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Mali: When Government Gives Entrepreneurs Room to Grow

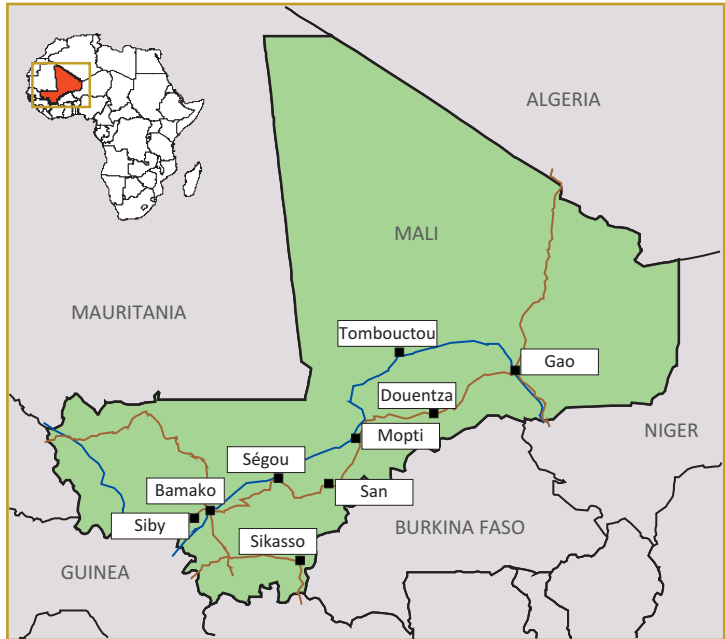
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5.1 Introduction

5.1.1 Agriculture

Mali is a vast country, landlocked in the heart of the West African Sahel, covering 1,241,238 km² with an estimated 13 million people. More than 65% of its land is desert or semi-desert. The country is fed by the great Niger and Senegal Rivers that shape Mali's young, market-based economy, still largely dominated by subsistence farming, herding and fishing. Industry is based on food processing, some textiles and gold and phosphate mining. The economy remains vulnerable to price fluctuations in its two main exports: gold and cotton.

Economic growth was hampered by the staled strategy adopted at independence, which led to unwieldy parastatals clogging up key economic sectors, weak infrastructure, burdensome administration and poor social conditions, including a low literacy rate and a population growth of 3.3% per year (one of the highest in the world in 2009; John F May, personal communication). Mali still



depends on foreign aid, as the government keeps implementing economic reforms and free market policies to meet the expectations of donors and private investors.

Mali covers three climatic zones: the desert-Saharan zone in the north with less than 200 mm rainfall; the Sahelian zone in central Mali with 200 to 600 mm rainfall; and the Sudanese zone in the south with 600 mm to 1400 mm of rain falling from late May to October.

Essential food crops such as maize, millet, sorghum and fonio are rainfed. To promote irrigated rice, large hydro schemes have been built in the inner Niger delta and in the valleys of the Niger and Senegal Rivers. Agriculture is dominated by small, family farms and the main way to harvest more food is simply to farm more land.



Cotton is no longer king. Upland rice has made its entry, and the inland valleys in southern Mali are increasingly used to grow rice in rotation with vegetables or potatoes.

5.1.2 Evolution of the seed sector

Informal sector. Farmers growing vegetables, maize and irrigated rice use more improved seed than those growing traditional crops. In the Koulikoro region (1000 mm of rainfall) less than 8% of seed of new sorghum varieties was introduced in villages through purchase (Siart, 2008). Most entered through exchange, gift or inheritance. Once a new variety is adopted, farmers produce their own seed as much as possible.

However, it is a stereotype to say that farmers buy no sorghum or pearl millet seed. Farmers do buy grains in the market, when they spot interesting traits or pure varieties, and then plant them (Siart, 2008).

Sorghum and millet seed is sold at weekly fairs in the districts of San (450–600 mm of rain) and Douentza (receiving only 200–400 mm), and, while it is not certified (Smale *et al.* 2008), the vendors are mainly women farmers who bring grain that is suitable for seed directly from their granaries to the market. Seed of local varieties is neither packaged nor labelled but identified by its provenance. However, it is never sold explicitly as ‘seed’ because customarily *la semence ne se vend pas* (‘seed is not sold’). As buying seed makes one a bad farmer, local markets can be a means of impersonal exchanges without social stigma (Smale *et al.*, 2008).

Under harsh and variable conditions, local sorghum and millet varieties often perform better than improved varieties. They can adjust the length of their growth cycle to synchronize with the length of the rainy season (called photoperiod sensitivity). Unfortunately, early breeding programmes, combined with the effects of drought, gradually eliminated photoperiod sensitivity in favour of varieties with fixed, short cycles. These shortcomings have since been overcome (Weltzien *et al.*, 2007).

The formal sector has undergone many changes since 1996 when state-owned seed production began to be transferred to farmers’ organizations and other private producers as part of Mali’s broader market liberalization strategy (Warms, 1994;

Dembélé *et al.*, 2003). Operation Production of Improved Seeds (OPSS – Opération Production Semences Sélectionnées) was created by the government in 1977 to produce, collect, store and distribute seeds. In 1991 the OPSS became the National Seed Service and worked closely with a network of farmers on state farms to produce certified seed.

To support the National Seed Service as the state disengaged, the Seed Sector Support Project (PAFISEM – Projet d'appui à la filière semencière) started in 2003 with support from the African Development Bank (AfDB) to: (i) create a network of seed producers in each region; (ii) strengthen the technical and financial capacity of seed producers; (iii) equip and strengthen the Seed Laboratory (LABOSEM – Laboratoire de Semences) and decentralize its activities; (iv) support actions to create infrastructure for storing certified seed; and (v) establish a National Seed Fund (for national security stock and to be prepared for disasters).

PAFISEM supported 136 cooperatives and various private enterprises, such as Faso Kaba (Section 5.2), Comptoir 2000, Nakoshi and Niégué Farm (Section 5.3). After the project came to an end in 2009, the various organizations approached the Malian government to continue subsidizing seed certification, at least for the costly field inspections. While the project supported the transition towards a private seed sector, it focused on seed production, but hardly at all on business management, seed distribution and marketing. The Nerica dissemination project of the African Rice Initiative (ARI) started addressing this for rice seed producers' organizations, e.g. by establishing revolving funds (see Chapter 3 for a similar experience in Cameroon).

The Seed Association of Mali (ASSEMA – Association Semencière du Mali) was created in 2003 under the umbrella of the African Seed Trade Association (AFSTA). It started with seven traders, focusing on imported vegetable seeds and agrochemicals. In 2009 it had 20 members and a network with 26 government agencies, 12 national non-public organizations and 25 international organizations.

5.1.3 Government support for the financial sector

The National Bank of Agricultural Development (BNDA – Banque Nationale de Développement Agricole) was created in 1972. Farmer cooperatives, groups or associations could apply for loans for agricultural equipment, tools and agrochemicals. Later on, it started financing the agro-industry, especially cotton, which accounted for about 70% of its activities. The crisis in the cotton sector coincided with the deregulation of the banking system in French-speaking West Africa, allowing the bank to finance activities in other sectors (Box 5.1). Today, 40% of the bank's investments are for rural financing, including seed production.

