NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

PEST MANAGEMENT

(Acre)

CODE 595

DEFINITION

Utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies to manage weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species), that directly or indirectly cause damage or annoyance.

PURPOSES

This practice is applied as part of a Resource Management System (RMS) to support one or more of the following purposes:

Enhance quantity and quality of commodities.

Minimize negative impacts of pest control on soil resources, water resources, air resources, plant resources, animal resources and/or humans (follow all criteria).Conditions Where Practice Applies

Wherever pests will be managed.

CRITERIA

General Criteria Applicable to All Purposes

A pest management component of a conservation plan shall be developed in accordance with policy requirements of the NRCS General Manual Title 450, Part 401 (Technical Guides, Policy and Responsibilities) and Title 190, Part 404 (Ecological Sciences, Pest Management Policy); technical requirements of the NRCS Field Office Technical Guide; procedures contained in the National Planning Procedures Handbook (NPPH), and the NRCS National Agronomy Manual (NAM) Section 503.

All methods of pest management must comply with Federal, State, tribal and local regulations, including management plans for invasive pest species, noxious weeds and disease vectors. Compliance with the Food Quality Protection Act (FQPA); Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); Worker Protection Standard (WPS) and the Endangered Species Act (ESA) is required for chemical pest control.

Integrated Pest Management (IPM) that strives to balance economics, efficacy and environmental risk, where available, shall be incorporated into planning alternatives. Washington State University Extension Bulletin 1786 provides information on IPM. This sustainable approach to pest control 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. IPM suppression systems include biological controls, cultural controls and the judicious use of chemical controls. Information and fact sheets are available for commodity specific IPM at the following web-sites:

http://ipm.wsu.edu/

http://pep.wsu.edu/

http://wsprs.wsu.edu/CropProfiles.html

An appropriate set of mitigation techniques must be planned and implemented to reduce the environmental risks of pest management activities in accordance with quality criteria in the local Field Office Technical Guide. Mitigation techniques include conservation practices like Filter Strip (393) or Conservation Crop Rotation, (328) and management techniques like application method or timing.

Plans for pest management that are elements of a more comprehensive conservation plan shall recognize the requirements of a conservation plan and be compatible with its other requirements.

Clients shall pay special attention to all environmental hazards and site-specific application criteria listed on pesticide labels and contained in Extension and Crop Consultant recommendations.

Additional Criteria to Protect Quantity and Quality of Commodities

As an essential component of both commodity-specific IPM and IPM general principles, clients shall be encouraged to use the minimum level of pest

control necessary to meet their objectives for commodity quantity and quality.

Additional Criteria to Protect Soil Resources

In conjunction with other conservation practices, the number, sequence and timing of tillage operations shall be managed to maintain soil quality and maintain soil loss at or below the soil loss tolerance (T) or any other planned soil loss objective. Approved erosion prediction tools are the Revised Universal Soil Loss Equation (RUSLE), the Wind Erosion Equation (WEQ), and soil quality rating procedures such as the Soil Conditioning Index (SCI).

Clients shall pay special attention to pesticide label instructions for limiting pesticide residues in soil that may negatively impact non-target plants, animals and humans.

Additional Criteria to Protect Water Resources

Pest management environmental risks, including the impacts of pesticides in ground and surface water on humans and non-target plants and animals, must be evaluated for all identified water resource concerns. Approved evaluation procedures to use are NRCS' Windows Pesticide Screening Tool (WIN-PST) and National Agricultural Pesticide Risk Analysis (NAPRA). WIN-PST is available at the following website:

http://www.wcc.nrcs.usda.gov/water/quality/frame/pestmgt.html.

When a chosen alternative has significant potential to negatively impact important water resources, (e.g., WIN-PST “Extra High”, “High” or “Intermediate” soil/pesticide human and/or fish risk ratings near ground or surface waters of the state), an appropriate set of conservation practices or mitigation techniques must be put in place to address risks to humans and non-target plants and animals. Appropriate practices/mitigation techniques by pesticide loss pathway and resource concern are identified in Table I – Washington Conservation Practice and Management Effectiveness Guide to Reducing Pesticide Impacts on the Environment. Positive/negative effects are rated as slight (+/-), moderate (++/--), or significant (+++/---).

The plan will follow pesticide label restrictions regarding soil texture depth to water table, and mixing/loading and application setback distances from intermittent or perennial streams or rivers, natural and impounded lakes, reservoirs, and estuaries. Pesticide label instructions will be followed for limiting pesticide residues in leachate and runoff that may negatively impact non-target plants, animals and humans.

