

12 Conclusions

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12.1 There is Life after Structural Adjustment

Despite massive privatization there still is a formal seed sector in Africa, including seed traders and growers and in some countries plant breeders and certification agencies. Few seed enterprises are still state owned, and even SONACOS in Morocco is now being privatized. Many of the seed enterprises are run by or employ agronomists or technicians who once worked for the public sector. But most formal seed enterprises are private, including medium-sized ones (like Premier Seed in Nigeria, Western Seed in Kenya and NASECO in Uganda). Many of these medium-sized companies produce seed through outgrowers, giving smallholder farmers a chance to earn cash income by growing traditional crops. All of the nine African countries we studied have small seed enterprises, sometimes run by a single farm family or an individual entrepreneur, like Mama Adama in Guinea or Mrs Coulibaly, who manages Faso Kaba in Mali.

12.2 Overview of the Book

In spite of their similarities, the nine countries reviewed in this book all have a unique seed history.

Cameroon (Chapter 3). The FAO set up farmer seed-producing groups in a remote, food insecure area, to provide seed locally. Some of the groups failed but some survived, especially the ones that were able to manage revolving funds. The groups were organized into a federation, which acquired source seed from a national research agency. These groups endured in part because they had few competitors and high demand from farmers in northern Cameroon for seed of new, short duration rice, maize, sorghum and millet varieties that help them cope with a changing climate.

Nigeria (Chapter 4). Private companies are organized in clusters around cities like Zaria, which have resources and people that companies need, such as universities and foundation seed suppliers. The companies see themselves locked in unfair competition with state agencies called ADPs, although the ADPs tend to produce the crops that are least profitable for the companies, such as rice and sorghum, while companies rely more heavily on hybrid maize and vegetables, although all of the companies do produce various kinds of crop seed. The federal government buys enough seed to seriously distort the market, which is one reason why multinational seed companies have come to Nigeria only to leave again. The Nigerian government's National Agricultural Seed Council does a competent job producing and distributing foundation seed and conducting quality control.

Mali (Chapter 5). Faso Kaba is a company started by the wife of a plant breeder, who used experience earned in the USA and her husband's help to start a business, buying and selling seed. AGRA has asked Faso Kaba to produce seed as well, which it did after it acquired land and recruited an agronomist and an experienced seed technician. Niégué Farm is a former state-owned farm, privatized and turned over to a group of agronomists, who used its land, tools and irrigation system to produce abundant rice seed. COPROSEM and Nipagnon cooperatives both produce sorghum and maize seed, whereas Nipagnon also grows seed of rice, cowpea and other crops. Nipagnon uses radio advertisements to promote its seed, and COPROSEM announces its local seed fairs over the radio. Both cooperatives supply local seed traders, but Nipagnon also sells to customers from neighbouring countries at the national seed fairs organized by the Ministry of Agriculture. Some villages in the arid Dogon country have acquired enough fame for the quality seed of their early maturing pearl millet landraces to attract the attention of international NGOs and local traders, including Faso Kaba.

Guinea (Chapter 6). Mama Adama and Sherif are really local. Sherif had capital support and training, but Mama Adama produces and sells seed entirely on her own. The Comptoir Agricole is a flexible seed company now riding out the world financial crisis by putting its employees on straight commission instead of salary. The Union of Cooperatives produces potato and cereal seed on the Fouta Plateau. Hundreds of highly motivated women work together, supervised by government extension agents, who manage the Union. El-Hadj Sow is a trader, inspired by his visit to France, who started growing potato, rice, maize and cowpea seed largely on his own, and he made it work. Certification services are nascent in Guinea and often dispensed with, creating an opportunity for small, private enterprises to produce quality seed, but also blocking entrepreneurs like El-Hadj from exporting seed to neighbouring countries.

The Gambia (Chapter 7). Since the 1990s, Gambia Horticultural Enterprises has continuously invested in marketing and has grown from a small office in the owner's home near Banjul to the country's largest farm supply company, selling seed, agrochemicals and machinery, and even exporting some products to Europe. The lack of a seed certification agency created a space for an ambitious farmers' association, the Jambur Kafo, mostly women. They have strong ties to government researchers, who give them seed and advice. These farmers became interested in seed while doing participatory varietal selection (PVS), but they were already a self-organized group before that. They make deft use of radio and TV to advertise nationally. The other case is Mr Dembo, an enterprising émigré, who returned to The Gambia, got seed and advice from the Jambur Kafo and used his own capital to start a thriving rice seed farm. The Jambur Kafo and Mr Dembo are both near the capital city, and have close ties with research, extension and media.

