

Insect/Disease Information

VEGETABLES

Colorado Potato Beetle



Colorado potato beetle adults are starting to emerge again in northern Utah. Egg-laying of the second generation larvae (the most harmful stage) will begin soon, so watch the undersides of potato leaves where a single female can lay as many as 500 eggs. Eggs will be laid during the next several weeks, and hatch in 4-10 days.

Feeding damage appears as randomly sized holes that usually start around the margins. Eventually the entire leaf blade is eaten, leaving a skeleton of veins and petioles, and in severe cases, defoliation of the plant. As a result, tubers are small and misshapen, and plants are stunted.

Colorado potato beetles overwinter as pupae in the soil and emerge in spring around May. Adults will feed and lay eggs on a variety of Solanaceous hosts such as potato, nightshade, tomato, and pepper. Larvae pupate in the soil and emerge as adults in late July and early August to lay eggs for the second generation.

Treatment: (**commercial**) acetamiprid (Assail), deltamethrin (Battalion), indoxacarb (Avaunt), spinosad (Entrust, Success), thiamethoxam (Actara); (**residential**) insecticidal soap (Concern), spinosad, neem oil, pyrethrin (Ace Flower and Vegetable Insect Spray, Bonide Liquid Rotenone), permethrin (Bonide Eight), carbaryl

Potato Leafhopper



Mary Benson, USDA; Property of the Smithsonian Institution

Damage from potato leafhopper is visible now. This leafhopper does not overwinter in northern Utah, but is carried up with storms and wind currents, starting in late May. There are several overlapping generations per year, and populations are at their peak now. Look for pale leaf veins and curling leaves. Severe feeding will cause yellow stippling on the leaves and necrosis of the leaf tips, called "hopper burn." Heavy feeding will also cause stunted growth, and undersized potatoes. Potato leafhoppers feed on many other fruits and vegetables such as eggplant, snap beans, and strawberries.

Look under the leaves for green flying insects or for the pale, flightless nymphs.

Treatment: (**commercial**) acetamiprid (Assail), beta-cyfluthrin (Baythroid), imidacloprid (Provado), thiamethoxam (Actara), permethrin (Ambush, Pounce); (**residential**) permethrin (Ace Multi-Purpose, Basic Solutions, Bonide Eight), beta-cyfluthrin (Bayer Power Force Multi-Insect), pyrethrin (Lilly Miller), carbaryl, malathion

Insect/Disease Activity, continued

Zucchini Aborting Fruit



If you have noticed that some of your zucchini fruits are not developing or are shriveling, the problem may be due to unsuccessful pollination or lack of male flowers. Female flowers have an emergent zucchini fruit that will not develop if the flower is not pollinated. When the plants first start to flower, they produce abundant male flowers so that there is enough pollen for the later female flowers. Eventually, there are more female than male flowers. If you are noticing a lot of shriveled fruit and flowers, you might want to consider hand-pollination. Male flowers occur higher on the plant than the females, and are slightly smaller. They have a single stamen that is loaded with pollen. Female flowers are near the base of the plant (on bush varieties), have the emergent zucchini, and have several pistils. Find a male flower, load up a small paintbrush with pollen, and transfer the grains to the pistils of all the female flowers. Voila! You'll have abundant fruit.

To help promote natural pollination, consider planting more nectar sources for native pollinators. The summer 2007 issue of Utah Pests News ([click here](#)) has a table of plants attractive to native bees and other pollinators. Some, such as mint, cilantro, and other flowering herbs, can be easily added to the vegetable garden. In addition, do not overhead irrigate in the morning. Male flowers tend to open early, and close by late morning, so this may also prevent successful pollination.

Tomato Hornworm



Whitney Cranshaw, CSU

This is the time of year when damage from tomato hornworm is easily spotted; mostly in residential gardens. Because of their size, a single larva can cause quite a bit of damage, primarily to the foliage, but sometimes to the fruit. They also feed on peppers, eggplants, and potatoes. Search your leaves now for damage, frass or larvae. The green larvae blend easily with the foliage, so look carefully. They will often spend time in the interior plant for shade during the day, and may move to the terminals at dawn or dusk.

The tomato hornworm overwinters as a pupa and emerges in early summer as a large moth with a stout abdomen. The adult is called the five-spotted hawk moth, but many of us may refer to it a hummingbird moth. They can be found hovering like a hummingbird at flowers with long corollas, extracting nectar.

They lay single eggs in random locations on leaves, and hatching begins about 7 days later. Larvae feed for 3-4 weeks reaching about four inches in length when full grown. They are easy to identify by the "horn" at the top of the tail end. They eventually burrow 3-4 inches into the soil to pupate. There are one to two generations per year.

If you are lucky, you may spot a hornworm larva that has been parasitized. You'll see white columns emerging from the caterpillar body. These are the cocoons of a parasitic Braconid wasp larvae that fed upon the inside of the caterpillar. Leave these hornworms alone as this wasp is an important predator, and the emerging adults will lay eggs inside other hornworms.

Treatment: Hand-picking is the best option for hornworm control, but if necessary, use products that preserve other natural enemies: Bt (*Bacillus thuringiensis*; Dipel, Xentari), indoxacarb (Avaunt), tebufenozide (Confirm), or spinosad (Success, Entrust, Green Light Lawn and Garden, Ferti-Lome Borer, Bagworm, Leafminer & Tent Caterpillar Spray).

Insect/Disease Activity, continued

SMALL FRUITS

Grape Powdery Mildew

Powdery mildew on grapes is caused by the fungus *Erysiphe necator*. It overwinters either on the buds or bark and in Utah, is spread primarily by overhead irrigation early in the season. Grape berries as well as leaves are susceptible to infection. Infections occur on the lower and upper portion of the leaves, and appear powdery white in color at first, and flecked with black dots (spore-producing bodies) later in the



Penn State Dept. of Plant Pathology

season. Infected berries may appear russeted, and infections that occurred early in the season will cause them to split. To prevent spread, suckers should be removed, and avoid overfertilizing, which will prevent an excess of succulent growth. If necessary, preventative sprays of fungicide may need to be applied. The best timing is to start in spring with 2-3 applications. Options include potassium bicarbonate (Kaligreen, Bonide, Armicarb), Abound, Flint, Pristine, Quintec, JMS Stylet Oil (do not use above 90 degrees F), Rally, Sovran, sulfur (do not use above 85 degrees F).

Precautionary Statement: Utah State University Extension and its employees are not responsible for the use, misuse, or damage caused by application or misapplication of products or information mentioned in this document. All pesticides are labeled with ingredients, instructions, and risks. The pesticide applicator is legally responsible for proper use. USU makes no endorsement of the products listed herein.

Small Fruits & Vegetables IPM Advisory

is published weekly by Utah State University Extension

Editor: Marion Murray, marion.murray@usu.edu

[click here](#) for archived advisories