

Pests of Flowers



Introduction

Managing common insects, weeds, plant diseases and certain animal pests found in the backyard can be a challenge. However, there are a number of ways to approach the problem. Information in this publication will help identify and manage pest problems.

Pest management methods will vary among individuals according to their tolerance of the pest, the damage and a basic philosophy about handling pest problems.

It may not be necessary to control pests if numbers are low and damage is not significant. At other times, simply spraying a tree with water, pruning a branch or digging up a weed will reduce or eliminate the problem. Natural predators may also control the pest problem.

Backyard Pest Management is designed to help focus on the key areas of pest management. The first section provides basic approaches to pest management and looks at ways to prevent problems and handle them as they arise. Further sections focus focus on the insects and the types of plants they damage.

There are many ways to deal with backyard pest problems. When using pesticides to control a problem, there is the potential for damage and the possibility of legal issues. Use pesticides with caution and always according to label directions.

Approaches to Pest Management

Integrated Pest Management (IPM) is an environmentally responsible approach to pest management. IPM focuses on prevention, and if problems occur, the method provides a variety of control strategies.

Prevention

Prevention is the foundation of an IPM program, and one way to do prevent problems is to choose the right plant for a specific location and provide the best growing conditions.

- Use a variety of plant material in a landscape to avoid a monoculture (growing only one type of plant), which can create potential problems with one species of insect.
- Select plant species that are less prone to pest problems. Some plants are consistently plagued by certain insect pests and diseases.
- Evaluate the planting site for exposure to light, low spots, wind speed and direction. Choosing plants suited to their growing conditions reduces plant stress, which helps prevent insect and disease problems.
- Be aware of soil conditions including pH, drainage, fertility and organic matter. If possible, improve the soil or choose a plant adapted to the conditions.
- Provide the best start for the plants, using good planting techniques. This approach includes proper planting, pruning, staking and mowing practices.
- Provide proper maintenance practices for plants including watering, fertilizing, pruning and weed control. Good maintenance practices will ensure healthy plants that are less likely to be affected by pests and diseases.

Identifying the problem

The first step in controlling a problem, whether it is an insect, disease or weed, is to identify it correctly. When dealing with insect and disease problems, learning about preferred hosts, the type of damage that occurs and life cycle are important when choosing the best control method. For weeds, having information about their life cycle is important because weeds are usually easier to control at some stages than others.

Monitoring

Monitoring involves checking plants in a yard regularly for the presence of pests. Frequent monitoring of pests is important so that proper treatment can be started when the outbreak first begins. Monitoring should occur throughout the entire growing season.

Action decisions

Proper pest control action involves two steps:

- first, identifying the injury threshold
- second, determining the action threshold

The **injury threshold** is the level at which a pest population causes an unacceptable degree of damage so that treatment is necessary. Knowledge of the pest and the plant it is affecting will help when deciding the treatment. For example, most deciduous trees and shrubs can withstand substantial defoliation by insects, especially later in the growing season. However, coniferous trees cannot tolerate defoliation because the needles are not replaced. Having this knowledge about the types of plants, as well as information about the pest, helps in making a decision about treatment when a problem arises.

The **action threshold** is the time to treat the problem to avoid an unacceptable amount of damage or *injury threshold*. It is important to know the life cycle of the pest and have an understanding of the time it takes for a control measure to be effective. For example, the biological control agent *Bacillus thuringiensis Kurstaki* will take longer to control caterpillars than a contact insecticide because the agent must be ingested by the caterpillars to be effective.

Treatment

Five general types of treatments can be used to control pests.

Types of treatment

Cultural

Provide proper maintenance practices such as regular watering, fertilizing, pruning and sanitation. Good maintenance practices keep plants healthy, so they are less likely to be affected by pest problems.

Physical

One method of physically controlling pests is to remove and destroy the insects, the infested leaves or the part of the plant that is severely affected. Pests such as caterpillars, beetles, slugs and other large pests can be easily removed by hand when infestations are low. Also, removing forest tent caterpillar egg bands on trees in the fall or early spring will reduce the problem the following year.

