

Submitted to the Western Region IPM Center
iSNAP Education Project Publication Needs Assessment Report
Mary Staben, Oregon State University
December 2005

One of the deliverables of the Integrated Soil Nutrient and Pest (iSNAP) Education Project activities is an assessment of the existing Pacific Northwest (PWN) Extension and other publications that address certain aspects of pest management and have a linkage to water quality. The goal was to uncover resource gaps in the existing publications related to pesticide drift, edge-of-field buffers, pesticide fate and behavior and weather and IPM. This information will be used to guide future publication development efforts by iSNAP Project members and others in the region.

A search of seven western state Extension Service websites was conducted to determine the currently available publications. The information gathered is presented in Table 1. We acknowledge that this is an evolving document and that it may rely on some resources outside the PNW.

Email and in-person surveys were conducted with a total of 34 responses. The email request included a copy of the existing publication table (Table 1) and asked participants to answer the following three questions:

- 1) Are any existing publications missing from the table?
- 2) From your perspective, what are the three most important topics areas that should be addressed with new or revised Extension publications?
- 3) Which of your colleagues have the most expertise in these areas? We would like to consult with them on the development of new or revised publications.

The organizations represented in the email survey included:

University of Idaho

Oregon State University

Washington State University

Oregon Department of Agriculture

NRCS West Region Technical Center

US Geological Survey

The Food Alliance

Salmon Safe is currently requesting responses from Salmon Safe certified growers

The in-person survey respondents were participants at the October 2005 iSNAP workshop, *Integrated Pest and Nutrient Management Options: Practices and Tools to Protect Water Quality*. First they were asked to look at a binder that contained the current publications listed in Table 1. Then they were asked what publications would be useful to them that do not currently exist. Twenty-four people completed a survey, including 14 NRCS personnel, six conservation district staff, two consultants, one department of agriculture employee and one Extension faculty member.

Summary of Feedback

Below are the topics the 34 survey respondents would like to see available in future Extension publications.

Pesticide Fate and Behavior

User-friendly information on pesticide breakdown in the environment (**multiple responses**)

Crop specific information sheets on BMPs for the use of and alternatives for Diuron in grass seed and wheat, Mocap in corn and Simazine in Christmas trees. This includes toxicity information for humans and fish. (**multiple responses**)

List of “high risk” pesticides that are currently slated for phase out with suggestions for alternative controls

Fate in environment and water quality issues related to Atrazine, Simazine, Metolachlor and Metribuzin

Pesticide residual effects (what crops to avoid in a rotation sequence and other impacts)
Information on the fate and behavior of newer pesticides

Pesticide Loss and Drift

Effectiveness of drift mitigation practices and measure of relative effectiveness (**multiple responses**)

Technologies for drift management (**multiple responses**)

Preventing drift: Recommendations of particle sizes for specific crops and sprayer types and sprayer differences and the impact on drift (such as hooded vs. low drift nozzles) (**multiple responses**)

Economics of reducing drift, including savings and loss prevention

Relative humidity, volatilization, pesticide formulations impacts on drift

E OR and W OR drift management video

Update the Burrill and Appleby How to Avoid Chemical Trespass (include more on nozzles and other current technologies)

Can yard (nursery) site management to reduce off-target movement

Edge-of-field Vegetation Buffers

Grass species to use for buffers for certified grass seed fields (**multiple responses**)

Buffer design considerations: plants types and species (native?), width, low input maintenance, preventing buffer plants from becoming weed, seeding rates (**multiple responses**)

Economics of installing buffers and the value of what is conserved, cost-benefit (**multiple responses**)

Buffers for dryland vs. irrigated crops and various purposes, such as wildlife habitat, insectary plantings, and resources for pollinators (**multiple responses**)

Buffer case studies and success stories

Buffers as a pollution sink, including rates of pollution captured, multiple uses, and nutrient management benefits

Weather and IPM

Field and crop scouting

How relative humidity affects pesticide uptake

Weather impacts in row crops and orchards

Website with all known weather information that is available (current and archived)

Summary and Recommendations

The feedback indicates that the bulk of the resource gaps can be addressed through three new publications. A pesticide drift publication is already in development as it was previously identified as a priority for the iSNAP Project. The other two publications will be incorporated into future project planning.

1. *Pesticide Application Technology and Drift Management*. This publication will go beyond the various causes of pesticide drift to describe a detailed process of managing and reducing off-site pesticide losses. Currently this publication is in draft form with an expected publication date of early 2006.

