CTAHR's Coffee Research and Extension Update 2014

A focus on CBB

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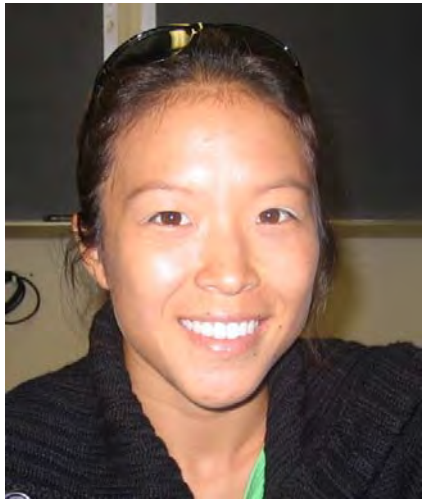
Key CTAHR personnel working with coffee around the State

Dr. Stuart Nakamoto
Ag. Economist

Dr. Loren Gautz
Biological engineer



Andrea Kawabata
West Hawaii Extension Agent

Marc Meisner
Kona Stn. Manager

Dr. Mark Wright
entomologist

Dr. Elsie B. Greco
Entomologist (resigned)

Dr. Russell Messing
entomologist

Also Dr. Mike Kawate, Richard Ebesu, Dr. Scot Nelson, Dry. PingSun Leung.

Coffee Pesticide Registration
Dr. Mike Kawate and team

Registration status:

Cyantraniliprole (Cyazypyr) – For CBB control. Residue being analyzed. NOTE: Used in Indonesia where green bean damaged reduced from 30% to 5%.

Spirotetramat (Movento) – For green scale control, Supplemental label approved.

Pyrethrins and piperonyl butoxide (Pyronyl Crop Spray, Evergreen) for quick knock down of CBB. Reregistration in residue analysis.

Spinosad (Success, Entrust (organic formulation) – For coffee leaf miner. NOTE: likely banana moth control.) Tolerance was proposed in the Federal Register, but has not yet gone to Final Rule. Once the Final Rule has been published in the Federal Register, Dow AgroSciences may add coffee to the product label.

Spinetoram (Delegate) – NOTE: similar to Spinosad. Tolerance was proposed in the Federal Register, but has not yet gone to Final Rule. Once the Final Rule has been published in the Federal Register, Dow AgroSciences may add coffee to the product label.

CBB Laboratory Bioassay of Effectiveness of Insecticides

EverGreen, Pyronyl Crop Spray

Good direct contact activity. No indirect activity.

Cyazypyr

Poor direct contact activity. Good indirect activity (possibly from limited ingestion of the insecticide when CBB bores into berry).

Admire Pro 2.8 oz/100 gal.

Poor direct contact activity. Moderate to good indirect contact activity (may have repelling or anti-feeding activity), but somewhat inconsistent.

Avaunt, 6.0 oz/100 gal

Effective for both direct and indirect contact. Submitted Pesticide Clearance Request form to IR-4 to establish a residue project. DuPont needs to approve of this use for Avaunt.

Sniper, 12.8 fl oz/100 gal

Effective for the direct contact application; slightly effective for the indirect contact. (Will repeat this bioassay.)

Mustang, 4.3 fl oz/100 gal was effective for the direct contact application; ineffective for indirect contact. (Will repeat this bioassay.)

Prev-Am, 50 fl oz/100 gal, was ineffective (direct and indirect contact).

VectoBac WDG, 14.0 oz/100 gal, was ineffective (direct and indirect contact).

Trilogy, 2.0 fl oz/100 gal, was ineffective (direct and indirect contact).

Neemix, 16 fl oz/100 gal, was ineffective (direct and indirect contact).

Closer, 5.75 fl oz/100 gal was slightly effective but inconsistent for the direct contact application; ineffective for indirect contact.

Danitol, 21.33 fl oz/100 gal was not effective for both direct and indirect contact. (We need to repeat this bioassay.)

