



Title: Simulation and Validation of Phosphorus Loading in Furrow Irrigation Tailwater

Name: Albert Clemmens

Email: bclemmens@uswcl.ars.ag.gov

Organization: USDA-ARS

State: AZ **Region:** Southwest States and Pacific Islands **Year of Funding:** 2000

Theme: Water Conservation and Agricultural Water Management

Situation: Phosphorus (P) transport to streams from furrow irrigation tailwater is a significant water quality issue in the Pacific Northwest.

Objectives: To develop an understanding of P transport under surface irrigation field conditions and to develop a mathematical model that describes it.

Methods: Experiments include field studies on soil and P transport, batch studies of P desorption from suspended sediment, and P desorption from the soil surface. Products include an addition of erosion and P-transport components to a surface irrigation model (in progress), and a new furrow flume for furrow erosion studies.

Partnerships: Cooperation was established between two ARS labs, Kimberly, ID, and Phoenix, AZ. Field and lab studies were done in Kimberly, while lab studies and computer modeling was done in Phoenix. Model verification will be done jointly.

Research: This is basic research and has not reached the point of education or outreach.

Resources: Base ARS funds were used to support the scientists on this project. NRI funds were primarily used for students.

Results: So far, we have added to our understanding of furrow erosion and the transport of P by irrigation streams. Incorporating this knowledge into a computer program, when completed, will allow other to evaluate the impact of various irrigation management strategies on the transport of soil and P to receiving waters.



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