

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

# Azerbaijan



# 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](http://cwrdiversity.org).

**Cover photos**

TOP LEFT: Candy Cane mountains, CREDIT: David Davidson/Flickr;

TOP RIGHT: Orchard in Lahic, CREDIT: Simon Hooks/Flickr;

BOTTOM LEFT: Finger Millet, CREDIT: RBG Kew;

BOTTOM RIGHT: *Malus* blossom, CREDIT: RBG Kew.

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/](http://www.cwrdiversity.org/)

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



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

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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.

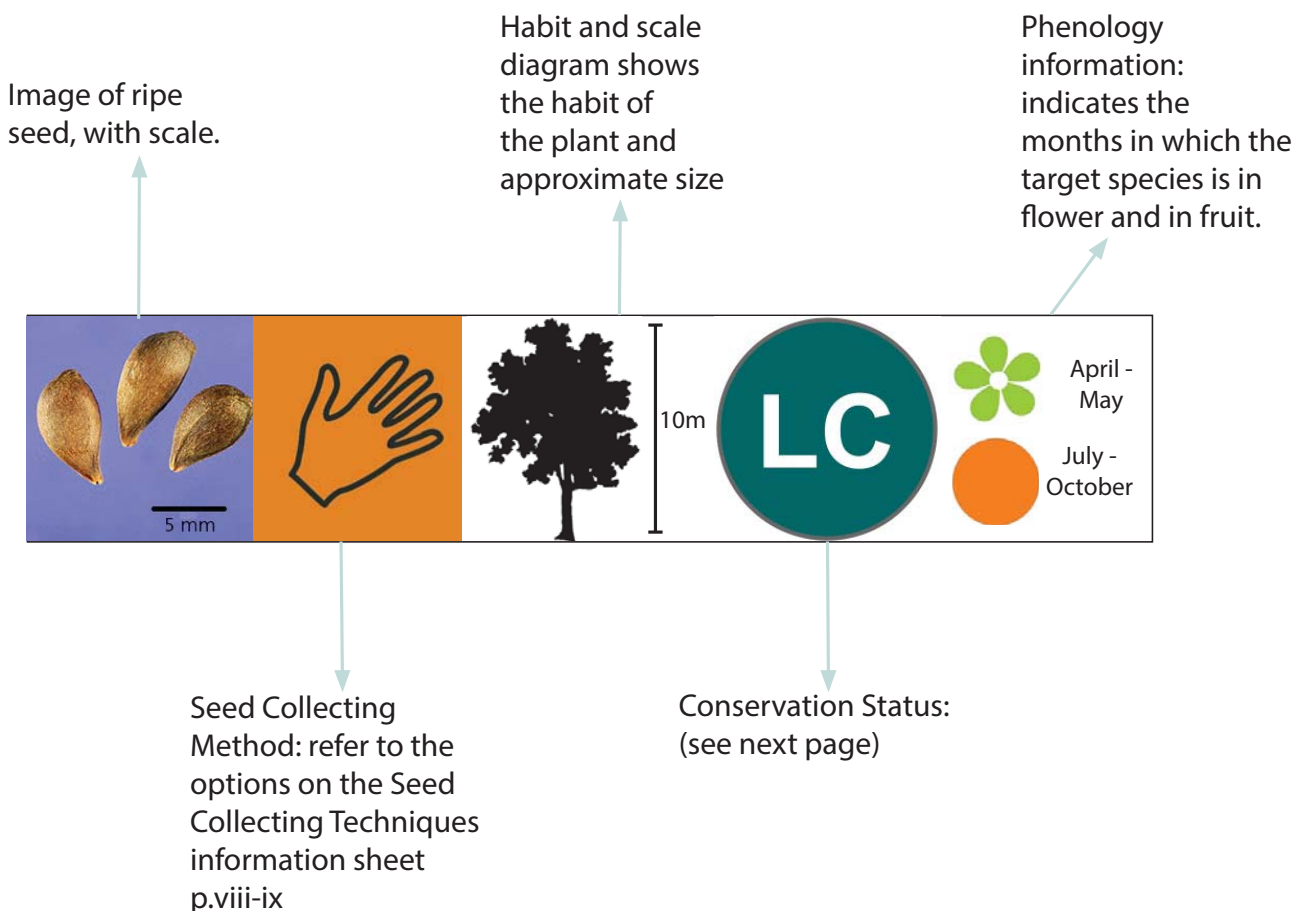
The species included in this guide are a selection of the wild relatives of the 29 key crops which this project covers. It is not a definitive guide to the Crop Wild Relatives in this country.

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

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

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

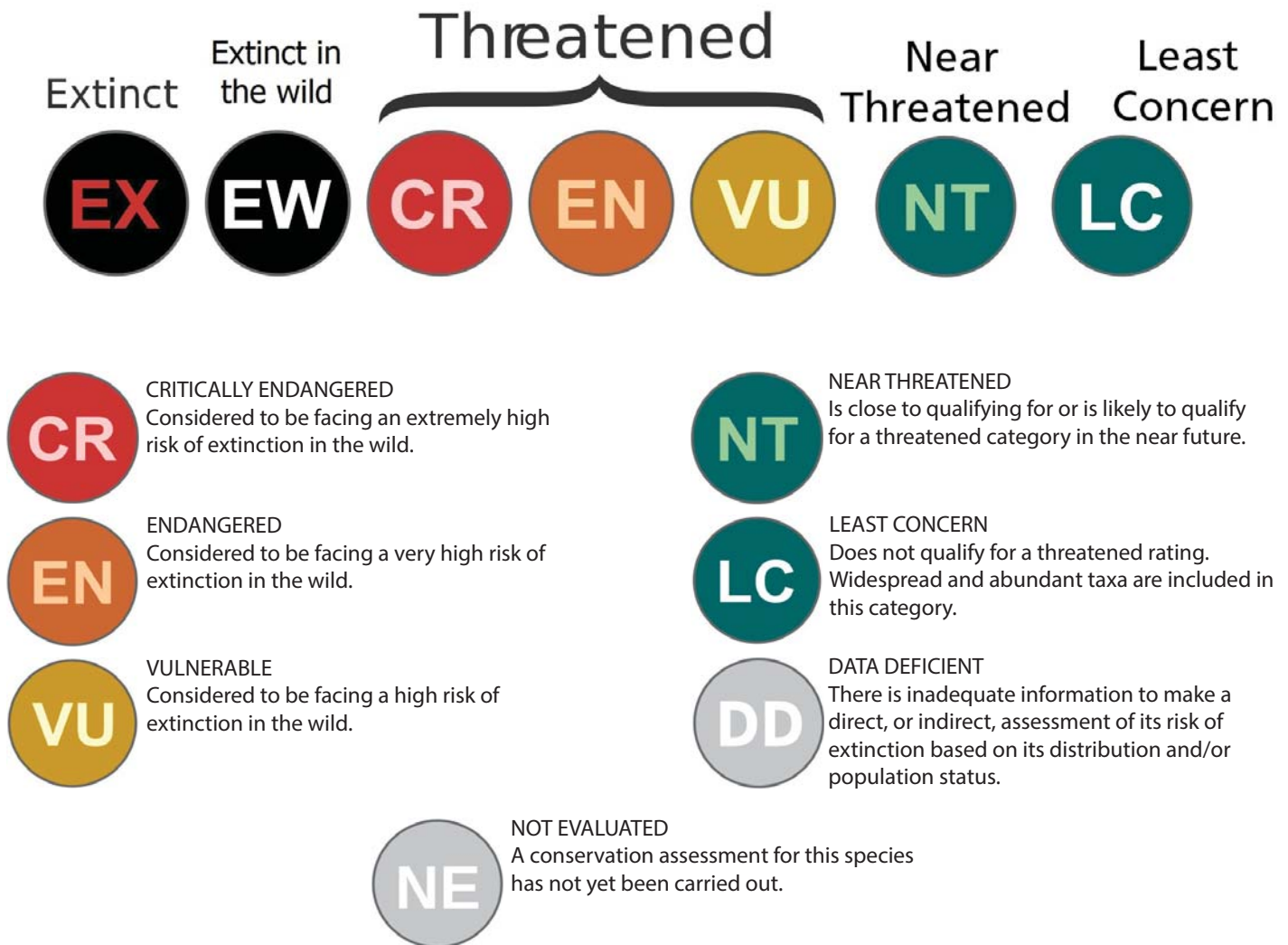
On each species profile, there is a collection of images to help identify the target species, accompanied by a series of symbols :



# Conservation Assessments

## Conservation Status:

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



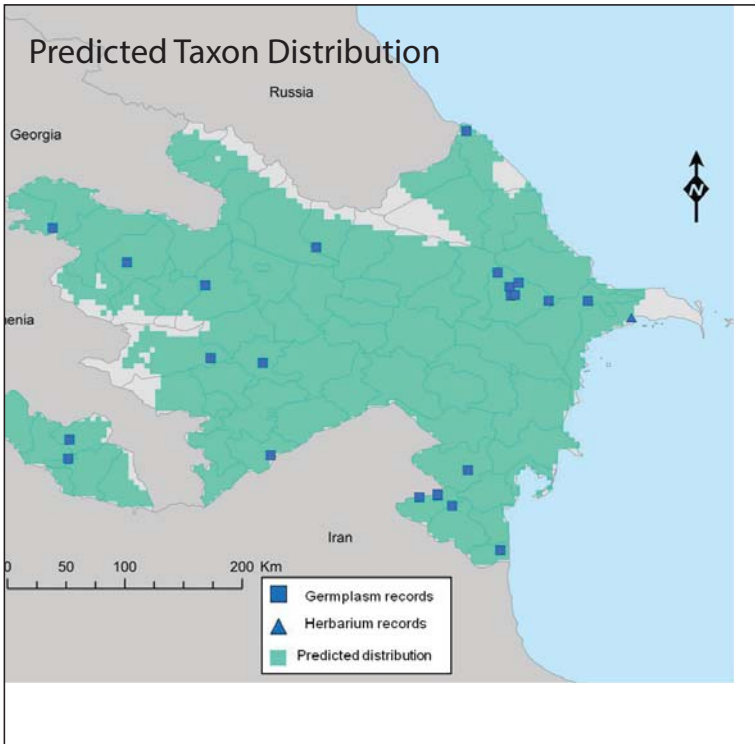
Where a full conservation assessment has not been completed, a preliminary conservation rating may be indicated. Preliminary assessments are produced using specimen locality data and GIS, which calculates two parameters accepted by IUCN as suitable measures of range: namely extent of occurrence (EOO)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

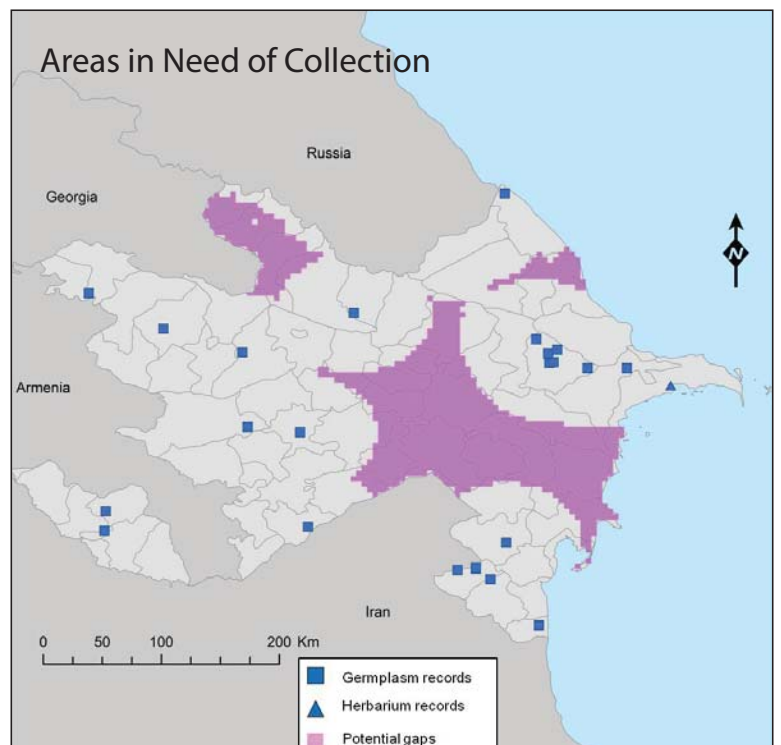


# Maps

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](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](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](http://www.cwrdiversity.org)



# Identification Keys

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Interactive identification keys can be accessed using the links below.

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

<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.

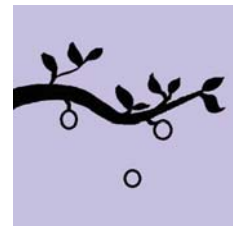


This is a very effective technique when:

- 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.

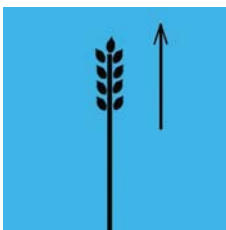
This technique may not be suitable for light, plumed seed from Bombacaceae and Asclepiadaceae, which may be carried away by air currents.



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.

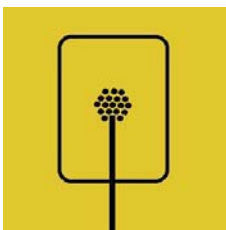


The stripping technique is most suitable for:

- 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.

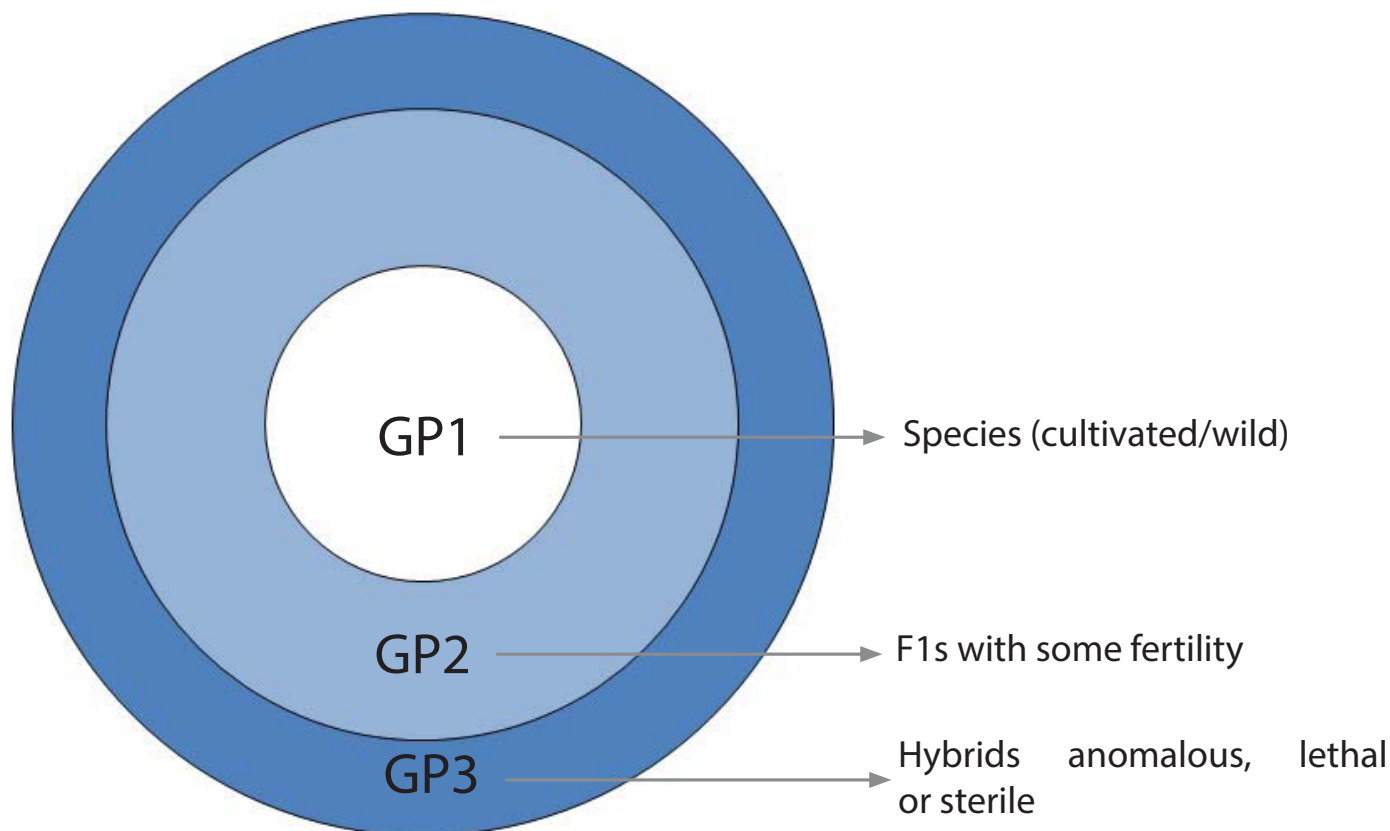
Place collections of dry, ripe seed into cloth or paper bags for transit. Store any awned seed or hooked fruit, that would damage or get stuck in cotton bags, in cardboard boxes or strong paper bags. Never collect or store seeds in plastic bags.

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

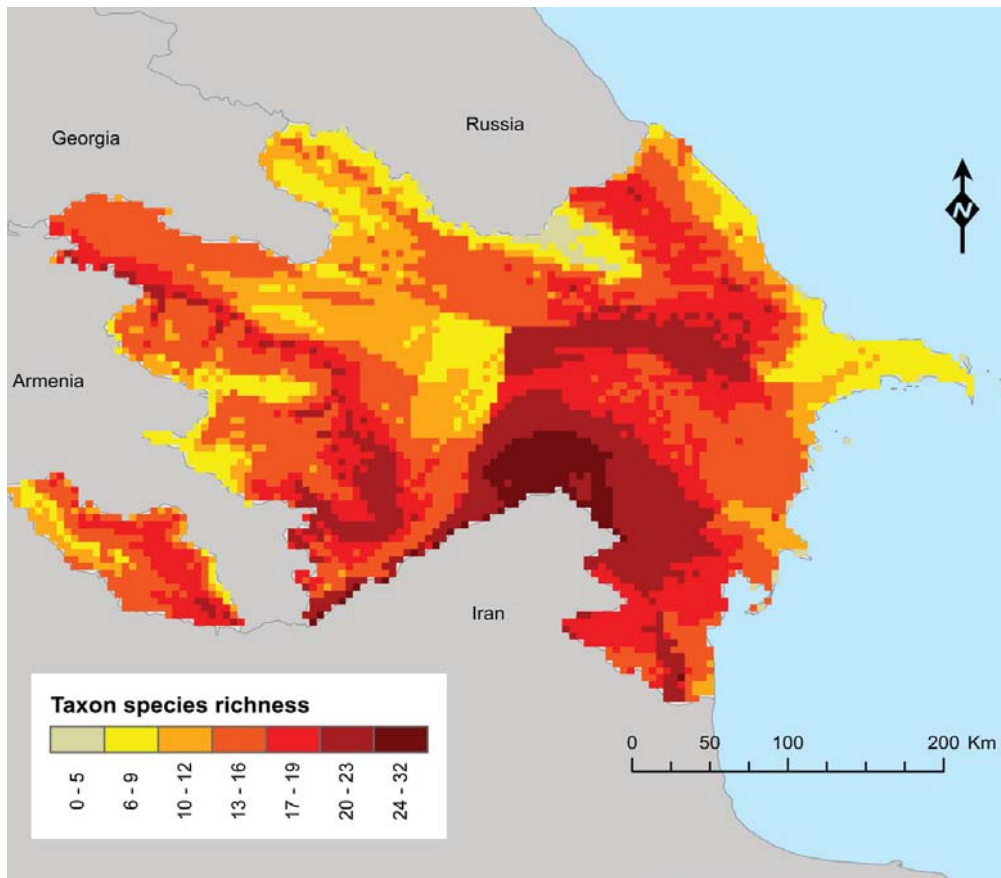
Taxon Group 2 – species in same series/section as crop

Taxon Group 3 – species in same subgenus as crop

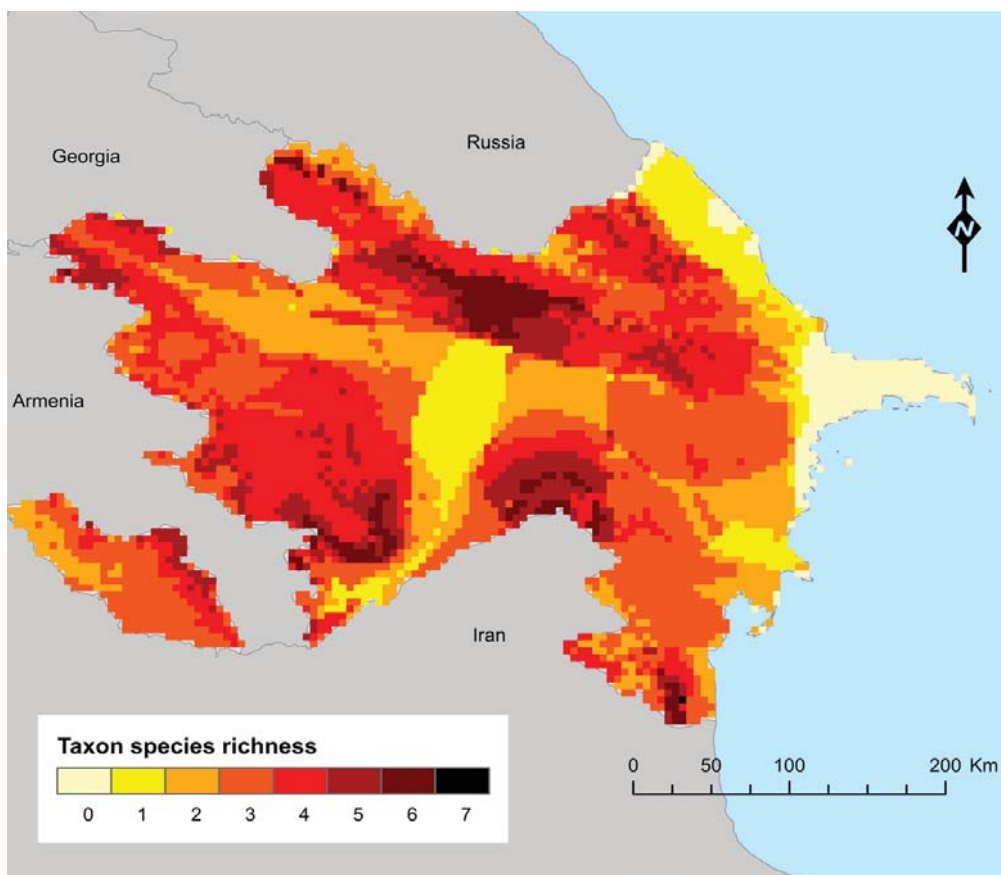
Harlan, J. and J. de Wet (1971). Towards a rational classification of cultivated plants. *Taxon* 20: 509-517.

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.

## Species richness



## Priority areas for collection



# Species in this guide

Species profiles are arranged alphabetically by family and taxon.

Family	Taxon	Genepool	Collection Priority	Sheet
Apiaceae	<i>Daucus carota</i> subsp. <i>carota</i>	Carrot	Low	1
Leguminosae	<i>Lathyrus anuus</i>	Grasspea	Low	2
Leguminosae	<i>Lathyrus aphaca</i>	Grasspea	Low	3
Leguminosae	<i>Lathyrus cicera</i>	Grasspea	Low	4
Leguminosae	<i>Lathyrus hirsutus</i>	Grasspea	Low	5
Leguminosae	<i>Lathyrus miniatus</i>	Grasspea	Low	6
Leguminosae	<i>Lathyrus pratensis</i>	Grasspea	Low	7
Leguminosae	<i>Lathyrus sphaericus</i>	Grasspea	Low	8
Leguminosae	<i>Lathyrus tuberosus</i>	Grasspea	Low	9
Leguminosae	<i>Lens culinaris</i> subsp. <i>orientalis</i>	Lentil	Low	10
Leguminosae	<i>Lens ervoides</i>	Lentil	Low	11
Leguminosae	<i>Medicago arabica</i>	Alfalfa	Low	12
Leguminosae	<i>Medicago daghestanica</i>	Alfalfa	Low	13
Leguminosae	<i>Medicago littoralis</i>	Alfalfa	Low	14
Leguminosae	<i>Medicago lupinula</i>	Alfalfa	Low	15
Leguminosae	<i>Medicago minima</i>	Alfalfa	Low	16
Leguminosae	<i>Medicago orbicularis</i>	Alfalfa	Low	17
Leguminosae	<i>Medicago polymorpha</i>	Alfalfa	Low	18
Leguminosae	<i>Medicago rigidula</i>	Alfalfa	Low	19
Leguminosae	<i>Medicago sativa</i> subsp. <i>caerulea</i>	Alfalfa	Low	20
Leguminosae	<i>Medicago sativa</i> subsp. <i>falcata</i>	Alfalfa	High	21
Leguminosae	<i>Medicago sativa</i> subsp. <i>glomerata</i>	Alfalfa	Low	22
Leguminosae	<i>Medicago sativa</i> subsp. <i>xvaria</i>	Alfalfa	High	23
Leguminosae	<i>Medicago truncatula</i>	Alfalfa	Low	24

# Species in this guide

Species profiles are arranged alphabetically by family and taxon.

Family	Taxon	Genepool	Collection Priority	Sheet
Leguminosae	<i>Pisum sativum</i> subsp. <i>elatus</i>	Pea	High	24
Leguminosae	<i>Vicia bithynica</i>	Vetch	Low	26
Leguminosae	<i>Vicia ciliatula</i>	Vetch	Low	27
Leguminosae	<i>Vicia grandiflora</i>	Vetch	Low	28
Leguminosae	<i>Vicia hirsuta</i>	Vetch	Low	29
Leguminosae	<i>Vicia hybrida</i>	Vetch	Low	30
Leguminosae	<i>Vicia hyrcanica</i>	Vetch	Low	31
Leguminosae	<i>Vicia johannis</i>	Vetch	Low	32
Leguminosae	<i>Vicia lathyroides</i>	Vetch	Low	33
Leguminosae	<i>Vicia lutea</i>	Vetch	Low	34
Leguminosae	<i>Vicia monantha</i> subsp. <i>monantha</i>	Vetch	Low	35
Leguminosae	<i>Vicia narbonensis</i>	Vetch	Low	36
Leguminosae	<i>Vicia pannonica</i>	Vetch	Low	37
Leguminosae	<i>Vicia peregrina</i>	Vetch	Low	38
Leguminosae	<i>Vicia sativa</i> subsp. <i>amphicarpa</i>	Vetch	Low	39
Leguminosae	<i>Vicia sativa</i> subsp. <i>nigra</i>	Vetch	Low	40
Leguminosae	<i>Vicia tenuifolia</i> subsp. <i>variabilis</i>	Vetch	Low	41
Leguminosae	<i>Vicia villosa</i> subsp. <i>varia</i>	Vetch	Low	42
Poaceae	<i>Aegilops biuncialis</i>	Wheat	Low	43
Poaceae	<i>Aegilops columnaris</i>	Wheat	Low	44
Poaceae	<i>Aegilops cylindrica</i>	Wheat	Low	45
Poaceae	<i>Aegilops geniculata</i>	Wheat	Low	46
Poaceae	<i>Aegilops kotschyi</i>	Wheat	Low	47

# Species in this guide

Species profiles are arranged alphabetically by family and taxon.

Family	Taxon	Genepool	Collection Priority	Sheet
Poaceae	<i>Aegilops tauschii</i>	Wheat	Low	48
Poaceae	<i>Aegilops triuncialis</i> var. <i>triuncialis</i>	Wheat	Low	49
Poaceae	<i>Aegilops umbellulata</i>	Wheat	Low	50
Poaceae	<i>Avena barbata</i>	Oat	Low	51
Poaceae	<i>Avena eriantha</i>	Oat	Low	52
Poaceae	<i>Avena fatua</i>	Oat	Low	53
Poaceae	<i>Avena sterilis</i>	Oat	Low	54
Poaceae	<i>Avena trichophylla</i>	Oat	Low	55
Poaceae	<i>Avena ventricosa</i>	Oat	Low	56
Poaceae	<i>Avena wiestii</i>	Oat	Low	57
Poaceae	<i>Hordeum bulbosum</i>	Barley	Low	58
Poaceae	<i>Hordeum marinum</i>	Barley	Low	59
Poaceae	<i>Hordeum murinum</i>	Barley	Low	60
Poaceae	<i>Hordeum vulgare</i> subsp. <i>spontaneum</i>	Barley	Low	61
Poaceae	<i>Pennisetum orientale</i>	Pearl Millet	Low	62
Poaceae	<i>Secale anatolicum</i>	Rye	Low	63
Poaceae	<i>Secale cereale</i> subsp. <i>segetale</i>	Rye	Low	64
Poaceae	<i>Secale sylvestre</i>	Rye	Low	65
Poaceae	<i>Sorghum halepense</i>	Sorghum	High	66
Poaceae	<i>Triticum monococcum</i> subsp. <i>aegilopoides</i>	Wheat	High	67
Poaceae	<i>Triticum timopheevii</i>	Wheat	Low	68
Rosaceae	<i>Malus orientalis</i>	Apple	Low	69









# Phenology table

Taxon	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<i>Avena sterilis</i>		Species in flower Species in fruit										
<i>Avena trichophylla</i>			Species in flower				Species in flower					
<i>Avena ventricosa</i>			Species in flower									
<i>Avena wiestii</i>			Species in flower									
<i>Hordeum bulbosum</i>												
<i>Hordeum marinum</i>			Species in flower Species in fruit									
<i>Hordeum murinum</i>			Species in flower Species in fruit									
<i>Hordeum vulgare</i> subsp. <i>spontaneum</i>			Species in flower Species in fruit									
<i>Pennisetum orientale</i>									Species in flower Species in fruit			
<i>Secale anatolicum</i>												
<i>Secale cereale</i> L. subsp. <i>segetale</i>												
<i>Secale sylvestre</i>					Species in flower				Species in fruit			
<i>Sorghum halepense</i>									Species in flower Species in fruit			
<i>Triticum monococcum</i> subsp. <i>aegilopoides</i>												
<i>Triticum timopheevii</i>												
<i>Malus orientalis</i>						Species in flower					Species in fruit	

## KEY



Data gathered from literature and herbarium specimens

**HABIT:** Biennial, 1st year plants composed of a rosette of leaves, 2nd year plants bolting to 120 cm.

**LEAVES:** Basal leaves oblong, 2-3-pinnate/pinnatisect, ultimate segments linear to lanceolate, 2-15 × 0.5-4 mm, glabrous to hispid especially on the veins and margins, apex acute, mucronate.

**INFLORESCENCE:** Solitary, compound umbels on long peduncle, flat-topped or slightly domed. Each inflorescence has 20-90 umbellets, each umbellet has 15-60 flowers. Peduncles 10-55 cm, retrorsely hispid, bracts foliaceous, pinnate, rarely entire, lobes linear, 3-30 mm, margins scarious, rays 2-7.5 cm, unequal, bracteoles 5-7, linear, entire or 2-3-lobed, more or less scarious and ciliate, equalling or exceeding flowers.

**FLOWER:** 2-3 mm across, petals white, sometimes yellow or pinkish.

**FRUIT:** 2-seeded schizocarps, about 3-4 mm long by 2 mm wide, ellipsoid, slightly flattened, bristly. At fruiting stage umbel folds inwards into a more-or-less spheroid shape.

**Habitat:**

Mountain slopes, ruderal areas.

**Distribution:**

Worldwide in temperate regions.

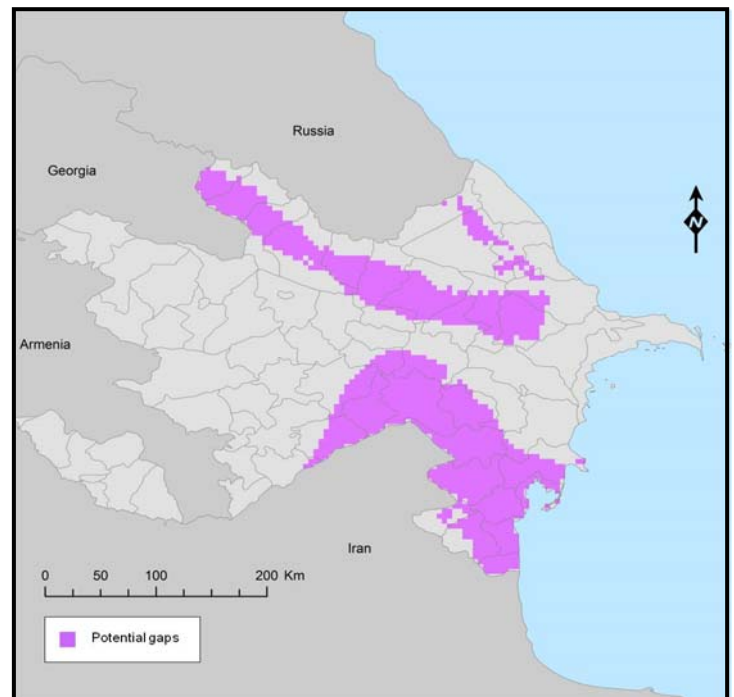
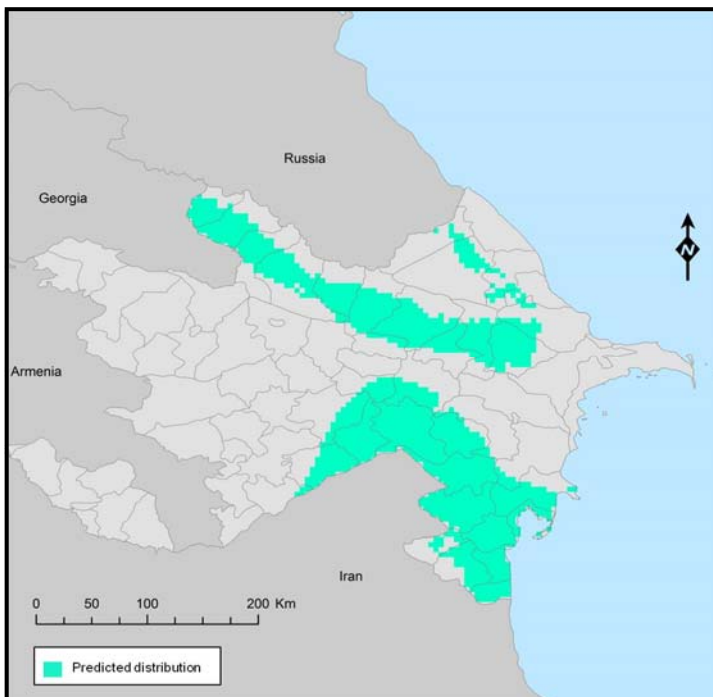
**Altitude:** 0 - 3000 m

*Daucus carota subsp. carota*

May be confused with:  
*Daucus carota subsp. sativa*

Taproot slender, branched, woody, not fleshy, usually brown. Wild carrots often have one dark purplish sterile flower at the centre of the umbel.

Taproot thickened, elongate terete or clavate, fleshy, reddish, reddish-yellow, or yellow.



**References:** Flora of China, Volume 14, p205 via [www.efloras.org](http://www.efloras.org)  
[http://www.efloras.org/florataxon.aspx?flora\\_id=2&taxon\\_id=200015518](http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200015518)



Wikimedia user Quartl



Wikimedia user Quartl



Flora Batava via Wikimedia



Wikimedia user Phuong Tran



0-1.2 m



May - Jul

Jul - Sep

**HABIT:** Annual scrambling herbs, 20-70 cm tall, vegetative parts glabrous. Stems narrowly winged, ascending to suberect. Stipules linear to subulate, semi-sagittate, 10-15 mm long, shorter than petioles.

**LEAVES:** Petioles winged. Leaflets 1-paired, linear to linear-lanceolate, 60-140 mm long by 2-12 mm wide, lower leaves ending in an awn, median and upper leaves ending in 3-5-branched tendrils.

**INFLORESCENCES:** Peduncles 1/2 as long to equalling length of leaf, sometimes gland-dotted. Flowers in groups of 1-2 (-6), 12-15(-17) mm long; calyx 5-7 mm long, lobes triangular-acuminate, lowest lobe slightly longer than others and the calyx tube, lobes patent in fruit; corolla yellow to orange, standard broadly oval, wings approximately equalling standard, narrowly clawed.

**FRUIT:** Pods sessile, linear to oblong, 50-70 mm long by 9-11 mm wide, slightly inflated, upper suture grooved, sessile glands present on valves, style persistent, 4-5 mm long. Seeds 6-8 per fruit, tuberculate.

**Habitat:**

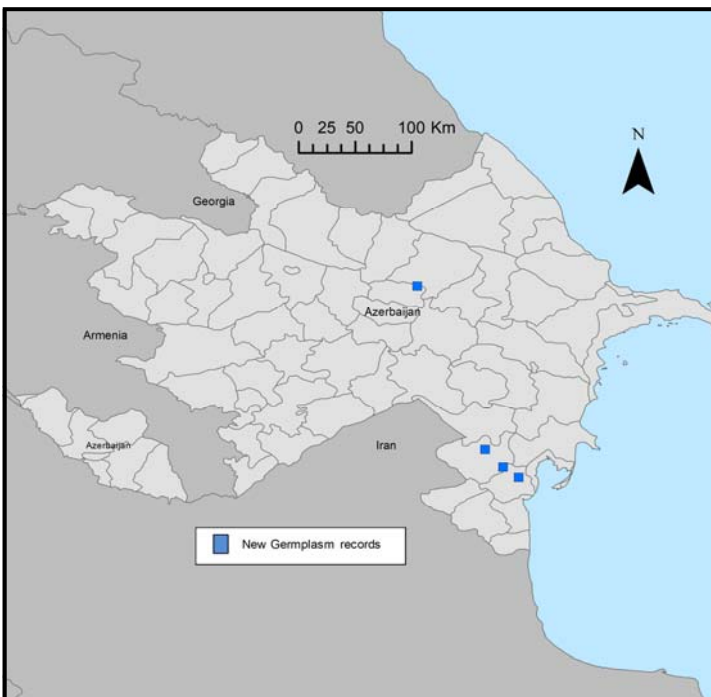
Scrub, hedges, water meadows, rocky soils, in cultivated fields.

**Distribution:**

Mediterranean region, northern Middle East, central Asia, Caucasus.

**Altitude:** 0 - 1000 m

<i>Lathyrus annuus</i>	May be confused with: <i>Lathyrus cicera</i>
Plants usually taller (20-70 cm); flowers solitary or paired; corolla yellow to orange.	Plants usually shorter (10-30 cm); flowers always solitary; corolla dull red.



All populations priority for collection.

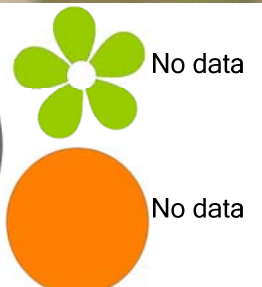
**References:** Davis, P.H. (1970) Flora of Turkey, Volume 3, p356; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p364.



No seed image available



0.2-0.7 m





Wild relative of *Lathyrus sativus* L. & *Lathyrus cicera* L.

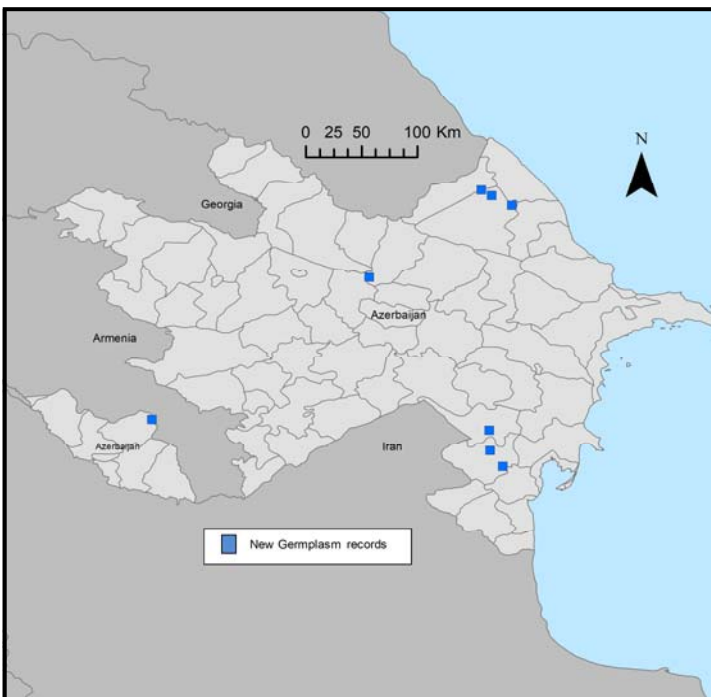
Yellow pea, Yellow vetchling

**HABIT:** Annual herbs, scrambling or trailing, stems slender, 5-50 cm long, glabrous, not winged.**LEAVES:** Stipules large, 16-25 mm long, foliaceous, broadly ovate, base cordate to hastate, apex acute, shortly mucronate. Rachis not bearing leaflets, ending in a simple tendril.**INFLORESCENCES:** Peduncles thin, longer than stipules, with 1-2 flowers. Flowers 7-13 mm long; calyx 3-9 mm long, teeth subequal, 2 to 3 times as long as tube; corolla bright to pale yellow, standard obovate, emarginate at apex, wings as long as keel.**FRUIT:** Pod linear-oblong, curved or straight, 18-35 mm long by 4-6 mm wide.**SEEDS:** 4-6 seed, seed testa smooth, 2-3.5 mm diameter.**Habitat:**

As a weed in cultivated fields, disturbed ground, steppe, meadows, riversides, roadsides, scrub, often on limestone substrates.

**Distribution:**

North Africa, throughout Europe but probably introduced in northern parts, South-western and Central Asia.

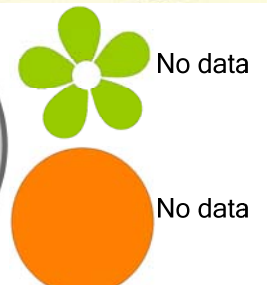
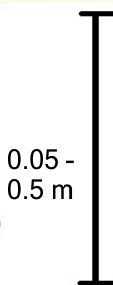
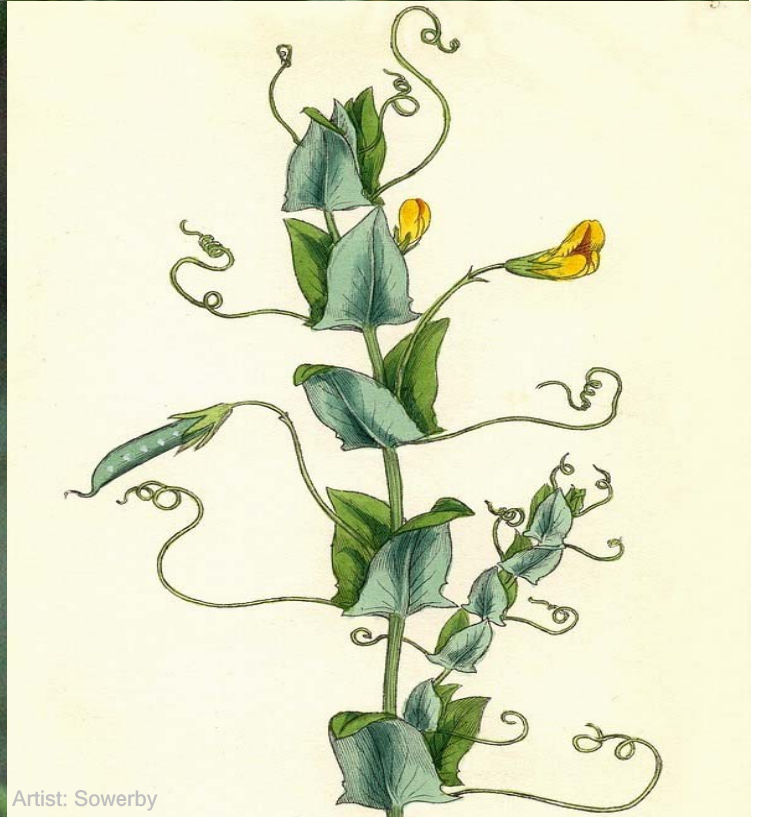
**Altitude:** 0 - 1900 m*Lathyrus aphaca*May be confused with:  
*Other Lathyrus species*The only *Lathyrus* in the region with large foliaceous stipules, and without leaflets on the rachis, which ends in a simple tendril.All populations priority  
for collection.**References:** Davis, P.H. (1970) Flora of Turkey, Volume 3, p367; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p364.

LEGUMINOSAE

Wild relative of *Lathyrus sativus* L. & *Lathyrus cicera* L.

*Lathyrus aphaca* L.

Yellow pea, Yellow vetchling



Taxon Group 1B relative of *Lathyrus cicera* L.; Tertiary Gene Pool relative of *Lathyrus sativus* L.

**HABIT:** Annual herbs, 10-30 cm tall, vegetative parts glabrous. Stems narrowly winged. Stipules 10-20 mm long, ovate to lanceolate, base semi-sagittate.

**LEAVES:** Leaflets 1-paired, linear to linear-lanceolate in upper leaves, oblong-elliptic in lower leaves, 15-95 mm long by 1-9 mm wide, median and upper leaves with simple or branched tendrils.

**INFLORESCENCES:** Peduncles about 1/2 length of leaf, often articulated between centre and apex. Flowers solitary, 8-10 mm long; calyx 7-9 mm long, lobes lanceolate, apex acuminate, 2-3 times as long as tube; corolla reddish, occasionally pink, standard obovate, tapering at the base, longer than wings and keel.

**FRUIT:** Pods sessile, oblong, 25-40 mm long by 8-10 mm wide, glabrous, inflated at the upper suture, apex beaked-attenuate, upper suture flattened and with 2 narrow keels.

**SEEDS:** 2-6 per fruit, testa smooth, 5-6 mm across.

**Habitat:**

Shrublands and grasslands, often as a weed.

**Distribution:**

Southern Europe, North Africa, northern Middle East, Central Asia and Caucasus.

**Altitude:** 5 - 2000 m

*Lathyrus cicera*

May be confused with:  
*Lathyrus annuus*

Plants usually shorter (10-30 cm);  
flowers always solitary; corolla dull  
red.

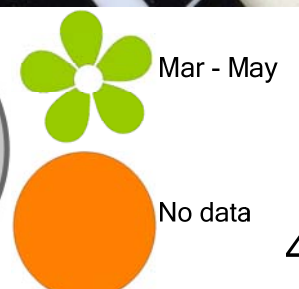
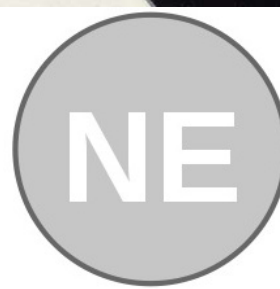
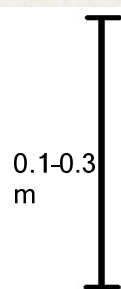
Plants usually taller (20-70 cm); flowers  
solitary or paired; corolla yellow to  
orange.



All populations priority  
for collection.

**References:** Davis, P.H. (1970) Flora of Turkey, Volume 3, pp 358-9; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p368.

Taxon Group 1B relative of *Lathyrus cicera* L.; Tertiary Gene Pool relative of *Lathyrus sativus* L.



Tertiary Gene Pool relative of *Lathyrus sativus* L.Caley Pea, Winterpea,  
Rough Pea, Hairy V

**HABIT:** Scrambling annual, sparsely pubescent, 40-60 cm tall. Stems branching from the base, ascending or erect, winged. Stipules 10-18 mm long, linear, semi-sagittate, shorter than petioles.

