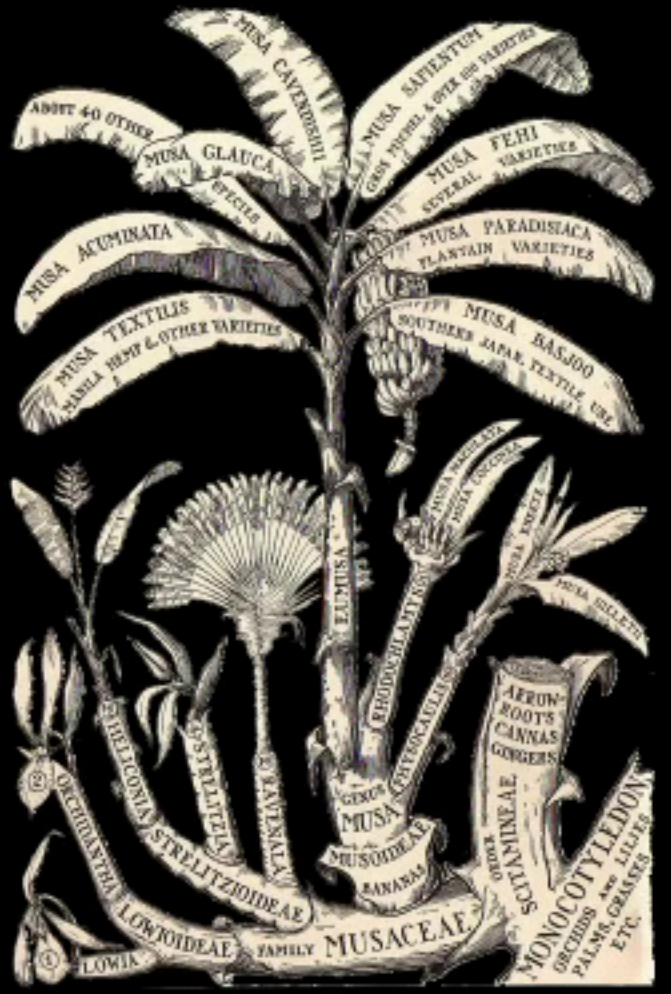
WORLD BANANA TOUR



Gabriel Sachter-Smith

Musaceae

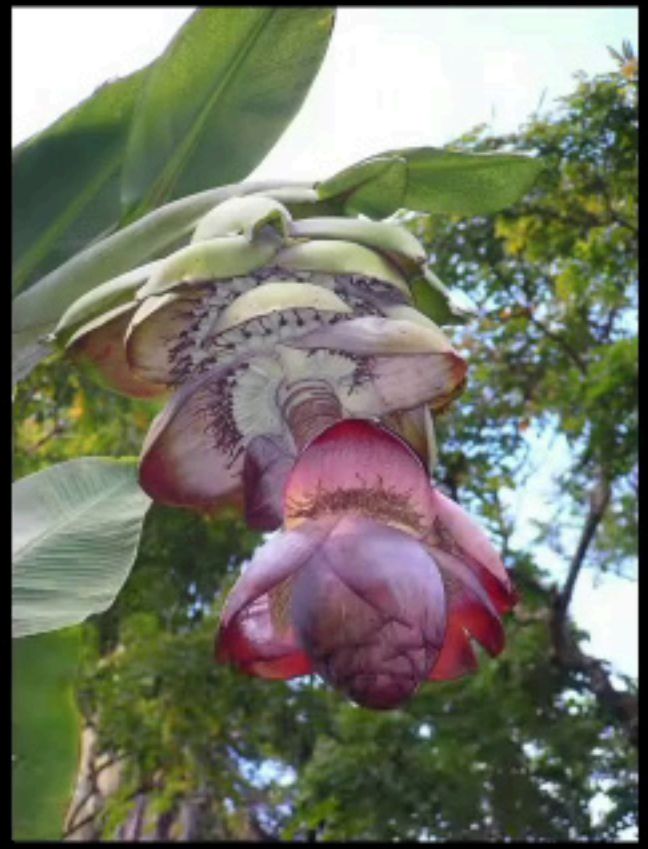
- Native to: Asia, Africa, and the Pacific
- 3 genera: *Musa, Musella, Ensete*
- ~100 species
- Related to: Heliconias, Gingers, Bird of Paradise



(not accurate)

Ensete

- 8 species recognized
- Native to: Asia & Africa
- Flower only once and completely die
- Domesticated forms of *E. ventricosum* in Ethiopia



E. superbum

E. ventricosum

Native to Africa, domesticated as edible crop in Ethiopia called “Enset”

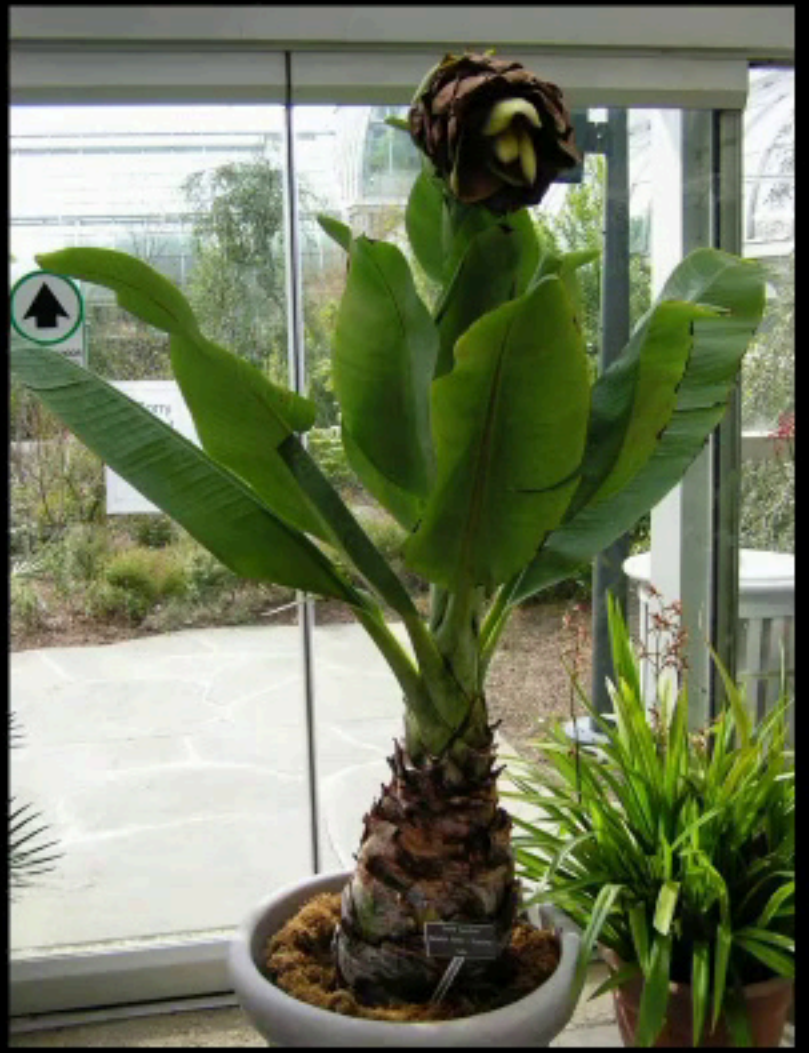


Commonly used as an ornamental landscape plant

E. superbum

Native to India, Thailand





E. glaucum

Wide ranging from India to Papua New Guinea





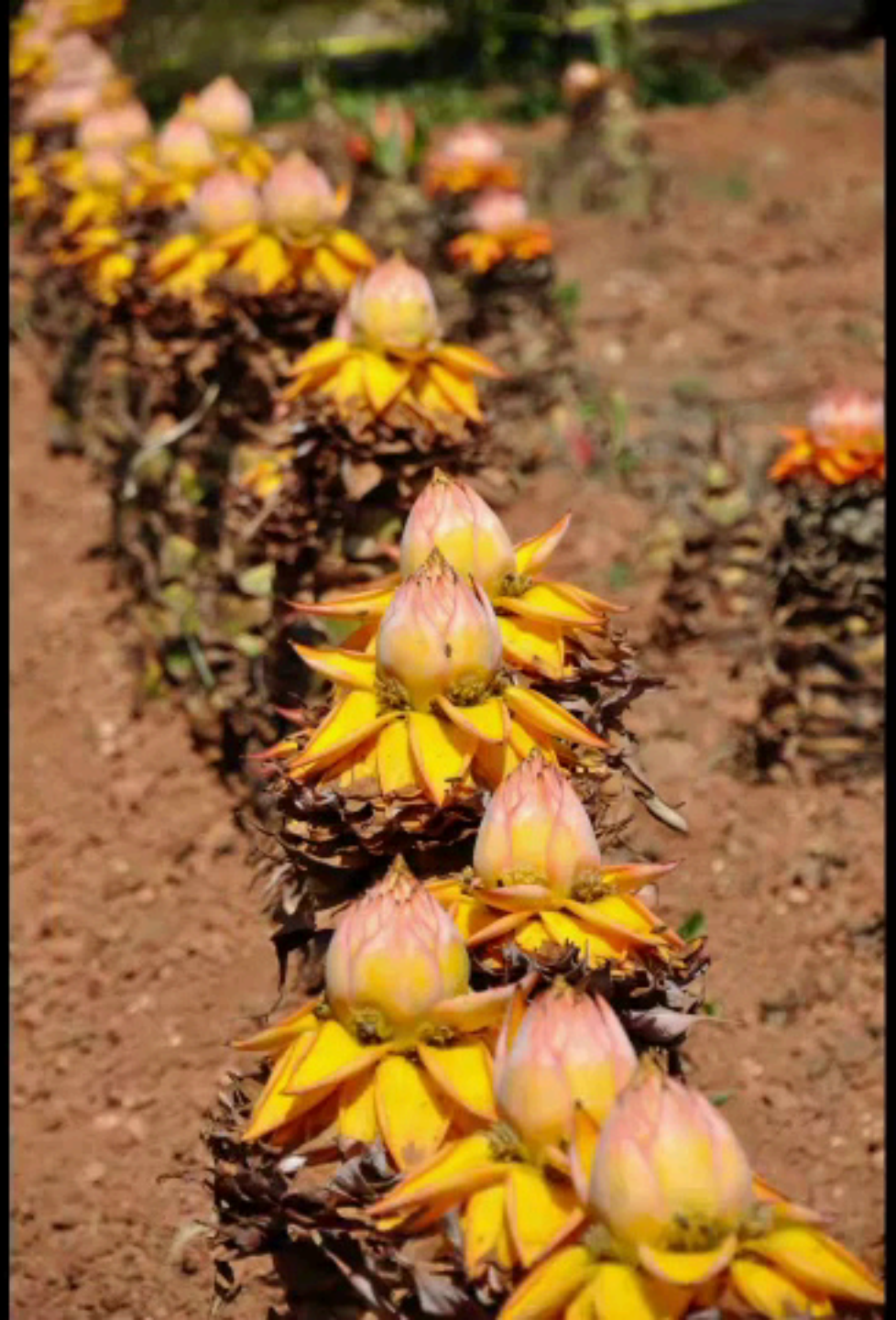


Musella

- 1 species recognized: *Musella lasiocarpa*
- Native to: China and Vietnam
- Highly endangered and very rare in the wild
- Heavily cultivated for animal feed and as ornamental
- “Golden Lotus” revered in some Buddhist traditions
- Closely related to *Ensete*











