NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

INTEGRATED PEST MANAGEMENT (IPM)

(Ac.)

CODE 595

DEFINITION

A site-specific combination of pest prevention, pest avoidance, pest monitoring, and pest suppression strategies

PURPOSE

- Prevent or mitigate off-site pesticide risks to water quality through leaching, solution runoff and adsorbed runoff
- Prevent or mitigate off-site pesticide risks to soil, water, air, plants, animals and humans through drift and volatilization
- Prevent or mitigate on-site pesticide risks to pollinators and other beneficial species through direct contact
- Prevent or mitigate cultural, physical and biological pest suppression risks to soil, water, air, plants, animals and humans

CONDITIONS WHERE PRACTICE APPLIES

This practice is applicable on all lands where pests are managed, however, the planning and application of this practice will not manage pests.

CRITERIA

General Criteria Applicable to All Purposes

Employ IPM strategies (Prevention, Avoidance, Monitoring and Suppression or "PAMS") to prevent or mitigate pest management risks for identified natural resource concerns.

A comprehensive IPM plan utilizing PAM strategies will be developed in accordance with this standard to document how specific pest management risks will be prevented or mitigated. The IPM plan must be crop and/or land use specific and adhere to applicable elements and guidelines accepted by the local Land Grant University or Extension.

If a comprehensive IPM system is not feasible, utilize appropriate IPM techniques to adequately prevent or mitigate pest management risks for identified natural resource concerns.

Develop a pesticide mitigation strategy utilizing conservation practices and selected IPM techniques. The mitigation strategy must be crop and/or land use and pesticide specific.

Refer to the CO Pest Management Considerations in Conservation Planning Worksheet to determine if planned and existing conservation practices and existing IPM techniques will provide sufficient mitigation to address identified pesticide-related resource concerns. If they do not, refer to the CO IPM (595) Implementation Requirements Worksheet to select additional IPM techniques that the producer is willing to apply.

Additional Criteria to Prevent or Mitigate Pesticide Risks to Water Quality through Leaching, Solution Runoff and Adsorbed Runoff

For identified resource concerns associated with Water Quality - Harmful Levels of Pesticides in Surface and or Groundwater, use the current version of the USDA-NRCS Windows Pesticide Screening Tool (WIN-PST) to evaluate potential soil/pesticide interaction risks to humans and or fish, as appropriate, for each pesticide identified for use by the cooperator.

Determine the minimum mitigation index score needed for each resource concern based on the site-specific WIN-PST interaction risk ratings, and the following WIN-PST Interaction Risk Rating table.

WIN-PST Interaction Risk Rating	Minimum Mitigation Index Score Needed
Low or Very Low	None Needed
Intermediate	20
High	40
Extra High	60 or more

Additional Criteria to Prevent or Mitigate Pesticide Risks to Soil, Water, Air, Plants, Animals and Humans through Drift and Volatilization

For identified natural resource concerns associated with Air Quality - Chemical Drift, the Minimum Mitigation Index Score required is 20.

For identified natural resource concerns associated with Volatile Organic Compounds (VOC), apply at least one Pesticide Volatilization IPM Technique. In some cases, an IPM Technique such as Application Timing, Ambient Temperature, may provide sufficient mitigation for a VOC resource concern.

Additional Criteria to Prevent or Mitigate Pesticide Risks to Pollinators and Other Beneficial Species through Direct Contact

For direct contact pesticide risks to pollinators and other beneficial species, apply at least two IPM pollinator mitigation techniques. Refer to the pesticide label specific Environmental Hazards Statement for additional requirements.

Additional Criteria to Prevent or Mitigate Cultural, Physical and Biological Pest Suppression Risks to Soil, Water, Air, Plants and Animals

For identified natural resource concerns associated with Air Quality – Particulate matter less than 10 microns (PM 10), or Soil Erosion - Sheet and Rill, or Wind, refer to the CO eFOTG, Section III, National and State Resource Concerns and Planning Criteria, for specific planning requirements.

CONSIDERATIONS

Utilize IPM strategies to maintain pest populations below economically damaging levels and to minimize pest resistance. IPM strategies also help prevent unnecessary pest management risks to natural resources and humans.

For noxious weed and invasive species management, use the minimum level of pest suppression necessary to meet natural resource objectives. Refer to the Colorado Noxious Weed list to determine if the Commissioner has designated a specific species for eradication.

The IPM approach adopted by USDA and the Regional IPM Centers includes Prevention, Avoidance, Monitoring and Suppression (PAMS) techniques, which can include the following activities.

Prevention

Prevention should be the first line of defense. It includes activities such as cleaning equipment and gear when leaving a weed infested area to minimize weed seed dispersal, using pest-free seeds and transplants, and irrigation scheduling to limit situations that are conducive to disease development.

Avoidance

Avoidance is appropriate when pest populations exist in a field and the application of a cultural practice can decrease the impacts of the pest. Activities can include practices such as crop rotation, planting cultivars with genetic resistance, early or late planting, fertilization to promote

rapid crop development, refugia management, or simply not planting parts of fields where pest populations are likely to cause crop failure.

