CLASS C

1) NAME

Cardaria pubescens (C. A. Meyer) - hairy whitetop

2) DESCRIPTION AND ACCOUNT OF VARIATION

Perennial, with a spreading root system from which many aerial shoots are produced; stem stout, spreading to nearly erect, 10-40 cm. high; leaves pubescent and irregularly dentate. Cardaria spp. differ from all other mustards in that they have white flowers. The seed pods of C. pubescens are completely globular to ellipsoidal. This character differentiates it from the other two species of Cardaria in North America.

3) ECONOMIC IMPORTANCE

a. Detrimental---C. pubescens has the potential to reduce the value of high-priced wheat lands in areas it exists in.
b. Beneficial---The flowers are frequented by insects, probably utilizing the pollen and nectar for food.

4) GEOGRAPHICAL DISTRIBUTION

C. pubescens is native to Kazakhstan SSR, Uzbekistan SSR, Turkmenia SSR, northern Iran and Afghanistan. It is naturalized in Argentina and North America. It is an aggressive weed in western North America and is rare in the east.

5) HABITAT

a. Climatic requirements---Studies indicate that C. pubescens is a significant hazard to crop production under moist conditions and on irrigated land, but is unlikely to be a problem under drier conditions.
b. Substratum---C. pubescens tends to show a preference for alkaline soils, but does well on a variety of soils where moisture is in at least a moderate supply.
c. Communities in which the species occurs---It grows under open unshaded conditions in pastures, and areas of disturbance, e.g., gardens, feed lots, water courses, and along irrigation ditches.

6) HISTORY

C. pubescens was first collected in the United States at Ypsilanti, Michigan, in 1919 and in Canada in 1926. It was introduced into North America in alfalfa seed from Turkestan.

7) GROWTH AND DEVELOPMENT

a. Morphology---The root system consists of vertical and lateral roots from which new rosettes and flowering shoots arise.
b. Perennation---It survives and spreads primarily by extremely persistant roots. These roots overwinter, with abundant food reserves, and produce new shoots in the spring.
c. Physiological data---Studies show that the maximum accumulation of carbohydrates is about 1 August and the lowest early in the spring.

d. Phenology---In Saskatchewan, plants of C. pubescens grown from seed planted in October 1957 did not produce an inflorescence until 1959. Shoot from underground parts emerged on 1 May 1959 and produced basal rosettes. By mid-May the plants were 5.1-12.7 cm tall and bore 5.7 leaves. Buds were initiated at the beginning of June and were in bloom the first week of July. On 20 July, seeds were fully developed but immature.

8) REPRODUCTION

a. Floral biology---This species is self-incompatible and is outcrossed by insects.

b. Seed production and dispersal---Average production is about 300 pods and around 2,000 seeds per mature plant.

c. Viability of seeds and germination---Seed of C. pubescens germinated 9% after 3 years but the seed was probably immature as it had only a 15% germination when collected.

d. Vegetative reproduction---Shoot development is from buds which can form on any part of the permanent root system, but tend 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.

9) HYBRIDS

No known hybrids exist.

10) POPULATION DYNAMICS

Studies in Saskatchewan show that C. pubescens is capable of an increase in area of 91% within a three year period. Perimeter extension or recession frequently coincided with the presence or absence of competitors.

11) RESPONSE TO HERBICIDES AND OTHER CHEMICALS

C. pubescens is susceptible to 2,4-D at rates of 454-907 g/0.4 ha and Amitrole at 907 g/0/4 ha.

12) RESPONSE TO OTHER HUMAN MANIPULATIONS

Alfalfa is a more effective competitor than perennial grasses where moisture is abundant. A stand of C. pubescens was eradicated in a season and a half by hoeing at intervals of 4 weeks. Three consecutive years of intensive tillage provides good control in most cases.

13) RESPONSE TO PARASITES

a. Insects and other nondomestic animals---No insects have been recorded from C. pubescens.

b. Microorganisms and viruses---None recorded from C. pubescens.

14) LITERATURE CITED

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.

Gilkey, 1957, Weeds of the PNW

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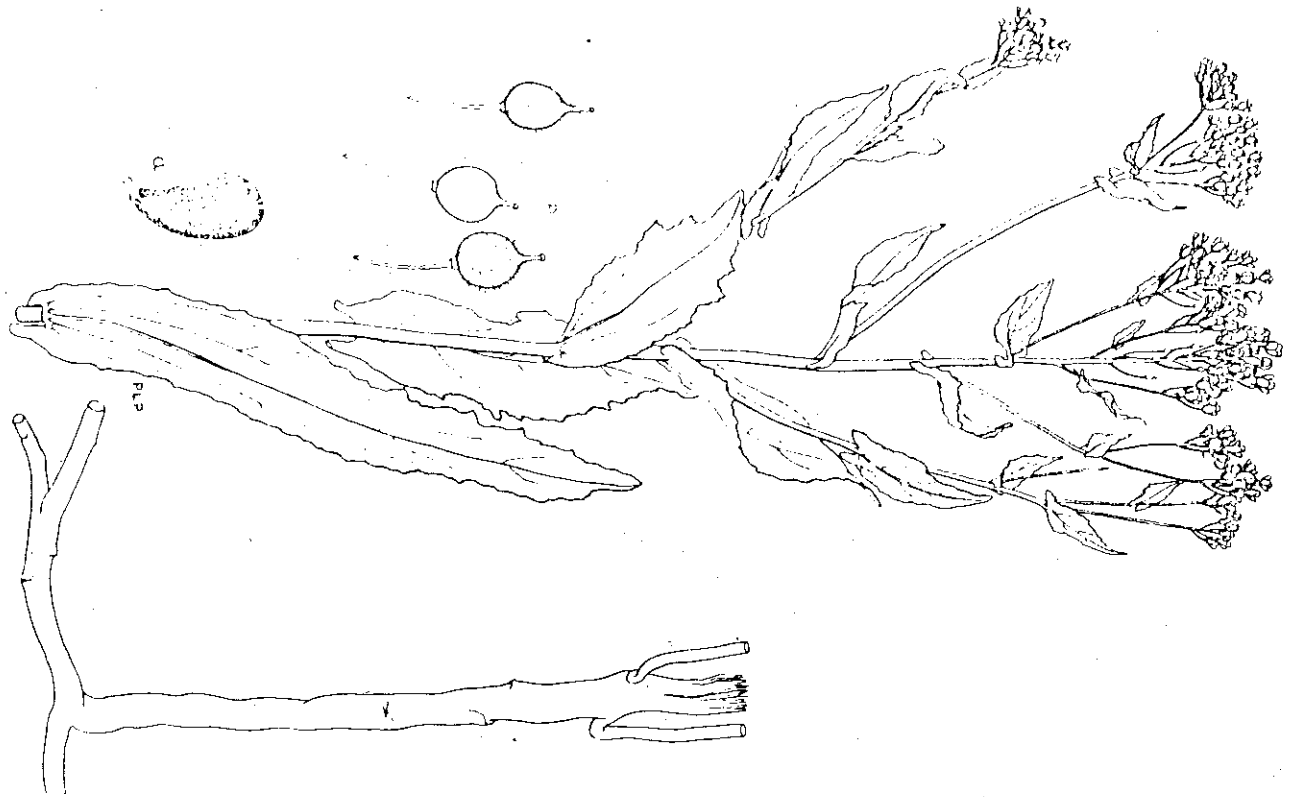

Figure 81. Hairy-podded Whitetop, *Cardaria pubescens*
a, seed
b, seed-pods