**LEAVES:** Petioles shorter than leaflets. Leaflets usually 1-paired, 30-60 mm long, 3-11 mm wide, linear-elliptic, apex abruptly tapering, mucronate. Rachis ending in 3-sect or pinnately branched tendrils.

**INFLORESCENCE:** Raceme 1-3-flowered, peduncle much longer than leaf.

**FLOWER:** 10-13 mm long, blue-violet or occasionally reddish; calyx 4.5-5.5 mm long, teeth subequal, as long as or slightly longer than the tube, standard much longer than keel, wings approximately equalling keel, limb broadly auricled at base.

**FRUIT:** Pods 20-50 mm long by 5-8 mm wide, oblong-linear, tuberculate, densely beset with white hairs on tubercles when young, glabrescent when ripe, 5-10-seeded.

**Habitat:**

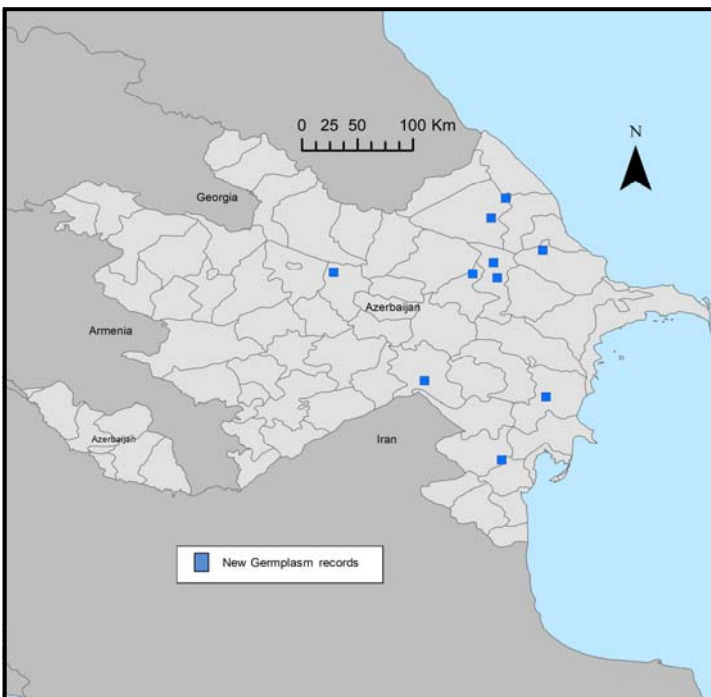
Usually found in grasslands and on cultivated land, sometimes on sand dunes and in marshy areas.

**Distribution:**

Southern and Central Europe, Lebanon, Crimea, Caucasus, North Africa and Iran. Introduced in the USA and East Africa, Afghanistan, India.

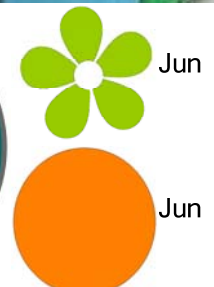
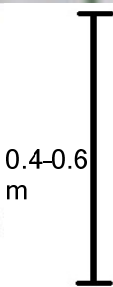
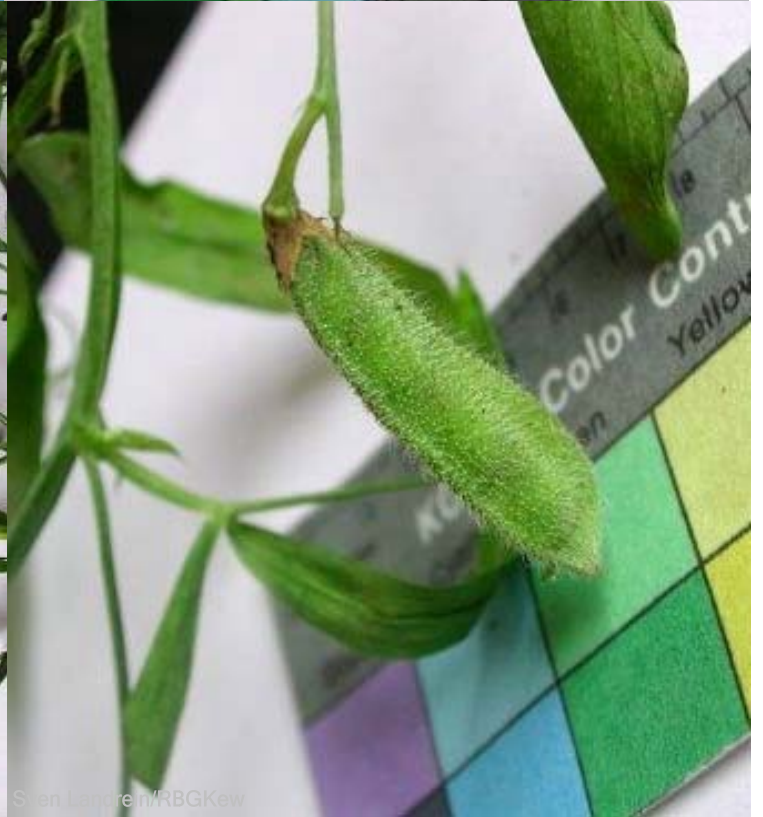
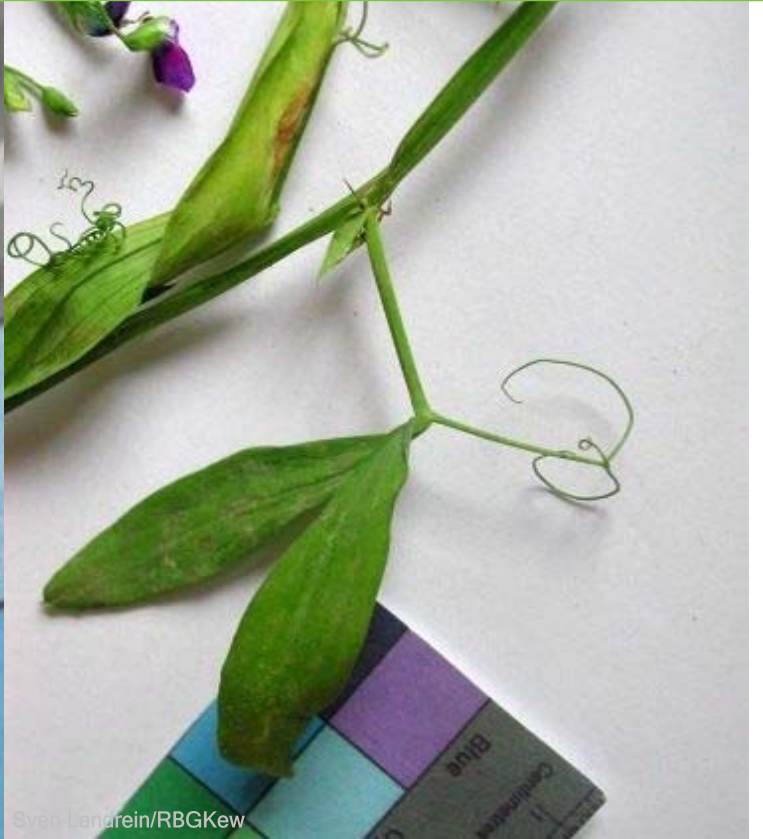
**Altitude:** 0 - 1000 m

<i>Lathyrus hirsutus</i>	May be confused with: <i>Lathyrus laxiflorus</i>
Annual plants, stem winged; stipules usually narrower than leaflets; leaflets linear-elliptic.	Perennial with tuberous rootstock, stem angled but not winged; stipules at least as broad as leaflets, often broader; leaflets ovate.



All populations priority  
for collection.

**References:** Davis, P.H. (1970) Flora of Turkey, Volume 3, p362; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p370.



Wild relative of *Lathyrus sativus* L. & *Lathyrus cicera* L.

**HABIT:** Perennial scrambler, 40-80 cm high, stems broadly winged, wings 1/3 to 1/2 of stem diameter, vegetative parts usually glabrous, occasionally pubescent. Stipules oblong-lanceolate, semi-sagittate, more than 25 mm long.

**LEAVES:** Leaflets 1-paired, elliptic, apex aculte. Rachis ending in a branched tendril.

**INFLORESCENCES:** Racemes 5-8-flowered, pedicels shorter than calyx, flowers 15-20 mm long; calyx broadly campanulate, teeth triangular-lanceolate, broad at the base, 1/3 to 1/4 length of the tube, subequal or lower teeth longer than others; corolla pink, standard abruptly tapering into a short claw, limb orbicular to oblate, rounded at lower margin and elongated above, wings shorter than standard, keel with a long, narrow claw.

**FRUIT:** Pod sessile, linear, 40-65 mm long, 4-8 mm wide, linear, glabrous, valves with dorsal, longitudinal ribs.

**SEEDS:** 8-10 per fruit, testa smooth, hilum 1/5 of circumference.

**Habitat:**

Forests and shrubby vegetation types

**Distribution:**

Endemic to the Caucasus region

**Altitude:** 1500 - 1800 m

<i>Lathyrus miniatus</i>	May be confused with: <i>Lathyrus rotundifolius</i>
Wings on stem 1/3 to 1/2 of stem circumference; stipules more than 25 mm long; leaves elliptic, never orbicular.	Wings on stem no wider than 1/4 diameter of stem; stipules less than 25 mm long; leaves orbicular to elliptic

Reported from  
Azerbaijan,  
but no localities  
known.

All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p375.

Wild relative of *Lathyrus sativus* L. & *Lathyrus cicera* L.



No seed image available



0.4-0.6 m

NE

Jun - Jul  
No data



Wild relative of *Lathyrus sativus* L. & *Lathyrus cicera* L.

Meadow vetchling

**HABIT:** Perennials, rootstock branching, cylindrical, creeping. Stems scrambling, 20-60 cm tall, compressed or 4-angled. Vegetative parts subglabrous to pubescent. Stipules ovate to lanceolate, much broader than leaflets, 7-37 mm long, base obliquely sagittate.

**LEAVES:** Petioles wingless. Leaflets 1 pair, narrowly elliptic-lanceolate, 10-40 mm long by 1.5-11 mm wide, venation parallel, rachis ending in a simple or branched tendril.

**INFLORESCENCES:** Peduncles often slightly curved, much longer than leaves. Racemes of (3-)5-10 flowers. Flowers 10-15 mm long; calyx 6-9 mm long, teeth equalling to slightly longer than tube, spreading at anthesis; corolla bright yellow, standard ovate, abruptly tapering into a claw, wings with narrowly curved claw, limb curved with short auricle at base.

**FRUIT:** Pods sessile, linear-oblong, 20-35 mm long by 5-6 mm wide, apex tapering to a short beak, surface glabrous or pubescent, venation oblique.

**SEEDS:** 4-8(-10) per fruit, compressed-globose, testa smooth, marbled red-brown.

**Habitat:**

Meadows, riversides, scrublands, forest edges.

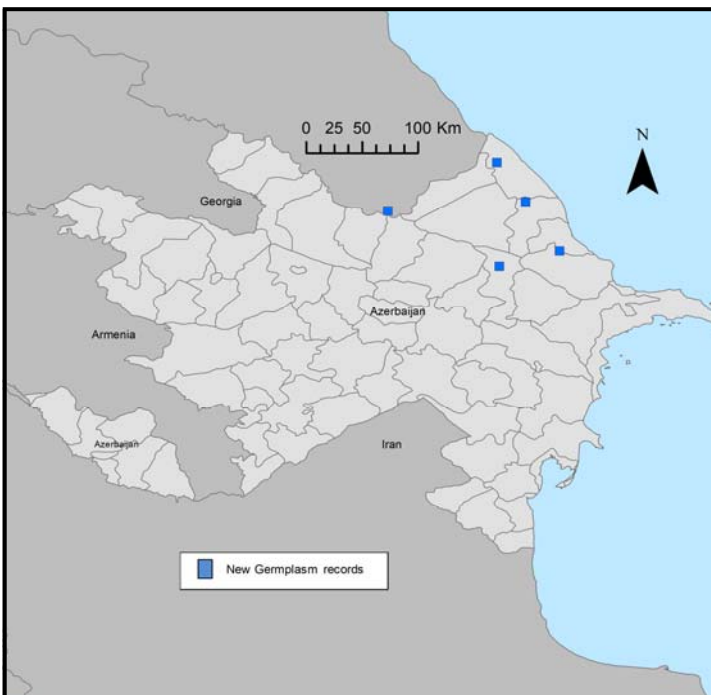
**Distribution:**

Europe, North and North-east Africa, Middle East, Caucasus, Central Asia, Himalayas

**Altitude:** 0 - 2300 m*Lathyrus pratensis*May be confused with:  
*Lathyrus tuberosus*

Rhizomes not tuberous; corolla yellow; leaflets narrowly elliptic-lanceolate.

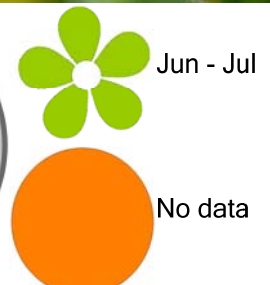
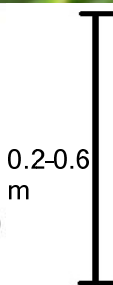
Rhizomes bearing tubers; leaflets ovate or obovate; corolla purple or red.

All populations priority  
for collection.**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, pp 380-381.

LEGUMINOSAE

Wild relative of *Lathyrus sativus* L. & *Lathyrus cicera* L.

*Lathyrus pratensis* L.  
Meadow vetchling



Wild relative of *Lathyrus sativus* L. & *Lathyrus cicera* L.

Grass pea

**HABIT:** Annual herbs, 15-70 cm tall, vegetative parts glabrous. Stems slender, erect or ascending, not winged. Stipules lanceolate to subulate, base semi-sagittate, about as long as rachis.

**LEAVES:** Leaflets 1-paired, linear-lanceolate to narrowly linear, 25-90 mm long by 1-6 mm wide, lower leaves ending in an awn, upper leaves ending in a simple tendril.

**INFLORESCENCES:** Peduncles much shorter than rachis, jointed in the middle, aristate. Flowers solitary, 1-12 mm long; calyx 5-6 mm long, teeth subequal, 1.5 to 2 times as long as tube; corolla brick red (purple in dry material), standard abruptly tapering to a long claw, deeply emarginate at apex, wings with long narrow claw, limb oblong-elliptic, auricled at base.

**FRUIT:** Pods more or less sessile, narrowly linear, 30-55 mm long by 4 mm wide, edges sharp, apex pointed, glabrous.

**SEEDS:** Compressed-globose, testa smooth, brown or olive green, hilum white.

**Habitat:**

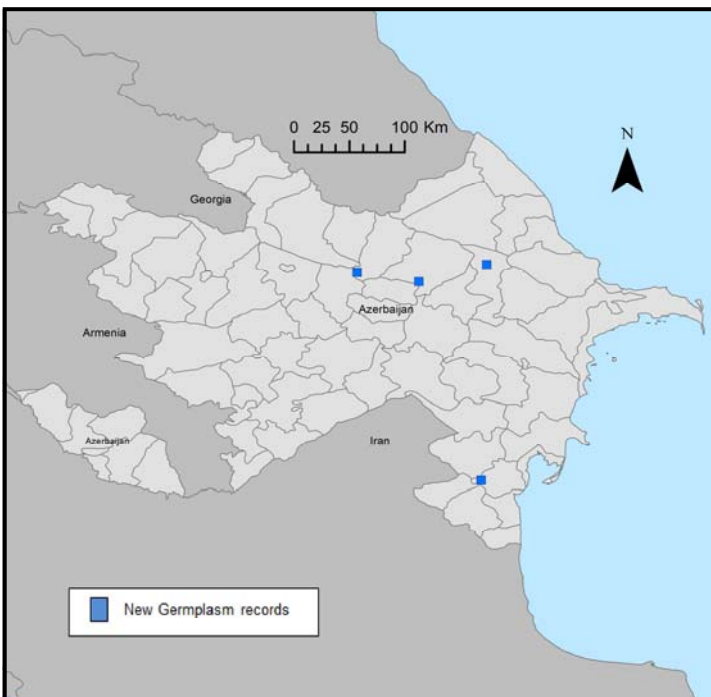
Pine forests, often on hillsides and south-facing screes.

**Distribution:**

Throughout the Mediterranean region and eastwards to Iraq, Iran and Caucasus

**Altitude:** 10 - 2000 m

<i>Lathyrus sphaericus</i>	May be confused with: <i>Lathyrus cicera</i>
Stems not winged; peducles aristate; pods about 4 mm wide	Stems narrowly winged; peduncles not aristate; pods 8-10 mm wide



All populations priority  
for collection.

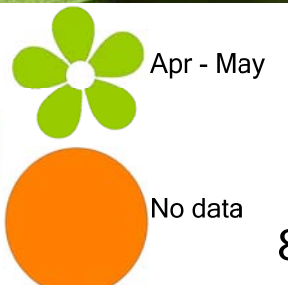
**References:** Davis, P.H. (1970) Flora of Turkey, Volume 3, p352; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p378.



No seed image available



0.15-0.7 m



**HABIT:** Perennial scramblers, 30-80 cm tall, rootstock bearing thickened fusiform to subglobose tubers. Stems branching from the base, prostrate to erect, glabrous, wingless but often angled. Stipules semi-sagittate, 5-20 × 1-4 mm.

**LEAVES:** Petioles 8-14 mm long, angular. Leaflets 1-paired, ovate to obovate, glabrous, apex mucronate, venation parallel. Rachis ending in a tendril, usually branched in upper leaves.

**INFLORESCENCE:** Peduncles longer than leaves, often curved. Racemes loose, 2-7-flowered. Flowers 15-20 mm long; calyx campanulate, 6-7 mm, teeth equalling or shorter than tube; corolla purple-red, 1.5-2 cm long, standard subovate, shortly clawed, limb auriculate at base, wings shorter than standard.

**FRUIT:** Pods noddling, linear, 2-4 cm, almost cylindrical, slightly inflated, glabrous.

**SEEDS:** 3-10 per fruit, elliptic, finely dotted, testa dark brown, smooth.

**Habitat:**

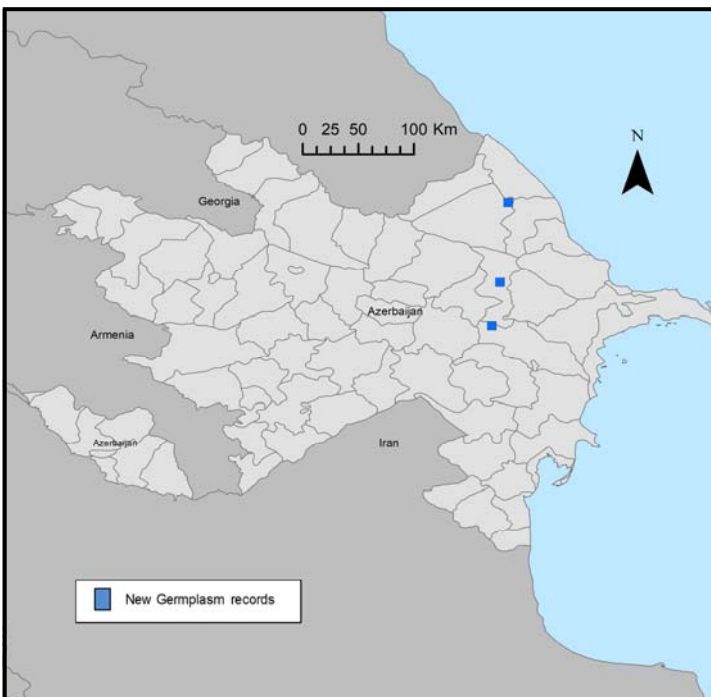
Disturbed habitats, forest edges, meadows and fields.

**Distribution:**

Southern and Eastern Europe; Caucasus; Western and Central Asia; Russia; China.

**Altitude:** 1000 - 1250 m

<i>Lathyrus tuberosus</i>	May be confused with: <i>Lathyrus hirsutus</i>
Perennial plant with tuberous rhizomes; stems not winged; corolla pink to purple, >1.5 cm long.	Annual plant; stems winged; corolla red or bluish-purple, <1.5 cm long.



All populations priority  
for collection.

**References:** Davis, P.H. (1970) Flora of Turkey, Volume 3, p350; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p372.



0.3-0.8  
m



Jun - Aug

Jun - Aug

**HABIT:** Erect, pale green annual herb up to 60(-75) cm tall. Stem square, much-branched, taproot slender. Stipules entire, 2.5-6 mm long.

**LEAVES:** Alternate, pinnately compound, with 5-16 leaflets, rachis (1-)2.5-3.5(-5) cm long, usually ending in a tendril or bristle. Leaflets opposite or alternate, sessile, oblong or elliptical, (3-)10-15(-20) mm long, (1.5-)2-5(-8) mm wide, margins entire.

**INFLORESCENCE:** 1-4(-7)-flowered, axillary, racemose, peduncle slender, (2-)3-4(-5.5) cm long, pedicel short.

**FLOWER:** Calyx campanulate, narrowly 5-lobed, tube c. 1.5 mm long, lobes c. 3 mm long. Corolla pale blue, white or pink, standard 5-7 mm × 4-5 mm, wings c. 4.5 mm × 1.5 mm, keel c. 4.5 mm × 2 mm, stamens 10, 9 united and 1 free, anthers uniform; ovary superior, 1-celled, style inflexed, inner surface bearded.

**FRUIT:** A rhomboid, laterally compressed pod, 6-20 mm long by 3.5-12 mm wide, glabrous, short-beaked, 1-2(-3)-seeded.

**SEEDS:** Lens-shaped, 2-9 mm × 2-3 mm, grey, green, brownish green, pale red speckled with black, or black, hilum minute.

**Habitat:**

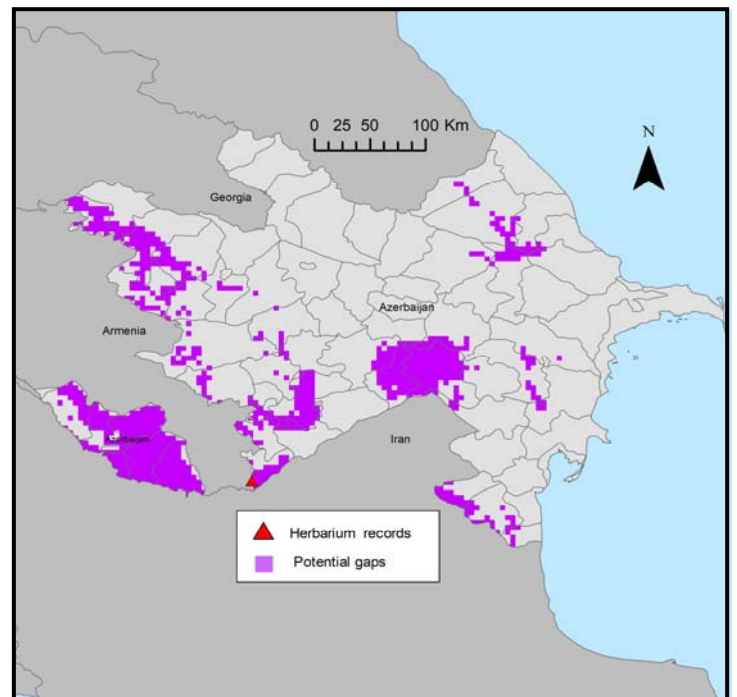
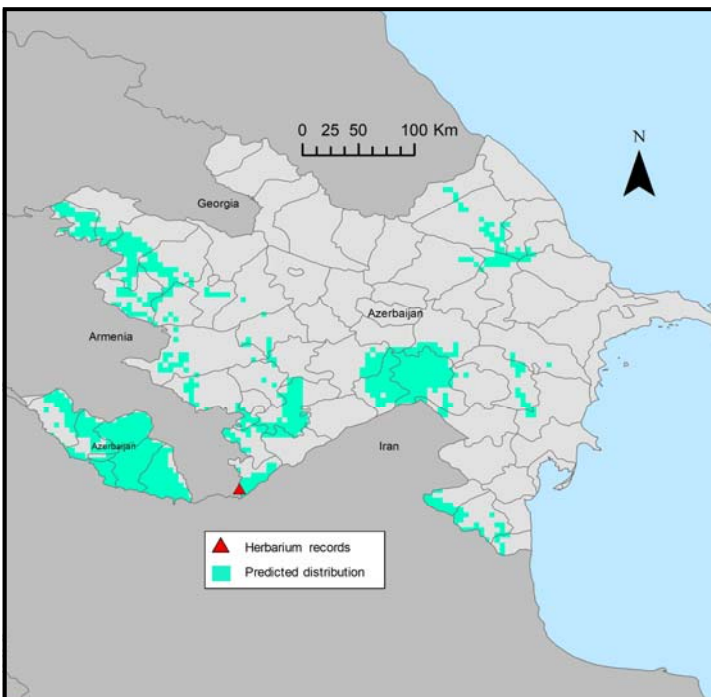
Inland habitats, often grasslands but sometimes associated with woodland, often occurs on limestone.

**Distribution:**

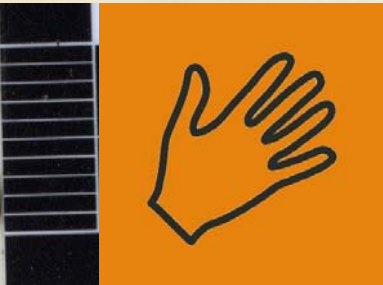
From Greece eastwards to Uzbekistan, and from the Crimean Peninsula southwards to Jordan.

**Altitude:** 250 - 800 m

<i>Lens culinaris subsp. orientalis</i>	May be confused with: <i>Lens culinaris ssp. culinaris</i>
Stipules obliquely lanceolate; fruit dehiscent.	Stipules lanceolate; fruit indehiscent.



**References:** Bejiga, G., 2006. *Lens culinaris* Medik. In: Brink, M. & Belay, G. (Editors). PROTA 1: Cereals and pulses/Céréales et légumes secs. [http://database.prota.org/PROTAhtml/Lens%20culinaris\\_En.htm](http://database.prota.org/PROTAhtml/Lens%20culinaris_En.htm)



up to  
0.6m



Mar - Jun

Mar - Jun



**HABIT:** Suberect, straggling or climbing annual herbs, up to 0.3 m tall. Stems slender, angular, much branched.  
**LEAVES:** 4-6 foliate; leaflets narrowly oblong or linear, 0.4-1.4 cm long, 1-4 mm wide, glabrous to thinly hairy; petiole very short to obsolete; rachis produced into a short awn or slender unbranched tendril, stipules 1-2mm.  
**INFLORESCENCE:** 1-2 flowered (but flowers mostly solitary); calyx glabrescent or hairy; tube 1.5 mm long. Corolla pale to bright blue; standard rounded,  $\pm$  3mm in diameter.  
**FRUIT:** Pods oblong, very compressed, 7-9 mm long, 3.5-4 mm wide, finely puberulous to adpressed pubescent or rarely glabrescent save for ciliate margins.  
**SEEDS:** Black and dark brown mottled, more or less circular in outline, compressed, 2-2.5mm in diameter, 1.5mm thick.

**Habitat:**

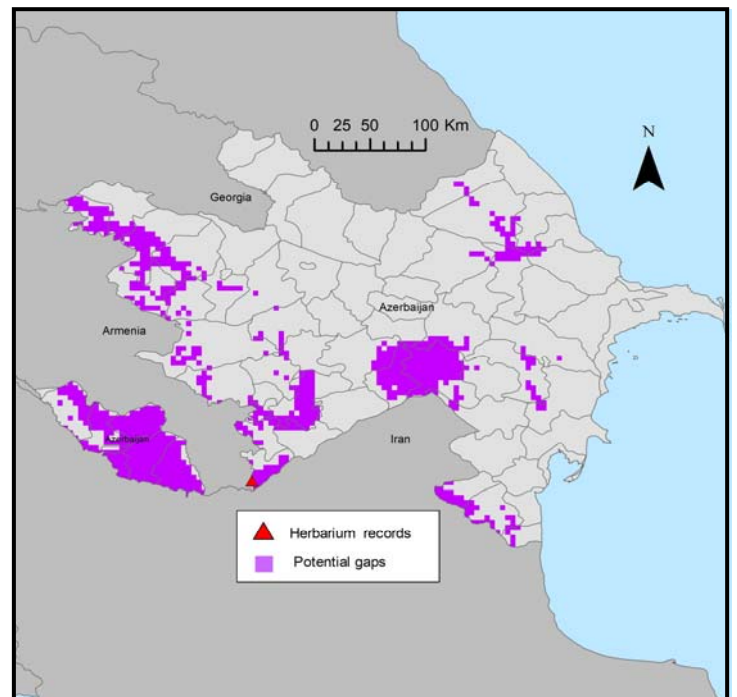
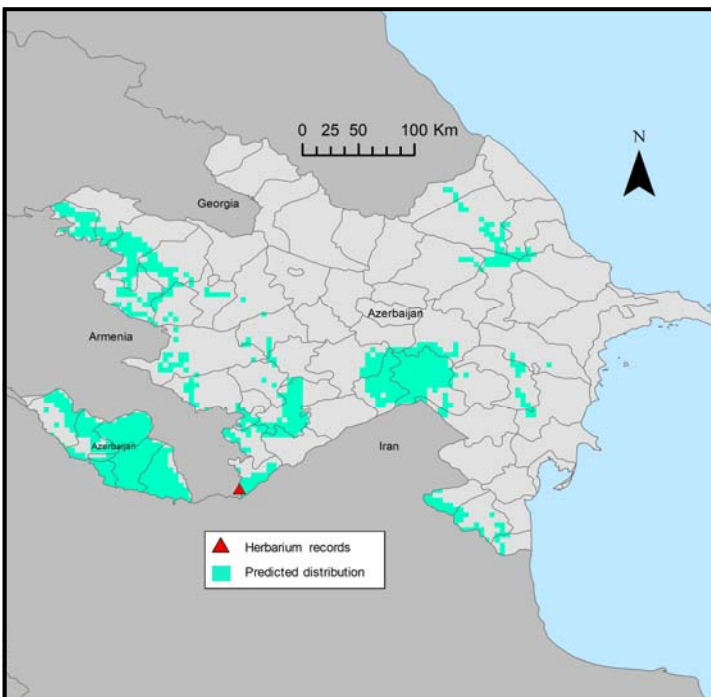
Grasslands, especially in montane areas.

**Distribution:**

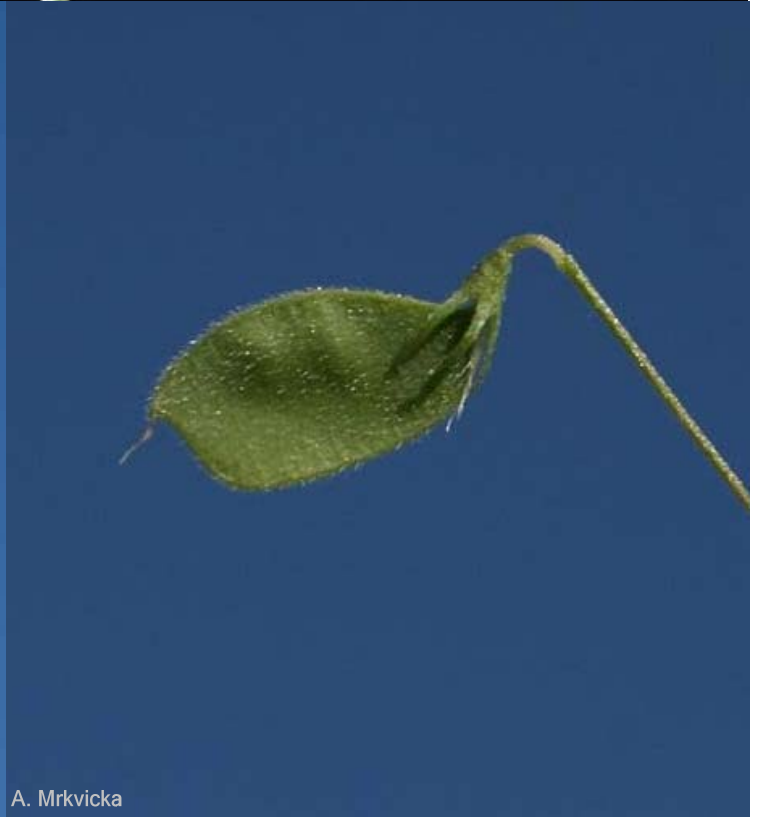
Confined mainly to Mediterranean region, with isolated populations from Ethiopia and Uganda.

Altitude: 2300 - 2550 m

<i>Lens ervoides</i>	May be confused with: <i>Lens culinaris</i>
Leaflets glabrous to thinly hairy. Corolla +/- 3mm.	Leaflets villous on both surfaces. Corolla 4.5 - 6.5 mm.



**References:** Thulin, M. (1989) Fabaceae. In: Flora of Ethiopia and Eritrea. Volume 3, p249.  
 Ferguson, M.E., Maxted, N., van Slageren, M. & Robertson, L.D. (2000) A re-assessment of the taxonomy of *Lens* Mill. (Leguminosae, Papilionoideae, Viciae). Botanical Journal of the Linnean Society 133: 41-59.



No seed image available



up to 0.3 m



Jun - Nov

Jun - Jan

Wild relative of *Medicago sativa* L.

Arabian alfalfa; burclover

**HABIT:** Annual herb 10-30(-100) cm tall, branching from the base, branches proumbent or ascending. Stipules ovate to sagittate, deeply dentate to lobed.

**LEAVES:** Leaflets 8-25 mm long by 6-25 mm wide, 1-1.5 times as long as broad, cuneate, obovate or orbicular, margin serrate in upper third, often with a dark patch in the centre of upper surface, glabrous above, hairs present below.

**INFLORESCENCES:** Composed of (1-)2-5(-8) flowers, peduncle about same length as subtending petiole. Flowers 4-5 mm long, pedicel 1-2 mm; calyx 1.5-3 mm, teeth as long as or longer than tube; corolla usually yellow, about twice the length of calyx or shorter.

**FRUIT:** Young pod protruding sideways from calyx. Mature pod glabrous, coils adpressed, shortly ellipsoid, discoid or cylindrical, (4-)5-7(-8) mm diameter, with flexible, hooked spines up to 4 mm long on dorsal suture, often intermeshing, end view of coil shows a central groove flanked by lateral grooves to form a pattern of 3 grooves separating 4 ridges, venation pattern on faces of coils conspicuously anastomosing in outer 1/3, only a few curving veins on inner 2/3.

**SEEDS:** 5-8 per pod, 2-3.5 mm long, yellow or yellow-brown.

**Habitat:**

Grassy, moist habitats, e.g. forest edges, scrub thickets, meadows. Also a weed of cultivated or disturbed areas.

**Distribution:**

Southern and Eastern Europe, North Africa, Western Asia and Middle East. Introduced into Australia, New Zealand, U.S.A. and Chile.

**Altitude:** 0 - 1300 m

<i>Medicago arabica</i>	May be confused with: <i>Other annual Medicago species</i>
Leaflets with a central dark blotch; fruit coil edge with 4 ridges alternating with 3 grooves; venation on pod coil faces anastomosing in outer 1/3, few curving veins in inner 2/3.	



All populations priority  
for collection.

**References:** Small, E. (2011) *Alfalfa and Relatives: Evolution and classification of Medicago*. NRC Research Press, Ottawa.

LEGUMINOSAE

Wild relative of *Medicago sativa* L.

*Medicago arabica* (L.) Huds.

Arabian alfalfa; burclover



0.1-0.3 m

NE

Mar - May

Jun - Aug

12

**HABIT:** Perennial herbaceous plant. Root system strong, branched, striking deep into the soil. Stems slender, quadrangular, ascending, numerous, lignescent at base, 20 to 40 cm tall.

**LEAVES:** Leaflets (3)5-8 mm long, triangular-obcordate, obovoid or obcuneate, denate in upper third. Stipules of lower leaves semi-sagittate, acute, with strongly prominent veins and several teeth in lower part, those of upper leaves narrower and often entire. Leaf blades 5-8 mm long, triangular-obovate or obcuneate, at the apex dentate and with a small emargination, somewhat rigid, glabrous, pubescent along midrib beneath, veins strongly prominent.

**INFLORESCENCE:** Capitata, rather sparse, 4-6 flowers.

**FLOWER:** Corolla 6-8 mm long, white, light blue or light violet. Standard broad, twice as wide as calyx, calyx broadly campanulate, pubescent, with thin subulate teeth.

**FRUIT:** Pod 3-5 mm diameter, cylindrical with flat surfaces, twisted 3-5 times, with glandular hairs or glabrous, with two deep longitudinal grooves and a few very short, thin, often curved spines at the outer margin of turns.

**SEEDS:** Ovate or weakly reniform, 1.8-2.5 mm long. Small, yellowish or light to dark brown. Seeds one or two in each coil, somewhat separated by a transverse, spongy septum, radicle half or less than half the length of the seed.

**Habitat:**

Mountainous areas, often on calcareous, rocky substrates and dry meadows.

**Distribution:**

Azerbaijan, Russia (Ingushetia and Chechnya)

**Altitude:** 500 - 1500 m

<i>Medicago daghestanica</i>	May be confused with: <i>Other Medicago species</i>
The only <i>Medicago</i> species with white or violet flowers and fruits which are spiny and coiled.	

Reported from Azerbaijan, but no localities known.

All populations priority for collection.



RBG Kew



RBG Kew



RBG Kew

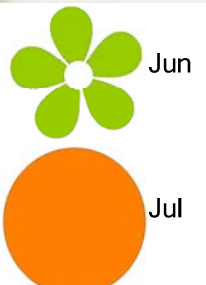


RBG Kew

No seed  
image  
available



0.2-0.4  
m



**HABIT:** Annual, procumbent herb, ascending, branched from the base, branches 7-20(-40) cm long, vegetative parts pubescent with simple hairs. Stipules dentate to laciniate.

**LEAVES:** Leaflets 3-8 mm long, 2-7 mm wide, pubescent on both sides, distal margins serrate.

**INFLORESCENCE:** Composed of 1-3(-5) flowers, peduncle about equal to subtending petiole. Flowers 3-6 mm long; calyx with simple hairs, teeth shorter than tube; corolla yellow, about twice as long as calyx.

**FRUIT:** Young pod contracted and concealed within calyx. Mature pod discoid to cylindrical, glabrous, hard at maturity, 3-10 mm long, 3-7 mm wide, with 2-6(-8) adpressed coils, spiny, the spines held 90-180 degrees to pod surface, rarely overlapping. Coil surface with about 10 somewhat curving radial veins arising from ventral surface, branching slightly and entering lateral vein. Grooves along sides of dorsal suture not very pronounced.

**SEEDS:** 1-2 per coil, separated by transverse spongy membranes, 2.5-3.7 mm long, yellowish to brownish-yellow, reniform, surface smooth.

**Habitat:**

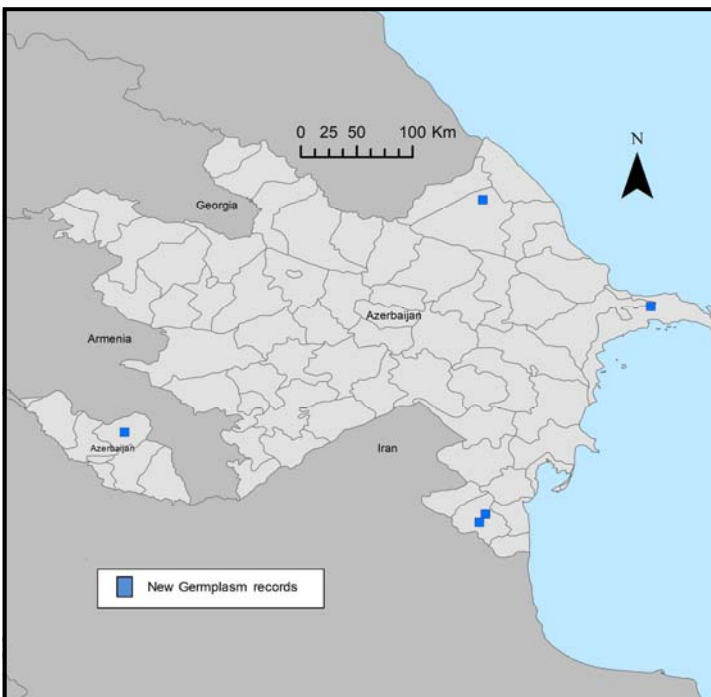
Usually found on sandy seashores, occasionally in grasslands and arid areas further inland.

**Distribution:**

Northern Africa, Southern and Eastern Europe, Western Asia, introduced into the Eastern USA and Australia.

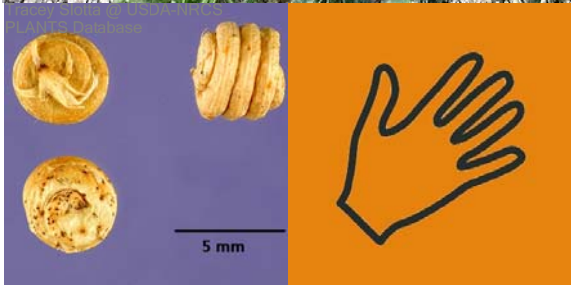
**Altitude:** 0 - 100 m

<i>Medicago littoralis</i>	May be confused with: <i>Medicago truncatula</i>
Mature fruit glabrous; grooves either side of dorsal suture not pronounced; spines on fruit rarely overlapping.	Mature fruit with at least a few hairs; grooves either side of dorsal suture pronounced; spines on fruit usually overlapping.



All populations priority  
for collection.

**References:** Small, E. (2011) Alfalfa and Relatives: Evolution and classification of *Medicago*. NRC Research Press, Ottawa.



0.07-0.2 m



Feb - May

Mar - Jun



Wild relative of *Medicago sativa* L.

Black medic

**HABIT:** Annual, biennial or short-lived perennial herb, stems prostrate, decumbent, ascending or erect, 20-100 cm long, stems and leaves glabrescent to densely pubescent. Stipules laceolate, entire or irregularly toothed.

**LEAVES:** Leaflets 6-20 mm long, elliptic, obovate, ovate, rhomboidal or suborbicular, margins serrate in distal half.

**INFLORESCENCES:** Short, cylindrical heads of 15-50 flowers, peduncles much longer than subtending petiole (further elongated in fruit); calyx 1.5-2.5 mm long, capanulate, pubescent, teeth unequal, equal in length or longer than tube; corolla yellow, 2-4 mm long, about twice length of calyx or slightly shorter.

**FRUIT:** Young pod contracted within calyx. Mature pod black (occasionally greyish), up to 3 mm long, slightly curved (sometimes almost forming a single coil), venation on pod face reticulate to somewhat anastomosing, with 3-6 strongly curving veins arising from ventral suture.

**SEEDS:** 1 per fruit, oval to reniform, 1.5-2 mm long, yellow, olive green or brown.

**Habitat:**

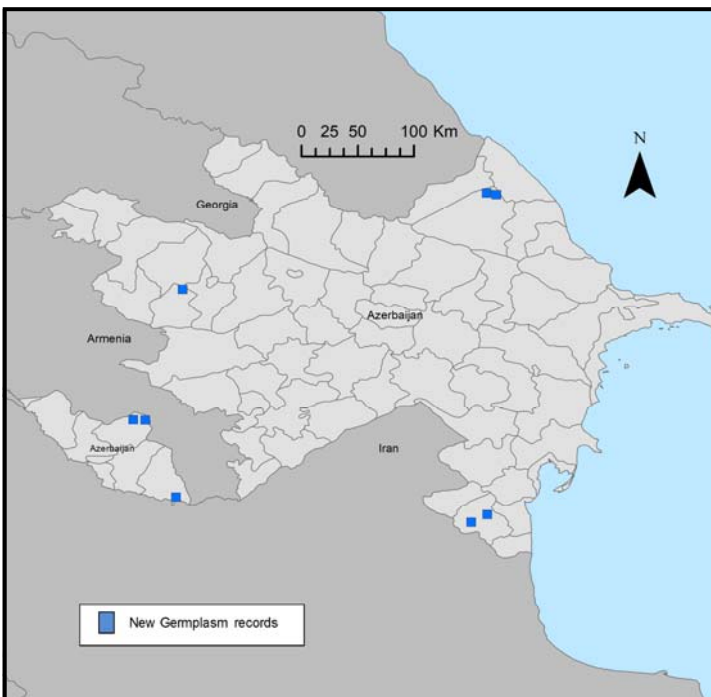
Commonly found in pastures, also in lawns, beside rivers, roads and railways and on disturbed ground and as a weed in fields and orchards.

**Distribution:**

Native to Europe, Middle East, North Africa, temperate regions of Asia. Widely introduced in the tropics and subtropics, including Australasia and North and South America.

**Altitude:** 0 - 2300 m

<i>Medicago lupulina</i>	May be confused with: <i>Other Medicago species</i>
Distinguished by capituliform inflorescence with peduncle much longer than subtending petiole; black, single-seeded fruit with 0-1 coils.	



All populations priority  
for collection.

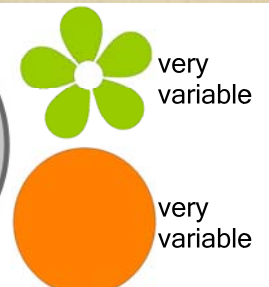
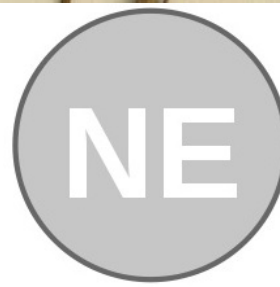
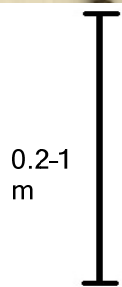
**References:** Small, E. (2011) *Alfalfa and Relatives: Evolution and classification of Medicago*. NRC Research Press, Ottawa.

LEGUMINOSAE

Wild relative of *Medicago sativa* L.

*Medicago lupulina* L.

Black medic



Wild relative of *Medicago sativa* L.

Least medic, Lesser bur medic

**HABIT:** Annual herb, stems ascending or procumbent, branched from the base, 5-40 cm long. Stipules lanceolate to ovate-lanceolate, entire or minutely denticulate at the base. Simple and gland-tipped hairs present on leaves, calyx and fruit.

**LEAVES:** Leaflets 4-8(-12) mm long, 2-7 mm wide, obovate or occasionally oblanceolate, margin serrate in distal third.

**INFLORESCENCES:** Capitulate with (1-)2-5(-8) flowers, peduncle shorter or longer than subtending petiole. Flowers 2-4.5 mm long, calyx appressed-hairy, teeth unequal, about as long as tube, corolla yellow, longer than calyx.

**FRUIT:** Young pod protruding sideways from calyx. Mature pod discoid, cylindrical, sub-orbicular or ovoid, 3-5 mm long, with 3-5 loosely appressed coils. Coil face with 6-8 strongly curved veins, entering broad, veinless margin. Dorsal spines varying from short tubercles to long curving spines, but surfaces usually grooved.

**SEEDS:** 1-2 per coil, reniform to oblong-ovoid, 1.5-2.5 mm long, testa yellow to light brown, separated by thin septae.

