Gene Flow Studies to Optimize Containment of Regulated Products Produced in Corn. (C04-stevens125743-Oral)

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Abstract:

Research was conducted to develop methods for achieving optimum containment of pollen from corn grown for plant-made pharmaceuticals (PMP). Experiments evaluated isolation distance and tassel removal as means of reducing gene flow. A candidate PMP production system was tested. Corn inbreds were planted in a 4-ha block in the center of three 65-ha cotton and bean fields. Within the 4-ha blocks, four rows of yellow kernel females were alternated with four rows of white kernel males. Yellow corn cultivars with transgenes were planted for tracing gene flow. Female rows were detasseled by hand with some of the plants intentionally missed. Levels of detasseling were 0%, 80%, 90%, and 100%. At 200 and 300 m from the pollen block, white corn trap plots were planted on three dates in strips. The greatest amount of gene flow, as detected by seed color and polymerase chain reaction, was to trap plots located 200 m north of the pollen block and was associated with pollen from yellow corn with no detasseling. Incidence of yellow kernels was 0.0301%. At 300 m, gene flow was 0.0013% from 90% detasseled corn. When 100% of the corn was detasseled, no gene flow was detected at 300 m.

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