



Sketch of Bourgou Limani's test plots,
photo by Mano Tissa

The importance of joint experimentation processes in agroecological intensification

Two cases of agricultural technologies joint experimentations in the commune of Manni and management of environmental resources in the commune of Gomponsom in Burkina Faso

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Introduction/Context

In the area of intervention of the project Strengthening Farmer-led Research Networks for Agroecological Intensification in Burkina Faso (FaReNe), farmers' practices improvement methods are very various and assistance of producers' development partners shows different characteristics, adapted to the context. Processes of joint experimentations of agricultural technologies and management of environmental resources have been set up by innovator farmers in collaboration with their partners World Neighbors, the researchers and Diobass Burkina for the promotion of a lasting agroecological intensification.

The joint experimentation with NGO World Neighbors is turned to the practices related to agricultural technologies of innovative farmers in the commune of Manni. With NGO Diobass Burkina, this joint experimentation is focused on the organization of environmental resources management by the communities of Gomponsom.

The joint experimentation is in the heart of Participatory Innovation Development (PID), an approach of the project FaReNe within the framework of innovations implementation. The process becomes integrated to the promotion of agroecological intensification. This process of researching, thinking and acting gives the opportunity to come with sustainable and adapted solutions (endogenous or cross-bred) to the concerns of rural communities. Many steps are included among which: diagnosis by the communities, characterization of the innovations and the innovators identified during the diagnosis, selection of the identified innovations, restitution of the diagnosis results to the communities, conducting of joint experimentations. The analysis and evaluation of the joint experimentations results are realized at the same time by the innovators and the researchers, in order to validate an innovation in a joint way.

Implementation

The main actors involved in PID implementation are the innovative farmers, the state technical services (agriculture, breeding, and environment), the research (researchers of INERA) and NGO World Neighbors and Diobass Burkina.

The process of joint experimentation, main element of PID is stated in this way:

- Visits and exchanges with the innovative farmers permit to identify the technologies and research questions;
- The protocols and mechanisms of joint experimentation are then evaluated (1 day per innovative farmer);
- Support-advice visits are proposed to the innovative farmers (on average 3 visits per experimentation site, at the beginning, at midway and at the end of the process). Each visit lasts one day.
- The profits gained thanks to the innovation are analyzed;

- The experimentation process results are evaluated in a participatory way with the innovative farmers and shared with their pairs (one day per area) which permits to discuss the experimentation results and analyze the opportunities as well as the difficulties related to the scaling of the innovations;
- The innovations results are restituted during communal workshops (one day per area) where the area producers are invited by the joint experimentation team to discuss and observe the results and examine the meaning for the area producers as well as the reproducibility;
- The innovation is adopted.

The process documentation and the results at the level of each village has been realized by the innovative farmers with the support of the technicians and the researcher. A report of the activities is published and available for reference.



Palaver tree: producers and research members in Gourcy. Photo by O. Tasséré

Roles of innovative farmers and technical services in PID process

The role of NGO like World Neighbors and Diobass is mainly to reinforce the producers' technical and organizational capacities on one hand and support the experimentation process with small equipment and agricultural inputs on the other hand.

As for the research, it accompanies all the process and contributes in particular to the working out of the experimental disposition, the follow-up/evaluation and the results documentation obtained after the supervision of the experimentations. These results are afterwards published.

Diagnosis of communities

This first step is realized by a team made up with at least three types of actors from the same village. It aims to identify the innovative practices. The diagnosis team is made up of a stimulating person coming from a farmer organization, an agent from the technical service and a member of each NGO. The members are chosen according to their knowledge of the environment and their experience as regards innovative practices in the area.

During the diagnosis, the team members are trained to the use of the diagnosis tools, developed by the persons in charge of Diobass research/action and the persons in charge of the programs of World Neighbors. These tools are in particular the questionnaire form for the innovations' characterization (who, what, how), the identification of the agroecological spectrum of the farmers' innovations, the criteria matrix of technical innovations (Technical, Economical, Ecological and Social - TEES) and the criteria matrix of social innovations (Durability, Reproducibility and Inclusivity - DRI). These tools serve to determine if the innovations correspond to the project objectives and orientate the decision taking.

