

## Seed Production of Field- and Greenhouse-Grown Herbaceous Ornamental Plants: Flowering and Pollinator Effects

Susan M. Stieve\*

\*Ornamental Plant Germplasm Center, The Ohio State University, 670 Vernon Tharp Street, Columbus, OH 43210

Seeds of herbaceous ornamental species conserved by the USDA National Plant Germplasm System (NPGS) have traditionally been produced in summer field cages with honey bees (*Apis mellifera*) when pollinators are required. This research supports efforts of the Ornamental Plant Germplasm Center (OPGC), the newest NPGS genebank, to optimize seed production through pollinator and environment selection. Flower quantities and effects of pollinators on quantity and weight of seed produced were studied in field cages and greenhouses at the OPGC in 2006 in a randomized complete block experiment. Honey bees, bumblebees (*Bombus impatiens*), or blue bottle flies (*Calliphoridae*) were used as pollinators, and field cages and greenhouses with no pollinator were controls. Cultivars studied are being conserved at the OPGC and included *Antirrhinum majus* 'Gum Drop', *Coreopsis tinctoria* 'Plains Bicolor', *Dianthus chinensis* 'Carnation', *Rudbeckia hirta* 'Indian Summer', and *Tagetes patula* 'Jaguar'. Seeds were harvested, cleaned, weighed, and 100-seed weights calculated. On average smaller taxa including *Antirrhinum*, *Dianthus*, *Rudbeckia* and *Tagetes* produced more flowers in greenhouses; larger *Coreopsis* plants produced more flowers in the field. *Coreopsis* and *Rudbeckia* produced more seeds per flower with field pollination by honey bees, *Antirrhinum* and *Dianthus* produced most with bumblebees in the field, and *Tagetes* produced most with blue bottle flies in the greenhouse. Each genus had similar 100-seed weights, an indicator of quality, in all treatments. Results show pollinators other than honey bees are useful for herbaceous ornamental seed production, and that greenhouses may be effective alternative environments for year-round seed production of some species.