



Association pour le Développement  
des Activités de Production et de  
Formation (ADAF/Gallè)



ASSOCIATION DES ORGANISATIONS  
PROFESSIONNELLES PAYSANNES

TITLE: **P**ROMOTING **F**ARMER  
**E**XPERIMENTATION AND INNOVATION TO  
IMPROVE FOOD SECURITY AND NATURAL  
RESOURCE CONSERVATION IN THE **S**AHEL  
(**P**ROFEIS): CASE OF MALI

Partenariat

**IED Afrique**  
**MISEREOR**

# CONTENT

I. INTRODUCTION

II. OBJECTIVE

III. THEMES

IV. METHODOLOGY

V. RESULTS

VI. INSTITUTIONAL MANAGEMENT

VII. LESSONS LEARNT

VIII. RECOMMENDATIONS

## LIST OF ACRONYMS

ADAF/Gallè	Association for the Development of production Activities and training n
AOPP	Association of professional farmer organization
FO	Farmer Organization
ICRAF	International Center for Research in Agroforestry (now World Agroforestry)
NGO	Non Governmental Organization
PROFEIS	Promoting Farmer Experimentation and Innovation in Sahel
PROLINNOVA	Promoting Local Innovation
SC	Steering Committee

## I. INTRODUCTION

As it is well known, food insecurity, degradation of natural resources and poverty in Sub Sahara Africa has been the challenge of all levels: communities, national, sub regional, regional and international levels.

Mali is one of Sub Sahara country with a large area of Sahel. Sahel ecological zone is characterized by harsh climate with a raining season of 3 months alternate with a dry season of 9-10 months. The rainfall is very low (300-600 mm/year), short (maximum 3 months) and irregular. Soils of that zone under consideration are very poor on organic matter and most of the soil nutrients.

The economy Malian rests primarily on the rural sector which occupies more than 80% of the population of the country. Exports of the agricultural produce contribute for more than 75% of the export earnings. The average growth rate of the production is of almost 4% per annum. Admittedly the results were reached; but the performances of the agricultural sector Malian currently do not enable him to produce the growth necessary to insufflate with the national economy a dynamics of accelerated growth durable, in the prospect for a significantly reduction of poverty. Agriculture Malian needs to be more competitive and to increase its share of market

By making retrospection one can say that Mali like almost all the African countries in the Sub Sahara that agriculture was and continues to be the center of panacea of the approaches with technologies in order to increase the agricultural production, to overcome food security and poverty.

For more than 3 decades, models of approach were designed, developed, transferred, implemented and promoted in order to help Sub Sahara African to reach a better living condition. Some models of approach were imagined and implemented in Africa. Other approaches which have a success in North or in other continents were transferred in Africa. Even with the participatory approaches, the agricultural production did not reach the expectation. The low production of agriculture, the food insecurity and poverty in Sub Sahara Africa reached their higher level.

If significant increase of production happens, definitely, it has been on the detriment of the environment. The food insecurity goes from evil into worse and poverty increases to a significant degree and the degradation of natural resources is going on.

The analysis of these approaches showed that the majority of them were not developed with the knowledge of farmers as the pillar. Consequently, approach comes and goes as well as technologies. Meanwhile, farmers have been solving their problems through their own innovation which has allowed them to survive. Yet very few structures know about farmer innovations used in food production, natural resource management and others.

With this intention, changes are essentials at the individual, institutional and organizational levels. Moreover, there is a lack of inclusion of farmer innovation in the agricultural research, an insufficiency framework of collaboration, common reflections, integrated approaches, concerted steps and shared efforts that must call upon new competences which make it

possible to better fulfill the current requirements for sustainable agricultural research for development.

It is this lack and insufficiency aspects that PROFEIS tries to fill. The step is original, insofar as it is evolutionary, flexible and participative. Indeed, conceived like an instrument of coherence and consensus, it offers the suitable framework for a fertile dialogue between the various actors.

PROFEIS is an initiative to promote the farmer innovation and to contribute thus to food security and the natural resource conservation. PROFEIS is a initiative brother of the international program PROLINNOVA (PROMotion of the INNOVAtion in ecological agriculture and natural resource management).

