

Refinement of Plum Curculio Biology in Southern New Jersey Peaches

Anne L Nielsen and Clement Akotsen-Mensah
Rutgers University

Plum curculio (PC) is a pest of apple, plum, peach, cherry, and blueberry, and can cause significant crop losses through early season scarring of the fruit (Fig 1). Untreated peach blocks at Rutgers Agricultural Research and Extension Center (RAREC) in Bridgeton, NJ can have >90% injury through scarring, direct fruit loss, and larval contamination of the fruit. Depending on geographic location, PC has two distinct populations that vary in the number of generations per year and are distinguishable through DNA analysis. The southern population has multiple generations per growing season, which can result in live larvae contaminating peaches at harvest. Regardless of location, only first generation

PC impact apples, they cannot develop in apples later in the growing season.

Beginning in 2012, we have found live PC larvae in harvested peaches at RAREC and observed continual adult activity, which strongly indicates the presence of a second generation. We conducted molecular analysis for 83 specimens from 2016 peaches at RAREC. Using an IQ tree analysis, all 83 specimens align with the southern plum curculio population. This confirms that the southern strain of PC is present in New Jersey for the first time.

The presence of the southern strain alone does not change the risk posed by PC, however, if a second

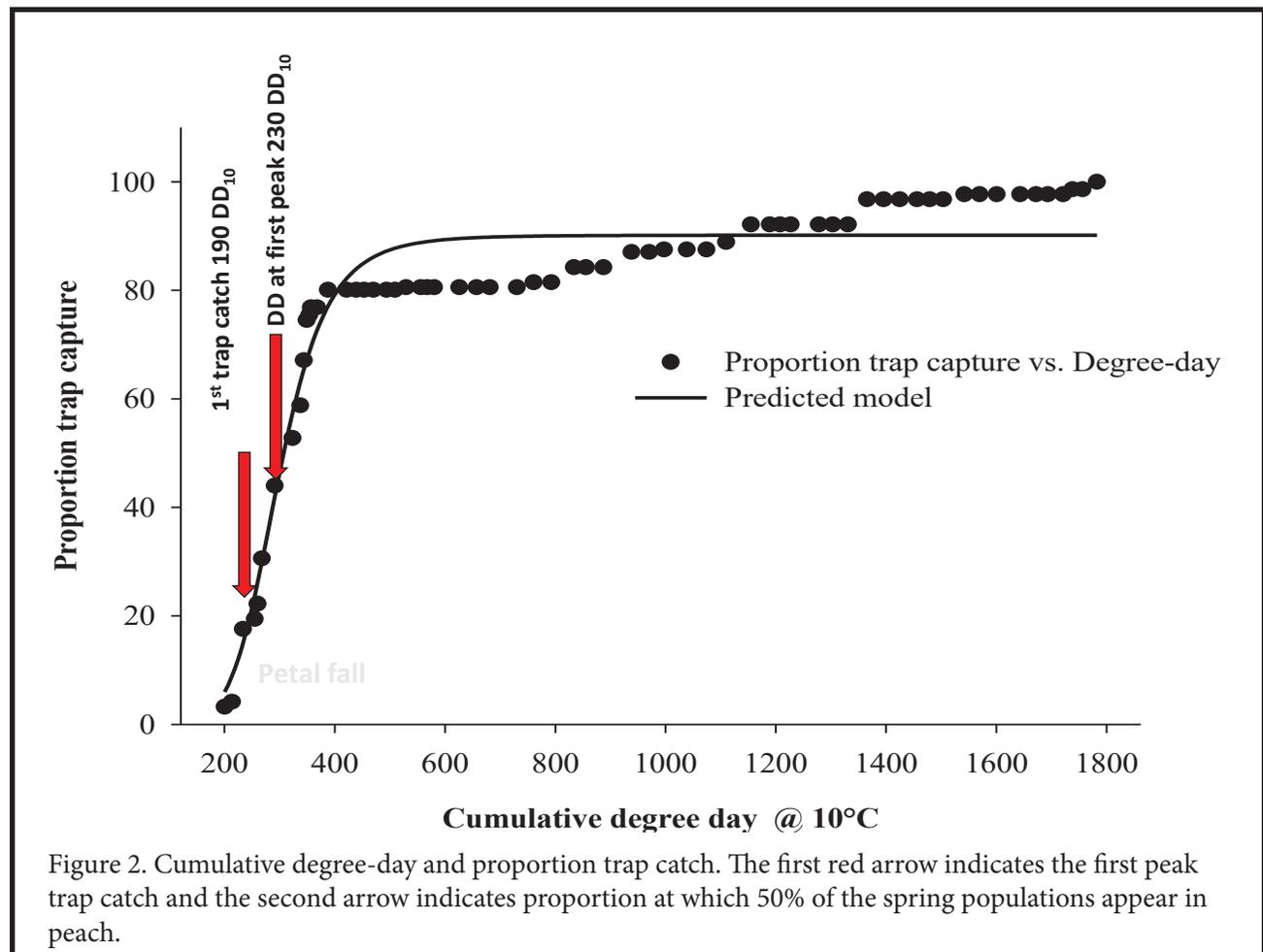




Figure 1. Plum curculio adult.

generation exists it could impact management programs and increases the risk of fruit with live worms at harvest. In recent years, growers have ap-

plied 3-4 insecticides against PC in the spring due to prolonged activity of adults. Growers and extension professionals have no IPM tools for determining when to start spraying or when to stop spraying in NJ peaches. We applied historic weather station data to seasonality data and compared the two degree-day models for best fit. The degree-day model developed for southern

peaches best fits the PC population in Bridgeton, NJ. The model predicts PC movement into orchards at 190 DD_{10°C} and that if PC is present, insecticide applications should start at 220 DD_{10°C} (Fig. 2). There are also sufficient degree-days for the development of two generations in Bridgeton, NJ.

