Tracking the Pepper Weevil (*Anthonomus eugenii* Cano)

Joseph Ingerson-Mahar
Bernadette Eichinger
NJ-Acts
5 February 2013

PURPOSE

Determine pathways of pepper weevil (pw) arrival into southern New Jersey. Determine scope of pest presence.

Part 1: Tracking and capturing the weevil.
Part 2: Results and follow-up.

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Why do we care about pepper weevil?

- Most important pest of peppers in sub-tropical regions like Florida, Texas, Georgia, Arizona, New Mexico and Mexico
- Causes fruit drop
- Spends its life inside the pepper damaging the core
- Inaccessible therefore very difficult to control
- Multiple lifecycles per season (~21day cycle)
- Not native to New Jersey but we are finding it here
- Appears to be spreading


bugguide.net/node/view/184395


Juliana Cardona-Duque, University of Puerto Rico
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What does pepper weevil look like?

- Body Oval, arched
- Size 2.0-3.5mm (1/8 in)
- Color Reddish-brown to black
- Tibia Bottom 2/3 orangey to red
- Snout Stout, longer than head/prothorax
- Antennae Long, thin, elbowed, clubbed
- Hair-like scale Clumped, pattern uneven
- Spur Underside of femora

Of note:

- Plays dead
- Not a regulated pest

Catching the pepper weevil

We drilled holes into a 6”x12” yellow sticky card to accept a two-component pepper weevil lure system (Trécé), attached the card to a 3-4’x¼” dowel, then inserted the assembly into the soil.

Over the course of evaluations, traps were positioned in field and non-field areas (migrant housing, loading docks, roadways). We included two non-farm sites known to handle peppers in the processing and waste chains).

Below shown are two other trap methods that are used for boll weevil trapping. Experimentally, we added these, using pepper weevil lures, then discontinued the techniques, finding the sticky trap adequate.

http://www.solida.ca/ipm-supplies.html

Boll Weevil Bait Stick, J. Winfred, Flickr, 2/11/11

Recent History

Pepper weevil (pw) found in 2004, 2006, 2007, 2008, 2009, 2010

2011 summer and winter

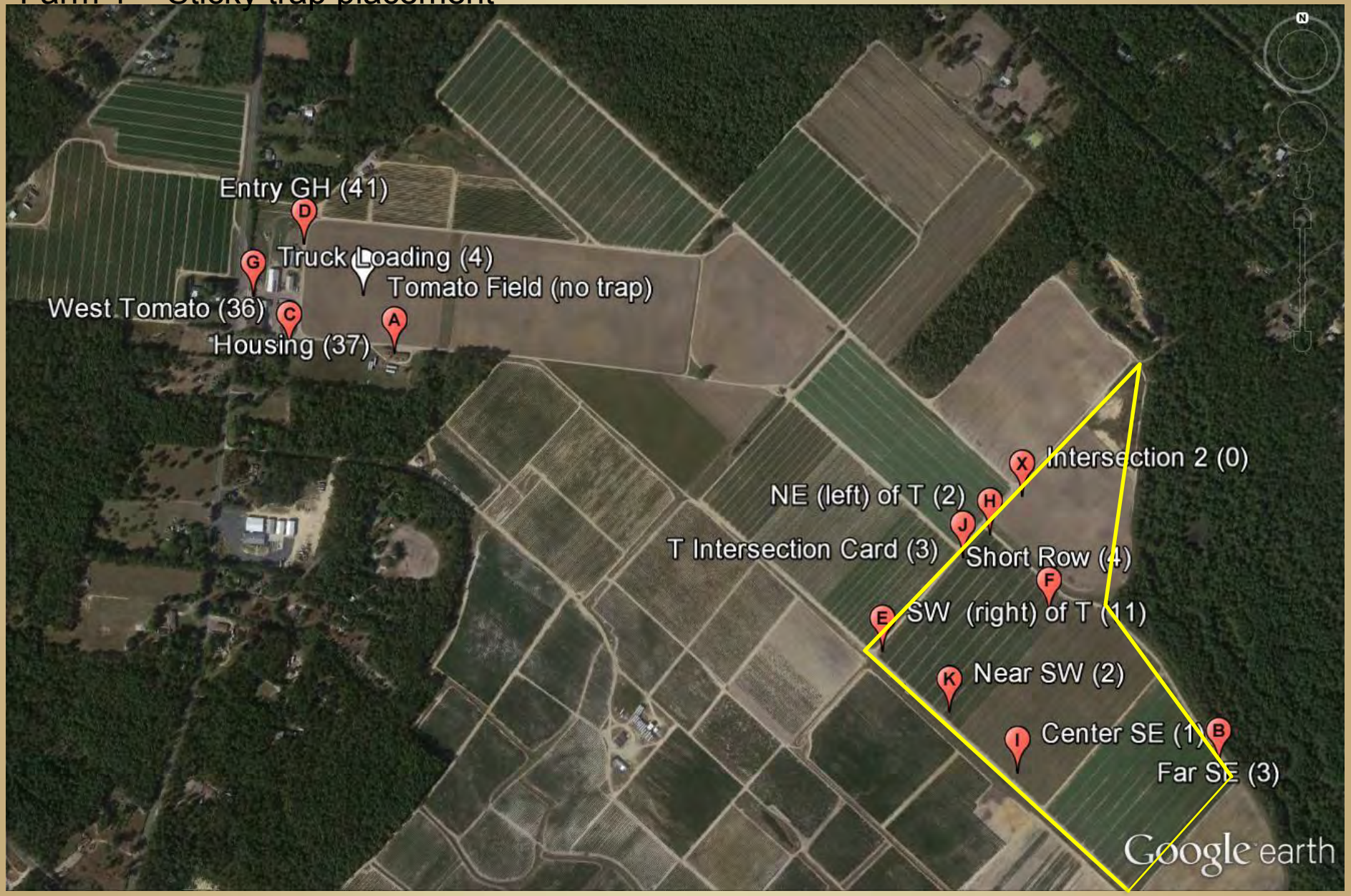
In July mounted traps and found pw at two Atlantic County farms and a Gloucester County farm.

