Taxon: Amaranthus blitoides S. Watson **Family:** Amaranthaceae

Common Name(s): mat amaranth
matweed
matweed amaranth
prostrate amaranth
prostrate pigweed

Synonym(s): Amaranthus graecizans auct.

Assessor: Chuck Chimera **Status:** Approved **End Date:** 1 Jul 2025

WRA Score: 21.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Annual Herb, Crop Weed, Potentially Toxic, Self-fertile, Crop Contaminant

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y = -3, n = 0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	0 = low, 1 = intermediate, 2 = high (see Appendix 2)	High
202	Quality of climate match data	0 = low, 1 = intermediate, 2 = high (see Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y = 1, n = 0	y
204	Native or naturalized in regions with tropical or subtropical climates	y = 1, n = 0	y
205	Does the species have a history of repeated introductions outside its natural range?	y= -2, ? = -1, n = 0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n = question 205	y
302	Garden/amenity/disturbance weed		
303	Agricultural/forestry/horticultural weed	y = 2*multiplier (see Appendix 2), n = 0	y
304	Environmental weed	y = 2*multiplier (see Appendix 2), n = 0	n
305	Congeneric weed	y = 1*multiplier (see Appendix 2), n = 0	y
401	Produces spines, thorns or burrs	y = 1, n = 0	n
402	Allelopathic		
403	Parasitic	y = 1, n = 0	n
404	Unpalatable to grazing animals	y = 1, n = -1	n
405	Toxic to animals	y = 1, n = 0	y
406	Host for recognized pests and pathogens	y = 1, n = 0	y
407	Causes allergies or is otherwise toxic to humans		
408	Creates a fire hazard in natural ecosystems	y = 1, n = 0	n

Qsn #	Question	Answer Option	Answer
409	Is a shade tolerant plant at some stage of its life cycle	y = 1, n = 0	y
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y = 1, n = 0	y
411	Climbing or smothering growth habit	y = 1, n = 0	n
412	Forms dense thickets	y = 1, n = 0	n
501	Aquatic	y = 5, n = 0	n
502	Grass	y = 1, n = 0	n
503	Nitrogen fixing woody plant	y = 1, n = 0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y = 1, n = 0	n
601	Evidence of substantial reproductive failure in native habitat	y = 1, n = 0	n
602	Produces viable seed	y = 1, n = -1	y
603	Hybridizes naturally	y = 1, n = -1	y
604	Self-compatible or apomictic	y = 1, n = -1	y
605	Requires specialist pollinators	y = -1, n = 0	n
606	Reproduction by vegetative fragmentation	y = 1, n = -1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y = 1, n = -1	y
702	Propagules dispersed intentionally by people	y = 1, n = -1	n
703	Propagules likely to disperse as a produce contaminant	y = 1, n = -1	y
704	Propagules adapted to wind dispersal	y = 1, n = -1	y
705	Propagules water dispersed	y = 1, n = -1	y
706	Propagules bird dispersed	y = 1, n = -1	y
707	Propagules dispersed by other animals (externally)	y = 1, n = -1	n
708	Propagules survive passage through the gut	y = 1, n = -1	y
801	Prolific seed production (>1000/m2)	y = 1, n = -1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y = -1, n = 1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y = 1, n = -1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Amaranthus blitoides was probably originally native to central and partly eastern United States, but now it is widely and successfully naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions. It has not been reported from Mississippi or North Carolina but since it is found in all other conterminous United States it can be expected to occur in these two as well." [No evidence of domestication]

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	NA

201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Flowering summer-fall. Disturbed habitats: roadsides, riverbanks, railroads, fields, waste places, sandy flats; 0-2200 m; Alta., B.C., Man., Ont., Que., Sask.; Ala., Alaska, Ariz., Ark., Calif., Colo., Conn., Del., D.C., Fla., Ga., Idaho, Ill., Ind., Iowa, Kans., Ky., La., Maine, Md., Mass., Mich., Minn., Mo., Mont., Nebr., Nev., N.H., N.J., N.Mex., N.Y., N.Dak., Ohio, Okla., Oreg., Pa., R.I., S.C., S.Dak., Tenn., Tex., Utah, Vt., Va., Wash., W.Va., Wis., Wyo.; introduced and often completely naturalized in South America, Eurasia, and other regions. The name Amaranthus graecizans often has been misapplied to both A. blitoides and A. albus in older North American floras and manuals. Amaranthus blitoides was probably originally native to central and partly eastern United States, but now it is widely and successfully naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions. It has not been reported from Mississippi or North Carolina but since it is found in all other conterminous United States it can be expected to occur in these two as well."

