

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

Kenya



crop wild
relatives

Seed Collecting Guide

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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: Green beans, CREDIT: Neil Palmer/CIAT;

TOP RIGHT: *Solanum mauense*, CREDIT: Maria Vorontsova/RBGKew;

BOTTOM LEFT: Sorghum, CREDIT: Ruth Harker/RBGKew;

BOTTOM RIGHT: Maize, CREDIT: Neil Palmer/CIAT.

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.



MILLENNIUM
SEED BANK
PARTNERSHIP



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

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

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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



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:

Ruth Harker

Collecting Guide Compiler
Conservation Science Department
Herbarium, Library Art & Archives
Royal Botanic Gardens, Kew

Dr Ruth Eastwood

Crop Wild Relatives Project Co-ordinator
Millennium Seed Bank Partnership
Conservation Science Department
Royal Botanic Gardens, Kew

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, Bambara groundnut, Banana, Barley, Bread wheat, Butter bean, Carrot, Chickpea, Common bean, Cowpea, Eggplant, 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 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.

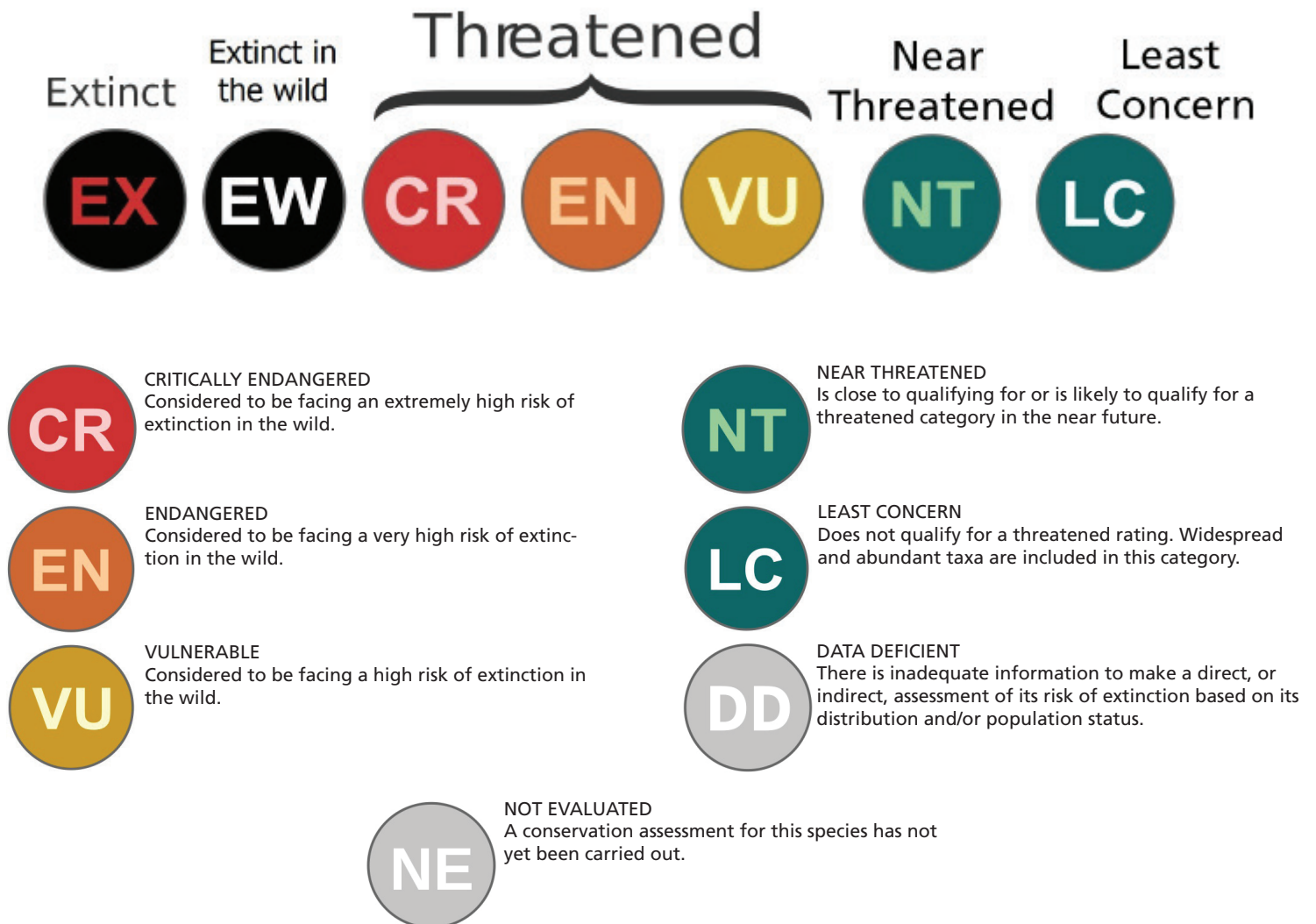
On each species profile, there is a collection of images to help identify the target species, accompanied by a series of symbols :



Conservation Assessments

Conservation Status:

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



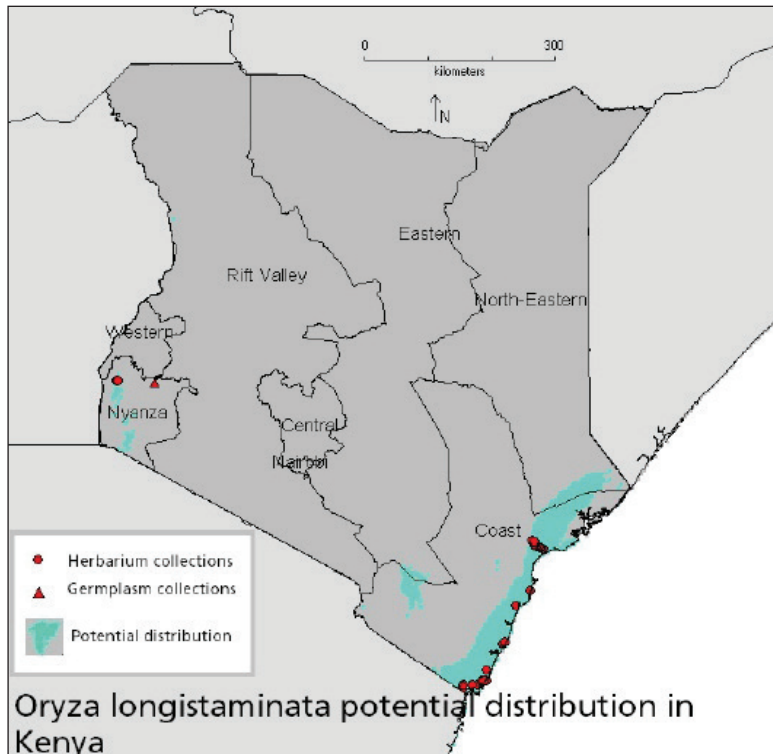
Where a full conservation assessment has not been completed, a preliminary conservation rating may be indicated. Preliminary assessments are produced using specimen locality data and GIS, which calculates two parameters accepted by IUCN as suitable measures of range: namely extent of occurrence (EOO) 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 calculated this is indicated by the word PRELIM:

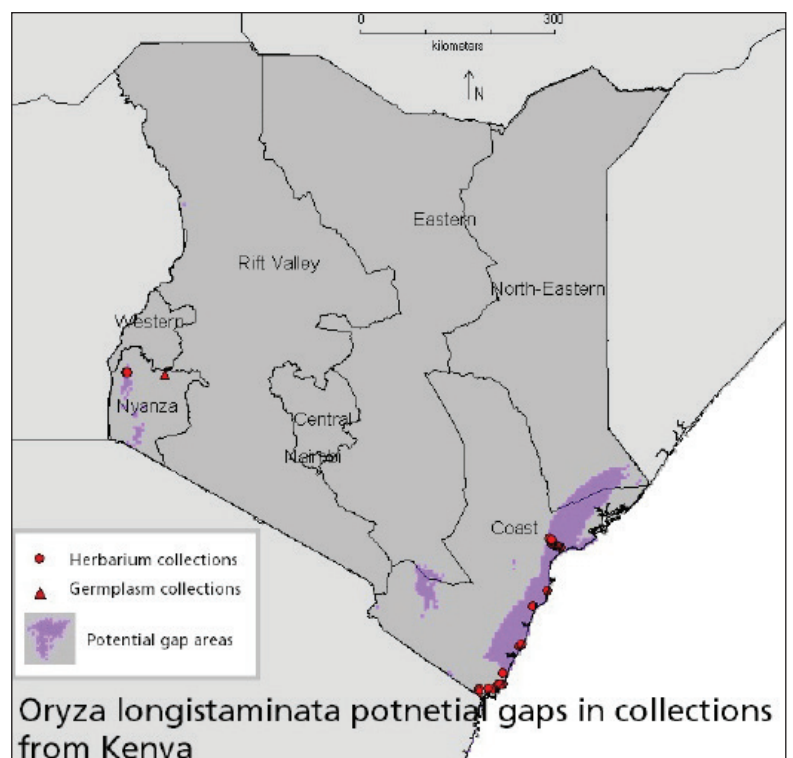


Maps

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 targeted.



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>

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.

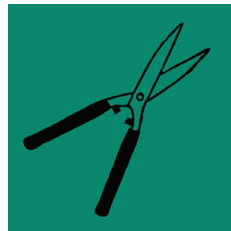


Plucking is particularly suitable when:

- 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.

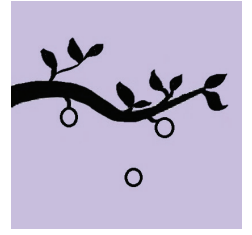


This is a very effective technique when:

- 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:

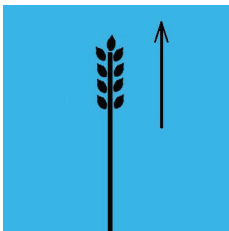
- dehiscent fruits with medium large seeds;
- seeds with irritant plumes (e.g. *Cercocarpus* of the Rosaceae);
- spiny trees such as *Prosopis* (Fabaceae);
- on level, open terrain suitable for tarpaulin use.
- This technique may not be suitable for light, plumed seed from Bombacaceae and Asclepiadaceae, which may be carried away by air currents.



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

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.

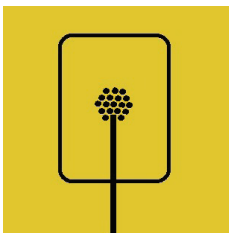


The stripping technique is most suitable for:

- 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 immediately after the field trip.



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

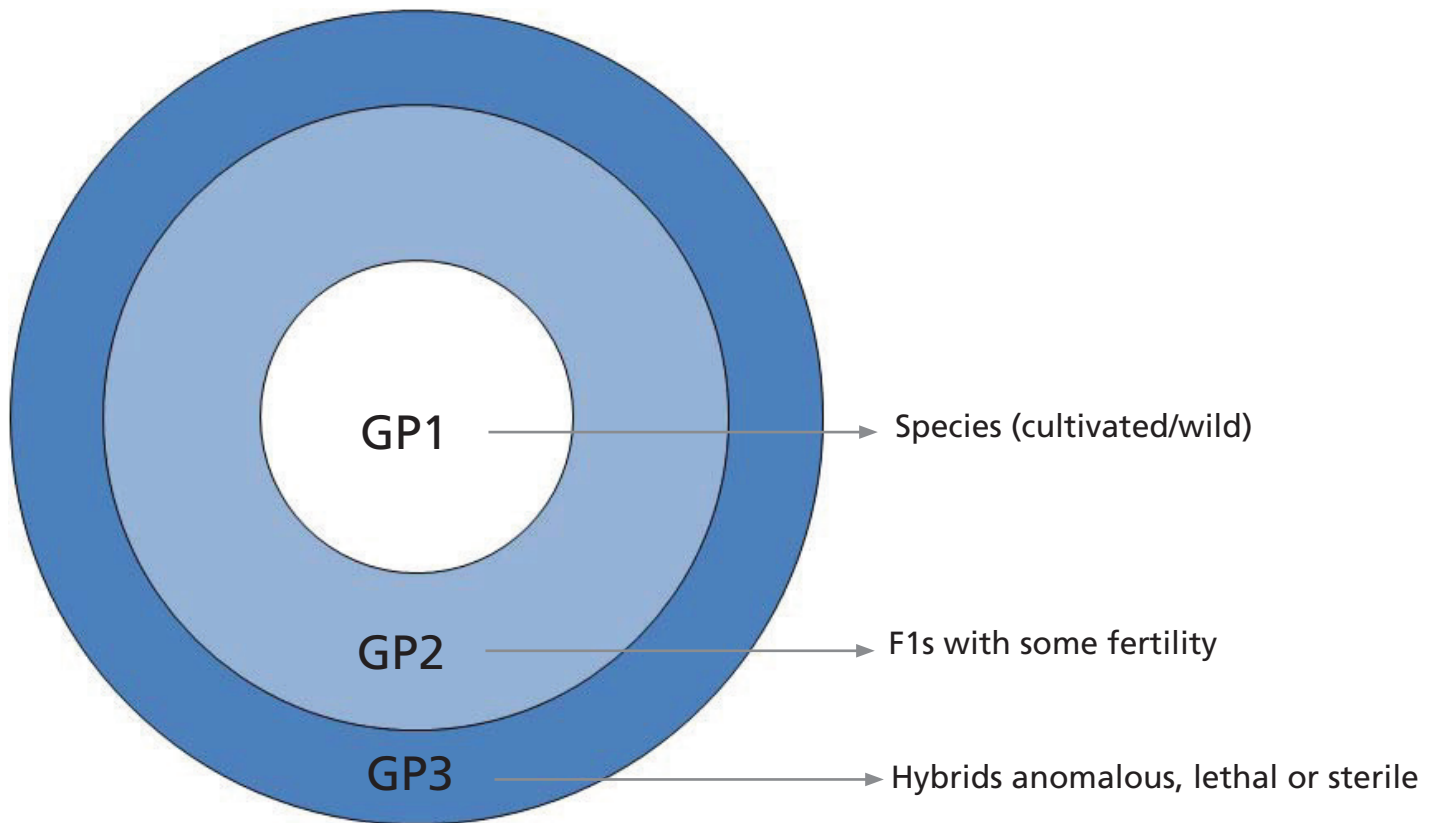
Containers

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.

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

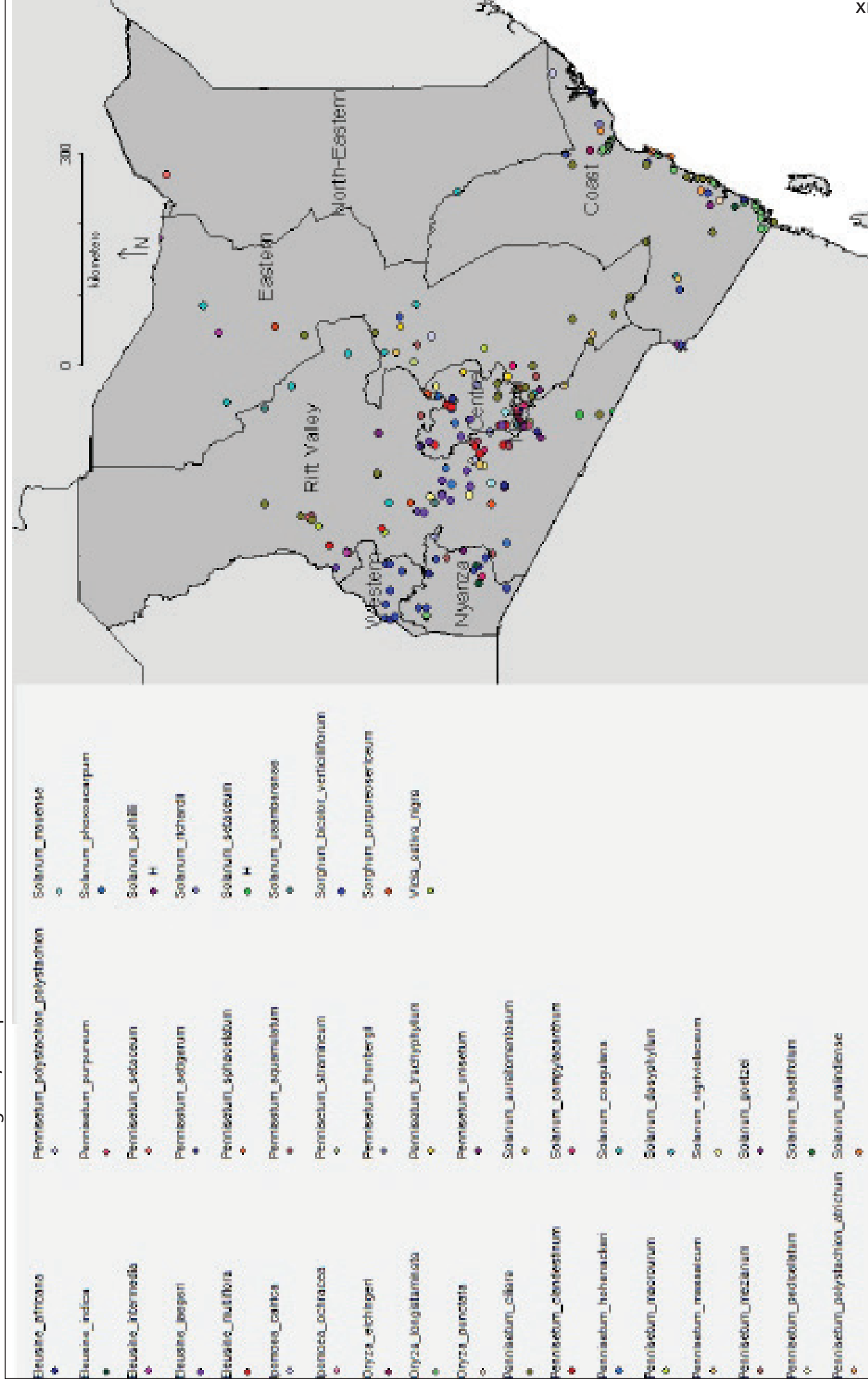
Taxon Group 3 – species in same subgenus as crop

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

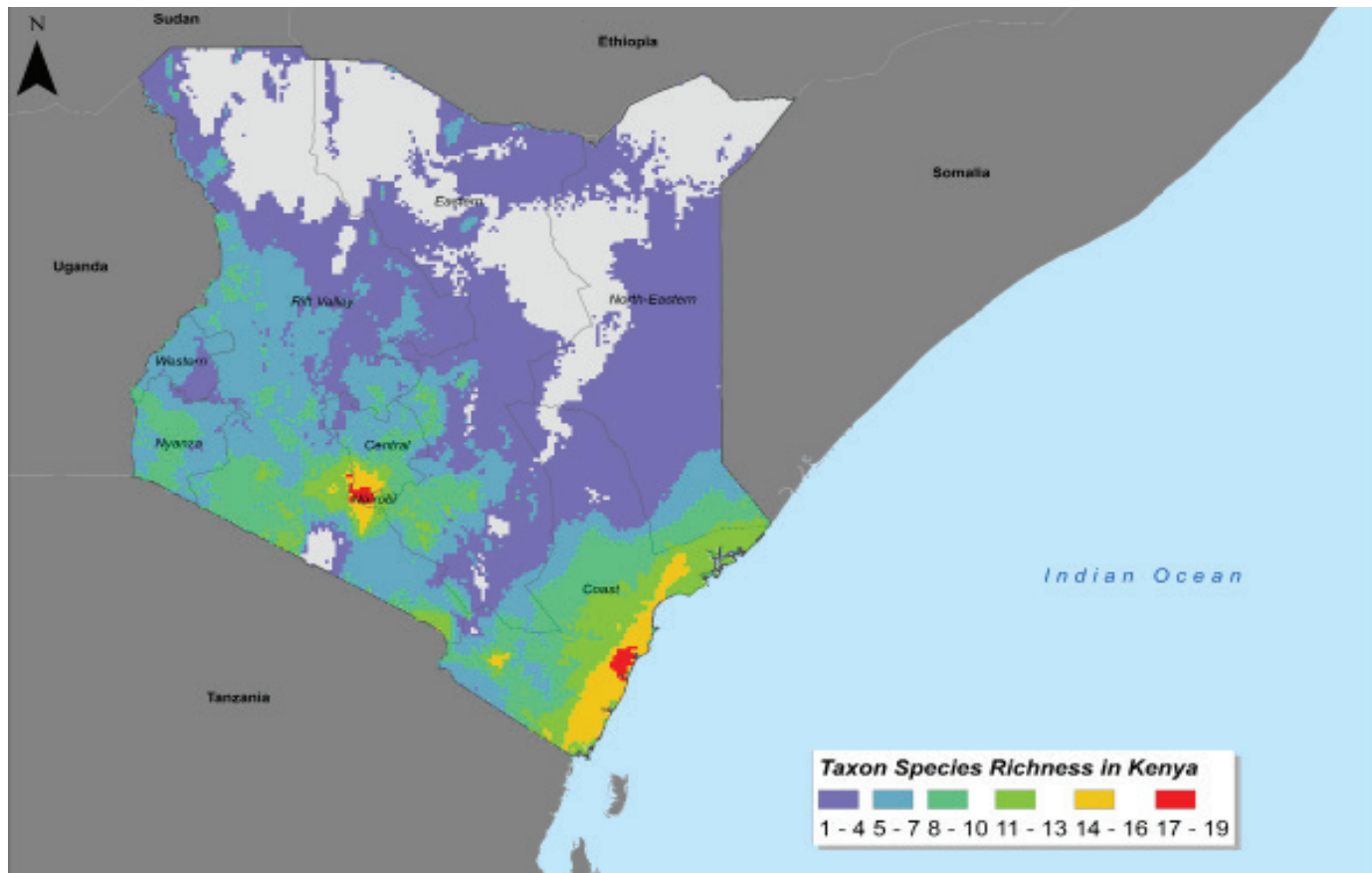
Maxted, N., B.V. Ford-Lloyd, S.L. Jury, S.P. Kell and M.A. Scholten (2006). Towards a definition of a crop wild relative. *Biodiversity and Conservation* 14: 1-13.

Country Maps

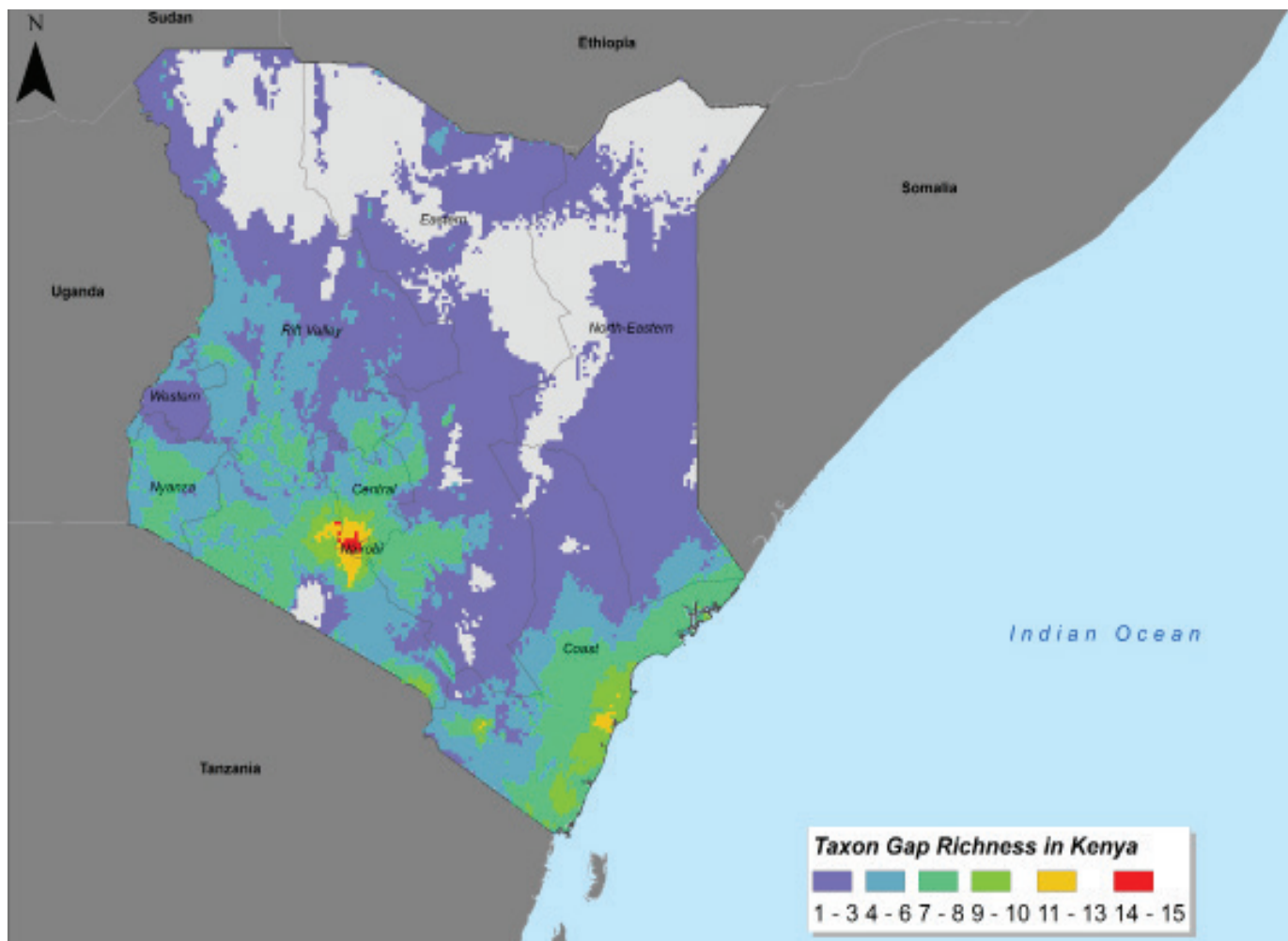
Occurrences of all taxa in this guide, as a point distribution



Species richness



Priority areas for collection



Species in this guide

Family	Taxon	Genepool	Collection Priority	Sheet
Convolvulaceae	<i>Ipomoea cairica</i>	Sweet Potato	Low	1
Convolvulaceae	<i>Ipomoea ochracea</i>	Sweet Potato	Low	2
Leguminosae	<i>Vicia sativa subsp. nigra</i>	Vetch	Low	3
Musaceae	<i>Ensete ventricosum</i>	Banana	Low	4
Poaceae	<i>Eleusine africana</i>	Finger millet	High	5
Poaceae	<i>Eleusine indica</i>	Finger millet	High	6
Poaceae	<i>Eleusine intermedia</i>	Finger millet	High	7
Poaceae	<i>Eleusine jaegeri</i>	Finger millet	Low	8
Poaceae	<i>Eleusine multiflora</i>	Finger millet	Low	9
Poaceae	<i>Oryza eichingeri</i>	Rice	Low	10
Poaceae	<i>Oryza longistaminata</i>	Rice	Low	11
Poaceae	<i>Oryza punctata</i>	Rice	Low	12
Poaceae	<i>Pennisetum ciliare</i>	Pearl millet	Low	13
Poaceae	<i>Pennisetum clandestinum</i>	Pearl millet	Low	14
Poaceae	<i>Pennisetum hohenackeri</i>	Pearl millet	Low	15
Poaceae	<i>Pennisetum macrourum</i>	Pearl millet	Low	16
Poaceae	<i>Pennisetum massaicum</i>	Pearl millet	Low	17
Poaceae	<i>Pennisetum mezianum</i>	Pearl millet	Low	18
Poaceae	<i>Pennisetum pedicellatum</i>	Pearl millet	Low	19
Poaceae	<i>Pennisetum pennisetiforme</i>	Pearl millet	Low	20
Poaceae	<i>Pennisetum polystachion subsp. atrichum</i>	Pearl millet	Low	21
Poaceae	<i>Pennisetum polystachion subsp. polystachion</i>	Pearl millet	Low	22
Poaceae	<i>Pennisetum purpureum</i>	Pearl millet	High	23
Poaceae	<i>Pennisetum setaceum</i>	Pearl millet	Low	24
Poaceae	<i>Pennisetum setigerum</i>	Pearl millet	Low	25
Poaceae	<i>Pennisetum sphacelatum</i>	Pearl millet	Low	26
Poaceae	<i>Pennisetum squamulatum</i>	Pearl millet	Low	27
Poaceae	<i>Pennisetum stramineum</i>	Pearl millet	Low	28
Poaceae	<i>Pennisetum thunbergii</i>	Pearl millet	Low	29

Species in this guide

Family	Taxon	Genepool	Collection Priority	Sheet
Poaceae	<i>Pennisetum trachyphyllum</i>	Pearl millet	Low	30
Poaceae	<i>Pennisetum unisetum</i>	Pearl millet	Low	31
Poaceae	<i>Sorghum bicolor subsp. verticilliflorum</i>	Sorghum	High	32
Poaceae	<i>Sorghum purpureosericeum</i>	Sorghum	High	33
Solanaceae	<i>Solanum aureitomentosum</i>	Eggplant	High	34
Solanaceae	<i>Solanum campylacanthum</i>	Eggplant	High	35
Solanaceae	<i>Solanum coagulans</i>	Eggplant	Low	36
Solanaceae	<i>Solanum dasyphyllum</i>	Eggplant	High	37
Solanaceae	<i>Solanum goetzei</i>	Eggplant	Low	38
Solanaceae	<i>Solanum hastifolium</i>	Eggplant	High	39
Solanaceae	<i>Solanum malindiense</i>	Eggplant	High	40
Solanaceae	<i>Solanum mauense</i>	Eggplant	High	41
Solanaceae	<i>Solanum nigriviolaecum</i>	Eggplant	High	42
Solanaceae	<i>Solanum phoxocarpum</i>	Eggplant	Low	43
Solanaceae	<i>Solanum polhillii</i>	Eggplant	Low	44
Solanaceae	<i>Solanum richardii</i>	Eggplant	Low	45
Solanaceae	<i>Solanum setaceum</i>	Eggplant	Low	46
Solanaceae	<i>Solanum usambarensense</i>	Eggplant	Low	47

Taxon	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<i>Solanum campylacanthum</i>												
<i>Solanum coagulans</i>												
<i>Solanum dasyphyllum</i>												
<i>Solanum goetzei</i>												
<i>Solanum hastifolium</i>												
<i>Solanum malindiense</i>												
<i>Solanum mauense</i>												
<i>Solanum nigriviolaceum</i>												
<i>Solanum phoxocarpum</i>												
<i>Solanum polhillii</i>												
<i>Solanum richardii</i>												
<i>Solanum setaceum</i>												
<i>Solanum usambarense</i>												

KEY



Species in flower



Species in fruit

data gathered from literature and herbarium specimens

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. **INFLORESCENCES** axillary, 1-3 flowered. Calyx 0.4-0.8 cm long; 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. **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:

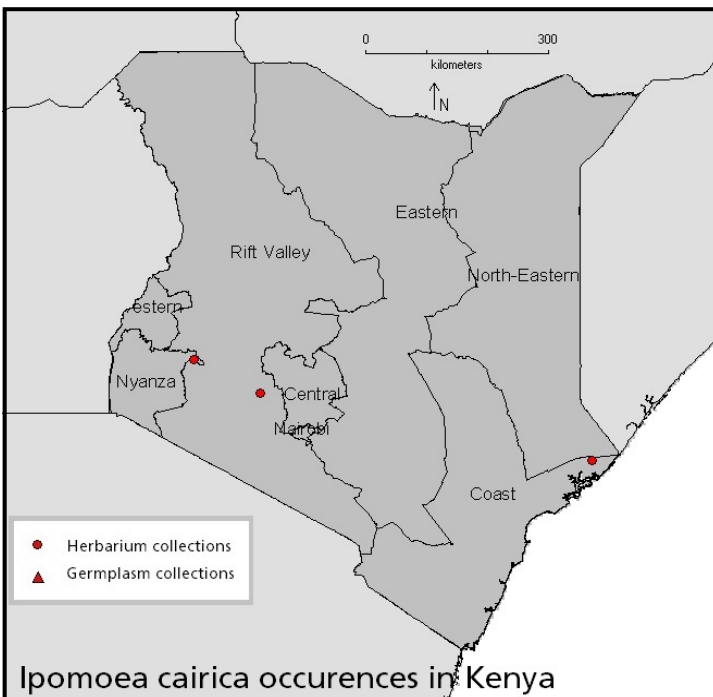
A common inhabitant of swampy grassland, riverine edges and roadsides, where it may cover extensive areas.

Distribution:

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

Altitude: Up to 1650 m

<i>Ipomoea cairica</i>	May be confused with: <i>Ipomoea batatas</i>
Deeply 5(-7)-lobed leaves.	Leaves entire.



All populations priority for collection

No accessions from Kenya listed on Germplasm Resources Information Network (GRIN) [online database] for this taxon

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

CONVOLVULACEAE

Wild relative of sweet potato

Ipomoea cairica (L.) Sweet

Morning glory, Mile-a-minute vine



BT Wursten/ Flora of Mozambique website



BT Wursten/ Flora of Mozambique website



BT Wursten/ Flora of Mozambique website



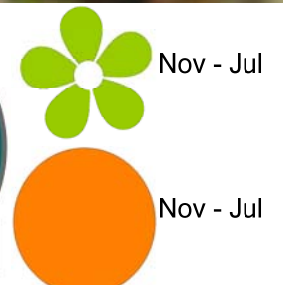
Sheldon Navie



Steve Hurst @ USDA-NRCS PLANTS Database



Up to 5 m



HABIT: Vines, stems twining, herbaceous, up to ca. 3 m long, glabrous.
LEAVES: Leaf blades chartaceous, cordate, 3.5-6 cm long, 3-5 cm wide, glabrous, margins entire, apex narrowly acuminate to acute, mucronulate, petioles up to 8 cm long. **INFLORESCENCES:** Flowers solitary, axillary, or few in cymes, pedicels 5-40 mm long; sepals unequal, inner ones ovate, larger than outer ones, ca. 6 mm long, ca. 3 mm wide, apex acute, base rounded, outer ones ca. 5 mm long, ca. 2.5 mm wide, apex acuminate, mucronate, base rounded, all sepals glabrous, minutely verrucose, margins scarious; corolla yellow, purple within tube, funnelform, 2.5-4 cm long. **FRUIT:** Capsules brown, ovoid, 1.0-1.5 cm long, 0.5-0.7 cm in diameter, glabrous. Seeds often 4, sometimes fewer, black, globose to ovoid, ca. 4 mm in diameter, glabrous to puberulent.



