CABI Briefing: Climate change

3 Climate-smart pest management for nature-positive agriculture

Key messages:

- Climate-smart pest management addresses the three pillars of climate-smart agriculture – adaptation, mitigation, and productivity – through a focus on integrated pest management strategies
- Climate-smart pest management creates a system for truly nature-positive agricultural production
- Both digital and manual information and advisory services are required to support farmers to identify the best climate-smart practices for their land and for the wider ecosystems

Pest and disease threats are increasing and spreading to new areas as climate change creates new niches for them to thrive and attack crops and livestock (FAO/IPPC, 2021). **Climate change is also affecting pest management strategies**, with more erratic rainfall, changing seasonal patterns, and weakening plant resistance to attack. Pest and disease risks can undermine climate adaptation and mitigation efforts, particularly by causing tree mortality, crop loss, and land degradation (IPPC, 2021).

In 2017, CABI devised the climate-smart pest management approach. This aims to reduce crop losses, enhance ecosystem services, reduce greenhouse gas emissions and strengthen the resilience of agricultural systems in the face of climate change (Heeb & Jenner, 2017). It addresses the three key pillars of climate-smart agriculture – **adaptation, mitigation, and productivity** – through a focus on integrated pest management strategies.

Climate-smart pest management considers climate change impacts on all aspects of the farming system and wider habitats, as well as how these interact with new and existing pest risks. It also identifies sustainable management practices to reduce crop losses from pest and disease attacks, which can **enhance resilience to climate change while minimizing the use of chemical inputs like pesticides**.

By integrating the use of biocontrol products, integrated pest management strategies, and climate adaptation practices, **climate-smart pest management creates a system for truly nature-positive agricultural production**.

Being climate-smart also requires access to smart analytical tools to optimize resource use and crop yields in the face of various climate shocks and stresses. To cope with the dual threat of direct climate change impacts and of increased pest and disease risks, farmers require timely, accurate, and clear advice on management strategies. CABI has pioneered a number of digitally-enabled early warning systems for likely pest attacks to provide farmers with advice on how best to apply control products and methods, including biocontrol products and integrated pest management practices (Taylor, et al., 2021).

However, digital solutions alone cannot create the necessary conditions for climate-smart pest management implementation by smallholder farmers. It also requires the establishment of a climate-responsive national extension system, and through **building functioning links between science and technology and farmers** as a means to overcome the structural disconnect between research and end-users.

To find out more and discuss opportunities to work together, please email us: **enquiries@cabi.org**