MODELING THE BIOLOGY OF OUT-CROSSING BY ADVENTITIOUS POLLEN. Mark Westgate, Juan Astini, Agustin Fonseca, Jon Lizaso, Craig Clark, and Ray Arritt, Professor, and Graduate Student, Agronomy Department, Iowa State University, Ames, IA 50011, Research Scientist, Monsanto Company, Williamsburg, IA 52361, Crop Modeler, McNair Bostick Simulation Laboratory, University of Florida, Gainesville, FL 32611-0570, Assistant Professor, Department of Geography and Meteorology, Valparaiso University, Valparaiso, IN 46383-6493, and Professor, Agronomy Department, Iowa State University, Ames, IA 50011.

Risk of out-crossing from adventitious maize pollen results from complex interactions between the biology of flowering and pollination processes as well as the physical nature of pollen transport in the atmosphere. To quantify this risk, we have developed biological models of maize pollen production and viability, physical atmospheric models for pollen dispersal, and a biological model of pollen-silk interaction leading to kernel formation. We will show how these biological and physical models are linked to predict out-crossing events associated with adventitious pollen production and transport. Examples include results from field trials designed for production of non-transgenic grain, hybrid seed, and pharmaceuticals.

2007 North Central Weed Science Society Proceedings 62:199.