



Cowpea Seed Innovation Platform: A Hope for Small Seed Producers in Mali

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Abstract

Cowpea is a food crop of great importance to the people of Mali due to its contribution to food security, improvement of producers' incomes, a price that is higher than that of cereals, and an important role in social relationships. However, the availability of good quality seeds is a major constraint to its production and productivity. As seeds are the key input in agriculture, an innovation platform has been established at the Cinzana Agronomic Research Station in May 2016 to improve the production and distribution of cowpea seeds in Mali. It brings together farmers, distributors, transporters, financial and technical services, and NGOs. This ensures greater sharing of information and knowledge among the different actors involved in the cowpea seed value chain. Two bodies of governance were set up: Program Planning Committee and Executive Office. Significant results have been achieved in three years of existence: the number of varieties used has increased from 5 to 12. The amount of foundation seeds produced annually has increased from 1 t to more than 20 t. The sales strategy in small packs proved very effective by reaching more farmers. Promotional activities involved 25 training sessions for 1097 farmers in different aspects of the value chain and 299 demonstrations, involving 2934 producers and benefiting 12193 farmers.

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Keywords

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10.1 Introduction

Cowpea is emerging more and more as a food and cash crop by its contribution to food security and increase in the incomes of the population. In Mali, the annual production of cowpea has risen to 180,080 t from an area of 426,870 ha (CPS/SDR 2017, Seventh Bulletin of Tropical Legumes III (TL III) publication 2017.)

However, this crop remains confronted by many constraints: low access to good quality seeds, problems with quality assurance/quality control (purity maintenance), and lack of market information, all owing to weak seed systems. Opportunities include the availability of several varieties (through the efforts of agronomic research during the last decades) and the existence of several agricultural input distribution companies interested in the seed value chain.

To sustain cowpea production, more efforts need to be made to optimize the use of quality seeds of improved varieties, good agronomic practices, and fertilizers. There is also the need to develop more effective commercial marketing channels for the grain. It is in this context that the setting up of an innovation platform (IP) of cowpea seed production and dissemination was considered in Cinzana. A workshop about setting up this platform took place on 17/19 May 2016 at Cinzana Agronomic Research Station, which is about 45 km from Ségou. The cowpea seeds market was inefficient because of either lack or distortion of marketing information. To deal with such situations, the authorities implemented market information systems (MIS) in order to (1) exchange and share information, (2) build social capital and trust, and (3) create a framework or conducive environment for innovation.

Innovation platforms (IPs) offer a framework for cooperation and learning through the direct networking of actors of a sector or community of common destiny in order to address the problems of informational asymmetry and the situations of mutual distrust that accompany them. They are increasingly mobilized in the programs of Research and Development to produce more impact on the beneficiaries.

Cowpea seed production and distribution in the IP of Cinzana Rural Commune is part of the TL-III project seed system to ensure more sharing of information and knowledge among the different actors in the cowpea value chain in Mali. The objective was to improve the production and the distribution of good quality seeds of improved cowpea varieties.

10.2 Establishment of the Platform

The IP was established in May 2016 at Cinzana Agronomic Research Station through a workshop attended by 53 participants representing a diversity of stakeholders in the value chains for production and distribution of cowpea seeds. The MSP is made up of three cowpea seed cooperatives (CPDS, COPROSEM, and CPS/SSN), three seed groups (G.Sem/Minankofa, GRAPS, and ARCAD), four NGOs (AMEDD, CRS, AMASSA, and Faso Jigui), two unions of cooperative societies (USCABI and UCPC), two seed companies (Faso Kaba and GRAADEC), one agro-dealer (Agri Sahel), three extension services (Segou Regional Agriculture Service, Local Agriculture Service of Cinzana, and the National Seed Service), one research center (Cinzana Agronomic Research Station), two radio networks (ORTM/Ségou and Radio Fôko), one microfinance institution (Dondalasso), and one private transporter (Table 10.1).

10.3 Overall Process of Platform Establishment

In the process of setting up the platform, contacts were made with various actors with common interests (farmers' organizations, agro-dealers, seed companies, NGOs, technical services, research, microfinance institutions, radio companies, transporters, consumers/users of cowpea seeds). The workshop was scheduled, and invitation letters were sent to the different organizations (Table 10.1).