202	Quality of climate match data	High
	Source(s)	Notes
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Amaranthus blitoides was probably originally native to central and partly eastern United States, but now it is widely and successfully naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions."

203	Broad climate suitability (environmental versatility)	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Climatic Requirements--There are no precise data available on the climatic limitations of the three species. Amaranthus albus is found in the widest range of climates. Based on herbarium data, it can be found in ruderal vegetal communities up to 1000 m elevation in typical temperate conditions and at even higher elevations (2000-2200 m) in high deserts from SW North America. Amaranthus blitoides appears to have similar climatic requirements to A. albus."
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	[Broad distribution and elevation range] "Disturbed habitats: roadsides, riverbanks, railroads, fields, waste places, sandy flats; 0-2200 m; Alta., B.C., Man., Ont., Que., Sask.; Ala., Alaska, Ariz., Ark., Calif., Colo., Conn., Del., D.C., Fla., Ga., Idaho, Ill., Ind., Iowa, Kans., Ky., La., Maine, Md., Mass., Mich., Minn., Mo., Mont., Nebr., Nev., N.H., N.J., N.Mex., N.Y., N.Dak., Ohio, Okla., Oreg., Pa., R.I., S.C., S.Dak., Tenn., Tex., Utah, Vt., Va., Wash., W.Va., Wis., Wyo.; introduced and often completely naturalized in South America, Eurasia, and other regions."

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	Source(s)	**Notes**
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Amaranthus blitoides was probably originally native to central and partly eastern United States, but now it is widely and successfully naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions."
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Climatic Requirements--There are no precise data available on the climatic limitations of the three species. Amaranthus albus is found in the widest range of climates. Based on herbarium data, it can be found in ruderal vegetal communities up to 1000 m elevation in typical temperate conditions and at even higher elevations (2000-2200 m) in high deserts from SW North America. Amaranthus blitoides appears to have similar climatic requirements to A. albus."

205	**Does the species have a history of repeated introductions outside its natural range?**	**y**
	Source(s)	**Notes**
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Amaranthus blitoides was probably originally native to central and partly eastern United States, but now it is widely and successfully naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions. It has not been reported from Mississippi or North Carolina but since it is found in all other conterminous United States it can be expected to occur in these two as well."

301	**Naturalized beyond native range**	**y**
	Source(s)	**Notes**
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Amaranthus blitoides was probably originally native to central and partly eastern United States, but now it is widely and successfully naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions. It has not been reported from Mississippi or North Carolina but since it is found in all other conterminous United States it can be expected to occur in these two as well."
	Kwan, C. (2025). Consultant. Pers. Comm. 16 April	"During my weed survey, I found mat amarant (Amaranthus blitoides)." [Oahu. Not officially documented as naturalized]

Qsn #	Question	Answer
	Gallaher, T.J., Brock, K., Kennedy, B.H., Imada, C.T., Imada, K., & Walvoord, N. (2025). Plants of Hawai'i. http://www.plantsofhawaii.org. [Accessed 30 Jun 2025]	No evidence to date

302	Garden/amenity/disturbance weed	
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	[A disturbance adapted weed that impacts crops] "Amaranthus albus and A. blitoides occur in a wide variety of habitats in Canada, both ruderal (disturbed ground, along roadsides and railways, waste land, rubbish tips, fallow fields) and agrestal (spring cereals and other grains, winter wheat, canola, mustard, rape, sunflower, flax, cotton, vegetable crops, orchards, tree nurseries and vineyards)."

