

# Salt Tolerance of Herbaceous Perennials and Groundcovers

Dr. Genhua Niu and Dr. Youping Sun, Texas A&M AgriLife Research & Extension Center at El Paso

*Supported by: Rio Grande Basin Initiative, USDA-NIFA and USDA-ARS*

## BACKGROUND

In order to conserve water, many municipalities in the Southwest encourage homeowners and businesses to reduce turf coverage in landscapes with incentive programs (e.g., El Paso, Texas and Las Vegas, Nevada). Low-water use herbaceous perennials and groundcover species have been popular in recent years as an alternative to turf in landscapes because they require low maintenance and increase diversity. As fresh water supply is diminishing and urban populations continue to increase, use of recycled water to irrigate landscapes may be inevitable in the future. The major concern of using recycled water for landscape irrigation is the elevated salinity, which causes salt damage or even death to sensitive species. In order to minimize the potential damage, salt tolerance of popular herbaceous perennials and groundcovers needs to be identified.

## OBJECTIVES

- Evaluate salt tolerance of herbaceous perennials and groundcovers that are also potentially heat and drought tolerant for the Southwest U.S. region.
- Understand salt tolerance mechanisms of selected plant species in order to aid breeding and biotechnology programs.

## RESULTS AND BENEFITS

- Large variations were observed in salt tolerance among the tested plant species.
- A number of salt tolerant herbaceous perennials and groundcovers 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 may become smaller and more compact as salinity of irrigation water increased.
- Salt tolerant species (examples): *Achillea millefolium* (yarrow), *Cestrum* ‘Orange Peel’ (peel jessamine), *Dicliptera suberecta* (mexican hummingbirdbush), *Delosperma cooperi* (purple ice plant), *Gaillardia aristata* (blanket flower), *Lantana x hybrida* ‘New Gold’ (lantana), *Lonicera japonica* (honeysuckle), *Malvaviscus arboreus* var. *drummondii* (turk’s cap), *Rosmarinus officinalis* (rosemary), *Salvia farinacea* ‘Henry Duelberg’ (salvia), and *Verbena x hybrida* ‘Blue Princess’ (verbena).
- Moderately salt tolerant species (examples): *Caryopteris x clandonensis* ‘Dark Knight’ (bluebeard), *Pavonia lasiopetala* (rock rose), *Ruellia brittoniana* (dwarf mexican petunia), *Salvia leucantha* (mexican bush sage),
- Moderately salt sensitive species (examples): *Lobelia cardinalis* (cardinal flower), *Cuphea hyssopifolia* (mexican false heather), *Perovskia atriplicifolia* (russian sage).
- Salt sensitive species (examples): *Aquilegia canadensis* (eastern red columbine), *Ajuga reptans* ‘Burgundy Glow’ (bugleweed), *Poliomintha longiflora* (mexican oregano), *Scutellaria suff rutescens* ‘Pink Skullcap’ (cherry skullcap), and *Phlox paniculata* ‘John Fanick’ (phlox).