

KARIN VANEKER & ERWIN SLAATS
AMSTERDAM, THE NETHERLANDS

MAPPING EDIBLE AROIDS



GLIDE'12
FOOD, NUTRITION, AND HEALTH



EDIBLE AROIDS

(L.Araceae)



The world's most ancient food crops

A photograph of a man with grey hair and a warm smile, wearing a red long-sleeved shirt and a purple bandana around his neck. He is positioned in the center of the frame, surrounded by massive, vibrant green taro leaves with prominent veins. The lighting is bright and natural, suggesting an outdoor setting.

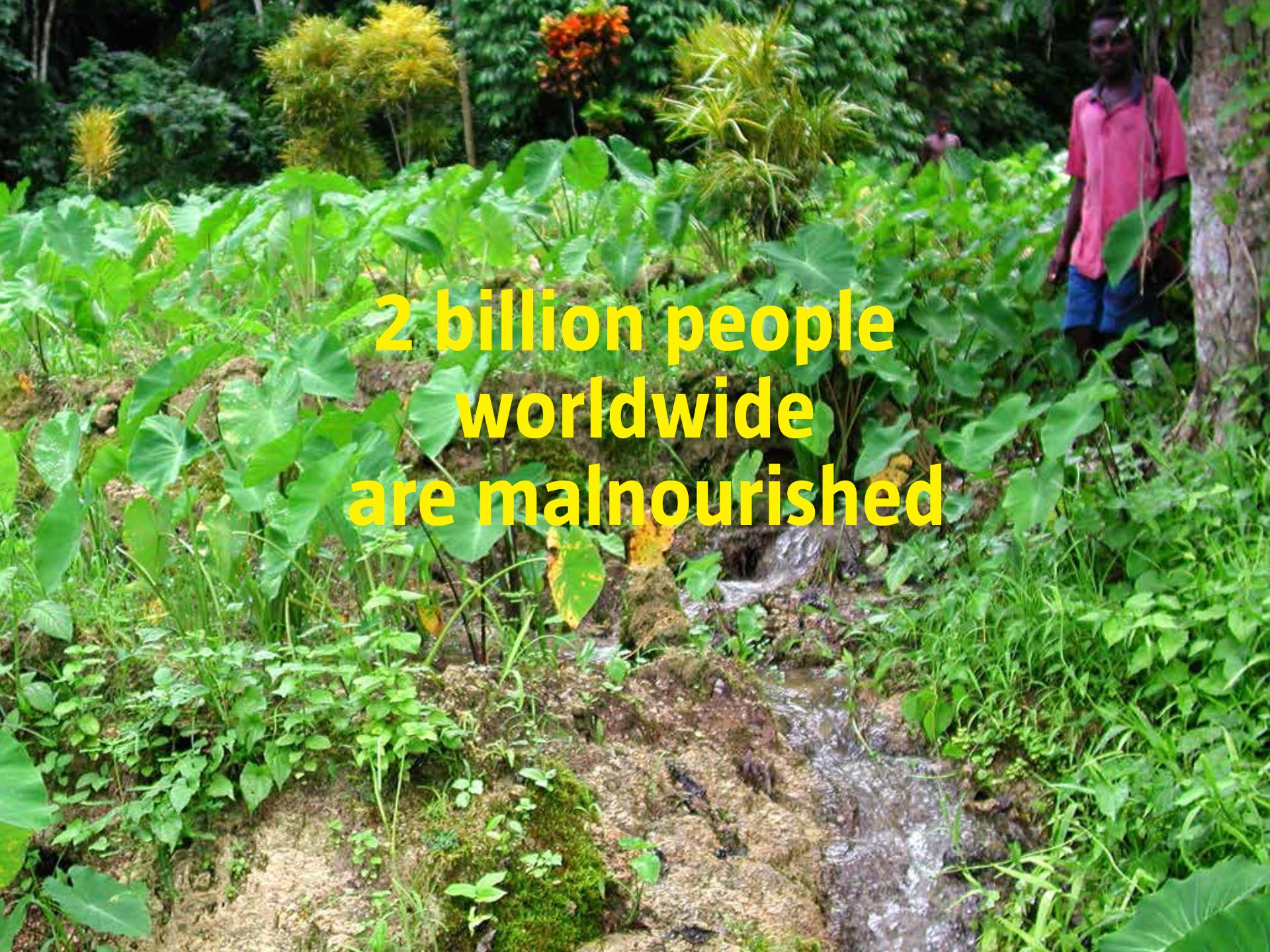
**2 billion small farmers
produce 60% of the world's food**

A photograph of three young women from Vanuatu sitting on the ground in a lush green jungle setting. They are smiling and holding a large pile of taro roots. The woman on the left wears a blue sleeveless top and a black skirt with white floral patterns. The woman in the middle wears a yellow sleeveless top. The woman on the right wears a grey t-shirt with a red cross necklace and a green skirt with orange and blue floral patterns. The text 'The vast majority lives in extreme poverty' is overlaid in large yellow letters.

The vast majority
lives in extreme poverty

A photograph of three women standing in a dense field of large, green taro leaves. The woman on the left is wearing a dark grey tank top. The woman in the center is wearing a light-colored t-shirt with a circular logo that includes the text "FRENCH MARKET". The woman on the right is wearing a patterned, short-sleeved top. They are all looking towards the camera. The background is filled with the massive, heart-shaped leaves of the taro plants.

**Small farmers produce
70% of the food
of 1.4 billion poor people**

A photograph of a lush, green tropical landscape. In the foreground, a small stream flows over mossy rocks. Two people are visible in the background: one man in a pink shirt and blue shorts stands on the right, and another man in a dark shirt stands further back. The scene is dense with various tropical plants, including large green leaves and yellow flowers.

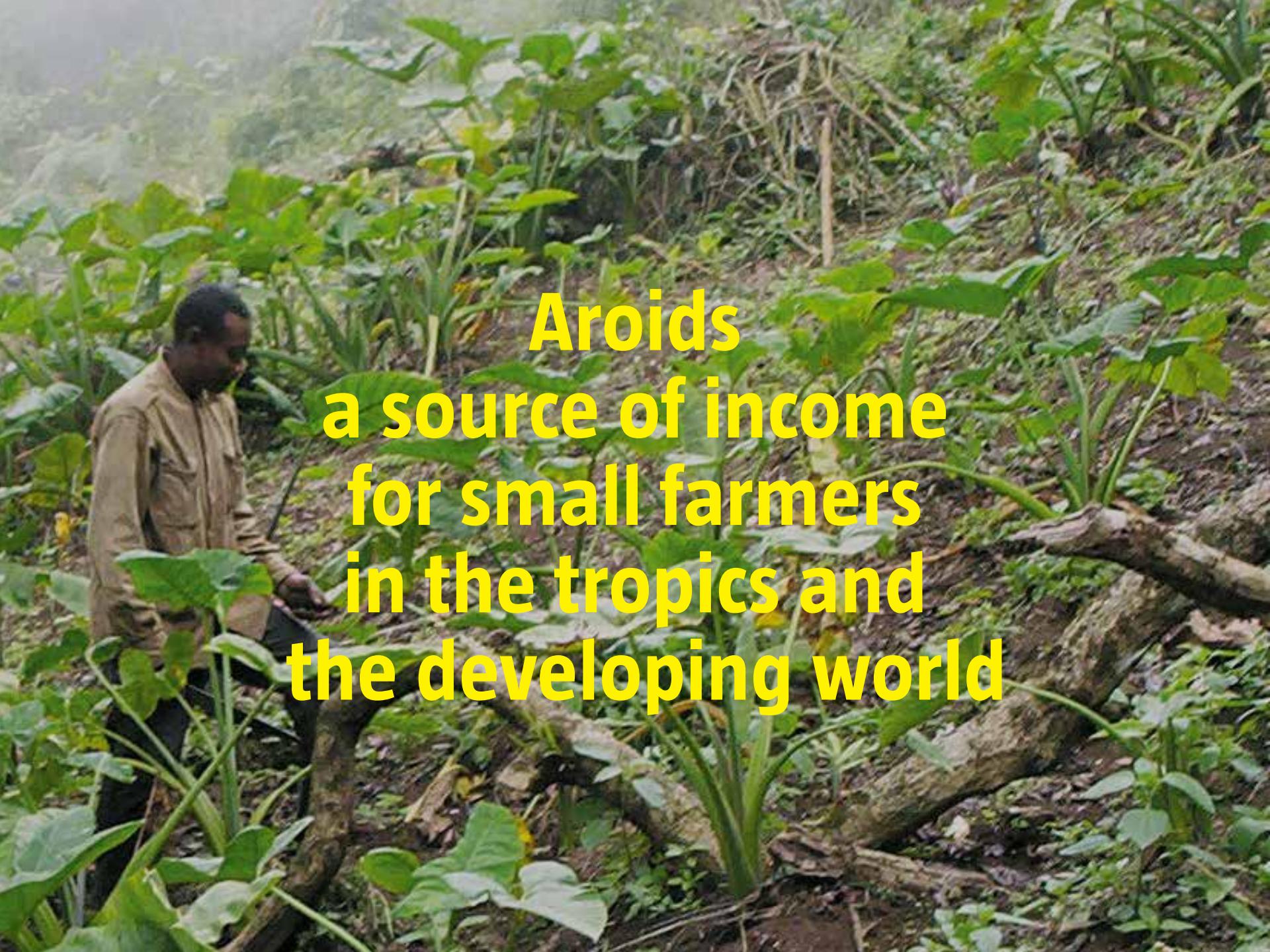
**2 billion people
worldwide
are malnourished**



ROOTS & TUBERS
STAPLE FOOD & CASH CROP
FOR MILLIONS OF PEOPLE



Aroids
important staple food
for the rural and urban poor

A photograph of a man in a brown jacket and dark pants working in a dense, lush tropical forest. He is bent over, possibly harvesting or tending to the plants. The forest floor is covered in fallen leaves and branches, and large green plants with broad leaves are prominent in the background.