## II. GLOBAL OBJECTIVES OF PROFEIS

- To reinforce the capacities among agricultural research institutions, extension services, NGO and community based organizations for an effective support of the farmer experimentation and innovation into the natural resource management.
- To accelerate the diffusion of innovations generating of good production and centered on the sustainable and environmental resource conservation, towards the poor resource farmers to improve food security and livelihood of the households.

## III. ENTRY POINTS OF PROFEIS MALI : Biodiversity conservation

In Mali, the entry themes of the PROFEIS was the conservation of the biodiversity which has two sub-themes :

- biodiversity of the sorghum and the millet with focus on the farmer innovations relating to the development of adapted varieties, the fight against genetic erosion and the varietal conservation, the endogenous diffusion of the knowledge and the exchanges between farmers.
- the setting in culture (domestication) of the natural forest species through the country innovations as regards germination of the species, the assets in the field of the shortening of the cycle, the maintenance of an appreciable rate of success, the durable management sciences.

The soil fertility was retained as transverse topic because it is an essential condition for the success of the innovations on the conservation of the biodiversity. Indeed, the high production of food crops and the normal development of natural forest tree species in the field are strongly dependent on the soil fertility. This is why the program will have to encourage the farmer experiments which associate practical conservation of the biodiversity with those aiming at improving the soil fertility.

## IV. METHODOLOGY

### 4.1. Choice of the location of PROFEIS Mali : Segou region

Segou region, a Sahelian ecological zone, has been chosen to the implementation of the program for several reasons:

- All three partners (IER, AOPP and ADAF Gallé) intervene in the Segou region and have undertaken activities which will be able to profit directly from the program and to contribute to institutionalize the assets.
- One of the strategic partners (ICRAF) intervenes primarily in this region.
- The networks of farmer organizations (AOPP) exist in this e zone and could constitute significant supports for the diffusion of the innovations.
- Many initiatives aiming to the conservation and the diffusion of the good country practices in the fields of the agro forestry, the management of the soil fertility and the genetic conservation of diversity exist in Segou region and deserve to be reinforced.

### 4.2. Process

To establish the program, for the start the full power was given to the network of FO, also member of the steering committee (SC). The initial planning has been adapted to the reality on the ground by the SC as a whole but particularly by the FO as well as the local selection of interested structures. For each event at Segou, at least 5 members of the SC participate.

The role of each partner of the SC has been well defined. Most of the principles and the roles used in this initiative are the existing ones of the network of FO (AOPP). In this way, there are more thrust, less complaints. All the participants of the local launching workshop were identified by AOPP based on some criteria defined by the SC. Then the network of FO is responsible on the field activities (convening farmers from different areas, logistics and facilitating in the local language...etc).

ADAF/Gallé role has been administrative and financial management and contribute to facilitate meetings workshops. It organized a series of consultation and planning activities with the members of the SC which aim was to better understanding the program and make an adapted and realist planning activities.

Research institution has contributed to play a role in the facilitation, training and technical advisory.

### **Major activities**

The first event was the national workshop of PROFEIS –Mali held at the National agricultural research institute (IER) on February 14, 2007. Representative from 13 structures (technical structures, local and international NGO, FO, agricultural research institutions and resource persons) participated to the workshop which aim was to inform stakeholders about the program of PROFEIS Mali.

The local workshop was launched at Segou on February 28,2007 with 25 participants from representative from local NGO, local FO, local technical services at local national agricultural research institute, and resource persons at the regional

agricultural Chamber of agriculture at Segou. The objective of this workshop was to familiarize participants of the identification of Farmer Innovation (FI). To facilitate the understanding of innovation by the participants, some examples were drawn from SC members. During this workshop, a group of investigators was identified to conduct the field work in interviewing for potential innovators.

The investigators have a one day training to go through the questionnaire in order to recognize a potential farmer innovator. A questionnaire was provided to them for interview. 6 teams of 2 persons have been constituted. Each team composed by FO and NGO or a local extension agent. Each team has had to identify at least 4 to 5 innovations for 10 days.

