

Controlling Green Peach Aphids on Potatoes

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Green peach aphids are one of the most common aphids in the U.S. They are very general feeders on horticultural and agronomic crops and can cause extensive damage to potatoes in Oregon by spreading leaf roll virus throughout fields.

DESCRIPTION

Aphids are very small insects with mouthparts designed for sucking sap from plants. Green peach aphids generally comprise 90 percent or more of populations found on potatoes. Much practice is needed to recognize them from other aphids. A good hand magnifying lens or microscope is necessary.



Winged female bodies are a pale green color with an irregular-shaped black patch on the upper surface (abdomen). The feet, head, antennae, and area between the wings (thorax) are also black.



Wingless aphids vary in size depending on the stage of development they are in at the time. They are most commonly yellowish to pale green in color.

LIFE CYCLE

In the cold climates of Oregon the green peach aphid overwinters as tiny black eggs on peach trees primarily, but has also been found at times on wild plum, apricot, cherry, choke cherry, and sand plum. During intermediate winters, females lay eggs on trees but some may remain on hardy herbaceous plants. Areas having warm winters have aphids living year-round on many annual plants.

During early spring, usually March in Oregon, females hatch from eggs. Usually two generations of wingless females develop prior to the presence of the winged generation. About May 1 winged females migrate through air currents to potatoes or sugar beets, if present, or such weeds as wild mustards, nightshades, peppergrass, etc. Many aphids feed on volunteer potatoes in the area and may quickly obtain leaf roll virus. From late June through August large numbers of winged females are produced and fly to potatoes, other crops, and weeds.

Throughout the spring and summer no males are present. All winged and wingless females produce living young without mating. Females fly back to peach trees in the fall, usually October, and produce wingless females at the overwintering site. Winged males are produced in fields and on weeds then fly to the females on trees for mating. Mated females lay small, shiny, black eggs on twigs, which can survive the coldest winters. Unless orchardists spray, the trees serve as a host for spring aphid populations each year.

DAMAGE

The transmission of leaf roll virus from infected to healthy plants is a very serious problem in potatoes. Aphids also transmit the yellows virus of

sugar beets. Very high populations of aphids rarely cause plant damage by direct feeding.

Most virus spread occurs during the period winged aphids are dispersing. At that time, tubers are formed and actively growing. Little virus is spread prior to tuber formation or when the tubers are nearing maturity since growth is slowing down.

Virus symptoms are expressed on plant foliage and if inoculation occurs early enough in the season, susceptible varieties such as the Russet Burbank (Netted Gem) contain net necrosis in tubers.

Usually foliar symptoms do not develop on plants infected after mid-August; however, net necrosis will continue to develop in tubers placed in storage for any length of time.

SAMPLING

Field margins generally contain aphids prior to finding them in centers. Examine fields especially on the windward side, near peach trees, volunteer potatoes, and cull piles by pulling 25 lower leaves from several spots in the field.

Aphids migrating into fields land on tops of plants but generally move down to the lower leaves before settling to feed and produce young aphids. Pull the leaves from the lower two-thirds of the plant. Avoid older yellow leaves plastered to the ground and newer, smaller leaves.

Examine the underside of the leaf, including all the leaflets. Aphids can usually be seen with the eye; however, a hand lens or strong reading glass may speed up the inspection. Look especially close along the mid-veins.

Foliar treatments on seed potatoes should start when the first wingless aphid is observed and when 5 percent of leaves contain at least one wingless aphid in commercial fields.

APHID TRAPPING

Traps can be a simple effective way of determining migrations of green peach aphids into potato fields. Trapping *must be* supplemented with field examinations, however.

Usually winged females will be captured in traps before they are found in the field. Traps are not foolproof and are only one tool to be used for determining field infestation.

Traps

A five-gallon can with the top cut off and the edges carefully smoothed can be used. Thoroughly

clean the can with a good detergent to remove oil or other contents. Paint the inside with two coats of deep yellow enamel paint. Whitish-yellow paints are not as attractive. Paint the outside any color except red.

Yellow plastic dishpans or buckets have also been used successfully.

Trap placement

Place two to four traps at separate locations on a dull background such as a bare piece of land or the highest part of a ditch bank. Avoid areas where there is green sod or weeds that can grow up around and hide the trap. It is good to locate the traps where there is an access to water so traps can be easily cleaned and refilled with a minimum of trouble.

