Plant Diversity Website

Pisum sativum L.

Common Names: Pea, dry pea, Chinese pea, Chinese pea pod, Chinese snow pea, edible-podded pea, edible pod pea, podded pea, snow pea, sugar snap pea

Etymology: *Pisum* is an ancient Latin name for the well-known pea. *Sativum* means "planted," or, more literally, "that which is sown" (6, 7).

Botanical synonyms (1, 6):
P. arvense L.
P. humile Boiss. & Noe
P. sativum L. ssp. *arvense* (L.) Poiret
P. sativum L. var. *arvense* (L.) Poir.
P. sativum L. var. *humile* Poir.
P. sativum L. var. *macrocarpon* Ser.

FAMILY: Fabaceae, the bean and pea family

Quick Notable Features:
¬ Alternate, compound leaves
¬ Large stipules, often larger than leaflets
¬ Terminal leaflets modified as tendrils
¬ Rachis of compound leaf is often winged

Plant Height: pea plants grow regularly to 1-2 m (3). Plant height was one of the important variables coded by Mendel in his study of peas.

Subspecies/varieties recognized (2, 3):
P. sativum L. subsp. abyssinicum (A. Braun) Govorov
P. sativum L. subsp. elatius
P. sativum L. *subsp. elatius pumilio*
P. sativum L. var. *hortense* Asch. & Graebn.
P. sativum L. *subsp. Sativum*
These are only a few of the common subspecies and synonyms recognized; the University of Flora Vascular Plants Database has a complete listing. http://www.plantatlas.usf.edu/synonyms.asp?plantID=1795

Most Likely Confused with: *Apios americana,* species of *Lathyrus,* species of *Vicia, Wisteria floribunda, and Wisteria sinensis.*

Habitat Preference: The plant prefers well-drained sand, silt, or clay loam and is not shade tolerant. It prefers relatively cool and humid climates and escapees are usually found on shores or fields; it is rarely persistent once escaped (3, 5).

Geographic Distribution in Michigan: It has escaped in four isolated counties in Michigan, both in the lower and upper peninsulas: Oakland, Alpena, Houghton, and Baraga (5).

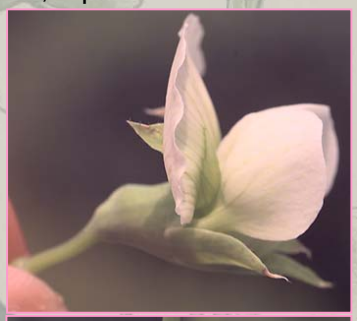
Known Elevational Distribution: No natural distribution was located in the literature, but peas are grown at high altitudes in the tropics and at sea level. The flora of Nepal lists the species from 1200 to 4000m (15) .Some reports indicate that high temperatures are more damaging than cool temperatures to pea plants.

Complete Geographic Distribution: This is an Old World species, native to Asia or possibly Europe and Southwest Asia (14). Now cultivated globally as one of the world's most important vegetable crops (5).

Vegetative Plant Description: This glabrous, herbaceous vine has leaves that are alternate and pinnately compound. The leaflets are ovate, entire, and 1.5 – 6 cm long. There are 1–4 pairs of pinnately-veined leaflets per side with the terminal leaflet pair modified into a branched tendril. Leaflets are essentially sessile. The stipules are large, up to 10cm long (usually 1.5-8 cm), on round, slender, and glabrous stems. The midrib of the leaf rachis can be slightly winged (2).

Climbing Mechanism: This plant climbs using the tendrils produced at the apex of a compound leaf. These modified terminal leaflets form a branched tendril (pers. obs.).

Flower Description: Flowers are borne on axillary racemes. Corollas can be white, pink, or purple (2). Flowers have the classic "Faboid legume" form with 5 sepals, 5 petals that are zygomorphic (bilaterally symmetrical), 10 stamens in two groups (9 fused + 1 free) and a single superior carpel (pers. obs.).



