

A PUBLICATION OF THE CAPITAL REGION HORTICULTURE TEAM

Integrated Pest Management in the Home Fruit Garden

IPM: Integrated Pest Management

The modern approach to managing pests is referred to as integrated pest management (IPM). IPM involves compiling detailed, timely information about a crop and its pests (insects, weeds, and diseases) to ensure that pest-management decisions are economically, environmentally, and socially sound. In addition, IPM advocates integrating as many suitable pest-management tactics as possible, including biological control—using one organism to control another by predation, parasitism, or competition; cultural control; horticultural practices; specialized pruning; orchard sanitation; planting scab-resistant varieties; insect behavior modification such as mating disruption; and the judicious use of pesticides. Successful IPM requires knowledge about pests and the vulnerable stages of the crop.

Monitoring

Monitoring fruit plantings frequently and on a regular basis is the key to a



successful IPM program. Monitoring can take several forms, and is accomplished by using various types of traps and by weekly scouting.

Pheromone traps lure male moths onto a sticky panel by means of a synthetic sex-attractant chemical. Counting the number of male moths in these traps weekly allows the gardener to better time insecticide treatments. Other insect traps are apple maggot spheres and white sticky panels for trapping European apple sawflies and tarnished plant bugs.

Scouting is the most useful technique for monitoring most pests. It should be done weekly during the growing season, and involves inspecting a sample of fruit plants to determine the presence and severity of various pests. During the dormant season, scouting should be performed at least once to determine levels of overwintering forms of some pests such as mite and aphid eggs and of San Jose scale. Invest enough time to make reliable assessments of pest and tree conditions.

Integrated Pest Management

Many plant diseases and insect pests survive the winter on woody plant parts, in the soil, or on weed hosts. They can live in a dormant state in dead wood, infected buds, limbs, trunks, bark on twigs, mummified fruit, decaying plant parts, leaf litter, and plant debris. When weather conditions become favorable in the spring, these insects and diseases become active again. The fungal and bacterial diseases begin to multiply, sporulate, and are carried by wind and rain to susceptible plant parts. This begins a new disease cycle. Knowing how these diseases and insect pests overwinter and spread is crucial in their control. This is why cultural methods such as sanitation, pruning, and using disease-resistant plants are so important. Pruning removes the source of the overwintered pathogen or insect pest. Some pruning guidelines are listed below.

Pruning

- Prune out and destroy dead, diseased, or insect-infested twigs and branches.
- Prune branches that rub against each other.
- Try not to leave a stub when pruning; remove the whole branch if possible.
- Do not prune in early winter. This will make trees more susceptible to winter injury.
- Prune to "open" trees, which will facilitate disease control. Pruning promotes better air circulation and light penetration, facilitates the drying of plant surfaces, and enhances spray distribution.

- Prune out cankers in stone fruit to discourage borers.

- Prune out fire blight cankers and all other cankers caused by disease organisms.

Sanitation

- Remove leaves and other plant parts containing insect egg masses.
- Remove and destroy decayed, injured, and mummified fruit left in the tree or on the ground.
- Pick up, burn, bury, or destroy fallen fruit.
- Rake and burn leaves and other litter under the tree to destroy overwintering disease and insect habitats.
- Eliminate weed hosts. Many insects and diseases overwinter in weeds.
- Avoid excessive nitrogen fertilization.
- Avoid wounding plant parts and fruit during the season. Wounds are excellent entry points for insects and diseases.

Plant Protection Materials

In some cases, plant protection materials are the only alternative in controlling pests. Pesticides recommended for home use have moderately low mammalian toxicity and degrade soon after application. Little or no toxic residues remain either on the fruit or in the environment if the pesticide is used according to label instructions.

A number of general-purpose products (GP-Products) are available at retail outlets, including some that are organic.

A GP-Product usually includes one or more insecticides and fungicides. It may or may not include a miticide. This type of mixture will afford adequate control of insect and disease problems, provided the amount used, the method of application, and the time of application are correct. These products allow you to buy one package of material instead of several individual pesticides that must then be mixed. Some mixtures are available in ready-to-use premeasured packets. Always follow the directions on the container package when mixing and applying pesticides.

Weeds

Weeds, or "plants out of place," compete with fruit crops for nutrients and water, provide a moist environment for disease organisms, and often harbor insects and small animals such as rabbits and mice. Nearly every fruit grower who attempts to grow plants around his or her property is faced at one time or another with some form of weed problem: lawns might contain plants other than desirable grasses; the vegetable garden is a constant source of weed growth; and landscape plantings and garden areas devoted to fruit-bearing plant production often are trouble spots. Competition between weeds and fruit plants for resources (nutrients and water) is of particular concern during the full-bloom period, when nothing should be allowed to interfere with the blossoming and subsequent fruit-setting processes.

Careful Observation

The first step in managing pests through IPM is careful observation. Develop a habit of observing your plants regularly, and daily if possible. Look at the blossoms, fruit, upper and lower surfaces of the leaves, new shoot growth, and general color and angle of the leaves. Also be aware that if you see changes in the plant, they may not be due to pests. The plant's nutrition can cause poor leaf color or unusual growth patterns, and humans can also cause damage to plants. Careful observation of the biological

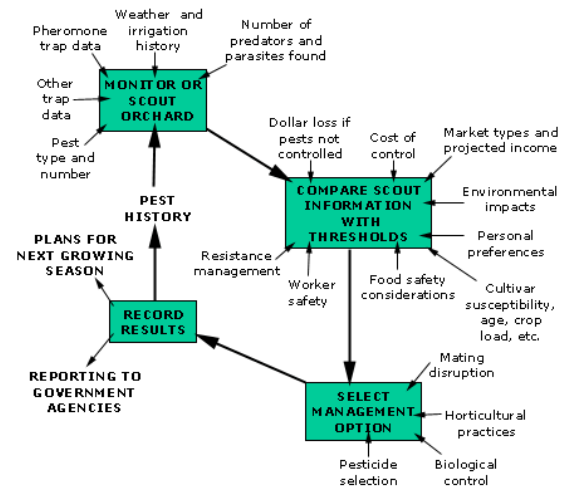


Figure 2-1. How to make an integrated pest management decision.

system that surrounds your crop plants is one of the most educational and challenging aspects of fruit production.

* * *

Reference:

This handout has been adapted from *Fruit Production for the Home Gardener*, published by Penn State University in 2006.

This publication can also be viewed on-line at <http://ssfruit.cas.psu.edu/default.htm>.

* * *

Penn State encourages persons with disabilities to participate in its programs and activities. If you anticipate needing any type of accommodation or have questions about the physical access provided, contact Penn State Extension, at 334-6271, in advance of your participation or visit.

This publication is available in alternative media upon request.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901, Tel 814-865-4700/V, 814-863-1150/TTY.

Where trade names appear, no discrimination is intended and no endorsement by Penn State Cooperative Extension is implied.