

Highlights

CIAT in Africa

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The Highlights series summarises research results and policy implications from the work of CIAT and its partners in Africa

Disseminating bean integrated pest management technologies: an adaptive approach with farmers.

Pest management strategies that are technically sound and effective often are not adopted because the complexity of smallholder farmers' production has been neglected in the generation and packaging of recommendations. Bean pests, like many others, tend to confuse farmers: some see bean stem maggot pupae as ants; others believe foliage beetles drop in with rains. With such understanding, complex technology tends to worsen the confusion. CIAT's approach to technology generation and dissemination includes enhancing farmers' understanding about the problem and tapping their knowledge. This issue of Highlights illustrates an adaptive approach to IPM development and dissemination with smallholder farmers in northern Tanzania.



In northern Tanzania farmers believed foliage beetles "came with the rains and got drowned if the rainfall got heavy." As a result the only solution they offered for control was "rain".

The bean stem maggot (*Ophiomyia* spp.) and the bean foliage beetle (*Ootheca* spp.) are widespread in Africa.

They become special problems in intensified production, where soils have become impoverished or beans are produced continuously without fallow or rotation. In such areas, farmers have accepted these pests as endemic constraints and factor them into their production circumstances. Farmers were aware of the symptoms and in some cases recognised the pests, but did not know the circumstances that led to outbreaks nor understood the damage well enough to take preventative or remedial action.

Participatory diagnosis and analyses of pest problems

Researchers guided farmers through participatory studies of pest development, following the distribution of its life stages above and below ground. Farmers gained a better understanding of the pest's ecology and population dynamics, and were then able to identify and try out more appropriate solutions for integrated pest management (IPM).

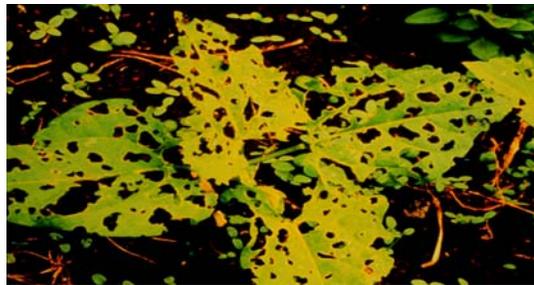
Farmers offered solutions based on their improved knowledge about the pest and their traditional control strategies. They compared circumstances that led to increases in pest incidence and the frequency of outbreaks, and designed experiments with researchers.

The farmers collected data, results were discussed in a participatory forum, best options for management of the pest were discussed and tested, and future activities were planned. Researchers and farmers also tested traditional pest control strategies under controlled conditions; some methods (e.g. fermented cow urine and various botanical concoctions) were found as effective as neem and other commercial pesticides.

Through this approach, farmers gained more confidence in their capacity as experimenters and have developed ways with the research and extension services, to adapt and disseminate their IPM and other production technologies. These include:

- Production problems, brainstorm on potential solutions and strategies for testing them.
- Field days to create awareness about the technologies.
- Farmers' conferences to engage in farmer-to-farmer information exchange and share new findings with other communities, who proceed to the next round of adaptive testing for their own particular circumstances.
- Radio programmes (including drama) to share information across the wider community.

The extension service and researchers participate in these activities and support the farmers with other extension materials developed in collaboration with the farmers.



Field damage by foliage beetles (top) and by bean stem maggots (bottom).

Farmers' preferred dissemination pathways

The main dissemination pathways selected by the farmers were:

1. On farm demonstration of IPM technology.
2. Demonstrations in schools.
3. Training through community learning activities.

4. Distribution of extension information leaflets, posters, etc. about the problem and its management.
5. Awareness-creating seminars and field tours.



Farmer demonstrating use of "Mfori" for *Ootheca* management.

Those farmers having above-average resources for production preferred hands-on group learning, while poorer farmers preferred activities that took less of their time such as field days, on-farm demonstrations, radio programmes and drama. Farmers were very willing to share newly acquired knowledge and went out of their way to disseminate information with their colleagues. This approach to technology development and dissemination enhances farmers' capacity to analyse their production problems and to identify appropriate solutions. It also creates confidence in their traditional knowledge systems and allows them to evaluate this knowledge in a critical manner.

A boost for extension

The approach gives the extension service an opportunity to reach more farmers with a range of appropriate technologies by which they can solve complex problems, without assuming that one solution or package suits all. At the request of farmers, the extension service is now using this approach across a wide range of issues including integrated soil fertility management with a range of crops.

Work at the pilot site in Lushoto, Tanzania, was conducted in collaboration with the Department of Agricultural Research, Ministry of Agriculture and the Northern Zone Agricultural Research Institute (NZARDI). The approach is now being scaled up by collaborators in other locations and countries.



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