



IPM-EHC Council of Ontario

in cooperation with the Pesticide Industry Regulatory Council
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Integrated Pest Management - Environmental Health Care Council of Ontario (IPM-EHC Council)

Elements of Integrated Pest Management

Learning Objectives

After reading and studying this section you should know:

- the importance of IPM**
- how IPM professionals reduce pesticide use**
- elements of a responsible IPM policy**
- top cultural practices for a healthy lawn**

IPM

Integrated Pest Management (IPM) is a process where all methods of pest management are considered in order to control the pests. It may involve monitoring, educational programs, sanitation, housekeeping, biological control or even the use of pesticides. If pesticides are used, only the least toxic and effective are considered. An IPM professional recognizes that pesticides pose potential hazards to human health and the environment, and shall give preference to reasonably available non-pesticide alternatives when considering the use of pesticides. Proper integrated pest management (IPM) will greatly reduce the need for pesticides.

Important elements of an IPM policy

A responsible IPM program and policy consists of many elements. Below are a list of important elements that should be followed before, during, and after discharging or permitting the discharge of a pesticide.

Monitoring

Establish scouting and inspection procedures to monitor pest population levels. Perform thorough in-field assessments of each pest problem, i.e. weeds, insects, fungus, etc. Keep records of such monitoring, which should be performed by persons knowledgeable in IPM methods, i.e. licensed applicators and trained technicians.

Establish an IPM Action Threshold

Establish for each pest an IPM implementation plan that evaluates the biological, aesthetic, and economic loss that each site can tolerate (tolerance levels) and set pest population levels (action levels) at which corrective action should be taken to ensure that pests do not exceed tolerance levels.



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Determine Corrective Action

Determine corrective actions when an action threshold is reached. Review and consider all available non-chemical options for acceptability and feasibility. Consider the use of Pesticides and other chemicals only as a last resort. Select and use Pesticides only in accordance with Federal, Provincial and municipal bylaws. Select reduced-risk practices least damaging to humans and the environment and most likely to produce a permanent reduction in the supportive environment for the target Pest(s).

Modify pest ecosystems

Identify and evaluate conditions that encourage pest problems. Modify pest ecosystems to reduce food and living space through physical and cultural practices.

- (a) Use physical pest controls such as cultivation, traps, and barriers (exclusions).
- (b) Employ practices, including watering, mulching, waste management, food storage to reduce pest populations.
- (c) Design and construct or modify, indoor and outdoor areas to reduce or eliminate pest habitats.
- (d) Use pest resistant plants and planting systems that minimize pest infections.
- (e) Use biological pest controls when possible.

Determine effective treatment

Determine most effective treatment time, based on pest biology and other variables, such as weather, seasonal changes in wildlife use, and local conditions.

Maintain accurate record keeping

Establish and maintain an accurate record-keeping system to catalog monitoring information and to document and evaluate effectiveness of pest management procedures. Evaluate the effectiveness of the IPM program and make adjustments as needed.

Staff IPM training

Establish ongoing staff training programs that covers updated regulations (federal, provincial, municipal) IPM technology advances and strategies, least risk products, pest biology, non-chemical pest control alternatives, health and safety issues, and toxicology of pesticides. This information is readily available from government, private sector and industry trade organization websites. Promote federal, provincial and municipal IPM pesticide reduction strategies and the important role that IPM plays in maintaining a Healthy Environment and Healthy Lawn to clients and the public.



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Maintain pesticide usage records

Maintaining accurate annual pesticide usage records and the size of client's turf area provides company IPM lawn care professionals the ability to develop and ensure that IPM pesticide reduction strategies and objectives are met. Golf courses and lawn care operators utilize this information to calculate annual pesticide usage and reduction. A standardized format and formula is used based on label rates

Calculating your pesticide reduction

In brief, under this standardized reporting system the physical turf area of all lawn care clients is totaled regardless of the number of applications performed. In the case of golf courses the physical turf area of the site is used. A company annually calculates its pesticide reduction percentage by subtracting the amount of product applied. The reduction percentage is also an indication as to the level that a company is practicing and promoting IPM services to its clients versus the label rate for each application over the entire client base.

