

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 may be 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.

CONDITIONS WHERE PRACTICE APPLIES

Wherever pests will be managed.

CRITERIA

General Criteria Applicable To All Purposes

Compliance with Federal, state, and local laws is required (e.g., Food Quality Protection Act (FQPA); Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); Worker Protection Standard (WPS); Interim Endangered Species Protection Program (H7506C); Chapter 5E-2 and 5E-9 Florida Administrative Code (F.A.C.); and Florida Statute (F.S.), Chapter 487.

An appropriate set of mitigation techniques MUST be planned and implemented where necessary to reduce the environmental risks of pest management activities consistent with meeting the quality criteria in Section III of the Field Office Technical Guide (FOTG). Mitigation techniques may include conservation practices and management techniques that are known to be effective in reducing the negative impacts of pest management. See Table 1 of this standard for a list of mitigation techniques to be considered when there is a need to reduce pesticide impacts on water quality.

Integrated Pest Management (IPM) is defined as an approach to pest control that combines biological, cultural, and other alternatives to chemical control with the judicious use of pesticides. 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.

Integrated Pest Management (IPM) principles that strive to balance economics, efficacy and environmental risk, shall be incorporated into planning alternatives. Two or more biological, cultural, mechanical, sanitation, and chemical control methods used in combination to treat a

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

targeted pest is required. Examples of biological control methods are the use of grazing animals, predators, parasites, nematodes, and pest diseases (e.g., use of Bollgard cotton, which contains Bt (*Bacillus thuringiensis*) to control budworm and bollworm). Cultural control methods are the use of crop rotations, cultivations, sanitation, pruning, and microbials. Mechanical control methods include traps, barriers, tillage, site preparation, and mowing (e.g., use of scalping for site preparation to plant pine trees to control weeds). See Florida NRCS conservation practice standards: Conservation Crop Rotation, Code 328, Field Border, Code 386, Filter Strip, Code 393, Residue Mgt., Codes 329 A & B and Code 344, and Mulching, Code 484 for additional criteria on the use of IPM control methods on cropland. On pasture, hayland, rangeland, forest, and wildlife land see Florida NRCS conservation practice standards: Brush Mgt., Code 314, Forage Harvest Mgt., Code 511, Grazing Land Mechanical Treatment, Code 548, Prescribed Grazing, Code 528A, Forest Site Preparation, Code 490, Prescribed Burning, Code 338, Tree and Shrub Establishment, Code 612, Upland Wildlife Habitat Management, Code 645, and Wetland Wildlife Habitat Management, Code 644.

Clients shall be instructed to pay special attention to all environmental hazards and site-specific application criteria listed on pesticide labels and those recommended by University of Florida, Institute of Food and Agricultural Sciences (UF-IFAS) Extension Agents and/or a Certified Crop Advisor (CCA) representatives.

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.

Treatment will be made when the pest damage reaches the “economic threshold level”.

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. Use current erosion prediction technology (i.e. RUSLE 2 and WEPS) for soil loss, and the Soil Conditioning Index (SCI) for soil quality.

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

The pesticides TRIUMPH and TEMIK have special soil ratings in Florida. For TRIUMPH, county-specific lists of soils on which the product may be applied have been developed by the product manufacturer and are available from the County Extension Offices or the product dealers. TRIUMPH should not be applied to soils that are included on these lists. In the case of TEMIK, the product label contains a list of Florida soils which have special shallow drinking water well set-back requirements (see label for definition of “shallow well”). Labels for TEMIK should be carefully read before using the product.

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. Evaluation methods shall include the following: NRCS’ Windows Pesticide Screening Tool (WIN-PST) and National Agricultural Pesticide Risk Analysis (NAPRA). The WIN-PST program can be downloaded from <http://www.wcc.nrcs.usda.gov/water/quality/comm/pestmgt/winpst.htm>. Florida soils must also be downloaded. See the above web-site or Chapter 10, Pest Management, of the Florida Agronomy Field Handbook for download instructions.

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 risk ratings in the drainage area of a drinking water reservoir), an appropriate set of mitigation techniques MUST be put in place to address risks to humans and non-target aquatic and terrestrial plants and wildlife. Pesticide alternatives with a WIN-PST soil/pesticide Hazard risk rating of ‘Extra High’, ‘High’, or ‘Intermediate’ shall be accompanied by one or more mitigating practices. Selection of mitigating practices and/or management

techniques shall be based on site-specific resource concerns and pesticide loss pathways. Table 1 contains a list of conservation practices, which can help mitigate the adverse impacts of pesticides depending upon pesticide loss pathways. Effects are rated as:

Effect	Positive	Negative
no effect	blank	blank
slight	+	-
moderate	++	--
significant	+++	---

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

The number, sequence and timing of tillage operations shall be managed in conjunction with other sediment control tactics and practices, in order to minimize sediment losses to nearby surface water bodies.

