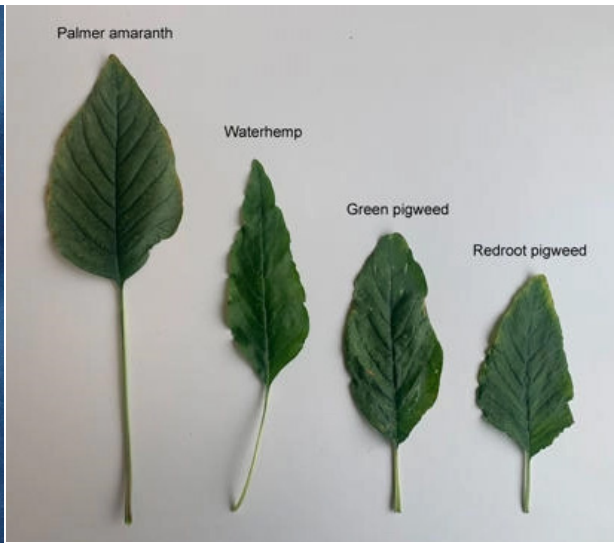
Tall Waterhemp

Amaranthus tuberculatus (Moq.) J.D. Sauer
(aka rough-fruited amaranth, rough-fruited waterhemp)

ALBERTA REGULATORY STATUS:
WEED CONTROL ACT
PROHIBITED NOXIOUS
Last Updated: April 2026

John D. Byrd, Mississippi State University, Bugwood.org


Bruce Ackley, The Ohio State University, Bugwood.org



Ministry of Agriculture, Food & Rural Affairs, M. Cowbrough. © King's Printer of Ontario, 2024

Overview:

Tall waterhemp is an annual, broadleaf species in the Amaranth (pigweed) family that has male and female plants. Tall waterhemp is thought to occur as two forms that differ in their origins and where they tend to grow. The variety known as *Amaranthus tuberculatus* var. *tuberculatus* is considered native in eastern Canada, typically in wetter habitats such as the edges of waterbodies.[1] The second variety, *Amaranthus tuberculatus* var. *rudis*, is treated as an introduced form in Canada. It is established in the eastern and southern United States and is regarded as the more aggressive weed in agricultural production systems, and can hybridize with other Amaranthus species.[1] Often these varieties are not distinguished and are referred to as "waterhemp".

Tall waterhemp is listed as a Class 2 Prohibited Noxious weed under the federal Weed Seeds Order, 2016 of the Seeds Act.[2] This species is not known to be in Alberta but is found in the Manitoba, Ontario, and Quebec.[3, 4] Tall waterhemp is an annual and both male and female plants exist in this species (dioecious).[5] Only female plants produce seed, which is its only form of reproduction. A single plant (*Amaranthus tuberculatus* var. *rudis*) has been documented producing between 35,000 to over 1 million seeds in a growing season. Similar to other Amaranth species, tall waterhemp can develop a persistent seed bank.[1]

Habitat:

Grows best open areas with at least partial sun in moist to wet areas, such as along waterbodies.[5] It can also be found in disturbed sites, including roadsides, railways, crop fields, and gardens.[1]

Identification:

Stems: Alternate, upright when mature, smooth, and hairless. Growing up to 3m in height.[1,5]

Leaves: The first true leaves typically have 2–4 pairs of secondary veins branching out from the central vein. Mature leaves are attached by long stalks (petioles) and can range in shape from oval-like to long and narrow (spear-like), are usually 2–10cm long, and 1–3cm wide. Leaves near the bottom of the plant are often larger and wider than the upper leaves.[1] Mature leaves have a wavy-like margin.[5]

Flowers: Color variations include green to reddish/purple.[5] Male and female flowers grow on separate plants in clusters which make dense flower spikes that are typically 10–20cm long. These flower clusters may be un-branched, and with or without leaves. Male flowers have five outer parts, while female flowers usually have one main outer part, and their supporting bracts are slightly larger and more pronounced.[1]

