Adapting agriculture to climate change:
collecting, protecting and preparing crop wild relatives

Indonesia

crop wild relatives

Seed Collecting Guide

MILLENNIUM SEED BANK PARTNERSHIP
Royal Botanic Gardens Kew
CROP TRUST

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The content of this collecting guide is intended only as a general reference for future collecting missions; the contents and data within are not guaranteed to be complete, correct, timely, current or up-to-date at the time of publishing. For general information and resources on collecting crop wild relatives, visit cwrdiversity.org.

Cover photos
TOP LEFT: *Cajanus* pods, CREDIT: Forrest and Kim Starr;
TOP RIGHT: Sorghum, CREDIT: RBG Kew;
BOTTOM LEFT: *Musa* seeds, CREDIT: RBG Kew;
BOTTOM RIGHT: Wild banana CREDIT: RBG Kew.

Introduction

This work was undertaken as part of the initiative "Adapting Agriculture to Climate Change" which is supported by the Government of Norway. The project is managed by the Global Crop Diversity Trust with the Millennium Seed Bank of the Royal Botanic Gardens, Kew, in partnership with national and international genebanks and plant breeding institutes around the world. It is implemented in accordance with the International Treaty on Plant Genetic Resources for Food and Agriculture. For further information see the project website: www.cwrdiversity.org/

Many individual scientists, herbaria, genebanks and specialist institutes are contributing advice and information to the Project and these guides. The Project aims to collect the wild relatives of 29 key crops, conserve them in genebanks, and prepare them for use in plant improvement programs to breed new crop varieties adapted to future climates.

The boundaries and names shown on the maps included in this guide do not imply official endorsement or acceptance by the Adapting Agriculture to Climate Change Project. Data source: GADM, Version 1.0 via diva-gis.org

Acknowledgements

The Harlan and de Wet Crop Wild Relatives Checklist was developed by Holly Vincent and Nigel Maxted at the University of Birmingham.

UNIVERSITY OF BIRMINGHAM

CIAT
International Center for Tropical Agriculture
Since 1967 Science to cultivate change

The Gap Analysis work which informed the list of species included in this guide, and all the map files, were produced by the Gap Analysis team at CIAT: Andy Jarvis, Nora Castañeda, Colin Khoury and Julian Ramirez-Villegas.

RBG Kew is involved in the research and collection phases of the project. This collecting guide was developed based on the work of the Millennium Seed Bank Enhancement Project Species Targeting Team.

Royal Botanic Gardens Kew

CROP TRUST

The Crop Wild Relatives Project is led by the Global Crop Diversity Trust. This work was undertaken as part of the initiative.

Specimen data was kindly provided to this project by many individuals and organisations who are listed on the website: http://www.cwrdiversity.org/home/data-sources

This data set will be made available for download. Please refer to the website for more information on this dataset.

This collecting guide has been compiled by:

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Collecting Guide Compiler
Crop Wild Relatives Project
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How to use this guide

This collecting guide consists of species profiles and information sheets contained within this folder, alongside a CD which contains localities of the taxa in an excel file.

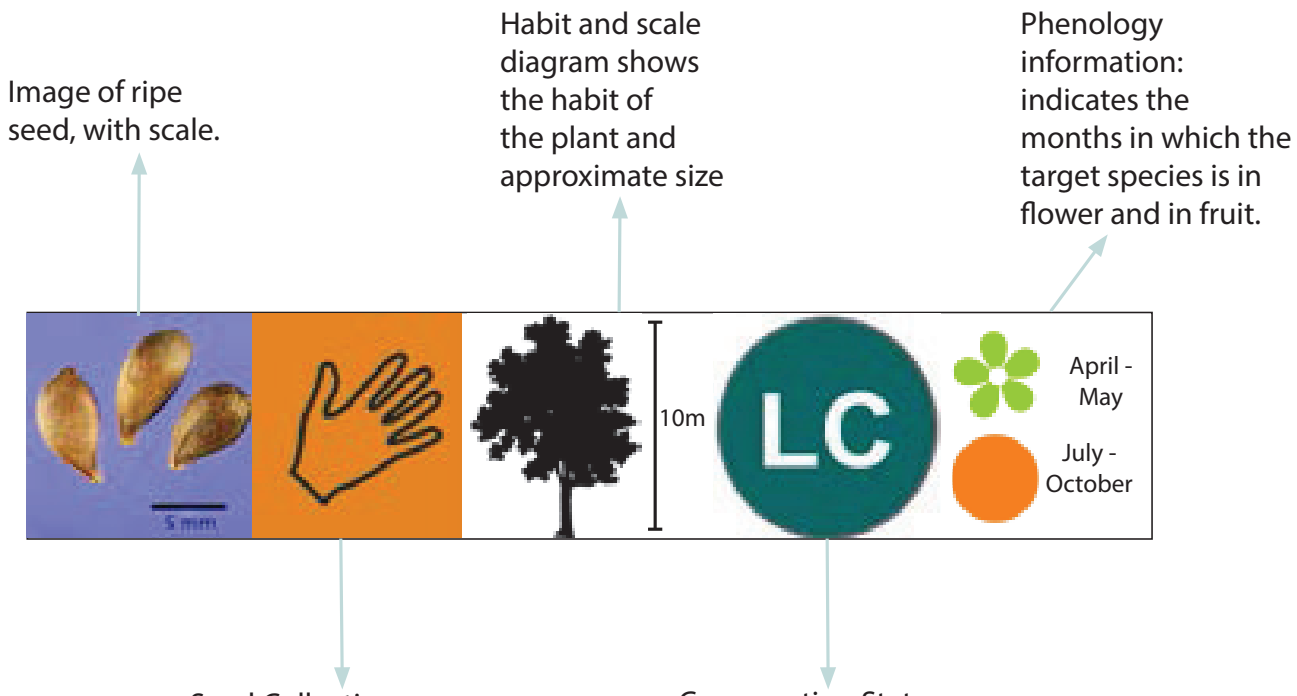
The species included in this guide are a selection of the wild relatives of the 29 key crops which this project covers (African Rice, Alfalfa, Apple, Aubergine, Bambara groundnut, Banana, Barley, Bread Wheat, Butter Bean, Carrot, Chickpea, Common Bean, Cowpea, Faba bean, Finger millet, Grasspea, Lentil, Oat, Pea, Pearl millet, Pigeon pea, Plantain, Potato, Rice, Rye, Sorghum, Sunflower, Sweet potato, Vetch). It is not a definitive guide to the Crop Wild Relatives in this country.

The guides are designed to be used both in the planning of a collecting trip, and also in the field.

At the front of this guide there is a phenology table showing the flowering and fruiting times of all the taxa to indicate which species may be found at a certain time of year, or when to collect target species.

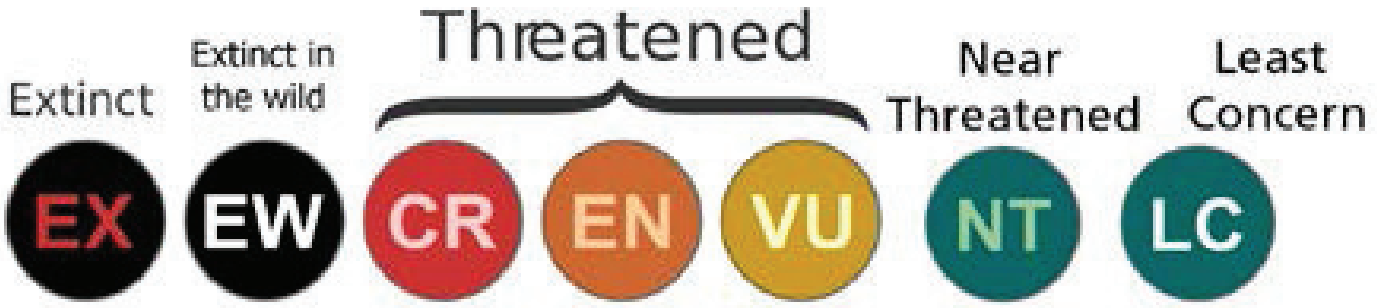
Synonyms for each species are listed in the Appendix at the end of this guide.

On each species profile, there is a collection of images to help identify the target species, accompanied by a series of symbols :



Conservation Assessments

Conservation Status:
Assessments are completed using 2001 IUCN Red List Categories and Criteria version 3.1 with the following categories:



CR
CRITICALLY ENDANGERED
Considered to be facing an extremely high risk of extinction in the wild.

EN
ENDANGERED
Considered to be facing a very high risk of extinction in the wild.

VU
VULNERABLE
Considered to be facing a high risk of extinction in the wild.

NT
NEAR THREATENED
Is close to qualifying for or is likely to qualify for a threatened category in the near future.

LC
LEAST CONCERN
Does not qualify for a threatened rating. Widespread and abundant taxa are included in this category.

DD
DATA DEFICIENT
There is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

NE
NOT EVALUATED
A conservation assessment for this species has not yet been carried out.

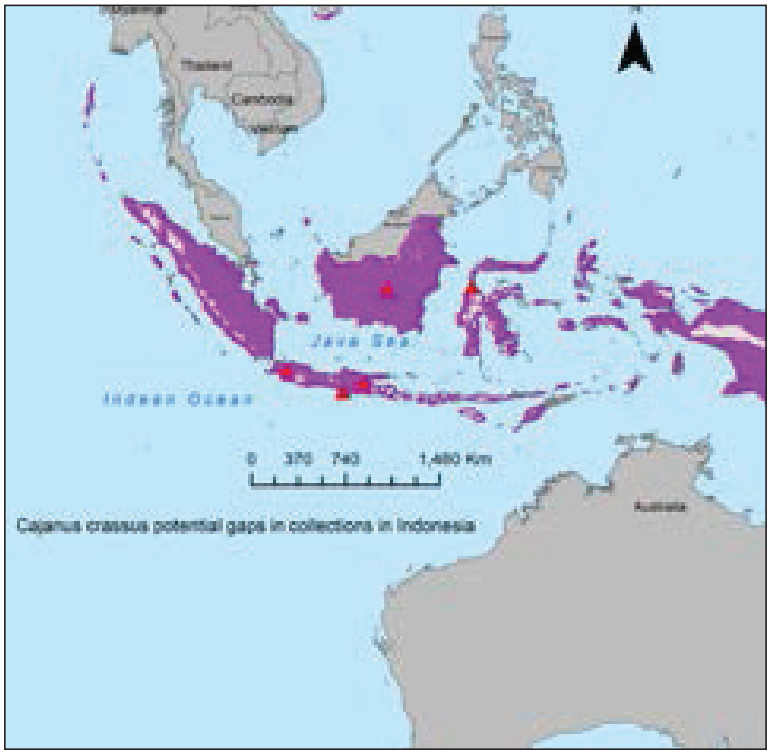
Where a full conservation assessment has not been completed, a preliminary conservation rating may be indicated. Preliminary assessments are produced using specimen locality data and GIS, which calculates two parameters accepted by IUCN as suitable measures of range: namely extent of occurence (EOO) and area of occupancy (AOO). These values derived for each species are then compared with thresholds set out by IUCN under Criterion B.
Where a preliminary conservation assessment has been caluculated this is indicated by the word PRELIM:

IUCN Graphics Credit: Peter Halasz

Maps

Two maps are provided for each target species. The first map shows a point distribution of all the known localities of this species based on herbarium specimen records and existing data-sets. The area shaded on this map shows the predicted distribution based on Maxent.

The second map shows the potential gaps in gene bank collections, where seed collections should be targetted.



Useful resources

The following resources are available online.

Kew technical information sheets

- Assessing a potential seed collection:
  http://brahmsonline.kew.org/Content/Projects/msbp/resources/Training/02-Assessing-population.pdf

- Post-harvest handling of seed collections:
  http://brahmsonline.kew.org/Content/Projects/msbp/resources/Training/04-Post-harvest-handling.pdf

Other sheets covering the following topics are available from
http://brahmsonline.kew.org/msbp/Training/Resources

- Protocol for comparative seed longevity testing
- Measuring seed moisture status using a hygrometer
- Selecting containers for long-term seed storage
- Low-cost monitors of seed moisture status
- Small-scale seed drying methods
- Equilibrating seeds to specific moisture levels
- Identifying desiccation-sensitive seeds
- Seed bank design: seed drying rooms
- Seed bank design: cold rooms for seed storage
- Cleaning seed collections for long-term conservation

ENSCONET seed collecting manual for wild species

http://ensconet.maich.gr/PDF/Collecting_protocol_English.pdf

Seed conservation: turning science into practice

https://academic.oup.com/aob/article/95/5/888/201951

Collecting plant genetic diversity: Technical guidelines (Bioversity)

http://cropgenebank.sgrp.cgiar.org/index.php?option=com_content&view=article&id=390&Itemid=557

FAO – Commission on Genetic Resources for Food and Agriculture

http://www.fao.org/nr/cgrfa/en/

IUCN Red List Categories and Criteria (Version 3.1)

https://iucn-csg.org/red-list-categories/

Plants of the World Online

http://plantsoftheworldonline.org/

For more information about the Crop Wild Relatives Project and to access the Harlan and de Wet Crop Wild Relatives checklist, please visit the website:

www.cwrdiversity.org

Identification Keys

Interactive identification keys can be accessed using the links below.

Kew Grassbase interactive identification key
http://www.kew.org/data/grasses-db/ident.htm

Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. (2006 onwards). GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html. [accessed 15 March 2012; 14:30 GMT]

Seed Collecting Techniques

Michael Way and Kate Gold, Seed Conservation Department

Seed collecting from wild plants requires care, resourcefulness and determination. There are many different collecting techniques. The most appropriate technique will depend on the species, particularly the type of dispersal unit (fleshy fruit, dry fruit, individual seeds etc). This information sheet outlines the manual techniques most commonly used to make seed collections of adequate quality and quantity, for long term conservation.

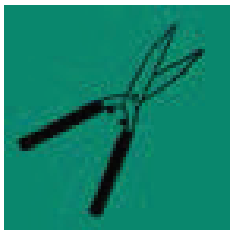
Hand picking of whole fruits

The most basic and flexible of techniques, hand picking or plucking, has many benefits. Consider though, if you can use a more efficient technique.

Plucking is particularly suitable when:

- target fruits can easily be selected by eye (e.g. due to colour or texture change of fruit coat, or swelling of fruit);
- non-target (e.g. immature or damaged) fruit cannot be excluded from the collection by more efficient techniques;
- fruits are easily accessible and collectors can tie buckets or similar containers around the waist, releasing both hands for collecting;
- collecting many-seeded fleshy or dry indehiscent fruits; and
- making small seed collections.

Pruning clusters of fruit

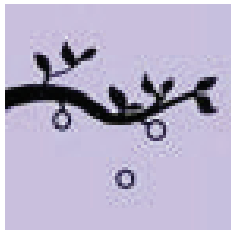


This technique is typically used to collect tree seeds. Cut groups or clusters of fruits using secateurs or tree pruners. Assess for ripeness and damage before adding seeds to the collection.

This is a very effective technique when:

- seed is clustered at the distal (terminal) parts of branches;
- the species is abundant and a small associated loss of branch and foliage is acceptable;
- seed is beyond reach of the collectors and has to be obtained using tree pruners.

Shaking branches



Careful shaking of branches will sometimes dislodge the best available seed, which can be collected in buckets or on a tarpaulin held or spread out beneath the plant. Start with gentle taps, and carefully check each sample of seed dislodged. Light shaking will often dislodge fully ripe fruits and seeds, leaving immature, poorly developed and damaged seeds to be retained on the parent plant. Too-heavy beating of branches may cause damage to the tree, and may also dislodge other plant material and associated insects, necessitating additional cleaning of the collection.

Shaking branches may be useful when collecting:

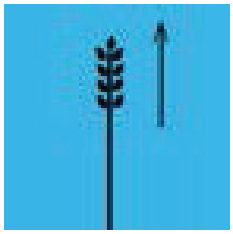
- dehiscent fruits with medium large seeds;
- seeds with irritant plumes (e.g. Cercocarpus of the Rosaceae);
- spiny trees such as Prosopis (Fabaceae);
- on level, open terrain suitable for tarpaulin use.

This technique may not be suitable for light, plumed seed from Bombacaeae and Asclepiadaceae, which may be carried away by air currents.

ABOVE: Stripping seed heads may be appropriate for grasses
Credit: Global Crop Diversity Trust/Britta Skagerfalt

Technical Information Sheet produced by Michael Way and Kate Gold for the Millennium Seed Bank Project, 2008.

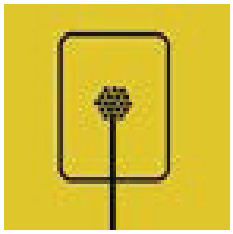
Stripping entire seed-heads



This is a popular technique for collecting seed from grasses and may be suitable for other species with erect infructescences (seedheads). Grasp the seed-heads at the base with a gloved hand and slide the hand upwards, dislodging many or all of the seeds. This technique may introduce a proportion of immature seeds into the collection.
Such seeds might need further postharvest ripening which can be time consuming and is best avoided.

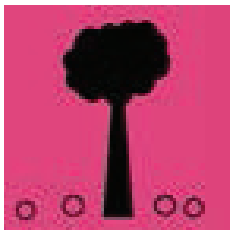
The stripping technique is most suitable for:
• dense, mono-specific stands of target species with no weed or other species present; and
• infructescences which are completely and consistently at the natural dispersal stage.

Bagging seed-heads



If there is frequent access to the collecting site, and if seeds would otherwise be lost, fix a well-tied mesh bag loosely over pre-dispersal seed heads. Seeds are captured as soon as they are shed, and can be periodically removed. This has been successfully used on a small scale, e.g. for collecting Fouquieria sp.

Collecting from the ground



You will frequently find seeds on the ground below trees or shrubs, but they will often be damaged by pests or pathogens. The seeds may have been on the ground for several months, and could even date from the previous year. Such seed will have aged and life-span in storage will be reduced. Inspect the seed carefully, noting any variation in the fruit, seed coat and internal tissues.

In general, only collect from the ground when:
• the parent tree(s) can be determined without doubt;
• you are certain that you are collecting recently dispersed seeds;
• seeds have not suffered significant damage from pests or pathogens; and
• other techniques or collecting options are unsuitable.

Collecting fleshy fruits

• Collect fleshy fruits directly into strong plastic bags or tubs with as much air as possible.
• Pack the bags in a rigid plastic container to ensure that the fruits are not squashed and help prevent them getting too hot and fermenting during transit.
• You may need to remove the seeds from fleshy fruits either during or immedately after the field trip.

ABOVE Collecting small seeds into paper bags
Credit: Ruth Harker/ RBG Kew

Containers

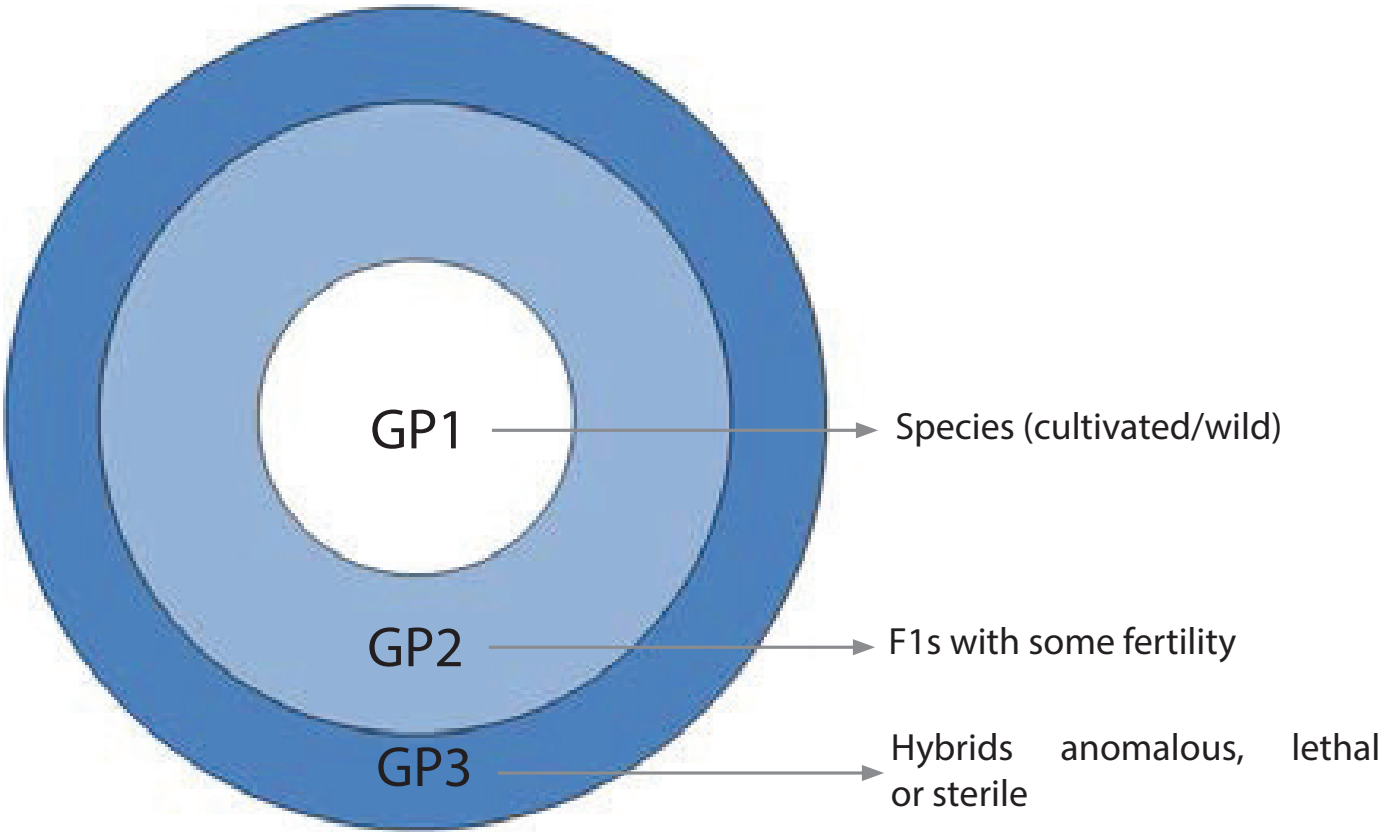
Collect into buckets, cloth or paper bags, and check each person's sample carefully before combining into a single population collection.
Using buckets has the advantage of allowing you to monitor the quality of the collection whilst associated insects disperse freely.
Place collections of dry, ripe seed into cloth or paper bags for transit. Store any awned seed or hooked fruit, that would damage or get stuck in cotton bags, in cardboard boxes or strong paper bags. Never collect or store seeds in plastic bags.
Label all seed containers inside and out with a unique collection number, and seal them securely. It is best to prepare sufficient labels before filling the containers.

How we define crop wild relatives

Each target species in this guide is a wild relative of a crop. On each species profile it is indicated how closely related the target species is to the crop using either the Gene Pool concept or the Taxon Group concept. Species more closely related to the crop are higher priorities for collecting.

