Predicting Pollen Production, Dispersal, and Outcrossing in Maize. (C04-westgate140427-Oral)

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Abstract:

As an open pollinated crop, corn is predisposed to out-crossing between plants or genotypes. This reproductive characteristic conflicts with the need to limit genetic drift and control genetic purity of harvested seeds. Assessing the risk of out-crossing events must consider the complex interactions between the biology of the flowering and pollination processes and the physical nature of pollen transport in the atmosphere. Our research team is developing quantitative biological models of pollen production, physical atmospheric models for pollen movement, and genetic determinants of pollen-silk interactions to assess this risk under typical field conditions. This presentation will provide examples of how we are combining these biological, physical, and molecular models to quantify pollen production in a given field, determine where it travels outside that field, and establish the risk of an out-cross event in a field nearby. The results of this research effort are aimed at providing a scientific basis for sound decisions to enable producers of both transgenic and non-transgenic corn seed to achieve their marketing objectives.

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