**Habitat:**

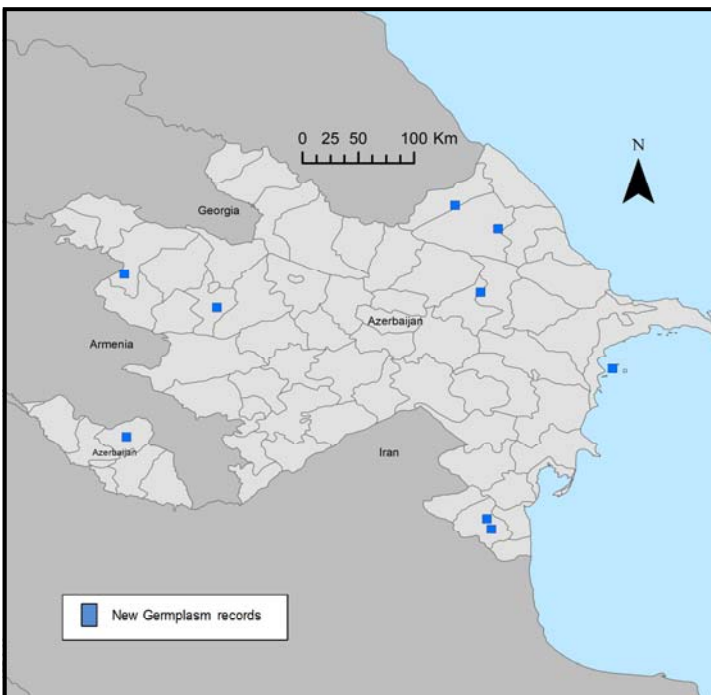
Occurs in a wide variety of semi-arid temperate habitats, including hillsides, steppe, sand dunes, fields, forest edges, disturbed ground, as a weed in cultivation.

**Distribution:**

Native in North Africa and the Middle East, western Asia, Europe. Introduced in Australia, New Zealand, temperate North and South America, Hawaii, New Caledonia.

**Altitude:** 0 - 1600 m

<i>Medicago minima</i>	May be confused with: <i>Medicago laciniata</i>
Leaves obviously pubescent; stipules entire to slightly dissected at the base; pod coil face with a broad, veinless margin (about 1/3 of coil radius).	Leaves sparsely hairy to glabrous; stipules dissected; venation on pod coils covers more than 2/3 of coil face.



All populations priority for collection.

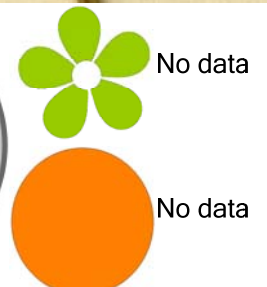
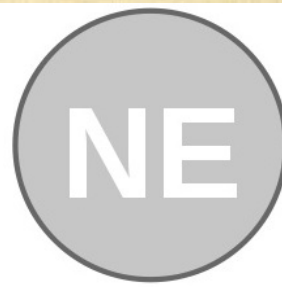
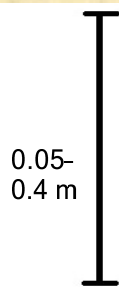
**References:** Small, E. (2011) *Alfalfa and Relatives: Evolution and classification of Medicago*. NRC Research Press, Ottawa.

LEGUMINOSAE

Wild relative of *Medicago sativa* L.

*Medicago minima* (L.) Bartal.

Least medic, Lesser bur medic



Wild relative of *Medicago sativa* L.Black disc medic, Button  
clover

**HABIT:** Annual herb, branched from the base, stems 10-40(-100) cm long, usually procumbent. Vegetative parts usually glabrous or glabrescent. Stipules 3-6 mm long, laciniate.

**LEAVES:** Leaflets 7-13 x 5-10 mm, obovate to cuneate, margins serrate in distal 1/3 to 2/3.

**INFLORESCENCES:** Usually composed of 1-2(-5) flowers, peduncles shorter or longer than subtending petiole. Flowers 3-4(-6) mm long, calyx glabrous or sparsely hairy, corolla yellow up to twice as long as calyx.

**FRUIT:** Young pod protruding sideways from calyx in a loose spiral which tightens at maturity. Mature pod lenticular to discoid, spines absent, 8-20 mm across, coils (2-)3-7, papery at margins, usually only a single pod developing per peduncle, coil face lacking a lateral vein.

**SEEDS:** Triangular to deltoid, compressed, 3-6 per coil, separated by thin septa, testa tubercular, yellow to brown.

**Habitat:**

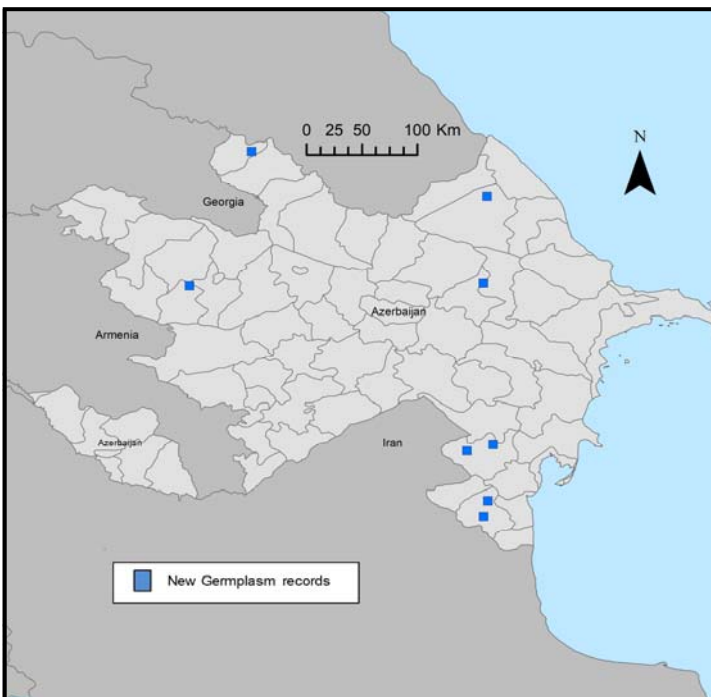
Margins of cultivated fields, fallow areas and hilly slopes.

**Distribution:**

Native in Mediterranean region, Middle East, Western Asia including Caucasus. Introduced to Australia, USA, Chile and South Africa.

**Altitude:** 0 - 1800 m

<i>Medicago orbicularis</i>	May be confused with: <i>Other Medicago species</i>
Distinguished by rather large (>1 cm across), spineless, papery pods and tubercular seed coat.	



All populations priority  
for collection.

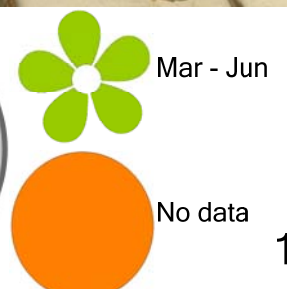
**References:** Small, E. (2011) *Alfalfa and Relatives: Evolution and classification of Medicago*. NRC Research Press, Ottawa.



No seed  
image  
available



0.1-0.4  
m



**HABIT:** Annual herb, branched from the base, stems procumbent, decumbent or ascending 15-40(-70) cm long. Stipules lanceolate to ovate-lanceolate, laciniate.

**LEAVES:** Leaflets obovate or obcordate, 6-20 mm long by 5-18 mm wide, margins serrate in apical 1/3 to 1/2, glabrous above, underside glabrous or sparsely hairy.

**INFLORESCENCES:** Compact heads of 2-6(-10) flowers, peduncle shorter or longer than subtending petiole. Flowers 3.5-6 mm long; calyx about half to equally length of corolla, teeth subulate to lanceolate, about equal to length of tube; corolla yellow.

**FRUIT:** Young pod protruding sideways from calyx, pubescent. Mature pod discoid, cylindrical or conical, 2-12 mm long, usually glabrous, grey to black, spines present or absent, grooved if present, coils 1.5-7 in a lax spiral, coil face ventation reticulate, veins anastomosing in outer part of coil before entering lateral vein.

**SEEDS:** 2-4 mm long, testa smooth, yellow to brownish, 1-2 per coil, separated by spongy septa.

### Habitat:

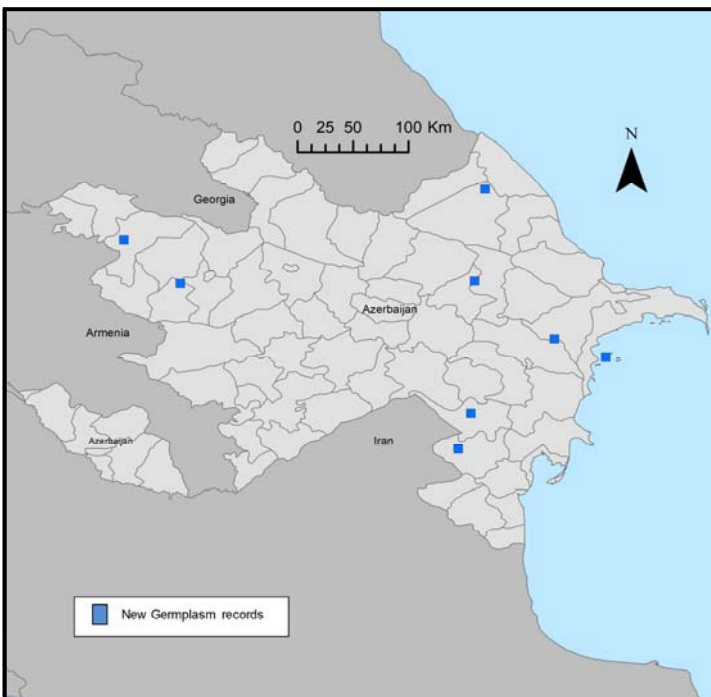
Occurs in a wide variety of habitats and on many different soil types, often as a weed in cultivation. Absent from deserts and high mountains.

### Distribution:

Native to Europe, North and East Africa, Middle East and Western Asia. Introduced in North and South America, Australia, New Zealand. Hawaii, Marianas, Reunion, South Africa.

**Altitude:** 0 - 1000 m

<i>Medicago polymorpha</i>	May be confused with: <i>Medicago laciniata</i>
Leaflets with serrations only in apical 1/3 to 1/2; fruit coil with numerous anastomoses between veins; submarginal vein much less than 1/5 radius of coil away from dorsal suture	Leaflets often serrate to deeply lobed; fruit coil with very few anastomoses between veins on coil face; submarginal vein about 1/5 of radius of coil away from dorsal suture.



All populations priority  
for collection.

**References:** Small, E. (2011) Alfalfa and Relatives: Evolution and classification of *Medicago*. NRC Research Press, Ottawa.



0.15-  
0.4 m



No data

No data



**HABIT:** Annual herb, pubescent with simple hairs, glandular hairs sometimes also present. Stems procumbent to ascending, usually branched from the base, (6-)10-40(-50) cm long. Stipules dentate to laciniate, blade divided to 1/3 to 1/4 of width, with 4-8 teeth including a long terminal tooth.

**LEAVES:** Leaflet blades (6-)8-12 mm long, cuneate-obovate to obovate, tips of mature leaflets usually emarginate, sometimes retuse or obtuse, margins serrate in distal half of leaflet.

**INFLORESCENCES:** Peduncle 1.5 to 3 times length of subtending petiole. Flowers 1-3(-6) per peduncle, pedicel about 1 mm long; calyx pubescent, shorter than corolla, lobes 60% to 80% of calyx length; corolla yellow.

**FRUIT:** Young fruit contracted and contained within calyx. Mature pod usually ovoid, usually pubescent, 5-10(-12) mm long, 5-10(-15) mm wide, with (4-)5-6.5(-7.5) coils, gaps present between mature coils, hard at maturity, veination on fruit surface obscure at maturity. Spines or tubercules sometimes present on edge of coils, when present 10-20 per coil, approximately oblique to pod axis.

**SEEDS:** 1-2 per coil, about 3-4 mm long, 1.5-2 mm wide, separated within fruit by spongy partitions, testa smooth, yellow-brown.

**Habitat:**

Steppes, scrubland, open woodland, disturbed ground, abandoned pastures, as a weed in crops and on roadsides.

**Distribution:**

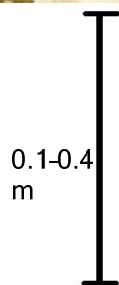
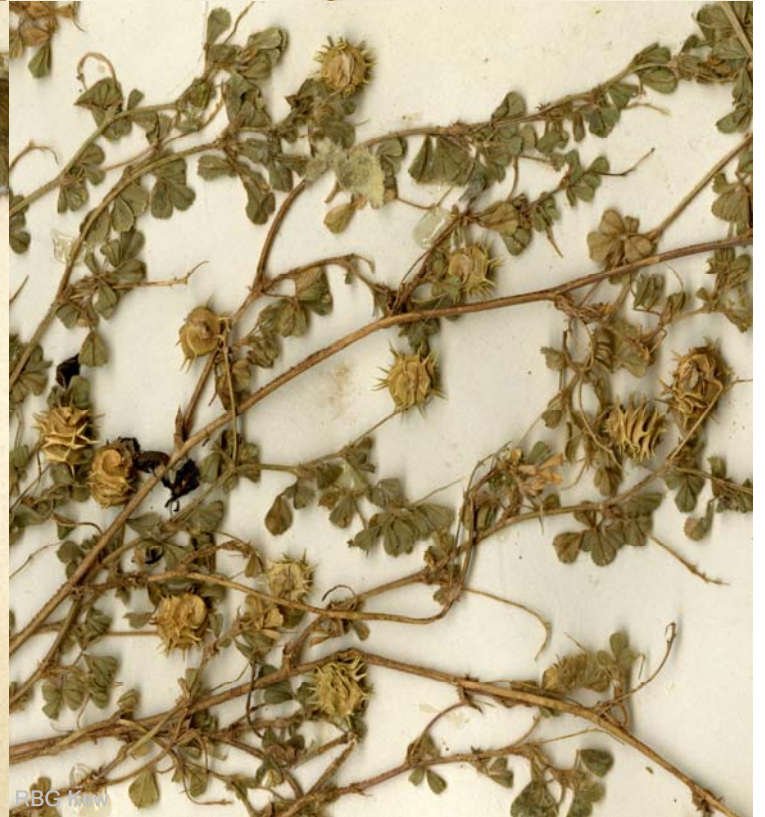
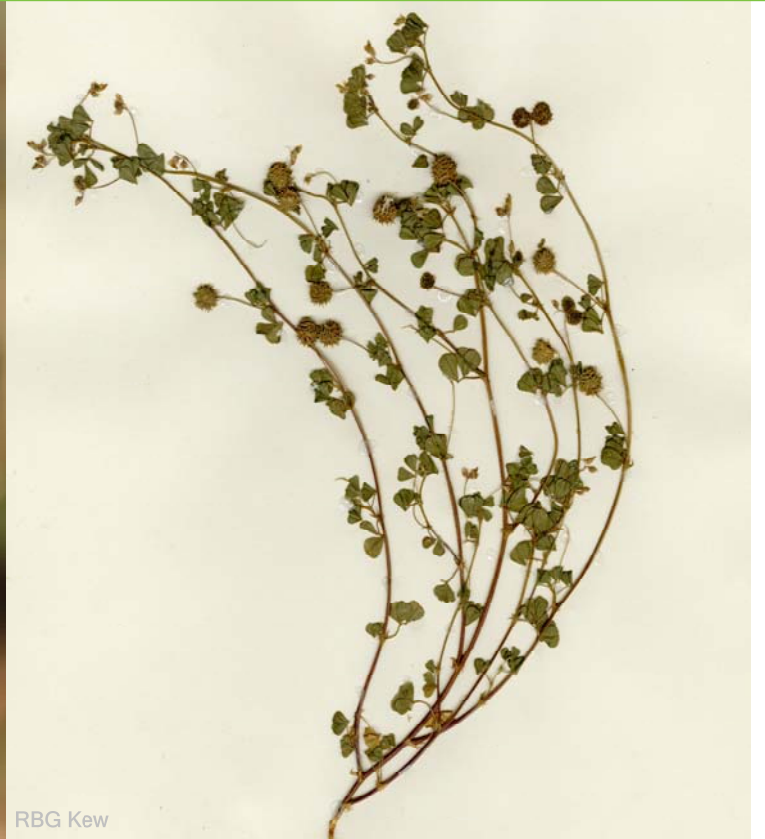
Native in Northern Africa, Central and Eastern Europe; introduced in the USA.

**Altitude:** 0 - 2150 m

<i>Medicago rigidula</i>	May be confused with: <i>Medicago rigiduloides</i>
Fruit usually with 5-8 coils; spines on fruit not prominently curved at tip, rarely reduced to tubercules or absent.	Fruit usually with 3-5 coils; spines on fruit prominently curved at tip, sometimes reduced to tubercules or absent.

Reported from Azerbaijan, but no localities known.

All populations priority for collection.



**HABIT:** Perennial herb, stems prostrate to erect, 10-100 cm long, branching, arising from a crown, rhizome or roots. Vegetative parts usually with simple hairs, usually appressed. Stipules laceolate-acuminate, entire or basally toothed. Whole plant with a delicate appearance.

**LEAVES:** Leaflets 5-30 mm long, 2-15 mm wide, linear or lanceolate, apical margin serrate, more or less glabrescent above, underside more or less pubescent.

**INFLORESCENCE:** Composed of 3-30(-50) flowers, usually racemose, peduncle longer than subtending petiole. Flowers 5-15 mm long; calyx usually <4.5 mm long, glabrous or pubescent; corolla purple, often with a bluish tint.

**FRUIT:** Pod brownish, with at least 1.5 coils, coils loosely to tightly appressed, fruit intersuture width usually <1.8 mm, glandular hairs absent.

**SEEDS:** 2-20 per pod, ovoid to deltoid, surface smooth, 1-1.5 mm long, about 1 mm wide.

**Habitat:**

Often found in semi-deserts and saline environments, especially along the Caspian Sea coast.

**Distribution:**

Eastern Turkey, Iran, Eurasia as far east as Kazakhstan.

**Altitude:** 230 - 1480

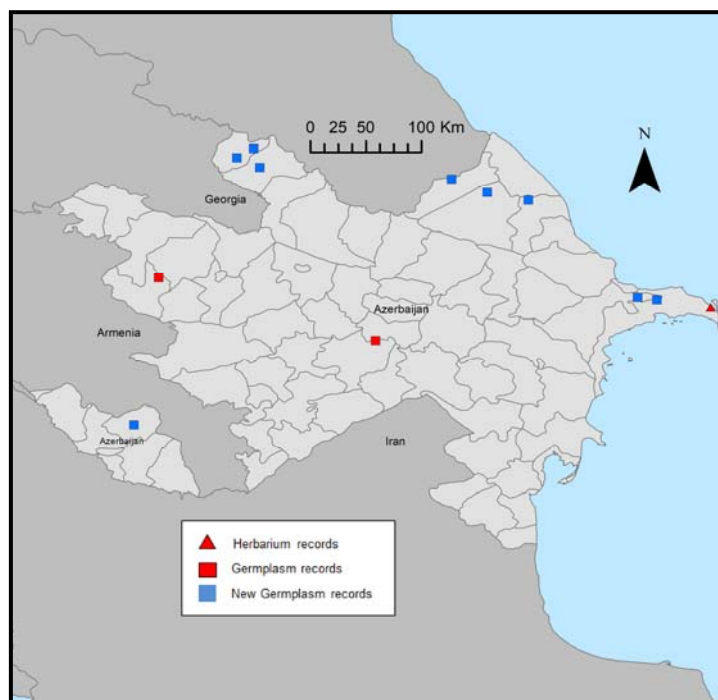
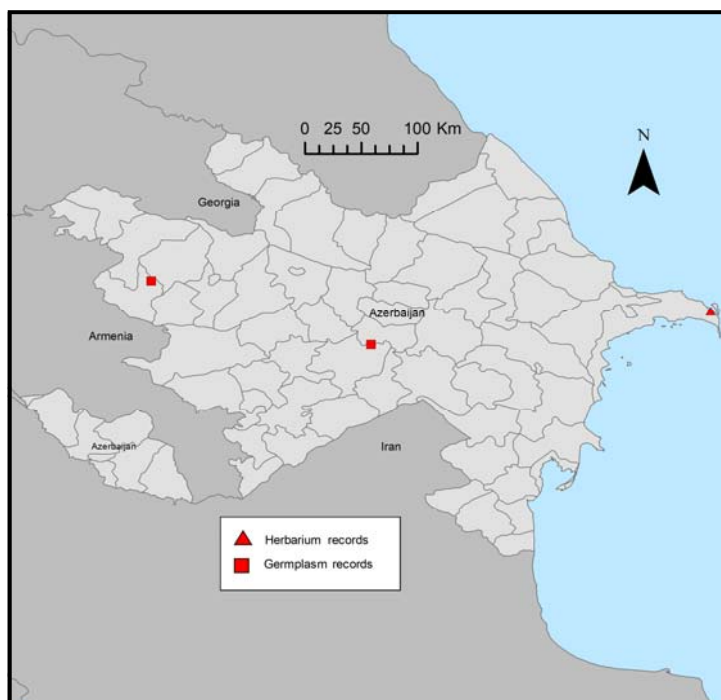
*Medicago sativa* subsp. *caerulea*

May be confused with:

*Medicago sativa* subsp. *sativa*

More delicate appearance; stronger bluish tint to the flowers and more delicate appearance; calyx (base to tip of longest lobe) usually less than 4.5 mm long; fruit intersuture width usually less than 1.8 mm.

Generally more robust appearance; purplish tint to flowers; calyx length usually more than 4.5 mm; mid-fruit intersuture width usually more than 1.8 mm.

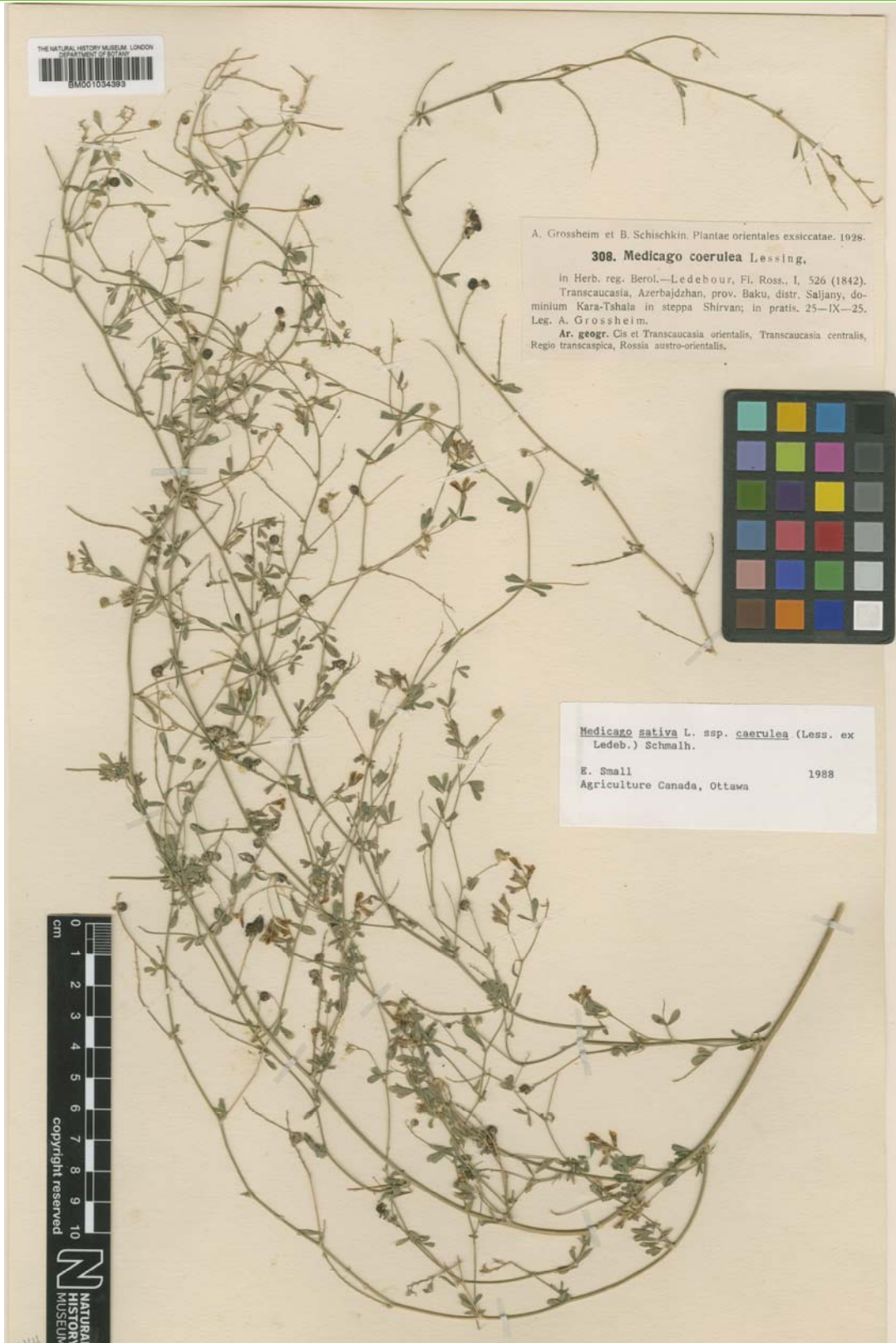


**References:** Small, E. (2011) Alfalfa and Relatives: Evolution and classification of *Medicago*. NRC Research Press, Ottawa.

*Medicago sativa* subsp. *caerulea* (Ledeb.) Schmalh.

Secondary Gene Pool relative of *Medicago sativa* L.

Blue alfalfa

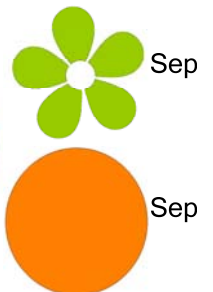


Natural History Museum London

No seed  
image  
available



0.1-1  
m



LEGUMINOSAE

*Medicago sativa* L. subsp. *falcata* (L.) Arcang. var. *falcata* (L.) Arcang.

Primary relative of *Medicago sativa* L., Secondary relative of *Medicago sativa* L.

Sickle Medick, Yellow alfalfa

HABIT: Perennial herbs, (20-)40-100(-120) cm. Stems erect or ascending, terete, branched. Stipules lanceolate to linear-lanceolate, base hastate, apex acuminate.

LEAVES: Leaflets obovate to linear, (5-)8-15(-20) × (1-)2-5(-10) mm, pubescent abaxially, glabrous or appressed puberulent adaxially, margin serrulate in apical 1/4 or margin 2- or 3-serrate, lateral veins 5-15 pairs, base cuneate, apex rounded, obtuse, or acute, mucronate.

INFLORESCENCE: Racemes 10-20(-40) mm, with 6-25 flowers, crowded, peduncles axillary, straight, equal to or slightly longer than leaves, bracts ca. 1 mm, pedicels 2-3 mm.

FLOWER: Corolla yellow, 6-9(-11) mm, standard long obovate. Ovary linear, ovules 2-5.

FRUIT: Pod falcate or straight, (8-)10-15 × 2.5-3.5(-4) mm, appressed puberulent, veins oblique and thin.

SEEDS: 2-4, brown, ovate-elliptic, ca. 2×1.5 mm.

**Habitat:**

Grassy places, slopes, ravines, dry sandy fields.

**Distribution:**

Throughout Asia and Europe, Morocco, South Africa, Canada and USA.

Altitude: 0 - 2500 m

<i>Medicago sativa</i> subsp. <i>falcata</i> var. <i>falcata</i>		May be confused with: <i>Medicago sativa</i> subsp. <i>caerulea</i>	
Corolla yellow; fruit falcate or straight.		Corolla purple; fruit with at least 1.5 coils.	

Reported from Azerbaijan, but no localities known.

All populations priority for collection.

References: Small, E. (2011) Alfalfa and Relatives: Evolution and classification of *Medicago*. NRC Research Press, Ottawa.

LEGUMINOSAE

*Medicago sativa* L. subsp. *falcata* (L.) Arcang. var. *falcata* (L.) Arcang.

Primary relative of *Medicago sativa* L., Secondary relative of *Medicago sativa* L.

Sickle Medick, Yellow  
alfalfa



Brian Eversham



Jacopo Werther



Brian Eversham



FBG Kew

Tracey Slotta @ USDA-NRCS  
PLANTS Database



0.4-1  
m



Jun - Aug

Jul - Sep

**HABIT:** Perennial herbs, stems prostrate to erect, 10-100 cm long, branching, arising from a crown, rhizome or roots. Vegetative parts with a mix of simple and glandular hairs, usually appressed. Stipules lanceolate-acuminate, entire or basally toothed.

**LEAVES:** Leaflets 5-30 mm long, 2-15 mm wide, obovate, linear or lanceolate, apical margin serrate, more or less glabrescent above, underside more or less pubescent.

**INFLORESCENCE:** Composed of 3-30(-50) flowers, usually racemose, peduncle longer than subtending petiole. Flowers 5-15 mm long; calyx usually >4.5 mm long, glabrous or pubescent; corolla yellow.

**FRUIT:** Pod brownish, with at least 1.5 coils, coils loosely to tightly appressed, glandular hairs present, mid-fruit intersuture width usually >1.8 mm.

**SEEDS:** 2-20 per pod, ovoid to deltoid, surface smooth, 1-1.5 mm long, about 1 mm wide.

**Habitat:**

Mesic, montane areas.

**Distribution:**

Southern and Eastern Europe, the Caucasus region, Northern Africa.

**Altitude:** 1740 - 2080

<i>Medicago sativa</i> subsp. <i>glomerata</i>	May be confused with: <i>Medicago sativa</i> subsp. <i>sativa</i> and subsp. <i>caerulea</i>
Flowers yellow; fruit with gland-tipped trichomes	Flowers variegated yellow-violet, violet or bluish; fruit without gland-tipped trichomes

Reported from Azerbaijan, but no localities known.

All populations priority for collection.



No seed image available



0.1-1 m



Jun - Sep

Jun - Sep



**HABIT:** Perennial (some annual domesticated forms), stems prostrate to erect, 10-100(150) cm long, branching, arising from a crown, rhizome, or roots. Vegetative parts of shoots more or less pubescent with simple appressed hairs, rarely also glandular hairs

**LEAVES:** Leaflets 5-30 mm long, 2-15 mm wide, obovate to linear or lanceolate, apical margin serrate, more or less pubescent below, more or less glabrescent above. Stipules lanceolate-acuminate, entire or basally toothed.

**INFLORESCENCE:** 3-30(50) flowers, usually in a raceme, peduncle longer than subtending petiole.

**FLOWER:** 5-15 mm long, corolla violet, yellow, yellow-orange, variegated yellow-violet, or pink, green or white. Calyx about half of length of flower, teeth about equal to length of tube, glabrous, or pubescent with simple hairs and/or glandular hairs.

**FRUIT:** Spineless, brownish, glabrescent or pubescent with simple hairs, straight, falcate, or with up to six coils, the coils loosely to tightly appressed, the pod face with veins running obliquely from ventral suture.

**SEEDS:** 2-20 per pod, ovoid to deltoid, surface smooth, yellow, brownish, greenish-yellow, or violet brown, 1-2.5 mm long, 1-1.5 mm wide, radicle slightly longer than half seed length.

**Habitat:**

A diverse range of habitats, often occurs as a weed.

**Distribution:**

Russian Federation, United Kingdom, Iran, Spain, Italy, Armenia, Azerbaijan, Cyprus, Georgia, Syria, Turkey, Austria, Belgium, Switzerland.

**Altitude:** 620 - 2030

<i>Medicago sativa</i> subsp. <i>xvaria</i>	May be confused with: <i>Medicago sativa</i> subsp. <i>falcata</i>
Flowers variegated yellow-violet; fruit with 0.8 to 1.4 coils.	Flowers yellow; fruit falcate or straight (usually <0.5 coils)

Reported from Azerbaijan, but no localities known.

All populations priority for collection.

*Medicago sativa* L. subsp. *varia* (Martyn) Arcang.

Primary relative of *Medicago sativa* L., Secondary relative of *Medicago sativa* L.

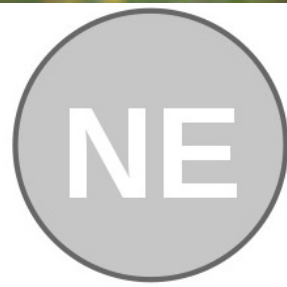
Hybrid alfaalfa, sand alfalfa



No seed image available



0.1-1 m



Primary Gene pool relative of *Medicago truncatula* Gaertn.

Aleppo clover, Barrel clover

**HABIT:** Annual herbs, stems branched from near the base, (6-)15-50 cm long. Vegetative parts pubescent with simple hairs. Stipules deeply dentate to lacinate.

**LEAVES:** Leaflets 8-15 cm long by 7-12 mm wide, cuneate-obovate to obovate, margins serrate in apical 1/2, occasionally incised or lacinate.

**INFLORESCENCES:** Composed of 1-3(-5) flowers, peduncle about the same length as subtending petiole. Flowers 6-8 mm long; calyx with subulate lobes, longer than the tube, pubescent; corolla yellow.

**FRUIT:** Young pod enclosed by calyx. Mature pod cylindrical, often pubescent, with 2.5-8 adpressed coils, 6-12 mm long by 7-12 mm wide, hard at maturity, spine numerous, divergent and intermeshing with those of adjacent coils, venation on coil surface with about 10 radial veins branching slightly before entering lateral vein.

**SEEDS:** 1 or 2 per coil, separated by transverse, spongy septa, testa yellow or brownish-yellow.

**Habitat:**

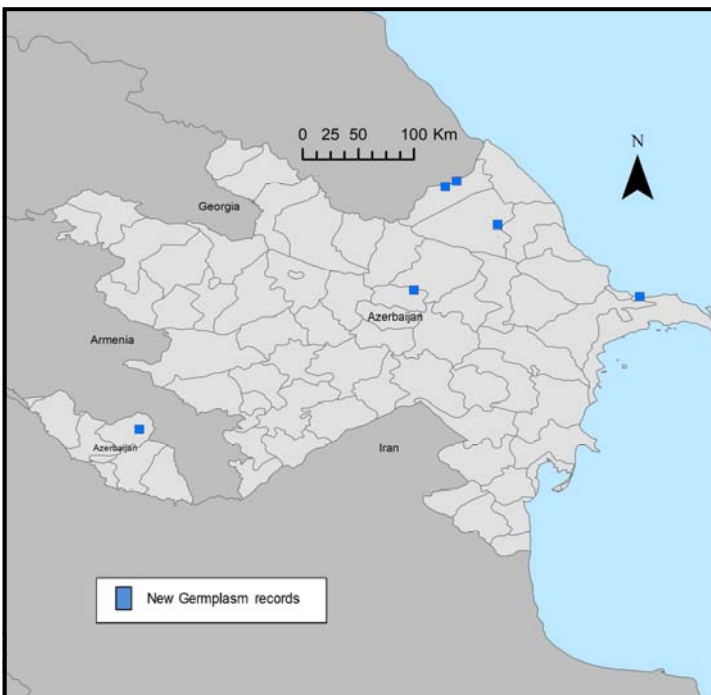
Inland Mediterranean-type grasslands and shrublands, often as a weed.

**Distribution:**

North Africa, Southern and Eastern Europe, Northern Middle East, Caucasus. Introduced into Australia and USA.

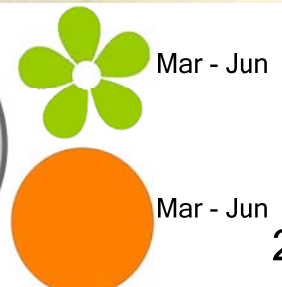
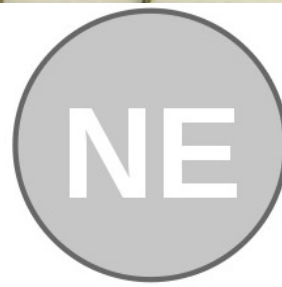
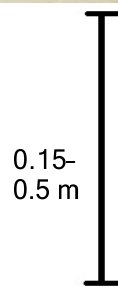
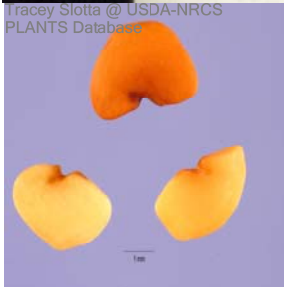
**Altitude:** unknown

<i>Medicago truncatula</i>	May be confused with: <i>Medicago littoralis</i>
Mature fruit with at least a few hairs; grooves either side of dorsal suture pronounced; spines on fruit usually overlapping.	Mature fruit glabrous; grooves either side of dorsal suture not pronounced; spines on fruit rarely overlapping.



All populations priority for collection.

**References:** Small, E. (2011) *Alfalfa and Relatives: Evolution and classification of Medicago*. NRC Research Press, Ottawa.



**HABIT:** Annuals bearing branched tendrils, herbaceous or climbing, stems 10-200 cm long. Whole plant glabrous and often glaucous, stems terete. Stipules larger than leaflets, 1.5-8 cm long, margin irregularly dentate in lower 1/2, base rounded and semi-amplexicaul.

**LEAVES:** Leaflets 1-4-paired, oblong to elliptic, margins entire or denticulate.

**INFLORESCENCE:** Peduncle 1/4 to 4 times as long as stipules. Inflorescence 1-3-flowered, usually longer larger than leaflets, short awn sometimes present. Flowers 16-30 mm long; calyx 8-15 mm, teeth subequal, longer than tube, ovate-lanceolate, more or less acuminate; standard lilac, wings darker reddish-purple.

**FRUIT:** Pod oblong-linear or linear, 40-70 mm long, 7-12 mm wide, stiff, usually dehiscent, venation prominently reticulate.

**SEEDS:** 3-10 per fruit, at least 5 mm in diameter, globose, densely papillose.

**Habitat:**

Rocky or grassy slopes, abandoned land, field margins.

**Distribution:**

Turkey, Caucasus and Crimea, Cyprus, North Africa, Iran.

**Altitude:** 0 - 1700 m

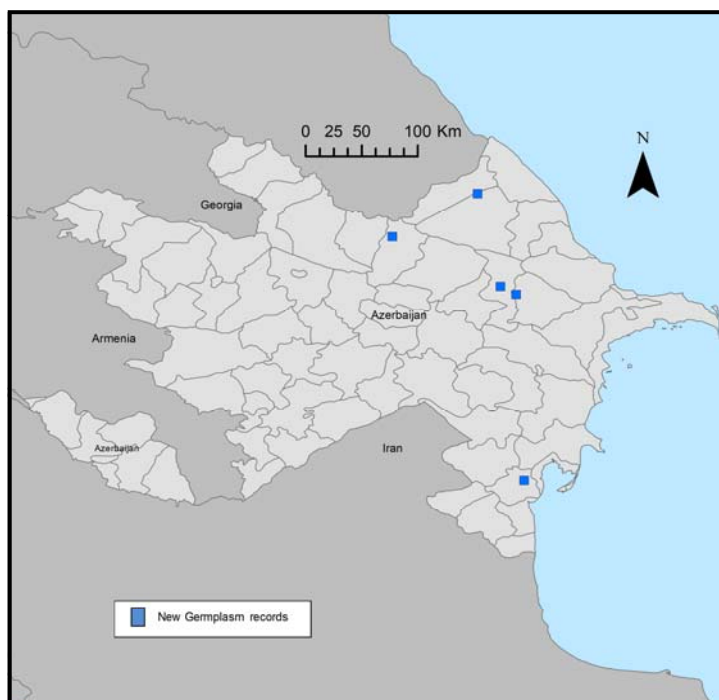
*Pisum sativum subsp. elatius*

May be confused with:

*Pisum sativum subsp. sativum*

Peduncles 1/4 to 4 times as long as stipules; flowers bicoloured; fruit 7-12 mm wide; seeds densely papillose.

Peduncle 1/2 to 2 times as long as stipules; flowers white or bicoloured; fruit 12-17 mm wide; seeds densely papillose.



All populations priority  
for collection.

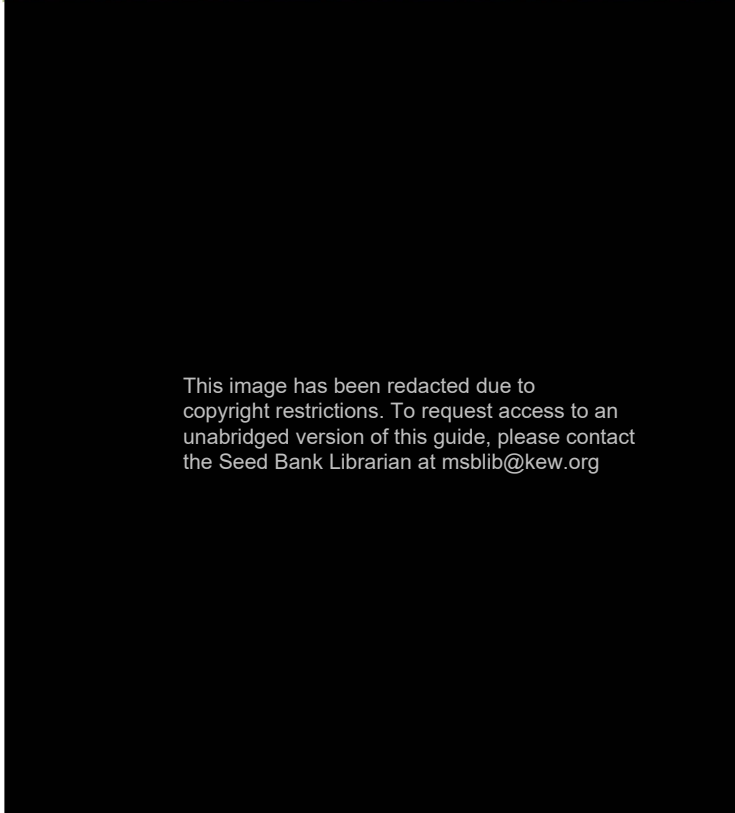
**References:** Davis, P.H. (1970) Flora of Turkey and the East Aegean Islands, Volume 3, pp 370-371; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, pp 398-399 (as *P. elatius*).



Wikimedia user: Arche



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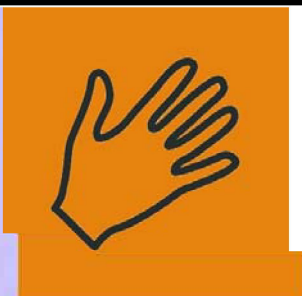
This image has been redacted due to copyright restrictions. To request access to an unabridged version of this guide, please contact the Seed Bank Librarian at [msblib@kew.org](mailto:msblib@kew.org)



RBG Kew



Tracey Slotta @ USDA-NRCS PLANTS Database



0.5-2 m



Apr - Jun

Apr - Jun

**HABIT:** Annual climbers, 20-70 cm tall, branching at the base, stems slender, acutely angular. Stipules asymmetrical, sagittate, 4-26 mm by 2-16 mm, margins with 3-8 subulate teeth in apical half.

**LEAVES:** Leaves 12-67 mm long, tendril present at apex. Leaflets 1-3-paired, 10-70 x 2-31 mm, symmetric, those of lower leaves shorter and wider than upper leaves, margins entire.

**INFLORESCENCES:** Peduncles shorter than leaves, 1-69 mm, with 1-2 flowers, pedicel 1-5 mm. Flowers 11-22 mm long; calyx mouth straight, teeth subequal; all petals approximately equal length, standard blue or purple, stenonychioid (lamina contacting into a narrow claw and no distinct constriction between lamina and claw), upper standard surface glabrous, wing marking absent, wing limb slightly folded at base.

**FRUIT:** Pod 23-47 mm by 6-11 mm, rhomboid, laterally flattened, sutures parallel, valves pubescent, hairs swollen at the base, septa present.

**SEEDS:** 2-7 per fruit, round, not laterally flattened, hilum <1/4 of seed circumference, lens positioned near hilum, testa smooth.

**Habitat:**

Agricultural and disturbed land, rarely on woodland edges.

**Distribution:**

Western and Eastern Europe, Turkey, Iran and Caucasus.

**Altitude:** 0 - 750 m

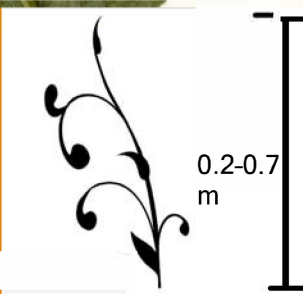
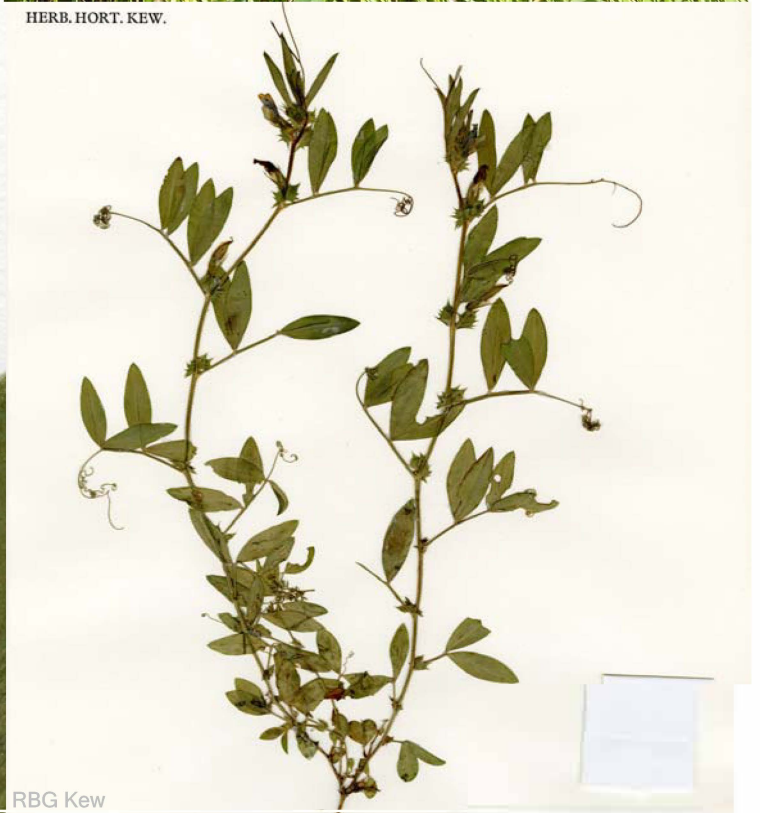
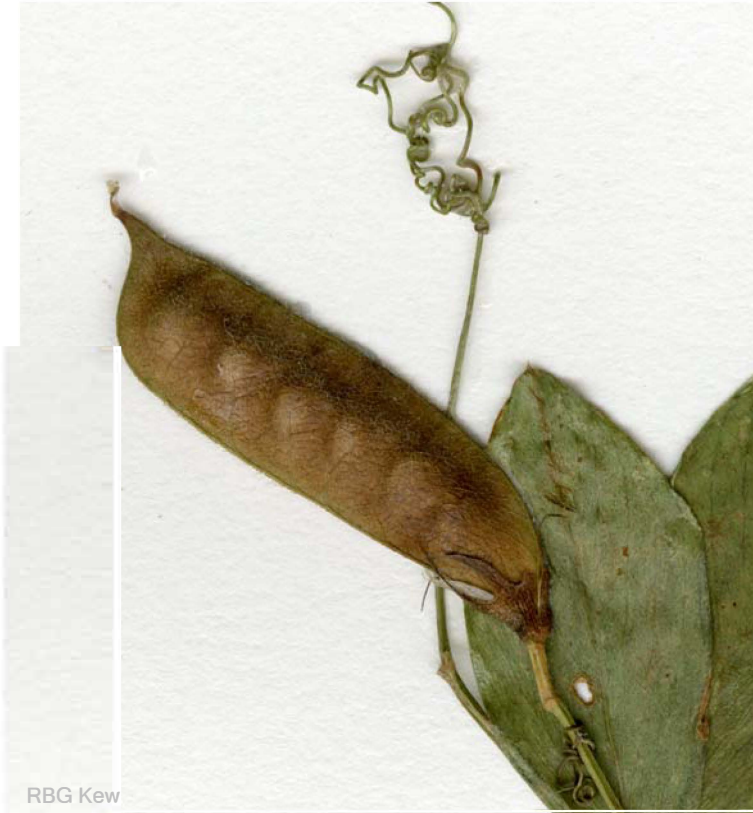
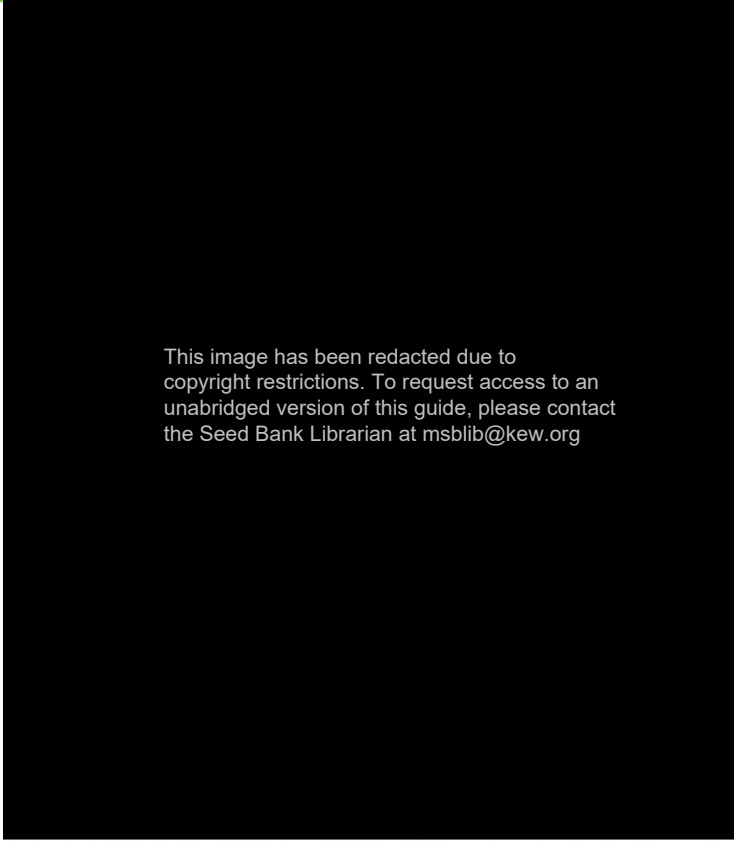
<i>Vicia bithynica</i>	May be confused with: <i>Vicia narbonensis</i>
Stipules ovate; leaflets narrowly ovate to linear; calyx teeth subequal; peduncle usually longer than calyx.	Stipules orbicular; leaflets broadly ovate or obovate; calyx teeth unequal, peduncle rarely longer than calyx.



