

PERENNIAL PEPPERWEED (Tall Whitetop)

Dr. Tony Svejcar, Research Leader
USDA , Agricultural Research Service
Burns, Oregon



(Whitetop Photo courtesy of Meg Laws)

Perennial pepperweed (*Lepidium latifolium*) is a rapidly spreading alien weed that was introduced to the U.S. from southeastern Europe or western Asia. This species forms dense stands, 3 to 5 feet in height, which can totally dominate riparian areas and other wetland habitats. The extensive creeping root system of perennial pepperweed gives this species a competitive advantage over other plants. Once a stand has formed, seed production is not important for stand maintenance. In fact, a native white rust often colonizes the seeds in dense stands, reducing germination to nearly 0%. Vigorous plants growing singularly or in small groups are seldom attacked by the rust, and seed germination may approach 100%. At present, no seed dormancy characteristics have been identified in perennial pepperweed, all

seeds appear to germinate readily.

The creeping root system allows perennial pepperweed to dominate an area, but the seeds must be the primary dispersal mechanism. There are many instances where single plants appear at great distances from established stands. The native flood meadows are particularly susceptible because high spring flows will spread any seeds that were produced the previous year. Traditional haying systems may cut plants before viable seeds are produced, although more research is needed before that can be assumed. However, there are often perennial pepperweed plants in fence lines, corral areas, hay stacks, and along roadsides that are not cut during haying. Plants that are cut by haying machinery may have the opportunity to regrow and produce seed.

If haying of flood meadows were delayed until viable pepperweed seed was produced, then hay equipment and transport of hay could serve as seed dispersal mechanisms. Feeding infested hay to livestock might also facilitate seed dispersal.

Riparian zones and wetlands tend to attract a variety of wildlife species and recreationalists, all of whom may disperse seeds of perennial pepperweed. Vehicles and heavy equipment are also notorious for weed seed dispersal.

Perennial pepperweed has a wide range of distribution, and has documented presence in all western states, except Arizona. This species seems to follow a lag-phase pattern; it may exist in an area for a long time before it begins its extensive spread. There are records from western Wyoming that date several infestations to the early 1940s. Initially, the impacts of perennial pepperweed were considered minor, and the weed appeared to be restricted to wet

saline bottomlands along several rivers. However, during the past 20 years this species exploded and now occupies large acreages, and is found in at least 16 of the 23 counties in Wyoming. Other western states have had similar experiences.

Management and/or control of perennial pepperweed has proved difficult, which explains the high level of concern over this species among private and public land managers. In the past, the primary chemical agent used to control perennial pepperweed was 2, 4-D. Weed control specialists in Wyoming have found that twice yearly, 2, 4-D applications for three years were required to rid a hay field of perennial pepperweed. Apparently, a portion of root buds maintain dormancy and can survive initial control efforts. Viable seed might also provide a mechanism for stand regeneration after 2, 4-D application. In recent years there has been success controlling perennial pepperweed with the sulfurol herbicides *Telar*[®] and *Escort*[®].

I'm not aware of any published reports documenting the effects of prescribed grazing treatments aimed at reducing perennial pepperweed. However, several research projects along these lines are currently in the planning stages. My experience has been that grazing can be used to reduce aboveground biomass of perennial pepperweed, but once the livestock are removed, the weed returns quickly. Clearly, more work in this area is needed. In general, perennial pepperweed is a hardy species and the combination of creeping roots, tillers and high seed production makes it unlikely that single control efforts will prove successful. Combinations of chemical control, grazing management, and revegetation will be necessary in many cases