Musella multiple inflorescences

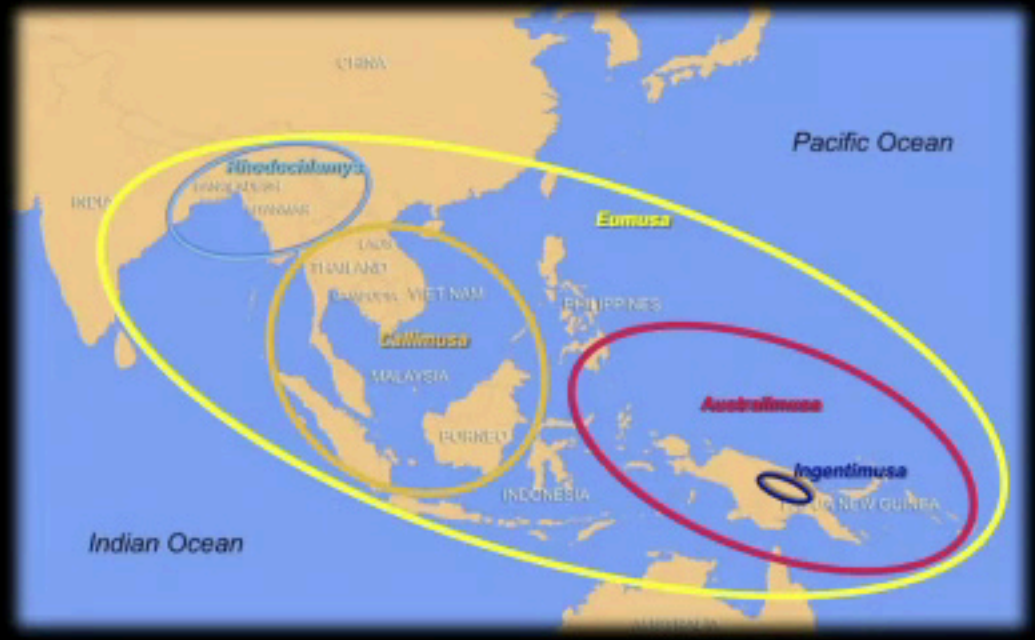






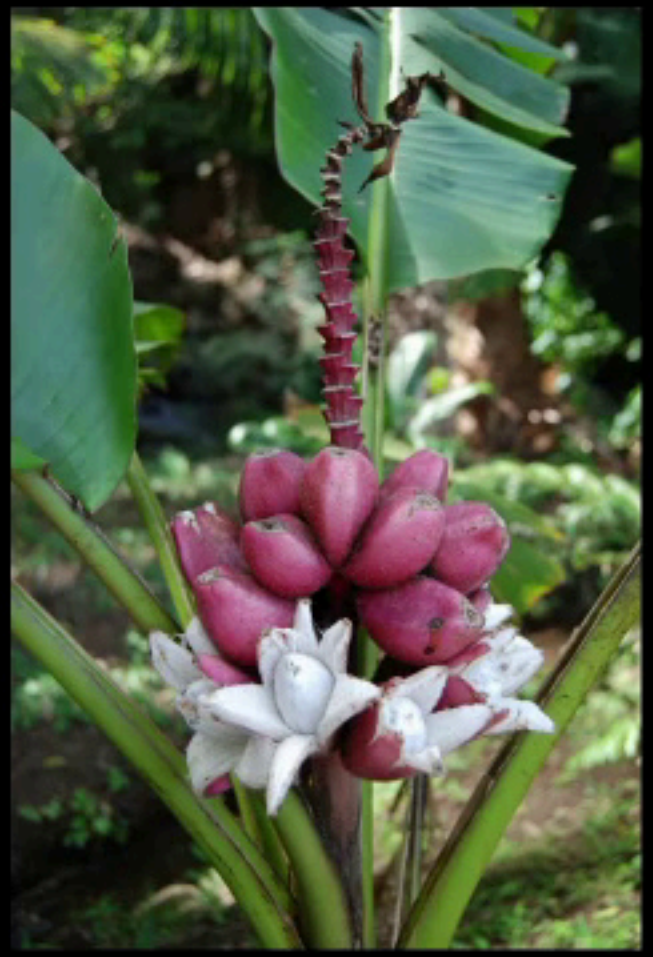
Musa

- Most common types of bananas
- ~80 species recognized
- Native to: Asia & the Pacific
- 2 subgenera: *Musa* and *Callimusa*
  - Formerly 5 *(see right)*



Musa (section)

- Includes majority of edible bananas
- ~40 species recognized
- Native to: Asia & the Pacific
- Formerly split into 2 separate sections (*Eumusa* and *Rhodochlamys*)



M. velutina

Former *Rhodochlamys*



M. mannii



M. ornata



M. laterita

M. itinerans

Native to: India, Myanmar, China, Thailand, Laos, Vietnam, Myanmar, Taiwan

Running with long rhizomes, non-astringent vegetative parts used as vegetable







M. itinerans large, spreading grove

M. itinerans

Native to: India, Myanmar, China, Thailand, Laos, Vietnam, Myanmar, Taiwan

Running with long rhizomes, non-astringent vegetative parts used as vegetable



Flower bud salad



Fruit infused alcohol



Inner stem, vegetable

M. itinerans

"leaf-noodle" dish, Yunnan

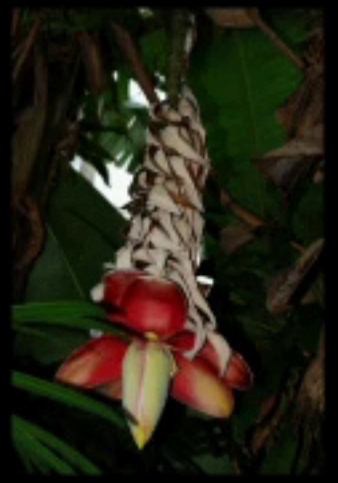




M. balbisiana diversity

Secondary ancestral parent to many edible bananas







Rare in wild, most are cultivated for non-fruit uses

Domesticated *M. balbisiana*





Soft/malformed seeds, large fruit and bunches, seeds/fruit used in medicinal alcohol, pseudostems used for animal feed

M. acuminata

Primary ancestral parent to most edible bananas



var. *zebrina*



subsp. *malaccensis*



subsp. *banksii*

M. acuminata subsp. *banksii*

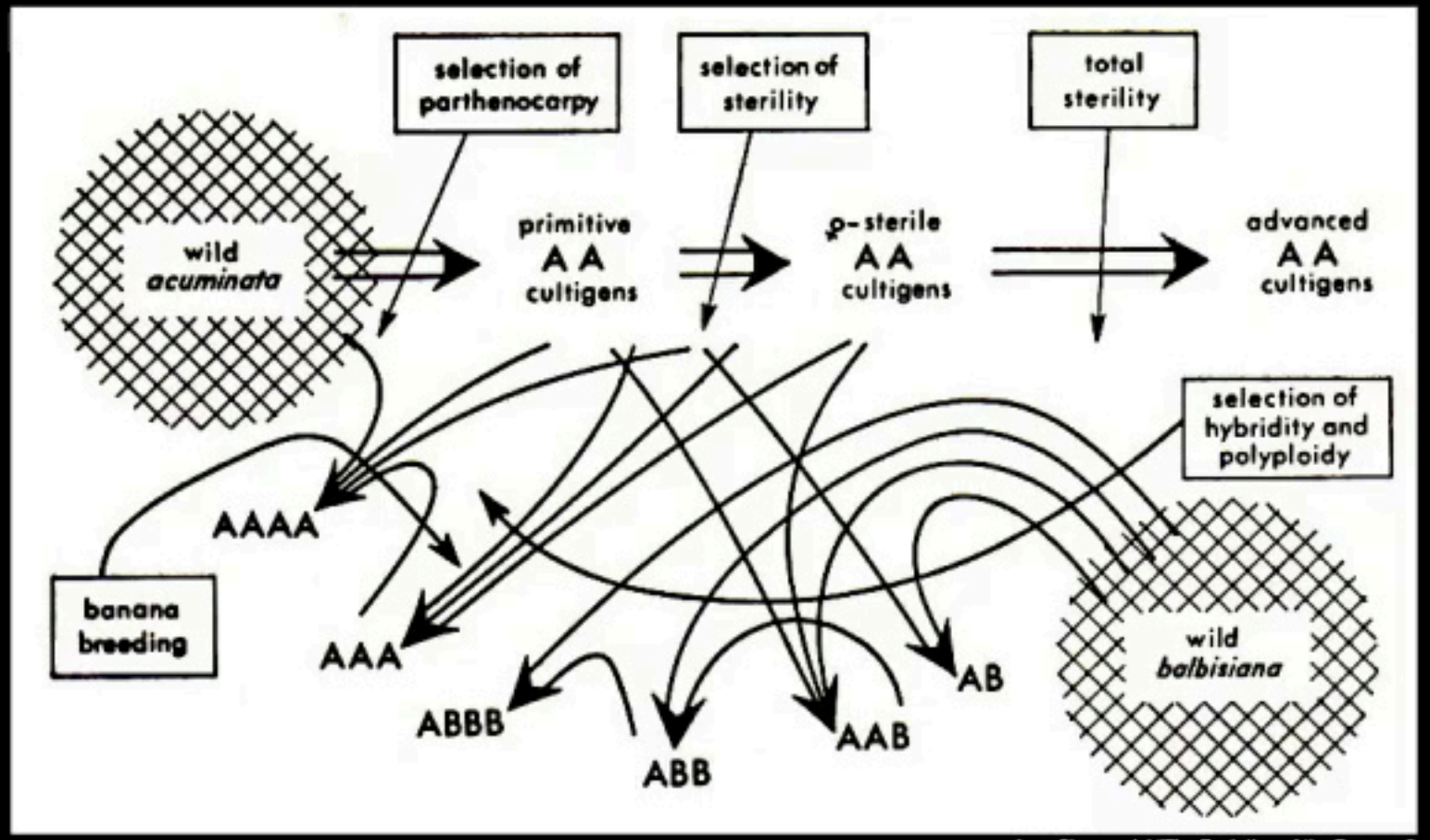


PNG, large wild bunch



Fa'i Taemanu, Samoa
Parthenocarpic wild specimen

From wild to edible



from Simmonds' "The Evolution of the Bananas"

just a conceptual starting point, the reality is even more complex

Genome Groups

- Based on ploidy (number of sets of chromosomes) and species contribution
- AA, AAA, AAAA (pure *M. acuminata* derived)
- AB, ABB, AAAB, AABB (*M. balbisiana* and *M. acuminata* derived)
- A way to classify, but grouping does not inherently mean anything specific about a given cultivars atributes