All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p358; Maxted, N. (1995) An Ecogeographical Study of *Vicia* subgenus *Vicia*. Systematic and Ecogeographic Studies on Crop Gene pools 8. International Plant Genetic Resources Institute, p72.

Tertiary Gene Pool relative of *Vicia faba* L.





**HABIT:** Annual scramblers, 20-50 cm tall, stems slender, vegetative parts sparsely to densely covered with appressed, sericeous hairs. Stipules small, 2-3 mm long, ovate to lanceolate, base semi-sagittate, often with an oval black spot.

**LEAVES:** Leaflets 6-10-paired, 15-22 x 2-4 mm, leaflets of upper leaves often linear, apex deeply emarginate and mucronate, those of lower leaflets smaller, up to 6 mm long.

**INFLORESCENCES:** Racemes subsessile, usually 2-3-flowered. Flowers pendant, 12-15 mm long; calyx obliquely truncate, teeth subulate, unequal, lower teeth equalling or exceeding tube, upper teeth 1/3 length of lower; corolla pale yellow to brown, standard shortly velutinous, claw twice as long as limb.

**FRUIT:** Pod oblong, 22-30 mm long, acuminate, ciliate at sutures, blackish when ripe.

**SEEDS:** 4-5 per fruit, subglobose, hilum 1/6 of circumference.

**Habitat:**

Forest edges, river valleys, meadows, mountain slopes, often in shady and moist places.

**Distribution:**

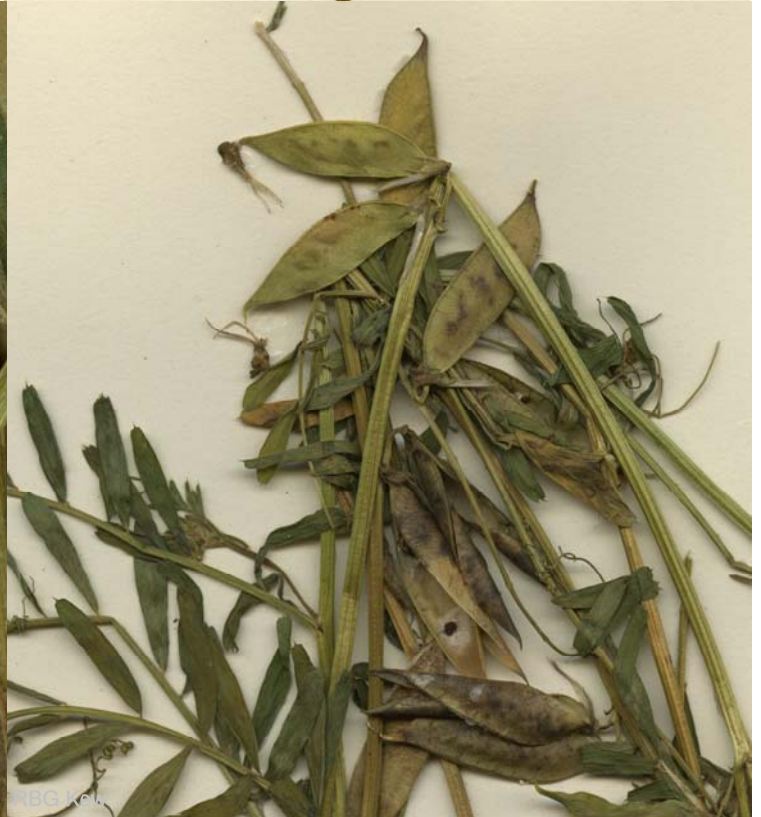
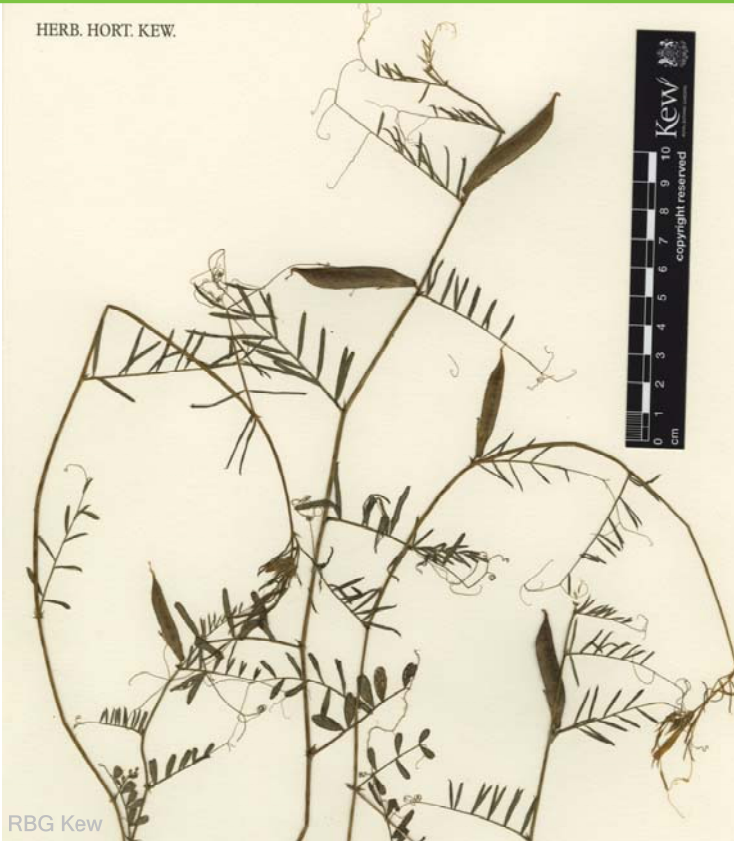
Endemic to the Caucasus region.

**Altitude:** up to 1500 m

<i>Vicia ciliatula</i>	May be confused with: <i>Vicia pannonica</i>
Standard with short, velutinous hairs on outer surface; pods glabrous with ciliate sutures.	Standard with dense, appressed, long hairs on outer surface; pod appressed sericeous.

Reported from Azerbaijan, but no localities known.

All populations priority for collection.



No seed image available



0.2-0.5 m



May - Jul

No data

**HABIT:** Annual or biennial climbers, 25-60 cm tall, stems slender, ascending. Stipules 2.5-12 mm by 1-11 mm, lower semi-hastate and few-toothed, upper ovate to lanceolate, entire.

**LEAVES:** Leaflets 3-7-paired, 7-38 x 1-15 mm, oblong, obovate or suborbicular, apex obtuse or truncate, mucronate, margins entire or serrate.

**INFLORESCENCES:** Axillary, 1-3-flowered but most often paired. Peduncle 1-13 mm, pedicel 1-4 mm. Flowers 10-33 mm; calyx teeth subequal; petals all approximately equal in length, standard cream or yellow, sometimes with a lilac tinge, shape stenonychioid (lamina contacting into a narrow claw and no distinct constriction between lamina and claw), claw bowing absent, upper standard surface glabrous, wing marking absent, wing limb with or without basal folding.

**FRUIT:** Pod 6-70 mm long by 4-12 mm wide, linear or rectangular, rounded or flattened, sutures straight, valves glabrous or pubescent.

**SEEDS:** 1-14 per fruit, more or less circular, laterally flattened, 2-7 mm in diameter, hilum > 1/2 of seed circumference.

**Habitat:**

Disturbed land, woodlands and woodland margins.

**Distribution:**

Southern and Eastern Europe, Turkey and the Caucasus.

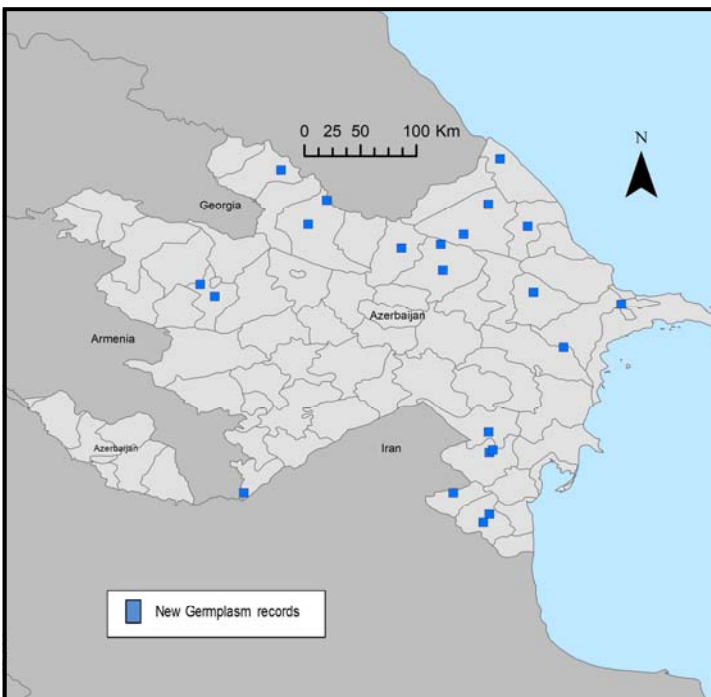
**Altitude:** 500 - 1600 m

*Vicia grandiflora*

May be confused with:  
*Vicia sativa*

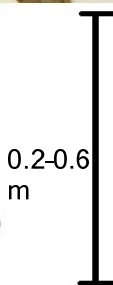
Corolla wings cream or yellow; fruit laterally flattened in cross-section.

Corolla wings purple; fruit rounded in cross-section.



All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p349; Maxted, N. (1995) An Ecogeographical Study of *Vicia* subgenus *Vicia*. Systematic and Ecogeographic Studies on Crop Gene-pools 8. International Plant Genetic Resources Institute, pp71-73.



Wild relative of *Vicia sativa* L.

Hairy tare

**HABIT:** Annual, herbaceous stragglers, 20-80 cm tall, stems slender, sparsely hairy, 4-angled. Stipules up to 3 mm long, semi-sagittate to lanceolate, sometimes 2-4-toothed or lobed in lower part.

**LEAVES:** Leaflets (4-)5-8-paired, first pair often close to leaf base, usually linear 5-20 x 1-3 mm, pubescent or glabrous below, rachis ending in a branched tendril.

**INFLORESCENCES:** Inflorescence approximately equalling leaf length, 2-6(-7)-flowered. Flowers small, 3-4(-5) mm long; calyx campanulate, 1.5-3 mm, teeth subequal, linear to subulate, equalling to exceeding length of tube; corolla bluish-white.

**FRUIT:** Pods pendant, oblong-rhomboid to trapezoid, 6-11 mm long by 2.5-4 mm wide, flattened, covered with adpressed hairs or sometimes glabrescent.

**SEEDS:** 1-2(-3) per pod, suborbicular, 1.5-3 mm diameter, testa olive green to dark brown, smooth, hilum comprising about 1/3 of circumference.

**Habitat:**

Oak forests, cultivated land, fallow fields, waste ground, roadsides, rocky meadows.

**Distribution:**

South-west Europe, Turkey, Caucasus, North-west Africa, Ethiopia

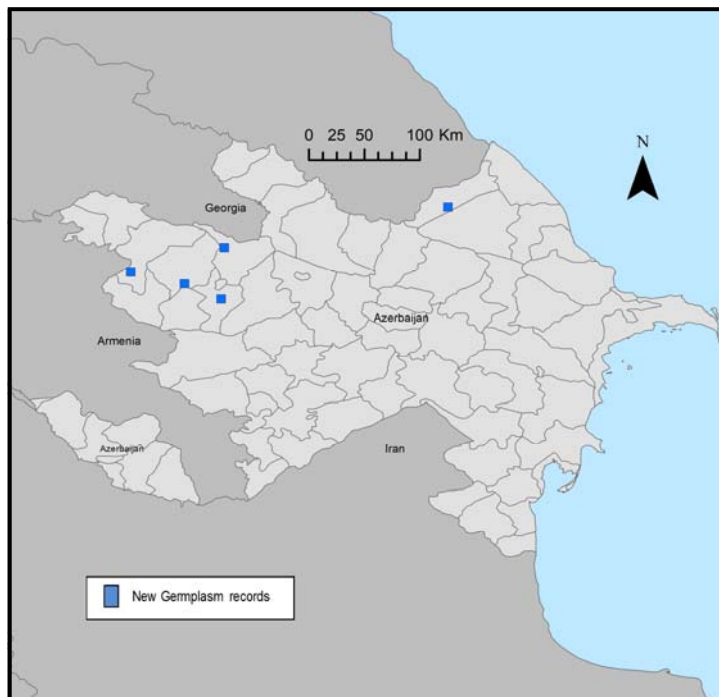
**Altitude:** 0 - 800 m

*Vicia hirsuta*

May be confused with:  
*Vicia tetrasperma*

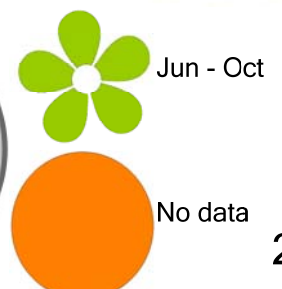
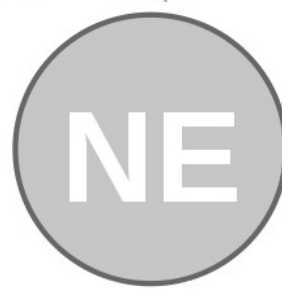
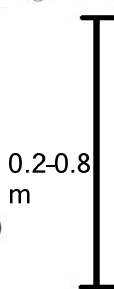
Leaflets 5-10 pairs; flowers 3-4 mm long, corolla bluish-white; seeds 1-2 per fruit.

Leaflets 3-5 pairs; flowers 5-8 mm long, corolla dark purple; 4 seeds per fruit.



All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p311.



**HABIT:** Annual herbs, ascending or climbing, 20-80 cm tall, covered in pale, adpressed-pilose indumentum. Stipules 2-3 mm long, semi-hastate, apex acuminate, margin sometimes toothed.

**LEAVES:** Leaflets 4-7(-8)-paired, 5-20 mm long by 3-8 mm wide, those of upper leaves oblong, occasionally linear, those of lower leaves smaller and obovate sometimes cuneate at the base, apex truncate or notched, rarely obtuse. Tendrils simple in lower leaves, otherwise branched.

**INFLORESCENCES:** Peduncle very rudimentary, pedicel shorter than calyx. Flowers axillary, solitary, 20-31 mm long; calyx 8-10 mm long, pilose, teeth shorter than tube, lanceolate to linear, lower teeth longer than upper; corolla yellow, standard sericeous-pubescent on outer surface, claw about equalling length of limb.

**FRUIT:** Pods elliptic, 20-35 x 6-12 mm wide, tapering at both ends, adpressed-pilose, tubercles absent.

**SEEDS:** 2-5 per pod, hilum no more than 1/8 of circumference.

**Habitat:**

Cultivated fields, waste ground, grasslands, sandy shores, scrublands, rocky slopes.

**Distribution:**

Mediterranean, Turkey and Romania, Syria, Iraq, Iran, Caucasus.

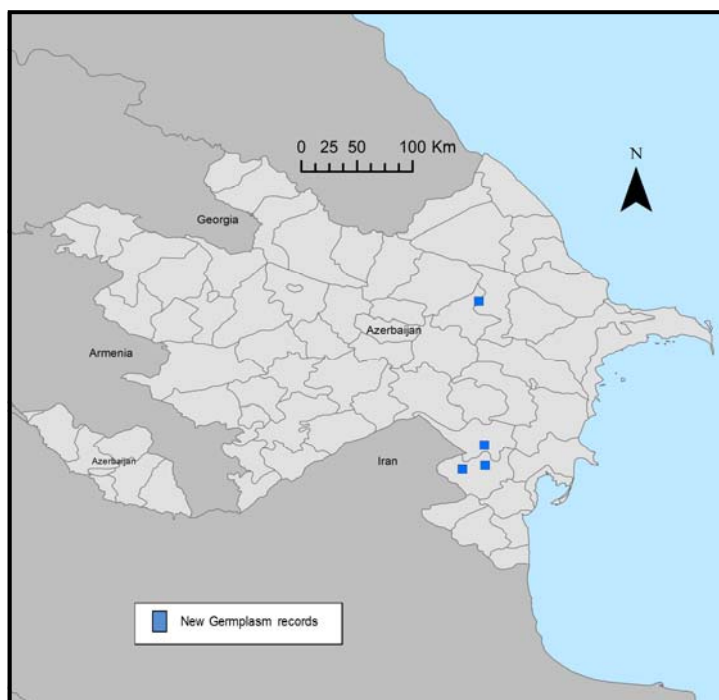
**Altitude:** 0 - 1000 m

*Vicia hybrida*

May be confused with:  
*Vicia pannonica*

Leaflets 4-7-aped, obovate to oblanceolate; flowers solitary, axillary

Leaflets 6-9-paired, linear to oblong; flowers in racemes of 2-4.



All populations priority  
for collection.

**References:** David, P.H. [ed.] (1969) Flora of Turkey, Volume 3, pp 314-315



Wikimedia user Jean Gadeyne



Sarah Gregg via Flickr



Sarah Gregg via Flickr

Tracey Slotta @ USDA-NRCS  
PLANTS Database



0.15-  
0.8 m



Apr - May

No data



Taxon Group 3 relative of *Vicia pannonica* Crantz

**HABIT:** Annual climbing herb, stems erect, 20-90 cm tall, vegetative parts glabrescent. Stipules minute, semi-sagittate to ovate.

**LEAVES:** Leaflets (4-)5-8 paired, 10-35 mm long by 3-12 mm wide, oblong, elliptic or linear, apex truncate to emarginate. Rachis ending in a branched tendril.

**INFLORESCENCES:** Flowers solitary or in pairs. Flowers 17-20 mm long; calyx 7-12 mm long, glabrous to sparsely pilose, mouth open, teeth unequal, longer or shorter than tube; corolla yellow with dark veins, standard limb slightly shorter than claw.

**FRUIT:** Pod 21-40 mm long, glabrous, oblong to linear, slightly compressed, apex with a short beak.

**SEEDS:** 3-6 per pod, hilum about 1/8 of perimeter.

**Habitat:**

Cultivated areas, especially irrigated fields, disturbed ground.

**Distribution:**

Central Asia, Caucasus, Iran and Iraq.

**Altitude:** 1100 - 2400 m

<i>Vicia hyrcanica</i>	May be confused with:

Reported from Azerbaijan, but no localities known.

All populations priority for collection.

**References:** David, P.H. [ed.] (1969) Flora of Turkey, Volume 3, p 306.

Taxon Group 3 relative of *Vicia pannonica* Crantz



No seed image available



0.2-0.9 m



Tertiary Gene Pool relative of *Vicia faba* L. & Gene Pool Secondary relative of *Vicia narbonensis* L.

**HABIT:** Annual herbs, stems almost erect, thick, ribbed, with grooves between the ribs and long, stiff hairs. Plants 50-70 cm tall. Stipules broadly ovate, apex acute, margins serrate.

**LEAVES:** Lower leaves with a single pair of leaflets, middle and upper leaves with with 2-3 pairs of leaflets. Leaflets thin, not coriaceous, 5 cm long, 2-2.5 cm wide, ovate, sometimes obovate or elliptic, apex frequently truncate, margins entire in lower half, upper half irregularly serrate, or sometimes only at the very tip, surface covered in stiff hairs arising from tubercles.

**INFLORESCENCES:** Flowers axillary, solitary or in pairs, quite small; calyx significantly zygomorphic, teeth membranous; corolla dirty pink, standard limb with a purple blotch, apex not significantly emarginate.

**FRUIT:** Immature fruit covered with appressed golden hairs on valves and seams.

**SEEDS:** With numerous small facets on the surface, covered with a black-brown velvety indumentum.

**Habitat:**

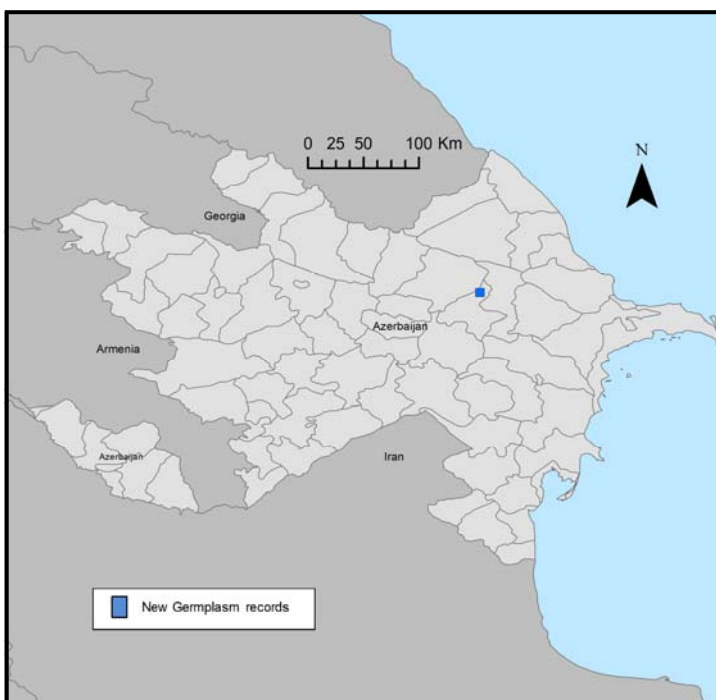
Found in low plains to middle montane belt, plantations, scrubland and gardens.

**Distribution:**

Southern Azerbaijan and northern Iran

**Altitude:** unknown

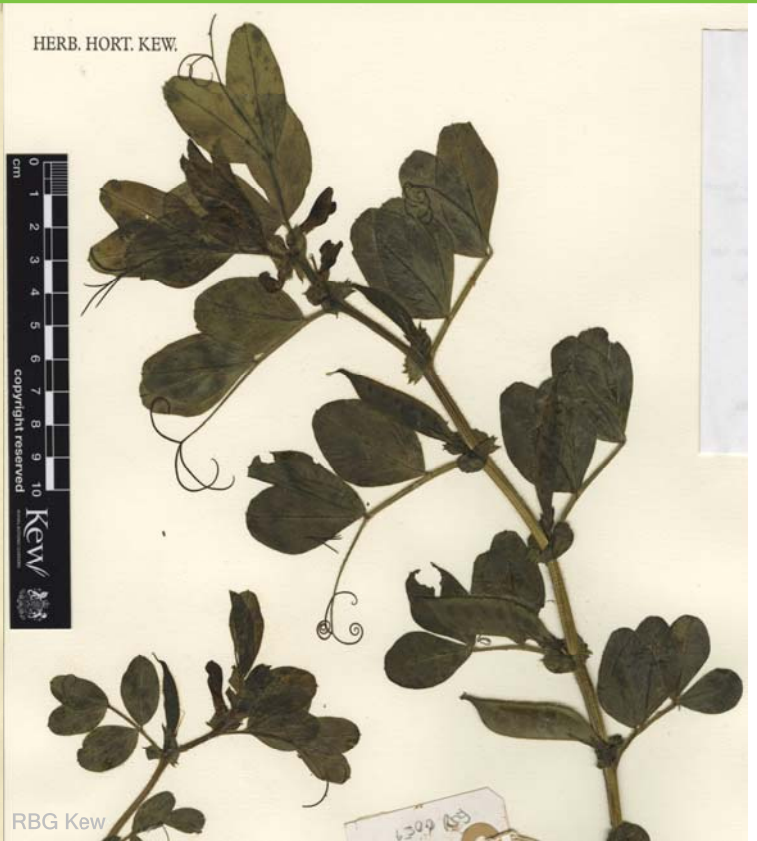
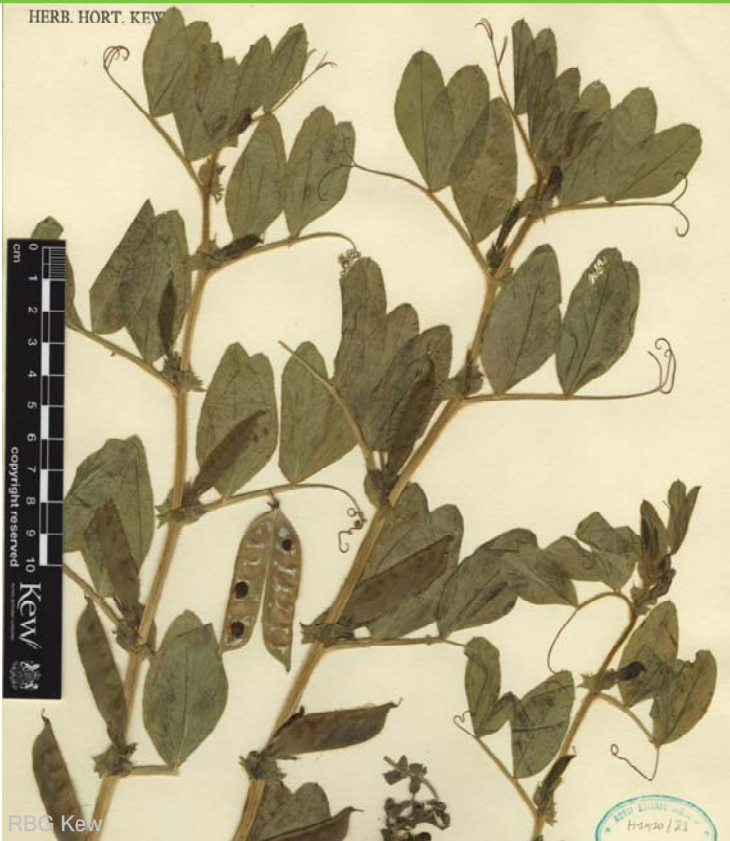
<i>Vicia johannis</i>	May be confused with: <i>Vicia narbonensis</i>
Leaflets chartaceous, upper 1/2 of margin irregularly serrate.	Leaflets rather coriaceous, margins entire.



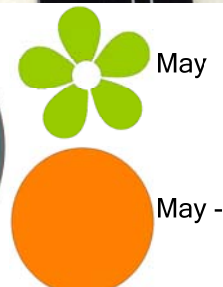
All populations priority  
for collection.

**References:**

Tertiary Gene Pool relative of *Vicia faba* L. & Gene Pool Secondary relative of *Vicia narbonensis* L.



0.5-0.7 m



Wild relative of *Vicia sativa* L.

Spring vetch

**HABIT:** Scrambling annual, stems slender. Stipules entire or semi-hastate, 2-6.5 mm by 1-4 mm, margins entire or with 1 or 2 teeth.

**LEAVES:** Leaves 3-48 m long, apex with a tendril, 2-12 leaflets per leaf. Leaflets 2-23 mm long by 1-9 mm wide, symmetric, margins entire.

**INFLORESCNCE:** Flowers usually solitary, peduncle 1-2 mm, pedicel 1-2 mm; calyx mouth straight, teeth subequal, base not gibbous; all petals approximately equal, purple to pinkish, shape stenonychioid, claw bowing absent, wing marking absent, wing limb without basal folding.

**FRUIT:** Pod 13-35 mm long by 3-5 mm wide, linear, more or less laterally flattened, sutures parallel or curved, valves glabrous, septa absent.

**SEEDS:** 4-8(-12) per pod, rounded in cross section, hilum < 1/4 of seed circumference, testa surface rough.

**Habitat:**

A weed of lawns and grazed pastures, open woodland and disturbed land.

**Distribution:**

From the UK and Scandinavian, eastwards to Turkey, the Caucasus and Iran, southwards to Jordan and Israel.

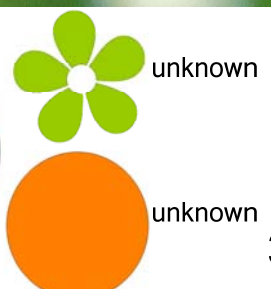
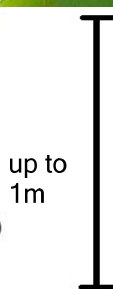
**Altitude:** 10 - 1500 m

<i>Vicia lathyroides</i>	May be confused with: <i>Vicia cuspidata</i>
Flowers 9-15 mm; fruit more or less straight, only slightly beaked at distal end; seed surface tuberculate.	Flowers 5-12 mm; fruit curved, strongly beaked at distal end; seed surface ruminant-reticulate.

Reported from Azerbaijan, but no localities known.

All populations priority for collection.

Wild relative of *Vicia sativa* L.



**HABIT:** Annual scrambling herbs, 20-80 cm tall, stems branching at base, vegetative parts usually sparsely hairy. Stipules 2.5-4 mm long, triangular-ovate to semi-hastate.

**LEAVES:** Leaflets 6-8(-10)-paired, 10-25 x 20-50 mm, oblong, lanceolate or linear, apex rounded or truncate.

**INFLORESCENCE:** Axillary, flowers 1-3, subsessile. Flowers 18-21 mm long; calyx tubular-campanulate, obliquely truncate, tube 4-6.5 mm, teeth linear; corolla 20-30 mm, yellow, often purple-tinged, glabrous, wings shorter than standard.

**FRUIT:** Pods elliptic to oblong-rhomboid, 25-35 x 7-14 mm, with stiff hairs arising from conspicuous tubercles with stalk-like bases 1-2 mm across.

**SEEDS:** 3-6 per fruit, subglobose, testa black or brown, hilum about 1/2 circumference.

**Habitat:**

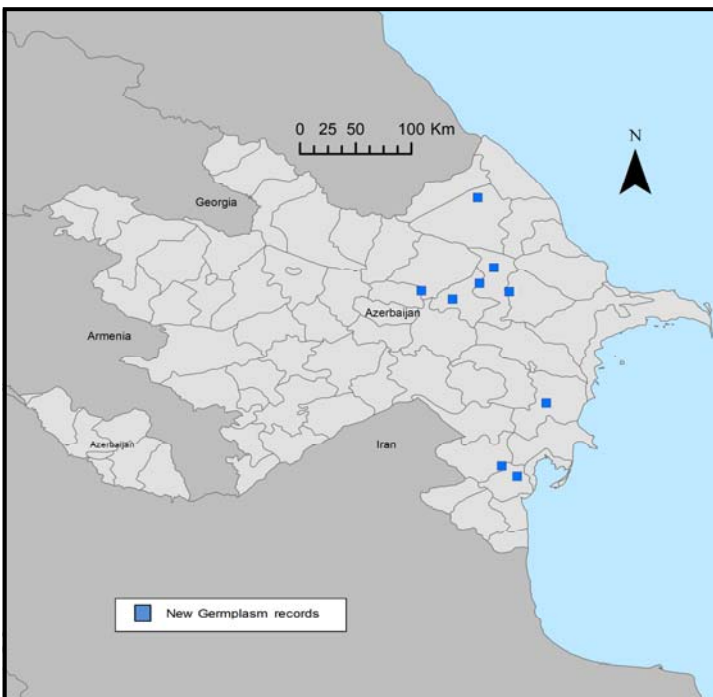
Disturbed and agricultural land, open woodland.

**Distribution:**

Western and Southern Europe, Northern Africa and the Middle East.

**Altitude:** 5 - 2200 m

<i>Vicia lutea</i>	May be confused with: <i>Vicia hybrida</i>
Corolla standard upper surface glabrous; fruit pubescent only on valves.	Corolla standard upper surface pubescent; fruit pubescent all over.



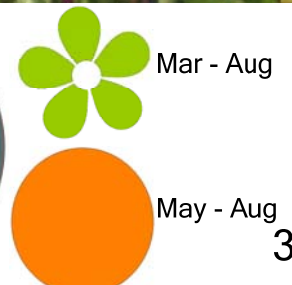
All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, pp 355-356; Maxted, N. (1995) An Ecogeographical Study of *Vicia* subgenus *Vicia*. Systematic and Ecogeographic Studies on Crop Gene-pools 8. International Plant Genetic Resources Institute, pp48-89.

Taxon Group 2 relative of *Vicia pannonica* Crantz



0.2-0.8 m





Wild relative of *Vicia sativa* L.

**HABIT:** Annual herbs, (5-)20-55(-75) cm tall, stems branching from the base, procumbent to erect. Vegetative parts sparsely adpressed-pilose. Stipules small, 3-4 mm long, semi-hastate-bipartate to sparsely dentate.  
**LEAVES:** Leaflets 4-8-paired, 5-25(-35) mm long by 1-5(-8) mm wide, oblong-elliptic, oblanceolate or lanceolate. Rachis terminating a branched tendril, shorter than the leaf.  
**INFLORESCENCES:** Peduncle and raceme shorter than leaf, often terminally aristate. Flowers 2-6 per inflorescence, occasionally solitary, 10-15 mm long; calyx (3-)5-6 mm long, campanulate, mouth oblique, pubescent, teeth shorter than tube, unequal; corolla longer than wide, violet to blue, limb of standard shorter than claw.  
**FRUIT:** Pods shortly stipitate, oblong-linear, 20-35 mm long by (5-)5-8.5 mm wide, laterally compressed, glabrous.  
**SEEDS:** 3-6 per fruit, subglobose, hilum comprising about 1/6 of circumference.

**Habitat:**

Fallow and cultivated fields.

**Distribution:**

Throughout the Mediterranean, South-west Asia.

**Altitude:** 900 - 1300 m*Vicia monantha* subsp. *monantha*May be confused with:  
*Vicia hirsuta*

Corolla violet to blue; pods 20-35 mm long; seeds 4-6 per fruit, hilum 1/6 of circumference

Corolla bluish-white; pods 6-11 mm long; seeds 1-2(-3) per fruit, hilum about 1/3 of circumference

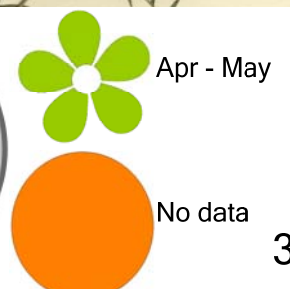
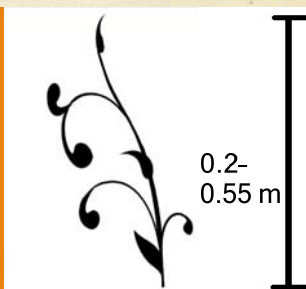
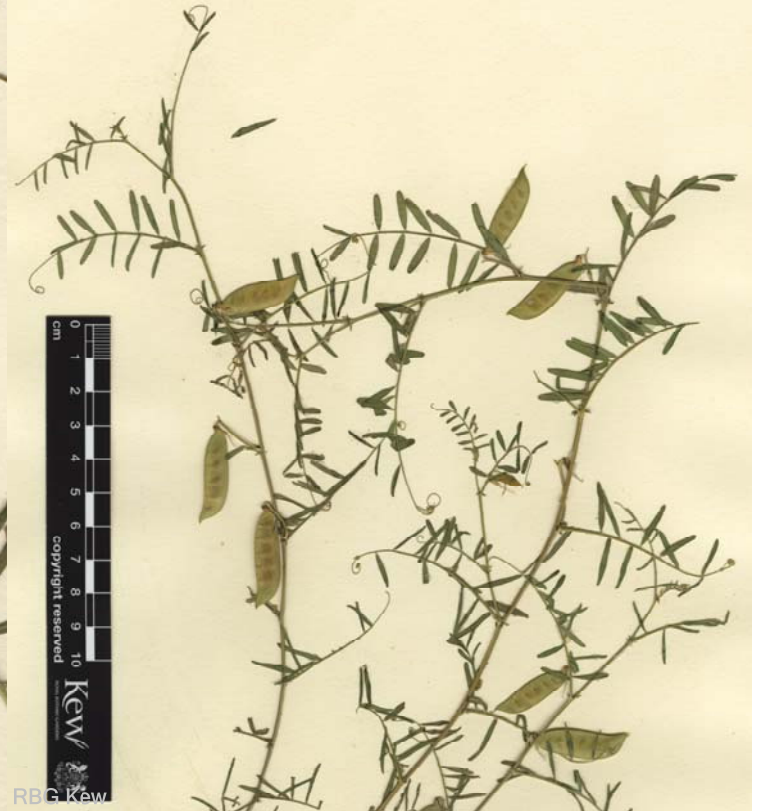
All populations priority  
for collection.

**References:** David, P.H. [ed.] (1969) Flora of Turkey, Volume 3, p 296; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p318 [as *V. calcarata* Desf.]

LEGUMINOSAE

*Vicia monantha* subsp. *monantha* Retz

Wild relative of *Vicia sativa* L.



Tertiary Gene Pool relative of *Vicia faba* L. & Gene Pool Primary relative of *Vicia narbonensis* L.

**HABIT:** Annual herbs (8-)15-70 cm tall, stems robust, erect, usually unbranched, vegetative parts subglabrous to pilose. Stipules semi-hastate to semi-orbicular, margin entire, incised or dentate.

**LEAVES:** Uppermost leaves with 2-3(-4) pairs of leaflets and ending in a branched tendril, lower leaves with 1(-2) pairs and ending in an awn. Leaflets (7-)10-40(-50) mm long by (5-)9-20(-30) mm wide, elliptic, obovate, oblong-lanceolate or ovate.

**INFLORESCENCES:** Flowers in axillary groups of 1-3. Flowers 16-30 mm long; calyx (7-)8-10(-13) mm long, teeth more or less lanceolate, slightly unequal, 1/2 as long to equalling length of tube; corolla dark violet, rarely lilac or with patches of white, standard more than twice as long as calyx and longer than wings, limb equalling length of claw.

**FRUIT:** Pod 35-50(-70) mm long by 8-11(15) mm wide, linear-oblong, beaked at the apex, tubercular-hairy becoming glabrous at maturity, margins remaining ciliate.

**SEEDS:** 4-6 per fruit, subglobose, 4-6 mm long.

**Habitat:**

Former cultivated land and fallow pasture, often on limestone or volcanic soils.

**Distribution:**

Southern Europe, North Africa, Crimea, Caucasus, South-west Asia

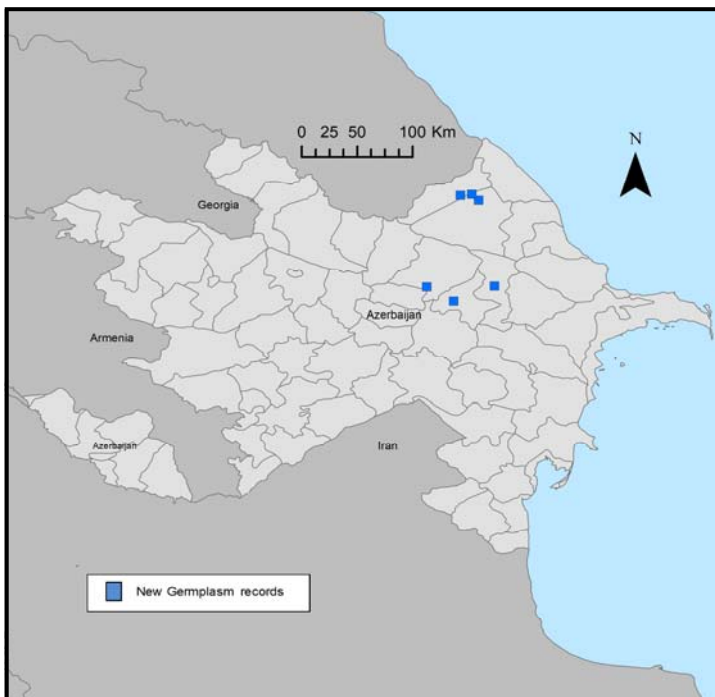
**Altitude:** 0 - 1500 m

*Vicia narbonensis*

May be confused with:  
*Vicia serratifolia*

Leaflets entire; corolla dull lilac to pink; pods oblong.

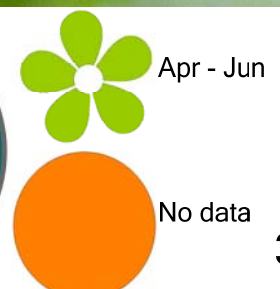
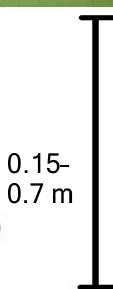
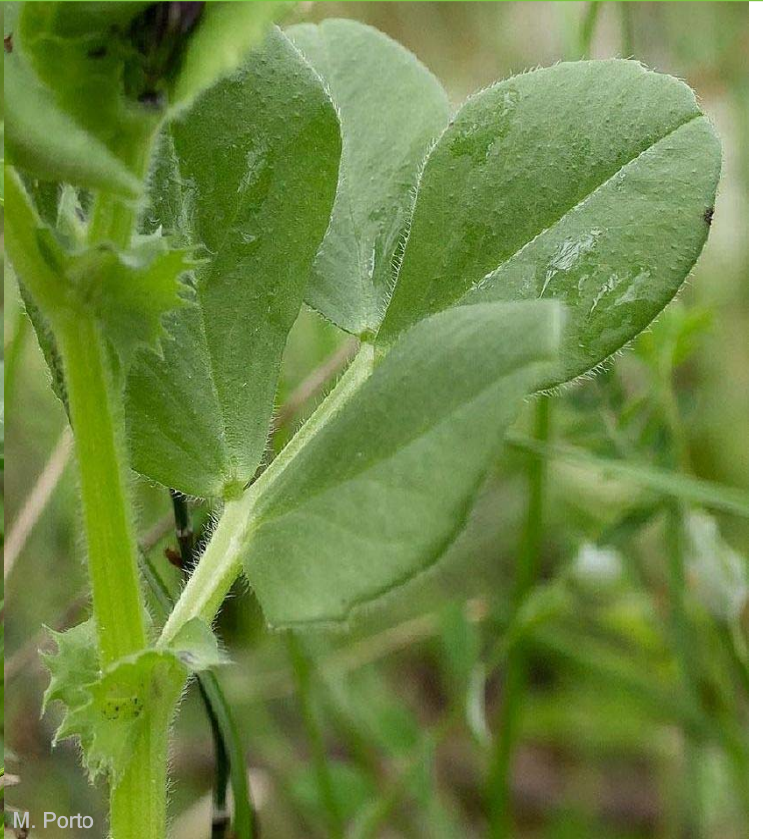
Leaflets serrate to dentate from base or in upper half; corolla lilac to purple; pods linear.



All populations priority  
for collection.

**References:** David, P.H. [ed.] (1969) Flora of Turkey, Volume 3, pp321-322; Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p359.

Tertiary Gene Pool relative of *Vicia faba* L. & Gene Pool Primary relative of *Vicia narbonensis* L.



Apr - Jun

No data

Taxon Group 1B relative of *Vicia pannonica* Crantz

**HABIT:** Annual scramblers, 40-60 cm tall, stems ascending, vegetative parts softly hairy. Stipules small, 3-4 mm long, ovate-lanceolate or semihastate, apex acute.

**LEAVES:** Leaflets 6-9-paired, linear to oblong, 12-18 x 2-3 mm, apex obtuse, truncate or slightly emarginate, often mucronate. Rachis ending in a simple or branched tendril.

**INFLORESCENCES:** Flowers in clusters of 2-4, short pedicelled, 20-22 mm long; calyx tubular-campanulate, strongly oblique, teeth subulate to filiform, unequal, lower teeth longer than upper and nearly as long as tube; corolla yellow, rarely purplish, standard with dense, appressed indumentum, claw slightly longer than limb.

**FRUIT:** Pods pendulous, oblong, tapering at both ends, about 30 mm long, covered in appressed, sericeous hairs.

**SEEDS:** 2-8 per fruit, slightly flattened, velutinous, hilum whitish, up to 1/4 circumference of seed.

**Habitat:**

Cultivated and fallow fields, roadsides.

**Distribution:**

Southern and central Europe, north-west Africa, Cyprus, Turkey, Caucasus, northern Iran.

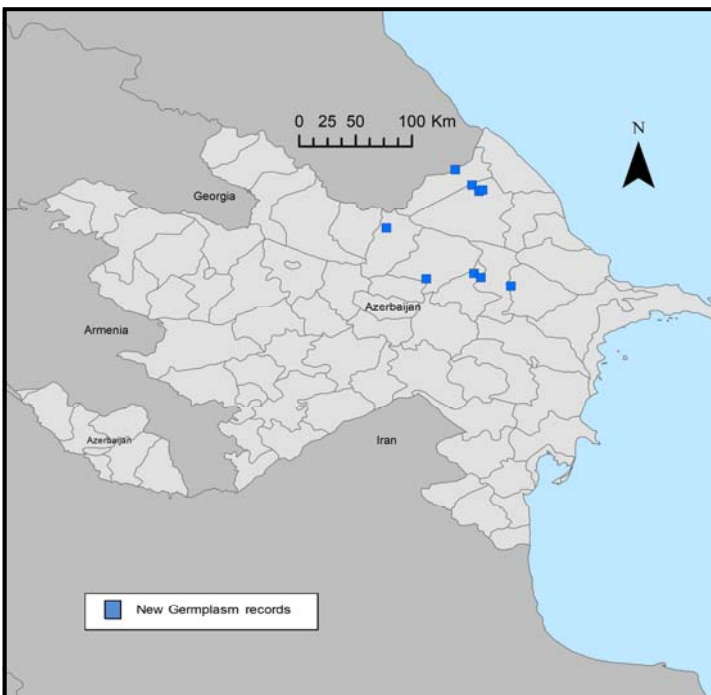
**Altitude:** 0 - 1300 m

*Vicia pannonica*

May be confused with:  
*Vicia ciliatula*

Standard with dense, appressed, long hairs on outer surface; pod appressed sericeous.

Standard with short, velutinous hairs on outer surface; pods glabrous with ciliate sutures.



All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p357.