**Aroids
a source of income
for small farmers
in the tropics and
the developing world**



**Aroids
a cash crops and
important source of
employment and income
for men and women
in the developing world**

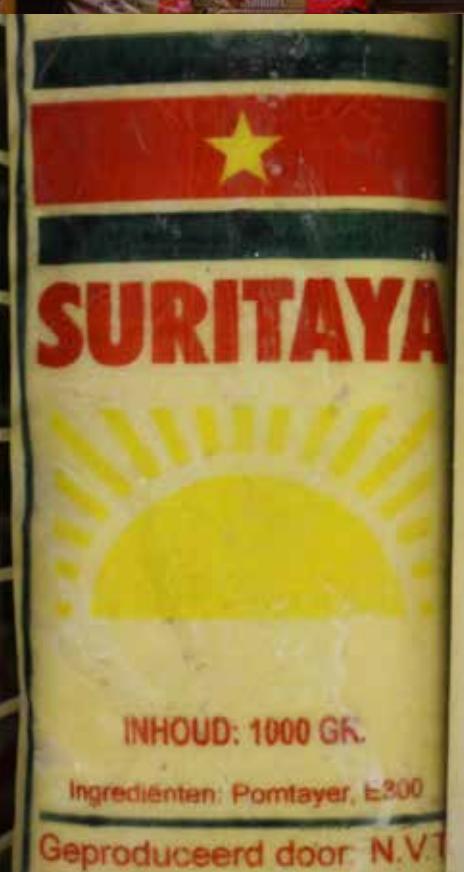




MIGRATION & MIGRANTS

A photograph of a grocery store aisle. In the foreground, there are several cardboard boxes stacked high. One box is orange with the word 'Kiwis' printed on it. Another box is white with 'CAPE' and 'CABOCA' printed on it. To the right, there are more boxes, one labeled 'De Keur Buttermeloen'. In the background, there are bins filled with green leafy vegetables like lettuce and cabbage. A white shelving unit on the right contains blue plastic tubs and red containers. The overall scene suggests a well-stocked supermarket.

**Europe and the United States
home to over 100 million migrants
many come from
poor tropical areas of the world**





**Migrants have a strong appetite
for familiar foods, ingredients
and dishes from their
homelands and cultures**





The transnational food trade
enables migrants to procure
important traditional foods,
and maintain their foodculture

NEAT FOODS

Instant



NEAT
FUFU
Cocoyam
Flour

700g

£1.99

Blue Bay
Cocoyam
FUFU
FLOUR

FUFU FLOUR
3 FOR £5.50
£5.50

Taste is Believing!

Mama's Choice

Cocoyam
FUFU
FLOUR



PLUS VITAMINS & MINERALS

FUFU FLOUR

The Best Plantain Fufu on Earth!

Mama's Choice

Plantain
FUFU
FLOUR



FUFU FLOUR
3 FOR £5.50
£5.50



A photograph of a man standing in a lush, tropical jungle. He is wearing a light-colored long-sleeved shirt and dark pants. The jungle floor is covered with various plants, including several large, broad green leaves in the immediate foreground. The background is filled with more dense foliage and trees.

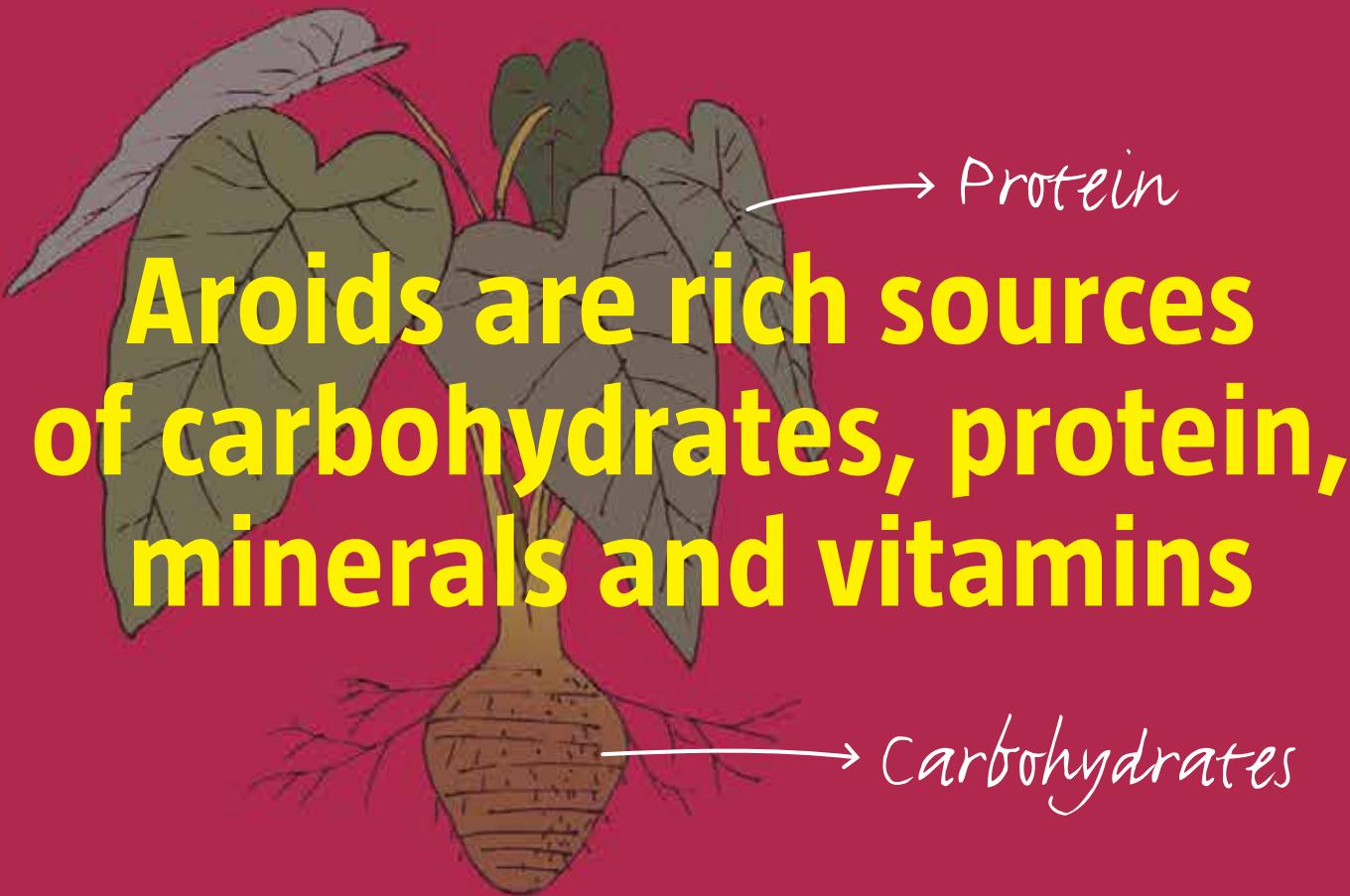
NUTRITIONAL VALUE

NUTRITIONAL VALUE



**All plant parts of aroids
are edible**

NUTRITIONAL VALUE



**Aroids are rich sources
of carbohydrates, protein,
minerals and vitamins**

Protein

Carbohydrates

NUTRITIONAL VALUE

The corms and cormels provide for carbohydrates and have a similar nutritional value as potatoes



NUTRITIONAL VALUE

If compared with potatoes,
their protein content
is slightly higher



NUTRITIONAL VALUE

Corms & cormels

Hypoallergenic, easily digested

They contain micronutrients e.g.

minerals, Vitamin C, and B1 and B2,
and niacin



NUTRITIONAL VALUE



Aroids leaves
nickname 'tropical spinach'

**Rich in protein, an excellent source of micronutrients
e.g. Vitamin A, C, calcium, potassium, phosphorus,
iron and folic acid**

A detailed illustration of a Monstera deliciosa (Swiss cheese plant) against a light beige background. The plant features several large, textured leaves with prominent veins and distinct holes (fenestrations), some showing signs of aging or damage. A cluster of small, green, star-shaped flowers or young leaves is visible at the top right. The overall composition is organic and centered.