Diploids

- Plants tend to be more slender
- Often more upright leaves
- Often smaller, but some are large



‘Pisang Jari Buaya’

Triploids

- Plants tend to be somewhat more robust than diploids
- Often more horizontal leaves



‘Putalinga No’uno’u’

Tetraploids

- Plants tend to be very robust
- Often more drooping leaves

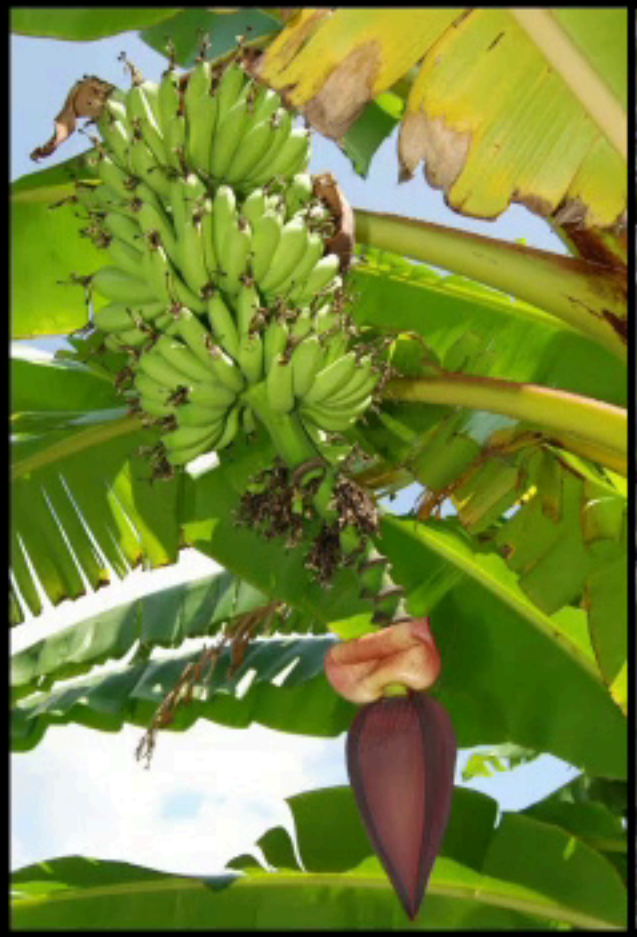


‘Buka’

“Subgroup” Concept

- A single original seedling which diversified into distinct cultivars by mutation
- Not all cultivars are assigned to a subgroup (yet)
- Not a perfect system, but very useful classification system for majority of commonly grown cultivars
- Cultivars within a subgroup generally share many important traits (disease resistance, fruit quality) and only differ in relatively small details (height, pigmentation, fruit size)

Sucrier (AA)



'Hapai'

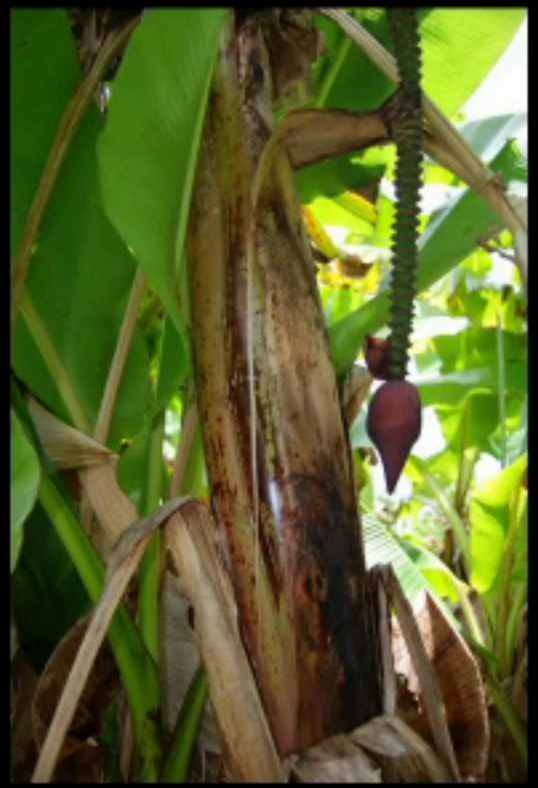
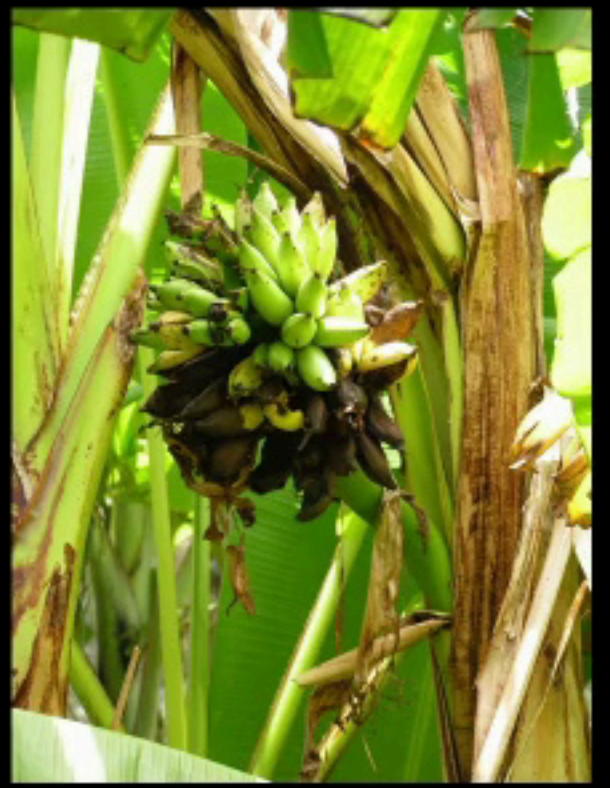


'Pisang Mas Ayer'



typical coloration

Mai’a Hapai

The Pregnant Banana. Not related to any other mai’a.

Mchare (AA)

An ancestral parent of Cavendish, Gros Michel and Pome bananas

Excellent fruit quality, large bunches



‘Muraru Mshale’

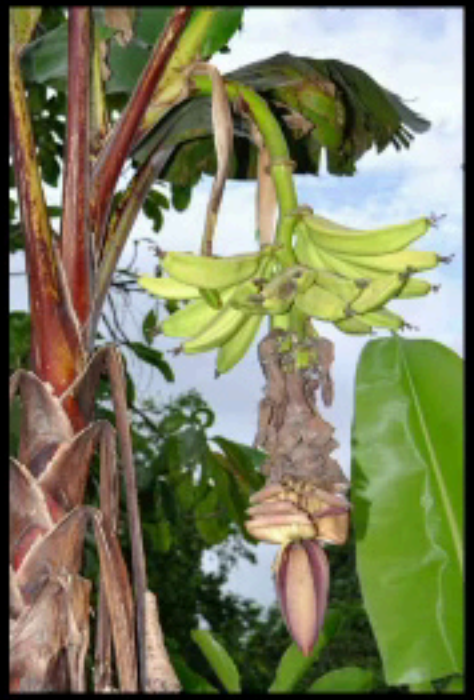


‘Huti Shumba Nyeelu’



large fruit and bunches

Papua New Guinea



'Seseve'



'5-minute'



'Talasea'



'Ruhuvia Chichi'

Diverse domesticated diploids (AA)

Papua New Guinea



Diverse domesticated diploids (AA)

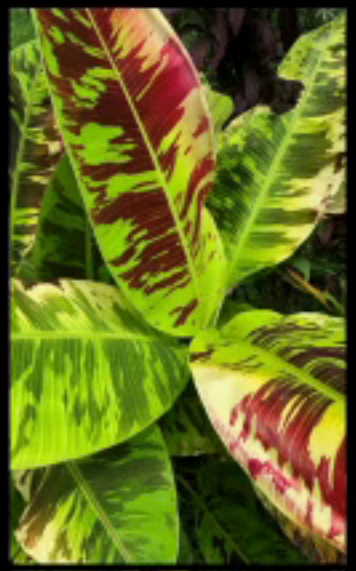
Papua New Guinea



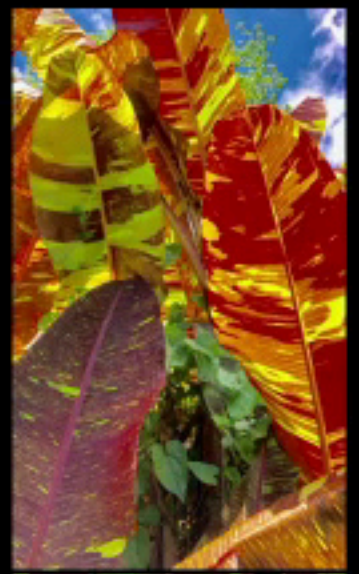
Diverse domesticated diploids (AA)

PNG “red leaf” group

Grown as garden ornamentals, rarely flowering, unclear origin/genetic background



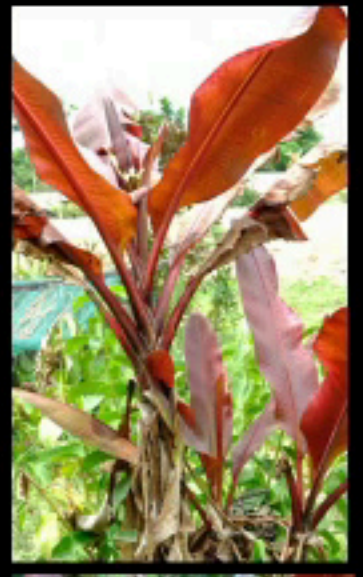
Mostly Green Variegated



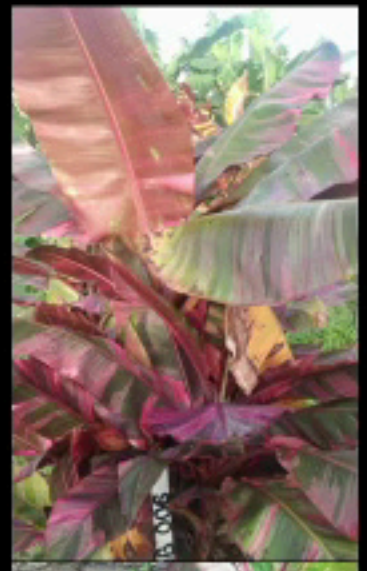
Mostly Red Variegated



Green/Red Solid



Red Solid



Rainbow Variegated

Cavendish (AAA)

