

## FENNEL

### *Foeniculum vulgare*

Carrot or Parsley Family (Apiaceae)

#### DESCRIPTION

Fennel is an erect perennial herb commonly found in annual and perennial grasslands, open, disturbed areas, chaparral, and along watercourses and roadsides.

Fennel grows 4–10 feet tall and smells like licorice. The branching stems are stout, grayish-green, and marked with long vertical grooves. The stems are jointed and sheathed by leaves at the nodes. The leaves are dissected into fine, feathery strands like dill leaves, with each division measuring up to 5 inches long. Fennel has a stout taproot.

#### REPRODUCTION

Fennel reproduces by seed and, after cutting, by regenerative root crowns. Flowers first appear 1.5–2 years after germination. Small, yellow flowers in umbrella-shaped clusters (umbels) bloom between April and August. Aromatic seeds are produced in pairs during summer until September. These are light green to brown, flattened and ribbed, measuring a half-inch long. Within 2 years, one plant can produce over 100,000 seeds. Seeds are commonly spread by water, or by coming into contact with clothing, animals, vehicles, and machinery. Seeds will germinate at almost any time of the year. Soil disturbance may trigger higher rates of germination.

#### IMPACT

Fennel can form dense monospecific stands by competing with other plant species for light, water, and soil nutrients. Research suggests it may also have an allelopathic effect on other species.

#### KEY FACTORS

- u High seed production.
- u Seeds remain viable in the soil for several years.



- u Resprouts from roots when cut.
- u Mowing can stimulate increased growth if performed too early in growing season.
- u Seedlings need light to grow.

#### TREATMENT OPTIONS

- u **Pull** small seedlings by hand when soil is soft and moist. You can also use hand tools, such as a soil knife or trowel, to uproot seedlings. A thick taproot frequently makes pulling mature fennel impracticable.
- u **Dig** out individual plants with shovels, hand picks, and Pulaskis, preferably when the soil is still moist. If you cannot get the whole root, remove the upper portion of the root crown (generally the top 3–6 inches). Cutting into the root just before the plant sets seed reduces the number of resprouts. If you don't plan to

follow up with herbicides, dig only in light infestations, because the soil disturbance will expose seeds and increase germination. The deep taproot and bulb store the plant's energy and will regenerate quickly if cut. Cutting alone will not kill fennel, so follow up on resprouts frequently to exhaust the roots.

- u **Mow** fennel 4 times a year, about every 3 months, beginning in March–April. Some seed heads lie prostrate and are therefore easier to miss. Mowing *during* seed set encourages seed spread and should therefore be avoided. Mowing too soon before seed set appears to increase vegetative growth. Reports suggest that this repeated mowing technique can eradicate fennel within 4 years.
- u **Mow and Foliar spray.** Some weed workers mow fennel and wait for resprouts to appear, then apply glyphosate to the bushy resprouts.
- u **Foliar spray.** A 2 percent solution of glyphosate can be sprayed on the leaves of green seedlings emerging after dormancy (March–May). Spray before the plant bolts (around June). Repeat application may be needed. For fennel growing near water, use a suitable glyphosate product.

### **Follow-Up**

Remove any ripe seeds from the site by brush-cutting and bagging the flower heads. This is

also a useful stop-gap measure to contain the spread of fennel on sites where elimination is not possible. In chaparral, revegetate with native shrubs immediately to discourage fennel from re-establishing and prevent colonization by other invasive species. Check for seedling growth twice a year, particularly in late winter/early spring, and follow up on resprouts to exhaust energy stored in the roots.

### **DISPOSAL**

Fennel stalks without seed heads can be piled or even composted in large piles on site.

### **INTERESTING FACTS**

Fennel originally comes from the Mediterranean region where the seeds and tuberous roots have been used in cooking at least since the Roman era. There is little information on its introduction to California, but it most likely escaped from cultivation. In medieval times, the seeds were eaten to suppress the appetite, while the raw bulb is still eaten as a digestive in southern Italy. Wild pigs will forage for the roots, which furthers invasion through soil disturbance, while birds and rodents reportedly eat the seeds. Fennel is attractive to Anise Swallowtail butterflies as a source of nectar, but generally speaking, fennel tends to displace other animal species by reducing habitat diversity.

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## **Notes**