Coffee Sucker Control

Evaluated Venue (ET) and Reglone for sucker control in our coffee field at Waimanalo Experiment Station. Venue was not effective at burning down the suckers. Reglone showed some promise, and therefore needs further evaluation. Plus Reglone may have limited effectiveness as a broad spectrum herbicide.

In-orchard sleeve tests of indirect exposure of CBB to pesticide:

Select laterals, remove CBB infested cherry, spray cherries, net sleeve added, 25 CBB added, after 4 wk all infested cherry picked and opened to count live, dead, ill CBB in all stage- egg to adult.

Cyazypyr was very effective.

Avaunt needs additional efficacy data (for DuPont).

New faces on Mark Wright's CBB team

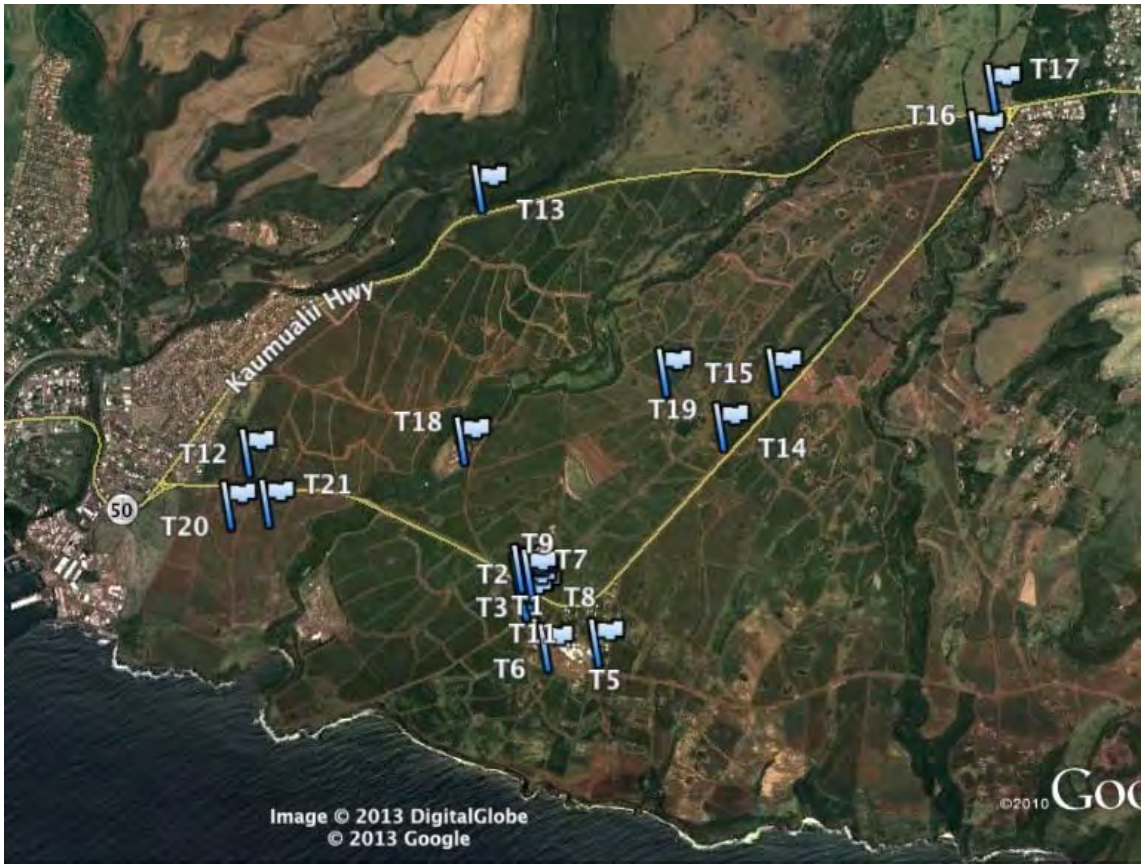
Dr. Ishakh PulakkattuThodi

Located in Hilo, he started this spring focused on simplifying estimating CBB infestation, spatial distribution of CBB, and improving effectiveness of B. bassiana and pyrethroid insecticides.

