

# Theory of Change for Pest Management

(Insect, Disease and Weed Pests; P/D/W)

## The Need

Pests constrain the productivity of many crops and are particularly challenging for legumes, reducing crop quantity and quality in the field and in storage.

Poorly regulated and over-used synthetic pesticides pose dangers to human health, non-target organisms, and threaten long-term management by driving "boom and bust" cycles.

Given the diverse nature of pests, the scale of management efforts must be considered on a case-by-case basis – from gene to plant to the landscape.

## The Diagnosis

Management strategies vary by pest. The strategies effective for managing major pests may be distinct from those needed to manage suites of minor pests.

Pest management systems need to include proactive elements such as genetic resistances, soil health and crop density, as well as reactive approaches such as application of biological control agents and (bio)pesticides based on scouting and knowledge of pest dynamics.

Pests management needs to be approached with integrated methods that recognize farmers' constraints (time/labor, funds and knowledge) and minimize selection pressure.

Farmers need a toolbox of pest management practices to fit to particular crop, environment, social, and market circumstances.

Collective action is needed to control many pests because they do not respect farm borders.

## The CCRP Response

Strategic prioritization:

- Assess problems and gaps using agroecological / cropping system and farm/farmer typologies.
- Tackle pests and diseases that influence the crops of interest to CCRP in selected contexts.

Understand pests biology and ecology as the basis for management.

Develop research technologies (breeding, bioinputs, pre- and post-harvest practices) as well as market and other incentives.

Identify management principles and options by context.

Strengthen capacity in pests research and knowledge (including awareness.)

Collaborate with organizations at all levels.

## Pathways to change

Model or monitor impact of pest management practices on non-target organisms, ecological services, and human health.

Test and refine management options (practices), including working with farmers.

Assess cost-effectiveness; farmer appeal, adoption and adaptation.

Develop and harness formal and informal networks.

## Contextualized scaling

Contribute to AE evidence base/ ecological pest management principles.

Scaling genetic resistance via seed systems; biopesticides via commercialization.

Extension (printed materials, games, models, mobile phones, videos etc.)

Policy impacts on use of toxic inputs, as well as market and community policies for pest control.

## Impacts

More resilient and productive ag systems.

Improved human and environmental health.