



# Integrated Pest Management

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## What is Integrated Pest Management?

Integrated pest management (IPM) is an approach to pest control that utilizes regular monitoring to determine if and when pesticide treatments are needed and employs physical, mechanical, cultural, biological and, when needed, chemical treatments to keep pest numbers low enough to prevent unacceptable damage or annoyance to properties.

In IPM programs, treatments are not made according to a predetermined schedule. Instead, they are made only when and where monitoring has indicated that the pests will cause unacceptable economic, medical, or aesthetic damage. Treatments are chosen and timed to be most effective and least hazardous to non-target organisms and the general environment.

Applying pesticides to crops, animals, buildings or landscapes on a routine basis, regardless of need, is not IPM. Applications of pesticides are always the last resort in an IPM program.

## Components of an IPM Program:

1. Identification of pests and possible natural enemies.
2. A monitoring and record keeping system for regular sampling of pest and natural enemy populations. Monitoring is an ongoing activity.
3. Determination of injury level, or that size of the pest population correlated with an injury sufficient to warrant treatment. In determining injury levels, the amount of aesthetic or economic damage that can be tolerated must be correlated with the population size of pests, natural enemies, time in the season, and/or life stage of the pest or host.
4. An integration of treatment methods that are effective against the pest, least disruptive to natural controls and least hazardous to human health and the environment.
5. An evaluation system to determine outcome of treatment actions.

For examples of Integrated Pest Management strategies for the control or elimination of specific insects, rodents or other pests, refer to the following web pages for reference:

<http://www.birc.org/> - [2002 Least-Toxic Product Directory](#)

<http://www.pesticide.org/factsheets.html>

# Integrated Pest Management Strategies

**Soil Preparation:** Give plants a head start on pest problems by choosing the proper site, testing the soil, rotating crops, creating raised beds where necessary, and providing sufficient organic matter.

**Planting:** Plant species that tolerate common problems, altering planting time and spacing to discourage certain diseases and insects.

**Over-seeding:** Over-seed your lawn or garden to promote the growth of desired plant species. This will reduce the amount of available soil and sunlight for undesirable species.

**Natural Barriers:** Natural barriers are a useful tool in keeping undesirable species from entering a specific area. They are also helpful in defining which areas will be considered in an IPM strategy.

**Forecasting:** Weather data is consulted to predict if and when pest outbreaks will occur. Treatments can then be properly timed, preventing crop damage and reducing the volume of pesticides sprayed.

**Pest Trapping:** Traps that are attractive to insects are used so that growers can pinpoint when the pest has arrived and decide whether control is justified.

**Monitoring:** Inspect representative areas of your lawn or garden regularly to determine whether pests are approaching a damaging level.

**Thresholds:** Before treating, wait until pest populations reach a scientifically determined level that could cause economic damage. Until that threshold is reached, the cost of yield and quality loss will be less than the cost for control.

**Cultural Controls:** Disrupt the pest's environment by turning under crop residues, sterilizing greenhouse tools and harvesting early.

**Biological Controls:** It is necessary to conserve the many beneficial natural enemies already at work. Many indiscriminant pesticides will reduce the amount of beneficial species in your lawn or garden. Import and use additional biological controls where effective.

**Chemical Controls:** Select the most effective and appropriate pesticide and properly calibrate sprayers. Verify that weather conditions will permit good coverage without undue drift. Only use chemical controls as a last resort, when the thresholds previously set, have been exceeded.

**Recordkeeping:** Records of pest traps, weather and treatment are kept for use in pest management decisions.

# 12 Step Organic Lawn Care Program

## 1. Decide

So, you've decided to implement organic lawn care. This involves actively caring for your lawn and ensuring that both the soil and plants are healthy. It also means adopting a new perspective on your lawn and those plants unaffectionately known as weeds. Some so-called weeds are actually beneficial to your lawn and soil. For example, clover fixes nitrogen from the air and adds it to the soil. Prior to the advent of chemical pesticides, this plant was a common component of seed mixes and lawns.

## 2. Water

Water deeply (about 1 inch) in the early morning or early evening once a week. Shallow watering may result in shallow roots and a greater susceptibility to drought damage in dry periods. To measure the amount of water you are applying, place a can under the sprinkler and time how long it takes for an inch to accumulate.

## 3. Mow

Mowing is one of the most important aspects of organic lawn care. Research at the University of Guelph demonstrated that 3 inches is an ideal height for turf grass because it shades out weeds which prefer more sunny and open locations. Taller turf also shades soil, keeping it cool and moist. Watering is more effective on taller lawns because more plant surface area is available to take up water and because water reaching the soil is sheltered from the sun and does not evaporate. Mowing to a height of 3 inches is also good for root development. A positive relationship exists between the quantity or bulk of grass blades and that of roots.

A grass plant's food is produced in its blades by photosynthesis. If grass is cut too short, less photosynthesis occurs and less food is produced. This stunts growth both above and below ground.

