

Iris tenuifolia

Iris tenuifolia is a beardless iris in the genus *Iris*, in the subgenus *Limniris* and in the series *Tenuifoliae* of the genus. It is a rhizomatous herbaceous perennial, from a wide region over central Asia, including Afghanistan, Pakistan, (the former Soviet Union republics of); Kazakhstan, Uzbekistan and Mongolia and in China. It has long greyish-green leaves, short stem and pale violet, lilac, pale blue, or purple flowers.

Iris tenuifolia is very similar in form to the Mediterranean *Iris unguicularis*. As they both have very small stems and the seed capsules are often hidden within the leaves of the plant.[2]

It has a dark brown, thin, short, knobbly, tough, wood-like rhizomes.[3][4][5] Underneath, it has a network of fibrous roots.[6]

On top of the rhizome, at the base of the leaves, are the brown or red-brown, fibrous remains of the previous seasons leaves. Which act as sheaths, for the new leaves.[3][5][7] The sheaths can be up to 6–20 cm (2–8 in) long.[6][5]

It can be either a single plant or can grow into thick clumps of plants.[5][8]

It has greyish-green, linear, twisted, leaves, that can grow between 20–60 cm (8–24 in) long and 1.5–2 mm wide.[7][9][10]

They do not have a mid-vein but parallel veins,[3][4][6] and are acuminate (ending in a point).[5]

They continue to grow after blooming, and can end up as a mass of twisted leaves.[11]

The leaves are longer than the flowering stems.[5]

It has a very short flowering stem or scape, 10–30 cm (4–12 in) long.[12][13][14] Although, sometimes the stems do not emerge above ground.[3]

It has 2 to 4, pointed (acuminate), membranous, green, between 5–10 cm (2–4 in) long and 8–10 mm wide, spathes (leaves of the flower bud).[3][6][7]

The stems hold normally 1–3, terminal (top of stem) flowers,[7][9][15] blooming in spring, between April and May,[3][6][13] or late as early June (in Russia).[10]

The scented flowers,[5] are 4–7 cm (2–3 in) in diameter,[7] and come in shades of pale violet,[3][14] lilac,[5][15][14] pale blue,[9][15][13] or purple.[4][10][13]

It has 2 pairs of petals, 3 large sepals (outer petals), known as the 'falls' and 3 inner, smaller petals (or tepals, known as the 'standards'.[16] The falls are spatulate (spoon shaped) or obovate-lanceolate,[4][6] 4.5–6 cm (2–2 in) long and 1.5 cm (1 in) wide.[3][6][7] They have a thin central yellow crest or mid-vein, dark veins (on a pale colour), and a band of papillose (or small hairs).[3][5][14] The narrower, oblanceolate, erect standards are 5 cm (2 in) long and 5–9 mm wide.[3][4][6]

It has a long, slender thread-like, perianth tube, 4.5–8 cm (2–3 in) long.[3][5][7]

It has 3 single coloured, style branches, 4 cm (2 in) long and 4–5 mm wide.[3] They attenuate (narrow slightly) and at the tips, are toothed.[4][6][5]

It has a slender 3–4 mm long pedicel,[5] 3 cm (1 in) long Stamens and a cylindric 7–12 cm (3–5 in) long and 2 mm wide, ovary.[3]

After the iris has flowered, between late July and early August (in Russia),[10] or between August and September (in China). It produces an ovoid or sub-globose, 3.2–4.5 cm (1–2 in) long and 1.2–1.8 cm (0–1 in) wide, seed capsule. It has short beak-like appendage on the top.[3][4][6]

The seeds are oval (or turbinate – like a top) shaped, wrinkled and black-brown to brown.[6][5][10]

Often, the seed capsule is hidden by the long leaves.[2]

In February 1997, a study was published in which 6 new flavanones, isolated from the rhizomes of *Iris tenuifolia*, using high resolution mass spectrometry.[17]

In 2005, it was noted that the rhizomes of *Iris tenuifolia* are the source of the largest number of new 2'-O-substituted simple flavanones within a single species.[18]

Between 2007 and 2011, a study was carried out on chemical constituents and pharmacological activities of *Iris tenuifolia* and *Iris halophila*. Using chromatographic and spectroscopic techniques. The irises have been used in various tradition herbal remedy's, such as traditional Mongolian herb medicine and Uighur herb medicine.[19]

In 2008, several chemical compounds were extracted from *Iris tenuifolia*. These included; 'izalpinin', 'alpinone', 'arborinone', 'irilin B', 'irisone A', 'irisone B', 'betavulgarin', 'beta-sitosterol' '5,7-dihydroxy-2', '6-dimethoxy-isoflavone', '2',5-dihydroxy-6,7-methylenedioxy flavanone, 'irisoid A' and 'ethyl-beta-d-glucopyranoside'. Also 2 new compounds were found, tenuifodione and tenuifone. All found using spectroscopic methods.[20]

In 2011, 2 flavans and a flavanone, were extracted from the rhizomes of *Iris tenuifolia* and then tested against stem cells.[21]

In 2012, a genetic study was carried out on *Iris laevigata* and several of its closely related iris species, including *Iris ensata*, *Iris setosa*, *Iris halophila*, *Iris scariosa*, *Iris potaninii*, *Iris tenuifolia*, *Iris bloudowii*, and *Iris sanguinea*. [22]