PAFISEM paid for seed certification and had a guarantee fund to reimburse banks for unpaid loans from seed producers. Farmers and their organizations did not know about this secret agreement; otherwise they would not have repaid the loans.

Seed producers need financing for a longer time than grain growers. The BNDA offers loans at relatively attractive annual interest rates of 8–10% for cooperatives and farmers' associations and 12–14% for private companies.

In addition to loans to buy equipment and other agricultural inputs, cooperatives and farmer organizations can also apply for credit to purchase seed from their

members (which they process and store for sale during the next season). The amount of credit BNDA grants to seed producers depends on the number of members of the cooperative, how much land they have, the crops produced, the economic situation of its members and the type of financing sought.

In 2010, as PAFISEM nears its end, the Ministry of Trade intends to provide a guarantee fund to BNDA and the Banque Malienne de Solidarité (BMS), among other banks, to support the emerging private sector. The main objectives are to lower the interest rates and to extend the loan periods. Both the guarantee fund and the subsidized interest rates need to be implemented with caution to ensure that farmers repay their loans to the banks (World Bank, 2008). Uganda is also strengthening its agriculture through the financial sector (Section 10.5).

Box 5.1 Termites speed up rural financing.

In the mid-1980s, the Malian government realized that farmers kept their savings from cotton sales under couches, in the horns of animals or in holes. However, termites often ate the money before it could even be invested.

As the government was opening up to the market economy, it wanted to stop the Compagnie Malienne de Textile (CMDT), a state-owned enterprise working with cotton farmers, from managing credit. Supported by the international community, the government approved the creation of a union of savings and credit establishments.

The Ministry of Finance established a regulatory framework for the central bank to supervise the management of these union funds, which later became known as Kafo Jiginew, the largest micro-finance institution in the country. In 2009, it had over 160 branches and 250,000 members, of which 65% are farmers. Seed producers in particular are known to be faithful in repaying their loans.

Now that farmers have a safe place to save, there is money to loan, but not for termites.

5.1.4 Agricultural law and seed policy

A new agricultural development framework law (LOA – Loi d’orientation agricole) was enacted in 2006 to promote sustainable, modern and competitive agriculture, based primarily on family farms. It stresses the production, marketing, diffusion and adoption of certified seed and encourages private investment.

The latest draft of the national seed law explicitly allows only for certification for seed produced from varieties registered in the seed catalogue (Diakit  et al., 2008). Yet certified seed production is still low (Table 5.1).

The Seed Laboratory under the Ministry of Agriculture is in charge of

Table 5.1. Seed certified (tonnes) in Mali, 2005–2009.
Source: LABOSEM.

	2005	2006	2007	2008	2009
<i>Maize OPV</i>	177	1,725	764	860	865
<i>Rice</i>	953	2,258	1,298	1,121	1,454
<i>Sorghum</i>	43	95	122	436	510
<i>Millet</i>	43	123	95	162	436
<i>Groundnut</i>	7	14	7	4	23
<i>Cowpea</i>	9	10	8	17	18
<i>Total</i>	1,232	4,223	2,294	2,599	3,306

all seed certification activities. It is the technical office of the Direction National de l'Agriculture (DNA), which deals with regulatory seed control and certification. The laboratory is accredited by ISTA (International Seed Testing Association) and standards are taken from the OECD (Organisation for Economic Co-operation and Development) to encourage the movement of seed within ECOWAS (Economic Community of West African States). Technicians give advice to seed growers and follow seed production from soil preparation, to sowing, harvesting and processing.

5.1.5 Seed demand and use

Mali released four hybrid sorghum varieties in 2008 and 2009 and plans to release five hybrid maize varieties. Demand for seed of improved varieties is generally perceived as being low. However, experiences show that, when superior varieties are available and farmers know about the specific advantages and the availability of the seed, then demand grows (Box 5.2), especially when new opportunities for grain marketing evolve.

Demand for seed of improved varieties is increasing, and is higher for irrigated than for rain-fed rice. Farmers grow most of their own seed for staple food crops, sorghum and millet, or they exchange within their village (Siart, 2008). Demand for seed of a new variety may be low initially, and growing demand can often be met within the village. Improved sorghum varieties have been more adopted than those of pearl millet (Smale *et al.*, 2008).

Farmers require sorghum and pearl millet varieties that are adapted to their climate, soils, pests, diseases and other constraints. Farmers plant various varieties, to match the growing conditions of each field.

New varieties are usually not evaluated as potential replacements of existing ones, but as additions to the village's variety portfolio (Box 5.2). In pearl millet, due to its outcrossing nature, farmers may actually be preserving multiple characteristics within an identified variety.

Farmers often buy legume seeds in markets because of pest damage in storage. Local adaptation is less important for legumes; they can be grown in a much wider range of growing conditions than cereals, which need to mature after the rains have ended to obtain good grain quality.

The diverse seed enterprises described below illustrate the recent developments in the formal seed sector. The first one is about a dynamic woman who established Faso Kaba, one of the few seed trading enterprises. The second case is Niégué Farm. When state-owned farms were privatized, a retired agronomist in the Office du Niger

Box 5.2 Demands for seed diversity.

When breeders included an extra early maturing sorghum variety, Diacumbe, in trials for the Sudanese zone, many farmers reacted angrily, as birds were eating the grains before they could be harvested. A few years later one of the same farmers requested foundation seed of Diacumbe for seed production. Demand for this 'unadapted' variety was rising because some farmers started using it in fields near their houses, where bird scaring is possible. They could thus harvest before anyone else, fetch very high prices and address the food gap in the 'hungry season', just before general harvest. Other farmers started using it for very late sowing, when all other varieties would fail, because they would be hit by end of season drought before the grains could fill.

changed it into a thriving rice seed enterprise. The third case describes the Nipagnon Cooperative in the Sikasso region, producing seed of many food security crops. The Mandé Seed Cooperative in Siby, about 50 km from Bamako, collaborated with ICRISAT to select promising sorghum lines until they became sorghum seed producers. The last case describes one of the Dogon villages north of Mopti that produces quality seed and is increasingly recognized for its early maturing pearl millet.

5.2 Faso Kaba

5.2.1 History

Faso Kaba Sarl (Ltd) is a seed company registered in 2007 in Bamako, Mali, that started as a seed dealer in 2005. However, the story goes back to the 1980s.

Best use of leisure time. The owner of Faso Kaba, Mrs Coulibaly eagerly shared her story. 'In 1985, my husband obtained a PhD scholarship in maize breeding in the United States of America. I went with him, but did not like to just sit at home every day while my husband was studying. I needed a job to keep myself busy with something useful.' Soon after, she obtained a position as a labourer in the Garst Seed Company, an early innovator of hybrid maize seed in the USA widely recognized for its unique production and distribution methods to deliver high yielding maize, soybean, sorghum, lucerne and sunflower seed.

Working at the maize unit, Mrs Coulibaly was in particular intrigued by the art of delivering high quality seed to farmers. 'But each time I thought of the conditions under which Malian farmers worked and the meagre results they got a sadness overwhelmed me. Rather than becoming frustrated, the challenge of providing seed related services (in Mali) came to my mind. Once back home, I was eager to achieve this dream.'

