NARO NGETTA ARLC

Client-Oriented Agricultural Research and Dissemination Project

DFID Department for International Development

NARO

Guidelines and Recommendations for Improved Seed Production Dissemination in Teso and Lango farming systems

By

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April-October 2001

AR 63.10

EXECUTIVE SUMMARY

Introduction

A study was carried out by seed specialists of the Overseas Development Institute (UK) and the Nkoola Consultancy Group (Uganda) in the Teso & Lango regions of Uganda, on behalf of the NARO/DFID COARD Project. The purpose of the study was to provide recommendations and guidelines for the development of enhanced seed supply in Eastern and Northern Uganda, informed by a review of current government and non-government interventions, and a field study of farmers' current practices and constraints in obtaining, storing and multiplying seed of improved (modern) varieties. The recommendations are intended primarily for the NARO/DFID COARD Project, but may also be of use for others interested in addressing seed supply issues in Uganda.

Stu dy to provide recommendations & guidelines for the development of improved seeds supply for E & N Uganda

The principal seed sources in the region are farmers' own saved seed or seed from neighbours, and seed purchased from grain markets (ranging from 15% or less for sweet potatoes and cassava, 40% - 60% for finger millet, pigeonpea and sorghum, to 70% - 90% for groundnuts, simsim and cowpea). Seed purchased from grain markets is simply selected from grain offered for sale – there is very little purchase of materials grown and packaged for sale as seed. The formal seed sector has largely failed to promote its varieties through the channels of seed provisioning that farmers regularly use.

Saved seed or seed from neighbours, and seed purchased from grain markets are principal sources of seed. Little or no role of formal seed sector

Despite the efforts of NARO, MAAIF extension and NGOs, many farmers in Teso and Lango lack awareness of the MVs available. Use of MVs observed in the study varied from zero for cowpea & simsim, 4% for pigeonpea, 10% & 17% for sorghum and finger millet, to 40% for cassava and sweet potatoes and 52% for groundnuts. Where farmers are using modern varieties (MVs), most of them are not aware of the original source of the material, or of NARO's role in the development of the MVs. In some cases, however, the uptake and spread of MVs displaying favourable characteristics has been quite rapid, provided that sufficient seed/ planting material was available. Such cases, together with the interest of farmers in trying out new varieties, clearly illustrate that farmers are willing to incorporate appropriate new varieties into their cropping systems.

Little awareness of available MVsUse of MVs varies from 0-50%Farmers not aware of NARO's role in developing MVsFarmers keen to try new varieties

The nature of seed demand and implications for interventions

For seed interventions to succeed, an understanding of the nature

Understanding of farmers' seed

of farmers' seed demand is essential. Farmers seek seed for various reasons, and 'seed' may refer to a particular variety or the physical input. Agricultural researchers and extensionists often use the term 'seed shortage' to describe various conditions, including:

- the lack of any appropriate modern variety, a shortage of particular MVs;
- a lack of awareness of MVs;
- a general shortage of any type of seed for a particular crop; or
- farmers' lack of resources to acquire seed.

In order to make informed decisions about research directed towards seed shortage, a precise description of the nature of seed demand is required. Many seed production schemes have not been successful because they fail to understand the nature of seed demand.

demand essential

"Seed shortage" often used to refer to several different conditions

Increasing demand for a new variety

There is a difference between development workers' desire to promote a new variety and a response to a genuine demand from farmers who wish to use the variety. There are many instances where farmers are aware of a new variety but are not motivated to plant it. In other cases, farmers may not know about a new variety. Seed of a new variety should be provided only after the variety has been demonstrated widely enough that farmers know about its principal advantages (and disadvantages) and are able to identify it or distinguish it from other varieties.

Promotion of new varieties or farmer-demand for that variety ?

At the pre-release stage, seed regulation prevents the commercial multiplication of seed, and it is therefore the responsibility of NARO to ensure that enough planting material is available for on-farm trials. ARDCs should play a key role in multiplying seed of promising pre-release cultivars for use in widespread on-farm trials. Pre-release material can be promoted through on-farm trials in that farmers can observe varietal characteristics and make their own assessments. NARO plant breeders, working in collaboration with farmers, ARDCs, TDSs, and NGOs, must undertake on-farm trials of pre-release material.

Pre-release materials can only be tested with NARO – carry out on-farm trials with NARO plant breeders, farmers and others

Once a new variety has been released, seed of the variety can be multiplied commercially, making it possible for a wider range of actors to become involved in its promotion, e.g. NARO institutes, ARDCs, NAADS, TDSs, NGOs, CBOs and private companies. Released varieties can be promoted through demonstrations and publicity campaigns, and by making small seed packs available for purchase by interested farmers, as described below:

Promotion of released varieties

Demonstrations

Make sure that there are widespread, comprehensible demonstrations of a variety, under farmers' conditions. This would be a prerequisite to later seed production and provision. Demonstrations can also be a focal point for the initial distribution of small quantities of seed. It is best to try to achieve cost recovery, or at least to charge something for introductory quantities of seed. Special arrangements can be made for the poorer farmers who are unable to buy seed.