The workshop was held on 17/18 May 2016 in the meeting room at Cinzana Agronomic Research Station. A brief overview was given on the general principles of operating an IP. The importance of cowpea in food security in Mali and the lack of access to seeds of improved varieties by smallholder farmers justify the setting up of the IP on production and distribution of seeds.

Seed producers highlighted the constraints relating to the adoption of new varieties and related crop protection measures. Seed distributors highlighted the weaknesses in the distribution channels and the low awareness and low visibility of cowpea-based products in the market. In its intervention, the National Seed Service emphasized the need to intensify the training of seed producers, strengthen the relationships among producers, trainers, and financial partners, and facilitate access to the required inputs for producers.

The participants were divided into two groups, seed producers and seed distributors. The first group identified and prioritized the constraints to production and distribution and the second prioritized the planning of activities.

The first three constraints identified and prioritized by the producers were the low availability of breeder and foundation seeds, problems of crop protection (phytosanitary treatment), and storage and conservation of production.

The constraints from the distributors' group were the lack of planning in the production and distribution of breeder, foundation, and certified seeds, the low level of training of the actors, and difficulties of access to credit.

Table 10.1 Categories of the stakeholders at platform establishment and current numbers of members

| Stakeholders | Organizations present at the establishment | Number of members at establishment (2016) | Current number of members (2018) | | |
|--|--|---|----------------------------------|----------------------|------------|
| | | | Men | Women | Total |
| 3 cooperatives of cowpea seed producers | CPDS | 20 (4 women) | 16 | 04 | 20 |
| | COPROSEM | 33 (7 women) | 85 | 40 | 125 |
| | CPS/SSN | 42 (15 women) | 39 | 19 | 58 |
| 3 groups of seed producers | G.Sem/Minankofa | 152 (99 women) | 53 | 99 | 152 |
| | GRAPS | 30 (11 women) | 18 | 14 | 32 |
| | ARCAD | | | | |
| 1 cooperative society of agricultural services | Zamoho/Koutiala | 25 men (19 < 35 years) | 47 (36 < 35 years) | 906 (817 < 35 years) | 953 |
| 4 NGOs | AMASSA | 66 (5 women) | 99 | 15 | 114 |
| | Faso Jigui | 13 (1 women) | 12 | 01 | 13 |
| | AMEDD | | | | |
| | CRS | | | | |
| 2 unions of cooperatives societies | USCABI | | | | |
| | UCPCC | | | | |
| 2 seed companies | Faso Kaba | | | | |
| | GRAADECOR | | | | |
| 1 agro-dealer | Agri Sahel | | | | |
| 3 technical services | DRA/Segou | | | | |
| | Cinzana subsector of agriculture | | | | |
| | National Seed Service (SSN) | | | | |
| Research | Cinzana Agronomic Research Station | | | | |
| 2 radio networks | ORTM/Segou | | | | |
| | Foko radio | | | | |
| 1 microfinance service | Dodalasso | | | | |
| 1 transporter | Private carrier | | | | |

The outputs from the workshop were as follows: (1) Lists of prioritized constraints in cowpea seed production and distribution, (2) Elaboration of platform workplans, and (3) IP for cowpea seed production and distribution. Roles and responsibilities of the different stakeholders involved in the IP are summarized in Table 10.2.

10.4 Structure of the Governance of the Platform

Two organs have been established for the seed production and distribution IP:

1. Committee composed of 21 members responsible for planning activities.

Table 10.2 Roles and responsibilities of the different stakeholders involved in the activities of the IP for the production and distribution of cowpea seed

| Stakeholders | Roles and responsibilities |
|---|---|
| Producers of certified seed (cooperatives and groups) | Produce certified seeds in quantity and ensure their availability |
| Seed distributors (seed companies, agro-dealers) | Supply or provide agricultural inputs (seeds, fertilizers, pesticides) and agricultural equipment |
| Cowpea seed consumers (NGOs, farmers, unions) | Ensure good production and wide diffusion/popularization of varieties |
| Microfinance | Facilitates access to credit |
| Transporters | Guarantee timely seed delivery in good condition |
| Technical services and NGOs | Support for technical advice, support, and monitoring of production and certification activities |
| Communicators (radio networks) | Information dissemination |

2. An Executive Office or Activity Unit, composed of 16 members, responsible for the implementation/execution of platform activities.