Where surface water may be impacted, aquatic toxicity will be listed for the selection of chemicals to be used. Only chemicals labeled for aquatic use will be applied to any surface water.

In areas where groundwater is subject to high level of potential contamination an evaluation of the stage of plant growth, ground cover, half-life of the chemical, organic content of the soil, and amount of active ingredient in the chemical will be provided to the client.

Open mixing of chemicals will not occur within 100 feet of a well or surface water body. Open mixing will be performed down gradient of wells.

Where chemical mixing occurs continuously in the same location or within 100 feet of a well or surface water, closed transfer systems or portable agrichemical handling facilities will be used. See NRCS - Florida conservation practice standards, Agrichemical Mixing Station – Portable, Code 703 and Agrichemical Handling Facility, Code 702.

Backflow prevention devices shall be used on all water sources which supply water to chemical

mixing tanks or where chemicals are applied through irrigation systems.

Additional Criteria to Protect Air Resources

Clients shall be encouraged to pay special attention to pesticide label instructions for minimizing volatilization and drift that may negatively impact non-target plants, animals and humans.

Additional Criteria to Protect Plant Resources

Clients shall be encouraged to pay special attention to 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, crop stage, soil moisture, pH, and organic matter in order to protect plant health.
- Limit pesticide residues in soil that can carry over and harm subsequent crops. Follow crop rotations or plant-back restrictions.

Additional Criteria to Protect Animal Resources

Clients shall be encouraged to pay special attention to pesticide label instructions that minimize negative impacts to animals, both wildlife and domestic.

Additional Criteria To Protect Humans

Clients shall be encouraged to pay special attention to pesticide label instructions that minimize negative impacts to humans.

Minimize exposure to chemicals, wear proper protective clothing, and use safety equipment as appropriate. Assure that agricultural workers and pesticide handlers are trained about general pesticide safety as required by the Worker Protection Standard.

The pesticide applicator shall know the exact field location to be treated.

Operators of equipment shall be alert at all times to avoid bodily injury and unnecessary exposure to chemicals.

Notify workers about areas where pesticide applications are taking place or where restricted-entry intervals are in effect. Unless the pesticide labeling requires both types of notification, notify workers either orally or by posting warning signs at entrances to treated areas. Inform workers which method of notification is being used. Reentry times shall be posted and followed.

Store pesticides in original containers in a locked, well ventilated weather resistant building. Post warning signs on or around the building. Locate the building so that accidental spills will create minimal environmental effects. Dispose of pesticide containers according to label directions and adhere to local or state regulations.

Provide emergency wash stations (decontamination sites) for personnel who might be accidentally exposed to chemicals.

Formulate a safety plan complete with telephone numbers and information about locations of emergency treatment centers for personnel exposed to chemicals. Post the Worker Protection Standard safety poster at a central location that workers and pesticide handlers can access.

Material Safety Data Sheets (MSDS) shall be readily accessible to personnel. See www.cpppress.com, "MSDS Reference" for latest manufactures MSDS information.

CONSIDERATIONS

The following should be considered when developing the pest management section of a conservation plan:

- 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, and adjusting planting dates to help control weed, insect, and disease problems.
- 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.
- The effect of adequate plant nutrients and soil moisture, favorable pH, good soil condition, and proper management of plant resource to reduce plant stress and improve plant vigor.
- Use of hand weeding for small, isolated areas, or on larger areas where labor costs are not prohibitive. Spot spraying and wick application of pesticides rather than full-coverage spraying should be considered when applicable.
- Pesticide characteristics such as solubility, toxicity, degradation process, mobility, persistence, adsorption, and efficacy, and their relationships to site characteristics such as soil, geology, depth to water table, proximity to surface water, topography, and sensitive areas to assess the potential impact on water quality.
- Timing of pesticide application in relation to present soil moisture, anticipated weather conditions, wind speed, and irrigation to achieve greatest efficiency and to reduce potential for offsite transport. The method of pesticide application, such as ground or aerial spraying, wicking, or dry granules is important to the degree of drift and volatilization that can be expected.
- The stage of plant growth and/or if soil applied in assisting with evaluating the leaching or runoff potential.
- The effects of erosion control practices, including subsurface water management, conservation buffers, and filter strips, used to reduce soil loss and runoff transport of adsorbed and dissolved pesticides.