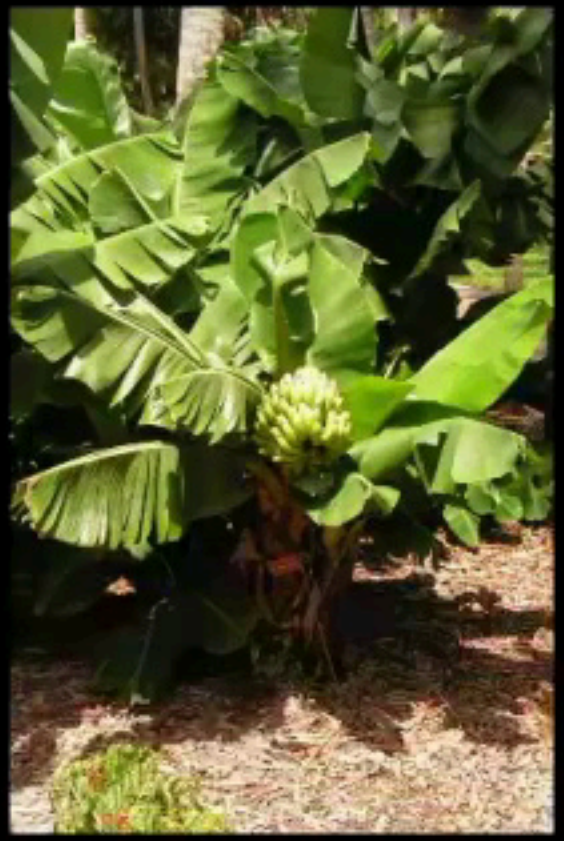
height variations



‘Robusta’



‘Dwarf Cavendish’



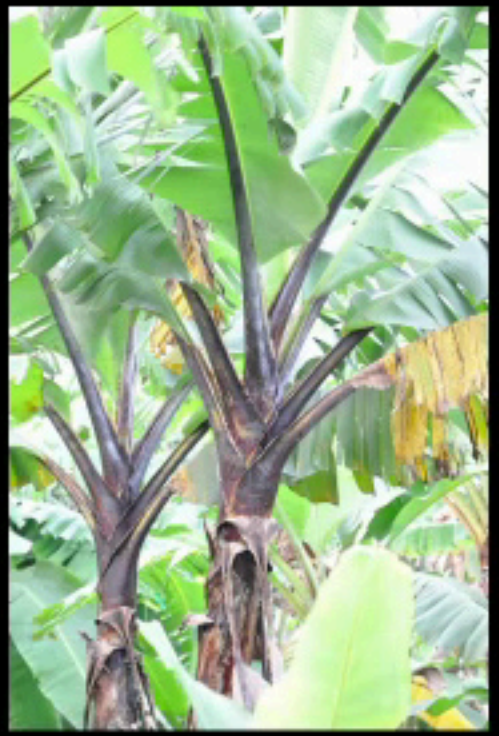
‘Super Dwarf Cavendish’

Cavendish (AAA)

other variations



yellow bud



black, Yunnan



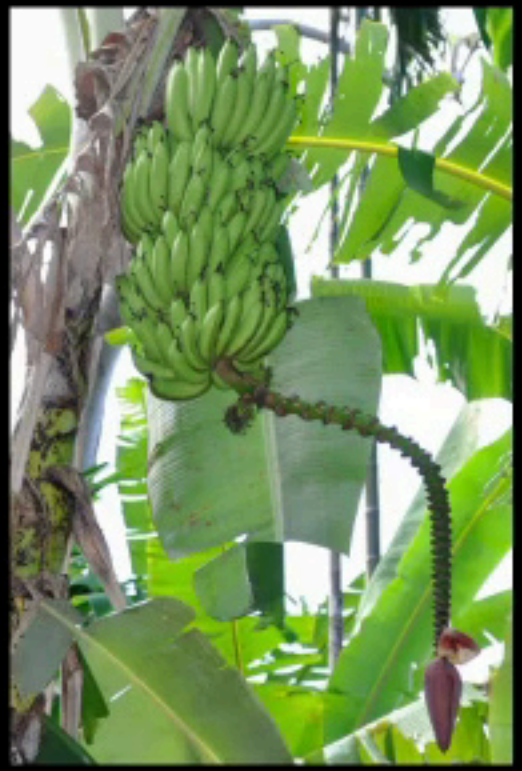
‘Double Cavendish’

Cavendish deserves respect. Essentially an unimproved old, heirloom, village banana. Very adaptable, highly productive. There is a very good reason it's become the most widely grown banana in the world. Not any banana can stand in its place.





Gros Michel (AAA)



'Bluefields'



'Cocos'



'Highgate'

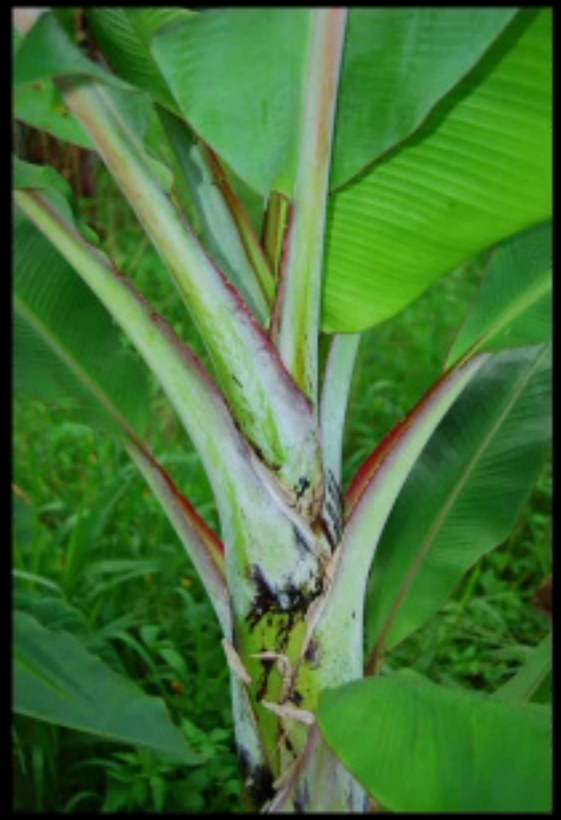
Gros Michel (AAA)



'Bogoya'



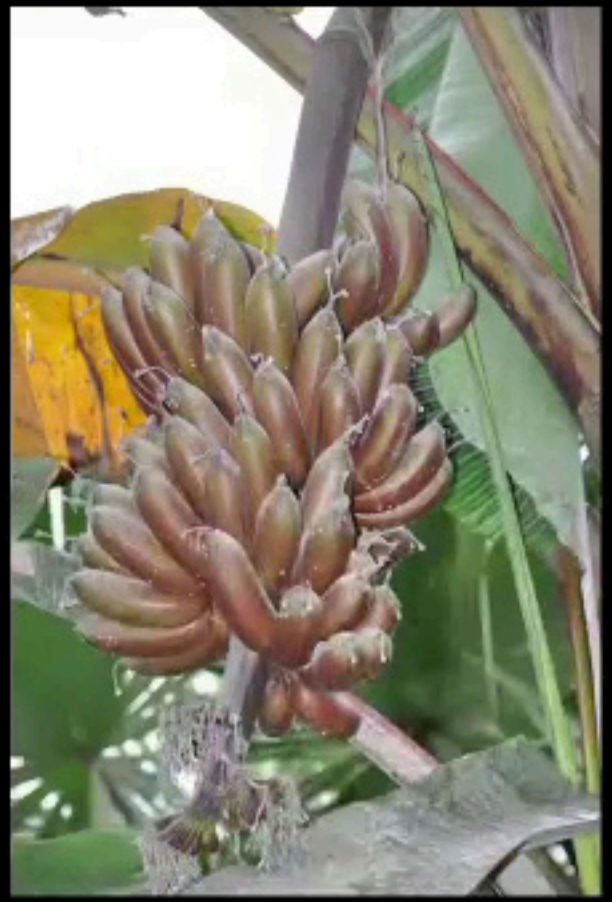
'Cocos'



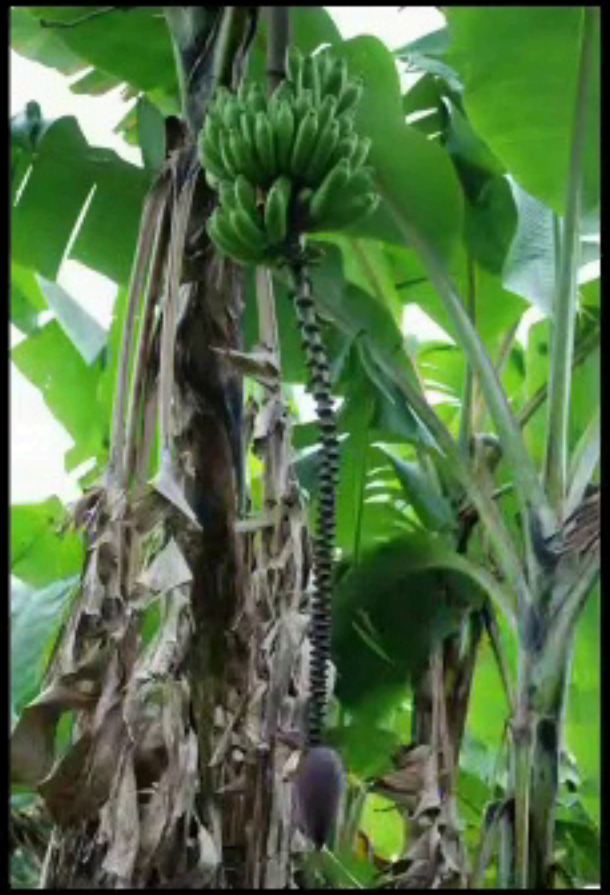
'Highgate'

Often with red on petiole margin

Red (AAA)



‘Red’



‘Green Red’



‘Dwarf Red’

Mutika/Lujugira (AAA)

“East African Highland Bananas”

Important staple crop in East Africa, especially Uganda





Matooke

Mutika/Lujugira (AAA)



‘Bakurura’



‘Makara’



‘Narwezinga’



‘Mukazi Alanda’



‘Namunwe’



‘Nante’





‘Bitambi’


PROUD TO BE
UGANDAN









banana “beer”
Special cultivars used

Plantain (AAB)

A specific genetic group, not synonymous with “cooking banana”



‘Nakatansese’

“French” type



‘Gonja Kakira’

“False Horn” type



‘African Rhino Horn’

“Horn” type

Maoli-Popo'ulu (AAB)



'Mangaro Torotea'
Aitutaki

"French" type



'Fa'i Samoa Au Pupuka'
Samoa

"False Horn" type



'Wan Gevi'
Papua New Guinea

"Horn" type

Maoli-Popo'ulu (AAB)



'Ta'anga'
Aitutaki



'Akamou'
Aitutaki



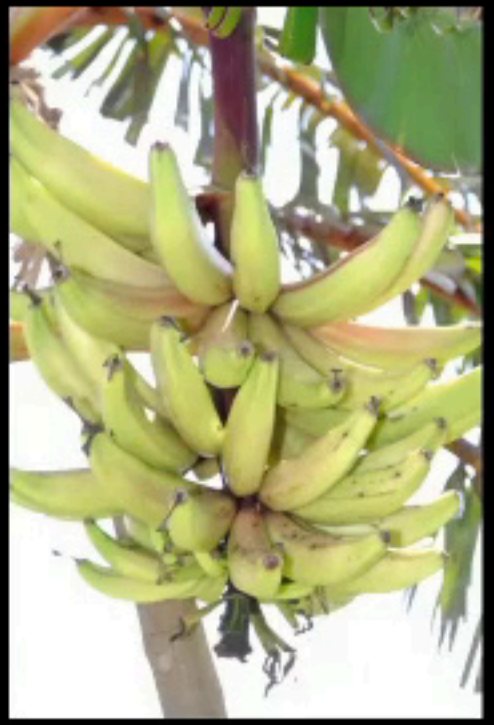
cooked whole fruits

Iholena (AAB)



