TAXON: *Achyranthes aspera* SCORE: *19.0* RATING: *High Risk*

Taxon: Achyranthes aspera

Family: Amaranthaceae

Common Name(s): burweed
chaff flower
chaffbur
devil's horsewhip

Synonym(s): Achyranthes argentea Lam.
Achyranthes indica (L.) Mill.
Achyranthes obtusifolia Lam.

Assessor: Chuck Chimera **Status:** Approved **End Date:** 18 Jun 2025

WRA Score: 19.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Naturalized, Agricultural Weed, Spiny bracts, Externally dispersed, Annual

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	y = 1*multiplier (see Appendix 2), n = 0	y
303	Agricultural/forestry/horticultural weed	y = 2*multiplier (see Appendix 2), n = 0	y
304	Environmental weed		
305	Congeneric weed	y = 1*multiplier (see Appendix 2), n = 0	y
401	Produces spines, thorns or burrs	y = 1, n = 0	y
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	n
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
409	Is a shade tolerant plant at some stage of its life cycle	y = 1, n = 0	n

Qsn #	Question	Answer Option	Answer
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	y
412	Forms dense thickets	y = 1, n = 0	y
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		
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	n
705	Propagules water dispersed	y = 1, n = -1	n
706	Propagules bird dispersed	y = 1, n = -1	y
707	Propagules dispersed by other animals (externally)	y = 1, n = -1	y
708	Propagules survive passage through the gut	y = 1, n = -1	n
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y = 1, n = -1	y
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
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	No evidence

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
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"…indigenous to Africa and Asia but is now found in nearly 60 countries with tropical and subtropical environments."

Qsn #	Question	Answer
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 28 Feb 2020]	"Native Africa NORTHERN AFRICA: Algeria (tropical & subtropical), Egypt, Morocco, Tunisia NORTHEAST TROPICAL AFRICA: Sudan EAST TROPICAL AFRICA: Kenya, Tanzania, Uganda WEST-CENTRAL TROPICAL AFRICA: Cameroon WEST TROPICAL AFRICA: Cote D'Ivoire, Nigeria, Senegal, Sierra Leone Asia-Temperate WESTERN ASIA: Afghanistan, Iran, Jordan, Lebanon, Syria CHINA: China [Zhejiang Sheng, Fujian Sheng, Hunan Sheng, Hubei Sheng, Jiangxi Sheng, Guangdong Sheng, Guizhou Sheng, Sichuan Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Hainan Sheng] EASTERN ASIA: Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, Nepal, Pakistan, Sri Lanka INDO-CHINA: Cambodia, Laos, Myanmar, Thailand, Vietnam MALESIA: Indonesia, Malaysia Australasia AUSTRALIA: Australia [New South Wales (e.), Queensland (n., e., & c.), Western Australia (n. & w.), Northern Territory] Europe SOUTHEASTERN EUROPE: Italy (incl. Sardinia, Sicily) SOUTHWESTERN EUROPE: Spain Northern America SOUTHERN MEXICO: Mexico [Chiapas, Quintana Roo] Southern America CARIBBEAN: Barbados, Dominica, Grenada, St. Lucia, St. Vincent and Grenadines CENTRAL AMERICA: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua NORTHERN SOUTH AMERICA: French Guiana, Guyana, Suriname WESTERN SOUTH AMERICA: Bolivia (tropical & subtropical), Colombia, Ecuador, Peru"

202	Quality of climate match data	High
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It has adapted to a wide range of environments. In Zambia it is found on heavy soils, often near ant hills and rivers (Vernon 1983), while in most countries it is common on light textured soils. It tolerates soil pH to 8 and grows from sea level in Hawaii and Colombia to 2500 m in Uganda (Masefield 1939)."

204	Native or naturalized in regions with tropical or subtropical climates	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"...indigenous to Africa and Asia but is now found in nearly 60 countries with tropical and subtropical environments."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"...indigenous to Africa and Asia but is now found in nearly 60 countries with tropical and subtropical environments."