Habitat:

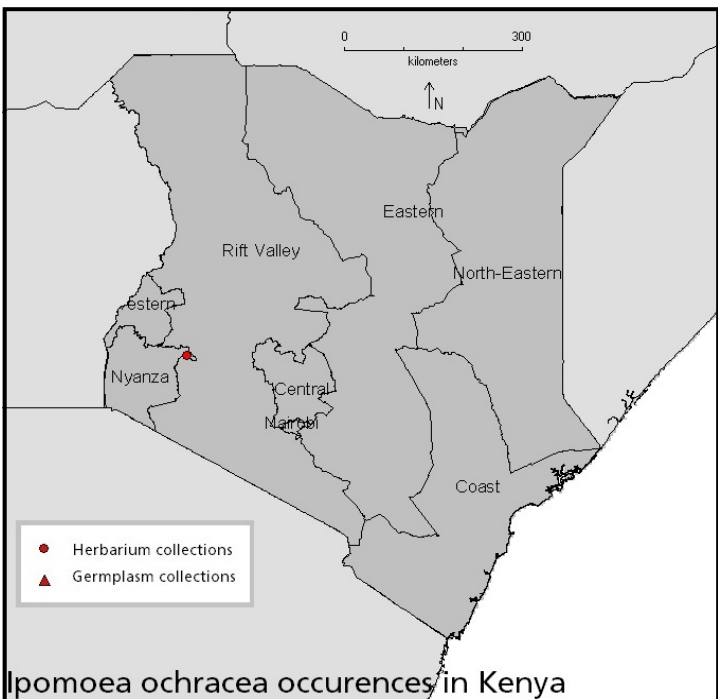
Grows in lower elevation, mesic (moderately wet) disturbed areas.

Distribution:

Found throughout the tropics.

Altitude: Up to 600 m

<i>Ipomoea ochracea</i>	May be confused with: <i>Ipomoea obscura</i>
Corolla bright yellow. 	Corolla white or pale yellow. 



All populations priority for collection

No accessions from Kenya listed on Germplasm Resources Information Network (GRIN) [online database] for this taxon

References: Wagner, Warren L./Herbst, Derral R./Sohmer, S. H. 1999. Manual of the flowering plants of Hawaii. Revised edition. Material for seed image provided by IBPGR.

CONVOLVULACEAE

Wild relative of sweet potato

Ipomoea ochracea (Lindl.) G. Don
Yellow morning glory



Credit: Forest & Kim Starr



Credit: Forest & Kim Starr

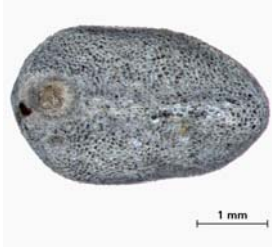


Credit: Forest & Kim Starr



Credit: Forest & Kim Starr

Gemma Toothill (c) Board of Trustees RBG Kew



3 m



All year

All year

HABIT: Annual with scrambling and climbing growth habit, 10-70 cm long. Stems arising from the base hollow, squarish in cross-section. Slender taproot system with numerous lateral branches.

LEAVES: compound pinnate with 3-8 pairs of opposite leaflets and 2-3 terminal tendrils. Leaflets narrowly oblong, square at the apex and with a small projecting mid rib, usually less than 10 mm broad. Stipules small and divided.

INFLORESCENCES: flowers borne singly or in pairs on short peduncles arising at the base of the leaves, mainly blue to purple but sometimes white. Calyx 7-12 mm, teeth c. 2.5 - 8 mm; corolla 10 - 20 mm.

FRUIT: pods narrow. Seeds 4-12 per fruit, flattened, black to greyish in colour, sometimes marbled, 2.5-4 mm.

Habitat:

Agricultural and disturbed land, margins of woodland.

Distribution:

Common pan-temperate and semi-tropical weed.

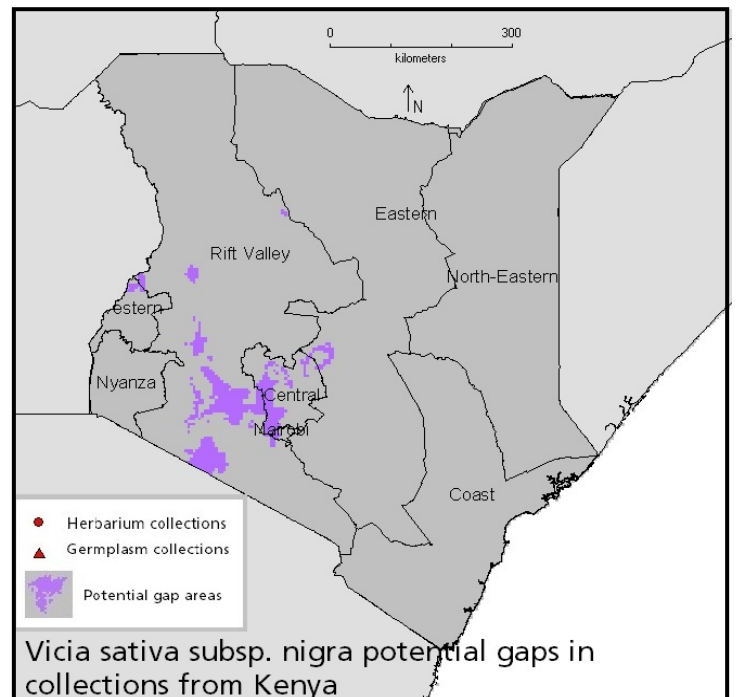
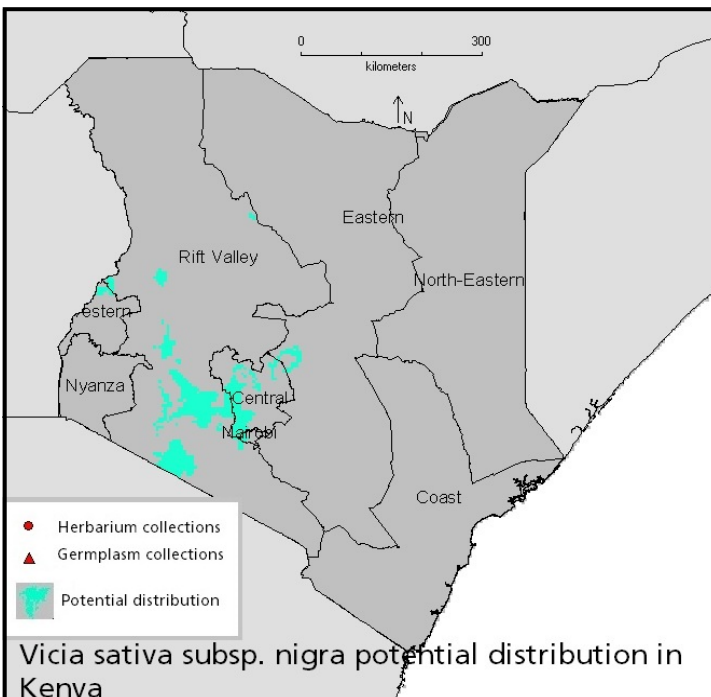
Altitude: 0 - 2900 m

Vicia sativa subsp. *nigra*

May be confused with:
Vicia sativa subsp. *sativa*

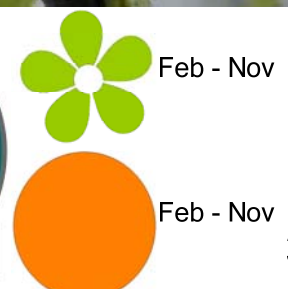
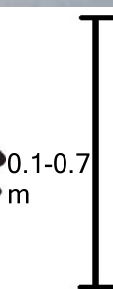
Pod black or brownish black, not contracted between seeds, 25-55 × (2.5-)-3-6 mm; usually glabrous.

Pod brown or yellow-brown, contracted between seeds, 35-70 × 6-11 mm, usually hairy.



References: Macted, N. (1995) An ecogeographical Study of *Vicia* subgenus *Vicia*.; FAO Grassland Species Profiles <http://www.fao.org/AG/agp/agpc/doc/Gbase/>; Davis, P.H. Flora of Turkey (3) p139

These two images have been redacted due to copyright restrictions. To request access to an unabridged version of this guide, please contact the Seed Bank Librarian at msblib@kew.org



HABIT: Giant herb arising from a short upright rhizome. Pseudostems formed of overlapping leaf-bases, 1.5 - 7 (9) m tall. **LEAVES:** blades forming a large rosette, oblong-lanceolate, to 5 x 1.5 m, midrib red or green. **INFLORESCENCE** appearing from centre of rosette, pendulous when mature. Bracts of male part of inflorescence up to 55 x 18 cm, each subtending 30-40 flowers. Calyx of male flowers 3-lobed, lobes variable in length, 3.5 - 5.5 cm long, white with orange tips; corolla serrate-apiculate, 1-1.5 x 1-1.7 cm, apiculum 0.3 - 1.3 cm or occasionally absent; stamens 5, 3-5 cm long, anthers violet to purple, filaments white; staminode present or not, needle like 0.1-1 cm long; style needle like, 1-2 cm long. Bracts of female or hermaphrodite part of inflorescence persistent, partially covering fruits. Calyx spathaceous, 3-lobed, sometimes with 1-2 smaller extra narrow pointed lobes attached to it internally; petals 1-3, variable in shape with 2 wings and an apiculum up to 1.5 cm long; stamens 0-5, 3.5 cm long, coloured as in male flowers; staminodes variable according to number of stamens present; style 2.5 - 4 cm long, terete, with a large capitate stigma. **FRUIT:** 5-20 in axil of each bract, long-obovoid, (7)8-15 x 3-4.5 cm, orange at maturity. Seeds irregularly subspherical, 1.2-2.3 x 1.2-1.8 x 0.9-1.6 cm, striate to smooth, hard, black, embedded in orange pulp.

Habitat:

Montane and submontane forests, often apparently benefiting from disturbance.

Distribution:

Tropical Africa.

Altitude: 800 - 2250 m

<i>Ensete ventricosum</i>	May be confused with: <i>Ensete gillettii</i> or <i>E. homblei</i>
5-9 m tall.	Usually less than 3 m tall.

Reported from
Kenya, but
no localities
known.

References:

Ensete ventricosum (Welw.) Cheesman
Abyssinian banana



User: B. B. B. via wikimedia commons



User Rillke via wikimedia commons



User: Rotational via wikimedia commons

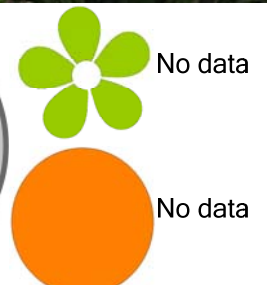


User: Daderot via wikimedia commons

No seed image available



7 m



HABIT: Annual, plants growing in tight groups. Culms robust, 40-90 cm tall, erect or geniculate ascending, often rooting at the lower nodes. **LEAVES:** mostly basal, leaf blades 5-35 cm × 3-6 mm, usually folded. Ligule with a definite ciliate fringe. **INFLORESCENCES** racemose 3-17, 3.5-15.5 cm × 4-7 mm. Spikelets solitary, 4.6-7.8 mm long, elliptic, appressed, disarticulating. Glumes persistent, shorter than spikelets, the inferior 2-3.2(3.9) mm long, the superior 3-4.7 mm long. Lemmas 3.7-4.9 mm long, lanceolate in profile, acute to subacute. **FRUIT:** Caryopsis 1.2-1.6 mm long, oblong to broadly oblong, the surface uniformly granular and obliquely ridged.

Habitat:

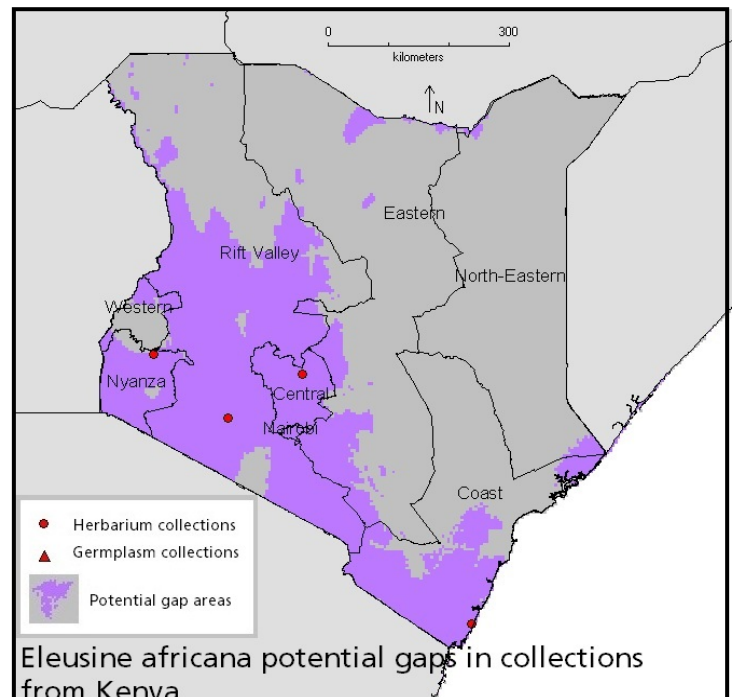
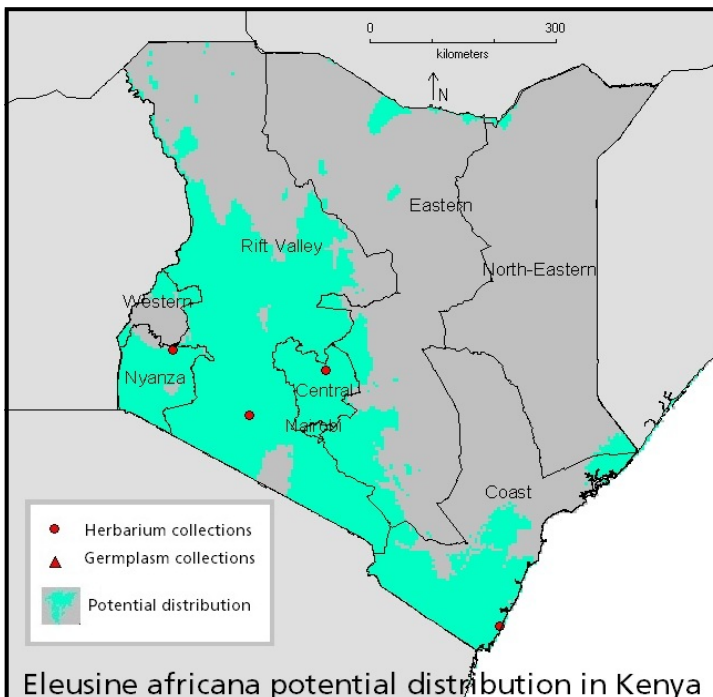
Usually in damp sandy soils beside rivers and dams, and in disturbed ground at roadsides; also in cultivated ground, often as a weed in crops, especially *E. coracana*

Distribution:

Arabia and Africa, mainly in the uplands of the east and south.

Altitude: 500- 2200 m

<i>Eleusine africana</i>	May be confused with: <i>Eleusine indica</i>
Larger spikelets (4.6 - 7.8 mm) and rounded grains.	Smaller spikelets (3-5mm), oblong grains.



References: Phillips, S. (1995) Poaceae. In: Flora of Ethiopia and Eritrea. Volume 7, p 139; T. Cope (1999) Gramineae. In: Flora Zambesiaca Volume 10 part:2; FAO Grassland Index; Hyde, M.A., Wursten, B.T. & Ballings, P. (2012). Flora of Zimbabwe: Species information: *Eleusine africana*.



Credit: RBG Kew



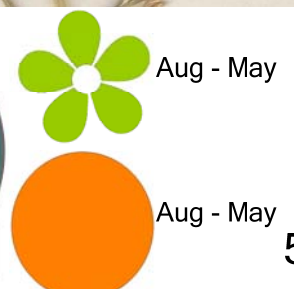
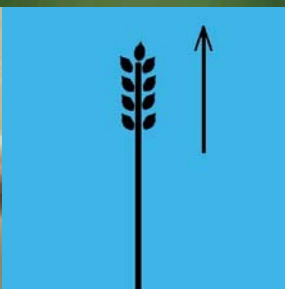
Credit: Petra Ballings



Credit: Petra Ballings



Credit: RBG Kew



Relative of Finger millet - *Eleusine coracana* (L.) Gaertn.

HABIT Annual; caespitose. Culms geniculately ascending, or decumbent; slender; 15-85 cm long. **LEAVES** mostly basal. Leaf-sheaths keeled; outer margin hairy. Leaf-blades conduplicate; 5-35 cm long; 2.5-6 mm wide. **INFLORESCENCES:** composed of racemes. Racemes 1-10(-17); single (rarely), or digitate; unilateral; 3.5-15.5 cm long; 3-3.5 mm wide. Spikelets comprising 3-9 fertile florets; with diminished florets at the apex. Spikelets elliptic; laterally compressed; 3-5 mm long; breaking up at maturity. Glumes persistent; similar; shorter than spikelet. **FLORETS:** Fertile lemma lanceolate in profile; 2.1-3.6 mm long; membranous; 3 -veined (excluding subsidiaries). Lodicules 2; cuneate; fleshy. **FRUIT:** Caryopsis with free soft pericarp; ellipsoid; isodiametric; trigonous; concealed by floret; 1-1.3 mm long; black; striate.

Habitat:

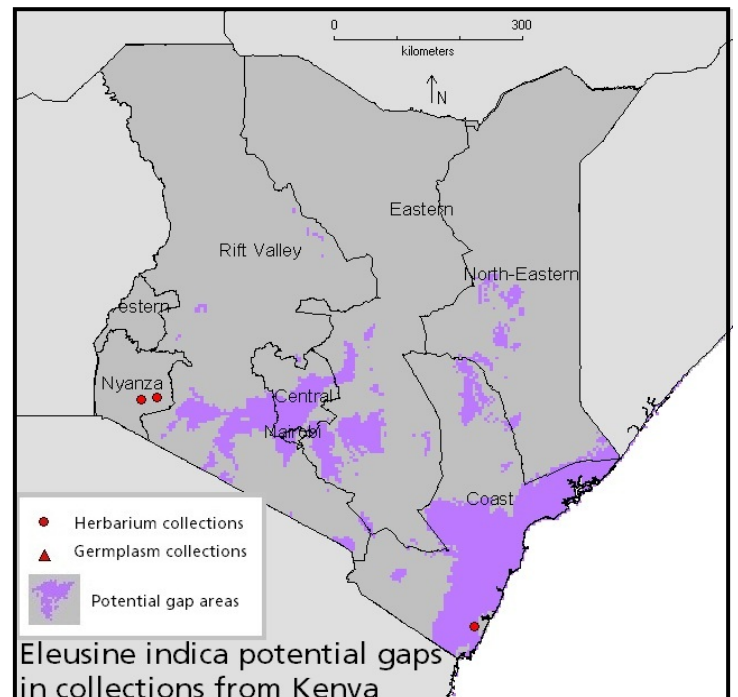
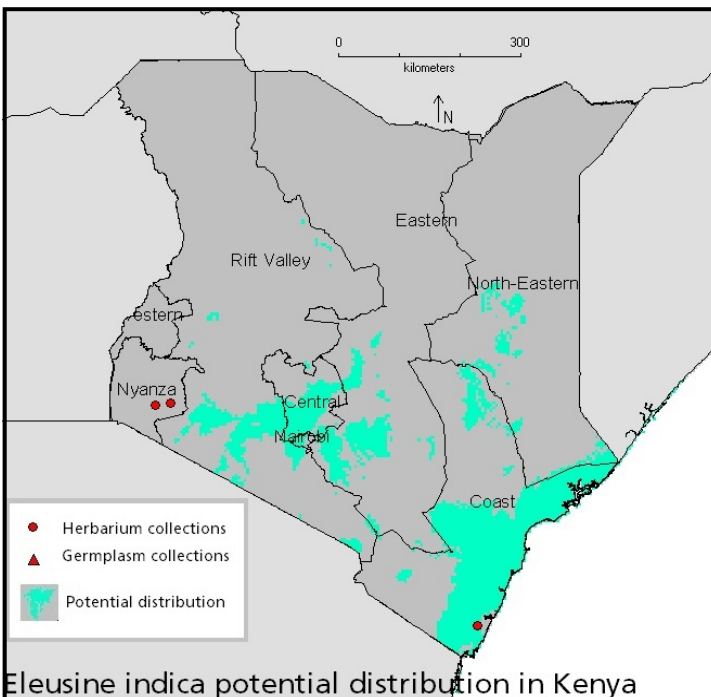
Found in moist as well as marshy areas, puddles, shallow ponds, fields, river and stream edges, ditches, canals etc.

Distribution:

Widespread throughout Africa, North and Central America, Southern Europe, Asia and Australasia.

Altitude: 0 - 2000 m

<i>Eleusine indica</i>	May be confused with: <i>Eleusine africana</i>
Smaller spikelets (3-5mm), oblong grains.	Larger spikelets (4.6 - 7.8 mm) and rounded grains.



References: Juffe Bignoli, D. 2011. IUCN Conservation assessment: <http://www.iucnredlist.org/details/177359/0>; Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>. [accessed 18th April 2013; 12:15 GMT]

Relative of Finger millet - *Eleusine coracana* (L.) Gaertn.



USDA-NRCS PLANTS Database / Hitchcock, A.S. (rev. A. Chase). 1950



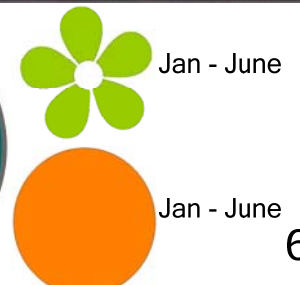
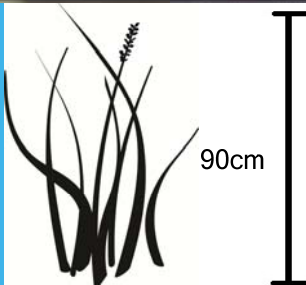
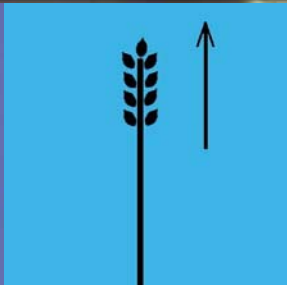
Credit: Frances Cook/RBGKew



Credit: Harry Rose



Credit: Harry Rose



Primary Genepool of *Eleusine coracana* subsp. *coracana*

HABIT: Perennial, plants growing in tight groups. Rhizomes short, ascending. Culms 60-120 cm long, erect or geniculately ascending. Culm-internodes elliptical in section. Lateral branches sparse. **LEAVES:** Leaf blades flat or folded, 15-50 cm long; 4-7 mm wide, surface pilose, hairy adaxially, margins smooth (except near tip), glabrous, apex acute. Ligule a ciliolate membrane, 0.6-1 mm long. **INFLORESCENCES** racemose, composed of 4-15 spikes, digitate, spreading or ascending, one-sided, 5-12 cm long. Central inflorescence axis 0-7 cm long. Rhachis wingless, flattened. Spikelet packing broadside to rhachis, regular, 2-rowed. Spikelets appressed, solitary. Fertile spikelets sessile.

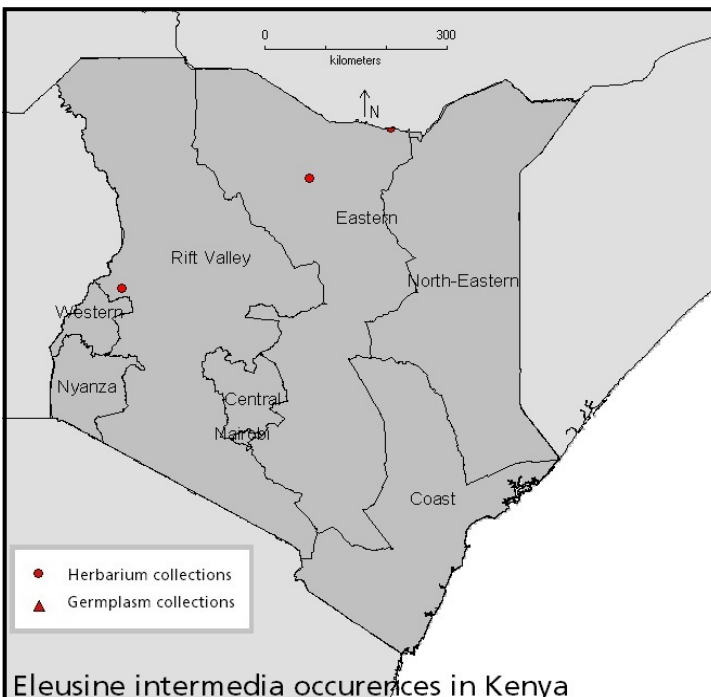
FRUIT: Caryopsis with free soft pericarp, ellipsoid, trigonous, 1.2-1.3 mm long, black, striate.

Habitat:

Deciduous bushland.

Distribution:

Northeast tropical Africa and east tropical Africa.

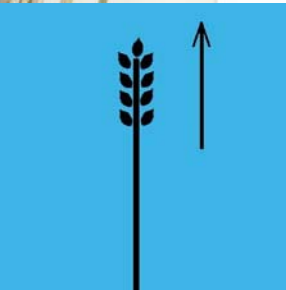
Altitude: 1150 - 1700 m*Eleusine intermedia*May be confused with:
*Eleusine floccifolia*Leaf margins without hairs.
Caryopsis finely striate.Tufts of soft white hairs scattered along
the leaf margins. Caryopsis minutely
rugulose, not striate.All populations priority
for collectionNo accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 13 August 2012]; Ibrahim, K. M., Kabuye, C. H. S. 1988. An illustrated manual of Kenya grasses. Rome, FAO. 765 pp.; Neves SS, et al. (2005) Phylogeny of *Eleusine* Mol Phylogenet Evol 35:395-419

Primary Genepool of *Eleusine coracana* subsp. *coracana*



No seed image available



0.6-1.2 m

LC PRELIM

No data
No data

Provisional Gene Pool Tertiary relative of *Eleusine coracana* (L.) Gaertn.

HABIT: Perennial; caespitose; clumped densely. Culms erect; 40-130 cm long. Culm-internodes elliptical in section. Leaf-sheaths keeled. Ligule a ciliate membrane; 0.15-0.25 mm long. **LEAVES:** blades 20-45 cm long; 4-7 mm wide; stiff; light green. Leaf-blade surface glabrous. Leaf-blade margins cartilaginous; scabrous; glabrous. Leaf-blade apex attenuate. **INFLORESCENCE** composed of racemes. Racemes 2-13; digitate; distant; spreading, or ascending; unilateral; 4-17 cm long. Central inflorescence axis 3-8 cm long. Rhachis wingless; flattened. Spikelet packing broadside to rhachis; regular; 2-rowed. Spikelets appressed; solitary. Fertile spikelets sessile. Fertile Spikelets comprising 3-9 fertile florets; with diminished florets at the apex. Spikelets oblong; laterally compressed; 6-10 mm long; breaking up at maturity. Glumes persistent; similar; shorter than spikelet. Florets: Fertile lemma oblong in profile; 3.6-5.2 mm long; membranous; dark green; 3-veined. Lemma midvein simple. Lemma surface scaberulous; rough above. Lemma margins eciliate, or pilose (obscurely). Lemma apex acute. Palea 0.9-1 length of lemma; 2-veined. Palea keels scabrous. Apical sterile florets resembling fertile though underdeveloped. **FLOWER:** Lodicules 2; cuneate; fleshy. **FRUIT:** Caryopsis with free soft pericarp; ellipsoid, or oblong; dorsally compressed; trigonous; 1.6-1.7 mm long; black; rugose.

Habitat:

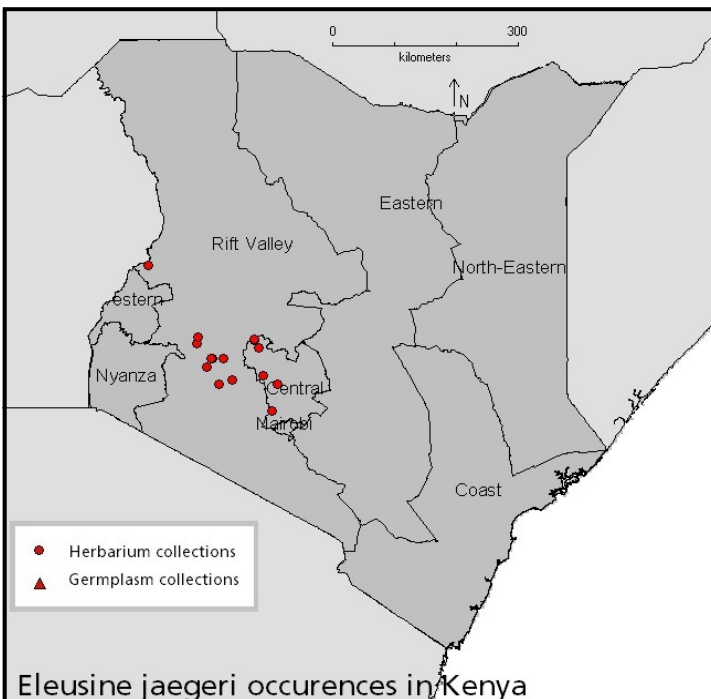
Upland grassland and clearings often common on abandoned cattle kraals.

Distribution:

Africa: northeast tropical and east tropical.

Altitude: 1800 - 3300 m

<i>Eleusine jaegeri</i>	May be confused with: <i>Other Eleusine species</i>
Bunched tussocky perennial, with the lower part of culms covered with long, hard overlapping leaf sheaths.	More tufted habits, without long hard overlapping leaf sheaths.

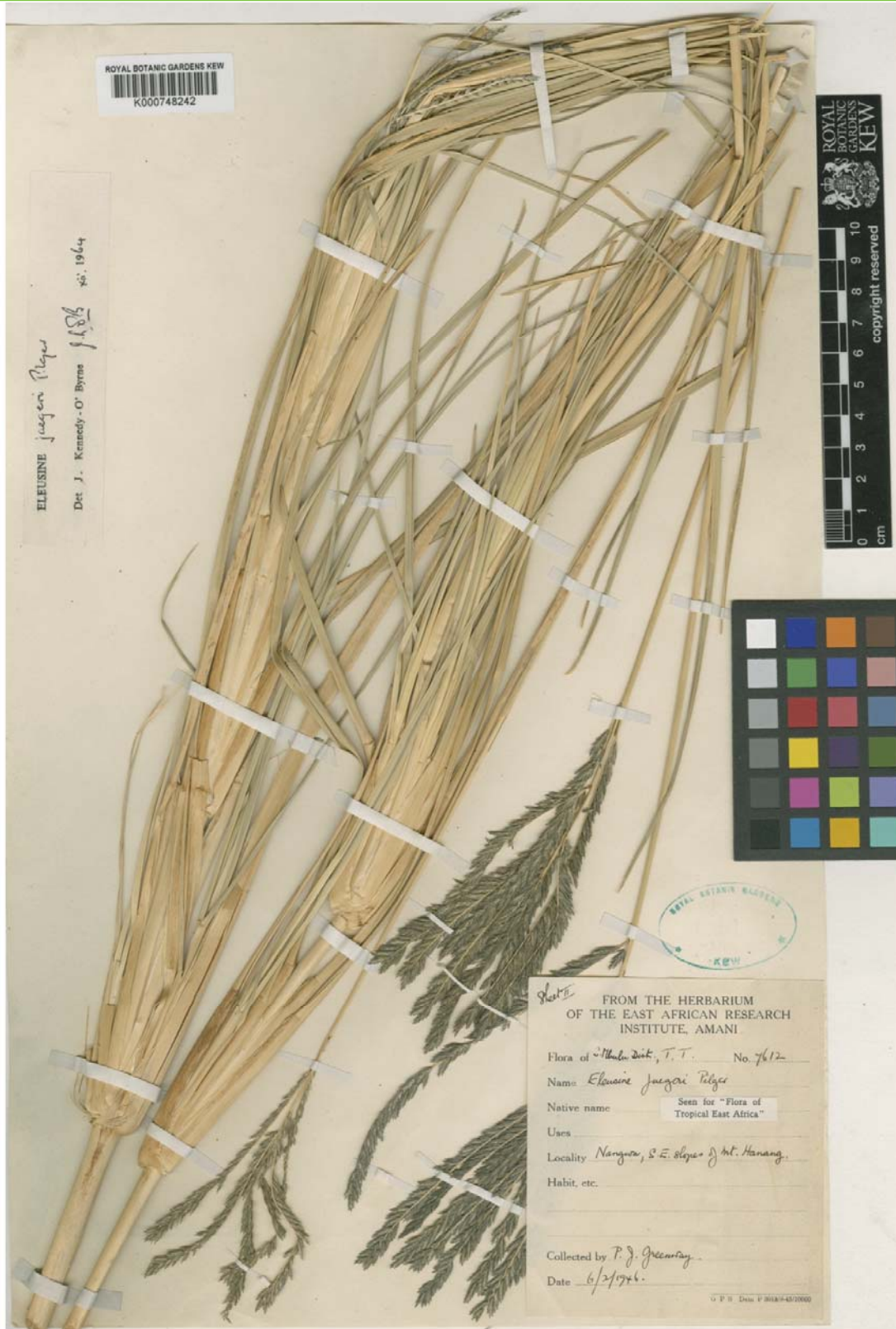


All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References:

Provisional Gene Pool Tertiary relative of *Eleusine coracana* (L.) Gaertn.



RBGKew Herbarium material

No seed image available

1.3 m

NE

All year

All year

Provisional Gene Pool Tertiary relative of *Eleusine coracana* (L.) Gaertn.

HABIT: Culms geniculately ascending; 15–45 cm long. Culm-internodes elliptical in section. Leaf-sheaths keeled. Ligule a ciliolate or ciliate membrane; 1 mm long; truncate. **LEAVES:** blades flat, or conduplicate; 6–26 cm long; 3–6 mm wide. Leaf-blade margins glabrous. Inflorescence composed of racemes. Racemes 2–8; digitate; distant; spreading, or ascending; oblong, or ovate; unilateral; 1.5–3 cm long. Spikelets appressed; solitary. Fertile spikelets sessile. Spikelets comprising 4–15 fertile florets; with diminished florets at the apex. Spikelets ovate; laterally compressed; 7–11 mm long; breaking up at maturity; disarticulating below each fertile floret. Glumes persistent; similar; shorter than spikelet. Florets: Fertile lemma lanceolate in profile, or ovate in profile; 3.3–5.2 mm long; membranous; 3 -veined (excluding subsidiaries). **FLOWER** Lodicules 2; cuneate; fleshy. **FRUIT:** Caryopsis with free soft pericarp; oblong; laterally compressed; sulcate on hilar side; concealed by floret; 1–1.2 mm long; black; granular and rugose.

