

Cucumber Beetle Management in Melons

Thomas P. Kuhar and John Speese, III

Department of Entomology, Eastern Shore AREC, Painter, VA

Cucumber beetles can be a major pest of cucurbit crops in Virginia, particularly cantaloupes and cucumbers. This was displayed in dramatic fashion this spring at the Eastern Shore AREC.



Fig. 1. Cucumber beetles feeding on young pumpkin.

In early May 2002 we put transplants of Gallia melons (*Cucumis melo* 'Gallicum') on black plastic and straight into the field for experimental plots. After approximately 24 hours in the field, the plants were infested with striped cucumber beetles. After 48 hours, many of the plants in our untreated check plots were completely destroyed.

Cucumber beetles infest cucumbers, melons, pumpkins, and squash every year, and are particularly damaging following warm winters like we had in Virginia this year. If not controlled, economic losses may result. Two different species of cucumber beetles are commonly found in Virginia, the striped cucumber beetle, *Acalymma vittatum* (F.) and the spotted cucumber beetle, *Diabrotica undecimpunctata howardi* (Barber). The spring crop typically is attacked by a greater number of striped cucumber beetles, and the fall crop is usually attacked by a greater number of spotted.

There typically are 2 generations of cucumber beetles per season, but in some years there may be a partial third generation. Over-wintered adults become active in May and June and colonize fields in aggregations. Cucumber beetle adults lay eggs in the soil at the base of stems. Larvae (= rind worms) feed on roots, but populations rarely are high enough to damage the plant before harvest. The next generation of adults emerges in August and September.

Both striped and spotted cucumber beetle adults feed on stems, foliage, flowers, pollen, and even fruit of cucurbit plants (Fig. 1). The most serious damage occurs when adults feed on seedlings, which can kill the plant. In addition, adults may transmit the bacterial wilt pathogen, which may cause the plant to wilt and die. As the adult feeds, the bacterium is passed from the beetle's mouthparts and feces and enters the plant through wounds. Infected plants will continue to grow normally until the onset of female flowers or even small fruit, and then the vine will wilt as a result of the bacteria obstructing the vascular tissue. An easy method to identify whether or not a plant is infected with bacterial wilt is to cut the stem at its base and look for a white, sticky substance oozing from the vascular tissue.

Cucumbers and all *Cucumis melo* melons (e.g. cantaloupe, honeydew, gallia, etc.) are susceptible to bacterial wilt, and certain cultivars of these crops are more susceptible than others. Other

cucurbit crops are not susceptible to bacterial wilt, but may suffer heavy seedling loss if cucumber beetle populations are high. Because of their small size and leaf area, seedlings and transplants are very difficult to spray efficiently with conventional equipment. At-planting treatments are recommended for cucurbit crops that are susceptible to bacterial wilt. Last year on gallia melons, under conditions of heavy beetle pressure, we achieved excellent cucumber beetle control with labeled rates of Admire 2F (imidacloprid) injected into the drip irrigation at transplanting. Yields of marketable fruit were equal to those in plots sprayed 6 times with the high rate of a pyrethroid foliar spray. Bacterial wilt infection ranged from 0 to 8% in treated plots compared with 70% in the untreated control plots.

This year, we are repeating the study and including Platinum 2SC (thiamethoxam), a newly-labeled neonicotinoid insecticide similar to imidacloprid. The pyrethroid, Capture 2EC (bifenthrin), is included in the study as a foliar comparison treatment. Melons were transplanted on 9 May, and striped cucumber beetles began massing on the border rows on 10 May, and the first Capture spray was applied later on that same day. Counts of live cucumber beetles on plants on 13 May indicated that all three insecticides were providing effective early season control (Table 1). Early melon growth difference were significant (Fig. 2), and as the season progresses, additional insect counts, bacterial wilt assessment, and yield data will be obtained.

Table 1. Counts of cucumber beetles on gallia melons following various insecticide treatments at the Eastern Shore AREC in May 2002.

Treatment	Rate	Mean cucumber beetles/5 plants
Admire 2F (drip line injection)	16 fl oz	0.6
Platinum 2SC (drip line injection)	8 fl oz	1.6
Capture 2EC (foliar spray)	4 fl oz	0.0
Untreated	-	11.0

Although they are effective, in-line irrigation treatments are relatively expensive. A grower should consider the following when deciding on a management strategy: 1) bacterial wilt susceptibility of the cucurbit variety; 2) history of beetle pressure on the farm; and 3) time and resources available to monitor fields and apply a rescue foliar spray if needed. Several labeled pyrethroid compounds provide effective beetle control as foliar sprays (see the 2002 Commercial Vegetable Production Recommendations Manual). If pyrethroids are used, fields should be monitored weekly for re-colonization by beetles.



Fig. 2. Early growth differences , Admire (right) vs. Control plots (left)

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