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Fruit Tips

Small Fruit Insect Pests and their Control: A Homeowner's Perspective

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The homeowner interested in growing small fruits—primarily strawberries, raspberries and blackberries—needs to make several considerations before planting. These considerations will prove helpful even if the plants are already in the ground.

- Properly prepare the ground before planting** to eliminate some pest insects, especially white grubs. This usually involves turning over the soil several times throughout the spring, summer and fall. Plant the following spring.
- Plant disease- and insect-free plants.** Reputable nurseries sell and guarantee pest-free material. Some plants, such as strawberries, can be treated with a hot water bath to eliminate some insect pests. Consult with your supplier regarding this treatment. Many times plants obtained from neighbors are not pest free.
- Keep plant debris and weeds out** of the fruit patch and other nearby planted areas to eliminate the habitat of many pest insects.
- Monitor insects in the fruit patch.** Keep an eye on your plants. Learn to recognize pest insects and their damage, as well as beneficial insects, such as ladybird beetles, lacewings and praying mantids.
- Control insects with cultural practices and mechanical killing**—e.g., squashing beetles and brushing off aphids. This activity can be very effective and avoids possible problems caused by other control methods.
- Renovate plantings every two years.** New plantings enhance pest control. Healthy, vigorous plants are more tolerant of insect damage than are old, declining plants. For example, strawberries generally are good for three to four years—then you need to renovate the patch for good weed and pest control.
- Learn to tolerate some insect damage,** especially from foliage feeders. Even fruit feeders are seldom

numerous enough to cause extensive damage in a home fruit patch. Slightly damaged or misshapen fruit can be just as tasty as the perfect berry and are unrecognizable in jams, jellies or shortcakes.

- Resort to chemical insecticides as a last line of defense.** You may need them to protect your crop if you have a heavy insect infestation. Remember, insecticides are poisonous to insects and other organisms, including birds, pets and humans. Exercise extreme care in their use and follow label instructions carefully. The philosophy “If a little is good, more is better” has no place here.

Strawberry Pests

Fruit Feeders

Strawberry weevil or strawberry clipper (*Anthonomus signatus* [Say]). These stout beetles are small, about $\frac{1}{10}$ inch long, and brownish with two black spots on the back. Adults overwinter (hibernate) in the ground debris of woodlands and hedges and possibly home gardens and planters. They become active in early spring when they begin to seek out strawberry plants on which to reproduce. Females lay their eggs in the flower buds and then girdle, or clip, the stems behind the buds, causing the buds to fall or dangle by a few shreds of stem tissue. Larvae—immature beetles that hatch from the eggs and look like small worms—feed and enter the pupal stage of development inside the buds.

The adults prevent fruit formation by severing the stems of the fruit buds. If the injured bud does not fall and fruit set does occur, the resultant fruit will be malformed. The adult also eats holes in the petals and other parts of the blossom, but this does not injure fruit.

Begin looking for this pest in early spring when plants are budding. Small numbers of insects may be

mechanically destroyed. If this pest does enter your strawberry patch, some damage should be tolerated. If heavy infestations occur, treat with malathion* or Sevin* as a last resort. Follow label instructions.

Strawberry sap beetle (*Stelidota geminata* [Say]). This beetle is small, about 1/8 inch long, and brownish. It overwinters in the ground debris of woodlands and possibly in gardens and planters. In mid-June, beetles migrate to strawberry plants and feed on the fruit. Females lay eggs near the fruit. The larvae enter the fruit through the adults' feeding holes and further damage the fruit. The feeding areas of the fruit are soft and subject to rotting fungi. Larvae-infested fruit may be destroyed.

These beetles prefer fruit that is touching the ground, so keeping the fruit up or on a mulch may offer some control. Keeping the patch free of debris and early, clean picking also offer protection from damage. Keeping other planted areas around your home free of debris will also help. Mechanical destruction will help if you have small numbers of insects, but you will need to tolerate some damage. There is no known effective insecticide control for this insect, so following good cultural practices is important in protecting your strawberries.

Tarnished plant bug or lygus bug (*Lygus lineolaris*). This insect is very widespread and may be the dominant pest of a home strawberry patch. The adult is rather flat, brownish with yellow and black markings and about 1/4 inch long. Adults overwinter among various herbaceous plants in protected places. They may even overwinter in strawberry patches, especially weedy patches. The nymphs—immature plant bugs—are green and resemble aphids. Both adults and nymphs are very active.

