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SEED FAIRS AND THE CASE OF MARAMBO VILLAGE, NACHINGWEA DISTRICT, TANZANIA: IMPLICATIONS OF LOCAL INFORMAL SEED SUPPLY AND VARIETY DEVELOPMENT FOR RESEARCH AND EXTENSION

Nicholas Q.R. Nathaniels and Amos Mwijage

Abstract

Until recently, indigenous systems of seed flow and variety development have essentially been ignored by local and public agricultural development organisations to promote seed and crop varieties. In Tanzania perceptions of seed and variety development by public service organisations appear to be shaped by familiarity with a model of centralised action and regulation leading to a standard distinct official product. However there are indications that official variety release authorities are now beginning to give more weight to farmers' decision-making criteria and are keen to promote wide testing of new materials with farmers to ensure wide demand. The seed fair concept and subsequent follow-up work described in this paper can contribute to increased understanding of local seed networks by local and public services and NGOs involved in agricultural development, and bring a wide range of materials to the attention of many farmers.

Small two-day rural seed fairs were initiated in south east Tanzania in 1997 and 1998 by the local agricultural research station and a donor-supported rural development programme. The fairs drew the attention of several hundred farmers, as well as local agricultural agencies and planners, to a wide range of seed and planting materials, both from research stations and from farmers' own sources. Seed was packaged, sold or exchanged in very small quantities so that many could obtain some for testing. Contacts made at the 1997 seed fair were subsequently used in a rapid study of varietal testing and seed procurement in Marambo village, Nachingwea District, Lindi Region. A small number of local farmers were identified as local seed providers. These farmers generated income through their seed provision activities but also saw themselves as providing a community service. They sold seed at low prices, gave away free seed or bartered seed in return for work. Local seed producers practised methods for ensuring higher quality seed and were interested in learning new methods. Through contacts made in connection with such fairs, crop research development initiatives can better focus on supporting these farmers' activities.

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Acronyms

CBO	Community based organisation
GoT	Government of Tanzania
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IV	improved varieties
MoA	Ministry of Agriculture
NAEP II	National Agricultural Extension Project Phase II
NGO	Non governmental organisation
RIPS II	Rural Integrated Project Support Phase II
SADC	Southern Africa Development Community
TARP II	Tanzanian Agricultural Research Project Phase II
ZARC	Zonal Agricultural Research Centre

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1 INTRODUCTION

In Tanzania, a pluralistic policy of support to agricultural development is being implemented (TARP II, 1997; NAEP II, 1994). The emphasis is on decentralisation of control and decision-making which acknowledges the role of a variety of public and private sector actors and organisations. Under the new policy, managers of public agriculture service institutions are to diversify sources of agricultural information and technologies. An important element in this is combining science-based technology generation with experience-based knowledge and skills of farming communities themselves. Greater sustainability in local research service funding is also to be secured through measures such as crop levies and revenue retention in addition to central government funding. In the districts, local government (District Council) authorities are to play a larger role in funding agricultural support activities. They are encouraged to seek out and draw actors from private and non government or community-based organisations (NGO/CBO) into active engagement in agricultural service provision.

Experience shows that the fundamental changes required to implement the new policies remain problematic as regards variety development and seed supply. In Lindi and Mtwara Regions in south east Tanzania commercial producers of certified seed of improved varieties (IVs) are absent, local entrepreneurs are unwilling to stock seed for which demand is uncertain, and difficult transport conditions from distant sources make seed costly. The tendency of agricultural professionals and district authorities to automatically assume that crop varieties developed by the official research system are appropriate to farmers' local circumstances can delay the formulation of alternative seed and varietal strategies.

Despite continuing financial constraints, there is nevertheless much goodwill and considerable interest amongst researchers and extensionists of the public sector in considering what the new policies mean and in mastering new ways to work, as this paper will illustrate. Agricultural researchers and extension department staff have recently been exposed to alternative approaches based on developing innovative partnerships with farmers (Gibbon and Stroud, 1992; Mponda et al., 1997; Nathaniels, 1998). By contrast, local district authority leaders and managers in the district councils have not generally been involved to the same extent in the new debates about multiple sources of innovations. By and large, they continue to interpret agricultural support policies and campaigns in conventional terms, often with a firm belief in the wide-scale suitability of a few seed materials carrying the official recommended label.

