

IMPROVING THE SEED DELIVERY SYSTEM IN SUB-SAHARAN AFRICA

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Background information

There is wide consensus that seed, especially of improved varieties, is one of the most important elements for increasing agricultural productivity and improved livelihoods. However, in Africa, only one-third of seed comes from seed companies while two-thirds derive from the informal sector. For example, in Western Africa less than 10 percent of total area is sown to certified seed. Farmers do not use improved seed, mainly because very often it is not available to them or they are not aware of the advantages of using improved varieties. Good quality seed is also not accessible to them as there is often a weak linkage between farmers, extension systems, research institutions and market.

Challenges facing the African seed sector

Seed and plant genetic resources hold many challenges for the range of stakeholders involved in the seed sector such as farmers, seed companies and producers, national seed services, research and extension systems and policymakers.

Farmers

Most farmers in Africa are subsistence farmers who, although custodians of local cultivars, often suffer from non-availability of adequate quantity and quality of seeds to sustain the crop diversity suitable for their agro-ecological and socio-economic needs as well as the demands of consumers. Overall, farmers in remote areas are often cut off from any agricultural development initiatives and

injection of new crops and varieties into their seed systems as rural infrastructure conditions in Africa are the major and most common constraint to the development of agriculture in the region. To improve food security, farmers should have on-going access to quality seed in normal and crisis situations. Viable seed supply systems to multiply and disseminate the seed or plant material are critical for the success of food security and livelihood programs in Africa.

Seed companies and producers

There is a crucial lack of sustainable systems for seed production due in part to the dominance of the public sector in seed production with limited private sector participation in seed production. There is often a lack of a clear national policy where the private sector's contribution to the development of the seed system is recognized and enhanced. Emphasis is sometimes put on large-scale seed companies which concentrate more on countries with big commercial farmers in the eastern and southern African regions. Their share of the African seed market as a whole is small and limited to hybrid maize seed and seeds of a few other high-value crops. They do not commercialize cultivars or varieties of other important food security crops such as rice or cassava with very narrow profit margins, as farmers usually save the seed or planting material for the following season's crops. But these cultivars are the germplasm used by most small and poor farmers, the majority of whom are women. These farmers need to access quality seed, the demand for which could be met by small to medium-scale seed enterprises of varying size and capacities.

These are often made up of individual seed growers, farmer groups or associations, and small seed companies with limited equipment, limited capital investment and very weak market strategies. They have little managerial capacity to undertake seed production and supply as a proper business. Basic accounting, marketing, banking and credit management expertise is often lacking. Also, linkage to research – even where possible – for necessary infusion of good

germplasm is limited. Backup support from the national extension services is often weak, necessary market intelligence is usually absent and necessary investment policy support expected from national authorities is minimal or totally lacking. Seed quality control systems are frequently inadequate, there is only a limited market for economic seed trade within individual countries, and regular hindrance of cross-border trade in seed caused by application of phytosanitary, regulatory and varietal release protocols.

To sum up, the lack of adequate participation by the private sector in seed trade and distribution, the lack of organization in the seed market, and the lack of economically-worthwhile seed demand from growers create a serious bottleneck in seed sector development in Africa. The farmer-based seed system still prevails and finding how to link it with a national seed system remains a major impediment to the production of quality seed and to functional distribution channels to ensure access by farmers either within the country or at the regional markets.

Plant breeding/variety improvement

Lack of national capacity in plant breeding has been a chronic limitation to crop improvement in many African countries. This is so partly because investment in plant breeding must be constant and adequate to ensure that trained scientists have resources to run effective breeding nurseries and trial plots in multiple locations for each major crop where improvement is a priority. There are few well-trained scientists and only a handful of these continue with the activity. Such common breaks in continuity of the breeding process generally result in major losses in efficiency. Stronger and regular support to national plant breeding, linked to extension and to farmers to test new varieties, is essential in nearly all countries in Africa. Sustaining plant breeding activities is crucial for the continued support and injection of new technologies into the seed systems.

Extension services

Most extension services are characterized by a lack of information, technical capacity and logistics for timely delivery of advice to farmers. They have inadequate capacity in terms of personnel and are unable to formulate and implement good and sound technology transfer approaches. Reports from 39 countries in Africa show that 77% of these countries have operational extension services; 69% of these countries have reported that extension services are provided by the government; and 31% are provided by development agencies. Many NGOs are deeply involved in agricultural extension, especially in Chad, Ghana, Malawi, Senegal, The Gambia, Guinea and Sierra Leone. The remaining countries either do not have an extension service or the service that exists is ineffective. Lack of or poor extension services are generally due to financial constraints, poor transportation systems, lack of incentives to motivate extension agents, and poor or inappropriate training of extension agents. A common complaint regarding seed is that extension services do not provide seed of varieties that farmers find suitable for local conditions. Extension services remain fundamental to the success of agricultural development, including seed production and distribution locally.

Policymakers

Many African governments have recognized the fundamental importance of sustainable seed production systems in contributing to increased agricultural production. Presently, the seed policies of most of the African governments are created to ensure that farmers are protected from poor quality seed from traders. Country profiles show that only 25% of sub-Saharan African countries have passed a Seed Act stipulating specific seed regulations that must be satisfied. The remaining 75% of countries in sub-Saharan Africa do not have legislation governing the sale and distribution of seeds. However, in most of those countries where a Seed Act has been passed, putting

the various laws and policies into practice has been impeded by inadequate enforcement mechanisms and lack of logistical, financial and human resources.