Monitored fields at all three throughout the rest of 2011, winter included after fields plowed under. Last pw found on 12/6/2011.

2012 spring

Added an unaffected fourth farm in Salem County. Monitored all the greenhouses and the fields being readied for 2012 at all four. Requested and received partnership grant from NE SARE (Northeast Sustainable Agriculture Research and Education).

Farm 1 – Sticky trap placement



Farm 2 – Sticky trap placement

Commercial 1 – Sticky trap placement

Pepper Weevil Trap Placements and Catches Spring and Summer 2012

•Had continuously monitored greenhouses and fields since prior year at four farms. Obtained negative results

•Initial traps set in March at processing facility

•Field traps set in Atlantic, Salem, Gloucester and Camden County in May as plants transferred to field

•First 2 pw caught at an Atlantic County processing facility on 4/16/12

•Next 2 at the same facility on 5/16/12

•One at a Camden County field 5/28

•No more until 8/16 in Atlantic County and 8/20 Camden and Gloucester Counties where most traps had caught pw

Pepper Weevil Trap Placements and Catches Spring and Summer 2012 (cont'd)

From mid-August 2012

- Alerted to damaged field in Cumberland
- Alerted to equipment exchange among Cumberland and Atlantic farms
- Alerted to shared fruit processing equipment.
- Added traps on 8/26 in Cumberland; first captures 8/28
- One on card in investigator truck on 9/6
- Added Salem County greenhouse and found larvae in fruit
- Last 12/5 Gloucester County

Additional pepper weevil trap placements continued through the summer into fall as pest presence was considered likely, based on prior finds.

By season's end we had placed traps at two commercial facilities, ten farms, two greenhouse areas not previously surveyed, and in our own vehicles. Five counties are affected.

We continue to monitor the commercial facilities.

2012 season's number of traps placed and captures

Location	# Traps	# Weevils	~ Acres of Peppers	County
CMRCL 1	3	39	0	Atl
CMRCL 2	3	34	0	Atl
EVAL 1	1	1	0	roving
EVAL 2	1	0	0	roving
FARM 0	4	1	4	Sal
FARM 1	12	144	52	Atl
FARM 2	10	231	36	Atl
FARM 3	10	111	9	Glou
FARM 4	7	92	10	Cam
FARM 5	4	160	19	Cum
FARM 6	3	19	28	Cum
FARM 7	3	8	33	Cum
FARM 8	2	31	10	Cum
FARM 9	2	5	<1	Cum
FARM 10	1	5	30	Glou
FARM 11	1	3	<1	Sal
Totals	67	884	231	
CMRCL = non-farm site				
EVAL = truck of evaluator				

Observations on 2012 season's captures

There was an early arrival (March and April) of a few pests at a processing facility; and one in Camden County in May.

Sudden detection of the majority of pests occurred in the late season, between 8/16 and 8/24 and continued through early December.

Most captures are associated with disturbed areas along roadways, near worker housing, near equipment movement. 79%of pw at a farm in Atlantic County were attached to cards ½ mile away from pepper fields. The same is true for 48% of those caught at a Camden County farm.

