

IMPACT



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Ground Water Quality Collaboration in Washington County

The Situation

Ground water near Weiser, Idaho has been degraded by nitrate leaching. Domestic wells show elevated nitrate levels close to, or above, the national minimum standards.

Nitrate leaching to ground water can occur from several sources, including irrigated agriculture. Approximately 26,000 acres near Weiser are farmed using surface furrow irrigation. Furrow irrigation is recognized as the least efficient method of applying water to crops. In addition, some crops in the area, such as onions, have historically used high amounts of nitrogen fertilizer. The combination of furrow irrigation and high nitrogen application often results in nitrate runoff or nitrate leaching.

In 2001, the Idaho Department of Environmental Quality announced the Weiser aquifer as the number one nitrate priority area in Idaho. With the assistance of the IDEQ, a county advisory committee was formed to develop a ground water management plan.

Our Response

Early in 2000, the Washington County Extension Office introduced a demonstration project to evaluate the effectiveness of using soil moisture sensors and monitors. The goal was to help growers schedule irrigations more efficiently, prevent crop disease loss, and reduce soil and nutrient loss. This project has continued for five years and includes sugarbeets and onions. Results from the

demonstration projects were presented in classes, conferences, and in reports.



Washington County growers learn how to improve irrigation scheduling with moisture sensors and monitors.

The Extension Office also provided the newly formed Washington County Ground Water Quality Committee with technical advice.

Another collaborating member of the committee was the Weiser Soil Conservation District. In 2003, the Weiser SCD submitted a "319" grant proposal to the IDEQ for introduction of water quality demonstration practices. The Extension Office assisted with the grant proposal and agreed to be a technical collaborator. The proposal was approved, qualified growers were selected, and practices were initiated in 2004.

The “319” project provided cost sharing to growers for the purchase and installation of drip and surge irrigation systems, the purchase of soil sensors and monitors, and the construction of filter strips and tail water catchments.

As part of the collaboration agreement, the Extension Educator provided training to the Weiser SCD staff and to growers for the installation, setup, and operation of soil moisture sensors. At season end, the Extension Educator gathered moisture data and processed it for interpretation and presentation. The Extension Educator provided grower education on soil moisture management at meetings, and assisted the Weiser SCD with field tours and field presentations.

The original “319” project, including grower cooperators and Extension collaboration, will continue through 2006. The Extension Educator has participated with the Weiser SCD on a Phase II grant proposal for a nitrate-impacted area south of Weiser. This project would begin in 2006 with selection of qualified growers and development of conservation plans. Field practices would begin in 2007 and would include soil moisture sensors and monitors. The Extension Educator would provide similar instruction and assistance to these growers in the Phase II project.

Program Outcomes

Historically many growers in the Weiser area used excessive amounts of nitrate fertilizer, especially for onion production. At the conclusion of the 2004 season, growers were shown where water use was excessive and where there were opportunities for improvement. Soil and water tests also revealed locations of nitrate loss or leaching. As a result, two onion growers elected to reduce their 2005 nitrate applications from 300 pounds per acre to 150 pounds per acre.

Another onion grower used soil sensors and monitors on his drip irrigated onions to schedule irrigations more efficiently. The resulting yields were among the highest that particular field has produced.

The soil moisture sensors and monitors also showed growers where they had inadequate water for optimum crop production. These growers are converting to surge and drip irrigation so they can make optimum use of the water allocation they do have.

The Water Quality Committee and several collaborators have organized an annual water quality fair for the public. The fair provides public education on water issues and includes poster displays, presentations, and water testing.

The Future

The Idaho Department of Environmental Quality, Weiser Soil Conservation District, Washington County Extension, Idaho Department of Agriculture, Washington County Ground Water Quality Committee, and Weiser growers continue to collaborate on irrigation improvement projects.

The IDEQ has installed monitoring wells so nitrate levels can be measured and then compared to improve farming practices and reduced farm inputs.

Cooperators

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District Conservationist: Tom Yankey

For More Information

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