Cultural practices that promote a healthy lawn

The benefits of building a healthy lawn go beyond having an aesthetically pleasing yard. It can also increase cooling of the surrounding area, increase oxygen production, reduce noise pollution, increase property value and help the turf to compete with weeds and insects, which, in turn, reduces one's reliance on pesticides. The IPM industry responsibly reduces the use of pesticides by promoting to the public the following cultural practices to establish a healthy lawn.

Mow High

Mow High. Taller grass helps to shade out weeds and prevents weeds from sprouting. Taller grass also tends to have better root systems, and because of the additional shade helps to keep water from evaporating. A recommended height is 7 –10 cm

Leaving grass clippings

Similar to the human body, turf grass needs nutrients to stay healthy. Without proper feedings, a lawn will get thinner and more prone to diseases and wither away. In nature decomposing plant matter regularly replenishes the soil with nutrients. Leaving grass clippings on the lawn provides natural fertility or nutrients and will reduce a lawn's annual fertilizer needs. Earthworms and other soil organisms help in breaking down clippings into valuable soil nutrients.

Compost

Compost is a valuable source of organic soil material. It can be made from most vegetable and garden waste. A compost pile must have oxygen to prevent an odor problem. Two types of bacteria work to compost materials, aerobic, or oxygen loving, and anaerobic ones, which do not require oxygen. In short, anaerobic bacteria smell, and aerobic ones do not. Compost must be stirred at least once every couple of weeks. Depending on how quickly you would like new soil, compost stirred more often tends to break down more quickly (i.e. couple of months). Compost should be spread as a thin layer



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Compost	(1-2 cm) on the soil in the Fall Earthworms and other insects will help drag the compost underground, where it will supply both nutrients and valuable air pockets for drainage.
Deep Watering	Water deeply once or twice a week. Deep watering will force the grass roots to dig deeply into the soil making them stronger and more efficient at collecting water in times of drought. Promoting deep root growth also helps grass stand up to common pest problem i.e. grubs, chinch bugs, etc. A good watering will fill a small cup with about 2-3 centimetres (one inch) of water.
Water Early in the Morning	Water early in the morning. The ideal time to water is early morning. This prevents the water from evaporating before it reaches the grass roots. Evening watering is discouraged because the lawn will remain damp all night promoting growth of pests, i.e. fungi.
Over seeding	Over seeding in early fall will help to ensure a thick lawn next spring. When over seeding, keep in mind the following important factors: (a) Is the lawn subject to full sunlight, partial sunlight, or shade? Does the selected seeds reflect the lawns lighting and stress conditions. Many grass seed offers a variety of resistances, (i.e. pests, drought?)
Keep Lawn Mower Blades Sharp	Keep your lawnmower blades sharp. Dull blades tear grass tips causing injury and damage to your lawn and making the leaves more susceptible to disease, insects and environmental stress like drought.
Aerating	Aerating your lawn will promote deeper roots. Aerating is a process done to help put more air in your soil, which helps plants grow. Lawns are best aerated in the spring or fall for cool season grasses normally found in Ontario.
Remove Thatch	Remove excess thatch, (i.e. with a rake or a vertical mower) that can harbour disease causing fungi and insect. Excessive thatch indicates that an imbalance has occurred and plant tissue is being produced more quickly than it is being decomposed. Thatch is primarily decomposed by several soil microorganisms, and to a lesser extent by earthworms. Excessively wet or dry soil, very high or low pH, excessive or inadequate nutrient levels and repeated use of pesticides may interfere with the action of these organisms. The major cause of thatch buildup is poor lawn maintenance habits like over fertilization, especially quick-release. Thatch levels of 1 cm, or 1/2 inch will cause no harm. The best time to remove thatch is in the Fall.
Pull a few weeds	Encourage property owners when feasible to pull a few weeds each day to prevent “blanketing” of weeds. Lastly a soil test may be considered to determine any nutrient imbalance