AROIDS IN CUISINES & CULTURES

A photograph showing a group of people, mostly men, sitting around a long wooden table outdoors. They are eating from bowls and plates, and there are cups and glasses on the table. The setting appears to be a casual meal or a community gathering. In the background, there are some flowers and a fence.

**As a plant and food,
aroids are embedded in many
western and non-western cultures
where they are often perceived
as intrinsic to cultural identity**

A close-up photograph of a bowl of green soup. Several large, bright red crab claws are visible, submerged in the thick, greenish-yellow broth. The soup appears to contain other ingredients like leafy greens and possibly potatoes. The bowl is white, and the background is blurred.

**Aroids and plant parts,
but also aroid dishes,
often carry a deep symbolic
meaning and cultural value
in the (sub-) tropics
and developing world**



THE AROID PLANT FAMILY: 120 GENERA & 3750 SPECIES



Aroids food, medicine, animal fodder, cut flowers and ornamental plants



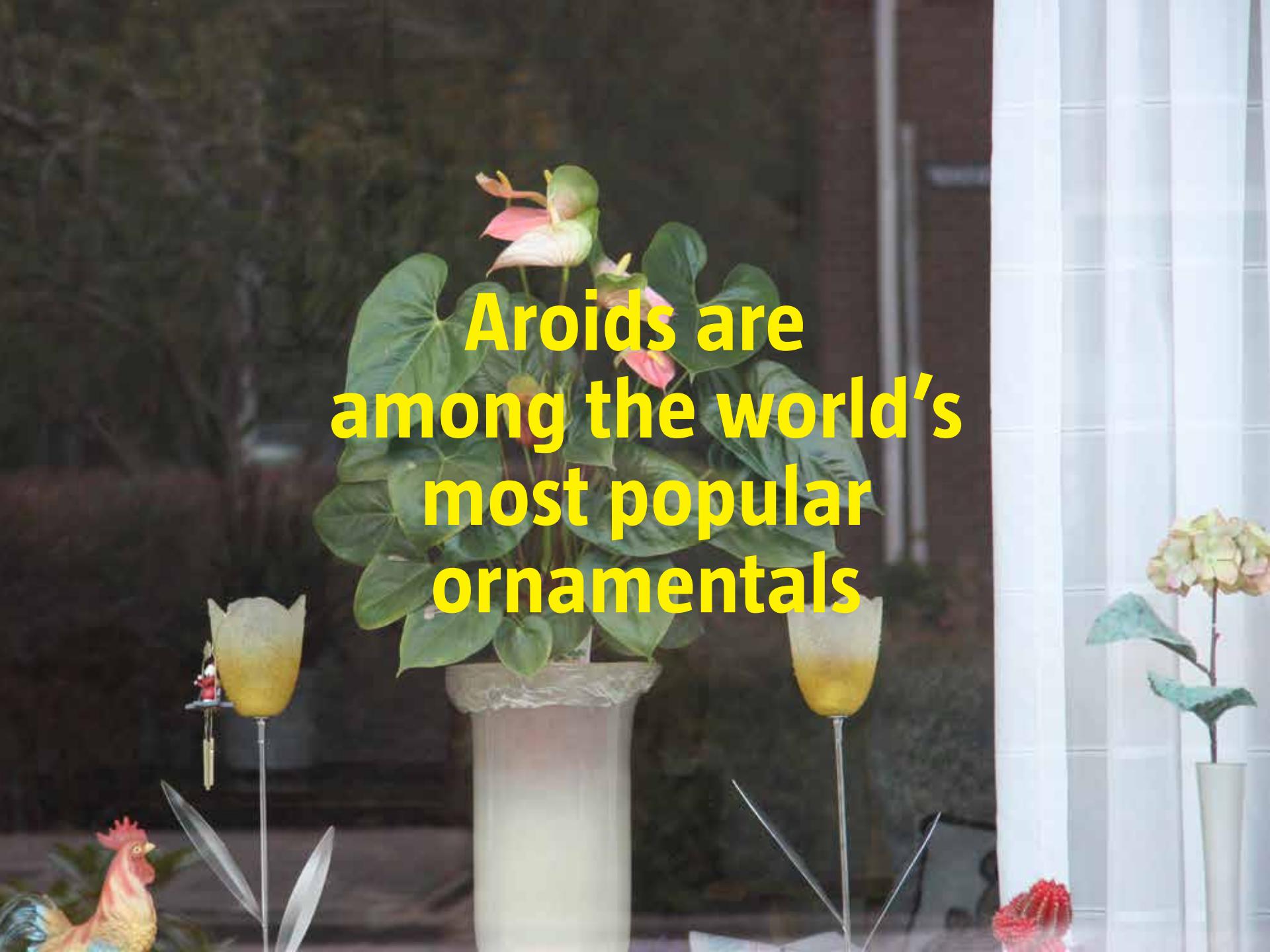
AROIDS IN THE WESTERN WORLD



PUNA YAMS
£2.50
2 FOR £4.50

A large indoor plant with variegated leaves in a white pot, surrounded by other plants in various containers.

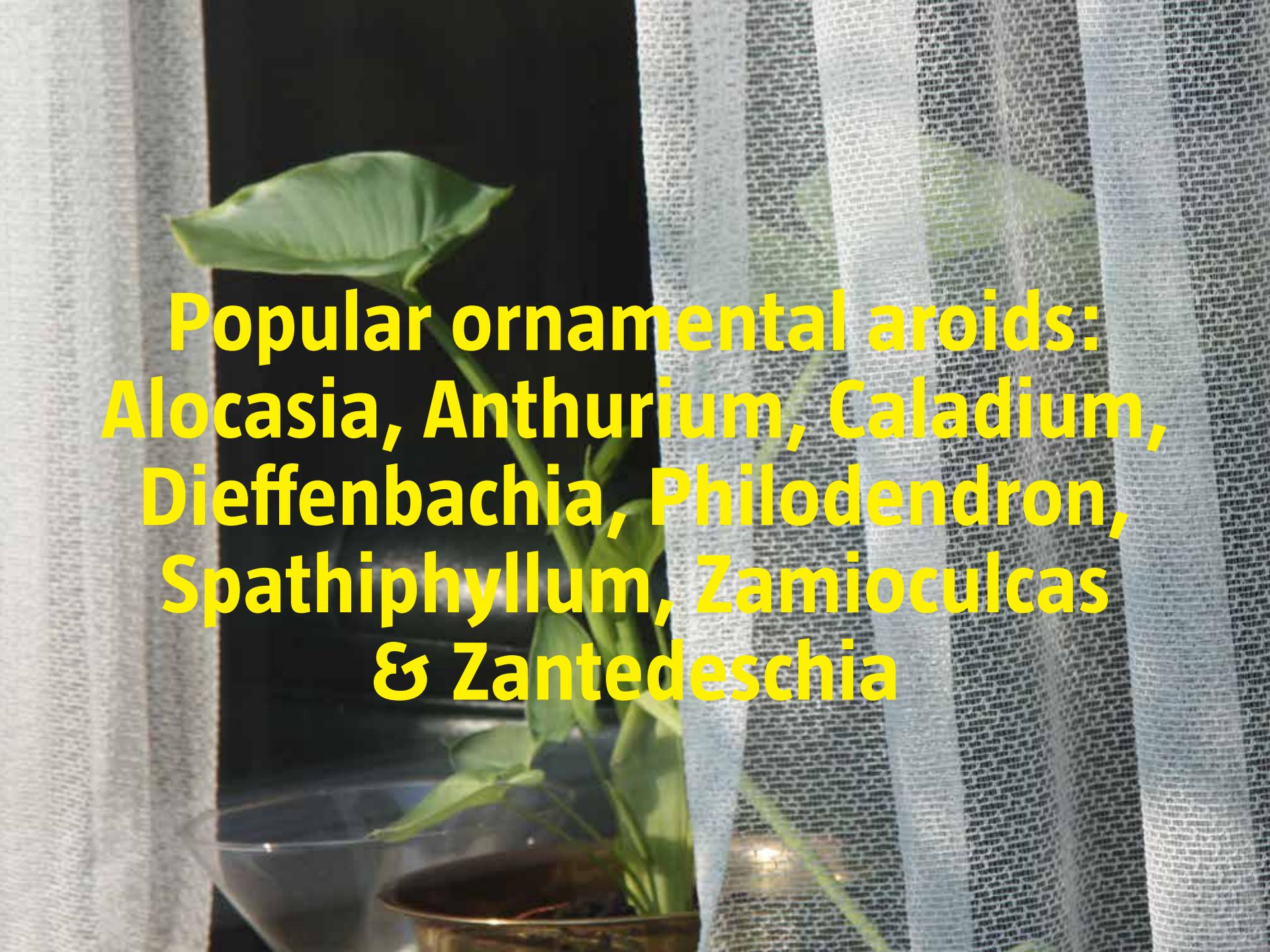
ORNAMENTALS



Aroids are
among the world's
most popular
ornamentals

A photograph showing a row of potted aroid plants, likely Calathea or Maranta species, with large, variegated leaves in shades of green, white, and reddish-brown. The plants are arranged in a metal planter box on a brick-paved floor. In the background, shelves filled with various items and price tags are visible, typical of a garden center or supermarket setting.

