

GENOTYPE INDEPENDENT IN VITRO CLONING OF AVOCADO (*Persea americana*)



- **Skybury farms:** Tropical North Queensland (17° 00' 21.5" S and 145° 20' 18.2" E)
- **Diversified farm:** Papaya, Coffee, Avocados, Banana, Citrus..
- **Marketing:** Tropical Fruits Direct (**TFD**)
- **Skybury Red Papaya:** Market leader $\geq 70\%$ of AU market
- **Excellence** through innovation and best practices
- **Value addition:** Papaya and Coffee liquors, creams etc
- **Research:** Conventional breeding and Biotechnology

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SKYBURY CLONING STORY.....



In vitro cloning

Octopus rooting



Acclimatisation/Growing on



CLONED PAPAYA- ADVANTAGES



- Counter sexuality by cloning hermaphrodite plants
- Uniformity, Early bearing, Low fruit set (30 cm)
- High vigour, thick stem & short internodes- more fruits
- Uniformity – reduced management cost
- High yield & Disease tolerance
- Higher profit



Adjacent rows of 4 months old - TC plants and Seedlings



SKYBURY 35- IN PRODUCTION - 2022



AVOCADO GENOTYPES CLONED



1. **Hass:** M G (42%, 58%)
2. **Reed:** Hybrid, G (100%)
3. **Zutano:** M G (43%, 56%)
4. **Bacon:** G (94%)
5. **Nabal:** G (99%)

(Chen et al. (2009). Journal of Heredity, 100(1):56–65)

6. **Velvick:** Hybrid: G x WI
7. **Shepard:** G



INITIATION



Challenges:

Media: modified MS, WPM, DKW

Hormones: BAP/ NAA/ IAA combinations

Environment: Light/ Dark, <25 or >25C

Contamination: Surface (fungal)/ Internal (bacterial)



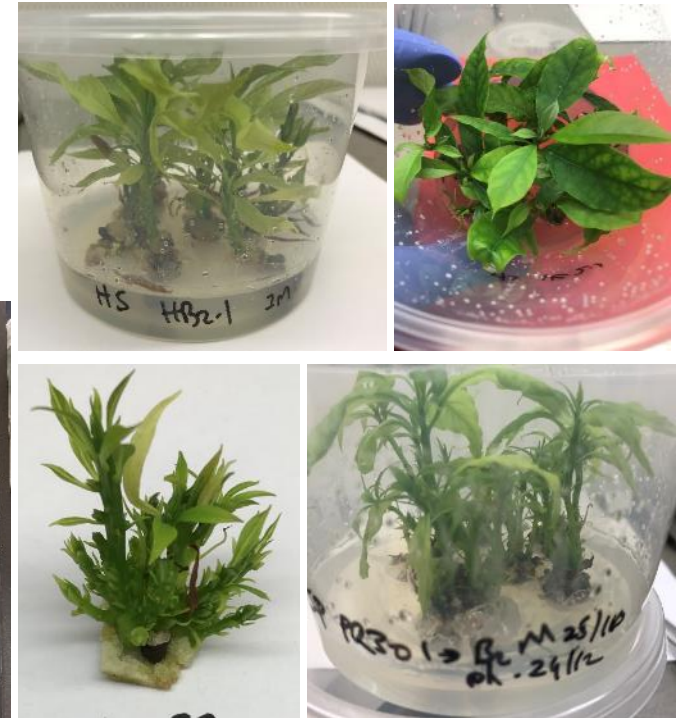
MULTIPLICATION



Challenges:

A recalcitrant, woody perennial plant

Solution: Media, Growth regulators, Light.



ROOTING



Challenge: A recalcitrant, woody perennial plant

Solutions in vitro: Hormones/ combinations

Environment: Dark/ light, Heat

Ex vitro rooting: Hormone/ Natural products



ACCLIMATISATION



Ambient environment
Potting mix/ drainage
Temperature & humidity
Duration in hardening



GROWING ON



FIELD EVALUATION



CONCLUSION



Protocols for micropropagation of 7 varieties (Genotypes) of Avocados standardised

Avo TC Protocol is available from **Skybury farms** for commercialisation

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Questions



10th
WORLD
AVOCADO
CONGRESS
New Zealand
2023

