

# IMPACT



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## Onion Nitrate Use Efficiency Under Different Irrigation Systems

### *The Situation*

The ground water in the Weiser area has been identified as having very high nitrate contamination. Many Washington County residents obtain their drinking water from wells in this area. Excess nitrate in drinking water is a known health threat. There are several potential sources of nitrate contamination in the Weiser area including irrigated agriculture.

Onion production is a potential source of nitrate contamination. Because onions are shallow-rooted they require frequent irrigations during the season. Excess water often moves nitrates from the field into ground water. More efficient irrigation of onions could reduce this possible source of nitrate contamination to ground water in the Weiser area.

### *Our Response*

To demonstrate to growers the nitrate loss of different irrigation systems, a comparison was made between conventional furrow-irrigated onions and drip-irrigated onions. Nitrates in soil, water, and onion tissue were compared and reported.

The Extension Office collaborated with the Washington County Ground Water Committee in developing nitrate reduction recommendations. The Extension Office also collaborated with the Weiser.

River Soil Conservation District in implementing a water protection project for the area.



### *Program Outcomes*

The demonstration plots revealed that the furrow-irrigated onions lost much more nitrate to leaching than did drip-irrigated onions. Soil water from various locations in furrow-irrigated onions revealed high levels of nitrate at the two-foot depth. Drip-irrigated onions did not show high nitrate levels at that depth. Drip-irrigated onions also tested higher in root nitrate. This suggests that nitrate was supplied and used more efficiently by the onions. These results were reported in the Washington County Extension Newsletter.

A document entitled: Weiser Area Ground Water Quality Management Plan was produced for Washington County. This document contains recommendations and implementation tasks for reducing nitrate contamination from a variety of sources.

The Extension Office participated with the Weiser River Soil Conservation District in project tours and project planning meetings. Six projects will be implemented next year; two of the projects will use drip irrigation. Funding is provided from the Idaho Nonpoint Source Program Grant.

### ***The Future***

The Extension Office will do a repeat of the irrigation system comparisons next year in the Weiser area. Different fields and additional measurements will be made.

The Extension Office will also be participating with the Weiser River Soil Conservation District in the installation of projects and collection of data.

### ***Cooperators***

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### ***For More Information***

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