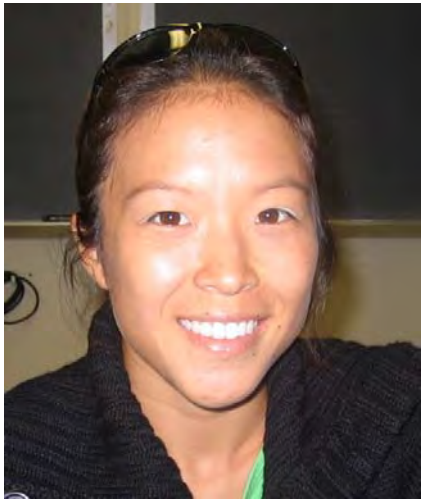
Saya Aoki is a Ph.D. student

Russell Messing
<messing@hawaii.edu>

Trapping at Kauai Coffee for nearly 2 years; no CBB yet. 21 traps, serviced weekly.



Traps near Visitor Center, Mill and along roads.



Andrea Kawabata <andreak@hawaii.edu>
West Hawaii Extension Agent

Andrea and former Jr. Extension Agent, Ryan Tsutsui, have provided 28 workshops and field days to coffee growers with topics ranging from CBB, sprayer calibration, etc.

Working with Greenwell Farms and UCC staff conducted a study on the effects of CBB on coffee cupping quality. View the poster in CTAHR booth.

Working on study of predatory square-necked grain beetles in the genus *Cathartus* and *Leptophloeus*, on CBB eggs and larvae.

Stuart and Andrea organize an annual CBB Summit for CTAHR and USDA, HDOA, and coffee industry and educational leaders to discuss CBB IPM how to improve these. “Recommendations for Coffee Berry Borer IPM in Hawaii 2014” Can be downloaded from CTAHR http://www.ctahr.hawaii.edu click on Coffee Berry Borer.

Dr. Stuart Nakamoto
Ag. Economist
<snakamo@hawaii.edu>

He recently co-authored’ The Economics of Coffee Production in Hawaii. It is based on the 2007 USDA Agriculture Census and provides a pre-CBB baseline to compare with 2012 Ag Census which is being analyzed now. Available from the CTAHR web page ‘Publications’ and your coffee organization.

Annual Economy-wide Impact due to CBB 'Estimated' Using Hawaii State Input-Output model

Crop year 2010 is base for calculations	2011	2012
Loss in crop value	$M4.9	$M7.7
Loss in economic output	$M10.1	$M15.6
Loss in household earnings	$M3.0	$M4.6
Loss in state taxes	$K370	$K571
Loss in jobs	153	232

PingSun Leung
Ag. Economist
psleung@hawaii.edu

NOTE: The 'loss' in crop value is the difference between 2010 and 2011 in green bean produced times the green bean price. So part of the loss could simply be less cherry produced and harvested, a 'off year' but trend is down. Direct CBB damage reports were not used in the calculation.

Coffee Engineering

Dr. Loren Gautz
<lgautz@hawaii.edu>
Andrew Bowles, M.S. student

Currently concentrating on:

- hot air quarantine treatment for CBB in green bean
- Small do-it-yourself or student built huller
- Drying (extension)

Drying

Will assist anyone designing a drying facility
Encourage the use of three layer downdraft dehumidifying.

Hot air based method to kill CBB in green bean to satisfy quarantine of green bean for interisland shipping.

- Mortality probability is a function of time and temperature. Experiments established time X temperature dose, 50°C for more 30 minutes, gives probit 9 certainty of mortality.

