



WATER RESOURCES RESEARCH GRANT PROPOSAL

Title: INTEGRATION OF SURFACE IRRIGATION TECHNIQUES TO REDUCE SEDIMENT AND NUTRIENT LOADING IN THE YAKIMA RIVER BASIN

Focus Categories: NNP, SED, IG

Keywords: non-point pollution, erosion, sedimentation, surface irrigation, salmon recovery, Yakima River, polyacrylamide, surge irrigation, tailwater, surface drains, check dams, grass lining.

Duration: September 2000 to August 2003.

Federal funds requested: \$95,106

Non-Federal (matching) funds pledged: \$95,119

Principal investigators:

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Congressional District: Washington's 4th District

Abstract:

Surface (rill) irrigation has been identified as one of the main sources of excess sediment in the Yakima River Basin. In turn, it is this source of water quality degradation that is thought to be one of the causes for declining salmon runs in the Yakima River. The Washington Department of Ecology has set a sediment limit for irrigation return flows of 25 NTUs (56 mg/l). Some irrigators are converting their rill irrigation systems to either sprinklers or drip irrigation at a cost of \$300 to \$1000 per acre. In some cases, this large capital investment in improved irrigation systems is being offset by cost share and low interest loan programs. However, there is not enough cost share money to match the rill

acreage and many irrigators cannot afford to convert their irrigation systems even if cost share were available to everyone. Therefore, many rill irrigators are attempting to improve their existing systems in order to keep their operations as profitable as possible. Many rill irrigators are applying Polyacrylamide (PAM) and successfully decreasing sediment loads from furrows by 80 to 90 percent. Unfortunately, this cleaner water often erodes sediment from the tailwater ditch causing elevated NTU levels still too high to be returned to irrigation district canals and drainage ditches. The focus of this research will be on inexpensive methods to further reduce sediment and nutrient loads from rill irrigation. Sediment loads will be evaluated for PAM (\$20/ac per year) used with Surge irrigation (\$125/ac), tailwater drains (\$75/ac), tailwater checks (\$25/ac), and grass-lined tail ditches (\$25/ac).