Taxon Group 1B relative of *Vicia pannonica* Crantz



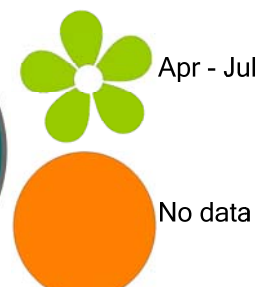
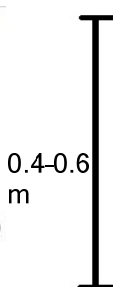
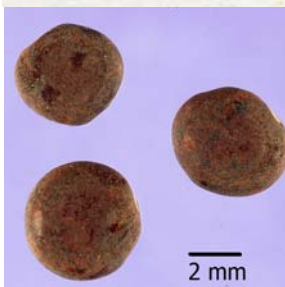
Wikimedia contributor Fornax



Wikimedia contributor Fornax



Wikimedia contributor Fornax



Wild relative of *Vicia sativa* L.

**HABIT:** Annual herbs 10-70(-95) cm tall, stems slender, ascending, vegetative parts pubescent, hairs often adpressed. Stipules 2-4 mm long, lower ones semi-hastate and 1-2-toothed, the upper ones entire.

**LEAVES:** Leaflets 2-3-paired in lower leaves, 3-8-paired in upper leaves, 5-35(-40) mm long by 0.5-5(-6) mm wide, narrowly linear, oblanceolate, base cuneate or narrowly tapering, apex retuse or praemorse, sometimes acute or rounded.

**INFLORESCENCES:** Flowers usually solitary and axillary, pedicel about equalling length of calyx; calyx tubular-campanulate, mouth oblique, teeth unequal, lower teeth longer and narrower than upper; corolla purple, standard deeper in colour than wings.

**FRUIT:** Pods up to 40 mm long, oblong to linear, flattened, apex beaked, covered with short, appressed hairs, glabrescent with ripening.

**SEEDS:** 4-6 per fruit, 3-4.5 mm in diameter, slightly angular, velutinous, hilum up to 1/10 of circumference.

**Habitat:**

Woodland and scrub, often associated with *Quercus*, rocky slopes, cultivated fields.

**Distribution:**

Mediterranean, Crimea, Caucasus, central Asia.

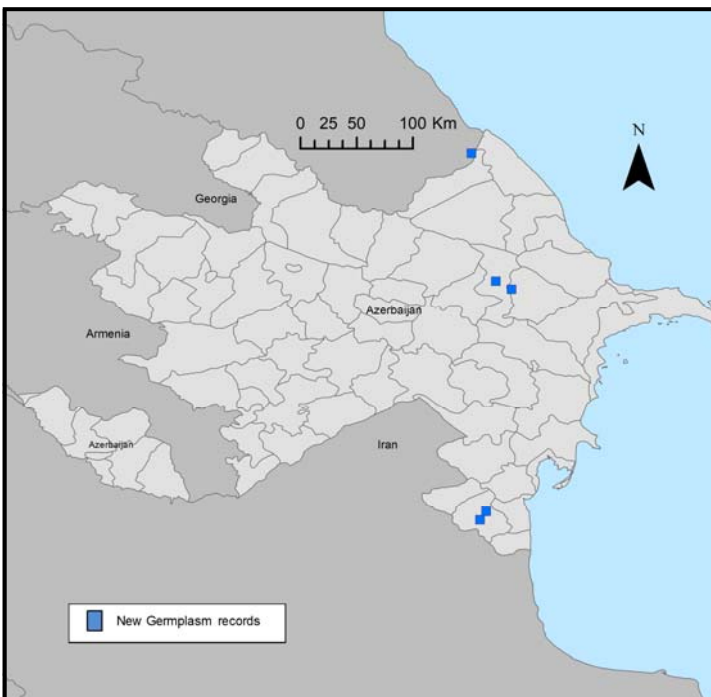
**Altitude:** 0 - 1400 m

*Vicia peregrina*

May be confused with:  
*Vicia hyrcanica*

Leaflets narrowly linear; corolla purple; hilum less than 1/10 seed circumference

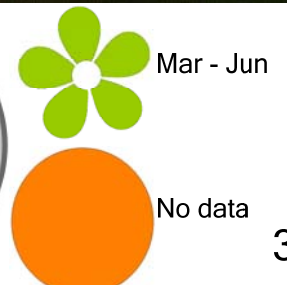
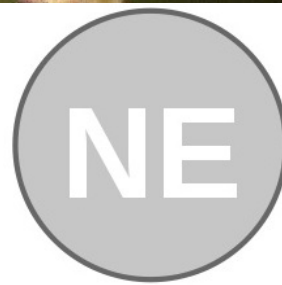
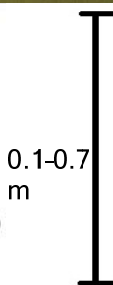
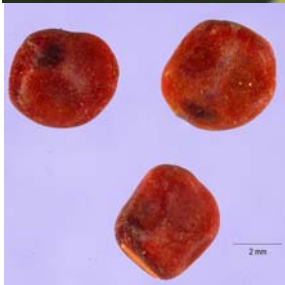
Leaflets elliptic to lanceolate, rarely linear; corolla yellow; hilum about 1/8 seed circumference



All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, p354.

Wild relative of *Vicia sativa* L.





Primary Gene Pool relative of *Vicia sativa* L.Subterranean vetch,  
underground vetch

**HABIT:** Annual herbs, 20-80(-100) cm tall, stems both aerial and subterranean, aerial stems erect or climbing. Stipules semi-hastate, margins dentate.

**LEAVES:** Leaflets usually 4-8-paired, apex tendrilled, about 10-40 mm long by 2-15 mm wide, oblong, obovate to linear or lanceolate, margins entire or shallowly serrate.

**INFLORESCENCES:** Subterranean flowers rudimentary, corolla absent. Aerial flowers in axillary groups of 1-2(-3), pedicels very short, 14-27 mm long; calyx 7-20 mm long, surface pubescent, campanulate-tubular, teeth subequal, up to half the length of the tube; corolla usually pink or violet.

**FRUIT:** Aerial pods 35-65 mm long by 5-9 mm wide, linear, apex sometimes beaked, pubescent. Subterranean fruit white, 1-2-seeded. Seeds of aerial pods 6-12, smooth, 2-7 mm diameter. Seeds of subterranean pods 1-2.

**Habitat:**

Rocky slopes, cultivated or fallow fields, plantations.

**Distribution:**

Mediterranean, Turkey and Caucasus

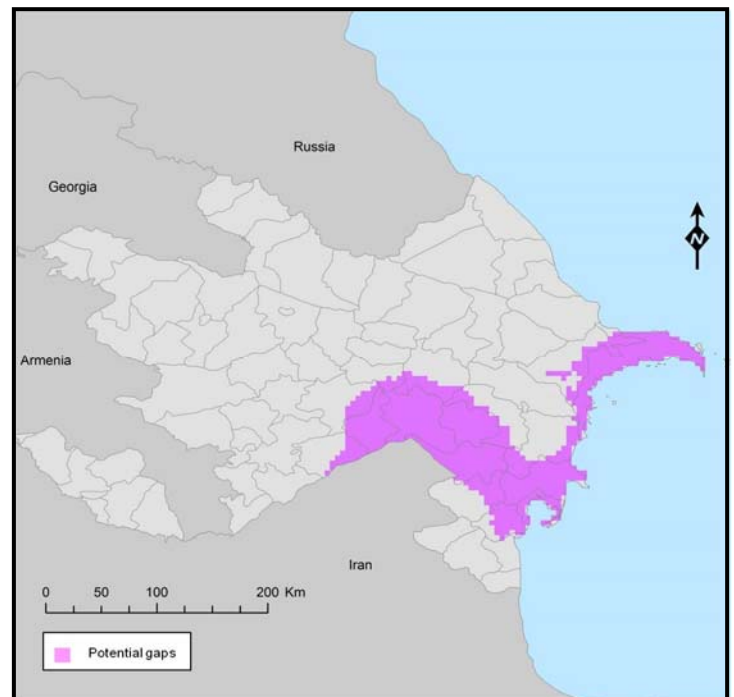
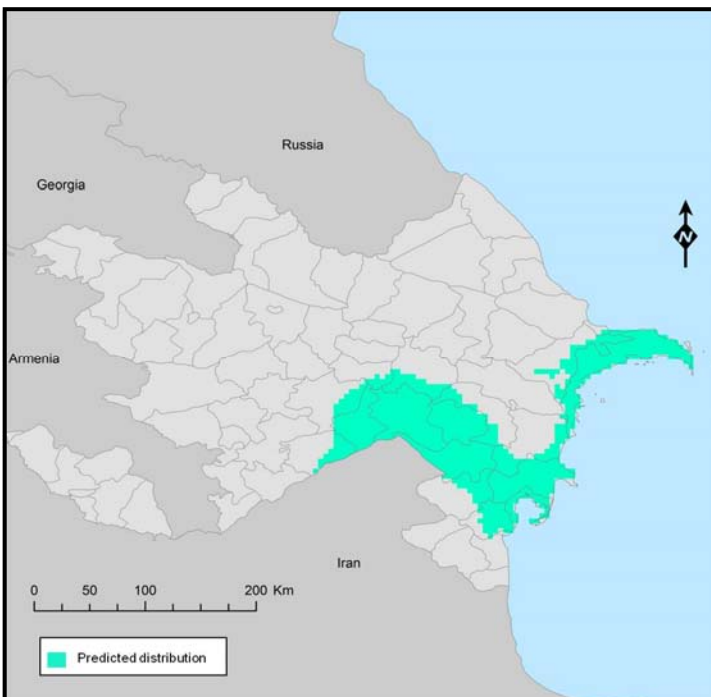
**Altitude:** 0 - 2000 m

*Vicia sativa* subsp. *amphicarpa*

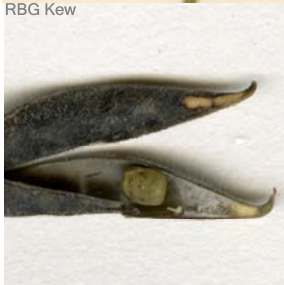
May be confused with:  
*Vicia sativa* subsp. *sativa*

Flowers and fruits dimorphic, both aerial and subterranean.

Flowers and fruits all morphologically similar, all on aerial stems.



**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, pp 352-353 [as *V. amphicarpa* Dorthes]



0.2-0.8  
m

NE

Apr - Jul  
No data

**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.

**INFLORESCENCE:** Flowers solitary or paired, on short peduncles arising at the base of the leaves, mainly blue to purple but sometimes white.

**FLOWER:** 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.

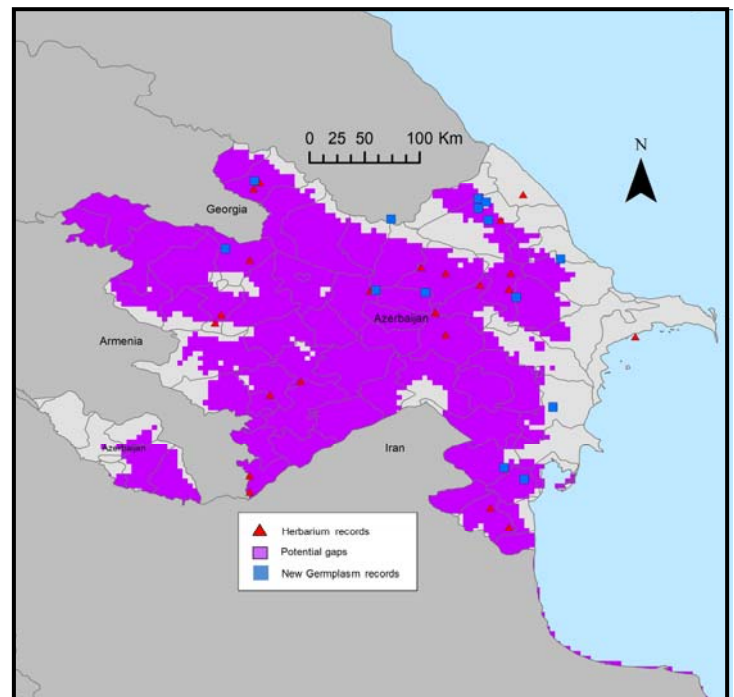
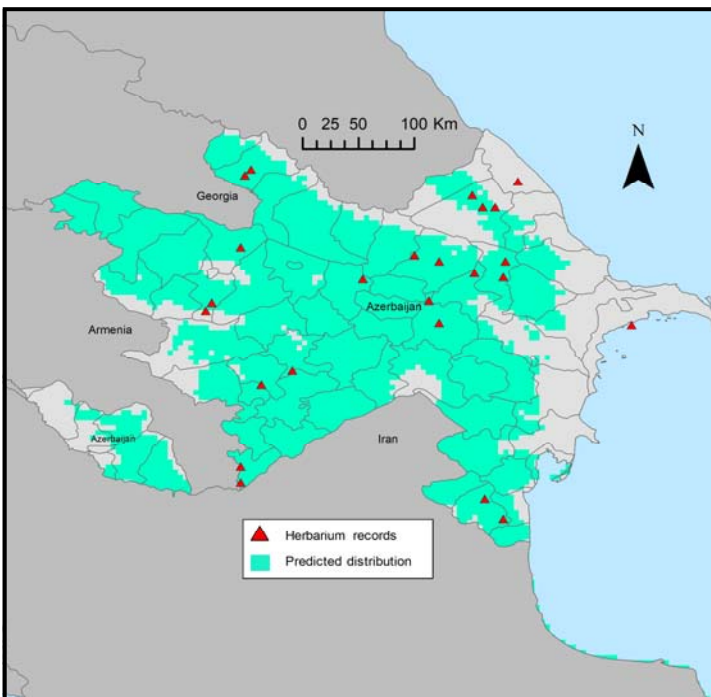
**Altitude:** 0 - 2900 m

*Vicia sativa* subsp. *nigra*

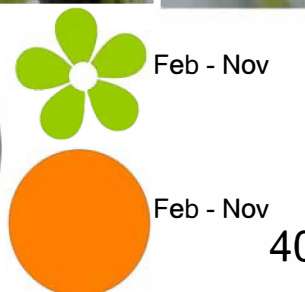
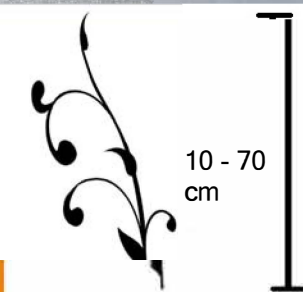
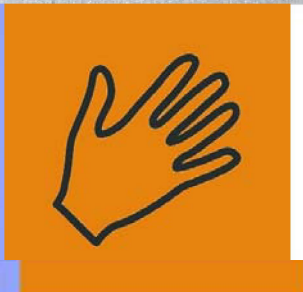
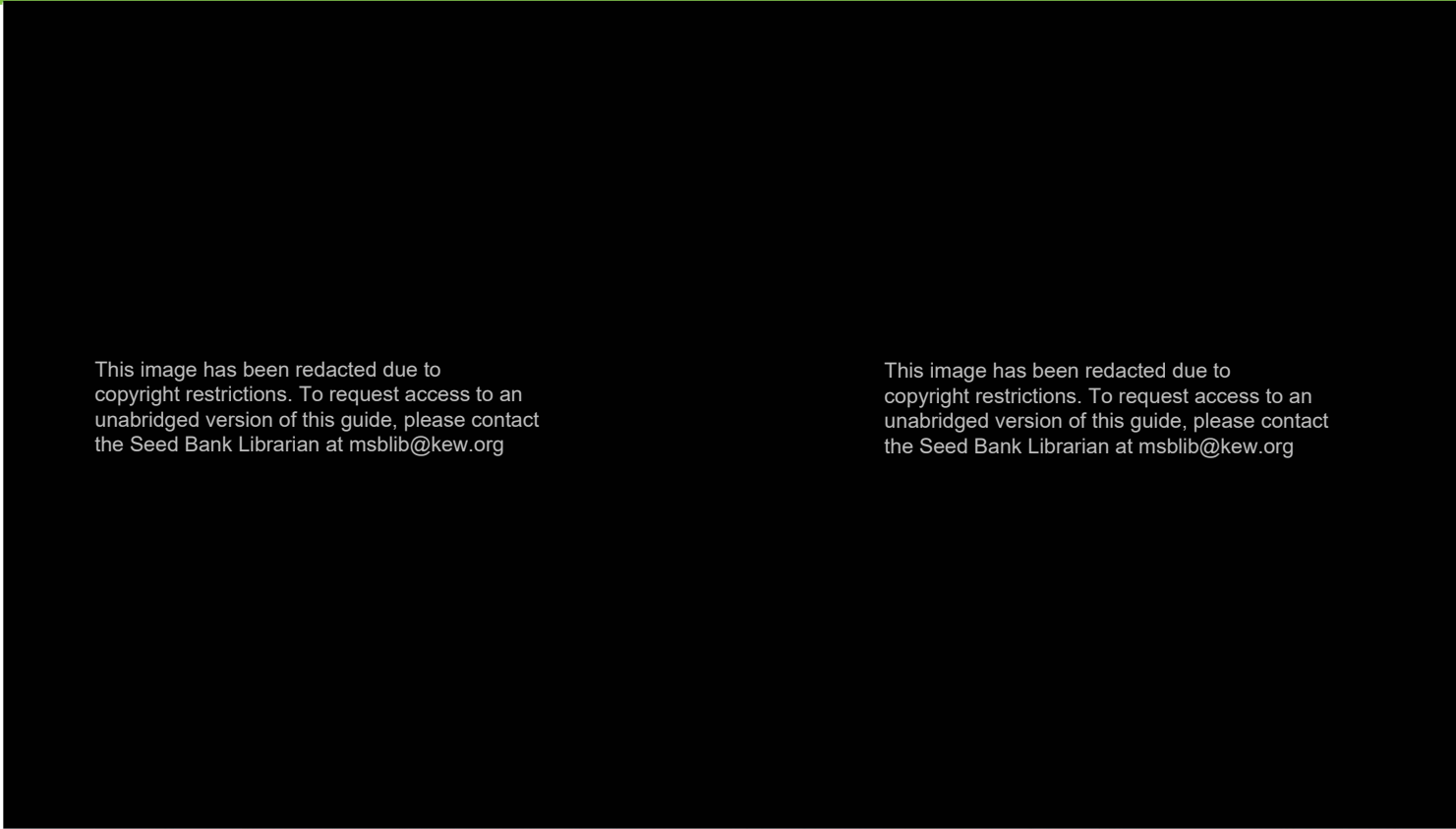
May be confused with:  
*Vicia sativa* subsp. *sativa*

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



Wild relative of *Vicia sativa* L.

**HABIT:** Perennial herbs 35-75 cm tall, stems robust, branching from the base, erect or ascending, internodes short and flexuous. Vegetative parts with short spreading hairs. Stipules semi-sagittate, lobes lanceolate.

**LEAVES:** Leaflets 7-14-paired, lanceolate to oblong-linear, 20-25 x 2.5-4.5 mm, apex acute and mucronate.

**INFLORESCENCES:** Inflorescence length exceeding the leaves, Racemes loose, one-sided, 10-12-flowered. Flowers 10-15 mm long; calyx campanulate, teeth unequal, lower teeth about as long as tube, upper teeth much shorter; corolla lilac, violet or purple.

**FRUIT:** Pods cuneate, glabrous.

**SEEDS:** Oblong to subglobose, hilum very short.

**Habitat:**

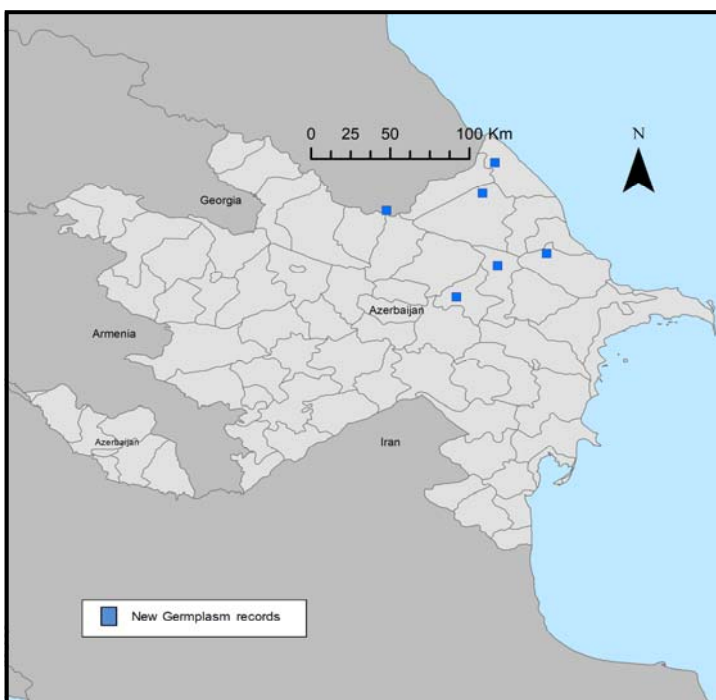
Mostly found in areas of mountain forest, in clearings, forest edges and shrublands.

**Distribution:**

South-western Europe, Turkey, Caucasus and Iran

**Altitude:** unknown

<i>Vicia tenuifolia subsp. variabilis</i>	May be confused with:



All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, pp 332-333 [as *V. variabilis* Freyn et Sint.]

NO IMAGE AVAILABLE

If you know of an image or link to an image of this species please let us know [cropwildrelatives@kew.org](mailto:cropwildrelatives@kew.org)

No seed image available



0.35-  
0.75 m



May - Jul

No data

Wild relative of *Vicia sativa* L.

**HABIT:** Annuals, rarely biennials, 30-70(-100) cm tall, stems slender, branching from the base, weakly climbing, vegetative parts usually densely pubescent. Stipules 5-8 mm long, those of lower leaves semi-sagittate, often denticulate, those of upper leaves lanceolate, entire.

**LEAVES:** Leaflets 6-8(-10)-paired, lanceolate to linear, 12-30 x 1-3 mm, apex obtuse or acuminate.

**INFLORESCENCES:** Inflorescences slightly exceeding leaves, racemes loose, 15-30-flowered, enclosed by a cluster of hairy bracts before flowering. Flowers 15-18 mm long; calyx campanulate, obliquely truncate, teeth narrow, almost setiform, very unequal, lower teeth much longer than upper; corolla lilac, limb of standard much shorter and wider than claw.

**FRUIT:** Pods 25-30 x 7-9 mm, broadly linear to oblong, stipitate, stipe longer than calyx tube, glabrous.

**SEEDS:** 2-5 per fruit, hilum 1/8 of circumference.

**Habitat:**

As a weed in cultivation.

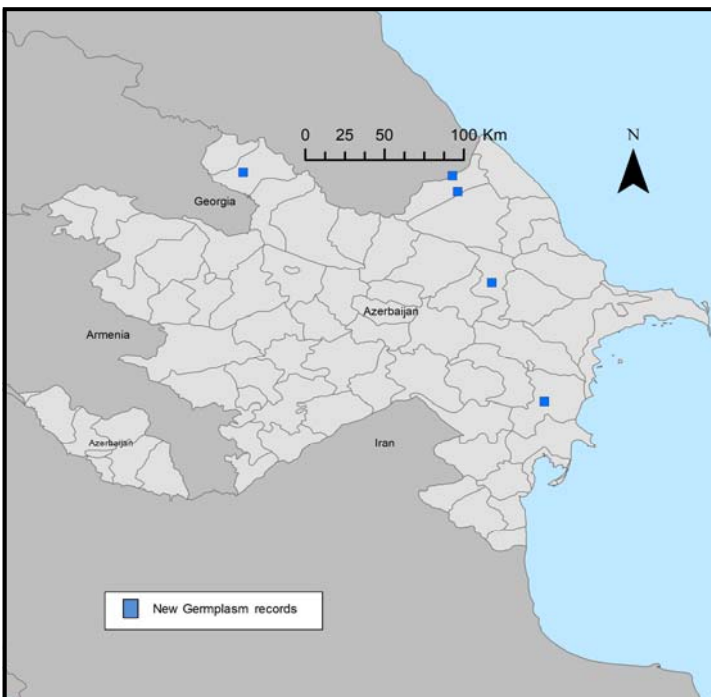
**Distribution:**

Western and Eastern Europe, Central Asia

**Altitude:** unknown*Vicia villosa* subsp. *varia*May be confused with:  
*Vicia cracca*

Plants usually densely pubescent; stems not ribbed; limb of standard much shorter than claw; pod on stipe exceeding calyx tube.

Plants glabrous or very sparsely pubescent; stems ribbed; limb of standard as long as claw; pod on stipe not exceeding calyx tube.

All populations priority  
for collection.

**References:** Komarov, V.L., ed. (1948) Flora of the USSR (English version). Volume 13, pp 341-342. [*V. villosa* Roth.]

Wild relative of *Vicia sativa* L.

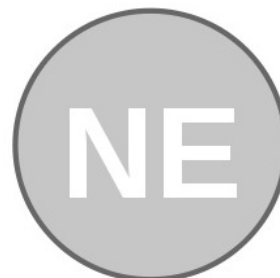


RBG Kew

No seed image available



0.3-0.7 m



May - Jul

No data



Secondary Gene Pool of *Triticum aestivum* subsp. *compactum*

**HABIT:** Annual, caespitose. Culms ascending, 10-40 cm long.

**LEAVES:** Leaf-sheaths pilose, oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blades 2-5 cm long; 2-3 mm wide, surface glabrous, or pilose.

**INFLORESCENCES:** Racemes single, lanceolate, bilateral, 1.5-2 cm long, bearing 2(-3) fertile spikelets. Deciduous as a whole. Rhachis tough. Spikelet packing broadside to rhachis, with upper internodes elongated.

Basal sterile spikelets 1-2, rudimentary. Fertile spikelets comprising 4-5 fertile florets, with diminished florets at the apex. Spikelets narrowly obovoid-ellipsoid, laterally compressed, 8-11 mm long, falling entire, deciduous with accessory branch structures. Glumes similar, shorter than spikelet. Lower glume oblong, or obovate; 7-10 mm long; 1 length of upper glume; coriaceous; without keels, 7-9 -veined. Lower glume lateral veins unequally thickened, ribbed, surface pubescent, or pilose, apex truncate, 2-3 -awned. Awns increasing in length towards inflorescence apex.

**FLORETS:** Fertile lemma oblong; 8-11 mm long, coriaceous, without keel, 5 -veined. Lemma apex dentate, 1-2 -fid, 1-2 -awned.

**FLOWER:** Lodicules 2. Ovary pubescent on apex.

**FRUIT:** Caryopsis free, with adherent pericarp, hairy at apex.

**Habitat:**

Usually found in dry and disturbed habitats e.g. roadsides, edges of cultivated land and forest, grasslands, steppe maquis, rocky mountain slopes.

**Distribution:**

Europe: southwestern, southeastern, and eastern.  
Africa: north and Macaronesia. Asia-temperate: Soviet Middle Asia, Caucasus, and western Asia.

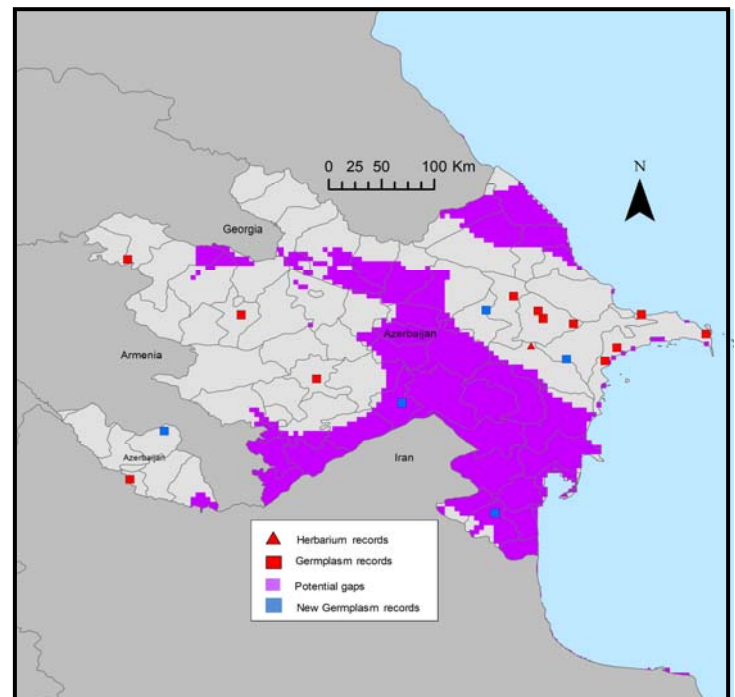
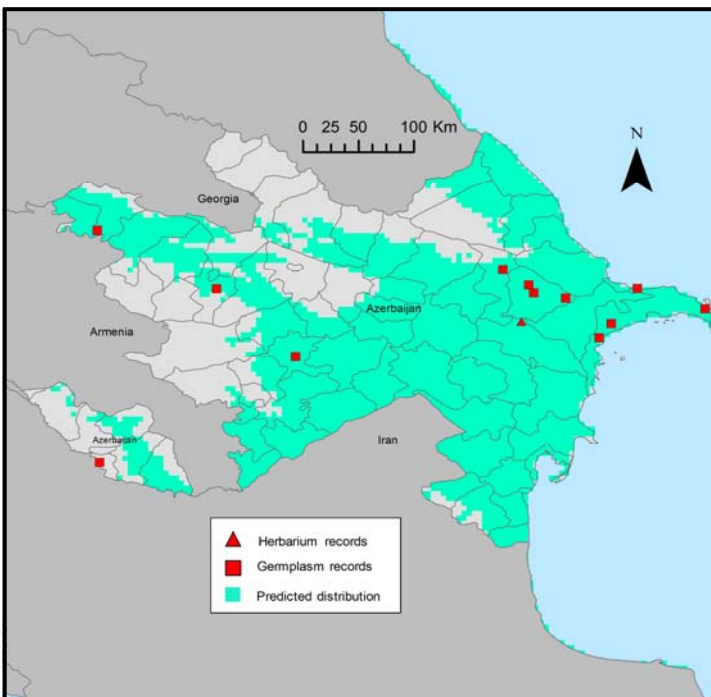
**Altitude:** 150 - 1030 m

*Aegilops biuncialis*

May be confused with:  
*Aegilops geniculata*

Spikelets 2(-3), all fertile, narrowly obovoid-ellipsoid, not constricted above; glume apex with 2-3 awns, longer towards apex of inflorescence.

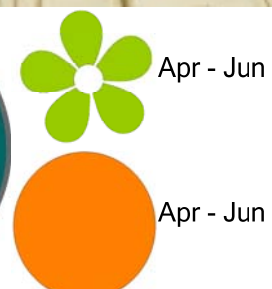
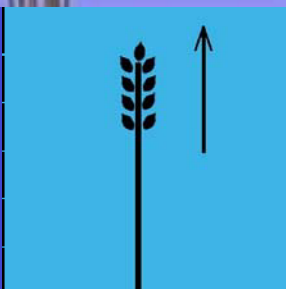
Spikelets (2-)3-4, upper one sterile, lowest 1-3 subventricose, widest at or below the middle, constricted above; glume apex with (3-)4-5 awns, becoming shorter towards apex of inflorescence.



**References:** Slageren, M.W. van (1994) Wild Wheats: A Monograph of *Aegilops* L. and *Amblyopyrum* (Jaub. & Spach) Eig. Wageningen Agricultural University Papers; GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.



No seed image available



Secondary Gene Pool of *Triticum aestivum* subsp. *compactum*

**HABIT** Annual herbs, caespitose. Culms geniculately ascending, or decumbent; 20-50 cm long.

**LEAVES:** Leaf-sheath oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blades 2-6 cm long; 2.5-4.5 mm wide. Leaf-blade surface scabrous; rough on both sides; pilose; sparsely hairy; hairy on both sides.

**INFLORESCENCES:** Spikes single, narrowly ovoid to oblong, bilateral, 2-4 cm long, deciduous as a whole. 2-3 fertile spikelets per spike. Rhachis tough, internodes oblong. Spikelet packing broadside to rhachis.

Spikelets comprising 3-4 fertile florets, with diminished florets at the apex. Spikelets oblong, laterally compressed, 8-12 mm long, falling entire.

Glumes shorter than spikelet, 7-11 mm long, with 2-3 awns, 1 awns more developed than others, broad at base and often bifurcating above. Lemmas with 2-3 awns, shorter than those of glumes (30-40 mm).

**FRUIT:** Caryopsis with adherent pericarp, free from lemma and palea.

**Habitat:**

Dry open fields, roadsides and hillsides, occasionally in pine forests.

**Distribution:**

Crete, Turkey, Caucasus and northern Iran.

**Altitude:** 450 - 1990 m

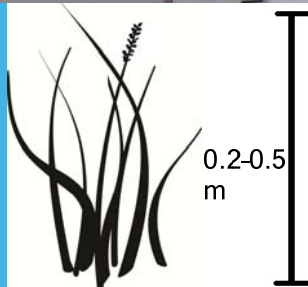
<i>Aegilops columnaris</i>	May be confused with: <i>Aegilops neglecta</i>
Spike ovoid in lower part, more linear in upper part; fertile spikelets 3-4, apical sterile spikelets very rudimentary; glumes of fertile spikelets elliptic-oblong, apex with 2 unequal awns.	Spike ovoid-ellipsoid, inflated in lower part, then abruptly constricted and almost linear; spikelets 3-6, of which upper 1-3 sterile; glumes of fertile spikelets obovate-elliptical, 3-awned, awns equal in length and width at base.

Reported from Azerbaijan, but no localities known.

All populations priority for collection.



No seed image available



**HABIT:** Clump-forming annuals. Culms often densely tufted, 20-40(-80) cm long high, erect or geniculately ascending. Leaf-sheath auricles falcate. Ligule an eciliate membrane.

**LEAVES:** Leaf-blades glabrous or sparsely hairy, up to 12 cm long, 0.2-0.5 cm wide.

**INFLORESCENCE:** Spikes 6-11 cm long (excluding the awns), cylindrical with 1-2 vestigial spikelets at the base; rachis breaking up at internodes at maturity. Basal sterile spikelets rudimentary, 1-2 in number. Fertile spikelets 4-6, glumes of lateral spikelets 7-9 mm long (to the base of the apical sinus), 2-toothed, 1 of the teeth short and blunt, the other produced as an awn up to 18 mm long, awns of terminal spikelet shorter than the spike.

**GLUMES:** Equal, shorter than spikelet, oblong, asymmetrical, 7-9 mm long, ribbed, coriaceous, apex bifid, with a terminal awn 9-18 mm long. Fertile lemma oblong, 9-11 mm long, coriaceous, not keeled 5 -veined, apex truncate, awned only on distal spikelets. Principal lemma awn shorter than raceme. Palea 2 -veined. Palea keels scabrous.

**FRUIT:** Caryopsis with adherent pericarp, hairy at apex.

### Habitat:

Ruderal and disturbed sites, e.g. waste ground, cultivated areas, roadsides, dry slopes, grasslands.

### Distribution:

Europe: central, southeastern and eastern. Asia-temperate: Soviet far east, Soviet Middle Asia, Caucasus and western Asia. Asia-tropical: India. Throughout USA.

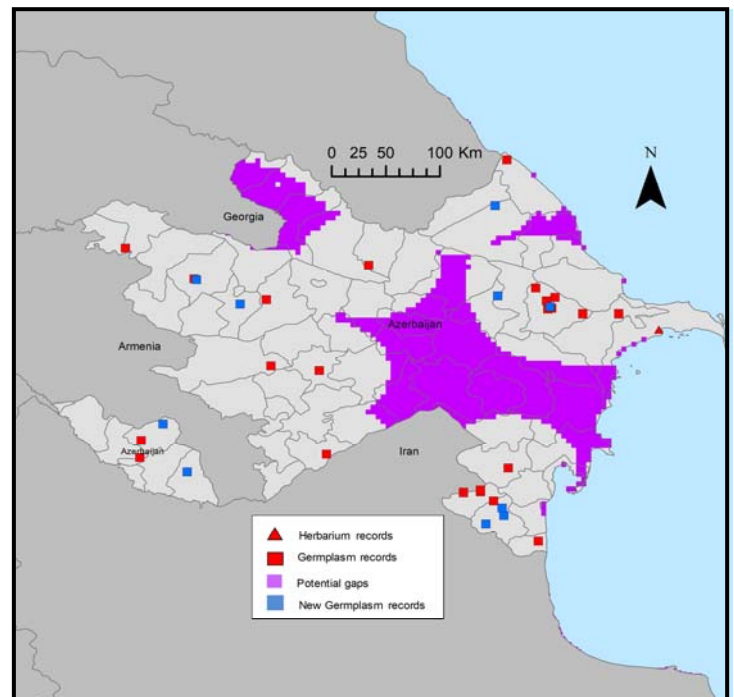
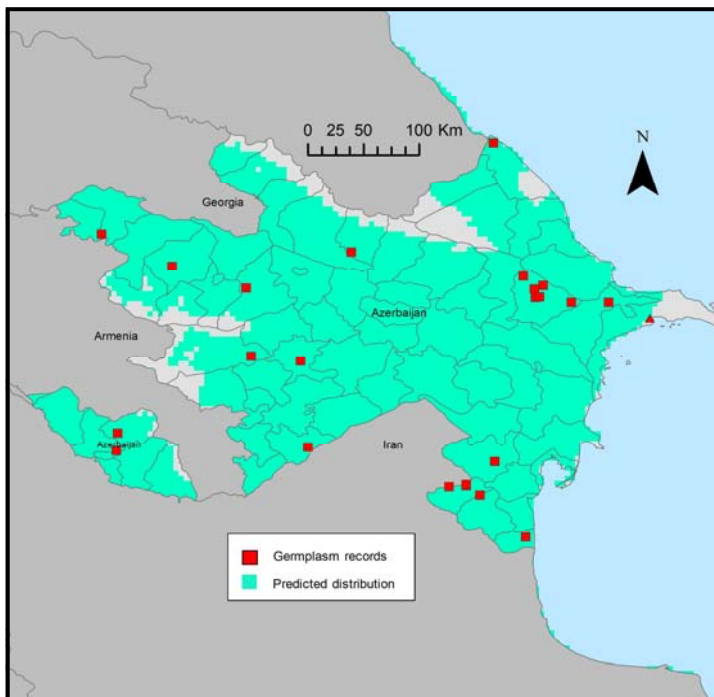
**Altitude:** 100 - 1750 m

#### *Aegilops cylindrica*

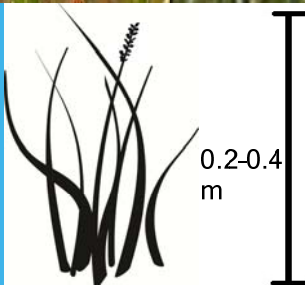
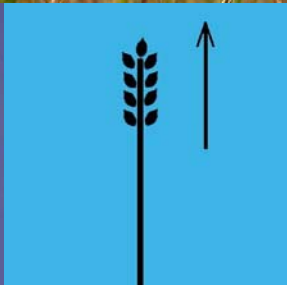
May be confused with:  
*Aegilops caudata*

Glumes on apical spikelets about 3-6 cm long (shorter than length of spikelet); lemmas with 4-8 cm long awns.

Awns on glumes of apical spikelet 4.5-12 cm long (longer than entire spike); lemmas without awns (mucronate at most).



**References:** Slageren, M.W. van (1994) Wild Wheats: A Monograph of *Aegilops* L. and *Amblyopyrum* (Jaub. & Spach) Eig. Wageningen Agricultural University Papers; GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.



**HABIT:** Annual; caespitose. Culms geniculately ascending; 10-30 cm long.

**LEAVES:** Leaf-sheath oral hairs ciliate, auricles falcate. Ligule an eciliate membrane. Leaf-blades 4-8 cm long; 1.5-3 mm wide, surface pubescent. Inflorescence composed of racemes; deciduous as a whole.

**INFLORESCENCES:** Racemes single, obovate, bilateral, 1-2 cm long, 4-9 mm wide, bearing 2(-3) fertile spikelets on each. Rhachis tough. Spikelet packing broadside to rhachis. Spikelets solitary. Fertile spikelets sessile. Basal sterile spikelets rudimentary, 1-2 in number. Apical sterile spikelets barren; 2-3 in number; 2-3 mm long. Fertile spikelets comprising 3 fertile florets, with diminished florets at the apex. Spikelets ovate, laterally compressed, 7-11 mm long, falling entire, deciduous with accessory branch structures. Glumes similar, shorter than spikelet. Lower glume oblong, 6-10 mm long, 1 length of upper glume, coriaceous, without keels, 7-9 -veined. Lower glume lateral veins unequally thickened, ribbed. Lower glume surface scabrous, rough on veins, pubescent. Lower glume apex truncate, 3-4(-5) -awned.

**FLORETS:** Fertile lemma oblong; 7-11 mm long; coriaceous; without keel; 5 -veined. Lemma apex dentate; 3 -fid; 3 -awned.

**FLOWER:** Lodicules 2. Ovary pubescent on apex.

**FRUIT:** Caryopsis with adherent pericarp; hairy at apex. Disseminule comprising an inflorescence.

**Habitat:**

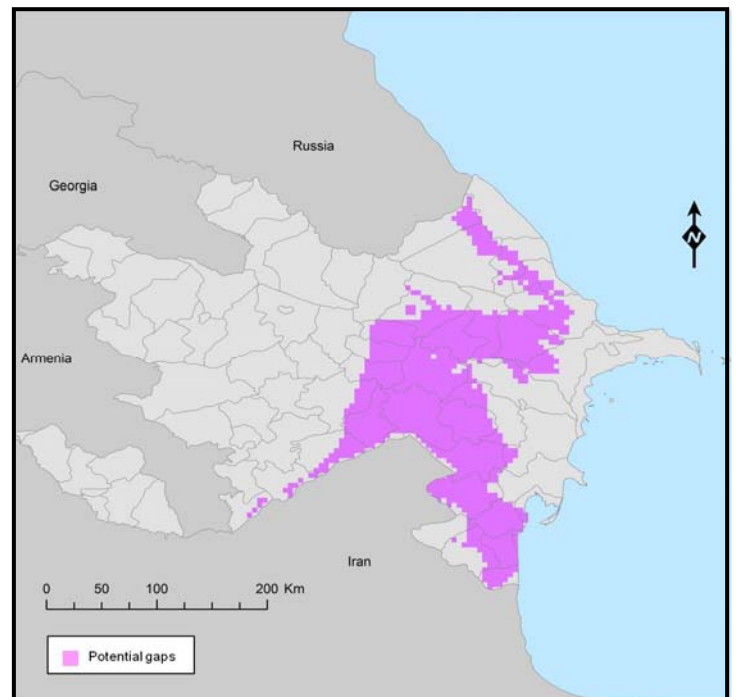
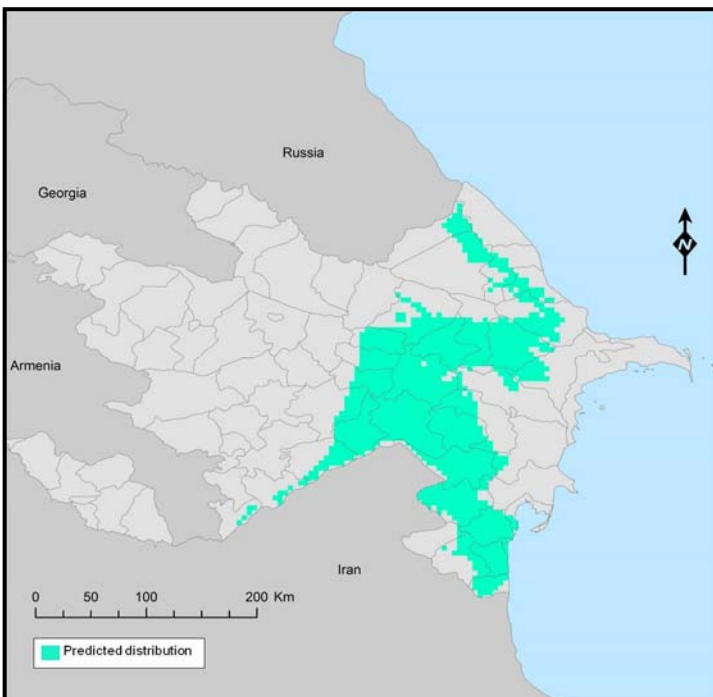
Dry, disturbed habitats e.g. wastelands, formerly cultivated sites, roadsides, dry rocky slopes, field edges, woodland, forest and scrub.

**Distribution:**

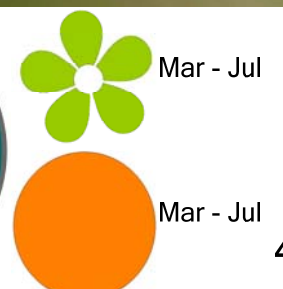
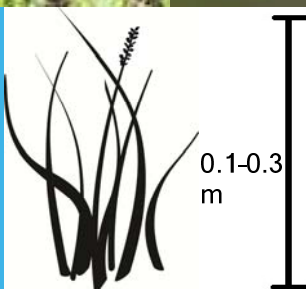
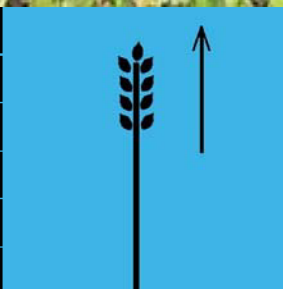
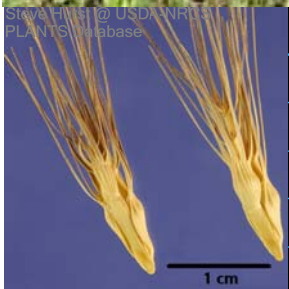
Europe: southwestern, southeastern, and eastern. Africa: north and Macaronesia. Asia-temperate: Caucasus and western Asia.

**Altitude:** 100 - 1200 m

<i>Aegilops geniculata</i>	May be confused with: <i>Aegilops biuncialis</i>
Spikelets (2-)3-4, upper one sterile, lowest 1-3 subventricose, widest at or below the middle, constricted above; glume apex with (3-)4-5 awns, becoming shorter towards apex of inflorescence.	Spikelets 2(-3), all fertile, narrowly obovoid-ellipsoid, not constricted above; glume apex with 2-3 awns, longer towards apex of inflorescence.



**References:** Slageren, M.W. van (1994) Wild Wheats: A Monograph of *Aegilops* L. and *Amblyopyrum* (Jaub. & Spach) Eig. Wageningen Agricultural University Papers; GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.





Secondary Gene Pool of *Triticum aestivum* subsp. *compactum*

**HABIT** Annual herbs, caespitose. Culms erect, or geniculately ascending, 10-30(-40) cm long.

**LEAVES:** Leaf-sheaths pilose, oral hairs ciliate and auricles falcate. Ligule an eciliate membrane. Leaf-blades 6-12 cm long by 1.5-4 mm wide, margins ciliate, surface glabrous, or pilose, sparsely hairy.

**INFLORESCENCES:** Racemes solitary, single, lanceolate, bilateral, 0.5-4 cm long by 2.5-5 mm wide, deciduous as one unit at maturity. 2-6 fertile spikelets per raceme, plus 2-3 rudimentary, basal sterile spikelets. Rhachis tough. Spikelet packing broadside to rhachis. Spikelets comprising 2 fertile florets, with diminished florets at the apex. Spikelets oblong, laterally compressed, 7-10 mm long, falling entire, deciduous with accessory branch structures.

**GLUMES:** Shorter than spikelet, 4-6 mm long, ovate to oblong. Surface of lower glume with more or less parallel, distinct venation, appearing ribbed, apex with 3(-4) equally wide, setulose awns. Fertile lemma oblong, 5-8 mm long, coriaceous, 5 -veined. Lemma apex dentate, 2 -fid, 1-3 -awned. Awns equal in length to those on glumes. Palea 2-veined. Palea keels scaberulous.

