

Guidance on Integrated Pest Management

This guidance is not legal advice. It was created with the intent to assist licensed cultivators engaged in the cultivation of cannabis in the adult-use marijuana market. Please consult an attorney if you have any questions regarding the legal requirements that apply to licensed marijuana establishments.

Licensed marijuana cultivators must comply with 935 CMR 500.120(9), which states:

The cultivation process shall use best practices to limit contamination including, but not limited to, mold, fungus, bacterial diseases, rot, pests, pesticides not in compliance with 500.120(5) for use on marijuana, mildew, and any other contaminant identified as posing potential harm.

To help licensed cultivators establish best practices in preventing pests and contamination, this guidance serves to assist growers in creating an integrated pest management plan.

The Plant - *Cannabis sativa* L.¹

Cannabis can be grown outdoors as a field crop, indoors in greenhouses, or in grow rooms. Each cultivation method has specific pest and disease problems that may arise due to the different conditions presented by each setting. For example, the high humidity environment of a grow room provides ideal conditions for fungal pathogens. Cannabis grown outdoors may be susceptible to vertebrate pests such as deer and mice as well as larger insect pests, such as stem borers. Whether the cannabis crop is grown indoors or outdoors, cultivators should be prepared with the knowledge to prevent, identify, and control pests using Integrated Pest Management.

Integrated Pest Management (IPM)

Integrated pest management (IPM) is an approach to pest control that applies a combination of methods to manage pest problems. The primary objective of IPM is to prevent, reduce, or maintain pest populations at non-damaging levels by utilizing mechanical, physical, and biological controls to reduce the need for reliance on chemical pesticides. In Massachusetts, IPM is defined under 333 CMR 14.02 as:

A comprehensive strategy of pest control whose major objective is to achieve desired levels of pest control in an environmentally responsible manner by combining multiple pest control measures to reduce the need for reliance on chemical pesticides; more specifically, a

¹ Hemp and marijuana are different varieties of the same plant species, *Cannabis sativa* L. For the purposes of this document, the term *Cannabis* refers to marijuana only.



combination of pest controls which addresses conditions that support pests and may include, but is not limited to, the use of monitoring techniques to determine immediate and ongoing need for pest control, increased sanitation, physical barrier methods, the use of natural pest enemies and a judicious use of lowest risk pesticides when necessary.

IPM takes advantage of all available pest management strategies. It does not rely on a single pest control method, but rather establishes a way of evaluating the situation and determining the most environmentally safe or ecological solution.

The basic concepts that comprise an effective IPM strategy include:

1. Knowledge
 - Identify the pests: accurate identification of pests is critical in determining the proper methods of control.
 - Establish thresholds to determine when and if action is required to control pests before they reach damaging levels.
2. Prevention
 - Inspect/quarantine plants entering closed environments to ensure you are not bringing in pests.
 - Maintain controlled environments to inhibit growth of plant pathogens.
 - Reduce habitat for potential pests such as poor drainage, standing water, or overgrown vegetation/weeds.
3. Monitoring
 - Scout crops for evidence of pest damage. Use pest traps (like pheromone traps or yellow sticky cards) to determine presence and levels of insect pests.
4. Intervention
 - If intervention is required to control pests, evaluate all the options to determine the least risky and most effective controls available, including cultural, mechanical, biological, and/or chemical methods.

This document is not intended to provide comprehensive IPM recommendations for every cannabis pest; rather, it should serve as a basic guideline and assist cultivators with development of an IPM plan for their crop.

Pesticide Use in Cannabis

As cannabis remains prohibited by federal law, the United States Environmental Protection Agency (EPA) does not allow for the use of any registered pesticides in cannabis. Massachusetts pesticide laws follow federal laws, and thus registered pesticides cannot be applied to cannabis in Massachusetts. The Massachusetts Department of Agriculture has published an [advisory](#) regarding the use of pesticides on cannabis. As a result, cannabis cultivators must rely more heavily on other methods of management, as they have fewer available tools for use in pest control.



