



Managing Wild Parsnip (*Pastinaca sativa* L.) along Roadsides

Introduction

Wild Parsnip (*Pastinaca sativa* L.) is a poisonous, noxious, biennial weed originally from Eurasia and brought to the US as an edible root. The sap of wild parsnip can cause phytophotodermatitis, a sunlight activated chemical burn resulting in blisters. While working around this plant it is recommended to wear gloves, long sleeve shirt, long pants, and boots to minimize possible exposure.



Figure 1. Wild parsnip may be found in a wide range of soils and locations such as disturbed sites like roadsides.

Characteristics

Wild parsnip (Figure 1) is characterized as a biennial or short-lived perennial. During the first year, wild parsnip seeds germinate and form a rosette that grows close to the ground. The rosette is composed of 10-15 pinnately compound leaves, 6-inches long, with ovate to oblong toothed leaflets. Some rosettes require two years or longer to mature and then flower. Flowering is triggered once the rosette reaches a critical size and is exposed to prolonged winter cold temperatures. The critical is met once a plant reaches a root crown diameter greater than or equal to 0.2 inches (Doll and Renz 2007). In the spring, rosettes will bolt to a height of 2-5 feet, flower, and set seed. Rosettes not reaching a critical size will continue to grow as a rosette until the size requirements are met.



Figure 2 a, b, c, and d. a) Pinnately compound leaves up to 15 inches long. b) The stem is smooth with grooved furrows running parallel with the stem and the petioles are grooved, clasping the stem. c) During flowering a yellow, 4-8 inch compound umbel flower with 15-25 ray flowers per umbel. d) Fruit is flat & oval with narrow wings, fruit split exposing 2 seeds. Seeds are a 1/4 inch oval, smooth on one side with ribbed edges on the other side. (Neal, Uva, DiTomaso, & DiTommaso 2023)

Mature wild parsnip has smooth, grooved stems that are hollow except at the nodes with compound leaves arranged alternately along the stems and reaching up to 15-inches long. Each leaf has 2-5 pairs of oppositely arranged and toothed leaflets (Figure 2). During the flowering phase, a 4-8 inch yellow flat topped umbel flower forms at the top of the plant with 15-25 ray flowers per umbel. The seed is a quarter inch oval, smooth on one side with ribbed edges on the other. Once ripe and dispersed, wild parsnip seed has a long germination window emerging between late September and November and up to early spring in some situations. Most fall germinated seedlings fail to survive winter (Doll and Renz 2007).

A majority (79%) of wild parsnip seed will germinate in the spring (Averill & DiTommaso 2007). Therefore, it is common to see wild parsnip co-exist in both the flower and rosette stage.

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After the plant flowers and sets seed it will senesce. The stalks and dried stems are noticeable through winter into the following spring.

Control Methods

Wild parsnip reproduces only by seed. The goal is to prevent seed production regardless of the management method utilized. Seeds are viable for several years in the soil, so repeat treatments can be expected to deplete the seed bank in the soil.

Mechanical Control

Very small infestations may allow for plants to be pulled out, dug up, or cut. This approach may only be appropriate in a small, isolated setting, such as a planting bed in a rest area. Please be sure to wear the appropriate protection and clothing including gloves, long sleeve shirt, and pants, socks and shoes. **Do not expose bare skin to sap!** While mowing with open cab tractors, mowers, or handheld trimmers, use the appropriate PPE mentioned above as well as eye and face protection. If mowing areas infested with wild parsnip, it is best to use an enclosed cab tractor. On the roadside, mowing in the spring may be effective to manage bolting and flowering stems to prevent seed production. Poorly timed mowing can assist in the spread of wild parsnip. If stands of wild parsnip have senesced with viable seeds attached to the umbels, it is best not to mow.

Chemical Control

There are several weed and brush mixes as well as individual herbicides that are effective on wild parsnip (Table 1). Application timing is critical to wild parsnip management and should be applied prior to flowering. **The key is to prevent seed production.** Expect to make multiple applications over several years to exhaust the seed bank.

Cultural Control

Establishing and maintaining a grass groundcover is the best approach to manage any weed pressure. Once wild parsnip is controlled, focus should be given to establishing or maintaining a competitive grass groundcover.

Management

Scouting is the first step to consider. Once wild parsnip sites are identified, a plan can be implemented. When targeting wild parsnip, it is critical to target rosettes between March and November (Table 2). Recent work by the project demonstrated that various herbicides and herbicide mixes commonly used in the weed and brush programs are effective at controlling wild parsnip. While it may be convenient to spray wild parsnip infestations during the routine weed and brush applications, this is not the proper time. It is best to target wild parsnip with mowing or herbicide applications prior to flowering; however, herbicide treatments post flowering can still be used to reduce the number of rosettes within a wild parsnip stand.

Table 1. Herbicides and herbicide mixes for control of wild parsnip.

Mix	Rate oz/acre	Comment
Method 240SL	10	A common weed and brush mix used along roadsides that is effective on wild parsnip. Method 240SL label recommends rates at 8 oz/ac to avoid turf damage. Escort XP 0.5 oz/ac may injure turf.
Freelexx	96	
Escort XP	0.5	
Vastlan	48	A weed and brush mix effective on wild parsnip
Freelexx	96	
TerraVue	2.85	A common weed and brush mix used along roadsides that is effective on wild parsnip. Escort XP 0.5 oz/ac may injure turf.
Freelexx	96	
Escort XP	0.5	
Method 240SL	8	A weed and brush mix effective on wild parsnip
Freelexx	64	
Escort XP	0.5	Each herbicide and rate listed is effective on wild parsnip. If specifically targeting wild parsnip it may be more cost effective to treat with one herbicide compared to a weed and brush mix. Escort XP at 0.5 oz/ac, Telar XP at 1 oz/ac and Method 240SL at 10 oz/ac may injure turf.
Telar XP	1	
Method 240SL	10	
Freelexx	96	
TerraVue	2.85	

In Pennsylvania, wild parsnip flowers between June and early August. Occasionally, flowering will continue through September. Herbicide treatments prior to flowering will eliminate seed set and additional seed to the soil seed bank. Most sites will require repeat applications to exhaust the seed bank source. Once efforts are employed to control wild parsnip, areas with little desirable groundcover should be seeded to a low growing competitive grass.

Summary

Care should be taken when working around wild parsnip. If skin comes in direct contact with sap and then exposed to sunlight painful blisters will appear. Well-timed mowing and herbicide applications can manage wild parsnip and its spread. Herbicide applications are more effective at controlling wild parsnip but both methods can reduce seed development. Efforts to manage wild parsnip as well as other herbaceous broadleaf invasive weeds are going to continue to be a routine part of roadside vegetation management.

References

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Figure 3. After flowering and setting seed the plants senesce leaving stems that will stand for many months afterwards.



Figure 4. Seed from wild parsnip. Seeds are flat and smooth on one side and have ribbed wings on the other side.

Table 2. The management calendar for wild parsnip. The rosette stage may be found throughout the year and can be targeted effectively except for the winter months. Mowing is done in the early summer to remove seed heads.

