

WRITTEN FINDINGS OF THE WASHINGTON STATE NOXIOUS WEED CONTROL BOARD

Scientific Name: *Cardaria draba* (L) Desv.

Common Name: Hoary cress

Family: Brassicaceae (Cruciferae)

Legal Status: Class C

Description and Variation: Perennial, with a spreading root system from which many aerial shoots are produced. The stem is 30-60 cm, erect to occasionally nearly procumbent. Basal leaves with scattered to dense pubescence, irregularly dentate to entire. Middle and upper leaves sparsely pubescent to glabrous, obovate, elliptic-oblong or lanceolate, irregularly toothed to nearly entire. Flowers are white. The seed pods are heart shaped.

Economic Importance: *Detrimental* - *C. draba* is the most weedy of all three *Cardaria* species occurring in the United States. It has the potential to reduce the value of high-price wheat lands.

Beneficial - The flowers serve as pollen and nectar sources for many insects.

Geographical Distribution: Native to the Balkans, Georgia, Armenia, Azerbaijan, Irkutskaya Oblast, Turkey, Israel, Syria, Iraq and Iran. It is widely introduced and is naturalized throughout Europe and all other continents.

Habitat: A significant hazard to crop production under moist conditions and on irrigated land, but is unlikely to be a problem in arid areas. *C. draba* shows a preference for alkaline soils, but does well on a variety of soils where moisture conditions are moderate. It grows under open, unshaded conditions in grainfields, hayfields, sugar beets, vegetable crops, and along roadsides.

History: First collected in the United States at Long Island, New York in 1862 and Ontario, Canada in 1878. It was probably introduced by early European settlers.

Growth and Development: The root system consists of vertical and lateral roots from which grow new rosettes and flowering shoots. It survives and spreads primarily by an extremely persistent root system. These overwintering roots give rise to new shoots in the spring. Studies indicate that the peak accumulation of carbohydrates is around the first of August and the lowest levels in the early spring. Cotyledons appear about 5-6 weeks after planting and expand to maximum size in about three weeks. During this time, a rosette forms. After 2-3 more weeks, the lateral roots develop from the radicle. Lateral stem shoots appear after about 13-14 weeks. Inflorescences commonly do not form until after two years. The plants usually bloom in mid-June, with pod development being completed by the third week of July. A single plant established in the absence of competition has

been reported *C. draba* to spread over an area 3.7 m in diameter during its first year of development. Other studies show radial increases of 61-76 cm annually. The plants are capable of producing up to 455 shoots in one year.

Reproduction: (a) Floral Biology - This species is self-incompatible and is outcrossed by insects. (b) Seed Production and Dispersal - One mature plant produces 1,200-4,800 seeds. (c) Viability of Seeds and Germination - One year old seed germinated 84%, two year old seed germinated 31% and three year old seed did not germinate at all. (d) Vegetative Reproduction - Shoot development is from buds which can form on any part of the permanent root system, but tends to occur most often at or just below the point where lateral roots bend down to become vertical. Such buds give rise directly to new rosettes if born at or near the soil surface. Buds arising at deeper levels grow out as rhizomes.

Hybrids: Capable of hybridizing with *C. chalepensis*.

Response to Herbicides: Susceptible to 2,4-D. Refer to the PNW Weed Control Handbook, updated annually. Read and follow current herbicide labels and recommendations for control.

Response to Cultural Methods: Cultivation is the major factor in the spread of this species in Australia. Studies in Canada have shown that it takes three consecutive years of intensive tillage to kill the root system. Studies have also shown that seeds are killed after being buried in moist, compacted manure for one month.

Biocontrol Potentials:

References:

Grower's Weed ID Handbook. 1978.

Hawkes, Whitson, Dennis. 1985. A Guide to Selected Weeds of Oregon

Mulligan, G.A. and J.N. Findlay. 1974. The Biology of Canadian Weeds. 3. *Cardaria draba*, *C. chalepensis* and *C. pubescens*. Can. J. Plant Sci. 54:149-160

Miller, T.W. 1991. Hoary Cress and Related Whitetops. Extension Bulletin PNW 359.

USDA-ARS. 1971. Common Weeds of the United States. Dover Publications, Inc., New York.