Most cards erected (65 of 67) caught the weevil suggesting that the card system is effective.

The weevil once detected spreads rapidly.

Observations on dual lures on sticky card system

No consensus was discovered in the literature relating the number of pests on a card to field damage. Most Southern State guidelines for spray application focus on percentage of field damage (5%) or number of insects found per number of buds (1 per 200 buds).

The card+lure system is useful as an indicator of presence of the pest.

The card is easily damaged by field traffic movement and weather systems.

Many other insects are trapped such as thrips, flies, moths, beetles, wasps. It takes a trained eye to locate pw.

Cards usually were changed twice a week, a messy process.

We changed lures monthly.

Many weevils other than pepper weevil are trapped. We found about 10 other species. Positive ID of pepper weevil requires training.

We found weevils inside fruit with no card indication.

Continuing goals for sticky card use and placement

•Determine the extent of pest presence in other counties.

•Devise a protocol for minimum card placement that maximizes early detection of arrival/presence. This will involve fewer cards throughout farm fields and more at disturbed areas and areas of potential introduction and transport.

•Determine source of first arrival into an area. Involves the need for cooperation from many entities in the distribution and marketing chains to allow survey cards at their sites.

We would like to thank our partners in this cooperative investigation

Bob Muth of Muth Family Farms

George Ruggero of Homestead Farms

August Wuillermin of Ed Wuillermin and Sons Farms

Back up slides

- Serious infestations have occurred in New Jersey in the past
  - 1957, 1967,1985, 1988 and 1989 (Ghidiu and Rabin – ‘The Grower’, 1991) Ghidiu, G. M., & Rabin, J. (1991). The Pepper Weevil in New Jersey. *The New Jersey Grower*, *14*(1).

- There was a light infestation at Centerton Research Farm and a local farm in unsprayed pepper plots in 1999

University of Georgia College of Agricultural and Environmental Sciences http://www.ent.uga.edu/veg/solanaceous/pepperweevil.htm Prepared by Dr. Alton "Stormy" Sparks, Jr. and Dr. David G. Riley - University of Georgia

http://onvegetables.com/2011/05/13/pepper-weevil-and-field-peppers/ Pepper weevil and field peppers

May 13, 2011 by Janice LeBoeuf « Carrot Weevil How fast do weeds grow? »

Pepper weevil and field peppers

May 13, 2011 by Janice LeBoeuf

Janice LeBoeuf, OMAFRA Vegetable Crop Specialist, Ridgetow

http://www.inspection.gc.ca/plants/plant-protection/directives/risk-management/rmd-10-28/eng/1304792116992/1304821683305E-mail Twitter Facebook Delicious Google Digg StumbleUpon Reddit Newsvine Technorati

RMD-10-28: Anthonomus eugenii (pepper weevil) - Pest Risk Management Document

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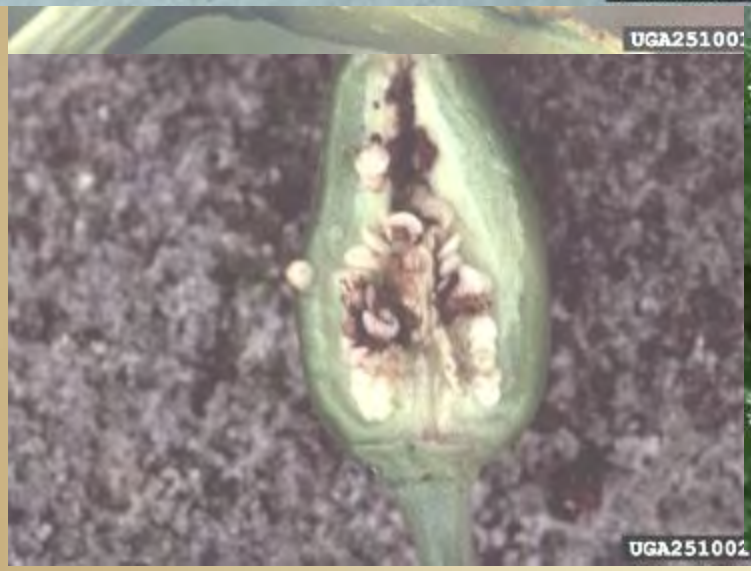
Date Issued: 2011-02-15

http://www.pestmanagement.rutgers.edu/ipm/Vegetable/ **New: Pepper Weevil in New Jersey**

Description, biology and damage (J. Ingerson-Mahar


UGA2510021


UGA1327144

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