University of Utah Rio Mesa Research Center
Purpose of Research

My research focuses on the water balance and population dynamics of riparian areas of the Colorado Plateau and Great Basin. At The University of Utah's Rio Mesa Research Center, I measure the water uses between a grove of tamarisk trees and greasewood shrubs. Flooding in the 1980's caused this stand of tamarisk to establish, replacing the greasewood about 40 meters in from the river bank. I am also using the above measurements of the tamarisk trees to contribute to an ongoing study on the impact of tamarisk leaf beetles (*Dirohabda carinulata*) on tamarisk leaf phenology and subsequent water use over multiple cycles of annual defoliation. Ground-based, heat balance, sap flow measurements were conducted as well as measuring leaf area index, (LAI), and using satellite imagery from Landsat Thematic Mapper 5 and the EOS-1Moderate Resolution Imaging Spectrometer (MODIS) sensors to assess the distribution of beetle damage, and the effect of defoliation on evapotranspiration (ET). The HYDRUS 1D model is being used to estimate the contribution of groundwater to root water uptake at the above sap flow sites. This data is of significant value for identifying future impacts of the beetle on tamarisk physiology, foliage phenology and ecohydrology as a whole, aiding large-scale water management decisions in semi-arid and arid areas in the southwestern United States.

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