Hohrae 1 is considered to be sweet by farmers and its popularity means it's spreading across Timor-Leste.

#### Agronomic adaptability

Sweet potato variety Hohrae 1 is suited to upland conditions in Timor-Leste. MAF recommended planting Hohrae 1 above an elevation of 500 metres. Cuttings of 25-30 cm lengths (5 nodes) are generally planted with 2-3 nodes being buried in the soil. Sweet potatoes grow best on raised beds at 25-50 x 100 cm spacings, preferably with irrigation or at the beginning of the wet season. Harvesting should be after 3-4 months. Irrigation allows for planting and harvesting every month of the year.

#### Storage

High yielding sweet potato clones do not store well in the ground. Unlike local varieties, roots of Hohrae 1 should be harvested at 3-4 months or when the soil cracks above the tuber. Their large roots often break the soil surface exposing the tubers to weevil damage.

#### Disease, insect and pest reaction

Hohrae 1 is susceptible to the sweet potato weevil when not completely buried. It is also susceptible to the fungus disease leaf scab and the Mycoplasma causing little leaf. Plants showing little leaf symptoms should be removed from the paddocks and burned. Leaf scab causes the young leaves to curl upwards standing above the rest of the leaves. It is not known to cause a reduction of yield.

# Yield and root quality

Name	Hohrae 1	Local
Yield (t/ha) (mean 2001-2012)	13.8	6.8
Yield advantage over local varieties (%)	102	-
Protein (%)	0.9	-



*Interested in getting cuttings? Please contact the MAF Office in your district* 

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# SWEET POTATO VARIETY HOHRAE 1



**HOHRAE 1 has:** 

- a short growing season (3-4 months)
- high yields, 12.7t/ha
- a 102% yield advantage over local varieties
- large white tubers

# HOHRAE 1 — INCREASING SWEET POTATO PRODUCTION IN TIMOR-LESTE

## Background

Release name	Hohrae 1
Year released	2007
Evaluation name	Cip-1
Botanical name	Ipomea batatas L.
Suited environment	Upland areas above 500m elevation with average temperatures of 24°C
Breeding number	B0053-9
Parents	Open pollination of B0053
Breeder	International Potato Centre (CIP)



#### Background

The sweet potato is an extremely important crop in Timor-Leste for both food security and nutrition. It grows well in a range of soils where it is generally cultivated with little or no fertiliser. The trials conducted by MAF-SoL from 2000 to now show that Hohrae 1 has good results compared with other varieties. This variety was introduced from CIP in Indonesia.

# Description

Immature leaf colour	Green
Petiole pigmentation	Green with purple at both ends
Predominant colour of vine	Green
<i>Abaxial</i> leaf vine pigmentation	All vines mostly purple
Storage root skin colour	White
Storage root flesh colour	White





#### Impacts

#### **Economic benefits**

Cuttings of Hohrae 1 are in high demand because of their high yield. There is a competitive advantage to growing sweet varieties with large sized roots.



#### **Social benefits**

The high yielding Hohrae 1 brings significant improvements to food security in Timor-Leste. Yields are doubled by planting the new varieties and improved health benefits are gained by the higher volumes available for consumption. The risk level of growing improved clones is similar to that of growing traditional varieties.

#### **Environmental benefits**

Through planting new sweet potato varieties, farming families help improve genetic diversity within Timor-Leste. None of the new clones are genetically modified organisms (GMO). Sweet potatoes tend to be environmentally friendly because of the low inputs required, especially nitrogen. They also grow quickly and cover the ground surface thus preventing erosion.

Hohrae 2 is considered to be sweet by farmers and its popularity means it's spreading across Timor-Leste.

#### Agronomic adaptability

Hohrae 2 is suited to all elevations in Timor-Leste. Cuttings of 25-30 cm lengths (5 nodes) are generally planted with 2-3 nodes being buried in the soil. Sweet potatoes grow best on raised beds at 25-50 x 100 cm spacings, preferably with irrigation or at the beginning of the wet season. Harvesting should be after 3-4 months. Irrigation allows for planting and harvesting during every month of the year.