- Leaving plant residue (residue management) on the surface increases organic matter, which reduce the chances of some herbicides like atrazine reaching groundwater.
- The effects of repetitive use of the same pesticide(s) with the same mode of action on pest resistance and shifts in the pest types.
- Effects of pest control measures on non-target soil organisms, and on aquatic and terrestrial life. Special care should be afforded to threatened and endangered species of plants and animals and their habitats.
- Effects of the seasonal water budget on potential pesticide loss from the plant environment to surface or ground water.
- Pesticide users must read and follow label directions, maintain appropriate Material Safety Data Sheet (MSDS), and become certified to apply restricted use pesticides.
- Properly rinse equipment and re-use rinsate for subsequent batches of the same pesticide, where possible.
- The dangers from excessive exposure to many chemicals.
- The potential for pesticide drift based on droplet size and wind velocity.
- Becoming familiar with Private Applicator Agricultural Pest Control (SM-53), UF, Cooperative Extension Service (CES), IFAS; and Applying Pesticides Correctly (SM-1), UF, CES, IFAS and the Environmental Protection Agency (EPA).
- Location of sensitive resources and filter strip buffers. See NRCS - Florida conservation practice standard, Filter Strip, Code 393 and NRCS Publication "Conservation Buffers to Reduce Pesticide Losses" for guidance on flow lengths and widths of buffers.
- Environmental risk analysis shall use WIN-PST Soil/Pesticide Interaction Loss Potential and Hazard Rating Report for alternative pest management recommendations. The environmental risk analysis will include Soil/Pesticide Interaction Screening Procedure 2 (SPISP2) ratings for Leaching Potential (ILP), Solution Runoff Potential (ISRP), Absorbed Runoff Potential (IARP), and Human and Fish Hazard Ratings. Use University of Florida, Institute of Food and Agriculture Science (UF, IFAS) Pesticide Selection Guides (Circular #961 through 1015, dated 1/98), crop specific supplement or copies of the filled out form(s) (last page of the circular) where the selection has been made by the cooperators in consultation with IFAS or a certified crop adviser.
- Interpretation of Hazard Ratings. Hazard Ratings are divided into 5 classes. These are:
 - X – Extra High
 - H – High
 - I – Intermediate
 - L – Low
 - V – Very LowHazard Ratings of 'Low' or 'Very Low' require no further action as long as they are used according to the label and meet quality criteria for Resource Management Systems (RMS's). 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' ratings. Mitigation measures may not be effective for 'Extra High' hazard ratings if resources are highly sensitive or a high degree of resource protection is desired. In these cases, an efficacious, economically acceptable pesticide with a lower risk or an alternate method of pest control may be required to meet quality criteria for a RMS.

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 and soil map of managed site.
- Identification of appropriate mitigation techniques. See Table 1 for list of

management techniques and conservation practices.

OPERATION AND MAINTENANCE

The pest management component of a conservation plan shall include appropriate operation and maintenance (O&M) items for the client. As a minimum, the O&M plan shall include:

- The O&M plan shall be reviewed and updated periodically in order to incorporate new IPM technology, respond to cropping system and pest complex changes, and avoid the development of pest resistance.
- 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). The telephone number for NPIC is: **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 agri-chemicals, the local emergency telephone number should be provided. The national 24-hour CHEMTREC telephone number is: **1-800-424-9300**.

- Follow label requirements for mixing/loading setbacks from wells, intermittent streams and rivers, natural or impounded ponds and lakes, or reservoirs. (State or local regulations may be more restrictive).
- Post signs according to label directions and/or Federal, State, 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. See USDA's publication on Pesticide Record-keeping Requirements. Florida Pesticide Law requires certified applicators to keep records on the applications

of Restricted Use Pesticides (RUP). Information on the RUP needs to be recorded within two working days of the application and maintained for two years from the application date.

Table 1 – Mitigation Effectiveness Guide - Reducing Pesticide Impacts on Water Quality

Note: Pest Management (595) requires environmental risk evaluation and appropriate mitigation 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
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

Pest Management Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Substitution – <ul style="list-style-type: none"> ▪ 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
Conservation Practices ^{3/}				
Agrichemical Mixing Center - Portable (703) Agrichemical Handling Facility (702)	+++	+++	+++	Reduces the potential for point source pesticide contamination
Anionic Polyacrylamide (PAM) Erosion Control (450)	-	+	+++	Increases infiltration and deep percolation, reduces soil erosion
Bedding (310)	+	+	+	Increases surface infiltration and aerobic pesticide degradation in the rootzone
Brush Management (314)	+++	+++	+++	Using non-chemical brush control often reduces the need for pesticides, pesticide use requires environmental risk analysis and appropriate mitigation
Conservation Cover (327)	+++	+++	+++	Retiring land from annual crop production often reduces the need for pesticides, builds soil organic matter
Constructed Wetland (656)	+	+	++	Captures pesticide residues and facilitates their degradation
Conservation Crop Rotation (328)	++	++	++	Reduces the need for pesticides by breaking pest lifecycles
Contour Buffer Strips (332)		++	++	Increases infiltration, reduces soil erosion
Contour Farming (330)	-	+	+	Increases infiltration and deep percolation, reduces soil erosion
Contour Stripcropping (585)		++	++	Increases infiltration, reduces soil erosion
Cover Crop (340)	+	+	++	Increases infiltration, reduces soil erosion, builds soil organic matter
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

