Coffee Research at PBARC

Daniel K. Inouye

U.S. Pacific Basin Agricultural Research Center

USDA-ARS, Hilo, HI

Marisa Wall, Director

Our Coffee Team


- Tracie Matsumoto – RL/Research Horticulturist
- Roxana Myers – Research Plant Pathologist
- Lisa Keith- Research Plant Pathologist
- Nick Manoukis- RL/Research Biologist
- Peter Follett- Research Entomologist
- Melissa Johnson – Research Biologist
- Marisa Wall- Director/Research Horticulturist

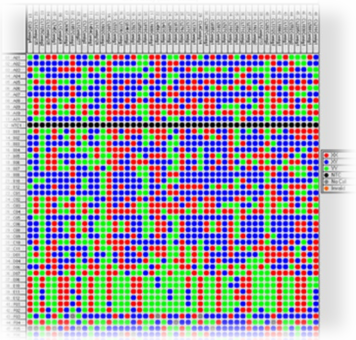

New!

- Peishih Liang – Research Agricultural Engineer
- Xiuxiu Sun – Research Food Technologist
- Research Geneticist




Tracie Matsumoto – Research Horticulturist

National Plant Germplasm System - Coffee



SNP
Genotyping
ARS Beltsville

Importation and Quarantine
of Foreign Coffee Germplasm
ARS Hilo

OR

Hawaii Coffee germplasm collected by HARC and local coffee growers

Seeds germinated in Hilo, in greenhouse before planting

Backup Coffee Collection
ARS Mayagüez

Long Term (Cryopreservation) Storage
ARS Fort Collins

Primary Coffee
Collection
ARS Hilo

Tracie Matsumoto – Research Horticulturist

Coffee Leaf Rust Resistant Varieties for Hawaii

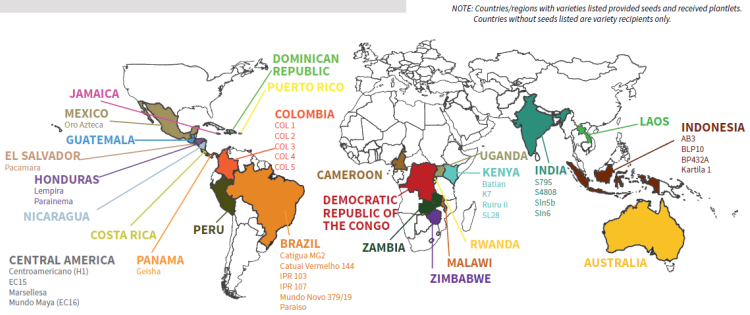
WCR International Multilocation Variety Trial

https://worldcoffeeresearch.org/work/international-multilocation-variety-trial/

WORLD COFFEE RESEARCH

HARC Hawaii Agriculture Research Center

22 countries host IMLVT sites



CLR Tolerant/Resistant Lines

Batian	Centroamericano H1	Ruiru 11
Catigua MG2	IPR103	S4808
Col1	IPR107	S795
Col2	Kartila 1	SLN5B
Col3	Marsellesa	SLN 6
Col4	Oro Azteca	
EC15	Parainema	
EC16	Paraiso	

Other Ongoing Activities

Negotiation with Breeders of Coffee Varieties in WCR IMVLT and other countries

Working with Dr. Dapeng Zhang at USDA ARS Beltsville to genotype current CLR resistant coffee in Hawaii

Investigating other potential varieties for Hawaii with Coffee Strategic Plan Variety Committee

- Chifumi Nagai
- Noel Arrieta
- Luis Aristizabal
- Andros Bracamontes
- Miguel Meza
- Arturo Correa

Development of methods to safely import coffee through USDA APHIS Controlled Import Permit

Questions: Please contact Tracie Matsumoto tracie.matsumoto@usda.gov

Roxana Myers – Research Plant Pathologist

Kona Coffee Root-knot Nematode

- Field Evaluation of Nematode Tolerant and Resistant Rootstocks
- Screening of Rust Resistant Coffee Varieties for Nematode Tolerance and Resistance
- Assessing Control Methods – Host Resistance, Cultural Practices, Amendments, Chemical and Biological Nematicides