Data gathering in the field concerning these different tools is led by the producers themselves. With the help of technicians, they document the used tools. All along the process of diagnosis, missions on the field have been periodically realized and have permitted the diagnosis team to proceed to the validation of the different forms filled. The processing of the collected data and the diagnosis activities report have permitted to exploit the information and results obtained on the innovations.

For the specific case of Diobass Burkina Faso, a reflection workshop has been organized before the communities' diagnosis in order to identify the problematic permitting to orientate the diagnosis teams on the target themes for the identification of pertinent farmer innovations. A call for the innovative practices has also been made by means of local community radios in order to select the innovative practices to conserve. The communities' diagnosis results and the call for innovative practices have been exposed at the mini-fair organized in July 2018 in Gourcy, in order to examine and complete the practices characterization.

Selection of innovations and male and female innovators

The innovative practices spotted during the diagnosis carried out by the communities and the actors of NGO structures, the scientific research and the diagnosis teams have permitted to determinate the most pertinent innovations on the basis of scientific criteria (TEES and DRI). These criteria take into account the originality of the innovation, its pertinence, its technical, environmental, economic and social viability and its potential of spreading (scaling). The innovations retained are then classified according to the combinations of technologies which the producers have, according to their resources (wealthy, middle, poor).



Tindano Namoussa, innovator producer in zaï field in Koulfo, photo made by Mano Tissa

Restitution of diagnosis results to communities

Final results are restituted to communities. This presentation in the communities of the innovations retained for the joint experimentations allows to ensure that the populations' concerns are really taken into account by the retained innovations. The restitution is realized during a community workshop which is also the oppor-

tunity to identify the innovative farmers interested by the activities related to the joint experimentations of the retained innovations. This session is animated by each of the NGO (World Neighbors and Diobass BF) with the team at the origin of the diagnosis in the village involved.

Management of joint experimentations

This step is set up in a participatory way by the research groups or Innovative Farmers Groups (IFG), made up of six members on average. From the innovative practice retained and on the basis of identified inadequacies (variables to improve) onwards, an experimental study theme is formulated for the joint experimentation in collaboration with the experimenter innovators, the research, the NGO and the involved technical services.

The research group is then trained on the management methodology of the experimentation activities as well as the use of tools to be used (experimental protocol, follow-up/evaluation form, activities planning form). This step also permits to identify the elements (variables to evaluate) to take into account in the elaboration of experimental protocols for research and by all the involved actors.

Research and NGO accompanying the innovative farmers bring support/advice for the activities planning of the joint experimentation and the follow-up/evaluation. Besides, the accompanying NGO bring a financial support for the acquisition of small equipment and research inputs. The innovators, gathered together per research group, operate the experimental protocol implementation. They are in charge of the gathering of primary data stemming from the experimentation results in collaboration with the technical services and the NGO agents.

In the specific case of Diobass BF, the auto-evaluation of the experimentation results has permitted to carry out an annual programming of the joint experimentation activities.

The joint follow-up of the experimentations is carried out quarterly with the NGO leaders and the technical services. The role of research is to set up the follow-up/evaluation and scientific validation of the experimentations results.

Results

Two joint experimentations have been conducted. The first has been carried out in the commune of Manni with World Neighbors during two crop years. They are 32 producers who have taken part to these experimentations on the combinations of agricultural technologies (stony bunds, zaï, half-moons, compost, mulching, dust of termite mounds, etc.). From the second year onwards, voluntary counterparts have taken part to the experimentations, at the rate of two counterparts per experimenter farmer.

The experimentation conducted in the commune of Gomponsom concerned as for it the research action about the environmental resources management, on a two years period also. This experimentation has gathered 30 male and female producers (15 men and 15 women), all members of the innovative farmer network in the commune of Gomponsom. The technologies were about forest zaï, ANR, community management (village grove), and introduction of useful species (*Ziziphus mauritiana*, *Piliostigma reticulatum*, *Sclerocarya birrea*, *Acacia nilotica*, *Diospyros mespiliformis*, *Parkia biglobosa* etc.) in the family farms.

The follow-up/evaluation has been operated in collaboration with the research and has permitted the elaboration of the reports on the participative process results. The process was marked by a strong implication of the innovative farmers who have produced new information on the practices.