**Annually around
50 million aroids are sold
worldwide**

A photograph of a large, broad green aroid leaf, likely from a Caladium or Dieffenbachia plant, resting on a dark, shallow saucer. The leaf has a prominent central vein and some smaller veins branching off it. The background is a light-colored, textured wall.

**Popular ornamental aroids:
Alocasia, Anthurium, Caladium,
Dieffenbachia, Philodendron,
Spathiphyllum, Zamioculcas
& Zantedeschia**

AROIDS

ART & DESIGN



Never grow up 8 - Yu Xiao



'Voyage Botanique' - Paul den Hollander



between romantic and rebellious

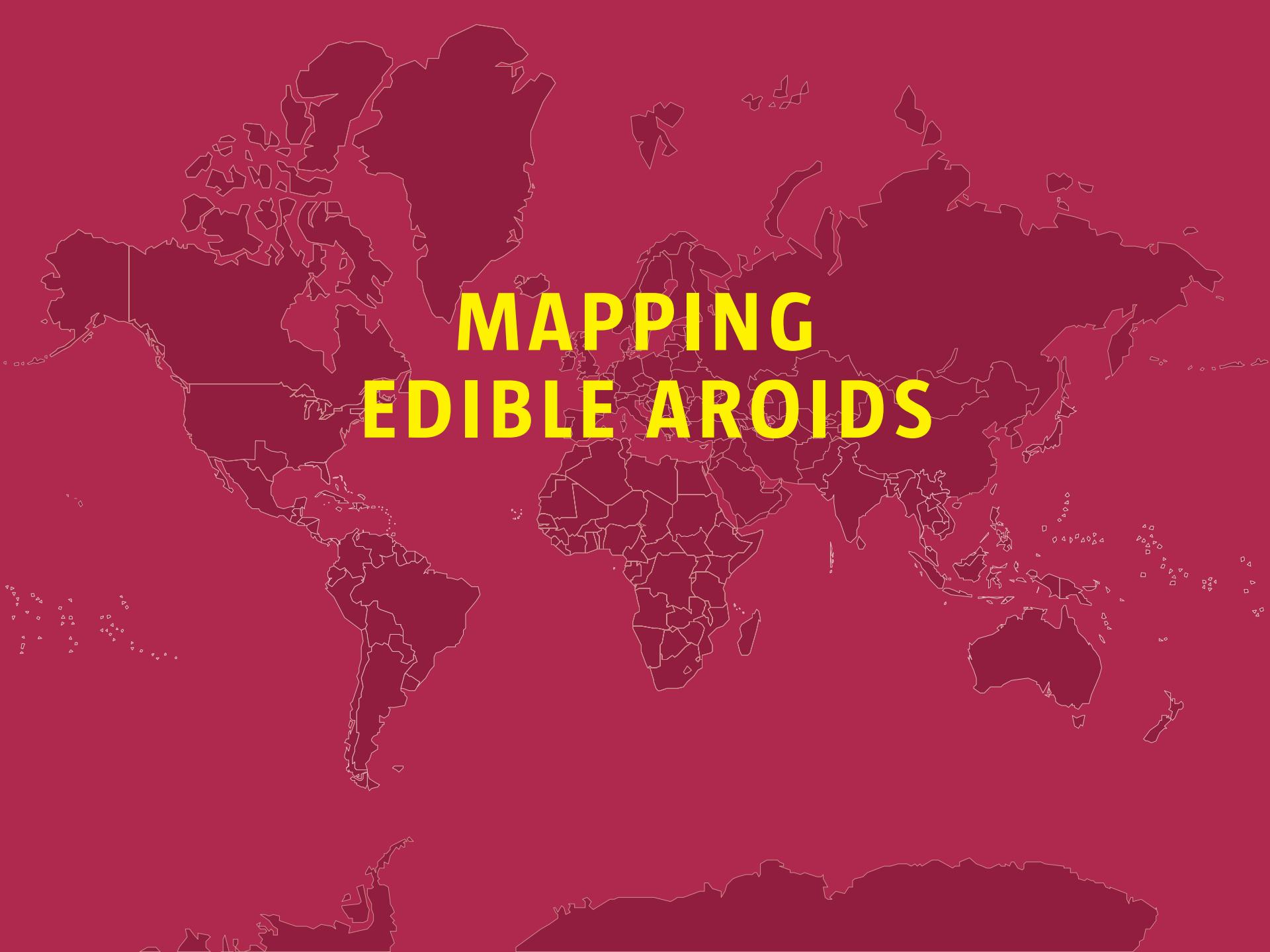


© Pieter Claessen

'Between romantic and rebellious' - Pieter Claessen



Felt plants - Driessens & Van den Baar, www.wandschappen.nl



MAPPING EDIBLE AROIDS

MAPPING EDIBLE AROIDS

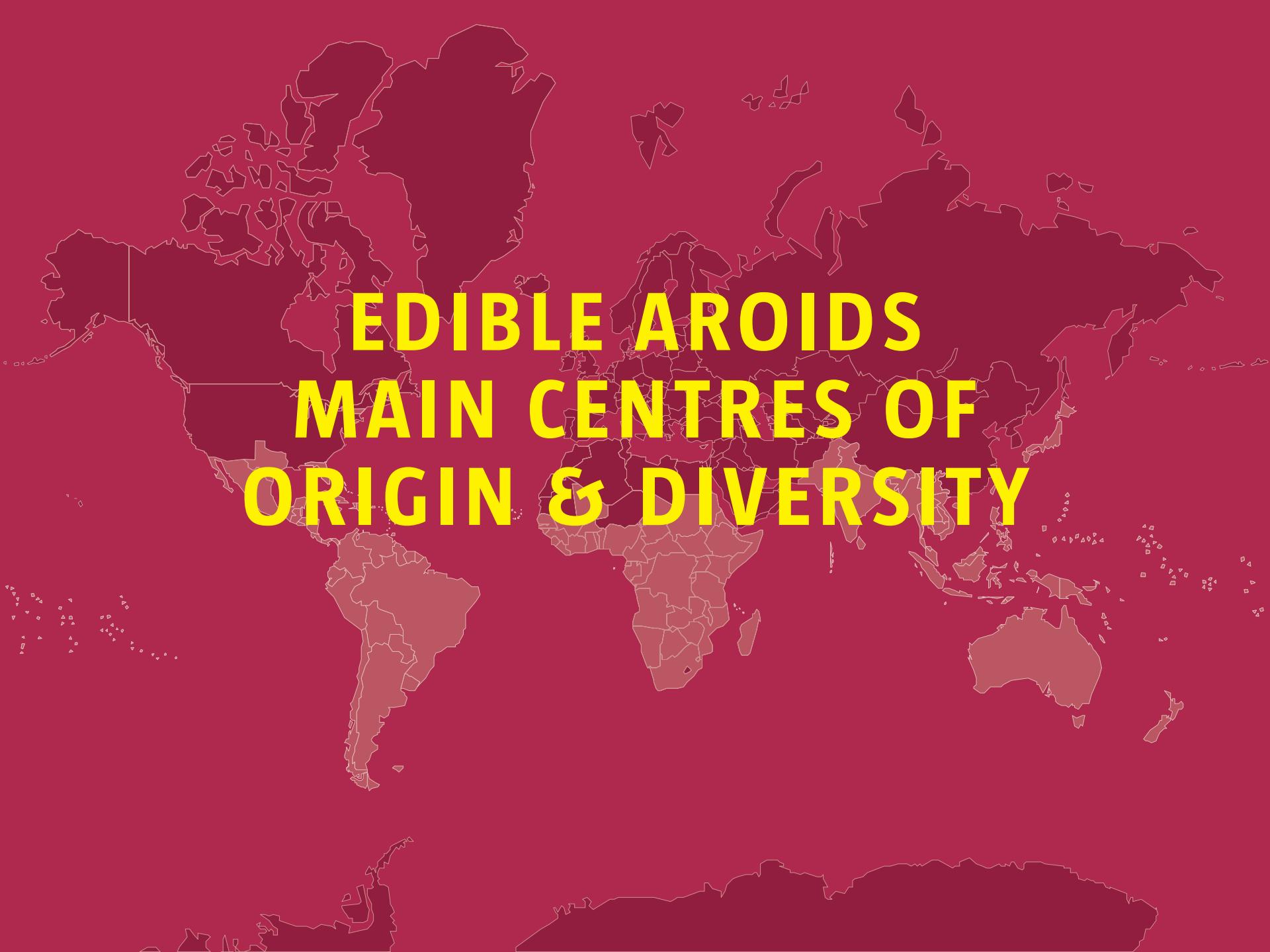
Primarily cultivated
by subsistence-oriented farmers
in the tropics

MAPPING EDIBLE AROIDS

& little known outside of
non-western food systems



In the tropics,
small farming is directly and
indirectly related to
75% of the poverty
in rural areas



EDIBLE AROIDS MAIN CENTRES OF ORIGIN & DIVERSITY

MAIN CENTRES OF ORIGIN & DIVERSITY

Southeast Asia:

**Elephant Ear, Elephant Foot Yam,
Swamp Taro & Taro**

NORTH AMERICA

POLYNESIA

SOUTH AMERICA

AFRICA

ASIA

MICRONESIA

MELANESIA

AUSTRALIA AND NEW ZEALAND

MAIN CENTRES OF ORIGIN & DIVERSITY

Latin America:

Tannia

NORTH AMERICA

SOUTH AMERICA

POLYNESIA

AFRICA

ASIA

MICRONESIA

MELANESIA

AUSTRALIA AND NEW ZEALAND

AROIDS FOOD CROPS

Elephant Ear

[*L. Alocasia*]



AROIDS FOOD CROPS

Elephant Foot Yam

(*L. Amorphophallus*)



AROIDS FOOD CROPS

Taro

(*L. Colocasia*)



AROIDS FOOD CROPS

Swamp Taro

(*L. Cyrtosperma*)



AROIDS FOOD CROPS

Tannia

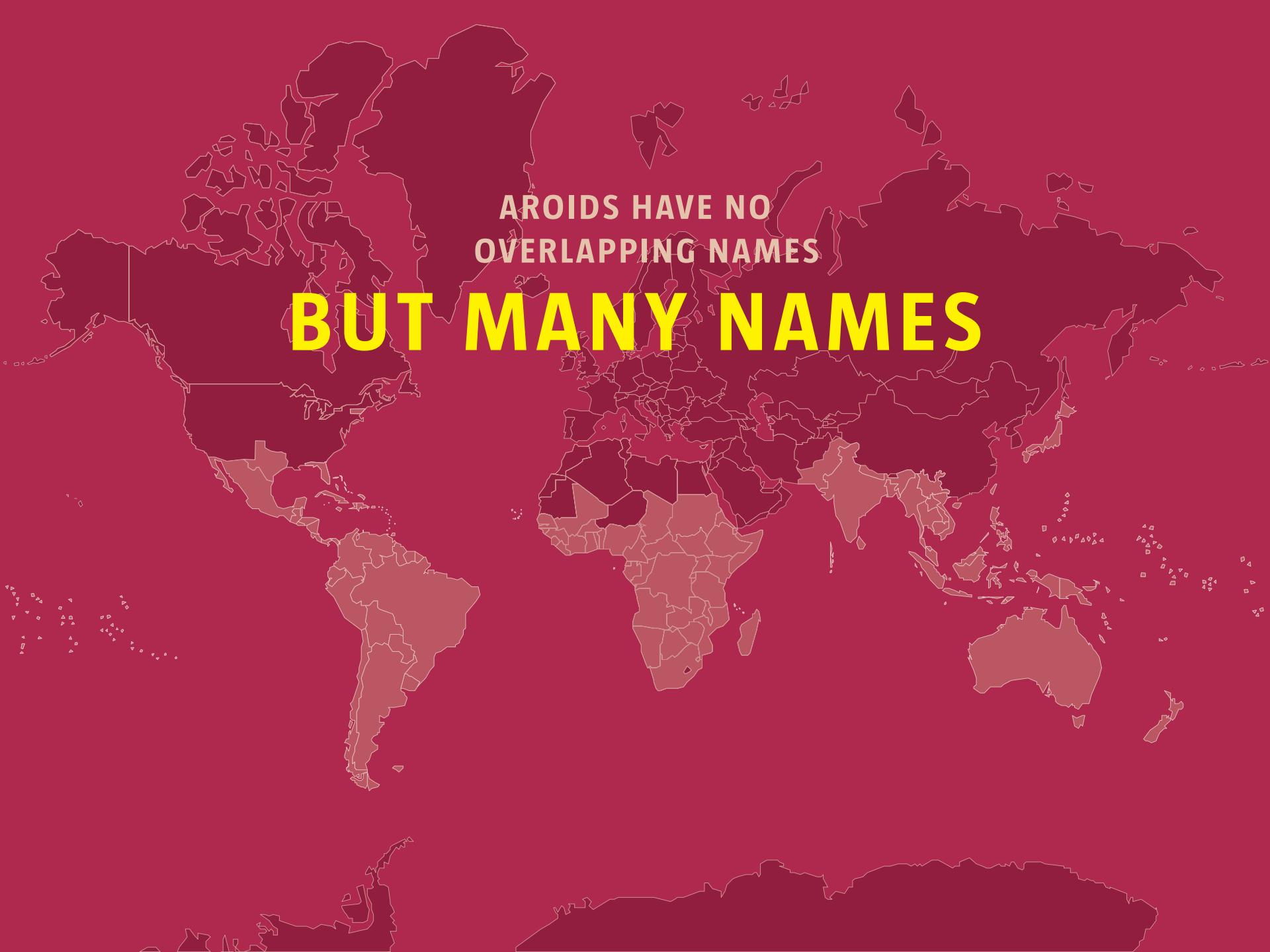
(*L. Xanthosoma*)







**AROIDS HAVE NO
OVERLAPPING NAMES**



AROIDS HAVE NO
OVERLAPPING NAMES
BUT MANY NAMES



CARAÏBE

BUT MANY NAMES
CALAUI

TALO PAPALAGI

CARAIBE

BUT MANY NAMES

CALAUI



CARAIBE
MONG SAP VANG

BOGOLO

TANIER

TALO PAPALAGI

GALANGA

MALANGA

CALAUI

YANTAS

YAHIBÍAS



TARO TARU

BALUZA

TALO PAPALAGI

CARAIBE

MONG SAP VANG

GUAGÜI

BOO

TANIER

SAVAHN ANÁLULU

CALAUI

DIAHUTIA

YANTAS

MALANGA

MACABO

GALANGA

OTEN JAPAN

KIMPOOL

YAHIBÍAS

TARO TARU

KUTAK MOKIL

BALUZA

TALO PAPALAGI

CALUSA

MONG SAP VANG

GUAGÜI

BOC

QUEQUESQUE

TANIER

SAVAHN ANÁLULU

CARAIBE

BADOO

GALANGA

CALAUI

DIAHUTIA

TANIA

YANTAS

MALANGA

MACABO

ONI SAPAN

YAHIBÍAS

WOTEN SAPAN

OTEN JAPAN

KIMPOOL





TARO TARU

SAVAHN AWAI

BLUE 'APE'

MONG SAP VANG

OSH

GUAGÜI

AL

BOGOLO

QUEQUESQUE

YABANE-IMO

TANIER

KELADI

SAVAHN ANÁLULU

WOTOPWU WA

BALUZA

TARO

TALO PAPALAGI

CALUSA

BADOO
GALANGA

YAUTÍA

MALANGA

CALAUI

SAWAHN AWAI

DIAHUTIA

MACABO

ONI SAPAN

TANIA

YANTAS

TIQUISQUE

KONTOMIRE

YAHIBÍAS

WOTEN SAPAN

EBALL

OTEN JAPAN

KIMPOOL



SEIBAN IMO

MON SAP VANG

KHOAI MÙNG

CHINESE TARO

MARUMI

PURPLE TARO

BADOO

GALANGA

CALUSA

YAUTÍA

KUTAK MOKIL

TARO

TALO PAPALAGI

TARO TARU

SAVAHN AWAI

BALUZA

BLUE 'APE'

TAYO

CARAIBE

MONG SAP VANG

VIDOLODODO

TARO IMO

AMANKANI

CALAUI

DAM

BISECH RA RUK

TANIA

SINGAPORE TARO

HONOLULU TARO

YAHIBÍAS

WOTEN SAPAN

MOULAVIKACHU

OTEN JAPAN

KIMPOOL

OSH

SAIBAL

GUAGÜI

BOGLOC

QUEQUESQUE

YABANE-IMO

KRADAT DAM

TANIER

UNCUCHA PAPA

SAVAHN ANALULU

WOTOPWU WA

EBALL

KELADI

KONG-KONG TARO

KONTOMIRE

YANTAS

SAWAN. (YAP)

