

Field Pennycress, *Thlapsi arvense*



Field pennycress is a common weed of cultivated areas.

on long petioles. These grow to produce a rosette of leaves up to 6" across that overwinter and resume growth in the spring. The medium green leaves are elongate, with long petioles, a distinct whitish midline when young, and may have slightly wavy margins. Seeds can also germinate in the spring or summer, but those plants generally do not form a basal rosette, only developing blooming stems. The plants have a shallow root system with a central taproot surrounded by many smaller fibrous roots.

Field pennycress is a common Eurasian weed that occurs throughout North America. The species *Thlapsi arvense*, in the mustard family (Brassicaceae) is a summer or winter annual that grows 1 to 2 feet tall. It is a common agricultural weed that prefers cultivated areas, rarely invading undisturbed natural habitats. It is commonly found along roadsides, in waste areas, cropland, weedy meadows or pastures, and gardens with full sun and moderate moisture, particularly on loam and clay soils.

Seeds germinate in the fall, producing non-distinctive seedlings with oval to oblong cotyledons



Field pennycress is frequently a winter annual that produces a rosette of leaves in the fall (L) that resumes growth in the spring (R).

In late spring overwintered plants produce an erect central flowering stem and several side stems. These smooth stems are ribbed and some develop wings or flanges along the ribs. The leaves on the flowering stems are alternate, elongate (lanceolate, oblanceolate or narrow ovate), and have toothed



Erect flower stems are produced starting in the spring (L, LC and RC). The stems are ribbed and the clasping leaves have ear-like lobes that go around the stem (R).

margins. The lower leaves may have a short petiole, but the middle and upper leaves do not, instead clasping the stem with a pair of ear-like lobes that go around the stem. As the plants begin to flower the basal leaves begin

to senesce. Each stem ends in a dense, erect raceme with numerous tiny flowers that bloom from the top down. The inflorescence is compact at first, but as it matures it lengthens up to 8 inches long.

Each white flower is about 1/8" across when open, with the 4 petals characteristic of the mustard family, 4 green sepals, and 6 stamens (4 long and 2 short) with yellow anthers, all held away from the flower stem on a slender pedicel up to 1/2 inch long. Plants bloom primarily from late spring through mid-summer, though summer-germinated plants may bloom later. The flowers are attractive to flies and small bees.



Flowers are produced in a dense raceme (L), with numerous flowers in each head (C) each with four petals (R).

The flowers are followed by relatively large (up to 1/2 inch long when mature), flattened, oval seedpods (a silicle), each up to 1/2 inch long with 2 cells, each containing 3 to 8 seeds that usually mature within



Field pennycress produces distinctive seed pods (L) in a single or branched raceme (LC) with flat, winged silicles that change from green (C) to tan (RC and R, closeup of a single silicle) as they dry.



Field pennycress seedpods sold as a cut flower (L) or in combination bouquets (C and R) at a farmer's market.

a week of flowering. The edge of each seedpod has a broad membranous wing with a small notch at the apex. The silicles remain green for a while, but eventually turn yellowish or greenish-orange at maturity. Together these numerous seed pods on the erect stems give the mature plant a "bottle brush" appearance, and some people even use them (or the flowering stems) for their ornamental value in fresh and dried flower arrangements.

Each dark brown to black seed is oval-shaped with one rounded end and one more pointed end, and has fine, curved ridges resembling a fingerprint pattern. Each plant can produce 1,000-15,000+ seeds that will remain viable in the soil for at least 5 years and up to 20 years under ideal conditions. Seeds are shed over several weeks, with the seedpods shattering readily when mature. The seeds contain a glucoside that is poisonous to animals, tainting the milk of cows that eat it and the meat from animals that have fed on it.



Field pennycress produces numerous small seeds (L), each of which has raised ridges on the surface (R).

This plant is sometimes cultivated as a food crop in Europe. The leaves of field pennycress are edible raw or cooked, with a bitter mustard-garlic-onion taste that can be removed by parboiling. They are best harvested before the plant begins to flower. The seeds can be ground to a powder and used as a mustard substitute, and contain 20-33% oil which can be extracted for cooking or industrial use. There has been some research done on the potential of field pennycress as a biofuel.



Shepherd's purse doesn't produce the dense foliage that field pennycress does (L) and had triangular seedpods (R).

Shepherd's purse (*Capsella bursa-pastoris*) is sometimes confused with field pennycress, but shepherd's purse has triangular pods and the foliage has no odor, and is generally a smaller and less dense plant.

This annual weed is easily controlled in gardens by hand pulling before it goes to flower. Overwintered plants start growing early in the spring, producing lots of green foliage before most other annuals have even germinated. At that time of year there are few "greens" to add



Field pennycress grows rapidly in the spring, developing lots of leaves before flowering.

to the plethora of "browns" left after the winter when constructing a compost pile, so I often intentionally let seedlings go in the fall and "harvest" them when still in the rosette phase to add to my compost pile.

– Susan Mahr, University of Wisconsin - Madison

Additional Information:

- Field Pennycress – on the Illinois Wildflowers website at www.illinoiswildflowers.info/weeds/plants/pennycress.htm