



Applying knowledge to improve water quality

Pacific Northwest

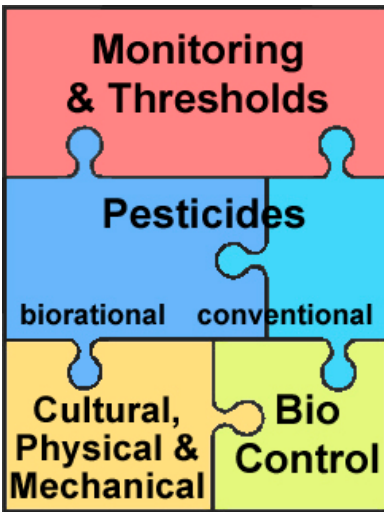
Regional Water Program

A Partnership of USDA NIFA
& Land Grant Colleges and Universities

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Integrated Pest Management:

IPM Protects Water Quality



Chemical use associated with the agriculture industry has been a water quality concern for the last four decades. Agrichemicals include pesticides and fertilizers. When used properly, these chemicals enhance food production and do minimal or no damage to the environment. However, when misused these chemicals can degrade surface and groundwater quality, the environment, and may even pose a threat to human health.

Land grant institutions (LGIs) in the Pacific Northwest have developed effective research and outreach programs to minimize the potentially negative impacts of chemical use in agricultural ecosystems, while at the same time maximizing both crop quality and yields.

Pest control is important in agriculture as research has shown that on average pests reduce food harvests by 38 percent. The two traditional philosophies of pest control are: (1) using chemical technology to exterminate pests, and (2) the use of ecological pest management. Both pest control philosophies have major problems. Chemical technology relies on the use of chemical pesticides that are often effective at killing pests, but can leave residues in soils and plants that can reach surface and groundwater. Conversely, ecological pest management relies on cultural and biological controls rather than pesticides to limit pests to tolerable levels in fields. The problem with ecological pest management is that our understanding of pest life cycles, food chains, food webs, and ecology within specific cropping systems is too limited to take full advantage of this management strategy. Our lack of understanding puts off full implementation of ecological pest management several years into the future.

The most widely used pest management strategy in the Pacific Northwest is called integrated pest management (IPM). Integrated pest management is a hybrid of chemical technology and ecological pest management. Researchers at LGIs in the Pacific Northwest have developed effective IPM strategies for most of our important cropping systems.

Integrated pest management's role in preventing contamination of water by pesticides is to decrease the amount of chemicals used and to decrease the risk that chemicals will leach into groundwater or run off crop fields into rivers and lakes. Largely due to the implementation of IPM the quantity of pesticides applied to agricultural fields in the Pacific Northwest has declined significantly in the last 20 years. "Rates of insecticides have dropped dramatically due to IPM and the fact that the active ingredients in newer pesticides are more effective," related Dr. Ed Bechinski, IPM Coordinator at the University of Idaho.

Integrated pest management's objective is to reduce pest numbers to levels that can be economically tolerated. IPM begins with using cultural and biological alternatives instead of chemical pesticides. If these control methods do not provide sufficient pest control, farmers using IPM practices will use pesticides only when field scouting shows that infestations exceed economic threshold levels. When pesticide use is warranted, IPM farmers pay special attention to soil and environmental factors that affect leaching and runoff. Pesticides



Pacific Northwest Regional Water Quality Coordination Project Partners

Land Grant Universities

Alaska

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University Publications:

<http://www.alaska.edu/uaf/ces/publications/>

Idaho

University of Idaho
Cooperative Extension System
Contact Bob Mahler: 208-885-7025

<http://www.uidaho.edu/wq/wqhome.html>

University Publications:

<http://info.ag.uidaho.edu/Catalog/catalog.htm>

Oregon

Oregon State University
Extension Service
Contact Mike Gamroth: 541-737-3316

<http://extension.oregonstate.edu/>

University Publications:

<http://extension.oregonstate.edu/catalog/>

Washington

Washington State University
WSU Extension
Contact Bob Simmons:

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University Publications:

<http://pubs.wsu.edu/>

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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, individual 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.

that have the least potential to adversely impact water quality without decreasing profits are chosen first by IPM farmers.

Steps In Putting IPM To Work...

Farmers in the Pacific Northwest put the IPM philosophy into practice by following these three steps:

Step 1: Use cultural methods, biological controls, and other alternatives to conventional chemical pesticides when practical.

Step 2: Use field scouting, pest forecasting, and economic thresholds to ensure that pesticides only are used against real and not perceived pest problems.

Step 3: Match pesticides with field site features so that the risk of contaminating water is minimized.

The following LGI faculty should be contacted for further information about specific state-based IPM programs:

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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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