#### Storage

High yielding sweet potato clones do not store well in the ground. Unlike local varieties, roots of Hohrae 2 should be harvested at 3-4 months or when the soil cracks above the tuber. Their large roots often break the soil surface exposing the tubers to weevil damage. Once weevils attack the tuber, the sweet potatoes become very bitter. The tubers should be stored in low temperatures with high humidity. Hohrae 2 sweet potatoes can be stored for up to three months.

#### Disease, insect and pest reaction

Hohrae 2 is susceptible to the sweet potato weevil when not completely buried. It is also susceptible to the fungus disease leaf scab and the *Mycoplasma* causing little leaf. Plants showing little leaf symptoms should be removed from the paddocks and burned. Leaf scab causes the young leaves to curl upwards standing above the rest of the leaves. It is not known to cause a reduction of yield.

# Yield and root quality

Name	Hohrae 2	Local
Yield (t/ha) (mean 2001-2012)	13.1	6.8
Yield advantage over local varieties (%)	91	-
Protein (%)	0.9	-



Interested in getting cuttings? Please contact the MAF Office in your district

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# SWEET POTATO VARIETY **HOHRAE 2**



# **HOHRAE 2 has:**

- a short growing season (3-4 months)
- high yields, 13.22t/ha
- a 91% yield advantage over local varieties
- large white tubers

# HOHRAE 2 — INCREASING SWEET POTATO PRODUCTION IN TIMOR-LESTE

## Variety information

Release name	Hohrae 2
Year released	2007
Evaluation name	Cip-6
Botanical name	Ipomea batatas L.
Suited environment	Upland areas with average temperatures of 24°C
Breeding number	AB96001.2
Parents	Xusha - 18 x I. trifida
Breeder	International Potato Centre (CIP)



#### Background

The sweet potato is an extremely important crop in Timor-Leste for both food security and nutrition. It grows well in a range of soils where it is generally cultivated with little or no fertiliser. The trials conducted by MAF-SoL from 2000 to now show that Hohrae 2 produces good results compared with other varieties. This variety was introduced from CIP in Indonesia.

# Description

Immature leaf colour	Purple on both surfaces
Petiole pigmentation	Green
Predominant colour of vine	Green
<i>Abaxial</i> leaf vine pigmentation	Green
Storage root skin colour	Cream
Storage root flesh colour	Cream



## Impacts

#### **Economic benefits**

Cuttings of Hohrae 2 are in high demand because of their high yield. There is a competitive advantage to growing sweet varieties with large sized potatoes.



#### **Social benefits**

The high yielding Hohrae 2 brings significant improvements to food security in Timor-Leste. Yields are doubled by planting the new varieties and improved health benefits are gained by the higher volumes available for consumption. The risk level of growing improved clones is similar to that of growing traditional varieties.

#### **Environmental benefits**

Through planting new sweet potato varieties, farming families help improve genetic diversity within Timor-Leste. None of the new clones are genetically modified organisms (GMO). Sweet potatoes tend to be environmentally friendly because of the low inputs required, especially nitrogen. They also grow quickly and cover the ground surface thus preventing erosion.

#### Agronomic adaptability

Hohrae 3 is suited to all elevations in Timor-Leste. Cuttings of 25-30 cm lengths (5 nodes) are generally planted with 2-3 nodes being buried in the soil. Sweet potatoes grow best on raised beds at 25-50 x 100 cm spacings, preferably with irrigation or at the beginning of the wet season. Harvesting should be after 3-4 months. Irrigation allows for planting and harvesting in every month of the year.

#### Storage

High yielding sweet potato clones do not store well in the ground. Unlike local varieties, roots of Hohrae 3 should be harvested at 3-4 months or when the soil cracks above the tuber. Their large roots often break the soil surface exposing the tubers to weevil damage. Once weevils attack the tuber, the sweet potatoes become very bitter. The tubers should be stored in low temperatures with high humidity. Hohrae 3 sweet potatoes can be stored for up to three months.

#### Disease, insect and pest reaction

Hohrae 3 is susceptible to the sweet potato weevil when not completely buried. It is also susceptible to the fungus disease leaf scab and the Mycoplasma causing little leaf. Plants showing little leaf symptoms should be removed from the paddocks and burned. Leaf scab causes the young leaves to curl upwards standing above the rest of the leaves. It is not known to cause a reduction of yield.

