

## PEST MANAGEMENT (ACRE)

### Definition

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

### Scope

This standard establishes the minimum acceptable elements of a pest management program. It includes appropriate cultural, biological, and chemical controls, and combinations thereof.

### Purpose

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

### Conditions Where Practice Applies

On lands where pest control is needed.

### Planning Considerations

1. Integrated pest management principles should be used, 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. Mechanical cultivation and biological controls should be considered, 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. Timing of pesticide application in relation to present soil moisture, anticipated weather conditions, and irrigation should be practiced 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. Effects of repetitive use of the same or similar pesticides on pest resistance and shifts in the pest types should be considered.
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.

### OPERATION, SAFETY, 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

## Pest Management 595-2

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.

### Specification Guide

1. Identify the target pest(s), the life cycle periods when 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. Appropriate land grant university publications concerning pesticide use will be maintained and updated as part of the field office technical guide. All recommendations for specific pesticides, rates of pesticides, level of crop tolerance, and effectiveness ratings for the target pest(s) will be in accordance with these publications.
4. Potential pesticide loss to surface runoff and leaching will be determined using "Soil Ratings for Pesticide Leaching and Surface Loss Potentials" or other appropriate ratings for soils and pesticides. 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. A reference section will be included at the end of the specifications that contains sources used in developing the specifications to provide easy access to more in depth technical information.

6. All specifications will be consistent with Federal, state, and local regulations.

### Specifications

1. Crop pests will be identified and their populations and economic threshold will be determined using field scouting techniques. Information on pest identification, scouting techniques, and treatment threshold levels is available from the local Cooperative Extension Service Office.

2. Time pest control methods for optimum effectiveness and lowest environmental hazards. Do not apply if the probability of precipitation is high.

3. Refer to West Virginia University CES Corn Herbicides for West Virginia, WVU CES No-Till Systems for West Virginia and Penn State Agronomy Guide for recommended pesticides, rates of pesticides, level of crop tolerance, and effectiveness ratings for the target pests.

Ensure that recommendations provided are in accordance with the pesticide label specifications. The decisionmaker should be cautioned to compare all published recommendations to actual label recommendation on the pesticide container to assure that legal use requirements are met.

4. To estimate site specific water quality risk, the chemical and physical properties of a pesticide must be considered in relation to soil and topographic characteristics.

A. Utilize the Field Office Technical Guide (FOTG) Soils Ratings, Section II-D, to determine the soil's potential for leaching and surface runoff.

B. Subsequently, use the FOTG Pesticide Data Base, Section I-E, to determine the pesticide potential for leaching and surface runoff.

C. Utilize the matrices in the FOTG Soil-Pesticide Interaction Ratings, Section II-D, to determine the potential for pesticide loss to leaching and surface runoff.

D. Follow the guidelines for interpreting the potential pesticide loss ratings in the Soil-Pesticide Interaction Ratings document.

5. All specifications will be consistent with Federal, state, and local regulations, and the manufacturers label. Refer to the Amended West Virginia Pesticide Use and Application Act of 1975, effective June 6, 1986.

## **Pest Management 595-4**

### **References**

1. Agronomy Guide, Penn State University, 1989-90.
2. Corn Herbicides for West Virginia, West Virginia University Extension Service.
3. Laws of West Virginia Relating to Agriculture.
4. No-Till Systems for West Virginia, West Virginia University Extension Service.
5. The Amended West Virginia Pesticide Use and Application Act of 1975, effective June 6, 1986.