'Iholena'

dwarf type, Hawaiian



'Laloki Red'

Reddish fruits, PNG



'Sepik Red'

Reddish plant, PNG

Iholena (AAB)

Hawaiian dwarf ‘Iholena’



July



August

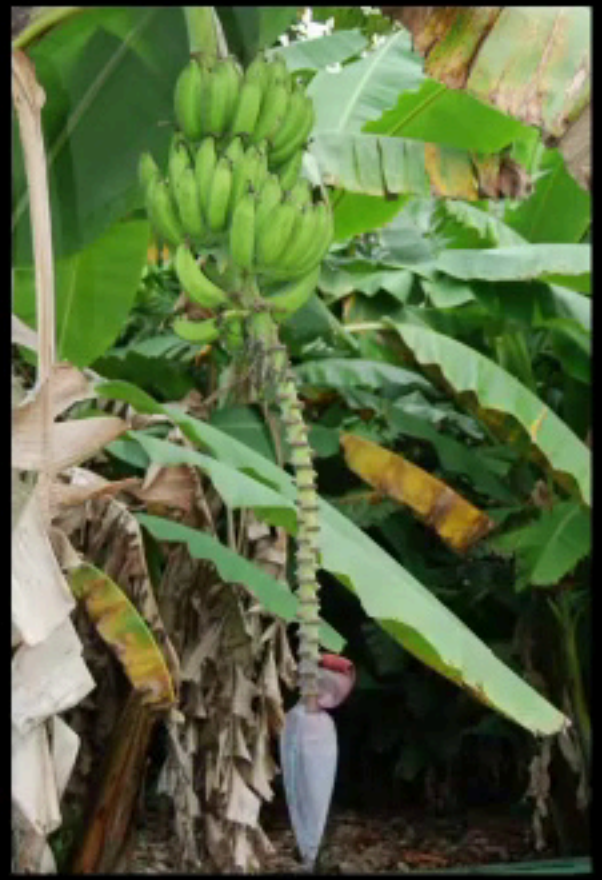


December

From planting to harvest in as little as 7 months

Silk (AAB)

US Mainland “Apple Bananas” aka ‘Manzano’



‘Amorosa’



‘Sukali Ndizi’



‘Ungoye’

Pome (AAB)

Hawaii's "Apple Bananas"



'Brazilian'

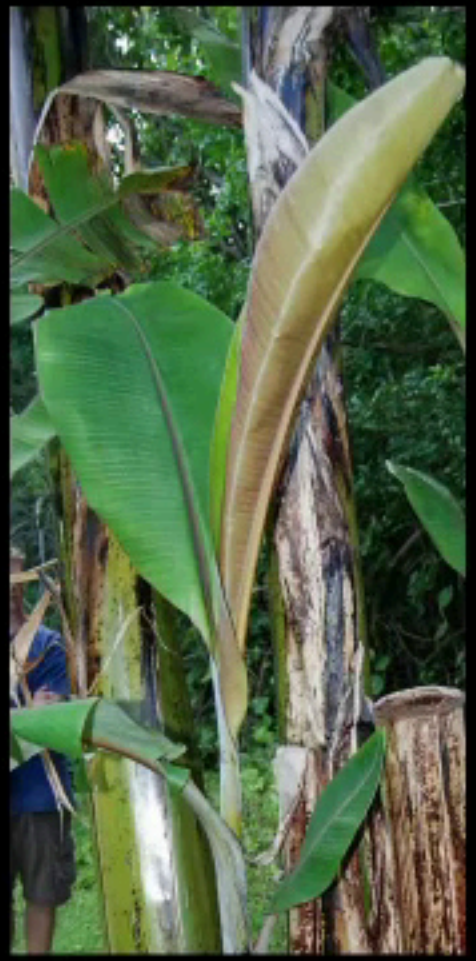


'Santa Catarina Prata'/'Prata Ana'

Mysore (AAB)



compact bunches

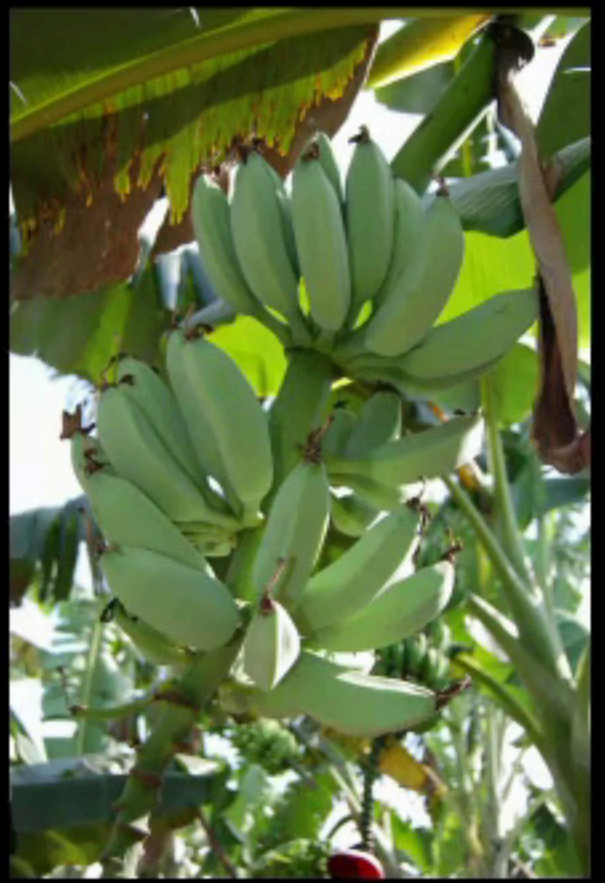


new leaves red underneath

Bluggoe (ABB)

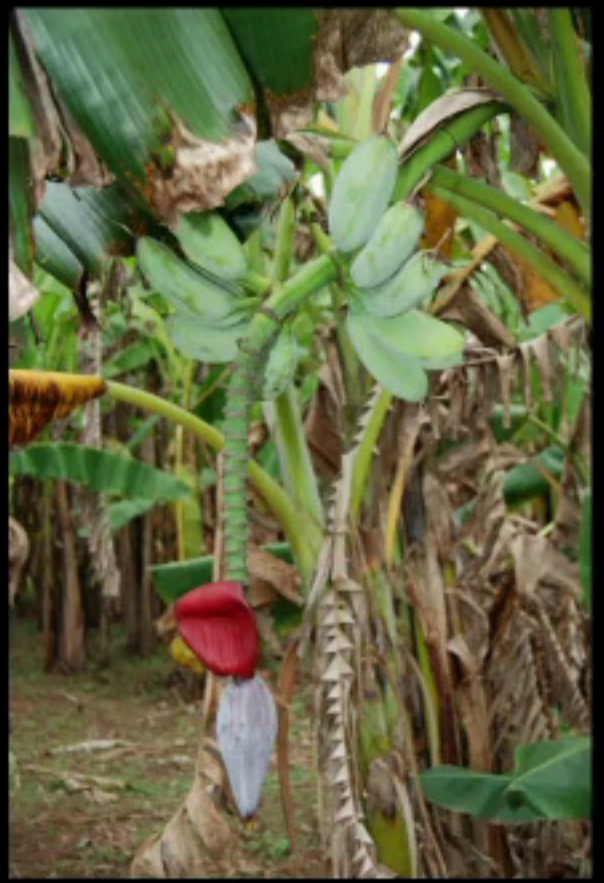


'Largo'



'Kivuvu'

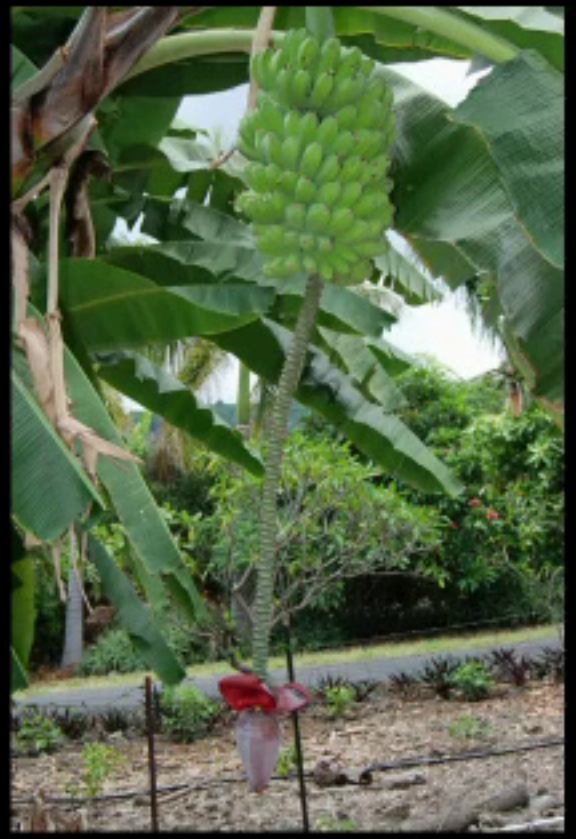
waxy



'Dole'

2 hands only

Saba (ABB)



‘Dippig’



‘Praying Hands’

Pisang Awak (ABB)



standard tall form



(unknown) waxless



'Kluai Namwah Khom' (dwarf)



'Pama' (AA) | 'Pisang Jari Buaya' (AA) | 'Princess' (AA) | 'Rose' (AA) | 'Tango' (AA) | 'Muraru Mshale' (AA) | 'Pagatau (AA) | 'Sucrier' (AA) | 'Duma' (AA)



'Baba Ka'a' (AA) | 'Anemasia' (AA) | 'Tavilo' (AA) | 'Meromero' (AA) | 'Wiau' (AA) | 'Nape'e' (AA) | 'Nesuri' (AA) | 'Seven Kina' (AA) | 'Morou' (AA)



'Robusta' (AAA) | 'Highgate' (AAA) | 'Narwezinga' (AAA) | 'Tereza' (AAA) | 'Ibolena Lele' (AAB) | 'Kifutu' (AAB) | 'Silk' (AAB) | 'Ice Cream' (ABB) | 'Sepik'



'Sar' (AAT) | unknown (Solomon Islands) | unknown (ABB?) | 'Kovokovo' (AAB) | 'Tari' (AA) | 'Gonja Mukuno' (AAB) | 'Kunnan' (AB) | 'Aiuri' (Fe'i) | 'Toraka Gatagata' (Fe