Habitat:

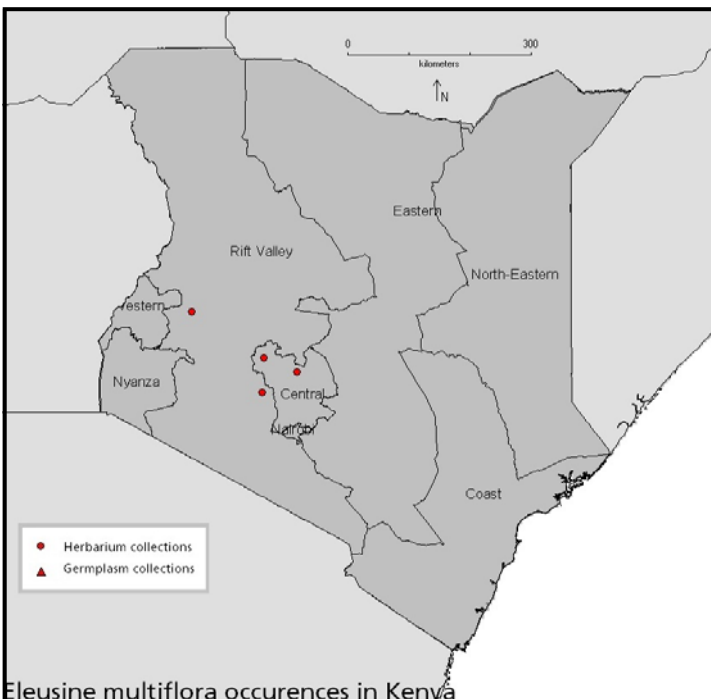
Deciduous bushland, disturbed ground in upland grassland; often as a weed of cultivation.

Distribution:

Northern Europe, Northeast tropical, east tropical and southern Africa, Arabia and Mexico.

Altitude: 1500 - 2700 m

<i>Eleusine multiflora</i>	May be confused with: <i>Other Eleusine species</i>
Spikelets 5 - 15 flowered, with grain 1 - 1.2 mm long.	Usually fewer than 9 flowers per spikelet, generally with grain over 1.2 mm long.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References:

Provisional Gene Pool Tertiary relative of *Eleusine coracana* (L.) Gaertn.



RBG Kew Herbarium material

No seed
image
available

0.45 m

NE

Jan - Oct

Jan - Oct

Gene Pool Secondary relative of *Oryza glaberrima* and *Oryza sativa*

HABIT: Perennial; clumped. Rhizomes short. Butt sheaths papery; pallid. Culms erect; 60-100 cm long; 2-3 mm diam. Culm-nodes constricted; pallid, or brown. **LEAVES:** Leaf-sheaths narrower than blade at the collar; keeled; smooth; glabrous on surface. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane; 1-3 mm long; entire; truncate. Leaf-blades 10-25 cm long; 3-10 mm wide; glaucous. Leaf-blade surface smooth, or scabrous. Leaf-blade margins scabrous. Leaf-blade apex acuminate. **PANICLE** open; lanceolate; 10-25 cm long. Primary panicle branches ascending. Panicle branches angular; scaberulous. Spikelets solitary. Fertile spikelets pedicelled, comprising 2 basal sterile florets; 1 fertile florets; without rhachilla extension. Basal sterile florets similar; barren; without significant palea. Flower Lodicules 2; lanceolate; membranous. Anthers 6. Stigmas 2. **FRUIT:** Caryopsis with adherent pericarp. Disseminule comprising a floret.

Habitat:

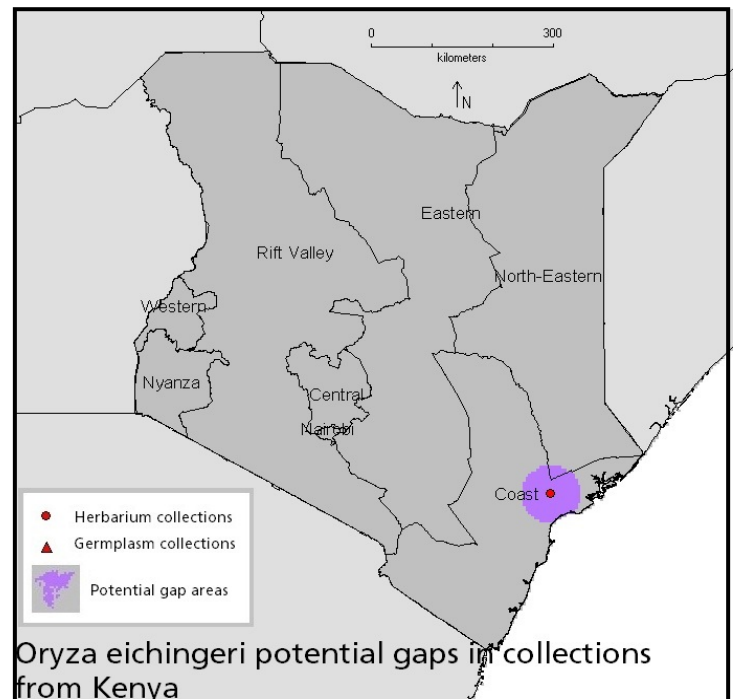
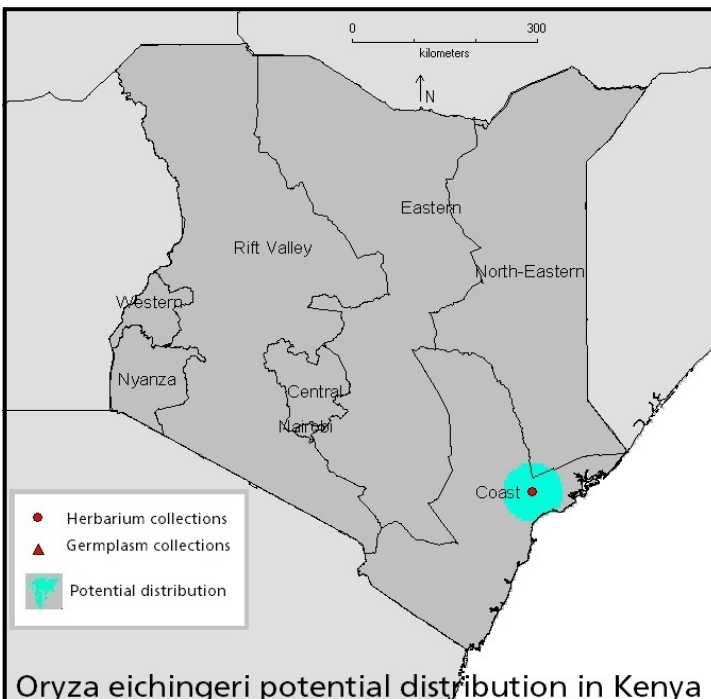
Undisturbed forest, gallery or evergreen forest, or forest margins. Grows in damp or flooded sites such as pools, water holds, marshy places, streams or riverbanks and beds, in ditches. Sandy or gray loamy clay soils. Shade or semi-shade.

Altitude: 100 - 1330 m

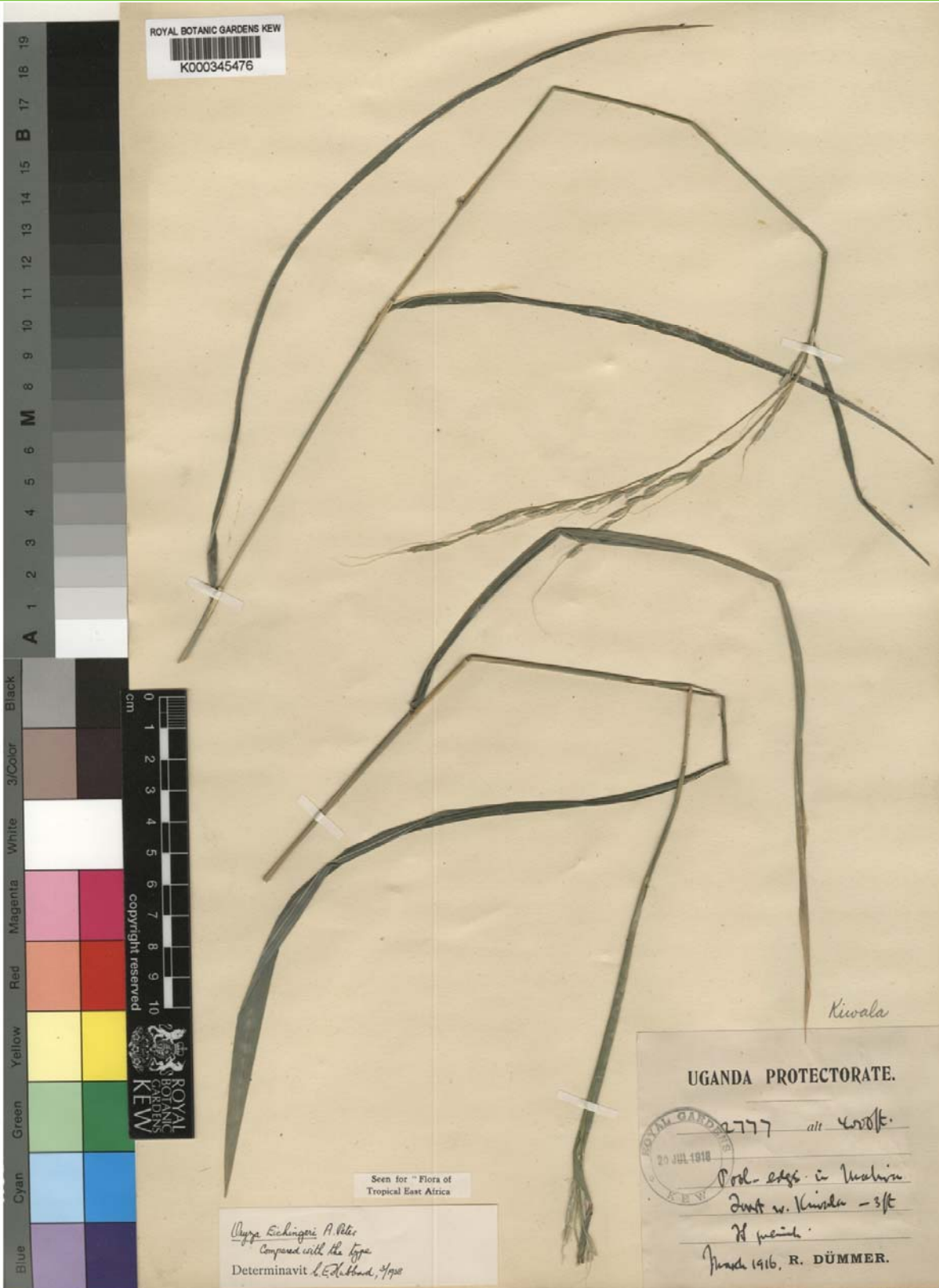
Distribution:

Central African Republic, Côte d'Ivoire, Democratic Republic of Congo, Kenya, Rwanda, Sri Lanka, Tanzania, and Uganda.

<i>Oryza eichingeri</i>	May be confused with: <i>Oryza punctata</i>
Culms 2 -3 mm diameter.	Culms 3-6 mm diameter.



References: 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 5th July 2013; 11:37 GMT]; IRRI Rice Knowledge Bank <http://www.knowledgebank.irri.org/extension/oryza-eichingeri-a-peter.html>



RBG Kew Herbarium specimen

No seed image available

Feb - Dec

All year

10

Primary relative of Rice - *Oryza glaberrima* and *Oryza sativa*

HABIT: Rhizomes elongated. Culms geniculately ascending, or decumbent; 70-120 cm long; 5-10 mm diam. Leaf-sheaths smooth; glabrous on surface. Ligule an eciliate membrane; Leaf-blades 10-75 cm long; 5-25 mm wide. Panicle open; elliptic, or oblong; 16-40 cm long; 1.5-8 cm wide. Primary panicle branches appressed, or ascending. Panicle branches angular; scaberulous; glabrous in axils, or pubescent in axils. Spikelets solitary. Fertile spikelets pedicelled comprising 2 basal sterile florets; 1 fertile floret without rhachilla extension. Spikelets oblong; laterally compressed; 7-12 mm long; 2-3 mm wide; falling entire. Spikelet callus glabrous; base truncate; attached obliquely. Glumes absent or obscure. Basal sterile florets similar; barren; without significant palea. **LOWER:** Lodicules 2; lanceolate; membranous. Anthers 6; 4.5-5.5 mm long. Stigmas 2. **FRUIT:** Caryopsis lanceolate or oblong, 5-7 mm long, laterally compressed, reddish, hilum linear, as long as caryopsis.

Habitat:

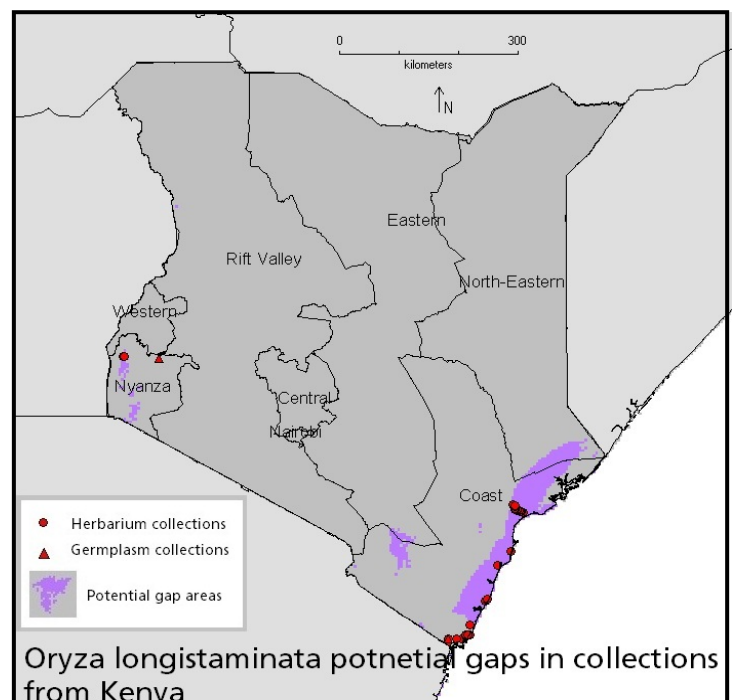
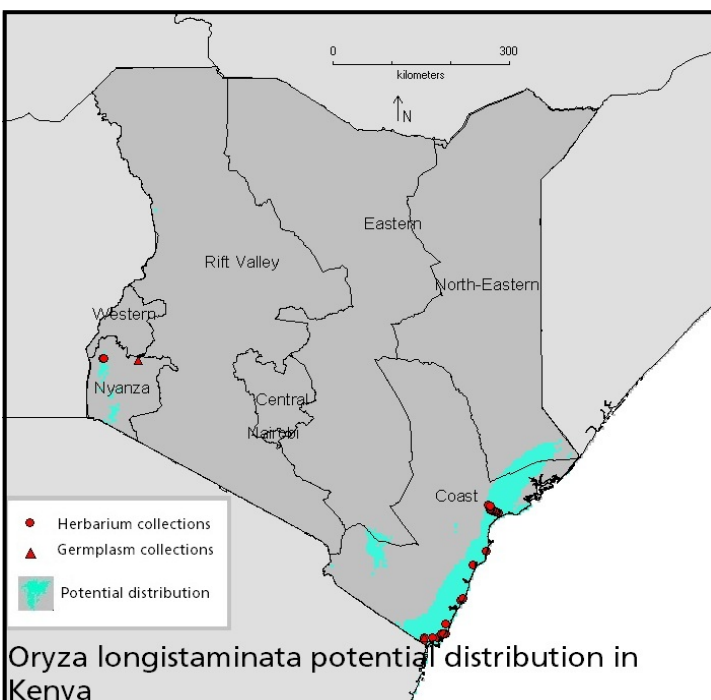
Deep water, standing or running water, salt marshes, dry, sandy fields.

Distribution:

Throughout Africa.

Altitude: 0-2000 m

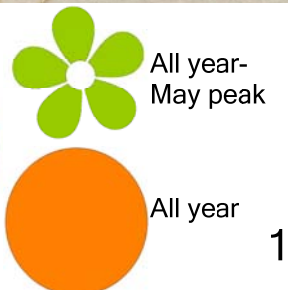
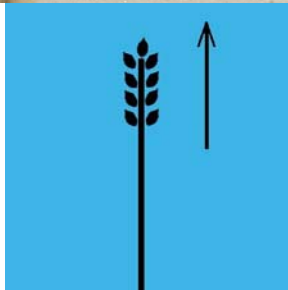
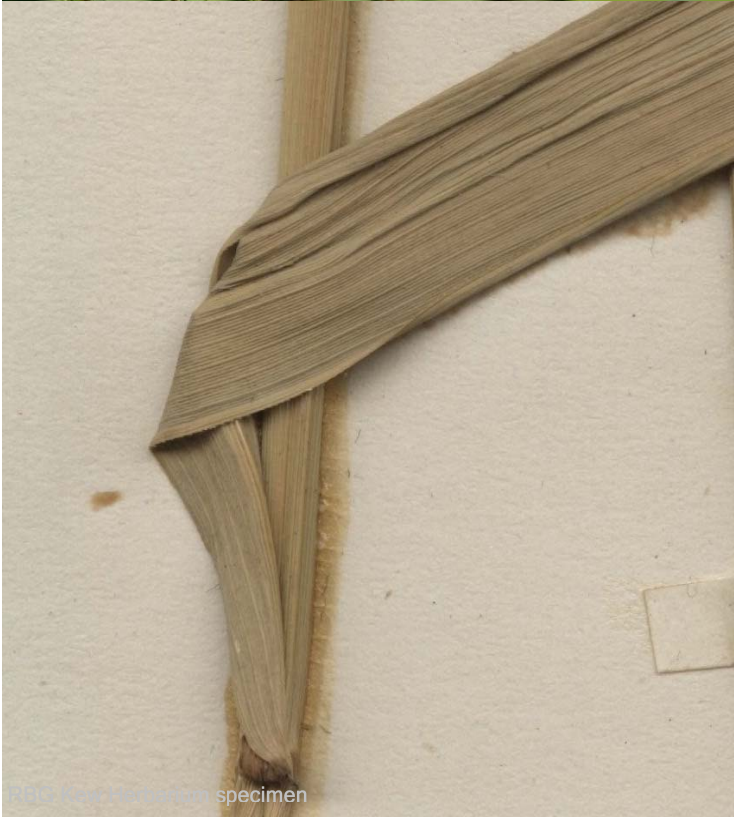
<i>Oryza longistaminata</i>	May be confused with: <i>Oryza sativa</i>
Red caryopsis.	Caryopsis brown to white.



References: Flora of Mozambique website: <http://www.mozambiqueflora.com>; IRRI Rice Knowledge Bank <http://www.knowledgebank.irri.org>

Oryza longistaminata A.Chev. & Roehrich

Primary relative of Rice - *Oryza glaberrima* and *Oryza sativa*



HABIT: clumped. Culms 50-120(-150) cm long; 3-6 mm diam.; spongy; 3-5 -noded. Leaf-sheaths smooth; glabrous on surface. Leaf-blade surface scaberulous; rough on both sides; margins scabrous; apex acuminate. **INFLORESCENCE:** Panicle open; elliptic; 15-35 cm long; 3-17 cm wide. Primary panicle branches ascending, or spreading. Panicle branches angular; scaberulous. **SPIKELETS** solitary. Fertile spikelets pedicelled. Pedicels linear; angular; 2-5 mm long; scaberulous; tip cupuliform. Fertile spikelets comprising 2 basal sterile florets; 1 fertile florets; without rhachilla extension. Spikelets elliptic; laterally compressed; 4.9-6.2 mm long; 1.9-2.6 mm wide (2.5 times longer than wide); falling entire. Spikelet callus glabrous; base truncate; attached transversely. Glumes absent or obscure. Basal sterile florets similar; barren; without significant palea. **FRUIT:** Caryopsis with adherent pericarp. Disseminule comprising a floret.

Habitat:

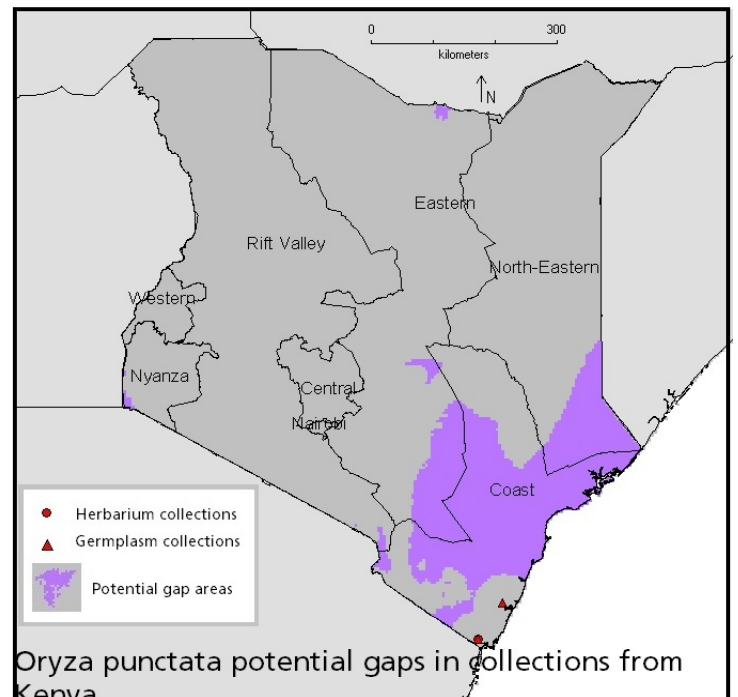
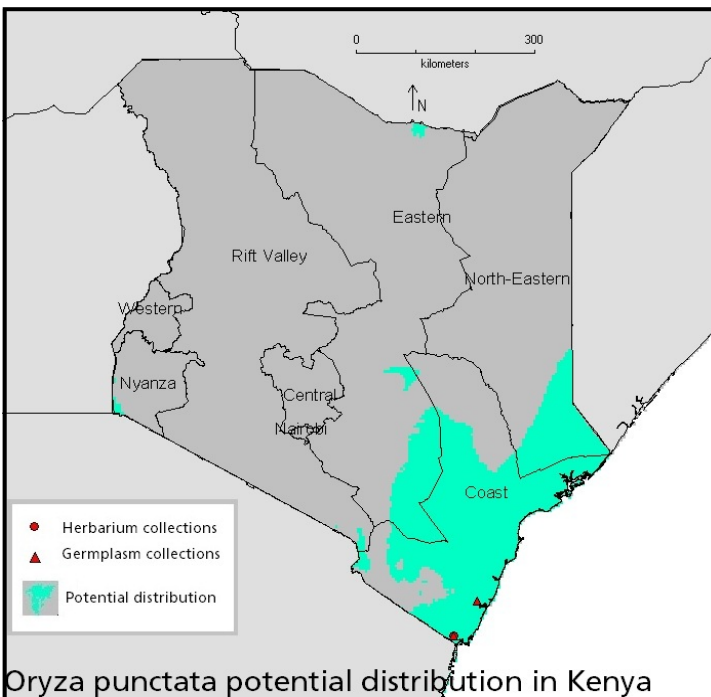
Open/semi-open habitats, forest margins, grassland and thickets, degraded mopane scrub, open bush or shifting cultivation fields; swampy areas, around water holes and pools, on riverbanks that flood to 1 m. Prefers black clay or sandy soil.

Altitude: 33 - 930 m

Distribution:

Distributed across southern, eastern, central and western Africa.

<i>Oryza punctata</i>	May be confused with: <i>Oryza eichingeri</i>
Culms 3-6 mm diameter.	Culms 2-3 mm diameter.

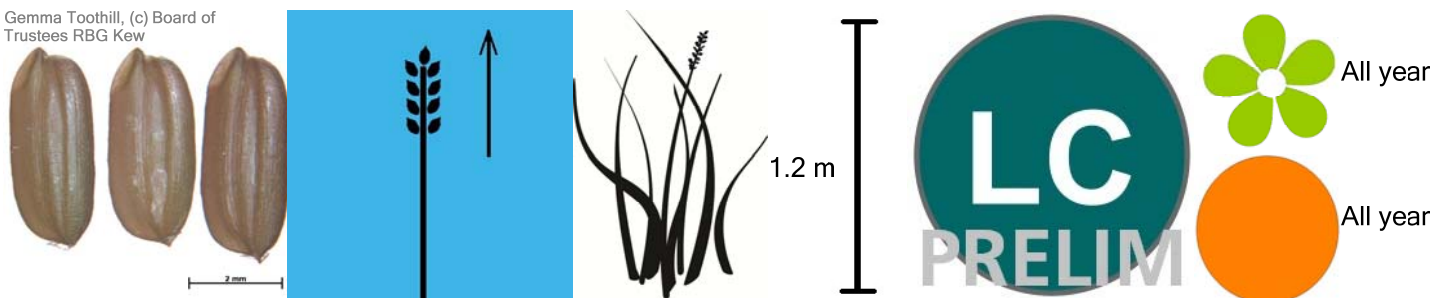


References: Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. (2006 onwards). GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>. [accessed 5th July 2013; 11:41 GMT]; IRRI rice knowledgebank <http://www.knowledgebank.irri.org/extension/oryza-punctata-kotschy-ex-steud.html> Accessed 16th July 2013



RBG Kew Herbarium specimen

Gemma Toothill, (c) Board of Trustees RBG Kew



HABIT: Perennial with ascending culms 10 - 150 cm high, varying from simple weak plants to mat-forming or tussocky forms. Leaf blades flat, 3-25 cm long, 2-13 mm wide. Spike-like panicle 2-14 cm x 10-26 mm, the involucre 6-16 mm in length with narrow inner ciliate bristles connate at the base to form a disc up to 1.5mm across (rarely forms a cup 0.5mm above the base) filiform and flexuous to the tip, scaberulous, the outer bristles filiform, numerous. Spikelets 2-5.5 mm long. **SEEDS** shed in a soft burr-like structure, which consists of the cluster of bristles and one or more mature spikelets. **CARYOPSIS** dark brown, broadly oblong in shape and somewhat flattened (1-1.3 mm long).

Habitat:

Open or wooded grassland, deciduous bushland, on a variety of soils.

Distribution:

Widespread throughout Africa and Asia.

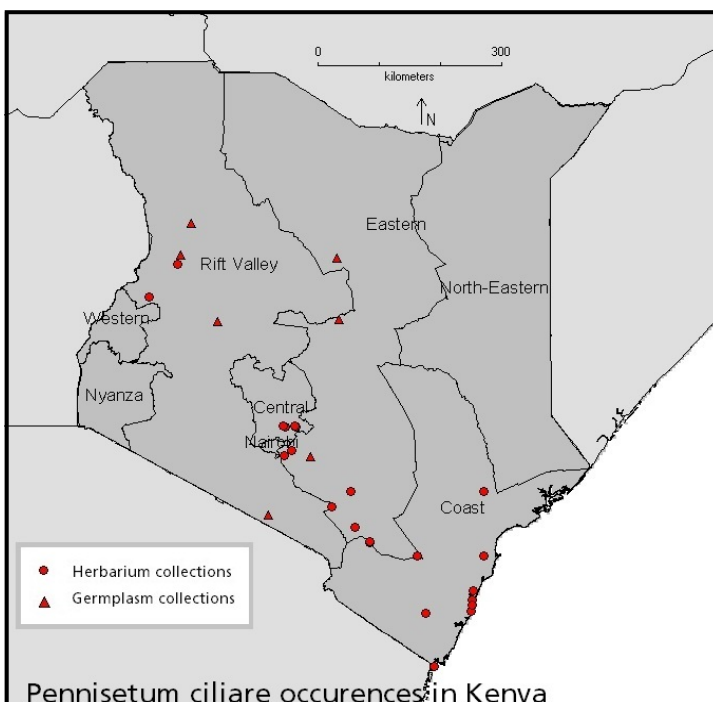
Altitude: 0 - 2000 m

Pennisetum ciliare

May be confused with:
Other Pennisetum species

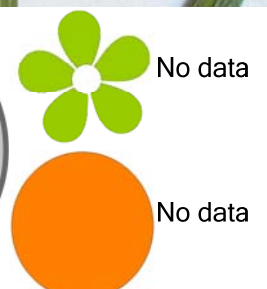
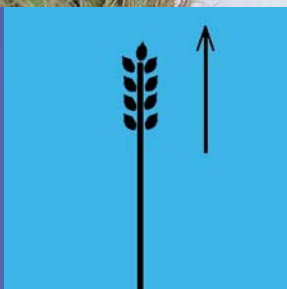
Involucre with narrow inner ciliate bristles forming a disc or cup.

Other *Pennisetum* species in Kenya do not show this character.



Focus collections on localities along the coast, where germplasm collections have not previously been made

References: An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



HABIT: Perennial; mat forming. Rhizomes elongated. Stolons present. Culms prostrate; 3-15(-45) cm long; rooting from lower nodes. Leaf-sheaths inflated. Ligule a fringe of hairs. Leaf-blades flat, or conduplicate; 1-15 cm long; 1-5 mm wide. Leaf-blade apex obtuse. Inflorescence comprising only a few spikelets; comprising (1-)2-4(-6) fertile spikelets; shorter than basal leaves; subtended by an inflated leaf-sheath; enclosed. Spikelets subtended by an involucre. Fertile spikelets sessile. Involucre composed of bristles; lanceolate; 4-15 mm long; base obtuse. Involucral bristles deciduous with the fertile spikelets; 3-15 in principal whorl; terete; flexible; antrorsely scaberulous; glabrous, or pubescent. Fertile spikelets: **SPIKELETS** comprising 1 basal sterile floret; 1 fertile floret; without rhachilla extension. Spikelets lanceolate; dorsally compressed; 10-20 mm long; falling entire; deciduous with accessory branch structures. Glumes absent or obscure; shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets barren; without significant palea. Flower: Lodicules absent. Anthers 3; 4-5 mm long; anther tip smooth. **CARYOPSIS:** ovoid, dark brown, about 2.5 x 1.5 mm, pointed with persistent short style.

Habitat:

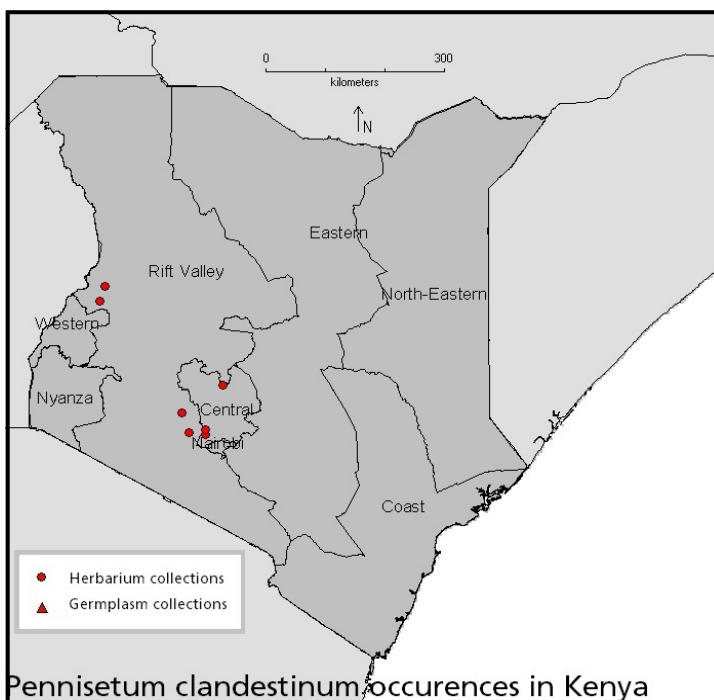
Upland grassland on fertile soils or along drainage lines.

Distribution:

Widely distributed around the world.

Altitude: 1330 - 3260 m

<i>Pennisetum clandestinum</i>	May be confused with: <i>Other Pennisetum species</i>
Inflorescence reduced to a cluster of 2-4 sessile spikelets enclosed in the uppermost leaf sheath, with long protruding filaments and stigmas.	Character absent in other species.

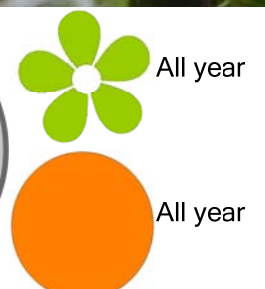
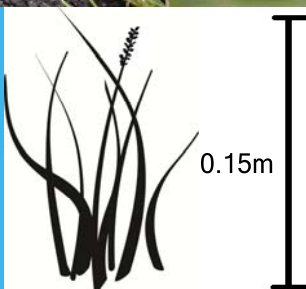
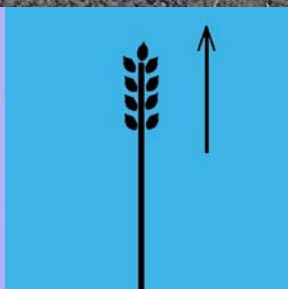


All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.

Pennisetum clandestinum Hochst. ex Chiov.
Kikuyu grass



HABIT: Perennial; caespitose; densely clumped. Culms erect; 60-150(-200) cm long. Leaf-sheaths keeled. Ligule a fringe of hairs. **LEAVES:** Leaf-blades conduplicate; 15-40 cm long; 1-5 mm wide; stiff. Leaf-blade surface ribbed with rectangular ribs. **INFLORESCENCE** a panicle. Peduncle scaberulous above; glabrous, or pubescent above. Panicle spiciform; linear; 10-25 cm long. Primary panicle branches accrescent to a central axis; with sessile scars on axis. Panicle axis angular; scaberulous; glabrous; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile. Involucre composed of bristles; oblong; 7-20 mm long; base bluntly stipitate (0.3-0.5mm). Involucral bristles deciduous with the fertile spikelets; numerous; with one conspicuously longer bristle; 6-30 mm long; terete; flexible; glabrous. Fertile Spikelets comprising 1 basal sterile floret; 1 fertile floret; without rhachilla extension. Spikelets lanceolate; dorsally compressed; 6.5-11 mm long; falling entire; deciduous with accessory branch structures. Glumes dissimilar; shorter than spikelet; thinner than fertile lemma. **FLOWER:** Lodicules absent. Anthers 3; 4-5 mm long; anther tip smooth, or penicillate. Styles connate below.

Habitat:

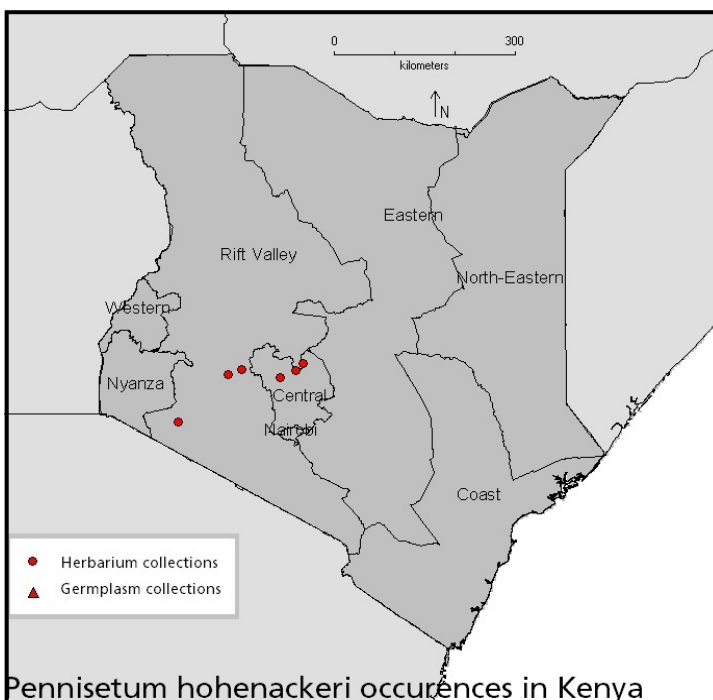
Open grassland, flood plains and stream banks.

