

# REDROOT PIGWEED

## *Amaranthus retroflexus* L.

**Family:** *Amaranthaceae* (Amaranth).

**Other Scientific Names:** None.

**Other Common Names:** Rough pigweed, red pigweed, green amaranth.

**Legal Status:** Not categorized.



### Identification

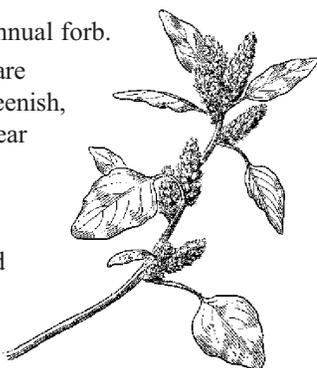
**Growth form:** Annual forb.

**Flower:** Flowers are inconspicuous, greenish, and without petals. They appear in dense, spike-like clusters up to 20 cm long at the stem ends and in leaf axils. Spine-tipped bracts give the head a bristly appearance. Plants flower from June to September, depending on geographic location.

**Seeds/Fruit:** Fruit is a capsule 1.5–2.0 mm long that contains a single glossy black seed.

**Leaves:** Alternate, dull green leaves have hairs and prominent whitish veins on the underside. Blades 3–8 cm long are carried on long stalks that often appear to droop.

**Stems:** Rough, angular stems grow 0.5–1.0 m tall. Plants are usually branched. Stems are red near the



roots and hairy near the tips, with dandruff-like scales beneath the flowers (Douglas et al. 1998).

**Roots:** Short, fleshy taproot is often pinkish to red.

**Seedling:** Cotyledons are lanceolate with reddish purple undersides. The stem is dark red near the soil surface. The first leaves are rounded, are notched at the tip, and have prominent veins (Royer and Dickinson 1999).

### Similar Species

Exotics: None.

**Natives:** Several pigweeds native to North America grow in BC. Tumble pigweed (*Amaranthus albus*) and prostrate pigweed (*Amaranthus blitoides*) bear their flowers in tiny clusters at the leaf bases instead of in spikes at the end of the stems. Green pigweed (*Amaranthus powellii*) is a slender plant with long terminal spikes and lacks the upper-stem hairs found on redroot pigweed (Frankton and Mulligan 1970).



## Impacts

**Agricultural:** One of the most common agricultural weeds, this plant infests grains, field crops, orchards, and forages. It causes significant crop yield reduction because of its rapid growth and large seed production. When grown on fertile soils, it can accumulate nitrates that can poison livestock (Alberta Agriculture 1983). This weed is a common soil contaminant and is a host to several pests of vegetable and ornamental crops, including the tarnished plant bug, European corn borer,

green peach aphid, and several viral diseases (Royer and Dickinson 1999).

**Ecological:** Grows on disturbed soils, especially around buildings. It is most abundant on fertile soils. It is unlikely to invade vigorous natural communities and does not tolerate shade.

**Human:** Can cause allergic reactions.

## Habitat and Ecology

**General requirements:** This weed requires disturbed, open conditions and thrives on fertile soils. It grows in cultivated crops, gardens, fields, roadsides, and disturbed habitats.

**Distribution:** This plant is present in all agricultural regions of the province but is more common in the south. It is found across North America.

**Historical:** Native to North America.

**Life cycle:** Redroot pigweed is an annual that germinates late in the spring when the soil has warmed, often after cultivated seedlings have emerged. Germination can continue through the summer with adequate soil moisture (Weaver and McWilliams 1980). Plants can set seed within 8 weeks of germinating, allowing 2 generations per growing season in most climates (Royer and Dickinson 1999).

**Mode of reproduction:** By seed.

**Seed production:** Each plant can produce 100,000–150,000 seeds.

**Seed bank:** Seeds are initially dormant, and most seeds germinate the spring following seeding. Some

seeds can remain dormant in the soil for up to 40 years, but most seeds are unviable after 3 years. Seeds buried below 2.5 cm will not germinate.

**Dispersal:** By wind, birds, or animals. Farm machinery, road building, and contaminated seed can also spread seeds.

**Hybridization:** Redroot pigweed will often hybridize with other pigweeds, producing a mixture of characteristics, but the hybrids are often sterile (Weaver and McWilliams 1980).

## Management

**Biocontrol:** None.

**Mechanical:** Shallow tillage in spring or autumn will encourage redroot pigweed germination. Follow-up tillage or herbicide application is needed to kill the seedlings. Plants up to 4 weeks old are easily killed by cultivation, but older plants often recover from trampling, clipping, or other injury (Weaver and McWilliams 1980). Mowing before flowering will prevent seed-set. Several mowings may be required in one season.

**Fire:** Fire will clean up herbage and destroy seeds on the plants but will not affect the seed bank. Improved fertility from fire may provide an ideal seed bed.

**Herbicides:** Redroot pigweed is relatively susceptible to herbicides commonly recommended to control broadleaf weeds both pre- and post-emergence. Some populations are resistant to triazine herbicides after repeated years of application. Consult the most recent edition of BC Ministry of Agriculture, Food and Fisheries Crop Production Guides for specific recommendations. **Before applying herbicides, read the label for full use and precautionary instructions.**

**Cultural/Preventive:** Treat new infestations immediately. Focus attention on areas with fertile soils like farmyards, corrals, and manure piles. Till, mow, or hand-pull small populations before they set seed. Maintain healthy perennial plant communities.

### Integrated Management Summary

Redroot pigweed is a pioneering species adapted to open, fertile conditions. It competes against other plants by its rapid growth and prolific seed production. Reducing opportunities for establishment can control this weed. Till, cut, or hand-pull before large infestations establish and a seed bank develops. For large infestations, use appropriate herbicides. Seed disturbed areas to perennial grasses and forbs and manage livestock to maintain perennial plant communities.

## References

Alberta Agriculture. 1983. *Weeds of Alberta*. Alberta Agriculture and Alberta Environmental Centre.

Douglas, G. W., G. B. Straley, D. Meidinger, and J. Pojar, eds. 1998. *Illustrated Flora of British Columbia*. Vol. 1: *Gymnosperms and Dicotyledons (Aceraceae through Asteraceae)*. Province of British Columbia.

Frankton, C., and G. A. Mulligan. 1970. *Weeds of Canada*. Publication 948. Ottawa: Canada Department of Agriculture.

Royer, F., and R. Dickinson. 1999. *Weeds of Canada and the Northern United States*. Edmonton: University of Alberta Press.

Weaver, S., and E. L. McWilliams. 1980. The biology of Canadian weeds. 44. *Amaranthus retroflexus* L., *A. powellii* S. Wats., and *A. hybridus* L. *Canadian Journal of Plant Science* 60: 1215–1234.

