Water Quality Enhancement Activity – WQL21 – Integrated pest management for organic farming

Enhancement Description
Managing pests on an organic farm, including farms transitioning to organic, with an Integrated Pest Management (IPM) system that relies on high level prevention, avoidance, monitoring, and suppression techniques that are based on an understanding of pest ecology. Organic IPM relies primarily on ecologically-based cultural and biological practices that result in healthy soil and habitat for beneficial organisms. Appropriate mitigation techniques are utilized to improve environmental risks from selected suppression techniques.

Land Use Applicability
Cropland, pastureland and rangeland

Benefits
Environmental benefits will be operation specific. Benefits may include but are not limited to improved water and air quality achieved through minimizing suppression risk to natural resources. This will include reducing pesticide risks in runoff, leaching, drift and volatilization, as well as impacts on pollinators, beneficial insects and wildlife. It may also include reduced soil erosion and sediment loss from tillage for weed control. Implementing IPM increases biodiversity on the farm while improving soil quality, resulting in a more stable farming system that helps to prevent pests from overwhelming the system.

Criteria
IPM is a sustainable approach to pest management that combines the use of prevention, avoidance, monitoring and suppression strategies, to maintain pest populations below economically damaging levels, to minimize pest resistance, and to minimize harmful effects of pest control on human health and environmental resources. Components of a high level Organic IPM include proactive cultural and biological controls.

High level Organic IPM includes:

1. A written IPM plan and implementation of activities that include:
    a. Prevention techniques such as cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, irrigation scheduling to avoid situations conducive to disease development, etc.
    b. Avoidance techniques such as maintaining healthy and diverse plant communities, using pest resistant varieties, crop rotation, refuge management, strip cropping, interplanting, intercropping, multiple cropping, etc.

   c. Monitoring techniques such as pest scouting, degree-day modeling, weather forecasting, use of economic thresholds, etc. to help target suppression strategies and avoid routine preventative treatments.
   d. Suppression techniques such as cultural and biological methods to reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms.
2. Only those substances listed in the National Organic Program regulations §205.601 and §205.603 may be used in the IPM program.
3. Acreage must be certified organic or in the transition to organic process.

Documentation Requirements

1. A written organic IPM system plan for all of the offered acres. This plan should include each of the following items:
   a. Pest prevention techniques
   b. Pest avoidance techniques
   c. Pest monitoring (scouting) techniques
   d. Economic pest thresholds
   e. Pesticide environmental risk analysis tool that was used for pesticides selected from the NOP Prohibited and Allowed Substance list (e.g., the NRCS Windows Pesticide Screening Tool - WIN-PST)
   f. Approved pesticide application records with the specific management techniques that were utilized to reduce pesticide environmental risk (i.e., spot treatment, banding, pheromone traps, pesticide incorporation, etc.)
   g. Land Grant University guidance, if available, should be followed for acceptable prevention, avoidance, monitoring and suppression techniques.
   h. Map showing location of fields, acreage, beneficial insect habitat, etc.
   i. Environmental assessment of non-chemical suppression methods, e.g. cultivation, burning
2. Copies of scouting reports and other IPM records used to monitor and evaluate the plans effectiveness
3. If formal IPM Guidelines with a numeric scoring system have been developed and approved by Extension, a completed set of those guidelines can be substituted for the documentation requirements in number 1 above.

Michigan Supplement

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The term "organic" has a legal definition based on the USDA National Organic Program (NOP) Rule, based on the Organic Foods Production Act of 1990. The NOP Rule, in effect since 2002, applies to the production, handling and labeling of agricultural and processed food products that are sold as organic. The NOP Rule established uniform production standards for crops and livestock as well as after harvest product handling and processing standards.

A copy of the NOP Rule is posted at http://www.ams.usda.gov/nop. Some of the key provisions of the rule are as follows:

- Most farmers and handlers must be certified by a USDA accredited certifying agent.
- Most synthetic fertilizers, pesticides, animal drugs, feed additives, and ingredients are prohibited and those allowed may be used only with specific restrictions.
- Organic farmers and handlers must prepare an Organic System Plan that a certifier must review, evaluate and approve.
- Land cannot be certified as "organic" until three years after the date of application of the last prohibited material.
- Farmers and handlers need to use and document proactive and preventative management practices before they can use pesticides.

Organic farm systems protect crop damage by insect pests primarily through the use of biological and cultural practices such as: crop rotation; diversification; habitat management; beneficial organism releases; sanitation and timing. Some natural substances, such as botanicals, and a few relatively non-toxic synthetic pesticides such as soap are permitted by the NOP standards when used in conjunction with the Organic System Plan and used according the restrictions found on the national list.

Weed management on organic farms consist of cultural and mechanical techniques such as crop rotation, mulching, tillage, water management and manual weeding. Plastic mulches are permitted provided they are removed at the end of the season. A few natural substances are also used to manage weeds, but the efficacy of these substances is still subject to question.

Soil-borne diseases are managed by improving soil organic matter and biological activity. Cultural, biological and physical methods such as crop rotation, sanitation, pruning, and selection of disease-resistant varieties are all part of organic disease management. Some natural substances such as clays and a few synthetic fungicides such as copper sulfate are

permitted by the NOP standards when used in conjunction with the Organic System Plan and according to National List restrictions, which is on the NOP website and contains the allowed synthetic and prohibited natural (non-synthetic) substances that are the exceptions to the general rule of organic.

The National List is not a comprehensive list of all approved materials, rather it can be described as an "open" list since it contains only the following: 1) the synthetic materials allowed for use in crop and livestock production; and 2) non-synthetic (natural) materials prohibited for use in crop and livestock production. All inert ingredients must be non-synthetic or classified as inerts of minimal concern by the EPA.

Growers are required to keep records of all products applied to crop and soil. The records should identify the source and/or manufacturer of every material, including a product label with a list of ingredients including inerts. Documentation of every input material purchase and application should be maintained for five years.

The organic certifying agencies determine whether or not the use of a given input on a farm complies with organic standards. It is important for growers to consult with their organic certifier before using any product.

For more sources of information on pest management in organic farming, refer to Michigan Agronomy Technical Note #8, Transitioning to Organic Resources, Michigan Agronomy Technical Note #56, and Conservation Planning Considerations for Pest Management in Organic Farming, found in Section I of the Field Office Technical Guide (FOTG).