Another effective way to control insects is with a strong jet of water from a garden hose. Spraying trees and shrubs thoroughly and regularly with water will dislodge and kill small caterpillars, aphids, spider mites, pear slugs and other pests.

Physical barriers may also be used to prevent insects from attacking plants, especially in the vegetable garden. Floating row covers may be used to prevent some insects from attacking plants. Tarpaper discs may also be used around the base of cole crops to discourage root maggot flies from laying eggs in the soil. Cutworms can be prevented from attacking the roots of transplants by sinking large tin cans, with both ends removed, into the soil around plants to act as cutworm barriers.

For diseases, physical control may involve removing plant parts by pruning. For example, the only way to control black knot on mayday is to prune out the affected branches or portions of the branches with the fungus. Also, if an individual plant is affected by a disease, it may need to be removed completely to prevent the spread of the disease to other plants.

Physical control for weeds involves simply hoeing or hand digging the weeds.

Mechanical

Insect vacuums, heat applicators for weed control and motion-triggered water applicators for wildlife may all be used for mechanical pest control.

Biological

Biological controls are natural enemies of pests such as predatory and parasitic insects as well as birds. These natural enemies will often come to the garden on their own if there are high populations of a pest insect. For example, an outbreak of aphids will attract the natural predator lady beetles (lady bugs). Beneficial insects can be attracted to a yard by growing plants that are sources of nectar and pollen such as aster, marigold, salvia and monarda. Shallow dishes or bird baths act as a water source for both insects and birds, encouraging them to visit the yard. Also, a bird feeder will help supplement the diets of birds like chickadees and other insect eaters.

Protect birds and beneficial insects by avoiding the use of pesticides. If pesticides are used to control the pest, the pesticide is likely to kill the beneficial insects as well. If pesticides have to be used, choose the product with the lowest toxicity and shortest residual period. Spot or target spray to minimize the area covered.

Beneficial insects are often sold to control backyard insect pests. The most common beneficial insects are ladybeetles and praying mantids. These insects usually have little benefit, as they frequently leave the yard, especially if their food supply is poor. It is preferable to let the native species of beneficial insects control the outbreak.

A bacterium called *Bacillus thuringiensis Kurstaki* is another type of biological control. It can be purchased to control leaf feeding caterpillars including forest tent caterpillars and the larvae of cabbage butterflies. It only affects the larvae of moths and butterflies and does not control any other insects.

Chemical

When purchasing pesticides, choose the product with the lowest toxicity. There are synthetically produced pesticides as well as naturally derived products. When using any product on food crops, follow the label directions for safety precautions and wait periods between spraying and harvest.

Many municipalities are moving to minimum or zero-pesticide tolerance and may have a municipality-wide bio-control program. Be aware of these issues in the community, so an informed decision can be made about pest control.

Evaluation

The last step in any pest management program is evaluation. Monitoring and record keeping are key factors in determining if the control measure was successful. This information may help in choosing a method in the future.

Many commonly used products for pest control in the home garden are being removed from the market. Many municipalities are creating by-laws to reduce or eliminate the use of pesticides. The principals and practices of integrated pest management will become more important in the future.

Integrated pest management takes time, planning and patience for it to be a successful.

Aphids



Aphids

Hosts: annuals and perennials

Damage

Aphids feed by sucking the sap from leaves, causing them to turn yellow, curl or become deformed and eventually fall off. The pests may also feed on flower buds, stems and even roots. Plant growth may be reduced. Aphids may also transmit viral diseases when feeding.

Aphids excrete a shiny, sticky substance called honeydew that can be found on the leaves. An unattractive, black, sooty mould may grow on the honeydew, but does not harm the plants. Large numbers of aphids often attracts ants that feed on the honeydew. The ants become a nuisance and will often protect the aphids from predators.