Distribution:

Africa: east tropical and western Indian ocean. Asia -tropical: India.

Altitude: 1500 - 2430 m

<i>Pennisetum hohenackeri</i>	May be confused with: <i>Pennisetum riparium</i>
Plants forming large tussocks.	Plants rhizomatous, forming low mats.



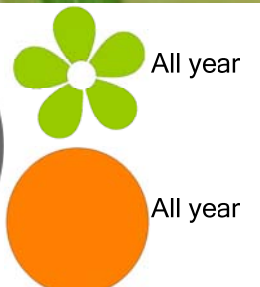
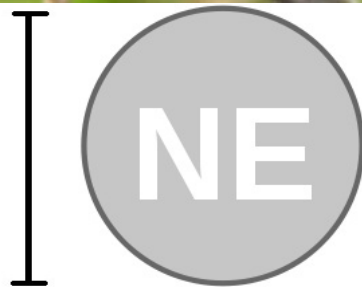
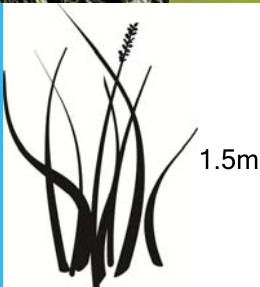
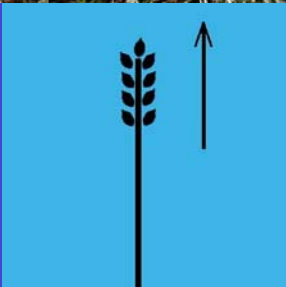
All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



No seed image available



HABIT: Perennial. Rhizomes elongated. Culms reed-like; 60-500 cm long. Culm-nodes brown. Ligule a fringe of hairs. **LEAVES:** Leaf-blades flat, or convolute; 10-45 cm long; 2-10(-15) mm wide; coriaceous; glaucous. Leaf-blade apex filiform. **INFLORESCENCE:** Panicle spiciform; linear; 6-40 cm long. Spikelets subtended by an involucre. Fertile spikelets sessile; oblong; 5-10 mm long; base obtuse. Involucral bristles deciduous with the fertile spikelets; numerous. Fertile Spikelets comprising 1 basal sterile floret; 1 fertile floret; without rhachilla extension. Spikelets elliptic, or ovate; dorsally compressed; cuspidate, or acuminate; 2-6 mm long; falling entire; deciduous with accessory branch structures. Glumes one the lower absent or obscure, or two; dissimilar; shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets male, or barren; with palea, or without significant palea. Lemma of lower sterile floret ovate; 0.75-1 length of spikelet; membranous; 5-9 -veined; obtuse, or acute. Fertile lemma ovate; 2-6 mm long; membranous; without keel; 5-7 -veined. **FLOWER:** Lodicules absent. Anthers 3; 2-2.5 mm long; anther tip smooth. Styles free to the base, or connate below. **CARYOPSIS** oblong-obovate, dorsally compressed.

Habitat:

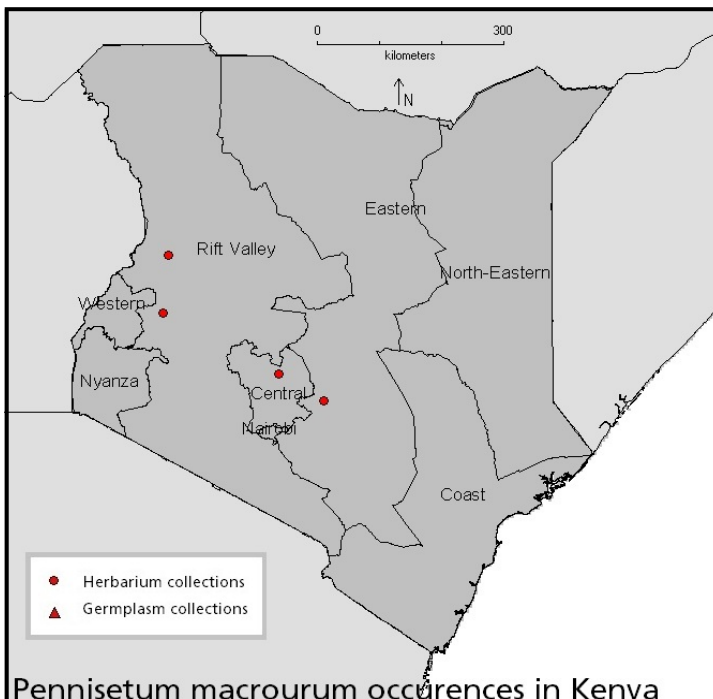
Usually river banks and stream beds but sometimes in seasonally wet grasslands.

Distribution:

Tropical Africa, Arabia, Australia and New Zealand.

Altitude: 900 - 2000 m

<i>Pennisetum macrourum</i>	May be confused with: <i>Pennisetum sphacelatum</i>
Reed-like from a creeping rhizome, often robust with an elongated panicle; rarely hairy below the panicle.	Densely tufted, with narrow convolute leaf blades; hairy below the panicle.



All populations priority
for collection

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Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.

HABIT: Perennial. Rhizomes short; knotty. Culms decumbent; 30-90 cm long; wiry, or woody. Lateral branches ample. Leaf-sheaths glabrous on surface, or pilose; with tubercle-based hairs. Leaf-sheath oral hairs lacking, or bearded. Ligule a fringe of hairs. **LEAVES:** Leaf-blades flat, or conduplicate; 3-25 cm long; 2-4 mm wide. Leaf-blade surface glabrous, or pilose; sparsely hairy; with tubercle-based hairs. Inflorescence a panicle. Peduncle scaberulous above. Panicle spiciform; linear, or oblong; 2-10 cm long. Spikelets subtended by an involucre. Fertile spikelets: Spikelets comprising 1 basal sterile floret; 1 fertile floret; without rhachilla extension. Spikelets oblong; dorsally compressed; truncate; 3.5-5.5 mm long; falling entire; deciduous with accessory branch structures. Glumes similar; shorter than spikelet; thinner than fertile lemma. **FLOWER:** Lodicules absent. Anthers 3; 2-2.5 mm long; anther tip smooth. Styles free to the base.

Habitat:

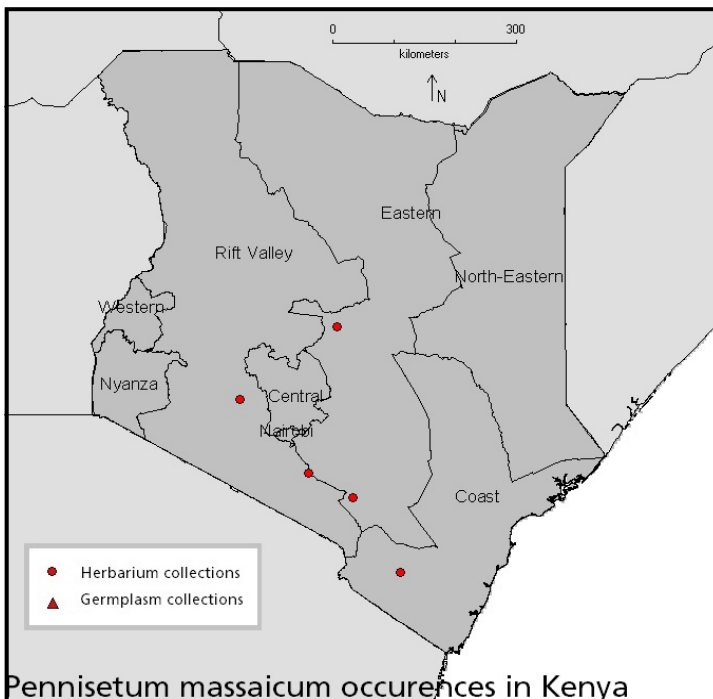
Grassland or open bushland, often on seasonally water-logged black soils.

Distribution:

Africa: northeast tropical, east tropical, and southern tropical.

Altitude: 270 - 1250 m

<i>Pennisetum massaicum</i>	May be confused with: <i>Pennisetum mezianum</i>
Culm scaberulous below the oblong to linear panicle.	Culm smooth below the ovate to oblong panicle.



All populations priority
for collection

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Kenya listed on
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(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



Kew herbarium material

No seed image available

0.9m

NE

All year

All year

HABIT: Perennial. Rhizomes short; knotty. Culms decumbent; 30-120 cm long; wiry, or woody. Leaf-sheaths glabrous on surface. Leaf-sheath oral hairs lacking. Ligule a fringe of hairs. **LEAVES:** Leaf-blades flat, or conduplicate, or involute; 2-15 cm long; 1-5 mm wide. Leaf-blade surface glabrous. **INFLORESCENCE** a panicle. Peduncle smooth. Panicle spiciform; oblong, or ovate; 1-3(-5) cm long. Primary panicle branches accrescent to a central axis; with sessile scars on axis. Panicle axis angular; scaberulous; glabrous; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile; 1 in the cluster. Involucre composed of bristles; oblong; 4-10 mm long; base obconical, or bluntly stipitate (briefly). Involucral bristles deciduous with the fertile spikelets; numerous; with an outer whorl of thinner bristles; with longest bristle scarcely emergent; 4-10 mm long; terete; flexible; glabrous. Fertile spikelets: Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Glumes similar; reaching apex of florets, or shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets male, or barren; with palea, or without significant palea. **FLOWER:** Lodicules absent. Anthers 3; 1.5-2 mm long; anther tip smooth. Styles free to the base, or connate below. **FRUIT:** Caryopsis with adherent pericarp; oblong; dorsally compressed; 1.5 mm long.

Habitat:

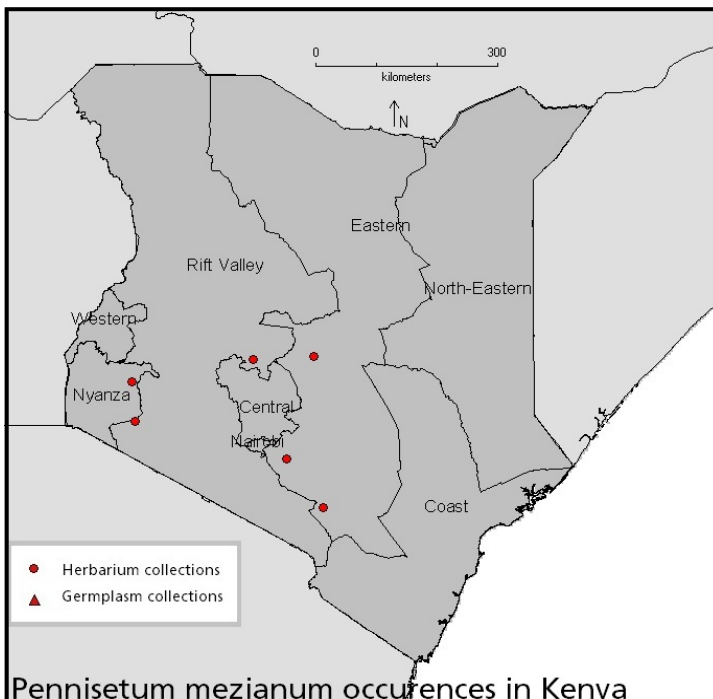
Open places in deciduous bushland and semi arid grassland, often on seasonally water-logged plains on black clays.

Distribution:

Africa: northeast tropical, east tropical, and south. Asia-tropical: India.

Altitude: 800 - 2100 m

<i>Pennisetum mezianum</i>	May be confused with: <i>Pennisetum massaicum</i>
Culm smooth below the ovate to oblong panicle.	Culm scaberulous below the oblong to linear panicle.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



Kew herbarium material

No seed
image
available

1.2m

NE

All year

All year

HABIT: Annual. Culms geniculately ascending; 30-150 cm long. Lateral branches ample. Ligule a ciliate membrane. **LEAVES:** Leaf-blades 5-25 cm long; 4-15 mm wide. **INFLORESCENCE:** Panicle spiciform; linear; straight, or curved; 5-15 cm long. Primary panicle branches accrescent to a central axis; with sessile scars on axis. Panicle axis with briefly decurrent ribs; glabrous; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile and pedicelled; 1-5 in the cluster; 0-1 sessile. Involucre composed of bristles; ovate; 5-10 mm long; base obtuse. Involucral bristles deciduous with the fertile spikelets; numerous; 15-25 in principal whorl; with one conspicuously longer bristle; 16-24 mm long; terete; flexible; woolly. Fertile Spikelets comprising 1 basal sterile floret; 1 fertile floret; without rhachilla extension. Spikelets lanceolate; dorsally compressed; 3.5-6 mm long; falling entire; deciduous with accessory branch structures; readily shedding fertile florets. Glumes dissimilar; reaching apex of florets; thinner than fertile lemma. Florets: Basal sterile florets male, or barren; with palea, or without significant palea. Lemma of lower sterile floret similar to upper glume; oblong; 1 length of spikelet; membranous; 5 -veined; puberulous; dentate; 3 -fid. **FLOWER:** Lodicules absent. Anthers 3; 1.5-2.5 mm long; anther tip smooth. **FRUIT:** Caryopsis lanceolate, dorsally compressed, 0.5-2.5 mm long, golden brown.

Habitat:

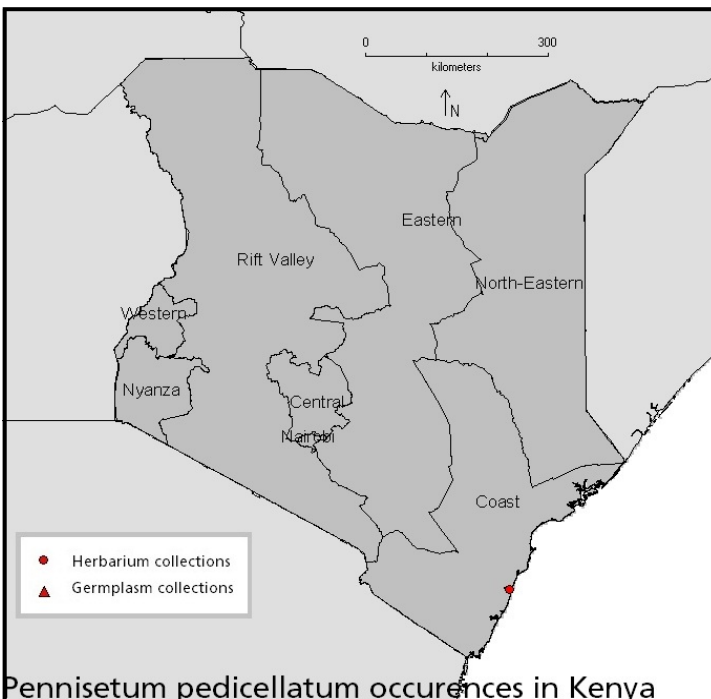
Coastal bushland mostly in disturbed areas.

Distribution:

Tropical Africa, India, Indo-China, and Malesia, Australia and Brazil.

Altitude: 0 - 100 m

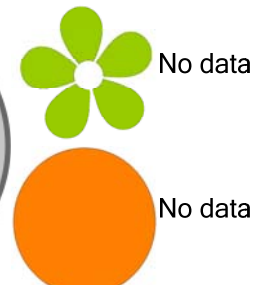
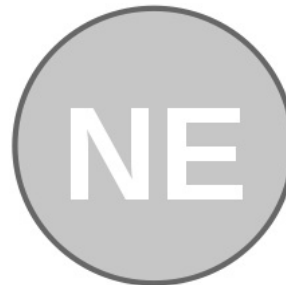
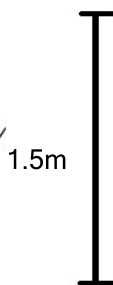
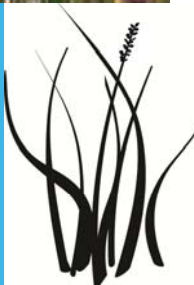
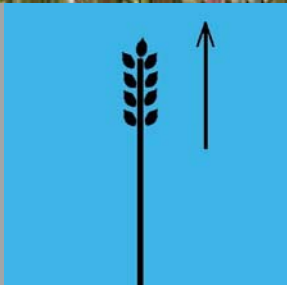
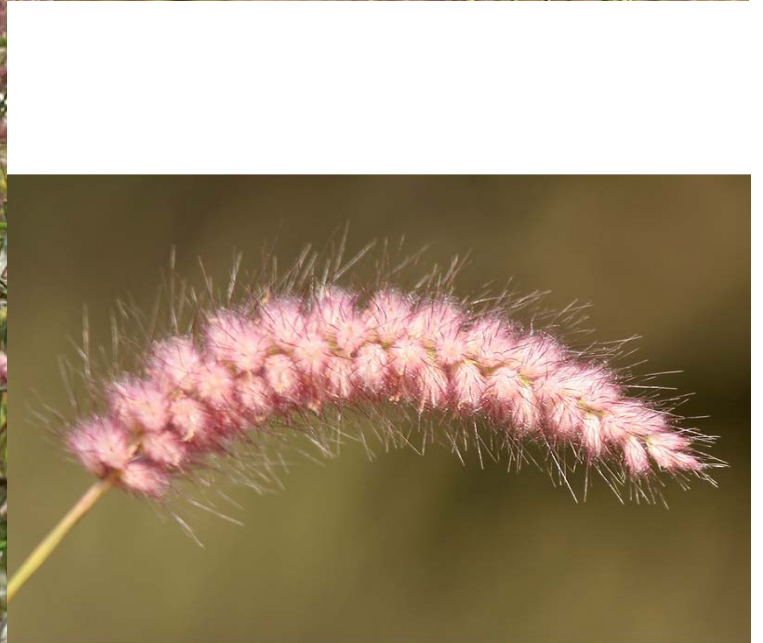
<i>Pennisetum pedicellatum</i>	May be confused with: <i>Pennisetum polystachion</i>
Spikelets in clusters of 1-5 within the involucre, at least one of them on a pedicel 0.5 - 3.5 mm long.	Spikelets solitary and sessile within the involucre.



All populations priority
for collection

No accessions from
Kenya listed on
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(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



HABIT: Annual, or perennial; short-lived. Culms geniculately ascending; 10-40 cm long. Ligule a fringe of hairs. **LEAVES:** Leaf-blades flat; 2-20 cm long; 2-5 mm wide. **INFLORESCENCE:** Panicle spiciform; linear to oblong; 2-6 cm long. Primary branches accrescent to a central axis; with sessile scars. Spikelets subtended by an involucre. Fertile spikelets sessile; 1-3 in the cluster. Involucre composed of bristles; connate into a cup below; with 1-2.5 mm connate; 6-12 mm long; base obconical. Fertile Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Spikelets lanceolate, or ovate; dorsally compressed; acute; 3-5 mm long; falling entire; deciduous with accessory branch structures. Glumes one the lower absent or obscure, or two; similar; shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets male, or barren; with palea. Lemma of lower sterile floret oblong; 1 length of fertile lemma; membranous; 5 - veined; puberulous; obtuse, or acute. Fertile lemma elliptic; dorsally compressed; 3-5 mm long; chartaceous; without keel; 5 -veined. **FLOWER:** Anthers 3; 3 mm long. **FRUIT:** Caryopsis with adherent pericarp; obovoid; dorsally compressed; 1.5-2 mm long; truncate.

Habitat:

Semi-arid grassland.

Distribution:

Kenya, North tropical Africa, Arabia and India.

Altitude: 300 - 1000 m

<i>Pennisetum pennisetiforme</i>	May be confused with: <i>Pennisetum ciliare</i>
Inner bristles connate for 1-2.5 mm above the basal disc.	Narrow inner ciliate bristles connate at the base to form a disk up to 1.5 mm across.

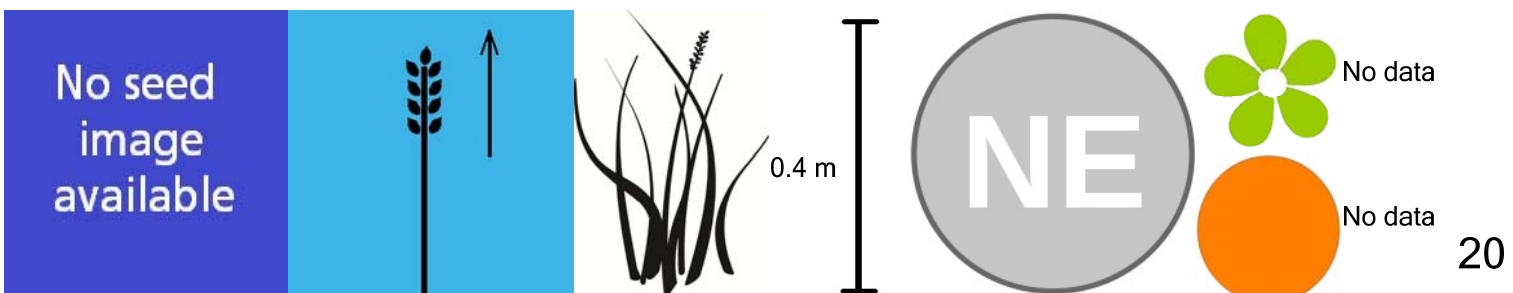
Reported from
Kenya, but
no localities
known.

All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

NO IMAGE AVAILABLE

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



Stout perennial with culms 80 - 200 cm high, branched from upper nodes. Leaf blades flat, 10 - 40 cm long and 3-16 mm wide. Inflorescence a linear spike-like panicle 8-20 cm long with sessile involucre of usually scaberulous bristles, the longest being 12-26 mm in length; each involucre enclosing one sessile spikelet 2.5 - 4 mm long; the rachis with sharp decurrent wings below the scars of fallen involucre.

Habitat:

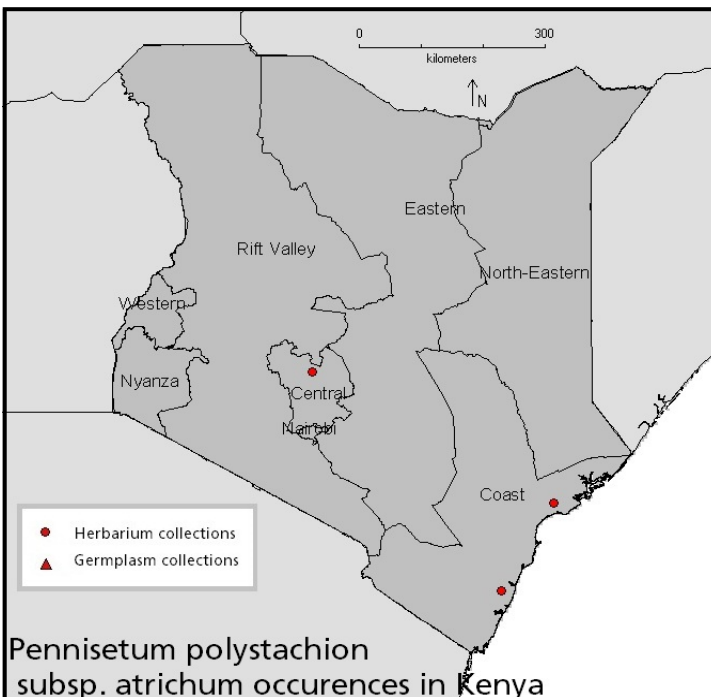
Grassland on moist sandy soils.

Distribution:

Kenya, Tanzania, Senegal, Zaire, Zambia, Malawi and Zimbabwe.

Altitude: 0 - 100 m

<i>Pennisetum polystachion subsp. atrichum</i>	May be confused with: <i>P. polystachion subsp. polystachion</i>
Perennial; involucre bristles scaberulous or rarely with a few cilia.	Annual or perennial; involucre bristles densely ciliate.



All populations priority for collection

No accessions from Kenya listed on Germplasm Resources Information Network (GRIN) [online database] for this taxon




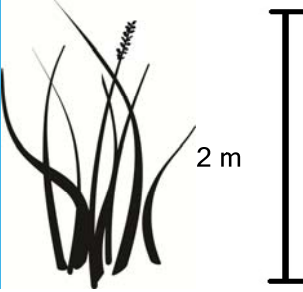

References: An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.

Pennisetum polystachion subsp. atrichum (L.) Schult.



Kew herbarium material

No seed image available



2 m

NE

All year

All year

HABIT: Annual, or perennial; caespitose. Culms geniculately ascending; 30-200 cm long. Lateral branches ample. Ligule a ciliate membrane. **LEAVES:** Leaf-blades 10-40 cm long; 3-16 mm wide. **INFLORESCENCE:** Panicle spiciform; linear; straight, or curved; 3-25 cm long; (0.6-)0.8-1(-1.5) cm wide (excluding bristles). Primary panicle branches accrescent to a central axis; with sessile scars on axis. Panicle axis with briefly decurrent ribs; glabrous; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile; 1 in the cluster. Involucre composed of bristles; oblong; 4-12 mm long; base obtuse. Involucral bristles deciduous with the fertile spikelets; numerous; with an outer whorl of thinner bristles; with one conspicuously longer bristle; 6-25 mm long; terete; flexible; antrorsely scaberulous; glabrous, or ciliate. Fertile spikelets: Spikelets comprising 1 basal sterile floret; 1 fertile floret; without rhachilla extension. Glumes one the lower absent or obscure, or two; dissimilar; reaching apex of florets; thinner than fertile lemma. Florets: Basal sterile florets male, or barren; with palea, or without significant palea. **FLOWER:** Lodicules absent. Anthers 3; anther tip smooth. **FRUIT:** Caryopses about 1.7 mm, concealed by the lemma and palea at maturity.

Habitat:

Open grassland and bushland often in disturbed places and as a weed of arable land.

Distribution:

Kenya, Uganda, Tanzania and throughout the tropics.

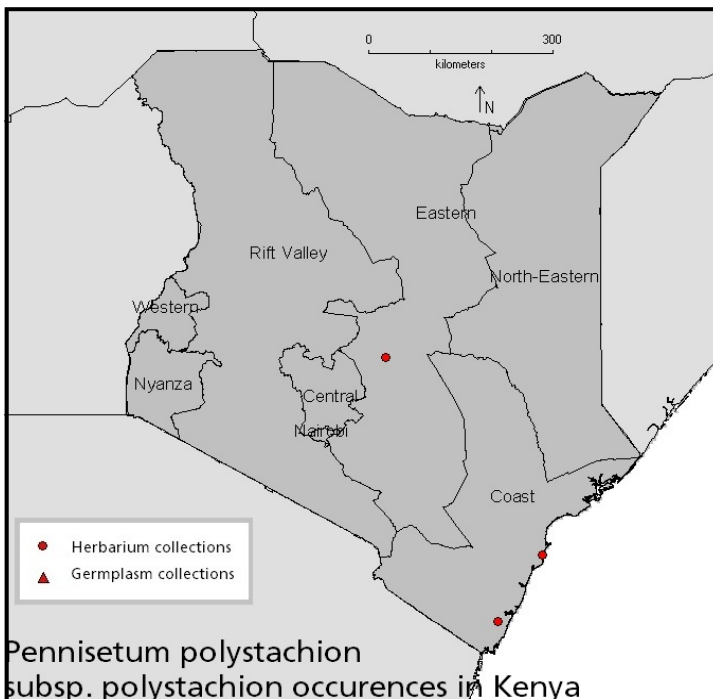
Altitude: 0 - 2450 m

Pennisetum polystachion subsp. *polystachion*

May be confused with:
P. polystachion subsp. *atrichum*

Annual or perennial; involucre bristles densely ciliate.

Perennial; involucre bristles scaberulous or rarely with a few cilia.



All populations priority
for collection

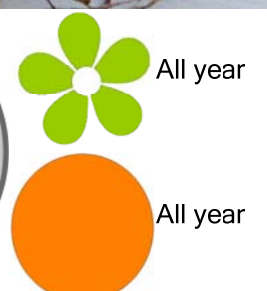
No accessions from
Kenya listed on
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for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.

Pennisetum polystachion subsp. polystachion (L.) Schult.



Julia Scher. USDA APHIS PPQ



HABIT: Robust perennial forming large, bamboo-like clumps, with culms usually 2-3.5 m high (up to 7.5 m) and branched towards the top. Stem to 3 cm diameter near the base. Spreads by short rhizomes, rooting from lower nodes or falling stems rooting at nodes creating a stolon. **LEAVES:** Leaf blades glabrous or hairy, 30-120 cm long and 1-5 cm wide; leaf-sheaths glabrous or with stiff hairs. **INFLORESCENCE:** a bristly false spike 10-30 cm long, 1.5-3 cm wide (excluding bristles) dense, usually yellow-brown in colour, more rarely greenish or purplish. **FRUIT:** Caryopsis with adherent pericarp; ellipsoid, or ovoid; dorsally compressed; concealed by floret; 1.8-2.2 mm long.

Habitat:

Riverine sites, valley bottoms and forest margins, with a preference for rich soils.

Distribution:

Tropical Africa; introduced to most other tropical countries.

Altitude: 300 - 1800 m

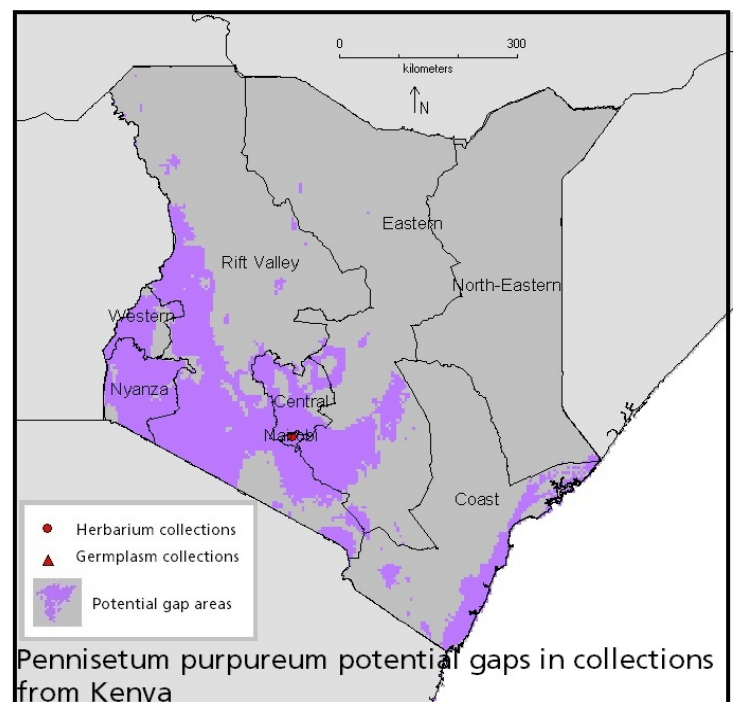
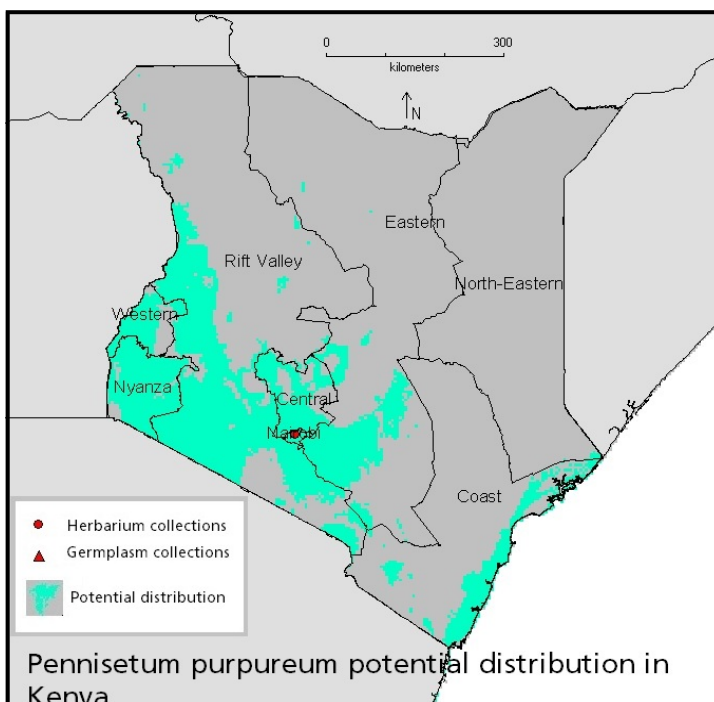
Pennisetum purpureum

Bristles are shed with the seeds.



May be confused with:
Setaria spp.

Seeds are shed without bristles.



References: Flora Zambesiaca Volume 10 part 3 (1989) Gramineae by W. D. Clayton; Cook, B.G., Pengelly, B.C., Brown, S.D., Donnelly, J.L., Eagles, D.A., Franco, M.A., Hanson, J., Mullen, B.F., Partridge, I.J., Peters, M. and Schultze-Kraft, R. (2005) Tropical Forages: an interactive selection tool <http://www.tropicalforages.info/> [accessed 20/06/2014]; CSIRO, DPI&F(Qld), CIAT and ILRI, Brisbane,...

Pennisetum purpureum Schumach.

Genepool 2 of Pearl millet - *Pennisetum glaucum* (L.) R. Br.