From informal to official. When Mrs Coulibaly returned with her husband she had to start a new life in Mali. Helping her husband breed new maize varieties had become her daily passion. The quality and yields of those varieties were impressive and attracted many producers. Men and women, sometimes in groups, approached her for seeds. But people did not know that her husband used foundation seed. Mrs Coulibaly persuaded her husband to multiply the foundation seed, which he did on a small plot, just about 0.25 hectare. Under his supervision, Mrs Coulibaly took care of the field and harvested it. She bought bags and packed the seeds for sale. The success of this experience encouraged her to expand.

Mrs Coulibaly noticed that the seed-producing groups and cooperatives supported by the PAFISEM project were isolated from potential customers. With few resources she started collecting seeds, packaged and stored them for sale during the next season. To face the fast growing demand for maize seed she registered as a seed retailer in 2005 and opened her shop in Bamako.

From a registered retailer to a company. As she increasingly supported seed producers, in 2007, Mrs Coulibaly transformed her retail business and officially registered as Faso Kaba. In the Bambara language, Faso Kaba means 'maize of our land'. The company did a market study to identify the needs of seed producers and assess cereal growers' evolving interest in quality seed, and also of other crops. ICRISAT, the National Seed Service and other organizations encouraged Faso Kaba by providing information.

Expanding to other crops and products. Family farmers produce many crops and their experiences with maize led them to seek good seed for other crops. To respond to their demand, Faso Kaba branched out, trading in certified seed of rice, cowpea, sorghum, millet, groundnut, gombo (okra), potato and sesame (Table 5.2).

Potato seed is imported from Europe via the ports of Senegal (Elodie variety) or Abidjan (varieties Claustar, Appolo, Spunta and Sahel), and transported by

truck or train to Bamako. Faso Kaba also started selling fertilizers, pesticides and sprayers, which its marketing study had revealed as complementary products to sell.

The Alliance for a Green Revolution in Africa (AGRA) did not believe that a company can master seed distribution and quality if it does not also produce seed, so in 2007–2008 it supported Faso Kaba in seed production and marketing. The company started growing its own seed of maize (2007), later on adding sorghum (2008), groundnut and millet (2009). To supplement its own production, Faso Kaba continues to tap into its network of seed producers to meet the demand.

‘But rice, cowpea and groundnut seed production is a bit complicated,’ said Mrs Coulibaly. ‘Farmers need more training in the production and processing of these seeds to meet certification standards. They are more experienced with the production of certified seed of maize, sorghum and millet.’

Table 5.2. Seed sold (tonnes), Faso Kaba.

	2005	2006	2007	2008	2009
<i>Maize</i>	1	20	41	60	180
<i>Rice</i>	–	–	8	70	42
<i>Cowpea</i>	–	–	0.2	9.5	15
<i>Sorghum</i>	–	–	0.5	5	15
<i>Millet</i>	–	–	0.2	3	10
<i>Okra</i>	–	–	0.1	0.2	0.5
<i>Groundnut</i>	–	–	–	10.5	20
<i>Potato</i>	–	–	–	2	2.5
<i>Sesame</i>	–	–	–	1.3	3
<i>Total</i>	1	20	50	162	288

5.2.2 Structure

Management and staff. Mrs Coulibaly is the sole proprietor. She is the director, manager and accountant of the company. She employs a driver, two labourers and a seed specialist who evaluates the quality of seed to buy and advises on storing and stock-keeping. The business grew rapidly and steadily and in 2008 Faso Kaba hired an agronomist to look after the farm, assisted by a technician with 20 years of seed production experience in Mali. Finally, Mrs Coulibaly hired a stock keeper and an accountant when she could no longer manage all the tasks



Seed entrepreneurs need to strengthen their networks and invest in trust building. Mrs Coulibaly from Faso Kaba does that on a daily basis.

by herself, even the ones she could do well. The company holds weekly staff meetings to brainstorm on solutions. In June 2010 Mrs Coulibaly received the prestigious African Business Award for Best Agricultural Development.

Infrastructure and equipment. Faso Kaba produces some seed itself, but continues to collect, transport, package, store and sell seed of multiple crops. It has office equipment and rents its office and shop, along with the two adjacent stores that can stock 40 tonnes of seed. Faso Kaba has its Bamako shop at a strategic location along the road to Ségou where anybody travelling upcountry has to pass. This is especially attractive to the Sunday farmers (people with full-time jobs who spend free time working the land and often send seed to their parents in the village). In Banankoroni, about 5 km from its Bamako shop, Faso Kaba is currently expanding its warehouse on a 0.5 hectare plot to store up to 500 tonnes of seed.

Faso Kaba relies on public transport (taxi, minibus) or small trucks to haul seed from the seed producers to Bamako for packaging, after which it distributes seed to its 50 selling points using similar means. Faso Kaba pays 13 FCFA (\$0.03) per kg seed transported.

Seed producers. During the marketing study Mrs Coulibaly learned about government and private maize and rice seed producers, even in remote areas. Apart from some individuals, they were mostly cooperatives composed of former farmer-employees of state-owned farms that had been privatized. Faso Kaba partially obtains seed by establishing seed production contracts, advancing foundation seed (90% coming from the Institut d'Economie Rurale – IER), fertilizers and agrochemicals and buying back the certified seed while deducting the costs of the loan. The price paid for the certified seed is determined only at the time of harvest, as it depends on the market price.

Most seed producers do not necessarily depend on Faso Kaba. They produce seed without contracts and sell to various clients. Faso Kaba can contact any of the seed-producing cooperatives or associations if it receives orders that are not covered by any of its contractual seed producers.

Seed dealers. To establish seed selling points, Faso Kaba organized community meetings to help identify contact people in the regions of Koulikoro, Ségou and Kayes. Often agro-dealers or farmers linked to a community-based organization were proposed. Nearly all were farmers themselves. In 2007 Faso Kaba worked with 33 seed dealers, and by 2009 this had grown to over 50, of which ten are women. One of Faso Kaba's local dealers in Dialakoroba village sells seed to over 30 neighbouring villages. All were trained by IER and extension staff, as part of a wider effort of AGRA to strengthen agro-dealers in Mali. Most village shops are only open a few months per year at the beginning of the growing season. In Ségou, however, Faso Kaba shares rent and taxes with a shop owner to ensure it is open throughout the year.

Quality control. Faso Kaba only sells certified seed. Seed is inspected at the source by formal inspectors when it is packed in large bags of up to 100 kg and kept in the farmers' or cooperatives' stores. However, for laboratory tests they only take a 2 kg sample from each seed lot (which can be up to 20 tonnes if it is from a single variety grown in a single village). Hence, when the seed is hauled to Bamako, Faso Kaba mobilizes 25 labourers to clean the seed again before packaging in smaller bags as it cannot afford to have any immature seeds or debris in the seed it sells.

When seed is grown under contract, Faso Kaba pays for the inputs and the certification (laboratory tests only; the field visits have so far been covered by the

government). But more and more Faso Kaba buys directly from seed producers who covered these expenses themselves.

Land. To respond to AGRA's demand to get involved in seed production, Mrs Coulibaly requested and received 60 hectares of land from her husband's clan. By 2009 she grew maize, sorghum, millet and groundnut seed on 20 hectares.