Morocco (Chapter 8). The one big state seed company in Morocco, SONACOS, defied structural adjustment and produced seed of wheat and other crops that private enterprises might have rejected. While this state company has received public support to produce seeds, we cannot say if it is economically efficient or not. But a public agency should be judged a success if it renders the services it is assigned and remains free of corruption and mismanagement. By that standard, SONACOS has been successful. For many years it put quality seed into the hands of smallholders. However, overall agricultural output in Morocco has declined. While this cannot be blamed on

SONACOS, it is possible that declining demand for seed (and a feeling that change was finally in order) has motivated the Moroccan government to start to privatize agriculture and seed.

Kenya (Chapter 9). The diverse seed sector includes a medium-sized private seed company that produces a lot of maize seed (OPV and hybrid), like some of the Nigerian companies. There is a new farmers' cooperative of soybean producers, which may or may not survive without the care of an institution. Sungus is a family farm that used a bit of land, some creativity and hard work to benefit from a German seed course to become a professional producer of seed potatoes.

Uganda (Chapter 10). Building on an NGO initiative, a Belgian agronomist started a company in an abandoned cotton ginnery in a village with bad roads and no electricity, eventually producing two or three times as much seed as other companies around Africa. In another case, a group of women who started as outgrowers are now producing rice and maize seed and dream of starting a company. A third enterprise started as a farmer field school (FFS) in 1999 which selected disease resistant bean varieties and ended up training and supervising various bean producers' groups, selling small packs of seed through a network of agro-dealers. As measured by longevity this enterprise is successful, although they still have support from CIAT, an international research centre.

Madagascar (Chapter 11). Vally Prod Sem is a bean seed company that grew out of an experience with a privatized government seed centre, and is linked to communication and entertainment businesses belonging to the same owner. Sakay is a privatized government seed centre that sells mainly to projects, but mobile phones now allow it to increasingly sell directly to farmers. SCAA is the largest government rice seed centre, which has recently come under the management of a private entrepreneur. Andri-Ko is a private company, started by a family with experience in the Ministry of Agriculture. FIFAMANOR is a public enterprise that evolved from a project funded by the government of Norway, and is now striving to recover more of its costs, mainly through foundation and quality potato seed production and marketing. MEVA is a cooperative where the high altitude allows some growers to produce high quality seed potato for other farmers.

These diverse, African seed enterprises serve a range of crops, giving each enterprise its own needs and challenges. The next section describes some of the unique challenges of enterprises dealing with four crop types. The third section describes business models, which are shaped by the kind of seeds they produce.

12.3 Unique Challenges of Four Crop Types

The four crop types are open-pollinated, self-pollinated, legumes and vegetatively reproduced. Open-pollinated crops, such as maize and pearl millet, cross easily, exchanging pollen with their neighbours, making it more challenging to maintain pure varieties. Seed of self-pollinated crops is usually easier to produce, and may be less profitable, especially for field crops. Legumes (most of which are also self-pollinated) are perhaps even less profitable because of the varieties' very slow deterioration rate (Section 2.2). Vegetatively reproduced crops have bulky planting material instead of light, portable seed, and their stems, corms or tubers are perishable. Each of the four crop types has its own seed management implications, of which a thorough overview is given in the book *Farmers' Seed Production* (Almekinders and Louwaars, 1999).

Open-pollinated crops (maize, sorghum and millet). Seed of open-pollinated crops must be kept isolated from other varieties of the same species, or the varieties will cross with each other. Some varieties need to be a kilometre away from other stands of the same crop. So a smallholder seed producer can only grow one variety and it must be far from other farms. Or the seed producer can plant earlier or later. Farmers may need training to learn to produce pure varieties of open-pollinated seed.

Self-pollinated (rice and wheat). Seeds of self-pollinated cereals are the easiest to save on farm without losing their genetic identity, making them appear less attractive to private companies, so governments often believe they have to produce seed of these crops, even though this may actually not be the case. This book has shown various examples of private seed enterprises that do grow rice seed, including a few that only produce rice seed. Under certain conditions, it may be profitable to grow rice seed, e.g. in high production areas (Mama Adama in Guinea, SCAA in Madagascar, Niégué farm in Office du Niger) or in countries like Uganda where grain markets are protected or rapidly expanding, and when new opportunities arise (relief aid, export or introduction of a new variety).