Phase two of the Rural Integrated Project Support (RIPS II) programme was drawn into the debate on provision of seeds and new varieties. RIPS II is a collaborative development initiative between the Government of Tanzania (GoT) and the Finnish Ministry of Foreign Affairs that has been operating in the Lindi and Mtwara Regions since 1993/94. Working with local formal and informal institutions, RIPS aims to promote a much stronger realisation of and conscious support for local capacities and initiatives in development efforts (Lundstrøm, 1998).

Local agricultural extension departments understandably looked to RIPS as a way to realise plans to provide seed of crop varieties they thought farmers lacked. RIPS staff, on their part, invited extension departments to become involved in a dialogue with farmers, so that concerns on seed and varietal issues could be identified with more precision, and programmes developed which took local capacities and networks into account. The result was that extension department proposals, whilst espousing appreciation of the importance of local capacities such as farmers' own knowledge, continued in practice to be strongly based on preconceived ideas on which varieties were best for farmers.

It was against this background that RIPS initiated a new type of event in the two regions – a series of small rural seed fairs in 1997 and 1998. These were intended to serve as a means of bringing a range of crop varieties to the attention of smallholders. These varieties came from many sources and included those developed by local researchers. The fairs were also intended to create a mutual learning environment aimed directly at the extension-smallholder-researcher interface. It was felt that such direct contacts would do much to break stereotyped perceptions and set in motion a greater number of ways to tackle variety development and seed supply issues. Details of these seed fairs have been described elsewhere (Mponda and Kafiriti, 1997; 1998).

This paper looks at some of the assumptions about seed and local farmers which the seed fair and subsequent village studies helped to expose. The 1997 seed fair formed a convenient starting point from which to learn more about local seed systems and varietal testing. Sharing this information can help researchers, extensionists and others working on seed and varietal issues, and contribute to a greater understanding of the need for radically different policies on seed supply and varietal development.

2 THE SEED FAIR CONCEPT

The Mtwara and Lindi rural seed fairs, as conceived in 1996/97, had the following objectives:

- Creating awareness amongst farmers, researchers, extensionists and district planners of additional alternative seeds and planting materials from research sources, AND about seed from farmers' own sources, and from additional outside sources.
- Enabling local researchers, extension and farmer seed experts who do not normally meet, to do so.
- To create working contacts between expert farmers, extensionists and researchers which will continue to exist and develop independent of outside facilitators.

The first seed fairs were held as two-day events in one village each in Masasi and Newala Districts in Mtwara Region, and Nachingwea District in Lindi Region in 1997. They were organised by the local Ministry of Agriculture (MoA) Zonal Agricultural Research Centre (ZARC), Naliendele, under a contractual arrangement with the RIPS programme. The contract stipulated that the organisers should spread the idea of the seed fairs in the districts and seek local cooperation and resources in the selection of villages and preparation of the sites. Further, small packets of seed of a large number of recommended varieties and some pre-release varieties of a wide range of crops should be made available. The contract stated that recommended seed should be sold at cost price and that all seed could be exchanged for other seed according to individual arrangements.

The RIPS programme further suggested that efforts should be made to identify and invite as seed exhibitors local farmers known in the communities as seed experts. Staff of ZARC identified local seed experts during short preparation visits to the selected villages by asking villagers to say from whom they usually obtain seed. The most frequently mentioned individuals were considered to be local seed experts. These farmers were invited to take part in the coming seed fairs where they would have stall space and would be free to exhibit their own selection of seeds which they could exchange for other seed, sell or give away for free as they saw fit.

In 1998, another contract was issued by RIPS to ZARC to provide a technical input to seed fairs in all nine rural districts in Mtwara and Lindi Regions. In the expanded 1998 programme, district authorities, extension agencies and village organisations took the lead responsibility for organising and funding local arrangements, invitation of local farmer seed experts, and local advertising. As in 1997, many crops and many varieties were to be made available, again in small amounts. It is estimated that some 2,000 farmers attended the fairs in 1998 . Researchers displayed 67 varieties of 27 different crops, whilst farmers displayed 103 varieties of some 40 different types of crops.

