DEMONSTRATING BIOLOGICAL APPROACHES FOR SUSTAINABLE MANAGEMENT OF TOMATO LEAFMINER IN KENYA

Locations
Kenya

Dates
01/09/2019 - 30/08/2020

Summary
Since 2014, the tomato leafminer has become the most serious threat to the sustainable productivity of tomato in Kenya, causing up to 80% yield loss. Almost 98% of farmers' crop suffer from this pest and when using pesticides as a control method, only 27% of farmers report success. Building on CABI's expertise in biological control and integrated pest management, in this project, CABI is collaborating with Koppert, a global supplier of biological control products, to demonstrate to farmers, the benefits of biological control within an integrated approach.

The problem
Tomato is one of the most popular and widely grown vegetables in Kenya, cultivated in all 47 counties. However, despite its socio-economic significance, the production of this key crop is constrained by numerous biotic and abiotic factors, namely insect pests.

Since its arrival in Kenya in 2014, the tomato leafminer, *Tuta absoluta*, has become the most serious threat to sustainable productivity, causing between 50-80% yield loss if no control method is applied.

Almost 98% of Kenyan farmers suffer from *T. absoluta* attacks in their tomato fields each season. To manage this pest, smallholder vegetable farmers typically rely on insecticides and spray between 6-10 times per season. As a result, *T. absoluta* is resisting pesticide, leading to production losses and increased input costs. A study by CABI on farmers' coping strategies towards the tomato leafminer showed that 96.5% of farmers apply pesticides but only 27% report success. Furthermore, many farmers do not observe pre-harvest intervals resulting in pesticide residues entering the human food chain, posing health risks to consumers.

Biological control, therefore, becomes an important component in the integrated management of this pest. It can offer a safer, more cost-effective and environmentally-friendly control option for smallholder tomato farmers.
What we are doing

CABI has promoted the use of biological control and integrated pest management since its origin.

CABI will work, collaboratively, with Koppert, a leading global supplier of biological control products, to demonstrate biocontrol within an integrated approach.

For two seasons, CABI and Koppert, together with smallholder tomato growers from Nairobi and Kajiado counties, will implement an Integrated Pest Management (IPM) approach involving the predatory mirid *Macrolopthus pygmaeus* (MIRICAL) and the pheromone trap system (Tutasan and Pherodis) with the hope that by using this spectrum of methods, pesticide use will be reduced and yields increased. This builds on previous work conducted by Koppert and Kenyatta University to validate the use of pheromone traps for *T. absoluta*. Work will involve deploying the two techniques in open fields and greenhouses.

One problem encountered is the attitudes of smallholder farmers towards biocontrol in that it is perceived as being expensive, not readily available and not always as effective as synthetic pesticides.

This project, will contribute to making that change, through enabling farmers to try out biological control, experience the benefits, and provide lessons and evidence for furthering the uptake of low risk pest control products. Biological control learning sites will be set-up to act as information hubs and focal points for communities to learn and be trained on biological control.

Partners, will together:

- Demonstrate the efficacy of selected biological methods for the management of the tomato leaf miner in different tomato cropping systems (open field and greenhouse)
- Build the capacity of smallholder farming communities on the use of biological approaches for sustainable management of tomato pests
- Create awareness on the use and benefits of biological approaches for managing tomato pests
- Determine the cost benefit, as perceived by smallholder farmers, of different biological packages (singly or integrated) for control of the tomato leaf miner

Key project outputs include:

- Uptake of biological methods for management of tomato leaf miner among smallholders in target areas increased
- Knowledge among farming communities on available biological methods for management of tomato leaf miner and the benefits enhanced
- Awareness by farmers and communities of the use of biological control for the sustainable management of invasive pests improved
- Information on the cost benefit of different biological approaches for control of the tomato leaf miner produced and disseminated
- Lessons learned for future efforts to promote wider use of biological control in smallholder production

Results so far

The project inception workshop, held on 27th August 2019, emphasised the need to deliver the project in more areas since *T. absoluta* remains a serious challenge for farmers in various regions.

Farmers and growers who will host the demonstrations have been identified, both for open fields and greenhouses, and planting dates have been agreed.

Additional results will be added as the project progresses.
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