Gene Pool Concept

Harlan and de Wet, 1971



Taxon Group Concept

Maxted et al. 2006

Taxon Group 1 – cultivated/wild form of the crop

Taxon Group 2 – species in same series/section as crop

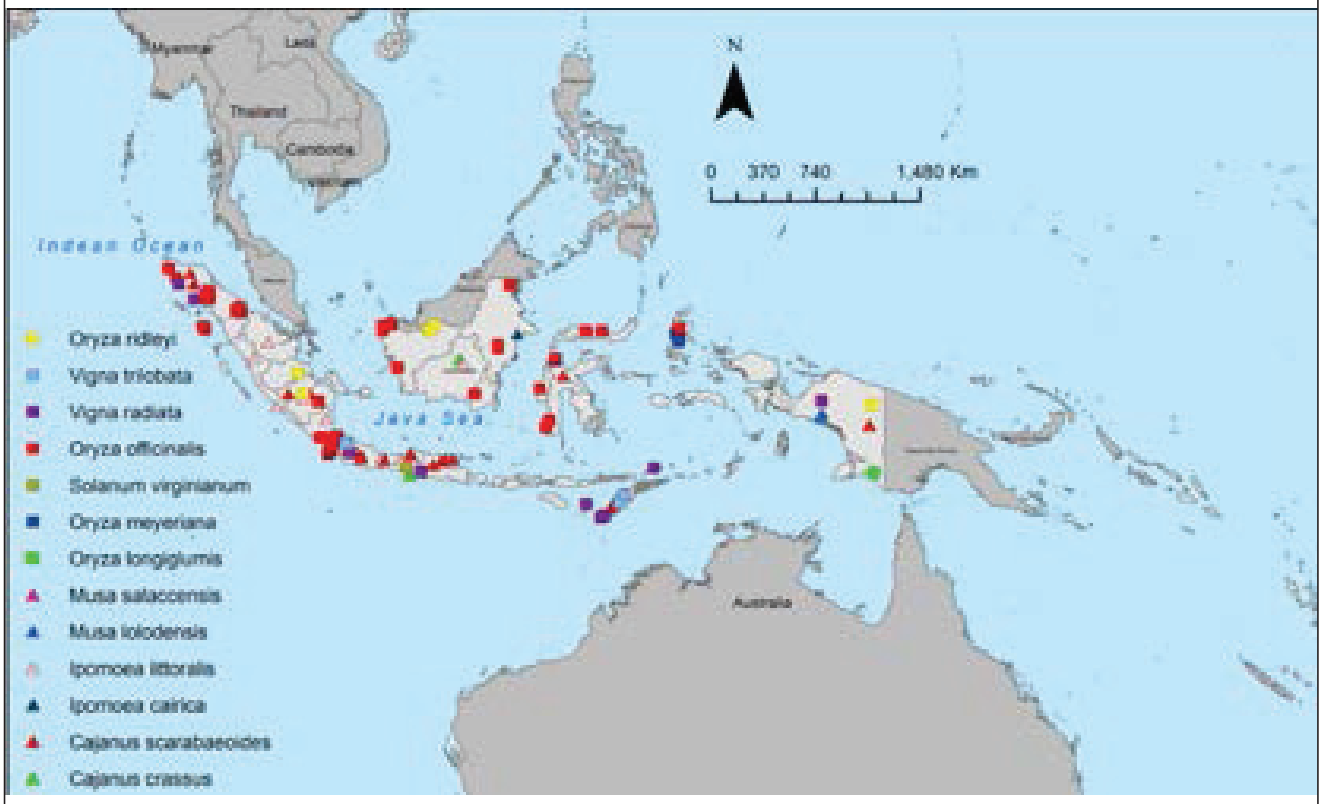
Taxon Group 3 – species in same subgenus as crop

Harlan, J. and J. de Wet (1971). Towards a rational classification of cultivated plants. Taxon 20: 509-517.

Maxted, N., B.V. Ford-Lloyd, S.L. Jury, S.P. Kell and M.A. Scholten (2006). Towards a definition of a crop wild relative. Biodiversity and Conservation 14: 1-13.

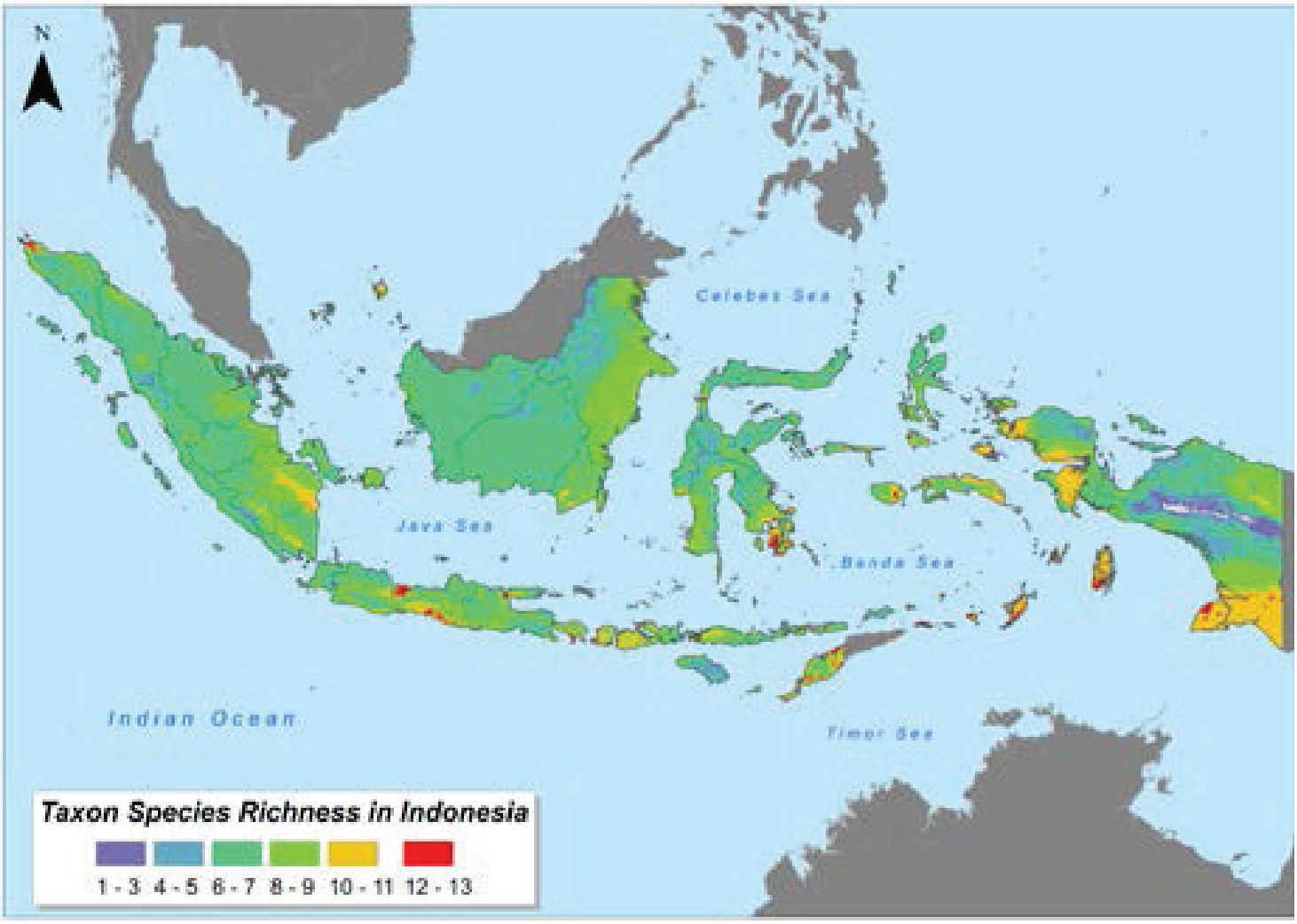
Country Maps

Occurences of all taxa in this guide, as a point distribution

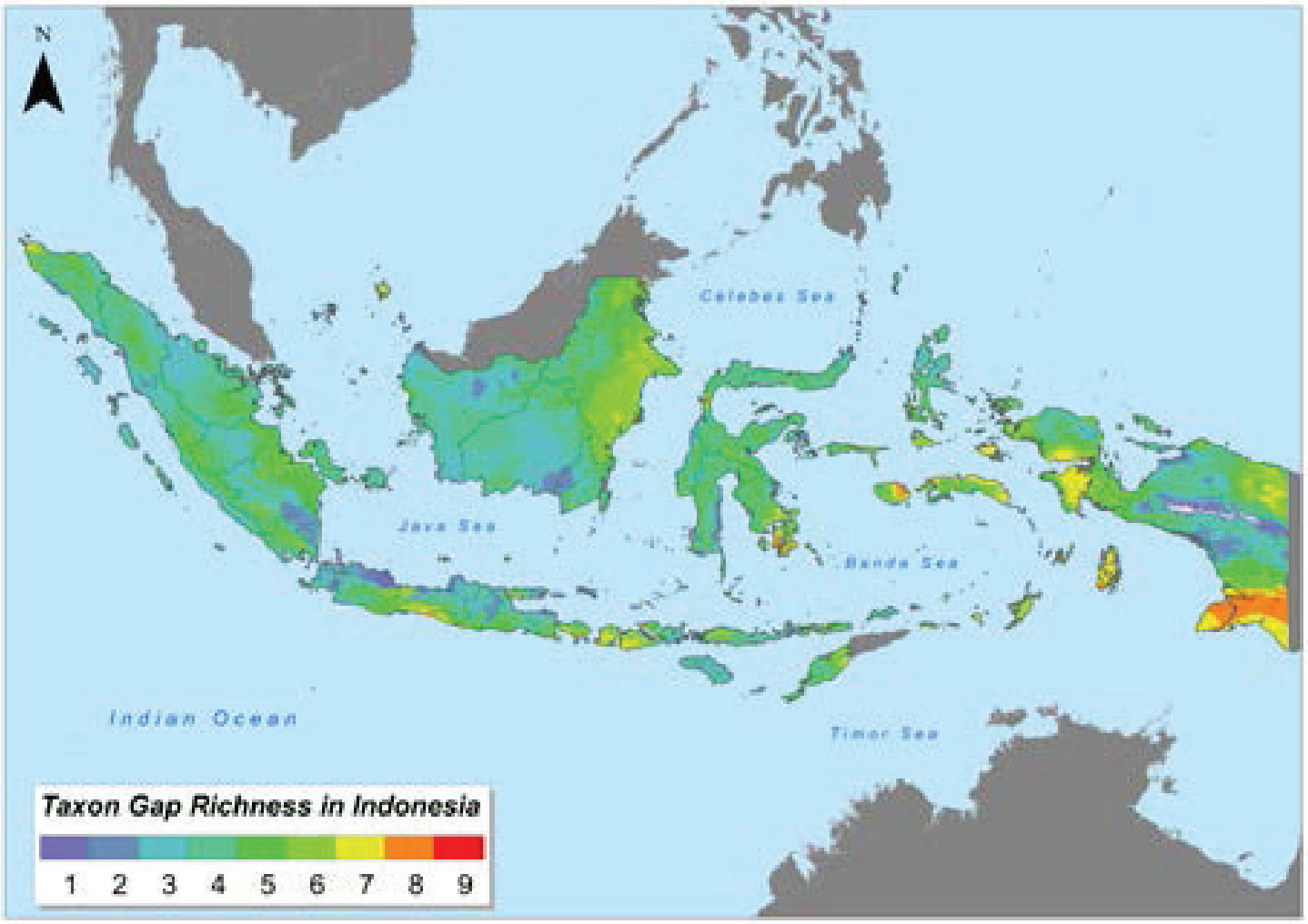


Occurrences in Indonesia of all taxa in this guide

Species richness



Gap richness



Species in this guide

Species profiles are arranged alphabetically by family and taxon.

Family	Taxon	Genepool	Collection Priority	Sheet
Convolvulaceae	Ipomoea cairica (L.) Sweet	Sweet Potato	Low	1
Convolvulaceae	Ipomoea littoralis Blume	Sweet Potato	High	2
Leguminosae	Cajanus crassus (Prain ex King) Maesen	Pigeon Pea	High	3
Leguminosae	Cajanus goensis Dazell	Pigeon Pea	Low	4
Leguminosae	Cajanus platycarpus (Benth.) Maesen	Pigeon Pea	Low	5
Leguminosae	Cajanus scarabaeoides (L.) Thouars	Pigeon Pea	Low	6
Leguminosae	Cajanus volubilis (Blanco) Blanco	Pigeon Pea	Low	7
Leguminosae	Vigna hirtella Ridl.	Cow Pea	Low	8
Leguminosae	Vigna radiata var. sublobata (Roxb.) Verdc.	Cow Pea	Low	9
Leguminosae	Vigna stipulacea Kuntze	Cow Pea	Low	10
Leguminosae	Vigna trilobata (L.) Verdc.	Cow Pea	Low	11
Musaceae	Musa acuminata subsp. acuminata Colla	Banana	High	12
Musaceae	Musa acuminata subsp. halabanensis (Meijer) M.Hotta	Banana	High	13
Musaceae	Musa acuminata subsp. malaccensis (Ridl.) N.W.Simmonds	Banana	High	14
Musaceae	Musa acuminata var. alasensis Nasution	Banana	High	15
Musaceae	Musa acuminata var. breviformis Nasution	Banana	High	16
Musaceae	Musa acuminata var. cerifera (Backer) Nasution	Banana	High	17
Musaceae	Musa acuminata var. microcarpa (Becc.) Nasution	Banana	High	18
Musaceae	Musa acuminata var. nakaii Nasution	Banana	High	19
Musaceae	Musa acuminata var. rutilipes (Backer) Nasution	Banana	High	20
Musaceae	Musa acuminata var. sumatrana (Becc.) Nasution	Banana	High	21
Musaceae	Musa acuminata var. tomentosa (K.Schum.) Nasution	Banana	High	22
Musaceae	Musa acuminata var. zebrina (Van Houtte ex Planch.) Nasution	Banana	High	23

Species in this guide

Species profiles are arranged alphabetically by family and taxon.

Family	Taxon	Genepool	Collection Priority	Sheet
Musaceae	Musa balbisiana Colla var. balbisiana Colla	Banana	High	24
Musaceae	Musa balbisiana Colla var. brachycarpa (Backer) Häkkinen	Banana	High	25
Musaceae	Musa lolodensis Cheesman	Banana	Low	26
Musaceae	Musa salaccensis Zoll.	Banana	Low	27
Musaceae	Musa sanguinea Hook. f.	Banana	Low	28
Poaceae	Oryza longiglumis Jansen	Rice	Low	29
Poaceae	Oryza meyeriana var. granulata (Nees & Arn. ex G. Watt) Duist.	Rice	Low	30
Poaceae	Oryza meyeriana var. meyeriana (Zoll. & Moritzi) Baill.	Rice	Low	31
Poaceae	Oryza nivara S. D. Sharma & Shastry	Rice	Low	32
Poaceae	Oryza officinalis Wall. ex G. Watt	Rice	Low	33
Poaceae	Oryza ridleyi Hook. f.	Rice	Low	34
Poaceae	Oryza schlechteri Pilg.	Rice	Low	35
Poaceae	Sorghum nitidum (Vahl) Pers.	Sorghum	High	36
Poaceae	Sorghum plumosum (R. Br.) P. Beauv.	Sorghum	Low	37
Poaceae	Sorghum timorense (Kunth) Buse	Sorghum	High	38
Solanum	Solanum virginianum L.	Egg Plant	Low	39

Phenology table

Phenology table

Taxon	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Musa acuminata var. cerifera												
Musa acuminata var. microcarpa												
Musa acuminata var. nakaii												
Musa acuminata var. rutilipes												
Musa acuminata var. sumantrana												
Musa acuminata var. tomentosa												
Musa acuminata var. zebrina												
Musa balbisiana var. balbisiana												
Musa balbisiana var. brachycarpa												
Musa lolodensis												
Musa salaccensis												
Musa sanguinea												
Oryza longiglumis												
Oryza meyeiana var. granulata												
Oryza meyeiana var. meyeriana												
Oryza nivara												

Phenology table

Taxon	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Oryza officinalis												
Oryza ridleyi												
Oryza schlechteri												
Sorghum nitidum												
Sorghum plumosum												
Sorghum timorense												
Solanum virginianum												

KEY

Species in flower

Species in fruit

Data gathered from literature and herbarium specimens

CONVOLVULACEAE

Ipomoea cairica (L.) Sweet

Wild relative of sweet potato

Morning glory, Mile-a-minute vine

HABIT: Perennial herb with twining and trailing stems, reaching up to 5 m. Roots tuberous and plant rooting at nodes. Plants hairless.
LEAVES: Round in outline, 3–10 cm long and wide,deeply 5-segmented with basal segments often lobed; leaf stalk 2–6 cm long.
INFLORESCENCE: Axillary, 1–3 flowered.
FLOWER: Corolla fused, funnel-shaped, 3.5–6 cm long, 6–8 cm wide, violet (rarely white), with darker violet hairless mid-petal bands, throat usually darker. Stamens and style included in flower tube. Calyx 0.4–0.8 cm long.
FRUIT: An almost globe-shaped capsule, 9–12 mm wide, with 2 chambers, splitting into 4 valves, contains up to 4 seeds.
SEEDS: Dark brown to black, 5–6 mm long, flattened ovoid, hairy with pale brown long hairs on outer ridges.

Habitat:

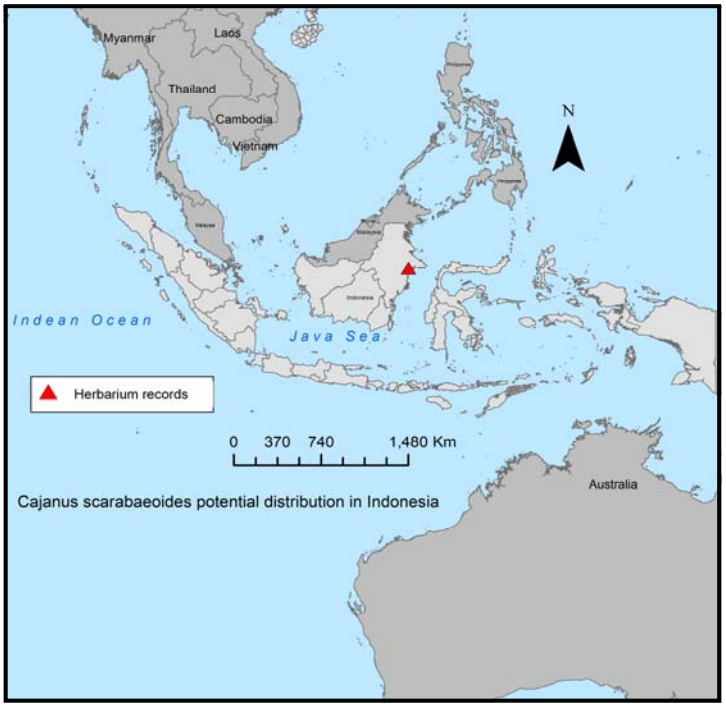
A common inhabitant of swampy grassland, riverine edges and roadsides, where it may cover extensive areas.

Distribution:

Throughout tropical Africa; also from the eastern Mediterranean region through Asia to Taiwan.

Altitude: Up to 1650 m

Ipomoea cairica	May be confused with: *Ipomoea batatas*
Deeply 5(-7)-lobed leaves. 	Leaves entire. 



All populations priority for collection.

References: Hyde, M.A., Wursten, B.T., Ballings, P. & Dondeyne, S. (2013). Flora of Mozambique: Species information: Ipomoea cairica var. cairica. http://www.mozambiqueflora.com/speciesdata/species.php?species_id=147580, retrieved 22 May 2013; Thorp, J.R., Wilson, M, Weeds Australia - www.weeds.org.au

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide.
Compiled by Richard Allen, RBG Kew

CONVOLVULACEAE

Ipomoea cairica (L.) Sweet

Wild relative of sweet potato

Morning glory, Mile-a-minute vine

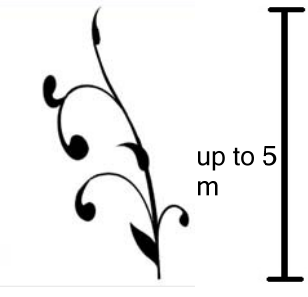

BT Wursten/ Flora of Mozambique website


BT Wursten/ Flora of Mozambique website


BT Wursten/ Flora of Mozambique website


Sheldon Navie

Steve Hurst @ USDA-NRCS PLANTS Database



LC PRELIM


Nov - Jul


Nov - Jul

Ipomoea littoralis Blume

Gene Pool 2 relative of Ipomoea batatas (L.) Poir

Coastal morning glory

HABIT: Perennial herbs, stems prostrate, rooting at nodes, or twining, slender, mostly glabrous.
LEAVES: Petiole 0.5–7 cm, leaf blade ovate to oblong, occasionally circular or reniform, 5–10 x 1–7.5 cm, glabrous or nearly so, base cordate, margin entire or minutely undulate to angular, or ± 3-lobed, apex acute, obtuse or emarginate, mucronulate.
INFLORESCENCES: Usually 1- flowered, occasionally few-flowered, peduncle 0.1–3 cm; bracts early deciduous, 1–2 mm, pedicel 1–4 cm, glabrous; calyx unequal, glabrous, outer 2 lobes concave, oblong-elliptic, 6–10 mm, apex acute to obtuse, inner 3 lobes elliptic to nearly circular, 0.8–1.2 cm; corolla pink or pink-purple, with a darker center, funnelform, 3–4.5 cm, glabrous; stamens included, filaments unequal, glandular pubescent on basal 1/2; pistil included, ovary glabrous; stigma 2 -lobed.
FRUIT: Capsule depressed-globose, 5 x 6–10 mm, calyx lobes persistent at base. Seeds up to 4 per fruit, black, ovoid, 3.5–4 mm, glabrous.

Habitat:

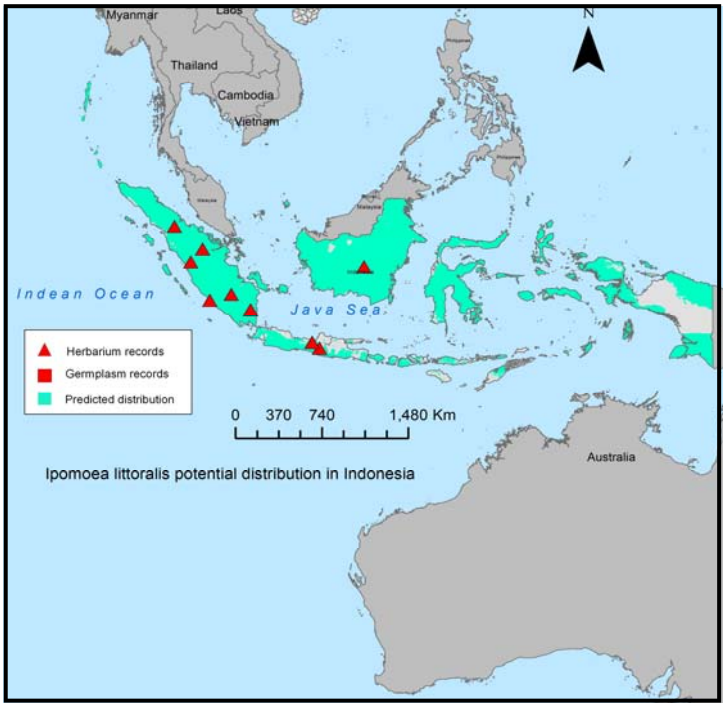
Sandy seashores, coastal thickets, forest floors.

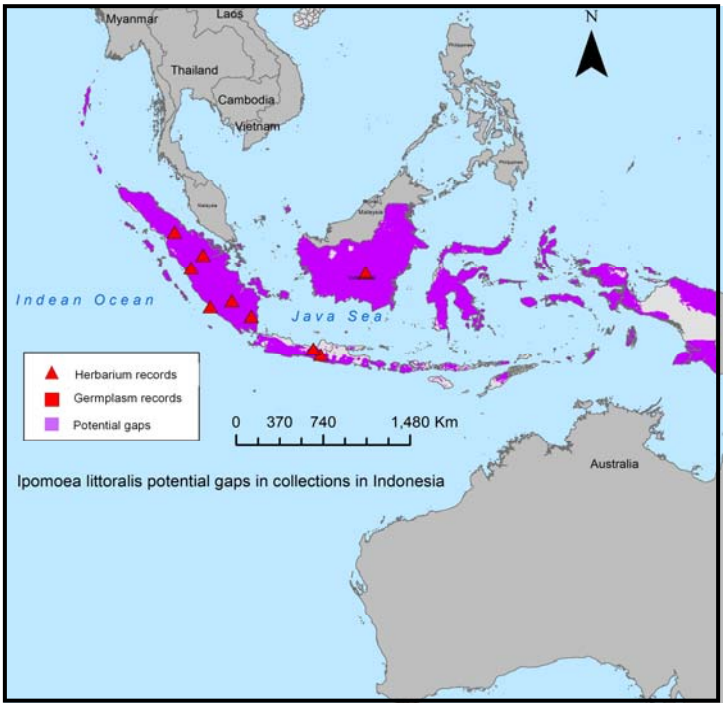
Distribution:

Hainan (Nanhai Zhudao), Taiwan, Cambodia, India, Indonesia, Japan (Ryukyu Islands), Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa, N Australia, Pacific Islands.

