2019 Black Pod Rot Variety Trial
Hilo, Lahaina, Kauai

How is the trial set up?

• 10 clonal varieties
• Each clone has 10 replicates per trial
• Trial replicated three times (Hilo, Kauai, Lahaina)
• Clones are grafted onto seeds from UH4 trees
  (clones) seeds are half siblings
• Clonal material from:
  • USDA ARS Hilo
  • USDA ARS Puerto Rico
  • Dan O’Doherty

Kauai Ag Research Center

Maui Ku’ia Estate
Waiakea Station – Hilo

Elevation: 600-800 ft Annual rainfall: 170 in Ave. min. temperature: 63°F Ave. max. temperature: 79°F

Soil series: Papai Soil order: Histosols
- Very-stony, organic soil. Important agricultural soil supporting macadamia nut orchards and diversified crops.
- Very rich in organic matter. Very high nutrient holding capacity. Well-supplied in Ca, Mg, K.
- Strongly acidic to moderately acidic (pH = 5.1 - 5.5). Al toxicity is rare due to high organic matter.
Mauai Ku’ia – Lahaina

Elevation: 150-250 ft  
Annual rainfall: 16 in  
Ave. min. temperature: 72°F  
Ave. max. temperature: 86°F

Soil series: Waine’e  
Soil order: Mollisols

- Very stony soil on coastal slopes. Once used for sugarcane production, now covered in brush land.
- Fertile soil. Well-supplied in Ca, Mg, and K.
- Near neutral to slightly alkaline (pH = 6.6 - 7.3)

Kauai Station – Wailua

Elevation: 500-600 ft  
Annual rainfall: 98 in  
Ave. min. temperature: 68°F  
Ave. max. temperature: 78°F

Soil series: Halii  
Soil order: Oxisols

- Well-drained, clayey upland soil. Once used for sugarcane production, this soil is now abandoned agriculture land, forested, or pasture.
- Naturally infertile. Low nutrient holding capacity. Often deficient in Ca, Mg, and K.
- Extremely acidic to strongly acidic (pH = 3.6 - 5.0). Aluminum toxicity is common if pH drops below 5.5. Thus, liming is required before planting.

The Clones

- Clones were selected with the help of Dan O’Doherty, Colin Hart, Tracie Matsumoto.
- They are and will be grafted with side wedge as well as top wedge.
- They should all have good to excellent flavor, good yield, low pod index, good architecture
- We will be looking specifically at black pod
tolerance and resistance, while noting yield and vigor.

**UH3**
- Skip’s selection from the statewide variety trial
- CTHAR Waimanalo Seedling (CTAHR identified)
- Shows black pod resistance
- Named “Easton”
- Six yr old grafted trees average 3.6 lb dry bean per tree (1,600 lb/acre) across 4 sites in 2016. Bean size is good, 1.4 g/bean or 323 dry beans per lb.
- Pod index is good 26 pods/1 kg dry bean

**UH4**
- Vigorous grower
- Waialua farm seedling (Dole identified)
- ~28 pod index
- Being adopted in the state as a seedling rootstock
• Self compatible

ICS95
• Worldwide standard for yield, flavor, BPR
• Criollo X Trinitario
• Pod Index 22
• 870 lbs per acre

TARS 1
• UF-668 x Pound-7
• 25.4 pod index
• 1806 lbs per acre
• A very complex nut character comes through, more like chestnuts roasting with a blend of some hazelnut skins

TARS 23
• UF-668 x Pound-7
• 24.5 Pod Index
• 1940 lbs per acre
• Rich, smooth chocolate profile up front with lots
of deeper, mild dark wood notes; really good overall flavor profile; the aftertaste is really a good chocolate

**Kapoho 2**
- Local selection
- Recommended by Tracie Matsumoto (USDA ARS)
- Vigorous and productive with low incidence of black pod rot

**Kapoho 3**
- Local selection
- Recommended by Tracie Matsumoto (USDA ARS)
- Vigorous and productive with low incidence of black pod rot
Criollo crosses from HSCT

- UH7 mother x with Upper Amazon Forestero
  PHL-05 PHL-06 PHL-15
- Selected and contributed by Dan O’Doherty

1.00 +
Parinari
SCA/Ucayali
0.80
Criollo
Amelonado

0.60
0.80

IMC/Nanay ony Nacional


0.40 -
3.60 0.40

0.20
1.20

0.00
0.00

- PHL-15
- PHL-05
90-1Hd

OOPERATIVE EXTENSION
UNIVERSITY OF TAWALA MANO COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

Timeline
• 2019 finish all grafts by August, Plant test plots by December
• 2020 Maintain by fertilizing, weeding, Start to take phenotypic data, Remove cages
• 2021 continue with phenotypic data collection
• 2022-2024 take yield, vigor, and phytophthora data
• 2025 make recommendations on suitable selections

Questions?
• Thanks to the Associate Dean of Extension, Kelvin Sewake for making the funding available to start this variety trial.
• Funding made available from Legislative appropriation from 2018 Legislative Session.
• Thanks to Hawaii County R and D for funding the evaluation of a further tens clones in Hawaii County.

• References