303	Agricultural/forestry/horticultural weed	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Detrimental–These three species have received much less attention in North American literature than other species of the genus Amaranthus. Crop losses associated with A. albus or A. blitoides were reported in North America for pinto beans (Phaseolus vulgaris L.) and potato (Solanum tuberosum L.) in New Mexico (Arnold et al. 1993; Murray et al. 1994), and for cotton (Gossypium hirsutum L.) in Oklahoma (Rushing et al. 1985). Crop losses produced by these three species in other crops were reported from Greece (Vizantinopoulos and Katranis 1994, 1998) and Israel (Qasem 1992). Mulligan and Munro (1990) stated that A. blitoides, A. hybridus L. and A. retroflexus L. can cause poisoning in pigs and cattle in Canada. Poisoning of cattle by A. blitum and A. hybridus was also reported by Ferreira et al (1991) in Brazil. The three Amaranthus spp. are also hosts to fungal, viral and bacterial pathogens, insects and nematodes that can cause considerable damage to crops (see section 13)."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Cereals, Cotton, Grapevines, Orchards & Plantations, Pastures, Pome Fruits, Potatoes, Sunflowers, Vegetables"

304	Environmental weed	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Cereals, Cotton, Grapevines, Orchards & Plantations, Pastures, Pome Fruits, Potatoes, Sunflowers, Vegetables" [Only one reference cites this species as an environmental weed, but does not describe significant impacts to natural areas]
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	[Crop weed] "3. Economic Importance (a) Detrimental–These three species have received much less attention in North American literature than other species of the genus Amaranthus. Crop losses associated with A. albus or A. blitoides were reported in North America for pinto beans (Phaseolus vulgaris L.) and potato (Solanum tuberosum L.) in New Mexico (Arnold et al. 1993; Murray et al. 1994), and for cotton (Gossypium hirsutum L.) in Oklahoma (Rushing et al. 1985). Crop losses produced by these three species in other crops were reported from Greece (Vizantinopoulos and Katranis 1994, 1998) and Israel (Qasem 1992)."

305	Congeneric weed	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Jansen, P.C.M., (2004). Amaranthus spinosus L. In: Grubben, G.J.H. & Denton, O.A. (Editors). PROTA 2: Vegetables/Légumes. [CD-Rom]. PROTA, Wageningen, Netherlands	"Spiny amaranth is a very noxious weed in many parts of the world. It is, for instance, troublesome in maize, cassava and groundnut in Ghana, in cotton in Mozambique, and in sugar cane in South Africa."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). (1983). Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	[Amaranthus spinosus] "Found in dry to moderately wet regions. A troublesome weed in pastures, rangelands, waste places, and cultivated areas." ... "A prolific seeder which crowds out forage grass. Avoided by livestock because of its long sharp spines. A common cause of hay fever."
	CABI. (2025). CABI Compendium Invasive Species. https://www.cabidigitallibrary.org/product/qi. [Accessed 1 Jul 2025]	A number of other Amaranthus species are documented as weeds including the following: Amaranthus blitum, Amaranthus dubius, Amaranthus hybridus, Amaranthus retroflexus, Amaranthus tuberculatus, and Amaranthus viridis

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	[No evidence] "Plants annual, glabrous. Stems prostrate or ascending (very rarely suberect), much-branched (usually from base), (0.1-)0.2-0.6(-1) m. Leaves: petiole ± 1/2 as long as blade; blade obovate, elliptic, or spatulate, 1-2(-4) × 0.5-1(-1.5) cm, base cuneate and tapering, margins usually entire, plane, rarely slightly undulate, apex obtuse, rounded, mucronulate. Inflorescences axillary glomerules, green. Bracts of pistillate flowers narrow, thin, 1.5-5 mm, ± equaling or slightly exceeding tepals. Pistillate flowers: tepals (3-)4-5, narrowly ovate to broadly linear, unequal or subequal, 1.5-3 mm, thin, apex acute or acuminate; style branches spreading; stigmas 3. Staminate flowers intermixed with pistillate; tepals 3(-4); stamens 3. Utricles broadly ovoid, 1.7-2.5 mm, equaling tepals, mostly smooth (slightly verrucose or rugose in dry plants), dehiscence regularly circumscissile. Seeds black, lenticular to broadly plumply lenticular, 1.3-1.6 mm diam., rather dull."