Elephant grass, Napier grass



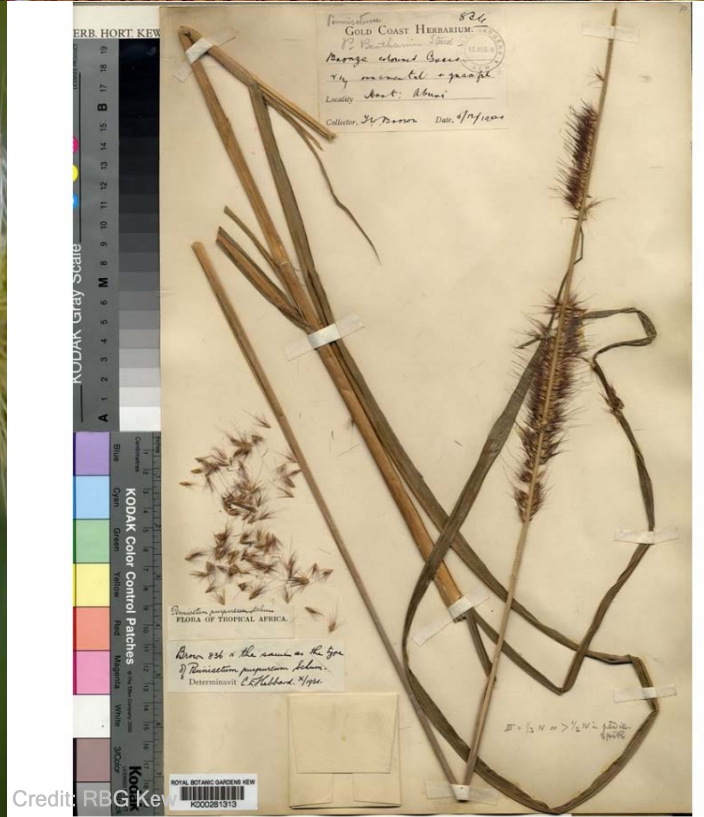
Credit: Forest & Kim Starr



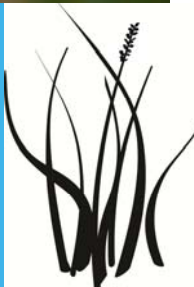
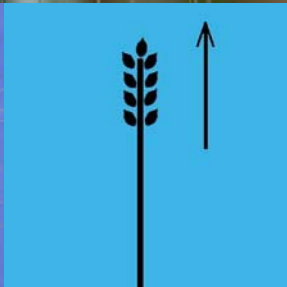
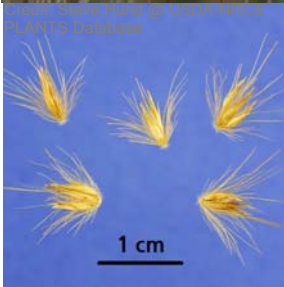
Credit: Forest & Kim Starr



Credit: Forest & Kim Starr



Credit: RBG Ke



1-6 m



Jan - June

Jan - June

HABIT: Perennial; caespitose. Culms 20-130 cm long. Ligule a fringe of hairs. **LEAVES:** Leaf-blades convolute; 15-30 cm long; 1-3 mm wide; stiff; glaucous. Leaf-blade midrib widened. **INFLORESCENCE:** Panicle spiciform; linear; 6-30 cm long. Primary panicle branches accrescent to a central axis; with sessile scars on axis. Panicle axis angular; glabrous, or pilose; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile and pedicelled; 1-3 in the cluster; 1 sessile. Involucre composed of bristles; oblong; 12-26 mm long; base bluntly stipitate (1-3mm); base pubescent. Involucral bristles deciduous with the fertile spikelets; numerous; with an outer whorl of thinner bristles; with one conspicuously longer bristle; 16-40 mm long; terete; flexible; plumose. Fertile Spikelets: Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension, or with a barren rhachilla extension. Spikelets lanceolate; dorsally compressed; 4.5-6.5 mm long; falling entire; deciduous with accessory branch structures. Glumes one the lower absent or obscure, or two; dissimilar; shorter than spikelet; thinner than fertile lemma. Basal sterile florets male, or barren; with palea, or without significant palea. **FLOWER:** Lodicules absent. Anthers 3; 2.5-3.5 mm long; anther tip smooth. Styles connate below. **FRUIT:** Caryopsis yellowish-brown, smooth.

Habitat:

Stony slopes and open dry places.

Distribution:

Southeastern Europe, North Africa, Tropical macronesia, Western and Tropical Asia. Australia and New Zealand.

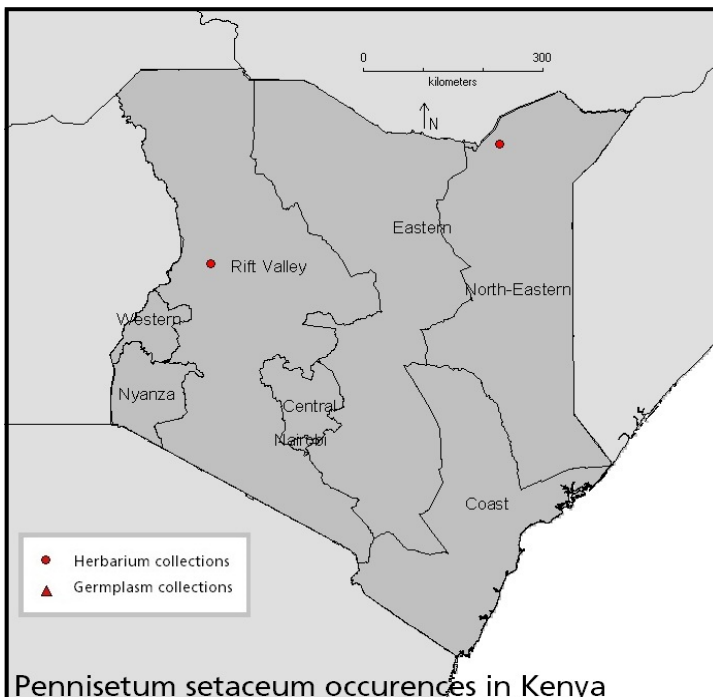
Altitude: 300 - 1640 m

Pennisetum setaceum

May be confused with:
Pennisetum squamulatum

Involucre borne upon a terete pubescent stipe 1-3 mm long and falling with it at maturity.

Involucre without a stipe.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



Kew herbarium material

No seed
image
available

1.3m

NE

All year
All year

HABIT: Perennial; caespitose. Butt sheaths thickened and forming a bulb. Culms geniculately ascending; 5-80 cm long. Ligule a fringe of hairs. **LEAVES:** Leaf-blades 2-20 cm long; 2-7 mm wide. **INFLORESCENCE:** Panicle spiciform; linear; 2-12 cm long. Primary panicle branches accrescent to a central axis; with sessile scars. Spikelets subtended by an involucre. Fertile spikelets sessile; 1-3 in the cluster. Involucre composed of bristles; connate into a cup below; oblate; 3-7 mm long. Involucral bristles deciduous with the fertile spikelets. Fertile spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Spikelets ovate; dorsally compressed; acuminate; 3-5 mm long; falling entire; deciduous with accessory branch structures. Glumes shorter than spikelet; thinner than fertile lemma. Lower glume ovate; 1.5-2 mm long; 0.5 length of spikelet; hyaline; without keels; 1 -veined. Upper glume ovate; 2 mm long; 0.5-0.66 length of spikelet; hyaline; without keels. Florets: Basal sterile florets barren; with palea. **FLOWER:** Lodicules absent. Anthers 3; 2 mm long. **FRUIT:** Caryopsis with adherent pericarp; oblong; dorsally compressed; 1.5 mm long; truncate.

Habitat:

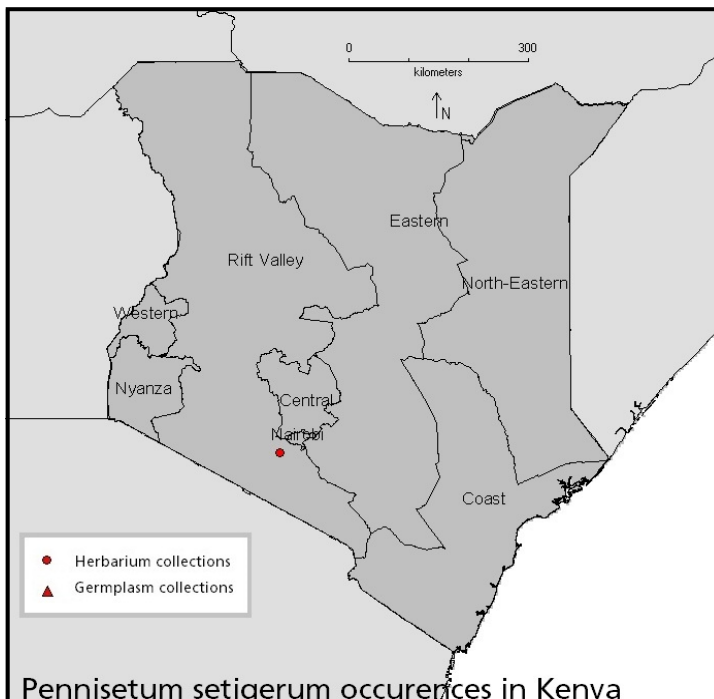
Deciduous bushland and semi-arid grassland.

Distribution:

Kenya, Tanzania, Uganda, NE tropical Africa, Arabia to India.

Altitude: 0 - 1000 m

<i>Pennisetum setigerum</i>	May be confused with: <i>Other Pennisetum species</i>
Distinguished by bulbous base.	Without a bulbous base.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.

Pennisetum setigerum (Vahl) Wipff
Birdwood Grass



Credit: Sheldon Navie



Credit: Sheldon Navie



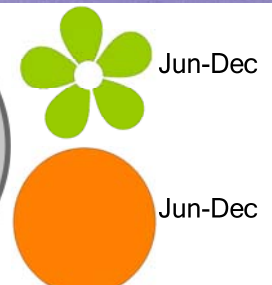
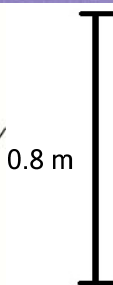
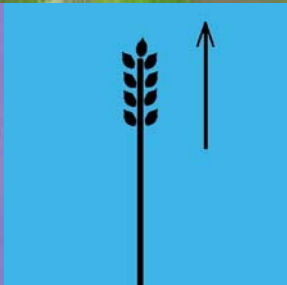
Credit: Sheldon Navie



Jose Hernandez : USDA PLANTS Database



Jose Hernandez @ USDA-NRCS PLANTS Database



HABIT: Perennial; caespitose. Culms erect; 30-150 cm long. Ligule a fringe of hairs. Leaf-blades convolute; 10-35 cm long; 2-4 mm wide; coriaceous; stiff. Inflorescence a panicle. Peduncle pubescent above, or pilose above.

INFLORESCENCE: Panicle spiciform; linear; 4-12 cm long. Primary panicle branches accrescent to a central axis; with lateral stumps on axis. Panicle axis with rounded ribs; smooth; glabrous, or pubescent; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile; 1 in the cluster. Involucre composed of bristles; oblong; 4-14 mm long; base obconical. Involucral bristles deciduous with the fertile spikelets; numerous; with longest bristle scarcely emergent; 4-14 mm long; terete; flexible; glabrous, or plumose. Fertile Spikelets: Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Spikelets lanceolate; dorsally compressed; cuspidate, or acuminate; 2.5-4.5 mm long; falling entire; deciduous with accessory branch structures. Glumes dissimilar; shorter than spikelet; thinner than fertile lemma. Lower glume lanceolate, or elliptic; 0.1-0.5 length of spikelet; hyaline; without keels; 0-1 -veined. Florets: Basal sterile florets barren; without significant palea. **FLOWER:** Lodicules 2. Anthers 3; 2-2.5 mm long; anther tip smooth. Styles free to the base.

Habitat:

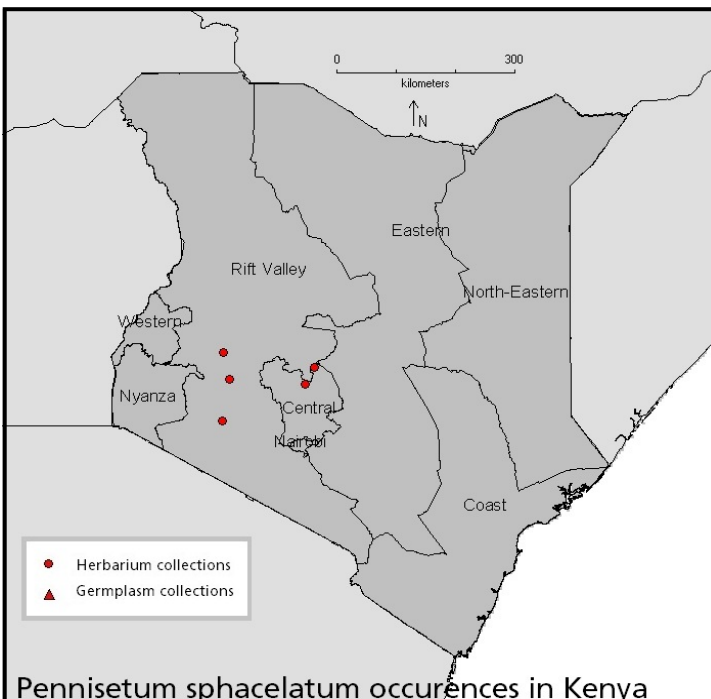
Upland grassland where it is frequently dominant; or in forest clearings.

Distribution:

Tropical Africa.

Altitude: 1550 - 2800 m

<i>Pennisetum sphacelatum</i>	May be confused with: <i>Pennisetum purpureum</i>
Plants densely caespitose, 0.3 - 1.5 m high with narrow convolute leaf blades.	Plants robust, 1-6 m high, with broad flat leaf blades.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.

Gene Pool Secondary relative of *Pennisetum glaucum* (L.) R. Br.

HABIT: Perennial; caespitose. Rootstock evident. Culms 30-200 cm long.
LEAVES: Ligule a fringe of hairs. Leaf-blades 15-30 cm long; 2-17 mm wide. Leaf-blade apex filiform. Inflorescence a panicle. Panicle spiciform; linear; curved; 5-25 cm long. Primary panicle branches accrescent to a central axis; with lateral stumps on axis. Panicle axis terete; pubescent; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets pedicelled; 1 in the cluster. Fertile Spikelets: Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Spikelets lanceolate; dorsally compressed; 4.5-7 mm long; falling entire; deciduous with accessory branch structures. Glumes one the lower absent or obscure; shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets barren; without significant palea. **FLOWER:** Lodicules absent. Anthers 3; 1.5 mm long; anther tip smooth. Styles connate below.

Habitat:

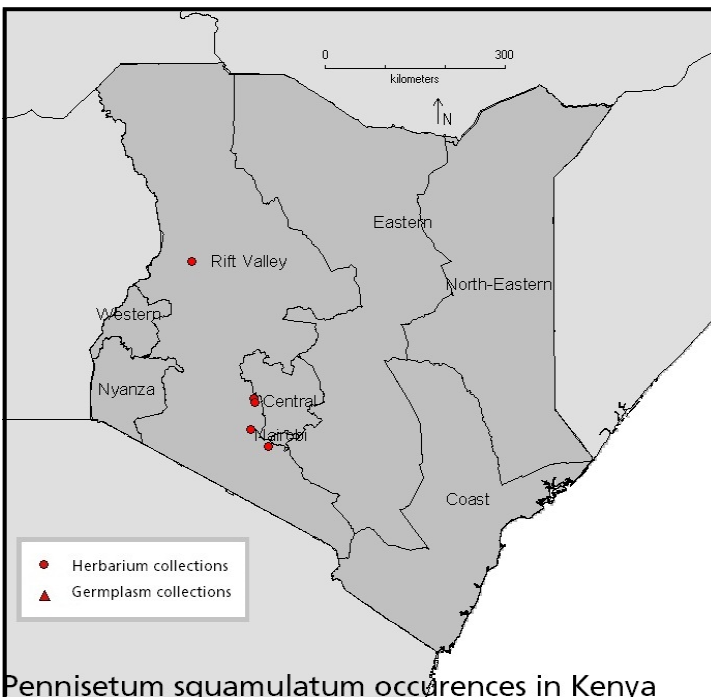
Rocky hillsides in open deciduous bushland.

Distribution:

Northeast tropical and east tropical Africa.

Altitude: 900 - 2100 m

<i>Pennisetum squamulatum</i>	May be confused with: <i>Pennisetum purpureum</i>
Spikelets all pedicelled.	At least one spikelet sessile in each involucre.

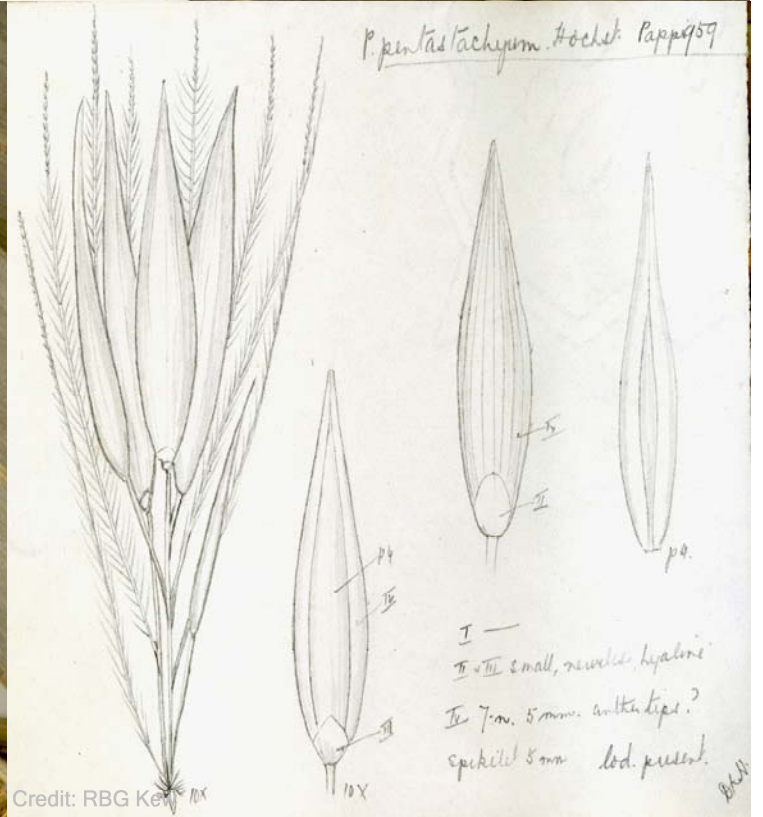


All populations priority
for collection

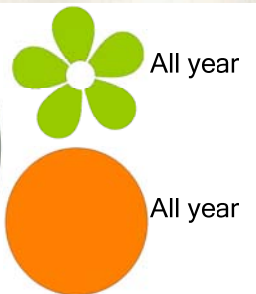
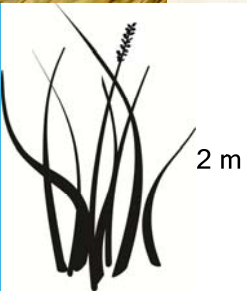
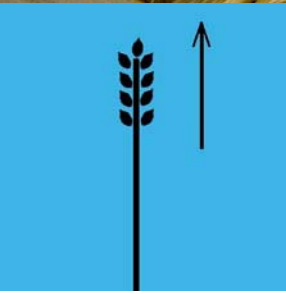
No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014]; Ibrahim, K.M. & Kabuye, C.H.S (1987) An Illustrated Manual of Kenya Grasses

Gene Pool Secondary relative of *Pennisetum glaucum* (L.) R. Br.



No seed image available



HABIT: Perennial; caespitose. Culms geniculately ascending; 30-120 cm long; wiry. Lateral branches suffrutescent. Ligule an eciliate membrane; 0.5-1.5 mm long; lacerate. Leaf-blades 3-15 cm long; 2-9 mm wide. **LEAVES:** Leaf-blade surface glabrous, or pubescent. Leaf-blade apex attenuate; filiform. **INFLORESCENCE:** Panicle spiciform; linear; 2-15 cm long. Primary panicle branches accrescent to a central axis; with lateral stumps on axis. Panicle axis with rounded ribs; smooth, or scaberulous; glabrous; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile; 1-2 in the cluster. Involucre composed of bristles; oblong; 7-12 mm long; base obtuse. Involucral bristles deciduous with the fertile spikelets; numerous; with longest bristle scarcely emergent; 7-12 mm long; terete; flexible; glabrous. Fertile Spikelets: Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Glumes dissimilar; shorter than spikelet; thinner than fertile lemma. Lower glume elliptic; 0.1-0.25 length of spikelet; hyaline; without keels; 0-1 -veined. Lower glume lateral veins absent. Lower glume apex obtuse. Upper glume elliptic, or ovate; 0.33-0.66 length of spikelet; membranous; without keels; 1-3 -veined. Upper glume apex obtuse, or acute. Florets: Basal sterile florets male; with palea. **FLOWER:** Lodicules absent. Anthers 3; 1.5-2 mm long; anther tip smooth. Styles free to the base.

Habitat:

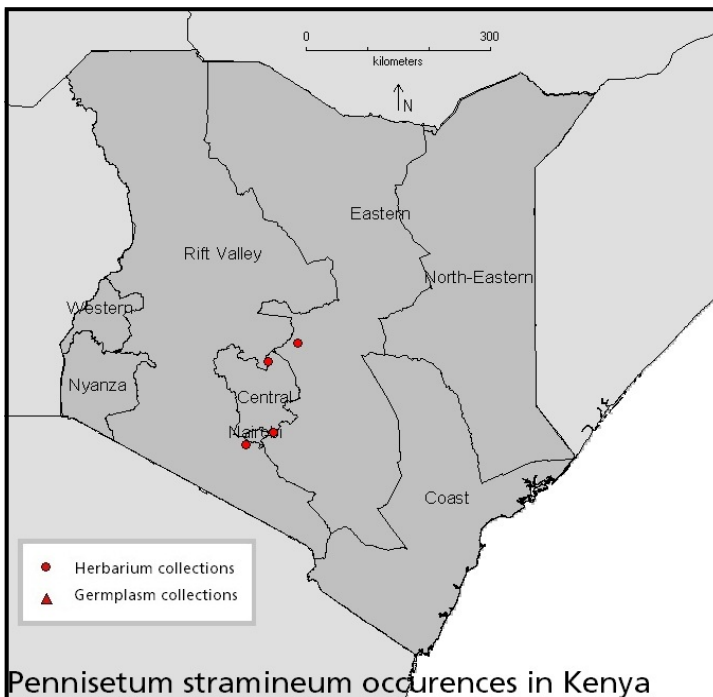
Deciduous Acacia/ Commiphora bushland often on black clays or volcanic soils, but sometimes on rocky sites.

Distribution:

Africa: northeast tropical and east tropical. Asia-temperate: Arabia.

Altitude: 1000 - 2500 m

<i>Pennisetum stramineum</i>	May be confused with: <i>Pennisetum purpureum</i>
Ligule membranous, 0.5 - 1.5 mm long.	Ligule represented by a line of hairs.



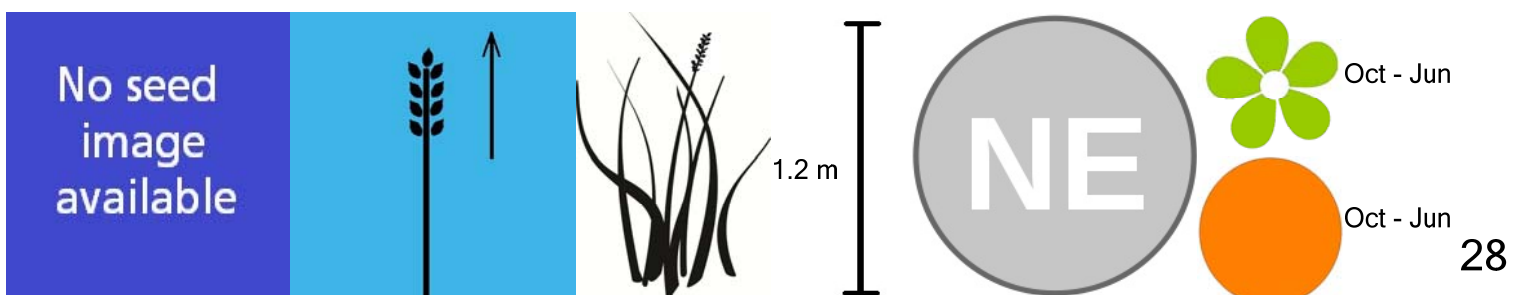
All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.

NO IMAGE AVAILABLE

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



HABIT: Perennial; caespitose. Rhizomes elongated. Butt sheaths glabrous. Culms erect, or geniculately ascending; 10-150 cm long. **LEAVES:** Leaf-sheaths glabrous on surface. Ligule a fringe of hairs. Leaf-blades flat, or convolute; 3-40 cm long; 2-8 mm wide. Leaf-blade apex attenuate; filiform. **INFLORESCENCE:** Peduncle glabrous. Panicle spiciform; linear, or oblong; 2-15 cm long. Primary panicle branches accrescent to a central axis; with lateral stumps on axis. Panicle axis with rounded ribs; scaberulous; glabrous; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile; 1 in the cluster. Involucre composed of bristles; oblong; 5-14 mm long; base truncate. Involucral bristles deciduous with the fertile spikelets; numerous; with longest bristle scarcely emergent; 5-14 mm long; terete; flexible; glabrous. Fertile spikelets: Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Glumes one the lower absent or obscure; shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets barren; without significant palea. Fertile lemma ovate; 2.5-5 mm long; membranous; without keel; 5-7 -veined. **FLOWER:** Lodicules absent. Anthers 3; 1.5-2.5 mm long; anther tip smooth, or penicillate. Styles connate below; 0.2 of their length connate. **FRUIT:** Caryopsis with adherent pericarp; oblong; dorsally compressed; 1.7 mm long.

Habitat:

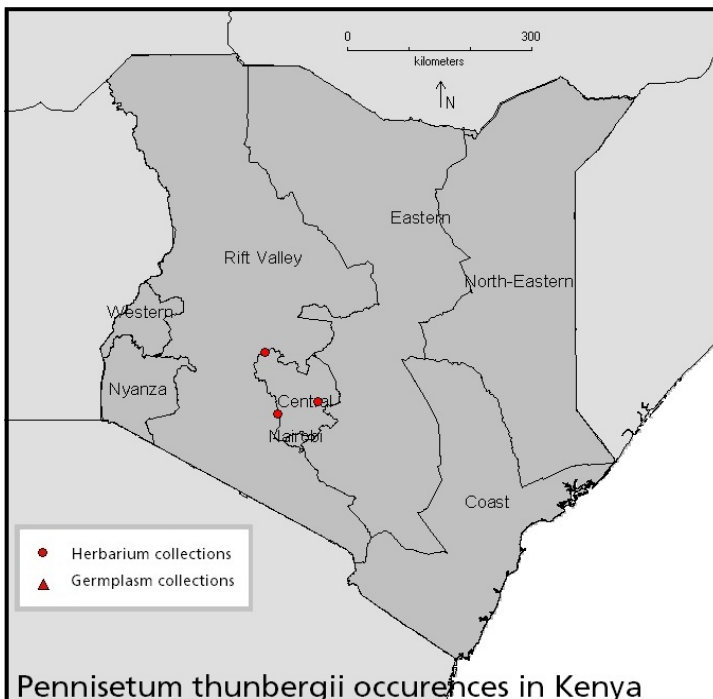
Upland grassland on damp soils, along roadsides and as a weed.

Distribution:

Tropical and South Africa, Arabia, India, Australia.

Altitude: 1500 - 3000 m

<i>Pennisetum thunbergii</i>	May be confused with: <i>Pennisetum mildbraedii</i>
Tip of lower lemma usually cuspidate-aristate.	Tip of lower lemma acute to acuminate



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



Kew herbarium material

No seed image available

1.5 m

All year

All year

HABIT: Perennial. Culms decumbent, or rambling; 60-200 cm long; rooting from lower nodes. Culm-nodes black. Ligule a fringe of hairs. **LEAVES:** Leaf-blades linear, or lanceolate; 10-45 cm long; 8-30 mm wide; membranous. Synflorescence compound; scanty. Inflorescence a panicle; terminal and axillary. Panicle spiciform; linear; 10-25 cm long. Primary panicle branches accrescent to a central axis; with sessile scars on axis. Panicle axis with rounded ribs; scaberulous; glabrous; bearing deciduous spikelet clusters. Spikelets subtended by an involucre. Fertile spikelets sessile; 1-3 in the cluster. Involucre composed of bristles; oblong; 5-9 mm long; base obtuse, or bluntly stipitate (indistinctly). Involucral bristles deciduous with the fertile spikelets; numerous; 15-30 in principal whorl; with one conspicuously longer bristle; 10-30 mm long; terete; flexible; glabrous. Fertile Spikelets: Spikelets comprising 1 basal sterile florets; 1 fertile florets; without rachilla extension. Glumes dissimilar; shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets male, or barren; with palea, or without significant palea. **FLOWER:** Lodicules absent. Anthers 3; 2-3 mm long; anther tip smooth. **FRUIT:** Caryopsis with adherent pericarp; oblong; dorsally compressed; 2.5 mm long.

Habitat:

River banks and forest edges on moist soils.

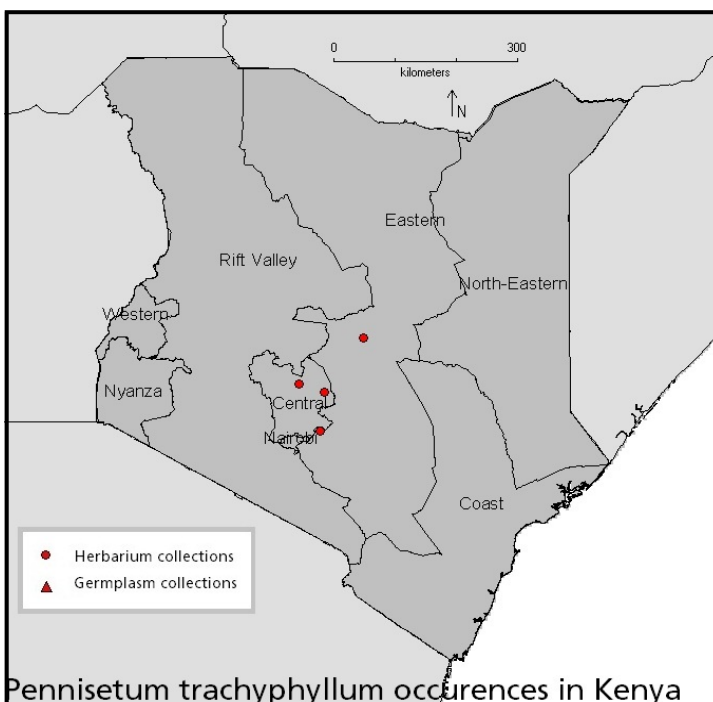
Distribution:

Tropical Africa.

Altitude: 1000 - 2500 m*Pennisetum trachyphyllum*May be confused with:
Pennisetum trisetum

Involucre well developed; axillary panicles few, nodes black.

Involucre sparse, of 2-5(-15) bristle, all but the longest shorter than the spikelet; panicles forming a scanty false inflorescence.

All populations priority
for collectionNo accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



Kew herbarium material

No seed
image
available

2 m

NE

All year

All year

30

HABIT Perennial; caespitose. Culms erect; robust; 60–400 cm long; 2–15 mm diam. Ligule a ciliate membrane. Collar glabrous, or bearded. Leaf-blade base without a false petiole, or with a false petiole. **LEAVES:** Leaf-blades linear to lanceolate; 20–60 cm long; (5–)10–30 mm wide; flaccid. Synflorescence compound; paniculate. Inflorescence a panicle; terminal and axillary. Panicle spiciform; linear; 2–4 cm long. Primary panicle branches accrescent to a central axis; with lateral stumps on axis. Panicle axis puberulous. Spikelets subtended by an involucre. Fertile spikelets sessile; 1 in the cluster. Involucre composed of bristles; base obtuse. Involucral bristles deciduous with the fertile spikelets; in one whorl; 1 in principal whorl; (2.5–)7–40 mm long; terete; flexible; glabrous. Fertile Spikelets: spikelets comprising 1 basal sterile florets; 1 fertile florets; without rhachilla extension. Glumes similar; shorter than spikelet; thinner than fertile lemma. Florets: Basal sterile florets barren; without significant palea.

Habitat:

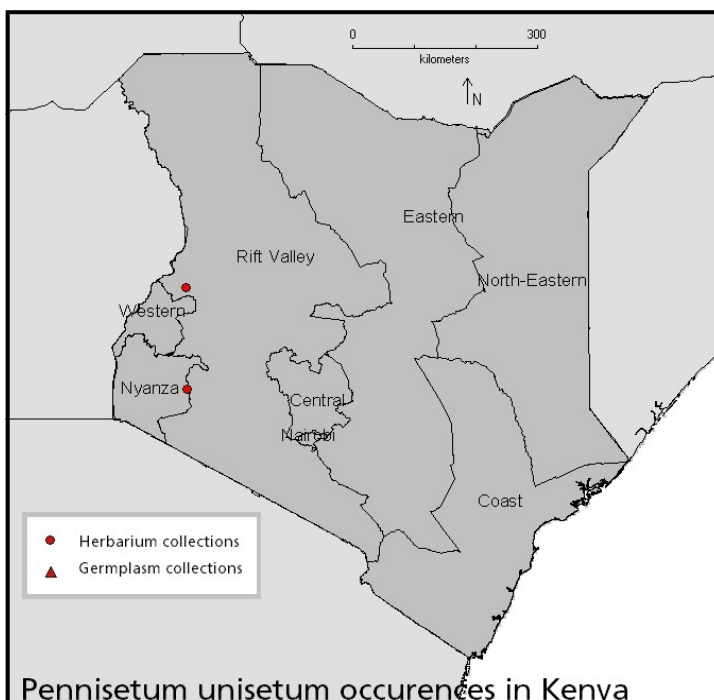
Deciduous bushland and wooded grassland often in moist and shady places.

Distribution:

Tropical and South Africa, Arabia, Papuaia.

