

FULL ACCOUNT FOR: Camelina sativa

Camelina sativa 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Capparales	Brassicaceae

false flax (English), Siberian oilseed (English), Oljedodre (Norwegian), big-seed Common name

false flax (English), Lin bâtard (French), Sæd-Dodder (Danish), German sesame (English), gold-of-pleasure (English), Ruistankio (Finnish), Cameline cultivee (French), Leindotter (German), camelina (Portuguese), camelina pilosa (Spanish), Huttentut (Dutch), Saatdotter (German), large-seeded false

flax (German), caméline ciliée (French)

Camelina parodii, Ibarra & La Porte **Synonym**

Myagrum sativum, L. (basionym)

Similar species Camelina microcarpa

Camelina sativa can prosper in many different climates and soils. Its ability to **Summary**

survive in a diverse range of habitats enables it to be introduced fairly easily into new environments. It is considered a common weed in many areas, but other areas embrace it for the use of its oils as a food, fuel or for its possible medicinal value. This is a hermaphroditic species, which contains seeds after

pollination that are known for the oils that they produce.

view this species on IUCN Red List



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Species Description

C. sativa is an annual or winter annual that reaches heights of 30 to 90cm (Mirek, 1981 in Putnam et al., 1993). It can have smooth (glabrous) or sparsely hairy stems that become woody at maturity, and is simple or sometimes branched (Klinkenberg, 2008). If hairy, the starlike hairs are more numerous than simple hairs. Leaves are 2-8cm long and are arrow shaped and sharp-pointed with smooth edges (Mirek, 1981 in Putnam et al., 1993). They are unstalked or have short stalks and are usually glabrous or only slightly hairy (Klinkenberg, 2008). It produces prolific small flowers defined as racemes which are white, pale yellow (Klinkenberg, 2008) or greenish yellow (Mirek, 1981 in Putnam et al., 1993) in colour. Flowers have four petals which are 4-5mm in length. Sepals are 2-3mm in length, styles are 2-2.5mm in length and flower stalks are 10-25mm in length (Klinkenberg, 2008). Fruits are pear shaped pods known as silicles; 7-9mm long, 5-6mm wide with a squared off tip (Klinkenberg, 2008). Seed pods are 6-14mm long and superficially resemble the bolls of flax. Fruits produce 10-25 tiny seeds (Schuster & Friedt, 1998) (0.7mm x 1.5mm), which are pale yellow-brown in colour and oblong in shape with a ridged surface (Mirek, 1981 in Putnam et al., 1993).\r\n\r\n C. sativa var. sativa grows in the open it has a wide-branching growth habit. However, in the presence of flax the weed takes on a taller, less branched form which closely resembles a flax plant. This is a classic example of crop-weed coevolution or crop mimicry (Radosevich et al., 1997). Baker (1974, in Radosevich et al., 1997) suggests that C. sativa is in fact one of the best examples of crop mimicry. In some areas where flax cultivation is very intensive C. sativa var. sativa is replaced by var. linicola which has a lifecycle even more aligned with flax. The seeds are so similar that they are not readily separated and must be sown together. C. sativa var. sativa grows in the open it has a wide-branching growth habit. However, in the presence of flax the weed takes on a taller, less branched form which closely resembles a flax plant. This is a classic example of crop-weed coevolution or crop mimicry (Radosevich et al., 1997). Baker (1974, in Radosevich et al., 1997) suggests that C. sativa is in fact one of the best examples of crop mimicry. In some areas where flax cultivation is very intensive C. sativa var. sativa is replaced by var. linicola which has a lifecycle even more aligned with flax. The seeds are so similar that they are not readily separated and must be sown together.

Notes

It is believed that this species was initially cultivated as an oilseed crop (Radosevich *et al.*, 1997). Seed oil content averages at 37 percent by weight.

Lifecycle Stages

C. sativa has a short lifecycle of just 85 to 100 days (Putnam *et al.*, 1993). Each plant can produce between 100 and 1000 seeds. Seeds are very tiny with the 1000-seed weight just 1g on average (Schuster & Freidt, 1998). Seeds do not exhibit dormancy (IENICA, 2002; Robinson, 1987 in Putnam *et al.*, 1993).

Uses

C. sativa is economically important as a human food due to its oil. It has an oil content of 40% and is rich in essential acids and omega-3 fatty acids including linolenic, linoleic, oleic and eicosenic acids (Ryhänen et al., 2009). Byproducts left over after oil extraction from seeds (known as Camelina meal or expeller) (Cherian et al., 2009; Ryhänen et al., 2009) may also have importance as animal fodder. They been used to increase nutritional content of chicken eggs (Cherian et al., 2009), rabbit (Peiretti et al., 2007), pig (Flachowsky et al., 1997), cattle (Moloney et al., 1998) and chicken meat for commercial consumption (Ryhänen et al., 2009). Seeds of C. sativa have also been used as food for caged birds (Putnam et al., 1993).\r\n

Further economic importance includes its potential as a petroleum substitute/alcohol and as a potential seed contaminant (USDA-ARS, 2008). In addition, C. sativa together with other oilseed crops, have garnered interest as potential sources of biodiesel (WSSA, 2008). *C. sativa* has attracted interest as an oil crop because of its ability to grow in various climatic conditions, low nutrient requirements and resistance to disease and pests (Francis & Warwick, 2009). Furthermore, the cultivated seed oil from this species was previously used as a food or lamp oil, and sometimes it was used for soap and dye production. It was formerly used for medicinal purposes, and today it is still sometimes applied in the veterinary medicine (Hanelt, 2001).



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Habitat Description

C. sativa can exist in a wide variety of habitats including prairies, fields (grain, flax, alfalfa), open woods, lakeshore, dry sandy soils, around elevators, roadsides, railways and waste places or weedy places (CBIF, 2003). *C. sativa* prefers well-drained soils (GISP, 2008).

Reproduction

The propagule of reproduction of *C. sativa* is the seed. This species has an unspecialized mode of dispersal. It uses mixed mating as its system of breeding. The sex of this species is hermaphroditic. The fruit type is called a silicle (API, 2008). The seeds result from either self-pollination, or cross pollination by visiting insects.

General Impacts

C. sativa has been described as an allelopathic crop affecting other crops (Kohli *et al.*, 2001). In addition, it has been considered an agricultural weed, environmental weed, and a naturalized weed (GCW, 2007) in addition to an economic weed (API, 2008). However, *C. sativa* is primarily a minor weed in flax and not often a problem in other crops (Putnam *et al.*, 1993).

Management Info

<u>Chemical</u>: Sulfentrazone, a PRE herbicide, completely eliminated *C. sativa* from treated plots regardless of rate in an experiment conducted in Montana in 2006 and 2007. The PRE herbicides reduced the *C. sativa* stand 15 to 56% at the half rate and 17 to 70% at the full rate. The results of the experiments indicate that there are several herbicides that have the potential to be utilized for *C. sativa* control (WSSA, 2008).

Principal source:

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ALIEN RANGE

[1] AUSTRALIA [10] CANADA [1] IRELAND [1] JAPAN

[1] MEXICO [1] SOUTHWESTERN ASIA

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