Flowering Time: May to September (3).

Pollinator: Self-pollination is possible in this species (2), but bees are also visitors (3).

Fruit Type and Description: The fruit is a legume. These are borne on a short pedicel, are 4-15 cm long and 1.5-2.5cm wide. The fruits are dehiscent both adaxially and abaxially, with each pod containing 2-10 seeds (2).

Seed Description: Seeds morphology varies greatly. They can be smooth or wrinkled, and globose or angled. Colors range from white to grey, green, or brown. Mature seeds are without the typical endosperm of most angiosperms and the cotyledons serve a nutritive role for the germinating seed (2,13).

Dispersal Syndrome: The pea is a widely distributed crop species but has rarely been encountered as an invasive and thus little is written about its dispersal. Pea fruits left on the vine may open along both sutures, dispersing seed by gravity but wild observations could not be found.

Distinguished by: *Pisum sativum* has terminal leaflets modified into tendrils, unlike *Apios americana,* the common peanut, and species in the genus *Wisteria*. It can be distinguished from various species of both *Lathyrus* and *Vicia* by the large stipules, which are larger than the basal leaflets (5).

Other members of the family in Michigan (number species): *Amorpha* (3), *Amphicarpaea* (1), *Anthyllis* (1), *Apios* (1), *Astragalus* (3), *Baptisia* (4), *Caragana* (1), *Cercis* (1), *Chamaecrista* (2), *Colutea* (1), *Crotalaria* (1), *Cytisus* (1), *Dalea* (3), *Desmodium* (14), *Genista* (1), *Gleditsia* (1), *Glycin* (1), *Gymnocladus* (1), *Hedysarum* (1), *Kummerowia* (1), *Lathyrus* (10), *Lespedeza* (14), *Lotus* (1), *Lupinu* (3), *Medicago* (4), *Melilotus* (2), *Mimosa* (1), *Orbexilum* (1), *Phaseolus* (2), *Pisum* (1), *Robinia* (3), *Securigera* (1), *Senna* (2), *Strophostyles* (1), *Tephrosia* (1), *Trifolium* (11), *Vicia* (9), *Vigna* (1), *Wisteria* (2)

Ethnobotanical Uses: *Pisum sativum* is a global food crop, including edible-pod peas as well as field and garden peas (2). Its seed, especially the oils, may be contraceptive. Powdered seed can also treat skin irritation and acne (3). Flowers are edible in a raw state (8). The top 10-15 cm (4-6) inches of pea plants are used in salads, stir-fries, and as decorative garnishes as a traditional Indochinese crop (10). From research into pea vine edibility comes the following wisdom: Remove tendrils before cooking/preparing pea vines as a vegetable. Taiwanese saying: "tendrils tie your tongue" (10).

Phylogenetic Information: *Pisum sativum* is one of only two species in the genus *Pisum*. *Pisum* is a Papilionoid genus in the Fabaceae, subfamily Faboideae. Families Fabaceae, Polygalaceae, Quillajaceae, and Surianaceae form the Fabales order. The Fabales, Rosales, Cucurbitales, and Fagales form a monophyletic group within the eurosids I inside the rosids. They are eudicots and angiosperms (4).

Interesting Quotation or Other Interesting Factoid not above:

- Vegetative, floral, and fruit morphology of *Pisum sativum* vary greatly.
- Plants are largely self-pollinated and thus it is easy to generate pure-breeding lineages.
- Gregor Mendel used peas as his model organism for his pioneering experiments in heredity. Using traits like pod color, seed shape, and plant height on this very species he began to understand how genetic information is passed from parent to progeny. (9)
- Peas are a target for genetic modification by incorporation of genes that combat a leaf fungus detrimental to pea crops. CSIRO in Australia has been involved (12).

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Image of flower back and side: www.csdl.tamu.edu/FLORA/imaxxfab.htm

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