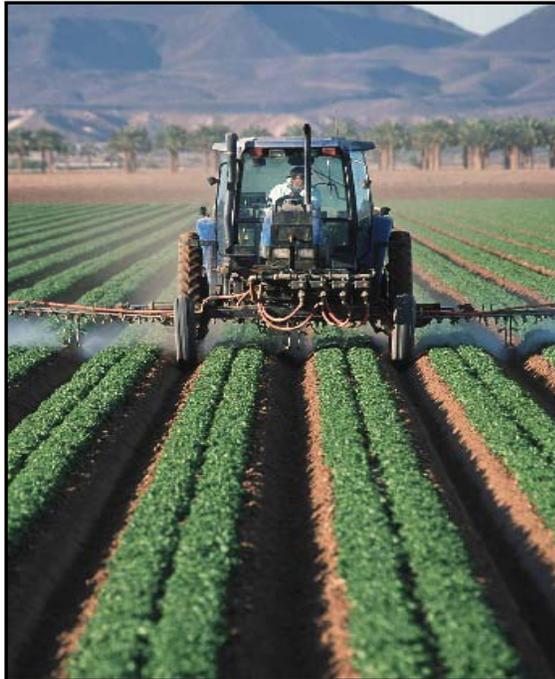


Water Quality Enhancement Activity – WQL13 – High level integrated pest management to reduce pesticide environmental risk



Enhancement Description

Utilize advanced Integrated Pest Management (IPM) prevention, avoidance, monitoring, and suppression techniques, and only apply the lowest risk pesticides available (or if higher risk pesticides are used appropriate mitigation techniques are used to ameliorate the risk) in an environmentally sound manner when monitoring indicates that an economic pest threshold has been exceeded. Pesticide applications must follow all label requirements.

Land Use Applicability

Cropland, pastureland, rangeland and forestland.

Benefits

This enhancement will improve water and air quality by reducing toxic pesticide runoff, leaching, drift and volatilization, and also reduce pesticide

impacts on pollinators and other beneficial insects.

Criteria

IPM is a sustainable approach to pest control that combines the use of prevention, avoidance, monitoring and suppression strategies, to maintain pest populations below economically damaging levels, to minimize pest resistance, and to minimize harmful effects of pest control on human health and environmental resources. High level IPM suppression systems include effective agro-chemicals and cost effective biological and cultural controls as well as the lowest risk pesticides available that can sustain the cropping system.

High level IPM includes:

1. This enhancement requires a written IPM plan and implementation of activities that include:
 - a. Prevention techniques such as cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, irrigation scheduling to avoid situations conducive to disease development, etc.
 - b. Avoidance techniques such as maintaining healthy and diverse plant communities, using pest resistant varieties, crop rotation, refuge management, etc.
 - c. Monitoring techniques such as pest scouting, degree-day modeling, weather forecasting, etc. to help target suppression strategies and avoid routine preventative treatments.



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- d. Suppression techniques such as cultural, biological and low risk chemical control methods, used judiciously to reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms.

Documentation Requirements

1. A description of the high level IPM system that is utilized on all of the offered acres. This description should include each of the following items:
 - a. Pest prevention techniques
 - b. Pest avoidance techniques
 - c. Pest monitoring (scouting) techniques
 - d. Economic pest thresholds
 - e. Pesticide environmental risk analysis tool that was utilized (e.g., the NRCS Windows Pesticide Screening Tool - WIN-PST)
 - f. Pesticide application records with the specific management techniques that were utilized to reduce pesticide environmental risk (i.e., spot treatment, banding, pheromone traps, pesticide incorporation, etc.)
2. If formal IPM Guidelines with a numeric scoring system have been developed and approved by Extension, a completed set of those guidelines can be substituted for the documentation requirements in number 1 above.

WATER QUALITY ENHANCEMENT ACTIVITY

WQL13– OR High Level Integrated Pest Management (IPM) to Reduce Pesticide Environmental Risk

General

The objective of IPM is to maintain pest levels below economically damaging levels while minimizing harmful effects of pest control on human health and environmental resources. Crops and pests are part of an agro-ecosystem and governed by the same biological processes as those in natural systems. Attempts to control one pest without regard for the entire system can irrupt checks and balances between crop plants, pests, beneficials, and the physical environment. Failure to understand these interactions may increase the severity of pest infestations and exacerbate issues like pesticide resistance. An understanding of a pest's natural enemies, crop growth and development, and what causes outbreaks and determines survival are all critical to IPM. *“Integrated”* means that a broad interdisciplinary approach is taken that uses principles of plant protection to bring together a variety of management tactics into an overall strategy. Additionally, IPM strives for maximum use of naturally occurring forces in the pest's environment including weather, pest life-cycle, and pest diseases/predators/parasites in this overall strategy.