The seed fair arrangements in both years departed significantly from previous interventions in the seed sector in Mtwara and Lindi. Although seed of recommended varieties both from the local research station and other sources was made available, the selection included many more crops. These ranged from bambara nut, pigeonpea and lowland rice to the more usual maize, cassava and cashew. Seed was packaged in transparent plastic bags in small quantities (5 to 200g portions) labelled with the crop variety name, or identification number if there was no name (for pre-release test materials). The specific intention was to enable many farmers to obtain some seed and test it for themselves. Seed of recommended varieties was sold for cash. In some cases farmers obtained samples of researchers' seed in exchange for their own seed, whilst samples of pre-release materials were provided free to interested farmers. Names of all who received official recommended or pre-release seed were recorded to facilitate follow-up. Farmers were equally prominent as stall-holders at the fairs, selling for cash, exchanging for other seed and providing small free samples of their own numerous, named varieties of seed. Farmers displayed their seed and planting materials heaped in piles on paper or placed in a variety of small containers.

A number of concerns came to light during the preparation and implementation of the seed fairs. These reflect a number of underlying assumptions about roles of agricultural service provision and about how technical innovations and new varieties come about. Public extension officials had most difficulty with accepting a role for pre-release materials in the seed fairs. They saw these as unfinished products which the public research system (with which they are most familiar) had the responsibility to complete. From this observation it was clear that the idea of farmer participation in the development of improved varieties had not yet entered the popular consciousness of local public agency officials.

One much voiced concern was that of seed prices. Local development authorities and extensionists wanted seed to be cheap. Several farmers also expressed this view. The organisers wanted to price seed at cost price and invest revenue in multiplication of some of the varieties at the research station for use in future fairs and on-farm trials. Attitudes developed during the era of wide-scale public service provision of subsidised inputs can be part of the reason for these views. Even now there is pressure to use local tax revenue, when available, to subsidise certain kinds of agricultural inputs such as pesticides or cashew seedlings. Traditionally, however, communities also share and provide some seed very cheaply to needy individuals, as will be revealed below. Currently, it is unlikely that local seed provision could or should be interpreted as a purely commercial undertaking.

Another concern was that many extension staff and some farmers expected larger quantities of seed to be available. It was difficult for them to appreciate that these fairs were an opportunity for many individuals to obtain small amounts of seed whose procurement had been subsidised by a donor for testing and sharing amongst themselves. Subsidised district schemes for production of recommended varieties have been a common feature of local extension policy. Such schemes have always assumed there would be a large demand for the selected varieties, again reflecting a belief in

automatic suitability of official varieties. Funding for these schemes has been very hard to secure, either from central sources or from local revenue.

3 FOLLOW-UP STUDIES IN MARAMBO VILLAGE, NACHINGWEA DISTRICT

Marambo village in Nachingwea District was chosen for a seed fair in 1997 and again in 1998. Both fairs attracted a lot of farmers from Marambo and neighbouring villages. Many farmers purchased test quantities of seed of different kinds. In 1997, 194 people were listed as having bought IVs and nine people were identified as local farmer seed experts by ZARC staff. The list of purchasers at the 1997 Marambo seed fair and of the local seed experts was subsequently used to establish contact with villagers later in the 1997/98 growing season, in May 1998.

Some 3,800 persons live in Marambo in 600 households located in five sub-villages. The overwhelming majority of the villagers are smallholder cultivators with few livestock. Incomes are supplemented by skills such as carpentry, or by selling beer and food. A few local residents are employed in government jobs such as teachers or village clinic attendants. Villagers have access to upland and an extensive area of fertile lowland which is subject to flooding. There is a pronounced wet and dry season in the area. A wide range of crops is grown, ranging from cashew and cassava on the upper slopes to maize and rice in the valley.

In the follow-up study, one of the authors (Amos Mwijage) stayed in the village for periods of up to a week at a time, over a period of one month. He visited the selected individuals in their houses or in the fields. By this time, the growing season was well advanced and many crops were well grown, ripening, or ready for harvest. Rainfall was particularly heavy over the 1997/98 rainy season, leading to quite severe flooding in parts of the Marambo valley.