402	Allelopathic	
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	[Potentially Yes] "Qasem (1994, 1995) investigated the alellopathic effects of A. blitoides, A. retroflexus and A. viridis on wheat (Triticum durum Desf.) and barley (Hordeum vulgare L.) under laboratory and field conditions. Laboratory experiments showed that fresh shoot and root extracts of the three species reduced germination, and growth of wheat seedlings (coleoptile length, root length and root dry weight). Under field conditions, incorporation of A. blitoides residues in soil reduced height, grain and straw yield of wheat and barley (Qasem 1994, 1995)."

403	Parasitic	n
	Source(s)	**Notes**
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Plants annual, glabrous. Stems prostrate or ascending (very rarely suberect), much-branched (usually from base), (0.1-)0.2-0.6(-1) m." [Amaranthaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Smith, J.G. (1900). Fodder and Forage Plants: Exclusive of the Grasses. Government Printing Office, Washington, D.C.	"On the western ranges t here are several species of Amaranth us which contribute to the forage. One of these, .A . blitoidea, comes up on now breaking, and with other weedy species is readily eaten by cattle before it has become woody. Because of their fumbling ha bit , they are rapidly scattered by the winds."
	Rogers, G. (2020). Desert Weeds: Personal Narrative on Botanical First Responders. Springer International Publishing, Germany	"Prostrate Pigweed (A,naranthus blitoides) [AIEFN] This native weed is unlikely to cause problems in CWF lawns and gardens. Though it has spread west with human roads and settlements, it is not very aggressive and it is not invasive. Where livestock grazing overwhelms native vegetation, however, Prostrate Pigweed joins other weeds colonizing the damaged areas. Many weeds, like Prostrate Pigweed (Fig. 9. 18), are edible and can entice livestock to remain on a site long after soil microorganisms and longer-lived plants have been trampled into dust. This alone can create a semi-permanent weedland. Because many weeds are short-lived and dry out during ummer, fire frequency increases and locks the weedland in place."
	Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[Palatable but potentially toxic] "The presence of thiaminase in Amaranthus blitoides could have contributed to the development of polio-encephalomalacia in sheep grazing on natural pastures. This plant accumulates nitrogen and can cause nitrate poisoning because it can accumulate amounts sufficient to kill cattle."

405	Toxic to animals	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Mulligan and Munro (1990) stated that A. blitoides, A. hybridus L. and A. retroflexus L. can cause poisoning in pigs and cattle in Canada."
	Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Weed dermatitis. The presence of thiaminase in Amaranthus blitoides could have contributed to the development of polioencephalomalacia in sheep grazing on natural pastures. This plant accumulates nitrogen and can cause nitrate poisoning because it can accumulate amounts sufficient to kill cattle."

406	Host for recognized pests and pathogens	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Amaranthus blitoides is a host of Tetanops myopaeformis Roder, one of the most important insect pests of sugarbeets in North America (Blickenstaff et al. 1977; Campbell et al. 1998), and of Asphondylia amaranthi Felt. (Barnes 1948)."

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	**Notes**
	Plants for a Future. (2025). Amaranthus blitoides - S.Watson. https://pfaf.org/user/Plant.aspx?LatinName=Amaranthus+blitoides. [Accessed 1 Jul 2025]	[Unlikely, but caution is advised if consuming plants] "No members of this genus are known to be poisonous, but when grown on nitrogen-rich soils they are known to concentrate nitrates in the leaves. This is especially noticeable on land where chemical fertilizers are used. Nitrates are implicated in stomach cancers, blue babies and some other health problems. It is inadvisable, therefore, to eat this plant if it is grown inorganically."

408	Creates a fire hazard in natural ecosystems	n

Qsn #	Question	Answer
	Source(s)	Notes
	Rogers, G. (2020). Desert Weeds: Personal Narrative on Botanical First Responders. Springer International Publishing, Germany	[Speculated to contribute indirectly to fire risk or fuel load] "Many weeds, like Prostrate Pigweed (Fig. 9. 18), are edible and can entice livestock to remain on a site long after soil microorganisms and longer-lived plants have been trampled into dust. This alone can create a semi-permanent weedland. Because many weeds are short-lived and dry out during summer, fire frequency increases and locks the weedland in place."
	WRA Specialist. (2025). Personal Communication	Amaranthus blitoides is not reported to significantly increase fire risk in most natural ecosystems. Its low, fleshy, and patchy growth pattern and preference for disturbed sites make it an unlikely contributor to altered fire regimes.
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	Not listed among the impacts