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"...in Hawaii naturalized in low elevation, open, dry, disturbed habitats, such as along roadsides, on Oahu and Hawaii. It was also collected once on Laysan. Naturalized prior to 1871 (Hillebrand, 1888)."
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"...indigenous to Africa and Asia but is now found in nearly 60 countries with tropical and subtropical environments."

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	Yuncker, T.G. 1959. Plants of Tonga. Bishop Museum Bull. 220. Bishop Museum Press, Honolulu, HI	"A common plantation and waste area weed"
	Nevill, J. 2009. Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape. National IAS Baseline Report. GOS - UNDP - GEF	"An aggressive invader of disturbed ground represents a threat to habitat rehabilitation programmes on islands of high biodiversity significance."
	Aerts, R., Van Overtveld, K., Haile, M., Hermy, M., Deckers, J., & Muys, B. (2006). Species composition and diversity of small Afromontane forest fragments in northern Ethiopia. Plant Ecology, 187(1), 127-142	"High grazing pressure in the former explains the high indicator value of Achyranthes aspera L., a troublesome epizoochorously dispersed weed and true disturbance indicator if abundant in moist, shaded habitats (Fichtl and Admasu 1994)."
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	"The species is one of the first invaders after cultivation, also found by road-sides, waste places, etc."

303	Agricultural/forestry/horticultural weed	y
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"A. aspera can be a serious weed in pastures, plantation crops, and occasionally in irrigated and cultivated crops."
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	"Damaged ecosystem services Ecosystem change/ habitat alteration Negatively impacts agriculture Negatively impacts animal health Reduced native biodiversity"
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	"It is a notorious weed in fields - a disadvantage to farmers, a feature that promises a ready aptitude for artificial establishment."

304	Environmental weed	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Nevill, J. 2009. Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape. National IAS Baseline Report. GOS - UNDP - GEF	"It has been cited as impacting upon foraging habitat for native birds such as the Seychelles magpie robin." … "An aggressive invader of disturbed ground represents a threat to habitat rehabilitation programmes on islands of high biodiversity significance."

305	Congeneric weed	y
	Source(s)	**Notes**
	Schwartz, L. M., Gibson, D. J., & Young, B. G. (2016). Life history of Achyranthes japonica (Amaranthaceae): an invasive species in southern Illinois. The Journal of the Torrey Botanical Society, 143(2), 93-102	"Achyranthes japonica is an aggressive invasive species that quickly spreads and can invade high-quality natural areas. We have already seen it invade into the Cache River watershed, which is considered the last remaining high-quality wetland in southern Illinois (Suloway and Hubbell 1994). The habitat type (CH: bottomland hardwood forest; BWR: wetland) and the overall site quality (CH: relatively undisturbed, greater species diversity; BWR: frequently flooded, lower species diversity) contribute to the difference in results between sites. Our data suggest that A. japonica can be a threat to both habitats but is, potentially, a greater threat to the higher species diversity site than to the more-disturbed site. This conclusion is of great concern because invasive species usually perform better in more-disturbed areas (Jauni et al. 2015)."
	Randall, R.P. (2012). A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	Achyranthes bidentata, Achyranthes fauriei, Achyranthes japonica, Achyranthes longifolia

401	Produces spines, thorns or burrs	y
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Spikes at first congested, becoming open, 10-45 cm long, the flowers usually 3-10 mm apart, the rachis moderately to densely villous, peduncles 1-7.5 cm long; sepals subequal to unequal, 3-7 mm long, apex acute, subtended by a white, lanceolate to broadly ovate, flexible, spine-tipped bract 1.7-5 mm long, bracteoles 1.5-4.5 mm long, spine tipped."

402	Allelopathic	
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	[Evidence from laboratory experiment suggests Yes] "Allelopathy studies by Rao et al. (1979) in India tested the effects of macerated shoot and root tissue of fruiting A. aspera plants and seeds in water extracts on the germination of millet (Pennisetum typhoideum) seeds." … "Seed, root, and shoot sources of the extract greatly inhibited millet germination after 90 hr … Leaf sheath elongation and root growth were totally stopped by seed and root extracts while some growth occurred in the presence of shoot extracts."

