

The University of Maryland Extension Agriculture and Natural Resources Profitability Impact Team proudly presents this bi-weekly publication for the commercial vegetable and fruit industry.

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Casual Observations from Southern Maryland

By Ben Beale

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- ✓ Growers are busy with irrigation, weed control, staking fruiting vegetables and continued planting.
- ✓ Rain has been very random leaving most fields drier than normal. Be sure to monitor for spider mite development.
- ✓ Sweet corn harvest (under plastic) started first the week of June.
- ✓ Early season produce continues to come off- tomatoes, cukes, and squash are available now.
- ✓ Cucumber beetles are the major insect pest on cucurbit crops and some worm pressure noted on fruiting vegetables.
- ✓ Folks continue to scout for late blight with disease - found one additional farm.

Striped Cucumber Beetles & Squash Bugs in Cucurbit Fields

By Gerald Brust

IPM Vegetable Specialist, UME

This is another bad year for striped cucumber beetles and squash bugs in watermelon, pumpkin and squash. Some fields have been hit hard with beetles causing 8-12% plant loss due just to their feeding. The biggest problem with these pests and why control sprays have not worked well is that they are consistently hiding in the plastic hole where they are feeding on the stem (fig. 1). Sprayers usually are set up to cover a lot of leaf canopy and do not do a very good job of putting chemical down in the plant hole. This stem feeding can be severe enough that either pest alone could cause some wilting, but with both feeding on this relatively small area of the stem they are causing considerable damage (fig 2).

It is hard enough to kill squash bug adults with a good cover spray, but when only small amounts of spray are reaching them down in the plant hole they will not be controlled. Often it is possible to walk by plants and even inspect them and still see no beetles or squash bugs, as they will stay down at the base of the plant and only move when the base is exposed.

If this type of feeding has occurred in your fields insecticide applications (pyrethroids such as Asana, Warrior, bifenthrin) must be directed down at the base of the plant with greater water volume (100-150 gal/a) and spray pressures (75-125 psi) than normally used for control.

Fig. 1 Cucumber beetle feeding at base of plant in plastic hole



Fig. 2 Severe feeding on pumpkin stem by striped cucumber beetle and squash bugs



It's Time to Review Imidacloprid

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Imidacloprid, originally sold under the brand name Admire, provides very good control of sucking insects such as aphids and certain chewing insects such as Colorado Potato beetle and Cucumber Beetle. As a soil applied systemic with long residual action, imidacloprid was quickly adopted by producers who have been using it on a regular basis for over 10 years. Over the last couple of years, I have received complaints that imidacloprid was not working as well as expected. After visiting many of these farms and reviewing the situation I believe many of these complaints are due to failures with application rate and method. Here are a few pointers taken from Galen Dively, UMD Entomologist; Jerry Brust, UME Vegetable Specialist and others:

- **Know your formulation:** There are a number of new generic products on the market, of which most are the 2F formulation containing 21.4% imidacloprid. Admire Pro has 42.8% imidacloprid or double the amount of active ingredient. Be sure to use the correct rate for the product you purchase. Use of the Admire Pro rate with a generic formulation will result in one-half the effective application rate to the crop.
- **Cucumber beetle populations are showing up earlier and earlier in the spring.** The use of season extending technology and warmer springs may be impacting this. Populations build up quickly and infest plants when they very small, causing severe feeding damage as well as transmitting bacterial wilt. Many foliar treatments are effective but only if timed properly and applied frequently. This can be time-consuming and one missed spray can lead to a wilt-infested crop. For this reason, many folks are treating with imidacloprid early on smaller plants. A very effective method for getting imidacloprid in the plant early is through a transplant drench.
- **Imidacloprid is photodegradable.** Exposure to sunlight will quickly breakdown imidacloprid. Thus, spraying imidacloprid on top of the ground without incorporation with water will result in poor performance. Imidacloprid must be taken up by plant roots so it is critical that it reach the root profile. As a general rule of thumb, each plant should receive at least 1 cup of water with a drench application. Drip lines should be adjacent to plants and calibrated to soak the root zone.
- **Rotate and use alterative strategy:** Finally, producers should not expect imidacloprid to work miracles year after year. The risk of resistance development exists when producers rely exclusively

on the neonicotinoids products for pest control. An example may be Admire applied early followed by Assail later in the season for cucumber beetles. Rotate to products with a different mode of action.

- **Calibrate your application equipment:** There are several application methods for applying imidacloprid. Soil incorporated, transplant drench, band spray or drip application. A good description of how to calibrate and apply imidacloprid for different application methods is provided by University of Massachusetts Extension and is given below. Note: This was written in 2002, when the only formulation was Admire 2F. Be sure to follow the rate on the label of the formulation you are using.

Striped Cucumber Beetle and Bacterial Wilt Management in Vine Crops

Source: UMass EXtension

Systemic controls. Imidacloprid (Admire 2F) has the potential to improve and simplify early season control of cucumber beetles and thus wilt. In contrast with other insecticides labeled for this pest, Admire can be applied to soil before or after seeding or transplanting which enables product to be in leaf tissue when an early invasion of beetles occurs. Admire is a systemic which it is taken up by the roots, translocates to new leaf tissue and persists through the critical early plant stages. Additionally, it has a relatively safe toxicological profile. There are several ways that Admire can be applied.

