



College of Tropical Agriculture and Human Resources
University of Hawai'i at Mānoa

CTAHR's Coffee Research and Extension Update 2012

A focus on CBB

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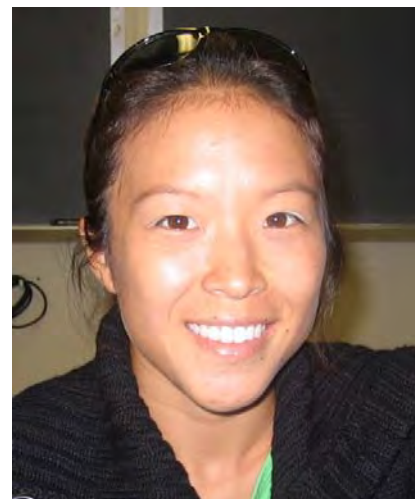
Key CTAHR personnel working with coffee around the State



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 Burbano-Greco
entomologist



Dr. Russell Messing
entomologist

Also Dr. Mike Kawate,
Richard Ebesu, Dr.
Scot Nelson, Jari
Sugano



Coffee pesticide registration – Dr. Mike Kawate

Registration status:

Ethylene (Ethrel) for fruit ripening - Bayer CropScience not currently supporting this use.

Imidacloprid (Provado 1.6 Flowable) – Provado will be phased out; Admire Pro will take its place, apply as foliar or drench.

Chlorantraniliprole (Altacor) – For coffee leafminer control. This product is not yet licensed for sale in HI, but apparently pending approval.

Cyantraniliprole (Cyazypyr) – For CBB control. IR-4 field residue trials to be conducted this fall (2012).

Indaziflam (Alion) – Preemergence grass and broadleaf herbicide. IR-4 field residue trials to be conducted this fall (2012)

Spinosad (Success, Entrust) – For coffee leafminer control. (HI is looking at this product for banana moth control.) IR-4 final report (tolerance petition) is under review with Quality Assurance and the manufacturer (Dow AgroSciences).

Spirotetramat (Movento) – For green scale control. EPA is reviewing tolerance petition.



CBB Laboratory Bioassay of Effectiveness of Insecticides

– Dr. Mike Kawate

Insecticides tested so far:

pyrethrins+PBO (EverGreen Crop Protection EC 60-6)

cyantraniliprole (Cyazypyr)

imidacloprid (Provado)

spirotetramat (Movento)

spinosad (Success)

spinosad (Entrust)

bifenthrin (Sniper)

chlorpyrifos (Lorsban Advanced)

spinetoram (Delegate)

K-salts of fatty acids (M-Pede)

tolfenpyrad



Evaluate as direct and indirect contact of pesticide and CBB



Direct – spray CBB in petri dish at label rate, then add mature cherries.



Indirect- dip mature cherries in pesticide at label rate , place in petri dish then add CBB.

Hold CBB for 2 wk then count live, dead, ill CBB both inside and outside cherries.



RESULTS:

EverGreen Crop Protection EC 60-6

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).

Provado

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

Movento

Poor direct contact activity. Poor indirect contact activity.

Success

Some (inconsistent) contact activity. Moderate to good indirect contact activity, but inconsistent.

Sniper

Good direct contact activity (expected). Good indirect contact activity.

Bioassays on the remaining insecticides in the list are ongoing.



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.

Tolfenpyrad, spinosad and pyrethrins were not.



Insects



Dr. Mark Wright, Dr. Russell
Messing, Dr. Mike Kawate,
Dr. Elsie Burbano-Greco and their
teams

Department of Plant and Environmental
Protection <markwrig@hawaii.edu>

Organized yesterdays CBB workshop.



Elsie Burbano-Greco



Experiments:

1-Effectiveness of 3 doses of *Beauveria bassiana* (first year of data)- 1 qt killed more than 8 oz/acre, surfactant
'Widespread Max' alone was better than low rate of fungus.

2-Effect of Surround WP (Kaolin clay) as a deterrent for coffee berry borer attack (second year of data) sprayed every two weeks through cherry growth season reduced CBB damage over 50%.