Widespread farmer-managed demonstrations combined with sale/distribution of small ammst. of seed

Revolving seed stocks

Many projects distribute small amounts of seed of new varieties to farmers with plans to collect part of the harvest for subsequent distribution. In other cases farmers are asked to pass on part of their harvest to others, either as gifts or for cash. Such endeavours are often accompanied by training in seed production techniques. In general, the distribution of seed of demanded varieties is often a good way to ensure diffusion. However, plans for revolving seed stocks (or seed banks) are usually difficult to administer and suffer from poor seed quality. Admonishing farmers to provide seed to their neighbours ignores the normal practices of farmer-to-farmer seed movement. If training in seed production is proposed, there must be strong evidence that farmers are unable to multiply and maintain seed of a particular variety (e.g., because of specific problems in seed selection).

Revolving seed stocks/ seed banks difficult to administer and rarely sustainable

Small seed packs

Consider the sale of small introductory packs of seed. This is best handled through stockists or other commercial outlets. ARDCs might be able to contribute to this, although the seed for such packs would be subject only to basic quality control (e.g., purity and germination), not certification.

Sell/ distribute small seed packs

Source seed

Ensure that NARO is doing everything necessary to provide breeder seed to seed companies; this may require some 'demonstrations' aimed at the seed companies, in order to stimulate demand.

Demonstrations for seed companies to stimulate private sector involvement

Proposals for local seed enterprises (not recommended)

Demand for new varieties is rarely sufficient (on its own) to maintain a commercial seed enterprise, even a small-scale one. This type of intervention is not recommended. See below (0) for factors related to the development of commercial enterprises.

Local seed enterprises not commercially viable

Improving on-farm management of seed or planting material

Farmers sometimes unable to maintain seed from year to year

There are instances when farmers are unable to maintain seed stocks from year to year. Reasons for this might include:

- a problem with local seed storage methods;
- problems in maintaining varietal purity in the field (e.g., because of out-crossing or inadequate seed selection);
- difficulties in maintaining vegetative planting material (stalks or vines) in the dry season.

On-farm seed management not a serious constraint in Teso and Lango

In some areas in Teso and Lango, farmers found it difficult to maintain the planting material of tubers over the dry season. Although some crops (*e.g.* sorghum or cowpea) are particularly susceptible to storage pests, farmers rarely lose their entire seed supply due to storage problems. A lack of seed at planting time is more likely to be caused by a poor harvest than by inadequacies in seed storage. Overall, on-farm seed and planting material management is not a significant constraint in the Teso and Lango farming systems. Any proposed interventions should be very carefully evaluated against the evidence of the magnitude of losses and the causes, before consideration for funding. Possible interventions might include:

Adaptive testing and demonstration of improved storage techniques

Improved storage interventions need careful evaluation before being supported

(Such techniques need to be costed to ensure that they represent reasonable recommendations.) Evidence of the magnitude of losses and the causes is needed before conducting research into improved technologies/practices.

Strengthen commercial seed sector

Promote commercial sector alternatives

If there are serious farm-level seed management problems, another option is simply to ensure that the commercial seed sector (or the grain market) is a reliable source of seed. (Indeed, this is one of the reasons that commercial seed enterprises emerge.)

Techniques for helping farmers maintain vegetative planting material over the dry season

Such techniques are unlikely to lead to commercial 'seed' ventures because of the sporadic demand and low monetary value of such planting materials.

Addressing shortage of seed for a particular crop

Several different factors can cause seed shortages –

There are various reasons why farmers may not be able to plant as much of a crop as they wish, due to seed shortage. The precise

reasons for the shortage need to be determined. They may include:

- poverty and low productivity, so that households have inadequate production and are unable to save seed or generate income to buy seed;
- local grain markets (from which farmers often get grain as seed) are not reliable seed sources for the particular crop; and/or
- the formal seed sector does not supply the seed.

these need different types of interventions

Whilst farmer-to-farmer diffusion of seed occurs effectively at village level without external support, there is need to ensure that seed of improved varieties demanded by farmers is available at local markets and through formal sector channels, possibly in the form of small seed packs that also contain information (preferably in local language) about the variety and its management requirements. Support to strengthen local grain markets and the commercial seed sector is recommended. For the latter, it is essential that NARO is able to maintain and produce adequate breeder seed to meet demand. For commodities, which do not easily lend themselves to the private sector, NARO, through its ARDCs needs to ensure that there is adequate quality seed that farmers/CBOs/NGOs can purchase to renew their seed stocks for these crops. Possible interventions include:

Strengthen the commercial seed sector.

Companies need to be informed of the availability and advantages of NARO varieties.