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"A. blitoides–thermophyte, xerophyte, heliophyte (var. blitoides) or tolerant of shade (var. reverchonii)."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"The highest frequencies and relative abundances of A. albus and A. blitoides were recorded on the Great Groups of Brown Chernozem and Dark Brown Chernozem, medium texture. Such soils have developed under conditions of the lowest available moisture in the prairie region (Anonymous 1998). However, based on our experience, A. albus and A. blitoides occur over a much wider edaphic spectrum. Both species had higher frequencies, densities and relative abundance on medium and coarse textured soils compared to heavier soils. This concurs with observations recorded on herbarium labels; both species growing on sandy soils, fixed sand dunes and alluvial sands. Amaranthus albus and A. blitoides can tolerate a range of pH, varying from 4.5 to 8.5, but preferences are for pH values closer to 7 (Costea, unpublished)."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	"Plants annual, glabrous. Stems prostrate or ascending (very rarely suberect), much-branched (usually from base), (0.1-)0.2-0.6(-1) m."

412	Forms dense thickets	n
	Source(s)	Notes

Qsn #	Question	Answer
	Rogers, G. (2020). Desert Weeds: Personal Narrative on Botanical First Responders. Springer International Publishing, Germany	[No evidence] "This native weed is unlikely to cause problems in CWF lawns and gardens. Though it has spread west with human roads and settlements, it is not very aggressive and it is not invasive. Where livestock grazing overwhelms native vegetation, however, Prostrate Pigweed joins other weeds colonizing the damaged areas."
	WRA Specialist. (2025). Personal Communication	Amaranthus blitoides is not reported to form dense monocultures or stands in natural ecosystems. It is more accurately described as a weedy, opportunistic species that grows in patches in disturbed areas, and lacks the ecological dominance or growth traits of species known to form monocultures.
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	No evidence

501	Aquatic	n
	Source(s)	**Notes**
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	[Terrestrial] "Disturbed habitats: roadsides, riverbanks, railroads, fields, waste places, sandy flats; 0-2200 m"

502	Grass	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2025). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 1 Jul 2025]	"Genus: Amaranthus Subgenus: Albersia Family: Amaranthaceae"

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2025). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 1 Jul 2025]	"Genus: Amaranthus Subgenus: Albersia Family: Amaranthaceae"

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"All three species are annual, with a taproot, and reproduce only by seeds."

601	Evidence of substantial reproductive failure in native habitat	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Flora of North America Editorial Committee. 2004. Flora of North America: Volume 4: Magnoliophyta: Caryophyllidae, Part 1. Oxford University Press US, New York and Oxford	[No evidence] "Flowering summer-fall. Disturbed habitats: roadsides, riverbanks, railroads, fields, waste places, sandy flats; 0-2200 m; Alta., B.C., Man., Ont., Que., Sask.; Ala., Alaska, Ariz., Ark., Calif., Colo., Conn., Del., D.C., Fla., Ga., Idaho, Ill., Ind., Iowa, Kans., Ky., La., Maine, Md., Mass., Mich., Minn., Mo., Mont., Nebr., Nev., N.H., N.J., N.Mex., N.Y., N.Dak., Ohio, Okla., Oreg., Pa., R.I., S.C., S.Dak., Tenn., Tex., Utah, Vt., Va., Wash., W.Va., Wis., Wyo.; introduced and often completely naturalized in South America, Eurasia, and other regions. The name Amaranthus graecizans often has been misapplied to both A. blitoides and A. albus in older North American floras and manuals. Amaranthus blitoides was probably originally native to central and partly eastern United States, but now it is widely and successfully naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions. It has not been reported from Mississippi or North Carolina but since it is found in all other conterminous United States it can be expected to occur in these two as well."