Assessment of the effectiveness for pesticide storage, handling and disposal shall be completed using Water Quality Technical Note #1 - Water Quality Indicator Tools.

Tillage operations shall be managed in conjunction with other sediment control practices to minimize sediment losses to nearby surface water bodies.

On irrigated land, conservation practice standard Irrigation Water Management (449) is required to minimize pest management environmental risk.

Additional Criteria to Protect Air Resources

Follow pesticide label instructions for minimizing volatilization and drift that may negatively impact non-target plants, animals and humans.

Avoid spray drift by applying pesticides only when wind speeds do not exceed label restrictions or local, state, tribal or federal regulations and wind direction is away from sensitive areas.

Additional Criteria to Protect Plant Resources

Follow pesticide label instructions including those directed at:

Preventing misdirected pest management control measures that negatively impact plants (e.g., removing pesticide residues from sprayers before moving to the next crop and properly adjusting cultivator teeth and flame burners).

Appropriate climatic conditions, plant crop stage, soil moisture, pH, and organic matter in order to protect plant health.

Limiting pesticide residues in soil that can carry over and harm subsequent crops.

Incorporating soil applied pesticides to the depth specified on the label when incorporation is recommended to minimize movement offsite or damage to non-target species.

Additional Criteria to Protect Animal Resources

Follow pesticide label precautionary statements and restrictions to minimize negative impacts to domestic animals, wildlife, and aquatic organisms.

Additional Criteria to Protect Humans

Read and follow all pesticide label instructions, as well as local, state, tribal and federal regulations regarding posting and field re-entry restrictions or treated areas.

Handle and apply pesticides properly to protect the user and the environment from adverse effects.

CONSIDERATIONS

If commodity-specific IPM is not available, the following IPM principles should be considered:

Prevention, such as using pest-free seeds and transplants, cleaning tillage and harvesting equipment between fields, irrigation scheduling to

avoid situations conducive to disease development, etc.

Avoidance, such as using pest resistant varieties, crop rotation, trap crops, etc.

Monitoring, such as pest scouting, soil testing, weather forecasting, etc. to help target suppression strategies and avoid routine preventative pest control.

Suppression, such as cultural, biological and chemical controls, that can reduce a pest population or its impacts. Chemical controls should be used judiciously in order to minimize environmental risk and pest resistance.

Adequate plant nutrients and soil moisture, including favorable pH and soil conditions, should be available to reduce plant stress, improve plant vigor and increase the plant's overall ability to tolerate pests.

PLANS AND SPECIFICATIONS

The pest management component of a conservation plan shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended purpose(s).

As a minimum, the pest management component of a conservation plan shall include:

- Plan map, soil map and topographic maps on steeper slopes of managed site.
- Location of sensitive resources and setbacks.
- Operation and maintenance requirements.
- Environmental risk analysis, with approved tools and/or procedures, for probable pest management recommendations by crop and pest.
- Alternative conservation practices that address erosion, sediment, soil quality and irrigation induced concerns.
- An appropriate set of Interpretations of the environmental risk analysis identified for each conservation practice/mitigation technique presented.
- Interpretation of Hazard Rating. Hazard Ratings are divided into five classes. These are:

  X-Extra High

  H-High

  I-Intermediate

  L-Low

  VL-Very Low

Hazard ratings of “Low” or “Very Low” require no further actions as long as they are used according to the label and meet quality criteria for Resource Management Systems (RMS). Hazard ratings of “Intermediate” or “High” require mitigation measures to meet quality criteria for a RMS. “High” ratings warrant more extensive mitigation measures than “Intermediate” rating. Mitigation measures may not be effective for “Extra High” hazard ratings if resources are highly sensitive, and a high degree of resource protection is desired. ie. aquifer sensitivity, endangered species protection, etc. In these cases, an economically acceptable pesticide with a lower risk or an alternative method of pest control shall be required to meet quality criteria for a RMS.