Pest Management Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Drainage Water Management (554)	++/--	++	++	Seasonal saturation may reduce the need for pesticides, drainage reduces storm water runoff, drainage increases infiltration and aerobic pesticide degradation in the rootzone during the growing season (++ leaching), seasonal saturation may bring the water table in contact with pesticide residues from the previous growing season (-- leaching)
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
Filter Strip (393)		++	+++	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
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
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. Promotes healthier plants, which can better tolerate pests.
Hedgerow Planting (442)			(+) ^{4/}	Reduces adsorbed pesticide deposition in surface water, also can reduce inadvertent pesticide application and drift to surface water

Pest Management Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Absorbed Runoff	
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
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 *Note – avoid direct outlets to surface water
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)	++	++	++	Retiring land from annual crop production often reduces the need for pesticides, builds soil organic matter, and reduces soil erosion.
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

Pest Management Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Prescribed Grazing (528A)	++	++	++	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, 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
Row Arrangement (557)	-	+	+	Increases infiltration and deep percolation, reduces soil erosion
Sediment Basin (350)			++	Captures pesticide residues and facilitates their degradation
Stripcropping, Field (586)		+	+	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 rootzone
Terrace (600)	--	++	+++	Increases infiltration and deep percolation, reduces soil erosion
Tree and Shrub Establishment (612)	+++	+++	+++	Retiring land from annual crop production often reduces the need for pesticides, increases infiltration and uptake of subsurface water, builds soil organic matter, and reduces soil erosion.
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

Pest Management Mitigation Techniques	Pesticide Loss Pathways			Function
	Leaching	Solution Runoff	Adsorbed Runoff	
Waste Utilization (633)	++	++	++	Increases soil organic matter
Water and Sediment Control Basin (638)	-	++	+++	Captures pesticide residues and facilitates their degradation, increases infiltration and deep percolation
Well Decommissioning (351)	+++			Reduces potential for point source contamination
Wetland Creation (658)	+	+	+	Captures pesticide residues and facilitates their degradation
Wetland Enhancement (659)	+	+	+	Captures pesticide residues and facilitates their degradation
Wetland Restoration (657)	+	+	+	Captures pesticide residues and facilitates their degradation

^{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.

REFERENCES

Chapter 5E-2 and 5E-9 (F.A.C.)
 Conservation Buffers to Reduce Pesticide Losses
 Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
 Florida Statute (F.S.), Chapter 487
 FOTG, Section III
 Material Safety Data Sheets (MSDS) (www.cpppress.com)
 National Agriculture Pesticide Risk Analysis (NAPRA)
 NRCS conservation practice standards:
 Agrichemical Handling Facility, Code 702
 Agrichemical Mixing Station, Code 703
 Brush Management, Code 314
 Conservation Crop Rotation, Code 328
 Field Border, Code 386
 Filter Strip, Code 393
 Forage Harvest Management, Code 511
 Forest Site Preparation, Code 490

Grazing Land Mechanical Treatment, Code 548
 Mulching, Code 484
 Prescribed Burning, Code 338
 Prescribed Grazing, Code 528A
 Residue Management, Codes 329A&B and 344
 Upland Wildlife Habitat Management, Code 645
 Wetland Wildlife Habitat Management, Code 644
 Revised Universal Soil Loss Equation (RUSLE 2)
 Soil Conditioning Index (SCI)
 UF, IFAS, Applying Pesticides Correctly (SM - 1)
 UF, IFAS, Circular Numbers 961-1015
 UF, IFAS, Private Applicator Agricultural Pest Control (SM - 53)
 USDA Pesticide Recordkeeping Requirements for Certified Private Applicators of Federal Restricted Use Pesticides; July 1996.
 Wind Erosion Prediction System (WEPS 1.0)

Windows Pesticide Screening Tool (WIN-PST)

([http://www.wcc.nrcs.usda.gov/water/quality/comm
on/pestmgt/winpst.htm](http://www.wcc.nrcs.usda.gov/water/quality/comm
on/pestmgt/winpst.htm))

Worker Protection Standard (WPS)