



Managing pests and diseases in tropical agroforestry

Strategic Opportunity

World Agroforestry Centre

At a glance ...

Pests and diseases are major causes of yield losses in crops around the world, but they have been given very little attention in agroforestry. As more farmers plant trees on their farms, there is a significant potential for an escalation in traditional pest and disease problems as they are provided with more hosts, or the development of new pests and diseases that could hinder agroforestry development.

Until now pest management has relied on traditional knowledge. There needs to be more awareness of pests and diseases in agroforestry, and to undertake pest risk assessments before scaling up successful agroforestry options. This will help in the eventual development of strategies for minimizing pest damage in agroforestry systems.

The global problem: little attention given to agroforestry pests and diseases

Pests and diseases are the biggest cause of crop yield losses around the world and the number one threat to food security in the developing world. Smallholder farmers in developing countries are perhaps the hardest hit, as they cannot afford chemical control measures and are more vulnerable to loss of food or income.

Agroforestry is an excellent tool in long-term development strategies for helping poor farmers increase livelihood and income options and for conserving natural resources. Much progress has been made in the last 20 years in developing and adopting new agroforestry technologies—and in domesticating and importing new tree species into farmers' enterprise systems. However, research in pest management for agroforestry systems has remained largely neglected. Very little is known about agroforestry tree pests. With few exceptions, pest management in tropical agroforestry relies on traditional knowledge. Assessing pest risk, a common practice in crop pest management, is rarely undertaken in agroforestry despite the increasing importance of trees on farms.

Domestication of indigenous trees, introduction of exotic trees and intensification of tree planting also have the potential to encourage the emergence of new pests on introduced trees. Host sharing and switching of tree pests are also risks. Some pests will remain of minor importance, while others may become serious constraints to widespread adoption of particular agroforestry technologies. Managing these risks—and problems when they occur—is a necessary next step in developing and promoting new agroforestry technologies.

How we have responded to this

A strategic alliance between the World Agroforestry Centre (ICRAF) and CAB International (CABI) has been developed to address this issue as a part of a Joint Bioscience Programme. The



aim of this project is to develop and apply methods for assessing and managing pests and pest risks in agroforestry practices that are being widely adopted by farmers. It targets pest problems in existing agroforestry systems and pest risk assessment and management in domestication of indigenous trees and introduction of exotic species. Specific objectives are:

- To contribute to the designing of more robust agroforestry technologies that minimize pest problems without compromising their intended use.
- To develop and test curricula for training of trainers and farmers in integrated pest management (IPM).
- To create awareness among farmers, extension staff, researchers and policy makers to advocate for IPM.
- To enhance capacity of national programmes to undertake IPM research in agroforestry.

How this extends our experience with pest and disease problems

The World Agroforestry Centre has been working in the area of pest management in agroforestry systems for several years. Two recent PhD studies on nematode problems in agroforestry systems have highlighted previously unsuspected problems. The

Bioscience Division of CAB International has a long history of work with ecological pest management, conserving and using microbial biodiversity in changing systems and supporting smallholder producers in the global market. This project will expand the close working relationship between the two organizations and will build on their extensive networks with a wide range of partner organizations around the world that have ensured that past research work has an impact on the lives of smallholder farmers.

Next steps ...

The World Agroforestry Centre and CAB International have joined resources to develop and apply methods for assessing and managing pest risks in widely used agroforestry practices—

- Strategic research will be conducted that considers both present pest problems in existing agroforestry systems and pest risk assessment and management related to domestication of indigenous trees and introduction of exotic species.
- Generic risk assessment and management methods will be developed for different agroforestry practices (improved fallows, fodder bank, timber trees, indigenous fruit trees, etc.) and applied to

selected case studies.

- Procedures and guidelines will be devised for strategic application by agroforestry research and development workers and for local implementation by farmers.
- The health status of the major agroforestry tree species presently being promoted will be assessed at global and local scales.
- Potential and existing pest problems will be identified, their importance assessed, and strategies for minimizing damage or risk of damage will be developed, implemented, and made available to farmers and extension workers.

For more information ...

Organizations interested in supporting or taking part in activities under the Joint Bioscience Programme are invited to contact:

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