Altitude: 0 - 100 m

Ipomoea littoralis	May be confused with: *Ipomoea batatas*
Perennial. Although flowers similar size, pedicels are longer 1-4 cm.	Annual. Flowers with pedicel 0.2 - 1 cm.





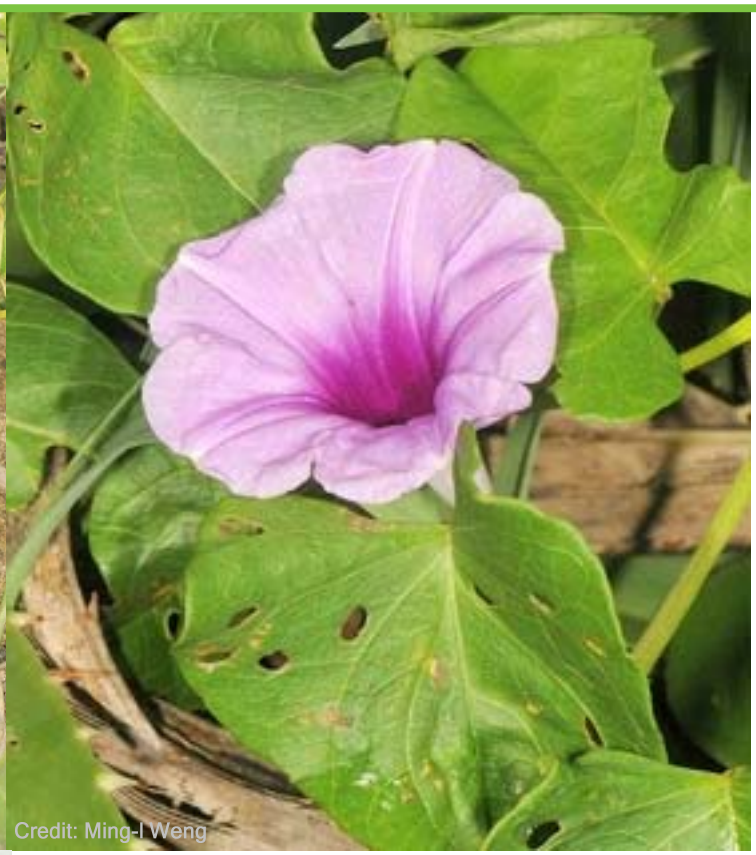
References: Flora of China http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=210000740

CONVOLVULACEAE

Ipomoea littoralis Blume

Gene Pool 2 relative of Ipomoea batatas (L.) Poir

Coastal morning glory



No seed image available

several m long

LC PRELIM

Jan - Jul

No data

Cajanus crassus (Prain ex King) Maesen

Tertiary Gene Pool relative of Cajanus cajan (L.) Millsp.

HABIT: Perennial climbers, supported by trees. Branches brownish pubescent (hairs very short), terete, firm, length up to 10 m. Stipules minute, ca 1 mm, triangular, caducous.
LEAVES: Pinnately trifoliolate, petiole 4–11 cm, rachis 0.3–1 cm. Leaflets coriaceous, thick, lower surface brownish pubescent, also on the thick prominent ribs, glandular-punctate, upper surface dark green, thinly puberulous especially on the veins; top leaflet subtrapezoid, acuminate, 3.5–10 cm long, 3–9.5 cm wide, below the middle narrowing to the rounded or cordate base, apex acuminate-cuspidate, side leaflets obliquely so, 3.5-10 cm long, 2.5–7.5 cm wide, petiolules 2–3 mm.
INFLORESCENCE: Racemes crowded, 3–6 cm, up to ca 20 flowers, 1–2 flowers per node.
FLOWER: Corolla yellow, marcescent, pedicels 4–10 mm, in fruit firm. Bracts large, elliptic-ovate, apex obtuse, fringed or acute, 10–15 mm long, 6–12 mm wide, thinly pubescent, caducous. Calyx pubescent (interior also), tube 4–6 mm, teeth triangular, shorter than the tube.
FRUIT: Pods sturdy, oblong, ends rounded acuminate, 2.5–5 cm long, 0.8–1.4 cm wide, (4–)5–6 seeds, shortly puberulous, sticky, transverse depressions oblique or straight, deep when fully developed.
SEEDS: Rectangular-rounded, ca. 4–5 mm long and wide, 3 mm thick, black with cream mosaic, or cream, strophiole 1 x 2.5 mm, divided, yellowish white.

Habitat:

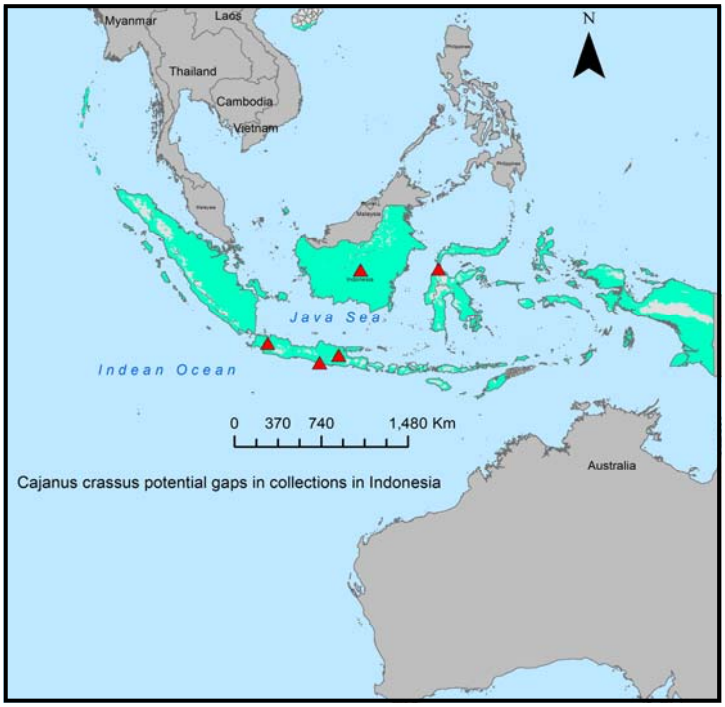
Climber in trees of dry forests (sal, teak, pine) or shrub vegetation, along streams or on dry soils, on alluvium, loam schists, granite rocks.

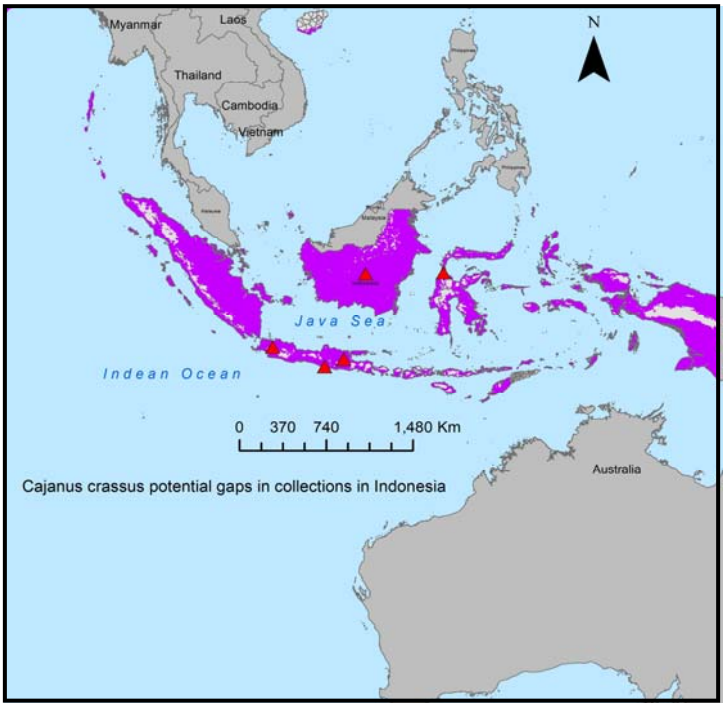
Distribution:

China, Papua New Guinea, Southcentral and Southeastern Asia.

Altitude: 0 - 800 m

Cajanus crassus	May be confused with: *Cajanus goensis*
End of pod rounded acuminate.	Apex of pod beaked. 





References: van der Maesen, L.J.G. (1985). Cajanus DC. and Atylosia W.& A. (Leguminosae). A revision of all taxa closely related to the pigeonpea, with notes on other related genera within the subtribe Cajaninae. Wageningen Papers 85-4.

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide.
Compiled by Richard Allen, RBG Kew

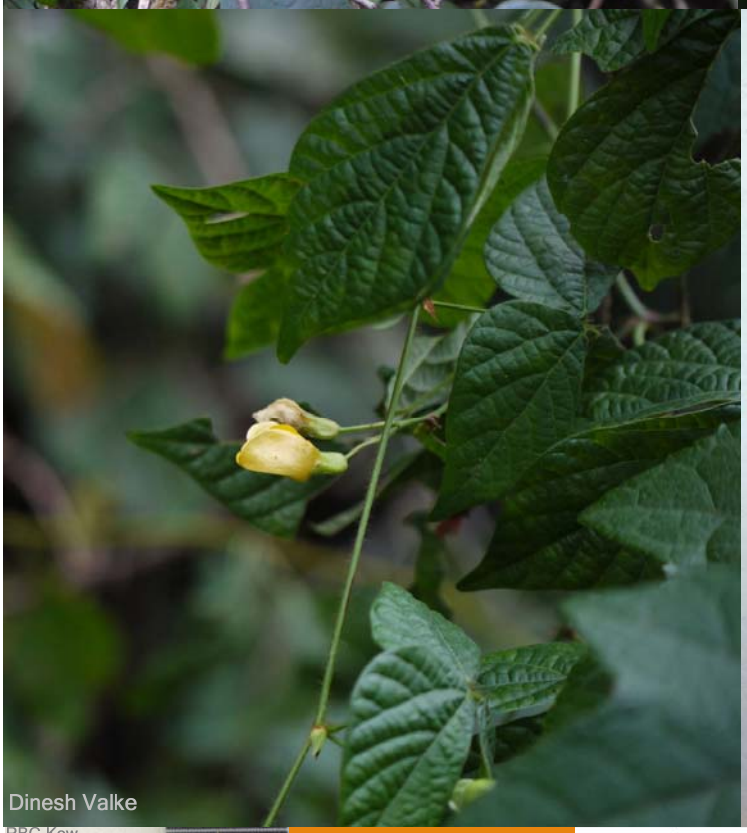
LEGUMINOSAE

Cajanus crassus (Prain ex King) Maesen

Tertiary Gene Pool relative of Cajanus cajan (L.) Millsp.


Dinesh Valke


Dinesh Valke


Dinesh Valke

RBG Kew Herbarium material


RBG Kew

10 m

LC
PRELIM

Jan - Mar

Jan - Mar

Cajanus goensis Dalzell

Gene Pool 3 relative of Cajanus cajan (L.) Millsp.

HABIT: Vines, woody, twining, to several meters tall, yellow-brown villous except for corolla. Stems densely hairy when young, later glabrescent, to dark brown. Stipules ovate-lanceolate, 7–12 mm, persistent.
LEAVES: Pinnately trifoliolate, terminal leaflet ovate to ovate-elliptic, 5–10 × 3–5.5 cm, densely villous when young, later glabrescent, base rounded, apex acuminate with hard mucro. Petiole 3–7 cm long.
INFLORESCENCES: Peduncle a few centimetres long, bracts ovate, densely villous. Flowers ca. 3 cm long, pedicels slender, 11–15 mm; calyx campanulate, lobes linear-lanceolate, lowest lobe ca. 2 × as long as tube; corolla yellow, standard obovate-elliptic, ca. 2.8 cm, base with an inflexed auricle on each side, apex slightly emarginate, wings broadly elliptic, base with auricle on one side, keels sickle shaped, slightly shorter than wings, clawed, without auricle. Ovary linear, densely villous, style long, curved, glabrous, stigma capitate.
FRUIT: Pod long elliptic, 4–6 × ca. 1 cm, straight, densely villous, apex beaked. Seeds 5–7, brown, subspherical, ca. 4 mm in diam., wider than long; strophiole acute and white, succulent.

Habitat:

Roadsides, river valleys.

Distribution:

China, Bangladesh, India, Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam.

Altitude: 1000 - 1300 m

Cajanus goensis	May be confused with: *Cajanus crassus*
Apex of pod beaked. 	End of pod rounded acuminate.

Reported from Indonesia

But no localities known

All populations priority for collection.

References: Flora of China http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242309513

Cajanus goensis Dalzell

Gene Pool 3 relative of Cajanus cajan (L.) Millsp.

No seed image available

several m long

LC PRELIM

Jan - Feb

Feb - Jul

Cajanus platycarpus (Benth.) Maesen

Tertiary Gene Pool relative of Cajanus cajan (L.) Millsp.

HABIT: Usually annual, creeping or trailing, stems 0.2–1 m long. Branches sparsely pubescent, internodes 1–15 cm long. Stipules lanceolate, caducous, 3–6 mm long.
LEAVES: Pinnately trifoliolate, petiole up to 10 cm long, petiolules 2–3 mm long, terminal leaflet often reduced in size. Leaflets membranous, thinly pubescent above, faintly glandular below. Terminal leaflet ovate to obicular, other leaflets ovate, 3–8 cm long, 3–7.5 cm wide, base truncate to subcordate, apex acuminate.
INFLORESCENCE: Racemes lax, up to 5-flowered, peduncle 0.5–8 cm long, pedicels 8-12 mm, recurved.
FLOWER: Calyx pubescent with yellow hairs, tube 3–5 mm long; corolla yellow, sometimes with purple veins or dots, standard clawed at the base, biauriculate, 12–15 mm long; lateral petals auriculate at base, 11–13 mm long; stamens fused for 3/4 of their length, curved upwards; ovary densely covered with long hairs, ovules 5–7.
FRUIT: Pod flat-oblong, 2–4.5 cm long by 1–1.5 cm wide, when young speckled and reddish, with sparse, caducous, pale hairs, tip of style persistent.
SEEDS: 4–6 mm long, 2.5 mm thick, rectangular-rounded, brown to almost black, strophiole large, 1 mm by 3 mm, horseshoe-shaped.

Habitat:

Usually associated with grasses, in grasslands, roadsides, pine forests and in crops.

Distribution:

Northwest and central India, Nepal, Pakistan, Java.

Altitude: 50 - 2600 m

Cajanus platycarpus	May be confused with: *Cajanus scarabaeoides*
Annual creepers; leaflets larger (3-8 cm long), ovate; pods broad (1-1.5 cm wide), flattened in cross section, papery. 	Perennial creepers or twiners; leaflets small (1.2-4 cm long), elliptic to obovate; pods narrow (0.4-0.6 cm wide), slightly rounded in cross-section. 

Reported from Indonesia

But no localities known

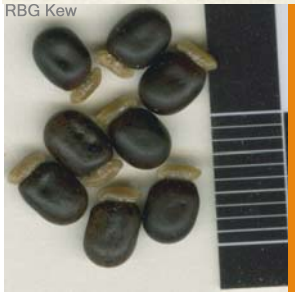
All populations priority for collection.

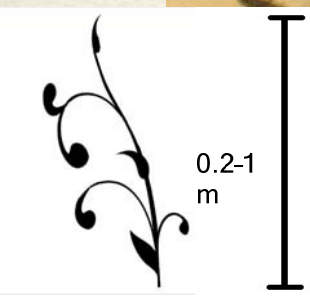
References: Maesen, L.J.G. van der (1985) Cajanus DC. and Atylosia W. & A. (Leguminosae). Agricultural University Wageningen Papers 85-4, pp 160-164.

LEGUMINOSAE

Cajanus platycarpus (Benth.) Maesen

Tertiary Gene Pool relative of Cajanus cajan (L.) Millsp.





Cajanus scarabaeoides (L.) Thouars

Secondary Gene Pool relative of Cajanus cajan (L.) Millsp.

HABIT: Perennial, woody, creepers or twiners, stems to 2 m. Stems slender, ± pubescent.
LEAVES: Pinnately 3-foliolate; stipules small, ovate, hairy, usually deciduous; petiole 1–2 cm; stipels absent; petiolules extremely short; leaflets papery or nearly leathery, with glandular spots, sparsely pubescent on both surfaces, denser abaxially, basal veins 3, obviously convex below; terminal leaflet elliptic or obovate-elliptic to obovate, 1.2–4 × 0.8-1.5(–3) cm, apex obtuse or rounded; lateral leaflets smaller, obliquely elliptic to obliquely obovate.
INFLORESCENCE: Raceme axillary, usually less than 2 cm, 1–5-flowered; peduncle 2–5 mm, densely brown to dull brown villous.
FLOWER: Calyx campanulate, 5-lobed, or 4-lobed with upper 2 incompletely connate, lobes linear-lanceolate. Corolla yellow, ca. 1 cm, usually deciduous, standard obovate, with emarginate auricle and claw at base, wings narrowly elliptic, slightly curved, base auriculate, keels curved at apex, densely very pale brown villous. Ovules several.
FRUIT: Pod oblong, 1.5–2.5 × 0.4–0.6 cm, leathery, densely villous, transversely constricted between seeds.
SEEDS: 2–7, dark brown, ellipsoidal, ca. 4 mm, strophiole convex.

Habitat:

Fields, roadsides, grassy slopes, coastal areas.

Distribution:

China, Bangladesh, Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam; Africa, Oceania.

Altitude: 100 - 1500 m

Cajanus scarabaeoides	May be confused with: *Cajanus platycarpus*
Perennial creepers or twiners; leaflets small (1.2–4 cm long), elliptic to obovate; pods narrow (0.4–0.6 cm wide), slightly rounded in cross-section. 	Annual creepers; leaflets larger (3-8 cm long), ovate; pods broad (1-1.5 cm wide), flattened in cross section, papery. 

Reported from Indonesia

But no localities known

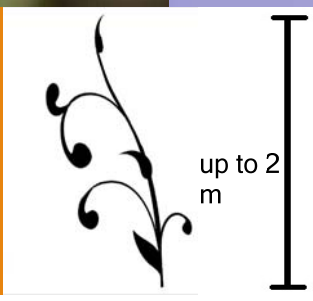
All populations priority for collection.

References: Flora of China, Volume 10, p232 via www.efloras.org http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242309519

LEGUMINOSAE

Cajanus scarabaeoides (L.) Thouars

Secondary Gene Pool relative of Cajanus cajan (L.) Millsp.



LC
PRELIM

Sep - Nov

Oct - Dec

Cajanus volubilis (Blanco) Blanco

Vines, twining. Stems robust, brown villous when young. Leaves pinnately 3-foliolate; stipules small, ovate, 2-3 mm, deciduous; petiole 2-8 cm; stipels linear, ca. 2 mm; petiolules extremely short; leaflets leathery, both surfaces pubescent, abaxial surface with sessile glands; terminal leaflet rhomboid to rhomboid-ovate, 2-9.5 × 2.7-9 cm, base rounded or shallowly cordate, apex obtuse; basal veins 3; lateral leaflets slightly smaller, obliquely ovate, 3.5-6 × 3-5 cm. Raceme axillary, robust, 3.5-6 cm, densely gray villous, each node with 1 or 2 flowers; bracts large, ovate, to 1.7 cm, membranous, minutely villous, deciduous; pedicels 3-7 mm, hairy. Calyx campanulate, 5-lobed; lobes triangular, unequal, upper 2 nearly connate, sparsely shortly villous. Corolla yellow, ca. 1.5 cm; standard obovate-orbicular, base auriculate at both sides; wings oblong, slightly shorter than standard; keels subequal to wings, with auricles, apex curved. Ovary pubescent; style filiform, long and curved, hairy adaxially. Legume oblong, inflated, 3-5 × 0.8-1 cm, hairy, transversely constricted between seeds. Seeds 4-6, black, usually subspherical, rarely hemispherical, 3-5 mm wide; strophiole thick and succulent.

Habitat:

Forests and thickets.

Distribution:

Indonesia and Philippines.

Altitude: lowland

Cajanus volubilis	May be confused with: *Cajanus crassus*
Much thinner leaflets, ovary with long white hairs, calyx has bulbous based hairs.	Thicker leaflets, ovary has conspicuous yellow glands, calyx without bulbous based hairs.

Reported from Indonesia

But no localities known

All populations priority for collection.

References: van der Maesen LJG, Cajanus DC. and Atylosia W and A (Leguminosae), Agricultural University Wageningen Papers 85-4 (1985) p210.

Cajanus volubilis (Blanco) Blanco

No seed image available

DD

Nov

Dec

Vigna hirtella Ridl.

Gene Pool Primary relative of Vigna angularis (Willd.) Ohwi & Ohashi

HABIT: A twining herb, stems rather thick, densely clothed with long retrorse or spreading white brown hairs (1.1-1.5 mm).
LEAVES: Leaflets rather densely covered with whitish hairs on both surfaces (0.5-1.0 mm long). Leaf petioles 7-12 cm, covered with short (0.5-.07 mm) white hairs on the ridge. Terminal leaflets ovate, acute or acuminate at the apex, obtuse at the base, 7.5-10.0 x 5.5-6.8 cm; lateral leaflets obliquely ovate, acute at the apex, rounded at the base.
INFLORESCENCE: 8-12 flowered; peduncles long, 20-25 cm long, covered with short (0.3-0.5 mm) white retrorse hairs; rachis 1.1 cm long, nearly glabrous; primary bract small, rhombic, acute at the apex, truncate at the base.
FLOWERS: Golden yellow, calyx campanulate, glabrous, 4 mm long, tube 3.2 mm long; standard asymmetrical, obliquely broadly elliptic, 15.1 x 19.4 mm. Right wing half concealing upper part of the keel-petals. Left wing spreading horizontally, supported by a pocket on the left-hand keel-petal.
FRUITS: Pendulous, linear, cylindrical, glabrous, blackish brown when mature, 15-19 seeded.
SEED: Oblong, brown densely mottled with black when mature, surface smooth, 3.3 x 2.4 x 1.8.

Habitat:

Wet highland sites.

Distribution:

Northern India, Bangladesh, South China, Myanmar, Thailand, Laos, Vietnam, Malaysia.

Altitude: 25 - 1700 m

Vigna hirtella	May be confused with: *Other Vigna species*
Hairy stems, small secondary bract, glabrous mature pod, oblong seed with slightly protuding hilum.	