# Yield and root quality

Name	Hohrae 3	Local
Yield (t/ha) (mean 2001-2012)	15.8	6.8
Yield advantage over local varieties (%)	132	-
Protein (%)	0.9	0.9
Vitamin A (%)	1200 mg/ 100g	0



*Interested in getting cuttings? Please contact the MAF Office in your district* 

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# SWEET POTATO VARIETY HOHRAE 3



# **HOHRAE 3 has:**

- a short growing season (3-4 months)
- a sweet taste
- high yields, 13.5t/ha
- a 132% yield advantage over local varieties
- large white tubers

# HOHRAE 3 — INCREASING SWEET POTATO PRODUCTION IN TIMOR-LESTE

## Variety information

Release name	Hohrae 3
Year released	2007
Evaluation name	CIP-7
Botanical name	Ipomea batatas L.
Suited environment	Upland areas with average temperatures of 24°C
Breeding number	BB9702.1
Parents	B0053-9 x AB94004
Breeder	International Potato Centre (CIP)



#### Background

The sweet potato is an extremely important crop in Timor-Leste for both food security and nutrition. It grows well in a range of soils where it is generally cultivated with little or no fertiliser. The trials conducted by MAF-SoL from 2000 to now show that Hohrae 3 produces good results compared with other varieties. This variety was introduced from CIP in Indonesia.

# Description

Immature leaf colour	Green with purple veins on lower surface	
Petiole pigmentation	Green with purple at both ends	
Predominant colour of vine	Green with many purple spots	
Secondary colour of vine	Purple nodes	
Abaxial leaf vine pigmentation	All vines mostly purple	
Storage root skin colour	Red	
Storage root flesh colour	Intermediate orange	



#### Impacts

#### **Economic benefits**

Cuttings of Hohrae 3 are in high demand because of their high yield. There is a competitive advantage to growing sweet varieties with large sized roots.



#### **Social benefits**

Planting this variety brings health benefits because there are larger amounts available to eat and the tubers are nutritious (high levels of vitamin A). The risk level of growing improved clones is similar to that of growing traditional varieties.

#### **Environmental benefits**

Through planting new sweet potato varieties, farming families help improve genetic diversity within Timor-Leste. None of the new clones are genetically modified organisms (GMO). Sweet potatoes tend to be environmentally friendly because of the low inputs required, especially nitrogen. They also grow quickly and cover the ground surface thus preventing erosion. Seed producers are currently multiplying cuttings of existing new sweet potato varieties for extension to farmers.

## Yield and grain quality

Nakroma was one of the 14 high yielding varieties tested against the local varieties in replicated trials conducted by the SoL/MAF program.

Based on the trials conducted in 2005-2012, results showed that Nakroma grew successfully in more than 300 locations. The average yield for Nakroma was 3.6 t/ha compared to 2.9 t/ ha of other varieties. Nakroma gave an average yield advantage of 26.4 % above the other rice varieties tested.

Name	Nakroma	Local
Yield (t/ha) (mean 2005-2012)	3.6	2.9
Yield advantage over local (%)	26.4	-



## Disease, insect and pest reaction

Nakroma shows resistance to diseases and other pests found in Timor-Leste. It also matures at a similar rate to other high yielding varieties currently cultivated in Timor-Leste thus reducing its susceptibility to rat damage.



Interested in getting seeds? Please contact the MAF Office in your district

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# RICE VARIETY NAKROMA



# **NAKROMA has:**

- high yields
- a 26.4% yield advantage over local varieties
- a good taste
- good milling qualities
- large fluffy grains

# NAKROMA - INCREASING RICE PRODUCTION IN TIMOR-LESTE

## Variety information

Release name	Nakroma
Year released	2007
Evaluation name	PSBRC54
Botanical name	Oryzae sativa L.
Suited environment	Irrigated rice ares
Breeding number	IR60819-34-2-1
Parents	IR72/IR48525-100-1-2
Breeder	International Rice Research Institute



#### Background

Nakroma is an irrigated rice variety bred at the International Rice Research Institute (IRRI). It was released in the Philippines by the Philippine Seed Board as PSBRC54 in 1997.