Qsn #	Question	Answer
	Tanveer, A., Safdar, M., Farooq, N., Sudozai, M., Nadeem, M. A., & Abbas, T. (2019). Exploring the Herbicidal Potential of Achyranthes aspera Against Some Weeds. Planta Daninha, 37:e019188205	Evidence from laboratory experiment suggests Yes] "The phytotoxic composition of Achyranthes aspera was identified through HPLC, and its herbicidal potential was investigated against two narrow leaf weeds viz., Phalaris minor Retz. and Avena fatua L.; and four broad leaf weeds viz. Lathyrus aphaca L., Vicia sativa L., Convolvolus arvensis L. and Asphodelus tenuifolius L. through bioassays. Weed seeds were grown in the aqueous extracts of various plant parts (roots, leaf, stem, fruit and whole plant) of A. aspera at 5% (w/v) concentration. The extracts of all plant parts caused significant reductions with differential degree in germination percentage and mean germination time. Phalaris minor, A. fatua, L. aphaca, V. sativa and A. tenuifolius completely failed to germinate whereas C. arvensis showed the lowest GP (20%) in response to 5% fruit extract of A. aspera. Inhibition of seed germination of all weeds was higher with the fruit extract than with the root, stem, leaf and whole plant extracts of A. aspera. Seed germination of all narrow leaf weeds was completely inhibited at the 5% fruit extract of A. aspera. The highest phytotoxic inhibitory effect of A. aspera fruit extract was proved to be due to the presence of gallic acid (88.4 mg kg-1), caffeic acid (519.2 mg g-1) and m-coumaric acid (51.4 mg kg-1) as assessed by their HPLC analyses. The study, therefore, showed that A. aspera exerts an inhibitory effect on germination of weeds and can be further explored as a pre- or post-emergence herbicide to provide natural alternative to chemical herbicides in the future."

403	Parasitic	n
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"A coarse, rambling or erect widely branched annual or short-lived perennial with a semi woody base..."

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Sharma, B. M. (1981). A phytosociological study of a weed community in fallow land in the semi-arid zone of India. Weed science, 29(3), 287-291	"Achyranthes aspera L. is palatable in juvenile stages." [Implies that older plants become unpalatable]
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	"It provides livestock forage especially during the dry season when grass is dry."
	Lamprey, H.F., Herlocker, D.J. & Field, C.R. (1980). Report on the state of knowledge on browse in East Africa in 1980. Pp 33-54 in Le Houérou, H.L. (ed.) Browse in Africa. International Livestock Centre for Africa, Addis Ababa, Ethiopia	"The Chemical Composition of Kenya Browse and Pasture Herbage (%DM). A few plants that are not apparently browsed are also described" [Achyranthes aspera - Parts browsed = twigs with leaves; Animal - ruminants]
	Griffiths, C. J., Zuel, N., Jones, C. G., Ahamud, Z., & Harris, S. (2013). Assessing the potential to restore historic grazing ecosystems with tortoise ecological replacements. Conservation Biology, 27(4), 690-700	[Palatable to tortoises] "Table 1. Mean occurrence of food items observed ingested and in fecal samples of Aldabran tortoises (Aldabrachelys gigantea) and radiated tortoises (Astrochelys radiata) when roaming free on Round Island" [Achyranthes aspera - Food type = leaves, seeds]

Qsn #	Question	Answer
405	Toxic to animals	n
	Source(s)	Notes
	Lamprey, H.F., Herlocker, D.J. & Field, C.R. (1980). Report on the state of knowledge on browse in East Africa in 1980. Pp 33-54 in Le Houérou, H.L. (ed.) Browse in Africa. International Livestock Centre for Africa, Addis Ababa, Ethiopia	"The Chemical Composition of Kenya Browse and Pasture Herbage (%DM). A few plants that are not apparently browsed are also described" [Achyranthes aspera - Parts browsed = twigs with leaves; Animal - ruminants]