The members ensure the following:

- The Chairman/President coordinates, directs, and organizes the activities of the platform.
- Chief Secretary is responsible for archives and logistics and represents the President when absent.
- General Treasurer is responsible for financial management and platform property.
- Secretary for information, responsible for all aspects of communication.
- Secretary for external relations, responsible for relations with NGOs, projects, and national and international institutions.
- Secretary for development, responsible for gathering the training needs of IP members.
- Secretary for production, supervises activity planning and innovation dissemination, maintains data sheets and other documents.
- Chairman of the Board ensures execution of the decisions of the General Assembly and compliance with the rules and procedure of the MSP.

10.5 Facilitation of Platform Activities, Including Meetings

Platform members meet formally with the TL-III team twice a year. During these meetings, the previous year's activities and results are reviewed and the workplan for the following year is developed and validated.

Implementation of platform activities is conducted based on the experiences of members and with support from a specialist on the operationalization of platforms. The participatory approach and brainstorming during general meetings and annual reviews are the democratic tools and mechanisms used to encourage the

participation of all members. Decisions are taken by a majority of the members present. Also, the TL-III team is regularly in contact with the different cooperatives, associations, and producer associations for the exchange of experiences and advisory support.

10.6 Activities of the Platform

As part of the implementation of the platform, different activities have been executed:

10.6.1 Workshops

Five workshops were organized as follows: one workshop for platform setup, 17–18 May 2016; one workshop for planning platform activities and setting up the Executive Office, 23–24 November 2016; two workshops for review and planning of activities, 7–8 February 2017 and 20 March 2018; and one workshop on introduction of platform members to marketing techniques, 19 July 2017.

10.6.2 Trainings

Different training sessions for seed producers and extension agents were held in Segou, Mopti, and Sikasso Regions. Men and women from different associations and cooperatives and technical agents were trained. The general objective was to strengthen the producers and agricultural agents' capacities on seed production, postharvest technologies, and seed sector legislation.

Different sessions focused on technical procedures for certified seed production, the principles and methods of certification (field and laboratory control), plot isolation, and storage and preservation techniques. The importance and characteristics of good quality seed and seed policy in Mali (organization of seed production, roles and responsibilities of the different actors in the sector, categorization of seeds, their producers and distributors) were explained in detail. The local language Bamananka was used for ease of communication. The participatory approach was the methodology used for better understanding of the different topics.

10.6.3 Seed Supply

Institut d'Economie Research (IER) was the only institution authorized by law to produce foundation seed. However, currently, professional seed-growers can produce basic/foundation seed provided they have the requisite technical capacities. For certified seed production (first and second reproduction, R1 and R2), foundation seeds are delivered by Research or by some relevant seed producers, then certified

seeds first reproduction (R1) and second reproduction (R2) are delivered by seed producers. TLIII project provides foundation seeds to projects, farmers' organizations, cooperatives, NGOs, State Services, and seed societies for certified seed multiplication. Partners producing certified seeds are listed per Region as follows: Ségou Region (G.Sem./Minankofa, DRA, GRAPS, CPDS, Faso Jigui, COPROSEM, AMASSA) and seed producers; Mopti (AMASSA and CRS); Sikasso Region (Zamoho, GRAADECOS, and SOPROSA); Koulikoro Region (Faso Kaba, Shi cololo Ton of SSN/Samanko). Over a period of 11 years (2007–2018), the Tropical Legumes project led to the production of about 1952.3 t of certified seed of improved varieties entrenched in the Malian seed systems (Fig. 10.1).

