking together'. BECA¹, which is based in Nairobi, can often side-step such problems and is successfully facilitating the national application of advanced high technology to crop improvement.

¹ **Biosciences eastern and central Africa (BecA) Hub-(Nairobi, Kenya):** BecA is an initiative developed within the framework of Centres of Excellence for Science and Technology in Africa. Hosted and managed by the International Livestock Research Institute (ILRI) in Nairobi, Kenya, the BecA Hub provides a common biosciences research platform, research-related services and capacity building opportunities to the region and beyond. The BecA Hub is committed to increase access to affordable, world-class research facilities and to create and strengthen human resources in biosciences and related disciplines in Africa. <http://hub.africabiosciences.org/>

This led to a related point being raised, namely how intellectual property (IP) issues can best be handled within the context of international collaboration. Dr Boyd pointed out that the projects she referred to in her presentation were publicly-funded. Also, they had not required the exchange of seeds, which was subject to a plethora of controls. So far, she hadn't had to deal with IP issues in this work.

The question of finding the right partners for collaborative research then came up. Dr Boyd's answer was that by talking to people and getting to know them soon revealed who did and did not want to share their work, at least with your particular network. Politics could override science! So it was important to understand the policies of potential collaborators and be patient in terms of getting your own requirements across; you needed to proceed step-by-step. But sometimes, in the end, one did sometimes have to play 'hard ball' as a last resort!

What are the links between KALRO (Kenya Agriculture & Livestock Research Organisation) and seed producers? It was KALRO that identified particular smallholder groups, which might be interested in being contracted to multiply up seed supplies. Thus in seed multiplication, KALRO provides the linkage with the public system. A follow-up question concerned the motivation for farmer groups to engage with KALRO. It appeared that the information about contracting opportunities spread by word-of-mouth and those farmers interested were ready to respond to approaches.

A comment was made about seed systems in Uganda, where seed certification can present problems: what's claimed on the packet or bag (germination rates, for example) does not always work out in practice. To address this, a company called AgVerify Ltd² has been set up with US help to check on seed quality, among other things. It successfully sells seed-fertiliser

² AgVerify Ltd, 'Farming Inputs, Food Products and Ag Services you can trust. Seeds, Fertilisers, Soils, Water, Grain, Feed, Food' (www.agverify.net)

combinations in packages as small as 1 kilogram. Even poor farmers are prepared to pay for inputs they know they can rely on. Dr Boyd agreed that the best route to a viable national seed system is via the private sector, but this depended on seed companies being able to remain profitable. Noting that that this might not be easy in some regions and for some crops, a TAA spokesperson drew attention to the forthcoming talk by Michael Turner on seed system development at the next meeting of the TAA's London and Southeast England branch. Another participant drew attention to the parallels with the livestock sector in East Africa, where the poor quality of the majority of animal health care products was the motivation for the INGO Farm Africa³ to establish its social enterprise subsidiary, Sidai Africa Ltd⁴. Sidai franchised suitable agro-dealers and supplied them with good quality merchandise.

The above exchange prompted a participant to point out that the private sector has to work within an effective and facilitative legal framework, yet the presentation had not mentioned the ministry of agriculture. Someone has to monitor the sale of certified seeds. The challenge is somehow to build sustainability into the institutional framework of seed systems – not any easy task. Several discussants agreed that in many cases the capacities and capabilities of ministries of agriculture had deteriorated after independence. After further discussion, the consensus was that seed systems had ultimately to be able to self-regulate to be sustainable.

2. **Unlocking the potential of grass pea (*Lathyrus sativus*) for food security**, by Peter Emmrich (John Innes Centre)

Are there any significant pests and diseases associated with the Grass Pea (*Lathyrus sativus*)? Dr Emmrich said there were and mentioned thrips and downy mildew. In this context, the question of why the crop produced its toxin (ODAP) was relevant – was it important agronomically? This had yet to be answered.

This led a participant to ask what could be the reasons for the Grass Pea to produce ODAP [which causes the disease Lathyrism]. Dr Emmrich suggested three main hypotheses; namely, the toxin is :

- (i) a plant defence mechanism (maybe against aphids)
- (ii) a solute for oxidative stress
- (iii) involved in iron toxicity protection or metal transport.

There was insufficient evidence to decide between these, though he personally favoured hypothesis (ii).

Was there any correlation between ODAP concentration and seed viability (nutrition)? Again, this had not been investigated in depth.

In answer to a question about out-crossing, Dr Emmrich said that the Grass Peas was largely self-fertilising, but out-crossing did occur (up to a maximum incidence of 28% according to a number of studies, depending on several factors).

³ www.farmafrica.org

⁴ www.sidai.com