



Applying knowledge to improve water quality

Pacific Northwest

Regional Water Program

A Partnership of USDA NIFA
& Land Grant Colleges and Universities

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Water Management in Idaho Potatoes

Only California, Texas, Nebraska and Arkansas have more irrigated acres of farmland than Idaho. The almost 4,000,000 irrigated acres of farmland are the bedrock of Idaho's agricultural economy. The agricultural industry has shown to be one of the few stable components of Idaho's economy during the Great Recession of 2008-2009.

Idaho is known for potato production and indeed potatoes are the most valuable crop (from an economic standpoint) grown on the Snake River Plain of southern Idaho. Water management practices are an essential component of modern intensive potato production. The University of Idaho's Sustainable Agriculture and Water Resources teams have conducted grower surveys over the past 25 years to collect information on water management practices. Perhaps, the most surprising finding is that water management in potato production has not changed very much in the last two decades. The purpose of this update is to give you a snapshot of irrigation management production practices in potato production practices in Idaho. These results are published in the current issue of the *American Journal of Potato Research*.

The information found in this update is based on grower surveys conducted in both 1997 and 2007. Loy Pehrson, a University of Idaho graduate and a member of Idaho's agricultural industry, conducted the 2007 survey as part of his M.S. research project in Soils and Environmental Sciences. Over 25 percent of all Idaho potato growers filled out the 2007 survey – so the collected data is highly representative of what is actually occurring in the field.

Water Management Practices. Based on the 2007 survey a majority of Idaho potato growers either usually or always use the following water management practices:

- ◆ Irrigate fields with sprinklers
- ◆ Use feel and appearance of the soil as the prime determinate of when to irrigate
- ◆ Use dammer-diking technology for erosion control
- ◆ Use basic tillage for erosion control
- ◆ Keep written records of water management

Currently, more than 97 percent of Idaho's potato acreage is irrigated using sprinklers. Sprinkler irrigation is much more water efficient than the older traditional furrow or surface irrigation technology. Most growers switched to this more efficient system more than 20 years ago. Many producers have continued to adapt newer sprinkler irrigation technologies such as using low-pressure sprinkler systems. Based on survey results, water management in potato production continues to become more efficient in Idaho.

Over 95 percent of Idaho potato producers always or usually rely on the feel and appearance of their soil for determining when to schedule irrigation. More than 70 percent of potato growers either always or usually use dammer-diking and/or basic tillage to control soil erosion. In addition, over two-thirds of survey respondents (68.8 percent) keep written records of their irrigation management practices.



Pacific Northwest Regional Water Quality Coordination Project Partners

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University Publications:

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University Publications:

<http://info.ag.uidaho.edu/Catalog/catalog.htm>

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Water Resource Research Institutes

Water and Environmental Research
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Idaho Water Resources
Research Institute
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Institute for Water and
Watersheds (Oregon)
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State of Washington
Water Research Center
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Environmental Protection Agency

EPA, Region 10
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The Project

Land Grant Universities, Water Research Institutes, and EPA Region 10 have formed a partnership to provide research and education to communities about protecting or restoring the quality of water resources. This partnership is being supported in part by the USDA's National Institute of Food and Agriculture (NIFA).

Our Goal and Approach

The goal of this Project is to provide leadership for water resources research, education, and outreach to help people, industry, and governments to prevent and solve current and emerging water quality and quantity problems. The approach to achieving this goal is for the Partners to develop a coordinated water quality effort based on, and strengthening, individual state programs.

Our Strengths

The Project promotes regional collaboration by acknowledging existing programs and successful efforts; assisting program gaps; identifying potential issues for cross-agency and private sector collaboration; and developing a clearinghouse of expertise and programs. In addition, the Project establishes or enhances partnerships with federal, state, and local environmental and water resource management agencies, such as by placing a University Liaison within the offices of EPA Region 10.

Water Use. The vast majority of Idaho potato growers use between 1.5 and 3.5 acre-feet of irrigation water. Over 50 percent of the growers use less than 2.5 acre-feet of irrigation water. Producers who are using the lower amounts of water are most likely using technologies that allow for increased efficient use of irrigation water. These lower rates of irrigation water may be linked to growers who follow strict irrigation scheduling techniques – as 47.3 percent use tensiometers, 55.3 percent use evapotranspiration data, and 37.2 percent use variable rate management.

Agrichemical Delivery. Many potato growers are using irrigation to deliver agrichemicals to potato plants. Seventy-nine percent of producers are using chemigation (applying chemicals directly in the irrigation water) for the delivery of nitrogen (N), and more than 60 percent are using chemigation for the delivery of nutrients other than N (phosphorus and micronutrients). Additionally, the application of pesticides through irrigation water is a practice used by over 35 percent of surveyed growers.

10-Year Changes. A major finding of the 2007 survey was that there was a lack of water management changes compared to the 1997 survey. The only significant differences found between the 10-year snapshots were with the use of PAM for erosion control and dammer-diking technology to reduce soil erosion. Both the use of PAM and dammer-diking technology has increased. Based on this, more growers are implementing and using erosion control technologies today compared to a decade ago.

The apparent lack of significant water management changes in potato production in Idaho since the 1990s may indicate that growers have already embraced current technologies and that there is not much room for further improvement when current economic constraints are factored into potato production.

National Water Quality Program Areas

The four land grant universities in the Pacific Northwest have aligned our water resource Extension and research efforts with eight themes of the USDA's National Institute of Food and Agriculture.

1. Animal Waste Management
2. Drinking Water and Human Health
3. Environmental Restoration
4. Nutrient and Pesticide Management
5. Pollution Assessment and Prevention
6. Watershed Management
7. Water Conservation and Management
8. Water Policy and Economics

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