THE IMPORTANCE OF UNDERSTANDING BIOGEOGRAPHY AND REPRODUCTIVE BIOLOGY OF SEXUALLY COMPATIBLE SPECIES. Baltazar M. Baltazar[1], Jose de Jesus Sanchez G.[2], and John B. Schoper[3]; [1]Pioneer Hi-Bred International, Inc., Nayarit. Mexico; [2]Universidad de Guadalajara, Las Agujas, Mpio. de Zapopan, Jalisco, México; [3]Pioneer Sementes Ltda., Brasilia – DF, BRAZIL.

Mexico is the center of origin and hosts the greatest diversity of the genus *Zea*. This diversity has developed over millennia as a result of domestication and further selection by farmers including natural hybridization of landraces of maize and teocintes in areas where they grow sympatrically. Understanding the origins and extent of maize genetic diversity is critical to ensure food and fiber for current and future generations.

Pioneer Hi-Bred International, in collaboration with Mexican institutions, established a research program in Mexico to measure gene flow in the genus *Zea* as a component of genetic diversity. Our research has shown that maize landraces and hybrids exchange genes freely. Landraces have thereby acquired new alleles for yield, biotic and abiotic stresses. We have also found that the most gene-flow in the teocinte-maize system is from teocinte (*Zea mays* subesp. *mexicana*) to maize, rather than from maize to teocinte. Parameters used to measure genetic compatibility and gene flow were: pollen size and longevity, silk size and longevity, isolation distance, floral synchrony and pollen and atmospheric water potential.

The purpose of this presentation is to share our research results on gene flow in the genus *Zea* that we have obtained in Mexico. Our studies are continuing. Our ultimate goal will be to provide a better understanding of the consequences of gene flow in maize's center of origin and to develop additional data on genetic biodiversity of Mexican maize landraces.

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