Plant defense and insect counter-defense: Battle for survival

Maize (Zea mays L.) is arguably the world’s significant cereal crop, but also suffers severe yield losses due to insect infestation. In this talk, I will provide information about maize defense signaling mechanisms and insect effectors that are involved in modulating maize defenses. The mechanisms that contribute to maize resistance to phloem-sap feeding insects involve callose deposition, interactions among phytohormones and aboveground to belowground defense signaling in maize. These will be discussed along with their relationship to Maize insect resistance1-Cysteine Protease (Mir1-CP), which is a key defensive protein against insect pests in maize. Furthermore, compared to other microbes (bacteria, fungi, nematodes, etc.), very little information is available regarding insect effectors (e.g., saliva, frass) and their role in modulating plant defense signaling mechanisms. The signaling networks underlying plant resistance to insects and the role of insect effectors in altering host plant defenses will be discussed.