

Integrated Pest Management

Integrated Pest Management (IPM) is an environmentally sensitive approach to controlling landscape pests that does not rely on pesticides alone. It is a method that uses cultural, mechanical, biological, and chemical control methods as appropriate. IPM can reduce landscape pesticide use by 50 -90%, without sacrificing plant appearance. IPM depends on frequent monitoring of plants and pests, so that control strategies are used only when and where needed. This is a decision-making process that requires a bit more time and attention on the part of the gardener, but that results in a healthier garden environment, leading to a healthier environment in general, for people, pets, and plants.

Only about one-third of the sick plants submitted to WSU Extension Master Gardeners suffer from the presence of insects or disease. The remainder have problems that are due to cultural and environmental factors, such as drought, winter damage, or being planted in the wrong place. Following are the steps involved in Integrated Pest Management.

Identify your plants and learn their cultural needs, common pest and environmental problems. Which plants are the most likely to have problems?

Study your landscape ecosystem. Learn about your garden's micro-climates, soil, drainage patterns, etc.

Determine the key problems, both biotic, caused by living organisms such as insects and fungi, and abiotic, caused by non-living factors such as soil fertility and water needs, that are most likely to require attention. Learn to identify

the stages of a pest's life cycle and to recognize symptoms of damage.

Monitor your landscape at least every two weeks during the growing season and once a month in winter. Note signs of plant stress and be on the lookout for developing pest problems. Concentrate your monitoring on key plants and key problems.

Optimize plant health with smart planning. Select disease- and pest-resistant species and match plants to existing climatic and soil conditions. Employ good cultural practices: improve soil condition with organic matter and mulches, use correct planting methods, and pay careful attention to watering, fertilizing, and pruning.

Successful IPM requires correct diagnosis, familiarity with pests' life cycles, and monitoring. Weather can influence when to monitor. Early warming can bring early pest emergence.

When should a pest be managed?

Many pest management techniques are used before the plant is affected. They are meant to prevent problems, not cure them. Reduced dependence on pesticides usually means increased use of preventive measures. These methods are used on particularly susceptible plants and where pests have been a problem in previous years.

For management techniques that can be applied after the plant is affected, various criteria influence timing. Vegetable and fruit gardeners use **economic threshold**, the pest level at which

production declines, to signal when action must be taken.

In landscapes, management action is triggered by an **aesthetic threshold**, when damage to the plant's appearance reaches an unacceptable level. A low aesthetic threshold may be appropriate for plants at a home's front entry and a much higher one for plants usually viewed at a distance. Unless otherwise stressed (usually due to inappropriate cultural practices) most plants can withstand considerable damage without seriously impairing their health. Unfortunately, the mere presence of pests, especially insects, often causes unneeded pesticide applications due to ignorance about the identity and life cycle of the pest and the plant's ability to withstand damage.

NOTE: IPM does not use control strategies based on calendar dates, because they don't usually work. Watch plant development and pest life cycles to time pest control for maximum effectiveness and minimum adverse environmental impact.

Cultural Control

Often you can manipulate the environment to avert serious pest problems. Simple things, such as spacing plants to allow good air circulation between them, or planting groundcovers to out-compete weeds, can be very effective.

- Select plants that are adaptable to the site.
- Avoid selecting pest- and disease-prone plants. Use resistant varieties when available.
- Remove problem plants.
- Group plants according to their needs for water.

Biological Control

Biological control uses living organisms, either native or introduced, to suppress pests below threshold levels. The best bio-control strategy is protecting and encouraging the beneficial insects and other organisms already present. Avoid

broad-spectrum pesticides and plant flowers to attract native beneficial insects.

Mechanical Control

Mechanical methods can provide good control, especially with low pest populations.

- For example, wash aphids off leaves with a garden hose, prune out tent caterpillars, and construct barriers for slugs and weevils. Traps may also be useful.
- Weeds are mechanically controlled by pulling, shallow cultivation, and use of mulches.
- Plant diseases can be suppressed and their spread prevented by pinching off and disposing of diseased parts and by careful sanitation, such as raking up diseased leaves.

Chemical Control

Although broad-spectrum chemical control may be needed occasionally, try selective, environmentally friendly materials first. Among the products to consider are insecticidal soaps, horticultural oils, and botanically derived pesticides.

Let's review the IPM decision-making process.

- ✓ Monitor and do accurate diagnosis.
- ✓ Determine potential for, or status of, economic or aesthetic damage and suppress pest populations accordingly.
- ✓ If needed, choose effective, selective, and least toxic control strategies.
- ✓ Time them properly.

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