2. *IPM Guidelines to Determine How Pesticides Fit in an IPM Plan*. The purpose of this publication will be to assist users in managing high risk pesticides within a logical IPM plan. The goal is to aid users in mitigating pesticide risk in a site specific manner through the use of example crops and forms for users to create and document their own plans.

3. *Using Vegetation to Mitigate IPM Impacts*. This publication should serve as a “how to” planning guide for developing vegetative mitigation management strategies. The publication would outline a process of how to build on-farm mitigation using a site map to identify resources of concern. This approach to planning will include how to use vegetative buffers to capture multiple conservation goals.

Table 1. iSNAP Education Project Extension Publication Inventory (Updated 11/05)

Developed by Mary Staben, Paul Jepson and Jeff Jenkins, OSU

State Extension Service websites searched: OR, WA, ID, WY, MT, NV, UT

Search terms: buffer, filter strip, drift, pesticide application, degree day, weather, pesticide toxicity, nozzle, water quality

Title (State)	Authors (Date)	Pub No. (Pgs)	URL	Online	Comments
Topic area: Pesticide Fate and Behavior					
Pesticides in Southern Willamette Valley Groundwater (OR)	J. Selker (2004)	EC 1565 (4 pp)	http://eesc.orst.edu/agcomwebfile/edmat/EC1565.pdf	Yes	
Understanding pesticide persistence and mobility for groundwater and surface water protection (OR)	E.A Kerle, J.J. Jenkins, and P.A. Vogue , (Reprinted October 1996)	EM 8561 (8 pp)	http://eesc.orst.edu/agcomwebfile/edmat/em8561.pdf	Yes	
Nutrient and Pesticide Management in the HUA (ID)	Huter, Mahler, Brooks and Lolley, (1999)	BUL 817 (12 pp)	http://info.ag.uidaho.edu/Resources/PDFs/BUL0817.pdf The Idaho Snake-Payette Rivers Hydrologic Unit Area (HUA) Water Quality Project	Yes	
How soil properties affect groundwater vulnerability to pesticide contamination (OR)	J.H. Huddleston (Reprinted October 1996)	EM 8559 (4 pp)	http://eesc.orst.edu/agcomwebfile/edmat/em8559.pdf	Yes	
An Overview of the Oregon Water Quality Decision Aid (OR)	J.H. Huddleston (March 1998)	EM 8705 (4 pp)	http://eesc.orst.edu/agcomwebfile/edmat/em8705.pdf	Yes	
Water Quality and Agrichemicals in Montana (MT)	1993	EB 51		No (Free)	
Site assessment for groundwater vulnerability to pesticide contamination (OR)	E.A. Kerle, P.A. Vogue, J.J. Jenkins, and J.H. Huddleston, (Revised May 1998)	EM 8560 (7 pp)	http://eesc.orst.edu/agcomwebfile/edmat/em8560.pdf	Yes	
OSU Extension Pesticide Properties Database (OR)	J.J. Jenkins and P.A. Thomson (1999)	EM 8709 (2 pp)	http://eesc.orst.edu/agcomwebfile/edmat/EM8709.pdf	Yes	
Pesticide National Synthesis Project		Many	http://ca.water.usgs.gov/pnsp/	Website	
Pesticide Buffer Zones Around Water (maps and affected pesticides)	ODA		http://egov.oregon.gov/ODA/PEST/buffers.shtml	Website	
WSDA Endangered Species Program	WSDA (2004)		http://agr.wa.gov/PestFert/EnvResources/EndangSpecies.htm	Website	

Table 1. iSNAP Education Project Extension Publication Inventory (continued)