Altitude: 1100 - 2000 m

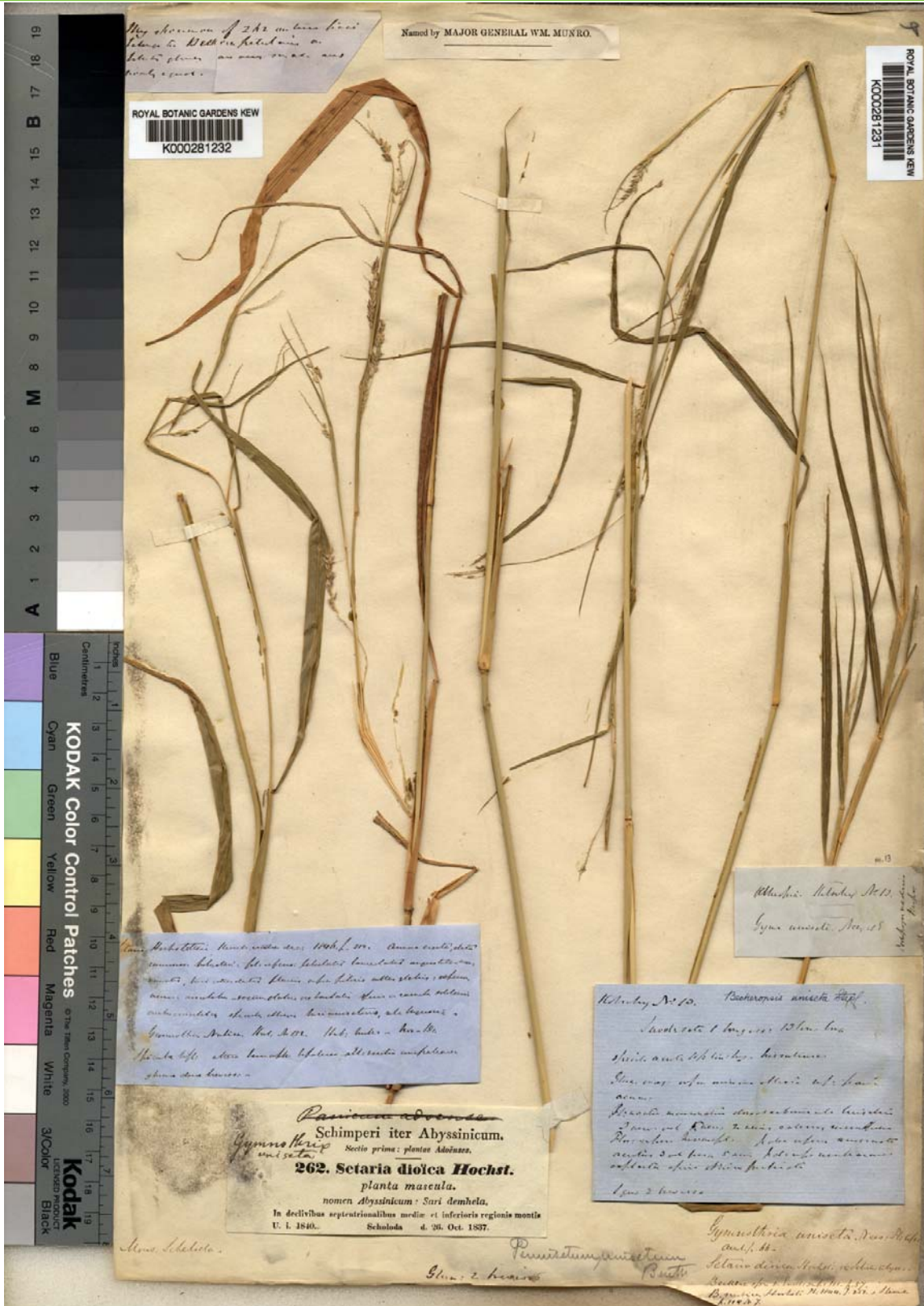
<i>Pennisetum unisetum</i>	May be confused with: <i>Pennisetum procerum</i>
Leaf blades (5-) 10 - 30mm wide; spikelets 2-3 mm long.	Leaf blades 1-4 mm wide, spikelets 3-4 mm long.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: 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 10th March 2014; 10:00 GMT]; An Illustrated Manual of Kenya Grasses (1987) Ibrahim KM & Kabuye CHS.



Kew herbarium material

No seed image available

4m

NE

✿

All year

●

All year

HABIT: Annual, rarely short-lived perennial; culms 30-400 cm high, robust, branched; leaf sheaths glabrous; ligule a membrane, edged with a fringe of fine hairs and hairy on the back; leaf laminae often large, 5-75 cm × 5-7 mm, broadly lanceolate, flat, glabrous on both surfaces, with a prominent whitish midrib. **INFLORESCENCE:** Panicle 10-60 cm long, broadly spreading; main axis angular, glabrous; primary branches divided, pubescent at the nodes; racemes 2-7-jointed; rachis internodes and pedicels pilose. Sessile spikelet (4)7(9) mm long, lanceolate to narrowly ovate; glumes coriaceous; inferior glume dorsally compressed, narrowly ovate, 2-keeled on the margins, superior glume glabrescent or with sparse hairs on the back; inferior floret empty, its lemma c. 5.5 mm long, lanceolate, ciliate on the margins; superior floret bisexual, its lemma c. 3 mm long, deeply lobed, ciliate on the lobes and margins, awned; awn up to 20 mm long, glabrous; palea c. 2 mm long. Pedicelled spikelets neuter, c. 6.5 mm long, linear to lanceolate; glumes chartaceous; inferior glume glabrous; superior glume slightly shorter than the inferior, glabrous; inferior lemma glabrous, with a truncate apex.

Habitat:

Swampy soils, streamsides, disturbed places and old farmland.

Distribution:

Native to Africa, Madagascar, and perhaps to the Mascarenes, but also introduced to India, Australia, and the Americas.

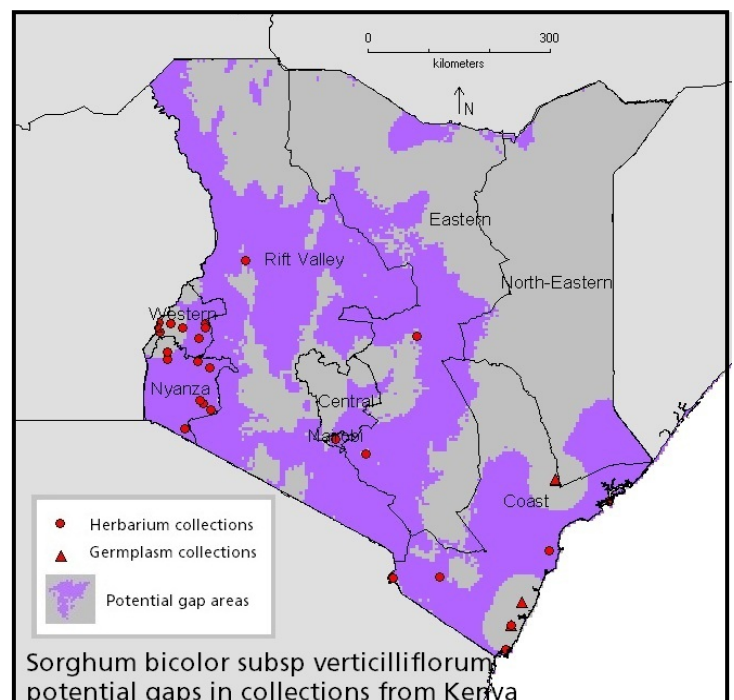
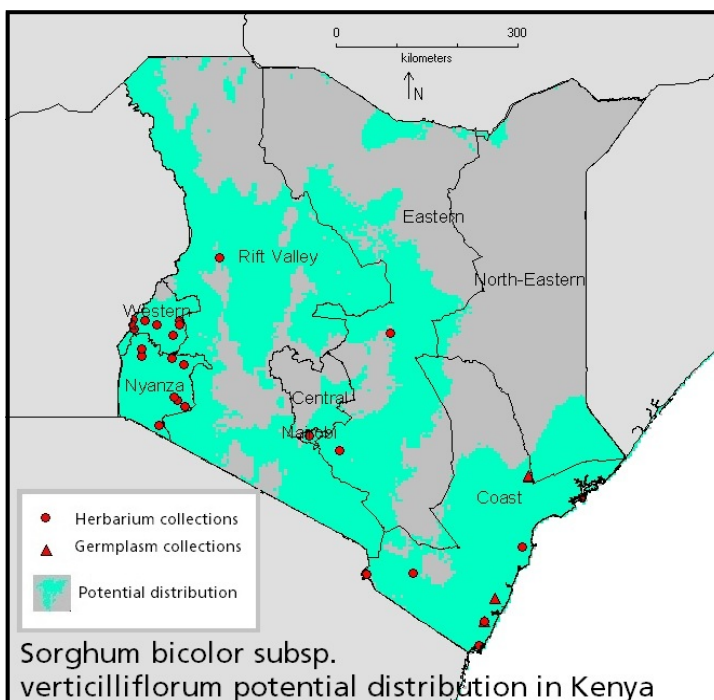
Altitude: 50 - 1400 m

Sorghum bicolor subsp. verticilliflorum

May be confused with:
Sorghum bicolor subsp. drumondii

Leaf blades linear lanceolate, up to 75 x 7cm, panicle up to 60 cm long x 25 cm wide.

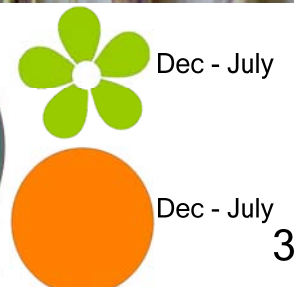
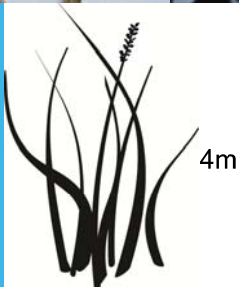
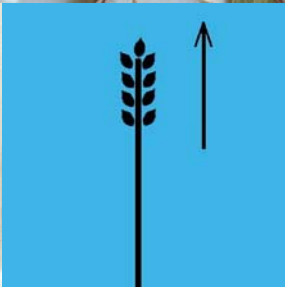
Leaf blades lanceolate 50 x 6 cm, panicles 30 cm long x 15 cm wide.

**References:**

Sorghum bicolor subsp. verticilliflorum (Steud.) de Wet

Gene Pool Primary relative of *Sorghum bicolor subsp. bicolor*

Common wild Sorghum



Gene Pool Tertiary relative of *Sorghum bicolor*

HABIT: Annual, culms 30 - 150 cm high, the nodes bearded. **LEAVES:** Leaf blades 10 - 50 cm long, 2 - 10 mm wide. **INFLORESCENCES:** Panicle narrowly oblong, 5 - 35 cm long, primary branches whorled (rarely the longer branched), bearing rachemes of 3-5 spikelet pairs. Sessile spikelet lanceolate, 7.5 - 10 mm long, lower glume coriaceous, glossy, reddish brown to black, glabrous or sometimes densely villous, bearded from the callus with white to rufous hairs, awn 20 - 40 mm long. Pedicelled spikelet linear to lanceolate, 6-10 mm long, greenish.

Habitat:

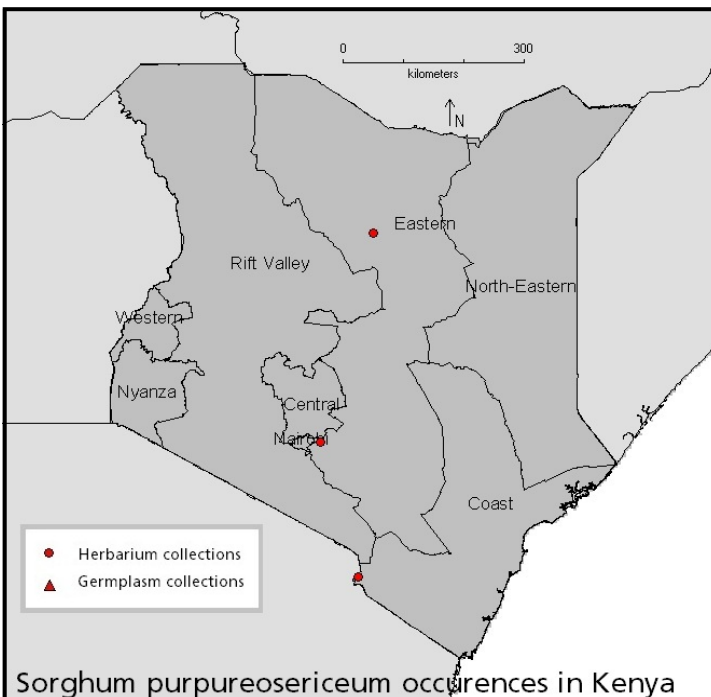
Riverine or lakeside alluvial soils and on black clays.

Distribution:

Middle and Eastern Africa, and Southcentral Asia.

Altitude: 500 - 1500 m

<i>Sorghum purpureosericeum</i>	May be confused with: <i>Sorghum versicolor</i>
Sessile spikelet 8-10 mm long, lanceolate; pedicelled spikelet 6-10 mm long.	Sessile spikelet 5-7 mm long, elliptic-oblong; pedicelled spikelet 3-5 mm long.

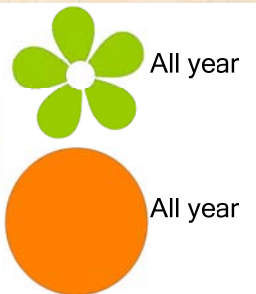
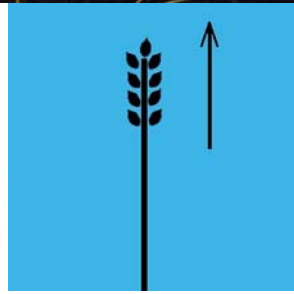
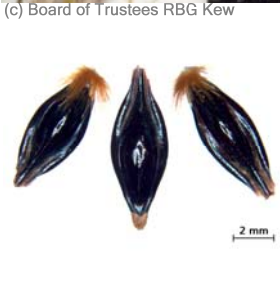
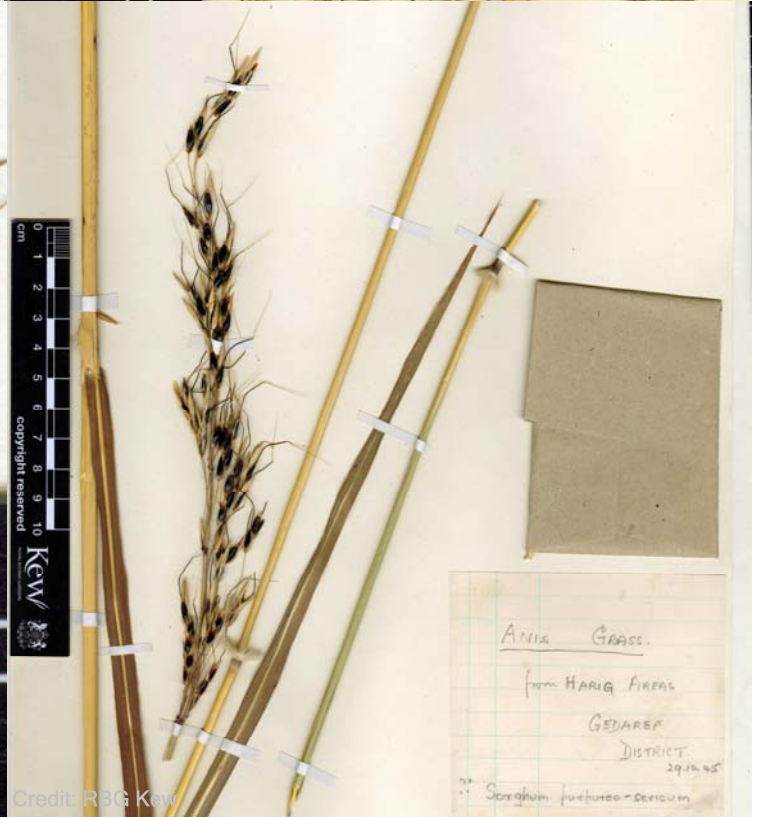


All populations priority for collection

No accessions from Kenya listed on Germplasm Resources Information Network (GRIN) [online database] for this taxon

References: Phillips, S. (1995) Poaceae. In: Flora of Ethiopia and Eritrea Volume 7 p301; Clayton & Renvoize (1982) Flora of Tropical East Africa Graminae (Part 3).

Gene Pool Tertiary relative of *Sorghum bicolor*



Wild relative of Eggplant - *Solanum melongena* L.

Impwa

HABIT: Erect herb to shrub, prickly. Young stems erect, robust, densely stellate-pubescent and prickly, with porrect, variously stalked trichomes; bark of older stems densely stellate-pubescent, yellow-brown. **LEAVES:** lobed, the blades 9-15 cm long, 6-12 cm wide, 1.5-2 times longer than wide, ovate, chartaceous, densely stellate-pubescent. **INFLORESCENCES** terminal or lateral, 3-10.5 cm long, not branched, with 5-8 flowers, densely stellate-pubescent. **FLOWERS** 5-merous, heterostylous and the plants andromonoecious, with the lowermost flower long-styled and hermaphrodite, the distal flowers short-styled and staminate. Corolla ca. 3.5 cm in diameter in long-styled flowers, 1.8-2.4 cm in diameter in short-styled flowers, white with purple midveins to mauve, stellate, lobed for 1/4-1/2 of its length. **FRUIT** a spherical berry, 1 per infructescence, 3.2-3.8 cm in diameter, the pericarp smooth, dark green with pale green and cream markings when young, yellow at maturity. **SEEDS** ca. 100-200 per berry, 2.9-3.2 mm long, 2-2.7 mm wide, flattened-reniform, orange-brown.

Habitat:

Edges of roadsides, Brachystegia woodland, and grassland.

Distribution:

Southern Tropical Africa, from Southern Democratic Republic of the Congo to Angola, southern Tanzania, Zambia, and Zimbabwe.

Altitude: 800 - 1600 m

Solanum aureitomentosum

May be confused with:
Solanum lichtensteinii

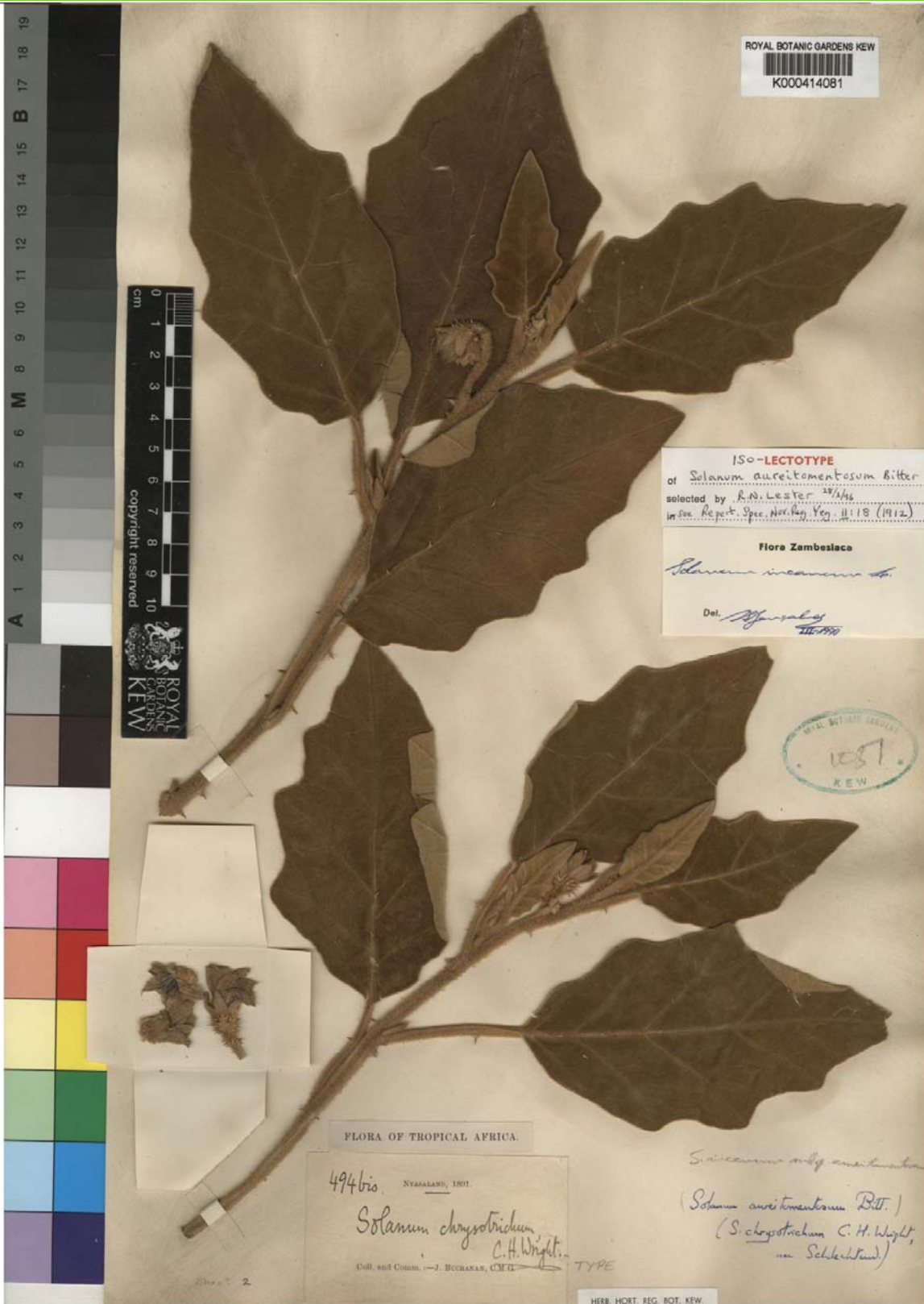
Calyx lobes ovate to oblong, foliaceous, 7-10 mm long on long-styled flowers.

Calyx lobes long deltoid, appearing less foliaceous, and 3.5-6 mm long on long-styled flowers.



Reported from
Kenya, but
no localities
known.

References: Knapp S, Vorontsova MS, Prohens J (2013) Wild Relatives of the Eggplant (*Solanum melongena* L.: Solanaceae): New Understanding of Species Names in a Complex Group. PLoS ONE 8(2); Vorontsova MS, Knapp S, A REVISION OF THE SPINY SOLANUMS, SOLANUM SUBGENUS LEPTOSTEMONUM (SOLANACEAE) IN AFRICA AND MADAGASCAR, unpublished.



RBG Kew Herbarium specimen

No seed image available

0.5-1.5m

LC PRELIM

Sep - Jan
Jan - Jul

Secondary gene pool of Eggplant - *Solanum melongena* L.

HABIT: Erect shrub, prickly or unarmed. Young stems erect, robust, moderately to densely stellate-pubescent and prickly or unarmed, with porrect, sessile or variously stalked trichomes; bark of older stems moderately stellate-pubescent, green-brown to red-brown. **LEAVES:** entire, sometimes lobed, the blades 3.5-17(-40) cm long, 0.6-10(-19) cm wide, 1.5-4 times longer than wide, ovate to elliptic or lanceolate, chartaceous, moderately to densely stellate-pubescent on both surfaces, with porrect, sessile or stalked trichomes. **INFLORESCENCES:** terminal or lateral, 2-11 cm long and the plants andromonoecious, with 1-3(5) long-styled flowers at the base of the inflorescence. Flowers (4-)5(-6)-merous, heterostylous. Calyx 7-15 mm long in long-styled flowers, 5-10 mm long in short-styled flowers. Corolla 2.5-4.5 cm in diameter in long-styled flowers, 1.8-4 cm in diameter in short-styled flowers, pale mauve to dark mauve, stellate. **FRUIT:** a spherical berry, 1-2(-4) per infructescence, 1.5-3 cm in diameter, the pericarp smooth, dark green with pale green and cream markings when young, yellow at maturity; fruiting pedicels woody, pendulous, with 0-10 prickles. Seeds ca. 30-150 per berry, 2.7-3.2 mm long, 1.9-2.6 mm wide, flattened-reniform, dull yellow to orange-brown.

Habitat:

Roadsides, abandoned cultivation, savanna, bushland, dunes, forest edges etc.

Distribution:

Found throughout Eastern Africa and distributed as far north as Sudan.

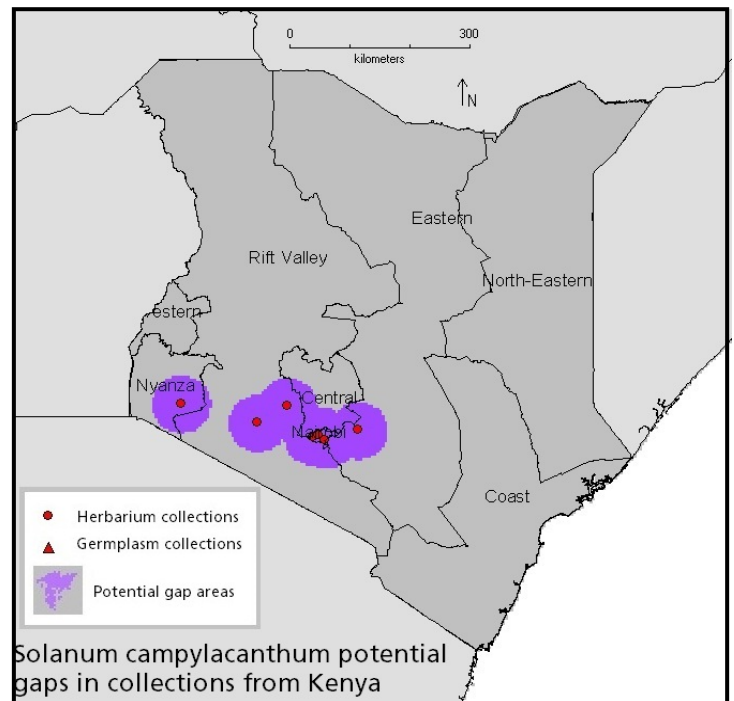
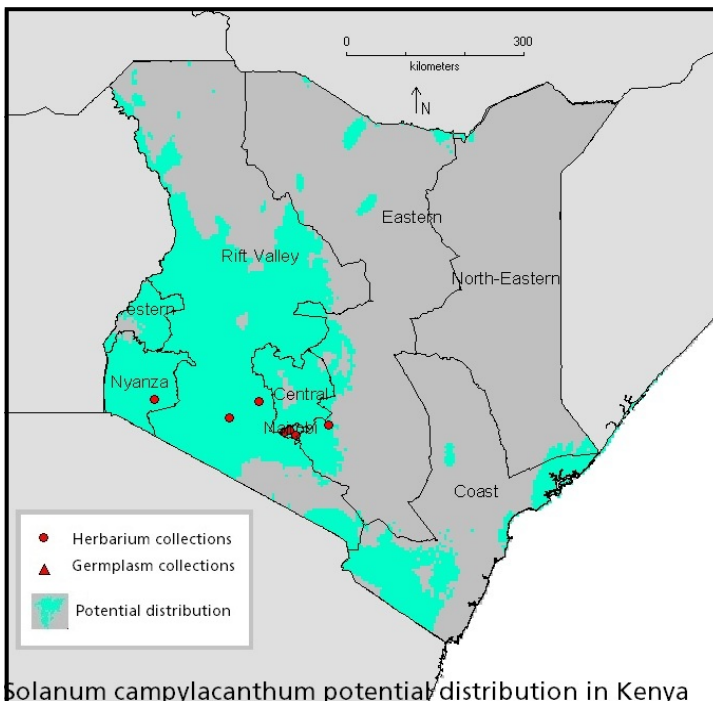
Altitude: 0-2300 m

Solanum campylacanthum

Extremely widespread and variable, recognised by mauve flowers, big bright yellow fruits, a long taproot, and leaves that are usually big and entire.

May be confused with:
Other prickly Solanums

Other *Solanum*s in this area do not have this combination of characters.



References: Vorontsova, M. & Knapp, S. *Solanum campylacanthum*. In *Solanaceae Source*. <http://solanaceaesource.org/content/solanum-campylacanthum> [Downloaded 18th April 2013.]

Secondary gene pool of Eggplant - *Solanum melongena* L.



0.2-1.5 m

LC
PRELIM



All year

All year

HABIT: Perennial herbs to subshrubs, 10-70 cm, usually armed, often with several stems. Young stems erect, ribbed, becoming terete with age, densely stellate-pubescent. **INFLORESCENCE:** lateral, 2-3 cm long, unbranched, with 1-6(10) flowers; peduncle 0-0.5 cm; rachis 0-0.8(3.8) cm; peduncle and rachis densely pubescent. **FLOWERS** apparently all perfect, 5-merous. Calyx widely cupular to obconical, divided for 1/2-2/3(3/4) of its length, the tube 2-4 mm long, the lobes equal or unequal, narrow-deltoid, apically acute to caudate, 4-6.5 x 1.8-2.5 mm, tearing unevenly, the central tissue chartaceous, with a dark raised midvein. Corolla 1.5-2.3 cm in diameter, blue-violet, rotate, lobed for ca. 2/3 of its length. Stamens free; filament tube ca. 1.5 mm. **FRUIT** a globose berry, 2-8 per infructescence, 0.7-1.3 cm in diameter, the pericarp ca. 0.15 mm thick, hard, shiny, bright yellow to orange, yellow at maturity, with venation visible on the inner surface, glabrescent, the trichomes as those on the stems but less regular and matted; fruiting calyx accrescent, the calyx tube expanding ahead of the developing fruit, enclosing almost all pericarp. **SEEDS** 2.3-2.8 x 1.7-2.5 x ca. 0.7 mm, asymmetrical, rounded-reniform, somewhat variable in outline, thickened towards the center, shiny, dark red-brown, appearing intense black, the surface smooth, with fine raised outlines of cells or small pits.

Habitat:

Cultivated land, grazed ground, roadsides, coastal plains, and savannah; usually on sand, silt or loam.

Distribution:

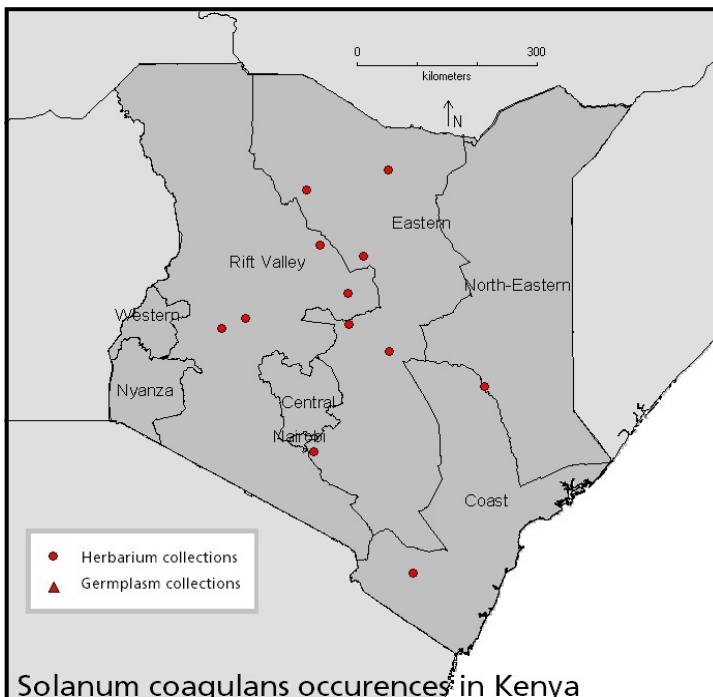
Northeast Africa and the Arabian Peninsula.

Altitude: 0 - 1700 m

Solanum coagulans

May be confused with:
Other African Solanums

Distinguished by densely spiny accrescent calyx covering most of the pericarp.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References:



Credit: Maria Vorontsova / RBG Kew



Credit: Maria Vorontsova / RBG Kew



Credit: Maria Vorontsova / RBG Kew



Credit: Maria Vorontsova / RBG Kew

No seed
image
available



0.7 m



All year

All year

Tertiary gene pool of Eggplant - *Solanum melongena* L.

HABIT: Erect woody perennial herb, 0.5-1 m, heavily armed, branched at the base.

LEAVES: simple, the blades 10-35 × 6-20 cm, 1.2-2 times longer than wide, elliptic, chartaceous, sparsely to densely stellate-pubescent on both sides.

INFLORESCENCES: lateral, extra-axillary, 4-7 cm long, unbranched, with 5-10 flowers. Plants strongly andromonoecious, with one long-styled flower at the base of the inflorescence and all other flowers short-styled, the flowers 5-merous. Calyx 1-3 cm long in long-styled flowers, 0.8-2 cm long in short-styled flowers. Corolla 3.5-6 cm in diameter in long-styled flowers, 1.5-3.5 cm in diameter in short-styled flowers, (white) pale mauve to purple, almost rotate, the abundant interpetalar tissue often tearing. **FRUIT:** a globose berry, 1(2) per infructescence, 2.5-4 cm in diameter, spherical throughout development, rarely somewhat elongate, the pericarp thin, smooth, shiny, glabrous, plain green or with dark green stripes when young, yellow at maturity, drying orange-brown. Seeds ca. 50-100 per berry, 2.8-4.5 × 2-3.5 × ca. 0.3 mm, flattened-reniform, almost round, orange to brown or almost black.

Habitat:

Usually a forest species but also found on hillsides, savannah, grassland, or wasteland, frequently near water.

Distribution:

Common throughout the highlands of West, Central and East Africa, between ca. 15°N and ca. 5°S.

Altitude: 600 - 1600 m

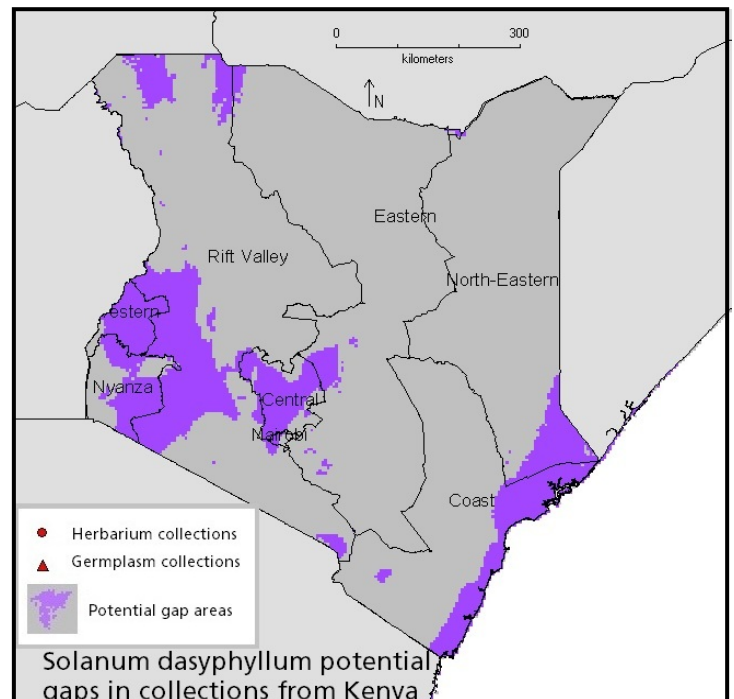
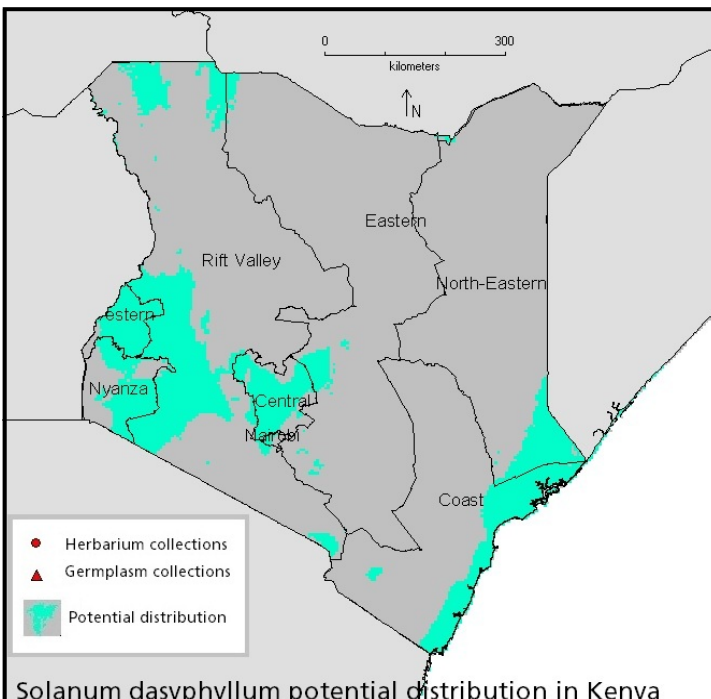
Solanum dasyphyllum

Distinguished by lack of distinct petiole or long-attenuate leaf bases, almost rotate corolla on short-styled flowers, and only 4(5) rays on the stellae on vegetative parts of the plant.