5.2.3 Cash flow

Banks were ready to grant credit to buy agrochemicals, but they did not think that buying and selling seed were profitable. So Mrs Coulibaly set up Faso Kaba with her own money. Despite the banks' lack of imagination, Faso Kaba grew, but it needed more cash. With one rain-fed cropping season cereal seed is sold for only 3 months, so selling vegetable seed and fertilizers helps to spread income over the year. 'To be able to respond to opportunities quickly, bank loans should be for at least 2 years,' explains Mrs Coulibaly. 'If you have taken a loan in April and you need to pay back in September, you have no money in October to buy seed potato, which farmers want after the rainy season, so you have to start a new dossier for credit all over again.'

In 2007, AGRA decided to strengthen Faso Kaba's distribution and marketing capacities and help it to buy seed from growers. In practice, AGRA persuaded the growers to sell their seed on credit to Faso Kaba. AGRA guaranteed farmers that Faso Kaba would pay them at the due time. As the project came to an end, Faso Kaba hopes that the government will act quickly to make loans more business-friendly.

For big seed orders, Faso Kaba asks its clients to pay 60% advance and the remaining 40% upon delivery. When selling to her network of 50 local seed dealers she tries to limit selling on credit as much as possible, but there are no fixed rules. Mrs Coulibaly believes the seed sector would benefit from a specific credit line for agro-dealers.

5.2.4 Marketing

Initially, to solicit maize growers' demand, Faso Kaba bought three mobile phones and gave one each to three farmer representatives in three village clusters, which it wanted to set up as local seed dealers. The representatives shared their mobile number



Quality control and customer-tailored packaging are some of the key strategies to build reputation.

with other farmers through their local radio. Farmers soon started placing seed orders, which the local dealers collected and passed on to Faso Kaba by phone and in writing with a taxi driver to Bamako. By the time the driver arrived, Faso Kaba had already prepared the order and handed it over to the taxi driver who returned to the village with the seed. Faso Kaba continues to use this method and has expanded its distribution network to 50 villages across three regions, several hundreds of kilometres apart. In 2010 the network will be expanded to the Sikasso region.

All local dealers are motivated to sell. They receive 25 FCFA (\$0.05) per kg of cereal seed sold, 100–500 FCFA (\$0.22–\$1.10) per bag of vegetable seed and 250–500 FCFA (\$0.55–\$1.10) per bag of fertilizer sold, the amount depending on the volume.

In 2009, the average price per kg certified seed sold was 350 FCFA (\$0.77) for maize, sorghum and millet; 500 FCFA (\$1.10) for rice; 750 FCFA (\$1.65) for cowpea; and 900 FCFA (\$2.0) for groundnut.

Faso Kaba's main clients nowadays include Sunday farmers, the 50 local dealers, full-time farmers, cooperatives, NGOs and occasionally FAO and other projects. However, following its marketing campaign, increased visibility and reputation among farmers, by 2015 Mrs Coulibaly predicts that most of her seed will be sold to local dealers (Table 5.3). About 60% of Faso Kaba's clients are repeat customers who return to buy seed every year, irrespective of the crop.

The company's forte is its marketing strategy, which it strengthened in 2008–2009 with AGRA support. First of all a radio programme was made that stressed the advantages of improved seeds. Faso Kaba made 50 copies and gave one to each of its local dealers, who in turn took it to their local radio station. These broadcast the programme four times per month prior to the cropping season, for each broadcast receiving 1000 FCFA (\$2.2). The radio broadcasters frequently invited the local seed dealers during call-in sessions, during which they announced that seed is available.

Faso Kaba also advertises directly through the national media, e.g. on Friday on the agricultural programme 'Le Monde Rural' put on by the national radio ORTM. When Faso Kaba attends seed fairs or organizes field days it often invites the national TV, which will comment on them 5 to 15 minutes after the nine o'clock evening news against payment, or on Monday at 6 p.m. when farmers are home. Broadcasts are done in either French or Bambara (one of the national languages). 'Increased visibility pays, as I receive telephone calls from new customers every day,' says Mrs Coulibaly.

Faso Kaba earned customers' trust by selling them quality seeds and services. Faso Kaba occasionally sells agrochemicals to farmers on credit and its agronomist gives technical assistance to farmers to ensure good production. At harvest time, farmers pay back their loans without having to pay interest. It is difficult to win farmers' trust, and yet so easy to lose it (Box 5.3).

Table 5.3. Clients of Faso Kaba.

	2005	2009	2015 (predicted)
<i>Sunday farmers</i>	1	1	4
<i>Local dealers</i>	–	2	1
<i>Individual farmers</i>	–	3	2
<i>Groups and cooperatives</i>	–	4	3
<i>Projects and NGOs</i>	2	5	6
<i>Government</i>	–	6	5

Ranking assessment by senior management of seed enterprise, 1 being the most important.

Faso Kaba also puts an entry in the yellow pages, and hands out business cards, calendars, caps and T-shirts during grain fairs and cereal fairs, organized by NGOs or the Ministry of Agriculture.

Another important marketing strategy is the packaging. Depending on the demand, cereal seed is sold in bags of 0.5 to 40kg, vegetable seed in bags of 5 to 500 grams and seed potato in 25kg bags. If farmers or farmer groups are reluctant or doubtful, Faso Kaba hands out small packs of seed between 100g and 3kg for farmers to try them out. All bags contain technical information on the seed and the variety.

The company now sees that opportunities for export are increasing as the Mauritanian government is emphasizing certified seeds. Besides Mauritania, the company also exports seed to Burkina Faso, Chad, Niger and Senegal based on orders placed by visitors at the annual seed fairs organized by the Ministry of Agriculture.

Box 5.3 A bad experience turning sour.

The importance of quality and certified seed was highlighted by a regular customer we happened to meet at Faso Kaba, in Bamako.

In 2007, he collected a seed order from his colleague farmers, travelled to Bamako, and figured he could make more money buying seed *tout venant* (whatever comes my way) from the market. This impure seed was cheaper than the seed he used to buy for them from Faso Kaba.

'I bought maize seed *tout venant* and distributed it to others in my village. Because of the bad quality of the seeds, yields were meagre that year and the farmers refused to pay for the seeds that I sold them on credit. I knew it was my fault and I lost about 10 million FCFA (\$2200). From that day on, I swore to go only for certified seed.'

5.3 Niégué Farm

5.3.1 History

When the government privatized all state-owned farms in 1994, Ousséini Doumbia, a retired agronomist, won the bid on one of these farms in the village of Niégué, in the Office du Niger (a state agency created in 1932 to manage a more than 70,000 hectare irrigation scheme in the interior delta of the Niger River). Together with nine colleagues Mr Doumbia started managing the farm. Five years later he and a few other elders left management to become just members.

The (partially) new management team that took over in 1999 is still in place. In 2000 they registered themselves as the Association of Economic Interest for the Rational Exploitation of Niégué Farm. According to the current head, Agouno Ongoiba, 'moving into the seed business was the best choice I ever made'. Mr Ongoiba is also an agronomist and former director of one of the five zones of the Office du Niger. Rice seed production on a developed land with irrigation facilities is a lucrative business.

Being a rice seed specialist with a long experience and the right know-how helps to guarantee high quality. And there is a growing market for seed.

Due to fertilizer, training the workers and better organization average yields on the Niégué Farm increased from 5.2 tonnes per hectare in 2007 to 5.8 in 2009. The average waste (after processing into seed) decreased from 16.7% in 2007 to 13.0% in 2009. Only rice seed is produced (Table 5.4).