Legumes (beans, soybeans, cowpeas and groundnuts). Legume grains are important to the communities, but large seed companies have scant interest in grain legumes, because economic returns are low or because legumes are more difficult to harvest with machinery than cereals. Seeding rates are higher for legumes than for maize. One may plant a hectare of maize with 30 kg of seed, compared with 100 kg for beans. This increases farmers' incentives to save their own legume seed, which is easy to do since legumes are predominantly self-pollinating.

Vegetatively propagated (potatoes). Although ware potato (for food) can be grown at low elevations in tropical countries, seed potato cannot. Seed potatoes can carry disease and even insect pests, like tuber moths. In the tropical lowlands conditions are usually more favourable for pathogens and insects, giving farmers a compelling reason to buy seed, creating a constant demand for seed potato growers who can provide healthy seed. The seeding rate is so high (as much as 2 tonnes per hectare) that potato growers are sensitive to price and usually prefer uncertified seed, to keep costs low. Other crops like sweet potato, cassava and banana are rarely taken up by seed enterprises, and hence hardly feature in our book.

12.4 Business Models

Crop type influences supply and demand for seed, but leaves plenty of room for individual variation. This section presents business models that reflect the nature of the people who run the seed enterprises, including farmers, farmers' associations, small seed companies (including traders), medium-sized companies and public agencies. As Harper and Tanburn (2005) observe for agriculture in general, seed enterprises in Africa rely on other small enterprises for services (skills, information, inputs, storage, marketing, equipment, transport, repairs and maintenance). Links with foreign enterprises are also beneficial when they exist (e.g. Gambia Horticultural Enterprises; Vali Prod Sem in Madagascar). Government-organized seed fairs, like those in Mali, have helped to create national and international demand and opportunities for various types of enterprises.

12.4.1 Farmers

Bello Yarima in Nigeria is an individual farmer selling open-pollinated maize and sorghum seed (Box 4.2). Mr Yarima also sells legumes, vegetables and other seed he grows himself. There are actually few examples of this type in our study, but there are probably thousands of informal seed producers like him across Africa. The authors only met Mr Yarima by accident. In the arid northern part of Mali, a few Dogon villages have acquired a good reputation with their early maturing millet landraces. Landraces are evolving, and are also genetically more diverse than improved varieties (Brush, 2004) but the Dogon maintain quality and uniqueness through traditional community rules and norms.

El-Hadj Sow in Guinea maintains high seed diversity (potato, rice, maize and cowpea). He is well trained and has strong links with research, extension and the private sector. He uses rural radio to promote his Nerica seed.

But Mama Adama, also in Guinea, may be a more typical case of a farmer seed producer. She specializes in seed of local rice varieties. She has no ties with research and extension, and advertises by word of mouth, using trusted, repeat customers. Mr Dembo in The Gambia produces rice seed (for a new variety which is in high demand); he grows other crops too, but not for seed. That is a difference between farmers and seed companies. Farmers diversify into other crops and livestock. Seed companies diversify into other types of seed and other agricultural inputs.

Some farmer seed producers establish themselves and prosper through their strong political ties or because they are solid members of the community. Mama Adama is the wife of a respected imam. El-Hadj Sow is the resident of his prefectural Chamber of Agriculture. El-Hadj has benefited from government support, but the other farmer seed producers have not. They invest in rice seed with their own money, suggesting that credit or financial support is not always essential to maintain a small business, but an enterprise often needs credit to expand. If financial products were better tuned towards agriculture and the seed sector (e.g. lower interest rates, repayment schedules that matched the harvest season), there might be more growth in African agricultural economies.

Most smallholder seed producers do not certify their seed. Certification adds to the costs and technical requirements, and demands contacts with the formal sector. Seed certification is a barrier for small-scale seed producers.

El-Hadj Sow in Guinea and Sungus Seed Potato Enterprise in Kenya sell their seed potato locally, straight from their farm. Sungus is a diverse family firm, with other crops, a dairy, even a hotel, but they do not produce seed for any crop other than potato. Neither El-Hadj nor Sungus have had bank loans; they work with their own funds and are not looking for loans. For potato, more than for other crops, a source of clean seed is crucial. Sungus in Kenya gets source seed from the national research agency (KARI).

12.4.2 Farmers' associations

A few associations produce OPV maize seed, such as COPROSEM in Mali and the farmer groups in Cameroon. It is easier for groups to grow self-pollinated crops such as rice or beans. For example, The Gambia's Jambur Kafo and the Sayem Seed

Production Union in Cameroon produce and sell rice seed. They have strong links with research and extension, which gives them the technical and marketing training they need. They use creative advertising. All of these associations diversify, usually by producing grains, vegetables or livestock.