Trap care

Fill each trap to within one inch of the top with water as clean and clear as possible. If you fill them too full, the trapped aphids will be blown out by the wind.

Check the traps twice each week at approximately the same time of day and on predetermined days. Change the water and clean the traps after each checking to keep them attractive.

Trap catches

Many kinds of winged aphids will be captured in the traps and will float on the water surface. Much practice may be required to recognize the green peach aphid from the others.

Remove the aphids from the surface with a camel hair brush and float them in a saucer for examination. Once the form and color has been recognized it will be easy to identify them in the trap. Use a good reading glass or hand lens to magnify the aphids.

INTERPRETATION OF RESULTS

If aphid traps are operated properly they should, along with plant examinations, indicate the time and abundance of aphids moving into the potato field.

If aphids are not controlled, when five or more are caught per trap in a week and weather is ideal, the propagation of wingless forms is rapid and foliar damage may appear within two to three weeks following infestation of a field by winged forms. When aphid control is delayed at this stage, it will be very difficult to kill aphids on the lower portion of plants throughout the season due to the inability to apply the insecticide under the canopy the plants form.

If aphids are controlled on the bottoms early, the possibility of infestations there later are greatly reduced.

CONTROL THROUGH MANAGEMENT

1. Plant leaf roll virus free seed.
2. Rotate potatoes with other crops.
3. Plant as early as possible to get crop far along prior to aphid migration period.
4. Rogue fields to remove both the infected plant and seed piece prior to aphid infestations.
5. Plant late potatoes as far away from early potatoes as possible to prevent aphids from flying short distances to infest new fields.
6. Control weeds such as wild mustards, nightshades, lambsquarter, pigweed, and wild lettuce both in and around fields.
7. Harvest and market as early as possible, especially if leaf roll is wide spread since net necrosis continues to develop in tubers in the field and in storage.
8. Destroy cull piles, as they may serve as a source of virus if allowed to sprout in spring.
9. Plow in the spring to reduce numbers of volunteer plants.

CHEMICAL CONTROL BY SOIL TREATMENT

Insecticides kill aphids, they do not control leaf roll virus. This is just one tool that will help protect potatoes from leaf roll damage.

If an insecticide will kill 90 percent of the population, it is easy to see that a better job will be done when fewer aphids are present than when gigantic numbers are being treated.

For early potatoes, planted February through April, apply one of the following granular insecticides in narrow bands four to five inches from both sides of the seed row and about even with seed piece when 75 percent of the plants have emerged.

To control Colorado Potato Beetle Larvae and Aphids, use Di-Syston 15G—20 lbs./acre, or Temik 15G—20 lbs./acre.

For later potatoes, planted after May, apply one of the following granular insecticides, at planting, in the seed row or in narrow bands two to four inches from both sides of seed row and about even with seed piece.

To control Colorado Potato Beetle Larvae and Aphids, use Di-Syston 15G—20 lbs./acre, or Temik 15G—20 lbs./acre.

CHEMICAL CONTROL BY FOLIAR TREATMENTS

Depending on the season and length of systemic control, foliar sprays should be started around June 15 to prevent early season virus spread and large numbers of aphids building up in the field. The combination of traps and field inspections or field inspections alone should be made to determine the need for a spray.

For Colorado Potato Beetle Larvae and Aphid control, use Monitor 4L—1 qt./acre.

CAUTIONS AND RESTRICTIONS

1. Do not mix insecticide granules with granular fertilizer as settling out will occur, causing erratic applications and insect control.
2. Irrigate immediately after side-dress applications on early plantings and when plants emerge on later plantings.
3. Di-Syston granules—do not make more than two applications/season nor apply within 75 days of harvest.
4. Temik granules—do not make more than one application/crop nor harvest within 90 days of an application at planting nor 50 days of post emergence application. Do not apply Temik post-emergence on late-planted potatoes (planted after May 1).
5. Inspect fields frequently to determine need for additional sprays. Monitor *usually* performs well for 14 to 21 days.
6. Do not apply Monitor within 14 days of harvest.
7. Aphid control should be continued until at least September 15 or until all vines and stems are completely killed.
8. All aerial spray applications for control of green peach and other aphids should be applied in 10 gallons of solution/acre.



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