



# SOUTHERN WILLAMETTE VALLEY GROUNDWATER MANAGEMENT AREA

JANUARY 2018

## SPECIAL POINTS OF INTEREST:

- **PINE updates**
- **Next GWMA Meeting is April 26, 2018**

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## EDITOR'S CORNER

### We want to hear from you.

If you have a topic you'd like to read more about or would like to submit an article contact Basin Specialist Becky Anthony

at

541-686-7119 or

anthony.becky

@deq.state.or.us.

Please keep cover page articles to 500 words. All other submissions should be 200 words or less.

## CALL FOR COMMITTEE MEMBERS

The Oregon Department of Environmental Quality continues to solicit nominations for interested parties to serve on the Southern Willamette Valley Groundwater Management Area Committee. The committee represents a balance of interests in the affected area and includes attendance at biannual meetings, advice and assistance regarding ongoing research, and implementation of the area's Action

Plan. Current vacancies include OSU Extension and local watershed councils. If you know anyone who may be interested,

please direct them to Becky Anthony at 541-686-7719 or email [anthony.becky@deq.state.or.us](mailto:anthony.becky@deq.state.or.us).



## Keeping Fertilizer in the Ground and Dollars in Farmers' Pockets

In 2013, scientists at the U.S. Environmental Protection Agency's National Health and Environmental Effects Research Lab's Western Ecology Division began an innovative field study to improve nutrient management, protect the quality of groundwater, and help farmers economically. The purpose of this study was to examine the influence of certain crops and nutrient management practices on nitrate leaching into ground

water. Building on foundational research done by Oregon State University in the 1990s, the team studied practices and nitrate leaching rates for four years (2014-2017). Other partners in the study included EPA Region 10 staff, the Oregon Department of Environmental Quality, local farmers, county soil and water conservation districts, the U.S. Department of Agriculture and community leaders. When fertilizer is applied

in amounts greater than can be absorbed by crops and the land, nutrients can move beyond their intended use, wasting farmers' money and impacting ground and surface water. This type of nutrient pollution is widespread, costly,

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If you would like to know more, please contact Jana Compton at 541-754-4620 or [Compton.Jana@epa.gov](mailto:Compton.Jana@epa.gov)

## PINE UPDATES, CONT. FROM PAGE 1

and a challenging environmental problem. In the Southern Willamette Valley, excess use of nitrogen-based fertilizers on farm fields has led to some private drinking water wells having nitrate levels that exceed EPA's national primary drinking water standards. Research on nutrient efficiency management can help improve water quality and help Oregon farmers reduce their large annual expenditures on fertilizer.

"Over the years a unique partnership among local citizens, and various local, state and federal agencies has allowed a better understanding of the sources and extent of the nitrate problem in the southern Willamette Valley Ground Water Management Area," says Alan Henning, an environmental protection specialist at EPA's Region 10, which covers the Pacific Northwest and Alaska.

In 2014, nine local growers allowed the team to study their farms and shared information about their nutrient management practices. Researchers measured nitrate as it moved into the soil below the roots. They evaluated soil before fertilizers were added and after crops were harvested in order to observe how much fertilizer growing crops used, how much is left over in

the soil, and whether it has potential to leach into groundwater. To capture a wide range of current nu-

trient management practices, a variety of crops were selected for the study, including blueberries, grass seed, wheat, sweet corn and peppermint. The field study concluded in December 2017, and now the project moves into a data analysis, interpretation and peer-reviewed publication phase.

Soil data gathered from

*"Over the years a unique partnership among local citizens, and various local, state and federal agencies has allowed a better understanding of the sources and extent of the nitrate problem in the southern Willamette Valley Ground Water Management Area," — Alan Henning, EPA's Region 10.*

systems of peppermint plants typically harvested within a year. However, five-year old peppermint plants with well-established root systems were more efficient at extracting nitrogen from the soil.

"Improvements in nitrogen management rely on the '4 Rs': right place, right time, right rate, and right source of fertilizer," says Jana Compton, a research ecologist at EPA's National Health and Environmental Effects Research Lab's Western Ecology Division who led the project.

In the Southern Willamette Valley, there are a number of options for improvement. Nitrate leaching occurs mainly during rainy seasons be-

low the shallow root local farms, coupled with historical data provided by the university, will help the team determine best practices to minimize nitrate leaching while maintaining crop yields. For example, high levels of nitrate were found in soil below the shallow root



In 2018, as one of EPA's Innovation Projects to address regional and state science priorities, the team will provide farmers with periodic updates summarizing leaching results from the farmers' own fields, including soil analyses and trends.

## PINE UPDATES, CONT. FROM PAGE 2

tween October and March – so fertilizer should be applied cautiously during this time since it is washed away faster than the plant can use it. Separate timely applications of fertilizer, particularly for grass seed, provide nutrients when the crop needs it most and allows farmers to maintain good harvests while saving on fertilizer. Cover or relay crops can be planted in the same field before or after harvest of the primary crops, such as corn or vegetable seed. These cover crops can continue growing to capture leftover nitrate in the soil during the rainy season.

In 2018, as one of EPA's Innovation Projects to address regional and state science priorities, the team will provide farmers with periodic updates summarizing leaching results from the farmers' own fields, including soil analyses and trends over time. This information shows the relationship between farmers' current agricultural practices and nutrient leaching. The complete analysis, which began in 2014, will be shared with the farmers in 2018. During that spring, the team will interview farmers to understand how they are using the nutrient data and how it has impacted their nutri-

ent management practices. The results will help guide EPA and other agencies to determine the most effective ways to provide information to farmers to help them reap the economic and environmental benefits of improving nutrient management practices and maintaining the quality of their water. — Jana Compton, Alan Henning

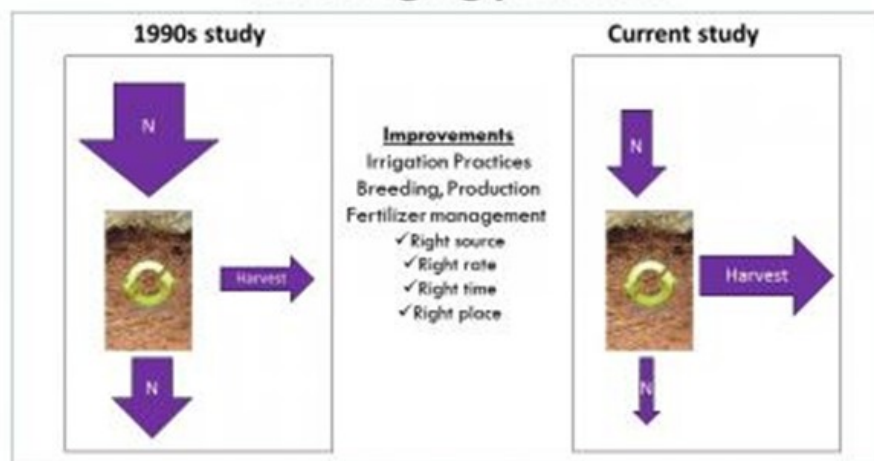
*This article was originally published in the Science Matters newsletter from EPA's Office of Research and Development.*

<https://www.epa.gov/sciencematters/keeping-fertilizer-ground-and-dollars-farmers-pockets>



Biologist Blake Hatteberg installs a lysimeter, which is a device that allows the collection of soil water and measurement of nitrate leaching to groundwater.

## Study expectations based on changing practices



Hypothesized differences between current and past nitrogen management practices in the Southern Willamette Groundwater Management Area.