

GENETIC DIVERSITY IN POPULATIONS OF NATIVE GRASSES AND FORBS IN MINNESOTA

Kerstin Concibido* and Mark S. Strefeler, Department of Horticultural Science, University of Minnesota, St. Paul, Minnesota 55108.

The Legislative Commission on Minnesota Resources initiated a program to develop a viable seed industry for the production of native grasses and forbs. A part of this program is to measure the amount of genetic diversity among and between populations in Minnesota. This information will be used to develop strategies for the distribution of seed in land reclamation and for management of seed production to maintain the genetic diversity of commercial seed lots. Two grasses, *Andropogon gerardii* and *Schizachyrium scoparium*, and two forbs, *Monarda fistulosa* and *Liatis* sp., were used in this study. Genetic diversity of populations was measured using morphological traits and isozyme analysis of 30 to 50 individuals from each of the 13 to 49 populations. Thirteen enzyme systems were examined to detect polymorphisms. Isozyme polymorphisms have been detected in *Liatis* populations for PGM, MDH and ACP. No isozyme polymorphisms have been detected in grass populations. Morphological characteristics were measured in a common nursery to remove genotype x environment interactions. Variation in height, number of stems and number of inflorescences were observed within and among grass populations. *Liatis* populations varied in leaf number, width and length and shoot dry weights.



The Legislative Commission on Minnesota Resources initiated a program to develop a viable seed industry for the production of native grasses and forbs.

INHERITANCE OF QUALITATIVE TRAITS IN NEW GUINEA IMPATIENS

Robert-Jan W. Quené* and Mark S. Strefeler, Department of Horticultural Science, University of Minnesota, St. Paul, Minnesota 55108

New Guinea impatiens have been growing in popularity as a potted, bedding and hanging basket plant. This growth has been due mainly to the development of new cultivars by commercial breeding programs. However, no one has investigated or reported the inheritance of simple Mendelian traits of economic importance.

A study of the genetics of six qualitative traits was undertaken to elucidate inheritance of these traits in New Guinea impatiens. The traits studied were flower color, flower size, leaf color, leaf vein color, leaf variegation and variegation of leaf margins. Thirteen genotypes were used as parents in reciprocal crosses of all possible combinations. Fourteen crosses yield sufficient seed for use in the inheritance studies. Fifty to one hundred progeny were used from each cross. Segregation of the traits of interest were observed in the F_1 populations. Inheritance measures were based on the segregation pattern of the F_1 progeny.

Heritabilities for traits varied widely. Genetic models based on segregation ratios will be presented for each trait. The mode of inheritance and heritabilities revealed from this study will be useful to plant breeders in developing efficient cultivar improvement strategies.

New Guinea Impatiens have been growing in popularity as a potted, bedding and hanging basket plant.