Maize Tassel Morphology as an Indicator of Pollen Production. (C04-fonseca084938-Poster)

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Abstract:

A simple method to predict pollen production by maize inbreds and hybrids is needed to ensure maximum kernel set and a high level of genetic purity in seed production. Pollen production reportedly varies from 2 to 42 million grains per plant, which likely reflects genotype differences in tassel morphology. Our objective was to determine whether a combination of morphological characteristics could be used to predict variation in pollen production. A numerical scale was established to document easily defined stages of tassel development. Tassel weight increased from tassel emergence (Stage 1) to initial pollen shed (Stage 4), then decreased as pollen was released from the anthers, and continued to decrease after pollen shed was complete (Stage 8). Pollen represented only a fraction of tassel weight loss, and this fraction varied with tassel size. Using main stem length and main stem diameter measured at maximum pollen shed (Stage 6) we developed a tassel area index that was closely correlated with total pollen production per tassel (r2=0.87). The utility of this approach for detecting variation in pollen production is being tested for a number of genotypes and growing conditions.

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