WHITE TOP

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WHITE TOP—*Lepidium repens*—Showing stem with flowers and seed pod, nature of root growth and seed. Seed magnified 8 diameters.

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WHITE TOP

Lepidium draba, Lepidium repens, and *Hymenophysa pubescens*

Other common names: Hoary cress and Perennial pepper grass.

By Rex Warren and Virgil Freed*

IN OREGON there are three distinct plants called white top. Though similar in general appearance, they differ slightly in the shape of the seed pod. One (*Lepidium draba*) has a heart-shaped, broad, flat pod containing two seeds; another (*Lepidium repens*) has a lens-shaped pod that is flat and round and has two or four seeds; the third (*Hymenophysa pubescens*) is lower growing, and is distinguished by its small, purplish, globe-shaped seed pod. Its pod somewhat resembles that of *Lepidium repens,* except that it is smaller and "blown up." It also has two or four seeds to the pod. The habits of these three white top plants are very similar so the material following will apply to all.

The plant is a perennial, has grayish white foliage, and grows erect from 10 to 18 inches high. The leaves are oval or oblong, generally between ½ inch and 3 inches long, with toothed or almost unbroken edges. The weed produces numerous white flowers, which are about ¼ inch broad, borne in large groups at the tops of the stems. A field in bloom has a solid, snowy-white appearance; hence the name "white top." Young plants have a rosette appearance before blooming and closely resemble fan weed.

Seed of white top is reddish-brown and about the same size as alfalfa seed. It is difficult to clean from alfalfa or clover seed and is often carried in these seeds as an impurity.

Some livestock will eat young plants, but the foliage becomes coarse, bitter, and woody as the plant matures. It has a disagreeable mustard taste.

White-top roots have been found as deep as 30 feet under ground. They send out numerous lateral roots, which send up shoots at frequent intervals. Each of these shoots can develop into a plant, and a small piece of root, if broken off, may start a new patch. Unlike morning-glory, white top increases the size of its patches in alfalfa but increases only slowly in sod-forming grasses. In time, it will choke out a field of alfalfa.

White top has been noted in all eastern Oregon counties and in four counties in western Oregon. It seems to prefer slightly alkaline soils but apparently will thrive in almost any kind of soil. It finds its real home on irrigated lands, but will grow on land much too dry for alfalfa. Most of the patches in the state were originally started by sowing alfalfa or clover seed that contained white top seed, or by using hay with mature white top. It is one of the few perennial weeds that ripen before the first cutting of alfalfa for hay, so first-cutting alfalfa as well as second is likely to carry the seed.

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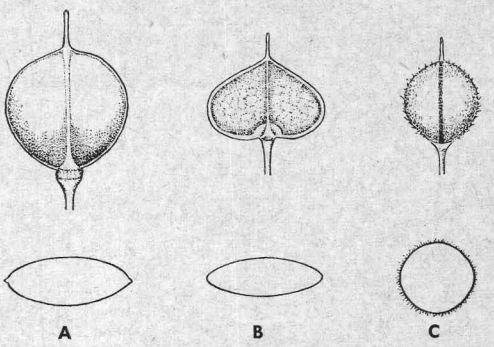
Control By Cropping and Cultivation

White top normally starts growth in the fall and makes a rapid growth early the following spring, maturing its seed in the early summer. Because of this early spring growth, and early seed maturity, it is possible to accomplish good control by early spring plowing and planting the field to a spring crop. Cereals are more suited for this type of cropping than are legumes or grasses. By repeating the spring plowing and seeding to spring crops, white top can be ultimately eradicated. Crops best adapted for spring planting are wheat, oats, barley, sudan grass, or corn. Bi-annual or perennial legumes should not be planted because of the impossibility of replowing the field each spring.



Enlarged views of seed pods from side and top of three different white tops. A. *Lepidium repens.* B. *Lepidium draba.* C. *Hymenophysa pubescens.* All enlarged 3 diameters.

2,4-D and Cultivation

Control and eradication can be obtained more quickly by spraying the white top with 2,4-D prior to plowing. Best results have been obtained by using 2 to 3 pounds of 2,4-D acid per acre. The field should not be plowed for at least 8 to 10 days after spraying. Over 90 per cent control of white top has been obtained by spraying and spring cropping in a 2-year period.

