

**Illinois Agricultural Experimental Station  
Department of Crop Sciences  
University of Illinois  
Urbana, IL 61801**

**Annual Report NCR-167  
- 2005 -**

**Faculty of the corn breeding group at the University of Illinois**

- Martin Bohn
- Torbert Rocheford

**Our objectives**

- Improve grain yield and value-added traits of corn.
- Improve agronomic characteristics of corn including resistance to disease and pests.
- Provide educational opportunities for students that prepare them for careers in plant breeding, genetics, and plant pathology.
- Provide continuing educational opportunities for commercial corn breeders.

**Program Highlights**

- The Illinois Maize Breeding and Genetics Laboratory (IMGL) organized the 41<sup>th</sup> Illinois Corn Breeders' School held in Urbana, Illinois, March 7-8, 2005. One session was dedicated to the integration of double haploids in maize breeding programs. The table of contents and attendance lists of Corn Breeders' Schools are available at the IMBGL internet homepage at <http://imbgl.cropsci.uiuc.edu>.
- One location of the 700-800 hybrid trial was grown by the University of Illinois in Urbana.
- Dr. Martin Bohn gave presentations on "Allelic Variation of Candidate Genes for European Corn Borer Resistance in Maize" and "How to Breed Corn Resistant to Corn Rootworms?" at the NCR-167 meeting in St. Paul, Minnesota.

**Publications**

Heckenberger M, Bohn M, Frisch M, Maurer HP, Melchinger AE (2005) Identification of Essentially Derived Varieties With Molecular Markers: an Approach Based on Statistical Test Theory and Computer Simulations. *Theoretical and Applied Genetics* 111(3):598-608.

Heckenberger M, Bohn M, Klein D, Melchinger AE (2005 ) Identification of Essentially Derived Varieties Obtained From Biparental Crosses of Homozygous Lines: II.

Morphological Distances and Heterosis in Comparison With Simple Sequence Repeat and Amplified Fragment Length Polymorphism Data in Maize. *Crop Science* 45(3):1132-1140.

Heckenberger M, Bohn M, Melchinger AE (2005) Identification of Essentially Derived Varieties Obtained From Biparental Crosses of Homozygous Lines: I. Simple Sequence Repeat Data From Maize Inbreds. *Crop Science* 45(3):1120-1131.

Papst C, Utz HF, Melchinger AE, Eder J, Magg T, Klein D, Bohn M (2005) Mycotoxins Produced by *Fusarium* Spp. In Isogenic Bt vs. Non-Bt Maize Hybrids Under European Corn Borer Pressure. *Agronomy Journal* 97(1):219-224.

Reif JC, Hamrit S, Heckenberger M, Schipprack W, Maurer HP, Bohn M, Melchinger AE (Sep 2005) Genetic Structure and Diversity of European Flint Maize Populations Determined With SSR Analyses of Individuals and Bulks. *Theoretical and Applied Genetics* 111(5):906-913.

Reif JC, Hamrit S, Heckenberger M, Schipprack W, Maurer HP, Bohn M, Melchinger AE (2005) Trends in Genetic Diversity Among European Maize Cultivars and Their Parental Components During the Past 50 Years. *Theoretical and Applied Genetics* 111(5):838-845.

Reif JC, Zhang P, Dreisigacker S, Warburton ML, Van Ginkel M, Hoisington D, Bohn M, Melchinger AE (2005) Wheat Genetic Diversity Trends During Domestication and Breeding. *Theoretical and Applied Genetics* 110(5):859-864.