Based on the replicated trials conducted in 2000-2004 by MAF-SoL, results showed that the rice variety PSBRC54 (Nakroma) showed potential in the trials and was suited to the irrigated lowlands. It was also recognised as being a good tasting addition to their current selection of rice varieties.

# Description

The following general characteristics of PSBRC54 are based on the national testing program of the Philippines.

Yield (t/ha)		
Dry season	4.4-4.9	
Wet season	4.6-5.0	
Maturity (no. days after sowi	ng)	
Dry season	113	
Wet season	113	
Plant height (cm)		
Dry season	86	
Wet season	96	
Reactions to:		
Blast	Resistant	
Bacterial blight	Intermediate	
Sheath blight	Intermediate	
Tungro	Resistant	
Stemborer (whiteheads)	Intermediate	
Grain quality		
Milling recovery (%)	69.1	
Head rice recovery (%)	43.1	
Protein (%)	7.5	

## Impacts

#### **Economic benefits**

This variety gives a 20% yield advantage over other varieties. It is a good cooking variety with good eating qualities, ensuring good adoption.



#### **Social benefits**

Cultivation of Nakroma provides one extra variety to diversify the selection. It is highyielding and has a good taste.

#### **Environmental benefits**

Nakroma originated from the IRRI breeding program using conventional breeding techniques. It is not a genetically modified organism (GMO). Nakroma will increase the diversity of the current genetic pool in Timor-Leste.



#### Agronomic adaptability

Utamua takes 7 extra days to emerge from the soil, two weeks extra to flower and 2-3 weeks longer to mature than most local populations. Utamua shows seed dormancy and does not germinate in the field if the harvest is delayed due to rain. Due to the seed dormancy, seed should be stored for 2-3 months before planting to ensure seed viability. Utamua seed should be soaked for 12-24 hours prior to planting to enhance seed emergence and good establishment.

#### Disease, insect and pest reaction

As with most peanuts in Asia, Utamua is reported to be tolerant to iron chlorosis.





# Yield and quality

In the 2006-2012 seasons, Utamua was included in 773 on farm demonstration trials (OFDTs). Utamua averaged 2.3 t/ha compared with local varieties, which only produced 1.6 t/ha. The average yield advantage of Utamua over the local was 47% during these trials. Pod yields were highest in the high rainfall sites. Utamua consistently produces large seeds. The average seed size of 103 grams/100 seeds is 60-100% greater than most local peanuts.

Name	Utamua	Local
Mean yield (t/ha) from 2006-2010	2.3	1.6
Yield advantage over local varieties (%)	47	-

#### Want seed?

Please contact the MAF Office in your district



MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# PEANUT VARIETY UTAMUA



# **UTAMUA has:**

- large seeds
- a sweet taste
- a 47% yield advantage over other varieties

# UTAMUA - INCREASING PEANUT PRODUCTION IN TIMOR-LESTE

# Variety information

Release name	Utamua
Year released	2007
Evaluation name	PT5
Botanical name	Arachis hypogaea L.
Suited environment	Anywhere same as locals
Breeding number	ICGV 88438
Identity	PI596514
Identity	International Crops Institute for the Semi Arid Tropics (ICRISAT)



#### Background

ICGV 88438 is a large-seeded Virginia type peanut bred at the International Crops Research Institute for the Semi Arid Tropics (ICRISAT). This cultivar has been included in trials in Timor-Leste since 2000 under the SoL/MAF program with the designation of PT5 and released name Utamua.

# Description

The following observations were recorded at ICRISAT, Patancheru, India.

Pigmentation a. Stem b. Peg	Absent Present
Number of primary branches	6
Number of secondary branches	5
Plant height and breadth	54cm, 44cm
The average yield (t/ha) from 2006-2010	2.3
Yield advantage over local varieties (1.2 t/ha)	44%
Leaf characters a. Size b. Shape c. Colour	Medium Elliptic Green
Pod and seed characters* a. Seed per pod b. Pod length c. Shelling (%) d. Weight of 100 seeds e. Seed colour	1-2 34mm (2 seeds) 71 103 g Brown

## Impacts

#### **Economic benefits**

The large seed of Utamua are universally liked and there is high potential for export to other districts or internationally.