**FRUIT** Caryopsis with adherent pericarp, hairy at apex.

**Habitat:**

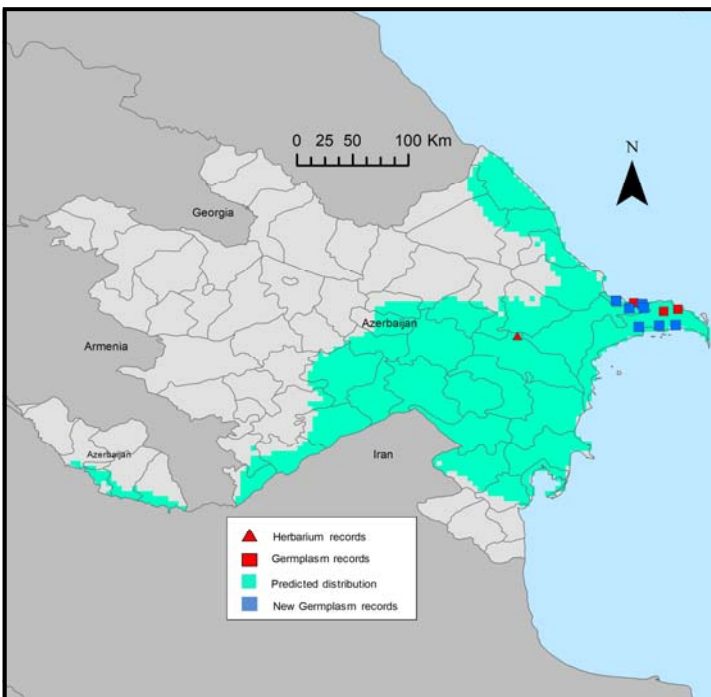
Usually found in dry and sandy habitats, including wadis and sand dunes. Also found in steppes, wastelands, roadsides, dry grasslands, as a weed in barley, fig, olive and pistachio crops.

**Distribution:**

Eastern Mediterranean, western Asia and the Middle East.

**Altitude:** -300 - 1500 m

<i>Aegilops kotschy</i>	May be confused with: <i>Aegilops peregrina</i>
Spike slender, appearing "regular" as awns of glumes and lemmas equal in length; glumes of lowest fertile spikelet with 3 awns.	Spike stout, appearing "irregular" due to variable lengths of glume and lemma awns; glumes of lowest fertile spikelets with 1-2 awns.

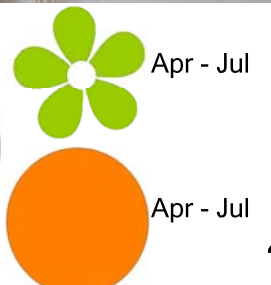
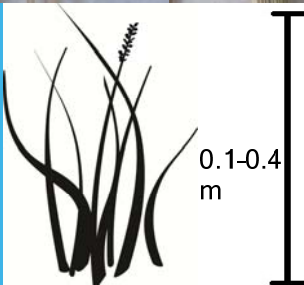
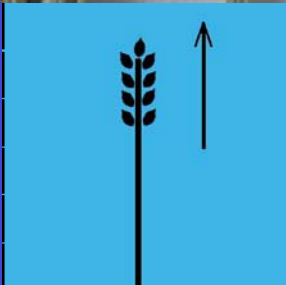


All populations priority for collection.

**References:** Slageren, M.W. van (1994) Wild Wheats: A Monograph of *Aegilops* L. and *Amblyopyrum* (Jaub. & Spach) Eig. Wageningen Agricultural University Papers; GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.



No seed image available



**HABIT:** Culms often densely tufted, 18-30(-60) cm high, erect or geniculately ascending. Leaf-sheath oral hairs ciliate, auricles falcate. Ligule an eciliate membrane.

**LEAVES:** Leaf-blades glabrous or sparsely hairy, up to 17 cm long, 2-6 mm wide.

**INFLORESCENCE:** Spikes 5-10 cm long (excluding the awns), cylindrical, with 0(-2) vestigial spikelets at the base rachis breaking up at internodes at maturity. Fertile spikelets 5-13, glumes of lateral spikelets 5-7.5 mm long, truncate, with a short, very blunt tooth on the upper margin, awns of terminal spikelet shorter than the spike.

**GLUMES:** Equal, shorter than spikelet, oblong, 5-6 mm long, coriaceous, not keeled, 7-9 -veined, venation ribbed, apex with a unilateral tooth, truncate. Fertile lemma oblong, or ovate, 6-7 mm long, coriaceous, not keeled, 5 -veined, apex entire, truncate, sometimes awned. Principal lemma awn 30-40 mm long, those of lower spikelets if present up to 18 mm. Palea 2 -veined, keels scaberulous.

**FRUIT:** Caryopsis with adherent pericarp; hairy at apex.

### Habitat:

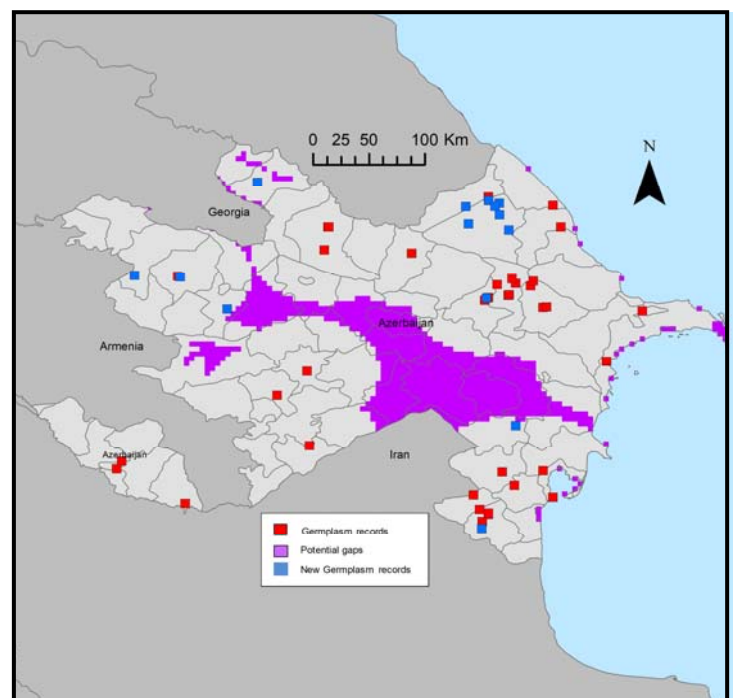
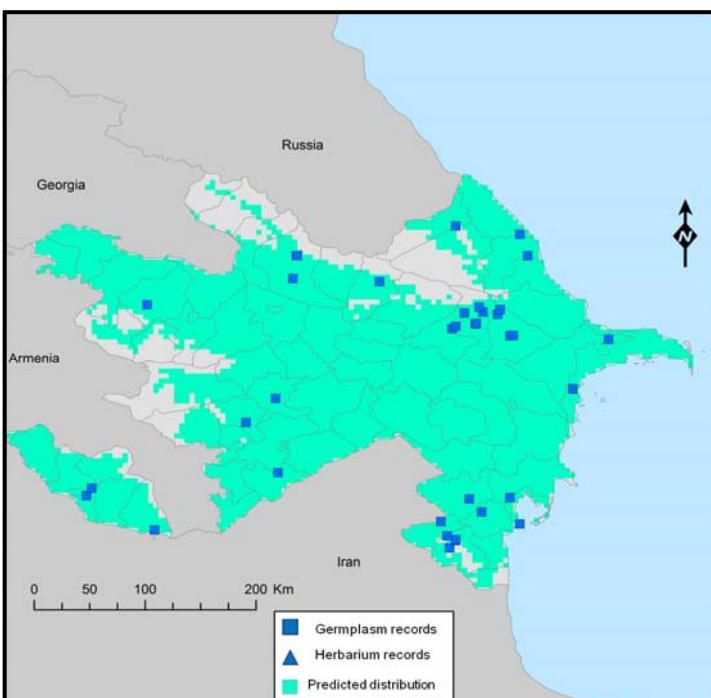
A wide range of habitats including: grasslands, fallow ground, steppes, wastelands, roadsides, within cultivation, forests, stony slopes.

### Distribution:

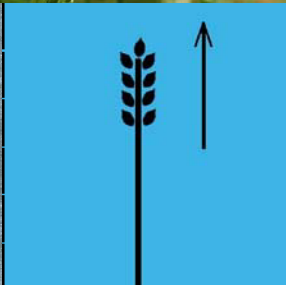
Eastern Europe, Central and Western Asia, from the Caucasus to India and China.

**Altitude:** 1300 - 2700 m

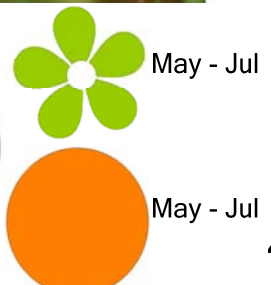
<i>Aegilops tauschii</i>	May be confused with: <i>Aegilops vavilovii</i>
Inflorescence 4-8 cm, barely tapering towards apex.	Inflorescence 10-15 cm long, tapering towards apex.



**References:** Slageren, M.W. van (1994) Wild Wheats: A Monograph of *Aegilops* L. and *Amblyopyrum* (Jaub. & Spach) Eig. Wageningen Agricultural University Papers. GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.



0.1-0.5 m



Secondary Gene Pool relative of *Triticum aestivum* subsp. *compactum*

**HABIT:** Annual herbs, caespitose. Culms erect, or geniculately ascending, 15–45 cm long. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane.

**LEAVES:** Leaf-blades flat, or involute, 5–10 cm long, 1–2 mm wide, glabrous, or pilose.

**INFLORESCENCE:** Racemes single, lanceolate, bilateral, 3–6 cm long, bearing (3–)4–6 fertile spikelets on each. Rhachis tough or fragile at the nodes. Spikelet packing broadside to rhachis. Basal sterile spikelets rudimentary, 2–3 in number. Spikelets oblong, laterally compressed, 7–10 mm long, when rachis fragile falling entire, with interodes.

**GLUMES:** Equal, shorter than spikelet, oblong, 7–10 mm long, coriaceous, not keeled, 7–9 -veined, venation ribbed, surface smooth, or scabrous, apex dentate, 3-fid, awned, 2–3 -awned, awn 10–60 mm long. Fertile lemma oblong, 7–10 mm long, coriaceous, not keeled, 5-veined, apex dentate, bifid, 3-awned on distal spikelets. Principal lemma awn 5–6 mm long overall. Palea 2-veined, keels scaberulous.

**FRUIT:** Caryopsis with adherent pericarp, hairy at apex. Disseminule comprising a rhachis internode, or inflorescence.

**Habitat:**

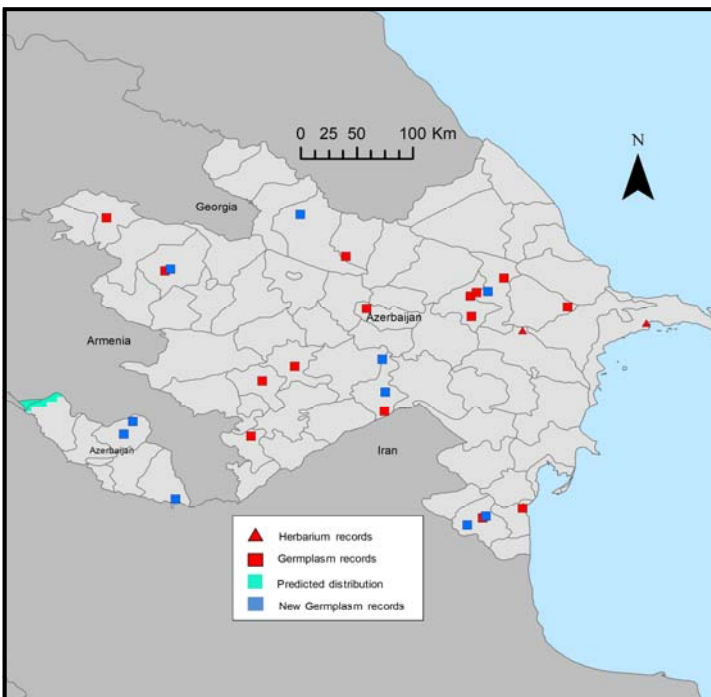
Dry, disturbed habitats e.g. wastelands, on the edges of and within cultivation, roadsides, dry rocky slopes, field edges, woodland, forest and scrub, dry riverbeds.

**Distribution:**

Mediterranean, Turkey, Iran, Crimea, Caucasus, Asia as far east as Pakistan, in Africa only in the Atlas mountains.

**Altitude:** 500 - 1200 m

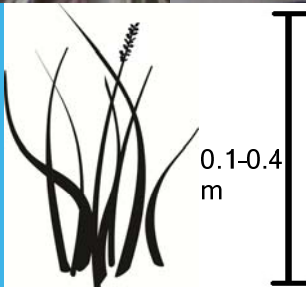
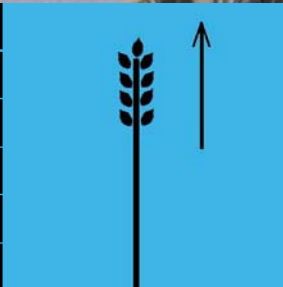
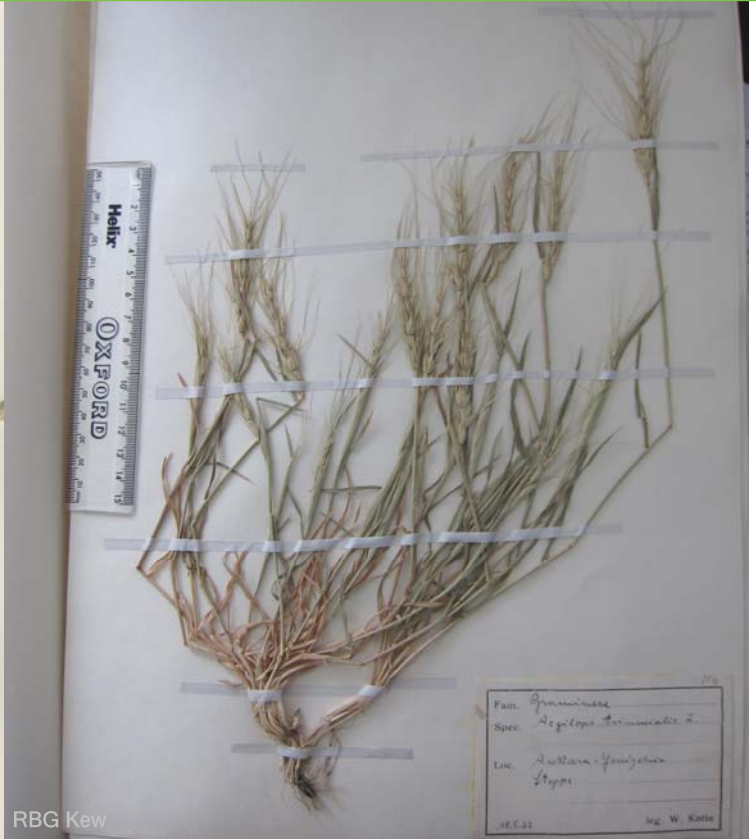
<i>Aegilops triuncialis</i> var. <i>triuncialis</i>	May be confused with: <i>Aegilops neglecta</i>
Inflorescence subcylindrical, 2.5–6 cm long; glumes of apical spikelets with 3 awns.	Inflorescence ovoid to oblong, 1.5–4.5(–6) cm long; glumes of apical spikelets with 2–3 awns.



All populations priority  
for collection.

**References:** Slageren, M.W. van (1994) Wild Wheats: A Monograph of *Aegilops* L. and *Amblyopyrum* (Jaub. & Spach) Eig. Wageningen Agricultural University Papers  
GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.

Secondary Gene Pool relative of *Triticum aestivum* subsp. *compactum*



Secondary Gene Pool of *Triticum aestivum* subsp. *compactum*

**HABIT:** Annual herbs, caespitose, with many tillers. Culms erect, or decumbent, 10-30 cm long. **LEAVES:** Leaf-sheath oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blades 3-10 cm long; 1-2 mm wide. Leaf-blade surface glabrous, or pilose.

**INFLORESCENCES:** A single, narrowly ovoid spike, bilateral, deciduous as a whole, 1.5-4 cm long, with (3-)5-6 spikelets of which upper 1-2 sterile and an additional (2-)3 rudimentary spikelets. Spikelets obovate, laterally compressed; 7-11 mm long, falling entire, deciduous with accessory branch structures.

**GLUMES:** Coriaceous, margins hyaline, obovate, 5-8 mm long, widest above middle and then abruptly constricted, those of apical spikelets much reduced. Lemmas 6-8 mm long, narrowly ovate-elliptical. Glumes awns 3-4(-5), 20-35 mm long, lemma apex with 1-3 awns, 2 as long as glume awns, 1 reduced.

**FRUIT:** Caryopsis with adherent pericarp, free from lemma and palea, ellipsoid, hairy at apex. Dissemminule comprising an inflorescence.

**Habitat:**

Grasslands, fallow fields, margins of cultivation, within forests and plantations.

**Distribution:**

Turkey, Caucasus, Aegean islands and northern Middle East.

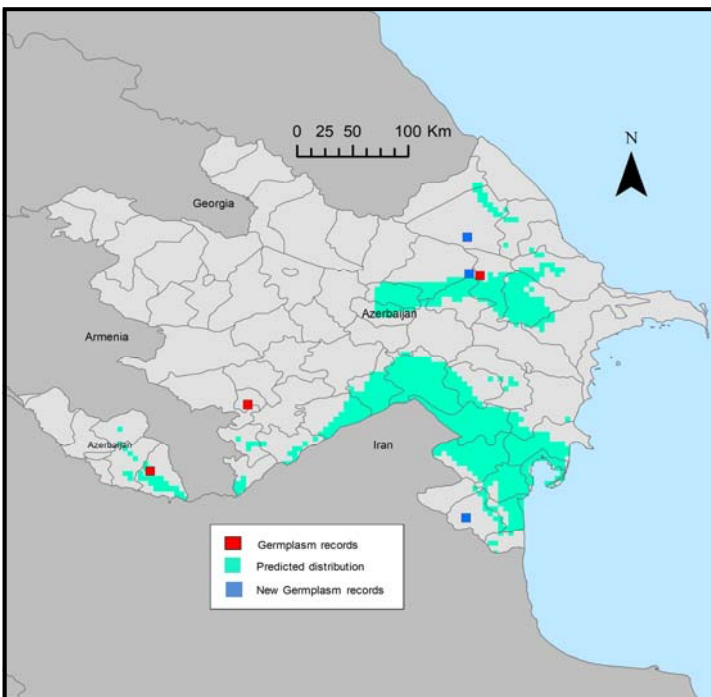
**Altitude:** 0 - 1800 m

*Aegilops umbellulata*

May be confused with:  
*Aegilops geniculata*

Spikes with 5-6 spikelets of which lower 2-3 are fertile; rudimentary spikelets usually 3; fertile spikelets obovoid-ellipsoid, widest above the middle, then abruptly constricted.

Spikes with (2-)3-4 spikelets of which lower (1-)2-3 are fertile; rudimentary spikelets usually 1; fertile spikelets ovoid, widest at or below middle.



All populations priority  
for collection.

**References:** Slageren, M.W. van (1994) Wild Wheats: A Monograph of *Aegilops* L. and *Amblyopyrum* (Jaub. & Spach) Eig. Wageningen Agricultural University Papers; GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.



RBG Kew



RBG Kew

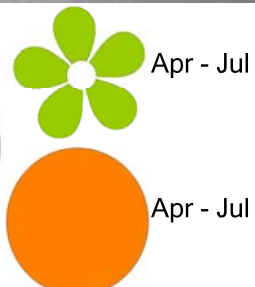
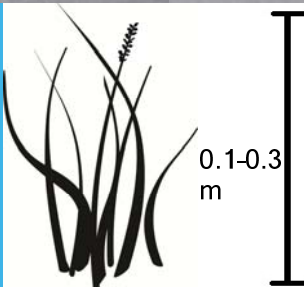
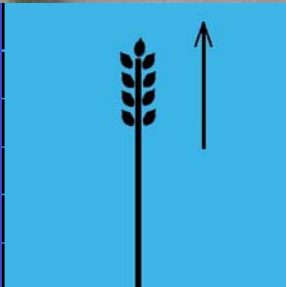


RBG Kew



RBG Kew

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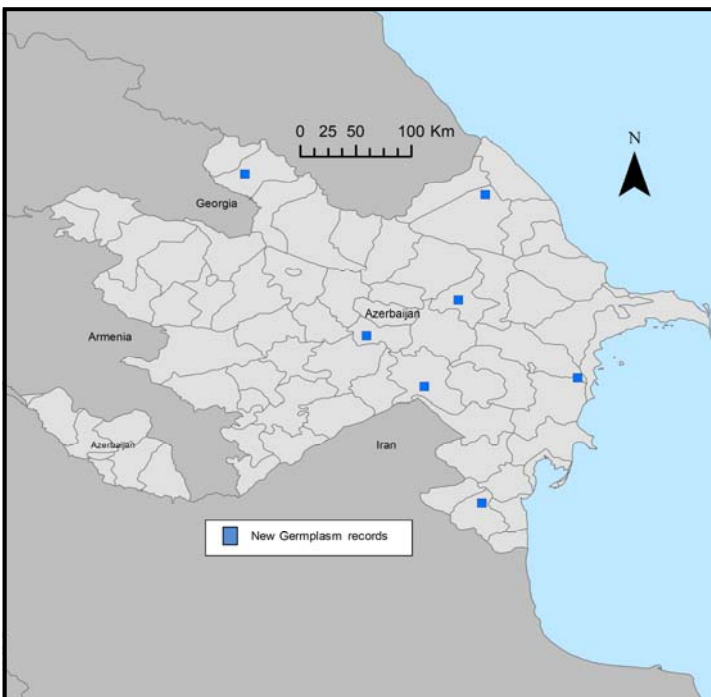


Tertiary Gene Pool relative of *Avena sativa* L.**HABIT:** Annual, culms 30-100 cm high, erect or ascending, slender to rather stout, simple.**LEAVES:** Leaf-blades up to 30 cm long, 3-8 mm wide, sparsely hairy to ciliate, ligules 2-5 mm long.**INFLORESCENCE:** Panicle subsecund, up to 30(-50) cm long and 12 cm wide, loose with smooth or faintly scaberulous branches. Spikelets 18-30 mm long, 2-3-flowered, the rachilla articulated beneath each floret and with a barren extension.**GLUMES:** Persistent, lanceolate, 16-26 mm long, apex acuminate, exceeding apex of florets, thinner than fertile lemma. Lemmas 12-20 mm long, upper surface scabrous, with long stiff hairs up to the insertion of the awn, lower surface densely hairy, apex bifid, with an awn 3-6 cm long, geniculate. Palea 10-18 mm long.**FLOWER:** Anthers 3. Ovary pubescent.**FRUIT:** Caryopsis with adherent pericarp, sulcate on hilar side, hairy all over. Hilum linear.**Habitat:**

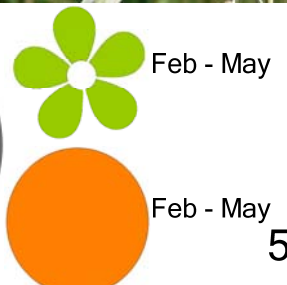
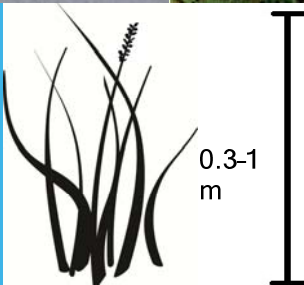
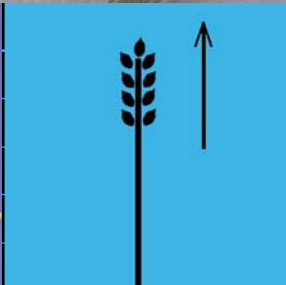
Disturbed sites, hillsides on shallow soils, shrublands, open grasslands, salt marshes, edges of paddy fields.

**Distribution:**

Circum-Mediterranean, northern Middle East, Central and Eastern Asia.

**Altitude:** 0 - 240 m*Avena barbata*May be confused with:  
*Avena fatua*Ligule obtuse; lemma tip biaristulate;  
epiblast 0.3-0.4 mm wide.Ligule acute; lemma tip bidenticulate;  
epiblast 0.45-0.7 mm wide.All populations priority  
for collection.**References:** Baum, B.R. (1971). Oats: Wild and Cultivated. A Monograph of the Genus *Avena* L. (Poaceae). Biosystematics Research Institute Monograph No. 14. Supply and Services Canada, Ottawa.

Tertiary Gene Pool relative of *Avena sativa* L.



Tertiary relative of *Avena sativa* L.

**HABIT:** Annual, culms solitary, or caespitose. Culms erect or ascending, 13-60 cm long. Culm-internodes glaucous. Lateral branches lacking.

**LEAVES:** Leaf-sheaths glabrous on surface, or pilose, often appearing glaucous. Ligule an eciliate membrane, 1.8-3 mm long. Leaf-blades 3-10 cm long, 2-4 mm wide, surface glabrous or pilose.

**INFLORESCENCE:** Panicle open, elliptic, nodding, 6-15 cm long; 4-6 cm wide. Spikelets pendulous, solitary. Fertile spikelets pedicelled. Pedicels filiform. Fertile spikelets comprising 2-3 fertile florets; with a barren rhachilla extension. Spikelets lanceolate, laterally compressed, 18-25 mm long, breaking up at maturity. Floret callus evident, bearded, obtuse, disarticulating obliquely.

**GLUMES:** Persistent. Lower glume lanceolate, 11-15 mm long. Upper glume elliptic, 20-25 mm long. Florets: Fertile lemma lanceolate, 20 mm long, coriaceous, much thinner above, without keel, 7 -veined. Lemma surface glabrous, or pilose, hairy above. Lemma apex dentate, 2 -fid, awned, 3 -awned. Principal lemma awn dorsal, arising a third to a half of way up back of lemma, geniculate, 30 mm long overall, with twisted column.

**FLOWER:** Anthers 3. Ovary pubescent all over.

**FRUIT:** Caryopsis with adherent pericarp, sulcate on hilar side, hairy all over. Hilum linear.

**Habitat:**

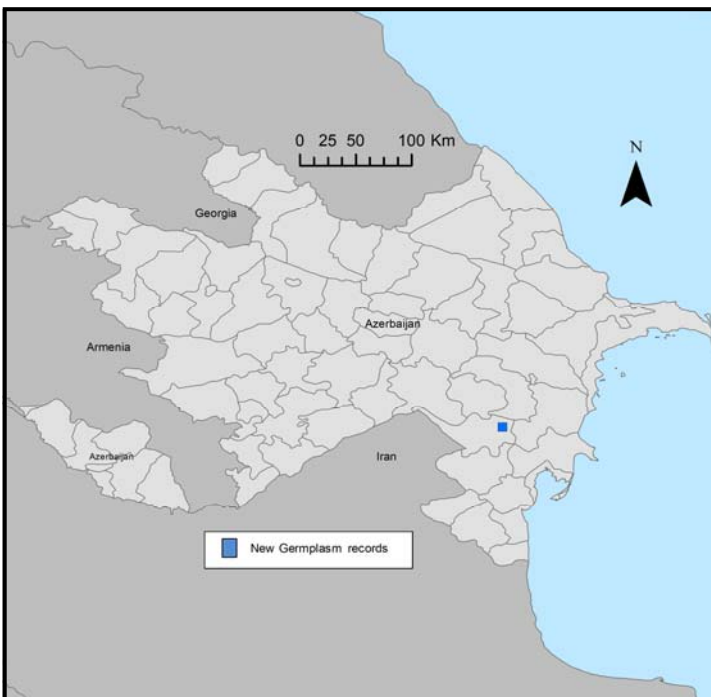
In areas protected from grazing, slopes, calcareous hills, sandy areas, steppes and maquis.

**Distribution:**

Europe: eastern. Africa: north and Macaronesia. Asia-temperate: Soviet Middle Asia, Caucasus, and western Asia.

**Altitude:** 200 - 1100 m

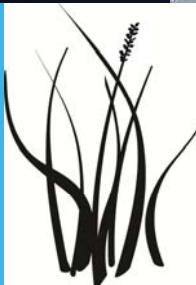
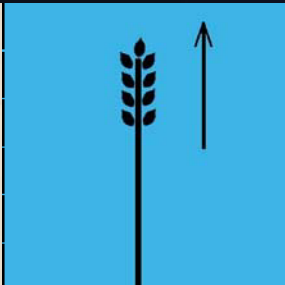
<i>Avena eriantha</i>	May be confused with: <i>Avena ventricosa</i>
Glumes unequal, upper glume larger than lower.	Glumes more or less equal in size.



All populations priority  
for collection.

**References:** Flora of Pakistan p 508 via efloras.org; 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>.

Tertiary relative of *Avena sativa* L.



**HABIT:** Annual. Relatively tall plants, 80-160 cm high. Culms 30-150 cm long, erect or geniculate ascending, stout, simple.

**LEAVES:** Leaves cauline. Leaf blades 10-45 cm long, 3-15 mm wide, glabrous, surface rough, ligules up to 6 mm long.

**INFLORESCENCE:** Panicles nodding (sometimes one-sided), narrowly to broadly pyramidal, 10-40 cm long and up to 20 cm wide, loose with scaberulous branches. Spikelets cuneate, pendulous, 18-30 mm long, 2-3-flowered, the rhachilla disarticulating below each floret.

**GLUMES:** Persistent, exceeding florets, 18-28 mm long, lanceolate, apex finely acute. Fertile lemma 12-25 mm long, with a basal callus, densely bearded around the callus with hairs up to 4 mm long, brown and densely hispid in lower two thirds, green and rough towards the tip, unequally and shortly 2-4-toothed at the apex, awn 2.5-4 cm long, geniculate.

**FLOWER:** Ovary pubescent. Anthers 3 mm long.

**FRUIT:** Caryopsis with adherent pericarp, 6-8 mm long, hairy all over. Hilum linear.

**Habitat:**

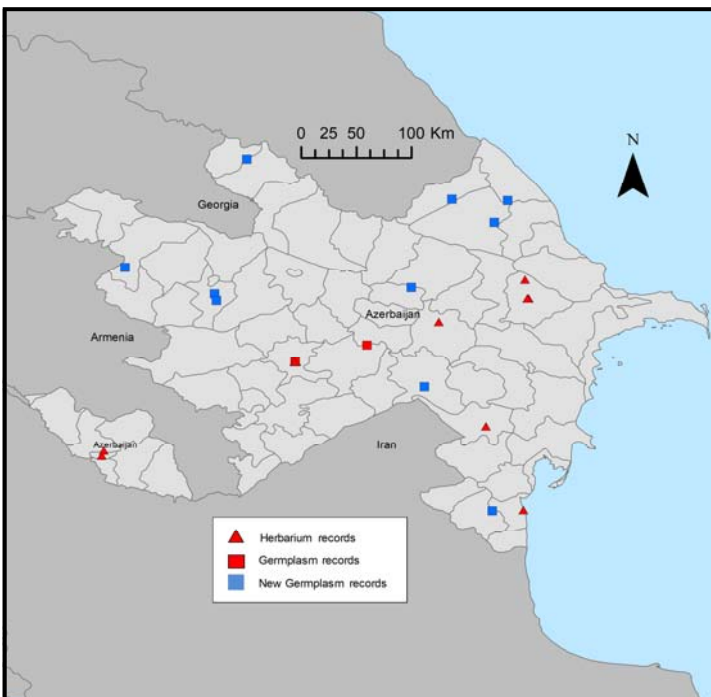
Roadside weed or weed of arable land.

**Distribution:**

Distributed globally.

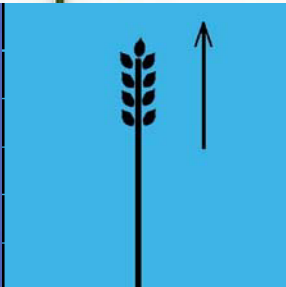
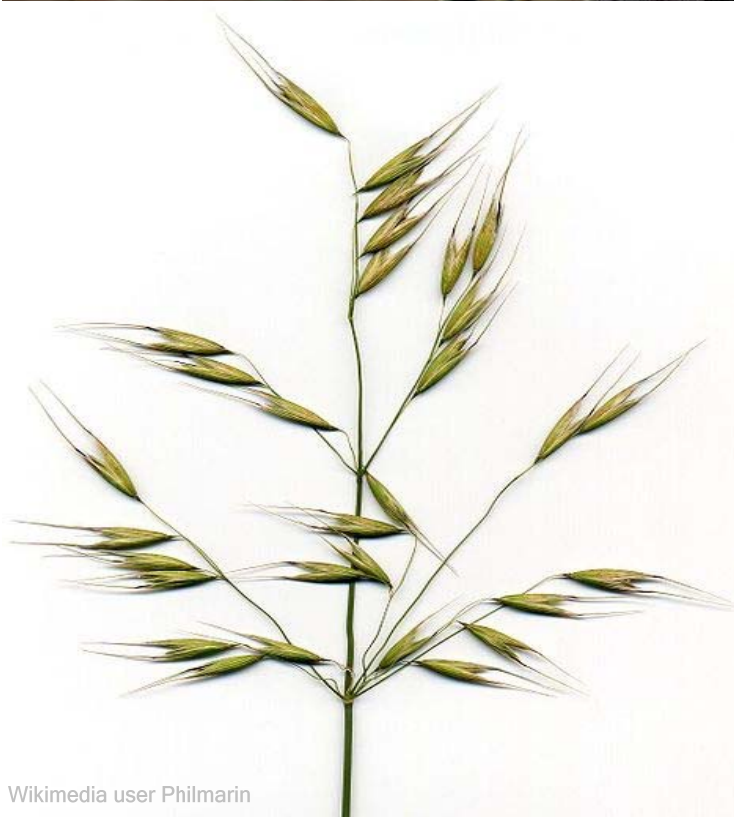
**Altitude:** 0 - 2400 m

<i>Avena fatua</i>	May be confused with: <i>Avena sterilis</i>
Rhachilla disarticulating between each floret; every lemma with a basal callus.	Rhachilla disarticulating only below lowest floret; only lowest lemma with a basal callus.

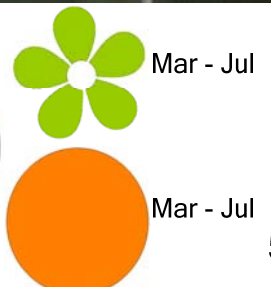


All populations priority  
for collection.

**References:** GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>; Phillips, S. (1995) Poaceae. In: Flora of Ethiopia and Eritrea. Volume 7, pp 37



0.3-1.5 m



**HABIT:** Annual. Culms 30-180 cm long, geniculately ascending, or decumbent, 2-5-noded.

**LEAVES:** Cauline, blades 10-60 cm long, 4-18 mm wide, surface rough.

**INFLORESCENCE:** Paniculate, nodding, pyramidal, 10-45 cm long, 5-25 cm wide. Spikelets 23-50 mm long, breaking up at maturity, disarticulating above glumes but not between florets. Fertile spikelets comprising 2-5 fertile florets, with a sterile rhachilla extension.

**GLUMES:** Persistent, exceeding apex of florets. Fertile lemma lanceolate, 15-40 mm long, coriaceous, much thinner above, apex dentate, bifid, with a dorsal awn, arising 0.5 way up back of lemma, geniculate, 30-80 mm long, with twisted column. Column of lemma awn hispidulous to pubescent. Palea keel ciliate.

**FLOWER:** Ovary pubescent all over. Floret callus evident, bearded, obtuse, disarticulating obliquely.

**FRUIT:** Caryopsis with adherent pericarp, 11-12 mm long, hairy all over. Hilum linear.

**Habitat:**

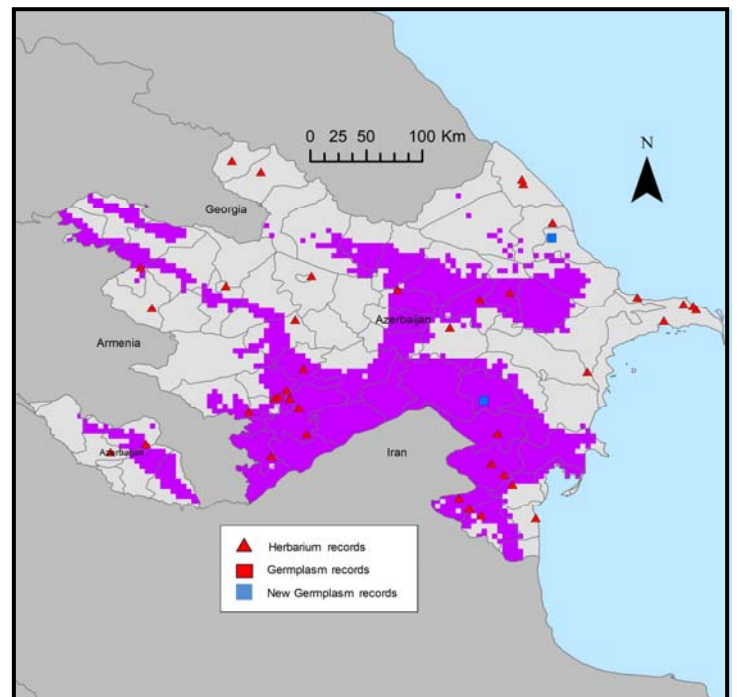
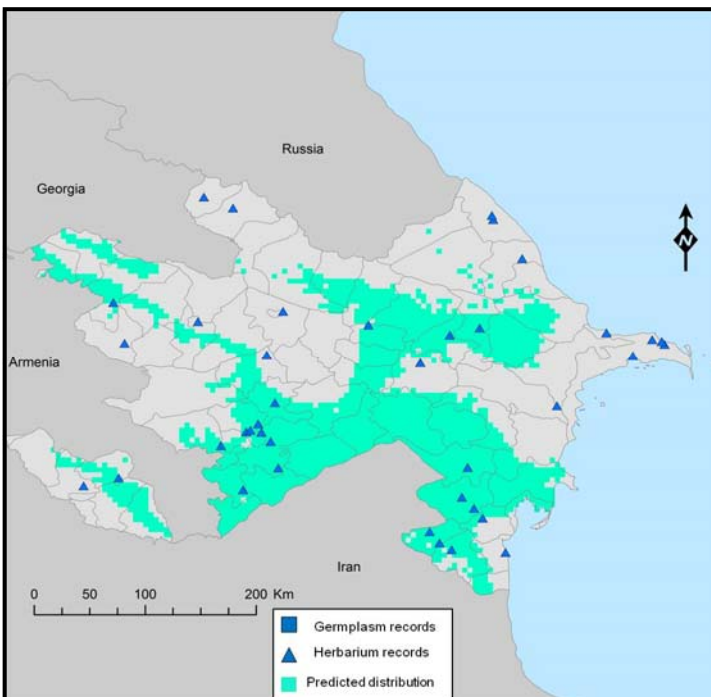
Arable land, especially fields of cereals, disturbed open ground, roadsides and field edges.

**Distribution:**

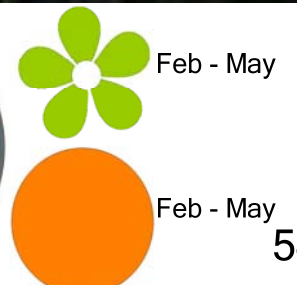
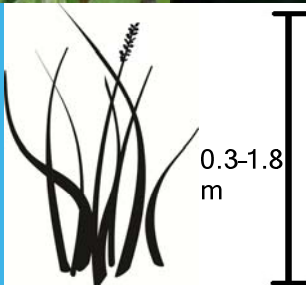
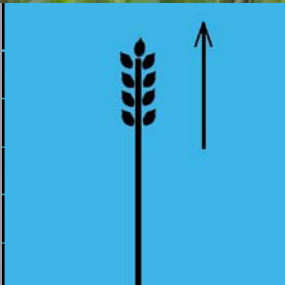
Distributed globally.

**Altitude:** 2100 - 2400 m

<i>Avena sterilis</i>	May be confused with: <i>Avena fatua</i>
Rhachilla disarticulating only below lowest floret, only lowest lemma with a basal callus.	Rhachilla disarticulating between each floret, every lemma with a basal callus.



**References:** GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.; Phillips, S. (1995) Poaceae. In: Flora of Ethiopia and Eritrea. Volume 7, p 37





Primary Gene Pool relative of *Avena sativa* L.

**HABIT:** Annual herbs. Juvenile growth prostrate to erect, becoming erect, 30-120 cm tall.

**LEAVES:** Ligule acute.

**INFLORESCENCE:** Panicles equilateral, at maturity only lowermost floret disarticulating. Spikelets 2-3.5 cm long excluding awns, 3-4 florets per spikelet.

**GLUMES:** Approximately equal in length, 25-45 mm long, each with 9-11 veins. Only lowermost floret disarticulating at maturity, scars broadly elliptic, periphery ring comprising 1/3 of scar. Awns inserted about lower 1/3 of lemma. Lemmas densely beset with macrohairs below awn insertion point, or sometimes only a few hairs present, apex bisubulate, sometimes bidenticulate. Paleas with 1-2(-3) rows of cilia along edges of keels, underside beset with prickles or hairs. Lodicule sativa type.


**Habitat:**

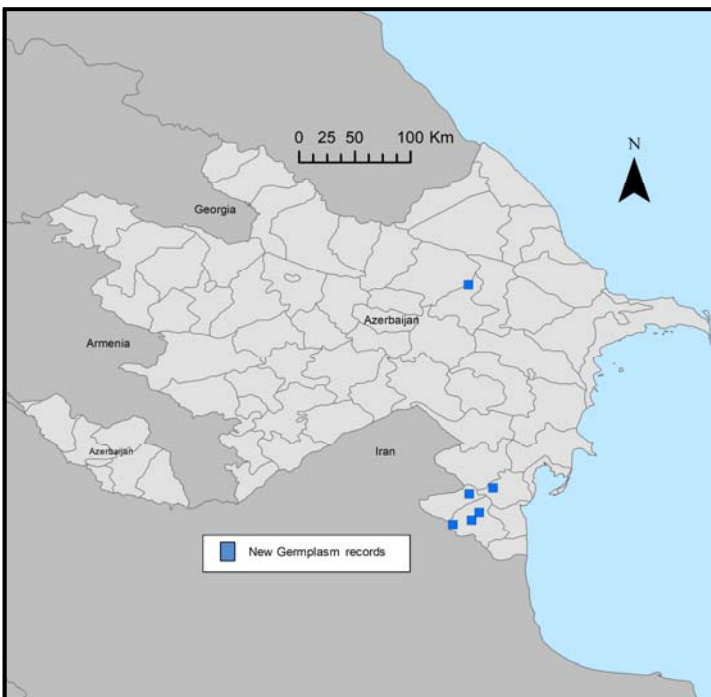
Fields, arid places, rocky slopes, river banks, steppes, farmland, in hedges and disturbed habitats.

**Distribution:**

Northern Europe, Mediterranean, western Asia, northern Middle East, Pakistan and India, Canary Islands. Introduced in Brazil.

**Altitude:** unknown

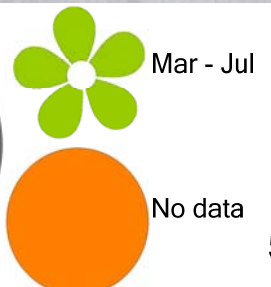
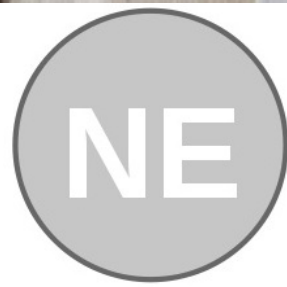
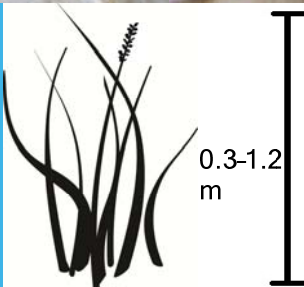
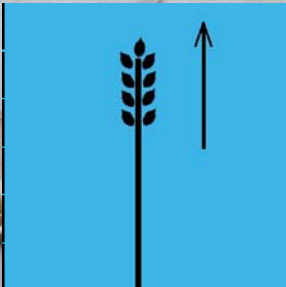
<i>Avena trichophylla</i>	May be confused with: <i>Avena sterilis</i>
Lemma tip bisubulate.	Lemma tip bidenticulate. 



All populations priority  
for collection.

**References:** Baum, B.R. (1971). Oats: Wild and Cultivated. A Monograph of the Genus *Avena* L. (Poaceae).

Primary Gene Pool relative of *Avena sativa* L.



Tertiary Gene Pool relative relative of *Avena sativa* L.

**HABIT:** Annual herbs, 25-70 cm tall. Juvenile growth semi-prostrate to erect, becoming erect. Appearance glaucous.  
**LEAVES:** Ligules obtuse with a mucro.  
**INFLORESCENCES:** Panicle one-sided or nearly so. Spikelets 1.7-2.4 cm long excluding awns, with 2 florets per spikelet. Glumes 25-40 mm long, slightly unequal, lower glume 1/8 to a 1/4 the size of the upper glume, each with 7-9 veins. Only lowermost floret disarticulating at maturity. Scars linear, periphery ring comprising 1/8 of scar. Lemma awns inserted between upper 1/3 to 1/2 and continuing in the same plane. Lemma structure tough, tips bisubulate with 2 veins ending in each lobe, macrohairs absent below insertion point of awn, but tips often densely hairy. Paleas with 1-2 rows of cilia along edges of keels.

**Habitat:**

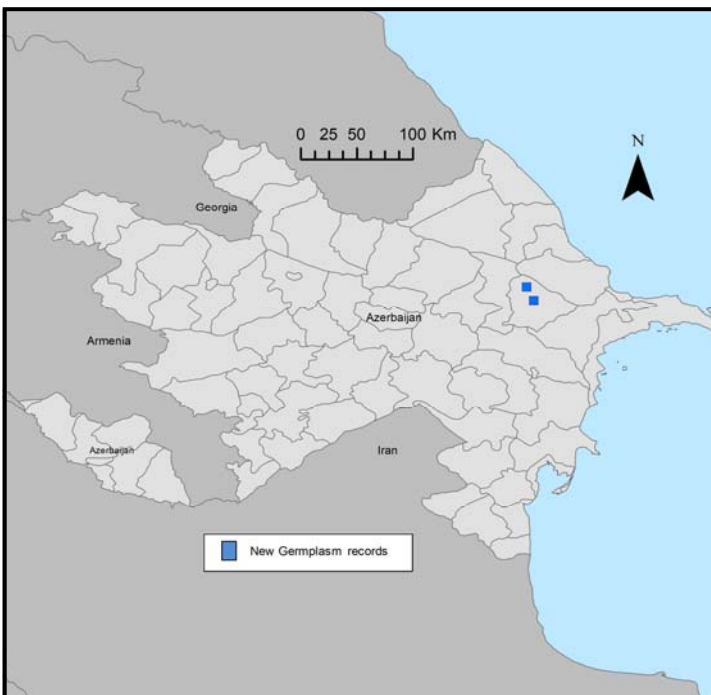
Rocky plateaus, sandy deserts, disturbed grasslands, forest edges, often found mixed with other *Avena* species.

**Distribution:**

Algeria, Libya, Iraq, Saudi Arabia, Cyprus, Azerbaijan.

**Altitude:** unknown

<i>Avena ventricosa</i>	May be confused with: <i>Avena eriantha</i>
Glumes more or less equal in size	Glumes unequal, upper glume larger than lower.



