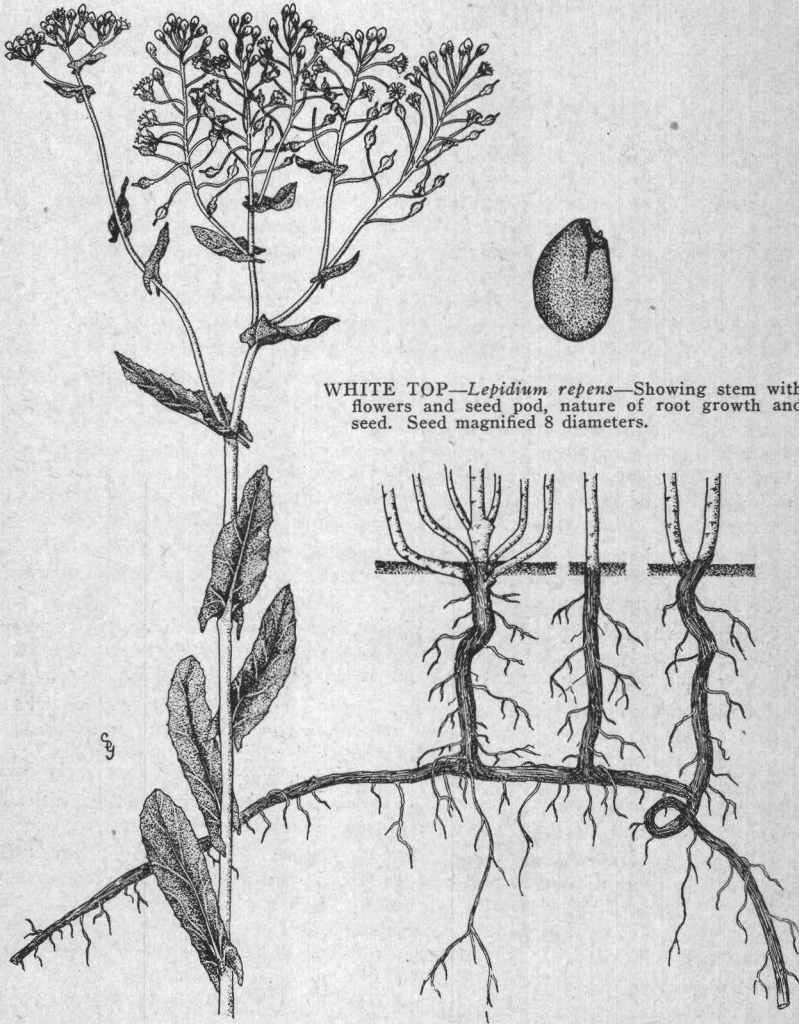


# White Top

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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*)

(*Hymenophysa pubescens*)

By LAWRENCE JENKINS and E. R. JACKMAN\*

Illustrations by Cathrine Davis Young

Other common names: Hoary cress and Perennial pepper grass.

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  $\frac{1}{2}$  inch and 3 inches long, with toothed or almost unbroken edges. The weed produces numerous white flowers, which are about  $\frac{1}{4}$  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.

A fourth weed, the broad-leaved cress (*Lepidium latifolium*), often called white top, was identified in an Oregon county in 1937. The cress grows taller, coarser, and has more branches than the other white tops. The leaves are more numerous and thicker, with a distinct leathery appearance. The seeds are smaller and the roots much larger. The seed pods are about the size of those of *Hymenophysa pubescens*, but are flat rather than globe-shaped. The entire plant is tough, and shrub-like.

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.

Because of the persistence of the roots white top is the most difficult to eradicate of any of the perennial weeds. It starts growth very early in the spring, and usually blooms when the alfalfa is only about 8 inches high. After blooming, the seed stalks die, but other leaves form and the plants remain green until frost, if moisture is available. Unlike morning-glory, the plants have a definite blooming period. After setting seed, the plant

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does not bloom again that year, but if disturbed by cutting or by livestock, plants send up successive stalks which will bloom and produce seed later in the summer.

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.

**Damage.** White top spreads rapidly, especially in irrigated areas, and displaces useful vegetation wherever it goes. Control with carbon bisulphide costs about \$150 per acre for material alone. Control by cultivation results in loss of the use of the land for two or three years. It is illegal in Oregon to sell small seed containing seeds of white top. As it is difficult to clean the seeds from alfalfa or clover seed, lands infested with this weed are not suitable for seed production. It is estimated that in 1938 nearly 6,000 acres of solid infestation existed in Oregon.