May be confused with:
Other prickly Solanums

Other prickly Solanums in this area do not have this combination of characteristics.



References: Vorontsova, M, (2009) *Solanum dasyphyllum*. In Solanaceae Source. <http://solanaceaesource.org/content/solanum-dasyphyllum> [Downloaded 20th February 2013]. Material for seed photo provided by IBPGR.

SOLANACEAE

Solanum dasyphyllum Schumach.

Tertiary gene pool of Eggplant - *Solanum melongena* L.



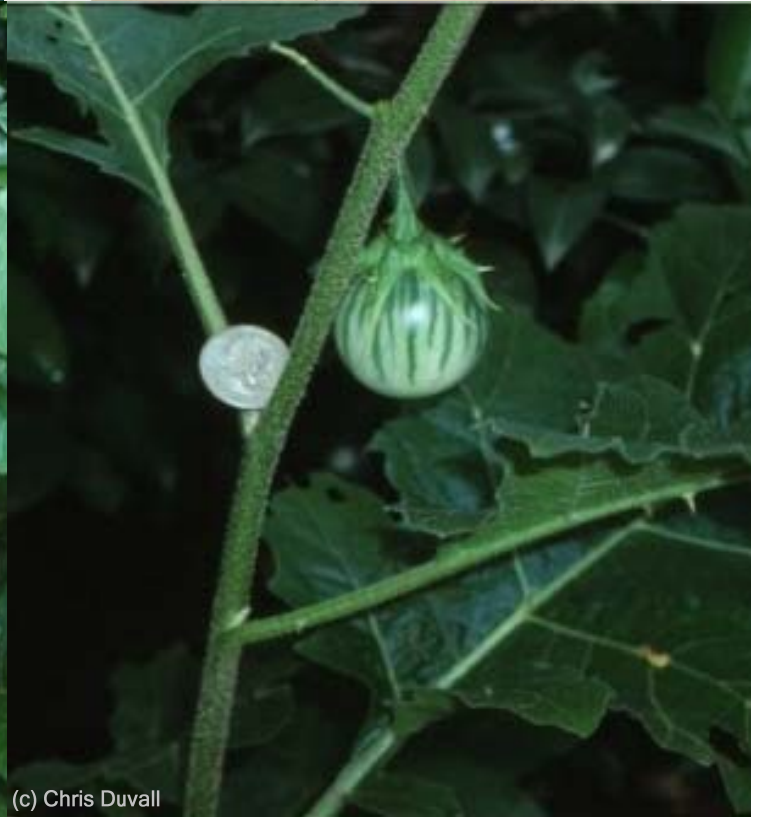
Credit: Raboud University Nijmegen Genebank



Credit: Raboud University Nijmegen Genebank



(c) Chris Duvall



(c) Chris Duvall

Gemma Toothill (c) Board of Trustees RBG Kew



Up to 1m



All year

All year

Gene Pool Tertiary relative of *Solanum melongena* L.

HABIT: Perennial herb or small shrub, occasionally scandent, up to 2(3) m, unarmed; hairs stellate, off-white, sometimes violaceous or reddish tinged. Branches floccose-tomentose at first, gradually glabrescent. **LEAVES** solitary or partly subgeminat; petiole 0.5-4.5 cm long; lamina membranous, 3-22.5 × 1-9 cm, lanceolate to obovate, base cuneate, gradually narrowing into the petiole and ± unequal-sided, apex acute or acuminate, underside paler, with 5-9 pairs of lateral nerves. Cymes 3-24-flowered. **FLOWERS:** (4)5-merous, ± nodding. Calyx 2-4(5) mm long, somewhat accrescent, campanulate or cupular, ± hairy; lobes somewhat unequal. Corolla bluish to pale violet or lilacineous, sometimes white, campanulate-stelliform; limb 8-15 mm across; lobes 3-8 × 1-3.5 mm, linear-lanceolate or lanceolate, acute, ± densely hairy outside mainly on the median part, glabrous except for a few stellate hairs scattered along the midvein or only near the apex inside, erect to reflexed. **FRUIT** shining bright to deep red when ripe, 6-10 mm in diameter, globose, soft. **SEEDS** not very numerous, pale yellowish, 3-5 × 2.5-4 mm, compressed, somewhat obliquely reniform, largely reticulate-tuberculate.

Habitat:

Dry forest margins and understorey, mopane woodland, savanna woodland and coastal bushland, sometimes on termite mounds or around granite outcrops, ruderal places and other areas of disturbance e.g. along roads.

Distribution:

Known from Kenya and Tanzania.

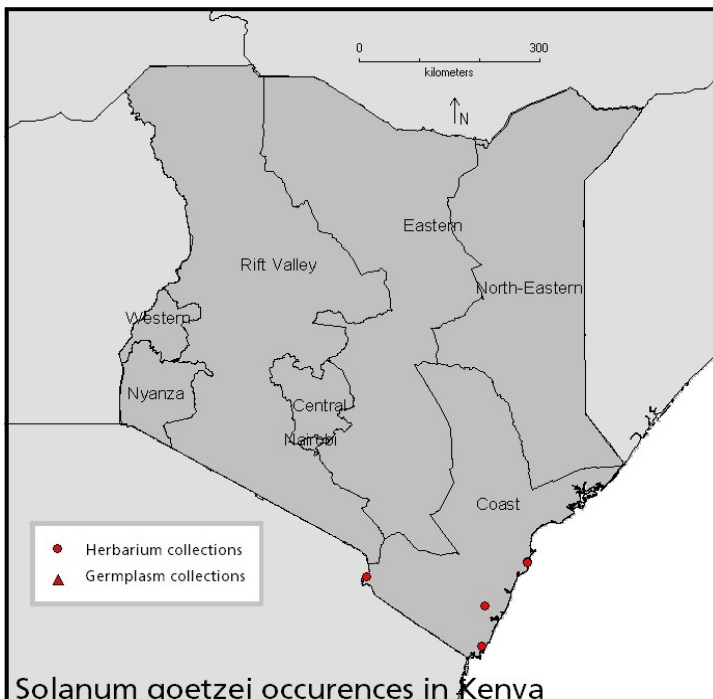
Altitude: 0 - 1189 m

Solanum goetzei

May be confused with:
Other African Solanums

The lack of prickles, the sparse indumentum and exceptionally large seeds are useful spot characters for this distinct species.

Other species do not have this combination of characters.



All populations priority
for collection

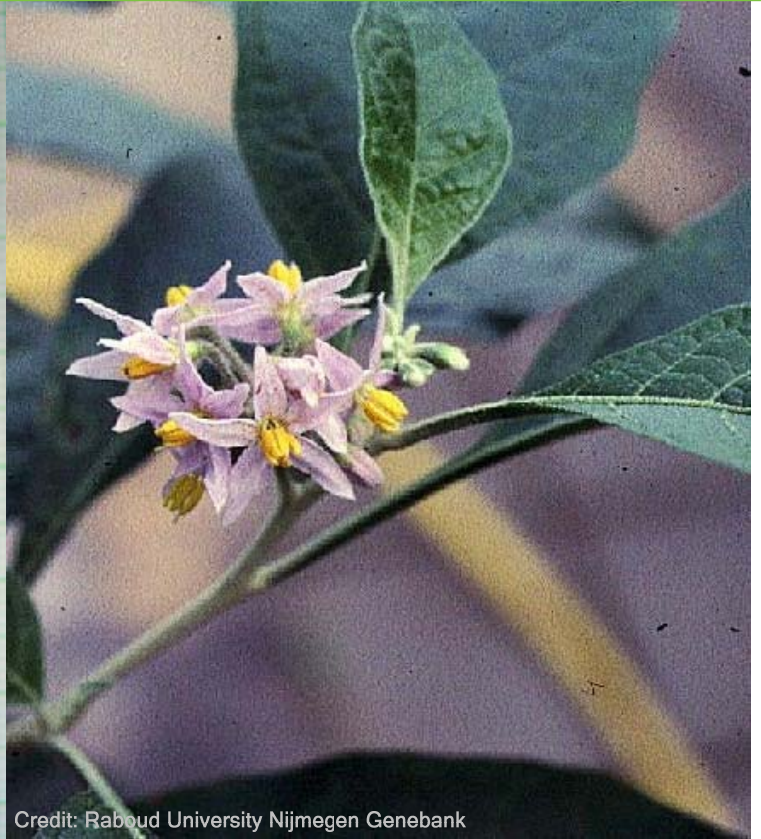
No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: FZ volume:8 part:4 (2005) Solanaceae by A.E. Gonçalves

Gene Pool Tertiary relative of *Solanum melongena* L.



Credit: Raboud University Nijmegen Genebank



Credit: Raboud University Nijmegen Genebank



Credit: Raboud University Nijmegen Genebank



Credit: Raboud University Nijmegen Genebank

No seed
image
available



2m



All year

All year

Tertiary genepool of *Solanum melongena*ethsakilele; gala-out;
edonamuroi

HABIT: Woody herb or small shrub, usually erect, sometimes ascending or climbing, 0.3-1(1.5) m, armed, sparsely branched; bark smooth, grey to brown; leaves evenly distributed along the stems. **LEAVES:** simple, the blades 2.5-6.5 × 0.8-2.5 cm, 2-4 times longer than wide, ovate to lanceolate, chartaceous, yellow-green; margin lobed, the lobes 2-4 on each side. **INFLORESCENCES:** terminal or lateral, 1-3 cm long, not branched, with 3-5 flowers. Flowers apparently all perfect, 4-merous or 5-merous. Calyx 4-6 mm long, obconical, divided for 1/3-2/3 of its length. Corolla 1.4-2 cm in diameter, pale mauve to purple or blue (white), strongly reflexed, lobed for ca. 4/6 of its length, with a faint to dark midvein. **FRUIT:** a globose berry, 1-4 per infructescence, 6-8 mm in diameter, spherical throughout development, the pericarp thin, smooth, shiny, white to light green with dark green lines or spots when young, bright red at maturity, calyx not accrescent, the lobes usually reflexed at maturity. Seeds ca. 10 per berry, 2.8-3.3 × 2-2.8 × ca. 0.3 mm, flattened-reniform, often somewhat irregular in outline, yellow-orange, the surface smooth or with raised outlines of cells or small pits.

Habitat:

Dry Acacia scrub, open places, disturbed vegetation and roadsides on sand, clay, loam and black cotton soil.

Distribution:

Widespread, dry, mainly inland East African species found from Sudan, Ethiopia and Somalia to Uganda and northern Tanzania.

Altitude: 0-1500m

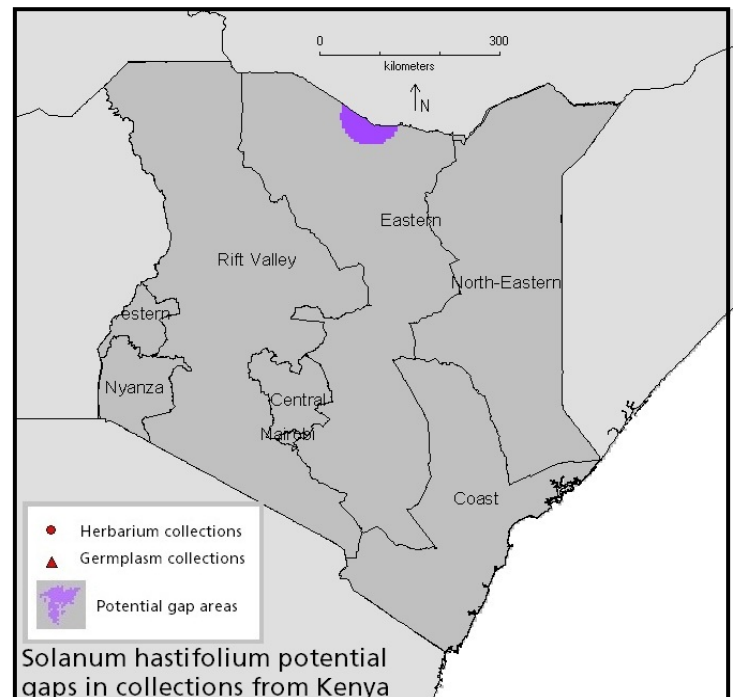
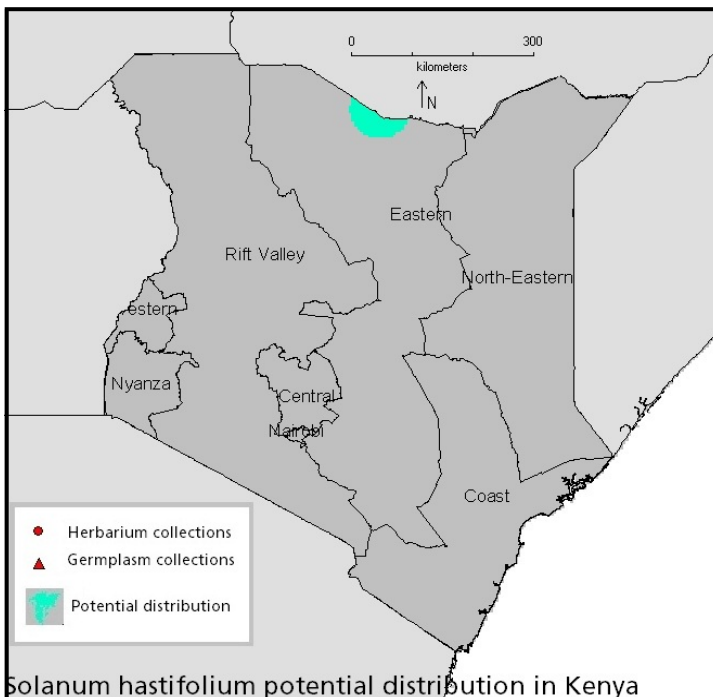
Solanum hastifolium

Lobed leaves 2.6-6.5 cm long; abundant prickles 1-4 mm long; 3-5 flowers per inflorescence; sparsely to moderately pubescent.

May be confused with:

Solanum taitense & *S. setaceum*

Solanum taitense: entire - subentire leaves 1.2-3cm long; inconspicuous prickles 1 mm long; 1-2 flowers per inflorescence; desnsely pubescent. *Solanum setaceum* distinguished by prominent stem bristles.



References: Vorontsova, M. (2008) *Solanum hastifolium*. In Solanaceae Source <http://solanaceaesource.org/content/solanum-hastifolium> [Downloaded 22nd Feb 2013]; Edmonds, J.M. 2013, FTEA Solanaceae.



Credit: Raboud University Nijmegen Genebank



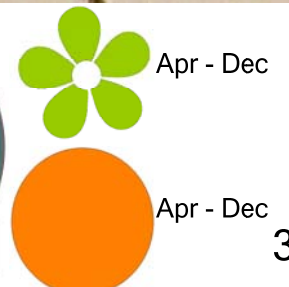
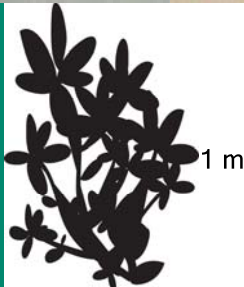
Credit: Raboud University Nijmegen Genebank



Gemma Toothill (c) Board of Trustees RBG Kew



Credit: Raboud University Nijmegen Genebank



Gene Pool Secondary relative of *Solanum melongena* L.

HABIT: Scandent shrub to 2 m, armed, sparsely branched; stems glabrescent; bark smooth, greyish. **LEAVES** simple, blades 3-6 × 2.5-4 cm, 1.5-2 times longer than wide, ovate, chartaceous, densely stellate-pubescent abaxially; the primary veins 3-5 pairs, petiole 1-2 cm. **INFLORESCENCES** 2-4 cm long, not branched, 3-10-flowered, with 1-4 flowers open at a time, Buds ovoid to ellipsoid. Plants andromonoecious, with 1(-2) long-styled flowers at the base of the inflorescence. Calyx 5-8 mm long, obconical, divided for 1/3-2/3 of its length. **COROLLA** 2-3.7 cm in diam, white to pale mauve, stellate, tearing unevenly at anthesis, with a dark midvein. **STAMENS** with the filament tube 2-2.5 mm; free portion of the filaments ca. 1.5 mm. **FRUIT** a globose berry, 1(-2) per infructescence, ca. 15 mm in diam, spherical throughout development, the pericarp thin, smooth, shiny, marbled green and white when young becoming yellow at maturity; calyx accrescent to ca. 10 mm long, covering ca. 1/3 of the mature fruit, with 10-30 straight or curved prickles. **SEEDS** ca. 50-100 per berry, 2.5-3.5 × 2-2.5 × ca. 0.3 mm, flattened-reniform, often somewhat irregular in outline, brown, the surface smooth or with raised outlines of cells or small pits.

Habitat:

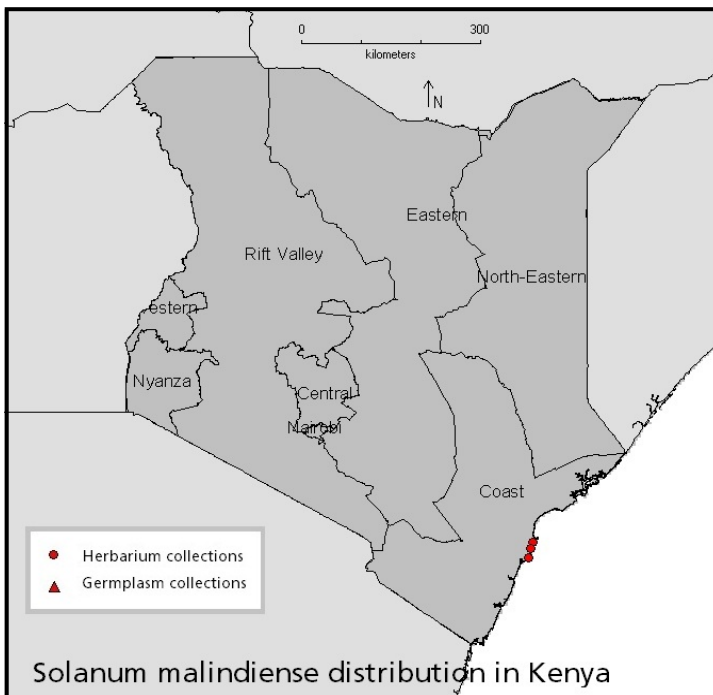
Coastal bush, dunes and sand, often on coral.

Distribution:

Found in Kenya, Coast province.

Altitude: 0 - 20 m*Solanum malindiense*May be confused with:
S. zanzibarensis and *S. litoraneum*Corollas, anthers and fruit are larger in *Solanum malindiense* than in either of these species.

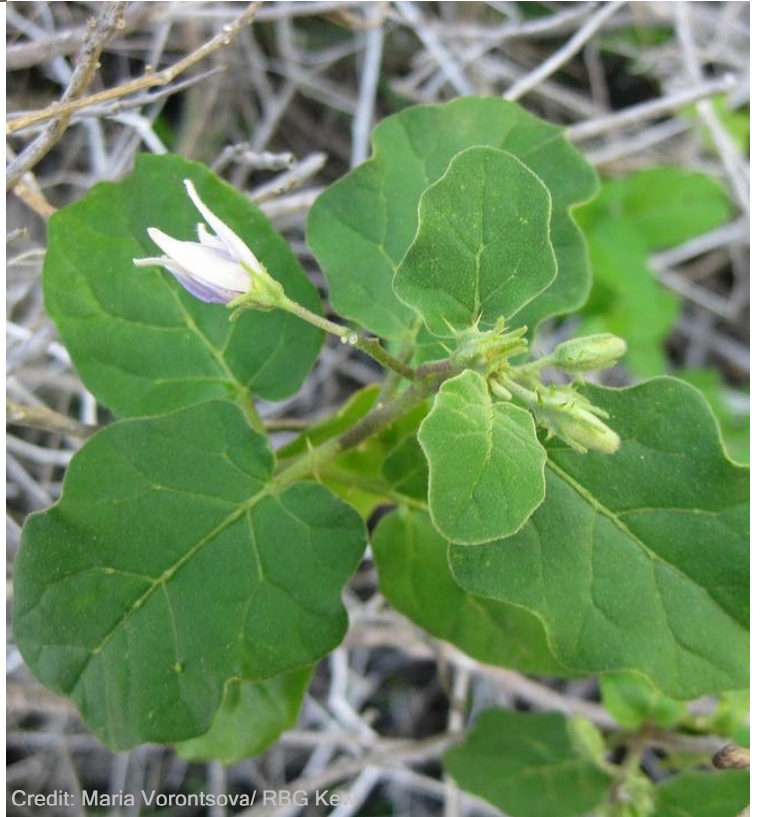
Smaller anthers, corollas and fruit.

All populations priority
for collectionNo accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon**References:** Vorontsova et al. Systematic Botany (2010), 35(4): pp. 894-906


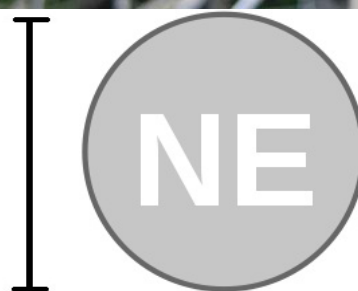
SOLANACEAE

Solanum malindiense Voronts.

Gene Pool Secondary relative of *Solanum melongena* L.



No seed image available



Jul - Nov
Jul - Nov

HABIT: Erect shrub, 0.5-1.5 m, prickly. Young stems erect, densely stellate-pubescent and prickly, with trichomes. Prickles 2-4 mm long. **LEAVES** subentire, rarely lobed on mature leaves, the blades 4-15(-25) cm long, 1-4.5(-7) cm wide, ovate, sometimes elliptic, chartaceous, adaxial surface densely stellate-pubescent, with 0-5 prickles on both surfaces; the primary veins 5-7 pairs. **INFLORESCENCES** 3-4(-6) cm long, unbranched, with 6-20 flowers, 2-4 flowers open at any one time. **FLOWERS** 5-merous, apparently all perfect. Calyx 3-6 mm long, the lobes 1-2 mm long, deltoid, apically acute, densely stellate-pubescent, with 0-4 prickles. Corolla 1-1.4 cm in diameter, white to mauve, stellate, lobed for ca. 2/3 of its length, the lobes 3.5-4.5 mm long, 2-3 mm wide, deltoid, spreading or weakly reflexed, moderately to densely stellate-pubescent abaxially. **FRUIT** a spherical berry, 6-13 per infructescence, 0.6-0.9 cm in diameter, the pericarp smooth, evenly green when young, orange to bright-red at maturity; fruiting pedicels 0.7-1.2 cm long, 0.4-1 mm in diameter at base, woody, pendulous, with 0-5 prickles; fruiting calyx accrescent, elongating to 4.5-6 mm long, covering 1/3-1/2 of the mature fruit, with 0(-4) prickles. **SEEDS** ca. 10-15 per berry, 2.5-3 mm long, 1.8-2.5 mm wide, flattened-reniform, dull yellow to orange-brown.

Habitat:

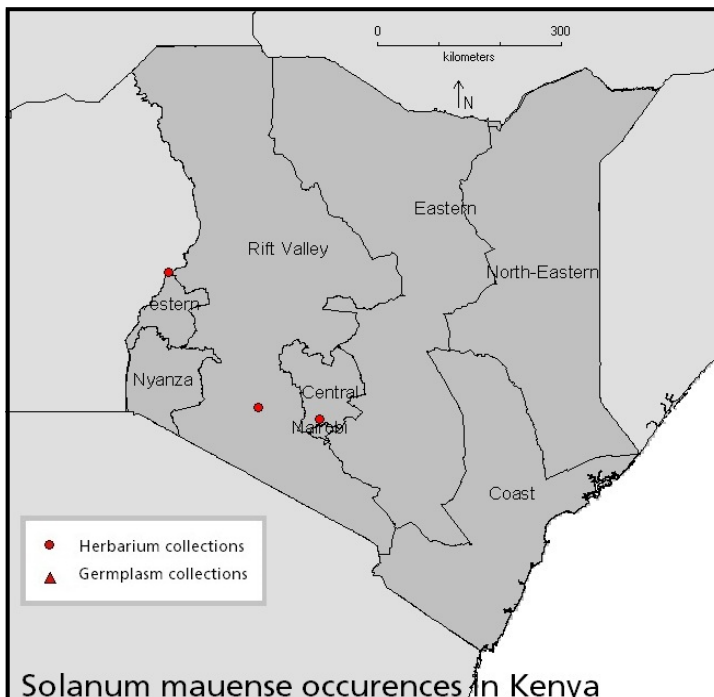
Scrub, forest edges, grassland, and old cultivated plots and is commonly found along roadsides.

Distribution:

Found in Kenya and Tanzania, with the majority of collections from the Kenyan highlands: the Aberdares, Mount Elgon, and Narok

Altitude: 1800 - 3000

<i>Solanum mauense</i>	May be confused with: <i>Solanum anguivi</i>
Leaves entire or subentire. Calyx lobes accrescent elongating to 4.5-6 mm in fruit.	Leaves almost always lobed, calyx lobes moderately accrescent elongating to 2.5-5 mm.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

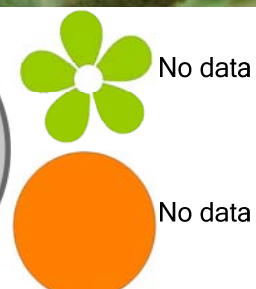
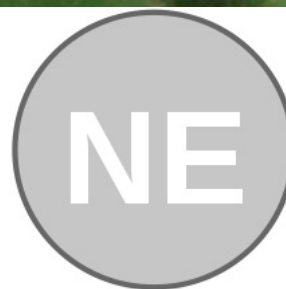
References: Vorontsova & Knapp, A revision of the spiny Solanums, solanum subgenus Leptostemonum (Solanaceae) in Africa and Madagascar, Unpublished.



No seed image available



1.5 m



Gene Pool Tertiary relative of *Solanum melongena* L.

HABIT: Woody herb to subshrub, 0.3-1(3) m, heavily armed, sparsely branched; moderately stellate-pubescent, prickles 5-9 mm long, straight, thin, yellow to brown; bark smooth, green-brown. **LEAVES** simple, the blades 6-12 × 5-11 cm, ca. 1.5 times longer than wide, ovate, chartaceous, yellow-green, moderately stellate-pubescent on both sides, the prickles up to 14 mm, protruding from the lamina on both sides. **INFLORESCENCES** lateral, 8-12 cm long, unbranched, with 3-7 flowers. Plants strongly andromonoecious, with one long-styled flower at the base of the inflorescence and all other flowers short-styled. Corolla 4.5-5 cm in diameter in long-styled flowers, 3.5-4.5 cm in diameter in short-styled flowers, rich purple, stellate. **FRUIT** a globose or ovoid berry, 1 per infructescence, 2.5-3 cm in diameter, spherical or slightly elongated throughout development, the pericarp thin, smooth, shiny, glabrous, green with white markings when young, yellow at maturity; fruiting pedicels 2-5 cm long, 1-1.5 mm wide at base, woody, pendulous, with numerous prickles; calyx moderately accrescent, elongating to 1.5-2.3 mm long, covering 1/2-2/3 of the mature fruit, with numerous prickles 3-5 mm long. **SEEDS** ca. 50 per berry, 2.8-3.2 × 2-2.5 × ca. 0.3 mm, flattened-reniform, almost round, orange-brown, the surface smooth or with raised outlines of cells or small pits.

Habitat:

Open ground, grassland and forest edges on hillsides.

Distribution:

Endemic to SE Kenya (Rift Valley Province, K3; Nyanza Province, K5; Masai Province, K6) and Uganda.

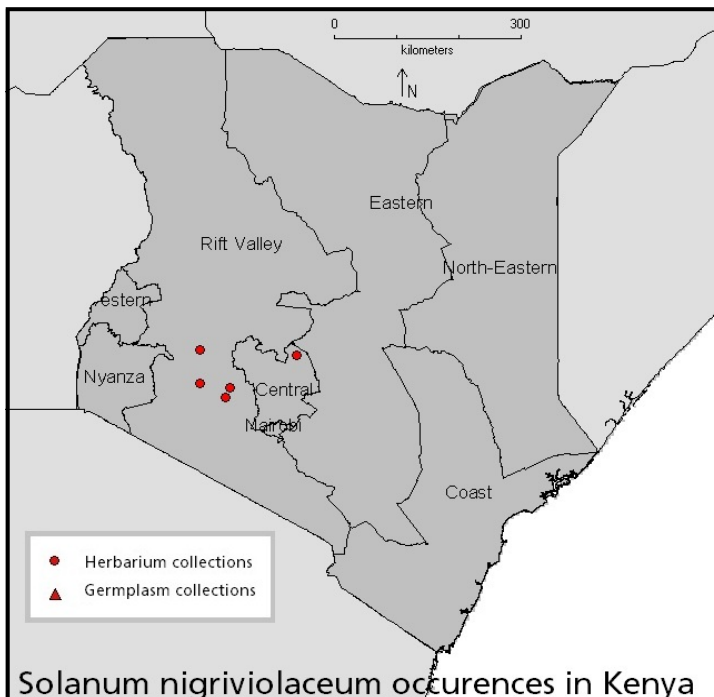
Altitude: 2500 - 3000 m

Solanum nigriviolaecum

May be confused with:
S. aculeatissimum

Rich purple, stellate flowers. Trichomes with unicellular midpoints and vestigial rays.

Flowers are much smaller with a more deeply dissected white corolla, and its trichomes have multicellular midpoints and no vestigial rays.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References:

Gene Pool Tertiary relative of *Solanum melongena* L.



Credit: Maria Vorontsova/ RBG Kew



Credit: Maria Vorontsova/ RBG Kew



Credit: Maria Vorontsova/ RBG Kew

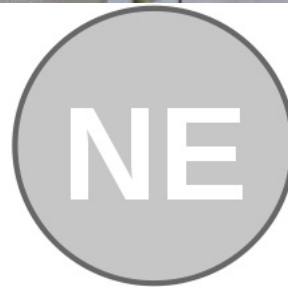


Credit: Maria Vorontsova/ RBG Kew

No seed image available



1m



Jul - Oct

May - Jul

HABIT: Erect shrub to small tree, 1-3(-6) m, armed. **LEAVES** simple, the blades on fertile branches 6-8 × 2.5-4 cm (larger on vegetative branches), elliptic, chartaceous, densely stellate-pubescent abaxially; margin subentire to weakly lobed. **INFLORESCENCES** 3-5.5 cm long, not branched, 1-7-flowered, with 1 flower open at a time, densely stellate pubescent. Plants andromonoecious, with 1(-3) long-styled flowers at the base of the inflorescence, the flowers 5(-6)-merous. Corolla ca. 3 cm diam in long-styled flowers, ca. 1.7 cm diam in short-styled flowers, blue-mauve, stellate, lobed for 1/2-2/3 of its length. **FRUIT** a conical berry, 1(-3) per infructescence, 2.8-3.7 × 1.8-2.2 cm, ca. two times longer than wide, apically pointed, retaining the same elongated pointed shape throughout development, the pericarp thin, usually smooth, sometimes warty, shiny, glabrous, with a few stellate trichomes near the apex on immature fruit, evenly green when young, yellow at maturity. Calyx sometimes accrescent to 2.5 cm long, covering 1/6-1/4(-1/2) of the mature fruit. **SEEDS** ca. 30 per berry, 4-4.5 × 3-4 × ca. 0.3 mm, flattened-reniform, almost round, often somewhat irregular in outline, brown to almost black, the surface smooth or with raised outlines of cells or small pits.

Habitat:

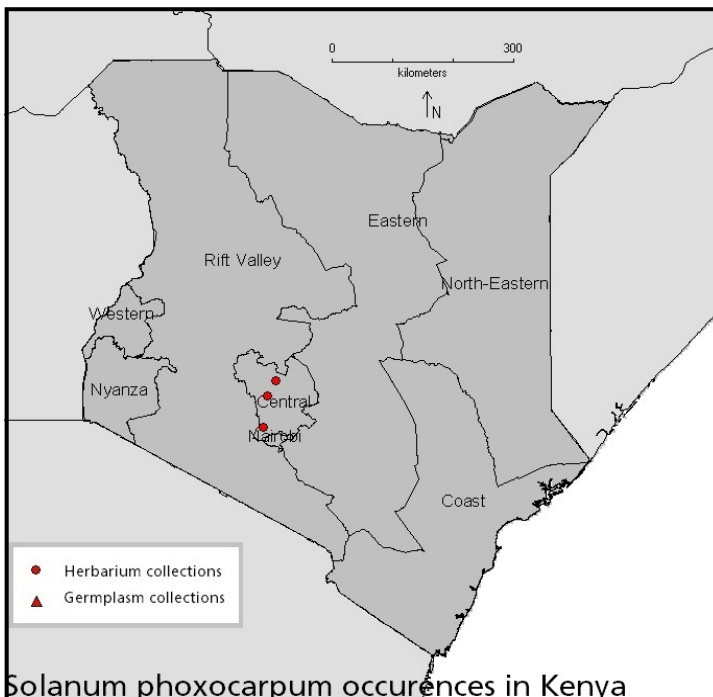
Damp forest understorey or secondary scrub.

Distribution:

Endemic to the East African Rift Valley, including the Rift Valley Province, Central Province, and Masai Province in Kenya and Northern Province in Tanzania.

Altitude: 2100 - 3000 m

<i>Solanum phoxocarpum</i>	May be confused with: <i>Other African Solanums</i>
Unusual long pointy fruit, subentire leaves, and mauve flowers.	Do not have this combination of characters.