Non-grafted nematode susceptible Typica

Typica grafted to nematode tolerant rootstock

In Collaboration with University of Hawaii, CTAHR

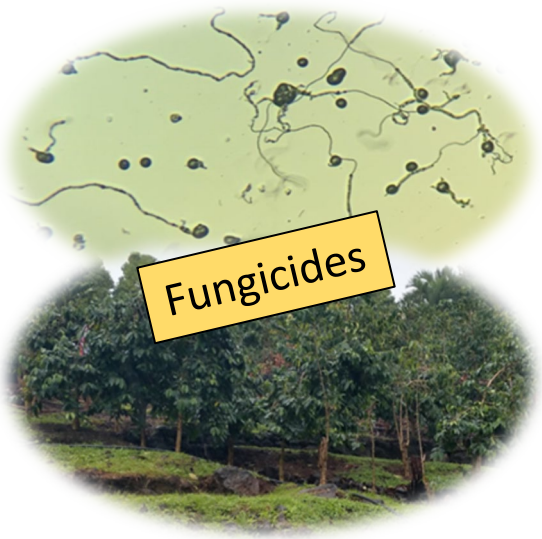
Coffee Leaf Rust

Lisa Keith – Research Plant Pathologist

- Pathogenicity

  CLR; Coffee Fruit Rot; Cercospora Spot

- Management



Developed Visual Aids / Molecular Methods for Early Disease Detection & CLR Sanitation Protocols

Melissa Johnson- Research Biologist

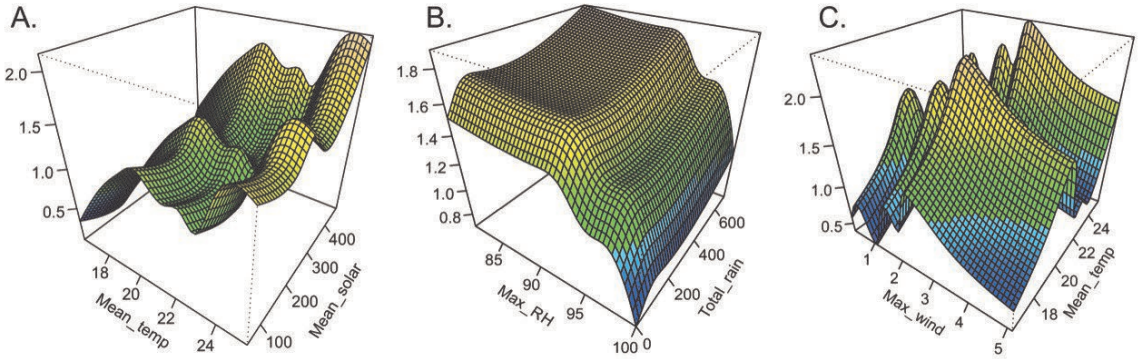
Coffee Leaf Rust

- Conducting surveys to estimate incidence & severity on managed commercial farms
- Quantifying spore load and characterizing wind dispersal using passive spore samplers
- Correlating symptoms with weather variables, as well as landscape and plot level characteristics
- Integrating data on CLR biology, agronomic characteristics and weather data into predictive models
- Describing impacts on coffee quality (physical and sensory defects)
- Optimizing management practices for CLR: pruning, sanitation, fertilization regimes

Melissa Johnson- Research Biologist

Coffee Berry Borer Research

- Developing baseline for post-harvest ground and tree sanitation
- Characterizing CBB flight: seasonal patterns, average/maximum height, time of day, relationship with weather variables
- Ground covers to improve soil/plant health and increase rate of raisin decomposition & CBB mortality



Beauvaria bassiana

Keith, Matsumoto, Johnson

Peter Follett- Research Entomologist

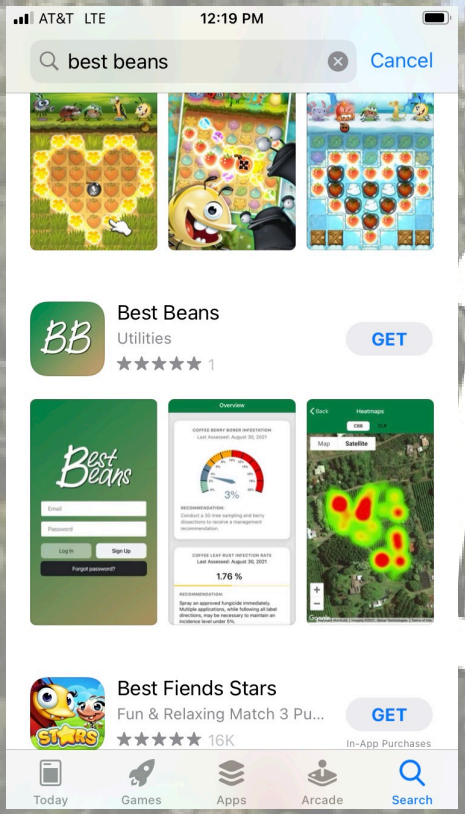
Coffee Berry Borer Biocontrol

Parasitic wasp attacking CBB

Predator breeding station

Nick Manoukis- Research Biologist

Best Beans App



- Currently available on iOS [App Store] and Android [Google Play]
- Testing phase until next season

CBB and CLR monitoring and decision support available now

SMART YIELDS

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