ONI SAPAN

ALÖKLOK

TIQUISQUE

WOTEN SAPAN



SEIBAN IMO

MONG SAP VANG

MON SAP VANG

OCUMO CUMAN

KHOAI MÙNG

BISECH RA RUK

SAIBAL

MADUMBE

QUEQUESQUE

YABANE-IMO

KELADI

TANIER

UNCUCHA PAPA

SAVAHN ANALULU

WOTOPWU WA

KONTOMIRE

MOULAVIKACHU

OTEN JAPAN

KIMPOOL

BALUZA

TALO PAPALAGI

CALUSA

SAVAHN AWAI

TAYO

CHINESE TARO

TARO

KELADI HITAM

YAUTÍA

CARAIBE

PURPLE TARO

BADOO

GALANGA

MARUMI

AMANKANI

VIDOLODODO

TARO IMO

CALAUI

MALANGA

SAWAHN AWAI

DANIA

ONI SAPAN

ALÔKLÖK

TIQUISQUE

TAHIA

BIRAH HITAM

TANIA

SINGAPORE TARO

YANTAS

SAWAN. (YAP) HONOLULU TARO

YAHIBÍAS

WOTEN SAPAN

KRADAT DAM

KONG-KONG TARO

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SAWAN. (YAP) HONOLULU TARO

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OTEN JAPAN

KIMPOOL

YANTAS

SAWAN. (YAP) HONOLULU TARO

YAHIBÍAS

MOULAVIKACHU

OTEN JAPAN

KIMPOOL

MAPPING TANNIA



MAPPING TANNIA

Taro & Tannia are the most widely grown and consumed aroids



MAPPING TANNIA

**Tannia is the only indigenous
American aroid widely used for food**



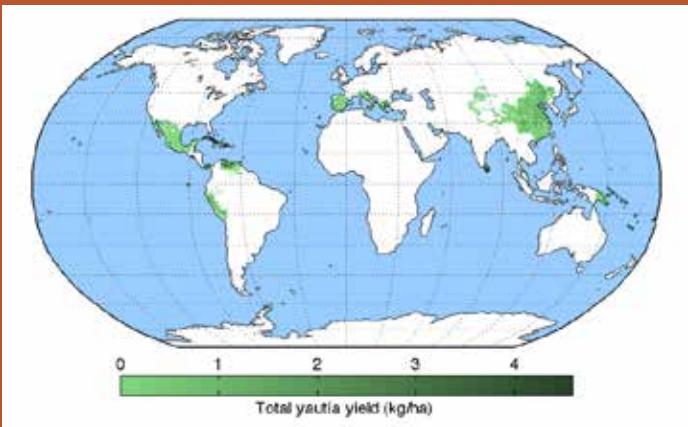
EDIBLE AROIDS

Where in the World is Taro Grown?