Seeds: Approximately 1mm long, are oval-shaped, glossy with dark red to brown coloring, with a small notch (hilum) near the top.[2] Tall waterhemp is a prolific seed producer, one plant may generate over 1 million seeds, of which the seeds can float and spread easily in water.[1]

Toxicity: Amaranthus species are not known to be inherently toxic, but pigweeds have a medium potential for livestock poisoning that may occur because of high levels of nitrate accumulating in the plant, which is most likely to occur during a drought.[6]

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Tall Waterhemp *(continued)*

Lookalike Species: Often confused with other Amaranthus species like redroot pigweed (*Amaranthus retroflexus*), green pigweed (*Amaranthus powellii*), and Palmer amaranth (*Amaranthus palmeri*). It can be told apart by its smooth and hairless stems. Tall waterhemp has more narrow leaves, with wavy-like margins, and no notches are found on the tips.[5] Tall waterhemp has a shorter leaf stalk (petiole) than the leaf blade, which can be easily confirmed by folding the leaf back over the stem while Palmer amaranth's leaf stalk is longer.[7]

Impacts:

It has become a problematic weed in agriculture in the midwestern United States, significantly impacting corn and soybean crop production by growing rapidly, easily outcompeting crops.[1]

Prevention:

Tall waterhemp is not present in Alberta, making early detection and prevention critical. Farmers and landowners are encouraged to report any unusual pigweeds to their local municipality or the Alberta Invasive Species Council (AISC). To help prevent the spread of invasive species, always inspect and clean boots, clothing, and equipment, and remove any soil, seeds, or plant material before moving between sites.

Control:

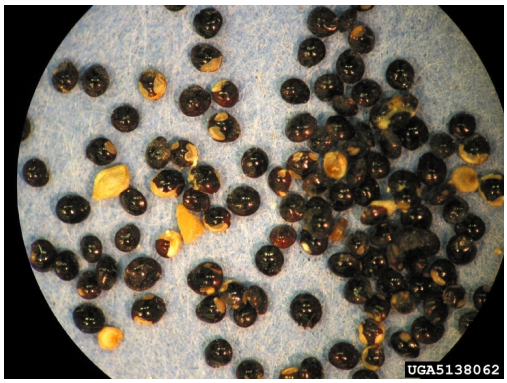
Grazing: It is not recommended to allow grazing on tall waterhemp, as Amaranthus species are prone to accumulation of toxic levels of nitrate, particularly during drought conditions.[6]

Mechanical: When combined with herbicide application within rows, between row mowing has been shown as an effective method of controlling tall waterhemp in corn fields.[8] Mechanical control should be performed before seed-set to reduce seed spread.

Cultural: Reducing the viable seedbank should be a target of integrated weed management plans. The use of winter cover crops such as cereal rye can decrease seed production and late-season weed emergence.[9] Studies found in the US that only cereal rye was found to decrease early-season weed emergence, while other nitrogen-fixing winter crops actually increased early-season emergence.[9] Decreasing crop row widths is another method used to control tall waterhemp, as increasing crop cover decreases the light available to germinating seeds.[10]

Chemical: A survey conducted in Ontario found waterhemp populations resistant to glyphosate (group 9), imazethapyr (group 2) and atrazine (group 5).[11] There are also US populations with known resistance to groups 4, 14, 15, and 27, including multiple-resistance to as many as five sites of action.[12] Pre-emergence and post-emergence herbicide application has been found to manage tall waterhemp in soybean fields effectively. However, continuous emergence throughout the season makes it difficult to control without multiple herbicide applications.[11] In Canada, carfentrazone (group 14), sulfentra-zone (group 14), halauxifen (group 4), bromoxynil (group 6), tolpyralate (group 27) and several tank mixes with glyphosate are registered for use on Tall waterhemp for agricultural crops.[13] Always check product labels to ensure the herbicide is registered for use on the target plant in Canada by the Pest Management Regulatory Agency. Always read and follow label directions.

Bruce Ackley, The Ohio State University, Bugwood.org



Lynn Sosnoskie, University of Georgia, Bugwood.org

Biological: None researched to date.

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