#### **Social benefits**

Cultivation of Utamua provides one extra cultivar to diversify the selection for Timor-Leste farmers, thereby reducing risk. Its higher yielding characteristics and potential for generating cash income may lead to improved food security.

#### **Environmental benefits**

Utamua originated from the ICRISAT breeding program using conventional breeding techniques. It is not a genetically modified organism (GMO). Utamua will increase the diversity of the current genetic pool in Timor-Leste.

#### Agronomic adaptability

Sele is well adapted for cultivation in Timor-Leste. The crops are planted either in rows or randomly spaced 75 cm to 1 m apart with 2-3 seeds per hill. This maize variety produces high yields without requiring fertiliser, however if fertiliser is applied the yield will be higher.



#### Storage

Evaluations during 2009-2011 illustrated that Sele is more resistant to weevil damage, similar to the average of local varieties when stored using traditional methods. It is best practice to store the grain airtight drums.

**Disease, insect and pest reaction** Sele is resistant to weevil damage.

# Yield and quality

Sele is an open pollinated variety with yellow grain and considered to be sweet by consumers in Timor-Leste.

Name	Sele	Local
Mean yield (t/ha) from 2007-2012	2.3	1.6
Yield advantage over local varieties in on farm demonstration trials (%)	41	-
Yield advantage over local varieties at research stations (%)	50	-



*Interested in getting seed? Please contact the MAF Office in your district* 

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org







# **SELE has:**

- big maize cobs
- high yields
- a 43% yield advantage over local varieties in both low and uplands
- a sweet taste

# SELE — INCREASING MAIZE PRODUCTION IN TIMOR-LESTE

# Variety information

Release name	Sele
Year released	2007
Botanical name	Zea Mays L.
Suited environment	At upland and lowland areas within the territory
Evaluation name	LYDMR
Breeder	CIMMYT (India)



#### Background

Maize is the main food crop in Timor-Leste and is relied on for food security by farmers. Five higher yielding open pollinated varieties introduced by CIMMYT early in the 2000s have consistently returned yield advantages in excess of 50%. One of these varieties is Sele.

# Description

Seed colour	Yellow
Seed quality	Semi-flint (not hard)
Plant height at harvest	2.0m
Time to flowering <sup>1</sup>	65 – 75 days after planting
Time to harvest <sup>1</sup>	105 – 115 days after planting
Weevil Resistance	Resistance similar to local varieties

1. Faster at lower altitudes



#### **Economic benefits**

Impacts

Maize is mainly grown for household consumption in Timor-Leste, however small amounts are also sold in local markets to generate income.



#### **Social benefits**

Cultivation of Sele Mutin will provide an alternative planting option for subsistence maize growers in Timor-Leste. Its higher yields and good eating qualities should help it contribute to greater food security in the country.

#### **Environmental benefits**

Sele originated from the CIMMYT breeding program using conventional breeding techniques. It is not a genetically modified organism (GMO). Sele will increase the diversity of the current genetic pool in Timor-Leste.

#### Agronomic adaptability

Noi Mutin is well adapted for cultivation in Timor-Leste. The crops are planted either in rows or randomly spaced 75cm to 1 m apart with 1-3 seeds per hill. This maize variety produce high yields without using fertiliser, however yields will be higher if fertiliser is applied.



#### Storage

Evaluations during 2009-2011 illustrated that Noi Mutin is more resistant to weevil damage, similar to the average of local varieties when stored using traditional methods.

#### Disease, insect and pest reaction

Noi Mutin is resistant to downy mildew, weevil damage, maize rust and heavy wind. Noi Mutin is an open pollinated variety which farmers can continue to grow.

# Yield and grain quality

Noi Mutin is an open pollinated variety with white grain which farmer can continue to plant it and considered to be soft by consumers in Timor-Leste.