Associations can easily sell directly to farmers, but some of them also sell seed to projects and NGOs, which are important seed buyers and may keep many seed enterprises in business. Some farmers' associations own some machinery, but, true to their smallholder heritage, they are able to keep overheads low.

Most seed producing associations had support from donors to get started or they received much support from government. They needed start-up capital. Many also had business development support (smart subsidies) and institutional strengthening of the group leaders. They usually had good access to foundation seeds.

Most associations or cooperatives produce high volumes of seed but do not certify it, relying instead on consumer trust of their name. Some use small seed packs, targeting the rural poor. Associations need easy seed regulations or at least ways to avoid confronting the seed laws. They usually cannot go through the whole process of certification, which makes their seed too expensive for the local farmers who are their customers. All seed-producing cooperatives and associations in Mali have received project (PAFISEM) support to train their members and to have their seed certified. The future will tell how many of them will survive now that the project has come to an end.

Many associations produce grain legume seed, possibly because they face little competition from private companies. For example, the Nyamabale Bean Seed Producers' Association in Uganda and the Mumias District Federation of Soybean Producers (MUDIFESOF) in Kenya are community enterprises that keep costs low and prices competitive, because they know they are competing with the grain market and farm-saved seed.

The Cereal and Potato Seed Producers' Union in Guinea and the Meva cooperative in Madagascar are the only two cases in our book of an association producing potato seed. The other cases are family farms (Sungus in Kenya and El-Hadj in Guinea). The Union is managed by qualified agronomists and the Meva cooperative has regularly received technical support from research and extension. All four of these enterprises sell much of their seed locally to reduce transportation costs of the bulky seed. None of them certify their seed, which also helps lower costs. Their reputation is their seal of quality.

12.4.3 Small seed companies

Traders such as Faso Kaba (Mali) and Sherif (Guinea) can easily market OPVs, if they do not have to grow them. They can also buy and sell seed of other types. Some traders, like John Kyoma in Uganda, grow small fields of the seed they promote, just to learn about the variety and to be able to give better advice to their clients.

Small seed companies may have their own land but they use outgrowers for all or most of their seed supply. Small seed companies work hard to keep the trust of outgrowers and farmers. They try to make farmers their main clients, and try to sell less to the government, because selling to the government can lead to crushing debt. The healthier companies also avoid bank loans with high interest rates. They need to

make a profit to survive, but they grow slowly and steadily, often on their own funds, keeping their overheads as low as possible, for example by renting their offices or their processing equipment instead of buying it, or by doing without cars, air conditioners or other expenses.

For many small companies, their core seed product is hybrid maize seed or imported vegetable seed. Few rely mainly on rice or wheat seed, where the company faces stiff competition from farmer-saved seed. Companies that do sell grain seeds may receive government support or use a vertical value chain approach (such as Terratiga in Nigeria), selling to grain producers themselves linked to the market through rice milling. Some such as Andri-Ko (Madagascar) have a restricted market area, but they forge solid links with research and development. Small does not mean sloppy. These companies have well-educated, experienced managers who often started in larger companies or the public sector, and they know their business.



Small seed enterprises often start by selling imported vegetable seed and later diversify into grain crop seeds.

12.4.4 Medium-sized seed companies

Medium-sized companies mainly produce seed of modern high yielding varieties, the result of formal research. Most of this seed is certified and is sold through wholesalers and retailers, rather than directly to farmers, although trends are changing. These companies have seed in their variety portfolio that is complex to produce, like hybrid maize, or they import vegetable seed, which farmers generally need to buy every season. The companies do not specialize in bean or rice seed, because it is difficult to compete with farm-saved seed. However, these companies often do sell some rice, sorghum, OPV maize or legume seed, as a way of diversifying and keeping a certain visibility in the market and being able to take advantage of big sales to government and NGOs.

Premier Seed in Nigeria has its own research department. This is unusual, even for a medium-sized company, but all the companies have experienced, capable managers. Most or all of them own their seed factories, some of which are endowments from earlier projects or the public sector, while others have invested their own money in equipment. Most of the machinery inherited from parastatals is now 20 or 30 years old, is often too big, and even with devoted maintenance cannot last for much longer. Medium-sized companies distribute nationally, through seed distributors or agro-dealers or through their own outlets, and to some extent on the international market, such as NASECO in Uganda.

Medium-sized African seed companies use outgrowers, who are often small-holder farmers. This passes the risk of crop failure on to the outgrowers and is a tacit

admission that smallholders are more efficient at producing cereal and legume crops than are private companies (see Wiggins, 2009, on the hardiness of African smallholders). Few companies buy land to grow their own seed.