Reported from Indonesia

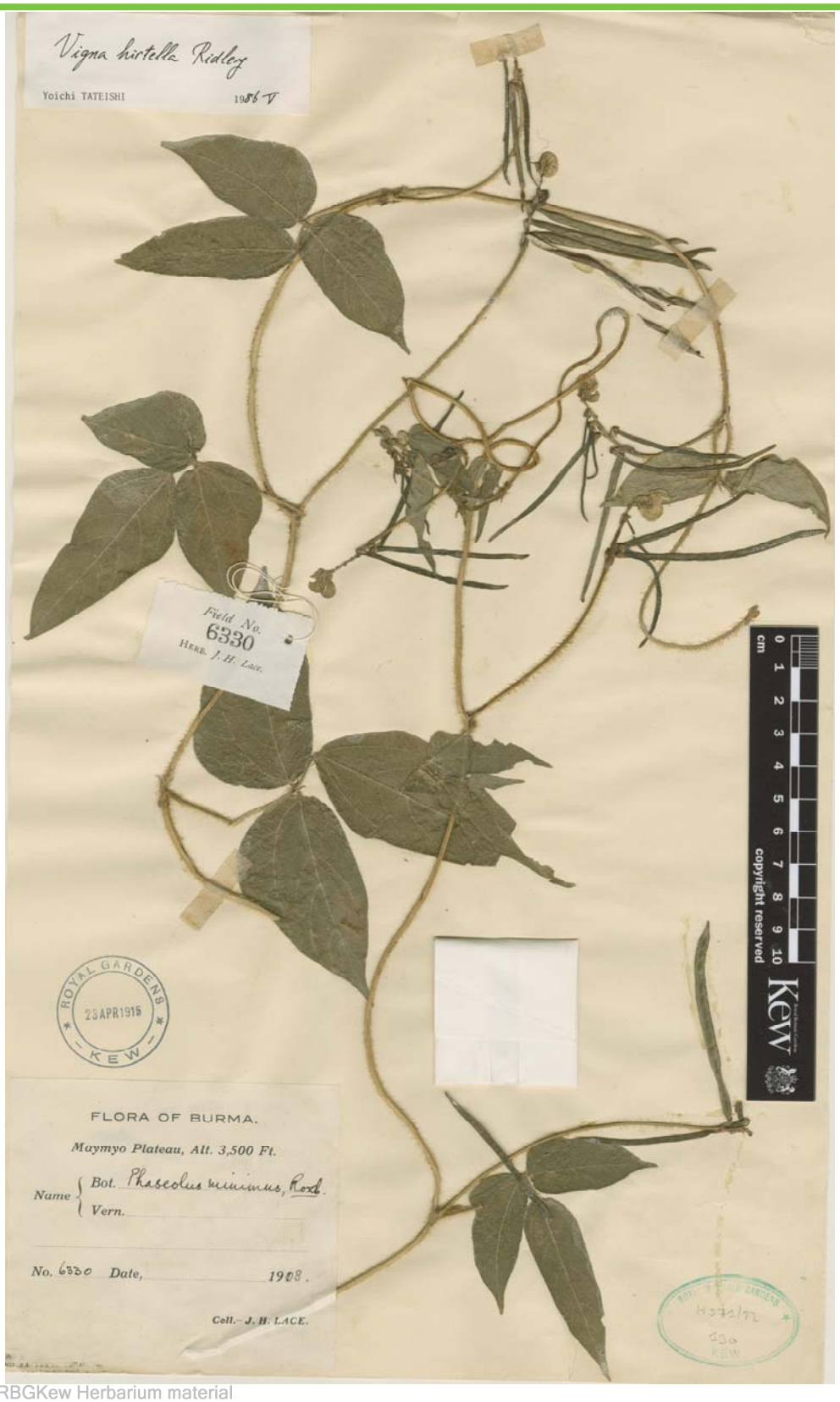
But no localities known

All populations priority for collection.

References: The Asian Vigna: Genus Vigna subgrnus Ceratopropis genetic resources, (2002), D. Vaughan, H. Moss, N. Maxted, T. Norihiko.

Vigna hirtella Ridl.

Gene Pool Primary relative of Vigna angularis (Willd.) Ohwi & Ohashi



RBGKew Herbarium material

Strack van Schijndel M., Botanic Garden Meise (Belgium)

0.6 m

NE

Oct - Nov

Oct - Nov

Vigna radiata var. sublobata (Roxb.) Verdc.

Gene Pool 1B relative of Vigna radiata (L.) Wilczek — **Jerusalem pea**

Annual herbs, twining, or creeping, 20-60 cm tall. Stems hispid with brown spreading hairs. Stipules peltate, ovate, 0.8-1.2 cm, ciliate; petiole 5-21 cm; leaflets 2- or 3-lobed, 5-16 × 3-12 cm, lateral ones ± oblique, ± sparsely pilose on both surfaces, sometimes 3-veined from base, base broadly cuneate or rounded, apex acute. Racemes axillary, 4- to several flowered (up to 25). Bracteoles linear-lanceolate or oblong, striate. Calyx tube 3-4 mm, glabrous; lobes narrowly deltoid, 1.5-4 mm, upper 2 connate into a 2-fid lip. Standard yellow-green outside, sometimes pink inside, suboblate, ca. 1.2 × 1.6 cm, apex emarginate; wings yellow, ovate; keel falcate and incurved through 180°, green tinged with pink. Pods linear-terete, 4-9 × ca. 0.6 cm, shortly hispid with pale brown hairs. Seeds 8-14, greenish or yellow-brown, shortly cylindric, 2.5-4 × 2.5-3 mm; hilum white.

Habitat:

Open wastelands, roadsides, thicket margins.

Distribution:

China, Cambodia, India, Indonesia, Laos, Sri Lanka, Thailand, Vietnam; Africa.

Altitude: ca. 500 m

Vigna radiata var. sublobata	May be confused with: *Vigna radiata var radiata*
Stems twining or creeping; leaflets 2 - or 3-lobed, acute at apex.	Stems erect; leaflets entire, acuminate at apex.

Reported from Indonesia

But no localities known

All populations priority for collection.

References: Flora of China: http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242414601

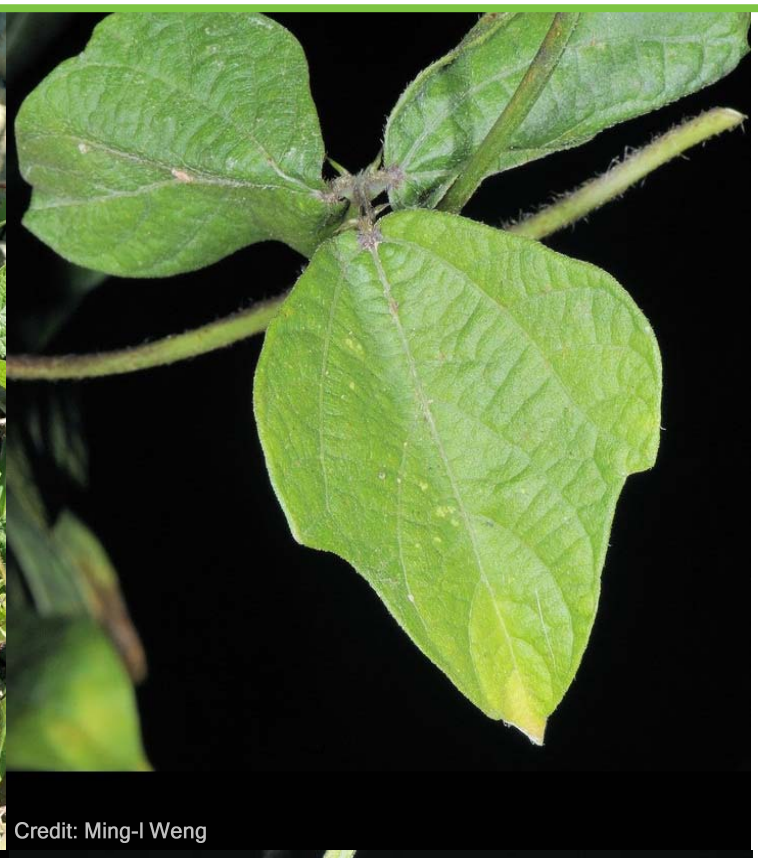
LEGUMINOSAE

Vigna radiata var. sublobata (Roxb.) Verdc.

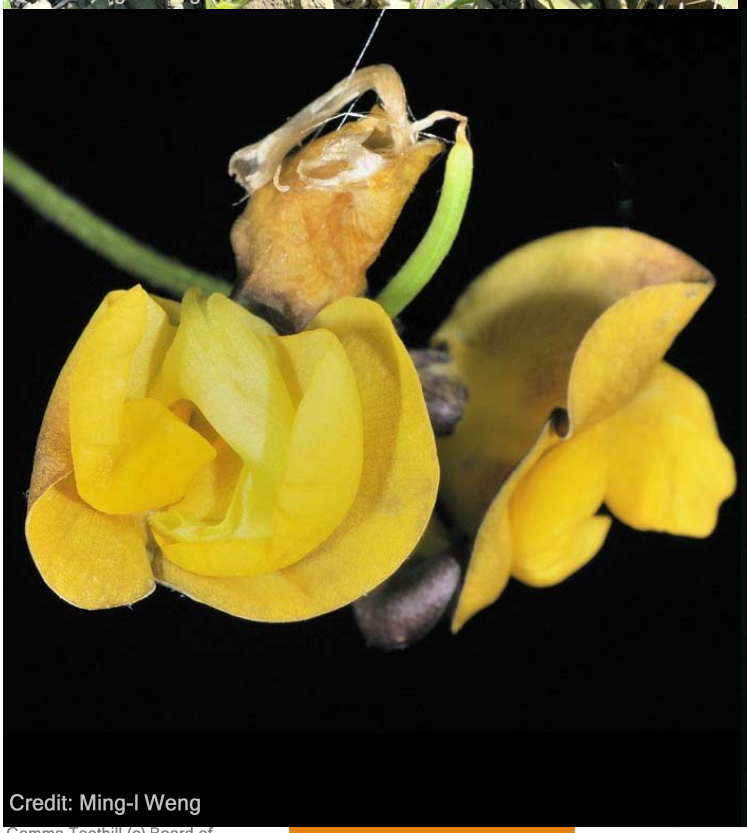
Gene Pool 1B relative of Vigna radiata (L.) Wilczek

Jerusalem pea

Credit: Ming-I Weng



Credit: Ming-I Weng



Credit: Ming-I Weng

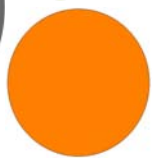
Credit: Ming-I Weng

Gemma Toothill (c) Board of Trustees RBG Kew

0.6 m

NE

May - Jun



Jun - Sep

Vigna stipulacea Kuntze

Taxon Group 3 relative of Vigna mungo (L.) Hepper

HABIT: Trailing twining herb, stems angular, nearly glabrous, very sparsely covered with fine white hairs.
LEAVES: Leaflets glossy, upper surface very rarely covered with white short (0.3-0.4 mm) hairs, lower surface sparsely covered with 0.5-0.6 mm long white hairs, 0.4-0.8 mm long whitish hairs on vein; leaf petioles 5.1-7.6 cm long, sparsely covered with fine appressed white hairs, 0.4-0.6 mm long. Lateral leaflets oblique, rather shallowly 2-3 lobed, obtuse or rounded at the apex, rounded at the base.
INFLORESCENCE: 4-12 flowered; peduncles conspicuously long (22.7-29.6 cm), nearly glabrous to very sparsely covered with 0.4-0.5 mm long white hairs, rachis 3.7-4.7 mm long, glabrous. Primary bract ovate at the apex, rounded or sometime truncate at the base 2.3 x 2.2 mm glabrous.
FLOWERS: Shiny clear yellow. Calyx campanulate, 2.6 mm long, tube 2.2 mm long; standard asymmetrical, obliquely elliptic, 8.1 x 12.3 mm, emarginated at the apex, an internal appendage absent. Right wing obliquely broadly obovate, concealing right side of keel-petal
FRUITS: Spreading, linear, 4.5-5.5 x 0.2-0.3 cm, covered with 0.3-0.5 mm long brown hairs, blackish brown when mature, 13-14 seeded.
SEED: Elliptic, 2.7 x 2.0 x 1.9 mm, brown with small black mottle, surface rough, fine reticulate.

Habitat:

In open or lightly shaded habitates, on edge of paddy fields or in abandoned paddy fields.

Distribution:

Sri Lanka, India, Myanmar, Indonesia, Vietnam, Yemen, Madagascar.

Altitude: 5 - 700 m

Vigna stipulacea	May be confused with: *Vigna trilobata*
	Characteristically deeply 3 lobed leaflets.

Reported from Indonesia

But no localities known

All populations priority for collection.

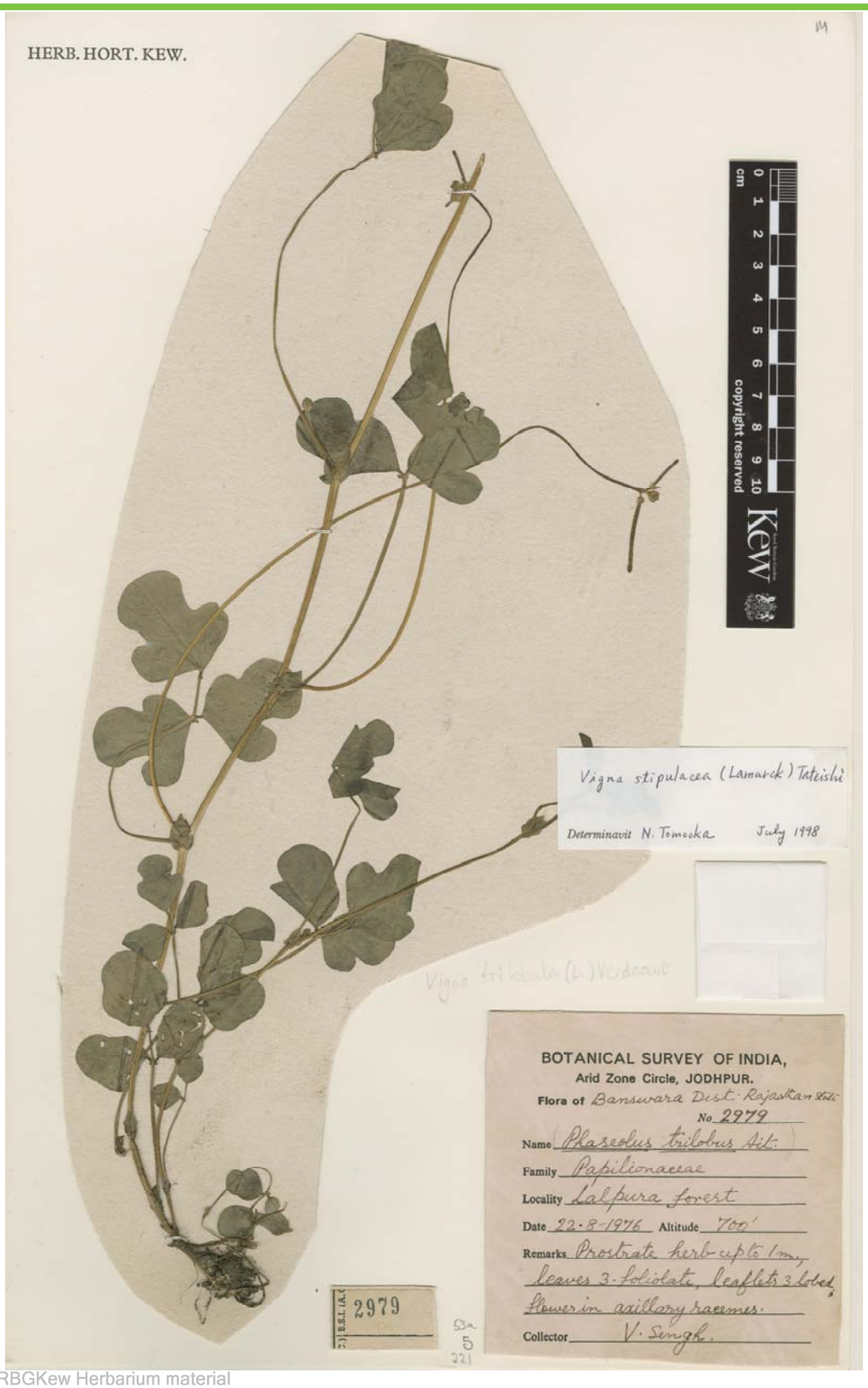
References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

LEGUMINOSAE

Vigna stipulacea Kuntze

Taxon Group 3 relative of Vigna mungo (L.) Hepper



RBGKew Herbarium material

Strack van Schijndel M., Botanic Garden Meise (Belgium)

0.6 m

NE

Oct - Dec

Oct - Dec

Vigna trilobata (L.) Verdc.

Gene Pool 3 relative of Vigna radiata (L.) Wilczek

Mugam

HABIT: Perennial or annual trailing herbs. Stems 30-60 cm, glabrous or glabrescent.
LEAVES: Stipules peltate, ovate, 0.6-1.9 cm; petiole 5-10 cm; leaflets rhombic or ovate, 2.5-5 cm, in annual cultivated forms often shallowly 3-lobed, in perennial wild forms often deeply 3-lobed, medium lobe broadly spatulate, apex obtuse, glabrous or inconspicuously pubescent. Racemes axillary, headlike; peduncles longer than leaves; pedicels very short.
INFLORESCENCE: 1-3-flowered.
FLOWER: Calyx campanulate; teeth deltoid, ca. 2 mm. Corolla yellow, ca. 6 mm; standard cordate; wings obovate, auriculate; keel apex contorted.
POD: Cylindric, 3-4 cm × 3-4 mm, glabrescent, 6-12-seeded.
SEEDS: Deep brown, cylindric, very small, truncate at both ends.

Habitat:

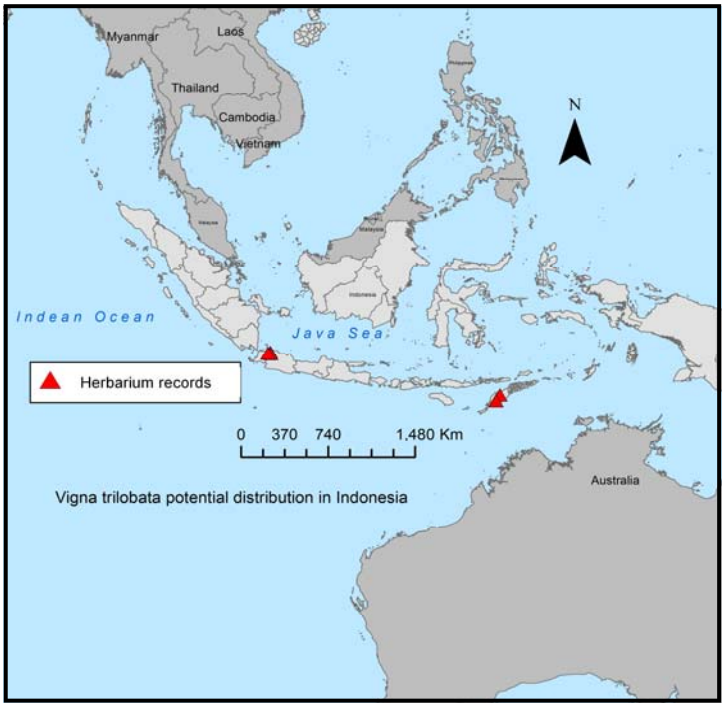
Grassland.

Distribution:

China, Afghanistan, Bangladesh, Bhutan, India, Indonesia, Kashmir, Myanmar, Nepal, Pakistan, Sri Lanka, Vietnam.

Altitude: ca. 1000 m

Vigna trilobata	May be confused with: *Other Vigna species*
Characteristically deeply 3 lobed leaflets.	Leaflets usually not deeply lobed.



All populations priority for collection.

References: Flora of China http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=242354387

Vigna trilobata (L.) Verdc.

Gene Pool 3 relative of Vigna radiata (L.) Wilczek

Mugam

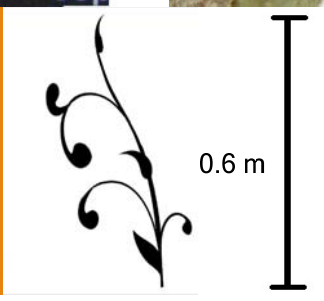
RBG Kew herbarium material

RBG Kew herbarium material

RBG Kew herbarium material

RBG Kew herbarium material

Strack van Schijndel M., Botanic Garden Meise (Belgium)



0.6 m

NE

All year

All year

Musa acuminata subsp. acuminata Colla

Primary Gene Pool relative of Musa acuminata Colla

HABIT: Pseudostems green with black blotches, ca. 4.8 m.
LEAVES: Leaf sheath and petiole pruinose; petiole ca. 80 cm, margin erect or spreading and basally with scarious wings; leaf blade adaxially green and pruinose, abaxially yellow-green and pruinose or not, oblong, 1.9--2.3 m × 50--70 cm, base cordate, asymmetric, midvein adaxially green, abaxially white-yellow. Inflorescence subhorizontal or vertically reflexed; peduncle usually downy or hairy. Bracts bright red to dark violet, sometimes yellow at extreme apex, ovate, apex usually acute.
FLOWERS: Male flowers ca. 20 per bract, in 2 rows. Compound tepal white or cream, lemon yellow at apex, 3.5--4 cm, apex of outer lobes with a hooklike, hairy appendage; free tepal not more than 1/2 as long as compound tepal, apex emarginate, shortly apiculate.
FRUIT: Infructescence ca. 1.2 m; peduncle to 70 × ca. 4 cm, white setose Berries incurved, green to yellow-green, 5-angled when young, cylindric at maturity, ca. 9 cm, white setose, base curved and attenuate into a stalk, apex contracted into a rostrum 6--10 mm.
SEEDS: numerous in wild plants but absent in cultivated clones, brown, depressed, 5--6 mm in diam., irregularly angled.

Habitat:

Shaded and moist ravines, marshlands, semimarshlands, slopes, also cultivated.

Distribution:

Native to China, India, Sri Lanka, Indonesia and Malaysia.

Altitude: 0 - 1200 m

Musa acuminata subsp. acuminata	May be confused with: *Cultivated Musa amuminata*
Wild plants are diploid (2 n = 22) and bear fruits containing numerous seeds making them inedible.	Cultivated plants are triploid (2 n = 33) and bear seedless, edible fruits; such plants have been called M. acuminata 'Dwarf Cavendish' (M. cavendishii Lambert ex Paxton; M. chinensis Sweet; M. nana Loureiro).

Reported from Indonesia

But no localities known

All populations priority for collection.

References: FOC Vol. 24 Page 315

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata subsp. acuminata Colla

Primary Gene Pool relative of Musa acuminata Colla

M. acuminata ssp. ? Paul Wilkin/ RBG Kew

M. acuminata ssp. ? Paul Wilkin/ RBG Kew

M. acuminata ssp. ? Paul Wilkin/ RBG Kew

No seed image available

up to 5 m

DD

No data

No data

MUSACEAE

Musa acuminata subsp. halabanensis (Meijer) M.Hotta

Gene Pool Primary relative of Musa acuminata Colla

Pisang cirik minyak, pisang rimbo

Big clump up to 12 stems; pseudostems 4.5-5.5 m high, 24-26 cm diameter, extensive brown blotching, without wax. Leaf blades lanceolate, 3.2-3.8 cm long, 90-95 cm wide, green, apex truncate, base rounded with unequal lobes, thinly waxy. Petioles 30-35 cm long, purplish brown blotching, their margins erect, and mid-rib yellowish green. Inflorescence horizontal then pendulous, up to 1.6 m long; its peduncle thinly pubescent. First bract scar closed encircling. Fruits and flowers biseriate; 10-12 hands per bunch, 20-49 fruits, but those on the apex 14-17 fruits. Fruits long, 10-12 cm, 1.8-2.0 cm diameter, pedicel 1.0-1.2 cm long, tip 0.8-1.0 cm long. Pericarp thin, pulp yellowish, slightly soft when ripe. Seeds many, 90-140 per fruit, sub-globose, smooth, 3.6-4.4 cm diameter, black when ripe. Male bud ovoid, 20-22 cm long, 6-8cm diameter, convolute, blunt tip, dark purple outside, light yellow innerside.

Habitat:

In open places.

Distribution:

Native to Indonesia, found in West Sumatera and Hambi.

Altitude: 350 - 2000 m

Musa acuminata subsp. halabanensis	May be confused with: *Musa acuminata var. alasensis*
	Glabrous peduncle or very thinly pubescent small seeds with terberculate surface, and grey colour on innerside bracts.

Reported from Indonesia

But no localities known

All populations priority for collection.