5.3.2 Structure

Management and staff.

The Niégué Farm is technically sound. Its staff includes four retired agronomists, two agricultural technicians, two economists and an accountant. The agronomists were extension agents who worked for many years with farmers, with whom they still have excellent relations. The technicians

regularly visit their clients and help them. The stock keeper helps the supervisor manage the seeds and agrochemicals in storage. The farm occasionally hires groups of young labourers for farm and postharvest tasks. Over the years they have built a particular expertise in operating the association's equipment. However, these groups are becoming rare, more demanding and expensive.

Land, infrastructure and equipment. The Niégué Farm has 45 hectares in ten widely spaced pieces of land. When the farm was privatized it had some infrastructure and equipment. On 4 hectares there is a functioning irrigation and drainage system that allows off-season production and irrigation in the rainy season when the rains fail. To use this system the farm pays an annual fee of 3 million FCFA (\$6500) to the Office du Niger, which owns it. Two big stores with a capacity of 200 and 300 tonnes of seed were also part of the deal. There is one generator and one seed processing system for seed preparation, cleaning, drying, coating, packaging and storing.

Production of quality seed. Each member of Niégué Farm is assigned one of the ten fields and produces only one of the eight popular rice varieties. Nobody is allowed to change the variety he produces. The objective is to ensure high quality seed. Producing the same variety year after year avoids seed mixtures and provides greater experience with the variety, both of which guarantee quality seed. To avoid volunteers (rice plants that sprout from the grain spilled in the field), the seed growers water the soil some time before the season to make these seed germinate and later plough them under. After harvest cattle graze on the stubble. The farm cannot increase production since no more land is available. If demand exceeds what the farm can produce, Niégué Farm would need to contract outgrowers.

Links and partnerships. There is a strong relationship between the Niégué Farm and farmers, who are the bulk of its customers. Niégué Farm is also tied to IER, which supplies it with foundation seed. The association estimates the demand for seed of different varieties based on recent demand or the expectations of farmers and channels this information to the agricultural research institute. The farm has never benefited from any technical or financial support from NGOs, projects or any other organization.

Table 5.4. Rice seed produced (tonnes), Niégué Farm.

	2005	2006	2007	2008	2009
<i>Kogoni 91-1</i>	66	82	75	90	93
<i>Adny 11</i>	18	23	42	36	58
<i>AD 9246</i>	20	23	29	33	32
<i>BG 90-2</i>	20	21	14	29	26
<i>Wat 310</i>	1	1	12	24	37
<i>ECIA</i>	8	10	13	3	3
<i>RPKN2</i>	3	3	1	0.6	1
<i>Séberang Mh 77</i>	4	6	2	3	–
<i>Total</i>	148	180	195	223	260

The association is run like a private business, pure and simple. It has no particular relations with competitors except when they meet for training or information that requires gathering seed producers.

5.3.3 Cash flow

Prices of inputs such as agrochemicals and labour are increasing every year. If seed prices were to increase, farmers might be discouraged from buying seed. This price squeeze reduces the profit margin of seed growers, who face the same increase in production costs as grain growers. Because the Niégué Farm is an association, not a cooperative, it pays the full amount for seed inspections and seed certification services. Despite this, producing rice seed is still profitable according to its managers.

Niégué Farm is also successful thanks to loans from BNDA, which offers an attractive annual interest rate of 12%. Conditions are negotiated and fixed in contracts with the bank. So far the farm has always repaid the loans promptly.

Except for some rare situations, customers do not need credit from Niégué Farm. Only some seed dealers require a few days to pay for their purchase.

It is unlikely that new rice varieties will easily compete with the ones from IER, so Niégué Farm does not fear immediate competition. Farmers need to get to know a variety before they will buy it. And Niégué Farm has always sold all its seed, thanks to its quality and the follow-up services provided by the agricultural technicians.

5.3.4 Marketing

Seeds produced by Niégué Farm are sold only in Mali. Individual farmers buy about 80% of the total production. Many of them have asked to represent the farm to distribute seeds in their villages. Other clients include the FAO, NGOs and projects. Prices have changed little since 2003. From 250 FCFA (\$0.55) per kg in 2003, a kilogram of rice seed was sold at 300 and 330 FCFA (\$0.65 and \$0.73) in 2006 and 2009.

The farm started marketing by organizing field days announced on local radio to explain that, under the right conditions, certified, quality seed allows higher yields and better grain quality. It creates higher market value and can increase farmers' incomes. All this was shown on



When farmers hear on the radio that there is a field day or a seed fair in their area, they are delighted to attend.

demonstration plots and visitors could see the behaviour of different kinds of seed. Rice seed is packaged in 50 kg bags printed with the name ‘Niégué Farm.’ Thanks to its permanent contact with research, the farm is aware of any new varieties, and tries them before recommending them to customers.

5.4 Nipagnon Cooperative

5.4.1 History

After the state-owned seed farms collapsed or were privatized, people were encouraged to create cooperatives or other organizations to take over seed production. One of these was the Nipagnon Cooperative, created in 2006 in the region of Sikasso, southern Mali. The cooperative has 35 members, including six women. It sells seed produced by its members.

PAFISEM helped build a storage building, trained producers and regularly controls seed production for certification. The international NGO Sasakawa Global 2000 (SG2000) contributed to 40% of the cost of the administration building. In contrast to the Niégué Farm described in Section 5.3, more than 90% of the cooperative members are illiterate. The cooperative does not own collective land except for 1 hectare used to grow okra.

The cooperative produces seed of maize (Debagnonman and Sotubaka varieties), rice (Nerica 4, Nerica 8, Nerica 9 and Nerica 12), sorghum (CSM 388), millet (Djiguifa) and soybean (G196) (Table 5.5).

Table 5.5. Seed produced (tonnes), Nipagnon.

	2006	2007	2008	2009
<i>Maize</i>	50	55	62	10
<i>Rice</i>	28	30	32	44
<i>Sorghum</i>	2.0	2.2	3.1	3.8
<i>Millet</i>	1.1	2.1	3.0	3.2
<i>Soybean</i>	0.5	0.8	0.8	1.8
<i>Total</i>	82	90	101	63

5.4.2 Structure

Management and staff. Fifteen members founded the cooperative, and others kept joining later. Three members left in 2008: they did not respect production norms and the certification services rejected their seed. The profitability of seed increased the seed producers’ incomes, attracting other farmers to join the cooperative in 2009.

Most members lack business management capacities. The president of the cooperative said, ‘We are peasants and not intellectuals. We don’t know how to manage. We should hire someone, but it would cost money the cooperative cannot afford.’ Indeed, apart from the secretary and the president, a respected 56-year-old nobleman, none of the members can read or write. Currently, management has five elected members, with three men occupying the positions of president, vice-president and secretary. The treasurer and the agent in charge of information and organization are women.

There is a mutual trust among the members and an eagerness to perform better than other cooperatives involved in producing seed. They are also motivated by their ambition to build a viable and powerful cooperative, to be proud to be its members and to acquire a higher social status with increased income and investments.

Land. Land is abundant. The village offered 1 hectare of land to the Nipagnon cooperative for building and development.

