USDA
NATURAL RESOURCES
CONSERVATION SERVICE

MARYLAND CONSERVATION
PRACTICE STANDARD

INTEGRATED PEST MANAGEMENT (IPM)

CODE 595
(Reported by Acre)

DEFINITION

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

PURPOSE

This practice may be applied for one or more of the following purposes:

1. Prevent or mitigate pesticide risks to water quality through leaching, solution runoff, and adsorbed runoff;

2. Prevent or mitigate pesticide risk to soil, water, air, plants, animals, and humans through drift and volatilization;

3. Prevent or mitigate pesticide risk to pollinators and other beneficial species through direct contact;

4. Prevent or mitigate cultural, mechanical, and biological pest suppression risk to soil, water, air, plants, animals, and humans.

CONDITIONS WHERE PRACTICE APPLIES

On lands where pests will be managed.

CONSIDERATIONS

IPM strategies that keep pest populations below economically damaging levels and minimize pest resistance should be utilized because they also help prevent unnecessary pest management risk to natural resources and humans.

For noxious weed and invasive species control, the minimum level of pest suppression necessary to meet natural resource objectives should be used, however, for the eradication of invasive species, the acceptable pest threshold may be zero.

IPM guidelines from the University of Maryland Cooperative Extension may be supplemented with information from appropriately certified professionals.

When providing technical assistance to organic producers, the IPM approach to managing pests should be consistent with the USDA-Agricultural Marketing Service National Organic Program standard which includes:

1. A diverse crop rotation that reduces habitat for major pests and increases habitat for natural enemies;

2. Use of “farmscaping” principles to create borders of beneficial species habitat;

3. Planting of locally adapted, pest resistant crop cultivars.

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

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

Consider surrounding land uses, including the distance to neighboring residences and sensitive resources such as well, springs, wetlands, and water bodies.

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.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service - Maryland or visit the electronic Field Office Technical Guide (eFOTG).

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

CRITERIA

Criteria Applicable to All Purposes

Producers are responsible for following all pesticide label instructions. All methods of pest management shall comply with federal, state, 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 Interim Endangered Species Protection Program (H7506C) is required for chemical pest control.

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

IPM Prevention, Avoidance, Monitoring, and Suppression techniques include:

1. Prevention – Activities such as cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, and irrigation scheduling to limit situations that are conducive to disease development;

2. Avoidance – Activities such as maintaining healthy and diverse plant communities, using pest resistant varieties, crop rotation, and refuge management;

3. Monitoring – Activities such as pest scouting, degree-day modeling, and weather forecasting to help target suppression strategies and avoid routine preventative treatments.

4. Suppression – Activities such as the judicious use of cultural, mechanical, biological, and chemical control methods that reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms;

A comprehensive IPM plan utilizing PAMS's 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 University of Delaware Cooperative Extension.

Additional Criteria to Prevent or Mitigate Off-site Pesticide Risks to Water Quality from Leaching, Solution Runoff, and Adsorbed Runoff Losses

For identified water quality concerns related to pesticide leaching, solution runoff, and adsorbed runoff, the current version of the USDA-NRCS WIN-PST program will be used to evaluate potential risks to humans and/or fish, as appropriate, for each pesticide to be used.

The minimum level of mitigation required for each resource concern is based on the final risk ratings in the "WIN-PST Soil/Pesticide Interaction Hazard Ratings" table below:

WIN-PST Identified Hazard Rating	**Minimum Mitigation Index Score Level Needed**
Low or Very Low	None Needed
Intermediate	20
High	40
Extra High	60 or more

Use Agronomy Technical Note 4, Pest Management in the Conservation Planning Process – Table II to determine if planned conservation practices provide adequate mitigation. If they do not, use Agronomy Technical Note 4 - Table 1 to apply appropriate IPM techniques with this practice.

All chemical pest management treatments must follow the pesticide label, specifically the Environmental Hazards Section. At a minimum when the chemical label states "do not apply directly to water", no chemical application can be closer than five feet from the edge of the ditch bank or stream edge.

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 related to pesticide drift, use steps outlined above using Agronomy Technical Note 4 - Pest Management in the Conservation Planning Process. The minimum level of mitigation required for drift is an index score of 20.

For Volatile Organic Compound (VOC) emission concerns, apply at least one IPM mitigation technique from the Pesticide Volatilization section of the Agronomy Technical Note 4 – Pest Management in the Conservation Planning Process.

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 mitigation techniques from the Pesticide Direct Contact section of Agronomy Technical Note 4 – Pest Management in the Conservation Planning Process.

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

For identified natural resource concerns related to cultural, mechanical, and biological pest suppression, (e.g. air quality concerns with burning for weed control or soil erosion concerns with tillage for weed control), natural resource concerns shall be addressed to FOTG quality criteria levels.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail to ensure successful implementation of this practice. Documentation shall be in accordance with the section "Supporting Data and Documentation" in this standard.