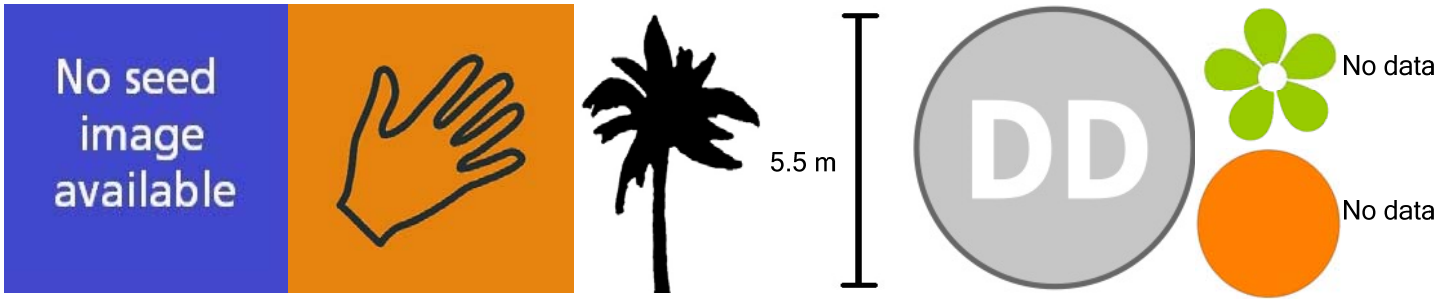
References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata subsp. halabanensis (Meijer) M.Hotta

Gene Pool Primary relative of Musa acuminata Colla

Pisang cirik minyak, pisang rimbo



MUSACEAE

Musa acuminata subsp. malaccensis (Ridl.) N.W.Simmonds

Primary Gene Pool relative of Musa acuminata Colla

A slender plant usually strongly waxy, with midribs commonly (but not always) bright red beneath, with a horizontal bunch and bright red non-imbricate male bracts.

Habitat:

Open places.

Distribution:

Native to Indonesia and Malaysia.

Altitude: unknown

Musa acuminata subsp. malaccensis	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

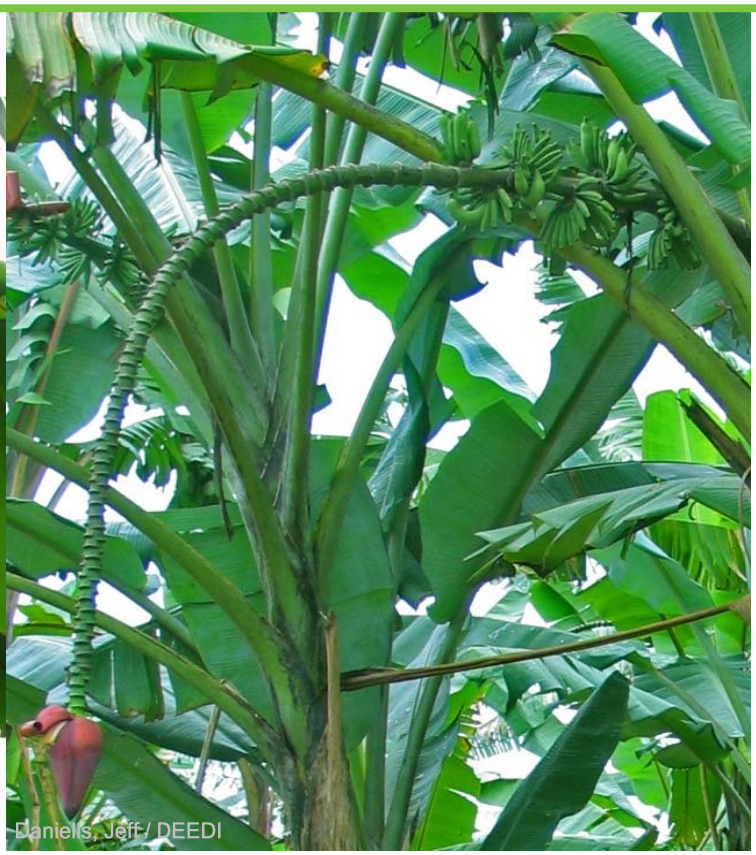
References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata subsp. malaccensis (Ridl.) N.W.Simmonds

Primary Gene Pool relative of Musa acuminata Colla

Credit: A. D'Hont, CIRAD



Daniells, Jeff / DEEDI

No seed image available

EN PRELIM

All year

All year

MUSACEAE

Musa acuminata var. alasensis Nasution

Gene Pool Primary relative of Musa acuminata Colla

Awai keken, pisang monyet, pisang hutan

Clump medium. up to 11 stems; pseudostems 4.8 m high, 18 - 23 cm diameter, brown, blotching without wax. Leaf blades lanceolate, 2.6 - 3.8 m long, 80 - 100 cm wide, apex truncate, base rounded with unequal lobes, green without wax. Petioles big, 40 - 60 cm long, purplish brown blotching, sometimes wholly brown; their margins erect; mid-rib pink. Inflorescence horizontal then pendulous, up to 1.5 m long, its peduncle glabrous or very thinly pubescent. First bract scar openly encircling. Fruits and flowers biserate; 8-9 hands per bunch. Basal hands bear 26 - 34 fruits but those on the apex 10 - 12 fruits. Fruits small, 5-6 cm long, 1.3 - 1.5 cm diameter, pedicels 0.9 - 1.1 cm long, tip 1.0 - 1.2 cm long, pericarp thin, pulp yellowish, slightly soft when ripe. Seeds many, 230 - 300 per fruit, subglobose, tubercule, 3-4 mm diameter, convolute, tip acute, dark purple outside, grayish inside. Basal flowers female, 5.6 - 7.0 cm long, 0.2 - 1.7 cm diameter. Male flowers 14 - 16 per hand.

Habitat:

On open places along the road between Kotacana and Blankejeren.

Distribution:

Native to Indonesia. Southeast Aceh, Alas canyon, between mount Leuser and Serbolangit.

Altitude: 350 - 1300 m

Musa acuminata var. alasensis	May be confused with: *Musa acuminata subsp. halabanensis*
Glabrous peduncle or very thinly pubescent small seeds with terberculate surface, and grey colour on innerside bracts.	

Reported from Indonesia

But no localities known

All populations priority for collection.

References: Mem. Tokyo Univ. Agric. 32: 48 (-51; fig. 19). 1991 [Mar 1991]

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

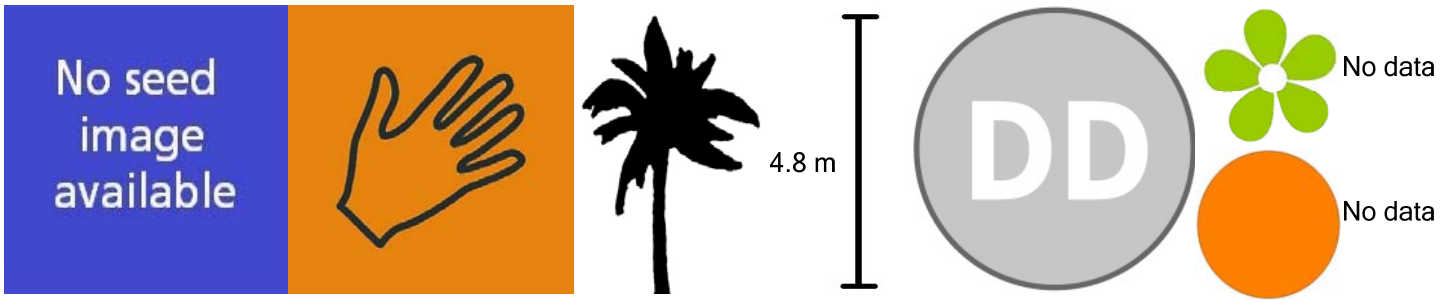
Musa acuminata var. alasensis Nasution

Gene Pool Primary relative of Musa acuminata Colla

Awai keken, pisang monyet, pisang hutan

NO IMAGE AVAILABLE

If you know of an image or link to an image of this species please let us know cropwildrelatives@kew.org



MUSACEAE

Musa acuminata var. breviformis Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang hutan, pisang cici alas.

Small clump up to 11 stems; pseudostems short, slender, 1.9 - 3.0 m high, 8-11cm diameter, brown blotching, without wax. Leaf blades lanceolate, 1.0 - 1.8 m long, 38 - 42 cm wide, apex truncate, base cuneate with unequal lobes, green upperside light green underside, thinly glaucous. Petioles small, 34 - 36 cm long, brown blotching, their margins erect; midrib green or yellowish green. Infloresence pendulous, up to 1 m long. Its peduncle thinly pubescent. First bract scar closely encircling. Fruits and flowers biserate; 4-6 hands per bunch, 8-16 fruits per hand. Basal each bears 14 - 16 fruits but those on the apex 8 - 10 fruits. Fruits small, 3.3 - 4.2 cm long, 1.5 - 1.7 cm diameter, pedicel 0.6 - 0.8 cm long, tip 0.6 - 0.8 cm long. Pericarp thin, pulp yellowish, slightly soft when ripe. Seeds many, 50 - 60 per fruit, irregularly angular, depressed, smooth, 5.0 - 5.7 mm diameter, black when ripe. Basal flowers female, 6.0 - 6.2 cm long, 0.7 - 0.8 cm diameter. Male flowers small, 16 - 18 flowers per hand.

Habitat:

Open places.

Distribution:

Native to Indonesia. Found in West Java.

Altitude: 20 - 400 m

Musa acuminata var. breviformis	May be confused with: *Musa acuminata var. zebrina*
Leaves green upperside light green underside.	Leaf blades green on upperside, sometimes with bars of purplish brown pigmentation, purplish underside and glaucous.

Reported from Indonesia

But no localities known

All populations priority for collection.

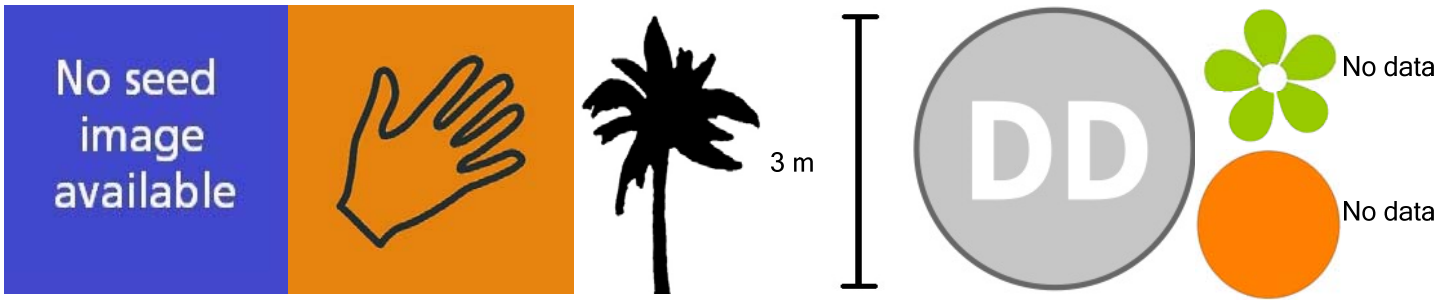
References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata var. breviformis Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang hutan, pisang cici alas.



MUSACEAE

Musa acuminata var. cerifera (Backer) Nasution

Gene Pool Primary relative of Musa acuminata Colla **Cau kole**

Infloresence first vertically deflexed, horizontal then pendulous, up to 1.5 m long, Its peduncle thinly hairy. Fruits and flowers biseriate; 7-8 hands per bunch; basal hands each bear 16-18 fruits, those on the apex 8-10 fruits. Fruits medium, 7-8cm diameter, pedicels 1.0 - 1.5 cm, tips 0.9 -1.3 cm long. Pericarp thin, thinly pubescent with brown hairs, pulp yellow and slightly soft when ripe. Seeds many, 90-100 per fruit, irregularly angular, depressed, smooth, 4.7 - 5.2 cm diameter, black when ripe.
Basal flowers female, 7-8 cm long, 0.9-1.1 cm diameter. Male flowers small, 18-20 per hand.

Habitat:

Open places.

Distribution:

Native to Indonesia, found in west and central Java.

Altitude: 200 - 600 m

Musa acuminata var. cerifera	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

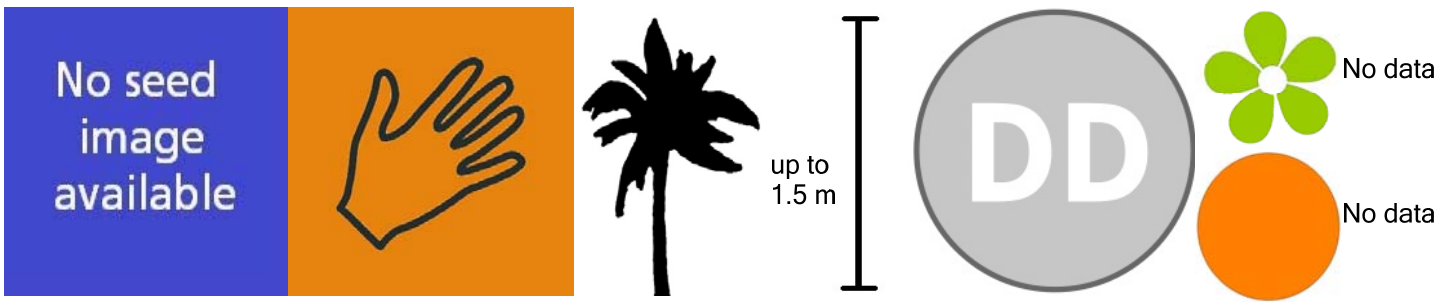
References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata var. cerifera (Backer) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Cau kole



MUSACEAE

Musa acuminata var. microcarpa (Becc.) Nasution

Primary Gene Pool relative of Musa acuminata Colla

Pisang hutan, pisang monyet

Medium clump up to 9 stems; pseudostems slender, tall, 4.0 - 4.5 m high, 14 - 15 cm diameter, purplish brown blotching without wax. Leaf blades big, lanceolate, 320 - 330 cm long, 80 - 90 cm wide, apex truncate, base rounded with unequal lobes, yellowish green, thinly glaucous. Petioles 60 - 70 cn long, brown blotching; their margins erect or incurved; mid rib pink. Leaves on seedlingsusually ornamented with bars of purplish brown pigmentation around thir midrib. Inflorescence pendulous, up to 1.4 m long. Its peduncle thinly pubescent with borwn hairs. First bract scar openly encircling. Fruit and flowers biseriate; 10 -11 hands per bunch, 20 - 21 fruits per hand but those on the apex 12-14 fruits. Fruits medium, 8-9 cm long, 1.8-2.0 cm diameter, pedicels 0.8-0.9 cm long, tip 0.5 cm long. Pericarp thin, pulp yellowish, slightly soft when ripe. Seeds many, 100 - 110 per fruit, irregularly angular, depressed, smooth, 5.0-5.5cm diameter, black when ripe. Male bud ovoid, 10-11 cm long, 6-7 cm diameter, convolute, tip acute, purple, thinly glaucous. Basal flower female, 7.8-7.9 cm long, 0.9cm across. Male flowers small, 18-19 flowers per hand.

Habitat:

Open places.

Distribution:

Native to Indonesia, found in Kalimantan both in the southern and western part. In Malay Peninsula, it has been reported to be found in Malacca and Serdang.

Altitude: 100 m

Musa acuminata var. microcarpa	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata var. microcarpa (Becc.) Nasution

Primary Gene Pool relative of Musa acuminata Colla

Pisang hutan, pisang monyet

Markham, Richard / Bioversity International

No seed image available

up to 4.5 m

EN PRELIM

No data

No data

MUSACEAE

Musa acuminata var. nakaii Nasution

Gene Pool Primary relative of Musa acuminata Colla

Small clumps up to 6 stems; pseudostems slender, 3.5 - 4.5 m high, 10 - 13 cm diameter; brown blotching without wax. Leaf blades lanceolate, 270 - 280 cm long, 45-50cm wide, apex truncate, base cuneate, green with bars of purplish brown pigment upperside, wholly purplish brown underside, thinly glaucous. Petioles 45 - 60 cm long, purplish brown blotchingm their margins erect or outcurved having an open adaxial channel; midrib pink or purplish. Inflorescence horizontal then pendulous, up to 1.5 m long, its peduncle and rachis pubescent with brown hairs. First bract scar openly encircling. Fruits and flowers biseriate; 4-6 hands per bunch, 16-18 fruits per hand. Basal hands each bears 14 - 18 fruits, but those on the apex 8-10 fruits. Fruit medium, 8.0-8.5 cm long, 1.5-2.0 cm diameter, pedicels 0.8-1.1 cm, tip 0.3-0.5 cm. Pericarp thinly puescent with brown hairs, pulp yellowish, slightly doft when ripened. Seeds many, 60 - 80 per fruit, irregularly angular, depressed, 4.6-5.0cm wide, smooth, black when ripened. Male bud ovoid, 7.0-7.5 cm long, 3.0-3.5cm wide, convolute, tip acute, purplish and thinly glaucous. Basasl flowers female, 7-8cm long, 0.9-1.1 cm across. Male flowers small, 14-16 per hand.

Habitat:

Open places.

Distribution:

Native to Indonesia. Java: around Bogor and Purwodadi (Lawang).

Altitude: 200 - 600 m

Musa acuminata var. nakaii	May be confused with:

Reported from Indonesia

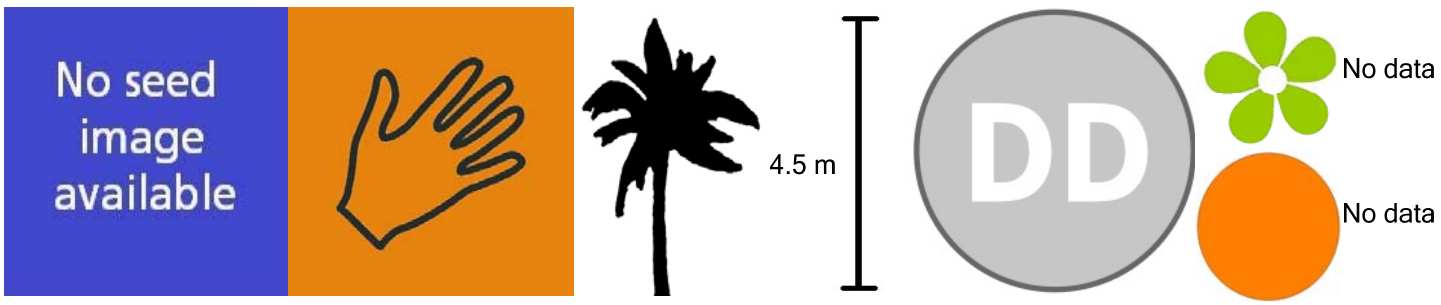
But no localities known

All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew


NO IMAGE AVAILABLE
If you know of an image or link to an image of this species please let us know
cropwildrelatives@kew.org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4.5 m
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MUSACEAE

Musa acuminata var. rutilipes (Backer) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang pecici, pisand cic alas

Medium clump up to 10 stems; pseudostems slender, 1.3 - 3.0m high, 5-11 cm diameter, brown blotching without wax. Leaf blades oblong to lanceolate, 1.0 - 1.8 m long, 25-27 cm wide, apex truncate, base rounded with unequal lobes, yellowish green; their margins erect; midrib yellowish green. Inflorescence horizontal then pendulous, up to 1.2 m long; its peduncle and rachis thinly pubescent. First bract scar closely encircling. Fruits and flowers biseriate; 4-6 hands per bunch, 14-16 fruits per hand. Basal hands each bear 14-16 fruits but those on the apex 8-10 fruits. Fruits small, 5-9 cm long, 1.3-1.4cm diameter; pedicels 1.4-1.5 cm long, tip 0.6-0.7 cm long. Pericarp thin, pulp yellowish, slightly soft when ripe. Seeds many, 60-80 per fruit, irregularly angular, depressed smooth, 5-6 cm across, black when ripe. Male bud ovoid, 10-12 cm long, 6-8cm across, coracoid tip, purple with yellowish marking at the base, and waxy.

Habitat:

Open places.

Distribution:

Native to Indonesia, found in west Java.

Altitude: 20 - 400 m

Musa acuminata var. rutilipes	May be confused with: *Musa acuminata var. zebrina*
	Leaf blades green on upperside, sometimes with bars of purplish brown pigmentation, purplish underside and glaucous.

Reported from Indonesia

But no localities known

All populations priority for collection.

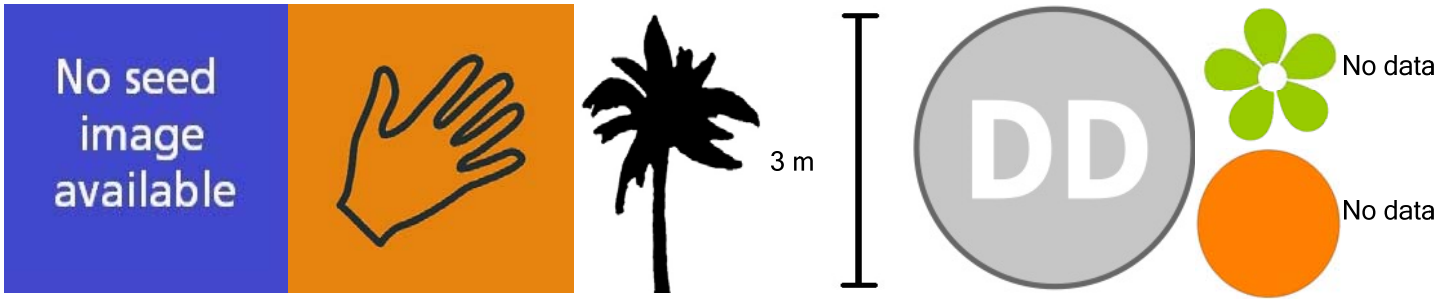
References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata var. rutilipes (Backer) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang pecici, pisand cic alas



MUSACEAE

Musa acuminata var. sumatrana (Becc.) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang karok, pisang hutan

Big clump up to 12 stems; pseudostems tall, 4.0-4.5 m high, 15-18 cm diameter, purplish brown blotching, without wax. Leaf blades big, lanceolate, 3.0-3.5m long, 70-75 cm wide, apex truncate, base cuneate with unequal lobes, green upperside but thickly glaucous underside. Petioles 50-70 cm longpurplish brown blotching, sometimes wholly purplish brown, their margins erect; mid-rib pink. Leaves of seedlingsusually ornamented with bars of purple pigmentation around their mid-ribs. Inflorescence pendulous, up to 1.6 m long. Its peduncle and rachis pubescent. First bract scar openly encircling. Fruits and flowers biseriate; 12-16 hands per bunch, 30-39 fruits per hand. Basal hands each bear 36-39 fruits but those in the apex 15-18 fruits. Fruits long, 12-13.5 cm long, 1.2-1.5 cm diameter; pedicel 2.3-2.5 cm long, tip 0.4-0.5 cm long. Pericarp thin, pulp yellowish, and slightly soft when ripe. Seeds many, 110-130 per fruit, rounded flat, not smooth, 6.5-7.4 mm across, black when ripe. Male buds ovoid, 11.5-13.5 cm long, 5-6 cm wide, convolute, tip acute, dark purple outside, light purple inside, and glaucous.

Habitat:

Open places.

Distribution:

Native to Indonesia. Found in North Sumatera, West Sumatera and Jambi, on the slopes of mount Sinabung, mount Singgalang, mount Sago and mount Kerinci.

Altitude: 450 - 2200 m

Musa acuminata var. sumatrana	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

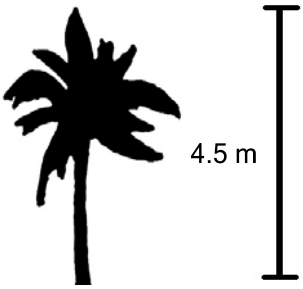
References:

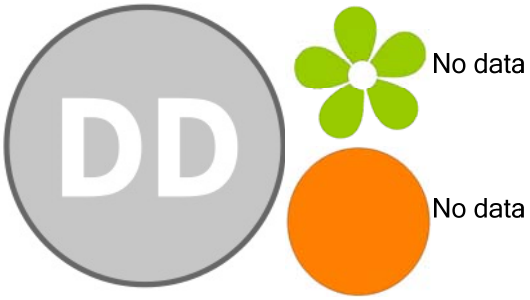
Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata var. sumatrana (Becc.) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang karok, pisang hutan





MUSACEAE

Musa acuminata var. tomentosa (K.Schum.) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang hutanm unti darek, punti lampung

Medium clump, up to 10 stems; pseudostems tall and slender, 4.0 - 4.75 m high, 13-15 cm diameter, brownish blotching without wax. Leaf blades big, oblong or lanceolate, 260-310 cm long, 60-70 cm wide, apex truncate, base rounded with unequal lobes, green, thinly glaucous. Petioles long, 60-70 cm with purplish brown markings; their margins erect; mid-rib usually pink but sometimes yellowish green. Leaves of seedlings usually blotched with bars of purplish brown pigementation around mid-rib. Inflorescence pendulous, short, 1.5 m long, its peduncle and rachis thinly pubescent. First bract scar openly encircling. Fruits and flowers biserate; 10 -12 hands per bunch, 10-12 fruits per hand. Basal hands each bear 16-20 fruits but those on the apex 10-14 fruits. Fruits medium, 9-10 cm long, 1.8-2.0 cm across, Pedicels 1.3-1.5 cm, tip 0.5-0.6 cm long. Pericarp thin, pulp yellowish, slightly soft when ripe. Seeds many, 105-120 per fruit, irregularly angular, depressed, not smooth, 6.0-6.4 mm across, black when ripe. Male bud ovoid, 11-12 cm long, convolute, tip acute, dark purple or yellow, thinly waxy.

