

les dossiers d'**AGROPOLIS** INTERNATIONAL

Expertise of the scientific community



Agronomy

Crops and cropping systems

Anti-insect netting tailored for protecting vegetable crops in the tropics



▲ *M. Tonou, a horticulture farmer at Ouidha, Benin, explaining to his colleagues how to use anti-insect netting to protect cabbage crops.*

In tropical regions, vegetable crops are infested year-round by a broad range of pests. Farmers generally deal with this problem by spraying pesticides. Although farmers, through such unplanned and uncontrolled chemical treatments, may sometimes be able to turn a profit, the residues remaining on the vegetables are a threat to consumer health, and there is a high groundwater pollution risk. It is now crucial to develop alternative pest management methods that are less dependent on chemical inputs. In Benin, the mosquito netting principle was adapted for the protection of cabbage crops—plastic netting placed over the crop late in the day thus kept pests (mainly nocturnal) from reaching the plants to feed and lay their eggs.

This economically viable and sustainable technique, which is also easy for horticultural farmers to understand and implement, reduced the number of pesticide treatments by tenfold, while increasing production. Physical control is proving well suited to small farms that employ family labour. This technology was developed through a participatory approach involving all stakeholders in this commodity chain. The physical control conditions and concomitant modifications in cropping practices have been defined within the framework of a prototyping initiative that takes cropping system constraints identified

during a preliminary assessment into account. Extension of the use of anti-insect netting for agricultural applications also provides an opportunity to recycle mosquito netting used in malaria control programmes. Moreover, the use of anti-insect netting will be studied for other vegetable crops such as tomato and leafy vegetables, while also combining this technique with other alternative pest and disease control methods.

Contacts: Thibaud Martin, thibaud.martin@cirad.fr & Serge Simon, serge.simon@cirad.fr

Innovation and supporting mixed cropping-livestock farms (Burkina Faso)

In sub-Saharan savanna areas, the extension of technical innovations in different production sectors has shown its limits. It cannot, for instance, provide a solution to complex issues such as soil fertility management, crop-livestock integration, or changes in cropping patterns on farms.

In cotton-growing areas in Burkina Faso, CIRAD has developed tools and a support strategy to help farmers change their production systems. This involves assisting farmers in developing innovative cropping systems that are cost-effective, socially acceptable, more efficient in capitalizing on input investments (fertilizer, concentrated livestock feed) and ecological processes (recycling of grassy biomass). This research is based on previously acquired technical results and farmers' knowledge and know-how. Possibilities of adoption and adaptation of these systems are evaluated jointly with farmers.

In addition to the work carried out with farmers, mixed crop-livestock farm functioning models are developed, which stimulate discussions with farmers on the best and most effective changes that they would like to make on their farms.

These tools enable farmers, as well as extension agents, to assess different production unit changes in terms of income and food security, the soil fertility balance or the forage balance on different livestock production farms. They can, for instance, be used to assess the feasibility and impact of including a forage crop in a rotation or of increasing the number of animals to fatten.

These computer tools will ultimately be implemented by advisors to help farmers in making strategic decisions (choice of activities, design of production areas, planning of technical interventions). This approach has also been developed in partnership with farmers and development organizations in other mixed crop-livestock farming situations in Brazil and Madagascar.

Contacts: Nadine Andrieu, nadine.andrieu@cirad.fr
Patrick Dugue, patrick.dugue@cirad.fr
& Pierre-Yves Le Gal, pierre-yves.le_gal@cirad.fr

► *Mechanical weeding in a cotton field—cattle draught is still an essential element for crop-livestock integration in Burkina Faso.*