Infrastructure and equipment. Most farmers work manually, but use fertilizers and pesticides. There is no irrigation service as in the Office du Niger and farms are rain-fed. The cooperative owns a storage building, a machine room, a complete seed processing chain and some tools. It acquired this equipment thanks to hard work, good management and some valuable donations.



In their early days most cooperatives receive infrastructure or equipment through outside support.

5.4.3 Cash flow

The Nipagnon Cooperative uses its profits to pay for storage pesticides and the foundation seed that it sells on credit to its members.

However, financial worries start when it is time to buy back the certified seed from the members. Then Nipagnon obtains loans from BNDA or a rural credit organization called Kafo Jiginew (Jiginew is the Bambara word for the traditionally woven purse that older men tie around their waist). The cooperative can take a loan between 500,000 and 2 million FCFA (\$1000–\$4000). It repays the loans once the seed is sold.

The cooperative also helps its members to manage their incomes. The members have decided to always keep part of their income with the cooperative to buy agrochemicals and to pay for labour. The needs and costs of these are estimated for each member, based on the area he or she aims to cultivate. The amount is deducted from the member's sales and the rest is paid to him or her. This way, the members get the inputs they need. After the initial financial, technical and marketing support from SG2000 newcomers to the cooperative received training from PAFISEM.

5.4.4 Marketing

Nipagnon Cooperative's major customers include two seed trading companies, Faso Kaba (Section 5.2) and Comptoir 2000, individual farmers, projects and various NGOs. It does not anticipate any changes over the next years.

Nipagnon also advertises over local radio stations in Bambara, the local language. The programmes were carefully prepared with the support of SG2000 and PAFISEM to explain that certified or good quality seeds improve yields and grain quality so farmers can earn more money. The ads stress the unique quality of Nipagnon seeds, produced under the guidance of seed specialists and certified by PAFISEM.

By attending the annual seed fairs organized by the Ministry of Agriculture, the cooperative started exporting seed to Burkina Faso, Guinea, Mauritania and Senegal. About 40% of the production is sold to Senegal.

5.5 COPROSEM

5.5.1 History

Officially registered in 2006 with headquarters in Siby, a village about 50 km from Bamako, COPROSEM (Coopérative pour la Promotion de la Filière Semence de Mandé) started with nine farmers, each from another village around Siby, who assigned administrative roles among themselves in a verbal process.

Before the cooperative started, a farmers' group helped ICRISAT (International Crops Research Institute for the Semi-Arid Tropics) researchers to identify the best sorghum varieties for their farming conditions, using a two-step participatory varietal selection (PVS) approach (Weltzien *et al.*, 2006). Some of the farmers, impressed by the new sorghum varieties, sought to get them in large quantities. They went to ICRISAT and asked for the seeds they had helped to select. But there was only foundation seed.

ICRISAT told them that this foundation seed needed to be multiplied into another generation of seed before they could give it to farmers. The farmers, all illiterate, organized themselves as COPROSEM to transform the foundation seed into certified seed. One of the first activities of the new cooperative was to participate in training sessions on procedures of formal seed production organized by IER and ICRISAT.

The farmers organized a seed fair that they advertised on local radio; ICRISAT paid the bill. Given its success, they launched a second fair and invited more farmers to learn about the advantages of good seed. The success made them realize that they could sell more.

The idea of a cooperative thus emerged after researchers suggested that farmers should sell quality seed of preferred varieties. Being a cooperative would also make it possible to acquire additional funding to remunerate seed producers in advance. Later, COPROSEM also produced maize seed (Table 5.6), and small quantities of uncertified seed of pearl millet, soybean and rice, to sell locally.

Table 5.6. Seed produced by COPROSEM.

	2006	2007	2008	2009
	Cultivated area (hectares)			
<i>Sorghum</i>	9.3	9.3	5.7	5.0
<i>Maize</i>	–	–	–	6.0
	Net production – certified and sold (tonnes)			
<i>Sorghum</i>	2.0	2.9	1.7	1.6
<i>Maize</i>	–	–	–	2.6

5.5.2 Structure

Management. Today, COPROSEM has 13 members with three others waiting to join. The youngest member is 35 years old and seven of the members are over 50 years.

COPROSEM members have acquired good seed production skills by engaging for various years in PVS trials with ICRISAT, but they lacked management skills. As with all cooperatives, the government assigned an extension officer to help them with production, sales management and record keeping. Additional management support was sought from the NGO Association Conseil pour le Développement (ACOD). The cooperative now keeps production and sales records.

COPROSEM's management team is composed of: (i) an administrative body which includes the president, the accountant and four secretaries for administration, supplies, information and commercialization; and (ii) a surveillance committee. A secretary in charge of seed stock management was added after the first experiences of seed production and commercialization.

Organization. Every year each member allocates some of his own land for seed production, growing household food and cash crops on the rest. The seed plot has to be isolated from other fields of the same crop. A few members use animal traction, but other farmers do all their work by hand. There is no irrigation.

At the beginning of each growing season, the members gather to estimate demands and talk about how to produce seed successfully. These meetings serve as training sessions for newcomers and as refresher courses for existing members. Seed inspectors start to make farm visits and continue through harvest and postharvest to seed certification.

5.5.3 Cash flow

Initially the costs for constructing a seed store, the labelling and the certification were covered by projects in collaboration with IER and ICRISAT, which also supplies them with sorghum foundation seed, at no cost. The cooperative knows it will have to pay for this in the future, as they also did for maize.

COPROSEM members plough, sow, weed and harvest their fields themselves so they do not need to pay for labour. As COPROSEM sells part of its certified seed to Faso Kaba, it gets fertilizer and pesticides on credit and shares them with its members.

As with most farm cooperatives, they need cash to buy the product (in this case seed) from their members and to process and store it for later sales. This is a difficult challenge which can make or break any cooperative. If a cooperative does not pay early, the seed producers will eat the crop as most are not food secure. In Mali credit lines are available for farmers and their organizations, but COPROSEM never bothered to apply. Rather it uses money saved by the cooperative from previous activities. As this money is not enough to buy and store larger amounts of seed, it limits the cooperative's growth. The extension officer assigned to COPROSEM is currently negotiating with the national farmers' association (AOPP – Association des Organisations Professionnelles Paysannes) for them to hire an external accountant to prepare COPROSEM's balance sheets, which would qualify them to apply for credit from the BNDA or the Kafo Jiginew.

5.5.4 Marketing

The main customers include two seed distribution companies (Faso Kaba and Comptoir 2000), individual farmers, and other projects and programmes (Table 5.7). While companies buy most (80%) of the maize seed, individual farmers buy the bulk (75%) of sorghum seed. However,

Table 5.7. Clients of COPROSEM.

	2006	2009	2015 (predicted)
<i>Seed companies</i>	2	1	1
<i>Projects and NGOs</i>	–	2	2
<i>Sunday farmers</i>	–	3	–
<i>Individual farmers</i>	1	4	3
<i>Members</i>	–	5	4

Ranking assessment by senior management of seed enterprise, 1 being the most important.

this is likely to change over time as demand for quality seed is on the rise. In March 2010, Faso Kaba bought 3 tonnes of sorghum seed from COPROSEM at 300 FCFA (\$0.65) per kg. This is slightly higher than what the cooperative sells it for normally, indicating that there is a real demand.