Description

Aphids are small (2 mm or less), soft-bodied, pear-shaped insects with sucking mouthparts. They are often found in colonies (cluster) and may be light green, yellow, brown, black or pink. The adults may or may not have wings; the nymphs are wingless. They also have two cornicles that look like tailpipes, sticking out their back ends, which is an identifying feature of the insect.

Life cycle

Most species overwinter as eggs on the stems of perennial plants. The eggs hatch in the spring, and after one or two wingless generations, winged forms are produced and fly to other plants. Females produce live young continuously throughout the summer without mating, so population growth is usually rapid. Male and female winged aphids develop in the fall and mate; then, the females fly to other plants to lay eggs.

Control

- Hose down infested plants with a strong spray of water from a garden hose. The spray washes off the wingless aphids, which are seldom able to return to their host, but rarely hurts aphid predators. Repeat the water spray as often as necessary.

- Avoid over-fertilizing plants with nitrogen because lush growth attracts aphids.
- Effective aphid predators are lady beetles (bugs), lacewings and flower fly larvae. Also, aphids may be parasitized by tiny wasps.
- Recommended products for aphid control are insecticidal soap and pyrethrins. Use these non-residual products as spot sprays.
- Aphids build resistance to insecticides very quickly so use an integrated method of control (more than one method of control).

Blister beetle



Blister beetle

Hosts: annuals and perennials, especially delphinium and aster

Damage

Blister beetle adults eat round holes in foliage and flowers. They are often seen feeding in swarms, which results in localized damage. The beetles move in, feed and leave as fast as they appeared. Damage is usually more severe to young plants during these infestations. The larvae feed mainly on grasshopper eggs and leafcutter bee larvae, but do not harm plants.

The name blister beetle comes from a substance secreted by the insect called cantharadin. When touched, this substance causes blisters to develop on the skin.

Description

Several species of this beetle feed on herbaceous plants. All species are similar in appearance, with long, narrow bodies 12 to 25 mm long. They have shiny black heads and wing covers with a metallic sheen that are often black, green or purple. Eggs are yellow and cylindrical.

The larvae differ in appearance depending on the stage of their development. Young larvae have a narrow body with long legs while mature larvae are larger and look more like a grub. Larvae grow up to 13 mm long.

Life cycle

Blister beetles have a complex life history. They overwinter as larvae in the soil and then pupate in the spring. The beetles usually appear in June or early July, and the females lay eggs in the soil. The larvae go through four stages including a hard-shelled overwintering stage. Most species have one generation a year. Blister beetles are more numerous during and after a grasshopper outbreak.

Control

- Hand-picking may be effective; however, gloves should be worn. Throw the insects into a pail of soapy water.
- Preferred products for control are pyrethrins. Spray when the insects are first seen feeding on the plants.

Caterpillars



Caterpillar

Hosts: all herbaceous ornamentals

Damage

Several species of caterpillars attack plants, chewing holes in the leaves. Unless defoliation is severe, overall plant health will not be affected.

Description

Common caterpillars are linden loopers, cankerworms, spiny elm, woolly bears and the larvae of rusty tussock moth and swallowtail butterfly.

Spiny elm caterpillars are purplish-black with red spots down their back and long black bristles covering the body. When mature, the larvae are about 60 mm long. The adult is the mourningcloak butterfly, which has dark brown wings with blue dots above whitish coloured edges. It is a large butterfly with a wingspan up to 80 mm. It can be seen flitting around when the air temperature is above 10°C, so it may be seen early in the spring.

Linden loopers are bright yellow caterpillars with 10 wavy black lines on their back. When mature, they can be up to 35 mm long. Larvae move like inchworms and when disturbed, they fall from the trees on silken threads. Larvae feed alone, but can consume entire leaves with only the petiole (leaf stem) left behind. They feed from the time the buds open for about one month. Adults are light brown moths with dark bands on their wings. Linden loopers feed on elm, Manitoba maple, lindens and poplars.