602	Produces viable seed	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Amaranthus blitoides germinated well at 25, 30, 35°C and the germination percentage was greater at higher temperatures (Martin 1943). Germination of A. blitoides is also under phytochrome control. Kadman-Zahavi (1955) reported that intermittent white or red light stimulated germination, while continuous incandescent illumination inhibited it. Partially or entirely removing the seed coat stimulated germination (Martin 1943). Santelmann and Evetts (1971) reported that A. blitoides had a lower percentage germination than five other Amaranthus species (A. retroflexus, A. hybridus, A. albus, A. spinosus and A. palmeri). The highest germination, 37%, was observed after the seeds had been treated with concentrated sulfuric acid for four minutes."

603	Hybridizes naturally	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Amaranthus blitoides may hybridize with A. albus (= A. × budensis) (Priszter 1958) and A. blitum may hybridize with A. viridis L. (Coons 1981). The hybrid between A. albus and A. blitoides is intermediate between the parents. It differs from A. albus through the shorter bracts and larger fruits and seeds, and from A. blitoides by the ascendant or erect stems, the longer bracts and smaller fruits and seeds (Priszter 1958; Morariu 1952). Hybridization in amaranths in temperate regions occurs infrequently and the F1 plants have reduced fertility, but there is no data published so far regarding outcrossing rates for the three species."

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"The flowers are small, green and unattractive. The three species have self-compatible breeding systems and are predominately self-pollinated by wind and gravitation (personal observation)."

605	Requires specialist pollinators	n

Qsn #	Question	Answer
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"The flowers are small, green and unattractive. The three species have self-compatible breeding systems and are predominately self-pollinated by wind and gravitation (personal observation)."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"All three species are annual, with a taproot, and reproduce only by seeds."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"The three species are annuals and overwinter as seeds on or below the surface of the soil."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Dispersal of seeds is accomplished in the same way as in other Amaranthus spp. (Weaver and McWilliams 1980): by wind, by birds, by other animals after ingestion and excretion, as well as through farm machinery. The distance the wind can carry seeds is limited to only a few m (1-3) around the mother plant (personal observation). Mammals ingest the seeds with the rest of the plants."

702	Propagules dispersed intentionally by people	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Animals, Livestock, Sheep, Water, Escapee"
	WRA Specialist. (2025). Personal Communication	Amaranthus blitoides (prostrate pigweed) is not typically cultivated intentionally and is generally considered a weedy species, though it has been introduced—not purposefully cultivated—to many parts of the world through accidental dispersal.

703	Propagules likely to disperse as a produce contaminant	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental"
	Conn, J. S. (2012). Pathways of invasive plant spread to Alaska: III. Contaminants in crop and grass seed. Invasive Plant Science and Management, 5(2): 270-281	"Table 1. Frequency of occurrence and mean number of seeds of weed and crop contaminants in crop seed imported to Alaska." [Amaranthus blitoides among the seed contaminants]

704	Propagules adapted to wind dispersal	y

Qsn #	Question	Answer
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Dispersal of seeds is accomplished in the same way as in other Amaranthus spp. (Weaver and McWilliams 1980): by wind, by birds, by other animals after ingestion and excretion, as well as through farm machinery. The distance the wind can carry seeds is limited to only a few m (1-3) around the mother plant (personal observation). Mammals ingest the seeds with the rest of the plants."

705	Propagules water dispersed	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Animals, Livestock, Sheep, Water, Escapee"
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Wilson (1980) in a field study in western Nebraska, found that seeds of A. retroflexus and A. blitoides were among the most common encountered in surface irrigation canals, accounting for 37% of all seeds collected in 1977."
	Egginton, G. E., & Robbins, W. W. (1920). Irrigation water as a factor in the dissemination of weed seeds (Vol. 253). Agricultural Experiment Station of the Agricultural College of Colorado, Fort Collins, CO	Identified Amaranthus spp. among weed seeds found in irrigation ditches and runoff from agricultural lands, confirming that Amaranthus seeds—including likely A. blitoides—can be transported by surface water flows.

706	Propagules bird dispersed	y
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Dispersal of seeds is accomplished in the same way as in other Amaranthus spp. (Weaver and McWilliams 1980): by wind, by birds, by other animals after ingestion and excretion, as well as through farm machinery. The distance the wind can carry seeds is limited to only a few m (1-3) around the mother plant (personal observation). Mammals ingest the seeds with the rest of the plants."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Dispersal of seeds is accomplished in the same way as in other Amaranthus spp. (Weaver and McWilliams 1980): by wind, by birds, by other animals after ingestion and excretion, as well as through farm machinery." [Amaranthus blitoides seeds are not adapted for external animal dispersal, and epizoochory plays little to no role in their spread.]

