

Evaluation of Salt Tolerance of Bedding Plants

Dr. Genhua Niu and Denise Rodriguez, Texas AgriLife Research & Extension Center at El Paso
Texas A&M University System

Supported by: Texas AgriLife Research, Rio Grande Basin Initiative, USDA-NIFA

BACKGROUND

Bedding plants are extensively used in landscapes throughout the country. However, their use in the Southwest U.S. is relatively limited due to the adverse climate conditions. Bedding plant production is the fastest-growing segment in the horticulture industry in the United States. New cultivars and species are being developed and released each year. Our recent research has revealed that some varieties are more stress tolerant than others. This information on responses to environmental stresses (salt, drought, and heat) of various bedding plant species and cultivars is important for consumers, growers, and breeders for selection of plant materials for improved landscape performance and to expand the use of these plants in areas where they are currently not widely used.

OBJECTIVES

- Evaluate salt tolerance of bedding plants which are also potentially heat and drought tolerant for the Southwest U.S. region.
- Understand salt tolerance mechanisms of selected bedding plants in order to aid breeding and biotechnological programs.

RESULTS AND BENEFITS

- Large variations exist among salt tolerance of the tested bedding plants.
- A number of salt tolerant bedding plants can be irrigated with lower quality water at moderate salinity (electrical conductivity of 3 to 5 dS/m or total dissolved solid at 2,000 to 3,000 ppm) without any visual damage, although plants became smaller and compact as salinity of irrigation water increased.
- Ornamental peppers 'Calico' and 'Black Pearl', Blue plumbago, vinca, Helenium 'Dakota Gold', gomphrena, and a number of petunia cultivars are moderately salt tolerant, Drought tolerant *Zinnia marylandica* Zahara Series are moderately salt sensitive.
- By selecting salt tolerant bedding plants, landscape performance will be improved in areas where lower quality water is used or with high soil salinity.



Screening salt tolerance for bedding plants in the greenhouse