Each interviewee was questioned first about what he or she had done or intended to do with the seed purchased at the seed fair and how these had actually fared. Interviewees were also asked from where and from whom they usually obtained seed. It was quickly apparent that villagers had shared purchased seed with many friends and relatives. Also, significantly, the investigator learned the names of several other individuals highly regarded in the community as seed providers.

During these week-long stays in the village, further interviews were conducted involving people named by the initial interviewees, and people named by these, in a snow-balling process. In an additional technique, conducted with the village-based agricultural extension officer, more names were selected by random sampling from the village household registers. In total, 50 people were contacted, roughly half were men and half were women. The discussions were about the most trusted and most used sources of seed, and who the most influential seed experts were. Simple matrix ranking methods were used to obtain interviewees' perceptions of the importance of various seed sources and crop varieties' characteristics. A scale of one to ten was used to indicate the relative importance of particular characteristics of the varieties. The main focus of the village study concerned the sorts of sources and networks villages use to acquire seed and new varieties. Some of the information obtained about the performance of purchased seed, although rather limited, was also of interest, and is described in the next section.

4 THE INTRODUCTION AND TESTING OF NEW VARIETIES BY FARMERS

Researchers involved in the seed fairs did not question the need for thorough testing, even adaptation, of variety materials by farmers themselves in order to best fit particular farmers' requirements. At ZARC Naliendele, efforts had been initiated up to several years previously to involve farmers in early selection of varieties and in testing back on their own farms. This reflected the increasingly participatory nature of routine research work at ZARC in the 1990s. These initiatives have included: providing farmers with alternative cashew materials for grafting onto their own cashew trees; eliciting farmers' detailed preference criteria for maize and rice varieties planted in researcher-designed plots, and for cowpea and sesame planted by farmers in their traditional systems; involving farmers in a village-based seed production scheme for an improved groundnut variety. Various official crop production campaigns connected with concerns for food security, earlier donor-supported commodity projects, and religious missions, in the 1980s and 1990s have also brought new improved varieties – particularly cassava, maize, rice and vegetables – to the attention of farmers in the area. The very diversity of the varieties which farmers displayed at the seed fairs, including material derived from earlier official releases, individual and neighbours' procurements and farmers' own selections, bore witness to the considerable efforts farmers were constantly making to access and maintain a very wide range of seed materials.

However, misunderstanding of the rationale for variety testing by farmers was common amongst extension staff involved with the fairs. Several extensionists found it difficult to appreciate that recommended maize varieties developed elsewhere in the country might not automatically be appropriate for a particular local agro-environmental niche or for specific purposes defined by farmers. Extensionists tended to be more concerned with the likelihood that pre-release materials might fail, than by the possibility that recommended varietal selections might be inappropriate, despite well known evidence of the latter. It was a new mental step for extension staff to appreciate that farmers themselves actively experiment to test the suitability of many varieties for a wide range of conditions and requirements.

In Marambo village, discussions with purchasers of seed from the 1997 fair showed that virtually all had shared the seed acquired at the seed fair with

relatives, friends and neighbours. This seed had been sown in different ways, including pure stands in the valley and small plots near the house. Some had been planted on fertile valley soil, other seed was intercropped with farmers' current varieties. Several marked the place to assist in identification later. Several of the IVs available at the fair had been publicised as being early maturing. This was an attractive characteristic to farmers and many mentioned this feature. However, earliness could also be a feature which exposed sorghum to serious bird attack, as witnessed by several interviewees who had tested early maturing sorghum types. Taste of maize (both roasted and boiled), and taste in general, was a feature commonly used by farmers to compare the test varieties with their own varieties. With lowland rice, more prolific tillering was a desirable feature of the improved varieties that was mentioned by one of the purchasers. In some cases the test varieties scored well for particular characteristics, but just as often they did poorly in comparison to local varieties.

Many of these Marambo informants, some of whose trials with purchased seed in 1997 had been destroyed by flooding, had plans to continue their tests the following season and already had several options as to where they would attempt to get small amounts of seed. These options included saving some seed, or obtaining some from friends or relatives who had already shared or otherwise obtained the same seed and had had more success with it. Other informants intended to purchase seed from official sources such as the district extension office or even, for a few, look for an opportunity to obtain it directly from a ZARC officer. In general, all interviewees gave the impression they were continually looking out for, and trying out different types of seed. The performance of newly acquired varieties was checked against a number of characteristics, of which taste and pest resistance (both on-farm and in storage) were as prominent as earliness and yield.