Cut no more than one third of the blade at once. Cutting off more than this may cause shock as a huge portion of a grass plant's food factory is eliminated all at once.

Another way to ensure your grass remains healthy and strong is to cut it with a sharp blade. Dull blades tear and stress grass blades, thereby increasing the potential for disease and pest infestations.

## 4. Mulch

Grass clippings are the perfect fertilizer for lawns. They are free, convenient, chock full of nutrients and organic matter and able to boost soil fertility by up to 30 percent. Use a mulching mower/blade that distributes the clippings fairly evenly throughout the lawn. They will quickly decompose. By leaving the clippings on the lawn, the homeowner requires fewer or no inputs and ships out fewer or no waste. Thus, he is in fact closing the "system" - making it more self-sustainable and less taxing on himself and the planet.

## 5. Monitor your Lawn

Monitor your lawn for insects, weeds and diseases. A small and stable pest population in an otherwise healthy lawn is hardly noticeable and not demanding of action. If however, the problem begins to threaten the overall health of your lawn, action is required.

## 6. Troubleshoot

Consult the chart on following page for insect and weed problems. Over time a healthy organic lawn will crowd out most weeds and become resistant to insect problems.

## 7. Rake

Use a stiff rake to gently remove thatch, increase air circulation and discourage fungal growth. Rake after grass dries out but before weed seeds start to germinate in earnest.

## 8. Fertilize Naturally

Fertilize with organic products such as finished compost, grass clippings and/or slow-release organic products (e.g., well-aged manure and seaweed). Organic fertilizers are best applied in late summer - early fall but may also be used in the early spring. Compost and grass clippings can be applied throughout the growing season.

## 9. Aerate

If your soil is compacted, aerate in the spring and/or fall before fertilizing and seeding. This increases air and water circulation. Rent a mechanical aerator or hire an organic lawn care company to do the work for you. Manual aerators are well suited for small to mid-sized lawns.

## 10. Topdress

Spread finished compost, topsoil and/or composted manure over your entire lawn after aerating and weeding and before seeding. This adds nutrients and microorganisms to your lawn.

## 11. Overseed

Grass plants, like all living things, eventually die. This is why overseeding every year in spring or late-summer is a good idea. Introduce hardy, pest-resistant grass species such as endophytic perennial ryegrass and fine fescues into your lawn. Allow seeds time to germinate in cool, moist conditions and the grass to become well-established prior to the hot, dry weather of summer. Keep seeded areas moist until grass is well-established.

## 12. Pride

Take pride in your lawn, the care you provide it and the environmental ethic which guides your actions and decisions. By implementing organic lawn care you are demonstrating to neighbours that alternatives to chemical lawn care and to the conventional lawn do exist.

**Comparison of Chemical and Organic Lawn Care**

Chemical Lawn Care	Organic Lawn Care
low biological activity in the soil	high biological activity in the soil
focuses on correcting problems with chemical inputs	focuses on prevention through appropriate cultural methods (i.e., mowing high)
weeds killed by chemical fertilizers	undesirable plants outcompeted by healthy grass plants which form a thick cover
chemical insecticides and fungicides used to eliminate insects and diseases	harmful insects and diseases kept at tolerable levels by maintaining healthy soil and grasses
chemical fertilizers increase a lawn's susceptibility to thatch and drought problems	extensive root system makes turf resistant to drought and active soil life controls thatch
lawn becomes dependent on ever-increasing chemical inputs	soil and plant health improves

## Troubleshooting Chart for Organic Lawn Care Solutions

Problem	Appearance/Symptoms	Cause	Solution
dandelion	familiar perennial plant with yellow flowers	compacted soil and thin turf cover	aerate soil; hand pull at least 80%; overseed with ryegrasses
crabgrass	low-growing annual with shallow roots and short, pointed, hairy leaves	nutrient-deficient soil, short mowing and soil compaction	raise mowing height; hand pull and apply organic fertilizers
common plantain	low-growing perennial with wide oval leaves	thin turf cover and low nutrients in soil	handpull; apply organic fertilizers and overseed
chinch bug	brown or yellow patches, particularly near driveways and sidewalks	stressed or weakened grasses caused by soil compaction and shallow watering	water deeply once a week; apply diatomaceous earth; dethatch and apply soap and water every 10 - 14 days
white grub	spongy dead patches that lift easily; common in spring and again in late-summer to early-fall	compacted soil, dry sunny lawns with short, weak roots, chemical fertilizer use and short weak roots	dethatch; water deeply; apply organic fertilizer; use soap and water or parasitic nematodes for major infestations; over- seed with ryegrass and fescues
dollar spot	small pale circles	dry soil and nitrogen deficiencies	add organic material; mow infected tips and discard clippings
summer patch	dead patches then brown rings; during humid summers	high nitrogen and low mowing	mow higher and apply organic fertilizer

For more information on organic lawncare or alternatives to pesticides, or to find an organic landscaping company in your area, go to [www.organiclandscape.org](http://www.organiclandscape.org)