3-Effectiveness of commercial versus homemade traps (second year of data) Design is important, commercial better unless homemade has 'bounce plate' for CBB to hit when flying into trap.

4-Effect of trap height on capture of CBB (first year of data)
18 inches better than 5 ft better than 6.5 ft



Workshops



Kona Risk Management School. The Local and Immigrant Farmer Education (LIFE) and Risk Management Hawaii. Kona, Hawaii. June 7th, 2012. Reducing Coffee Berry Borer Numbers and Damage

The Local and Immigrant Farmer Education (LIFE) and Risk Management Hawaii. April 16, 2012. Current management techniques for coffee berry borer in Hawaii

14th Pacific Entomology Conference. Honolulu, Hawaii. February 22 and 23, 2012. The Coffee Berry Borer: A Threat to the Hawai'i Coffee Industry. A Discussion on Pest Management Solutions





Russell Messing Evaluating trap design <messing@hawaii.edu>

Using commercial 'broca' CBB trap he found:
3:1 methanol to ethanol works as well as 1:1 to attract CBB
100% Isopropyl alcohol not effective

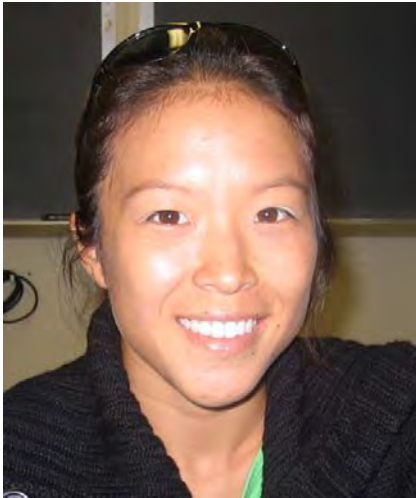


Small 'breathable bags with alcohol caught more beetles, and are easier to handle (less labor) in the field than Vials of 3:1 Methanol :Ethanol

Insecticide Hercon Vapor tape suspended in collection jar kills beetles without liquid, less labor to service traps.

No alternate hosts of CBB found in Kona. Only 3 beetles found 6 lb of haole koa seed! But plenty in feral coffee.





Andrea Kawabata
West Hawaii Extension Agent

Working with the Local and Immigrant Farmer Education (LIFE) Program, Risk Management School and Risk Management Hawaii Projects.

Current program focus, crop insurance workshops throughout Hawaii Island and the state. Provided to Ka'u and Kona coffee growers CBB, pruning, record keeping, business taxes, good agricultural practices or food safety, and worker protection safety with pesticides. Participated in the Kona Coffee Cultural Festival, Ka'u Coffee Festival and Coffee College, KCFA Expo, and Hawaii Coffee Association Annual Conference and Tradeshow with display booths and presentations.

Assist Ka'u coffee growers with efforts to recover coffee plants from brush fire that scorched 5,200 acres in Pahala. Growers experienced from 5-80% crop damage.



Crop Insurance

This year Dr. Stuart Nakamoto informed workshops participants about risk management, AGR-Lite, coffee tree and fruit insurance, and USDA-FSA disaster assistance programs NAP, SURE, and TAP. Crop insurance will cover CBB.



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



Coffee Engineering



Dr. Loren Gautz

Andrew Bowles, M.S. student

Cody Smith, B.S. student

Currently concentrating on quarantine
treatment for CBB in green bean

Coffee Origin verification from green bean

Small do-it-yourself or student built huller

Drying



Developing hot air based method to kill CBB in green bean to satisfy quarantine of green bean

Mortality probability is a function of time and temperature.

Evaluate doses in time 5 to 35 minutes and temperature 35 to 55 C.

Literature says green beans can be held at 50°C for 2 hours before quality impact.

Recommend 50 C (122 F) for more than 30 minutes for probit 9 certainty of mortality.

Will be conducting experiments to establish time temperature effect on cup quality with recirculated air at equilibrium moisture.