Using imidacloprid in direct seeded crops. Admire 2F can be applied in a narrow band within 2 weeks before planting, as an in-furrow spray or narrow surface band during planting, or as a post-seeding drench. It is important to get Admire into the soil to avoid photochemical breakdown; this can be accomplished by placing it in the furrow or irrigating it in. The best system for an in-furrow treatment is to attach an injector to the planter for placement at the seed level. Studies conducted by Meg McGrath on Long Island showed slightly better control with an in-furrow treatment compared to a band over the top.

The label gives a range of 16 - 24 oz per acre or 0.9 to 1.3 oz per 1000 feet of row. Studies have found a rate of 1.1 oz per 1,000 feet to be sufficient for controlling cucumber beetle in the critical early weeks. Given the wide range in row spacing with these crops and the fact that it is a banded application, the best way to calculate rates is based on the number of row feet per acre. For example, for 9 foot row spacing, divide 43,560 sq ft/acre by 9 feet, which equals 4,840 linear feet. Divide that by 1,000, then multiply by the Admire rate per 1,000 feet. For a rate of 1.1 oz per 1000 feet of row, that would mean 5.3 oz per acre.

Using imidacloprid on transplants: The best time to treat is about 1 day prior to planting in the field. The rate used per transplant is very low: 0.02 ml/plant. To treat a flat of 200 transplants with Admire 2F at this rate, a grower would need to dilute 4 ml (0.135 oz) of Admire 2F in a volume of water sufficient to soak to soil mix evenly. Accurate measuring of small amounts is very important! A plastic syringe, available from the local drug store, can help ensure that these small measurements are accurate! To help make other conversions: multiply 0.02 ml per plant times the number of plants in your flat. For example, use 20 ml to treat 1000 transplants. You can convert ml to oz by dividing by 29.6 (there are 29.6 ml in one fluid oz). Be careful of phytotoxicity (burning the plants) at higher rates. In Pennsylvania, burning of leaf margins was observed at 0.04 ml/melon plant at the 2- leaf stage, although these plants did grow out of this in about 2 weeks. The transplant treatment should be sufficient to carry the plants through the early crop stages. Scouting can determine if any foliar applications are needed. One concern is whether this treatment will last long enough on transplants set out in early May. It is possible that slightly higher rates would last longer, but there is also the risk of phytotoxicity at higher rates. Remember that the older the plants are when beetles arrive, the less serious is the damage that beetles cause. This method of application is, obviously, less expensive than a furrow drench. Admire can also be used for Colorado potato beetle or flea beetle control on tomato, pepper and eggplant transplants. Again, be cautious not to use too high a rate, as phytotoxicity can result. The suggested rate of Admire 2F for tomato transplants is 15 ml - or 0.5 ounce - per 1000 transplants.

Drip application: A drip system can be used for Admire 2F applications to either direct seeded or transplanted crops. Apply early enough to allow root systems to take up the material before beetles arrive (which is typically between June 10 and 17, depending on the weather). The system should be primed with water first, and imidacloprid injected slowly. More emitters provide a more even distribution of product. Make sure to use enough water to soak the area between emitters. Calculate Admire rates based on 100 ft of row. For a 16 oz/acre rate, use 0.110 oz/100 ft bed (assumes a 3- ft bed, either one row or multiple rows.). If you have a drip system for transplants that go out in May, applying Admire through the drip may have an advantage a pre-plant drench, because you can wait until just before beetles arrive to make the application.

Note: The foliar form of imidacloprid, Provado 1.6F, is not labeled on vine crops. Imidacloprid is highly toxic to bees. Translocation into flowers from soil applications of Admire is reported to be below levels that would cause toxicity to bees.

Spider Mites Rage in Early Market Plasticulture Vegetable Systems

By Dave Myers

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Anne Arundel County

Warm and dry Conditions this spring coupled with early market plasticulture vegetable systems has led to early population explosions of spider mites. An amazing spider mite rage was observed in plasticulture sweet corn this week not often seen this early in a northern state like Maryland, however, often reported in the south. This mite explosion should teach us that using high tunnels, low tunnels and plasticulture systems manipulates the environment and changes the dynamics of insect development. Therefore, when using IPM treatment thresholds, keep in mind that the value of early market produce is much higher; thus, a higher value crop may warrant a lower treatment threshold.

ECONOMIC THRESHOLD ET – 80% EIL

Level of pest activity when control action is suggested to prevent economic injury:

EIL = Pest Density (P)

$$P = \frac{C}{V \times D}$$

C = Cost of Control

V = Value of Crop

D = Damage

Vegetable IPM Thresholds at:

<http://annearundel.umd.edu/files/IPMGuideVegetables2009.pdf>

Vegetable & Fruit Headline News

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