

FOOD & BUSINESS APPLIED RESEARCH FUND

Development, Validation and Dissemination of Integrated Pest Management Packages for Tomato Leafminer (*Tuta absoluta*) and Fusarium wilt-root knot nematode complex affecting tomato production in Kenya.

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Project Description

Tomato plays a critical role in meeting domestic and nutritional food requirements, generation of income and creation of employment for both the rural and urban populations in Kenya. Currently, tomato production is facing major challenges with Tomato leafminer (*Tuta absoluta*) and Fusarium wilt-root-knot nematode complex which causes 80-100% crop loss if not managed. Efforts to manage the pests using chemical pesticides and resistant varieties have not been very successful. Through this project the current status of diversity and identity of tomato leafminer (*Tuta absoluta*) and Fusarium wilt-root-knot nematode complex will be established. This will provide baseline information for development, validation and dissemination of IPM packages that are effective, sustainable and adoptable for management of the target pests. A cross-sectional survey to document current status of the pests will be carried out. Identification of the fusarium wilt, root knot nematode isolates and *Tuta absoluta* will be done through morphological and molecular characterization. Development and validation of the IPM packages for management of the above pests will be achieved through on-farm scientific trials. Sealing out and dissemination of the best technologies to the target groups will be accomplished through demos, farmer field days and stakeholder workshops. This is expected to result to improved livelihoods of smallholder farmers and improved food security due to improved tomato production.

Activity	Preliminary Results
Project Inception workshop	• Key stakeholders in the tomato value chain involved and their input included
Cross-sectional survey in Kirinyaga County-Kenya	• Key information generated for strategic decision making both at farm level and policy level • 2 scientific papers being reviewed for submission to open access journals
Morphological and molecular characterisation of isolates	• Results being utilized for development of IPM packages
Farmer field days and trainings	• 2 field days organized, 300 smallholder farmers and 5 MoA officials trained on IPM & Biological control
On-farm scientific trials	• Development and validation of IPM packages on-going

Opportunities and challenges

Opportunities

- Thirst for knowledge on IPM by smallholder farmers
- Potential high demand for alternative and sustainable solutions for insect pests and diseases
- Partnerships and collaborations with relevant stakeholders both in government, NGOs and private sector in the quest to improve the livelihoods of smallholder farmers

Challenges

- Intense knowledge gap among smallholder farmers on IPM and biological crop protection
- Unstructured extension service systems and mechanisms



Fig 1: Project inception workshop; participants group photo



Fig 2: On-farm trial site



Fig 3: Project partners training during a farmer field day at Kago site



Fig 4: Demonstrating to farmers mass trapping of *Tuta absoluta* using a water trap



Fig 5: Project partner responding to questions from farmers



Fig 6: Root knot nematodes



Fig 7: Tomato leafminer (*Tuta absoluta*) larvae



Fig 8: Tomato leafminer (*Tuta absoluta*) adult



Fig 9: *Tuta absoluta* adult moths



Fig 10: Fusarium wilt damage on leaves



Fig 11: Fusarium wilt damage on roots