Designed and fabricated machine to treat one 100 lb bag of green bean

Fans will push air through at about 1.5 yards per sec

Tests on 1/3 bag lots was able to heat green beans to 122 F in less than 15 min.

Will be testing this machine in Kona this fall.



Evaluated RF (radio frequency) heating to kill CBB in green bean

RF (radio frequency) heating will shorten time to heat green bean.
But needs air movement and shifting of beans within the RF field for
uniformity of heating.



Storing Parchment Before Milling

Observed a need for 11% moisture to assure CBB stops feeding.
Beetles taken from storage and kept at Kainaliu ambient temperatures
Beetles held at 20C (68F) do not multiple, feed, or spread to other beans.

Recommend drying to 10 to 11% moisture and reducing temperature to 60F (15C) to prevent damage in storage.

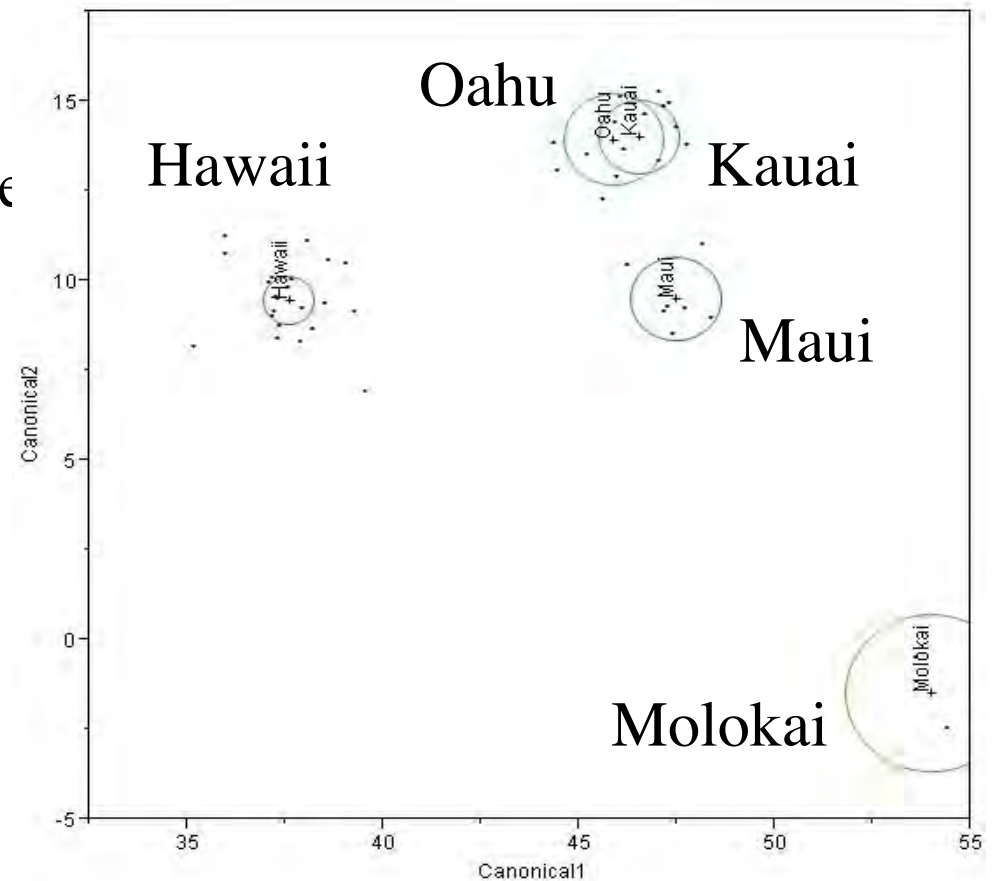


Coffee Origin Verification

Working with Portuguese lab.

Good separation for one year samples using isotope ratios

Published article in J of Agriculture and Food Chemistry



Small size Huller

For parchment, naturals, or cacao

Made from Locally available materials- plywood, PVC pipe, hard wood dowel

Do it yourself-Table saw, Drill, hand or stand press

Or

Support future biological engineers-Biological Engineering Student Assoc will build for materials and donation