It was not uncommon for individuals to visit the district town (some 20 km away by bush road) to acquire seed. Some farmers had even travelled to a mission an additional 85 km away (only 35km of this tarmacked) where vegetable seed could be obtained. Farmers also mentioned relatives in other regions who gave them new sorts of seed.

5 LOCAL SEED SYSTEMS

Extensionists, like researchers, have also not been accustomed to considering how farmers procure seed, what their seed requirements actually are, and what community-based networks exist to provide for farmers' needs. This section considers the different sources and networks farmers use to acquire seed in Marambo village.

The principle sources of seed named by 50 informants for a range of different crops revealed the patterns summarised in Table 1. Home-saved seed and neighbours were the predominant seed sources. Nachingwea District town market was also a prominent source, particularly for maize, legume and oilseeds. The district agriculture extension office was generally a minor source, except for cashew and sesame seed, which are promoted by the local agricultural research station. Local village shops were generally a minor source, though with some importance for pigeonpea, sesame and vegetable seed.

According to interviewees, there were marked differences in the quality of the seed service available from different sources (Table 2). Neighbours were ranked high for all three seed service characteristics, and highest of all for seed quality. Nachingwea town market was also highly ranked, and the highest for reliability, since the market is open every day throughout the year. By contrast, village shops ranked lower, and the seed service provided by the district agricultural extension office was ranked lowest for all three characteristics, particularly reliability.

The importance of named individuals as providers of seed of particular crops was gauged by the frequency with which they were mentioned by the 50 interviewees. Those mentioned most often were taken to be the most influential local seed providers. An indication of perceptions of wealth was obtained by asking three informants individually to define how they saw wealth categories in the village. These informants also ranked the local seed providers according to the wealth categories they had described. Several of the local seed providers were interviewed and asked to explain why they were active as seed sources in the village. What were their views of the local seed system? What were the shortcomings and what solutions could they see or had they implemented themselves?

Table 3 shows the frequency with which individual seed providers were named by village interviewees. Those mentioned most frequently tended to be men, though one was an elderly woman. Another very elderly woman, although mentioned rather less often, was particularly renowned as a source of lablab bean (*Dolichus lablab*) seed. The men were especially prominent as sources of cereals (maize, sorghum, rice), legumes (pigeonpea, cowpea), and cassava. One man was also prominent as a source of cashew nut seed, and another was a leading source of vegetable seed (tomato, okra, amaranth, spinach) in the village. The women were generally looked on as sources of maize, pigeonpea and lablab bean seed. A further group of about 15 people also formed fairly important seed source. Those who were mentioned less frequently were noted for providing seed of groundnuts, bambara nuts and cashew nuts. These individuals were all associated with cultivating and providing seed of a range of named varieties. Some local seed providers concentrated on traditional crops only, and these had not been identified in the earlier ZARC farmer seed expert identification exercise. Others dealt with both traditional and modern varieties obtained more recently from official sources.

Table 1 Sources of seed of the principal crops grown in Marambo village, Tanzania,1998.
(Figures indicate number out of 50 informants mentioning a particular source.)

Crop seed or planting material	Save own seed from previous harvest	Neighbours	Nachingwea town market	District agriculture extension office	Village shops
Maize	50	46	31	5	6
Rice	25	40	15	2	2
Sorghum	34	17	12	5	3
Pearl millet	17	22	2	2	6
Cowpea	32	34	20	0	7
Pigeonpea	50	27	15	0	15
Bambara nut	25	30	10	0	4
Lablab bean	39	24	25	0	5
Cassava	50	19	0	5	0
Sunflower	2	1	20	0	0
Sesame	43	35	30	18	19
Groundnut	27	46	35	2	9
Cashew	40	29	0	22	0
Tomato	35	40	20	8	11
Onion	5	5	0	5	5
Other vegetable seed	3	42	3	8	12
Orange	2	2	2	0	0