- Literature says green beans can be held at 50°C (122°F) for 2 hours before quality impact.

- Our experiments indicate cup quality is either improved or unchanged with recirculated air at 55°C (131°F).

- Designed and fabricated machine to treat from 10 to 100 lb bags of green bean.
- Fans push air through at about 1.5 cubic yards per second.
- Electric heaters control air temperature.
- Able to heat green beans to 122°F in 5 to 30 min.
- Tray with bagged beans goes in one side and treated bag is removed on other side like airlock to a CBB-free room.
- This machine is installed at Kona Experiment Station in Kainaliu.
- Takes one hour to treat bag (load bag, raise to temperature and hold, unload bag) Draws 10 amps at 220 volts Operating costs for 1 bag or 100 lb green coffee

Labor	$15.00
Electricity.	0.88
Total	**$16.00 per bag**

- Need industry support to obtain DOA approval as treatment.

Small scale huller & winnower of wood or high density polyethylene

- Huller will handle parchment, raisins (naturals) and cacao.
- If DIY material costs $12 to 25 plus shop vacuum cleaner.
- If made by CTAHR student club request $200 donation.

CBB Annual Survey Summary

H.C. “Skip” Bittenbender, A. Kawabata, E. Greco,

Third annual CBB survey was sent in mid September 2013 to coffee leaders requesting that they forward the survey link to growers. Survey was developed by Andrea Kawabata, Elsie Greco, and me.

Our goal is monitor the successful adoption of CBB IPM and the damage reported by growers and processors.

79 farmer/processors responded representing over 700 acres in Kona.

Please help us to increase the number of farmers and processors participating. A shorter 2014 survey will start in August.

2013 CBB survey

Marketable Green Bean Recovery Ratio (MGBRR) for the 2012-13 crop as stated by farmers was 6.3 equal to 20% loss of green bean. Same as 2011. Cherry buyers who sampled for CBB damage estimated 26% cherry loss and 28% green bean loss.

60% farmers in 2013 felt CBB was decreasing on their farms; in 2012 50% thought it was decreasing.

Sanitation (contain and kill) efforts are increasing. More farmers intend to use strip picking at the end of the harvest in addition reduced dropped cherry during harvest, sealing coffee bags during transport, pulping all harvested coffee, and treating pulping waste.
80% of farmers sprayed B. bassiana, starting between February and April.

Chemical Desuckering of Stump Pruned Coffee

Too many verticals (suckers) are produced on stump pruned coffee, if the number is not reduced by July of same year then self-shading will reduce yield in following year.

Hand desuckering is labor intensive and must be repeated during the pruning year.

Best chemical method has been Gramoxone spray. It is a restricted use pesticide.
Aim is being evaluated but is not as effective. It also a contact herbicide and labeled for coffee.

2014 experiment is on a mechanically harvested farm. Using tractor-mounted sprayer, apply at 2 oz Aim in 100 gal per acre. Treatments are:
1 hand desuckered as needed – collect time to desucker and 2015 yield.
2 Aim, as needed hand desuckering - collect time to desucker, Aim application cost, and 2015 yield.
3 Aim only, collect application costs and 2015 yield.

No spray, not yet desuckered

Note Aim kills broadleaf weed seedlings and young growth coffee but not grass

Sprayed twice below stump cut, now spraying above stump cut to thin top verticals.

Emaravirus on Coffee in Kona

Dr. Scot Nelson
<snelson@hawaii.edu>

Pale yellow circular spots on leaves. No spores.

This virus has never been reported on coffee. It was found in the Captain Cook area of the Big island in February by a farmer who used “The Plant Doctor” app. The virus identity was confirmed on 14 March 2014 by Dr. Michael Melzer. Geographic distribution of the virus or disease is unknown at present. If you see these symptoms on your coffee plants, please contact Scot Nelson snelson@hawaii.edu. Original trees were destroyed. This can reduce yields.

Questions or Comments ?