Local seed enterprises (not recommended)

Local seed enterprises are very risky ventures. Experience has shown that community-level seed enterprises almost always fail to achieve financial viability. The reasons include lack of marketing capacity and experience, lack of adequate quality control, lack of access to processing or storage facilities, and lack of access to source seed. A more likely avenue for improving farmers' incomes is to help them to market their grain, rather than turning them into seed entrepreneurs. For crops like cassava, attention might be given to dual purpose gardens that could be used for commercial tuber production as well as planting material supply.

Local seed enterprises very risky ventures – better to help farmers to market their grain, rather than turn them into seed entrepreneurs

Contract seed growing (not recommended)

Contract seed growing may be a means of increasing income for some farmers, but these are generally better-resourced farmers who have the skills and experience to bear the risks involved. In addition, contract seed growing is usually only viable in concentrated areas that are easily accessed by the company

Contract seed growing usually for more wealthy farmers in concentrated

supervisors and where crop production conditions are above average.

areas

Strengthening local grain markets.

These are often the source of grain that is used as seed. Innovations in grain marketing (e.g., storage or transport) that increase the movement of grain in local markets will help increase the supply of such 'seed' and stimulate demand for the crop, which in turn stimulates more formal seed provision.

Improved grain marketing will increase supply of "seed" and stimulate demand

Improvements in crop management.

Increase crop yield (and hence seed supply).

Targeted voucher scheme

For the poorest households that are chronically short of seed, some type of targeted voucher scheme might be considered.

Recommendations for projects to support the development of the Teso and Lango seeds systems

The NARO/DFID COARD Project could establish a specialised agricultural technology fund specifically designed to support interventions to develop the Teso & Lango seeds systems. Potential applicants might include the following categories:

Thematic ATF for seed systems interventions

- Farmer groups or associations and other community-based organisations;
- Groups of small-scale traders or traders' associations (including individual stockists);
- NGOs or church-based organisations;
- ARDCs & TDSs (as managed by NARO and NAADS);
- NAADS (*i.e.* farmer fora or groups, and/or extension agents working with farmer fora);
- NARO & other researchers (*i.e.* plant breeders, farm managers, other scientists from NARO, universities, *etc*);
- Private seed companies and associated networks of contract growers, stockists, *etc.*

Potential applicants

Projects to be supported should address one or more of the following three issues, in order of priority (examples of possible projects for each issue are indicated as bullet points). The matrix below gives an indication of the types of projects that might be designed and implemented by the various different types of applicant organisations. For most projects, collaboration among different organisations will be required.

The promotion of new varieties, especially appropriate improved materials

- On-farm testing of pre-release varieties
- Demonstration plots of released varieties
- Promotion of new varieties to seed companies
- Seed bulking and sale in small seed packs to farmers

Promotion of new varieties strongly recommended

Improved post harvest processing and/or seed management practices

- Adaptive testing and demonstration of improved storage techniques for grain / seed
- Techniques for maintaining vegetative planting material over the dry season

Possible seed management practise interventions

Increased availability of seed of modern varieties

- Strengthen linkages between NARO, private seed companies and contract growers
- Promoting and strengthening local grain markets
- Improved crop management and production

Increase availability through strengthened private sector and marketing

Potential support to seeds systems through other initiatives

Other possible initiatives to develop seeds systems include NARO's Outreach & Partnership Initiative, the NAADS Enterprise Development Fund, Local Government initiatives (using PAF and PMA non-sectoral grant funds), and NGO and church-based organisation initiatives. Such initiatives might also carefully consider the precise nature of seed demand and possible interventions as described above, and the recommendations above. Wherever possible the aim should be private sector production and delivery of improved seeds – for the immediate future this means focusing on creating widespread awareness of MVs, so as to stimulate properly informed farmer-demand. Well-informed farmer demand is an essential pre-requisite for private sector involvement in the seed systems of Teso and Lango in Uganda.

These recommendations may be helpful for other initiatives to develop seeds systems (NARO OPI, NAADS, PAF, PMA NSCG, NGOs, etc) Principal focus should be on creating widespread awareness of MVs

Matrix to indicate projects and appropriate applicants for a specialist seeds systems support fund

		Farmer groups	Traders assns	NGOs	ARDCs & TDSs	NAADS	NARO	Private seed co's
	On-farm testing of pre-release varieties	✓		✓	✓		✓	
Promotion of MVs PHP / seed mgmt	Demonstration of released varieties	✓		✓	✓	✓	✓	✓
	Promotion of new varieties to seed companies		✓			✓	✓	✓
	Sale of small seed packs to farmers		✓			✓	✓	✓
PHP / seed mgmt	Adaptive testing and demonstration of improved storage techniques	✓	✓	✓	✓	✓	✓	
	Techniques for maintaining vegetative planting material over the dry season	✓	✓	✓	✓	✓	✓	
Availability of MV seed	Linkages between NARO, private seed co's and contract growers			✓			✓	
	Strengthening local grain markets						✓	✓
	Improved crop management and production	✓	✓	✓	✓	✓	✓	✓