10.6.4 Popularizing New Varieties

Three main strategies were adopted to popularize new cowpea varieties: demonstration (demo) plots, field days, and radio programs. The objective of demonstration is to evaluate the farmers' preference and the yield of new improved varieties compared to the farmers' local check or standard control variety. The demo plots were established by individual farmers or farmer groups. Field days have been organized during the period from bloom to maturation at Cinzana Agronomic Research Station and at farmers' cowpea demo and seed multiplication plots. Farmer participatory variety selection was also done in the demonstrations. Radio programs were broadcast from July to September to highlight different stages of crop growth and development. The broadcasts focused on the importance of cowpea, climate and soils, site selection for production, varieties, planting dates, spacing, weed control, insect pest control in the field, harvesting, and the control of storage pests.

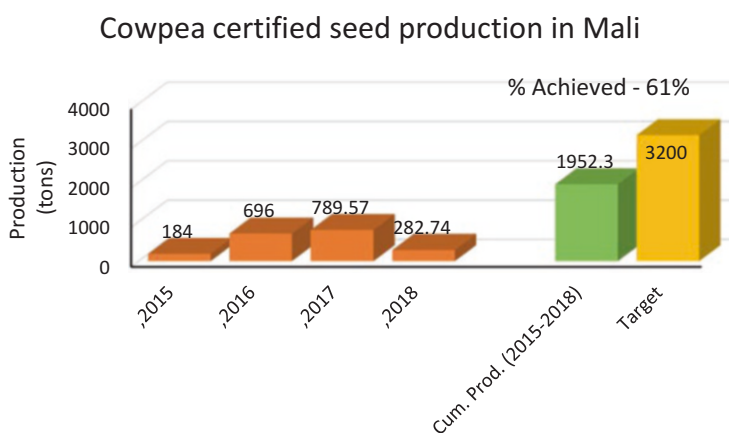


Fig. 10.1 Certified seed production between 2015 and 2018

10.6.5 Seed Marketing

The seed market is liberalized and dominated by the private sector. The State ensures that legislation and the regulation of the market are in accordance with the country's seed law. There are several actors in the seed market: producers and producer organizations, independent or dependent collectors, agro-dealers, seed companies, and NGOs, etc.

Often TL-III facilitates the sale of seeds produced by certain producers or cooperatives and also facilitates access to certified seeds by some organizations. In the villages, weekly fairs and the focal points of seed sales in small packages are key strategies used to promote new cowpea varieties and facilitate small farmers' access to improved seed. The strategy of seed sales in small packages of 1 kg in weekly fairs (exhibitions) is more adapted to the context. The number of producers reached by this strategy is higher. The case of Zamoho/Koutiala, a member of our cowpea seed platform is a good example.

10.6.6 Challenges

The IP for cowpea seed production and distribution faces a number of challenges: platform formalization, the acquisition of financial resources, the implementation of certain activities, production and productivity increases, dissemination and wide adoption of improved varieties, and training of the actors. With regard to platform problems, these are the lack of suitable harvesting and post-harvesting equipment, the lack of stakeholders trained in marketing and business management, the technical procedures for production, and the insufficiency of breeder seed. At policy level, the problems are the absence of operating procedures governing the platforms. On the organizational and managerial level, the problems are the unavailability of some stakeholders at certain meetings of the platform and the insufficiency of financial resources.

10.7 Results/Achievements of the Platform

The IP on cowpea seed production and distribution recorded different results:

10.7.1 Trainings (Access to Knowledge and Advisory Services)

Twenty-five training sessions were conducted for seed producers and extension agents in Segou, Mopti, and Sikasso Regions. A total of 1097 participants (912 men and 185 women) from different associations and cooperatives and technical agents were trained on seed production techniques, postharvest technologies, and seed sector legislation.

10.7.2 Collaboration/Partnership

The partnership/collaboration between actors in the value chain (seed producers, researchers, agricultural extension services, NGOs, agro-dealers, seed companies, and National Seed Service) was strengthened through platform training workshops, the conduct of demo plots, field days, exchange visits, and the supply of foundation seeds.

10.7.3 Popularization of New Varieties

Various complementary approaches for awareness creation were employed to popularize new improved varieties in the last three years.