THE EXISTING MAPS

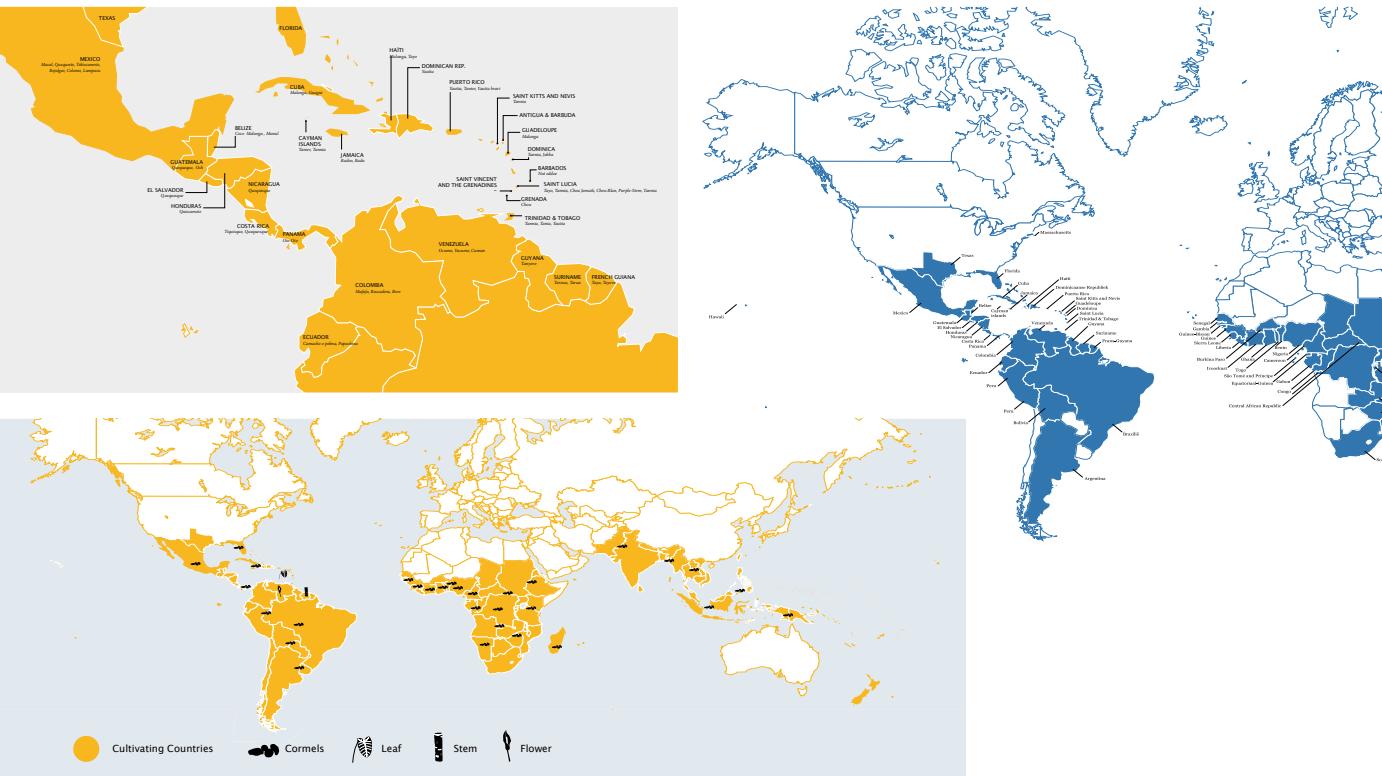


EDIBLE AROIDS: THE EXISTING MAPS



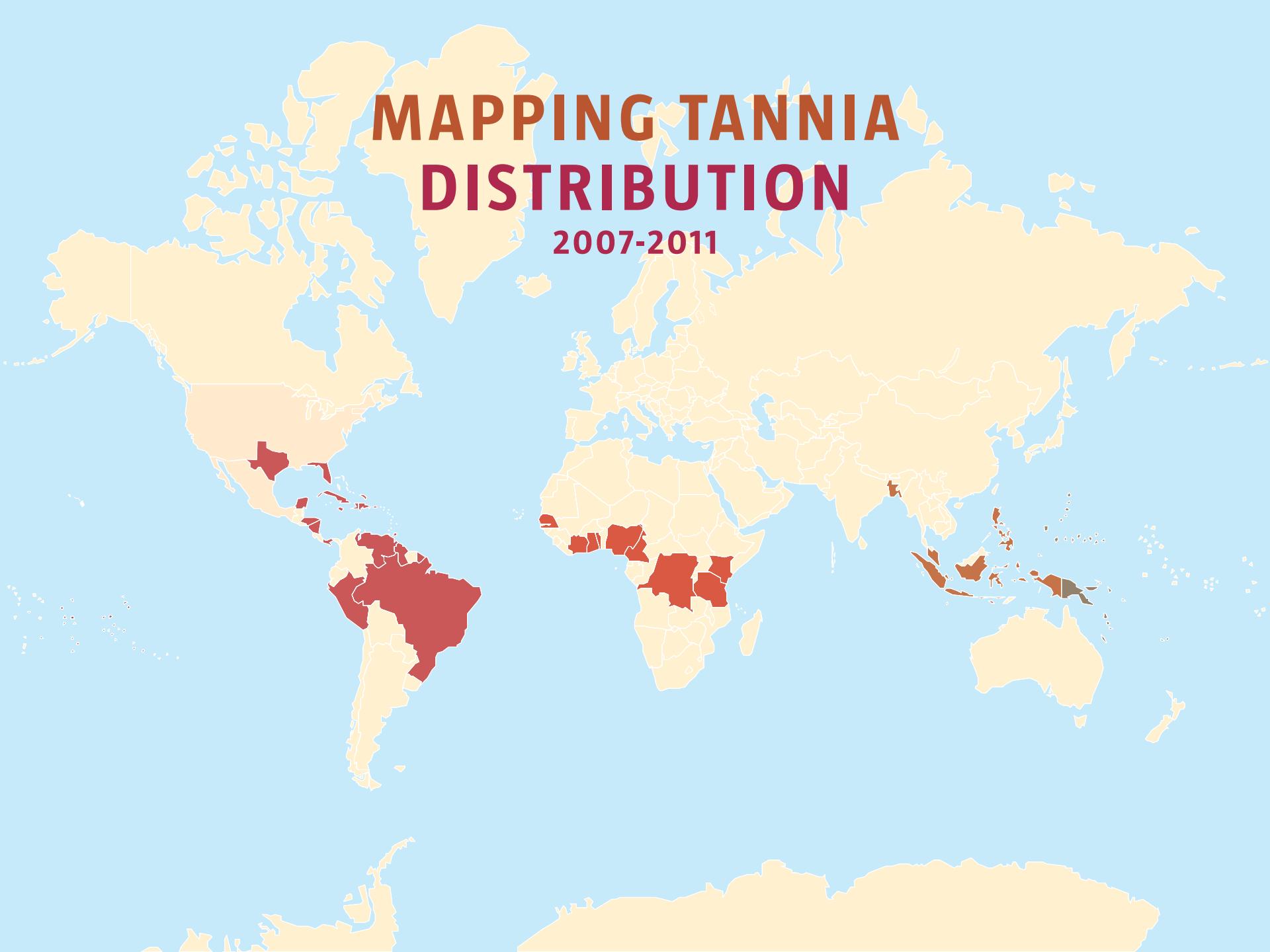
MAPPING TANNAI

Drafts



MAPPING TANNIA DISTRIBUTION

2007-2011



MAPPING TANNIA



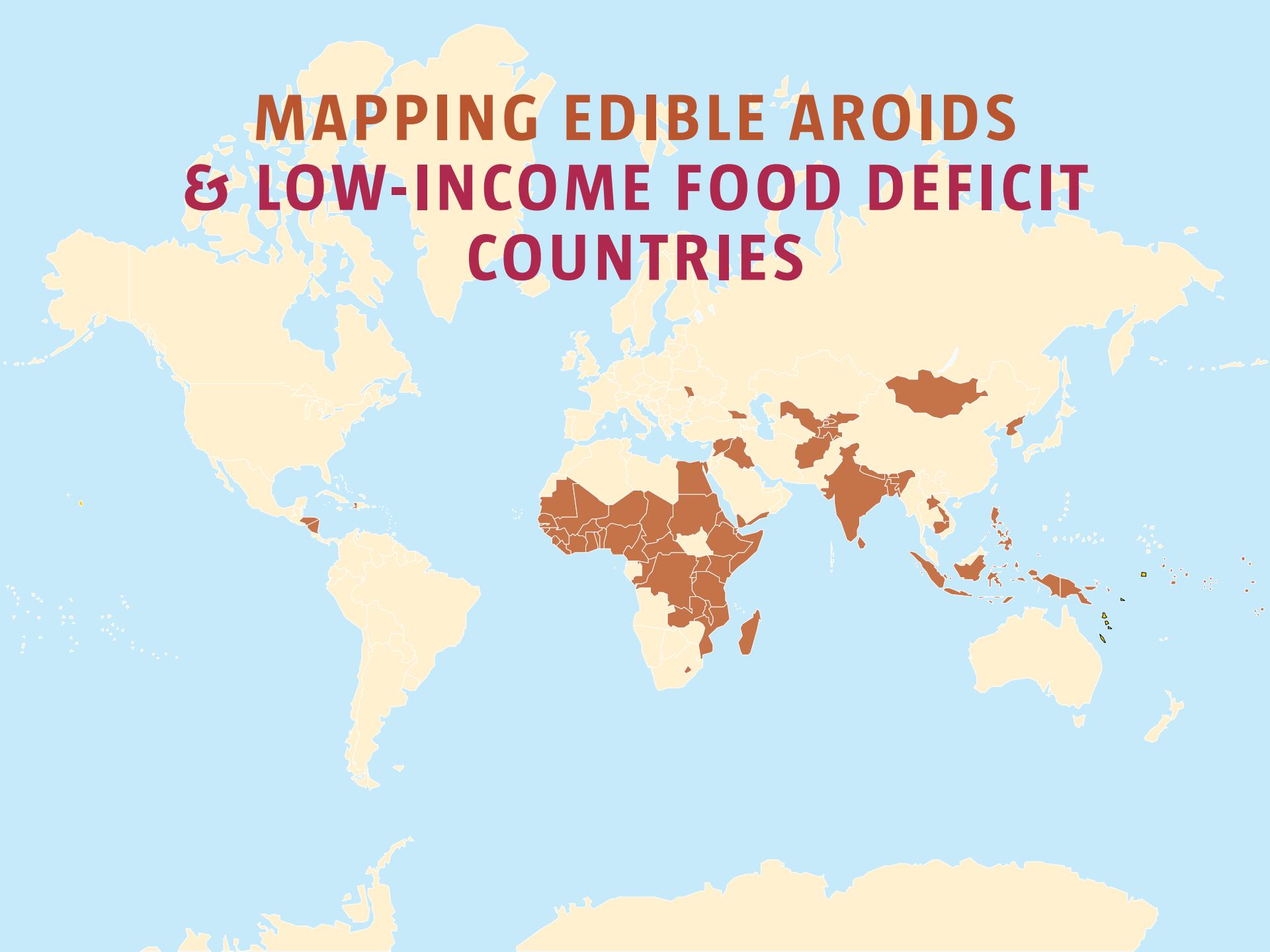
MAPPING TANNIA CULTIVATING COUNTRIES



- AFRICA**
- 1 Angola - Luanda
 - 2 Benin - Porto Novo, Cotonou
 - 3 Botswana - Gaborone
 - 4 Burkina Faso - Ouagadougou
 - 5 Burundi - Bujumbura
 - 6 Cameroon (also spelled Cameroun) - Yaoundé
 - 7 Cape Verde - Praia
 - 8 Central African Republic (Centrafrique) - Bangui
 - 9 Chad (Tchad) - N'Djamena
 - 10 Comoros - Moroni
 - 11 Republic of the Congo - Brazzaville
 - 12 Democratic Republic of the Congo - Kinshasa
 - 13 Côte d'Ivoire (Ivory Coast) - Yamoussoukro
 - 14 Djibouti - Djibouti
 - 15 Equatorial Guinea - Malabo
 - 16 Eritrea - Asmara
 - 17 Ethiopia (Itiopia) - Addis Ababa
 - 18 Gabon - Libreville
 - 19 The Gambia - Banjul
 - 20 Ghana - Accra
 - 21 Guinea - Conakry
 - 22 Guinea-Bissau - Bissau
 - 23 Kenya - Nairobi
 - 24 Liberia - Monrovia
 - 25 Madagascar - Antananarivo
 - 26 Malawi - Lilongwe
 - 27 Mali - Bamako
 - 28 Mozambique - Maputo
 - 29 Namibia - Windhoek
 - 30 Nigeria - Abuja
 - 31 Rwanda - Kigali
 - 32 São Tomé and Príncipe - São Tomé
 - 33 Senegal - Dakar
 - 34 Sierra Leone - Freetown
 - 35 Somalia - Mogadishu
 - 36 South Africa - Cape Town, Pretoria, Bloemfontein
 - 37 South Sudan
 - 38 Sudan - Khartoum
 - 39 Swaziland - Mbabane
 - 40 Tanzania - Dar es Salaam, Dodoma
 - 41 Togo - Lome
 - 42 Uganda - Kampala
 - 43 Zambia - Lusaka
 - 44 Zimbabwe - Harare

- ASIA**
- 1 Bangladesh - Dhaka
 - 2 Cambodia (Kampuchea) - Phnom Penh
 - 3 China, People's Republic of - Beijing (Yunnan)
 - 4 China, Republic of (a.k.a. Taiwan) - Taipei
 - 5 East Timor (Timor Leste) - Dili
 - 6 India (Hindi: Bharat) - New Delhi
 - 7 Indonesia - Jakarta
 - 8 Japan (Nihon) - Tokyo
 - 9 Laos - Vientiane
 - 10 Malaysia - Kuala Lumpur
 - 11 Maldives - Malé
 - 12 Myanmar (Burma) - Yangon
 - 13 Nepal - Kathmandu
 - 14 Pakistan - Islamabad
 - 15 Philippines - Manila
 - 16 Sri Lanka - Sri Jayawardenapura Kotte, not Colombo now
 - 17 Thailand (Muang Thai) - Bangkok
 - 18 Vietnam - Hanoi
- MICRONESIA**
- 1 Guam - Hagåtña
 - 2 Kiribati - Tarawa atoll
 - 3 Marshall Islands - Majuro
 - 4 Federated States of Micronesia - Palikir
 - 5 Nauru - Yaren
 - 6 Northern Mariana Islands - Saipan
 - 7 Palau - Koror
- MELANESIA**
- 1 Fiji - Suva
 - 2 New Caledonia - Nouméa
 - 3 Papua New Guinea - Port Moresby
 - 4 Solomon Islands - Honiara
 - 5 Vanuatu - Port Vila
- AUSTRALIA AND NEW ZEALAND**
- 1 Australia - Canberra
 - 2 New Zealand (Aotearoa) - Wellington
 - 3 Christmas Island - The Settlement

MAPPING EDIBLE AROIDS & LOW-INCOME FOOD DEFICIT COUNTRIES



MAPPING EDIBLE AROIDS FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

[FAO]

Low-Income Food-Deficit Countries (as of April 1997)

At present, 86 nations are defined as Low-Income Food-Deficit Countries (LIFDCs) – 43 in Africa, 24 in Asia, 9 in Latin America and the Caribbean, 7 in Oceania and 3 in Europe. These countries are home to the vast majority of the world's 800 million chronically

undernourished people. Many LIFDCs, particularly in Africa, do not grow enough food to meet all their needs and lack sufficient foreign exchange to fill the gap by purchasing food on the international market.