OPERATION AND MAINTENANCE

The pest management component of a conservation plan shall include appropriate operation and maintenance items for the client. These may include:

- Review and update the plan periodically in order to incorporate new IPM technology, respond to cropping system and pest complex changes, and avoid the development of pest resistance. A plan review shall be completed when changes occur in crop rotation or when new pesticides are to be used.
- Maintain mitigation techniques identified in the plan in order to ensure continued effectiveness.
- Develop a safety plan for individuals exposed to chemicals, including telephone numbers and addresses of emergency treatment centers for individuals exposed to chemicals and the telephone number for the nearest poison control center. The National Pesticide Information Center (NPIC) telephone number in Corvallis, Oregon may also be given for non-emergency information:

  1-800-858-7378

  Monday - Friday

  6:30 a.m. to 4:30 p.m. Pacific Time

For advice and assistance with emergency spills that involve agrichemicals, contact the Washington Department of Ecology at:

Northwest Office, Bellevue: 1-425-649-7000

Southwest Office, Olympia: 1-360-407-6300

Central Office, Yakima: 1-509-575-2490

Eastern Office, Spokane: 1-509-456-2926

The national 24-hour CHEMTREC telephone number may also be given:

1-800-424-9300

- Follow federal, state, and local label requirements for mixing/loading setbacks from wells, intermittent streams and rivers, natural or impounded ponds and lakes, or reservoirs.
- Post signs according to label directions and/or Federal, State, tribal and local laws around sites that have been treated. Follow restricted entry intervals.
- Dispose of pesticides and pesticide containers in accordance with label directions and adhere to Federal, State, and local regulations.
- Read and follow label directions and maintain appropriate Material Safety Data Sheets (MSDS).
- Calibrate application equipment according to Extension and/or manufacturer recommendations before each seasonal use and with each major chemical change.
- Replace worn nozzle tips, cracked hoses, and faulty gauges.
- Maintain records of pest management for at least two years. Pesticide application records shall be in accordance with USDA Agricultural Marketing Service's Pesticide Record Keeping Program and state specific requirements.

REFERENCES

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Washington State. Chapter 16-228 WAC. 2003. *General Pesticide Rules.*

Washington State. Chapter 16-233 WAC. 1996. *Worker Protection Standard*. http://agr.wa.gov/PestFert/Pesticides/default.htm

Washington State Department of Health. 1999. *Washington State's Source Water Assessment Program*. Department of Health Publication 331-148.

TABLE I –
Washington Conservation Practice and Management
Mitigation Effectiveness Guide to
Reducing Pesticide Impacts on the Environment

Note: Pest Management (595) requires environmental risk evaluation and appropriate conservation and mitigation measures for all identified resource concerns. This table identifies management techniques and conservation practices that have the potential to mitigate pesticide impacts on water quality. Not all techniques will be applicable to a given situation. Relative effectiveness ratings by pesticide loss pathway are "no effect" (blank), "slight effect" (+/-), "moderate effect" (++/--), and "significant effect" (+++/---). The table also identifies how the techniques function. Effectiveness of any mitigation technique can be highly variable based on site conditions and how it is designed. Therefore, with guidance provided by the table, site-specific selection and design of mitigation techniques that are appropriate for identified resource concerns is left to the professional judgement of the conservation planner.

Pest Management Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Management Techniques [1/]				
Application Timing	+++	+++	+++	Reduces exposure potential - delaying application when significant rainfall events are forecast can reduce pesticide transport to ground and surface water, application when conditions are optimal can reduce the amount of pesticide applied, also delaying application when wind speed is not in accordance with label requirements can reduce pesticide drift to surface water
Formulations/Adjuvants	++	++	+	Reduces exposure potential – formulations and/or adjuvants that increase efficacy allow lower application rates
Lower Application Rates	+++	+++	+++	Reduces exposure potential - use lowest effective rate on label
Partial Treatment	+++	+++	+++	Reduces exposure potential - spot treatment, banding and directed spraying reduce amount of pesticide applied
Pesticide Label Environmental Hazard Warnings and BMPs	Required [2/]	Required [2/]	Required [2/]	Reduces exposure potential - label guidance must be carefully followed for pesticide applications near water bodies and on soils that are intrinsically vulnerable to erosion, runoff, or leaching
Scouting and Integrated Pest Management (IPM)Thresholds	+++	+++	+++	Reduces exposure potential - reduces the amount of pesticide applied
Set-backs	+	++	+	Reduces exposure potential - reduced application area reduces amount of pesticide applied, can also reduce inadvertent pesticide application and drift to surface water
Soil Incorporation – mechanical or irrigation	---	+++	+++	Reduces exposure potential for surface losses, but increases exposure potential for leaching losses
Substitution – ▪ Alternative pesticides ▪ Cultural controls ▪ Biological controls	+++	+++	+++	Reduces hazard potential - use alternative pesticides with low environmental risk, substituting cultural (including burning and mechanical controls) and biological controls can reduce the need for pesticides.

All management techniques pertaining to pesticide labels must be provided by a licensed pesticide representative.