Gabriel Sachter-Smith, 201

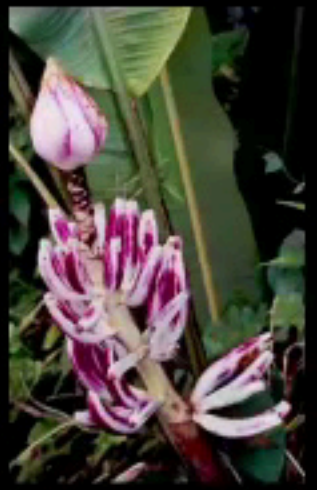
Callimusa (section)



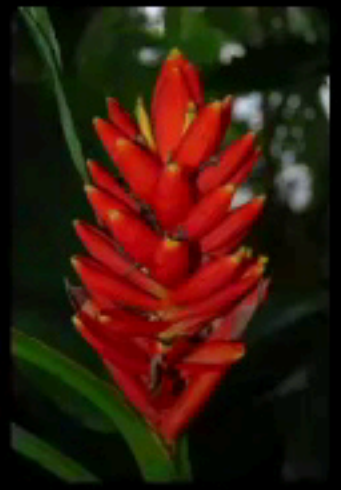
M. gracilis



M. violascens



M. campestris



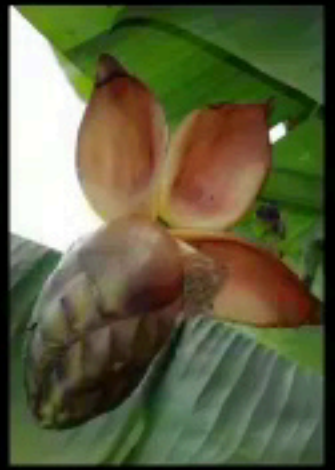
M. coccinea



M. lokok



M. lutea



M. textilis



M. beccarii



M. viridis

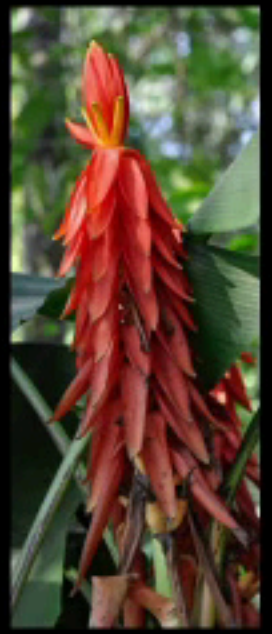


M. peekelii

Vietnamese *Callimusa*



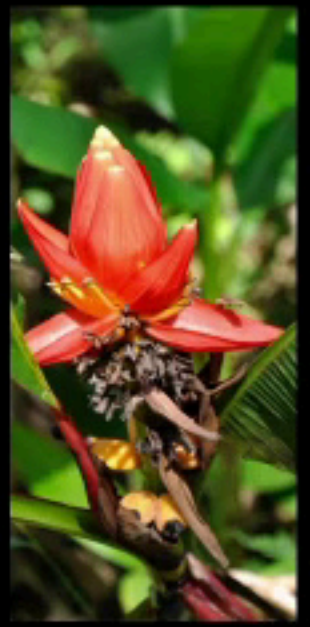
M. coccinea



M. haekkinenii



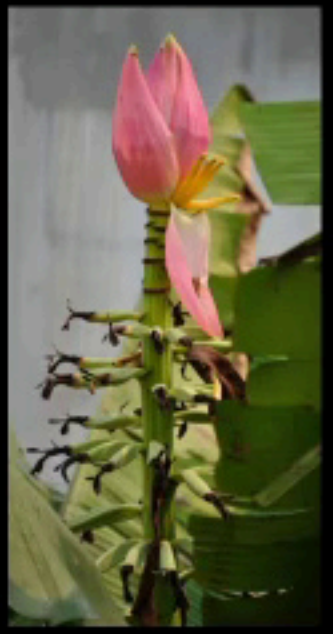
M. lutea



M. exotica



M. splendida



M. viridis

Musa splendida



Sa Pa, Vietnam

Musa maclayi



Erect bunches



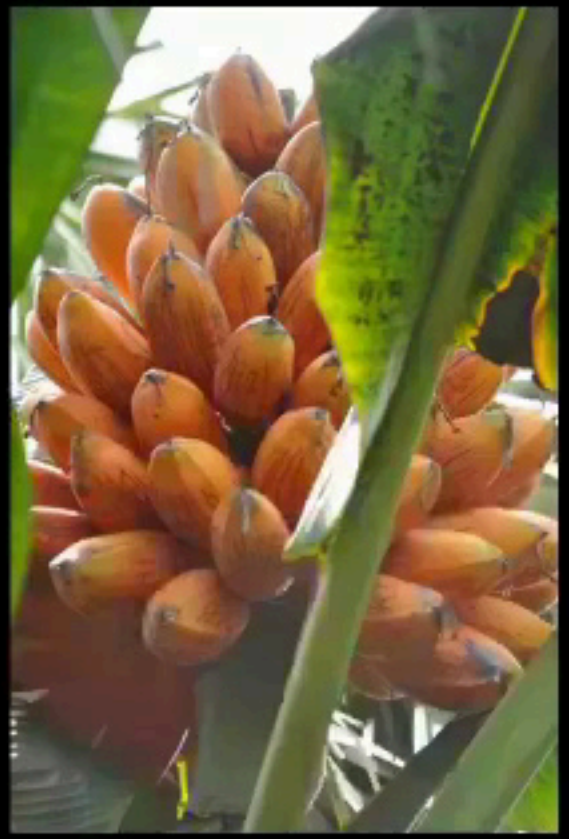
Orange flesh



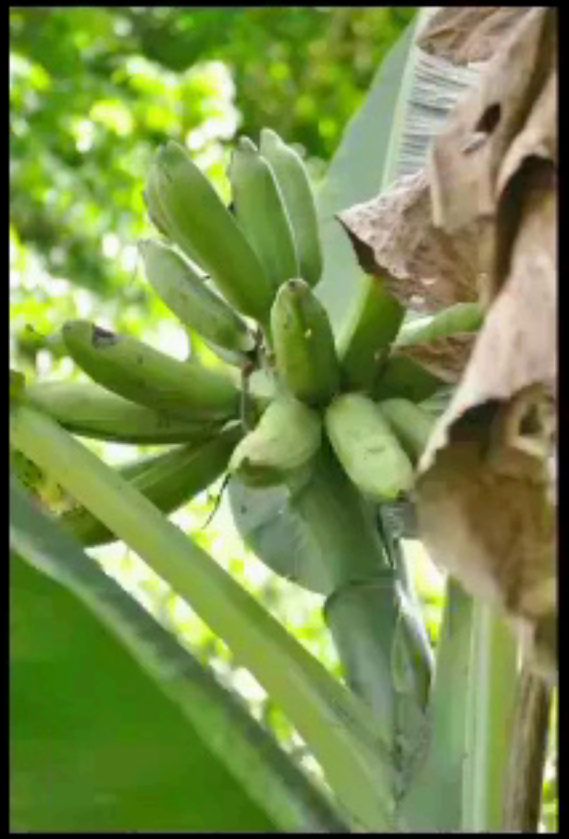
Purple sap

Probable wild ancestor to Fe'i bananas, native to Papua New Guinea

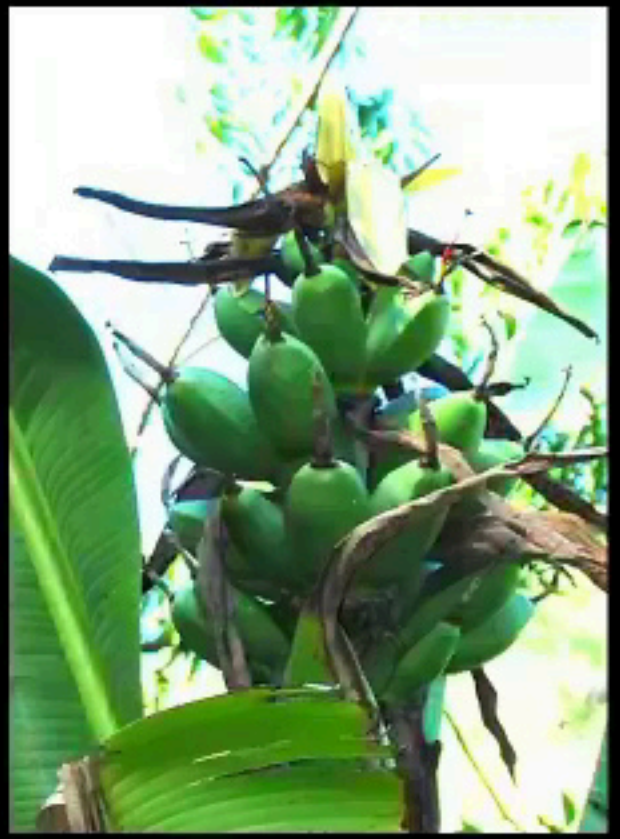
Fe’i



‘Limot’



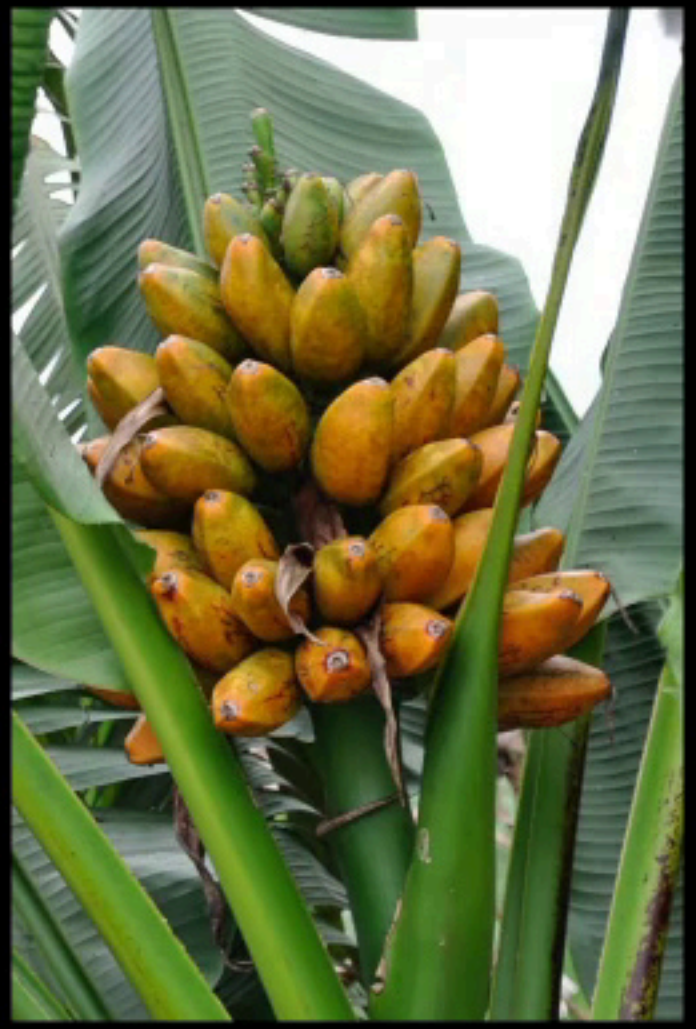
‘Toraka Gatagata’



‘Poti’a’

Many cultivars. Poorly understood in general.