Habitat:

Open places, but sometimes under shade as well.

Distribution:

Native to Indonesia. Found in Sulawesi.

Altitude: 0 - 600 m.

Musa acuminata var. tomentosa	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

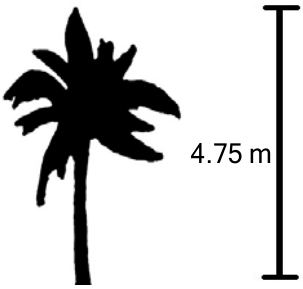
References:

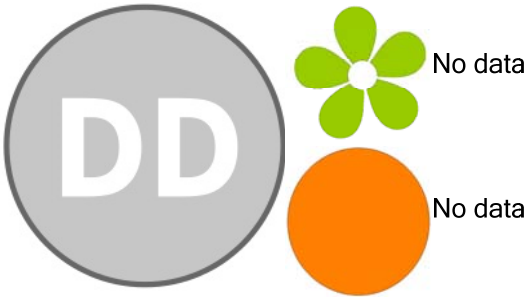
Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa acuminata var. tomentosa (K.Schum.) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Pisang hutanm unti darek, punti lampung





MUSACEAE

Musa acuminata var. zebrina (Van Houtte ex Planch.) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Cau kole, cau kees; gedang cici

Medium clump up to 13 stems; pseudostems slender, 2.0 - 2.7 m length, 6 - 9 cm diameter, brown blotching without wax. Leaf blades lanceolate, 1.3 - 1.5 m long, 26 - 34 cm wide, apex truncate, base cuneate with unequal lobes, green upperside sometimes with bars of purplish brown pigmentation, purplish underside and glaucous. Petioles short, 35 -40 com long, purple with black markings at base; their margins nearly revolute leaving an open adaxial channel; mid rib light purple. Inflorescence horizontal then pendulous, up to 1.1 m long; its peduncle thinly pubescent. First bract scar open or closely encircling. Fruits and flowers biseriate; 5-8 hands per bunch, 14 - 16 fruits per hand. Basal hands each bear fewer fruits (7-9) than those on the apex (14 - 16). Fruits small. 5.0 - 6.6 cm long, 1.5 - 1.9 cm across, pedicels0.5 - 0.6 cm long. Pericarp thin, pulp yellowish, slightly soft when rupe. Seeds many, 60 - 80 per fruit, irrugularly angular, depressed, smooth, 5.8 - 6.3 mm diameter, black when ripe.

Habitat:

Found in open places.

Distribution:

Native to Indonesia.

Altitude: 250 - 900 m

Musa acuminata var. zebrina	May be confused with: *Musa acuminata var. breviformis*
Leaf blades green on upperside, sometimes with bars of purplish brown pigmentation, purplish underside and glaucous.	Leaves green upperside light green underside.

Reported from Indonesia

But no localities known

All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

MUSACEAE

Musa acuminata var. zebrina (Van Houtte ex Planch.) Nasution

Gene Pool Primary relative of Musa acuminata Colla

Cau kole, cau kees; gedang cici

Credit: Wikimedia Commons User: Raul654

Credit: Wikimedia Commons User: Dave Whitinger

Credit: Wkimedia Commons User: User:BotBln

Credit: Wikimedia Commons User: Raul654

No seed image available

2.7 m

DD

No data

No data

Musa balbisiana var. balbisiana Colla

Primary Gene Pool relative of Musa acuminata Colla

HABIT: Pseudostems clumped, yellow-green, often with large, black markings, ca. 6 m. Petiole 60-75 cm, margin open, ca. 2 cm wide, often closed when young; leaf blade adaxially green and slightly pruinose or not, ovate-oblong, ca. 2.9 m × 90 cm, base auriculate, asymmetric.
INFLORESCENCES: Pendulous, ca. 2.5 m; peduncle and rachis glabrous. Bracts of bisexual and male flowers adaxially purple-red, abaxially brownish purple to yellow-green and pruinose, ovate to lanceolate, persistent, apex obtuse, reflexed after flowering; bracts of female flowers deciduous. Male flowers up to 20 per bract, in 2 rows. Compound tepal adaxially pale purple, abaxially pale purple-white, 4-5 cm, striate, teeth yellow to orange; free tepal milky white, translucent, obovate, ca. 1/2 as long as compound tepal, apex emarginate, shortly mucronate-apiculate.
INFRUCTESCENCES: Pendulous, with ca. 8 clusters ('hands') each of 15 or 16 berries in 2 rows.
FRUIT grey-green, obovoid, ca. 13 × 4 cm, distinctly angled at maturity, base narrowed into a stalk ca. 2.5 cm, apex contracted or not into a short, angled column ca. 2 cm.
SEEDS numerous, brown, oblate, 5-10 mm in diam., minutely warty.

Habitat:

Ravines in evergreen forests

Distribution:

China, Papua New Guinea, Southcentral and Southeastern Asia.

Altitude: 0 -1100 m

Musa balbisiana var. balbisiana	May be confused with: *Musa balbisiana var bakeri*
Up to 6m tall.	Up to 3 m tall.

Reported from Indonesia

But no localities known

All populations priority for collection.

References: Kuo, M.L. (ed.) (2012). Flora of Taiwan , ed. 2, Suppl.: 1-414. Editorial Committee of the Flora of Taiwan, Second Edition, National Taiwan University

MUSACEAE

Musa balbisiana var. balbisiana Colla

Primary Gene Pool relative of Musa acuminata Colla

up to 6 m

DD

Dec - May

Dec - May

MUSACEAE

Musa balbisiana var. brachycarpa (Backer) Hakkinen

Gene Pool Primary relative of Musa acuminata Colla

HABIT: Plant stooling freely; up to 6 m high, about 30 cm diam. at base, predominately green or yellowish green.
LEAVES: Up to more than 3 m long and 60 cm wide, truncate at apex, rounded or slightly cordate at base. Leaf blades oblong, green above, paler and more or less glaucous beneath, midribs green or yellowish green. Petioles 60 cm or longer, strongly concave above, their edges almost meeting over the adaxial channel.
INFLORESCENCE: Pendulous, its peduncle and rachis glabrous.
FLOWER: Basal flowers female, the number of female hands varying up to about 10; upper hands male, male flowers about 20 per bract, in two rows; compound tepal 4-5 cm long x 1.2 cm wide.
BRACTS: varying shades of purple, broadly ovate, rounded at apex, often greenish or yellow at extreme tip; outer surface more or less glaucous, usually longitudinally ribbed, inner surface dark crimson to the base, transversely corrugated between the ribs.
FRUIT: Individual fruits about 10 cm long x 4 cm diameter; pericarp about 3 mm thick; pale yellow at full ripeness, soon blackening, pulp whitish.
SEED: Black, irregularly globose, scarcely depressed, minutely warty, 5-6 mm across x 4-5 mm high.

Habitat:

Open places.

Distribution:

Native to Indonesia.

Altitude:

Musa balbisiana var. brachycarpa	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa balbisiana var. brachycarpa (Backer) Hakkinen

Gene Pool Primary relative of Musa acuminata Colla

NO IMAGE AVAILABLE

If you know of an image or link to an image of this species please let us know cropwildrelatives@kew.org

No seed image available

up to 6 m

VU PRELIM

No data

No data

Musa lolodensis Cheesman

HABIT: Stooling freely; pseudostems up to 4 m or more in height, 20 cm diam. at base.
LEAVES: Leaf blades up to 3 m long 60 cm wide, truncate at apex, unequally rounded at base, one side of the lamina a little shorter than the other, lightly glaucous beneath; midribs paler than the lamia; petioles 30-50 cm long.
INFLORESCENCE: Pendulus, or at least semi-pendulous, its peduncle and rachis either glabrous or pubescent; sterile bract about 60 cm long, its upper quarter leaflike, basel flowers femail, upper flowers male.
FLOWERS: Female flowers 7-14 per bract, in teo rows; compound tepel 4.5 cm long, cream, its lobes orange yellow, the lateral lobes broadly ovate, 4-5 mm long, with a filiform dorsal appendage 2 mm long. Male flowers about 14 per bract in two rows, 5-6 cm long; compound tepel 4.5 cm long, cream, lobes orange as in the female flowers, but shorter (scarcely 2 mm long); free tepel white, oblong-lanceolate.
FRUIT: Bunch of about 7-8 "hands", ripening orange-red. Indevidual fruit 8-10 cm long, 3 cm diam., distictly 5-angled at maturity.
SEEDS: Dull black, irregular angular, minutely striate but scarcely rough, 6 mm x 3 mm.

Habitat:

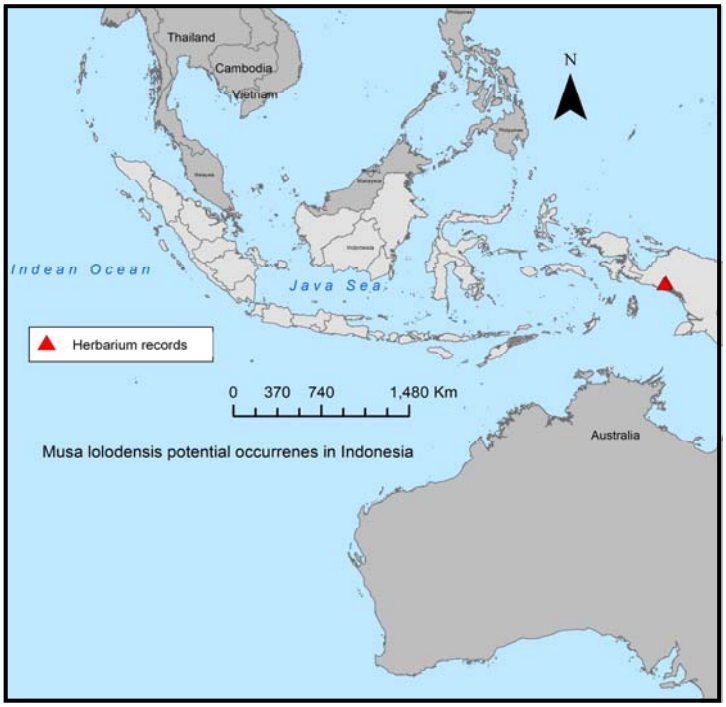
On the banks of rivers.

Distribution:

Halmahera, Irian Jaya, North west Papua New Guinea.

Altitude:

Musa lolodensis	May be confused with:

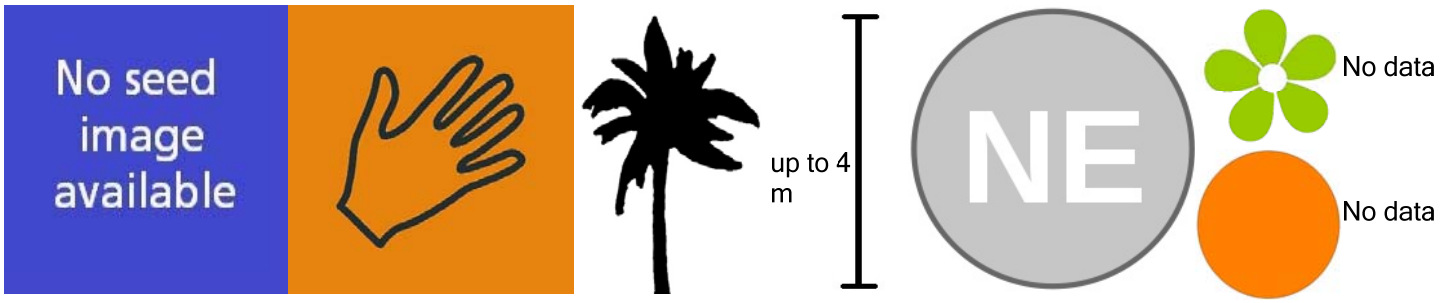


All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa lolodensis Cheesman



Musa salaccensis Zoll. ex Backer

Taxon Group 4 relative of Musa textilis Nee

A small herb, not more than 3 m tall, with a short underground stem and a pseudostem consisting of overlapping leaf-sheaths which are tightly rolled round each other to form a ridgid bundle and an erect inflorescence.

Habitat:

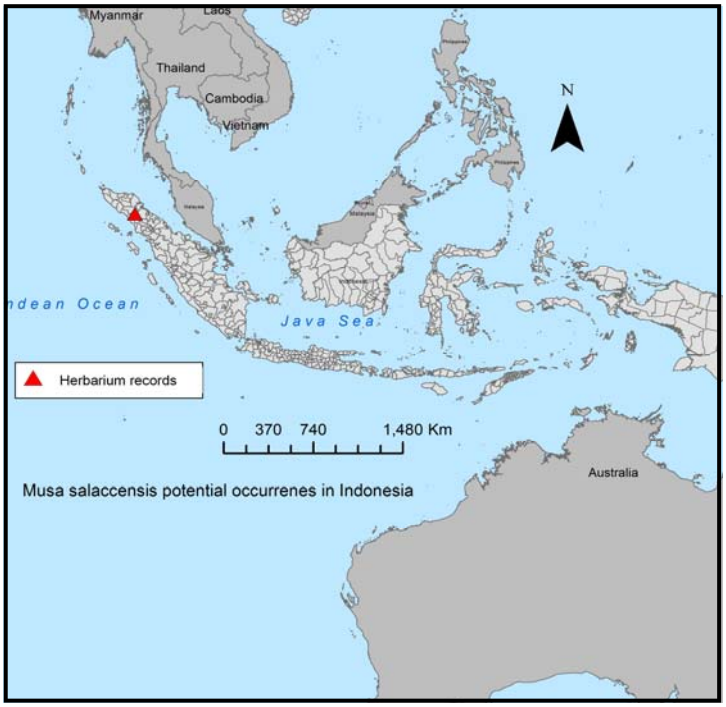
Unknown

Distribution:

Indonesia

Altitude:

Musa salaccensis	May be confused with:



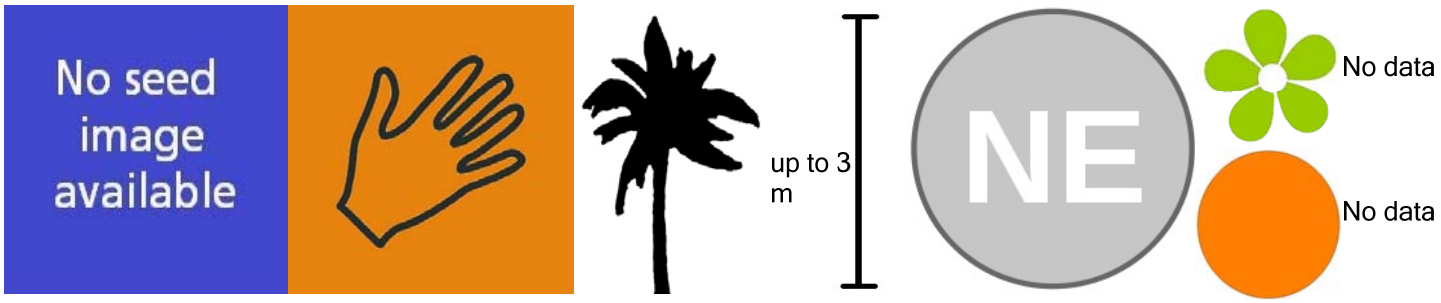
All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

NO IMAGE AVAILABLE

If you know of an image or link to an image of this species please let us know cropwildrelatives@kew.org



MUSACEAE

Musa sanguinea Hook.f.

Taxon Group 4 relative of Musa textilis Nee

Pseudostems clumped, 1.5--2 m. Petiole ca. 30 cm, margin narrow and open; leaf blade deep green, ovate-oblong, not more than 1 m, base asymmetric, apex obtuse. Inflorescence erect or ascending, becoming pendulous, ca. 20 cm; rachis brown puberulent. Bracts reddish, ovate-lanceolate, 7.5--14 cm. Flowers borne on proximal bracts, 3 per bract, in 1 row. Compound tepal bright yellow, ca. 3.8 cm, apex of outer lobes with a hooklike appendage; free tepal yellow, equaling compound tepal, membranous. Berries grayish yellow-green with red blotches, trigonous oblong, 5--7.5 cm. Seeds numerous, black, ca. 5 mm in diam., irregularly multiangled, tuberculate.

Habitat:

Ravine bottoms or semimarshlands.

Distribution:

India, Indonesia.

Altitude: about 1000 m

Musa sanguinea	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Musa sanguinea Hook.f.

Taxon Group 4 relative of Musa textilis Nee

RBG Kew

No seed image available

up to 1 m

NE

No data

No data

Oryza longiglumis Jansen

Gene Pool Tertiary relative of Oryza glaberrima Steud.

HABIT: Perennial. Culms erect; 60-120 cm long, nodes glabrous, leaf-blades 15-30 cm x 6-8 mm wide, apex acuminate.
INFLORESCENCE: A panicle; embraced at base by subtending leaf. Panicle contracted; lanceolate, or elliptic; 10-20 cm long. Primary panicle branches ascending; 2-3 -nate. Panicle branches angular; smooth. Spikelets solitary. Fertile spikelets pedicelled. Pedicels linear; angular; 4-12 mm long.
FERTILE SPIKELETS: Spikelets comprising 2 basal sterile florets; 1 fertile florets; without rhachilla extension. Spikelets oblong; laterally compressed; 7-8 mm long; 1.5-2 mm wide; falling entire. Spikelet callus glabrous; base truncate.
GLUMES: Both absent or obscure.
FLORETS: Basal sterile florets similar; barren; without significant palea. Lemma of lower sterile floret subulate; 10-14 mm long; 1.4-1.8 length of spikelet; without lateral veins. Lemma of upper sterile floret subulate; 10-14 mm long; 1 length of lower sterile floret. Fertile lemma elliptic; laterally compressed; 7-8 mm long; coriaceous; keeled; 5 -veined. Lemma midvein spinulose. Lemma surface scabrous; rough on veins. Lemma margins interlocking with palea margins. Lemma apex rostrate; awned; 1 -awned. Principal lemma awn 15-26 mm long overall.coriaceous.
FLOWER: Lodicules 2; membranous. Stigmas 2.
FRUIT: Caryopsis with adherent pericarp. Disseminule comprising a floret.

Habitat:

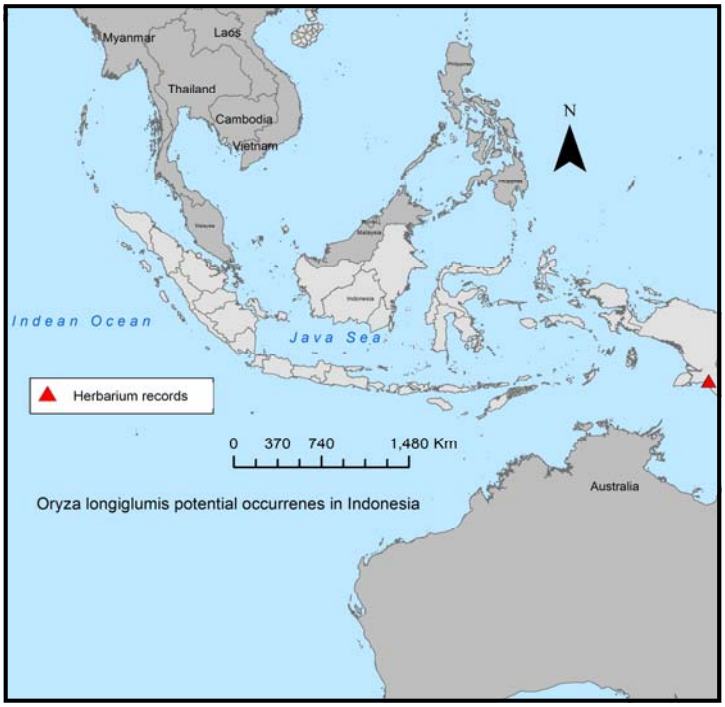
Forested areas, low-lying seasonally wet areas such as swamps, water holes of stream beds.

Distribution:

Indonesia, Papua New Guinea.

Altitude: lowland

Oryza longiglumis	May be confused with: *Oryza ridleyi*
Sterile lemma as long or longer than fertile lemma.	Sterile lemma shorter than palea and lemma.



All populations priority for collection.

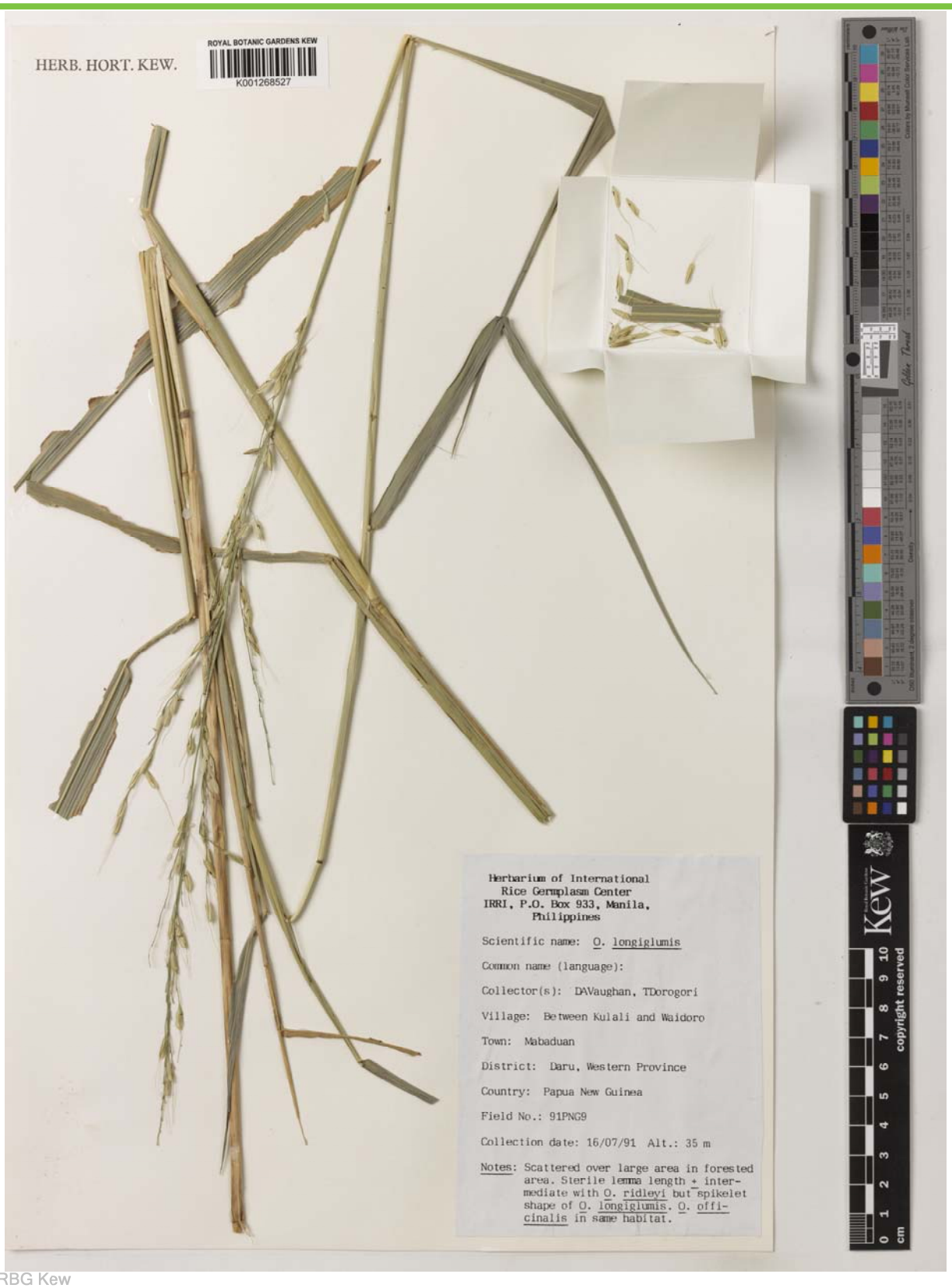
References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

POACEAE

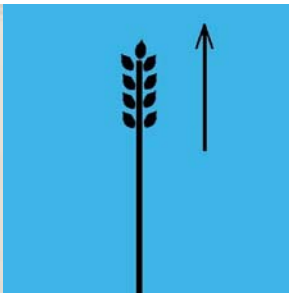
Oryza longiglumis Jansen

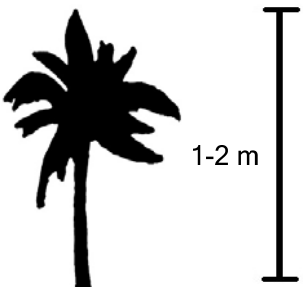
Gene Pool Tertiary relative of Oryza glaberrima Steud.