The identification and characterization of farmer innovation was done during 2 seasons: dry season and raining season

In March 2007, a two day workshop was held in Segou to listen to the investigators. Questions of clarifications were asked for selections. Some of the innovations dropped. Another identification of potential innovators was done during the raining season based on the same procedure on September 2007.

A 3 day workshop was organized to invite all the identified innovators. 33 innovators participated to this workshop. The objective of this workshop was to listen directly the chosen innovators and to make an appreciation.

## V. RESULTS

### a. Identification des innovations paysannes pendant la saison sèche

Sous thèmes	Nombre d'innovations identifiées
Biodiversité du sorgho	11
Fertilité des sols	6
Agroforesterie	8
TOTAL	25

### 5.2. Characterisation of farmer innovations during the dry season

Sub –theme	Innovations retained
<i>Biodiversity of sorghum</i>	Fight against mildiou with podwer of grains of <i>Combretum micranthum</i> (Ngolobé)
	Fight against Strigawith podwer of fruit of nere
<i>Soil fertility</i>	Water and soil conservation
	Water and soil conservation in association with raies and buttes
<i>Agroforestry</i>	Improvement of the germination of <i>Piliostigma reticulatum</i> « Niama »

	Grafting 2 indigenous tree species <i>Lannea microcarpa</i> et du <i>Sclerocarya birrea</i> (Npegou/Ngounan)
--	--

### 5.3. Identification of farmer innovation during the raining season

Sous thèmes	Nombre d'innovations identifiées
Animal production and health	6
Seed conservation system	2
Crop production	2
Domestication of local species	2
Pisculture	1
TOTAL	13

13 innovations were identified on diversified themes. A total of 38 innovations have been identified during the 2 seasons (dry and raining seasons).

### 5.4. Characterisation of farmer innovations during the raining season.

Some of these raining season innovations have been characterized. A special session was organized to allow the innovators themselves to appreciate the innovations to be experimented

### 5.5. Joint experimentation of innovations

Among all the 38 innovations identified, characterized, 6 innovations have retained for joint experimentation.

1. The beaten clay incubator of Nouhoum Traoré of the village of Djela (commune of Gouendo);
2. The breeding of pintadeaux of Bakary Daou of the village of kanouala (common of Kéméni);
3. The organisational innovation of Moulaye Coumaré of the village of Kalabougou (commune of farako)
4. Fight against the striga with low powder of leaves of baobab tree and powder of néré of Bakary Konitié Dembelé of the village of Saye (Sana commune);
5. Fight against the striga containing powder of néré of Bakary Dembelé of the village of saro (common of Saloba);
6. Grafting of Gounan (*sclerocarya birrea*) and of Pegou (*Lannea microcarpa*) of Sidiki Coulibaly of the village of Zembougou-Mangoni (commune of Niasso).

### 5.6. Exchange visits of innovations

To increase the diffusion of the farmer innovations identified, an exchange visit was organized. 33 innovators and the 5 members of the SC were divided in 2 groups. Each group visited 3 innovations retained for joint experimentation for 3 days. At the end of the 3 days, a restitution of the visit has been held to allow participants to exchange on the visit.

Farmer innovators were very satisfied of the visit. Many of them have started to informal networking and exchange telephone number. They found the visit very benefic and requested for more of such a visit among innovators.

### 5.7. Networking

The networking of innovators is in process. Because of the high interest of farmer innovator, they decided to have time to consult other farmers in order to put in place a more functional and sustainable network.

### 5.8. Determination of hypothesis

One day workshop was held to start the joint experimentation with the 6 farmer innovators.

## VI. INSTITUTIONAL MANAGEMENT

PROFEIS –Mali is made with 3 main partners: 2 representatives of a network of Farmer organization (AOPP), 2 representatives of national research institute (IER) and 2 representative of a NGO (ADAF/Gallè).

PROFEIS has favored the collegial participation which means that the 3 partners are equal in term of decision, implementation, monitoring ..etc. In fact, the principles, rules of the network of Farmer organization have been applied during the field activities

Table 1: Identification of PROFEIS partners.

