Key Pests of Field Production Perennials

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Integrated pest management (IPM) is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks. The challenging aspect for nursery production of ornamental plants is due to the extremely low tolerance for pest presence and damage. IPM strategies are designed to manage pest populations below damaging levels; the goal is not the complete elimination of pests. The low aesthetic threshold for pest populations and damage makes perennial IPM programs a challenge to implement. However, this does not mean that IPM cannot be successful for perennials. There are many situations when alternative control methods, other than chemical, can be implemented with no loss to crop value. Frequently, crop quality is improved with fewer economic losses due to pest problems.

Every production site may develop its own specific IPM program based on climate/microclimate, plant material and management practices. Before an effective IPM program can be established, the personnel involved need to become familiar with the key plants and key pests. Key plants are those with the highest dollar value or the ones most susceptible to numerous and/or serious problems every year. The key pests are those which attack high value plants or are a serious problem every year on a variety of hosts.

The following components are the basic steps required for a successful program. Remember to keep an open mind and incorporate any new idea that fits into your program framework.

Components of an IPM Program

- Definition of objectives. What are the goals? Possibly to reduce pesticide usage, improve crop quality or save money.
- Gather information on insect/disease/weed identification, life cycles, hosts and control recommendations; how to properly scout for specific pests

• Monitoring of pest and beneficial populations and record keeping (including date, location, weather, pests found and their level, recommendations for treatment, action taken, etc.).

• Decision making. Based on the information available, the person responsible for controlling pest problems must consider all possible options for each situation. This includes treating the problem or waiting to see what happens to the population; selecting the appropriate control measure(s), etc.

• Management options—cultural, biological, chemical, physical etc.

• Evaluation of treatments and overall program.

In order to scout efficiently, there are some basic tools that are required. These include:

10X-20X hand lens, around the neck, not in a pocket
clippers
sample bags
waterproof marker
water
ruler
white paper and clipboard to monitor for mites, thrips
scouting forms
clipboard
soil probe
reference books
tally meter
sample vials with alcohol
paper towels

The following suggestions for pest management relate more specifically to herbaceous perennials.

• Inspect incoming plants for pest problems

• Clean growing areas (including weeds and dead plant material)

• When possible cover all soil surfaces with concrete, black plastic or weed barrier

• Keep pet plants out of crop areas

• Grow resistant varieties whenever possible

• Keep unnecessary people out of crop areas (pests hitch rides)

• Sterilize growing media, if needed

• Inspect and quarantine incoming plants

• Use physical barriers such as screening, doors, plastic curtains in greenhouses

• Use sticky traps to monitor for pests; check/change weekly.

Scouting Equipment Suppliers

Forestry Suppliers
205 West Rankin Street
P.O. Box 8397
Jackson, MS 39284
800-647-5368

Great Lakes IPM
10220 Church Road, NE
Vestaburg, MI 48891
517-268-5693

Gempler's Pest Management Supply
P.O. Box 270
211 Blue Mounds Road
Mt. Horeb, WI 53572
800-332-6744

The following are some of the key pests of field-grown herbaceous perennials. The list is based upon a review of the available literature with additional input from growers. It is not meant to be an exhaustive list but, instead, to serve as a starting point for monitoring field-grown perennials. For simplicity sake, frequently, only the genus name is included due to the large number of cultivars and species. More detailed pest information can be found in the references listed at the end of the article.

Aster Leafhopper (*Macrosteles quadrilineatus*)

Host Plants

Anchusa, Aster, Centaurea, Chrysanthemum, Coreopsis, Cosmos, Dahlia, Dianthus, Gaillardia, Lobelia, Papaver, Phlox, Rudbeckia, Scabiosa.

Monitoring Techniques

Overwinter as eggs in plant tissue. Adults have six black spots on the head. Visual inspection of leaves for stippling damage; look on underside of leaves for adults, nymphs and shed skins. Yellow sticky cards can also be used to detect populations. One or more generations/year.

Damage Symptoms

Mycoplasm disease symptoms = chlorotic foliage, deformed flowers (Aster Yellows Disease). Feeding causes discoloration (stippling).

IPM Options

Destroy diseased plants. Bifenthrin, Fluvalinate, horticultural oil, insecticidal soap.

Black Vine Weevil (*Otiorhynchus sulcatus*)

Host Plants

Astilbe, Bergenia, Cyclamen, Hosta, Primula, Saxifraga.