As with the small companies, medium ones avoid bank loans whenever possible. Only entrepreneurs that have a long track record of proven success have been able to negotiate their terms and conditions for bank loans. The high transaction costs and interest rates of bank loans in Africa make formal loans an unbearable burden for most enterprises, although there have been efforts in Mali and Uganda to address this. Entrepreneurs with a long track record may negotiate their terms and conditions for loans, like GHE in The Gambia.

Medium-sized companies understand their national context perfectly and know how to build trust with outgrowers and farmers. They have close links with extension, research and development. They often employ former staff of international research centres, and maintain collegial relations with national and international scientists.

Value chain model. Some medium-sized enterprises produce one variety dedicated to one big customer, such as Terratiga in Nigeria producing sorghum seed for farmers selling to a brewery.

12.4.5 Public agencies

Public agencies, like Nigeria's ADPs or SONACOS in Morocco, are well-structured, state-owned agencies. They often produce large amounts of rice, wheat, grain legumes or other self-pollinated seed which is not overly attractive to private companies. However, SONACOS also produces seed of sugarbeet, potatoes, vegetables and other crops which could be grown by the private sector. SONACOS specializes in seed and until recently held a monopoly on it, but Nigeria's ADPs are state extension agencies that sell seed as just one of their activities, but one which is popular with rural voters.

The Moroccan government made all the initial investments in SONACOS, including the physical plant and staff training, before gradually withdrawing in favour of private management. Yet privatization is only partial; SONACOS still depends on low interest loans and government subsidies to keep seed prices affordable to farmer customers.

Like private companies, these public agencies rely on outgrowers to produce the seed. The agency trains and organizes the outgrowers, collects, processes, stores and distributes the seed. With nationwide coverage, these agencies can help implement government policy to encourage improved varieties or certified seed for staple crops.

Public enterprises may well discourage private companies. Until recently SONACOS held a monopoly on seed. This is now being liberalized and it is too soon to tell what will happen to newly emerging companies in Morocco. In Nigeria, the ADPs have always competed with private companies, unfairly so in the eyes of the companies, but in truth the ADPs have also helped the companies by promoting hybrid maize and new varieties.

The state. Even governments that don't produce seed are involved in it through credit, registration, quality control, and seed certification and by providing new varieties

and foundation seed. In Uganda and Mali, effective joint donor and multi-stakeholder financial coordination systems have favoured seed companies. Government support also includes tariffs on grain imports, subsidies, infrastructure, research (e.g. plant breeding), extension (promoting varieties), price support, and facilitating markets for seed, farm produce, fertilizer and other inputs. Some governments, like those of The Gambia and Guinea, are less involved but at least provide foundation seed and help promote modern crop varieties.

Certification and organization. Certification is a government responsibility. However, certification is not always worth the time and money it takes to do it, especially when mechanisms to trace fraudulent sales and legal systems to pursue them are lacking. Many of the successful enterprises in this book, especially the smaller ones, do not certify their seed. It is often more important to screen for plant diseases than to worry about genetic contamination. And, if the state ensures good foundation seed, certification may be less important.

Farmers can produce and sell common seed on their own, but, if they join the formal seed sector or want to tap into a network of agro-dealers, they profit from being organized in groups and receiving support from the public sector, NGOs or even private companies.

12.5 What Makes Seed Enterprises Tick

Equipment and infrastructure. Successful enterprises have access to good equipment, like seed processors, even if it is rented or borrowed. Processing equipment, storage facilities and roads (e.g. Nigeria, Mali and Cameroon) may have been left by government or projects before structural adjustment. Some companies like the small Chinese equipment. The old US or European project equipment 30 years ago was too big.

Larger enterprises have access to machinery that farmer associations lack.

Policy support. The National Bank in Mali explicitly supports the seed sector and this can be replicated in other countries.

Self capital. In Cameroon, the FAO insisted that farmer seed-producing groups use a revolving fund. The project gave the groups seed, fertilizers, pesticides and bags for seed packing, and they repaid the cost back to themselves to start their revolving fund so they could give themselves loans. The groups that survived were the ones that managed to keep their revolving fund.

Frugality. Money is important, but managing cash flow is more important than making a big investment. Successful companies of all sizes have lean overheads and avoid loans as much as possible.

Isolated enterprises are at a disadvantage. Professional organizations are important to defend their rights and improve prices, marketing, seed rules, controls, etc. Seed trade associations are often the result of seed sector support by donors or government. Even so, they are a forum where people discuss issues and decide what to do as a group. Seed enterprises need links with government, international centres or other companies for source seed, new varieties and technologies.