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"A. blitoides can produce 14 600 seeds (Stevens 1932). Dispersal of seeds is accomplished in the same way as in other Amaranthus spp. (Weaver and McWilliams 1980): by wind, by birds, by other animals after ingestion and excretion, as well as through farm machinery."

Qsn #	Question	Answer
801	**Prolific seed production (>1000/m2)**	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039–1066. https://doi.org/10.4141/P02-139. [Accessed]	"A plant of A. blitoides can produce 14 600 seeds (Stevens 1932)."

802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039–1066. https://doi.org/10.4141/P02-139. [Accessed]	"There are no data available on the longevity of seeds of these three species. However, taking into account their morphological and physiological similarity to seeds of other Amaranthus spp., it can be speculated that the seed banks of the three species are relatively persistent (see literature reviewed by Weaver and McWilliams 1980; Burnside et al 1996)."

803	**Well controlled by herbicides**	y
	Source(s)	**Notes**
	Heap, I. (2025). The International Survey of Herbicide Resistant Weeds. Online. www.weedscience.com	"Prostrate Pigweed (Amaranthus blitoides) is a dicot weed in the Amaranthaceae family. In Israel this weed first evolved multiple resistance (to 2 herbicide sites of action) in 1991 and infests Forests, and Roadsides. Multiple resistance has evolved to herbicides in the Groups 2 (Legacy B), and PSII inhibitors - Serine 264 Binders HRAC Group 5 (Legacy C1 C2). These particular biotypes are known to have resistance to atrazine, chlorsulfuron, and simazine and they may be cross-resistant to other herbicides in the Groups 2 (Legacy B), and PSII inhibitors - Serine 264 Binders HRAC Group 5 (Legacy C1 C2)."

Qsn #	Question	Answer
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	[Certain herbicides are effective, but herbicide resistance may have developed for certain chemicals] "Vencill et al. (1990) studied the patterns of clomazone translocation and metabolism in A. blitum, A. hybridus and A. retroflexus. They reported greater absorption of 14C clomazone in the roots of the sensitive A. blitum and A. retroflexus than in a tolerant biotype of A. retroflexus. Most of the absorbed clomazone was traslocated acropetally to the leaves via the xylem. The absorption and translocation of pyridate, its effect on photosynthetic activity and its metabolism were studied in A. blitoides, rigid ryegrass (Lolium rigidum Gaudin) and chickpea (Cicer arietinum L.) (Gimenez-Espinosa and De Prado 1998). The absorption of pyridate in A. blitoides was slower than in chickpea plants, but much faster than in L. rigidum. The study of translocation of pyridate showed that most of this herbicide (60-90%) remained in treated leaves. Herbicide Resistance--No herbicide-resistant biotypes have been reported in Canada for any of the three species examined so far. An atrazine- and simazine-resistant biotype of A. albus was reported in Spain in 1984, where it infested 40-200 ha in 11-50 sites (Heap 2002). Amaranthus blitoides was reported to have developed resistance to photosystem II inhibitors (atrazine and simazine) in Israel in 1983 (Sibony and Rubin 1996; Rubin 1997; Heap 2002) and in Spain in 1986 (De Prado et al. 1993; Heap 2002). Results indicated that resistance to atrazine and simazine in both A. albus and A. blitoides was caused by an altered target site, similar to other atrazine resistant weeds (De Prado et al. 1993). Resistance is due to a point mutation in the chloroplast psbA gene, resulting in the substitution of Gly for Ser at residue 264 in A. blitoides (Sibony and Rubin 2001). In Israel, the triazine-resistant A. blitoides biotype infests between 405 and 4046 ha of cropland and roadsides in 501-1000 different sites (Heap 2002). A combination of flumioxazin + triazines at 2.5 g a.i. ha-1 + 0.062 kg a.i. ha-1 efficiently controlled triazine-resistant biotypes of A. blitoides and A. hybridus (Yacoby et al. 1996). In Spain, triazine-resistant A. blitoides infests 40-202 ha of orchards in 11 to 50 different sites. Sibony and Rubin (2001) in Israel reported that two biotypes of A. blitoides examined on a whole-plant basis using in vitro assays, revealed multiple-resistance to sulfonylureas, imidazolinones, triazolopyrimidines, pyrimidinylthiobenzoates and triazines. A single nuclear encoded gene, dominantly expressed, was responsible for conferring resistance to the ALS inhibitors. Two different point mutations were observed after sequencing the ALS gene: Cyt337Thy in domain A, which determined a substitution Pro188 Ser, and Gua1721Thy in domain B, which resulted in a Trp569Leu substitution. Based on whole-plant dose responses, the resistance to sulfometuron-methyl conferred by the mutation in domain B was greater than the resistance conferred by the mutation in domain A. Additionally, the 2 biotypes exhibited a point mutation in the chloroplastic psbA gene, Ser264Gly substitution in the D1 protein, which conferred resistance to atrazine. The same mutation in the psbA gene was noticed in a triazine-resistant biotype collected from another location in Israel (Sibony and Rubin 2001). Populations of dodder (Cuscuta campestris Yunker) resistant to ALS inhibitors were detected parasitizing resistant plants of A. blitoides (Sibony et al. 1995)."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	**Notes**
	Costea, M., & Tardif, F. J. (2003). The biology of Canadian weeds. 126. Amaranthus albus L., A. blitoides S. Watson and A. blitum L. Canadian Journal of Plant Science, 83(4), 1039-1066. https://doi.org/10.4141/P02-139. [Accessed]	"Mechanical factors such as clipping or trampling trigger development of secondary branches." [Amaranthus blitoides tolerates and may benefit from mutilation and moderate cultivation, thanks to its regenerative branching and ruderal nature. However, it is not fire-adapted and would likely be negatively affected by fire.]