The combination of 2,4-D sprays and cultivation can be used successfully when winter cereals are produced. For producing winter grains, the infested area should be sprayed before plowing, followed in two weeks by plowing. The field should be cultivated the remainder of the summer and seeded to grain the following fall. The wheat is selectively sprayed with 2,4-D acid the following spring with about 1 pound of 2,4-D per acre.

If white top plants are observed growing in the field after either spring grain or fall grain are harvested, the field should be dry plowed and reworked until fall seeding time or until soil conditions prevent further working.

Control with 2,4-D

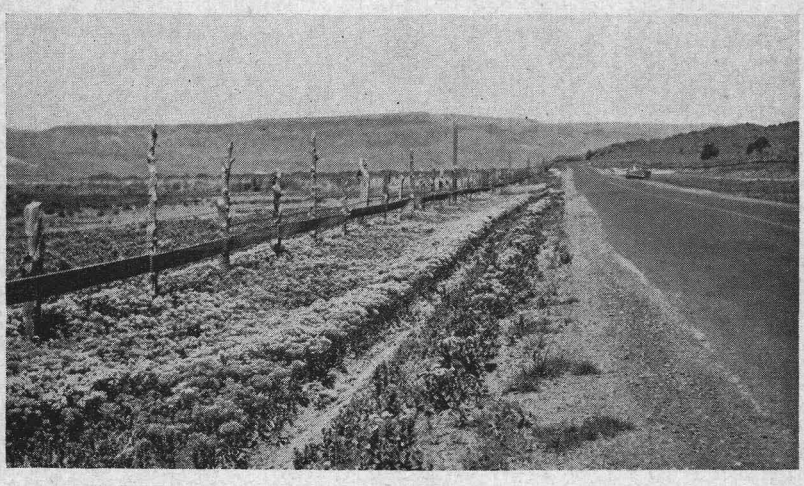
White top is more susceptible to the 2,4-D sprays than are some of the other perennial weeds, such as Russian knapweed, or leafy spurge. When white top is growing in crop land it is more practical to utilize cropping and 2,4-D sprays as previously described. When white top is growing on grass land or pasture land, however, 2,4-D can be used with success without cultivation. For best control, white top should be sprayed in the early bud stage. Spraying should be done with 2 to 3 pounds of 2,4-D acid per acre. More effective control is obtained by spraying with a minimum of 25 gallons of spray per acre. A new chemical, MCP, has shown promise in some areas for control of white top. This material should be applied at the pre-bud stage for best results. It is used in the same manner as 2,4-D.

Control with Sodium Chlorate

Sodium chlorate is not as effective in controlling white top as it is for morning glory, Canada thistle or Russian knapweed. When sodium chlorate is used, it should be applied in the fall at the rate of 6 to 8 pounds per square rod. This rate of application of sodium chlorate will result in soil sterility for several years, depending upon the amount of moisture and organic matter available. Sodium chlorate can be applied either dry or as a spray. When used as a spray, it should be mixed with water at the rate of 1 pound per gallon. Spray operators should be careful in applying sodium chlorate as a spray because of fire hazards after drying. Spray operators should wear clothes and footwear which can be readily washed or discarded immediately following the spray operation.

Control with Soil Fumigants

Soil fumigants are effective for the control of white top, as well as other deep rooted perennial weeds. Most common soil fumigants are carbon bisulfide and materials commonly called prochlors. These materials are liquids which are injected into the soil with special equipment; after coming in contact with the soil they form gases which are very effective on the control of these weeds. Soil fumigants are expensive to use and should be considered only on intensive crop land or in areas where cultivation or soil sterilants cannot be used. Carbon bisulfide is injected into the soil at 18-inch intervals at the rate of 2 ounces for each injection. The prochlors are best used at the rate of one tablespoonful each 14 inches. Fumigants should be applied using a diamond pattern. (Injections in the second row are spaced so that they are between the injections of the previous row.) The area to be treated should be thoroughly worked. A seedbed similar to that of a garden is preferred. It is important that there be sufficient soil moisture to prevent the fumes from escaping from the soil surface. The area after treatment should be rolled or the individual injection holes should be tramped shut.



White top along a highway. This has probably been spread by grading operations.