TABLE I –

Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Conservation Practices [3/]				
Agrichemical Mixing Facility	+++	+++	+++	Reduces the potential for point source pesticide contamination
Alley Cropping (311)	+	+	++	Increases infiltration and uptake of subsurface water, reduces soil erosion, can provide habitat for beneficial insects which can reduce the need for pesticides, also can reduce pesticide drift to surface water
Anionic Polyacrylamide (PAM) Erosion Control (450)	-	+	+++	Increases infiltration and deep percolation, reduces soil erosion
Brush Management (314) (non-chemical)	+++	+++	+++	Using non-chemical brush control often reduces the need for pesticides, pesticide use requires environmental risk analysis and appropriate mitigation - see Pest Management (595)
Channel Bank Vegetation (322)	-	+	++	Increases infiltration and traps adsorbed pesticides, if combined with a setback. Reduces application area resulting in less pesticide applied and can reduce inadvertent pesticide application and drift to surface water
Conservation Cover (327)	+++	+++	+++	Retiring land from annual crop production Reduction in pesticide use, builds soil organic matter
Conservation Crop Rotation (328)	++	++	++	If practice reduces the need for pesticides, breaks pest lifecycles
Constructed Wetland (656)	+	+	++	Captures pesticide residues and facilitates their degradation
Contour Buffer Strips (332)	-	++	++	Increases infiltration and deep percolation, reduces soil erosion and deposition
Contour Farming (330)	-	+	+	Increases infiltration and deep percolation, reduces soil erosion
Cover Crop (340)	-	+	+	Increases water uptake, increases infiltration, reduces soil erosion, and builds soil organic matter.
Critical Area Planting (342)	+++	+++	+++	Increases water uptake and infiltration, reduces soil erosion, builds soil organic matter
Cross Wind Ridges (589A)			(+)[4/]	Reduces wind erosion and adsorbed pesticide deposition in surface water
Cross Wind Trap Strips (589C)			(++)[4/]	Reduces wind erosion and adsorbed pesticide deposition in surface water, traps adsorbed pesticides
Deep Tillage (324)	-	+	+	Increases infiltration and deep percolation
Dike (356)	++/--	++	++	Reduces exposure potential - excludes outside water (++ leaching) or captures pesticide residues and facilitates their degradation (-- leaching)
Diversion (362)	+	+	+	Reduces exposure potential - water is diverted
Field Border (386)		+	++	Increases infiltration and traps adsorbed pesticides, often reduces application area resulting in less pesticide applied, can provide habitat for beneficial insects which reduces the need for pesticides, can provide habitat to congregate pests which can result in reduced pesticide application, also can reduce inadvertent pesticide application and drift to surface water

TABLE I - (continued)

Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Conservation Practices [3/]				
Filter Strip (393)	+	++	+++	Vegetative planting & management increases crop removal capabilities & infiltration, traps adsorbed pesticides, and may reduce application area resulting in less pesticide applied. Provides habitat for beneficial insects which reduces the need for pesticides. Provides habitat to congregate pests which can result in reduced pesticide application, also can reduce inadvertent pesticide application and drift to surface water
Floodwater Diversion (400)	+	+	+	Reduces exposure potential - floodwater is diverted
Forage Harvest Management (511)	++	++	++	Reduces exposure potential - timely harvesting reduces the need for pesticides
Forest Stand Improvement (666)	++	++	++	Reduces the potential for pest damage and the need for pesticides
Grade Stabilization Structure (410)			++	Traps adsorbed pesticides
Grass Buffer Strip (741)	-	++	++	Increases infiltration, reduces soil loss and deposition
Grassed Waterway (412)		+	++	Increases infiltration and traps adsorbed pesticides (should be applied with Filter Strips at the outlet and on each side of the waterway)
Grazing Land Mechanical Treatment (548)	-	+	+	Increases infiltration and deep percolation
Hedgerow Planting (442)			(+)[4/]	Reduces adsorbed pesticide deposition in surface water, also can reduce inadvertent pesticide application and drift to surface water
Herbaceous Wind Barriers (603)			(+)[4/]	Reduces wind erosion, traps adsorbed pesticides, can provide habitat for beneficial insects which reduces the need for pesticides, can provide habitat to congregate pests which can result in reduced pesticide application, also can reduce pesticide drift to surface water
Hillside Ditch (423)	+	+	+	Reduces exposure potential - water is diverted
Irrigation Land Leveling (464)	++	+	++	Reduces exposure potential - uniform surface reduces pesticide transport to ground and surface water
Irrigation System, Microirrigation (441)	++	+++	+++	Reduces exposure potential - efficient and uniform irrigation reduces pesticide transport to ground and surface water
Irrigation System, Sprinkler (442)	++	++	++	Reduces exposure potential - efficient and uniform irrigation reduces pesticide transport to ground and surface water
Irrigation System, Surface and Subsurface (443)	+	+	+	Reduces exposure potential - efficient and uniform irrigation reduces pesticide transport to ground and surface water
Irrigation System Tail Water Recovery (447)		+++	+++	Captures pesticide residues and facilitates their degradation
Irrigation Water Management (449)	+++	+++	+++	Reduces exposure potential - water is applied at rates that minimize pesticide transport to ground and surface water, promotes healthy plants which can better tolerate pests
Land Smoothing (466)	+	+	+	Reduces exposure potential - uniform surface reduces pesticide transport to ground and surface water
Mole Drain (482)	+	+	+	Increases infiltration and aerobic pesticide degradation in the rootzone ***avoid direct outlets to surface water**

