Outcrossing and pollen competition between teosinte *Zea mays* ssp. *parviglumis* and cultivate maize under field conditions

B.M. Baltazar*, M. Horak, C. Brown

*Monsanto Company, USA*

In Mexico, wild relatives of maize “the teosintes” and cultivated maize have co-existed for thousands of years. With the development and commercialization of GM maize, a concern has been raised by Mexican policy makers and regulators about the consequences of possible transfer of genes from GM maize to teosintes. Pollen competition and the frequency of outcrossing between teosinte and cultivated maize under field conditions are important factors for evaluating the potential for outcrossing to occur. While there are various species of teosinte in Mexico, teosinte *Zea mays* ssp. *parviglumis* is the most suitable to study gene flow because it does not contain genetic incompatibility barriers. The lack of incompatibility barriers facilitates hybrid seed formation in teosinte silks pollinated with cultivated maize pollen. The objectives of this study were: 1) to measure outcrossing rates from cultivated maize to teosinte ssp. *parviglumis* under field conditions, and 2) to evaluate how pollen competition may affect the level of outcrossing. The experimental approach, key results, and interpretation of the data will be discussed considering the distribution of teosinte ssp. *parviglumis* in Mexico and the biology of teosinte and maize. It is expected that data obtained in this study will provide greater utility for decision-makers in assessing the potential environmental risk of GM maize in Mexico.

Keywords: Teosinte, Maize, Gene Flow, Risk Assessment