Monitoring Techniques

Overwinter as larvae in the soil or adults in protected areas. Look for C-shaped leaf notching as evidence of adult feeding. Adults can also be monitored by using burlap bands and pitfall traps. One generation/year.

Damage Symptoms

Larvae feed on roots which will weaken or kill the plant.

IPM Options

Use exclusion barriers to keep adults out of production areas. Acephate, Fluvalinate + PBO

Cyclamen Mite (*Phytonemus pallidus*)

Host Plants

Aconitum, Chrysanthemum, Clematis, Cyclamen, Dahlia, Delphinium, Verbena, Vinca, Viola.

Monitoring Techniques

Overwinter as adults on plant material. Mites are invisible to the naked eye (1/100"), need a microscope to see them, makes it difficult to detect them prior to onset of injury. Several generations/year.

Damage Symptoms

Feeding causes leaves to curl and twist. Flower buds will dry up and die. Particularly severe on Delphinium.

IPM Options

Space plants so they do not touch. Remove and destroy infested plants. Dicofol, Dienochlor

European Corn Borer (*Ostrinia nubilalis*)

Host Plants

Althea, Aster, Chrysanthemum, Dahlia.

Monitoring Techniques

Overwinter as larvae in the plants. Larvae are cream colored with brown spots. Observe new growth flushes for early signs of larvae. One or two generations/year.

Damage Symptoms

Boring can cause dieback or death.

IPM Options

Remove infected stems in spring before larvae become adults. Don't grow corn or potatoes near perennial field production.

Four-lined Plant Bug (*Poecilocapsus lineatus*)

Host Plants

Aconitum, Alchemilla, Chrysanthemum, Coreopsis, Cosmos, Dahlia, Echinops, Gaillardia, Heliopsis, Heuchera, Hydrangea, Lavandula, Lupinus, Mentha, Papaver, Paeonia, Rudbeckia, Veronica.

Monitoring Techniques

Overwinter as eggs inserted into tender shoots. Adults are yellow-green with four black, longitudinal stripes. Detection can be difficult because they will quickly move to a hiding place when they notice movement. One generation/year.

Damage Symptons

Feeding causes spotting of leaves which may develop necrotic centers. This should not be confused with leaf spot disease. Extensive feeding can cause leaf drop.

IPM Options

Remove weeds which can serve as alternate food sources. Acephate, Bifenthrin, horticultural oil, insecticidal soap. Start treatments early when first nymphs are detected.

Japanese Beetle (*Popilliae japonica*)

Host Plants

Althea, Aster, Astilbe, Dahlia, Digitalis, Gaillardia, Hemerocallis, Hibiscus, Iris, Paeonia, Rudbeckia.

Monitoring Techniques

Overwinter as grubs (larvae) in the soil. Larval raster patterns: bristles form a "V". Look for adult damage on indicator plants such as sassafras, rose, wild grape, etc. One generation/ year.

Damage Symptoms

Adult feeding on foliage causes a lacy pattern on leaves (skeletonization). Larval feeding prunes roots causing turf dieback.

IPM Options

Placement of pheromone traps may cause more feeding damage to susceptible host plants. If possible use protective netting

to protect plants. Adults: Chlorpyrifos, Fluvalinate. Control grubs in turf areas: Insect parasitic nematodes (*Steinernema feltiae* and *Heterorhabditis bacteriophora*)

Lacebugs (Tingidae)

Host Plants

Aster, Chrysanthemum, Scabiosa, Sedum, Solidago.

Monitoring Techniques

Overwinter as adults in protective areas; in plant debris. Adults have lacy, transparent wings. Nymphs (immatures) are black and spiny. Feed on the underside of leaves, dark fecal spots will be present. Several generations/year.

Damage Symptoms

Feeding will cause leaves to discolor and appear bleached.

IPM Options

Remove weeds which can serve as alternate food sources. Acephate, horticultural oil, insecticidal soap.

Oriental Beetle (*Anomala orientalis*)

Host Plants

Cyclamen, Phlox.

Monitoring Techniques

Overwinter as grubs (larvae) in the soil. Larval raster pattern: bristles form two parallel lines. Look for adults on roses, dahlias, etc. in mid-late summer or near lights at night. One generation/year.