Feeding by these insects causes hard, dry or dead areas on the fruit. Small wounds result in misshapen berries. Occasionally berries cease to grow, causing greenish-brown “buttons” to form.

You can control tarnished plant bugs somewhat by keeping the patch free of weeds and by isolating the patch from protected places where the insects may overwinter. Keeping other planted areas free of weeds will also offer some control. This insect is not affected by many insecticides. Some damage should be tolerated.

Foliage Feeders

Spittlebugs (*Philaenus spumarius*). These insects overwinter as eggs attached to stems and leaves of strawberry and other plants. The eggs hatch from late March through May, and the nymphs—immature

*Insecticides most commonly available for home and garden use.

spittlebugs—cover themselves with a frothy secretion resembling human spittle. The adults are brown or mottled gray and about 1/4 inch long.

Spittlebug nymphs feed on new growth, sucking out plant juices. They may weaken growth and stunt the berries. However, these insects rarely cause damage. They are mostly a nuisance because of the spittle masses.

Strawberry leafroller (*Ancylis comptana fragariae*). The adult is a moth about 1/2 inch long and rusty red with brown and white markings. The larva—immature leafroller—is about 1/2 inch long and ranges from pale green to gray brown. Larvae form pupation sites by rolling leaves along the midribs and tying them together with silk, giving the leaves a folded appearance. The larvae feed on the leaf surfaces and fold them over, sometimes causing withering of leaves and fruit. Because they do not feed directly on the fruit, however, it is usually not recommended for homeowners to control them.

Flea beetles (*Epitrix* sp.). These insects are very small—about 1/16 inch long—jumping beetles that are a shiny, greenish metallic bronze. The adults overwinter in ground litter, come out in the spring and lay eggs in the foliage. The adults and larvae feed on strawberry leaves and leave them riddled with small holes. These insects rarely do significant damage. Keeping the patch free from litter, debris and weeds usually ensures control of this pest.

Aphids and Mites. These insects rarely significantly damage strawberry plants, because natural enemies usually keep their numbers down. The use of insecticides has caused outbreaks of these potential pests by killing their natural enemies. Therefore, use caution when using an insecticide in your strawberry patch. Aphids—and mites, if they can be seen—may be mechanically controlled by simply brushing them from the leaf surfaces.

Root Feeders

White grubs (*Phyllophaga* sp.). Grubs are the larvae—immature forms—of the June beetle. They are C-shaped insects about 1 inch long that live in the soil and feed on the roots of various plants, including grasses. These insects may be the most important pest to watch for before planting a strawberry patch.

White grubs feed on the roots of strawberry plants and can weaken or kill them, especially during the second or third year of growth. You should control this insect before planting. If the area to be planted is a lawn area, work the ground for an entire spring,

summer and fall to expose the grubs to predators, drying and freezing. Plant the following spring. In patches where this insect is already a pest, remove the strawberries and rotate with another crop. This usually brings white grubs under control.

Strawberry root weevil (*Brachyrhinus ovatus*). The adults are black, stout beetles about ¼ inch long. The larvae are about the same size but white, with tan heads, thick bodies and no legs. They live in the soil and emerge, after pupation, between late May and September. Females lay their eggs in the soil near strawberry plants in spring and early summer. After the eggs hatch, the small larvae begin feeding on the roots. Adults feed on the strawberry leaves, but the damage is insignificant. Larvae, however, can seriously damage or kill plants by feeding on the roots and crowns.

This insect is not a serious problem in Michigan but may be transported to your strawberry patch on plants mail-ordered from other parts of the country. Always find out whether nurseries are supplying you with disease- and insect pest-free plants. Reputable companies guarantee their merchandise to be pest free. Suspected plants may be treated in a hot water bath. Check with your supplier before attempting this treatment.

Strawberry rootworm (*Paria fragariae*). These insects are small, dark brown or black beetles about ⅛ inch long. The larvae are small, white, brown-spotted grubs. Adults overwinter in ground litter and emerge in the spring. Females lay eggs in the soil near strawberry plants. Newly hatched larvae burrow into the soil near strawberry plants, where they develop and emerge as adults in the summer.

Adults feed on strawberry leaves and larvae feed on roots, but this insect rarely does significant damage. Keeping the patch and the surrounding areas free of plant litter and planting pest-free stock should afford good control of this insect.

Bramble Pests

The strawberry sap beetle, tarnished plant bug and white grub are also pests of raspberries, blackberries and currants. Refer to the discussion under strawberry pests for information on these insects.

