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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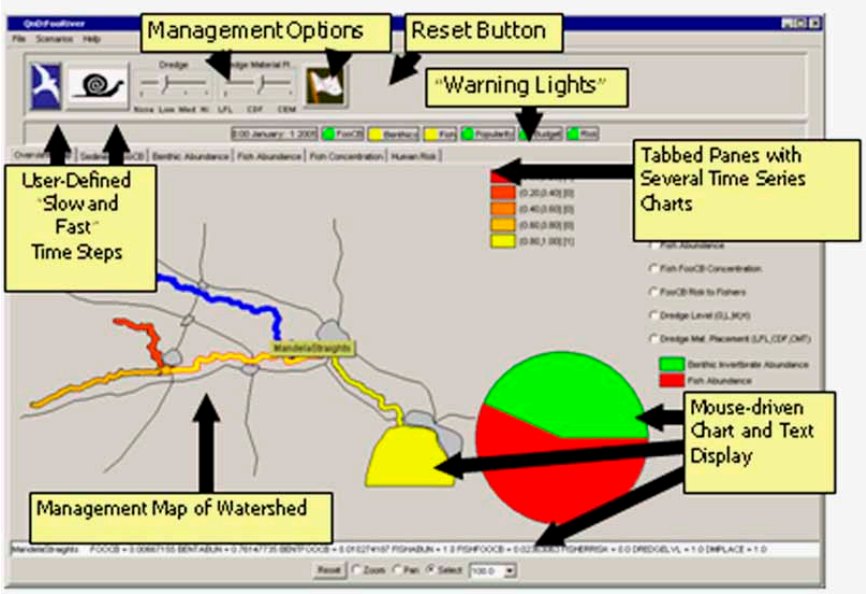
New Software:

Water Management Simulator

Preventing water pollution caused by agricultural practices is no game, but game-like software simulating the impact of certain on-farm decisions could help a whole new generation of agriculture producers make better management choices that help improve water quality.

Researchers at Washington State University (WSU) and University of Florida (UF) have won a $567,000 grant from the U.S. Department of Agriculture to develop a computer decision-making tool that incorporates agricultural management, water quality data, economics, and socio-political issues to help growers understand the use of vegetation as a buffer between fields and surface waters. The game-style program simulates and allows users to see on screen the impact of their different agricultural management decisions, encouraging adoption of these vegetative filter strips by providing a better understanding of associated trade-offs and helping to remove uncertainties.



The project also will provide much needed regional data on targeted filter strip design and placement to protect water resources in the highly productive Yakima River Basin of central Washington. At the same time, it develops novel decision-making tools that provide the basis for an interactive outreach and education approach that can be used locally and transferred to use in other watersheds.

“Everyone is excited about this project since the tools are unique and versatile enough to be used for decision making by resource managers, as an outreach tool for producers, and as a flexible education tool to be used in middle and high schools, as well as college courses,” said Jeffrey Ullman, a scientist in the WSU Department of Biological Systems

Pacific Northwest Regional Water Quality Coordination Project Partners

Land Grant Universities

Alaska
Cooperative Extension Service
Contact Fred Sorensen:
907-786-6311
http://www.uaf.edu/ces/water/
University Publications:
http://www.alaska.edu/uaf/ces/publications/

Idaho
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Contact Bob Mahler: 208-885-7025
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University Publications:
http://info.ag.uidaho.edu/Catalog/catalog.html

Oregon
Oregon State University
Extension Service
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University Publications:
http://extension.oregonstate.edu/catalog/

Washington
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http://pubs.wsu.edu/

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Contact Charlotte Clausing:
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Water Resource Research Institutes
Water and Environmental Research Center (Alaska)
http://www.uaf.edu/water/

Idaho Water Resources Research Institute
http://www.boise.uidaho.edu/

Institute for Water and Watersheds (Oregon)
http://water.oregonstate.edu/

State of Washington Water Research Center
http://www.swwrc.wsu.edu/

Environmental Protection Agency
EPA, Region 10
The Pacific Northwest
http://www.epa.gov/r10earth/

Office of Research and Development, Corvallis Laboratory
http://www.epa.gov/wed/

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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, indivudual 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.

Engineering. Ullman is principal investigator on the project; other core members of the team are UF researchers Rafael Munoz-Carpena and Greg Kiker.

The highly irrigated Yakima Basin will be a case study for the project. The team will examine how vegetative filter strips can best be used to mitigate sediments and nutrients from entering local water resources. Specifically, they will conduct field experiments on plots to demonstrate how well different filter strip types work and optimize their design using the vegetative filter strip modeling system, VFSMOD. They will then share the results with interactive focus groups of local producers, along with an accompanying cost-benefit analysis, to determine their beliefs, attitudes, and behaviors about adopting filter strips. All of the information will be integrated with available water quality data into an innovative decision-support tool, Questions and Decisions™ (QnD™).

Once developed, the modeling tool will be featured in multi-media workshops where audience members will register their management decisions through voter keypads. The ability for producers to alter their choices and see the corresponding changes will promote informed decision-making and allow the team to measure changes in producer behavior.

Another key aspect of the project is using the fun, interactive style of the decision-making tool to stimulate the interest of secondary and college students. Working with the Yakima Nation, Heritage University, and the Yakima Watershed Activities to Enhance Research in Schools program offered through Central Washington University, team members will engage Native American and Hispanic youth by using the models and out-of-class experiential learning opportunities with an eye toward inspiring a whole new generation that understands and is committed to solving water resource and sustainable agricultural issues.

"Courtesy of WSU College of Agricultural, Human, and Natural Resource Sciences"

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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