**WATER RESOURCES RESEARCH GRANT PROPOSAL**

**Project ID**: AZ1001

**Title**: Salt Tolerance of Southwestern Perennial Ornamentals

**Focus Categories**: Water Quality, None

**Keywords**: Salinity, plant growth, Southwest landscape plants, plant-water relationships

**Start Date**: 03/01/2001

**End Date**: 02/28/2002

**Federal Funds**: $12,000

**Non-Federal Matching Funds**: $25,963

**Congressional District**: Fifth

**Principal Investigator**:
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**Abstract**

Description of Problem: Water is a limited resource in the arid Southwest. Water demand is increasing for the burgeoning population in Arizona and the Southwest, while water supply is decreasing. The increase in primarily urban population brings with it a steady demand for ornamental plants in nurseries and landscapes. One strategy to stretch the finite ground water resources is reusing or recycling used water or gray water for ornamental plan production or maintenance of plants in the landscape. Gray water with higher salinity can result in soil salinity, reduced growth, foliar injury or death of plants over time. In the future, plant production and landscape maintenance will have to rely on irrigation water with higher salinity than current sources. Many of the most common trees, shrubs, groundcovers, and accent plants, because they have only recently been used for landscaping, have not previously been tested for salt tolerance.

Methods: The study will use small plants to determine salt tolerance over a period of seven months, because it is unlikely that plants have been exposed previously to salt stress, and maximum growth rates during early stages of development are more likely to separate growth responses to salinity treatments than could be observed on older, established plants. Plants will be irrigated at the medium surface with drip emitters to prevent foliar injury from saline. In this experiment, young plants will be exposed to irrigation water with different levels of salinity and will be ranked a slow, medium, or highly tolerant to salinity based on plant growth, visual appearance, and shoot and root biomass.

Objectives: The objective of this study is to determine salinity tolerance and ability for osmotic adjustment of selected trees, shrubs, groundcovers, and accent plants recently introduced to landscapes in the Southwest. Three species each of trees, shrubs, groundcovers, and accent plants, with the following attributes will be selected for the study: no previous knowledge is available on their salt tolerance; they are widely used across the Southwest; they are readily available from several growers; and they are durable, and long-lived. This information will benefit nursery growers who may produce plants with recycled or poor-quality water. Landscape maintenance professionals and homeowners will learn how to maintain plants properly based on the salinity of water in their area. This can increase water conservation efforts by decreasing unnecessary leaching, a common practice to flush excessive salts from plant root zones. Overall, this research can help to divert large quantities of potable water form current landscape or nursery

production use ad instead focus on gray or recycled water with higher salinity to produce and maintain ornamental plants.