Fruit Feeders

Raspberry fruitworm (*Byturus unicolor*). These

beetles are small, about ⅓ inch long, and pale red. They overwinter as adults in ground debris, coming out in May to feed on the leaves of bramble fruits. Females lay their eggs on blossom stems and, after hatching, the larvae enter the buds to feed.

The adults skeletonize the leaves when feeding, while the larvae prevent fruit formation or damage fruit by feeding on the buds. These insects come out at infrequent intervals. Keeping planted areas free of weeds and plant debris should offer control.

Stem Feeders

Raspberry crown borer (*Bembecia marginata*). This moth resembles a wasp with yellow bands on its body and clear wings. The adults appear in August and lay eggs on the undersides of leaves. After hatching, the larvae crawl to the base of the canes to overwinter. In the spring, the larvae bore into the canes to feed.

Larvae damage new buds and canes arising from the base of the plant. Often the canes are easily broken because of their damage. Weakened canes should be removed from the plant and the insects destroyed. This technique should effectively control the moth, especially for the following season.

Raspberry cane borer (*Oberea bimaculata*). This slender beetle overwinters as an adult. It is about ½ inch long and black with a yellow thorax. Beetles appear in June, when the female girdles raspberry tips and lays eggs in the pith of the stem. The larvae bore down into the cane to feed. Damaged canes appear withered and drooped, but this insect rarely causes significant damage. Removing the damaged canes should control the pest.

Foliage Feeders

Raspberry sawfly (*Monophadnoides geniculatus*). These insects do damage as larvae, which are pale green, spiny, many-legged worms about ½ inch long. Sawfly larvae skeletonize the leaves of bramble fruits and may strip the plant of foliage. In small numbers, mechanical killing should offer adequate control. If heavy infestations occur, malathion or Sevin will control this insect.

Aphids and mites. As with strawberries, these insects do little damage because they are usually controlled by natural enemies. Insecticides may cause outbreaks of these potential pests by killing their natural enemies. Aphids may spread plant diseases, but mechanical control—brushing them off—will help stop this spread. Remove diseased plants.

TABLE 1. Strawberry insect pests and some recommended control practices.

Insect pest	Control
Strawberry weevil <i>Anthonomus signatus</i> (Say)	Mechanically destroy; treat with malathion or Sevin as a last resort.
Strawberry sap beetle <i>Stelidota geminata</i> (Say)	Keep fruit off the ground; keep patch free of debris; pick early, if possible; mechanically destroy; no known effective insecticide.
Tarnished plant bug <i>Lygus lineolaris</i> (P. DeBauv.)	Keep patch free of weeds; isolate patch from protected areas where bugs overwinter; keep adjacent areas free of weeds; not affected by many insecticides.
Spittlebug <i>Philaenus spumarius</i> (L.)	Squeeze the bugs in the spittle between your fingers to destroy them.
Strawberry leafroller <i>Ancylis comptana fragariae</i> (W. & R.)	No control necessary because they are seldom present in high enough numbers to do any damage (see spittlebug control).
Flea beetles <i>Epitrix</i> sp.	Keep patch free from litter and weeds.
Aphids and mites	Rarely damage strawberries; brush from leaves if seen (sometimes a garden hose-directed water spray is sufficient to destroy them); use pesticides judiciously to avoid killing natural enemies.
White grubs <i>Phyllophaga</i> sp.	Work the planting area for an entire season before planting; if strawberries are already in, remove them and plant another crop for a season.
Strawberry root weevil <i>Brachyrhinus ovatus</i> (L.)	Not a problem in Michigan, so be sure your nursery stock is pest free; treat plants suspected of harboring weevils with a hot water bath.
Strawberry rootworm <i>Paria fragariae</i> (Wilcox)	Keep patch and surrounding areas free of plant litter; plant pest-free stock.

TABLE 2. Bramble fruit insect pests and some recommended control practices.

Insect pest	Control
Raspberry fruitworm <i>Byturus unicolor</i> (Barben)	Keep planted areas free of weeds and plant debris.
Raspberry crown borer <i>Bembecia marginata</i> (Harris)	Remove and burn weakened canes that contain the larvae.
Raspberry sawfly <i>Monophadnoides geniculatus</i> (Hartig)	Mechanically destroy (pinch with fingers, spray with a garden hose); treat heavy infestations with malathion or Sevin.
Raspberry cane borer <i>Oberea bimaculata</i> (Olivier)	Rarely causes damage; remove and burn damaged canes that contain the larvae.
Aphids and mites	Brush from leaves with fingers, brush or garden hose; use pesticides judiciously to avoid killing their natural enemies.

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