Monitoring
Monitoring is the basis for planning suppression activities and includes proper identification and location of pests through surveys or scouting/trapping programs, weather monitoring, degree-day modeling and soil testing where appropriate. Maintain records of pest incidence and distribution for each field as a basis for crop rotation selections, economic thresholds and suppressive activities.

Suppression
Pest suppression may become necessary if prevention and avoidance activities are not successful. Suppressive tactics can include Cultural practices such as narrow row spacing, alternative tillage systems, cover crops or mulches; Physical practices can include mechanical activities such as cultivation or mowing, or manual activities such as hoeing or hand pulling; Biological practices such as mating disruption, release of predatory organisms or grazing; and Chemical suppression by the judicious use of pesticides.

Certified Pest Management professionals may supplement IPM guidelines from the local Land Grant University or Extension.

When providing technical assistance to organic producers, the IPM approach for managing pests should be consistent with the USDA-Agricultural Marketing Service, National Organic Program, Crop Pest, Weed and Disease Management Practice Standard § 205.206.

Adequate plant nutrients and soil moisture, including favorable pH and soil quality, can decrease plant stress, improve plant vigor and increase the plant's overall ability to tolerate pests.

On irrigated land, plan irrigation water management to avoid conditions conducive to disease development and minimize offsite contaminant movement.

Remind producers that they are responsible for following all pesticide label instructions and complying with all applicable Federal, state and local regulations, including those that protect Threatened and Endangered Species.

Enhancement Considerations

A more intensive level of IPM focused primarily on prevention and avoidance strategies can further minimize pest management risks to natural resources and humans.

Precision pesticide application techniques in an IPM system can further minimize pesticide risks to natural resources and humans.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field or treatment unit according to the Criteria and Operation and Maintenance sections of this standard. Specifications shall describe the requirements to apply the practice to achieve the intended purpose(s).

Record practice specification within a CO IPM 595 Implementation Requirements Worksheet.

The IPM plan shall include the following components, as a minimum.

1. Plan map and soil map of site/affected area, if applicable (use conservation plan maps if available)
2. Location of sensitive resources and setbacks, if applicable (use conservation plan maps if available)
3. An interpretation of the environmental risk analysis - Note: all pesticide label requirements and federal, state, and local regulations must be followed for all pesticide applications
4. Identification of appropriate pesticide risk mitigation including conservation practices and IPM Techniques

5. A list of pest prevention and avoidance strategies that will be implemented, as applicable
6. A scouting plan and threshold levels for each pest, as applicable
7. Other monitoring plans, as applicable, such as weather monitoring to indicate when pesticide application for prevention is warranted
8. A list of accepted pest thresholds or methods to determine thresholds that warrant treatment, as applicable

Note: Items 5, 6, 7 and 8 are required to document a comprehensive IPM system, but they may not be applicable when only a limited number of mitigation techniques are sufficient to address identified natural resource concerns.

Record Keeping

The producer shall maintain the following records, as applicable.

1. Monitoring or scouting results including the date, pest population/degree of infestation, and the crop or plant community condition
9. When and where each pest suppression technique was implemented
10. When and where IPM techniques were implemented to mitigate site-specific risks (e.g. soil incorporation of a pesticide to reduce its surface runoff to a nearby stream)

Note: Applicability will depend on the level of IPM adoption and site-specific mitigation requirements.

OPERATION AND MAINTENANCE

The IPM plan shall include the following appropriate operation and maintenance items, as appropriate.

1. Review and update the plan periodically in order to incorporate new IPM strategies, respond to cropping system and pest complex changes, and avoid the development of pest resistance.
11. Maintain mitigation techniques identified in the plan in order to ensure continued effectiveness.
12. Calibrate application equipment according to Extension and/or manufacturer recommendations before each season of use and with each major chemical change.
13. Maintain records of pest management for at least two years. Pesticide application records shall be in accordance with USDA Agricultural Marketing Service's Pesticide Recording Keeping Program and site specific requirements.

REFERENCES

Colorado Dept. of Agriculture. 2015. Colorado Noxious Weed List. Conservation Services. Broomfield, CO. https://www.colorado.gov/pacific/agconservation/noxious-weed-species

Crop Data Management Systems Inc. 2015. Pesticide Labels and MSDS. Marysville, CA. http://www.cdms.net/Home.aspx

High Plains Integrated Pest Management Guide for Colorado, Western Nebraska, Wyoming, Montana and Western South Dakota. Center for Invasive Species and Ecosystem Health. Univ of Georgia. Athens, GA. http://wiki.bugwood.org/HPIPM:Main_Page

IPM Elements and Guidelines. National Information System for the Regional IPM Centers. North Carolina State Univ. Raleigh, NC. http://www.ipmcenters.org/ipmelements/index.cfm

National Pesticide Information Retrieval System. Purdue Univ. West Lafayette, IN. http://state.ceris.purdue.edu/

National Sustainable Agriculture Information Service. National Center for Appropriate Technology. Butte, MT. http://attra.ncat.org/

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