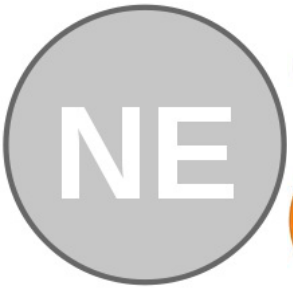


RBG Kew

RBG Kew







POACEAE

Oryza meyeriana var. granulata (Watt) Duist.

Tertiary Gene Pool relative of Oryza glaberrima Steud. and Oryza sativa L. **Jungle rice**

HABIT: Perennial, loosely tufted or sometimes shortly stoloniferous. Culms erect or ascending, 0.3-0.7m tall.
LEAVES: Leaf sheaths shorter than internodes, auricles ciliate; leaf blades thin, 5–20 × 0.6–2 cm, inrolled when dry, abaxial surface smooth, adaxial surface scabrid along veins, margins scabrid, base rounded, narrowed at insertion, apex acuminate; ligule 1–2 mm.
INFLORESCENCES: Panicle narrow, erect, 3–15 cm; branches 2–5, inserted singly, 2–6 cm, unbranched, ascending, bearing few spikelets. Spikelets elliptic-oblong, 5–6.5 mm, length 2–3 times width, light green or gray; sterile lemmas narrowly lanceolate, slightly unequal, ca. 1 mm; fertile lemma irregularly granular, flanks sulcate, apex obtuse or shortly 3-toothed, awnless. Anthers 3.5–4.5 mm.
FRUIT: Caryopsis brown.

Habitat:

Hill forests, on well drained soils and damp places by streams.

Distribution:

China, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand

Altitude: 500 - 1000 m

Oryza meyeriana var. granulata	May be confused with: *Oryza meyeriana var. meyeriana*
Spikelets 5 - 6.5 mm; length 2-3 times width.	It has longer, (6–)7–10 mm spikelets, with length 3–6 × width.

Reported from Indonesia

But no localities known

All populations priority for collection.

References: FOC Vol. 22 Page 183

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Oryza meyeriana var. granulata (Watt) Duist.

Tertiary Gene Pool relative of Oryza glaberrima Steud. and Oryza sativa L.

Jungle rice

RBG Kew

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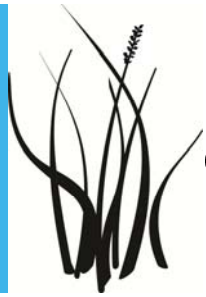


0.3-0.7 m

NE

All year

All year

Oryza meyeriana var. meyeriana

Tertiary Gene Pool relative of Oryza glaberrima Steud. and Oryza sativa L.

HABIT: Perennial, caespitose, culms erect 60-70(-100) cm long, nodes glabrous.
LEAVES: Leaf-sheaths 6-8 cm long, striately veined, smooth, glabrous on surface, auricles erect. Ligule an eciliate membrane, 1-2 mm long, white. Leaf blades linear, or lanceolate; 15-22 cm long; 16-20 mm wide, base broadly rounded, with a brief petiole-like connection to sheath, surface and margins scaberulous, apex acuminate.
INFLORESCENCE: Panicle open, linear, 3-4 cm long, bearing few spikelets, primary branches appressed, simple. Spikelets solitary. Fertile spikelets pedicelled. Pedicels linear, angular; bibracteate. Spikelets comprising 2 basal sterile florets and 1 fertile floret. Spikelets elliptic, or ovate, laterally compressed, 5-5.5 mm long, falling entire. Glumes absent or obscure. Basal sterile florets similar, barren, without significant palea, lemmas linear or lanceolate, 0.4-1 mm long, 0.1-0.2 length of spikelet, membranous. Lemma of fertile floret elliptic, laterally compressed, 5-5.5 mm long, coriaceous, keeled, 5 -veined. Lemma surface granulose, margins interlocking with palea margins, apex acute, muticous. Palea elliptic, 5 mm long, coriaceous, 5 -veined, 1-keeled, surface smooth, apex acute. Lodicules 2, membranous, anthers 6, stigmas 2.
FRUIT: Caryopsis with adherent pericarp. Disseminule comprising a floret.

Habitat:

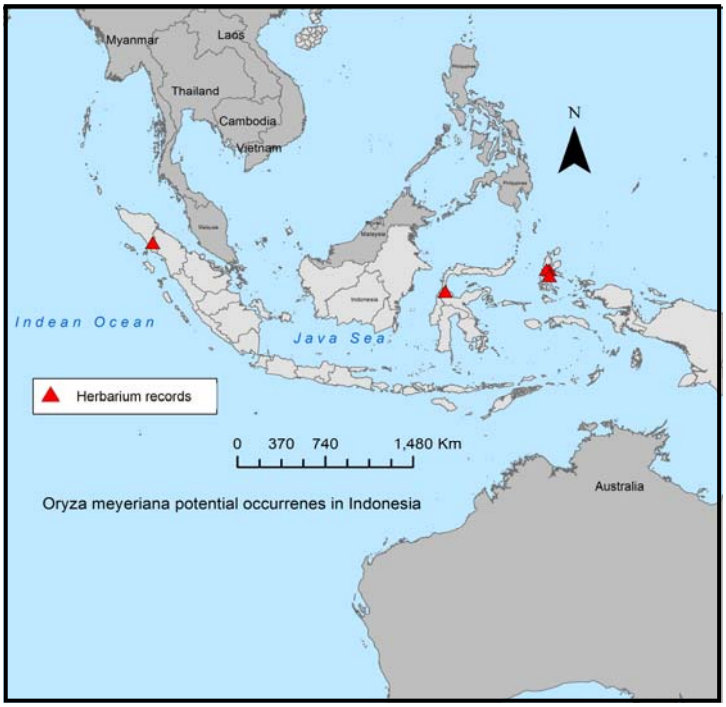
No information.

Distribution:

South East Asia

Altitude:

Oryza meyeriana var. meyeriana	May be confused with: *Oryza meyeriana var. granulata*
It has longer, (6–)7–10 mm spikelets, with length 3–6 × width.	Spikelets 5 - 6.5 mm; length 2-3 times width.



All populations priority for collection.

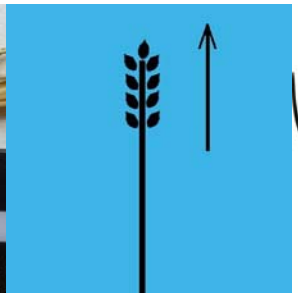
References: eMonocot: http://e-monocot.org/taxon/urn:kew.org:wcs:taxon:426655

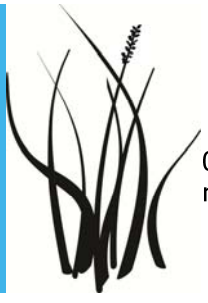
Oryza meyeriana var. meyeriana

Tertiary Gene Pool relative of Oryza glaberrima Steud. and Oryza sativa L.

RBG Kew herbarium material

RBG Kew herbarium specimen





0.6-0.7 m

NE

All year

All year

POACEAE

Oryza nivara S.D.Sharma & Shastry Baill.

Primary Gene Pool relative of Oryza sativa L and Oryza glaberrima Steud.

HABIT: Semierect plant about 1m tall with semierect leaves.
INFLORESCENCES: Panicle branches semi-spreading. Spikelets appressed, solitary, large (6-10.4 mm long by 1.9-3.4 mm wide), with strong awn (4-10 cm long), 2 basal florets sterile, 1 floret fertile. Anthers 1.5-3 mm long.
FRUIT: Kernels often red.

Habitat:

Found in swampy areas, at edges of ponds and tanks, beside streams, in ditches in or around ricefields. Usually grows in shallow water up to 0.3 m, seasonally dry; in open habitats.

Distribution:

Native to Bangladesh, Cambodia, India, Laos, Myanmar, Sri Lanka, Thailand and Vietnam.

Altitude: 0 - 700 m

Oryza nivara	May be confused with: *Oryza rufipogon*
Annual. Tufted herb, anthers <3mm.	Perennial. Anthers usually >3mm.

Reported from Indonesia

But no localities known

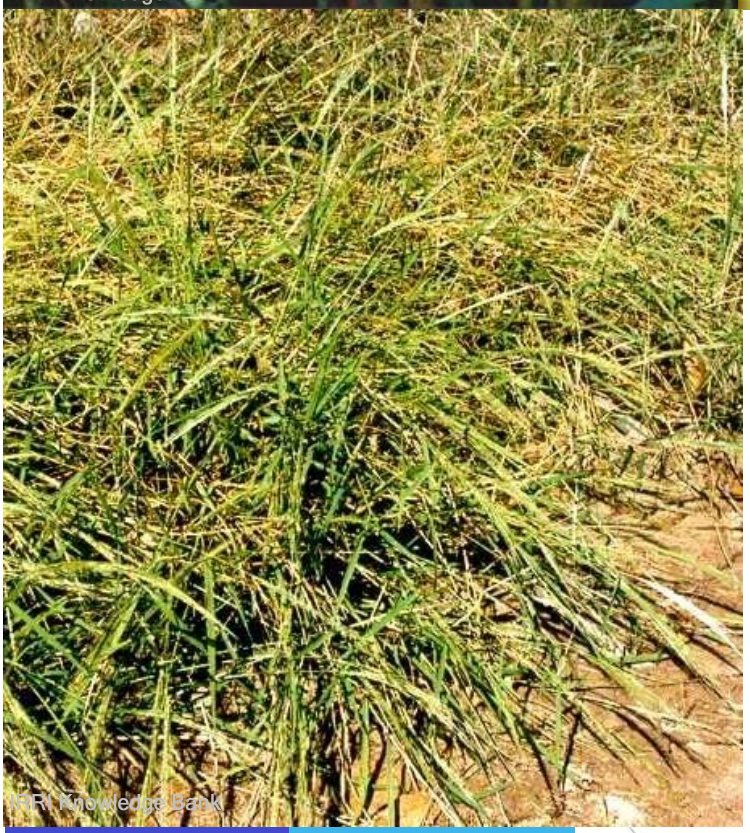
All populations priority for collection.

References: Vaughan, D. (1994) The Wild Relatives of Rice- A Genetic Resources Handbook. IRRI.

POACEAE

Oryza nivara S.D.Sharma & Shastry Baill.

Primary Gene Pool relative of Oryza sativa L and Oryza glaberrima Steud.



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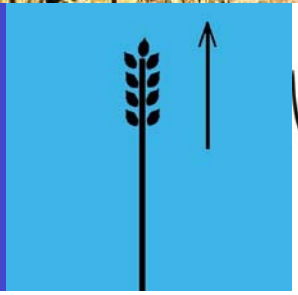
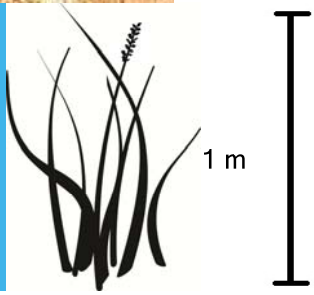




LC

PRELIM

Sep - Dec

Sep - Dec

POACEAE

Oryza officinalis Wall.

Secondary Gene Pool relative of Oryza sativa L and Oryza glaberrima Steud.

HABIT: Perennial. Culms erect or creeping and rooting at lower nodes, 1.5–3 m tall, 7–10 mm in diam.
LEAVES: Leaf sheaths more than 3 times internode length, auricles inconspicuous; leaf blades thick, 30–50 × 2–3 cm, abaxial surface and margins scabrous, adaxial surface scattered villous, midrib stout, lateral veins inconspicuous, base narrowed, puberulous, apex acuminate; ligule 1–4 mm.
INFLORESCENCE: Panicle loosely contracted, 30–50 cm, base often included in terminal sheath; branches 3–5 at lowest node, axils bearded, longest 10–25 cm, naked in lower half, apices of lowermost branches drooping. Spikelets broadly ovate-oblong, 4–5 mm, length 1.5–2 times width, yellowish green or tinged brownish black, deciduous; sterile lemmas linear-lanceolate, 1.5–2 mm, apex acuminate; fertile lemma papillose, keel and marginal veins with hard glassy hairs; awn 5–10(–25) mm, slender, scabrid. Anthers 1.5–2.5 mm.
FRUIT: Caryopsis reddish brown

Habitat:

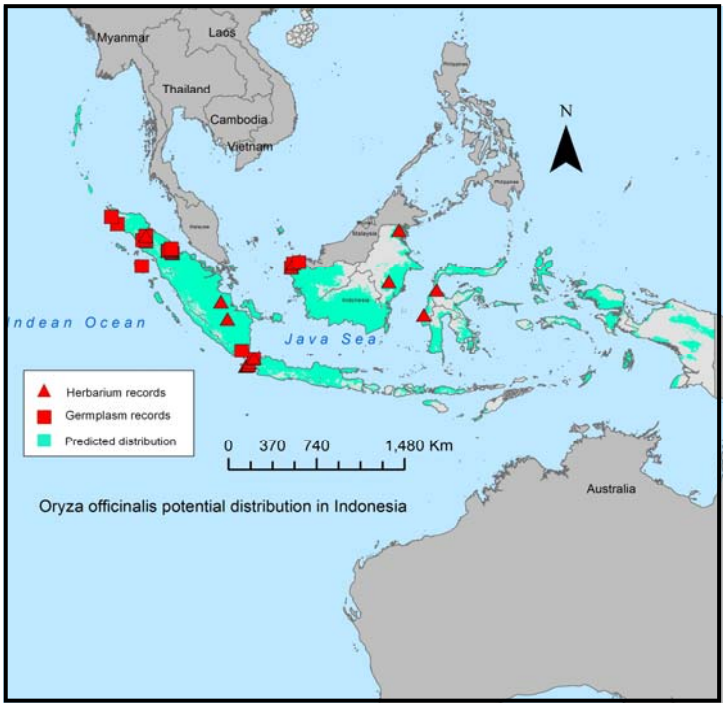
Low hills, alluvial plains, ditch banks.

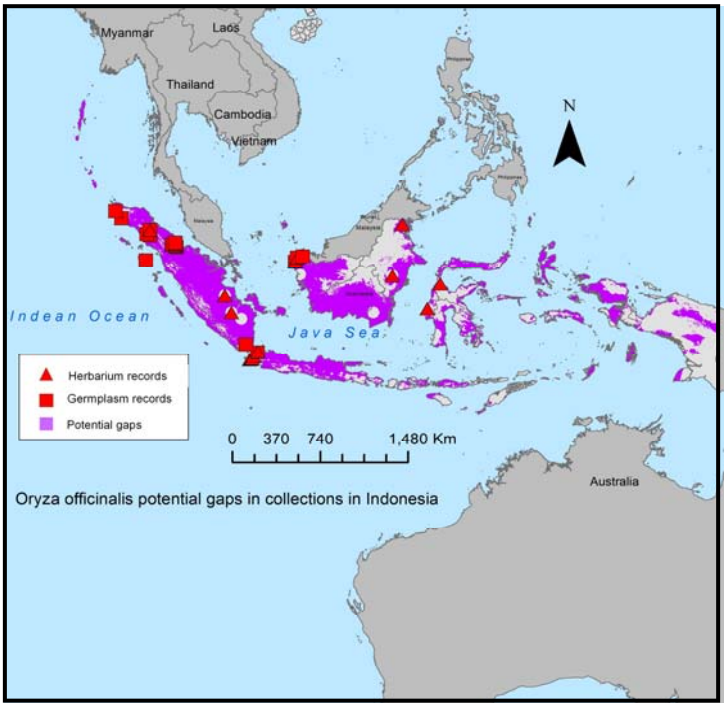
Distribution:

China, Bhutan, Cambodia, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam.

Altitude: 0 - 1000 m

Oryza officinalis	May be confused with: *Oryza minuta*
Lower panicle branches naked in lower half, and branches drooping. Spikelet length 1.5 - 2 x width.	Differs only slightly morphologically, the lowermost panicle branches having a shorter naked portion and ascending at the tip. It also has proportionately narrower spikelets with length 2–2.7 × width.





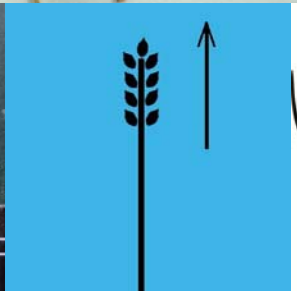
References: Flora of China http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200025785

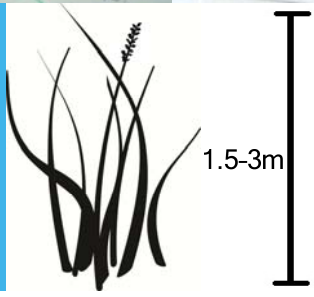
Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide.
Compiled by Richard Allen, RBG Kew

POACEAE

Oryza officinalis Wall.

Secondary Gene Pool relative of Oryza sativa L and Oryza glaberrima Steud.





LC

Jul - Mar

Jul - Mar

Oryza ridleyi Hook.f.

Tertiary Gene Pool relative of Oryza sativa L. and Oryza glaberrima Steud.

HABIT: Perennial. Culms 100–150 cm long.
LEAVES: Leaf-sheaths smooth, glabrous on surface. Leaf-blades 15–30 cm long, 15–25 mm wide, surface smooth, margins scabrous, apex acuminate. Ligule an eciliate membrane, 3–5 mm long.
INFLORESCENCES: Panicle open, elliptic, 25–35 cm long, 10–15 cm wide, primary branches ascending, simple, scaberulous, 6–12 cm long. Spikelets appressed. Pedicels of fertile spikelets linear, angular, tip cupuliform. Fertile spikelets comprising 2 basal sterile florets and 1 fertile floret, without rhachilla extension. Spikelets oblong, laterally compressed, 8–9 mm long, 2–5 mm wide, falling entire. Glumes both absent or obscure. Basal sterile florets similar, barren; without significant palea. Lemma of lower sterile floret subulate, 6–7.5 mm long, 0.8 length of spikelet; scaberulous. Lemma of upper sterile floret subulate, 6–7.5 mm long, 1 length of lower sterile floret. Fertile lemma elliptic, laterally compressed, 7–8 mm long, coriaceous, keeled, 5 -veined. Lemma surface scaberulous, rough on veins, margins interlocking with palea margins, apex awned. Principal lemma awn 4–8 mm long overall. Palea elliptic, 9 mm long, coriaceous, 3 -veined, 1-keeled, keel spinulose. Lodicules 2, membranous, anthers 6, stigmas 2.
FRUIT: Caryopsis with adherent pericarp. Disseminule comprising a floret.

Habitat:

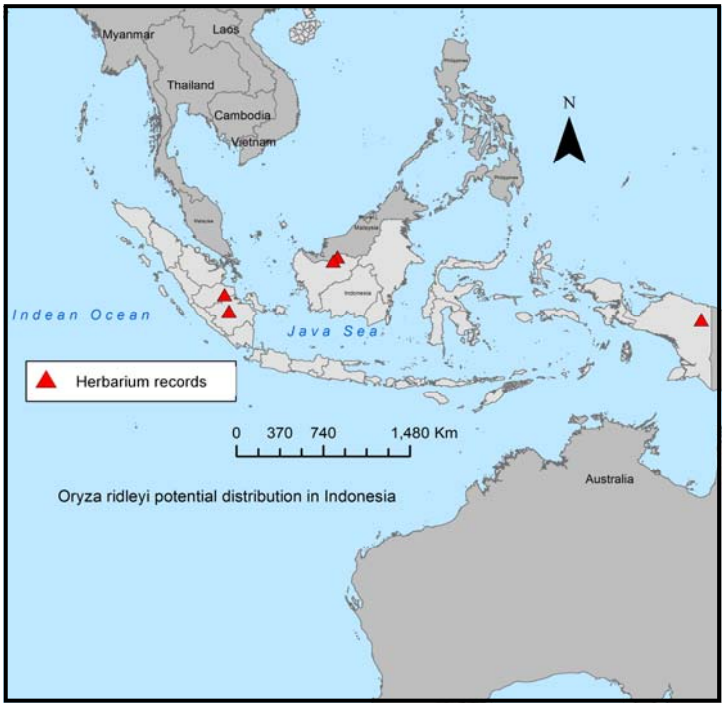
Found in old secondary, evergreen or dipterocarp forest; flooded rainforest; old rubber plantations; dense thickets or open spaces. Grows in marshes or riverbanks near streams in highly organic, friable soil such as decaying tree trunks; commonly in full shade.

Altitude: 0 - 200 m

Distribution:

Cambodia, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, and Thailand.

Oryza ridleyi	May be confused with: *Oryza longiglumis*
Sterile lemma shorter than palea and lemma.	Sterile lemma as long or longer than fertile lemma.



All populations priority for collection.

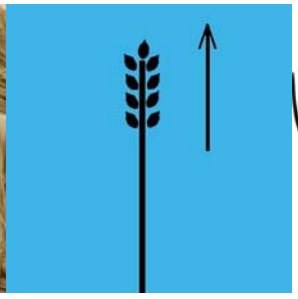
References:

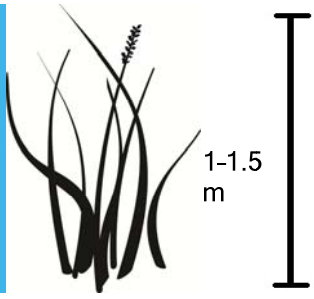
Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

Oryza ridleyi Hook.f.

Tertiary Gene Pool relative of Oryza sativa L. and Oryza glaberrima Steud.

RBG Kew herbarium material





LC
PRELIM

Sep - Dec peak

Sep - Dec peak

POACEAE

Oryza schlechteri Pilg.

Gene Pool Tertiary relative of Oryza glaberrima Steud.

HABIT: Annual. Culms erect; 30-90 cm long. Ligule an eciliate membrane; 1-2 mm long. Leaf-blades 20-30 cm long; 5-10 mm wide.
INFLORESCENCE: A panicle. Panicle open; elliptic; dense; 3-6 cm long. Primary panicle branches spreading. Panicle branches angular. Spikelets spreading; solitary. Fertile spikelets pedicelled. Pedicels linear; angular; 1 mm long.
FERTILE SPIKELETS: Spikelets comprising 2 basal sterile florets; 1 fertile florets; without rhachilla extension. Spikelets orbicular; laterally compressed; gibbous; 1.5-1.7 mm long; falling entire. Spikelet callus glabrous; base truncate.
GLUMES: Both absent or obscure.
FLORETS: Basal sterile florets similar; barren; without significant palea. Lemma of lower sterile floret lanceolate; 0.2 mm long; 0.1 length of spikelet; 1 -veined; without lateral veins; acute. Lemma of upper sterile floret lanceolate; 0.2 mm long; 1 length of lower sterile floret. Fertile lemma orbicular; laterally compressed; gibbous; 1.5-1.7 mm long; coriaceous; keeled; 5 -veined. Lemma surface striate. Lemma margins interlocking with palea margins. Lemma apex rostrate; muticous. Palea elliptic; coriaceous; 3 -veined; 1-keeled. Palea surface smooth. Palea apex acute.
FLOWER: Lodicules 2; membranous. Stigmas 2.
FRUIT: Caryopsis with adherent pericarp. Disseminule comprising a floret.

