Utilization of Germplasm Resources to Improve CIMMYT Maize Gene Pools. (C01-kirubi104104-Oral)

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Abstract:

While the need to conserve and utilize the genetic diversity of maize landraces is a generally accepted tenet for future viability of maize breeding, the adoption of landraces into breeding programs has not received widespread acceptance for various reasons, including concern about dilution of elite germplasm. In 1999, the Maize Genetic Resources subprogram at CIMMYT initiated a prebreeding agenda for introducing accessions from the germplasm bank into the highland, tropical and subtropical breeding pools. To maintain genetic diversity while selecting the best individuals from a germplasm collection, core subsets are developed using cluster analysis based on a variety of plant and ear traits. The core subset is then crossed twice to elite inbreds, resulting in S2 lines containing 25% accession, 75% elite germplasm. The best of these S2 lines are then incorporated into the breeding pools. The breeding pools are improved using RRS-inbred testers, with the best S2 lines passed on to the other breeders for either direct development of elite inbreds or incorporation into breeding populations from which elite inbreds are derived.

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