Fe’i of Samoa

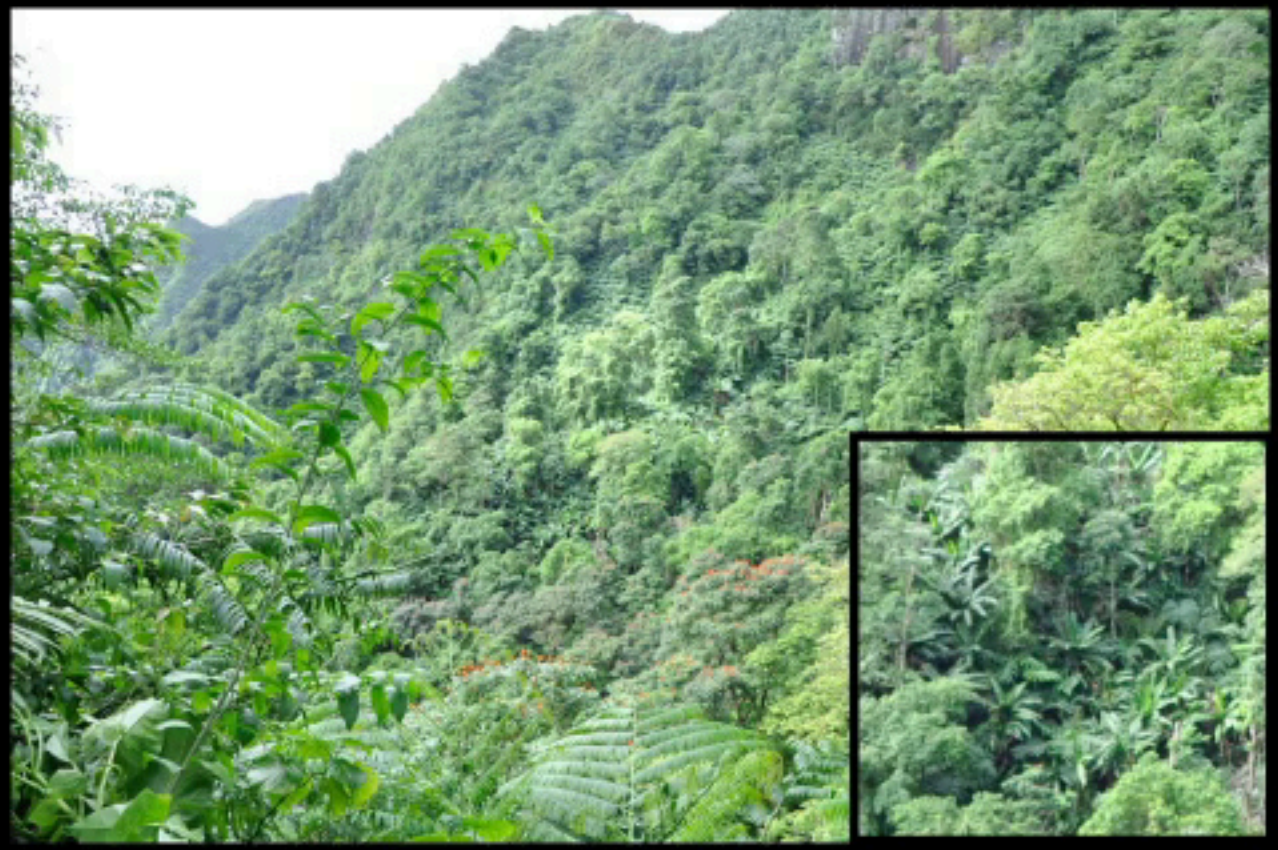


Fa’i Ausulasula

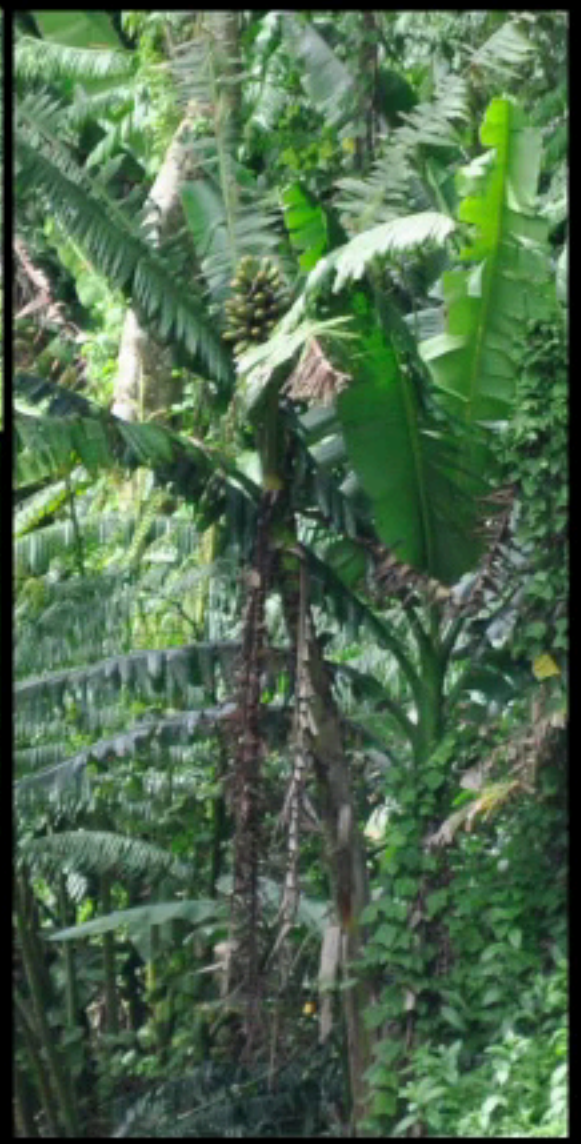


Fa’i Soa’a

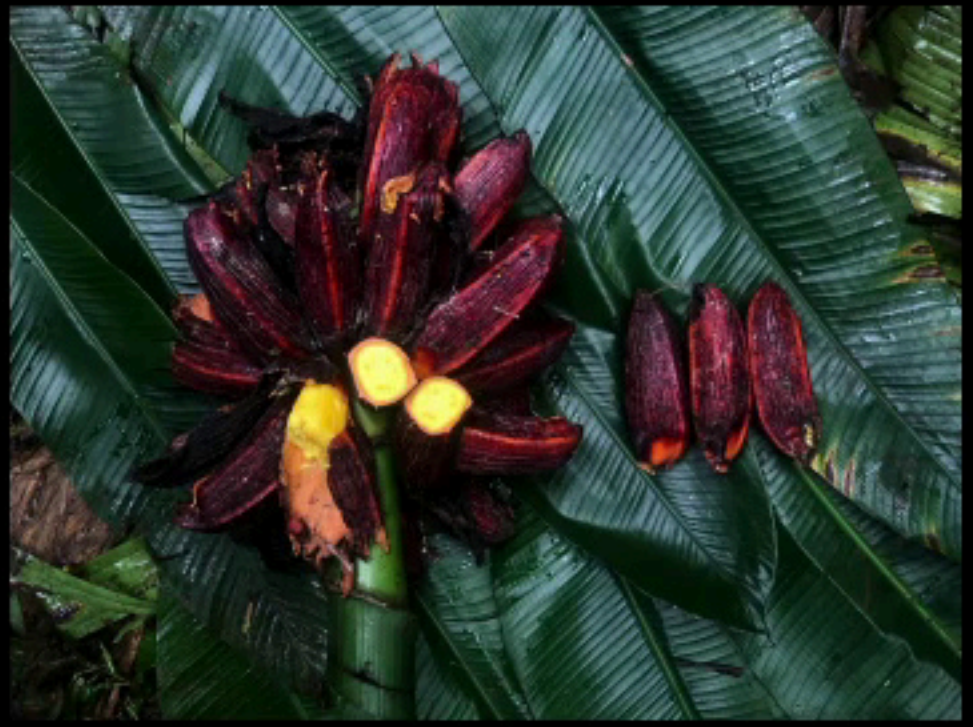
Fe’i of Rarotonga



Ancient Utu groves abundant in Takuvaine valley



Celine's Utu Garden











Fe’i, purple sap



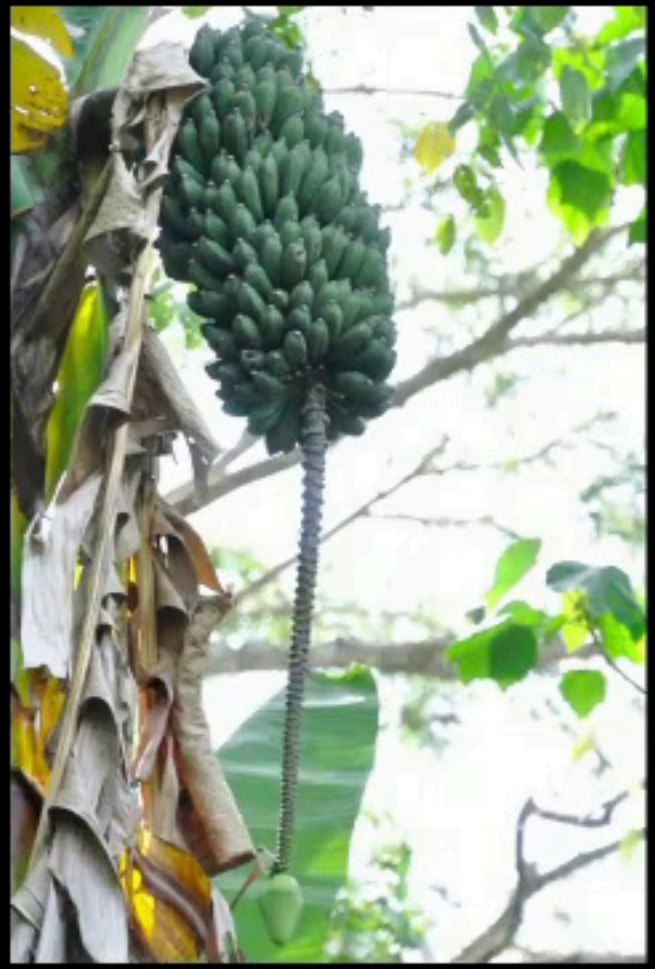


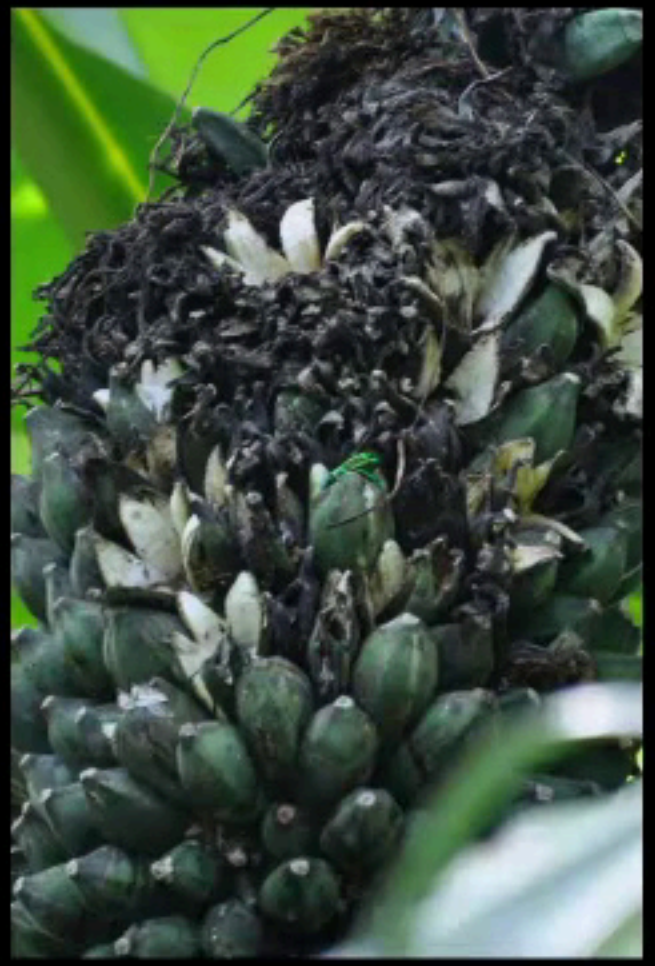


Carotenoid-rich fruits

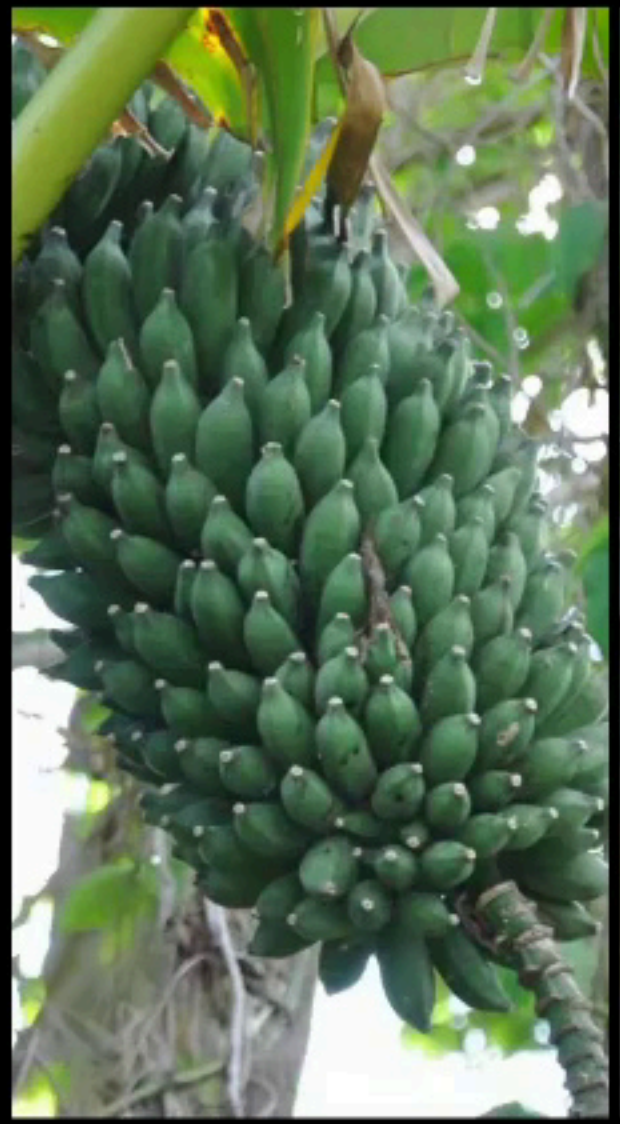
M. schizocarpa

Native to mainland PNG, name means “splitting fruit”, ancestral parent to some PNG edible cultivars





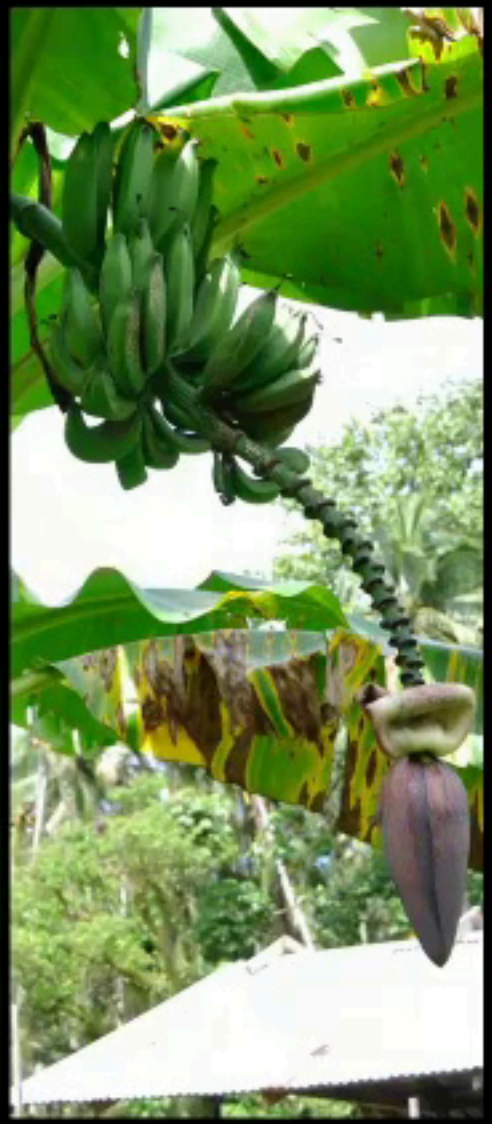
