

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**PEST MANAGEMENT**

(Acre)  
CODE 595A

**DEFINITION**

Managing agricultural pest infestations (including weeds, insects, and diseases) to reduce adverse effects on plant growth, crop production, and environmental resources.

**PURPOSES**

To develop a pest management program that is both consistent with selected crop production goals and environmentally acceptable.

**CONDITIONS WHERE PRACTICE APPLIES**

On cropland where pest control is needed.

On cropland within a ground water quality concern area or within a surface water quality concern area where pest control is needed.

**CRITERIA**

**Ground Water Quality Concern Area**

For each field or conservation treatment unit (CTU), determine which target pesticides are being used and their application schedules.

If one or more target pesticides are being used, find the Pesticide Leaching Potential rating for each of the target pesticides. Refer to the Pesticide Data Base in Section II of the Field Office Technical Guide (FOTG).

Find the Soil Leaching Potential rating for each soil mapping component in the field (or CTU). Refer to the Soil Ratings For Determining Water Pollution Risk For Pesticides list in Section II of the FOTG.

Determine the Potential Pesticide Loss to Leaching rating for each target pesticide being used. Refer to the Potential Pesticide Loss to Leaching Matrix in Section II of the FOTG.

Where the Potential Pesticide Loss to Ground Water is rated as 3, consider this practice not needed on this field (or CTU).

**Surface Water Quality Concern Area**

For each field or conservation treatment unit (CTU), determine which target pesticides are being used and their application schedules.

If one or more target pesticides are being used, find the Pesticide Surface Loss Potential rating for each of the target pesticides. Refer to the Pesticide Data Base in Section II of the Field Office Technical Guide (FOTG).

Find the Soil Surface Loss Potential rating for each soil mapping component in the field (or CTU). Refer to the Soil Ratings For Determining Water Pollution Risk For Pesticides lists in Section II of the FOTG.

Determine the Potential Pesticide Loss to Surface Runoff rating for each targeted pesticide being used. Refer to the Potential Pesticide Loss to Surface Runoff Matrix in Section II of the FOTG.

Where the Potential Pesticide Loss to Surface Runoff is rated as 3, consider this practice not needed on this field (or CTU).

**Both Water Quality Concern Areas**

Where the Potential Pesticide Loss to Ground Water or Surface Runoff is rated as 1 or 2, this practice is needed on this field (or CTU).

Specify the target pests, the cropping sequence, and the target pesticides being used.

Evaluate each target pesticide for its health hazard to humans and animals. If a pesticide is a potential danger to health, suggest that the land user/producer substitute an alternative pesticide, alternative pesticide application techniques, or other pest management techniques.

Identify alternatives with the land user/producer to reduce or eliminate target pesticides including such items as changing crop management techniques to include rotations.

Plan erosion control practices to minimize soil loss and runoff that can carry dissolved and adsorbed pesticides to surface waters. Proper irrigation water management will reduce deep percolation of pesticides. Proper tailwater management can reduce runoff containing pesticides.

Field applications of pesticides should be forgone just prior to predicted heavy rainfall or irrigation to prevent surface water contamination and ineffective control of target plants and animals.

Identify the use of integrated pest management (IPM) systems that utilize the most appropriate means of pest control including cultural, mechanical, chemical, and biological control such as insect attractant traps.

Consider crop rotation and varietal resistance as a part of the integrated pest management system. This will remove or reduce pesticide availability as a potential pollutant of water.

Encourage field scouting of pests to determine when the treatment threshold has been reached. Treatment thresholds for specific insects and crops are available from Cooperative Extension. Uneconomic and environmentally unneeded application of pesticides can thus be avoided.

## CONSIDERATIONS

1. Use integrated pest management principles, some major features of which are incorporated in subsequent items.
2. Consider the use of crop rotations, crop varieties resistant to the target pest(s), and adjusting planting dates to help control weed, insect, and disease problems.
3. Consider mechanical cultivation and biological controls, where appropriate, to control pests.
4. Consider the effect of adequate plant nutrients and soil moisture, favorable pH, and good soil condition to reduce plant stress and improve plant vigor.
5. Consider use of hand weeding for small, isolated areas, or on larger areas where labor costs are not

prohibitive. Spot spraying rather than full-coverage spraying is another alternative.