Swallowtail butterfly larvae are green, segmented caterpillars with a large eyespot marking on each side and about 45 mm long. A gold band separates the thorax and abdomen. The adults are the beautiful black and yellow butterflies with a wingspan up to 80 mm. They can be seen around mud puddles and lilac flowers from late May to early July. Larvae can be found on birch, aspen, willow and other hardwoods. This insect seldom does any significant damage to trees and should not be harmed.

Life cycle

The life cycle varies depending on the species. Most overwinter as pupae. Moths or butterflies emerge in the spring to lay eggs on leaves. Caterpillars grow and usually feed for two to four weeks, but this may vary depending on the species. Most caterpillars in Alberta have only one generation a year.

Control

- Hand-pick and destroy caterpillars only if damage is severe enough to warrant.
- Some caterpillars develop into beautiful butterflies or moths and should not be destroyed.
- Preferred products for control include *Bacillus thuringiensis Kurstaki*, insecticidal soap and pyrethrins.
- Before spraying, consider the decision carefully as caterpillar feeding seldom affects plant health.

Columbine leaf miner



Columbine leaf miner

Photo credit: Whitney Cranshaw, Colorado State University, Bugwood.org

Host: columbine

Damage

The larvae mine the leaves by feeding on the tissue between the upper and lower leaf surfaces. The feeding damage produces whitish winding tracks on the leaf surface. These mines often end in a large blotch. When the leaf surfaces are separated, small black droppings may be seen. The damage caused by this insect does not usually affect plant health, but reduces the ornamental value.

Description

The adult is a small, black sawfly. The small larvae are pale green.

Life cycle

The insect overwinters as pupae in the soil, and after the adult flies emerge, they insert eggs into the leaves. The larvae hatch from the eggs and mine the leaves. After feeding, the larvae pupate on the leaves, and another generation of flies appears two weeks later. There is usually more than one generation a year. When the final generation of larvae matures, they exit the leaves and drop to the ground to overwinter.

Control

- Keep plants well watered to help them outgrow insect damage.
- Remove damaged leaves and clean up plants in the fall to reduce overwintering populations.
- No products are registered to control this pest.

Columbine sawfly



Columbine sawfly

Host: columbine

Damage

Damage is caused by the larvae feeding on the leaves. They usually begin feeding on the leaf edges and then move inwards. The larvae usually eat entire leaves except for the mid-vein. It is common for the insect to completely defoliate the plants by the time they are ready to flower.

Description

The adult is a sawfly that looks like a small, black wasp and is approximately 6 mm long. The larvae are light green and grow 5 to 10 mm long. They are difficult to see because they blend in with the leaves, and they often feed on the underside of the leaves.

Life cycle

The insect overwinters as pupae in the soil, and the sawflies emerge in the spring and lay their eggs. The larvae feed for approximately two weeks and then drop to the ground to pupate. A new generation of adults appears in approximately 10 days. They lay eggs and the cycle continues. There may be up to three generations a year.

Control

- Hand-pick and destroy the larvae.
- Preferred control products include insecticidal soap and pyrethrins.

Cutworms



Cutworms - larvae

Hosts: a wide variety of plants, especially young plants and transplants

Damage

Small holes in the leaves are often a sign that cutworm larvae are present. As the larvae grow, they chew off the stems of seedlings and transplants at the soil surface or just below ground level. A few species climb plants and eat the leaves and fruit. Most cutworms feed at night.

Description

Several species of cutworms damage plants, but the most common is the redbacked cutworm. They are greyish with a reddish stripe running down their back. Cutworms grow up to 35 mm long and curl up in a C-shape when disturbed. The adults are the miller moths, which are attracted to lights in the summer and their colour can vary from tan to reddish.

Life cycle

The redbacked cutworms overwinter as eggs in the soil. The eggs hatch in early spring, and the cutworms feed until late June. Pupation occurs in the soil, and adult moths emerge in July or August. There is one generation a year.