M. schizocarpa/acuminata-hybrid cultivars



wild type



diploid AS cultivar



triploid AAS cultivar

Intersectional Outliers



Fe’i-relative hybrids?

Intersectional Outliers



Kalapua-like tetraploid



Pisang Awak-like tetraploid



Silk-like tetraploid


BREEDING
NEW
BANANA
VARIETIES
TO LIFE



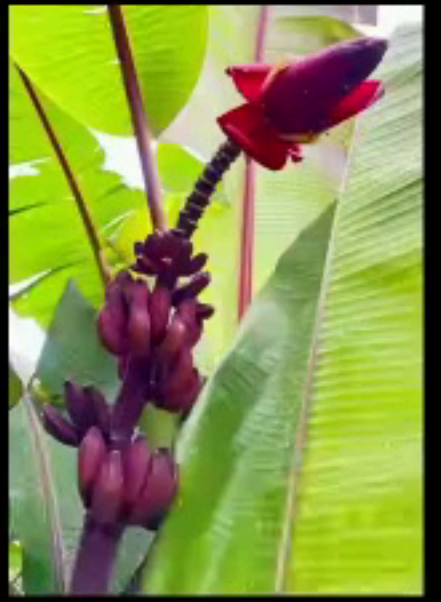

Seeds are a
necessary
problem











GSS Novel Creations

LIME SHERBET



PINA COLADA



19-05.11



19-05.11

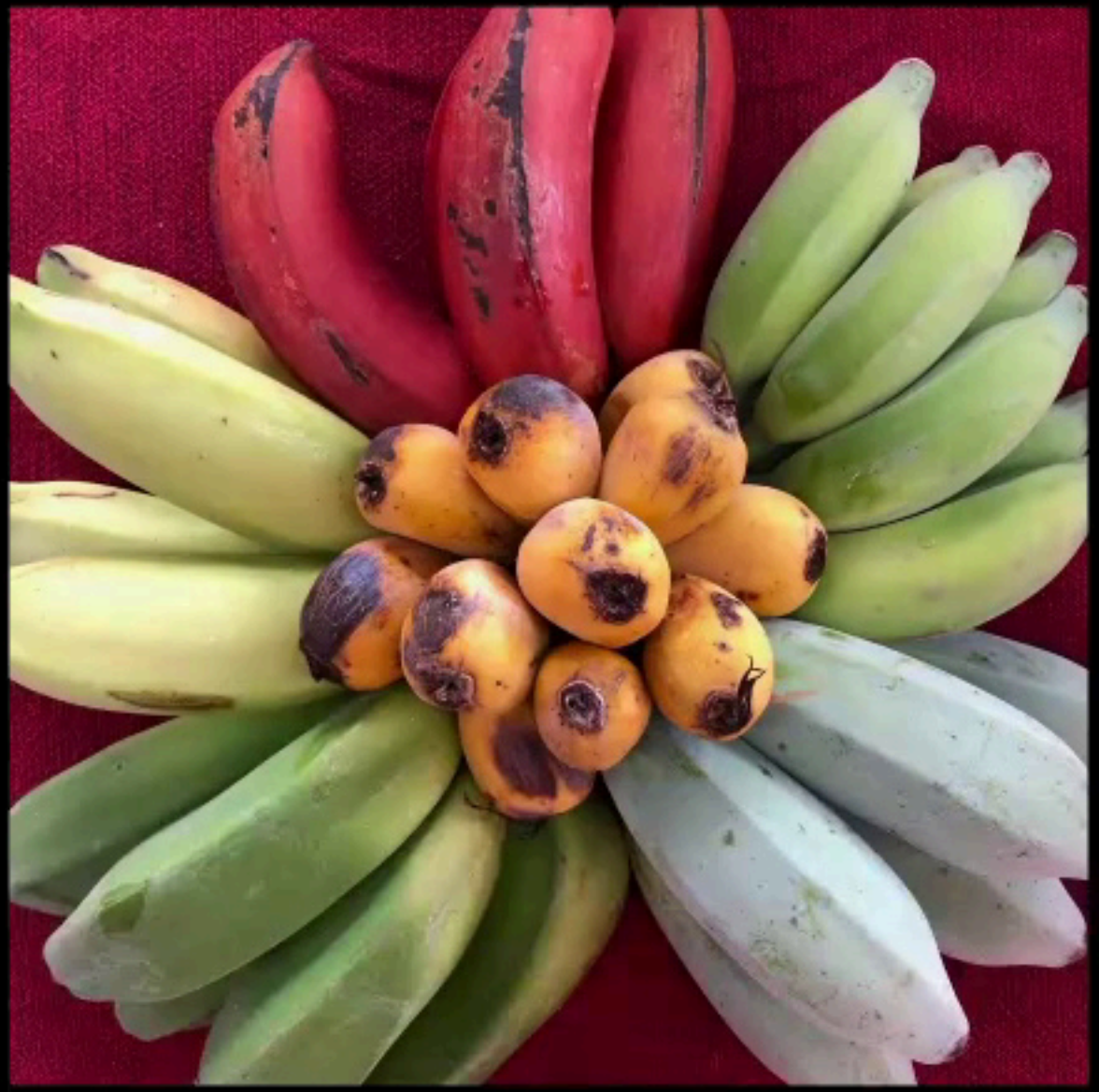


PINA COLADA



LIME SHERBET





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