6. Consider pesticide characteristics such as solubility, toxicity, degradation products, mobility, persistence, adsorption, and efficacy, and relationships to site characteristics such as soil, geology, depth to water table, proximity to surface water, topography, climate, and sensitive environmental elements to determine the potential impact on water quality.
7. Practice timing of pesticide application in relation to present soil moisture, anticipated weather conditions, and irrigation to achieve greatest efficiency and reduce potential for offsite transport. The method of pesticide application, such as ground or aerial spraying, wicking, granules, etc., is important since the degree of drift and volatilization can vary considerably.
8. Consider the effects of erosion control practices, including subsurface water management, used to reduce soil loss and runoff on transport of adsorbed and dissolved pesticides.
9. Consider the effects of repetitive use of the same or similar pesticides on pest resistance and shifts in the pest types.
10. Consider 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.
11. Consider effects of the seasonal water budget on potential pesticide loss from the plant environment to surface or ground water.

## Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or

at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that during critical periods, such as spawning, eggs in gravel's, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

### **Water Quantity**

This practice is considered to have no effect on the amount of water except on irrigated land where it may result in reduced pesticide laden irrigation runoff due to less water being applied.

### **Water Quality**

This practice limits the availability of pesticides in or on the soil and on plant foliage that could pollute surface or ground water by reducing pesticide application numbers and amounts to those necessary to protect the agricultural commodity, or where feasible, eliminating them entirely.

### **PLANS AND SPECIFICATIONS**

1. Identify the target pest(s), the life cycle periods when it is most vulnerable to control, and the best mechanical, biological, or chemical control method or combinations of control and list limitations on use.
2. Develop and use a water budget when planning the use of this practice that will show the seasonal distribution of water resources under the appropriate soil-crop-management system.
3. Describe specifications for any pest management measure consistent with state and local regulations. Appropriate land grant university publications concerning pesticide use will be maintained and updated as part of the field office technical guide, and all recommendations for specific pesticides, rates of pesticides, level of crop tolerance, and effectiveness ratings for the target pest(s) shall be in accordance with these publications.
4. Determine potential pesticide loss to surface runoff and leaching using "Soil Ratings for Pesticide Leaching and Surface Loss Potentials" or other appropriate ratings for soils and pesticides in Section II of the field office technical guide. This information will be used to rank the various pesticides in terms of their potential to contaminate water resources and to consider other management options.
5. All specifications will be consistent with state and local regulations.

Specify that the land user/producer shall consult with a Farm Advisor and a Pest Control Advisor (PCA) licensed by the California Department of Food and Agriculture to explore use of non-target pesticides and use of integrated pest management.

Include wording that the person will perform all the necessary operations, safety and maintenance items needed.

### **OPERATION AND MAINTENANCE**

1. Prepare a chemical management plan.
2. Maintain mechanical equipment in good working condition and calibrate application equipment to ensure recommended rates are applied. Replace worn components of pesticide application equipment as well as other pest management implements.
3. Operators of equipment must be alert at all times to avoid bodily injury and unnecessary exposure to chemicals.
4. Pesticide users must read and follow label directions, maintain appropriate Material Safety Data Sheets (MSDS), and become certified to apply restricted use pesticides.

5. Apply chemicals during periods of minimum potential for drift.
  6. Minimize exposure to chemicals, wear protective clothing, and use safety equipment as appropriate.
  7. Ensure that the pesticide applicator knows the exact field location to be treated. Post signs according to label directions or state and Federal laws around fields that have been treated. Follow the established re-entry time as stated on the MSDS.
  8. Properly locate chemical mixing and equipment rinsing stations relative to potential for contamination of ground or surface water. Extreme care must be taken to follow loading and mixing procedures. Provide for managing accidental spills.
  9. Properly rinse equipment and re-use rinsate for subsequent batches of the same pesticide, where possible.
  10. 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.
  11. Provide emergency wash stations for personnel who might be accidentally exposed to chemicals, and formulate a safety plan complete with information about locations of emergency treatment centers for personnel exposed to chemicals.
  12. Ensure that backflow prevention devices are installed and operating properly on irrigation systems used for applying pesticides.
  13. Recognize the dangers from excessive exposure to the take appropriate precautionary measures. This is especially important for farm workers who spend long hours in the field.
2. Always maintain a safe distance of several hundred feet from water wells when mixing and loading pesticides.
  3. Clean application equipment after each use by triple rinsing according to state and local regulations. Be sure rinse water is kept away from high runoff areas, wells, ponds, lakes, streams, and other water bodies.
  4. Always store pesticides in the original labeled containers, preferably in a locked building with appropriate warning signs.
  5. Dispose of leftover material and containers according to label requirements. Never reuse pesticide containers for any purpose other than to return to manufacturer.

The pesticide user should be encouraged to:

1. Protect water wells with earth berms to prevent accidental pesticide spills from entering the underground water table.