

Factsheet final findings Applied Research Fund Call 2



Salvaging tomato production in Kenya from pests and diseases

Summary

The aim of this three-year project was to improve tomato production in the peri-urban tropics through sustainable management of the tomato leaf-miner (*Tuta absoluta*) and Fusarium wilt-root-knot nematode complex. The first objective was to establish the status of diversity and identity of the tomato leaf-miner (*Tuta absoluta*) and Fusarium wilt-root-knot nematode complex in the Mwea region in Kenya. This was achieved through a cross-section survey and collection of samples that were identified through morphological and molecular techniques. The second objective was to determine efficacy of integrated pest management (IPM) packages to control tomato leaf-miner and Fusarium wilt-root-knot nematode complex within smallholder farms which was determined through on-field scientific trials and demonstrations at farmer fields. The final objective was to develop, validate and disseminate IPM packages for wide scale adoption. To achieve this, on-field scientific trials and demonstrations at farmer fields that incorporated farmer participation were organized. The best IPM strategies were scaled out to more regions through trainings, field days and on-farm demonstration trials. Dissemination was conducted jointly with stakeholders through farmer field schools, farmer groups training, workshops, publications, and field days. The project was implemented in Kenya under the Dutch government policy goals of increased sustainable agricultural production.

Research Findings

The project was able to demonstrate over 20% increase in yields of tomatoes as a result of adopting IPM as well as significant reduction in post-harvest losses as a result of pest damage. This increase in production led to a higher income for the farmers, which can improve livelihoods for the farming communities. It was apparent that the adoption of IPM also led to a 25% to 50% reduction of synthetic pesticide use which has a positive impact on the environment, food safety and general human health. In this project it became apparent that the materials, tools and medium used to deliver or share knowledge to different stakeholders should be tailor made to suit specific groups. Moreover, it was learned that the knowledge gap on IPM technologies is huge under smallholder farmers. Therefore, there is a need for stakeholders to make investments in knowledge transfer to smallholder farmers for easier adoption of IPM technologies. When providing demonstrations to show efficacy and cost effectiveness of IPM technologies, smallholder farmers were more willing to adopt the technologies than when only theoretical presentations were given. It was also learned that by intentionally partnering with other like-minded stakeholders, for instance distributors, a wider number of farmers was reached, and therefore the adoption of the new technology and innovations accelerated. Another lesson learned was that the knowledge sharing activities need to target all the actors in the value chain, even though the primary target is the farmers. This is because the other actors in the value chain, for instance off-takers, can influence the practices of farmers through their opinion and demands, which affects adoption of new technologies.

Outcomes achieved

The incorporation of the new knowledge and training materials by training and learning institutions in their knowledge transfer programmes, influences behaviour change for the learners/trainees from entirely conventional farming practices to sustainable production following IPM principles. The awareness created through knowledge sharing on various platforms has led to an increase in the number of consumers demanding for safe food. The improved pest management technologies that lead to increase in farmer incomes has led to the transition of

many smallholder from subsistence producers to agripreneurs (agribusiness farmers). Lastly, through involving the local as well as national government in the project phase, the efforts to promote integrated pest management is being supported and pushed by the government.

Project messages to	<p>A) Actors from private sector:</p> <ul style="list-style-type: none">• Knowledge sharing is key for success of any IPM programme for smallholder farmers. The smallholder farmers are willing to adopt new technologies only after training, demonstration and peer learning from fellow farmers. <p>B) Civil society and practitioners organizations:</p> <ul style="list-style-type: none">• The civil society and practitioners organisations should continue to advocate for food safety which will make more and more people aware of the need for sustainable agricultural production. <p>C) Policy makers:</p> <ul style="list-style-type: none">• In order to accelerate the adoption of IPM, policies that fast track availability of biological control solutions should be formulated so that more farmers can access these products.
Knowledge products	<ul style="list-style-type: none">• Integrated Management of Fusarium Wilt-Root Knot Nematode Complex on Tomato in Central Highlands of Kenya. Journal of Sustainable Agriculture Research, 2018.• Role of Mass Trapping in the Management of leaf miner (<i>Tuta absoluta</i>) on Tomato in the Central Highlands of Kenya. Journal of Agriculture and Life Sciences, 2018.• Project documentary. YouTube video, 2018.
Knowledge co-creation	<p>The consortium members held meetings and organized joint activities regularly to learn and update each other on activities carried out, as well as plan for the next phase of activities. It was apparent that consistent updates on each of the partner's activities was instrumental in making the project a success. To be able to reach a wider scale, more and more partners need to be involved to share findings and build on the knowledge gained. One such effort is the collaboration with Latia training centre which will go a long way in reaching many farmers in the farming communities</p>
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