One of the members of COPROSEM is a trader. He started treating sorghum seed and putting it in 1 kg bags, which he sold at the local market at 400 FCFA (\$0.88) per kg. At first it raised eyebrows among his colleagues, but now he has even started experimenting with 100 g seed bags, which he sells at 100 FCFA (\$0.22).

Farmers are not yet aware that the cooperative has started producing maize seed. COPROSEM may need to return to its initial successful strategy of combining radio adverts with local seed fairs.

5.6 Pearl Millet Seed-producing Villages in Dogon Country

5.6.1 History and context

In the harsh Sahelian climate with erratic annual rainfall of 200 to 400 mm, pearl millet is the only cereal able to grow on the sandy soils. In this transition zone between the Sahara desert and the Seno plain of Dogon country in central Mali, pearl millet is the staple food for the Dogon people. Ever since the Dogon settled on the cliffs or bases of the escarpments in the 14th century, they have developed immense knowledge, cultural values, rules and powers associated with pearl millet.

Pearl millet was domesticated in this part of West Africa; its weedy relatives (locally called *chibra*) grow wild in the area, although they have bristles, shatter easily and mature before the cultivated form. As pearl millet is a highly cross-pollinated crop, with very good pollen longevity, coexistence with these wild forms may enhance its genetic diversity.

During the hungry period, women collect the weedy *chibra* before the pearl millet harvest. They carefully remove all the bristles before pounding the grains. Although both cultivated and wild forms can be used to prepare the staple food *tob* (pearl millet flour mixed with water heated above a fire and stirred into a paste, like mashed potatoes), *chibra* is unsuitable for couscous and *crème* (a local drink on the basis of water, pearl millet flour and tamarind that is consumed daily) and hence is always stored separately.

Farmers in the Douentza district, and especially in the north-eastern Haïre township, face some of the harshest conditions imaginable for crop production: temperatures at planting time can reach 50°C; the rainy season is



Dogon women collect the earlier-maturing weedy forms before the actual pearl millet harvest.

short and erratic; and soils are sandy with a low pH (acidic). Any crop variety grown here must be adapted to these extreme conditions, be early maturing and able to resist noxious pests (such as headminers and the parasitic weed striga) and diseases (mainly downy mildew). Farmers in this area have developed clear rules and practices for managing seed, as their success in farming depends on having seed of well-adapted landraces.

Villages like Tabi, Tega and Touperé in Douentza district enjoy a good reputation in the Mopti region (central Mali) for the quality seed of their *Tabi nyo* (pearl millet from Tabi). According to farmers, their millet can mature in only 45 days, while it adapts its growth cycle to the length of the rainy season through continuous tillering from the base or from the lower nodes. It has thin, cylindrical, compact panicles 20 to 30 cm long, which are more resistant to headminers, an insect that feeds on the pedicels of the florets during grain filling.

Although farmers in Tabi were unsure about its origin, they knew of the uniqueness of their local landrace, both for growing and eating it. 'We know of farmers from other villages who planted our millet next to theirs and ours ripened first. Our millet is the best, because we have a good soil for it. At the market in Boni, women also prefer to buy two bowls of pearl millet from Tabi rather than four bowls of pearl millet coming from elsewhere. When they make *tob* from our millet, they become hungry less quickly.'

As pearl millet is highly cross-pollinating, characteristics of local landraces can change with time and farmers consider soil the most important influence on the development of plant types, similarly to pearl millet farmers in Rajasthan (Christinck, 2002). Farmers distinguish between the short millet types that grow well on hard soil (*animam yu*, or 'pearl millet of the short people', referring to the Tellem, the pygmies who lived in caves and built dwellings around the base of the escarpment at the time when the Dogon arrived); another short pearl millet grown between rocks at the base of the escarpment (*torro yu*), but which can grow on either hard or sandy soil; and the tall pearl millet grown on the sandy plains (*dou yo*). Yields are highest for *dou yo*, but its larger, yellowish grains give a *tob* of lesser quality than *torro yu* or *animam yu*, which have darker green, smaller, shinier and harder grains. *Torro yu* is preferred over the pearl millet grown on the sandy plains. When prepared, two bowls of *torro yu* give as much *tob* as three bowls of *dou yo* and *torro yu* is said to be more nutritious and heavy. Due to their different qualities in the field and in the kitchen, farmers often keep the different types separated, although they say that when one type is grown in the other environment it will become the other type after two seasons.

Many neighbouring villages have heard about the pearl millet from Tabi. Especially when rains are late, farmers from far away come to look for their very early maturing pearl millet. It has attracted customers from as far as Burkina Faso and Ségou (about 600 km south of Tabi). Recent trials with the variety in Maradi region, Niger, have excited farmers from more than 1000 kilometres away and have started seed production in Niger by ICRISAT.

5.6.2 Structure

Management. Farmers in Dogon country are not organized in farmers' associations or cooperatives, but abide by social rules and norms aimed at protecting the entire community. Although the amount of seed stocks are well-kept household secrets, by the time of planting farmers know who has no more seed or grain that can be used as seed.

Farmers in Tabi village also know that they should not buy pearl millet seed at the local market, and rather ought to ask people in their community when needed. But, as farmers are ashamed to admit that they have no more seed, many feel reluctant to ask others. Those who do will do so after dusk. Those who decline to ask out of shame will receive a (secret) visit the evening before the day on which all farmers go out to sow their fields. Some seed will be deposited in front of the house of the deprived neighbour, who may never know the origin of the donor. The importance of using seed from their own community is also reflected in village stories (Box 5.4).

Dogon farmers integrate seed and grain. Seed is selected from the grain, usually before harvest, and may or may not be stored separately. Seed panicles are cut with a piece of the stem attached (about 10 cm), and can always be distinguished from panicles destined for grain, which are cut at the very base of the panicle. Most farmers store pearl millet on the panicle, and only thresh it when offering it for sale at the market. Farmers are so determined to preserve their own seed that, after 2 years of near crop failures, 80% said that they still had sufficient pearl millet seed for sowing (CRS, 2006).

Many farmers in Tabi village produce surplus pearl millet and store grain for several years, also for use as seed, as crops fail one out of three years in this region. Also, even in years where the crop does not fail but drought hits during the grain filling phase, the grain harvested will not be well filled and thus will not have good vigour at germination.

Infrastructure. Dogon farmers have continued to build storage structures like the ones made by their ancestors, some of which are still in use. Seed is often stored with the food grain in a house-like, rectangular adobe structure (roughly 6m × 2m × 2m). In Tabi, it is locked behind a small iron door, to guard the precious seed stock. The structure is raised half a metre above ground, resting on piled rocks to keep out termites.

Linkages. Following 2 years of crop failure, those farmers who did not have enough seed said they relied on local grain markets as a source for local variety seed.

In 2006 and 2007 ICRISAT with local partners conducted farmer field schools (FFS) for controlling striga weed. Ever since, farmers in Tabi have continued thinning (removing the weak plants from pockets at an early crop stage), as they said this practice helps to reduce the weedy *chibra* in their crop.

Quality control. The neighbouring villages Tabi, Tega and Touperé only grow the pearl millet of Tabi. Cross-pollination by wind and exchanges between farmers have helped to maintaining their local landrace. To avoid contamination, farmers were not

Box 5.4 Pearl millet seed from Tabi.

