NJ Department of Environmental Protection

Integrated Pest Management (IPM) Prerequisites And Minimum Criteria for Mosquito Control

General Definition of IPM:

IPM is a sustainable approach to managing pests by using all appropriate technology and management practices in a way that minimizes health, environmental, and economic risks. IPM includes, but is not limited to, monitoring pest populations, public education, and when needed, water management practices, sanitation, solid waste management, structural maintenance, physical, mechanical, biological and chemical controls.

Prerequisites for an IPM Program:

Education of the General Public

The IPM practitioner will educate the public about the principles of IPM and how these methods can help reduce the need for pesticides. An overall reduction in chemical controls, along with the appropriate choice of pesticides and application methods through the use of IPM, results in a lower risk and exposure potential for humans, pets and other non-target organisms. Risks and efficacy of both chemical and non-chemical control methods of pest suppression must be considered as part of an overall pest management strategy. The information for educational purposes will also include the importance of monitoring for pest problems, pests, water quality, beneficial insects, the maintenance of mosquito susceptibility to select insecticides in order to prevent resistance and monitoring the potential for mosquitoes to vector diseases to humans and wildlife.

Public Involvement

The practitioner should emphasize the importance of public involvement with the process of IPM. Examples of areas where the public can actively participate are: Maintenance of private property to reduce mosquito breeding habitat, project review with the mosquito control agency prior to the construction of facilities which may result in additional mosquito breeding habitat, community involvement with education and notification associated with the area-wide application of pesticides and notification to the mosquito control agency of known mosquito breeding habitat or adult mosquito populations.

Credentials of the IPM Practitioner

The IPM practitioner should have the following credentials:

- ♣ Completion of the Rutgers “Mosquito Biology and Habitat Recognition” Short Course or other comparable course in scope and duration.
- ♣ A valid Commercial Pesticide Applicator license issued by the NJDEP
- ♣ Certification in Category 8B (Mosquito Control) and 11 (Aerial Application if appropriate).
- ♣ Thorough knowledge of “Best Management Practices for Mosquito Control in Freshwater Wetlands and/or standards for “Open Marsh Water Management” in salt-marsh.
- ♣ Thorough knowledge of “How to Use the State Bio-Control (mosquito-fish) Program for Mosquito Control in New Jersey.

- Through knowledge of “Surveillance Techniques”, (Kent, et.al. 1989. Proc. NJMCA. 76: 16-55.)

Minimum Criteria for IPM:

Monitoring

- Routine site inspections will be performed which will produce a written mosquito survey and map of mosquito breeding habitat. Key species, population dynamics, key pests, and a description of the habitat will be identified and delineated.
- Routine mosquito specimens will be taken at an appropriate location(s) on the site. The specimens will be identified to species, sexed and counted. Data will be analyzed and interpreted by a biologist or identification specialist to establish a protocol for control via appropriate IPM strategy (dependent on species, stage of life cycle of the insect, habitat and weather.)
- Field inspections will be made based on weather (rainfall), tidal cycles, and other surveillance techniques. The accumulation of inspection and insecticide treatment data will prioritize areas as candidates for a permanent or semi-permanent control strategy (i.e. source reduction or biological control). Post control surveillance will continue to establish environmental, economic and efficiency data. Results will be reported in the literature.

Action Thresholds

An action threshold is a level at which some method of control would be initiated. Action thresholds are determined by such factors as severity of the pest problem, impacts on health and safety, economics and aesthetics related to the pest and user needs for the site where the pest is found. The IPM practitioner and the public will determine and record tolerance levels for pests and pest damage. This may vary by pest species or type, and site.

Pest Management Methods

Integrated Pest Management techniques will be used for prevention and suppression of pests. These include:

- Cultural methods, such as homeowner source reduction and elimination of standing water on property. This may include project review practices before construction of a project, which may result in increased mosquito breeding or resting habitat.
- Physical and mechanical controls, such as, improvement of window screening or other barriers to prevent entrance of mosquitoes in flight or as a barrier to oviposition sites.
- Biological controls, when and where appropriate, such as bacteria, mosquito-larvae eating fish, fungi, viruses and nematodes that are predators or parasites of mosquitoes.
- Water management, which will enhance the site of a degraded wetland habitat in order to correct its environmental health, thereby eliminating it’s potential as a larvae-breeding site.
- Sanitation, such as the removal of trash, discarded tires, or other water containers which provide for an artificial mosquito-breeding habitat.

If any insect nuisance or disease (i.e. West Nile, Eastern Equine or St. Louis Encephalitis) problems develop which meet or exceed the pre-determined threshold amount, and pesticides become necessary:

- ♣ Pests should be reduced to below threshold levels.
- ♣ Preserving beneficial plants and other organisms should be considered when feasible.
- ♣ Spot treatments of biological products that target the specific pest will be preferred (but not limited to). Consideration should be given to the products and application techniques that lower the level of risk to humans and the environment.
- ♣ Pesticides shall be applied in accordance with label instructions, at or below label rates, and under appropriate environmental conditions (i.e., no spraying on windy days or immediately prior to forecast of heavy rain).
- ♣ Pesticides will be rotated in use, when possible, to prevent or slow the development of resistant strains of pests that would then require more frequent or higher application rates.

Documentation & Recordkeeping

Compile a site-specific history of all monitoring observations, pest infestations, cultural procedures, control measures and pesticide treatments made. This will allow each mosquito control practitioner to note the problems associated with each site. In addition, the principles of an IPM program should be written into the annual work plans for mosquito control. Accumulated mosquito biology and control knowledge is used to detect, monitor, and predict pest outbreaks to ultimately prevent pest problems from occurring. Proactive avoidance of pest problems is desired, followed by early detection and early intervention, once pests reach action thresholds.

- ♣ Written records of each inspection will be kept and made available to the public, to include any cultural procedures, pests, diseases, or other problems found, control measures, or treatments made, and materials used, as well as recommendations for long term control.
- ♣ The IPM practitioner will keep records of all surveillance.
- ♣ Pesticide application records shall be kept as required by the NJDEP pesticide control regulations.

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