Local seed providers ranged in age from relatively young to elderly. A few were considered to be wealthy by local standards but most appeared to be in the middle category of wealth. None were in the poorest wealth category. In the wealth ranking exercise, wealthy individuals (classified as A) were described as cultivating 8–10 ha per season, being self sufficient in food with excess for sale and employing casual labourers. The middle wealth category (B) was also food self sufficient, cultivating 4–6 ha per season, occasionally employing casual labourers and engaged in other small business. The poorest category (C) was described as cultivating not more than two ha, not being food self sufficient and earning low cash incomes. All seed providers interviewed named agriculture as an important activity. The wealthiest also had shops. Of the moderately wealthy seed providers interviewed, most had a diversity of income/livelihood sources such as small businesses and artisan trades (e.g. house construction), fish farming and livestock keeping, in addition to farming. The women seed specialists included in this group owned livestock, made pots and in two cases also practised traditional midwifery.

Table 2 Comparison of quality characteristics of different seed sources, Marambo village, Tanzania 1998. (Mean rankings from interviews of 50 people – 1 is low, 10 is high.)

	Seed quality	Timeliness of supply	Reliability of availability
Neighbours	7.9	7.8	7.5
Nachingwea town market	6	7.7	8.2
Village shops	5.8	5.8	5.7
District agriculture extension office	4.9	4.9	4.1

Seed quality refers to seeds obtained from that particular source in terms of viability, productivity and cleanliness; *timeliness* refers to whether seed is available to farmers prior to, or sufficiently early in, the planting season; *reliability* refers to the assurance of obtaining seeds from that source at any time during the planting season, even if the farmer may be late to prepare his/her plot.

Reasons given by the local farmer seed providers for engaging themselves in seed production included an element of income generation but also as a service to others in the community. In fulfilling this purpose they offered seed at lower than shop prices, gave it for free or by exchange for work on the producers' fields. This service was reportedly expected of them because of close ties in the village, and also constituted a way of helping others to achieve greater self sufficiency, thereby diminishing antisocial behaviour such as theft.

Despite the community service element mentioned by all seed experts as a motive for their activities, the extent to which access (by various groups) to their services is constrained or enhanced by existing social ties in the heterogeneous local village situation (Sikana, 1995) was not clear. Gift giving, of which seed exchange is one form, plays a significant role in the establishment and maintenance of social relations important to rural welfare. Further investigation of these practices is warranted to explore access issues, the direction and scope of changes in response to growing market economies and to define appropriate action for development agencies.

The local seed producers who were interviewed described a number of deliberate methods for ensuring higher quality seed. In particular, leaving crops to mature sufficiently long in the field before harvest, and storing selected seeds in the smoky environment of the cooking fire in the house were prominent techniques. Producers expressed a strong interest in learning new methods and trying out alternatives, but the service from extension was a less important source of ideas than their own ingenuity and that of fellow farmers.

Table 3 Some characteristics of frequently-mentioned local seed providers, Marambo, Tanzania 1998.
(Figures denote number of times mentioned in connection with various crop groups by 50 informants.)

Name	age and sex	livelihood	wealth rank	cereals	cassava	legumes	oilseeds	cashew	vegetables
A. Maokola	M, 48	A, T, L	B	50	20	30	17	26	-
A. Chikonda	M, 64	A, S	A	46	1	46	25	-	-
M. Kalema	M, 30	A, S	A	31	25	41	5	-	2
S. Maluma	M, 39	A, T, L	B	36	9	32	10	-	12
R. Chipukuu	M, 35	A, Art	B	17	10	28	4	-	-
H. Maduana	F, 73	A, L, Art MW	B	21	1	23	-	-	-
Mtenda	M		A	17	5	12	5	4	-
Ngango	M		B	12	5	10	-	-	5
Chindole	M		B	12	5	9	2	-	-
H. Ndambachia	M, 60	A	B	11	4	8	4	-	-
Chikungo	M, 52		B	9	4	9	4	-	-
H. Nampelunda	M,	A, F, L	B	9	2	7	2	-	4
M. Chilunduma	M,		B	8	4	9	-	-	-
B. Chipagala	F, 86	A, Art MW	B	9		10	2	-	-
S. Matingo	M,			9	1	11	-	-	-
P. Damian	F, 38	A, T, L	B	7	2	-	-	8	3
C. Mbaline	M, 58	A, T, L	B	10	1	2	-	6	1
A. Mtima	M, 48	A, L	B	9	1	4	-	-	-
S. Ondali	M,		B	1	2	9	-	1	-
R. Mnimbo	M		B	-	-	8	4	-	-
Mangwela	M, 30	A, S	A	6	2	3	-	-	-