Indoor *Cannabis* Pest Prevention

Growing cannabis indoors is unique from other cultivation practices in that environmental factors such as ventilation and light are not naturally occurring. Instead, these inputs are produced and controlled by equipment. As with other crops, however, IPM starts with pest prevention. It is recommended to design and operate facilities to prevent the introduction and spread of pests.

Recommendations for indoor pest prevention include:

1. Keeping plants healthy: healthy plants are more readily able to fight off pests or infections.
2. Sanitation: keep your facility clean and organized. Seal potential points of entry for pests including cracks, crevices and voids. Establish protocols to prevent pests from entering the facility on workers' clothing, shoes or equipment.
3. Quarantine: inspect all new plant material entering your facility for signs of infestation. Keep new plant material in a separate space for several days to ensure that signs of infestation do not present.
4. Maintain environmental conditions to minimize optimal pest habitat: ensure humidity levels are appropriate and do not promote pathogen growth. Prevent standing water from forming and ensure that any reservoirs are sealed and filtered.
5. Inspections/Monitoring: regularly inspect plants for signs or symptoms of pest infestations. Place traps like yellow sticky cards in strategic locations to help detect early infestations of flying insect pests.

Outdoor *Cannabis* Pest Prevention

Cannabis grown outdoors is susceptible to a wide variety of pests including deer, insects, and fungi. Outdoor environments, by nature, are not as well controlled as indoor, and exclusion/prevention practices may be less effective against certain pests. In addition, the use of chemical controls is restricted, so cultural, mechanical, and biological controls have increased importance.

Recommendations for outdoor Cannabis pest prevention include:

1. Keeping plants healthy: Healthy plants are more readily able to fight off pests or infections.
2. Exclusion: Use fencing or netting to keep out unwanted pests like deer or birds.
3. Sanitation: Inspect all new plant material for signs of infestation. Keep new plant material in a separate location for several days to ensure that signs of infestation do not present.
4. Maintain field conditions to minimize optimal pest habitat: Remove any overgrown vegetation that may harbor insect pests. Prevent standing water and promote plant health.
5. Inspections/Monitoring: Regularly inspect the crop for signs or symptoms of pest infestations. Place traps like yellow sticky cards in strategic locations to help detect early infestations of flying insect pests like moths or aphids.



Cannabis Pest Control Actions

Even with a solid preventative program implemented, it is still possible for a cannabis crop to develop a pest problem. The first step once you've discovered a pest problem is to identify your pest. Proper identification of the pest is vital to determining the most effective control strategy.

There are four primary strategies available in a pest management program:

1. **Cultural Controls:** Cultural controls modify the environment to make the cultivation operation an unaccommodating habitat for pests. They involve practices such as adjusting the irrigation schedule to combat root disease, reducing humidity to make the environment less hospitable to pathogenic fungus and shaping the canopy to facilitate superior airflow, or companion plantings to boost the populations of beneficial insects.
2. **Mechanical Controls:** mechanical controls use physical methods to trap, exclude, and remove pests, such as putting filters on air intakes, placing sticky traps in strategic locations to trap flying pests, removal of diseased plant material, or removal of weeds.
3. **Biological Controls:** biological controls utilize natural enemies (predators and parasites that deplete the health of a pest population) to directly attack pests. Biological control organisms can be extremely effective at maintaining pest populations below economic thresholds, and preventing infestations from reaching damaging levels.
4. **Chemical Controls:** chemical controls should be used judiciously in any IPM program. *Cannabis* cultivators are limited in their options for chemical controls since Massachusetts prohibits the use of any pesticide with an EPA registration number. While there are minimum-risk (25(b)) pesticides available for use in cannabis cultivation, pesticides in general should not be used as a primary pest control method in cannabis.

Questions?

If you have additional questions, please contact the Commission at (617) 701-8400 or CannabisCommission@Mass.Gov.