Institutions partenaires		Country	Members of steering committee
AOPP (network of FO)	FO	Mali	Souleymane DIARRA <a href="mailto:aopp@cefib.com">aopp@cefib.com</a>
	FO	Mali	Ousmane Barké DIALLO <a href="mailto:aopp@cefib.com">aopp@cefib.com</a>
IER (National research institute)	Research	Mali	Dr Abdou Yéha MAIGA <a href="mailto:abdou.maiga@ier.ml">abdou.maiga@ier.ml</a> .
	Research	Mali	Diakalia SOGODOGO <a href="mailto:Diakalia.sogodogo@ier.ml">Diakalia.sogodogo@ier.ml</a>
ADAF/Gallè NGO)	NGO	Mali	Madame Assétou KANOUTE <a href="mailto:adafgalle@afribone.net.ml">adafgalle@afribone.net.ml</a>
	NGO	Mali	Djibril KONE <a href="mailto:adafgalle@afribone.net.ml">adafgalle@afribone.net.ml</a>
IED Afrique	Regional NGO	Sénégal	Bara Gueye <a href="mailto:iiedsen@sentoo.sn">iiedsen@sentoo.sn</a>
ETC Ecoculture	International NGO	Pays Bas	Jean-Marie Diop <a href="mailto:jm.diop@etcnl.nl">jm.diop@etcnl.nl</a>

The Steering Committee (SC) is made with 6 members. The national coordination is ensured by ADA/Gallè. The ONG had signed with regional coordination a contract:

- Signing of all the contracts and protocols with the various financial partners, in particular Misereor.
- Narratif and financial report (January –June 2007) was transmitted to regional coordination. The six-month period (July –December 2007) is in process.
- To work with the national teams to set up a national system of coordination and to take care that information technical, administrative and financial necessary to account for the operation of the project is regularly sent to the seat of IED Africa.
- Feedback of information on the progress report of the program with PROLINNOVA
- Demonstration of interest of all the information of PROLINNOVA (Innovation and HIV/SIDA, Genre, climate change ... etc).
- Support of regional coordination for improvement of the reports
- The implementation of a network of farmer innovators is in process

To broaden the partnership, PROFEIS –Mali identified some of the partners of MISEREOR in Mali to be part of the initiative. Most of them are NGO ( GRAT, AMAPROS, ex world neighbours or Signignongnè and TONUS). Signignongnè which headquarter is based in Ségou, took part in all the activities.

GRAT and TONUS took part of the launching of the national workshop as well as ICRAF (International Center for Research in Agroforestry).

## 6. LESSONS LEARNT FROM FARMER-RESEARCH-NGO PARTERSHIP

- Facilitation of such of identification of farmer innovation require skill to listen and patience
- They must play a catalyst role in order to invite potential innovations to tell their innovation
- Members of the Sc facilitating the all process must be good listenerTo listen and able to listen

## 7. RECOMMANDATIONS

Farmer innovators have recommended more field visits for them “it is better tto see something than to hear thousand times”

All the innovators identified were men therefore; gender aspects must be part of the program in the future

## 8. CONCLUSIONS

Most of farmer innovators identified are trained to identify new innovations among themselves. They have been sensitized and are ready to involve more farmers in the initiative. Many of farmer innovator stated that they have learn. They also appreciate the field visit It is too premature to see any impact on agricultural research development.

## **INNOVATION : Grafting of 2 indigenous tree species : *Lanea microcarpa* and *Sclerocarya birrea***

### **1. Identification of the innovator**

Sidiki Coulibaly, 50 years, primary school. He is married with 2 women and 34 children (in charge). He is literate. . It was before the innovation farmer and now he is a farmer, nursery gardener and grower.

Its principal activity is agriculture with the plantation seedbed. It makes also the association of the melon – cucumber with the jujube tree and grafted tamarinier. The whole supported by a system of pumping out to animal haulage. It has a livestock of 90 bovines, 15 sheep, 25 caprine 3 asses and poultries. It is well equipped with 3 plough 2 carts 2 seeders a Threshing-machine, 1 mill a pump on puit and other small equipment.

It is to 20 km of the market but the road is impracticable during the season of pluie. Les mean of transport is difficult because it is necessary to go on 10 km (rural track) to reach the butinée road.