Habitat:

In undistured forests, on land slips, beside rivers in humid conditions, in shade or partial sun.

Distribution:

Indonesia, Papua New Guinea.

Altitude: 30 - 307 m

Oryza schlechteri	May be confused with: *Not closely related to any species in this Genus*
Very small spicklets 1.5-2 m long, and empty glumes, 0-0.5 m long.	

Reported from Indonesia

But no localities known

All populations priority for collection.

References:

Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

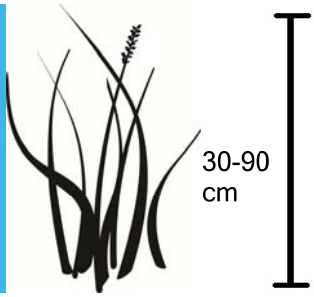
POACEAE

Oryza schlechteri Pilg.

Gene Pool Tertiary relative of Oryza glaberrima Steud.

The Gray Herbarium/Jstor

No seed image available



NE

No Data

No Data

POACEAE

Sorghum nitidum (Vahl) Pers.

Tertiary Gene Pool relative of Sorghum bicolor (L.) Moench

HABIT: Perennial forming loose tufts. Culms erect, 0.6–2 m tall; nodes bearded with pale spreading hairs. Leaf sheaths glabrous or pilose.
LEAVES: Leaf blades linear, 10–40(–50) × 0.4–1 cm, glabrous to hispid, bearded at base; ligule 1–1.5 mm.
INFLORESCENCE: Panicle lanceolate in outline, 15–30 cm, glabrous but with soft hairs at the nodes; primary branches whorled, simple, flexuous, 2–5 cm, lower part bare; racemes borne at branch ends, fragile, composed of 2–4 spikelet pairs; internodes and pedicels brown-ciliate. Sessile spikelet ovate-lanceolate, 3.5–5 mm; lower glume leathery, black-brown at maturity, glossy, glabrous below middle, upper part and margins hispid with brown hairs; upper lemma awnless or awned; awn 1–1.5 cm. Pedicelled spikelet usually staminate, elliptic, 3–3.7 mm, papery, light brown.

Habitat:

Meadows, grassy hillsides.

Distribution:

Native to Australia & New Zealand, Eastern Asia, Melanesia, Southcentral Asia and Southeastern Asia.

Altitude: 300-1400 m

Sorghum nitidum	May be confused with: *Sorghum bicolor*
Up to 2 m tall.	3-5 m tall.

Reported from Indonesia

But no localities known

All populations priority for collection.

References: Flora of China, Volume 22, p600.

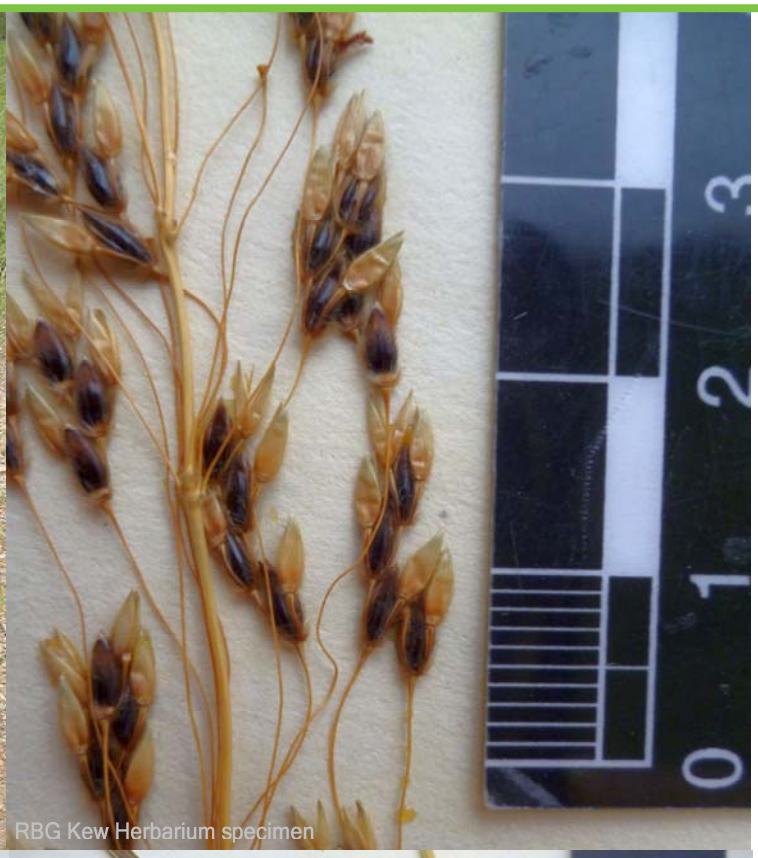
Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

POACEAE

Sorghum nitidum (Vahl) Pers.

Tertiary Gene Pool relative of Sorghum bicolor (L.) Moench

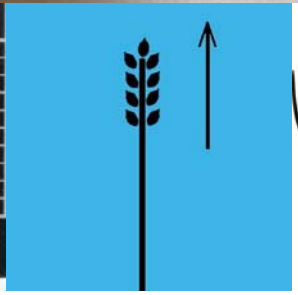

Credit: Wikimedia Commons user Mark Marathon

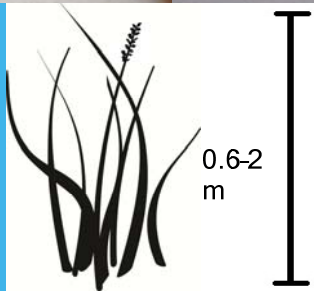

RBG Kew Herbarium specimen


RBG Kew Herbarium specimen


RBG Kew Herbarium specimen

RBG Kew





LC
PRELIM

May - Dec

May - Dec

POACEAE

Sorghum plumosum (R.Br.) P.Beauv.

Gene Pool Tertiary relative of Sorghum bicolor (L.) Moench

HABIT: Perennial 1-3 m high, sometimes shortly rhizomatous, rarely with aerial roots, usually hairy at the base, green or pruinose to glaucous. Culms to 6 mm diam., 4-5 noded; nodes glabrous or pubescent, sometimes (especially the upper ones) bearded.
LEAVES: Sheaths hirsute with simple and tubercle-based hairs 3-5 mm long or glabrous, usually bearded at the mouth or its margins; blades to 30 cm x 4-12 mm, flat, sometimes loosely folded or terete, long-acuminate to a filiform apex, hirsute on the lower or both surfaces or more often glabrous. Panacle 12.5-32(-45) x 2-4 cm (excluding awns), usually dense; axis compressed upwards or terete, usually glabrous and smooth; branches to 7 cm long, simple (rarely branched), usually 1 - 8-nate, scabrous-hispid, pilose or pubescent in the axils, with prominent pulvini; articulation joint linear to elliptic or linear-obovate, acute to obtuse, acutely oblique. Racemes 2-3.5 cm long.
SPIKELET: Sessile 8-9 (6-11) mm long (including callus), usually elliptic; callus 1.3-2.5 (0.5-4) mm long, shortly pungent or rarely subacute, sometimes straight. Glumes 5-7-nerved, cartilaginous (rarely crustaceous), hirsute (sometimes partly pubescent to glabrous). Awn 5-7 (3-10) cm long, sometimes the column and bristle subequal in length or the column longer. Lodicules 0.4-0.7 mm long and almost as wide. Caryopsis 3.3-4.3 x 1-1.5 mm.

Habitat:

A wide range of habitats including rocky hills and outcrops, coastal dunes, plains, swamps, seasonally flooded levees and other low-lying ground.

Distribution:

Malasia, Australia.

Altitude:

Sorghum plumosum	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

References: Lazarides, M., J. B. Hacker & M. H. Andrew, (199)1. Taxonomy, cytology and ecology of indigenous Australian sorghums.

POACEAE

Sorghum plumosum (R.Br.) P.Beauv.

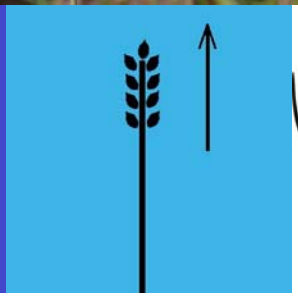
Gene Pool Tertiary relative of Sorghum bicolor (L.) Moench

Russell Cumming

Russell Cumming

Russell Cumming

Russell Cumming



1-3 m

NE

Jan-Sep

Jan-Sep

POACEAE

Sorghum timorense Buse ex de Vriese

Gene Pool Tertiary relative of Sorghum bicolor (L.) Moench

Annual. Culms erect, or geniculately ascending; 30–300 cm long; 7–13 mm diam.; without nodal roots, or with prop roots. Culm-internodes distally pruinose, or glabrous. Culm-nodes constricted, or flush with internodes; pubescent, or bearded. Lateral branches sparse. Leaf-sheaths glabrous on surface, or puberulous. Leaf-sheath oral hairs lacking, or bearded. Ligule an eciliate membrane; 1.3–3.5 mm long. Leaf-blades straight, or curled; 30–60 cm long; 5–10 mm wide. Leaf-blade surface glabrous, or pubescent; with tubercle-based hairs. Leaf-blade apex filiform. Inflorescence a panicle with branches tipped by a raceme. Panicle open; dense, or loose; 15–40 cm long. Primary panicle branches simple; 2–11 cm long. Panicle axis smooth. Panicle branches angular, or flat; scabrous; rough distally; villous; hairy at tip; glabrous in axils, or bearded in axils; with prominent pulvini. Racemes bearing 2–10 fertile spikelets on each. Rhachis fragile at the nodes; ciliate on margins. Spikelets in pairs. Fertile spikelets sessile; companion sterile spikelets pedicelled. Caryopsis with adherent pericarp; ellipsoid, or obovoid; dorsally compressed; 2.6 mm long.

Habitat:

Distribution:

Native to Australia and Indonesia.

Altitude:

Sorghum timorense	May be confused with:

Reported from Indonesia

But no localities known

All populations priority for collection.

References:

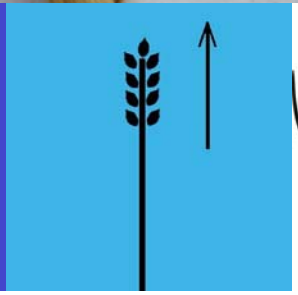
Adapting Agriculture to Climate Change Project, 2016. Indonesia Crop Wild Relatives Seed Collecting Guide. Compiled by Richard Allen, RBG Kew

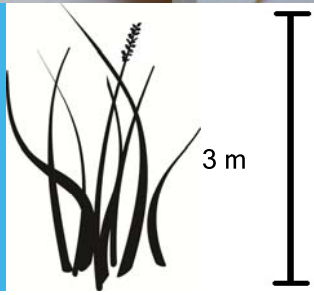
POACEAE

Sorghum timorense Buse ex de Vriese

Gene Pool Tertiary relative of Sorghum bicolor (L.) Moench

No seed image available





LC PRELIM

Mar - Sep

Mar - Sep

Solanum virginianum L.

Tertiary Gene Pool relative of Solanum melongena L.

Yellow-fruit nightshade

HABIT: Herbs erect or creeping, sometimes woody at base, 0.5-0.7 m tall, copiously armed with sturdy, needlelike, broad-based prickles 0.5-2 cm × 0.5-1.5 mm, pubescent with 7-9-rayed stellate hairs, overall glabrescent.
LEAVES: Unequal paired; petiole 2-3.5 cm, prickly, with sessile stellate hairs; leaf blade ovate-oblong, 4-9 × 2-4.5 cm, pubescent and prickly along veins, glabrescent, base subcordate or unequal, margin usually 5-9-lobed or pinnately parted, lobes unequal, sinuate, apex acute.
INFLORESCENCE: Elongate racemes 4-7 cm, peduncle unbranched, copiously armed. Pedicel ca. 1 cm.
FLOWER: Calyx campanulate, ca. 1 cm in diam.; lobes oblong, pubescent, prickly. Corolla blue-purple, rotate, 1.4-1.6 × 2.5 cm; lobes ovate-deltate, 6-8 mm, densely pubescent with stellate hairs. Filaments ca. 1 mm; anthers ca. 8 mm. Style ca. 1 cm.
FRUIT: Fruiting pedicel 2-3.6 cm, with prickles and sparse stellate hairs. Fruiting calyx prickly, sparsely pubescent. Berry pale yellow, 1.3-2.2 cm in diam.
SEEDS: Subreniform, ca. 1.5 mm in diam.

Habitat:

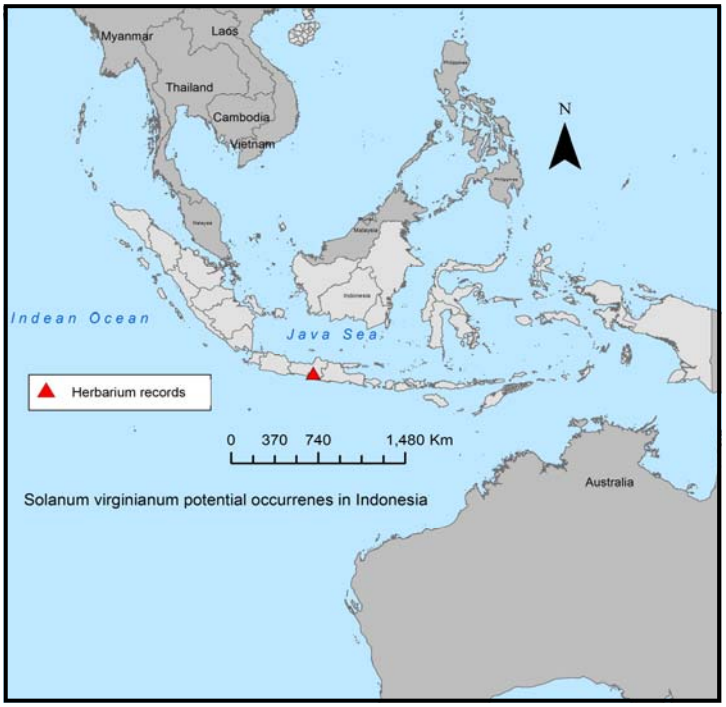
Sandy river beaches.

Distribution:

China, Afghanistan, India, S Japan, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam; Africa, SW Asia, Pacific Islands.

Altitude: 100 -1300 m

Solanum virginianum	May be confused with: *Solanum violaceum*
Prickles straight and needle-like. Berry pale yellow. 	Prickles recurved. Berry orange. 



All populations priority for collection.

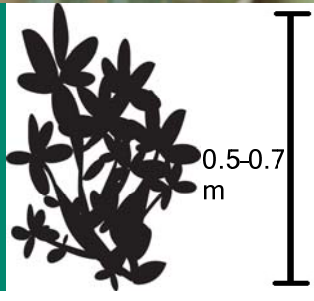
References: Flora of China http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200020613

SOLANACEAE

Solanum virginianum L.

Tertiary Gene Pool relative of Solanum melongena L.

Yellow-fruit nightshade



LC
PRELIM

Nov - May

Jun - Sep

Appendix - Synonyms

Taxon	Sheet	Synonyms
Ipomoea cairica (L.) Sweet	1	Batatas cavanillesii (Roem. & Schult.) G. Don; Batatas senegalensis G. Don; Convolvulus cairicus L.; Convolvulus cavanillesii (Roem. & Schult.) Spreng.; Convolvulus limphaticus Vell.; Convolvulus tuberculatus Desr.; Ipomoea cairica var. cairica; Ipomoea cavanillesii Roem. & Schult.; Ipomoea funaria Larrañaga; Ipomoea heptaphylla Griseb.; Ipomoea palmata Forssk.; Ipomoea pentaphylla Cav.; Ipomoea senegalensi Lam.; Ipomoea stipulacea Jacq.; Ipomoea tuberculata (Desr.) Roem. & Schult.; Ipomoea vesiculosa P. Beauv.
Ipomoea littoralis Blume:	2	Convolvulus littoralis Linnaeus; Convolvulus denticulatus Desrousseaux; Ipomoea denticulata (Desrousseaux) Choisy non R. Brown.
Cajanus crassus (Prain ex King) Maesen:	3	Atylosia crassa Prain ex King; Atylosia volubilis (Blanco) Gamble; Cantharospermum volubile (Blanco) Merr.; Cantharospermum volubilis (Blanco) Merr.
Cajanus goensis Dalzell	4	Atylosia barbata (Benth.) Baker; Atylosia calycina (Miq.) Kurz; Atylosia goensis (Dalzell) Dalzell; Atylosia siamensis Craib; Cantharospermum barbatum (Benth.) Koord.; Dolichos barbatus Benth.; Dunbaria barbata Benth.; Dunbaria calycina Miq.; Dunbaria stipulata Thuan
Cajanus platycarpus (Benth) Maesen	5	Atylosia geminiflora Dalzell; Atylosia platycarpa Benth.; Cantharospermum distans Baker; Cantharospermum geminiflorum (Dalzell) Raizada
Cajanus scarabaeoides (L.) Thouars	6	Atylosia pauciflora (Wight & Arn.) Druce; Atylosia scarabaeoides (L.) Benth.; Cantharospermum pauciflorum Wight & Arn.; Cantharospermum scarabaeoides (L.) Baill.; Cantharospermum scarabaeoideum (L.) Baill.; Dolichos medicagineus Roxb.; Dolichos minutus Wight & Arn.; Dolichos scarabaeoides L.; Rhynchosia biflora DC.; Rhynchosia scarabaeoides (L.) DC.; Stizolobium scarabaeoides (L.) Spreng.
Cajanus volubilis (Blanco) Blanco:	7	Cytisus volubilis Blanco
Vigna hirtella Ridl.	8	No synonyms
Vigna radiata var. sublobata (Roxb.) Verdc.	9	Phaseolus sublobatus Roxb.; Vigna brachycarpa Kurz; Vigna perrieriana R.Vig.
Vigna stipulacea Kuntze	10	No synonyms
Vigna trilobata (L.) Verdc.	11	Dolichos trilobatus L.; Phaseolus trilobatus (L.) Schreb.; Phaseolus trilobatus (L.) Baill.; Phaseolus trilobus Aiton
Musa acuminata subsp. acuminata var. acuminata Colla	12	Musa acuminata var. alasensis Nasution; Musa acuminata var. bantamensis Nasution; Musa acuminata var. breviformis Nasution; Musa acuminata var. cerifera (Backer) Nasution; Musa acuminata var. longipetiolata Nasution; Musa acuminata var. nakaii Nasution; Musa acuminata var. rutilipes (Backer) Nasution; Musa acuminata var. violacea Kurz; Musa acuminata var. zebrina (Van Houtte ex Planch.) Nasution; Musa brieyi De Wild.; Musa cavendishii Lamb.; Musa cavendishii var. hawaiiensis N.G.Teodoro; Musa cavendishii var. pumila N.G.Teodoro; Musa cerifera (Backer) Nakai; Musa × paradisiaca var. pumila G.Forst.; Musa rhinozerotis Kurz; Musa rumphiana Kurz; Musa × sapientum var. pumila (N.G.Teodoro) Merr.; Musa simiarum Miq.; Musa simiarum var. violacea Kurz; Musa zebrina Van Houtte ex Planch.; Musa zebrina f. cerifera Backer; Musa zebrina f. rutilipes Backer
Musa acuminata subsp. halabanensis (Meijer) M.Hotta	13	Musa acuminata var. halabanensis (Meijer) Nasution; Musa halabanensis Meijer
Musa acuminata subsp. malaccensis (Ridl.) N.W.Simmonds	14	Musa acuminata var. flava (Ridl.) Nasution; Musa acuminata var. malaccensis (Ridl.) Nasution; Musa flava Ridl.; Musa malaccensis Ridl.
Musa acuminata var. alasensis Nasution	15	Musa acuminata Colla
Musa acuminata var. breviformis Nasution	16	Musa acuminata Colla
Musa acuminata var. cerifera (Backer) Nastion	17	Musa acuminata Colla
Musa acuminata var. microcarpa (Becc.) Nasution	18	Musa acuminata var. microcarpa (Becc.) Nasution; Musa microcarpa Becc.
Musa acuminata var. nakaii Nasution	19	Musa acuminata Colla

Appendix - Synonyms

Musa acuminata var. rutilipes (Backer) Nasution	20	Musa acuminata Colla
Musa acuminata var. sumatrana (Becc.) Nasution	21	Musa sumatrana Becc.
Musa acuminata var. tomentosa (K.Schum.) Nasution	22	Musa tomentosa Warb. ex K.Schum.
Musa acuminata var. zebrina (Van Houtte ex Planch.) Nasution	23	Musa acuminata Colla
Musa balbasiana var. balbasiana Colla	24	No Synonyms
Musa balbasiana var. brachycarpa (Backer) Hakkinen	25	Musa brachycarpa Backer
Musa lolodensis Cheesman	26	No Synonyms
Musa salaccensis Zoll. ex Backer	27	No Synonyms
Musa sanguinea Hook. f.	28	Musa assamica W.Bull
Oryza longiglumis Jansen	29	No Synonyms
Oryza meyeriana var. granulata (Nees & Arn. ex G. Watt) Duist.	30	Oryza meyeriana (Zoll. & Moritzi) Baill..
Oryza meyeriana var. meyeriana (Zoll. & Moritzi) Baill.	31	Oryza meyeriana (Zoll. & Moritzi) Baill..
Oryza nivara S.D.Shama & Shastry Baill.	32	Oryza rufipogon Griff..
Oryza officinalis Wall.	33	Oryza latifolia var. silvatica A.Camus; Oryza malampuzhaensis Krishnasw. & Chandras.; Oryza minuta var. silvatica (E.G.Camus) Veldkamp; Oryza officinalis subsp. malampuzhaenensis (Krishnasw. & Chandras.) Tateoka; Oryza officinalis subsp. malampuzhaensis (Krishnasw. & Chandras.) Tateoka
Oryza ridleyi	34	Oryza stenothyrsus K.Schum.
Oryza schlechteri Pilg.	35	No Synonyms
Sorghum nitidum (Vahl) Pers.	36	Anatherum nitidum (Vahl) Spreng.; Andropogon amboinicus var. nitidus (Vahl) Backer; Andropogon consimilis Steud.; Andropogon dichroanthus Steud.; Andropogon fuscus J.Presl; Andropogon nitidus (Vahl) Kunth; Andropogon pedicellatus Steud.; Andropogon serratus Thunb.; Andropogon serratus var. nitidus (Vahl) Hack.; Andropogon tropicus Spreng.; Chrysopogon fuscus (J.Presl) Trin. ex Steud.; Holcus fauriei Honda Holcus fulvus R.Br.; Holcus fulvus var. nitidus (Vahl) Honda; Holcus fulvus var. piliferus Honda; Holcus nitidus Vahl
Sorghum plumosum (R. Br.) P. Beauv.	37	Andropogon australis subsp. plumosus (R.Br.) Hack.; Holcus plumosus R.Br.; Sarga plumosa (R.Br.) Spangler; Sorghum plumosum var. teretifolium Lazarides
Sorghum timorense (Kunth) Buse	38	Andropogon australis var. timorensis (Kunth) Hack.; Andropogon tropicus var. timorensis Kunth; Sarga timorensis (Kunth) Spangler; Sorghum australiense Garber & Snyder; Sorghum brevicallosum Garber; Sorghum timorense var. villosissimum Jansen
Solanum virginianum L.	39	Solanum mairei H. Lév.; Solanum xanthocarpum Schrad. & H. Wendl.