Contacts. No matter what you know about seed, who you know may matter even more. People who have been in politics or the ministry of agriculture have a head start if they want to start a seed enterprise. Many of the ones in this book started

with some contact through a ministry of agriculture. Others were initially involved in seed related activities with an NGO or international research organization.

Diversity. Successful enterprises diversify. Most companies sell hybrid maize and vegetable seed, besides OPV seed. Successful agro-dealers sell fertilizer and other inputs besides seed. Successful smallholder seed producers still tend other crops and livestock. Many enterprises produce seed in the rainy season and something else in the dry season, often vegetables (not vegetable seed, just the vegetables).

Knowledge. The successful companies were started by people who knew how to manage a business. Good managers start small and build up creatively, without over-extending themselves. They train their staff, invest in them and try to maintain them, like the Nigerian ADPs and Premier Seed, which have stable staff. These enterprises train their outgrowers and distributors, and they treat their outgrowers with respect and honesty.

Not all seed enterprises know much about seed when they get started. Some, like Mr Dembo in The Gambia, were even new to agriculture. But they are all fast learners, and successful seed enterprises are sponges for new information.

Research. Successful enterprises invest in research and development, including market research. Few of the medium-sized companies breed new crop varieties, but many have research plots where they test new varieties. The farmers who produce seed are born innovators who enjoy trying new things. All seed enterprises are innovative by nature.

Decentralization. Certification services in Cameroon and Madagascar are being decentralized. Having only one central laboratory makes for delays, especially if regions are poorly connected. Several regional labs can process samples faster. The national laboratory oversees the regional ones if a government or the seed industry supports certification.

Quality. Successful enterprises build trust and reputation for quality products, like healthy seed. They build up strong internal support for inner quality control systems.

Certified seed is overrated. Many successful enterprises do not certify their seed, and none of the seed potato enterprises do. Insisting that all seed be certified is foolhardy if the government cannot certify everyone. Certification always implies a cost and, if not subsidized, makes seeds more expensive. Certification is good if it improves quality control. But the transaction costs and the social contacts needed for certification favour larger enterprises and lock out smallholders. Truthfully labelled seed may be a more feasible way forward, with more emphasis on branding and trust in the source.

Marketing strategies include radio campaigns and TV ads, demonstrations, seed fairs, billboards and field days, proper pricing, small packaging and labelling. Successful enterprises



Seed enterprises increasingly invite the media to broadcast farmer field days and promote their products and services.

keep proper records of their activities so they can see trends and make plans. And they sell to farmers, not just to government and NGOs. Unfortunately, government distortions may inhibit marketing. The Kenyan government has a draconian prohibition on advertising informal seed, even if it is of top quality.

Some successful enterprises (especially the medium-sized ones) provide backup support for farmers who buy their seed. They invest in small packaging (such as half kilo to 1 or 2 kg seed bags), which reduces fraud and makes seed accessible and affordable to farmers.

Successful enterprises cooperate. They join together in associations, try to protect the market from counterfeiters, share or rent equipment to each other. They may use the same research centres and source seed and some cluster around the same cities. The next section offers suggestions for helping seed enterprises, not just as individuals, but also as systems made up of enterprises and their support networks.

12.6 How to Encourage Seed Enterprises

12.6.1 For donors

Strengthen the financial sector to make debt bearable, by making appropriate loans for seed enterprises, which have to spend money for almost 2 years before they start making money. Provide loan guarantee funds for agriculture. Make loans available to small seed enterprises as well.

Support companies with equipment for seed processing, storage and training. Support professional bodies, like seed trader associations and agro-input dealer associations, at least during the start-up phase. Facilitate linkages between actors in the seed and commodity value chains, e.g. through multi-stakeholder platforms.

Support new technologies, irrigation, roads and electricity. Help the countries to do effective and inexpensive quality control and certification. General agricultural development will also benefit seed producers by increasing the demand for seed.

Support variety development and selection with farmers (e.g. the sorghum varieties by COPROSEM



Involving farmers, seed dealers and variety release agents in PVS speeds up the development, release and dissemination of better varieties.

followed PVS with ICRISAT; the beans in Uganda with CIAT; and rice seed in The Gambia followed PVS with AfricaRice). Strengthen each country's ability to produce breeder and foundation seed. This is a public sector task, especially when meeting smallholders' demands for seed and crop varieties.

12.6.2 For governments

Governments and donors can give loan guarantee funds to several commercial banks. In Uganda donors put money in more than one bank so they compete to give farmers the best services.