A participation of women and young people in the implementation process of the joint experimentations was noticed, particularly in the case of Gomponsom.

An improvement of agricultural practices, an increase of outputs in the range of 10 to 15% in the experimentation in Manni and a development of the surface areas of the restored lands for agriculture have also been noticed.

At the level of joint experimentation, the introduction of useful species, the initiatives for family groves implementation, the maintenance and preservation of endangered species and the extension of ANR and forest zaï practice have got a positive impact on agroecology.

Furthermore, social cohesion has been improved in the area where FaReNe is active, particularly through mutual assistance in the carrying out of operations of planning and restoration of lands and family consultations, but also at the level of land management in the framework of the management of environmental resources. This improvement is linked to the results in the conducting of the joint experimentation and the effects of innovative practices.

The sharing of experiences and knowledge between the farmers of the villages concerned is also to be noticed, because it is at the origin of organizational changes and a mutual assistance for the implementation of the experimentations. Besides, the more dynamic functioning of the innovative farmers' networks has permitted exchanges and consultations of local communities in order to scale the joint experimentations results.

Challenges and solutions

The joint experimentations implementation has presented numerous challenges particularly about the commitment of the different actors involved in the joint experimentations process. It has been necessary to set up concertation frameworks with the different actors involved in the process in order to incite everybody to take part in equal shares.

The respect of disposals set for the conducting of the experimentations by the innovative farmers has represented a major challenge. Intensive trainings on local governance and advocacy are as such advisable in order to reinforce the different actors' capacities. It is also necessary to adapt the tools for data gathering

to producers by translating them in a tongue that is accessible to them so that they may give information on data in a more complete way. Furthermore, if the information collected is useful to the results analysis, it also fosters the process appropriation

The joint experimentations provide useful results for the research but nevertheless different from those obtained by the fundamental research. These experimentations are indeed more rooted in the farmer's reality and more centered on their needs than the fundamental experimental research. The researchers' consistent participation in such a process represents a difficulty owing to the little credit granted by the

fundamental research to joint experimentation. An institutionalization of PID in the universities of the country through actions-research could certainly facilitate an effective implication of the research for the promotion of innovations.

Intellectual property which concerns certain innovations represents another major challenge, in particular

for the innovations which possess a commercial potential, like the phytosanitary products. This challenge limits the scaling of the results of experimentations of innovations. The visibilities of producer's experimentation actions, those who have taken part to the innovations, go through initiatives like fund to the innovators or organization of competitions aiming to point out the best innovators.

Lessons learned

The lesson to be learned here is the real great enthusiasm for the implementation of innovative practices nourished by the share of knowledge between pairs and the support of the various actors (NGO, research, state technical services). These innovations are the fruits of the taking into account of the producers' specific needs.

Furthermore, the focus should be put on the implication of women in choosing the producers and the innovations of experimentations because these are part and parcel of the system of production in family farms. Moreover, the activities of production therefore the innovative technologies learned in family farms on their individual pieces of lands are applied according to the available means.

The joint experimentations efficiency depends on the different actors' capacities to collaborate. The experimentations should be carried on with an approach adapted to the local context (specific case of Manni and Gomponsom). Adapted mechanisms in the pursuit of joint experimentations should be implemented to ensure the success of PID.

The joint experimentations allow producers to exchange in order to improve their knowledge and their practices in the framework of agroecological intensification at the local level. Joint experimentations are fundamental points of PID and also contribute to the dissemination of innovative agricultural technologies and management technologies of environmental resources.

Publication February 2019

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This publication is the result of the project *Strengthening Farmer-led Research Networks for agroecological intensification in Burkina Faso and Mali* (FaReNe) which has been possible and has been realized through the Collaborative Crop Research Program (CCRP) of the

McKnight Foundation and under the aegis of Prolinnova. The project aims to reinforce and support the research networks managed by the producers in the environment of which the small farmers carry out joint experimentations directed by the producers in collaboration with researchers for agro-ecological intensification. All that is based on local knowledge and local innovations. The following publication would not have been possible without the active participation of the partners of FaReNe. The Royal Tropical Institute took care of the facilitation of the workshop process of the writing and general editing of the document.

Design: Anita Simons <https://symsign.nl>