Fact Sheet

University of California
Agriculture and Natural Resources

Plumas-Sierra-Butte Livestock & Natural Resources

Perennial Pepperweed - *Brassicaceae Lepidium Latifolium*

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Pepperweed in flowering stage.

Pepperweed

Thick pepperweed roots.

Native to Eurasia, perennial pepperweed was thought to be introduced around 1900 to North America as a sugar beet seed contaminate. It is currently listed as noxious or problematic in 15 states, overtaking a variety of environments from wetlands and riparian areas to roadsides and agronomic crops. Typically, it is associated with moisture on the landscape, and will grow in saline or alkaline conditions.

Biology: It is a perennial species that once established grows in basal rosettes during the fall and spring until it bolts in early summer. Bolted plants grow from 3-6 ft. tall and produce small, numerous, showy white flowers. Seeds produced are small and not very persistent in the soil. Aboveground vegetation dies back in late summer, creating a litter layer up to 4 cm thick, which is problematic for competing vegetation. Roots are thick and course, growing up to 10 ft. deep.

Dispersal: Seeds of perennial pepperweed can be spread by wind, animals, humans and can even float in water systems. Once established, patches will expand rapidly by root growth. Where broken pieces of roots can also be a dispersion mechanism.

Impacts: Perennial pepperweed is known for creating monocultures crowding out desirable vegetation and displacing wildlife habitat. Not only is it problematic in natural areas, but it can be a major pest in pastures and crops. Perennial pepperweed also has the ability to alter soil properties, accumulating salts in the foliage, and corresponding litter layer. The thick litter layer it forms favors pepperweed's growth, while discouraging the growth of other plants. It often colonizes stream banks, which is problematic because it's coarse non-fibrous rooting system can be more prone to bank erosion than other vegetation. It is difficult to eradicate, and may decrease the overall value of the land it infests.

Control: Understanding the biology of the plant can help narrow down which control methods can be effective. When it is a seedling, before it's roots are established, many physical techniques, such as hand pulling, grubbing or cultivation, will control it. After it's roots are established, these methods can control the top growth, but will not kill the root below the soil surface without extensive repeated effort over many years. Single tillage events on agricultural land can be counterproductive, as they will chop up the root and spread them throughout the field increasing the size of the patch. Establishing competitive species, such as perennial grasses, can be a good cultural method to crowd out pepperweed. Livestock typically avoid eating perennial pepperweed, but will eat it during the younger growth stages which does not provide control of the roots.

Often herbicides alone or in combination with other tactics are needed to control the root system. The surface area of the leaves is maximized at the bud stage of growth, which research has shown is the best time to make herbicide applications. Likewise, mowing pepperweed at the bud stage, and allowing stems to regrow to the bud stage before herbicide application, can be a successful integrated strategy (mowing, and treating regrowth at the bud stage). Likewise, research has shown either high density stocking of cattle, cultivation, or prescribed fire, to remove the litter layer, can be effective when combined with herbicide applications.

Select Herbicides		
Herbicide Trade Name	**Product Rate/A**	**Comments**
2,4-D 2,4-D LV4 2,4-D Amine	2 qt./acre (1.9 a.e./acre)	Applications are most effective at the bud stage, right before flowering. It will not control Perennial pepperweed with a single application, but can suppress the population and provide good control with annual applications. 2-4,D will injure many broadleaf plants but typically is safe for application to grasses. This is a restricted use product in California, and is highly volatile at temperatures exceeding 80 degrees with potential for off site movement. 2,4-D Amine has an aquatic label, and can be used around water.
Glyphosate Roundup Glyfos Rodeo	2-4qt/acre (2.25-4.5 lb a.e./ acre)	Applications are most effective at the bud stage of growth, right before flowering. Glyphosate is non selective, and will kill most actively growing vegetation, creating a bare spot which may be colonized by other non-desirable vegetation. However, as glyphosate has no soil residual activity, it can be a good option when planning to seed into the treated area. Formulations of glyphosate without surfactants, can have an aquatic label.
Chlorsulfuron Telar	1-2.6 oz/acre (.75-1.96 oz a.i. /acre)	Applications are most effective at the bud stage of growth, right before flowering. Established perennial grasses are typically tolerant. Telar has long soil residual activity, and may prevent the germination of grasses and broadleaf plants. It may not be the best choice, in areas where grass plantings are planned after application. Telar cannot be used in water.
Imazapyr Arsenal Habitat	1-2 at./acre (0.5-1 lb a.e./ acre)	Applications are most effective at the bud stage of growth, right before flowering. Imazapyr is typically nonselective, and has a long residual activity. Only use this product where bare ground is acceptable for more than one year. Certain formulations can be applied around the water.

Any mention of pesticide is not a recommendation or endorsement of use by the University of California or the authors. Pesticides are mentioned by trade names for informational purposes only. Read and follow the label when using a pesticide.

Thick pepperweed litter in early spring.

References:

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2. Renz, Mark J.; DiTomaso, Joseph M. 2004. Mechanism for the enhanced effect of mowing followed by glyphosate application to resprouts of perennial pepperweed (Lepidium latifolium). Weed Science. 52(1): 14-23.

3. Young, James A.; Palmquist, Debra E.; Blank, Robert R. 1998. The ecology and control of perennial pepperweed (Lepidium latifolium). Weed Technology. 12(2): 402-405.

This resource is courtesy of University of California Cooperative Extension. For questions contact:

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