Cut taxes for seed companies and cut duties for importing machinery, inputs and seed. Provide training for seed enterprise staff. Train farmers in new crop technology and develop high quality training materials that can be used by many small-scale service providers. Have degree training for seed technologists. Develop curricula at universities. Subsidize airtime for local and national media for agricultural programmes.

Protect grain markets from cheap, subsidized imports.

Avoid buying large amounts of seed purchases to give free to farmers, which distorts the market. Governments should pay on time if they buy from seed enterprises.

Private companies can manage hybrid maize and vegetables. Farmers can manage bean and cereal seed. But they need help getting new varieties. By allowing truthfully labelled (uncertified) seed to enter the system, small enterprises can more easily market their seed beyond their immediate vicinity (by making their seed legal and allowing them to use existing agro-dealer networks). Small enterprises need equitable access to foundation seed and technical support.

Do not use regulations as barriers to entry for new and farmer-owned seed enterprises. Have different standards and regulations for small and medium-sized enterprises. Create appropriate small enterprise registration. Seed certification should be for quality control, not to create monopolies. Governments must prosecute fraud and hold cheaters accountable for bad quality.

12.6.3 For research

Research agenda. Develop appropriate, new high performing varieties. Do research on seed technology and comparisons of seed from different sources, including landraces, under different regimes. Study farmers' seed systems and enterprises. Study farmer demand more carefully, and involve farmers in setting the research agenda.

Involve farmers and end-users like consumers, agro-dealers and the seed companies in varietal testing. Also involve the people who allow a new variety to be released in the varietal testing so that they already know the qualities of the variety to speed up the release.

Certified seed is grown from foundation seed, which is grown from breeder seed, which is provided by the plant breeders. There is some suggestion that, after releasing a new variety, breeders are more interested in creating their next hit variety than in the thankless work of endlessly rearing out their older ones. Yet research centres must

provide the highest quality breeder seed all the time to keep the varieties from getting mixed, and lost.

12.6.4 For NGOs and development agencies

Buy standard seed some of the time, if that is legal, and do not insist on all certified seed. Seed health is more important than certification per se.

Recover at least the cost of the seed. You can subsidize seed but don't just give it away for free. Sell the seed no lower than the grain price.

Stop buying so much seed. It distorts the seed market and creates instability.

12.6.5 For financial institutions

As mentioned above, make appropriate financial products and services for agriculture (Harper, 2005), and seed enterprises in particular. Loan officers need to be trained on the workings and needs of seed enterprises to be able to judge their risks and the services and products they need.

When creating loan guarantee funds, also provide technical assistance. Enterprises that require the guarantee from a fund are usually too risky for banks and so are 'non-bankable'. Training (e.g. on financial literacy or financial management) can make enterprises more likely to repay their loans.

Seed enterprises can use their commercial relationships with agro-dealers or farmers to increase access to finance. Assured sales of seeds demonstrate lower risks for financial institutions.

Financial institutions can facilitate the development of specific value chain finance schemes, such as warehousing.



Banks can enquire about the seed enterprises' strategies, linkages and clients before working out specific client-tailored products and services to ensure higher payback rates.

12.7 Conclusions

Old stereotypes die hard. As late as 2006, experts on African seed were writing that 'Seed markets in the region are small and highly fragmented; with closed national markets dominated by a few international companies and parastatals' and still reeling from the market and institutional failures caused by structural adjustment (Minde and Waithaka, 2006, 2–3).

Since the 1980s, African seed enterprises have come to life and grown. We have seen that seed certification may keep smallholders out of the seed business, and that

there are some farm families and farmer groups successfully producing seed, although most of them still have some technical support from outsiders. We have met agro-dealers who are not usurious demons, but honest people who make seed flow, like the Comptoir Agricole, and respected individuals, like Mama Adama, who sells seed to her neighbours. Medium-sized companies often work hard to respond to increasing demands for seed and benefit from a well-organized network of agro-dealers.

For many years seed scholars have suggested that enterprises need a regular infusion of new varieties to stay viable (see Chapter 2). But it is not always true. Mama Adama has been selling the same variety for years to a limited number of clients. Niégué Farm in the Office du Niger has about five popular rice varieties that keep selling. Bringing a new variety on the market offers a marketing opportunity, but African economies have fewer competitors (and higher transport costs) than elsewhere, leaving local markets more open to a few actors. Perhaps seed scholars were influenced too much by Western perceptions of competition.

