

Observing pepper weevil (*Anthonomus eugenii* Cano) in New Jersey fields

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I. A new communication tool for the New Jersey vegetable industry

In February, 2007, we held meetings with the growers and others involved with the Vegetable IPM Program for discussing improvements and other issues for the program. One suggestion was to initiate a pest alert system that would compliment the Plant and Pest Advisory Newsletter: Vegetable Edition. Growers expressed the concern that severe pest infestations could be found several days before the next issue of the Vegetable newsletter. We decided that an alert system needed to be developed.

A one-page Pest Alert format was developed including: the author of the alert, what the pest was, where it was found, what was the anticipated impact or damage caused, and what corrective measures should be taken. More thorough coverage of the pest would be written for the next issue of the newsletter.

It was decided that the Alerts would only be sent via email because of the difficulty and expense of sending messages via fax machines. Approximately 150 addresses were obtained from the Plant and Pest Newsletter subscription lists. Additional addresses were included after the initial Pest Alert was sent.

Four Pest Alerts were distributed in 2007: two for downy mildew in cucurbits, one for late blight in tomatoes and one for the Hawaiian beet webworm.

II. Observing pepper weevil (*Anthonomus eugenii* Cano) in New Jersey fields

In the past four years, one farm in the Hammonton area has been infested with pepper weevil in three of the growing seasons. Pepper weevil is a subtropical insect that is transported from its overwintering areas in the most southern parts of the US and Mexico. It cannot overwinter in northern climates and appears incapable of surviving without a food source, namely peppers and nightshade. All varieties of cultivated peppers are attacked with bell peppers being favored. Damage results primarily from the abortion of infested fruit. With a short life cycle of 2 ½ to 3 ½ weeks and each female capable of laying 200 to 300 eggs, the weevil can rapidly infest a field causing severe crop loss upwards to 80%.

In 2007, an adult pepper weevil was caught at the Hammonton farm in a pheromone trap in early June. The farmer immediately sprayed an insecticide and no additional weevils were caught until late August. A second weevil was found in the same vicinity of the field as the June

capture. However, this time a small number of fruit were found to be infested in both of two adjacent fields. The farmer again sprayed insecticide weekly for the next five weeks.

These two fields were scouted twice a week and the progress of the weevil was noted. Areas of concentration built up in the initial areas of infestation to the point that by the first week of October no fruit could be found on plants. These plants grew larger and were more lush with foliage than plants with fruit. At the same time weevil adults were picked up for the first time in pheromone traps on the opposite end of the larger 15 acre field. Despite the insecticide treatments the weevils had continued to spread across the field.

Fortunately, there appeared to be no economic loss from this infestation, because it occurred late in the growing season. In 2004, the weevil infestation occurred early in the season and about 80% of the yield was lost at this farm.

Two other farms were infested with pepper weevil in 2007. One of these farms had a very light infestation occurring late in the season. Since it was a grower in the IPM program it is possible, though not proven, that this farm could have been infested with transported weevils from the Hammonton farm. Since this is a possibility, new protocols on traveling to and from infested fields will have to be established to contain pepper weevil.

The second farm seems to have had an independent infestation which occurred earlier in the growing season. By the time the infestation was discovered, significant fruit loss had occurred. Looking for plants that were taller but lacking fruit, this infestation appeared to have started in the interior of this 10 acre field and spread out to the field borders. Based upon information from Texas this is atypical as most infestations begin on the edges of pepper fields.

As a general recommendation, pepper growers should maintain pepper weevil pheromone traps and either learn to use the traps and recognize the weevil on their own or hire consultants to help manage the traps. Several species of weevils are attracted to the current pheromones being used for pepper weevil and the person checking the traps must be trained in how to recognize pepper weevil adults or serious errors in management can occur, such as the unnecessary use of insecticides. How the weevils are transported into the state remains a mystery. However, it is likely that the weevils are being brought in either on plants or produce from southern regions of the US.

Insecticide resistance has been observed in pepper weevils, however, there is no way to know what, if any, resistance the NJ populations have because we have no idea where they came from. If insecticides do not work is it because of a poor choice of insecticide, or is it that the weevils are tolerant or resistant to the materials?

New insecticide chemistries are being registered and it is possible that one of these will be effective on controlling pepper weevil, at least in the short term.