Control

- Keep weeds under control and turn over soil in the fall.
- Digging the garden or rototilling in the spring may expose cutworms to birds.
- Use physical barriers, such as milk cartons or tin cans around individual plants. Push these barriers into the soil at least 8 cm.
- Hand-pick cutworms from under the soil surface around newly damaged plants.
- If climbing cutworms are suspected, use a flashlight to check the damaged plants at night, and then remove and destroy any larvae.

Delphinium leaf-tier



Delphinium leaf-tier

Hosts: delphinium and larkspur

Damage

The larvae tie the uppermost leaves of the plant together over the terminal bud. They damage the plant by feeding on the leaves and the growing point, preventing the plant from flowering. Stalks are also damaged and tied together. Black droppings from the larvae are usually seen within the webbed leaves and damaged stalks. The delphinium leaf-tier does not kill the plant, but greatly reduces the ornamental value.

Description

The caterpillar is 10 mm long and pale green with a narrow yellow stripe. The adult is a brown, non-descript moth.

Life cycle

The insect overwinters in the soil as eggs. The caterpillars emerge in the spring when the plants begin to grow. Pupation takes place in late June. Adults emerge in July and begin laying eggs at the base of delphinium plants in late summer. There is one generation a year.

Control

- In the spring, once the plant has grown 15 to 20 cm tall, cut it back to a height of 4 to 6 cm. This method will delay flowering, but will reduce damage by the insect. Dispose of the material, but do not compost.
- Hand-pick and destroy larvae.
- Alternatively, prune out affected stalks.
- Spraying is not usually effective, therefore not recommended.

Grasshoppers



Grasshopper

Hosts: a wide variety of plants are affected

Damage

Adults and nymphs eat all parts of garden plants including leaves, stems, flowers, fruit and seeds. Large numbers of grasshoppers may completely destroy plantings of garden crops. Serious outbreaks may occur after two or three years of hot, dry weather and good snow cover.

Description

The colour of grasshoppers will vary depending on the species. They can be brown to yellowish-brown, yellowish-green or black and can grow up to 40 mm long. Grasshoppers have large hind legs and wings that fold up behind them when they are resting. Most adult grasshoppers are strong flyers. Nymphs look similar except they are smaller and wingless.

Life cycle

Most grasshoppers overwinter as eggs in pods in the soil. They hatch in early spring, and nymphs feed for two to four weeks before their final moult to the adult stage. Adult females begin laying eggs in late July.

Control

- Cultivate garden and weedy areas in the fall to discourage egg laying.
- Row covers may be the only protection against very severe infestations. Make sure the edges are covered with soil or boards.
- Birds are natural predators, so attract them to the yard with feeders and water.
- Control young grasshoppers with registered chemical sprays before they become egg-laying adults.

Leafhoppers



Leafhopper

Hosts: Virginia creeper, roses, annuals and perennials

Damage

Nymphs and adults feed by sucking sap on the undersides of leaves. This activity causes small whitish spots to form on the upper surface of the leaves. Leaves eventually turn yellow and die. Plants may become stunted and show a general decline in vigour. Leafhoppers do not usually kill the plants, but the feeding damage greatly reduces the ornamental value.

Description

Leafhoppers are small, slender, sap-sucking insects that hop away quickly when disturbed. They are light to medium green, yellow or white. When resting, their wings are held over their body.

Life cycle

Some species overwinter as adults under trash or in other protected places. Other species may migrate in from the south. Adults emerge in the spring to feed when the plants begin to leaf out. They usually lay their eggs in May and June under the leaf surface. The nymphs hatch and go through several developmental stages. The number of generations per year depends on the species and weather conditions.

Control

- Spray a strong jet of water to wash the insects off vines and other sturdy plants. To be most effective, spray the undersides of the leaves.
- Control weeds as they may attract leafhoppers to the garden.
- Leafhoppers have many natural predators including lacewings, damsel bugs, lady beetles (bugs), minute pirate bugs and spiders.
- Remove all plants showing symptoms of aster yellows disease. Aster yellows is a disease transmitted by leafhoppers.
- Preferred products for control include insecticidal soap and pyrethrins. Spray the undersides of the leaves for maximum control.