April 2, 2010. Sitting under the shade of a veranda, whose roof is packed with a 40 cm thick layer of millet stalks (for animal fodder), the protection from the scorching sun is highly appreciated while talking with a group of 12 farmers in Tabi village, Dogon country. Asked to tell a story about their local millet seed, one farmer starts: 'In the past, a man from our village once ended up without any millet and had eaten his seed saved for the next season. He felt so ashamed that he did not dare to tell the others in the village. He went to Boni market and bought millet from San (a few hundred kilometres south). Most of us buy pearl millet for food at the market from time to time, but never for seed. He decided to keep quiet and used the millet he bought as seed. At first the plants grew well, but by the time all villagers were harvesting their crop his pearl millet had not yet even flowered and it wilted when the rains stopped. Not only had he wasted the millet, but he also ended up harvesting nothing.'

interested in testing new varieties of pearl millet as part of the farmer field school programme. The social cohesion, norms and rules (not to mention the demanding growing conditions) are such that farmers only source seed from within their own community.

Panicles are usually selected in field before harvest, but this may also be done after harvest by the older people. They choose panicles that are firm when pressed between thumb and index finger, and have good seed set and well-filled grains, especially covering the tip. These characteristics also prevent the grains from being damaged when rain is still falling during harvesting time.



When selecting seed, farmers identify panicles that have well-covered tips, like the one shown on the left.

5.6.3 Cash flow

In the early 1980s a project operating near Gao visited Tabi village various times with a truck to buy pearl millet for distribution in their target zone. Before that Tabi farmers were already selling pearl millet at the markets of Boni and Simby, although exchanges and sales within the village were more important. As farmers only sell grain (selling seed being culturally inappropriate as one is supposed to help a farmer in need) and leave it up to their clients whether they want to use it for food or for seed, there is no special price for seed. Prices are slightly higher in the market, to cover farmers' travel costs.

But, as the demand for their pearl millet increases, at planting time farmers sell it 30% to 50% above the grain price to outside buyers, such as to the NGO Afrique Verte, which bought 10 tonnes of millet at 250 FCFA (\$0.55) per kg in 2003.

5.6.4 Marketing

Farmers confirmed that pearl millet from their villages is very much sought after by other farmers in the surrounding areas. They mentioned that people from as far away as Timbuktu, Kidal, Burkina Faso and Ségou come to their village to buy pearl millet seed. When approached for selling pearl millet, the village committee meets. Rather than coordinating the sales, they pass on the information to all village members and each decides, based on their available stock, how much they will put up for sale.

The Catholic Relief Services (CRS) also encouraged pearl millet surplus producers from Tabi and other villages to market their own stored grain to improve seed security for disadvantaged farmers in Douentza through seed fairs and vouchers.

In the Boni market in the Haïre commune even traders dealing with large volumes of grain, often imported from southern Mali, stored grain from local pearl millet varieties destined for sale during the sowing period, when farmers may use it as seed. These traders said they prefer buying grain from the group of villages around Tabi, Tega and Touperé, as their variety is very much appreciated in the area (CRS, 2006).

When mentioning our visit to Dogon country, Faso Kaba (Section 5.2) took immediate action to establish links to source this early maturing pearl millet. It would make sense (from a technical, economic and marketing point of view) for traders to sell seed packages under the name of the village of origin, e.g. as torrinion millet of Tabi, but this option may be influenced by the rigidity with which the new seed law will be implemented.



Dogon farmers would rather sell their belongings to survive than eat their millet seed.

5.7 Challenges and Strengths of the Seed Enterprises

The seed sector is changing fast in Mali. Most of the enterprises in this chapter started in the last 5 years, with both the government and donors trying to create an enabling environment.

Faso Kaba is successful because of the know-how and the ability of the owner, who has formed partnerships with research, extension, NGOs, cooperatives, individual farmers and the media. The company built a solid network of seed producers, contact farmers and farmer-customers, cleverly combining mobile phone and local radio to assess demand (for other examples of entrepreneurs who combine social networking with mobile phones, see Mehta *et al.*, 2009). Over the years Faso Kaba developed trading expertise and, as suggested by a donor, also started producing seed. Although Faso Kaba has grown and is gradually establishing its production and distribution networks, it believes that more appropriate bank loans are needed to advance its business.

According to the supervisor of Niégué Farm, demand for rice seed is growing rapidly. Meeting this demand requires more land and machinery and more off-season production. But there is no way to expand the farm without buying or renting land far away. During the rainy seasons Niégué Farm floods and the farm can do nothing about it, because the drainage system needs repairs and is managed by the Office du Niger, not by the farmers. The Niégué Farm is successful because the owners are agricultural specialists who work for themselves. They are serious and dream of progress, of becoming leading seed producers in Mali.

The Nipagnon Cooperative received financial, technical and marketing support from SG2000. Although most of its members are illiterate, the cooperative is able to apply for loans from the National Agricultural Development Bank and Kafo Jiginew, a rural credit

organization. The Nipagnon Cooperative also exports seed to neighbouring countries. By attending the annual seed fairs organized by the Ministry of Agriculture, the Cooperative staff meet other seed producers and dealers and learn about what they are doing.

COPROSEM at Siby lacks business management skills. But they are expert farmers, from years of experience and from having participated in PVS. And they are close to ICRISAT, national research and extension, which helps farmers of the cooperative to have access to new varieties. They also link with seed distribution companies, such as Faso Kaba, a crucial approach to diffuse new varieties on a large scale (Siart, 2008). Equally important, one of the members, a trader by profession, is a keen innovator, who started preparing 100g packages of new sorghum varieties to sell on the market.

The cases in this chapter suggest that one has to move away from seed production models and move towards seed production-marketing-enterprise models. Government and donor programmes that build self-reliance, along with practical organizational and management skills can equip producer organizations to start and sustain trade relations with companies and financial institutions (Bingen *et al.*, 2003).

In Mali's harsh and diverse environments it is crucial to get the variety right. The Dogon case, the Nerica case and the Niégué Farm case all show this. Various villages in the arid Dogon country, such as Tabi, have developed a strong reputation for producing good quality, early maturing and drought tolerant pearl millet. Modern varieties have never outperformed the local landraces under such harsh and variable conditions. Customers have come as far as 600 km to buy pearl millet from Tabi, while CRS has used it in seed fairs during times of food insecurity. Recently, Faso Kaba also became interested in marketing their seed. It may require Faso Kaba to expand its range from certified to truthfully labelled seed, if the seed law allows such latitude.

The new seed law, which is nearly approved, will forbid sales of uncertified seed. Seed legislation based on European models often fails to respond to African realities and needs. Pearl millet is especially difficult to produce within the norms and can often only maintain its properties when produced in the place of origin (Christinck, 2002). The registered pearl millet variety Toronion is actually a landrace (that locals call *torri yo* or *torri nyo*) originating from a village in the Mopti region and which was purified by IER. Whether the pearl millet produced in its area of origin is still the same as the registered variety is questionable. Also, field inspections for certification in the remote Dogon country would make little economic sense. The extent to which expert pearl millet farmers like those from Tabi could play a role in the national economy will depend a lot on how pragmatically the new seed legislation will be interpreted.

Governments may give entrepreneurs room to grow by supporting certification, organizing national seed fairs and supporting the financial sector, and yet policies and overly restrictive legislation may keep some community initiatives from reaching their full potential.

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