

Evaluating Salinity Tolerance in Nursery and Landscape Plants

Background

Ornamental plant production in nurseries and greenhouses, landscape management, and turfgrass production are collectively known as the green industry. This industry ranks among the fastest growing and most economically important activities in Texas agriculture. These activities also share the distinction to being the most intensively managed, requiring massive inputs of water and agrochemicals. Given the water quantity and quality issues in many regions in rural and urban areas of Texas, these industries face severe water shortages, higher usage of poor-quality irrigation waters, and regulatory and environmental pressures to capture, recycle and reuse drainage and effluents. Irrigating ornamental and landscape plants with poor-quality water (e.g., naturally-saline, reclaimed, recycled) presents major challenges as these plants are generally susceptible to the deleterious effects of salinity. Thus, it is important to identify species and varieties of plants that can tolerate saline and poor-quality water, and to evaluate management practices that allow irrigating with limited or poor quality water.

Objectives and Approach

Identify salt tolerant species and selections of economically important and promising/emerging ornamental plants, including annual/bedding plants, herbaceous perennials, shrubs and trees. This is done by subjecting plants to increasing and controlled levels of salts in the irrigation water, thus mimicking the chemical composition of poor quality waters. Plant response to salinity is evaluated by monitoring plant growth and quality, and tissue nutrient concentrations and accumulation.

Program Benefits

- Growers, landscapers and homeowners will have salt-tolerant ornamental species and cultivars plants for production using poor-quality irrigation waters.
- Best management irrigation and fertilization practices will effectively deal with poor-quality irrigation waters and sustain ornamental plant/crop productivity and quality.
- The use of naturally-saline and reclaimed/recycled irrigation waters will effectively increase the use efficiency of potable and good-quality water for other purposes.

Researcher

Raul Cabrera
Associate Professor and Project Leader in Woody Ornamental Horticulture