Red lily beetle



Red lily beetle

Photo credit: Mariusz Sobieski, Bugwood.org

Hosts: lilies, fritillaria, lily of the valley, Solomon's seal and nicotiana

Damage

Damage by this insect is caused mainly by the larvae, although the adults feed as well. The red lily beetle is very destructive and eats all parts of the plant in only a few days, leaving only the stem.

Description

The adults are a bright red beetles, with a black head and a rectangular shape. They grow up to 8 mm long. The larvae are soft-bodied and yellowish, although they are covered in a black slime. The larvae are usually found on the undersides of the leaves.

Life cycle

These insects overwinter as adults under debris or under the soil surface. After the adults appear in the early spring, they mate and the females lay hundreds of bright orange eggs on the undersides of leaves. After the eggs hatch, the larvae feed for approximately three weeks and then pupate in the soil. The adults emerge less than a month later and mate. There are up to three generations in a season.

Control

- If purchasing potted bulbs, check the soil for the beetles and larvae.
- Monitor plants frequently during the season. Hand-pick the adults and larvae from the plants and destroy them.
- A preferred product for control is diatomaceous earth. Sprinkle this dust directly on the beetles.

Rose curculio or rose weevil



Rose curculio or rose weevil - bud damage

Host: rose

Damage

The adult weevils chew holes in the flower buds to feed on the pollen inside. This activity may prevent the buds from opening, but if they do open, the flower petals are usually covered with holes. The eggs are laid inside the flower buds, and the larvae feed inside them. They will also feed on the developing seeds in the rose hips. If the plant is not flowering, the weevils may feed on the ends of the new growth.

Description

Adult weevils are black with a red back and a long snout. They are approximately 8 mm long. The larvae are small, white grubs.

Life cycle

The larvae overwinter in the soil around the base of the plants. Pupation occurs in the spring, and the adults usually appear when the flower buds begin to form. The females lay eggs in the buds, and the larvae hatch and feed inside them. In the fall, the larvae drop to the ground to overwinter. If the buds or hips fall off prematurely, the larvae will crawl out and move into the soil. There is one generation a year.

Control

- Remove adult weevils, infested flower buds and hips by hand and destroy.
- Apply recommended insecticides when the adults are first noticed.

Rose gall wasps



Rose gall wasps

Host: rose

Damage

The damage from this insect causes galls to form on the stems or crowns of rose plants. The adults lay eggs in the stems, which causes the formation of swellings or galls. Stem galls can affect the branch growth above the gall, stressing the branch for nutrients. The appearance of the galls on the stems reduces the ornamental value of the plants. Gall formation on the crown of the plant may cause the stems to die.

Description

Several species of tiny non-stinging wasps cause gall formation on roses.

Life cycle

Insects develop in the galls. Adults emerge in the spring. There is one generation a year.

Control

- Prune out and destroy infested stems in the fall.
- Plants that develop galls on the crowns may need to be removed and discarded.
- Spraying is not recommended.

Rose slug



Rose slug damage

Host: rose

Damage

The larvae cause damage by skeletonizing the leaves, which means the upper leaf surface is chewed away, with only the veins and lower leaf surface remaining. The layer that remains is clear at first, before turning brown.

Description

The larvae are light green and slightly flattened with a brownish-orange head. They grow approximately 13 mm long. The adult is a small, shiny black sawfly.