Name	Noi Mutin	Local
Mean yield (t/ha) from 2007-2012	2.1	1.7
Yield advantage over local varieties in on farm demonstration trials (%)	43	-



Interested in getting seed? Please contact the MAF Office in your district

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# NOI MUTIN



# **NOI MUTIN has:**

- big cobs
- high yields
- a 25% yield advantage over local varieties in low and upland areas
- a soft texture
- a sweet taste

# NOI MUTIN — INCREASING MAIZE PRODUCTION IN TIMOR-LESTE

## Variety information

Release name	Noi Mutin
Year released	2012
Botanical name	Zea Mays L.
Suited environment	Upland and lowland areas within the territory
Evaluation name	POT CMU VAR12
Breeder	Central Mindanao University (CMU, Philippines)



#### Background

Maize is the main food crop in Timor-Leste and is relied on by farmers for food security. This variety was introduced from the Philippines in 2006 and was tested for adaptation in research centres. The variety released committee from MAF and farmer representatives approved Noi Mutin for release on 24 November 2011. Adaptation trials were continuing at farmer's field with results showing a 27% yield advantage over their local equivalents.

# Description

Seed colour	White
Seed quality	Semi-flint (not hard)
Plant height at harvest	1.8 m
Time to flowering <sup>1</sup>	65 – 75 days after planting
Time to harvest <sup>1</sup>	105 – 119 days after planting
Yield (t/ha)²	2.1 t/ha
Noi Mutin yield from top 10% of OFDTs <sup>3</sup>	5 t/ha
Yield advantage over local varieties in OFDTs (%)	25%
Weevil resistance	Medium resistance

1. Faster at lower altitudes

2. Data collected from 389 on farm demonstration trials during 2009-2011

3. Produced by OFDT farmers in Timor-Leste



#### Impacts

#### **Economic benefits**

Maize is mainly grown for household consumption in Timor-Leste, however small amounts are also sold in local markets to generate income.



#### **Social benefits**

Cultivation of Noi Mutin will provide an alternative planting option for subsistence maize growers in Timor-Leste. Its higher yields and good eating qualities should help contribute to greater food security in the country.

#### **Environmental benefits**

Noi Mutin originated from the CMU breeding program using conventional breeding techniques. It is not a genetically modified organism (GMO). Noi Mutin will increase the diversity of the current genetic pool in Timor-Leste.

# History

Cassava is a standard crop in many regions of Timor-Leste with more than 85% of households growing some cassava. It grows on a range of soils and slopes mainly as inter-cropped (or mixed cropped) with maize, pumpkins, sweet potato and vegetables. Cassava crops are generally cultivated with little or no fertiliser in the uplands and average yields are low.

Originating from International Centre for Tropical Agriculture (CIAT) and Kasetsart University, Thailand, the Ai-luka 1 variety (known in Thailand as KU50) was initially distributed to farmers by Cooperativa Cafe Timor (CCT) in 2007.



Ai-luka 1 (KU50) is the most important cassava cultivar in Thailand, and, most likely, the most important cultivar in the world. In 2006, this cultivar was planted covering 57 percent of cassava growing area in Thailand (about 633,700 ha). This cultivar also is grown extensively in Indonesia and Vietnam (under the name of KM 94).

# Yield and Quality

Name	Ca109	Lokál
Production Results (t/ha)*	23.4	16.3
Yield advantage over local variety (%)*	43	-
Starch content (%)*	26.7	24.1
HCN content (PPM)	107	51

\* Averaging from 20 replicated trials on 5 sites, 2008 - 2012



**Do you want more information?** Contact your local MAF district office!

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org





cassava variety Ai-luka 1



Ai-luka 1 is a cassava variety that is:

- High yielding, 23.4 t/ha
- Yielding 43% more than local varieties
- Bitter
- White-fleshed, large tubers

# AI-LUKA 1 — INDUSTRIAL CASSAVA TIMOR-LESTE

# Variety Information

Released variety	Ai-luka 1
Year of Release	2014
Trial name	Ca109 (KU50)
Botanical name	Manihot esculenta Crantz
Breeder	CIAT and Kasetsart Uni- versity, Thailand





# Description

Name	Ca109
Plant type	Non branching
Height	Medium (190cm)
Stalk diameter	Medium
Internode length	Medium
Colour of mature stem	Silver-green
Colour of young stem	Green
Shape of lobe	Obovate/lanceolate
Number of lobes	7 lobes per leaf
Shoot colour	Red-brown
Vein colour on upper part	Green
Leaf shape	Deeply lobed
Leaf colour	Green
Colour of petiole	Red on upper surface near leaf
Tuber shape	Large
Colour of periderm	Light brown
Tuber colour	White-fleshed
Taste of cooked tuber	Bitter

## Impact

#### **Economic Benefits**

Ai-luka 1 has the potential to have a significant positive impact on farming households. By planting Ai-luka 1, farmers may choose to sell the tubers as dried chips, or store the tubers as a flour as a reserve food store.