The following components shall be included in the pest management plan:

1. Aerial photo or conservation plan map with location and boundary of the practice.

2. Soils map and soil interpretation of the managed site. Indicate sensitive resources and setbacks, if applicable.

3. 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 mitigation techniques. See Agronomy Technical Note 4 – Table 1 and 2 for pesticide risk mitigation.

5. A list of pest prevention and avoidance strategies that will be implemented, if applicable.

6. A scouting plan for each crop that includes scouting guidelines based on plant's stage of growth. Include scouting methods, pest thresholds, and action levels that warrant treatment, if applicable.

   http://ag.udel.edu/extension/IPM/info/ipmveg.html

7. Other monitoring plans, if applicable, such as weather monitoring to indicate when pesticide application for prevention is warranted.

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

OPERATION AND MAINTENANCE

The producer/client is responsible for the operation and maintenance of the practice. Operation and Maintenance activities address the following:

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.

2. Maintain mitigation techniques identified in the plan in order to ensure continued effectiveness.

3. Calibrate application equipment according to University of Maryland or Delaware Cooperative Extension and/or manufacturer recommendations before each season of the use and with each major chemical change.

4. Maintain records of pest management for at least two years. Pesticide application records shall be in accordance with USDA Agricultural Marketing Service's Pesticide Recordkeeping program and site specific requirements.

Recordkeeping

Participating producer must maintain records to allow certifying individual to document plan implementations. As applicable records include:

1. Monitoring or scouting results including the date, scouting method, pest population/ degree of infestation, pest threshold (action level) that warrants treatment and the crop or plant community condition;

2. When and where each pest suppression technique was implemented;

3. When and where special IPM techniques were implemented to mitigate site-specific risks (e.g. soil incorporation of a pesticide to reduce surface runoff to a nearby stream.

Record Keeping for Restricted Use Pesticides

The USDA requires private pesticide applicators to keep a record of all restricted use pesticide (RUP) applications. Refer to Maryland Department of Agriculture, Pesticide Information for Professionals Section, "Record-Keeping for Commercial and Public Agency Applicators," for additional information.

The Federal pesticide record keeping regulations require all commercial applicators to furnish a copy of the required data to the customer within 30 days of the RUP application. These records must be maintained for two years following application by the customer.

Any producer that employs non-family individuals must comply with WPS (Worker Protection Standards) requirements. These requirements are specified on product labels that include information on protective equipment, restricted entry, and posting. Commercial applicators must provide the following information to the grower before the application of a WPS – labeled pesticide:

1. Specific location to be treated; time and date the pesticide is scheduled to be applied;

2. Product name, EPA Registration Number, and active ingredient(s);

3. Restricted entry interval for the pesticide;

4. Whether the field must be posted (Do Not Enter); and any other specific requirements on the pesticide labeling concerning the protection of workers and other persons.

SUPPORTING DATA AND DOCUMENTION

The following is a list of the minimum data and documentation to be recorded in the case file:

1. Location of the practice on the conservation map;

2. Assistance notes. The notes shall include dates of the site visits, name or initials of the person who made the visit, specifics as to alternatives discussed, decisions made, and by whom;

3. WIN-PST, risk assessment and documentation of mitigation practices;

4. Copy of the Pest Management Plan.

REFERENCES

1. Maryland Department of Agriculture, Code of Maryland, *Pesticide Regulation* 15.05.01.

   http://www.mda.state.md.us/plants-pests/pesticide_regulation/index.php

2. Maryland Department of Agriculture. *Record-Keeping for Commercial and Public Agency Applicators.*

   http://www.mda.state.md.us/plants-pests/pesticide_regulation/pesticide_info_for_professionals/index.php

3. National Information System for the Regional IPM Centers, *IPM Elements and Guidelines*.

   http://www.ipmcenters.org/ipmelements/index.cfm

4. Maryland Cooperative Extension Service, 2009. *Commercial Vegetable Production Recommendations, EB 236*.

5. National IPM Network, Northeastern Pest Management Center. *Northeast Region IPM*.

   http://northeastipm.org/

6. USDA-AMS National Organic Program, *National List of Allowed and Prohibited Substances.*

   http://*www*.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateN&navlD=NationalListLinkNOPNationalOrganicProgramHome&rightNav1=NationalListLinkNOPNationalOrganicProgramHome&topNav=&leftNav=NationalOrganicProgram&page=NOPNationalList&resultType=&acct=nopgeninfo

7. USDA-NRCS, *Agronomy Technical Note 4, Pest Management in the Conservation Planning Process.*

   http://efotg.sc.egov.usda.gov/references/public/NJ/TechNote4Sept2010.pdf

8. USDA-NRCS GM-190-404 *Pest Management Policy.*

   http://directives.sc.egov.usda.gov/RollupViewer.aspx?hid=17015

9. USDA-NRCS, *Using Farm Bill Programs for Pollinator Conservation*.

   http://plants.usda.gov/pollinators/Using Farm Bill Programs for Pollinator Conservation.pdf

10. USDA-NRCS, *Web Soil Survey.*

    http://websoilsurvey.nrcs.usda.gov/app