Key: Livelihood: **A** - Agriculture; **L** - Livestock; **S** - Shop; **T** - Small business; **F** - Fish farming; **Art** - Artisan trades (pot making, house construction), **T**- petty trading, **MW** - traditional midwifery

6 DISCUSSION AND CONCLUSION

This report, like experiences from elsewhere in Africa (Sperling *et al.*, 1993; Cromwell, 1990; Berg, 1992) and other parts of Tanzania (Friis-Hansen, 1999), indicates the existence of a dynamic informal culture of seed procurement, testing, and exchange among smallholder farmers in south east Tanzania. The informal seed sector of Tanzania was the subject of a workshop at Morogoro (Stroud, 1996) which recommended the widespread testing of new materials by farmers and placed particular emphasis on the importance of encouraging informal seed systems, both small-scale structured commercial and so-called unstructured farmer seed development and exchange. The seed fairs described in this report offer a simple method of generating contact between the formal seed/variety sector (in south east Tanzania predominantly the public sector research and extension system), and the informal sector of producers and farmers. Seed fairs form one of several ways in which scientists in Tanzania have responded to the opportunities and requirements of greater participation by farmers in agricultural research under the new agricultural development policy. Yet there remain major challenges in the regulation of national variety and seed systems in serving the needs of communities in complex, risky and diverse habitats.

The effectiveness of seed fairs

The seed fair concept, as described here, provides a highly appropriate means to promote the widespread testing of new materials with farmers and give more weight to farmers' decision-making criteria in the selection of improved crop varieties, as recommended by the Morogoro workshop. The enthusiasm with which farmers attended the seed fairs, the wide range of varieties of many crop types presented by farmers and their evident knowledge, helped counter the prejudice among local public agency officials who regard smallholders as passive, conservative and non-innovative. In Nachingwea, the follow-up study of farmers who acquired seed from the 1997 Marambo seed fair, and the wealth of materials displayed at all the fairs, provided ample evidence of farmers' active agency in the selection and evaluation of varieties. Seed fairs provide a means to ensure that a range of materials enters into farmers' informal seed exchange systems, allowing many farmers the opportunity to test new varieties. They can also help to generate demand in the villages for those varieties that meet farmers' needs.

By drawing different agencies and individuals together in preparation for and execution of the seed fairs, a new local platform for active discussion on seed issues was created in which interactions could start to take new directions. Contacts made at the seed fairs and simple rapid follow-up, such as described in this report, to learn who rural people go to for seed, can significantly enhance the ability of the public research and extension services to develop useful and cost-effective collaborative variety development initiatives. These contacts can lead to greater all round understanding of seed and variety issues, particularly by public service agencies and district leaderships. Clearer signals from national seed and variety development authorities would, however, help to enable local-level agencies to act in more flexible and innovative ways. This could lead to the refining of some district seed schemes in the light of new information.

Other client-oriented agricultural research activities

In south east Tanzania, there have been a number of other responses to the opportunities and requirements for decentralisation of agricultural research, and for greater participation by farmers, encouraged by the national Tanzanian Agriculture Research Project Phase II (TARP II). Agricultural scientists at ZARC have been developing new approaches for eliciting farmers' knowledge about variety characteristics and uses (Mponda et al., 1997). Farmers have been invited to view on-station variety trials, and more materials (for example cowpea, groundnut and sesame) have been provided to farmers for testing using both researcher-managed trials and increasingly farmers' own management practices.

However, the existence of indigenous systems of seed flow have essentially been ignored by local public extension in practical attempts to promote recommended IVs and by local public service researchers as a means to encourage farmer testing of new IVs. The extension service has most recently attempted to increase efficiency and information availability through encouraging farmers to form subject matter groups. For their part, plant breeders interested in seeking partnerships with local farmers have typically worked more with individuals who have tended to be more affluent male farmers. These initiatives have not taken account of farmers' existing networks. Likewise, measures so far being debated at local district level for a devolution of seed production closely reflect attempts to recreate the standard national structured seed production system at a local commercial/semi-commercial level, with attendant costs. They also risk continued donor dependence rather than incorporating new innovative elements based on farmers' own networks (Mwijage, 1998). In the wake of the seed fairs, local discussion on seed issues is better informed about farmers' varieties and interests than before. More initiatives should now focus on supporting the informal unstructured farmers' activities in the case of self pollinated crops and those produced from planting material, rather than recreate costly small-scale commercial enterprises.