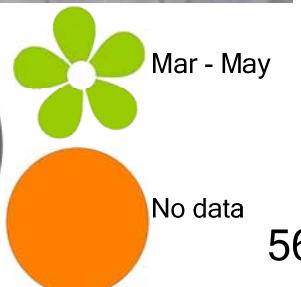
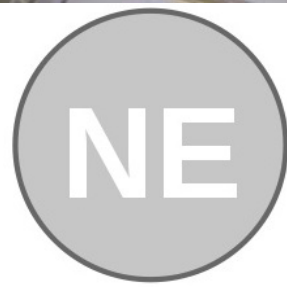
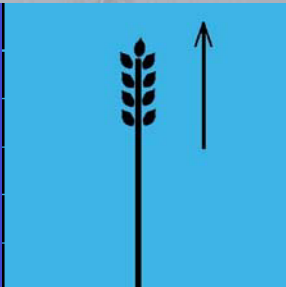
All populations priority for collection.

**References:** Baum, B.R. (197). Oats: Wild and Cultivated. A Monograph of the Genus *Avena* L. (Poaceae).

Tertiary Gene Pool relative relative of *Avena sativa* L.



No seed image available



Tertiary Gene Pool relative relative of *Avena sativa* L.

HABIT: Annual herbs. Culms erect, 40-120 cm tall.

LEAVES: Ligules obtuse.

INFLORESCENCES: Panicles equilateral. Spikelets indeterminate, 1.6-3 cm long excluding awns, 2 florets per spikelet. All the florets disarticulating at maturity. Glumes equal in length or slightly unequal, 15-30 mm long, with 5-7 veins. Scars oval to narrowly elliptic, periphery ring comprising 1/3 to 1/2 of scar. Awns inserted at about centre point of lemma. Lemma structure tough, tips bisetulate or biaristulate, dense macrohairs present below insertion point of awn. Paleas with 1 row of cilia along keels, underside prickly or glabrous.

**Habitat:**

On sandy or rocky substrates, steppes, volcanic debris and gravel.

**Distribution:**

Mediterranean, Turkey and the Middle East, Caucasus, Turkmenistan, Pakistan.

Altitude: unknown

<i>Avena wiestii</i>	May be confused with: <i>Avena barbata</i>
Spikelets 16-20 mm long; lemma toothed below 2 setae on margins	Spikelets 20-26 mm long; lemma apex tapering, ending in 2 setae



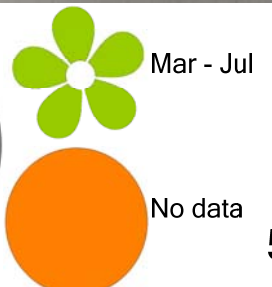
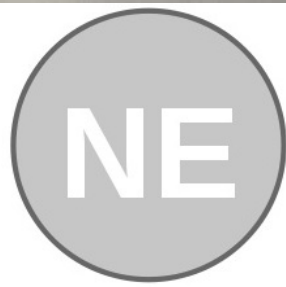
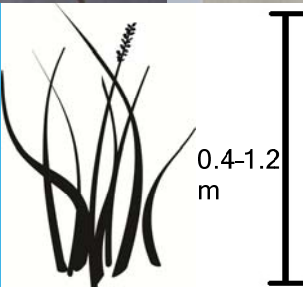
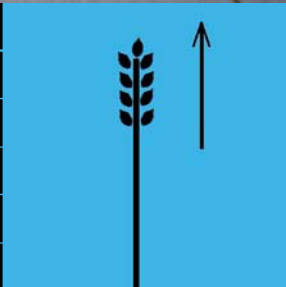
All populations priority  
for collection.

References: Baum, B.R. (197). Oats: Wild and Cultivated. A Monograph of the Genus *Avena* L. (Poaceae).

Tertiary Gene Pool relative relative of *Avena sativa* L.



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**HABIT:** Perennial clump-forming grass. Culms 50-130 cm long, erect to somewhat geniculate, nodes glabrous, basal internodes swollen.

**LEAVES:** Leaf blades 10-20 cm long by 3-7 mm wide, surface shortly scabrous, often also longer soft hairs present adaxially. Auricles up to 5.5 mm long, falcate, often completely surrounding culm.

**INFLORESCENCES:** Formed of solitary spicate racemes, bilateral, 45-165 mm long by 6-10 mm wide, flattened, disarticulating at the nodes. Spikelets arranged in threes: 1 central and fertile, 2 sterile. Sterile spikelets pedicelled, well-developed, male, lanceolate, dorsally compressed, 13-25 mm long, deciduous with fertile spikelets. Fertile spikelets sessile, with a barren rhachilla extension, lanceolate, dorsally compressed, 8-11 mm long, falling entire.

**GLUMES:** Collateral, similar, lanceolate, 5-8 mm long, margins eciliate, or ciliate, apex with a single awn 10-18 mm long. Fertile lemma lanceolate, 8-11 mm long, coriaceous, not keeled, 5 -veined. Lemma apex acuminate, 1 -awned. Principal lemma awn 20-35 mm long overall, limb scabrous.

**FRUIT:** Caryopsis with adherent pericarp, sulcate on hilar side, hairy at apex. Hilum linear.

**Habitat:**

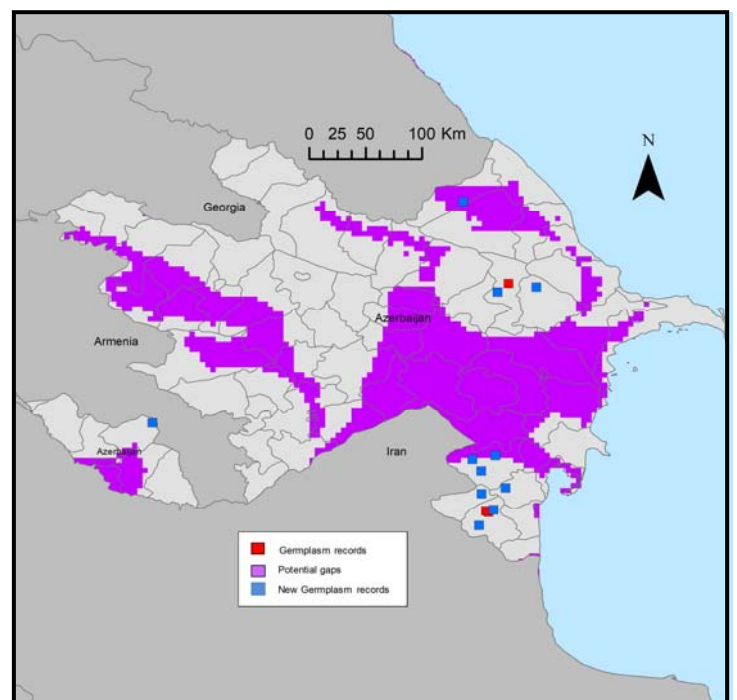
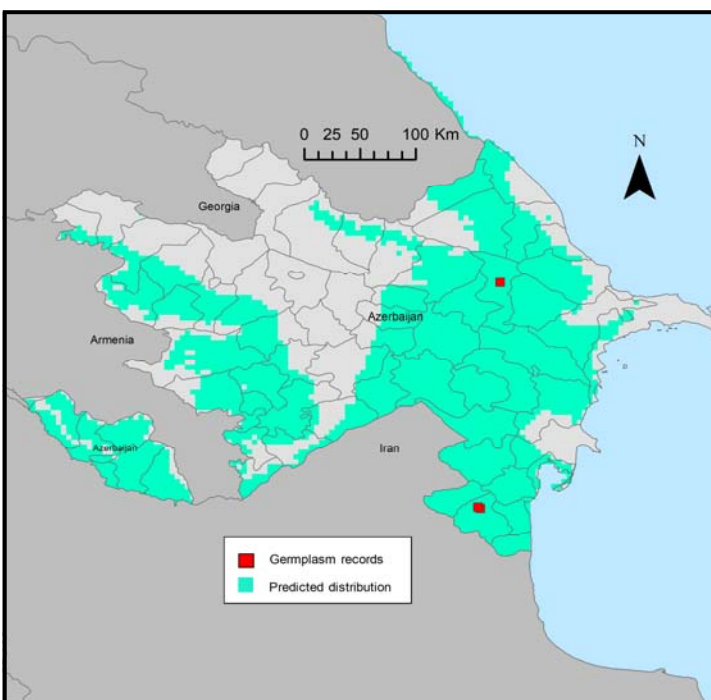
Found in numerous habitat types including wet meadows, dry hillsides, roadsides, fallow fields.

**Distribution:**

Mediterranean region, easterwards to Afghanistan, Caucasus, southern Russia

**Altitude:** unknown

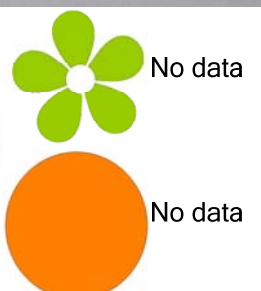
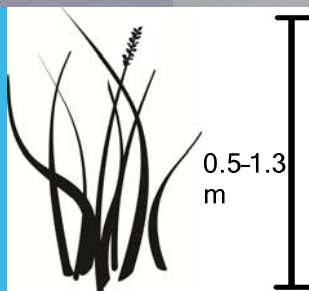
<i>Hordeum bulbosum</i>	May be confused with: <i>Hordeum vulgare</i>
Perennials with a bulbous swelling at base; awns on spikelets up to 2 mm long.	Annuals without bulbous swelling at base; awns on spikelets 20-40 mm long.



**References:** Bothmer, R. von et al. (1991) An Ecogeographical Study of the Genus *Hordeum*. Systematic and Ecogeographic Studies on Crop Gene-pools 7. IBPGR, Rome.; GrassBase <http://www.kew.org/data/grasses-db/www/imp05425.htm>



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**HABIT:** Annual, culms solitary, or caespitose. Culms 10-40 cm long, 3-4-noded.

**LEAVES:** Leaf-sheath auricles absent, or falcate. Ligule an eciliate membrane, 0.5-1 mm long. Leaf-blades 1.5-8 cm long, 1-3.5 mm wide.

**INFLORESCENCE:** Racemes single, oblong, or ovate, bilateral, 2-6 cm long. Rhachis fragile at the nodes, flattened. Spikelet packing broadside to rhachis, internodes oblong, falling with spikelet above. Spikelets in threes. Fertile spikelets sessile, 1 per cluster. Companion sterile spikelets pedicelled, 2 per cluster, well-developed, containing empty lemmas, lanceolate, dorsally compressed, 3-5 mm long, shorter than fertile, deciduous with the fertile. Companion sterile spikelet glumes markedly unequal in width, subulate, 8-26 mm long, winged on margins (upper glume), lemmas 1, exserted from glumes, 3-5 mm long, 1-awned. Fertile spikelets comprising 1 fertile florets, without rhachilla extension.

**GLUMES:** Collateral, similar; gaping. Florets Fertile lemma ovate, 6-8 mm long, coriaceous, 5 -veined.

**FLOWER:** Ovary apex pubescent.

**FRUIT:** Caryopsis with adherent pericarp; ellipsoid, sulcate on hilar side; hairy at apex. Embryo 0.2 length of caryopsis. Hilum linear, 1 length of caryopsis.

**Habitat:**

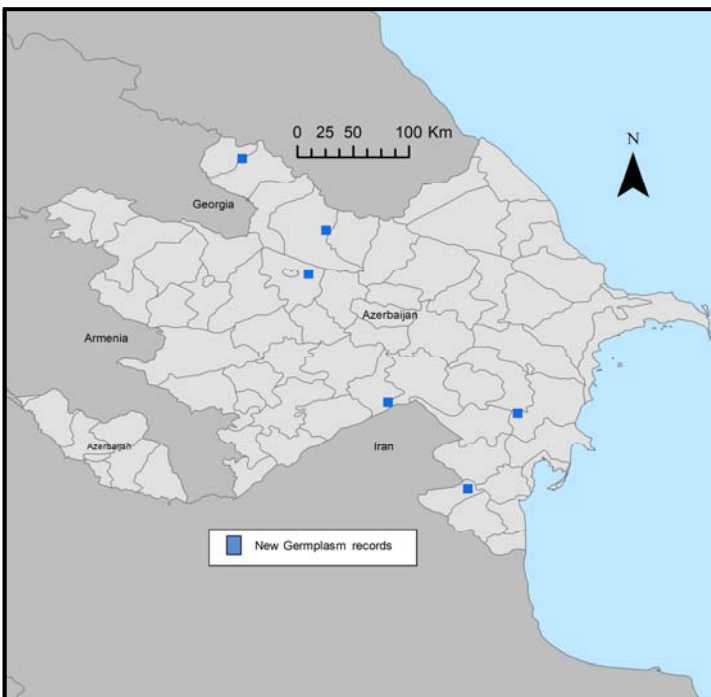
Inland or coastal marshes, meadows and river beds, as a weed in pastures and on waste ground.

**Distribution:**

Distributed globally.

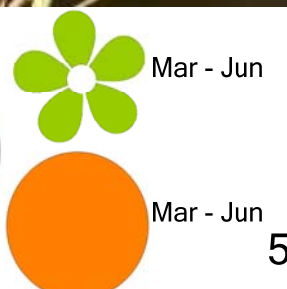
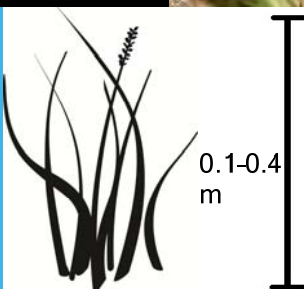
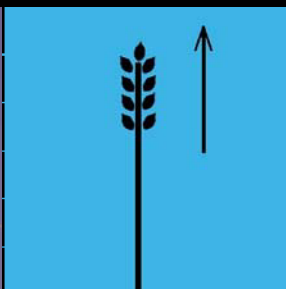
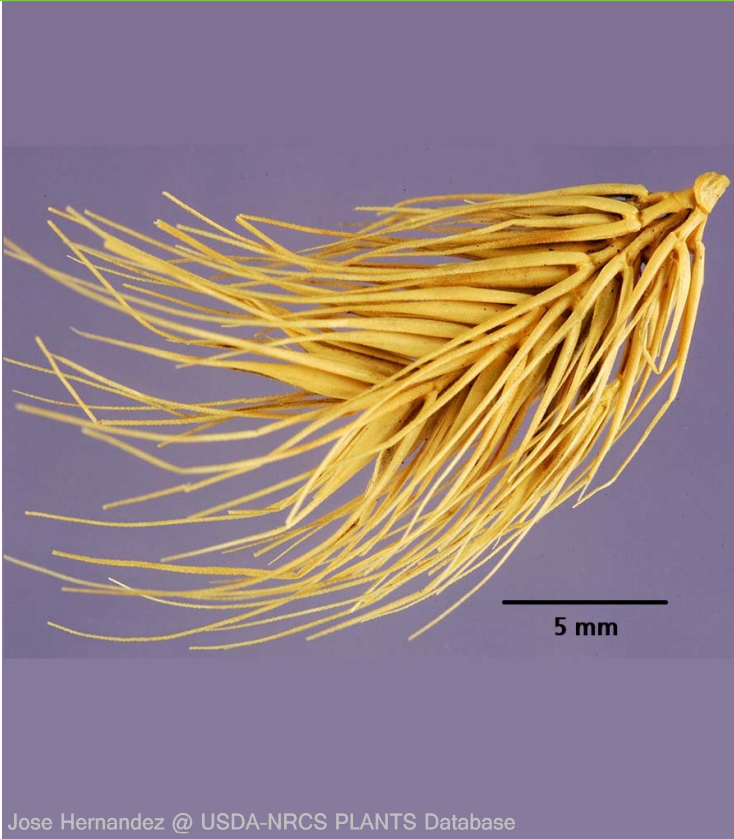
**Altitude:** 0 - 130 m

<i>Hordeum marinum</i>	May be confused with: <i>Hordeum depressum</i>
Awns of lateral spikelet 5-10 mm long.	Awns of lateral spikelet absent or no more than 1-2 mm long.



All populations priority  
for collection.

**References:** Bothmer, R. von et al. (1991) An Ecogeographical Study of the Genus *Hordeum*. IBPGR, Rome.; GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.



**HABIT:** Annual, culms 5-50 cm high, tufted or solitary, erect or geniculate ascending.  
**LEAVES:** Leaf-blades up to 20 cm long, 2-8 mm wide, glabrous or sparsely pubescent.  
**INFLORESCENCE:** Spike oblong, strongly compressed, 2-7(-12) cm long, green or tinged with purple, rachis sparsely ciliate on the margins, fragile. Central spikelet sessile or with a pedicel up to 1.8 mm long.  
**GLUMES:** Lanceolate, long-awned, up to 26 mm long including the awn, fringed with hairs below, lemma lanceolate, 7-12 mm long, scabrid towards the tip, awn 18-50 mm long, anthers 0.2-1.4 mm long. Lateral spikelets well-developed, male or barren, pedicellate, glumes slightly dissimilar, the inner lanceolate, ciliate below, the outer setaceous, both long-awned, 16-30 mm long including the awn, lemma 7-11 mm long, with an awn 10-40 mm long, rhachilla extension slender or stout.  
**FRUIT:** Caryopsis with adherent pericarp, ellipsoid, sulcate on hilar side, hairy at apex. Hilum linear, equalling length of caryopsis.

**Habitat:**

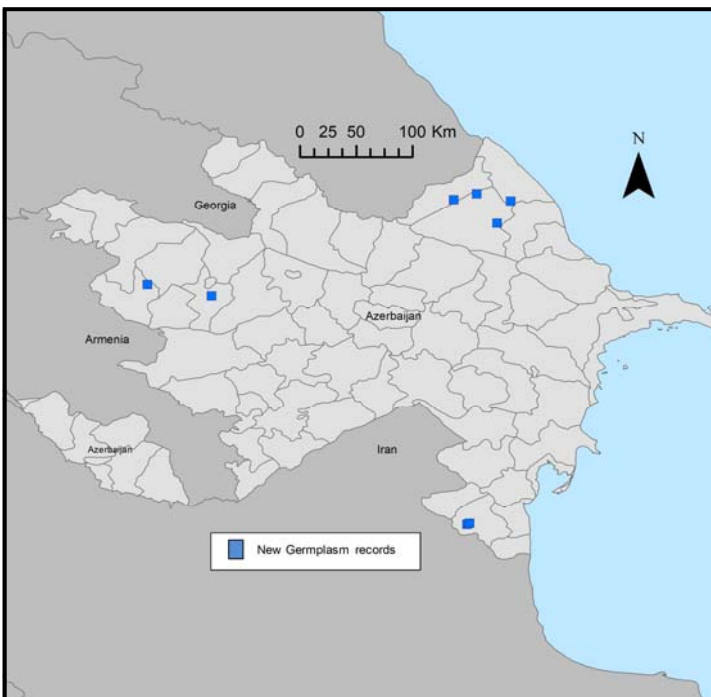
Found as a weed in disturbed habitats and cultivated land, but probably originally native to coastal areas, sandy riversides and grazed areas in wetlands.

**Distribution:**

Distributed globally.

**Altitude:** 0 - 1700 m

<i>Hordeum murinum</i>	May be confused with: <i>Hordeum vulgare</i>
Central spikelet pedicellate to subsessile, less than 2 mm wide; awn 2-4 cm long.	Central spikelet sessile, at least 3 mm wide; awn if present 5-15 cm long.

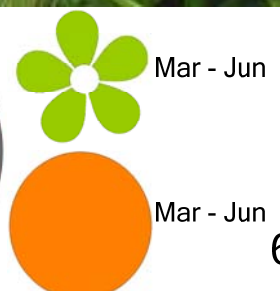
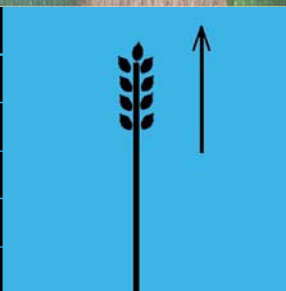


All populations priority  
for collection.

**References:** Bothmer, R. von et al. (1991) An Ecogeographical Study of the Genus *Hordeum*. IBPGR, Rome.; Flora of Pakistan p635 via efloras.org



No seed image available



*Hordeum vulgare* L. subsp. *spontaneum* (K. Koch) Thell.Primary Gene Pool relative of *Hordeum vulgare* L.**HABIT:** Clump-forming perennial. Culms erect, or geniculately ascending, 35-70 cm long.**LEAVES:** Leaf-sheath oral hairs lacking, auricles falcate. Ligule an eciliate membrane. Leaf-blades 5-16 x 0.4-0.8 cm, surface smooth, or scabrous.**INFLORESCENCE:** Racemes solitary, linear, bilateral, 4-9 x 0.6-0.8 cm. Rhachis fragile at the nodes, flattened, margins ciliate, internodes oblong, 3.5-5 mm long, falling with spikelet above. Pedicels oblong. Spikelet packing broadside to rhachis, arranged in threes: one fertile, 2 sterile. Spikelets lanceolate, dorsally compressed, 12-14 mm long, falling entire, deciduous with accessory branch structures. Sterile spikelets well-developed, containing empty lemmas or anthers, lanceolate, dorsally compressed, 4-6 mm long, shorter than fertile spikelets, glumes subulate, lemmas 1, 7-9 mm long. Fertile spikelets with a barren rhachilla extension.**GLUMES:** Collateral, similar, equal in length, linear, or lanceolate, 4-6 mm long, surface pubescent, apex 1-awned, awn 10-15 mm long. Fertile lemma lanceolate or ovate, 12-14 mm long, coriaceous, not keeled, 5-veined, apex acuminate, 1-awned. Anthers 3, 2.5-3 mm long. Ovary pubescent on apex.**FRUIT:** Caryopsis with adherent pericarp, sulcate on hilar side, hairy at apex. Hilum linear.**Habitat:**

Grasslands, meadows, cultivated areas, often weedy.

**Distribution:**

Greece, Turkey, Egypt, South-west Asia from Iran through to Pakistan, northern India and Nepal.

**Altitude:** 0 - 4500 m*Hordeum vulgare* subsp. *spontaneum*

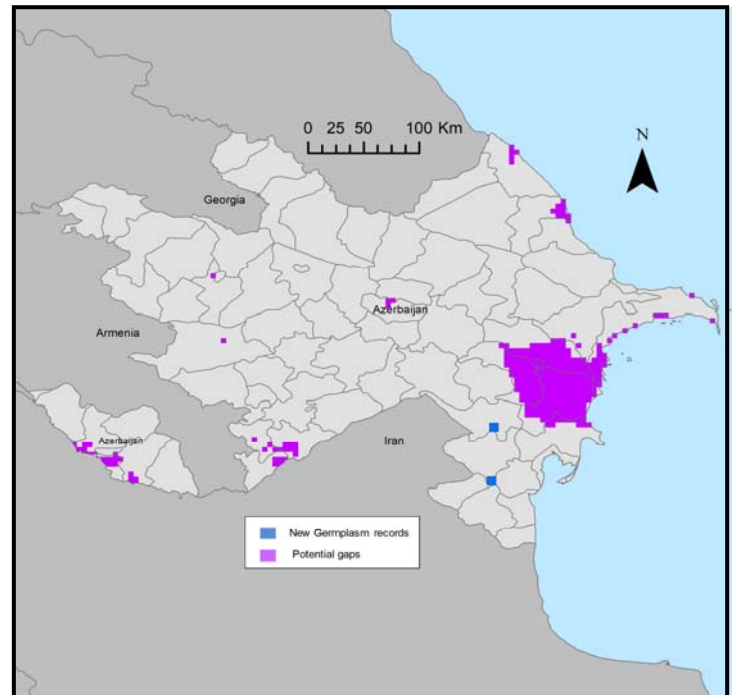
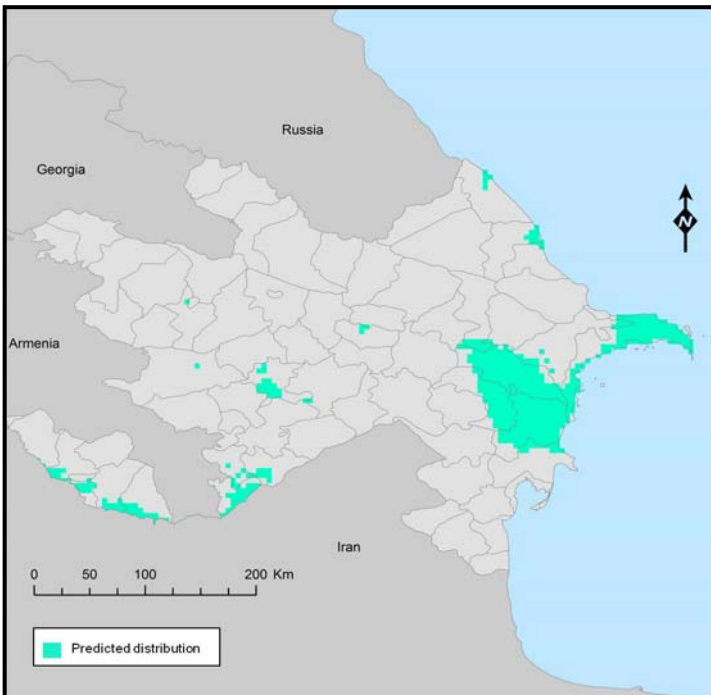
Rachis brittle; spikelets 2-rowed.



May be confused with:

*Hordeum vulgare* subsp. *vulgare*

Rachis tough; spikelets 6-rowed.

**References:** Bothmer, R. von et al. (1991) An Ecogeographical Study of the Genus *Hordeum*. Systematic and Ecogeographic Studies on Crop Gene-pools 7. IBPGR, Rome.

*Hordeum vulgare* L. subsp. *spontaneum* (K. Koch) Thell.

Primary Gene Pool relative of *Hordeum vulgare* L.

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0.35-0.7 m

LC PRELIM

Mar - Jun

Mar - Jun

Confirmed use in breeding for *Pennisetum glaucum* (L.) R. Br.

Oriental fountain grass

**HABIT:** Clump-forming perennial. Rhizomes short. Culms erect, or geniculately ascending, 20-200 cm long, woody. Lateral branches fastigiate. Ligule a fringe of hairs.

**LEAVES:** Leaf-blades flat, or convolute, 30-60 cm long, 7-15 mm wide. Leaf-blade surface smooth, or scaberulous, glabrous, or pubescent.

**INFLORESCENCE:** Panicle spiciform, linear, continuous, or interrupted, 8-30 cm long. Primary panicle branches accrescent to a central axis, axis with sessile scars, angular, puberulous, or pubescent, bearing deciduous spikelet clusters. Fertile spikelets 1-3(-5) in the cluster, 1 sessile. Spikelets subtended by an involucre composed of bristles, 15-30 mm long, base bluntly stipitate 0.5-1.5 mm long. Involucral bristles deciduous with the fertile spikelets, numerous, 15-30 mm long.

**GLUMES:** Dissimilar, shorter than spikelet, thinner than fertile lemma. Basal floret sterile, other floret fertile, without rachilla extension. Basal sterile florets male, with palea. Lemma of lower sterile floret elliptic, 1 length of spikelet, chartaceous, setaceously attenuate. Fertile lemma lanceolate, 4.5-6.5 mm long, chartaceous, without keel. Lemma margins flat, apex setaceously attenuate. Palea chartaceous.

**FLOWER:** Soft, pink. Anthers 3, anther tip apiculate.

**Habitat:**

Well drained soil, sandy loams with good drainage.

**Distribution:**

Native to Asia and North Africa.

**Altitude:** unknown

*Pennisetum orientale*

Panicle 8-30 cm long; 1-3 fertile spikelets per cluster, spikelets lanceolate, involucral bristles 15-30 mm long; glumes 2, dissimilar, apex acute or acuminate.

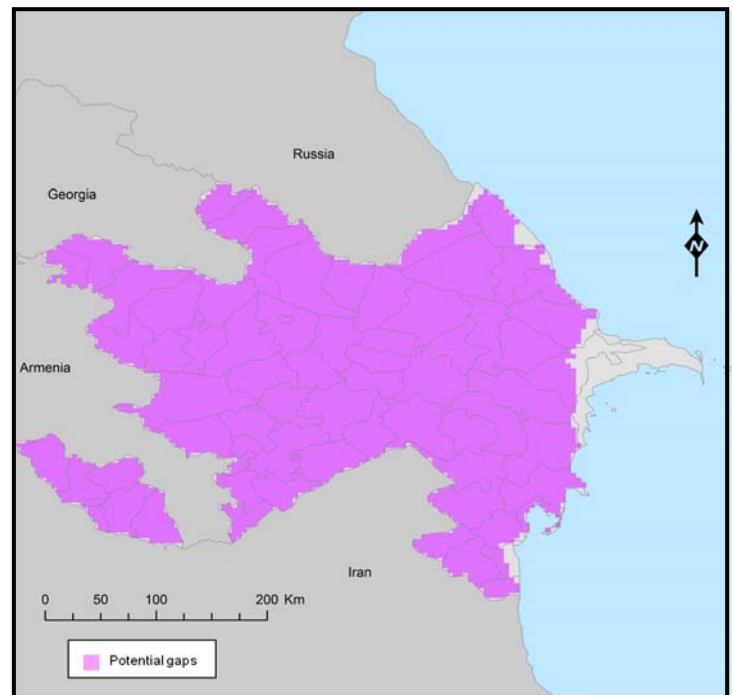


May be confused with:  
*Pennisetum glaucum*

Panicle 4-200 cm long; 1-9 fertile spikelets per cluster, spikelets obovate, involucral bristles 2-7 mm long; glumes apparently 1 (the 2nd absent or obscure), apex obtuse or acute.



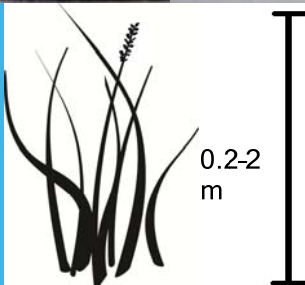
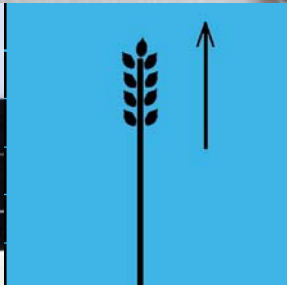
All population priority for collection



**References:** Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. (2013). GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.



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Wild relative of *Secale cereale* L.

**HABIT:** Clump-forming perennial. Culms erect, 50-70 cm long. Leaf-sheaths glabrous, auricles falcate. Ligule an eciliate membrane.

**LEAVES:** Leaf-blades 10-20 x 0.3-0.6 cm, surface scabrous, rough adaxially, margins smooth, or scaberulous.

**INFLORESCENCE:** Peduncle pubescent above. Racemes solitary, bilateral, 4-8 x 0.6-0.7 cm. Rhachis fragile at the nodes, margins ciliate, internodes oblong, 2.5-3 mm long, falling with spikelet above. Spikelets solitary, packing broadside to rhachis, each comprising 2 fertile florets with a single apical, rudimentary floret, 16-18 mm long, falling entire.

**GLUMES:** Equal, shorter than spikelet. Lower glume oblong, equalling length of upper glume, membranous, keeled, primary vein scabrous, lateral veins absent, surface puberulous, apex acuminate, awned. Upper glume oblong, slightly shorter than adjacent fertile lemma, membranous, keeled, primary vein scabrous, lateral veins absent, surface puberulous, apex acuminate, 1-awned. Glume awns 1-2.5 mm long. Fertile lemma elliptic, 12-14 mm long, coriaceous, shiny, keeled, 5-veined, surface smooth, or scaberulous, midvein ciliate, apex acuminate, 1-awned. Principal lemma awn 20-30 mm long, limb scabrous. Palea 2-veined.

Lodicules 2, ciliate. Anthers 3. Ovary with a fleshy appendage below style insertion, pubescent on apex.

**FRUIT:** Caryopsis with adherent pericarp. Hilum linear.

**Habitat:**

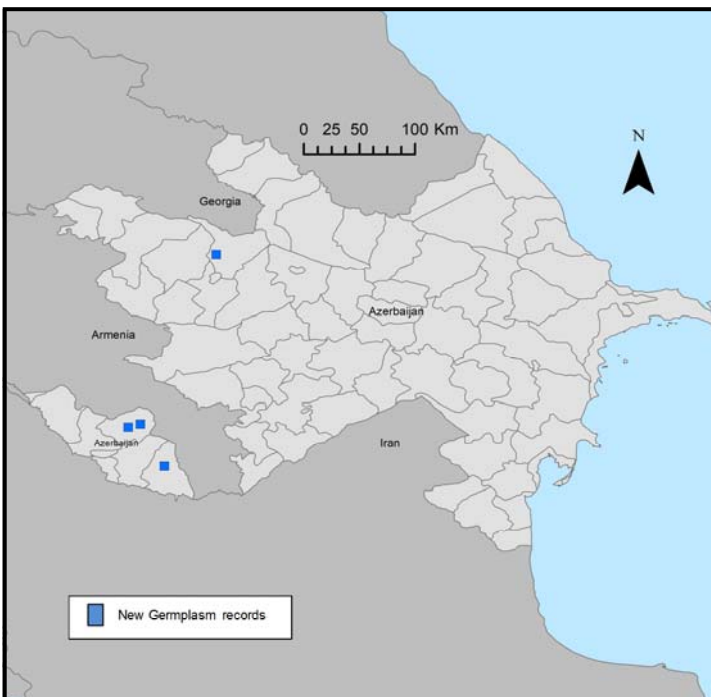
Unknown

**Distribution:**

Caucasus and western Asia.

**Altitude:** unknown

<i>Secale anatolicum</i>	May be confused with: <i>Secale cereale</i> subsp. <i>segetale</i>
Spikelets 16-18 mm long	Spikelets 12-15 mm long



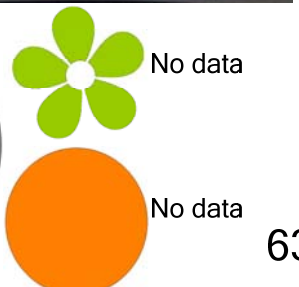
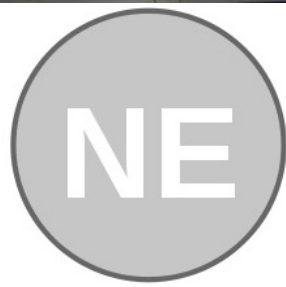
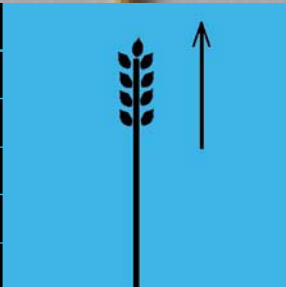
All populations priority  
for collection.

**References:** GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.

Wild relative of *Secale cereale* L.



No seed image available



Primary Gene Pool relative of *Secale cereale* L.**HABIT:** Clump-forming annuals. Culms 60-150 cm long, 6-7 -noded.**LEAVES:** Leaf-sheaths glabrous on surface, or hirsute, auricles falcate. Ligule an eciliate membrane, 1 mm long, truncate. Leaf-blades 10-20 x 0.6-1 cm, surface glabrous or sparsely hairy.**INFLORESCENCE:** Peduncle pubescent above. Racemes solitary, bilateral, 5-15 cm long. Rhachis fragile, pubescent on surface, margins ciliate, internodes oblong, 2-3 mm long. Spikelets solitary, packing broadside to rhachis, each comprising 2 fertile florets with diminished florets at apex, laterally compressed, 12-15 mm long, persistent on plant.

Glumes equal, shorter than spikelet, linear, 10-12 mm long, equalling length of upper glume, coriaceous, keeled, primary vein scabrous, lateral veins absent, surface puberulous, apex acuminate, mucronate, awn 1-3 mm long.

Fertile lemma lanceolate, 14-18 mm long, coriaceous, keeled, 5 -veined. Lemma midvein ciliate, margins ciliate, hairy above, apex acuminate, 1 -awned. Principal lemma awn 20-50 mm long overall, limb scabrous. Palea 0.6-0.7 length of lemma, 2 -veined, keels scaberulous. Apical sterile florets resembling fertile though underdeveloped.

Anthers 3, 7 mm long. Ovary with a fleshy appendage below style insertion, pubescent on apex.

**FRUIT:** Caryopsis with adherent pericarp, obovoid, sulcate on hilar side, 8-10 mm long. Hilum linear.**Habitat:**

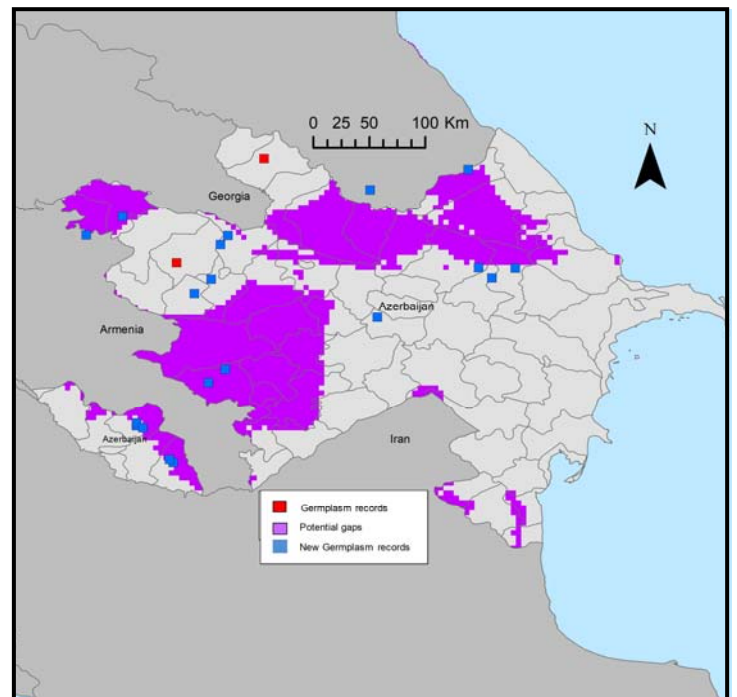
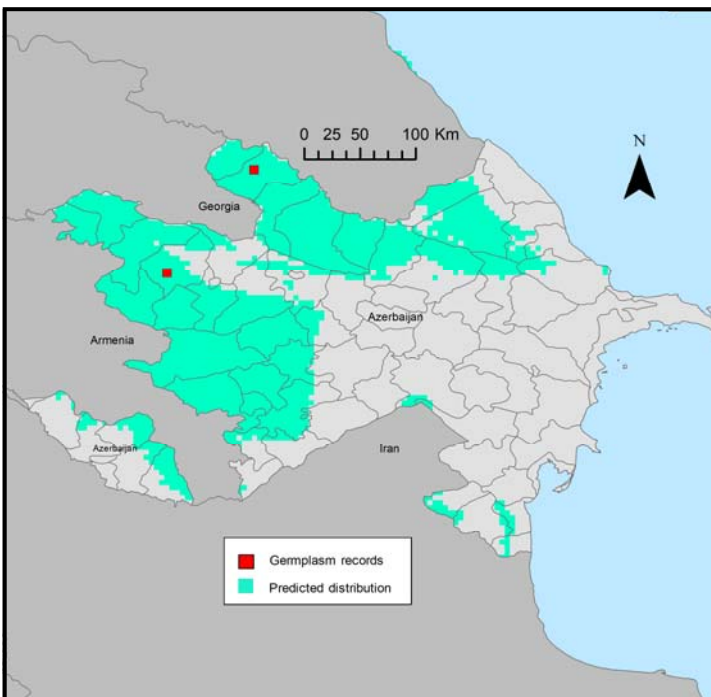
Usually found as a weed in cereal crops

**Distribution:**

Europe, North and East Africa, temperate and tropical Asia, Australasia, North and South America.

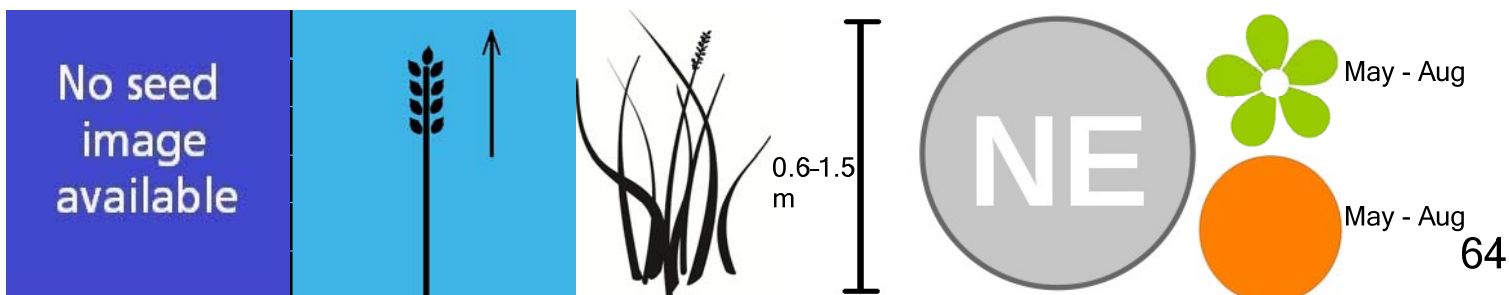
**Altitude:** unknown

<i>Secale cereale</i> subsp. <i>segetale</i>	May be confused with: <i>Secale cereale</i> subsp. <i>cereale</i>
Rachis fragile at the nodes	Rachis tough, not fragile at the nodes

**References:** GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.

NO IMAGE AVAILABLE

If you know of an image or link to an image of this species please let us know [cropwildrelatives@kew.org](mailto:cropwildrelatives@kew.org)



Taxon Group 3 relative of *Secale cereale* L.

**HABIT:** Annual; culms solitary, or caespitose. Culms erect, or geniculately ascending; 15-30 cm long.  
**LEAVES:** Leaf-sheaths puberulous. Leaf-sheath oral hairs lacking. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blades flat, or involute; 5-10 cm long; 1.5-3 mm wide. Leaf-blade surface glabrous, or puberulous.  
**INFLORESCENCES:** Peduncle pubescent above. Racemes 1, single, bilateral, 2-3.5 cm long, 8-10 mm wide. Rhachis fragile at the nodes, margins ciliate. Spikelet packing broadside to rhachis. Rhachis internodes oblong, 3-3.5 mm long; falling with spikelet above. Spikelets solitary. Fertile spikelets sessile. Fertile spikelets comprising 2 fertile florets, with diminished florets at the apex. Spikelets cuneate, laterally compressed; 12-14 mm long; falling entire; deciduous with accessory branch structures. Glumes similar, shorter than spikelet; thinner than fertile lemma. Lower glume linear; 11-12 mm long; Upper glume linear; 11-12 mm long; Upper glume apex acuminate; 1 -awned. Upper glume awn 25-50 mm long.  
**FLORETS:** Fertile lemma elliptic; 10-12 mm long, coriaceous, keeled, 5 -veined. Lemma midvein pectinately ciliate. Lemma surface scaberulous. Lemma apex acuminate 1 -awned.  
**FLOWER:** Lodicules 2, ciliate. Anthers 3. Ovary with a fleshy appendage below style insertion; pubescent on apex.  
**FRUIT:** Caryopsis with adherent pericarp. Hilum linear.

**Habitat:**

Sandy substrates, including dunes and sandy steppes.

**Distribution:**

Europe: central, southeastern, and eastern. Asia-temperate: Siberia, Soviet Middle Asia, Caucasus, western Asia, and China.

**Altitude:** 0 - 2300 m

<i>Secale sylvestre</i>	May be confused with: <i>Other Secale species</i>
Glume awns 15-35 mm long.	Glume awns when present up to 6mm long.

Reported from Azerbaijan, but no localities known.

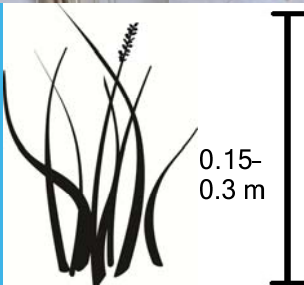
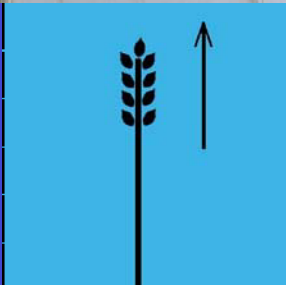
All populations priority for collection.

**References:** Flora of Pakistan p 508 via efloras.org; 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>

Taxon Group 3 relative of *Secale cereale* L.



No seed image available



**HABIT:** Perennial with vigorous spreading rhizomes. Culms 0.5-1.5 m long, 4-6 mm in diameter, nodes puberulous.  
**LEAVES:** Leaf sheaths glabrous, blades linear or linear-lanceolate, 25-80 × 1-4 cm, glabrous, ligule 0.5-1 mm, glabrous.  
**INFLORESCENCE:** Panicle lanceolate to pyramidal in outline, 20-40 cm, soft white hairs in basal axil; primary branches solitary or whorled, spreading, lower part bare, upper part branched, the secondary branches tipped by racemes, racemes fragile, composed of 2-5 spikelet pairs. Sessile spikelet elliptic, 4-5 mm, callus obtuse, bearded, lower glume sub-leathery, often pale yellow or yellowish brown at maturity, shortly pubescent or glabrescent, 5-7-veined, veins distinct in upper part, apex 3-denticulate, upper lemma acute and mucronate or 2-lobed and awned, awn 1-1.6 cm. Pedicelled spikelet staminate, narrowly lanceolate, 4.5-7 mm, often violet-purple.

**Habitat:**

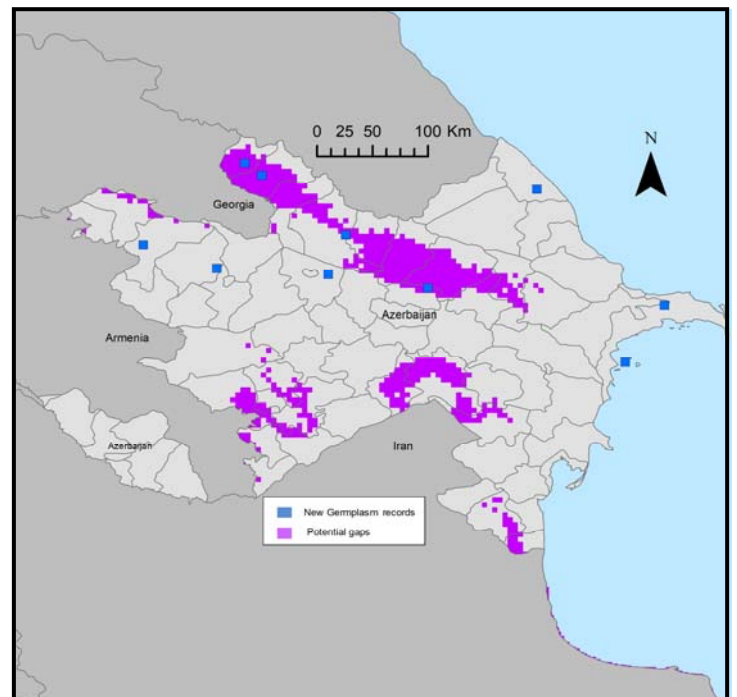
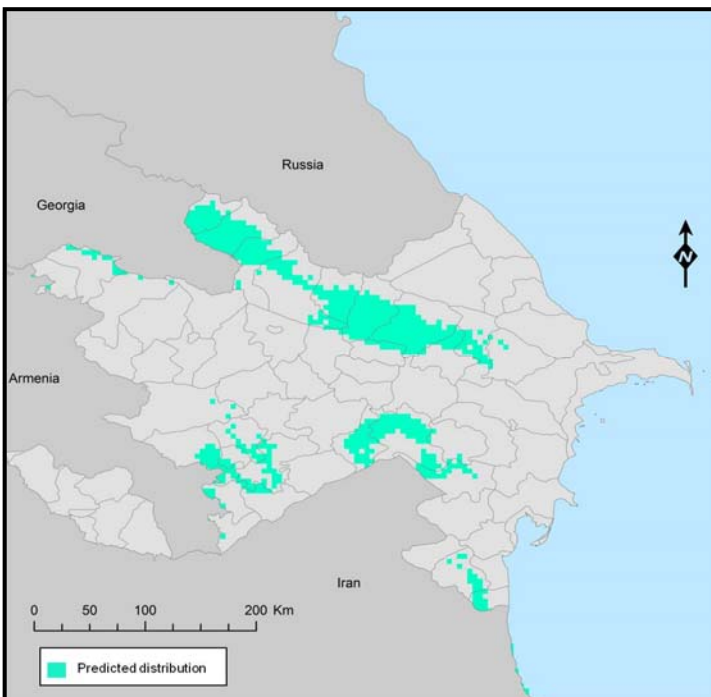
Streams, valleys, waste ground, and as a weed in fields.