LOW-INCOME FOOD-DEFICIT COUNTRIES

2012

66 countries (source FAO)

EDIBLE AROIDS IN LOW-INCOME FOOD-DEFICIT COUNTRIES

2012 Edible aroids are cultivated in 50 Low-Income Food-Deficit countries

MAPPING EDIBLE AROIDS & LOW-INCOME FOOD-DEFICIT COUNTRIES

Elephant Ear

NORTH AMERICA

SOUTH AMERICA

POLYNESIA

AFRICA

ASIA

MICRONESIA

MELANESIA

AUSTRALIA AND NEW ZEALAND



MAPPING EDIBLE AROIDS &
LOW-INCOME FOOD-DEFICIT COUNTRIES

Elephant Foot Yam

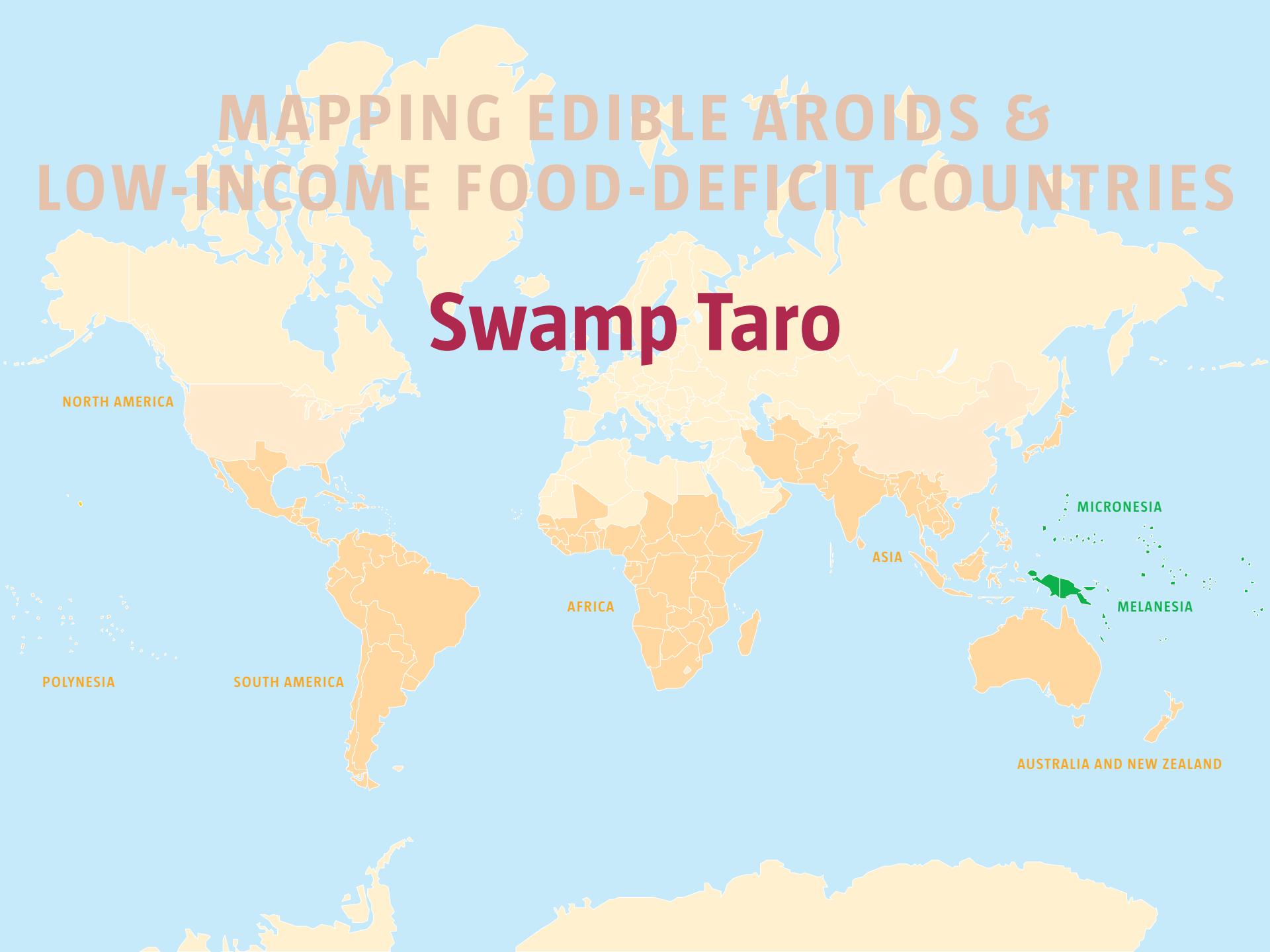


OL-Chingrir Dalna (Elephant yam & Prawn curry)



MAPPING EDIBLE AROIDS & LOW-INCOME FOOD-DEFICIT COUNTRIES

Swamp Taro





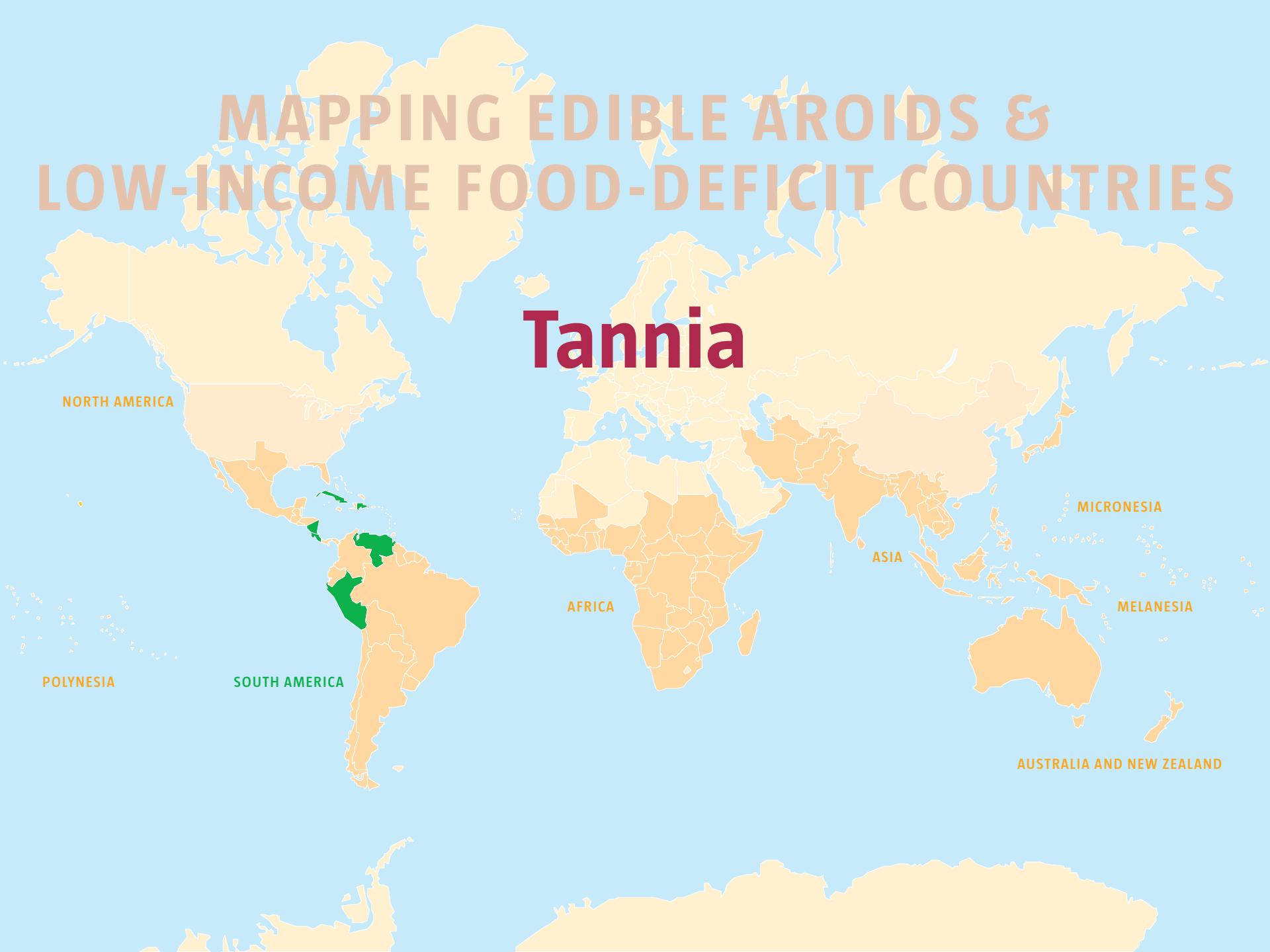
MAPPING EDIBLE AROIDS & LOW-INCOME FOOD-DEFICIT COUNTRIES

Taro



MAPPING EDIBLE AROIDS & LOW-INCOME FOOD-DEFICIT COUNTRIES

Tannia





**“¡se ha olvidado la malanga!,
a pesar de las veces que hemos
dicho que si no hay nada que comer
comeremos malanga.”**

[APLAUSOS]

**“¡the malanga has been forgotten!,
despite the time we have said that if there is nothing to eat
we will eat malanga.”**

[Applause]

Fidel Castro (1961)

ACKNOWLEDGEMENTS

Thank you

Glide'12

Peer reviewers

Grahame Jackson

International Network for Edible Aroids (INEA)

www.Edible aroids.org

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Charlotte Lusty

Global Crop Diversity Trust

Ieva Laurina

Isabel Serval

Paul den Hollander

Kahmann Gallery, Amsterdam

Pieter Claessen

Nicole Driessens & Ivo van den Baar

www.wandschappen.nl

Yu Xiao

Flatland Gallery, Utrecht

Flatland Gallery

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KARIN VANEKER & ERWIN SLAATS
AMSTERDAM, THE NETHERLANDS

MAPPING EDIBLE AROIDS

Thank you

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FOOD, NUTRITION, AND HEALTH