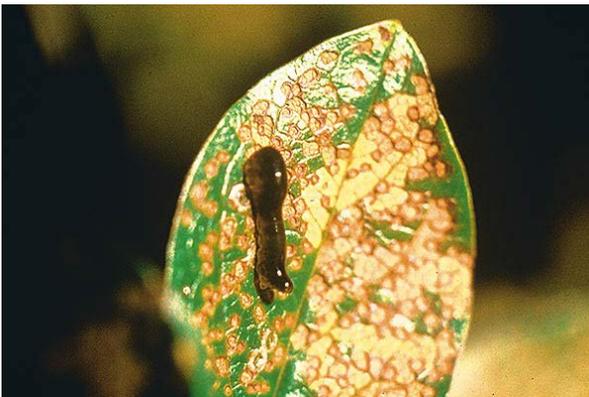
Life cycle

The insects overwinter in the soil as pre-pupae. In the spring they pupate, the adults emerge and lay eggs in the leaves. The larvae feed from mid-May through June. When fully grown, the larvae drop off the plant and enter the soil to overwinter. There is one generation a year.

Control

- Spray a strong jet of water to wash off the insects.
- Hand-pick the larvae and destroy.
- A preferred product for control is insecticidal soap.

Slugs



Slug

Photo credit: Manitoba Agriculture, Food and Rural Development

Hosts: various garden plants especially those with succulent foliage

Damage

Slugs feed on all plant parts including leaves, flowers, seeds pods and fruit. The pests will even go underground and feed on roots. They scrape the surface of the leaves, making irregularly shaped holes. Slugs feed mostly at night from two hours after sunset to two hours before sunrise. Slugs usually feed in a relatively small area, returning to the same spot to hide during the day, unless the spot dries out.

Description

Slugs are soft-bodied and depending on the species, are grey to greyish-brown to almost black. They are covered in a clear slime that protects their bodies from drying out. Slugs leave shiny slime trails as they move from one area to another. They grow up to 30 mm in length. Damp, shady locations provide the ideal condition for slugs.

Life Cycle

Slugs overwinter as clear round eggs under boards, debris or in the soil. A jelly-like substance protects the eggs from drying out. The eggs are very tolerant of severe winter temperatures and will lie dormant until there is sufficient moisture for hatching. Eggs hatch in late spring, and young slugs are usually observed in midsummer. Occasionally, they will overwinter as adults.

Control

- Attract natural predators like ground beetles, garter snakes and frogs by planting permanent walkways of clover, sod or mulch between the rows to provide refuge.
- Dispose of all residues where slugs can hide and lay eggs.
- Maintain a border of bare soil around the garden.
- Do not overwater the garden.
- Hand-pick slugs in the evening or early morning.
- Look for slugs on the plants or under vegetation near damaged plants.
- Place a floating row cover or fine screen to protect small plants and new shoots. Make sure no slugs are trapped under the cover.
- A barrier of crushed eggshells or diatomaceous earth around plants damages the body of slugs, leading to dehydration and death. Replace the diatomaceous earth regularly.
- Keep generous spacing between plants in the garden to allow good air circulation and reduce hiding spots for the slugs.
- Avoid mulching the soil with grass clippings or any damp material that the slugs could use as a hiding spot.
- Lay boards, grapefruit or melon rinds, cabbage leaves or cut raw potatoes on the soil. These objects will give the slugs a hiding place, so the pests can then be gathered every few days and killed.
- Shallow containers of beer or any yeasty-smelling fermented product can be dug into the soil, so the container edge is even with the soil surface. These products will attract slugs, which will fall into the containers and drown.
- Copper stripping or flashing can be used as a barrier that slugs will not cross.
- Spade the garden in the fall either to bury the eggs or to bring them to the surface over the winter.
- Apply slug baits or pellets according to label directions. Do not allow the product to come into contact with plants. Protect baits from pets and wildlife.
- Putting the bait under boards will keep the bait dry, and the slugs will be drawn to the area naturally. Replenish the bait once it has dissolved. Start control early in the season, although warm nights are best for baiting.

Spider mites



Spider mites

Hosts: herbaceous ornamentals

Damage

The first sign of spider mite damage is a white speckling on the upper leaf surface. Spider mites feed by sucking the contents of the cell out. As feeding progresses, leaves appear bleached or brown or yellow, depending on the plant's reaction to the feeding.