TABLE I - (continued)

Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Conservation Practices [3/]				
Mulching (484)	+	-/+	-/+	Often reduces the need for pesticides, natural mulches increase infiltration and reduce soil erosion (+ solution and adsorbed runoff), artificial mulches may increase runoff and erosion (- solution and adsorbed runoff)
Nutrient Management (590)	++	++	++	Promotes healthy plants which can better tolerate pests
Pasture and Hay Planting (512)	++	++	++	Improving pasture/hayland often reduces the need for pesticides, builds soil organic matter
Precision Land Forming (462)	++	+	++	Reduces exposure potential - uniform surface reduces pesticide transport to ground and surface water
Prescribed Burning (338)	++	++	++	Often reduces the need for pesticides
Prescribed Grazing (528)	++	++	++	Improves plant health and reduces the need for pesticides
Range Planting (550)	++	++	++	Increases infiltration and uptake of subsurface water, reduces soil erosion, builds soil organic matter
Recreation Area Improvement (562)	++	++	++	Increases infiltration and uptake of subsurface water, reduces soil erosion, builds soil organic matter
Residue Management, Direct Seed (777)	+	++	+++	Increases infiltration, reduces soil erosion, builds soil organic matter
Residue Management, No-till and Strip-Till (329A)	+	++	+++	Increases infiltration, reduces soil erosion, builds soil organic matter
Residue Management, Mulch-Till (329B)	+	++	+++	Increases infiltration, reduces soil erosion, builds soil organic matter
Residue Management, Ridge Till (329C)	+	++	+++	Increases infiltration, reduces soil erosion, builds soil organic matter
Residue Management, Seasonal (344)	+	+	+	Increases infiltration, reduces soil erosion, builds soil organic matter
Riparian Forest Buffer (391)	+	+++	+++	Increases infiltration and uptake of subsurface water, traps sediment, builds soil organic matter
Riparian Herbaceous Cover (390)	+	++	++	Increases infiltration, traps sediment, builds soil organic matter
Row Arrangement (557)	-	+	+	Increases infiltration and deep percolation, reduces soil erosion
Sediment Basin (350)			++	Captures pesticide residues and facilitates their degradation
Stream Habitat Improvement & Management (395)	-	+	++	Reduces soil erosion
Stripcropping (585)		+	+	Increases infiltration, reduces soil erosion
Structure For Water Control (587)	-	++	+++	Captures pesticide residues and facilitates their degradation, increases infiltration and deep percolation
Subsurface Drainage (606)	+	++	++	Increases infiltration and aerobic pesticide degradation in the rootzone *Note – avoid direct outlets to surface water
Surface Drainage, Field Ditch (607)	+	+	+	Increases infiltration and aerobic pesticide degradation in the root zone
Surface Roughening (609)			(+)[4/]	Reduces wind erosion and adsorbed pesticide deposition in surface water
Terrace (600)	--	++	+++	Increases infiltration and deep percolation, reduces soil erosion

TABLE I - (continued)

Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Conservation Practices [3/]				
Tree and Shrub Establishment (612)			(++)[4/]	Reduces wind erosion, reduces adsorbed pesticide deposition in surface water, traps adsorbed pesticides, also can reduce pesticide drift
Vegetative Barriers (601)			++	Reduces soil erosion, traps sediment, increases infiltration
Waste Storage Facility (313)	+	++	++	Captures pesticide residues
Waste Treatment Lagoon (359)		+++	+++	Captures pesticide residues and facilitates their degradation
Waste Utilization (633)	++	++	++	Increases soil organic matter
Wastewater Treatment Strip (635)	+	++	+++	Vegetative planting & management increases crop removal capabilities & infiltration, traps adsorbed pesticides, and may reduce application area resulting in less pesticide applied. Provides habitat for beneficial insects which reduces the need for pesticides. Provides habitat to congregate pests which can result in reduced pesticide application, also can reduce inadvertent pesticide application and drift to surface water
Water and Sediment Control Basin (638)	-	++	+++	Captures pesticide residues and facilitates their degradation, increases infiltration and deep percolation
Well Decommissioning (351)	+++			Eliminates point source contamination
Wetland Creation (Ac.) (658)	+	+	+	Captures pesticide residues and facilitates their degradation
Wetland Enhancement (Ac.) (659)	+	+	+	Captures pesticide residues and facilitates their degradation
Wetland Restoration (Ac.) (657)	+	+	+	Captures pesticide residues and facilitates their degradation
Windbreak/Shelterbelt Establishment (380)			(++)[4/]	Reduces wind erosion, reduces adsorbed pesticide deposition in surface water, traps adsorbed pesticides, also can reduce pesticide drift
Windbreak/Shelterbelt Renovation (650)			(++)[4/]	Reduces wind erosion, reduces adsorbed pesticide deposition in surface water, traps adsorbed pesticides, also can reduce pesticide drift

[1/] Additional information on pest management mitigation techniques can be obtained from Extension pest management publications, pest management consultants and pesticide labels.

[2/] The pesticide label is the law - all pesticide label specifications must be carefully followed, including required mitigation. Additional mitigation may be needed to meet NRCS pest management requirements for identified resource concerns.

[3/] Details regarding the effects of Conservation Practices on ground and surface water contamination by pesticides are contained in the Conservation Practice Physical Effects matrix found in the National Handbook of Conservation Practices.

[4/] Mitigation applies to adsorbed pesticide losses being carried to surface water by wind.

TABLE I - (continued)

Washington's Conservation Practice and Management Mitigation Effectiveness Guide to Reducing Pesticide Impacts on the Environment used information from the Northwest Climate Center Pest Management Team's *TABLE I Mitigation Effectiveness Guide - Reducing Pesticide Impacts on Water Quality*. Their guide is based on available research specific to the technique, related research, and the NWCC Pest Management Team's best professional judgment. The ratings are relative index values as opposed to absolute values, much like the Conservation Practice Physical Effects (CPPE) matrix. They are intended to help planners choose the best combination of techniques for their identified resource concerns. The ratings are based on the relative *potential* for a technique to provide mitigation. The technique has to be specifically designed, implemented and maintained for the mitigation potential to be realized. Varying site conditions can result in a great deal of variation in actual mitigation effectiveness, but our relative index values indicate which techniques will generally provide more or less mitigation under a given set of conditions. Our general rule of thumb is that +'s generally have the potential to reduces losses by 10 -15%., ++'s have the potential to reduces losses by about 25% and +++'s have the potential to reduce losses by about 50%.

The original matrix was developed by the EPA-sanctioned Aquatic Dialogue Group and published by SETAC. The original reference is: *Aquatic Dialogue Group: Pesticide Risk Assessment and Mitigation, Baker JL, Barefoot AC, Beasley LE, Burns LA, Caulkins PP, Clark JE, Feulner RL, Giesy JP, Graney RL, Griggs RH, Jacoby HM, Laskowski DA, Maciorowski AF, Mihaich EM, Nelson Jr HP, Parrish PR, Siefert RE, Solomon KR, van der Schalie WH, editors. 1994. Society of Environmental Toxicology and Chemistry, Pensacola, FL., pages 99-111 and Table 4-2.* They provided ranges of effectiveness for various mitigation techniques. With their permission, we expanded their work for the NEDC *Nutrient and Pest Management Considerations in Conservation Planning* course materials. Richard Aycock from Louisiana was the first to put a mitigation matrix into an NRCS Pest Management (595) standard, based in large part on Table 6.2 (pages 67 - 68), and Table, 6.4 (pages 71 - 72) in *Module 6, Part C-Integrating Nutrient and Pest Management with Other Conservation Practices* in our *Nutrient and Pest Management Considerations in Conservation Planning* course materials. Table 1 was built from the Louisiana matrix by adding additional management techniques and conservation practices. If you have any questions, please contact the NWCC Pest Management Team.