

State of Maine

**Best Management
Practices for Pest
Prevention and
Management in Maine
Medical Marijuana
Cultivation**

Maine Department of Agriculture, Conservation and Forestry
October 2015



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October 2015

Re: Best Management Practices in Maine Medical Marijuana Cultivation

The purpose of this document is to provide guidance for preventing, minimizing and managing pests in the production of medical marijuana. The ultimate aim is to reduce the risk of product contamination, ensure a safe workplace, and minimize negative impacts on the environment.

This document was developed in accordance with 22 MRSA Section 2423 and Section 2428, which prohibit a registered dispensary or primary caregiver from using a pesticide on marijuana unless it is used "consistent with best management practices approved by the Commissioner of Agriculture, Conservation and Forestry." This document describes Best Management Practices (BMPs) for pest control in the cultivation of marijuana by Maine dispensaries and primary caregivers.

Dr. Kathy Murray, Integrated Pest Management specialist, Maine Department of Agriculture, Conservation and Forestry is the lead author. Helpful reviews and comments on earlier drafts were contributed by a number of Maine growers and outside reviewers.

A handwritten signature in cursive script that reads "Walter E. Whitcomb".

Walter E. Whitcomb, Commissioner
Maine Department of Agriculture, Conservation and Forestry

Best Management Practices for Pest Prevention and Management in Maine Medical Marijuana Cultivation

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Best Management Practices for Pest Prevention and Management in Maine Medical Marijuana Cultivation

Introduction

This document was developed in accordance with 22 MRSA Section 2423 and Section 2428, which prohibit a registered dispensary or primary caregiver from using a pesticide on marijuana unless it is used “consistent with best management practices approved by the Commissioner of Agriculture, Conservation and Forestry.” This document describes Best Management Practices (BMPs) for pest control in the cultivation of marijuana by Maine dispensaries and primary caregivers.

For prevention and management of pests, BMPs can best be described as the widely accepted principles and practices of integrated pest management (IPM). It is State of Maine policy to promote adoption of IPM to minimize reliance on pesticides according to 22 MRSA Section 1471-X. IPM is described in Chapter 413 7 MRSA as ‘the selection, integration and implementation of pest damage prevention and control based on predicted socioeconomic and ecological consequences, including a) understanding the system in which the pest exists, b) establishing dynamic economic or aesthetic injury thresholds and determining whether the organism or organism complex warrants control, c) monitoring pests and natural enemies, d) when needed, selecting the appropriate system of cultural, mechanical, genetic, including resistant cultivars, biological or chemical prevention techniques or controls for desired suppression, and e) systematically evaluating the pest management approaches utilized.’

The purpose of this document is to provide guidance for preventing, minimizing and managing pests in the production of medical marijuana. The ultimate aim is to reduce the risk of product contamination, ensure a safe workplace, and minimize negative impacts on the environment.

Integrated Pest Management

The basic components of IPM are 1) accurate identification of pests and pest-caused damage, 2) systematic pest monitoring, 3) reliance on combinations of biological, mechanical, cultural, or other pest prevention and mitigation methods to keep pests at or below acceptable levels, and 4) documentation and periodic review. Each of the pest prevention and pest management tactics listed in this document have been shown to be effective under certain conditions, however the specific set of tactics selected by a grower may vary depending on the pests encountered, cultivation systems used, economic factors and other conditions.

A pest is any living organism causing health, economic, aesthetic or environmental harm. Pests can include weeds, insects, mites, plant pathogens, and other living organisms. Any organism can be harmful under some conditions and not harmful or even beneficial in other situations. The aim is not to eliminate all potential pests, but to optimize plant health and avoid unacceptable levels of pest-associated risk.

Best Management Practices for Pest Prevention and Control

The following BMPs are intended to prevent and manage pest-associated losses while minimizing risks of product contamination. *Note: Throughout this document the term 'pest' refers to any living organism posing unacceptable levels of risk and includes but is not limited to insects, mites, birds, and other animals, plant pathogens, mold and mildew, and weeds. Furthermore, under Maine law, a pesticide is any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest and includes disinfectants, insecticides, herbicides, fungicides, plant regulators, defoliants and plant desiccants.*

BMP 1. Design and operate facilities to prevent introduction and spread of pests.

- Cultivation and processing facilities must be operated in a manner that promotes good plant health while discouraging pest organisms. Indoor operations must be sufficiently equipped to provide adequate ventilation, drainage, lighting and temperature controls to promote plant health while discouraging pests, plant disease and mold.
- Facilities and operations must be designed to permit isolation and sanitation processes necessary to minimize the risks of introduction, establishment and spread of pest organisms and permit their management while promoting good plant health and worker safety.
- Post-harvest handling facilities must be designed and operated to prevent contamination of product by insects and rodents, mold, bacteria, viruses, chemicals or other contaminants.
- Adequate hand-washing facilities must be provided for workers.

