



2009 CSREES National Water Conference; St. Louis, MO

Economic Implications of Biological Control of Giant Reed on the Rio Grande

Emily Seawright*, Ed Rister, Ron Lacewell, Allen Sturdivant, and John Goolsby
Texas A&M University
* ekseawright@ag.tamu.edu

Abstract:

Arundo donax, giant reed, is a large, bamboo-like plant that grows 20-30 feet tall and consumes large quantities of water, as much as 528 gallons per square meter. Giant reed thrives in the Mediterranean climate of the Rio Grande and has invaded several thousand acres of the Rio Grande riparian area. With concern over *Arundo*'s unmitigated growth, the United States Department of Agriculture-Agricultural Research Service (USDA-ARS) is investigating four beneficial insects which may be used for biological control of *Arundo donax*. This research examines the economic aspects for the Lower Rio Grande Valley of using these biological control agents, including the value of the water saved due to the reduction of *Arundo donax*, a benefit-cost analysis, and an economic impact analysis for the region.

Growth models are used to determine the continued un-controlled growth and expansion of the plant in the Rio Grande Basin. These models are then altered to reflect the efficacy of the introduced insect(s). Data regarding the efficacy of the agents have been recorded and the estimates of control are currently being applied to the base model for un-controlled growth. The net water saved is then determined by associating water use amounts with the reduction in giant reed.

Economic and financial budgets are used to determine the value of irrigation water in the region, which is required to perform the base analysis for the economic value of water saved for irrigation. Benefits are based on irrigation water since municipalities have first priority to water over agricultural users. Once numbers from the base analysis have been confirmed, the benefit-cost and economic impact analyses can be performed using gross revenues from the budget analysis and the IMPLAN model developed by MIG, Inc., respectively. The analysis for this project is currently underway and confirmed results are expected by January 2009.

Impact Statement:

This project involves substantial collaboration with members of the United States Department of Agriculture-Agricultural Research Service and with other scientists in Texas AgriLife Research and at Texas A&M University. With the release of the biological control agents, the amount of giant reed present along the Rio Grande is expected to decline, thus increasing the water flow of the river. This new water will be beneficial to all water users in the Rio Grande Valley, since the water saved from the reduction of giant reed upstream will allow for more water availability to users downstream. With water shortages becoming an increased concern for this area, the additional water availability has value to the economy of the Lower Rio Grande Valley. Economic analyses are currently underway and results are expected by January 2009. At that time, the details related to Outputs, Outcomes, Lessons Learned will be more clearly defined. While estimates of water use and efficacy are still under investigation, initial results indicate a substantial reduction in the amount of giant reed present along the river. The added water from this reduction will be beneficial to agriculture in the Lower Rio Grande Valley.

Category: Conservation and Resource Management

Type of Presentation: Oral Presentation