Questions relating to the balance between the formal and informal sectors, role of the private sector, subsidies, farmers' and plant breeders' rights, seed legislation, biotechnology, and many more pose difficult challenges for which answers must emanate not from the technical domain but from carefully formulated seed policies. Harmonized regional seed rules will facilitate cross-border movement of seed consignments to alleviate periodic seed shortages. In this regard, several initiatives are now underway on the African continent (UEMOA/CILSS/ECOWAS and SADC countries) with support from regional organizations, donors and FAO that further need to be supported by national governments.

In the light of the above, the development of rice in Africa and particularly of NERICA rice is clearly faced with many challenges, including the performance of the seed delivery systems. Seed systems in Africa, where NERICA varieties originated, are very complex and usually not well understood.

It is worth noting that over the 10 years since the introduction of NERICA varieties with the potential to revolutionize rice production, access to sufficient seed remains a major constraint to the activities of smallholder farmers in SSA.

A study in Nigeria funded by the Gatsby Foundation showed that, although farmers who have access to and have adopted NERICA varieties are deriving higher yields and income, those who do not have regular access to seeds have abandoned NERICA lines in favour of low yielding local varieties (Spencer *et al.*, 2006). New approaches are therefore needed but should aim at direct support to farmer organizations and small businesses to strengthen their capacity to manage a seed enterprise. These should take into

account development objectives such as equity, gender, sustainable development and poverty reduction.

A basket of strategies for sustainable seed production and distribution in SSA

A flexible seed system is crucial to respond effectively to the challenges identified. Given the current status of seed production systems in most SSA countries, it is necessary to recognize the informal sector as an important low-cost source of quality seed, and to use it as a vehicle for providing resource-poor farmers with improved seed of modern varieties at affordable prices. The formal sector can continue producing other high value seed along with the informal sector. The creation of small indigenous enterprises, with low-cost structures and close trustworthy relationships with the farming communities they serve, are believed to be better suited to the task.

The proposed approach to the strengthening of the informal seed sector, especially in West Africa where large scale seed enterprises are rather uncommon, consists of:

- Enhanced access of the informal sector to NARS/IARC-bred foundation (and/or breeder seed);
- Effectively-trained and equipped extension services to advise on seed production, processing, treatment and storage.

The Africa Rice Center (WARDA) Experience

The Africa Rice Center (WARDA) has been active in SSA in matters concerning seed and food security. The Center has explored and adapted a range of partnership models that has reinforced SSA's capacity for rice seed production and distribution. These include several participatory models, such as Participatory Varietal Selection (PVS), Community-based Seed Production Systems (CBSS) and Participatory Learning and Action Research (PLAR). Introduced

for the first time in SSA, PVS has revolutionized the scientist-farmer interaction across SSA and unleashed the NERICA adoption wave. The implementation of the project on Participatory Adaptation and Diffusion of technologies for rice-based systems (PADS) used the CBSS-approach to stimulate farmers in taking the lead in seed supply. PVS and CBSS involved more than 20,000 farmers and many tonnes of NERICA seed were produced and distributed across SSA. Local networks and communication channels have been used to promote the new NERICA seed in which NGOs played a crucial role. PADS also developed extension materials such as technical fact sheets and leaflets on improved rice varieties, weeds and fertilizer management, the use of bio-pesticides, improved parboiling technology, etc.

Scientists from NARS partners and farmers' groups have been trained in seed production and varietal release procedures during workshops regularly organized by WARDA since 2000 with hundreds of participants from 30 countries in SSA. In these gatherings, policy reforms required to strengthen the seed sector have been discussed, including intellectual property rights, biotechnology and biosafety regulations.

The Africa Rice Center has also contributed to several initiatives to facilitate the harmonization of regional seed rules with the aim of easing cross-border movement of seed consignments and consequently alleviating seed shortages. As a result of WARDA's active involvement, several initiatives are being undertaken with support from regional organizations (UEMOA/CILSS/ECOWAS in West Africa and SADC in Southern Africa) and multilateral donors that need to be supported by national governments. These governments have realized the need for a basket of strategies to address the complex issue of quality seed production and distribution in their respective countries. Many countries in SSA have become aware that increased food production depends critically upon country-specific and crop-specific seed systems which meet the seed needs of a range of farmers, particularly smallholders.

They have committed to paying increased attention to:

- implementing a legal framework that permits the marketing of uncertified, “truthfully labelled” seed, which would conform to the prescribed standards regarding the genetic purity, germination and moisture content laid down for the variety, except that it would not carry an official certification tag
- the production of breeder seed and, in some cases, foundation seed
- quality control and maintenance of reserve stocks of seed
- implementation of the national seed policy.

Through its partnerships and network activities, as well as its policy research, the Africa Rice Center is encouraging the private and public sectors towards sustainable impact on constraints such as seed availability, support to farmers and small businesses within farming communities, access to inputs, product quality and markets. The aim is to substantially minimize the impact of these constraints with the specific objective to develop and promote public-private partnerships for sustainable seed production and distribution in sub-Saharan Africa.