In 2014, the characteristics of phenotypic plasticity and ecological adaptation of *Iris tenuifolia* from various habitats in Xinjiang, China, were studied.[23]

As most irises are diploid, having two sets of chromosomes. This can be used to identify hybrids and classification of groupings.[16]
It has a chromosome count: $2n=14$. [3][24]

It is written as 细叶原委 in Chinese script and known as xi ye yuan wei in Pinyin Chinese.[3][4][25]

The Latin specific epithet *tenuifolia* comes from the almagamtion of two Latin words *tenuis* meaning 'fine or thin' and *folia* mean leaf.[26]

It has the common names of Egeria Iris.[27][28] Note; 'Egeria' means water buffaloes or cows

pulling (in China).[4] Another common name is narrow leafed iris,[29] or fine leaved iris,[30] or slender-leaf iris,[25] or silk leaves Iris.[4][27]

It was published and described by Peter Simon Pallas in Reise Russ. Reich. Vol.3 on page 714 in 1776.[31]

It was introduced to Russia in 1812, and was noted as growing in the front garden of Mr. A. Razumovsky near Moscow.[30]

It was later published with an illustration in The Gardeners' Chronicle 3rd. Series Vol.59 on page 196 on 8 April 1916.[32]

It was verified by United States Department of Agriculture Agricultural Research Service on 2 October 2014,[25] then as of January 2015, it is listed as a tentatively accepted name by the RHS.[33]

Iris tenuifolia is native to a wide region, of various temperate areas of Central Asia.[25][33] Which extends from the Volga through Turkestan into Mongolia,[12] and China.

It is found in the western Asian countries of Afghanistan and Pakistan.[3][6][25]

Also in the middle Asian countries of (the former Soviet Union republics of); Kazakhstan, Uzbekistan and Mongolia.[3][14][25]

Also found in regions of Russia, including Agin-Buryat Okrug, Bashkortostan, Chelyabinsk, Chita and Siberia.[13][14][25]

It is listed with *Iris bloudowii*, *Iris humilis*, *Iris ruthenica*, *Iris sibirica* and *Iris tigris* as being found in the Altai-Sayan region (where Russia, China, Mongolia and Kazakhstan come together).[34]

It is found within central China,[9][10][14] in the provinces of Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, (Shandong[3]), Shanxi, Xinjiang and Xizang.[3][4][25]

One reference mentions Turkey,[6] another reference mentions Iran.[11] Since most others do not mention these countries, they are not regarded as valid.

It is grown in semi-desert, desert or mild mountainous areas.[15]

On sandy steppes, on dunes, beside sandy riverine grasslands or river banks, on dry coastal sand regions, on gravelly desert-like slopes and in the crevices of rocks.[8][10][15]

It is also grown at altitudes of 1000 to 4200m above sea level.[6][8][13]

In north east China, it is found growing on poor soils on open tree-less plains.[11]

In 2003, it was listed as an endemic vascular species of the temperate steppe region of Inner Mongolia, China, along with *Stipa grandis*, *Artemisia frigida*, *Festuca ovina*, *Thymus serpyllum*, *Caragana microphylla*, *Koeleria cristata* and others.[35]

It is included in the IUCN 'Red Data Book' of the Chita Oblast of 2002, listed as 'rare'. It is now protected in Dauria and Khopyor reserves.[30]

Iris tenuifolia is rare in cultivation in the UK.[9][36] It is rare in cultivation in the US as well.[11]

They are more grown by specialised collectors or for scientific and research purposes.[6][11]

It was sometimes used as annual plant and only planted during the summer (in the UK, in 1800s).[36]

It is hardy, if sited in a northern continental climate. Similar to Nebraska, North Dakota or South Dakota.[11] It is hardy in parts of Russia. It has been grown in Moscow, St Petersburg and Chita.[10]

It prefers sandy or sandy loam soils, similar to the desert habitat.[6][9][15] It prefers alkaline soils.[8]

They prefer positions in full sun.[8]

It needs to be kept dry during winter, needing the protection of bulb frames (in the UK). It only needs water during the growing period.[9] The plant loses its foliage during the winter, as it is removed by the forces of wind, snow and other bad weather conditions. It then re-grows leaves, in April and May.[11]

It has high drought and heat tolerance (desert-like conditions).[8][11][15]

The seed of *Iris tenuifolia* is rarely used by western horticulturists, as the plants rarely flower.[11] William Rickatson Dykes notes that it made no satisfactory growth and never flowered.[2]

In other flowering regions, the seed can be harvested in autumn, washed, fresh or dried.[6]

Due to its high drought and heat resistance, it could be useful in breeding purposes.[10][30]

In 2001, a study was carried to monitor the effects of the iris, within a herbal remedy for kidney protection was carried out.[29]

The *Iris* genus has been used as a traditional folk medicine, used to treat a variety of diseases, such as cancer, inflammation, bacterial and viral infections.[37] It was found that compounds isolated from *Iris germanica* have anti-tumor, anti-oxidation, anti-malarial parasite and anti-TB and other positive effects.[38]

The roots, seeds and flowers of the iris, are used as ingredients in herbal medicines. They have been used as tocolysis (also called anti-contraction medications or labor represents) and to treat fetal metrorrhagia.[6]

On 24 December 2009, a patent was granted, for the extraction of *Iris tenuifolia*. Due to its chemical compounds being used in the treatment of Alzheimer's disease.[37]