The seed regulatory system

The general hesitancy to offer larger numbers of pre-release materials for testing, and preoccupation with commercial-style seed production appears to reflect the larger conceptual and operational circumstances within the national variety development and seed regulation system. These problems cannot be tackled only at the local level, where interpretations of ideal seed production systems are still largely shaped by familiarity with a system producing a standard official product sanctioned by central authorities.

Tripp et al. (1997) have analysed the basic elements of systems, the problems faced by them, and options for reform and development. As in Tanzania, these systems have often been under-financed and have suffered from inefficiency and delays; variety testing and seed quality standards have not taken the real conditions and priorities of many farmers adequately into account; extension services, private and farmers' organisations have been insufficiently involved in management and definition of the regulatory procedures; and mechanisms have not been transparent. Changes are urgently required. In particular, there is a need for variety release authorities to give more weight to farmers' decision-making criteria.

There are promising indications of such change within the national variety and seed regulatory bodies in Tanzania. At the national level, the official variety release committee is a public body made up mainly of senior public agricultural officials (scientists) with representatives of private seed companies and NGOs involved in seed issues invited to the annual sessions. A more flexible approach is being adopted by the committee concerning criteria for recommending a variety – for instance, researchers at ZARC have accepted more farmer-derived criteria in justification of variety release (Box 1).

Yet the government still has a significant role to play in creating an institutional environment that is conducive to the diversification of the national seed system at local district level. Changes which are already taking place under the new decentralisation policy for agricultural research in Tanzania provide a promising opening. Locally, capacity is being created for innovative action research based on participatory principles, resulting from the implementation of new policies in which zonal centres have had to prioritise research and seek partners and local funding support in the interests of sustainability. The same capacities are an invaluable resource for exploring and contributing to the elaboration of, and support for, locally relevant seed systems. Indeed, as discussed earlier, this is to some extent already happening in south east Tanzania. At local district level, the risks of contradictory interpretations of policy noted in this report may be greatly reduced if the autonomy already officially sanctioned in agricultural research and district development matters is also made more publicly apparent within the sphere of seed and variety development. Such action would, in our view, go a long way towards encouraging the potential that is already present in local communities, administrations and zonal research centres to create seed systems that are genuinely responsive to local communities.

Box 1 Official release of groundnut (*Arachis hypogaea*) variety *Sawia* in Tanzania based on farmers' preferences

Advanced groundnut trials at the Zonal Agricultural Research Institute, Naliendele were held between the 1990/91 and 1995/96 seasons for variety ICGMS 46. This variety had desirable attributes including yield potential, shelling percentage and seed weight. It was proposed for release as *Sawia 98* in 1998. Although the pedigree for this variety is not available, it was introduced to Tanzania in 1987 as ISGMS 46 from Malawi through the SADC/ICRISAT regional groundnut project network. It was originally introduced from ICRISAT India as ICGV 89326.

On-farm variety evaluation was conducted in south Masasi (Mtwara Region) for two consecutive seasons from the 1996/97 season. Forty-six farmers were involved, three from each village, selected on the basis of their interest and willingness to participate in the research process, and their expertise in the crop.

The farmers' selection criteria were elicited during monitoring and evaluation of researcher-designed on-farm trials at the flowering, harvest and post-harvest stages. Yield and all other data collected were based on farmers' assessments and own preference criteria which included maturity period, growth habit (upright versus spreading), yield, oil content, kernel size, seed colour, disease and drought tolerance. Also included were number of pods per plant, ease of shelling (hence less labour), ease of harvest, pod filling and attractive taste when eaten raw or roasted.

Source: Oilseeds Section, Zonal Agricultural Research Institute, Naliendele, Mtwara, Ministry of Agriculture, Tanzania.

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