Master Gardener Program

WASHINGTON STATE UNIVERSITY EXTENSION

Using Integrated PestManagement in the Landscape

Integrated pest management (IPM) is an environmentally sensitive approach to controlling pests that does not rely totally on pesticides. IPM depends on frequent monitoring of plants and pests, so that control strategies are used only when and where needed. IPM is a decision-making process. It is environmentally friendly, using cultural, mechanical, biological, and chemical control methods, as appropriate. IPM can reduce landscape pesticide usage by 50-90%, without sacrificing plant appearance.

Although a step in the right direction, IPM still focuses on pests, not plants. We want healthy, attractive plants, so we must not overlook cultural problems. Less than half the sick plants submitted to WSU Master Gardeners for diagnosis are suffering from insects or disease organisms. Their problems are due to cultural and environmental factors such as drought or winter damage.

An even more holistic system that focuses on healthy landscapes is called plant health care (PHC). It emphasizes plant health over pest management. Although incorporating all IPM principles, PHC goes beyond IPM, emphasizing proper culture.

THE IPM DECISION-MAKING PROCESS

Monitor and do accurate **diagnosis** ⇒	Determine potential for or status of **economic** or **aesthetic damage** ⇒	If needed, select effective, selective and least toxic **control strategies** ⇒	**Time** them properly ⇒	**Suppress** pest populations below economic or aesthetic thresholds

Steps for using a PHC system in your home landscape:

1) Identify your plants and learn their cultural needs, common pest problems and environmental problems. Which key plants are most problem-prone?

2) Study your landscape ecosystem. Learn about your garden's micro-climate, soil, drainage pattern, etc.

3) Determine the key problems, both biotic (living organisms such as insects and fungi) and abiotic (non-living factors like weather and fertility) most likely to require attention. Learn to identify the stages of the pest's life cycle and to recognize symptoms of damage.

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

5) Optimize plant health with smart planning: select pest-resistant plant species and match plants to the existing climatic and soil conditions. Then employ good cultural practices: improve soil

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condition with organic matter and mulches, use correct planting methods and pay careful attention to watering, fertilizing and pruning.

Integrated Pest Management

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 applied before the plant is affected. They are meant to prevent problems not cure them. Reduced dependence on pesticides usually means increased use of preventative measures. These methods are used on particularly susceptible plants or 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 that action must be taken.. An **aesthetic threshold** (when damage to the plant's beauty is at an unacceptable level) triggers management action in landscapes. A low threshold may be appropriate for plants by a home's front entry and a much higher one for plants usually viewed at a distance. Unless otherwise stressed, most plants can take considerable damage without seriously impairing their health. Unfortunately, mere presence of pests (especially insects) often causes unneeded pesticide applications, due to ignorance about pests and the plant's ability to withstand damage.

NOTE: IPM seldom uses control strategies based on calendar dates, since they don't usually work. Watch plant development and pest life-cycle stages to time pest control for maximum effectiveness and minimum environmental impact.

Cultural Control
You can often manipulate the environment to avert serious pest problems. Simple things like spacing plants to allow good air circulation or planting ground covers to out-compete weeds can be very effective.

- **Select plants adapted to the site.**
- **Avoid selecting pest-prone plants.**
- **Remove problem plants.**
- **Use resistant varieties where available.**
- **Group plants by water need.**

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 beneficials 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. ⚘ Insect examples include washing aphids off leaves with a garden hose, pruning out tent caterpillars and constructing barriers for slugs and weevils. Traps may also be useful.
⚘ Pulling, shallow cultivation and mulches mechanically control weeds.
⚘ Plant diseases are suppressed and their spread prevented by pinching off and disposing of diseased parts and by careful sanitation, such as raking diseased leaves.

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

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