Webbing in combination with the leaf colour change is a definite indicator of high spider mite populations. Plants and fruits are stunted.

Description

Spider mites are small, less than 1 mm long. They are oval, yellowish or green except for two dark spots. Adults have eight legs, while the nymphs have six.

Life cycle

Females overwinter under leaf litter, tree bark or in other protected areas. They emerge in late spring and begin laying eggs. The optimum temperature for mite development is 30°C; at this temperature, a new generation of mites will be produced every 8 days. At 12°C, it can take 6 weeks for new generations to be produced. Generally, hot, dry weather increases populations.

Control

- Natural control is provided by heavy precipitation, accompanied by high winds and high humidity.
- Predatory mites can also offer some form of control. Predatory mite populations do not build as fast as spider mite populations.
- Monitor plants regularly for the presence of mites.
- Spray down garden plants with a forceful spray of water from the garden hose once a week or more often if conditions are favourable for mite population explosions.
- Preferred products for chemical control: insecticidal soap and pyrethrin.
- If infestations persist at damaging levels, apply a foliar spray of insecticide. Insecticides must be applied in such a way that the spray penetrates the webbing. A follow-up spray can be necessary two weeks after the first spray.

Thrips



Thrips

Hosts: gladiolus, rose, iris and lily

Damage

Both adults and nymphs injure plants by rasping or scraping the plant tissue and sucking the sap as it flows from the tissue. Thrips feed mainly on the leaves, flower buds and flowers. The damage causes a silvery, streaked appearance on the affected parts. Flower buds may fail to open, but if they do, the petals may be discoloured.

Sometimes entire gladioli spikes are deformed. On gladioli, the pests overwinter on the corms, which causes them to become rough and sticky.

Description

Adults are very small, slender, brownish-black insects with feather-like wings. The nymphs are wingless and yellowish. Thrips are only 1 to 2 mm long, so they are very difficult to see. They produce oily black droppings that can be seen on the affected tissue.

Life cycle

Most thrips overwinter as adults under trash or under bark. On gladioli, the adults overwinter on the corms that are brought indoors for storage. In the spring, the adults appear once the plants begin to grow. They insert their eggs in leaves or flowers.

After the eggs hatch, the larvae feed and go through several stages before pupating. The adults emerge, then mate and begin to lay eggs on the same plants, or they may fly to other locations. Under favourable weather conditions, several generations may occur in a season.

Control

- Control weeds as they may attract thrips to the area.
- Remove dead plant material from the garden.
- Preferred products for control are insecticidal soap and pyrethrins. Use at the first sign of damage.
- Store gladioli corms at 2 to 4 °C for 4 months to kill thrips. Alternatively, dust corms with an insecticide before storing.

Whiteflies



Whiteflies

Hosts: annuals and perennials, especially coleus, fuchsia, hollyhock and impatiens

Damage

Both adults and nymphs feed on the leaves by sucking the sap, which causes the leaves to turn yellow and die. Severely infested plants may wilt. Leaves become coated with sticky honeydew on which a black sooty mould often grows.

Description

Adult whiteflies are small (1 to 2 mm), delicate insects covered with a white powdery wax. They can be found on either side of the leaves. They resemble tiny moths and swarm when plants are disturbed. Nymphs are whitish, flat, oval spots that are found on the undersides of leaves.

Life cycle

Whiteflies only overwinter in greenhouses and are introduced into the garden on bedding plants. They lay eggs on the undersides of the leaves. After hatching, small white “crawlers” move around on the leaves, then after the first moult they lose their legs. Nymphs are fully developed in two weeks, and the complete life cycle takes about four weeks. There may be several generations in a season.

Control

- Encourage natural predators including lacewings and ladybeetles.
- Preferred products for control are insecticidal soap and pyrethrins.
- Other recommended insecticides may be used, but they may kill natural predators.

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