10.7.3.1 Establishment of Demonstrations in Target Communities

In three Regions (Koulikoro, Sikasso, and Segou) 299 demo plots were established across different organizations to promote the use of improved varieties, and to create awareness for the community through training on cowpea production. A total of 2934 producers (401 men, 2533 women) participated in the demonstrations. A total of 12,193 farmers (men: 5766; women: 6427) were reached through the demo plots.

10.7.3.2 Organization of Field Days in Target Communities

Forty field days were organized during the period from bloom to maturation of cowpea at farmers' demo and seed multiplication plots and on Cinzana Agronomic Research Station and were attended by 1866 participants (1140 men and 726 women).

10.7.3.3 Dissemination by Radio Programs

Fifty-two radio broadcast messages on promotion and production techniques for cowpea varieties were broadcast from July to September for the attention of the rural community in the local language, Bamanan. They focused on the importance of cowpea, climate and soils, site selection for cowpea production, varieties, planting dates, plant spacing, weed control, insect pest control in the field, harvesting, and the control of storage pests.

10.7.3.4 Seed Fairs

Eight seed fairs were organized through collaboration with USAID-Groundnut scaling project, Faso Kaba Seed Co., with a total of 780 participants including 466 women. In addition, more than 7000 people have been briefed across two circles (Koutiala and Yorosso) through participation in 13 weekly fairs.

10.8 Access to Improved Seed

In the domain of access to improved seed, the number of varieties used increased from 5 (Korobalen, Sangaraka, Dounan, Djièmani, and Yèrè wolo) to 12 (Korobalen, Sangaraka, Dounan fana, Cinzana télimani, Djièmani, Yèrè wolo, Gana shôni, Djiguiya, Wilibali, Fakson, Acar 1, and Simbo). The quantity of foundation seeds produced increased from 1–1.250 t to 20–30 t per year. Foundation seed supply has been improved through the cooperatives and members' groups of the platform who have priority in the supply of foundation seed. Several non-members including farmers from other villages are able to access improved seed through members of the platform (e.g., OPROSEM/Dakoumani, 32 men and six women; G.Sem/Minankofa, more than 40 producers). Land area cultivated to improved seeds has increased significantly with the platform. As examples: before the platform, the average area was 0.5 ha for G. Sem/Minankofa, compared to 3 ha per producer after the establishment of the platform. With COPROSEM/Bla, the average total area was about 11 ha, compared to more than 20 ha with platform membership.

10.9 Access to New Markets

In Mali, the market for agricultural products, including seeds, is liberalized and dominated by the private sector. Prices vary according to demand and production. The cowpea seed market is irregular and variable. The acquisition of new market opportunities is also irregular, but the platform is already making headway. In 2018, for example, G.Sem/Minankofa sold seeds to five new customers [Dry Dev/Cinzana (project), UPM/Segou (Union), Sahel Seed Production/Kayes (Cooperative Society), ADDAR/Mali (NGO), and USC/SOS Canada-Mali (NGO)] as a result of new linkages developed through the platform.

10.10 Relationship with Other Platforms

TL-III IP for cowpea seed production and distribution has good collaboration with Cinzana and Baroueli cowpea IPs, supplying them with good quality early generation seeds sourced from TL-III IP. These platforms aim to contribute to improvement in food security by training their members to increase production and productivity through new improved seeds thereby improving members' income. With the support of TL-III project, two associations (Jama jigui of Samine and Jiguiya Ton of Wolona) were created and specialized in cowpea seed production in Segou Region. Because of the collaboration between TL-III and NGO AMEDD, the Center of Agricultural Service (CSA) of Yorosso has also been motivated to promote seed production in Sikasso Region, circle of Yorosso. With the development of cowpea sole cropping in the area, the improvement of production and purchase of new assets are visible changes in the community. The

capacity of producers has been strengthened through training, conduct of demo plots, field days, and exchanges/visits.