Title (State)	Authors (Date)	Pub No. (Pgs)	URL	Online	Comments
Topic area: Pesticide Loss/Drift					
International Conference on Pesticide Application for Drift Management	2004	504 pp	http://pep.wsu.edu/drift04/proceedings.html	No (\$50)	
Establishing Buffers: Protocols and Toxicological Benchmarks (from proceedings above)	A. Felsot (2004)	5 pp	http://feql.wsu.edu/pubs/HawaiiDriftBufferProc.pdf	Yes	
Vegetative Filter Strips near Surface Water in the PNW	J. Colquhoun, R. Lins and C. Cole (2004)	EM 8876 (4 pp)	http://eesc.orst.edu/agcomwebfile/edmat/EM8876.pdf	Yes	
Drift Management: Practical Methods to Increase Spray Particle Size	J. Colquhoun	5 pp		No	
Getting the Most from Soil-applied Herbicides (MT)	F. Menalled and W. Dyer (2004)	MT200405 AG (4 pp)	http://www.montana.edu/wwwpb/pubs/mt200405.pdf	Yes	
VIDEO: Discusses best management practices for using pesticides and fertilizers while preventing groundwater contamination (MT)	1991	\$14.95 (18 mins)	Contact MSU Extension Publications	No	
Preventing Phenoxy Herbicide Damage to Grape Vineyards (OR)	E. Hellman and J. Fults (Revised October 1999)	EM 8737-e (2 pp)	http://eesc.orst.edu/agcomwebfile/edmat/em8737-e.pdf	Yes	
Preventing Herbicide Injury and Drift to Grapes (OR)	Ball, Parker, Colquhoun & Dami (2004)	EM 8860 (8 pp)	http://eesc.orst.edu/agcomwebfile/edmat/EM8860.pdf	Yes	
How to Avoid Chemical Trespass When Applying Pesticides (OR)	L. Burrill and A. Appleby, (Reprinted 1992)	FS 315 (1 p)	http://eesc.orst.edu/agcomwebfile/edmat/fs315.pdf	Yes	
Herbicide Drift and Carryover Injury in Potatoes: Recognizing the Symptoms (ID)	C. Eberlein, P. Westra, L. Haderlie, J. Whitmore, M. Guttieri (1997)	PNW 498 (16 pp)	http://info.ag.uidaho.edu:591/catalog/default.htm	No (\$4.00)	Many color images

Table 1. iSNAP Education Project Extension Publication Inventory (continued)

Title (State)	Authors (Date)	Pub No. (Pgs)	URL	Online	Comments
WSU Spray Drift Task Force:	1998			No (free)	
1. Ground Application Studies	6 pp	MISC0206	http://cru84.cahe.wsu.edu/cgi-bin/pubs/MISC0206.html		
2. Chemigation Application Studies	6 pp	MISC0205	http://cru84.cahe.wsu.edu/cgi-bin/pubs/MISC0205.html		
3. Airblast Application Studies	8 pp	MISC0204	http://cru84.cahe.wsu.edu/cgi-bin/pubs/MISC0204.html		
4. Aerial Application Studies	8 pp	MISC0203	http://cru84.cahe.wsu.edu/cgi-bin/pubs/MISC0203.html		
Topic area: Edge-of-field Buffers					
Tree Buffers along Streams on Western Oregon Farmland (OR)	Emmingham, Bishaw and Rogers (2005)	EM 8895-E (24 pp)	http://eesc.oregonstate.edu/agcomwebfile/EdMat/em8895-e.pdf	Yes	Added 11/05
Managing for Soil Erosion (MT)	Ann McCauley and Clain Jones (2005)	Soil & Water Mgmt Module 3 (12 pp)	http://www.montana.edu/wwwpb/pubs/44813.pdf	Yes	Includes shelter belts, filter strips, PAM.
Vegetative Filter Strips near surface water in the Pacific Northwest (OR)	J. Colquhoun, R. Lins, C. Cole (2004)	EM 8876 (4 pp)	http://eesc.orst.edu/agcomwebfile/edmat/EM8876.pdf	Yes	
Reducing Soil Losses with Filter Strips (ID)	(1984)	CIS 587	http://info.ag.uidaho.edu:591/catalog/default.htm	No (\$0.50)	
VIDEO: Protecting Surface Water With Vegetative Filter Strips (MT)	Video 43 (2002)	12 mins	Contact MSU Extension Publications	No (\$14.95)	
Topic area: Weather					
Weather and degree day information			http://pnwpest.org/wea/	Website	
Using Growing Degree Days to Predict Plant Stages	Miller, Lanier, Brandt (2001)	MT200103 AG (8 pp)	http://www.montana.edu/wwwpb/pubs/mt200103.pdf	Yes	
Topic area: Regional IPM Handbooks					
2005 PNW Weed Management Handbook	William et al. (2005)	420 pp	http://pnwpest.org/pnw/weeds	Yes	
2005 PNW Pest Management Handbook	D. McGrath et al. (2005)	624 pp	http://pnwpest.org/pnw/insects	Yes (printed \$40)	
2005 PNW Disease Management Handbook	J. Pscheidt and C. Ocamb (2005)	600 pp	http://plant-disease.ippc.orst.edu/	Yes (printed \$40)	