Another old problem is that many crop varieties are poorly adapted to farmers' conditions. Participatory plant breeding was created to address that – and seems to be working. Plant breeders are much more likely to involve farmers in their research than other agricultural scientists, and plant breeders are now taking many characteristics into account (e.g. taste, colour, disease resistance), no longer focusing only on yield.

New African enterprises. The fresh new type of enterprises described in this book have closer contacts with farmers than the old parastatals, and on a wider scale than scientists will ever be able to obtain. This is another reason why the public sector should strengthen the private sector. Future breeding should build more on local knowledge, not just of farmers organized in groups, but of seed companies, dealers and retailers, which will speed up the number of acceptable varieties.

The public sector is crucial to create a formal seed sector. That is not merely true by definition. In each of the nine countries the public sector (including international research centres) contributes at least some functions, especially basic plant breeding, which the private sector will never do.

Emerging entrepreneurial (human) characteristics. It is often assumed that entrepreneurs make it because they take risks, but, in the cases of African seed, it is more a matter of having a good sense for opportunities and for avoiding needless risk. Just like the examples described in the book *Africa's Greatest Entrepreneurs* (Makura, 2008), the seed entrepreneurs described in our book are loyal to their clients and hard-working and exude a real passion for the work they do. But they are generally more careful when it comes to risk-taking. The seed enterprises spotted opportunities and followed them with a stepwise, thoughtful approach, avoiding risky loans, trying it out at a small scale, much like farmer experimentation but with bigger stakes. As enterprises grew, they also became more risk averse as a failure would have more severe consequences.

The successful enterprises are also grounded in the community, whether that is a village or a region. Almost all of the entrepreneurs are from the area where they work, but they are all hands-on people, the kind who are in the seed factory or with the outgrowers every day, making sure that things are done right.

We have been fairly generous with the word 'successful'. We did not audit the enterprises financially or ask for privileged information. We used survival as our main yardstick. Anyone who can make a business, an agency or an association last for several years running is doing something right.

Structural adjustment's flaws are well-documented, including debt, unemployment, deterioration of social services and a general failure to deliver on its promises (e.g. Sachs, 2005; Meredith, 2006). But the parastatal seed corporations that the IMF broke apart in Africa may have been dysfunctional. The Moroccan case is like an experiment, where one African country held on to its parastatal seed company, but Moroccan agriculture has failed to grow and the government is now privatizing the public seed company of its own free will.

The cases in this book show that, whatever the merits and flaws of the parastatals, they were staffed by some educated, hard-working people, who went on to create successful small and medium companies after structural adjustment. The African seed enterprises described in this book emerged after 1980, most after 1990, from the wreckage of structural adjustment.

Structural adjustment may not have harmed smallholders. It reversed unfavourable terms of trade for agriculture; actually the 1980s were a period of accelerated growth for agriculture in Africa. African agriculture only looks stagnant when one includes the disastrous decade of the 1970s, before structural adjustment (Wiggins, 2009).

What is clear is that the retreat or advance of the state creates or closes spaces for seed enterprises. This book has explored how these spaces change and how seed entrepreneurs adapt to them.

References

- Almekinders, C.J.M. and Louwaars, N.P. (1999) *Farmers' Seed Production: New Approaches and Practices*. Intermediate Technology Publications, London. 291 pp.
- Brush, S.B. (2004) *Farmers' Bounty: Locating Crop Diversity in the Contemporary World*. Yale University Press, New Haven. 327 pp.
- Harper, M. (2005) Farm credit and microfinance: is there a critical mismatch? *Small Enterprise Development* 16(3), 58–67.
- Harper, M. and Tanburn, J. (2005) *Mapping the Shift in Business Development Services. Making Markets Work for the Poor*. ITDG Publishing, London. 181 pp.
- Makura, M. (2008) *Africa's Greatest Entrepreneurs*. Penguin Books, Johannesburg. 291 pp.
- Meredith, M. (2006) *The State of Africa: a History of Fifty Years of Independence*. Free Press, London. 752 pp.
- Minde, I. and Waithaka, M. (2006) Rationalization and harmonization of seed policies and regulations in Eastern and Central Africa: effecting policy change through private–public partnerships. Paper read at the International Association of Agricultural Economists Conference, Gold Coast, Australia, 12–18 August 2006.
- Sachs, J.D. (2005) *The End of Poverty: Economic Possibilities for Our Time*. Penguin Books, New York. 397 pp.
- Wiggins, S. (2009) Can the smallholder model deliver poverty reduction and food security for a rapidly growing population in Africa? Paper for 'How to Feed the World in 2050', FAO, 24–26 June.