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Green Peach Aphid on Vegetables

Homoptera: Aphididae, *Myzus persicae*

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Fig. 1. Green peach aphid nymphs and wingless adults (Whitney Cranshaw, Colorado State University, Bugwood.org)

Distribution. The green peach aphid can be found worldwide and is considered a pest of numerous vegetable crops throughout the Commonwealth of Virginia.

Description. *Eggs*. Aphid eggs are yellow or green in color turning black as they develop. They are elliptical (0.02 in. long and 0.01 in. wide). Eggs are usually laid in crevices or near buds. *Nymphs*. Aphid nymphs are greenish turning yellowish as they grow and closely resemble adults (Fig. 1). Nymphs that develop into winged adults may be pinkish. *Adults*. There are multiple forms of adults. The wingless adult (0.07-0.08 in.) is yellowish or greenish with possible medial and lateral green stripes present. Their appendages are pale. The winged adult (0.07 - 0.08 in.) has a black head and thorax, yellowish green abdomen and large dark patch dorsally (Fig. 2). The egg laying form, oviparae female, is pinkish (0.06-0.08 in.).

Fig 2. Winged adult (alate) **(**Scott Bauer, USDA Agricultural Research Service, Bugwood.org**)**

Fig 3. Green peach aphid infestation on broccoli

Plants Attacked. The green peach aphid will attack plants in the field as well as in greenhouses. Their primary overwintering host is *Prunus* sp. (peach trees and their hybrids). However, in the summer, they leave their primary host to feed on a wide range of plants including many ornamentals, weeds, and agronomic crops. They can be found on most vegetable crops, but in Virginia, they are particularly a pest problem on pepper, spinach, crucifers (cabbage, broccoli, kale, etc…), potato, and cucurbits (Fig. 3).

Damage. Aphids feed on young plant tissues causing water stress, wilting and reduced growth rates. Prolonged infestation may reduce yields. The major concern, however, is the transmission of viruses to the plants through the adults and nymphs. Over 100 viruses can be transmitted by green peach aphid. A few examples are Potato Leafroll Virus and Potato Virus Y to solanaceous plants (pepper, potato, tomato); Cauliflower Mosaic Virus and Turnip Mosaic Virus to crucifers, and Cucumber Mosaic Virus and Watermelon Mosaic Virus to cucurbit cucurbits.

Lifecycle. Temperatures greatly influence the lifecycle of the green peach aphid, especially cold winters. In the North, aphids overwinter in the egg stage on *Prunus* trees. Mortality at this stage may be very high. As temperatures warm, the aphid may go through multiple generations while still on the tree, but as densities increase, winged adults are produced. These winged forms colonize nearby plants by depositing daughters on one plant and then moving on to the next plant. Each daughter begins asexual reproduction (parthenogenesis) by rapidly giving birth to new daughters, which often already have a developing daughter inside them ready to emerge in a few days. As densities increase on the newly colonized plants, and as the plants deteriorate, new winged forms are produced. This cycle repeats as long as the weather is favorable. Eventually, as day length begins to shorten and temperatures change, the winged females search for *Prunus* trees to colonize. Females arrive on the overwintering locations first and give birth to wingless egg laying forms (oviparae), which mate with winged males. These females each lay 4-13 eggs on the overwintering host.

In some parts of the world, where suitable host plants are abundant year round, aphids do not return to a *Prunus* host plant, but continue to recolonize and reproduce on secondary hosts. This may also occur for some green peach aphid populations in eastern Virginia on winter crops such as spinach, beets, Brussels sprouts, cabbage, kale, collards, and other various winter weeds.

Cultural Control. Most green peach aphid outbreaks on vegetable crops are the result of applications of agrichemicals. Green peach aphid is resistant to many broad-spectrum insecticides, and frequent applications of these chemicals (such as pyrethroids) eliminate natural enemies and stimulate reproduction in the aphid. Also, aphid densities tend to be higher on plants that are fertilized liberally, thus efficient use of fertilizer can help to prevent large-scale outbreaks. Use of metallized (aluminated) or reflective mulch can help reduce aphid populations on vegetables by interfering with the ability of winged aphids to find plants. In addition, removal of nearby *Prunus* trees may help to reduce the overwintering population of aphids and the source of immigrants to vegetable crops in the summer months.

Fig 4. Aphid mummies and parasitoid wasp on aphid (photo courtesy of David Cappaert)

Organic/Biological Control. Biological control plays a major role in the natural suppression of aphids. Green peach aphid has numerous natural enemies including ladybird beetles, lacewing larvae, syrphid fly larvae, and predatory bugs. Green peach aphids are also often parasitized by native aphidiid wasps. Parasitized aphids' mummies (Fig. 4) are the result of this parasitism and will remain firmly attached to the plant. The aphid itself is however dead and unable of any further damage. Field parasitism rates exceeding 90% are not uncommon. In addition, aphids are also killed by entomopathogenic fungi, particularly during periods of high humidity and precipitation. This complex of natural enemies can usually keep populations of green peach aphid in check.

Chemical Control. The use of insecticides is only recommended after approximately 50% of leaves are infested. Green peach aphids have developed resistance to a number of different insecticides, most notably the pyrethroids. Furthermore, in crops such as pepper, green peach aphids typically only become pest problems after pyrethroids are repeatedly sprayed. The bar graph in Fig. 1 shows a typical aphid population flare in bell peppers following two applications of four different pyrethroid products.

The "UTC" refers to the untreated pepper plots. Insecticidal research studies conducted in Virginia have found a number of insecticides to be efficacious for the control of green peach aphids including: organophosphates such as acephate and dimethoate; carbamates such as oxamyl and methomyl; neonicotinoids such as imidacloprid, thiamethoxam, dinotefuran, clothianidin, and acetamiprid; and several novel homopteran-specific and IPM-friendly insecticides such as pymetrozine, spirotetramat and flonicamid. The latter chemicals have little to no toxicity to natural enemies and therefore, fit best into an IPM strategy.

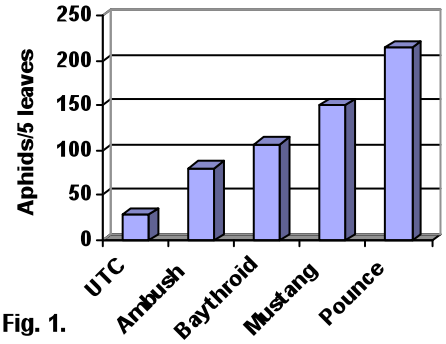

Fig. 1.