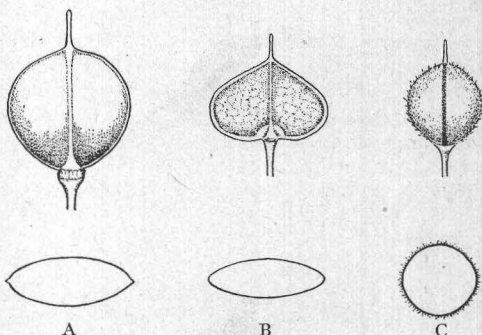
#### Control by cultivation.

If the weed is present on large areas, cultivation is the only practical control method. It usually requires three years of cultivation to get the last plant. Even then the field should be watched for seedlings and stray plants. Cultivation should start early and will require from 15 to 20 workings the first year, about 12 the second year, and less than 12 the third year. Deep cultivation is more effective than shallow. The rod weeder and the duckfoot are the best implements.

With whitetop the deferred fallow system—fallowing after an early hay crop is removed—is likely to be a failure. The weed completes its season's cycle before the hay crop is cut and can survive such treatment much better than weeds that mature later.

**Chemical control.** Sodium chlorate has given erratic results on white top in Oregon, and in general cannot be recommended for this weed. Preliminary work at the Federal Experiment Station at Genesee, Idaho, indicates that the three common forms of white top differ in their resistance to chlorate. It is reported that *Hymenophyssa pubescens* required only 2 pounds per square rod, but that *Lepidium draba* required 5, and *Lepidium repens* needed 9.

Chlorates are dangerous unless proper precautions are observed. They should not be used without reading and observing the precautions listed on pages 19 to 22 in Oregon Extension Bulletin 510.



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



Carbon bisulphide is the most effective chemical for white top, but it should be used only when the soil is moist. This chemical is more expensive and requires more labor to apply than other chemicals. It has not proved effective on gravelly, heavy, or gumbo types of soils. On Eastern Oregon dry lands carbon bisulphide usually can be used only in the early spring. (See directions on pages 12 to 14 in Oregon Extension Bulletin 510.)

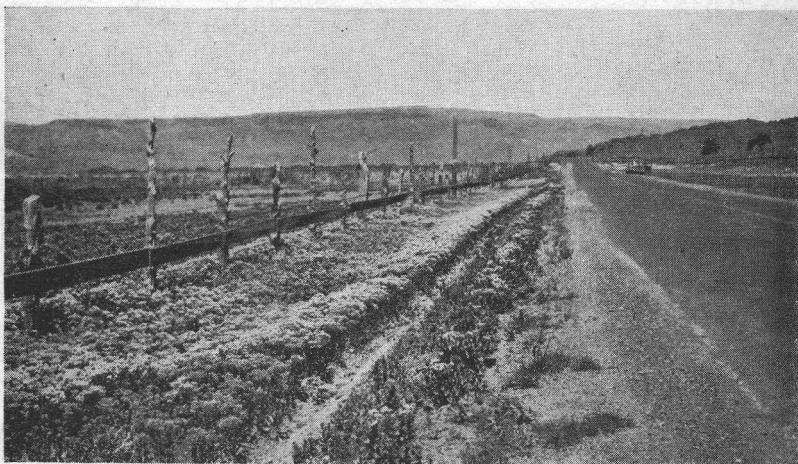
With any treatment be sure to *kill the last plant* or growth will reappear and soon cover the entire area. With chemical treatments it is especially important to apply the chemical at least six feet beyond the edges of the patch.

Whatever control methods are used it is important to look frequently for seedlings. White top is a very heavy seeder and the seeds may remain dormant in the ground for many years.

**Other control methods.** There are no known methods of killing white top by seeding the land to permanent crops, such as grass or alfalfa. Furthermore, if land infested with white top is used for pasture, the animals may spread the weed to other parts of the farm.

Small patches may be eliminated by pulling, or hoeing for a period of three years. It is likely that summer flooding, if continued long enough, will kill the weed, although this has not been tried in Oregon.

For further information on these and other control methods see Oregon Extension Bulletin 510, "Control of Perennial Weeds in Oregon."



White top along highway in Jefferson County. This has probably been spread by grading operations.

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