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Crop Protection to Outsmart Climate Change for Food Security & Environmental Conservation

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O32-5. Informing an emergency response to the detection of a non-native plant pest in the landscape

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The objective of an emergency response to the introduction of a non-native plant pest is to eradicate or contain the exotic pest population. Those accountable for this work requires information relevant to the identification, survey, and control of the introduced species. Emergency responders must be able to distinguish the non-native pest from native species, delimit the distribution of the pest population in the invaded landscape, and eradicate or suppress that population. This presentation will focus on the sources and application of information to these facets of an emergency response after the detection of a new pest.

O32-6. A spatial analytic framework to manage plant pest species in regulatory phytosanitary applications

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Non-native pests cause economic and environmental damage to managed and natural U.S. forests and agriculture. When such species are detected in the United States, response must be rapid. Part of this response includes control efforts focusing on population management, eradication, port inspections, surveillance and monitoring, shipment treatments and pre-clearance programs. However, because each disease or pest and its associated outbreak has its own idiosyncratic characteristics, responses are often highly complex, operationally difficult and challenging to coordinate. To help phytosanitary management agencies respond more quickly to pest threats, we developed an integrated system called the Spatial Analytic Framework for Advanced Risk Information Systems (SAFARIS). SAFARIS is designed to provide a seamless environment for pest predictive models. It supports pest forecast models and tools for researchers, risk analysts, decision/policy makers, rapid-responders, and land managers in need of a streamlined and tractable system to support pest surveys, pest forecasts, pest risk analyses, emergency response, and economic analyses. The case studies of an Oriental fruit fly (*Bactrocera dorsalis* (Hendel)) and a spotted lanternfly (*Lycorma delicatula* (White)) demonstrate building analytic models and tools with multiple data sources within a single framework.

O32-7. Effect of varied weather parameters and different sowing dates on the incidence of insect pest in chickpea

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It is important to identify genotypes with resistance varied sowing windows. Therefore, evaluated a five diverse genotypes for resistance to *H. armigera* for three years over four sowing window. More number of eggs were observed in 2012 than in 2013 and 2014. Highest numbers of eggs were recorded in the crop sown

in October in cumulative three seasons. Among the genotypes tested, ICC 3137 had the highest number of *H. armigera* eggs (11.6) across the seasons. The lowest number of *H. armigera* eggs was observed on JG 11 (6.3) in 2012, on ICCV 10 (3.6) in 2013. The *H. armigera* larvae were highest in October sown crop (80.7) and lowest in the January sown crop (21.1) in 2014-15. The larval incidence decreased from October to December but increased in the January. Greater numbers of cocoons were recorded in the December sown crop (3.4) in 2012-13.However highest number of cocoons were recorded on ICC 3137 (2.5) and lowest on KAK 2 (1.6). The maximum temperature and minimum temperature shows a significant negative and positive correlation with *H. armigera* larvae population for October and November sown crop. Multiple regression analysis of the *H. armigera*, *S. exigua* eggs and larval population showed a significant interaction with weather parameters during all cropping seasons. The coefficient of multiple determinations (R2) was varied per cent during across different seasons for *H. armigera, S. exigua* population

O32-8. Risk assessment and preparedness: an encounter to agricultural transboundary pests and diseases

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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 climate change accelerated transboundary P&D are responsible for food chain catastrophes and upsurge of minor pest into major. 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. The ICRISAT, Center of Excellence on Climate Change Research for Plant Protection (CoE-CCRPP) is a joint initiative with Department of Science and Technology and ICRISAT to study impact of climate change on agriculture P&D in an inclusive manner with key audience (adaptation funding entities, planners, policymakers and practitioners) at national and regional level (NARS, ARIs and CGIAR). The CoE-CCRPP emphasis is on mapping the potential pest risk distribution and forecasting; short and medium term climate resilient pest management practices; as well as capacity building of various stakeholders on climate resilient agriculture. The ICRISAT center, further focus to determine and establish priority pest indicators ranking, risk assessment and distribution, socio-economics of P&D to assist in enhancement of pest policies, pre-emptive breeding, improved P&D monitoring and surveillance to strengthen global efforts to alleviate P&D complications on sustainable agriculture and food security.

Oral

O32-9. Biological control of recent invasive whiteflies (Hemiptera: Aleyrodidae) of coconut in India: a success story

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Invasion and establishment of four whitefly species viz., Rugose spiralling whitefly, *Aleurodicus rugioperculatus* (Hemiptera: Aleyrodidae) in 2016, Bondar's nesting whitefly, *Paraleyrodes bondari*, nesting whitefly, *P. minei* in 2018 and palm infesting whitefly, *Aleurotrachelus atratus* in 2019 reported in coconut ecosystem in India. All the species are reported as highly polyphagous, invasive and believed to be originated from Neotropical regions. Co-existence of this species in coconut palms indicate probable simultaneous