References: Vorontsova et al. Systematic Botany (2010), 35(4): pp. 894-906

All populations priority
for collection

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Kenya listed on
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for this taxon



Credit: Maria Vorontsova/RBG Kew



Credit: Maria Vorontsova/RBG Kew

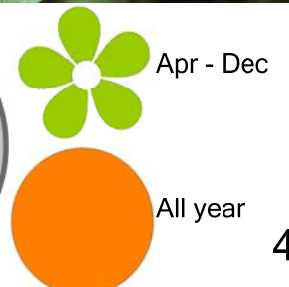
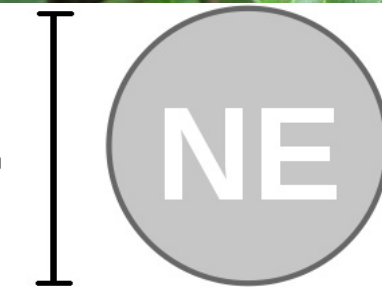


Credit: Maria Vorontsova/RBG Kew



Credit: Maria Vorontsova/RBG Kew

No seed image available



Gene Pool Tertiary relative of *Solanum melongena* L.Endulelei, Oliasuria,
Entenelua-Narok

HABIT: Erect woody shrub, 1-2 m, armed, moderately branched; main branches 1-2 cm in diam at base, glabrescent; bark smooth, grey or brown. Leaves simple, the blades 2-6 × 1-4 cm, ovate, chartaceous, densely stellate-pubescent on both sides. **INFLORESCENCES** 2-4.5 cm long, not branched, 1-4-flowered, with 1(-2) flowers open at a time. Buds broad-ovoid or almost globose. Plants andromonoecious, with 1(-2) long-styled flowers at the base of the inflorescence. **FLOWERS** 5-merous. Calyx 8-16 mm long, obconical, divided for 3/4-5/6 of its length, the lobes 4.5-12 mm long, 1-1.5 mm wide at base. Corolla 2-4.2 cm in diam, deep purple, star-shaped, tearing unevenly at anthesis, opening fully or slightly reflexed, lobed for 2/3-3/4 of its length. **FRUIT** a globose berry, 1(-2) per infructescence, 13-20 mm in diam, becoming spherical and glabrous at maturity, the pericarp thin, smooth, shiny, marbled green and white when young, yellow to orange at maturity. Calyx slightly accrescent, covering 1/3 to all of the mature fruit. **SEEDS** ca. 30-100 per berry, 2.8-3 × 2-2.5 × ca. 0.3 mm, flattened-reniform, often somewhat irregular in outline, pale yellow to orange-brown, the surface smooth or with raised outlines of cells or small pits.

Habitat:

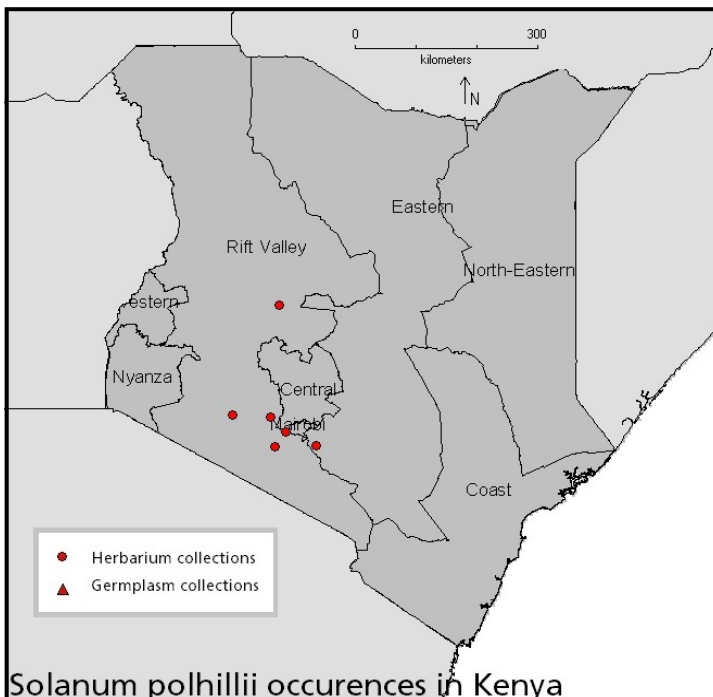
Savanna, rocky hillsides, bushland and scrub, on granite, volcanic rocks or red sandy soil.

Distribution:

Known from Kenya and Tanzania.

Altitude: 1800 - 2200 m

<i>Solanum polhillii</i>	May be confused with: <i>Other Solanum species</i>
<i>S. polhillii</i> has anthers 4.5 - 8mm long.	Other <i>Solanum</i> species have anthers smaller than this, apart from <i>S. richardii</i> which is larger, at 8.5 -11.5 mm.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References: Vorontsova et al. Systematic Botany (2010), 35(4): pp. 894-906



Credit: Maria Vorontsova



Credit: Maria Vorontsova

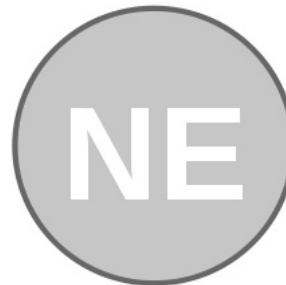


Credit: Maria Vorontsova

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image
available



2m



No data

No data

Tertiary genepool of Eggplant - *Solanum melongena* L.

HABIT: Erect, scandent or climbing woody perennial shrub, heavily armed, sparsely branched; leaves evenly distributed along the stems. **LEAVES** simple, the blades 7-22 × 5-13 cm, 1.5-2.5 times longer than wide, ovate to elliptic, chartaceous, moderately to sparsely stellate-pubescent. **INFLORESCENCES** terminal or lateral, 6-11 cm long, with 3-10 flowers; **FLOWERS** heterostylous and the plants andromonoecious, with 1-6 long-styled flowers at the base of the inflorescence, the flowers 5-merous. Corolla 3.5-6 cm in diameter, mauve to rich purple, stellate, tearing unevenly at anthesis, opening fully but not reflexed. **FRUIT** a globose berry, 2-6 per infructescence, 3-5 cm in diameter, elongate during development becoming spherical at maturity, the pericarp thin, smooth, shiny, the young fruit glaucous green with dark green markings, with stellate trichomes scattered around the apex, the mature fruit bright yellow to orange or red-orange, glabrous. **SEEDS** ca. 200 per berry, 3-4 × 3-3.7 × ca. 0.3 mm, flattened-reniform, somewhat irregular in outline, orange-brown, the surface smooth or with raised outlines of cells or small pits.

Habitat:

Disturbed areas, open bushland with grass, open forest, thickets and roadsides.

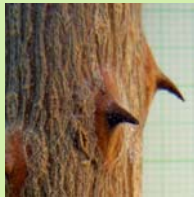
Distribution:

Widespread in East and South-East Africa and Madagascar.

Altitude: 500 - 1300m

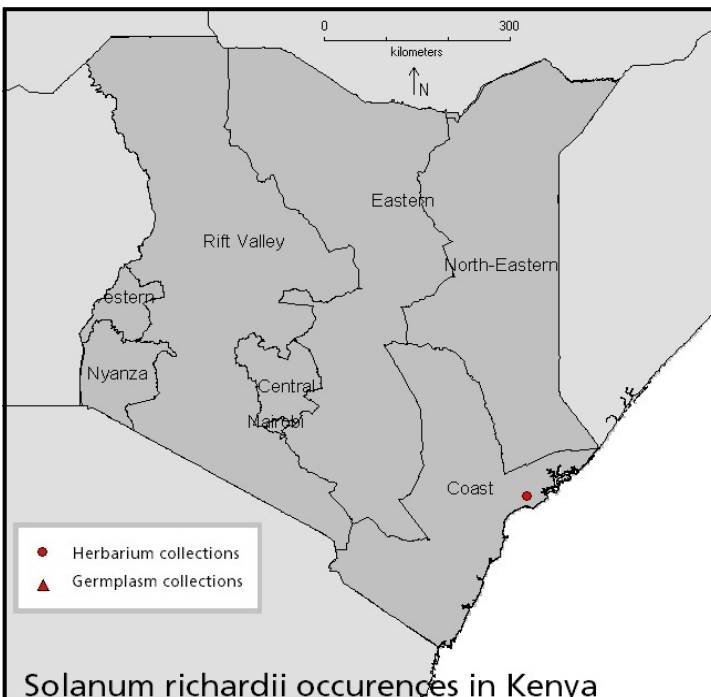
Solanum richardii

Corolla 3.5-6 cm in diameter; prickles usually curved.



May be confused with:
Solanum linnaeanum

Corolla 1.5-3 cm diameter; prickles straight.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon

References:

Tertiary genepool of Eggplant - *Solanum melongena* L.



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Credit: Raboud University Nijmegen Genebank



Credit: Raboud University Nijmegen Genebank

No seed
image
available



Up to
2m



All year

Jan - Jun

Gene Pool Tertiary relative of *Solanum melongena* L.

HABIT: Erect woody herb to small shrub, 0.5-1 m, armed, moderately branched; young stems slender, erect to ascendant, terete, moderately to densely stellate-pubescent; bark smooth, dark grey or brown; **LEAVES** evenly distributed along the stems. Leaves simple, the blades 1.5-5(7) × 0.7-2(4) cm, 2-4 times longer than wide, ovate, chartaceous, yellow-green, moderately to densely stellate-pubescent on both sides. Inflorescences apparently terminal or lateral, 2-3 cm long, not branched, with 1-3(4) flowers. **FLOWERS** apparently all perfect, 5-merous. Corolla 1.4-2 cm in diameter, pale mauve or pale purple, sometimes white. **FRUIT** a globose berry, 1-4 per infructescence, 6-9 mm in diameter, spherical throughout development, the pericarp thin, smooth, shiny, with stellate trichomes scattered around the apex on immature fruit, glabrous at maturity, green when young, red at maturity, the stigma attachment point a small stump; fruiting pedicels 0.9-1.6 cm long, 0.3-0.5 mm wide at base, herbaceous, pendulous, unarmed or with 1-10 bristles; calyx not accrescent, the lobes usually reflexed at maturity. **SEEDS** ca. 10-20 per berry, 2.8-3 × 2.1-2.3 × ca. 0.3 mm, flattened-reniform, often somewhat irregular in outline, orange-brown to brown, the surface smooth or with raised outlines of cells or small pits.

Habitat:

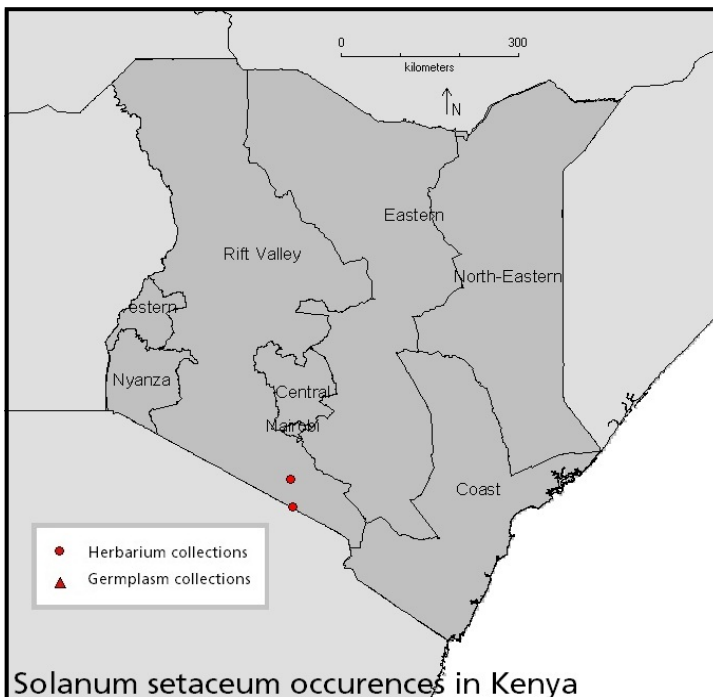
Acacia bushland, dry thickets and grassland on sandy loam or dark cotton soil.

Distribution:

Masai Region species. Almost all collections are from the Northern Province of Tanzania (T2), with limited occurrence in the surrounding Lake Province (T1), Central Province (T5), Tanga Province (T3), and Kenya, Masai Province (K6). One collection is known from Tanzania, Western Province (T4)

Altitude: 1000 - 1500 m

<i>Solanum setaceum</i>	May be confused with: <i>S. hastifolium</i>
Almost filiform recurved bristles over 2.5 mm in length.	Abundant prickles 1-4 mm.



All populations priority
for collection

No accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon





References:

Gene Pool Tertiary relative of *Solanum melongena* L.




Credit: Maria Vorontsova/ RBG Kew

No seed image available



Sep - May



Sep - May

46

Gene Pool Secondary relative of *Solanum melongena*

HABIT: Erect shrub, 1-2.5 m, prickly. Young stems erect, densely stellate-pubescent on both sides and prickly, with porrect, sessile trichomes; bark of older stems stellate-pubescent to glabrescent, green-brown. **LEAVES** lobed, the blades 9-22 cm long, 7-16 cm wide, ca. 1.5 times longer than wide, ovate, chartaceous; adaxial surface densely stellate-pubescent. **INFLORESCENCES** terminal or lateral, 5.5-8 cm long, branched more than once, with 20-60 flowers, ca. 15 flowers open at any one time. Calyx 3-4 mm long, the lobes 0.5-1.5 mm long, deltoid, apically acute, densely stellate-pubescent, with 0-4 prickles. Corolla 0.9-1.2 cm in diameter, white to mauve, stellate, lobed for ca. 2/3 of its length, **FRUIT** a spherical berry, 15-40 per infructescence, 0.5-0.8 cm in diameter, the pericarp smooth, evenly green when young, dark orange to red at maturity; fruiting pedicels 0.8-1.3 cm long, 0.5-0.8 mm in diameter at base, woody, pendulous, with 0-10 prickles; fruiting calyx moderately accrescent, elongating to 4-6 mm long, covering ca. 1/4 of the mature fruit, with 0(-4) prickles. **SEEDS** ca. 10-20 per berry, 2.2-3 mm long, 2-2.5 mm wide, flattened-reniform, dull yellow to orange-brown.

Habitat:

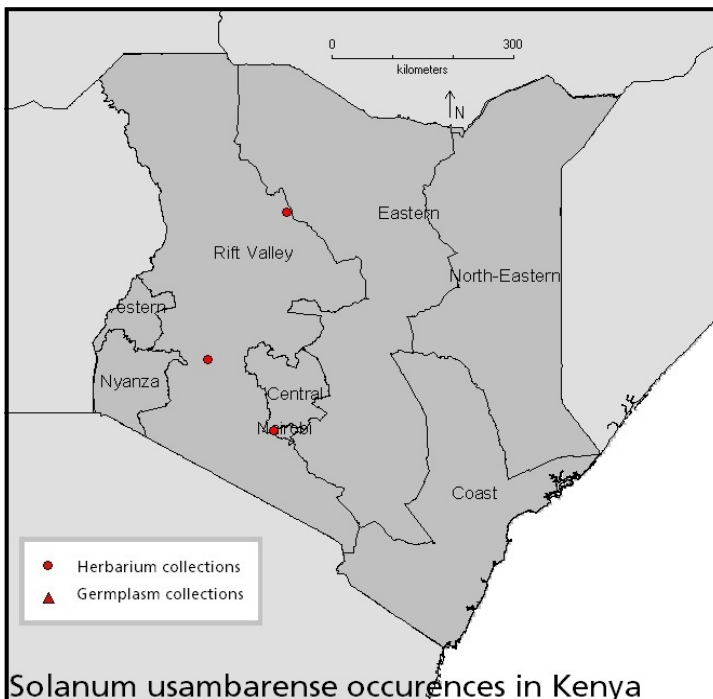
Forest understory, forest edges, or clearings.

Distribution:

Kenya and Tanzania.

Altitude: 1800 - 2200 m*Solanum usambarense*May be confused with:
S. anguivi

Inflorescence axis branching more than once with more than 20 flowers per inflorescence; pedicels recurved, visibly hirsute.

The inflorescence axis of *S. anguivi* does not branch, or only once; fewer than 20 flowers per inflorescence; pedicels recurved with or without visible indumentum.All populations priority
for collectionNo accessions from
Kenya listed on
Germplasm Resources
Information Network
(GRIN) [online database]
for this taxon**References:**



No seed image available



1-2.5 m



All year

All year

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.; Ipomoea cavanillesii Roem. & Schult.; Ipomoea funaria Larrañaga; Ipomoea heptaphylla Griseb.; Ipomoea pentaphylla Cav.; Ipomoea rosea var. pluripartita Hassl.; Ipomoea senegalensi Lam.; Ipomoea vesiculosa P. Beauv.
Ipomoea ochracea (Lindl.) G. Don	2	Ipomoea curtisii House; Ipomoea ochracea var. curtisii (House) Stearn
Vicia sativa subsp. nigra (L.) Ehrh.	3	Vicia angustifolia L.; Vicia angustifolia subsp. angustifolia L.; Vicia angustifolia subsp. pusilla Boiss.; Vicia angustifolia var. segetalis (Thuill.) Arcang.; Vicia angustifolia subsp. segetalis (Thuill.) Arcang.; Vicia angustifolia var. uncinata (Desv.) Rouy; Vicia bobartii E.Forst.; Vicia bobartii Koch; Vicia canadensis Zuccagni; Vicia cuneata Guss.; Vicia debilis Perez Lara; Vicia heterophylla C.Presl; Vicia lanciformis Lange; Vicia maculata C.Presl; Vicia pilosa M.Bieb.; Vicia sativa var. angustifolia (L.) Wahlb.; Vicia sativa var. angustifolia L.; Vicia sativa subsp. angustifolia (L.) Gaudin; Vicia sativa subsp. angustifolia (L.) Batt.; Vicia sativa subsp. consobrina (Pomel) Quezel & Santa; Vicia sativa subsp. cordata (Hoppe) Batt.; Vicia sativa subsp. cuneata (Guss.) Maire; Vicia sativa subsp. heterophylla (C.Presl) J.Duvign.; Vicia sativa var. minor (Bertol.) Ohwi; Vicia sativa var. nigra L.; Vicia segatalis Thuill.
Ensete ventricosum (Welw.) Cheesman	4	Ensete arnoldianum (De Wild.) Cheesman; Ensete bagshawei (Rendle & Greves) Cheesman; Ensete buchananii (Baker) Cheesman; Ensete davyae (Stapf) Cheesman Ensete edule Bruce ex Horan. Ensete fecundum (Stapf) Cheesman Ensete holstii (K.Schum.) Cheesman ;Ensete laurentii (De Wild.) Cheesman ;Ensete proboscideum (Oliv.) Cheesman ;Ensete ruandense (De Wild.) Cheesman ;Ensete rubronervatum (De Wild.) Cheesman ;Ensete schweinfurthii (K.Schum. & Warb.) Cheesman ;Ensete ulugurense (Warb. & Moritz) Cheesman ;Ensete ventricosum var. montbeliardii (Bois) Cufod. ;Mnasion theophrasti Pritz. [Invalid] ;Musa africana W.Bull.; Musa arnoldiana De Wild.; Musa bagshawei Rendle & Greves; Musa buchananii Baker; Musa davyae Stapf; Musa ensete J.F.Gmel.; Musa ensete var. montbeliardii Bois; Musa fecunda Stapf; Musa holstii K.Schum.; Musa kaguna Chiov.; Musa laurentii De Wild.; Musa martretiana A.Chev.; Musa proboscidea Oliv.; Musa ruandensis De Wild.; Musa rubronervata De Wild.; Musa schweinfurthii K.Schum. & Warb; Musa ulugurense Warb. & Moritz; Musa ventricosa Welw.
Eleusine africana Kenn.-O'Byrne:	5	Eleusine coracana subsp. africana (Kenn.-O'Byrne) Hilu & de Wet; Eleusine indica subsp. africana (Kenn.-O'Byrne) S.M.Phillips
Eleusine indica (L.) Gaertn.:	6	Agropyron geminatum Schult. & Schult.f.; Chloris repens Steud.; Cynodon indicus (L.) Raspail; Cynosurus ara Buch.-Ham. ex Wall.; Cynosurus indicus L.; Cynosurus pectinatus Lam.; Eleusine distachya Trin. ex Steud.; Eleusine distans Link; Eleusine distans Moench; Eleusine domingensis Sieber ex Schult.; Eleusine glabra Schumach.; Eleusine gonantha Schrank; Eleusine gounii E.Fourn.; Eleusine inaequalis E.Fourn.; Eleusine indica var. major E.Fourn.; Eleusine indica var. monostachya F.M.Bailey; Eleusine indica var. oligostachya Honda; Eleusine indica var. sandaensis Vanderyst; Eleusine japonica Steud.; Eleusine macrosperma Stokes; Eleusine marginata Lindl.; Eleusine polydactyla Steud.; Eleusine rigidifolia E.Fourn.; Eleusine scabra E.Fourn.; Eleusine textilis Welw.; Juncus loureiroana Schult. & Schult.f.; Leptochloa pectinata (Lam.) Kunth; Paspalum dissectum Kniph.; Poa spicata Willd. ex Steud.; Triticum geminatum Spreng.
Eleusine intermedia (Chiov.) S.M.Phillips:	7	Eleusine indica var. intermedia Chiov.
Eleusine jaegeri Pilg.	8	Eleusine jaegeri var. maxima Peter
Eleusine multiflora Hochst.	9	Eragrostis kwaiensis Peter
Oryza eichingeri Peter	10	Oryza collina (Trimen) S.D.Sharma & Shastry; Oryza glauca Robyns; Oryza latifolia var. collina (Trimen) Hook.f.; Oryza rhizomatis D.A.Vaughan ; Oryza sativa var. collina Trimen ; Oryza ubanghensis A.Chev.
Oryza longistaminata A.Chev. & Roehrich	11	Oryza barthii auct.
Oryza punctata Kotschy ex Steud.	12	Oryza eichingeri var. longiaristata Peter; Oryza sativa var. punctata (Kotschy ex Steud.) Kotschy; Oryza schweinfurthiana Prodoehl
Pennisetum ciliare (L.) Link	13	-
Pennisetum clandestinum Hochst. ex Chiov.	14	Cenchrus clandestinus (Hochst. ex Chiov.) Morrone; Pennisetum inclusum Pilg.; Pennisetum longistylum var. clandestinum (Chiov.) Leeke

Appendix - Synonyms

b

Pennisetum hohenackeri Hochst. ex Steud.	15	Cenchrus hohenackeri (Hochst. ex Steud.) Morrone ; Cenchrus hordeiformis Rottler ex Steud.; Gymnotrix alopecuros B.D.Jacks.; Pennisetum alopecuros Steud.; Pennisetum alopecuros var. occidentale Pilg.; Pennisetum catabasis Stapf & C.E.Hubb.
Pennisetum macrourum Trin.	16	Cenchrus caudatus (Schrad.) Kuntze; Cenchrus macrourus (Trin.) Morrone; Gymnotrix caudata Schrad.; Gymnotrix gigantea (A.Rich.) Walp.; Gymnotrix quartiniana (A.Rich.) Walp.; Gymnotrix riparioides (A.Rich.) Walp.; Panicum asperum Link [Illegitimate]; Pennisetum angolense Rendle; Pennisetum angolense var. laxispicatum Rendle; Pennisetum asperum Schult.; Pennisetum davyi Stapf & C.E.Hubb.; Pennisetum exile Stapf & C.E.Hubb.; Pennisetum franchetianum Stapf & C.E.Hubb.; Pennisetum giganteum A.Rich.; Pennisetum giganteum var. minus Leeke; Pennisetum giganteum var. trinervium Pilg.; Pennisetum glaucocladum Stapf & C.E.Hubb. ex Stent & J.M.Ratray; Pennisetum haareri Stapf & C.E.Hubb.; Pennisetum kisantuense Vanderyst; Pennisetum macropogon Stapf & C.E.Hubb. ex Stent & J.M.Ratray; Pennisetum natalense Stapf; Pennisetum quartinianum A.Rich.; Pennisetum riparioides A.Rich.; Pennisetum scaettae Robyns; Pennisetum stenorrhachis Stapf & C.E.Hubb.; Pennisetum stolzii Mez; Pennisetum tenue Mez; Pennisetum togoense Mez; Pennisetum validum Mez; Perotis latifolia Eckl. ex Steud.
Pennisetum massaicum Stapf	17	Cenchrus massaicus (Stapf) Morrone
Pennisetum mezianum Leeke	18	Cenchrus mezianus (Leeke) Morrone; Pennisetum brachystachyum Hack.; Pennisetum stapfianum F.Bolus
Pennisetum pedicellatum Trin.	19	Cenchrus pedicellatus (Trin.) Morrone; Eriochaeta densiflora Fig. & De Not.; Eriochaeta secundiflora Fig. & De Not.; Panicum araneosum Edgew.; Pennisetum amoenum Hochst. ex A.Rich.; Pennisetum araneosum Edgew.; Pennisetum densiflorum (Fig. & De Not.) T.Durand & Schinz; Pennisetum dillonii Steud.; Pennisetum implicatum Steud.; Pennisetum intertextum Schldt.; Pennisetum lanuginosum Hochst.; Pennisetum lanuginosum var. majus Hochst.; Pennisetum pedicellatum var. amoenum (A.Rich.) Chiov.; Pennisetum pedicellatum var. pallidum Chiov.; Pennisetum pedicellatum subsp. pedicellatum; Pennisetum pedicellatum var. pubirhachis Berhaut; Pennisetum secundiflorum (Fig. & De Not.) T.Durand & Schinz
Pennisetum pennisetiforme (Hochst. & Steud.) Wipff	20	-
Pennisetum polystachion subsp. atrichum (L.) Schultes	21	Pennisetum atrichum Stapf & C.E.Hubb.; Pennisetum reversum var. gymnochaetum Hack.
Pennisetum polystachion subsp. polystachion (L.) Schult.	22	-
Pennisetum purpureum Schumach.:	23	Pennisetum benthamii Steud.; Pennisetum purpureum subsp. benthamii (Steud.) Maire & Weiller; Pennisetum purpureum subsp. flexispica (K.Schum.) Maire & Weiller
Pennisetum setaceum (Forssk.) Chiov.	24	Cenchrus setaceus (Forssk.) Morrone; Pennisetum cupreum Hitchc.; Pennisetum erythraeum Chiov.; Pennisetum macrostachyon Fresen.; Pennisetum macrostachyum Fresen.; Pennisetum numidicum Paris; Pennisetum orientale var. altissimum Chiov.; Pennisetum orientale subsp. parisii Trab.; Pennisetum orientale var. parisii (Trab.) Leeke; Pennisetum parisii (Trab.) Trab.; Pennisetum phalaroides Schult.; Pennisetum ruppellii Steud.; Pennisetum ruppellii var. depauperatum Schweinf.; Pennisetum scoparium Chiov.; Pennisetum setaceum var. parisii (Trab.) Maire; Pennisetum spectabile Fig. & De Not.; Phalaris setacea Forssk.
Pennisetum setigerum (Vahl) Wipff	25	-
Pennisetum sphacelatum T.Durand & Schinz	26	Cenchrus sphacelatus (Nees) Morrone; Gymnotrix adoensis A.Rich.; Gymnotrix glabra Hochst. ex Steud.; Gymnotrix schimperi (A.Rich.) Walp.; Gymnotrix sphacelata Nees; Panicum atrichum Steud.; Pennisetum macrourum var. angustifolium Hack.; Pennisetum merkeri Leeke; Pennisetum schimperi A.Rich.; Pennisetum sphacelatum var. tenuifolium (Hack.) Stapf; Pennisetum tenuifolium Hack.
Pennisetum squamulatum Fresen.	27	Cenchrus squamulatus (Fresen.) Morrone; Pennisetum pentastachyum Hochst. ex A.Rich.; Pennisetum pentastachyum var. violaceum Avetta; Pennisetum proximum Leeke; Pentastachya abyssinica Hochst. ex Steud.
Pennisetum stramineum Peter	28	Cenchrus stramineus (Peter) Morrone
Pennisetum thunbergii Kunth	29	Cenchrus geniculatus Thunb.; Cenchrus thunbergii (Kunth) Morrone; Gymnotrix purpurascens Schrad.; Panicum geniculatum (Thunb.) Thunb.; Pennisetum depauperatum Schweinf.; Pennisetum geniculatum (Thunb.) Leeke; Pennisetum glabrum Steud.; Pennisetum glabrum var. filiforme Chiov.; Pennisetum leekei Mez; Pennisetum leekei var. leucostachys Peter; Pennisetum paucisetum Peter; Pennisetum schimperi var. glabrum (Steud.) T.Durand & Schinz; Pennisetum schimperi var. pubiflorum A.Rich.; Pennisetum snowdenii C.E.Hubb.; Pennisetum thunbergii var. galpinii Stapf
Pennisetum trachyphyllum Pilg.	30	Cenchrus trachyphyllum (Pilg.) Morrone

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Pennisetum thunbergii Kunth	29	Cenchrus geniculatus Thunb.; Cenchrus thunbergii (Kunth) Morrone; Gymnotrix purpurascens Schrad.; Panicum geniculatum (Thunb.) Thunb.; Pennisetum depauperatum Schweinf.; Pennisetum geniculatum (Thunb.) Leeke; Pennisetum glabrum Steud.; Pennisetum glabrum var. filiforme Chiov.; Pennisetum leekei Mez; Pennisetum leekei var. leucostachys Peter; Pennisetum paucisetum Peter; Pennisetum schimperi var. glabrum (Steud.) T.Durand & Schinz; Pennisetum schimperi var. pubiflorum A.Rich.; Pennisetum snowdenii C.E.Hubb.; Pennisetum thunbergii var. galpinii Stapf
Pennisetum trachyphyllum Pilg.	30	Cenchrus trachyphyllum (Pilg.) Morrone
Pennisetum unisetum Benth.	31	Beckera glabrescens Steud.; Beckera uniseta (Nees) Nees ex Hochst.; Beckeropsis uniseta (Nees) K.Schum.; Cenchrus unisetus (Nees) Morrone; Gymnotrix uniseta Nees; Pennisetum kirkii Stapf
Sorghum bicolor subsp. verticilliflorum (L.) Moench:	32	Andropogon arundinaceus Willd.; Andropogon sorghum (L.) Brot. subsp. vogelianus Piper; Andropogon sorghum (L.) Brot. var. aethiopicus Hack.; Andropogon sorghum (L.) Brot. var. effusus Hack.; Andropogon sorghum (L.) Brot. var. virgatus Hack.; Andropogon stapfii Hook. f. ; Andropogon verticilliflorus Steud.; Holcus sorghum L. var. effusus Hitchc.; Holcus sorghum L. var. verticilliflorus (Steud.) Hitchc.; Rhaphis arundinacea Desv.; Sorghum aethiopicum (Hack.) Rupr. ex Stapf; Sorghum arundinaceum (Desv.) Stapf; Sorghum bicolor (L.) Moench subsp. arundinaceum (Desv.) de Wet & J. R. Harlan ex Davidse; Sorghum brevicarinatum Snowden; Sorghum lanceolatum Stapf; Sorghum macrochaeta Snowden; Sorghum pugionifolium Snowden; Sorghum stapfii (Hook. f.) C. E. C. Fisch.; Sorghum usambarensis Snowden; Sorghum verticilliflorum (Steud.) Stapf; Sorghum virgatum (Hack.) Stapf; Sorghum vogelianum (Piper) Stapf
Sorghum purpureosericeum Schweinf. & Asch.:	33	Andropogon pappii Gand.; Andropogon purpureosericeus Hochst. ex A.Rich.; Andropogon purpureosericeus var. calomelas Hack.; Andropogon purpureosericeus var. pallidior Hack.; Sarga purpureosericea (Hochst. ex A.Rich.) Spangler; Sorghum deccanense Stapf ex Raizada; Sorghum dimidiatum Stapf; Sorghum purpureosericeum subsp. deccanense Garber; Sorghum purpureosericeum subsp. dimidiatum (Stapf) Garber
Solanum aureitomentosum Bitter:	34	Solanum chrysotrichum C.H.Wright
Solanum campylacanthum Hochst.	35	Solanum antidotum Dammer; Solanum astrochlaenoides Dammer; Solanum benguelense Peyr.; Solanum bojeri Dunal in DC.; Solanum bojeri var. deckenii (Dammer) Bitter; Solanum bojeri var. houyanum Bitter; Solanum bojeri var. integrum Bitter; Solanum bojeri var. sinuatorepandum Dunal in DC.; Solanum bussei Dammer; Solanum cufodontii Lanza; Solanum deckenii Damme; Solanum delagoense var. astrochlaenoides (Dammer) Bitter; Solanum delagoense var. benguelense (Peyr.) Bitter; Solanum delagoense var. fischeri (Dammer) Bitter; Solanum delpierrei De Wild.; Solanum endlichii Dammer; Solanum fischeri Dammer; Solanum goniocalyx Lanza; Solanum himatacanthum Dammer; Solanum iodes Dammer; Solanum macrosepalum Dammer; Solanum magdalenaе Dammer; Solanum malacochlamys Bitter; Solanum malacochlamys var. transgrediens Bitter; Solanum maranguense Bitter; Solanum melongenifolium Lanza; Solanum merkeri Dammer; Solanum merkeri subsp. militans Bitter; Solanum merkeri var. endastrophorum Bitter; Solanum merkeri var. intermontanum Bitter; Solanum merkeri var. mediidominans Bitter; Solanum merkeri var. ruandense Bitter; Solanum merkeri var. tobleri Bitter; Solanum mesomorphum Bitter; Solanum neumannii Dammer; Solanum neumannii var. schoense Bitter; Solanum pembae Bitter; Solanum psilostylum Dammer; Solanum repandifrons Bitter; Solanum secedens Dammer; Solanum sennii Chiov.; Solanum ukerevense Bitter; Solanum urbanianum Dammer; Solanum verbascifrons Bitter; Solanum volkensii Dammer; Solanum volkensii var. himatiacanthum (Dammer) Bitter; Solanum suaveolens Bojer
Solanum coagulans Forssk.	36	Solanum depressum Bitter; Solanum dubium Fresen.; Solanum dubium var. brevipedunculatum Dunal; Solanum dubium var. cisterninum Dunal; Solanum dubium var. denseaculeatum Bitter; Solanum dubium var. dolichoplocalyx Bitter; Solanum dubium var. subinerme (Dunal) Bitter; Solanum ellenbeckii Dammer; Solanum ellenbeckii var. oligoplum Bitter; Solanum hedjazense Dunal; Solanum thruppii C.H.Wright
Solanum dasyphyllum Schumach.	37	Solanum duplosinuatum Klotzsch
Solanum goetzei Dammer	38	-
Solanum hastifolium Hochst. ex Dunal	39	Solanum cynanchoides Chiov.; Solanum longestamineum Dammer; Solanum hastifolium subsp. velutinellum Bitter;
Solanum malindiense Voronts.	40	-
Solanum mauense Bitter	41	-
Solanum nigriviolaceum Bitter	42	-

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Solanum phoxocarpum Voronts.	43	-
Solanum polhillii Voronts.	44	-
Solanum richardii Dunal	45	Solanum richardii var. pallidum Dunal; Solanum acanthocalyx Klotzsch; Solanum bathocladon Dammer; Solanum magnusianum Dammer; Solanum acutilobatum Dammer; Solanum burtt-davyi Dunkley; Solanum richardii var. acutilobatum (Dammer) A.E.Gonç.; Solanum richardii var. burtt-davyi (Dunkley) A.E.Gonç.
Solanum setaceum Dammer	46	-
Solanum usambarense Bitter & Dammer	47	-