The release of Ai-luka 1 will contribute to the development of a cassava chip industry in Timor-Leste. Dried chips of Ai-luka 1 are currently being purchased for starch production. The release of Ai-luka 1 as a dual purpose variety will promote the dry chip industry, giving economic benefits to the farmers as well as providing downstream benefits.



#### **Social Benefits**

Cultivation of Ai-luka 1 will provide an alternative planting option for cassava growers in Timor-Leste. Its ability to store, and its existing market, allows direct benefits to flow to farming families.

#### **Environmental Impacts**

Ai-luka 1 is grown from cuttings, but can flower and produce viable seeds. It is not a genetically modified organism (GMO), or bred using recombinant DNA technology. Ai-luka 1 will increase the diversity of the current genetic pool in Timor-Leste.

## Background

Cassava is an extremely important crop for household food security in Timor-Leste. Cassava is the third most important crop grown in Timor-Leste after maize and rice, based on production area. It grows well in a range of soils where it is generally cultivated with no fertiliser.

Traditional cassava varieties are low yielding. Higher-yielding cassava varieties have been evaluated by the Seeds of Life Program since 2000 with exceptional results, particularly in the lowland sites such as Betano.



Between 2000 and 2008, trials were run using extensive material (more than 60 clones) obtained from a number of sources via the Asia Office of the International Centre for Tropical Agriculture (CIAT). However many of the very high yielding clones had poor eating quality and a high hydrogen cyanide (HCN) content, so were only suitable for commercial production of cassava starch products.

Over a long period of time the two clones Ca 15 (Ai-Luka 2) and Ca 26 (Ai-Luka 4) consistently displayed relatively high yields combined with the good eating characteristics desired by farmers in Timor-Leste.

# Yield and quality

Name	Ai-Luka 2	Local
Yield (t/ha)*	32.5	19.8
Yield advantage over local varieties (%)*	64	-
Starch content (%)**	21	23
Hydrogen cyanide content (ppm)	41	28

\* Mean 2001-2008 from 20 replicates in 5 sites \*\* Mean 2006-2008 from 9 replicates in 4 sites



*Need cassava cuttings? Please contact the MAF Office in your district* 

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# CASSAVA VARIETY AI-LUKA 2



# AI-LUKA 2 has:

- high yields, 32.5 t/ha
- a 64% yield advantage over local varieties
- a sweet taste
- large white tubers

# AI-LUKA 2 — INCREASING CASSAVA PRODUCTION IN TIMOR-LESTE

## Variety information

Release name	Ai-Luka 2
Year released	2009
Evaluation name	Ca 15
Botanical name	Manihot esculenta Crantz
Suited environment	Well drained areas in the uplands or lowlands
Breeding number	OMM 90-03-100
Parents	Ambon local as female (open pollination)
Breeder	BALITKABI Indonesia



# Description

Plant type	Absence of branching	
Height	Medium (187 cm)	
Stalk diameter	Medium	
Internodes length	Medium	
Colour of mature stem	Greenish grey	
Colour of young stem	Green	
Shape of lobe	Teardrop/long, wider in the middle (Obovate-lanceolate)	
Number of lobes	7 lobes	
Shoot colour	Green	
Veins colour on upper part	Green	
Leaf shape	Normal	
Leaf colour	Green	
Colour of petiole	Green/red	
Tuber shape	Large	
The colour of periderm	Slightly brown	
Tuber colour	White	
Taste of cooked tuber	Sweet/very sweet	

## Impacts

#### **Economic benefits**

In the near future cassava varieties that produce high yields and have good eating quality will maintain household food security, but is grown on limited land. This variety will also potentially facilitate us to grow a much larger area to obtain immediate economic benefits.