**Distribution:**

Native to North Africa, South-central and Western Asia.

**Altitude:** unknown

<i>Sorghum halepense</i>	May be confused with: <i>Sorghum arundinaceum</i>
Leaves 1 to 4 cm wide.	Leaves narrower, 0.5 to 0.7 mm wide.



**References:** Flora of China, Volume 22, pp 600-601.



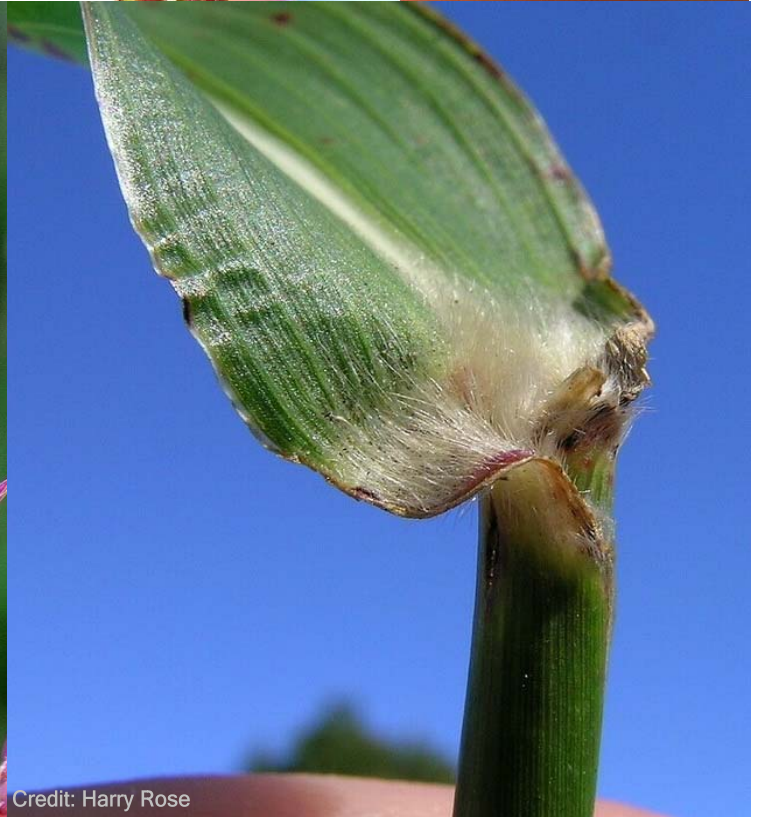
Credit: Forest and Kim Starr



Credit: Harry Rose



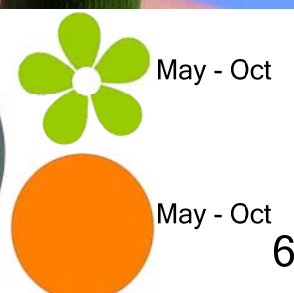
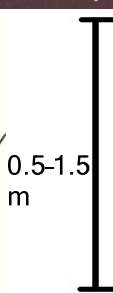
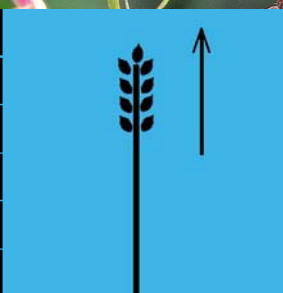
Credit: José María Escolano



Credit: Harry Rose



Steve Hurst @ USDA-NRCS PLANTS Database





**HABIT:** Annual; culms solitary, or caespitose. Culms 45-80 cm long. Culm-nodes bearded. Leaf-sheath oral hairs ciliate. Leaf-sheath auricles falcate. Ligule an eciliate membrane. Leaf-blades 2-5 mm wide. Leaf-blade surface puberulous. Leaf-blade margins smooth, or scaberulous.

**INFLORESCENCE:** Racemes solitary, bilateral, (2.5-)3-4 cm long. Rhachis fragmenting at the nodes with pressure, flattened, margins glabrous or pubescent, internodes oblong, 2-2.5 mm long; falling with spikelet above.

Spikelets comprising 1(-2) fertile florets, with rudimentary florets at apex. Spikelets oblong, laterally compressed, 10 mm long, falling entire, deciduous with accessory branch structures.

**GLUMES:** Similar, shorter than spikelet. Lower glume oblong, 6-8 mm long, 1 length of upper glume, coriaceous, 2-keeled, 5-9 -veined. Lower glume apex dentate, bifid. Upper glume approximately equalling length of adjacent fertile lemma, coriaceous, 2-keeled, 5-9 -veined. Upper glume lateral veins divergent at apex. Upper glume apex dentate, bifid. Fertile lemma elliptic, 8-10 mm long coriaceous, keeled, 9-11 -veined. Lemma apex dentate, bifid, 1 -awned. Principal lemma awn (30-)60-80 mm long overall. Palea 2 -veined, keels ciliolate. Apical sterile florets resembling fertile though underdeveloped, 1 in number.

**FRUIT:** Caryopsis with adherent pericarp; hairy at apex. Hilum linear.

**Habitat:**

Unknown

**Distribution:**

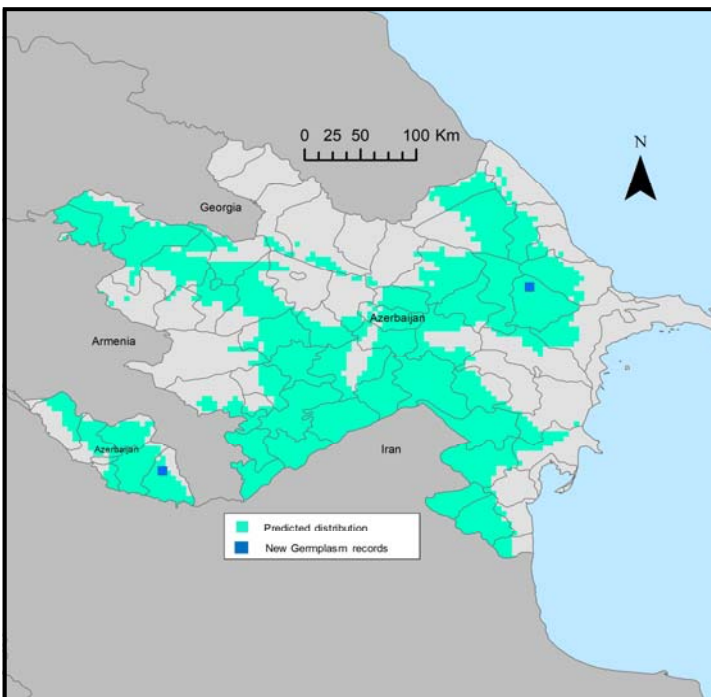
Europe: southwestern, southeastern, and eastern.  
Africa: north, northeast tropical, and southern tropical. Asia-temperate: Caucasus and western Asia

**Altitude:** unknown*Triticum monococcum* subsp. *aegilopoides*

May be confused with:  
*Triticum turgidum* or *T. aestivum*

Leaves 2-5 mm wide; inflorescence rachis disarticulating with pressure at maturity; spikelets with 2 florets.

Leaves 7-18 mm wide; inflorescence rachis tough, not disarticulating; spikelets with >3 florets.



All populations priority  
for collection.

**References:**

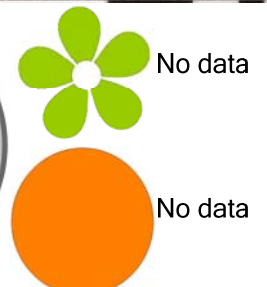
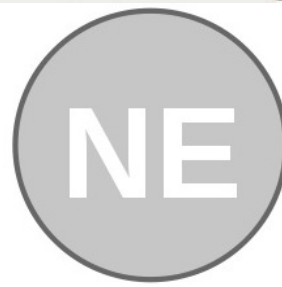
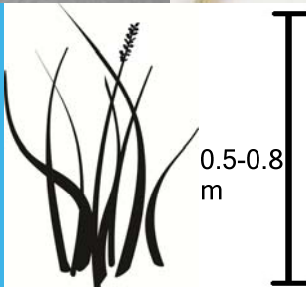
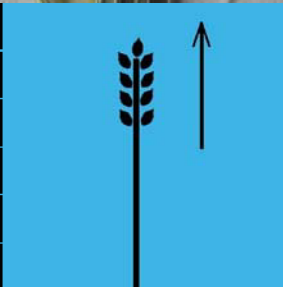
*Triticum monococcum* L. subsp. *aegilopoides* (Link) Thell.

Primary Gene Pool relative of *Triticum aestivum* L.

Wild einkorn



No seed image available



Primary Gene Pool relative of *Triticum aestivum* L.**HABIT:** Clump-forming annual, culms erect, 71-90 cm long.**LEAVES:** Leaf-sheaths pilose, with additional ciliate hairs, auricles falcate. Ligule an eciliate membrane, 1 mm long. Leaf-blades 20-45 cm long by 2-5 mm wide, surface smooth, or scaberulous, pilose on both sides.**INFLORESCENCES:** Raceme solitary, bilateral, (3.5-)5-6.5 cm long by 10-15 mm wide, flattened, fragile at the nodes. Peduncle pubescent above. Spikelets solitary, comprising 2 fertile florets, with diminished florets at the apex. Spikelets oblong, laterally compressed, 10-12 mm long, falling entire, deciduous with accessory branch structures.**GLUMES:** Similar, shorter than spikelet. Lower glume oblong, asymmetrical, 7-10 mm long, coriaceous, 2-keeled, winged near apex, or above, 5-9 -veined. Lower glume surface pubescent, apex with a unilateral tooth. Upper glume oblong, asymmetrical, equalling length of adjacent fertile lemma, coriaceous, 2-keeled, winged near apex, or above, 5-9 -veined. Upper glume lateral veins divergent at apex, surface pubescent, apex with a unilateral tooth.

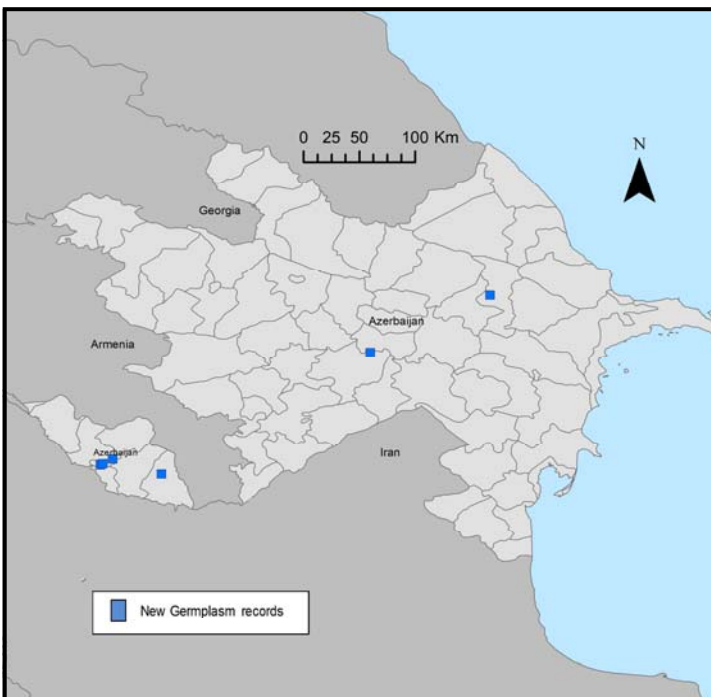
Fertile lemma elliptic, 10-12 mm long; coriaceous; without keel, 9-11 -veined. Lemma surface pubescent. Lemma apex dentate; 2 -fid; awned; 1 -awned. Principal lemma awn 50-60(-90) mm long overall. Palea 2 -veined. Palea keels ciliate. Apical sterile florets resembling fertile though underdeveloped, 1 in number.

**FRUIT:** Caryopsis with adherent pericarp, hairy at apex. Hilum linear.**Habitat:**

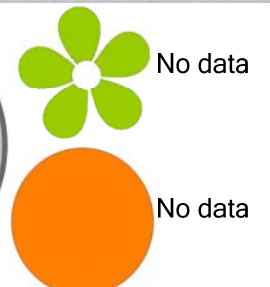
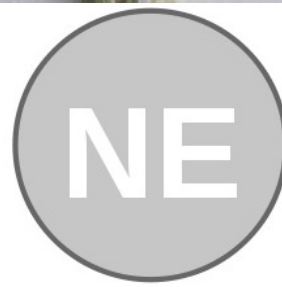
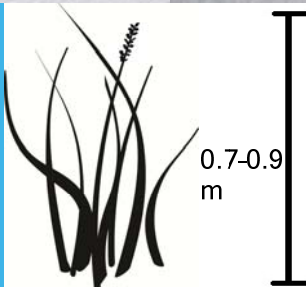
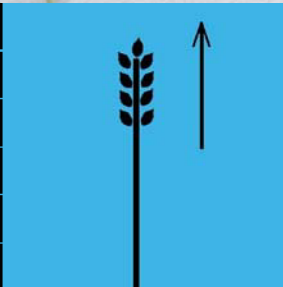
unknown

**Distribution:**

Temperate western Asia and Caucasus.

**Altitude:** unknown*Triticum timopheevii*May be confused with:  
*Triticum monococcum*Spikelets 3-flowered; rachis  
disarticulating readily at maturitySpikelets 2-flowered; rachis  
disarticulating with pressure at maturityAll populations priority  
for collection.**References:** GrassBase - The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>.

Primary Gene Pool relative of *Triticum aestivum* L.



Primary Gene Pool relative of *Malus domestica* Borkh.

**HABIT:** Tree 3-10 m tall, usually unarmed, rarely spiny when young. Twigs and young shoots dark brown, slightly pubescent.

**LEAVES:** Elliptic-obovate to almost orbicular, 3-8(-10) cm long by 1.5-3.5 cm wide, usually cuneate at the base, apex obtuse, rarely acuminate or mucronate, margin coarsely serrate-dentate in apical half, young leaves pubescent above, densely pale tomentose below, adult leaves glabrescent above except along veins, sometimes tomentose below, veins prominent.

**INFLORESCENCE:** Flowers in umbelliform fascicles of 4-6, 3-4 cm across, hypanthium and pedicels often tomentose; calyx narrowly triangular, apex acute; corolla white to pink, lobes obovate, narrowing into a conspicuous claw; styles about as long as stamens.

**FRUIT:** Pomes globose, 2-3 cm across, green to greenish yellow or reddish.

**Habitat:**

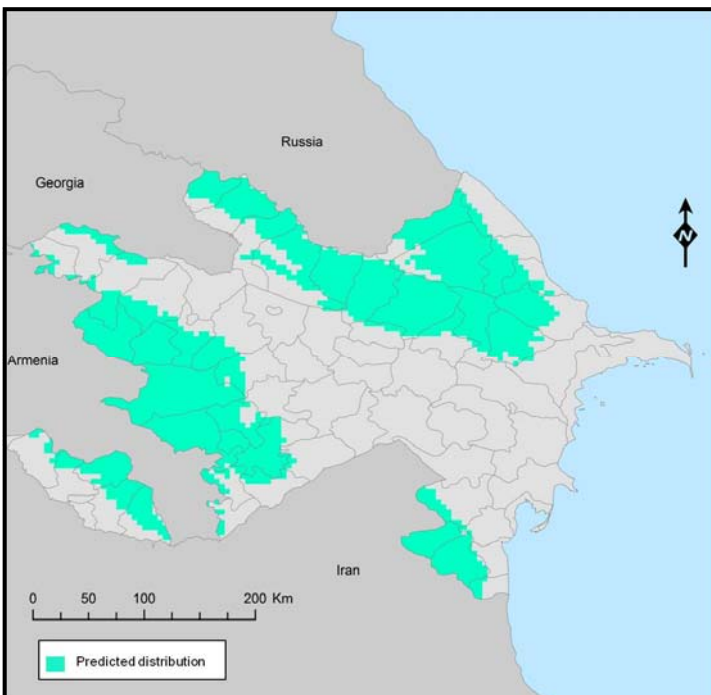
Deciduous woodland, scrub and thickets, rocky slopes, field edges and along streams, often locally common.

**Distribution:**

Caucasus and Crimea, Iran, Turkey and southern Russia.

**Altitude:** 150 - 2300 m

<i>Malus orientalis</i>	May be confused with: <i>Malus praecox</i>
Leaves cuneate at the base, apex not mucronate, margin toothed only in upper half, underside densely tomentose.	Leaves rounded at the base, mucronate at apex, margin toothed throughout, underside only slightly hairy.



All populations priority for collection.

**References:** Yuzepchuk, S.V. (Ed.) Flora of the USSR (English version), Volume IX p275.

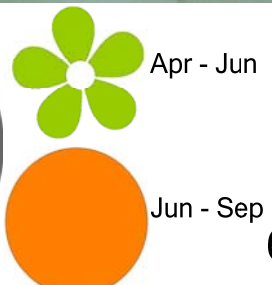
Primary Gene Pool relative of *Malus domestica* Borkh.



No seed image available



up to 10m



# Appendix - Synonyms

Taxon	Sheet	Synonyms
<i>Daucus carota</i> subsp. <i>carota</i>	1	None known
<i>Lathyrus anuus</i>	2	<i>Lathyrus trachyspermus</i> Webb
<i>Lathyrus aphaca</i>	3	<i>Orobus aphaca</i> (L.) Doll
<i>Lathyrus cicera</i>	4	<i>Lathyrus aegaeus</i> Davidov
<i>Lathyrus hirsutus</i>	5	None known
<i>Lathyrus miniatus</i>	6	None known
<i>Lathyrus pratensis</i>	7	<i>Orobus pratensis</i> (L.) Stokes
<i>Lathyrus sphaericus</i>	8	<i>Lathyrus coccineus</i> All.; <i>Lathyrus hygrophilus</i> sensu Robyns; <i>Lathyrus viciodes</i> DC.; <i>Orobus sphaericus</i> (Retz.) Avazneli
<i>Lathyrus tuberosus</i>	9	None known
<i>Lens culinaris</i> subsp. <i>orientalis</i>	10	<i>Ervum orientale</i> Boiss.; <i>Lens orientalis</i> (Boiss.) Hand. Mazz.
<i>Lens ervoides</i>	11	<i>Cicer ervoides</i> Brign.; <i>Ervum ervoides</i> (Brign.) Hayek; <i>Ervum hohenakeri</i> Fisch. & C.A. Mey.; <i>Ervum lenticula</i> Schreb. ex Sturm; <i>Lens lenticula</i> ; <i>Lens nigricans</i> (M. Bieb.) Godr. subsp. <i>ervoides</i> (Brign.)Ladiz.; <i>Vicia ervoides</i> (Brign.) Fiori; <i>Vicia lenticula</i> (Schreb.) Janka
<i>Medicago arabica</i>	12	<i>Medicago cordata</i> Desr.; <i>Medicago coronata</i> Pall.; <i>Medicago immaculata</i> Schur; <i>Medicago oxalioides</i> Schur; <i>Medicago polymorpha</i> L. var. <i>arabica</i> L.; <i>Medicago salusuginosa</i> Dumort.; <i>Medicago talyschenisis</i> Latsch.
<i>Medicago daghestanica</i>	13	<i>Medicago daghestanica</i> Rupr. ex Boiss. var. <i>coerulescens</i> Trautv.; <i>Medicago daghestanica</i> Rupr. ex Boiss. var. <i>pallida</i> Trautv.
<i>Medicago littoralis</i>	14	<i>Medica littoralis</i> (Loisel.) Bubani; <i>Medicago truncatula</i> Gaertn. subsp. <i>littoralis</i> (Rohde ex Loisel.); <i>Medicago arenaria</i> Ten.; <i>Medicago braunii</i> Godron; <i>Medicago cylindracea</i> DC.; <i>Medicago gracilis</i> Biv.; <i>Medicago littoralis</i> Rohde ex Loisel. subsp. <i>braunii</i> (Godron) Bonnier & Layens; <i>Medicago littoralis</i> Rohde ex Loisel. subsp. <i>brevisepala</i> (DC.) Urb. var. <i>depressa</i> Urb.; <i>Medicago littoralis</i> Rohde ex Loisel. var. <i>brevisetata</i> DC.; <i>Medicago littoralis</i> Rohde ex Loisel. subsp. <i>brevisetata</i> (DC.) Urb.; <i>Medicago littoralis</i> Rohde ex Loisel. subsp. <i>cylindracea</i> (DC.) Nyman; <i>Medicago littoralis</i> Rohde ex Loisel. var. <i>dextrorsa</i> Dur.; <i>Medicago littoralis</i> Rohde ex Loisel. var. <i>inermis</i> Moris; <i>Medicago littoralis</i> Rohde ex Loisel. subsp. <i>inermis</i> (Moris) Urb.; <i>Medicago littoralis</i> Rohde ex Loisel. subsp. <i>inermis</i> (Moris) Urb. var. <i>pentacycla</i> Urb.; <i>Medicago littoralis</i> Rohde ex Loisel. var. <i>inermis</i> Rouy; <i>Medicago littoralis</i> Rohde ex Loisel. subsp. <i>longisetata</i> (DC.) Urb.; <i>Medicago littoralis</i> Rohde ex Loisel. var. <i>longeaculeata</i> Moris; <i>Medicago littoralis</i> Rohde ex Loisel. var. <i>rouyana</i> Fiori; <i>Medicago littoralis</i> Rohde ex Loisel. var. <i>subinermis</i> (Bertol.) Boiss.; <i>Medicago pusilla</i> Viv.; <i>Medicago rugulosa</i> Batt.; <i>Medicago subinermis</i> Bertol.; <i>Medicago tetracycla</i> Presl; <i>Medicago tricycla</i> Senn. non DC.; <i>Medicago trigyra</i> Senn.
<i>Medicago lupinula</i>	15	<i>Medicago apennina</i> J.Woods; <i>Medicago breviflora</i> Gilib.; <i>Medicago canescens</i> Menyharth; <i>Medicago corymbifera</i> W.L.E.Schmidt ex Schldl.; <i>Medicago cupaniana</i> Guss.; <i>Medicago leiocarpa</i> Guss.; <i>Medicago mnio-carpa</i> Wallr. ex Ser.; <i>Medicago reniformis</i> Dulac; <i>Medicago stipularis</i> Wallr.; <i>Medicago willdenowii</i> Merat.

# Appendix - Synonyms

b

Taxon	Sheet	Synonyms
Medicago minima	16	Medicago arabica L. var. echinata Weston; Medicago brachyacantha A.Kerner; Medicago greca Hornem.; Medicago hirsutissima Cyrillo ex Steud.; Medicago inconspicua Nevski, Medicago lineata Tausch; Medicago mollissima Roth.; Medicago polymorpha L. var. hirsuta L.; Medicago polymorpha L. var. recta Desf.; Medicago pulchella Lowe; Medicago recta (Desf.) Willd.; Medicago rigidula Hoffm. ex Steud.; Medicago sessilis Peyr. ex Post; Medicago viscida (Koch.) Schur.
Medicago orbicularis	17	Medicago ambigua Jordan ex Boreau; Medicago applanata Willd. ex Schlecht.; Medicago clypeata J.Woods; Medicago echinata Steud.; Medicago marginata Willd.; Medicago scutella Pall.
Medicago polymorpha	18	Medicago apiculata Willd.; Medicago apiculata Willd. var. confinis W.D.J.Koch; Medicago berteroana Moris; Medicago caspia Jacq. ex Spreng.; Medicago conica Schkuhr; Medicago cyrenaica Maire & Weiller; Medicago denticulata Willd.; Medicago denticulata Willd. var. brevispina Benth.; Medicago distans Poir.; Medicago hamata Presl; Medicago hispida Gaertn.; Medicago hispida Gaertn. subsp. polymorpha (L.) Rouy.; Medicago hystrix Ten.; Medicago intermedia DC. ex G.Don; Medicago lappacea Desr.; Medicago loreti Albert; Medicago microdon Ehrenb.; Medicago mitra Willd. ex Urb.; Medicago oligocarpa Corb.; Medicago pentacycla DC.; Medicago pentacycla DC. var. brevispina (Benth.) Heyn; Medicago persica Stev. ex Fisch.; Medicago polyantha Dulac; Medicago polycarpa Willd.; Medicago polycarpa Willd. ex Schlecht. subsp. polymorpha (L.) Cadevall & Sallent; Medicago reticulata Benth.; Medicago reynieri Albert; Medicago sardoia Moris ex G.Don; Medicago terebella St.-Lag.; Medicago terebellum Willd.
Medicago rigidula	19	Medicago agrestis Ten.; Medicago bondevii Kozuharov; Medicago bonofcensis Kit.; Medicago cinerascens Jordan; Medicago depressa Jordan; Medicago gaditana Perez Lara ex Wilk.; Medicago gerardii Waldst. & Kit. ex Willd.; Medicago gerardii Waldst. & Kit. ex Willd. subsp. agrestis (Ten.) Bonnier & Layens; Medicago germana Jordan; Medicago mitis Willd. ex Urb.; Medicago morisiana Jord.; Medicago muricata (L.) All.; Medicago polymorpha L. var. muricata L.; Medicago polymorpha L. var. rigidula L.; Medicago rigidula (L.) All. subsp. agrestis (Ten.) Ponert; Medicago rigidula (L.) All. var. cinerascens (Jord.) Rouy; Medicago rigidula (L.) All. var. compacta Kozuharov; Medicago rigidula (L.) All. var. eriocarpa Rouy; Medicago rigidula (L.) All. var. germana (Jordan) Rouy; Medicago rigidula (L.) All. var. minor Ser.; Medicago rigidula (L.) All. var. morisiana (Jord.) Rouy; Medicago rigidula (L.) All. var. brevispina Rouy; Medicago rigidula (L.) All. var. submitis Boiss.; Medicago rigidula (L.) All. var. agrestis (Ten.) Burnat; Medicago rigidula (L.) All. f. discoidaea Kozuharov; Medicago rigidula (L.) All. f. elegans Kozuharov; Medicago timeroyi Jordan; Medicago tomentosa Chevallier; Medicago villosa DC.
Medicago sativa subsp. caerulea	20	Medicago caerulea Less. ex Ledeb.; Medicago coerulea Less. ex Nyman; Medicago sativa L. subsp. microcarpa Urb. var. caerulea (Less. ex Ledeb.) Urb.; Medicago sativa L. subsp. caerulea (Less. ex Ledeb.) Schmalh.
Medicago sativa subsp. falcata	21	Medicago falcata L.
Medicago sativa subsp. glomerata	22	Medicago glutinosa M. Bieb.; Medicago gunibica Vassilcz.
Medicago sativa subsp. xvaria	23	Medicago falcata L. var. ambigua Trautv.; Medicago glutinosa M. Bieb. subsp. praefalcata Sinskaya; Medicago komarovii Vassilcz.; Medicago media Pers.; Medicago sativa L. subsp. ambigua (Trautv.) Tutin; Medicago sativa L. subsp. hemicycla (Grossh.) C. R. Gunn; Medicago sativa L. subsp. praefalcata (Sinskaya) C. R. Gunn; Medicago sativa L. var. varia (Martyn) Urb.; Medicago schischkinii Sumnev.; Medicago trautvetteri Sumnev.; Medicago tianschanica Vassilcz.; Medicago vardanis Vassilcz.; Medicago varia Martyn



# Appendix - Synonyms

Taxon	Sheet	Synonyms
<i>Medicago truncatula</i>	24	<i>Medicago crassispina</i> Vis.; <i>Medicago glabella</i> Presl; <i>Medicago hornemania</i> Ser.; <i>Medicago pubescens</i> Hornem.; <i>Medicago rigidula</i> Willd.; <i>Medicago tentaculata</i> Willd.; <i>Medicago tribuloides</i> Desr.; <i>Medicago uncinata</i> Willd.
<i>Pisum sativum</i> subsp. <i>elatius</i>	25	<i>Pisum biflorum</i> Raf.; <i>Pisum elatius</i> M.Bieb.; <i>Pisum humile</i> Boiss. & Noe; <i>Pisum sativum</i> var. <i>elatius</i> Trautv.; <i>Pisum sativum</i> subsp. <i>humile</i> (Holmboe) Greuter & al.; <i>Pisum sativum</i> subsp. <i>pumilo</i> (Meikle) Ponert
<i>Vicia bithynica</i>	26	<i>Lathyrus bithynicus</i> L.
<i>Vicia ciliatula</i>	27	None known.
<i>Vicia grandiflora</i>	28	<i>Vicia grandiflora</i> Scop. var. <i>kitaibeliana</i> W. D. J. Koch
<i>Vicia hirsuta</i>	29	<i>Ervum hirsutum</i> L.
<i>Vicia hybrida</i>	30	<i>Vicia linnaei</i> Rouy; <i>Vicia spuria</i> Raf.
<i>Vicia hyrcanica</i>	31	<i>Vicia biebersteinii</i> C.A.Mey.; <i>Vicia jaubertii</i> Boiss. & Buhse; <i>Vicia lutea</i> var. <i>glabra</i> Regel
<i>Vicia johannis</i>	32	<i>Bona johannis</i> (Tamamsch.) Stank. & Roskov; <i>Vicia latifolia</i> Moench
<i>Vicia lathyroides</i>	33	<i>Ervum lathyroides</i> (L.) Stank.; <i>Ervum soloniense</i> L.; <i>Vicia lathyroides</i> subsp. <i>olbiensis</i> (Reut.) Smejkal; <i>Vicia olbiensis</i> Timb.-Lagr.
<i>Vicia lutea</i>	34	<i>Vicia laevigata</i> Sm.; <i>Vicia lutea</i> L. var. <i>laevigata</i> (Sm.) Boiss.
<i>Vicia monantha</i> subsp. <i>monantha</i>	35	<i>Cracca calcarata</i> (Desf.) Gren. & Godr.; <i>Vicia biflora</i> Desf.; <i>Vicia calcarata</i> Desf.; <i>Vicia griffithii</i> Baker
<i>Vicia narbonensis</i>	36	<i>Bona narbonensis</i> (L.) Medik.; <i>Vicia serratifolia</i> sensu auct.
<i>Vicia pannonica</i>	37	None known
<i>Vicia peregrina</i>	38	<i>Vicia gracilior</i> (Popov) Popov; <i>Vicia megalosperma</i> M. Bieb.
<i>Vicia sativa</i> subsp. <i>amphicarpa</i>	39	<i>Vicia amphicarpa</i> Dorthes; <i>Vicia amphicarpa</i> L.; <i>Vicia angustifolia</i> var. <i>amphicarpa</i> (Dorthes) Boiss.; <i>Vicia subterranea</i> Dorthes
<i>Vicia sativa</i> subsp. <i>nigra</i>	40	<i>Vicia angustifolia</i> L.; <i>Vicia angustifolia</i> subsp. <i>angustifolia</i> L.; <i>Vicia angustifolia</i> subsp. <i>pusilla</i> Boiss.; <i>Vicia angustifolia</i> var. <i>segetalis</i> (Thuill.) Arcang.; <i>Vicia angustifolia</i> subsp. <i>segetalis</i> (Thuill.) Arcang.; <i>Vicia angustifolia</i> var. <i>uncinata</i> (Desv.) Rouy; <i>Vicia bobartii</i> E.Forst.; <i>Vicia bobartii</i> Koch; <i>Vicia canadensis</i> Zuccagni; <i>Vicia cuneata</i> Guss.; <i>Vicia debilis</i> Perez Lara; <i>Vicia heterophylla</i> C.Presl; <i>Vicia lanciformis</i> Lange; <i>Vicia maculata</i> C.Presl; <i>Vicia pilosa</i> M.Bieb.; <i>Vicia sativa</i> var. <i>angustifolia</i> (L.) Wahlb.; <i>Vicia sativa</i> var. <i>angustifolia</i> L.; <i>Vicia sativa</i> subsp. <i>angustifolia</i> (L.) Gaudin; <i>Vicia sativa</i> subsp. <i>angustifolia</i> (L.) Batt.; <i>Vicia sativa</i> subsp. <i>consobrina</i> (Pomel) Quezel & Santa; <i>Vicia sativa</i> subsp. <i>cordata</i> (Hoppe) Batt.; <i>Vicia sativa</i> subsp. <i>cuneata</i> (Guss.) Maire; <i>Vicia sativa</i> subsp. <i>heterophylla</i> (C.Presl) J.Duvign.; <i>Vicia sativa</i> var. <i>minor</i> (Bertol.) Ohwi; <i>Vicia sativa</i> var. <i>nigra</i> L.; <i>Vicia segetalis</i> Thuill.

# Appendix - Synonyms

Taxon	Sheet	Synonyms
<i>Vicia tenuifolia</i> subsp. <i>variabilis</i>	41	<i>Vicia variabilis</i> Freyn & Sint.
<i>Vicia villosa</i> subsp. <i>varia</i>	42	<i>Cracca varia</i> Host; <i>Vicia dasycarpa</i> Ten.; <i>Vicia eriocarpa</i> (Hausskn.) Halácsy; <i>Vicia glabrescens</i> (Koch) Heimerl; <i>Vicia polyphylla</i> Desf.; <i>Vicia pseudovillosa</i> Schur; <i>Vicia varia</i> Host; <i>Vicia villosa</i> subsp. <i>dasycarpa</i> (Ten.) Cav.; <i>Vicia villosa</i> var. <i>eriocarpa</i> Hausskn.; <i>Vicia villosa</i> var. <i>varia</i> (Host) Corb.
<i>Aegilops biuncialis</i>	43	<i>Aegilops lorentii</i> Hochst.; <i>Aegilops macrochaeta</i> Shuttlew. & E. Huet ex Duval-Jouve; <i>Triticum macrochaetum</i> (Shuttlew. & E. Huet ex Duval-Jouve) K. Richt.
<i>Aegilops columnaris</i>	44	<i>Triticum columnare</i> (Zhuk.) Ros. Morris & Sears
<i>Aegilops cylindrica</i>	45	<i>Aegilops cylindrica</i> Host subsp. <i>pauciaristata</i> Eig; <i>Cylindropyrum cylindricum</i> (Host) A. Love; <i>Cylindropyrum cylindricum</i> (Host) A. Love subsp. <i>pauciaristatum</i> (Eig) A. Love; <i>Triticum cylindricum</i> (Host) Ces.
<i>Aegilops geniculata</i>	46	<i>Aegilops geniculata</i> Roth subsp. <i>geniculata</i> ; <i>Aegilops geniculata</i> Roth subsp. <i>gibberosa</i> (Zhuk.) K. Hammer; <i>Aegilops ovata</i> auct.; <i>Aegilops ovata</i> L. subsp. <i>gibberosa</i> Zhuk.; <i>Triticum ovatum</i> auct.
<i>Aegilops kotschyi</i>	47	<i>Aegilemma kotschyi</i> (Boiss.) A. Love; <i>Triticum kotschyi</i> (Boiss.) Bowden
<i>Aegilops tauschii</i>	48	<i>Aegilops squarrosa</i> auct.; <i>Aegilops squarrosa</i> L. var. <i>anathera</i> Eig; <i>Aegilops squarrosa</i> L. var. <i>meyeri</i> Griseb.; <i>Aegilops squarrosa</i> L. subsp. <i>salinum</i> Zhuk.; <i>Aegilops squarrosa</i> L. subsp. <i>strangulata</i> Eig; <i>Aegilops tauschii</i> Coss. var. <i>anathera</i> (Eig) K. Hammer; <i>Aegilops tauschii</i> Coss. var. <i>meyeri</i> (Griseb.) Tzvelev; <i>Aegilops tauschii</i> Coss. subsp. <i>strangulata</i> (Eig) Tzvelev; <i>Aegilops tauschii</i> Coss. subsp. <i>tauschii</i> ; <i>Patropyrum tauschii</i> (Coss.) A. Love; <i>Patropyrum tauschii</i> (Coss.) A. Love subsp. <i>salinum</i> (Zhuk.) A. Love; <i>Patropyrum tauschii</i> (Coss.) A. Love subsp. <i>strangulata</i> (Eig) A. Love; <i>Triticum tauschii</i> (Coss.) Schmalh.
<i>Aegilops triuncialis</i> var. <i>triuncialis</i>	49	<i>Aegilopodes triuncialis</i> (L.) A. Love; <i>Aegilops elongata</i> Lam.; <i>Aegilops squarrosa</i> L.; <i>Aegilops triuncialis</i> L. var. <i>assyriaca</i> Eig; <i>Aegilops triuncialis</i> L. subsp. <i>triuncialis</i> ; <i>Triticum triunciale</i> (L.) Raspail
<i>Aegilops umbellulata</i>	50	<i>Kiharapyrum umbellulatum</i> (Zhuk.) A. Love; <i>Triticum umbellulatum</i> (Zhuk.) Bowden
<i>Avena barbata</i>	51	<i>Avena agadiriana</i> B.R.Baum & G.Fedak; <i>Avena alba</i> var. <i>barbata</i> (Link) Maire & Weiller; <i>Avena almeriensis</i> Gand.; <i>Avena atheranthera</i> C.Presl; <i>Avena atlantica</i> B.R.Baum & G.Fedak; <i>Avena canariensis</i> B.R.Baum, Rajhathy & D.R.Sampson; <i>Avena cypria</i> Sibth.; <i>Avena damascena</i> Rajhathy & B.R.Baum; <i>Avena hirsuta</i> Roth; <i>Avena hirtula</i> Lag.; <i>Avena hoppeana</i> Scheele; <i>Avena lagascae</i> Sennen; <i>Avena lusitanica</i> (Tab.Morais) B.R.Baum; <i>Avena malzevii</i> Tzvelev; <i>Avena matritensis</i> B.R.Baum; <i>Avena maxima</i> C.Presl; <i>Avena sallentiana</i> Pau; <i>Avena sativa</i> var. <i>barbata</i> (Pott ex Link) Fiori; <i>Avena serrulatiglumis</i> Sennen & Mauricio; <i>Avena wiestii</i> Steud.
<i>Avena eriantha</i>	52	<i>Avena eriantha</i> var. <i>acuminata</i> Coss.; <i>Trisetum pilosum</i> Roem. & Schult.

# Appendix - Synonyms

Taxon	Sheet	Synonyms
Avena fatua	53	Anelytrum avenaceum Hack.; Avena ambigua Schoenb.; Avena cultiformis (Malzev) Malzev; Avena fatua subsp. brevopilosa Kieck; Avena fatua subsp. cultiformis Malzev; Avena fatua subsp. glabrata (Peterm.) Piper & Beattie; Avena fatua subsp. meridionalis Malzev; Avena fatua subsp. septentrionalis (Malzev) Malzev; Avena fatua subvar. naniformis Yamag.; Avena fatua subvar. pseudonana Yamag.; Avena fatua subvar. pumila Yamag.; Avena fatua subvar. zine Yamag.; Avena fatua var. acidophila Kieck; Avena fatua var. alcaliphila Kieck; Avena fatua var. alta Kieck; Avena fatua var. altissima Kieck; Avena fatua var. elongata Malzev; Avena fatua var. glabrata Peterm.; Avena fatua var. glabrescens Coss. & Durieu; Avena fatua var. gravis Kieck; Avena fatua var. hyugaensis Yamag.; Avena fatua var. intermedia (T.Lestib.) Lej. & Courtois; Avena fatua var. leiocarpa Malzev; Avena fatua var. levis Kieck; Avena fatua var. longiflora Malzev; Avena fatua var. longispiculata Malzev; Avena fatua var. mollis Keng; Avena fatua var. nipponica Yamag.; Avena fatua var. pilosa Syme; Avena fatua var. pilosiformis Yamag.; Avena fatua var. pilosissima Gray; Avena fatua var. pseudoculta Peterm.; Avena fatua var. vilis (Wallr.) Hausskn.; Avena hybrida Peterm.; Avena intermedia Lindgr.; Avena intermedia T.Lestib.; Avena japonica Steud.; Avena lanuginosa Gilib.; Avena ludoviciana subvar. glabrescens (Durieu ex Godr.) Husn.; Avena ludoviciana var. glabrescens Durieu ex Godr.; Avena meridionalis (Malzev) Roshev.; Avena meridionalis var. grandis Roshev.; Avena nigra Wallr.; Avena occidentalis Durieu; Avena patens St.-Lag.; Avena pilosa Scop.; Avena sativa subsp. fatua (L.) Fiori; Avena sativa var. fatua (L.) Fiori; Avena sativa var. sericea Hook.f.; Avena septentrionalis Malzev; Avena sterilis Delile ex Boiss.; Avena sterilis subvar. glabrescens (Durieu ex Godr.) Husn.; Avena sterilis var. glabrescens (Durieu ex Godr.) Malzev; Avena vilis Wallr.
Avena sterilis	54	Avena fatua var. sterilis (L.) Fiori & Paol.; Avena macrocarpa Moench; Avena nutans St.-Lag.; Avena sativa var. sterilis (L.) Fiori; Avena sterilis subsp. macrocarpa Briq.
Avena trichophylla	55	Most sources consider this name to be a synonym of <i>Avena sterilis</i> subsp. <i>ludoviciana</i> (Durieu) Gillet & Magne
Avena ventricosa	56	Avena beguinotiana Pamp.; Avena bruhnsiana Gruner; Avena ventricosa Bal.; Avena venticulosa Bal. ex Coss.; Avena ventricosa subsp. bruhnsiana (Gruner) Malz.; Avena ventricosa subsp. ventricosa (Bal. ex Coss.) Malz.
Avena wiestii	57	Most sources consider this to be a synonym of <i>Avena barbata</i> Pott ex Link.
Hordeum bulbosum	58	Critesion bulbosum (L.) Á.Löve; Hordeum bulbosum var. bourgaei Boiss.; Hordeum bulbosum var. brevispicatum Post; Hordeum bulbosum var. lycium Asch. & Graebn.; Hordeum bulbosum subsp. nodosum (L.) B.R.Baum; Hordeum kaufmannii Regel; Hordeum nodosum L.; Hordeum strictum Desf.; Zeocriton nodosum (L.) P.Beauv.; Zeocriton strictum (Desf.) P.Beauv.
Hordeum marinum	59	Hordeum berterioanum É.Desv.; Hordeum caudatum V.Jirásek; Hordeum marinum subsp. marinum; Hordeum marinum var. pubescens (Guss.) Nevski; Hordeum marinum Stokes [Illegitimate]; Hordeum marinum var. annuum (Lange) Maire & Weiller; Hordeum marinum var. pubescens (Guss.) Woods; Hordeum pratense var. annuum Lange; Hordeum pubescens Guss.; Hordeum rigidum Roth; Hordeum winkleri Hack.; Zeocriton rigidum (Roth) P.Beauv.

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Taxon	Sheet	Synonyms
Hordeum murinum	60	Critesion murinum (L.) Á.Löve; Critesion murinum subsp. murinum; Hordeum boreale Gand.; Hordeum coleophorum Phil.; Hordeum delphicum Gand.; Hordeum depilatum Gand.; Hordeum dilatatum Gand.; Hordeum elongatum Gand.; Hordeum flexicaule Gand.; Hordeum hohenackeri Gand.; Hordeum microcladum Gand.; Hordeum murinum var. glaucescens Zapal.; Hordeum murinum var. leptostachys Trab.; Hordeum murinum var. majus Godr.; Hordeum murinum f. montanum Hack.; Hordeum murinum subsp. montanum (Hack.) H.Scholz & Raus; Hordeum murinum subsp. murinum; Hordeum murinum subsp. setarium H.Scholz & Raus; Hordeum murinum var. simulans Bowden; Hordeum neglectum Gand.; Hordeum pseudomurinum Tapp. ex W.D.J.Koch; Hordeum rubens Willk.; Hordeum vaginatum K.Koch; Triticum murale Salisb. [Illegitimate]; Zeocriton murinum (L.) P.Beauv.
Hordeum vulgare subsp. spontaneum	61	None known
Pennisetum orientale	62	Alopecurus hordeiformis Willd. ex Steud.; Cenchrus orientalis (Pers.) Willd. ex Kunth; Cenchrus orientalis (Rich.) Morrone; Panicum orientale (Rich.) Willd.; Pennisetum fasciculatum Trin.; Pennisetum griffithii Munro ex Hook.f.; Pennisetum orientale var. fasciculatum (Trin.) Leeke; Pennisetum orientale var. triflorum (Nees ex Steud.); Pennisetum persicum Boiss. & Buhse; Pennisetum phalariforme Steud.; Pennisetum setaceum subsp. orientale (Rich.) Maire; Pennisetum setaceum var. orientale (Rich.) Maire; Pennisetum sinaicum Decne.; Pennisetum tenue Fig. & De Not.; Pennisetum triflorum Nees ex Steud.; Pennisetum variabile Fig. & De Not.
Secale anatolicum	63	Secale anatolicum var. daralagesii N.R.Ivanov & Yakovlev; Secale cereale var. perennans Grossh.; Secale daralagesii Tumananow; Secale montanum subsp. anatolicum (Boiss.) Tzvelev; Secale montanum subsp. rhodopaeum (Delip.) Kouharov; Secale montanum var. anatolicum (Boiss.) Boiss.; Secale rhodopaeum Delip.; Secale strictum subsp. anatolicum (Boiss.) K.Hammer
Secale cereale subsp. segetale	64	Secale segetale (Zhuk.) Roshev.
Secale sylvestre	65	None known
Sorghum halepense	66	Andropogon controversus Steud.; Andropogon halepensis (L.) Brot.; Andropogon miliformis Schult.; Andropogon miliaceus Roxb.; Holcus sorghum L. var. exiguus (Forssk.) Hitchc.; Holcus exiguus Forssk.; Andropogon halepensis (L.) Brot. var. anatherus Piper; Holcus halepensis L.; Holcus halepensis L. var. miliformis (Schult.) Hitchc.; Sorghum miliaceum (Roxb.) Snowden; Sorghum miliaceum (Roxb.) Snowden var. parvispicula Snowden; Sorghum controversum (Steud.) Snowden

Taxon	Sheet	Synonyms
Triticum monococcum subsp. aegilopoides	67	Crithodium aegilopoides Link; Triticum aegilopoides (Link) Balansa ex Korn.; Triticum boeoticum Boiss.; Triticum boeoticum subsp. boeoticum (Boiss.) Hayek; Triticum monococcum subsp. boeoticum (Boiss.) Hayek; Triticum spontaneum Glaksb. subsp. aegilopoides (Link.) Flaksb.; Triticum thaoudar Reut. in Bourg. ex Hausskn.
Triticum timopheevii	68	Gigachilon timopheevii (Zhuk.) Á.Löve; Triticum araraticum Jakubz.; Triticum chaldicum Menabde; Triticum miguschovae Zhirov; Triticum militinae Zhuk. & Migush.; Triticum montanum Makush.; Triticum timonovum Heslot & Ferrary
Malus orientalis	69	Malus sylvestris (L.) Mill. subsp. orientalis (Uglitzk.) Browicz