Evaluating Promising New Eggplant Varieties for Commercialization

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Identifying Suitable Eggplant Hybrids for Commercialization

- Finding suitable varieties for Hawaii’s unique growing conditions is critical.
- Evaluation and selection of new crop varieties tolerant to new and reoccurring pest and diseases enable growers to manage pest and diseases in an environmentally friendly manner while minimizing costly crop protection chemical inputs.
- Increased access to online local, national and international seed companies has now generated an influx of promising vegetable cultivars into Hawaii.
  - However, new pathogens have made its way into the state through these portals.
  - This poses a great threat to Hawaii’s diversified agriculture sector.
- Commercial growers rely on seeds produced through ADSC for their commercial operations in Hawaii. This project provides an opportunity to develop and expand ADSC’s Seed Program to include new promising varieties best suited to Hawaii’s unique environmental conditions as well as provides an opportunity for us to expand our organic seed sector in CTAHR.

Project objective: Finalize the commercialization of 2-3 long eggplant varieties (convention and organic culture) for marketing and sale through UH CTAHR’s ADSC Seed Lab

- This project aims to complete the 5 year commercialization process in identifying and commercializing 2-3 new and promising long eggplant (Solanum melongena) cultivars (organic and conventional) preferred by many Hawaii’s growers and consumers.
Variety trials were conducted in 2008 and 2013 utilizing a randomized complete block design with 4 reps at the Poamoho and Waimanalo Research Stations under conventional and certified organic management. Commercial eggplant varieties with potential for commercialization include new eggplant hybrids developed by Dr. Kenneth Takeda, emeritus CTAHR horticulturalist, and Susan Migita, station manager of the Poamoho Research Station.

The promising 200 series numbered cultivars were selections made by Dr. Kenneth Takeda. Hybridization or cross breeding work was conducted by Susan Migita. The 2013 field screening data shows new eggplant hybrids developed by Takeda and Migita have promise as new commercial cultivars in Hawaii.

Additional statewide field work was necessary to evaluate statewide crop production suitability, shelf life issues, and producer /consumer preferences to expand on the promising horticultural characteristics of long eggplant varieties at CTAHR.

Supplemental funds obtained via CTAHR were secured in 2013 to evaluate its commercialization potential.
Statewide Assessments 2013-2014:

- Upper / Lower Elevation
- Conventional / Organic Cultivation
- Staked vs non Staked Propagation
- Seed vs. Cutting Propagation

Poamoho Research Station: 800’ above SL    Kahuku, Oahu: Commercial operation-hybrids only

Maui Extension Office: Sea level    Kula Ag Station& Ag Park: 1300’-3100’ above SL
Waimanalo Research Station: Organic Culture, Hybrids and Heirloom varieties

Hilo Extension Office: Organic / Cutting Culture

Laie, Oahu: Limited selection.
Original Parental Lines

Molokai (Male parent) / Waimanalo (Male parent) / Nitta (Female parent)

Current CTAHR Hybrids for Commercial Sale

Molokai x Nitta

Waimanalo x Nitta
Hybrid Lines Being Considered for Conventional & Organic Seed
Possible heirloom, organic lines

Nitta

Green

Tolentino

Hamasaki
Summary of Data from Statewide Trials (September 2014)

POAMOHO: New hybrids (201, 210 & 204 x N, Tol, and Tol x N) are out performing the current industry standard & parental lines. Do we need to hybridize Tolentino?
POAMOHO: TOTAL NUMBER OF FRUIT

Number of Fruit

POAMOHO: 4 MONTH DATA GRADE B AND OFF GRADES

TOTAL YIELD (LBS)

[Graphs showing data for Grade A and Grade B]
POAMOHO NOTES: There is a need to devote additional time and resources into maintaining the parental lines to retain its key horticultural characteristics. Three different Nitta parental lines yielded varying results: Wai x N (Nitta parent from W. Tolentino), Wai x N (Nitta parent from Poamoho), and Wai X N (Taiwan produced hybrid).

KAHUKE, OAHU: ON FARM
TOL X N, 201 X N AND 210 X N DID SLIGHTLY BETTER THAN INDSTRY STANDARDS
KAHUKU NOTES: New hybrids are out performing industry standard lines. Taiwan produced WAI x N did the poorest at the Kahuku site.

WAIMANALO Research Station (organic) data: June-August 2014

WAIMANALO NOTES: Waimanalo organic eggplant transplanted in April, Harvests every 2-3 weeks. Three replications. One ton of tankage per acre preplant. WAI x N out performed new hybrid lines under organic culture. Hamasaki line should be explored further. Taiwan produced WAI X N did not do as well as the WAI X N line.

Maui & Hilo (organic cuttings) data still pending
**Average Fruit Count / Plant**
Maui Ag Park: 4/23/14-7/30/14

**Average Plant Yield / Plant (oz)**
Maui Ag Park: 4/23/14-7/30/14
Average Plant Yield/Plant (oz)
Maui Ag Park: 4/23/14-7/30/14

Average (A) Fruit Weight (oz)
Average (B) Fruit Weight (oz)

Average Yield/Plant
Kahului: 4/16/14-7/30/14

Average (A) Fruit Weight (oz)
Average (B) Fruit Weight (oz)
2014 Hilo MG Extension Cuttings Project:
Unique challenge due to a lack of available seed

Typical method of propagation: Seed
Mahalo to Sharon Motomura, Andrew Kawabata and Hilo MG for taking on this project. Non-typical method of propagation: Cuttings (see handout)

Reminder, the use of vegetable cuttings for commercial production systems was a temporary replacement due to the unavailability of seed. Additional work is needed to evaluate: 1) effect /
labor of plucking off early flowers, 2) yield comparisons of cuttings vs seedlings, and 3) impact of repetitious vegetative cuttings.

**Summary:**
Program investigators are working with the ADSC Seed Lab program to commercialize new eggplant hybrid varieties once statewide field trials are completed. Commercial eggplant sales via ADSC generates income to UH CTAHR every year. ADSC has an established commercial partnership with Known You Seed Company (to scale up seed volume) and new hybrid lines from CTAHR could result in increased sales and royalties.

2017 Update:
Tolentino, Hamasaki and 210 are currently being grown for commercial seed at UH CTAHR. Parental issues with Nitta x Waimanalo have been rectified and hybrids have been re-released for commercial sales.