Oregon Criteria

Evaluating pesticides for potential risk of transport (beyond the edge of the field or below the root zone) and effects on non-target organisms (humans and fish) is part of IPM. This is accomplished through the Windows Pesticide Screening Tool (WinPST) software available for download at: <http://www.wsi.nrcs.usda.gov/products/W2Q/pest/winpst.html>, or in the NRCS Field Office. In situations where a pesticide/soil interaction shows a rating of Intermediate or above, the IPM plan will also include replacement of this pesticide with a lower risk pesticide, if available. If unavailable, this will be noted in the plan. In all situations where a pesticide/soil interaction shows a rating of Intermediate or above, the IPM plan will include a list of mitigating activities to be maintained (that effectively reduce the rating down one level). To reduce the rating, at least three mitigating activities should be present. Mitigating activities can be found as a table at the back of the Pest Management (595) standard, available at: <http://efotg.nrcs.usda.gov/treemenuFS.aspx>.

The best references available for the development of crop-specific (and sometimes location-specific) IPM plans are the PNW Weeds, Insects, and Disease websites, and the Integrated Plant Protection Center website. These sites contain the Land Grant University recommendations for the control/management of specific pests, and are the source for NRCS Pest Management planning efforts.

<http://plant-disease.ippc.orst.edu/>
<http://uspest.org/pnw/insects>

PNW On-Line Guide to Plant Disease Control
PNW Insect Management Handbook

<http://uspest.org/pnw/weeds>
<http://ipmnet.org/>

PNW Weed Management Handbook
Integrated Plant Protection Center

Minimizing drift will be included in all IPM plans. A poster from the IPPC on preventing drift is included at the back of this Enhancement. It should be used to guide timing on sprays based on humidity, heat, and wind. Part of avoiding drift is to check weather forecasts, and will be a part of IPM activities included in the plan, as well as keeping a record of weather conditions when chemical applications were done. A good website for checking weather forecasts is:

<http://www.weather.gov/forecasts/graphical/sectors/>

In Oregon, the Oregon Department of Agriculture requires setbacks for use of certain chemicals along specific waterways. The IPM plan will contain this information if it is relevant to the operation and its location. The lists may be downloaded at:

<http://egov.oregon.gov/ODA/PEST/buffers.shtml>

Chemical suppression may only be used with this Enhancement where monitoring indicates that an economic pest threshold has been exceeded. The lowest risk pesticides available will be used. The best sources for economic threshold level information in the PNW are the various IPM Handbooks: http://ipmnet.org/IPM_Handbooks.htm and the two key phenology modeling websites:

<http://uspest.org/wea/>.

IPM Principles

Examples of activities that fall under the PAMS categories are shown below. **A High level IPM plan combines the use of as many of these activities as is feasible and practical for a given operation.** Other activities may exist at a site-specific level.

Prevention

Cleaning equipment
Pest-free seeds
Irrigation scheduling to avoid disease development
Seedbed prep, fertilizer application

Avoidance

Healthy/diverse plant communities
Pest resistant varieties
Crop rotation
Managing refuge areas
Delayed planting

Monitoring

Pest scouting
Degree day modeling
Weather forecasting

Suppression

*Cultural controls:
tillage, mowing, vacuuming
burning
reduction of pest habitat quality/quantity
alteration of planting patterns to disrupt pest habitat quality/quantity

Suppression

*Cultural controls (continued):
diversion of mobile pests from crop
alteration of seeding rates/crop spacing
cover crops
trap crops

**Biological controls:
introduction of predators
parasitoids (parasites of other insects)
introduction of pathogens
conservation of naturally occurring
parasites/predators

Chemical control:
low/very low-risk chemical control (as defined in WinPST)

Documenting the Enhancement:

- 1. Document this Enhancement by target pest or groups of target pests**
- 2. Attach a map or aerial photo showing fields where the Enhancement is applied.**
- 3. Enhancement Fields/Acres:**

Field(s)	Acres

4. Indicate Prevention techniques used:

Cleaning equipment Pest-free seed Irrigation scheduling Other (Explain):

5. Indicate Avoidance techniques used:

Pest-resistant varieties Healthy/Diverse plant communities
 Crop rotation Management of refuge areas
 Delayed planting Other (Explain):

