

# VEGETABLE CROPS

## INSECTS OF POTATOES Green Peach Aphid

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### green peach aphid

*Myzus persicae* (Sulzer)

#### INTRODUCTION

The green peach aphid (GPA) is distributed worldwide and has a host range of over 400 species of plants. In the United States, green peach aphid is a serious pest of vegetables and potatoes. Economic damage results from direct removal of plant nutrients or through transmission of viruses causing plant disease. The green peach aphid is a vector of over 100 diseases in important crops including beans, citrus, crucifers, cucurbits, potato, tomato, sugar beet, and sugar cane.

#### ADULTS

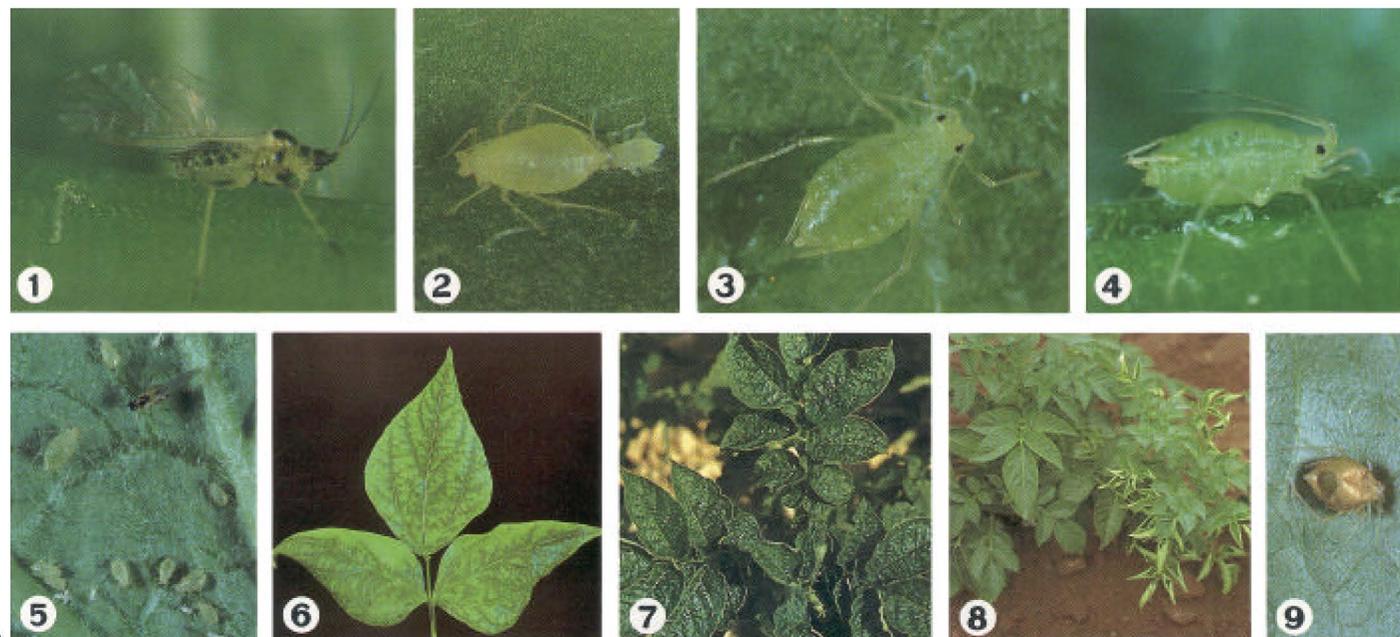
Green peach aphid adults are approximately 1/14 inch long (2-3mm) and vary from colorless to light blue-green or pinkish-red. The body of the aphid is widest at the midsection of its abdomen, giving it an almond shaped appearance. Adult green peach aphids may be winged (Fig. 1) or wingless. In the spring, after developing on primary host species of *Prunus*, female

adult aphids (stem mothers) are wingless and reproduce by giving birth to living young (Fig. 2).

Spring populations of green peach aphid can also originate from sources other than the primary overwintering hosts. Significant reservoirs of aphids exist in many commercial greenhouses. In addition, aphid-infested bedding plants (ornamentals and vegetables) often serve as a source of infestations when transplanted to gardens. Winged aphids that disperse from more southerly areas by wind are an additional source of spring infestations. Green peach aphids have been recorded at altitudes over 20,000 feet and they can probably move 200 miles or more with turbulent winds that often accompany storm fronts.

