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E. Penot

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Dissemination of direct seeding mulch-based cropping systems in Madagascar

Developing a learning approach

In the mid-altitude zones of Madagascar, cropping systems based on direct seeding, with a cover crop and crop rotation, have been disseminated on smallholdings since the turn of the century with a degree of success. In order to disseminate these new cropping patterns, CIRAD and its development partners in Madagascar have developed modelling tools to monitor and assess activities through a DSS (Decision Support System). For developers, these tools provide decision-support in the technological choices to be implemented depending on their physical environment and their type of farm.



Field visit and assessment of practices. © E. Penot, CIRAD

Optimizing extension efforts

In agricultural development projects, decision-support and negotiation between operators and with farmers is a priority, so that actions live on after the end of the project. CIRAD is endeavouring to optimize extension efforts by proposing techniques and services that are truly adapted to each type of farmer.

This type of initiative is being implemented as part of development projects in the regions of Lake Alaotra (BV-lac project, Lake Alaotra watersheds), Vakinankaratra and southeastern coast (BVPI-SE/HP project). The aim is to adapt technical and organizational messages to farmer realities and promote innovation processes including direct seeding mulch based cropping systems (DMC) for sustainable production as well as the integration of agriculture and animal production. A self-appraisal method for farmers/groups and a network of reference farms have been developed. These tools can also be used to assess technical actions and provide support in defining aspects of public agricultural development policy.

Contact

Eric Penot
CIRAD
Innovation joint research unit
Ampandranomby, BP 853,
99 Antananarivo
Madagascar

eric.penot@cirad.fr



Identifying innovation processes

CIRAD proposes self-appraisal sessions where farmers in producer organizations themselves identify innovation processes adapted to them, using the "Accelerated Propagation of Innovation" (API) method (Belloncles). The method requires prior coaching of the participants so that they can give thought to a situation then act appropriately. This prior coaching is provided by socio-organization specialists.

At Lake Alaotra, CIRAD used the API method with associations of irrigation water users, the federation of user associations in the network of the two irrigated areas: "PC15" and "Marianina Valley", as well as with agricultural intensification groups and farmer groups integrating DMC practices. The transmission of technical information within the farmer groups applying DMC was a frank success. The analysis identified how DMC techniques are effectively adopted and revealed a potential will to increase intensification from the 4th or 5th year of DMC.

The development project partners thereby acquired experience in organizing and running these sessions. The method has been formalized in the form of a BV-lac working document available from CIRAD.



Cowpea mulch in a DMC system with a maize-cowpea-rice rotation, Madagascar.

© E. Penot, CIRAD

Developing a network of reference farms

New cropping systems are assessed in networks of reference farms. A network of reference farms is a set of farms representative of different agricultural and socio-economic situations. The farms are monitored annually, to measure the impact of technical actions and development policies and carry out prospective analyses.

Olympe software is a tool developed by CIRAD, INRA

and IAMM (Mediterranean Agricultural Institute in Montpellier) to simulate farm activities. It can be used to test the robustness of a technical choice, and farm's resilience when faced with a series of hazards. Simulations of the adoption of new techniques are carried out with standard crop management patterns that provide reliable data over a large number of plots through prospective analysis. Applying this approach to the adoption of direct-seeding mulch-based cropping systems at Lake Alaotra helped development operators to make progress in their work. Consequently, the technical possibilities offered to farmers have become more adapted to the constraints faced by different types of farms. In particular, the levels of cropping system intensification proposed are more adapted to risk levels acceptable to producers.



On-farm reporting-back session, Madagascar. © E. Penot, CIRAD

Partners

- FOFIFA, Centre de recherche agronomique de Madagascar
- University of Antananarivo, Madagascar
- Development partners associated with the BV-Lac and BVPI-SE/HP projects, Madagascar
- Groupement semis direct de Madagascar