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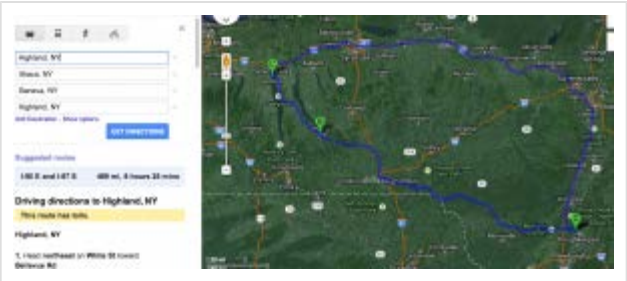
# 2013 CCE Summer Internships

CATEGORY ARCHIVES: PLUM CURCULIO MANAGEMENT IN ORGANIC APPLE PRODUCTION: DEVELOP MANAGEMENT STRATEGIES USING BIO-CONTROL NEMATODES

## Can you say “Road Trip”?

Posted on **July 28, 2013** by **dac364@cornell.edu**

On Monday, we finished collecting our soil samples from the last of the three farms and for some reason we saved the biggest for last. In total, we collected 900 soil samples or 300 per farm. All the samples were bagged up and stored in a cooler until Friday when we embarked on our 500 mile round trip journey to up to Ithaca and also a side trip to Geneva to pick up a plum curculio colony. We dropped the soil samples off and proceeded to Geneva to the New York State Agricultural Experiment Station at Geneva where we met Art Agnello, who developed a colony of plum curculio for us to use in a few experiments to test and see how successful the nematodes are at controlling the plum curculio population. A few rest stops and coffee breaks later, we arrived safely back to Highland, tired of driving and with an empty truck except for our plum curculio and a few (million) nematodes that we also picked up in Ithaca.

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## Just Digging in the Dirt

Posted on **July 16, 2013** by **dac364@cornell.edu**

So we “decided” to collect our soil samples for July in what is likely the hottest week of the month. Temperatures are in the high 90’s with the heat index in the three digits. Last time we collected samples, it was in downpours and now we are collecting samples in extreme heat-I can’t decide which is worse.

On Monday, we collected from Westwind Orchards in Accord, NY. Together four of us collected 300 soil samples that will be used to measure the populations of the nematodes and plum curculio population in the soil. To collect a soil sample, a special metal pole is inserted into the dirt. The soil sampler has an opening on the side to allow for the soil to be collected and put into containers.

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# The Stinkbugs Are Growing

Posted on **July 16, 2013** by **dac364@cornell.edu**

We will be collecting soil samples this week but in the meantime, I am still helping with the brown marmorated stinkbug project. Here is a picture of a 4$^{th}$ instar that we found at one of the traps at the Hepworth Farm in Marborolo, NY. In the past few weeks when we have been finding a lot of stink bug larvae, particularly 1$^{st}$ and 2$^{nd}$ instars, but as they age, they molt and grow until they reach their adult size and so now we are seeing more mature larvae. The 4$^{th}$ instar is the second to last stage before they reach adulthood. Soon, the current population of immature stinkbugs will all be mature and start causing issues again, particularly with crops such as tomatoes and

people will be seeing them everywhere.

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## Project Update 7/9/13

Posted on **July 9, 2013** by **dac364@cornell.edu**

Hi everyone!

Last week and the beginning of this week did not involve much with regards to my plum curculio project. However next week that will chance since we have to collect our second round of soil samples again-hopefully the weather will be nice for us. With this round of the samples, we should be able to see both the population of the plum curculio larvae in the sample and also if the nematodes that were sprayed last month, were able to survive and hopefully thrive in the soil. Though, we are a little more flexible with timing with this batch of samples, so we can work around the weather if we need to. Here in the Hudson Valley, it has rained about once a day since before July started.

Instead I helped with the brown marmorated stinkbug project that Kaitlyn Kelder, the other intern in the lab, is working on. Everyday we travel to several sites and check several traps for the brown marmorated stinkbugs (BMSB) or their eggs. Sometimes we find some, other times we just find giant spiders that are lurking in the traps. Lately we have been seeing a lot of the instars or the nymph stages of the stinkbugs in our traps. We also do perimeter searches of the area around the traps to see if we find any other stinkbugs. If we do we take them back to the lab to see if they had entered the traps. The traps have neon powder at the opening that the stinkbugs have to go thru to enter the trap. We also just designed a new part of the trap to ensure that the stink bugs are traveling thru the powder and will be setting them up tomorrow. Hopefully we won't get too much neon powder on us when we adjust the traps-it seems to get everywhere!

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# Cicada Fest 2013!

Posted on **June 30, 2013** by **dac364@cornell.edu**

I don't know about anyone else, but we are seeing a lot of cicadas. It is so bad that you don't want to drive with your windows down or they will fly in. So last week, in honor of the prehistoric-looking critters, the entomology department at the Highland Lab threw Cicada Fest.

We made t-shirts to celebrate the event, and decorated the table with cicada wings. Many of my coworkers constructed crazy dishes to sample, all revolving around the cicada-many even had cicadas in them. We had tempura cicada sushi, cicada skewers, fried cicadas, and cicada jello jigglers. We also had cupcakes with cicada heads and wings. Someone also made an amazing cicada-free brownie cake, for those too chicken to try the cicadas.

Cicada Fest was a blast and I even tried the cicadas. I can't say that I like them, but I am happy I tried them just to say that I had eaten a cicada. After all, it will be another 17 years till we see these cicadas again!

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## Welcome to my blog

Posted on **June 20, 2013** by **dac364@cornell.edu**

Hello, my name is Danielle Carolei and welcome to my blog!

This summer I will be working on a really exciting project.  My project involves using nematodes to help decrease plum curculio populations in organic apple farms in the Hudson Valley.

So what is a nematode?

A nematode is a microscopic worm and there are thousands of known species that do a vast variety of things.  They

are found all over, and have adapted to all different environments. Some are harmful, particularly those that cause diseases in plants while others can eat insect larvae in the soil, which can help manage populations of insects that are harmful to particular plants.

The nematodes we are working with have been bred to eat plum curculio larvae. Plum curculio is an insect that feeds on fruits, particularly young apples and leaves them scared and ruined. Organic apple farmers in the Hudson Valley have been devastated by the plum curculio, losing most, if not all of their apple crops to the damage from the insect. With commercial farming, the plum curculio population is managed by simply spraying pesticides to get rid of the plum curculio but currently there are not very many practical and cost effective management strategies out there for the organic farmer. In spraying these nematodes, they will eat the plum curculio larvae that grow up in the soil and then cause a drastic decrease in the populations of plum curculio and help to increase the yield of the apple crops for the farmers.