Qsn #	Question	Answer
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	WRA Specialist. (2025). Personal Communication	Unknown

Summary of Risk Traits:

Amaranthus blitoides, commonly known as prostrate pigweed or mat amaranth, is a fast-growing annual plant native to North America. It forms low, spreading mats that can quickly cover bare soil and disturbed areas, especially along roadsides, agricultural fields, and urban environments. This weed thrives in dry, sunny conditions and is highly adaptable, making it difficult to control once established. Its small green flowers produce abundant seeds, which are easily dispersed by water, animals, and machinery.

It was recently reported as present in the Hawaiian Islands, but its full distribution is currently unknown. While not currently a major agricultural pest in Hawai'i, Amaranthus blitoides has the potential to spread aggressively in disturbed or unmanaged sites. Its dense, ground-hugging growth may outcompete native vegetation, especially in arid or lowland environments. Early detection and manual removal are key to preventing its spread. Avoid planting or transporting soil or materials contaminated with its seeds to help protect Hawai'i's natural and agricultural landscapes.

High Risk / Undesirable Traits
Broad climate suitability (grows in temperate to sub-tropical climates over a broad range of elevations and latitudes)
Naturalized almost everywhere in temperate North America and in many subtropical to warm-temperate regions
A disturbance adapted weed of several important agricultural crops
Other species are invasive
Potentially allelopathic
Accumulates nitrogen and can cause nitrate poisoning in pigs and cattle
A host of Tetanops myopaeformis Roder, one of the most important insect pests of sugarbeets in North America
Shade tolerant (but does best in high light environments)
Tolerates many soil types (not limited by substrate)
Reproduces by seed
Hybridizes with other species in the genus
Self-compatible and capable of self-pollination
Annual (reaches maturity in one growing season)
Seeds dispersed by water, wind, birds, other animals after ingestion and excretion, as well as through farm machinery or as a produce contaminant
Capable of prolific seed production
Seeds may form a persistent seed bank (longevity unknown)
Resistant to certain herbicides
Tolerates cutting and cultivation

Low Risk Traits
Unarmed (no spines, thorns, or burrs)
Palatable to animals (despite potential for nitrate poisoning)
Not reported to spread vegetatively
Herbicides may provide effective control