BMP 2. Use, store and dispose of pesticides only in accordance with state and federal regulations including the following:

- Pesticides may only be used in strict accordance with the product label requirements including, but not limited to directions pertaining to application, storage and disposal of the pesticide product.
- State pesticide regulations can be found at <http://www.maine.gov/dacf/php/pesticides/laws.shtml>.
- Pesticide products must be registered with, and not prohibited for the intended usage by, the Maine Department of Agriculture, Conservation and Forestry Board of Pesticides Control pursuant to Title 7, section 607, and must be used in a manner consistent with these BMPs approved by the Commissioner of Agriculture, Conservation and Forestry.
- Application of nutrients or pesticides through an irrigation system (chemigation) must be performed in accordance with federal, state and local agricultural regulations.
- Disposal of waste water or growing media containing pesticides or nutrients must be performed in accordance with federal, state and local agricultural regulations.
- Home-made pest control substances (including food-based solutions) are not allowed.
- When using a pesticide, ensure that the primary caregiver or the registered primary caregiver's employee is licensed as an Agricultural Basic Pesticide Applicator by the Maine Board of Pesticides Control, pursuant to section 1471-D.
- Ensure that any employee who has direct contact with pesticide-treated plants has completed safety training pursuant to the U.S. Environmental Protection Agency (USEPA) Worker Protection Standards, 40 Code of Federal Regulations, Section 170.130.
- Ensure that any employee who is not licensed pursuant to section 1471-D and who is involved in the application of the pesticide or handling of the pesticide or equipment first

completes the Pesticide Handler safety training described in 40 Code of Federal Regulations, Section 170.230.

- Pesticide storage, mixing and use must be in compliance with the USEPA Worker Protection Standards and must meet product label requirements for fire and chemical safety. Ensure all necessary personal protective equipment is available, clean, and properly stored.
- Ensure pesticide application equipment is properly calibrated.
- Detailed records of all pesticides used in the cultivation and processing of the crop, including any added to the growing media, or applied to the space or surfaces of the facility before or during cultivation, processing or storage must be kept according to Chapter 50 of Maine Board of Pesticides Control regulations. These regulations can be found at <http://www.maine.gov/dacf/php/pesticides/laws.shtml>.
- All pesticide use records must be provided to the appropriate Maine state regulatory bodies upon request.

BMP 3. Establish and utilize sanitation protocols to prevent the spread of pests and contaminants within the facility by workers.

- Develop site-specific pest-preventive protocols for each section of every facility.
- Place emphasis on starting with pest-free plant material.
- Do not allow smoking, eating or drinking within the cultivation and processing areas of the facility.
- Ensure all workers utilize appropriate sanitation protocols before entering the plant cultivation and processes areas, including thoroughly washing hands after eating, drinking, smoking or using the bathroom.
- Ensure all workers receive adequate training.

BMP 4. Provide optimal growing conditions to promote healthy plant growth, encourage natural enemies, and minimize pest-conducive conditions.

- Supply proper plant nutrition, moisture, and pH to support optimal plant growth while discouraging pests.
- In indoor cultivation and processing facilities, operate ventilation, lighting and heating systems to optimize humidity, temperatures and patterns of air movement that support plant growth and natural enemies while discouraging establishment, growth and spread of pests.
- Provide optimal plant spacing to prevent pest movement among plants and to allow adequate air circulation.
- Keep facilities free of weeds, plant debris, pest harborage, mold, mildew and algae.
- On late flowering plants, avoid application of liquids on leaves and flowers and encourage rapid drying to avoid mold and mildew contamination of product.

BMP 5. Implement effective procedures to regularly and systematically monitor for pests.

- Develop site-specific pest monitoring protocols for each section of every facility.
- Train employees in all pest prevention, detection, identification, monitoring and record-keeping protocols.
- Identify unknown insect and disease problems.

- Keep records of where, when and how many of each pest that is encountered and all actions taken to manage them. Record observations and/or releases of beneficial organisms.

BMP 6. Develop and utilize an integrated pest management plan that includes least-risk protocols for preventing and managing common pests.

- Develop and utilize site-specific comprehensive integrated pest management protocols for each section of each facility. Update protocols as needed and as new research-based information becomes available.
- Use pesticides only in strict accordance of all applicable regulations including those specified on the product label. Avoid the use of pesticides on flowering plants.

