

# OSU Research and Extension Projects

## A snapshot of selected programs

A summary of what's been done in the SWVGWMA with respect to N fertilizer management, nitrate levels in groundwater, irrigation, and education. Mark Mellbye and Ross Pennhallegon – OSU Extension Ag Agents, January 2010

<u>Project</u>	<u>Dates</u>
1. Well testing in Lane County	1991-by the
2. On-farm groundwater nitrogen leaching studies	1993-98
3. Stem nitrate testing of peppermint	1996-1999
4. Irrigation management studies and education	1996-98
5. Cover crop studies	1990's-2005
6. On-farm N fertilizer trials in peppermint	1995-1996
7. N rate studies on grass seed crops	1998-2001
8. Groundwater Decision Aid	1990's
9. Well water protection program	1990s-2000.s
10. Home-A-Syst.	1990'

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Repeat of project list with summary and selected references

<u>Project</u>	<u>Investigators</u>	<u>Dates</u>
<b>1. Well testing in Lane County</b> OSU Extension Service	Ross Penhallegon Extension Agent	1991-by the
Over 5,000 wells tested (public and private). Results showed that some high nitrate levels were present in some wells, especially shallow wells. Contamination from a variety of sources – Ag, Septic systems, etc.		
<b>2. On-farm groundwater nitrogen leaching studies</b> Dept. of Bioengineering, OSU	John Selker Groundwater scientist	1993-98
Evaluations of N leaching losses using PCAPS in Lane and southern Benton Counties across a range of crops and soil types. Results showed that leaching problems associated with 2 crops: peppermint and row crops. Irrigation management and precision fertilizer practices were identified as effective and key factors in reducing leaching problems.		
Publications: Field measurements of nitrate leaching below WV crops (EM 8862). Nitrates and Groundwater: Why Should We Be Concerned with Our Current Fertilizer Practices? OSU Agricultural Experiment Station Special Report (1050) January 2004. 21 pp. and other pubs at : <a href="http://www.bre.orst.edu/faculty/selker/">http://www.bre.orst.edu/faculty/selker/</a>		
<b>3. Stem nitrate testing of peppermint</b> Dept. of Bioengineering, OSU	Jason Smersrud & John Selker	1996-1999
Worked on field methods to improve use of stem nitrate testing in mint, a method to improve N fertilizer use, and avoid excess N applications late in the season.		
Publications: Field Sampling Considerations for the Stem Nitrate Test in Peppermint. Comm in Soil Sci. and Plant Anal. 29:3073-3091. 1998.		

**4. Irrigation management studies and education**  
Dept. of Bioengineering, OSU

John Selker 1996-98  
Groundwater scientist

Identified two problems associated with irrigation on farms in the Willamette valley: (1) need for better irrigation scheduling to avoid over watering, and (2) system uniformity.

Publications: Irrigation System Maintenance, Groundwater Quality, and Improved Production. OSU Extension service EM8862. April 2004. 3 pp.  
Western Oregon Irrigation Guides (EM 8713) June 1998.  
Groundwater and Nitrogen Management in Willamette Valley Mint Production. OSU Extension service EM8861. April 2004. 4 pp.

**5. Cover crop studies**

John Selker & Richard Dick 1990's-2005

A 12 year study of the impact of cover crops on nitrate leaching was conducted at the NWREC (Aurora/N valley) on irrigated row crops. Results showed that cover crops could substantially reduce leaching losses of N. Depends on crop and year.

Publications: Feaga, J.B., J. S. Selker, R.P. Dick and D.D. Hemphill. Long-Term Nitrate Leaching Under Vegetable Production with Cover Crops in the Pacific Northwest. Soil Sci. Soc. Am. J. 74:186-195. 2009.

**6. On-farm N fertilizer trials in peppermint**  
Crop and Soil Science Dept., OSU

Neil Christensen, J Hart, agents 1995-1996

Large scale on-farm N rate trials were conducted. Results showed that increasing N rates above OSU recommended levels (200-225 lb/a) did not increase mint oil yield.

Publications: Soil N dynamics in peppermint fields. Proceedings: Western Nutrient management Conference, 5:71-76. Potash and Phosphate Institute. Results also in Reports to the ARF for the Oregon Mint Commission, years 1996-98 and 1996-7. Extension UPDATE newsletter, June 1996 and July 1997.

7. **N rate studies on grass seed crops** Bill Young, Hart, et al 1998-2001  
Dept Crop and Soil Science, OSU OSU Extension Service

Large scale on-farm field trials were conducted on grass seed crops valley wide on a variety of soil types, testing up to 2x recommended N fertilizer rates. Residual N left in the soil profile in the fall was measured. Results showed grass seed crops, with their fibrous root system, are very efficient N users and at recommended rates the potential of leaching losses are negligible.

Publications: OSU Seed Production Research Reports (<http://cropandsoil.oregonstate.edu/seed-ext/Pub/2002/01.pdf>. <http://cropandsoil.oregonstate.edu/seed-ext/Pub/2002/index.htm>)  
OSU Fertilizer Guides for grass seed crops (<http://oregonstate.edu/valleyfieldcrops/soils>)

8. **Groundwater Decision Aid** Herb Huddleston and Jeff Jenkins 1990's  
OSU CSS and Ag Chem OSU Extension specialists

Educational tool to help farmers prevent leaching and well-water contamination  
Publication available through OSU publications

9. **Well water protection program** Gale Glick-Andrews 1990s-2000.s  
Dept. of Bioengineering, OSU

An educational program for home owners and commercial farmers. Included well water testing and "farm-a-syst" program.

10. **Home-A-Syst.** Ross Penhallegon 1990'

An educational effort to help homeowners and small scale landowners protect wells and groundwater.

Publication available from Ross Penhallegon.