It has the easy access to information through the engineering departments (visits), the projects and/or the ONG.

On the other hand, the access to the appropriations is difficult starting from the banks

It is laid out to share its innovation and its experiment with others.

It had 12 ha before the innovation and 22 ha after the innovation

It profited from a study trip in Koutiala –Kaniko Sirakelé – Fonfona de Octobre –December 2006 in the field of the seedbed, plantation of Eucalyptus and Acacia Senegal.

It is of Moslem and the Bambara ethnos group. Its principal activity is organic manures starting from the pits compostières

The sources of income of the innovator come

- Agriculture (65%)
- Breeding (5%)
- Seedbed (20%)
- Plantation (5%)
- Poultry (3%)
- Others (2%)

**The principal constraints** are:

The access of the plantation is at the edge of the trunk road N° 6 thus accesses easy during all the year.

### **2. Characterization of the innovation**

#### **Localization**

The innovation is located in the village of Zémbougou Mangoni, common Niasso, rings of San, located at 400 km of the Bamako capital.

#### **Complete description of the innovation**

Grafting of *Lanéa* sp on *Sclérocarya* *Buréea*.

The experimentation started in 2000. The graft is taken on *Lanéa* sp and grafted to *Sclérocarya* *Burea* which is relates it Clerc's Office. The recovery is 10 to 15 days. The foot thus grafted gives the fruits as from 3 years. The fruits are larger, more charnu and very sweetened that those of ordinary *Lanéa*. Fructification is made once/year. The fruits are appreciated much by the children, the birds and the animals. Two (2) peasants nursery gardeners visited the grafted feet and applied the same technology which succeeded to them

The plantation of the grafted jujube tree and the tamarinier grafted in partnership with melon and cucumber was implemented for a rational and judicious use of water of watering. This technology makes it possible to reduce considerably the loads of L plantation because the vegetables are collected several times.

The use of the system of watering drop by drop supplied with a puit of 19 m on which is installed a manual pump with animal haulage (tractor drawn by an ass) with a flow of 5 liters at the minutes. The grafting of Lanéa sp on Sclérocarya Buréa is a new idea. The experimentation is always in hand. The children of the innovator take part in work of the innovation by the execution of an elaborate work schedule and the regular follow-up of the grafted seedlings and system drop by drop.

#### **Motivations**

Love of the trees and nature. This was supported by the framing of the engineering departments especially of the IER/ICRAF or the innovator with have to learn, include/understand and know many techniques of production and multiplication of the seedlings (seedbed, grafting, maintenance of the plantations, collect fruits and of gum arabic and others). The desire to make to always better succeed pushed its curiosity to graft Lanéa in *Sclérocarya*. In the environment of the innovator, the fruits of his trees are appreciated much by the population. At the beginning of the rain season, the women extract the juices to make of it a local drink also appreciated by the population; other share, the fruits of these trees make it possible to fight against the food shortage at the beginning of wintering.

Ambition of being able to create something. Increase in L aproduction and the productivity.

#### **Idea**

Curiosity and knowledge to make local peasant of the innovator, avid of knowledge and ambitious in the multiplication of the seedlings.

The innovation asks for investments of departure (small equipment. .)

#### **Drawn advantages**

Increase in production and incomes. In 2006, it had the first price of the operation to be equipped in afforestation what made it possible to acquire agricultural equipment complete (wheelbarrow, plough, barbed wire, cart. It had a reputation in the sale of the jujube trees. It was made a notoriety by the sale of the grafted seedlings.

#### **Level of adoption**

The close village nursery gardeners come to visit the innovation in the plantation.

#### **Constraints**

Small problem of management

#### **Solutions applied: reinforcement of the capacities of the innovator in management**

The innovation is diffused and adopted in the villages surrounding following the visits of exchange

#### **Modifications to be made**

It is a new single innovation in its kind because of the gasolines used.

#### **Partnership with research or extension service**

The innovation had the support council and the formations of the ICRAF and the IER. ONG had to visit the seedbed and the plantations. There are bonds of partnership between the innovator and the C\$Op. Small private companies come to buy seedlings. World Close and the project to development supports the innovator by technical councils