In 2017, 8.6% of nectarines harvested from a lightly treated block at RAREC had live PC larvae in them at harvest in 2017. In contrast, previous work by Anatas Atanassov (Rutgers Fruit IPM program) for Northern New Jersey showed the degree-day model for apples fit well with that population (genetic analysis still pending). This suggests that we may need two different degree-day models in NJ to make management decisions for PC.

Editor's Note: I asked Dr. Neilson if she had more information on where the two strains of PC might diverge and if we had just the Northern Strain of PC in Northern NJ? Her response was: "Regarding PC, we aren't entirely sure where the populations would separate. We have a few specimens from additional farms in NJ that hopefully will help clarify this question. research considerably."

LEADER OF THE PAK

REARS

THE MOST POPULAR 3 PT. HITCH WE SELL!

REARS PAK-TANK SPRAYERS

- Stainless steel tanks, mechanical agitation
- PTO shaft driven diaphragm pump
- Variety of booms, guns and hose available
- Excellent for small fruit, Christmas trees and general row crop spraying

**25 TO 200 GALLON SIZE • 3 PT. HITCH OR FRONT MOUNT
STANDARD OR HEAVY DUTY FRAMES**



100 gallon Pak-Tank



Call for a catalog or just stop by

You will always be able to speak to a knowledgeable, friendly person who can help.

www.oescoinc.com

800-634-5557

Mon. - Fri. 7 a.m. - 5 p.m. & Sat. 7 a.m. - noon

8 Ashfield Rd./Rt. 116, P.O. Box 540, Conway, MA 01341

PEACHES

Still growing
strong!

Delaware & California Grown
Certified Peach Trees.
Order Now for Spring.



Adams County Nursery, Inc. • Aspers, PA
(800) 377-3106 • (717) 677-4124 Fax
Website: www.acnursery.com • Email: acn@acnursery.com

Eco-Friendly Insect, Disease, Bird Control

University/USDA tested

Stink Bug Traps

Brown Marmorated and Native Bugs

Insect Traps and Lures

*Plum Curculio Trap Tree **Control**,
Codling & Oriental Moth, Cranberry
Pests, **Black Stem Borer**, Others*

Honey Bee Lure

Attract Bees - Increase Pollination

Predalure attracts beneficials

Oriental Beetle MD

*Mating Disruption
Fruit Crops & Ornamentals*

Prestop

*New Biofungicide Impressive
Activity. Foliar/Root Diseases*

Avex

*Bird Control. Apply by ground or
air. Cherries, Blueberries, Sweet
Corn, other crops*



*Committed to the Environment and Green Technology
Since 1990*

P. 303-469-9221
agbio@agbio-inc.com
www.AgBio-Inc.com

