Watch for aphids in melons

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Several reports lately of very deformed watermelon plants, but also a few cucumber and cantaloupe fields. These distortions (fig. 1) most of the time are being caused by melon aphids *Aphis gossypii* Glover. Melon aphids are small and range in color from a light/dark green mottle (fig. 2), which is most common to whitish, yellow (seen during hot, dry weather), pale green, and dark green almost black forms. The legs are pale with just the tips of some parts black. The cornicles also are black. One trait of melon aphids that make them particularly difficult to manage is that unlike other aphids, their populations do not fade with higher summer temperatures. Immatures look like adults, only smaller.

Female melon aphids give live birth to clones of themselves during spring and summer and their populations can increase very rapidly especially when hidden on the underside of foliage. One of the things to look for to see if you have an actively growing aphid population is white cast skins of the aphids, aphids must shed their skins to grow so lots of skins show that the aphids are actively growing (fig. 2, orange arrows). The faster they grow the faster they become adults and can begin to reproduce. The reproductive period lasts about two weeks with a female producing 65-85 offspring in that time. The ideal temperature for reproduction is around 70°-80° F., which are the temperatures we are experiencing now. There is evidence that there are host races, i.e., melon aphids reared on cotton can be transferred successfully to okra but not to cucurbits. This inability to transfer from one host to another has been shown for other crop combinations.

Melon aphids feed on the underside of leaves and can be a major problem on young plants when they feed near the tips of vines, sucking sap and nutrients from the plant. Their feeding causes a great deal of distortion and leaf curling, hindering the photosynthetic capacity of the plant (fig. 1). The foliage may become chlorotic and die prematurely. They also secrete a great deal of honeydew which allows the growth of sooty mold and further reduces the photosynthetic ability of the infested plant. One of the other major problems with melon aphids (as with other aphid species) is that they are good at transmitting potyviruses such as cucumber mosaic virus, watermelon mosaic viruses, and zucchini yellow mosaic virus. These viruses are transmitted to plants despite insecticide applications, which include oil sprays. This is mostly because the aphids can transmit these nonpersistent viruses within 15 seconds of reaching the plant.

**Management** No thresholds have been established for melon aphid in cucurbits. Reflective mulches laid before planting can repel aphids from plants reducing or delaying virus transmission, until vine growth covers-up the plastic. In smaller fields row covers can be used. Biological control can have a significant impact on aphid populations and is our first line a defense. Therefore, weekly sprays of insecticides should not be used in watermelon unless really needed. Because cantaloupe and cucumber are very susceptible to bacterial wilt disease, which is vectored by striped cucumber beetles several insecticide sprays may be necessary. However, resistance by melon aphids to organophosphates and pyrethroid insecticides is common. Using neonicotinoids for beetle control will help control aphids, but the neonics should not be sprayed exclusively and pyrethroids or other insecticide classes should be used intermittently for beetle control. It should be noted that a plant damaged as severely as the one in figure 1 will not recover to produce a crop.

While many of the above suggestions are all good to prevent aphid problems what do you do once you have them? Organically there are not many good aphid control tactics to use once they show up. Applications of rosemary oil or insecticidal soaps or horticultural oils are options. These will have to be applied several times with thorough coverage of the foliage being critical for control of the pest. Rosemary oil will disrupt beneficial populations less so than soaps or oils. There are several synthetic controls that will work if thorough coverage is obtained. These chemical controls include: methomyl, dimethoate, acetamiprid, clothianidin, thiamethoxam, pymetrozine, flonicamid and combination products that include one of these. Be sure to read the label and the Mid-Atlantic Commercial Vegetable Production Recommendation Guide before applying any chemicals.
Fig. 1 Watermelon plant with heavy melon aphid population

Fig. 2 Melon aphids on underside of leaf