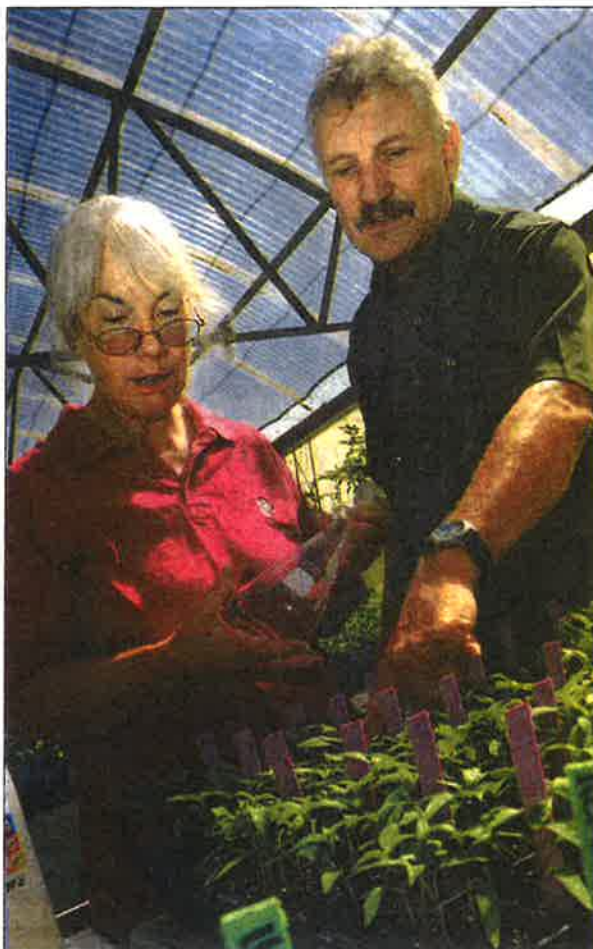


**NEW MEXICO STATE UNIVERSITY** professors April Ulerly, left, and Paul Bosland add salt water to chile seedlings as part of a research experiment aimed at measuring salt tolerances in chile plants. They are conducting this part of the experiment in Bosland's greenhouse, located at the Fabian Garcia Science Center in Las Cruces.



DARREN PHILLIPS / NMSU

# Researchers test chile crops for salt tolerance

By Kristina Medley  
KMEDELY3@NMSU.EDU

**L**AS CRUCES — The effects of drought are evident in New Mexico, especially in the area of agriculture, but the chile crop will not be left behind if New Mexico State University researchers have any say in the matter.

Evan Call, who graduated from NMSU in 2010 with a Master of Science in Plant and Environmental Sciences, began the study, "Evaluation of Two Methodologies to Screen Capsicum for Salt Tolerance," in 2009. Call was advised by Paul Bosland and April Ulerly, NMSU plant and environmental science professors.

Call began the study partly in response to the steady decrease in main water sources for New Mexico farmers. Such reductions, especially the water level decrease at Elephant Butte Lake, make it more challenging and expensive to irrigate crops, and many farmers are forced to tap into underground water sources, which often have higher saline content, Ulerly said.

Plants grown in soil with high saline content are often stunted and have lower yield because salts inhibit nutrient and water uptake by plants, Ulerly said. "It takes so much effort for a plant to grow in high saline soil that it expends more energy trying



to stay alive than in producing healthy fruit," Ulerly said.

Chile seeds are typically planted a half inch to one inch deep in soil. The saline content is often higher in surface soil because water moves toward the surface of the soil in response to heat from the sun and when the water evaporates, it leaves salt behind. Ulerly said farmers have some control over saline content by irrigating the soil before planting crops to drive salt further down into the soil. She emphasized that careful management is crucial when using poor quality water.

The study examined 13 accessions representing five species of chile plants in a germination test to see what percentage of each species showed signs of making it through the growing process when grown in seven saline solutions. Then, the 13 species were narrowed down to eight in a greenhouse test to see which species would emerge through the soil when grown in saline soil mix.

"Early Jalapeno" had the highest emergence percentage at 81 percent. "NuMex Sweet" and P.L. 140375 also finished in the top three performers for saline tolerance, with emergence percent-

ages of more than 70 percent.

In the future, Bosland said he would like to look at inheritance of the salt tolerance trait in chile plants and developing cultivars that are salt tolerant.

Call, Bosland and Ulerly also collaborated on a study with faculty members from Texas A & M University, titled "Responses of Eight Chile Peppers to Saline Water Irrigation." This study found that NMCA 10652 and 'Early Jalapeno' were the most saline-tolerant chile varieties.

"It is becoming increasingly important to look at saline conditions and water use, especially considering recent changes in water distribution and drought," Ulerly said. "We don't know the future or when it is going to get better, but in the meantime we can prepare and use varieties that can handle less water or lower quality water while still maintaining quality of fruit."

Ulerly and Bosland said because chile is such an important crop in New Mexico, they hope local farmers will be able to use such research findings to continue to produce healthy crops even in difficult growing conditions.

"Eye on Research" is provided by New Mexico State University. This week's feature was written by Kristina Medley of University Communications.