Damage Symptoms

Adult feeding on foliage causes skeletonization. Larval feeding prunes roots.

IPM Options

Adults: Chlorpyrifos, Fluvalinate. **Grubs:** Insect parasitic nematodes (*Steinernema feltiae* and *Heterorhabditis bacteriophora*).

Potato Leafhopper (*Empoasca fabae*)

Host Plants

Althea, Dahlia, Hibiscus, Lupinus.

Monitoring Techniques

Does not overwinter in the North, migrates from the South in late April or early May. Adults are green with six white spots on the thorax. Yellow sticky cards can be used to monitor for adults. Several generations/year.

Damage Symptoms

Discoloration, wilting of foliage. Leaves may also be smaller than normal and deformed.

IPM Options

Bifenthrin, horticultural oil, insecticidal soap.

Slugs (Mollusca)

Host Plants

Althea, Bergenia, Campanula, Delphinium, Hemerocallis, Hosta, Iris, Primula, Sedum, Viola.

Monitoring Techniques

Look under boards, vegetation and daytime shelter. Look for silvery slime trails on or near vegetation.

Damage Symptoms

Leaves can be cut off at the petiole. Large, ragged holes chewed in leaves.

IPM Options

Control weeds and keep production area clear of debris.

Spittlebugs: Meadow Spittlebug (*Philaenus spumarius*)

Host Plants

Achillea, Phlox.

Monitoring Techniques

Overwinter as eggs inserted into shoots. Look for conspicuous "spittle" masses surrounding the nymphs. Adults are active during the summer months. One generation/year.

Damage Symptoms

Feeding causes wilted, stunted, distorted and discolored foliage.

IPM Options

Pick out nymphs if infestation is light. Chlorpyrifos, insecticidal soap

Stalk Borer (*Papaipema nebris*)

Host Plants

Althea, Aquilegia, Aster, Centaurea, Chrysanthemum, Dahlia, Delphinium, Digitalis, Gaillardia, Phlox, Rudbeckia, Salvia.

Monitoring Techniques

Overwinter as eggs on grasses and weeds. Immature caterpillars are brown with white stripes, interrupted by a purple band. Mature larvae are gray. If wilting is noticed, slice open plant and look for larva. One generation/year.

Damage Symptoms

Boring can weaken, stunt or kill the plant.

IPM Options

Can slice open and remove borer, then try to bind plant together. Natural enemies (lady beetles and ground beetles) help reduce populations. Remove weeds which are used for egg deposit and larval feeding.

Tarnished Plant Bug (*Lygus lineolaris*)

Host Plants

Achillea, Aster, Astilbe, Chrysanthemum, Dahlia, Papaver, Rudbeckia, Salvia, Verbena, Veronica.

Monitoring Techniques

Overwinter as adults in protective areas. Adults are a mottled brown color, with distinct yellow and black triangles on their sides. Visual inspection for adults can be difficult because they move quickly. Three-five generations/year.

Damage Symptoms

Feeding causes spotting of leaves which may develop necrotic areas. Extensive feeding may cause leaf drop.

IPM Options

Clean production areas to remove overwintering sites. Acephate, Bifenthrin, horticultural oil, insecticidal soap. Spray when flower buds start to form.

Two-spotted Spider Mite (*Tetranychus urticae*)

Host Plants

Althea, Aquilegia, Campanula, Dahlia, Delphinium, Dianthus, Gaillardia, Hemerocallis, Hydrangea, Iris, Phlox, Primula, Rudbeckia, Salvia, Verbena, Viola, various herbs.

Monitoring Techniques

Overwinter as adult females in protective areas. Adult mites have eight legs, are greenish-colored, with two dark spots on the back. Look on the underside of leaves where mites like to feed for live mites, empty egg cases and shed skins. Look for webbing

on plant material. Tap leaves onto white paper to dislodge mites and make them more visible with a hand lens; wait a few seconds and the mites, which are about the size of a period, will be noticeable moving across the paper. Several generations/year.

Damage Symptoms

Discoloration of leaves (stippling). Severe feeding will cause leaf drop.

IPM Options

Heavy irrigation may knock mites off of plants and reduce the population. Release of a combination of predatory mites may reduce pest population. Abamectin, Dicofol, Dienochlor, horticultural oil, insecticidal soap.

Remember to check the pesticide label to see if the product is safe to use on the herbaceous perennials in question.

References

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