6. Indicate Monitoring techniques used:

Pest scouting Degree-day modeling
 Weather forecasting Other (Explain):

7. Indicate Suppression techniques used:

Cultural Biological Chemical

Cultural (circle all that apply):

vacuuming/burning reduction of pest habitat quality/quantity
tillage mowing alteration of planting patterns to disrupt pest habitat
cover crops trap crops diversion of mobile pests from crop
other (explain):

Biological Techniques (circle all that apply):

introduction of predators introduction of parasitoids (parasites of other insects)
 introduction of pathogens conservation of naturally occurring parasites/predators
 other (explain):

Chemical Techniques:

- Established economic threshold level for treatment: _____
- Economic threshold level exceeded?

___ Low/Very Low-risk chemical control used (as defined in WinPST)

___ Intermediate or above rated pesticide used (no alternative available) with mitigating activities in place.

- **If Intermediate or above rated pesticide used, list mitigating activities (at least three as indicated on the previous page):**

8. Attach a copy of the WinPST run for all chemicals currently used in the operation.

9. Pesticide Application Records

Natural Resources Conservation Service, Oregon							
CLIENT PEST MANAGEMENT RECORD WORKSHEET							
PEST MANAGEMENT APPLICATION RECORDS							
Date	Tract & Field Number	Acres Treated	Pest Management Method	Product Brand Name	Product EPA Reg. No.	Amount & Units	Purpose

CLIENT PEST MANAGEMENT RECORD WORKSHEET

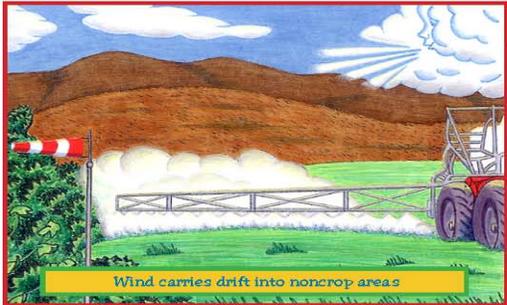
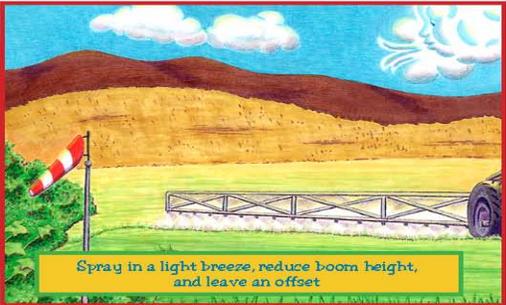
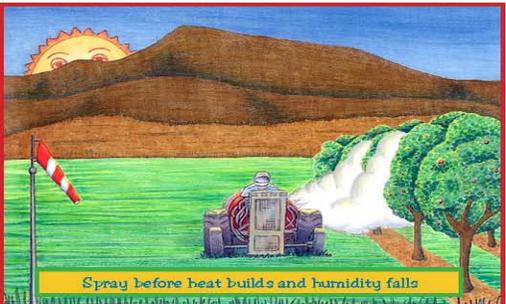
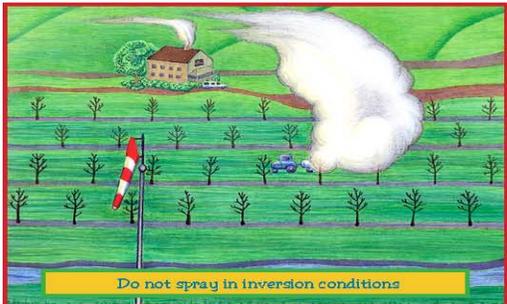
PEST MANAGEMENT APPLICATION RECORDS

Date	Tract & Field Number	Acres Treated	Pest Management Method	Product Brand Name	Product EPA Reg. No.	Amount & Units	Purpose

Notes:

OSU Integrated Plant Protection Center *Avoiding Drift Handout*

PESTICIDE DRIFT MANAGEMENT

 <p>Wind carries drift into noncrop areas</p>	Wind Drift	 <p>Spray in a light breeze, reduce boom height, and leave an offset</p>
 <p>Do not spray in hot, dry conditions</p>	Thermal Drift	 <p>Spray before heat builds and humidity falls</p>
 <p>Do not spray in inversion conditions</p>	Inversion Drift	 <p>Spray in a light breeze</p>

EM 5934-E • August 2007

The document can be downloaded in its entirety at: <http://ipmnet.org/>