

ASSESSMENT OF POTENTIAL IMPACT OF HYBRIDIZATION BETWEEN TEOSINTE (*Zea* spp.) AND MAIZE (*Zea mays* spp. *mays*) ON DORMANCY CHARACTERISTICS OF TEOSINTE. Baltazar M. Baltazar*, William J. Duncan, Daniel L. Kendrick and Michael J. Horak, Monsanto Company, St. Louis, MO 63167, USA.

Teosinte (*Zea* spp.) is an annual and perennial grass endemic to Mexico and Central America. Teosinte resembles maize (*Zea mays* spp. *mays*), but differs in various phenotypic characteristics including: pollen size and pollen viability, number of tassels per plant, and in the morphology of the pistillate inflorescence. In contrast to maize, teosinte populations survive as wild plants. This may be in part due to seed dispersal and dormancy mechanisms found in teosinte but absent in maize.

Research has demonstrated that gene flow and hybridization between teosinte and maize is possible. Furthermore, with the advent of genetically modified (GM) maize, questions have been raised regarding the potential ecological risks associated with the introduction of GM maize into areas where teosinte is present. However, there has been limited research on the biological effects of maize genes transferred to teosinte. One area of interest is on the effect of hybridization and introgression on seed dormancy (e.g., hard seed). One possible effect of hybridization between teosinte and maize would be decreased dormancy of hybrid seed.

Experiments to evaluate seed dormancy of *Zea* spp. were conducted during 2007. Four replicates of 25 seeds each of 8 *Zea* spp. were placed in rolled germination towels, arranged in a completely randomized block design and then placed in a germination chamber set at 25°C for 8 days. Seed/seedlings were evaluated as germinated (normal and abnormal, dead, or hard following AOSA guidelines 5 and 8 days after planting. The percentages of each category were statistically compared for each species.

Results of the experiments revealed four significantly different groups for the *Zea* species evaluated according to their percentage of dormant seed; Group 1, *Zea nicaraguensis* with 55%; Group 2, *Zea luxurians* (34%), *Zea mays* spp. *mexicana* (30%) and *Zea mays* spp. *parviglumis* (25%); Group 3, *Zea huehuetenangensis* (20%) and *Zea perennis* (16%) and Group 4, *Zea diploperenis* (8%) and *Zea mays* spp. *mays* (0%).

Additionally, experiments are underway to evaluate seed dormancy characteristics of hybrid seed from crosses between teosinte and maize.