

## Target Population Environments and Pest Distribution Modelling: An Approach towards Pest Prioritization and Preparedness

Mamta Sharma, Ramanagouda G, Sharath Chandran US, Jana Kholova, and Irshad Ahmed M

ICRISAT, Patancheru, Hyderabad -502324, Telangana, India

\*Corresponding author: [mamta.sharma@cgiar.org](mailto:mamta.sharma@cgiar.org)

The transboundary crop pest and disease (P&D) outbreaks over large geographical regions jeopardizes the food security and have broad economic, social and environmental impacts. The upsurge of new crop P&D, such as fall armyworm; cassava mosaic and brown streak virus; banana fusarium wilt tropical race 4 and wheat stem rust Ug99 are having serious repercussions on agriculture. Climate change is, in part, responsible for food chain catastrophes arising from these transboundary P&D. However, there is clear evidence that climate change impacts are altering the distribution of crop P&D. Such accelerated events require more attention on a greater scale to strengthen food security and protect the livelihoods of poor and most vulnerable countries of the world. A well-defined P&D ranking and distribution will focus on supporting policy-making, integrated P&D management as well as tangible pre-emptive breeding strategies at large scale. Here, we have used chickpea homogenous systems units (HSUs) defined by mechanistic models and geo-bio-physical parameters; over which the P&D distribution and rankings were over-layered. The chickpea P&D severity, distributions, social impact and key drivers responsible for spread on these locations were identified by using meta-analysis. Further, in order to understand the possible risks and consequences of P&D population growth and geographical expansion, the CLIMEX package was used. We aim to compare the pest distribution generic models and prioritization methodologies for emerging regional specific P&D. These findings would support policy intrusions associated with long term transformative adaptation strategies for climate change.