10.11 Social Assets and Gender

Social relationships have been improved by increasing direct contact between producer associations and groups, through the platform. Memberships of women in the cooperatives and associations have increased (for example: COPROSEM/Bla has 91 members, including 30 women; G.Sem./Minankofa has 153 members, including 99 women). The IP improved the women's livelihoods (Fig. 10.2) by increasing their income to satisfy some of their financial needs. It has helped to ease rural work by regrouping, and diversifying food by the purchase of other food products after selling cowpea seeds, securing food, engaging in other income generating activities such as rearing of small ruminants by women. The example of Minankofa is an illustration of this (Fig. 10.2). As for the youth, the rural exodus to the gold mining sites and the big cities has decreased considerably (Minankofa). Their standard of living has improved. Motorcycles have replaced bicycles as a means of transportation. Their clothing is becoming more and more up to date.

For elderly people, their health status has improved through the increased family income enabling them to seek better health services and eat better, more nutritious foods.

10.12 Sustainability of the Platform

The following are platform activities aimed to contribute to its sustainability: strengthening of funding sources including member annual contributions from seed sales, formalization of the platforms (through legal recognition), and by putting in place a system of mobilization of internal resources (including contributions proportional to seed sales).



Fig. 10.2 (a) Mrs Albertine Dabou, Minankofa (I am owner of sheep through the platform) and (b) Mrs Jandark Coulibaly, Minankofa (I am owner of goats through the platform)

10.13 Reflection on the Process

The importance of the results on the various stakeholders involved is assessed through the increase of the income of producers, the adoption of improved varieties, the increase in production and sales by seed companies (e.g., Zamoho/Koutiala, 6 t in 2017 and 12 t of certified seeds by 2018 plus 1 t of foundation seed), and the strengthening of capacity of foundation seed production in addition to the certified seed (R1) by some professional seed companies through the trainings offered.

10.14 Importance of Results for Communities

- Construction of community store by G.Sem/Minankofa (Fig. 10.3).
- Contribution to food security.
- Wide dissemination of varieties and improved seeds.
- Membership of many women cowpea seed producers (COPROSEM/Dakoumani).
- Involvement of women's groups in the production of cowpea seed, case of Zamoho/Koutiala.
- Tendency for reduction in the area under cotton in favor of cowpea (Zamoho/Koutiala cases).
- Increase in cowpea sole cropping areas.
- Impact on livestock from forage production.
- Positive impact of the small packages “mini sachets” on the accessibility of seed to small producers (Zamoho/Koutiala).



Fig. 10.3 A store for seed to Minankofa for the benefit of the community through the IP; February 2019, Mr Prosperous Traore (hands on the back), Chief of Minankofa village

10.15 Vision of the Future

Strengthening the achievements of the platform by substantial funding, self-reliance (payment of contributions), formalization (legal recognition), a system of mobilization of resources (levy proportional with sales), wide dissemination of improved varieties, adoption capacity building on cowpea processing, and building the capacity of key actors in their activities.

Eventually, field trips for sharing experiences with other platforms in the subregion will be organized.

10.16 Lessons Learned

The development of cowpea sole cropping and the improvement of production and purchase of new assets are visible changes in the community. Cowpea seeds are more expensive than seeds of other crops (millet, sorghum, and corn). The cowpea seed market is irregular and variable. In the villages, weekly fairs and focal points of seed sales in small packages of 1 kg (Fig. 10.4) are key strategies to promote new varieties and facilitate small farmers' access to improved seeds. Demo plots, field



Fig. 10.4 (a) Cowpea seed in small packages of 1 kg for sale; Zamoho, 2018 and (b) sales of cowpea seed in small packages of 1 kg in weekly markets; Zamoho, 2018

days, and the broadcasting of radio programs are three main strategies to popularize cowpea varieties. The tendency for a reduction in the area under cotton in favor of cowpea has been noted in Zamoho/Koutiala zone. Social relationships have been improved by increasing direct contact between producers of associations and groups through the platform. Membership of women in the cooperatives and associations has increased (for example: COPROSEM/Bla, 91 members, including 30 women; G.Sem./Minankofa, 153 members, including 99 women). For the youth, the rural exodus to the gold mining sites and the big cities has decreased considerably (Minankofa). Their standard of living has improved. Motorcycles have replaced bicycles as a means of transportation. The platform ensures greater sharing of information and knowledge between the different actors involved in the cowpea seed value chain.

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