#### Social benefits

The very high yielding test clones will bring significant improvements to food security in Timor Leste. Yields will be 64% greater by planting the new varieties and improved health benefits will be gained by the higher volumes available for consumption. The risk level of growing improved clones is similar to that of growing traditional varieties.

#### **Environmental benefits**

The introduction of the two new cassava varieties will improve the genetic diversity within Timor-Leste. None of the new clones are genetically modified organisms (GMO) using recombinant DNA technology and will not introduce any undesirable traits to the environment. Cassava tends to be environmentally friendly because of the low inputs required, especially nitrogen.

## Background

Cassava is an extremely important crop for household food security in Timor-Leste. Cassava is the third most important crop grown in Timor-Leste after maize and rice, based on production area. It grows well in a range of soils where it is generally cultivated with no fertiliser.

Traditional cassava varieties are low yielding. Higher-yielding cassava varieties have been evaluated by the Seeds of Life Program since 2000 with exceptional results, particularly in the lowland sites such as Betano.



Between 2000 and 2008, trials were run using extensive material (more than 60 clones) obtained from a number of sources via the Asia Office of the International Centre for Tropical Agriculture (CIAT). However many of the very high yielding clones had poor eating quality and a high hydrogen cyanide (HCN) content, so were only suitable for commercial production of cassava starch products.

Over a long period of time the two clones Ca 15 (Ai-Luka 2) and Ca 26 (Ai-Luka 4) consistently displayed relatively high yields combined with the good eating characteristics desired by farmers in Timor-Leste.

# Yield and quality

Name	Ai-Luka 4	Local
Yield (t/ha)*	26.0	17.2
Yield advantage over local varieties (%)*	50.9	-
Starch content (%)**	24	23
Hydrogen cyanide content (ppm)	38	28

\* Mean 2001-2008 from 20 replicates in 5 sites \*\* Mean 2006-2008 from 9 replicates in 4 sites



*Need cassava cuttings? Please contact the MAF Office in your district* 

MINISTRY OF AGRICULTURE AND FISHERIES Seeds of Life | Fini ba Moris Comoro, Dili, Timor-Leste | +670 7728 4730

# www.seedsoflifetimor.org



# CASSAVA VARIETY AI-LUKA 4



# AI-LUKA 4 has:

- high yields, 2.6 t/ha
- a 51% yield advantage over local varieties
- a sweet taste
- large white tubers

# AI-LUKA 4 — INCREASING CASSAVA PRODUCTION IN TIMOR-LESTE

## Variety information

Release name	Ai-Luka 4
Year released	2009
Evaluation name	Ca 26
Botanical name	Manihot esculenta Crantz
Suited environment	Well drained areas in the uplands or lowlands
Breeding number	MLG 10169
Parents	Gading Local ( Sooka, Punung, Pacitan, E Java)
Breeder	BALITKABI Indonesia



# Description

Plant type	Absence of branching	
Height	Medium (141 cm)	
Stalk diameter	Medium	
Internodes length	Medium	
Colour of mature stem	Medium	
Colour of young stem	Orange brown	
Shape of lobe	Teardrop/long, wider in the middle (Obovate-lanceolate)	
Number of lobes	7 lobes	
Shoot colour	Purplish	
Veins colour on upper part	Green	
Leaf shape	Normal	
Leaf colour	Green	
Colour of petiole	Red	
Tuber shape	Large	
The colour of periderm	Grey brown	
Tuber colour	White	
Taste of cooked tuber	Sweet/very sweet	

## Impacts

#### **Economic benefits**

In the near future cassava varieties that produce high yields and have good eating quality will maintain household food security, but is grown on limited land. This variety will also potentially facilitate us to grow a much larger area to obtain immediate economic benefits.



#### Social benefits

The very high yielding test clones will bring significant improvements to food security in Timor Leste. Yields will be 64% by planting the new varieties and improved health benefits will be gained by the higher volumes available for consumption. The risk level of growing improved clones is similar to that of growing traditional varieties.

#### **Environmental benefits**

The introduction of the two new cassava varieties will improve the genetic diversity within Timor-Leste. None of the new clones are genetically modified organisms (GMO) using recombinant DNA technology and will not introduce any undesirable traits to the environment. Cassava tends to be environmentally friendly because of the low inputs required, especially nitrogen.