In late spring, the offspring of stem mothers mature, develop wings, and migrate from the primary host to secondary host plants such as nightshade, wild mustards, thistle, chickweed, clover, and numerous early season vegetable crops. A number of overlapping generations are produced during this period. Beginning in mid-July, winged migrants are produced and disperse to late summer hosts on which large colonies may develop if not controlled. In response to shorter days during fall, females give birth to a generation of winged females and for the first time all season, males. After mating, the winged females produce eggs that give rise to next spring's stem mothers. Females may produce as many as 75 young during their reproductive period; maximum reproduction occurs between 55 F (13 C) and 61 F (16 C). At 68 F (20 C) the average length of the reproductive period is 20 days.

Egg	Actual Size		Adult	Winged adult
	Nymphs			
	1st	5th		



## EGGS

In the Northeast, green peach aphid overwinters in the egg stage. The eggs are laid only in the fall on the primary host species of *Prunus*, e.g., peach, plum, cherry, chokecherry, and possibly others. The eggs are very minute (less than 1mm), black, and shiny.

## NYMPHS

The immature green peach aphid is called a nymph and passes through four developmental stages (instars), followed by a pre-reproductive stage before becoming a reproductive adult. The nymphs are similar in both color and body shape to the adults, but do not have wings (Figs. 3,4). Since many adults in early spring do not have wings, a mature nymph may be confused with a wingless adult. Later in the season, immature forms can be found with winged adults (Fig. 5).

The immature green peach aphid requires approximately eight days to pass through the four nymphal instars at a temperature of 68 F (20 C). The total thermal unit requirements for development of these instars is approximately 237 F (114 C) at a developmental threshold of 39 F (4 C). The average life span of a green peach aphid is 41 days at 68 F or 395 F (202 C) thermal units. The average time period for one generation is nine days or 277 F (136 C) thermal units at 68 F.

## DAMAGE

Injury from feeding by green peach aphid is often subtle and seldom reflected by obvious changes in plant growth or growth form. Frequently, growers become aware of a damaging aphid infestation because of premature death or early senescence of their crop. By this time, damage in the form of reduced yield is irreversible. Damage resulting from the transmission of plant-infecting viruses is usually much more dramatic than direct feeding injury, which varies with the specific crop and disease. Snap beans are subject to numerous aphid transmitted viruses of which common mosaic virus (Fig. 6) is the most common. Green peach aphids also transmit many viruses to potatoes. Figures 7 and 8 are examples of rugose and potato leafroll viruses, respectively.

## MONITORING

Green Peach Aphid populations can be monitored by using a combination of methods. Dispersal flights of winged adults can be monitored by using yellow sticky boards or yellow water pan traps placed along the borders of the field. Colonization potential and population levels within the crop are best monitored by visual inspection of foliage. This is done by examining the undersides of leaves of potatoes and other vegetable hosts for populations of both winged and wingless adults, in addition to immature forms. Green peach aphids are more apt to be found on the lower, yellowing, senescing leaves of potatoes, thus, this area should be searched first. Care should be taken to properly identify green peach aphids since other similar appearing aphids which are less harmful may also

be present. Consult your local extension recommendations for current treatment thresholds.

## CONTROL

Effective control of green peach aphid requires that growers be aware of both the potential and actual infestation of their crop. Winged aphids pose the threat of potential infestation.

While chemical insecticides provide the most immediate and consistent degree of control, they should be used with discretion and integrated with other control measures whenever possible. A list of special considerations follows:

1. Avoid repeated use of certain broad-spectrum insecticides that lead to resurgence of GPA populations by removing predators and parasites. Parasitized aphids are easily distinguished by their brown mummified form from which an adult parasitic wasp emerges (Fig. 9).
2. Whenever possible, use insecticides that are selectively active against GPA.
3. Maintain effective control of weeds in and on the margins of fields; cruciferous weeds and pigweed often serve as alternate hosts for GPA.
4. Plant seed certified to be reasonably free of viruses transmitted by the green peach aphid.
5. Consider use of reflective mulches or mineral oil sprays for virus control.
6. Eliminate volunteer plants and rogue diseased plants; these often attract early migrant aphids or serve as reservoirs of disease inoculum.
7. Avoid planting fields immediately downwind of any barrier; hedgerows, woodlots, or hilly terrain reduce wind velocity and increase the number of dispersing aphids falling into fields downwind.
8. Consider breaking up large fields with strips of grain crops. Grain barriers tend to "filter out" dispersing winged forms and also restrict the movement of wingless forms.
9. Harvest the crop as early as possible to minimize vulnerability to late season GPA colonization and to infection by viruses.

Consult your local recommendations to determine the need, timing, and most effective insecticides for control of GPA in your area.

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