406	Host for recognized pests and pathogens	y
	Source(s)	Notes
	Nono-Womdim, R. (2003). An overview of major virus diseases of vegetable crops in Africa and some aspects of their control. Pp 213-232. In J. d'A. Hughes and J. Odu, (eds.). Plant virology In sub-Saharan Africa, Proc. Conf. International Institute of Tropical Agriculture, Ibadan, Nigeria	"Tomato yellow leaf curl virus (TYLCV) genus Bigeminivirus has been classifi ed in the family Geminiviridae." … "TYLCV causes severe diseases in tomato crops. Infected tomato plants exhibit severe symptoms consisting of yellowing, puckering, and size reduction in the terminal leaves, curling of lower leaves, and stunting. The severity of foliar symptoms and reduction in yield depend on the age at which plants are infected." … "In Tanzania, TYLCV was also detected in three newly identifi ed hosts that are Achyranthes aspera, Euphorbia heterophylla, and Nicandra physalloides (Nono-Womdim et al. 1996)."

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	[Unlikely unless ingested] "Chhabra (Pers. Comm.) reports that A. aspera contains saponin which is a cardiac stimulant. The Benzene extract is arbortificient and a preparation of this plant with zinc metal is fungicidal. Two compounds Bentaine and Ecdystrone have been reported to be isolated from this plant."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	Not listed among impacts
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	Not listed among impacts

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	"The species grows in open areas, it does not tolerate shade."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	"Achyranthes aspera is a widespread weed occurring on a variety of soils from sea level to 2600m or more in semi-arid areas receiving c. 250mm rainfall to high rainfall savannas with over 2000mm annual rainfall."

Qsn #	Question	Answer
411	Climbing or smothering growth habit	y
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual or perennial herbs, sometimes suffrutescent at base; stems erect to decumbent, 0.2-2 m long."

412	Forms dense thickets	y
	Source(s)	Notes
	Standley, P.C. & Dahlgren, B.E. 1937. Flora of Costa Rica - Vol. 18 - Part II. Field Museum of Natural History, Chicago	"Achyranthes aspera L. Mozotillo, Rabo de chancho. Common in the Meseta Central, ranging to the coasts, a weed of waste or cultivated ground, often growing in thickets. Tropics of both hemispheres. Leaves acuminate. "
	Smith, A.C. (1981). Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 2. Pacific Tropical Botanical Garden, Lawai, HI	"occurs from near sea level to about 900 m elevation as an abundantly naturalized weed on rocky shores, limestone islets, and grassy slopes, in coastal thickets, cultivated areas, and along roadsides and forest trails"

501	Aquatic	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Terrestrial] "naturalized in low elevation, open, dry disturbed habitats, such as along roadsides"

502	Grass	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual or perennial herbs, sometimes suffrutescent at base; stems erect to decumbent, 0.2-2 m long." [Amaranthaceae]

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual or perennial herbs, sometimes suffrutescent at base; stems erect to decumbent, 0.2-2 m long." [Amaranthaceae]
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 28 Feb 2020]	Family: Amaranthaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes

Qsn #	Question	Answer
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. (1999). Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Annual or perennial herbs, sometimes suffrutescent at base; stems erect to decumbent, 0.2-2 m long." [Amaranthaceae]

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	[No evidence] "Achyranthes aspera is an herbaceous to semi-woody plant widely disbursed in tropical and subtropical regions of the world."

602	Produces viable seed	y
	Source(s)	Notes
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"A single A. aspera plant produces from 2970 seeds/plant in Cuba (Rodriguez and Cepero 1984), 3600 in India (Hosamani et al. 1971) to 9450 in the Philippines … Seeds germinate equally well under light, shade and dark conditions (Fenner 1980)."

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	Unknown. No evidence of hybridization found

604	Self-compatible or apomictic	y
	Source(s)	Notes
	Shivanna, K. R. (2014). Reproductive assurance through autogamy in some annual weed species. Proceedings of the National Academy of Sciences, India Section B: Biological Sciences, 84(3), 681-687	[Autogamous] "Weeds have evolved numerous adaptations to establish, survive and spread rapidly in disturbed habitats. Although prolific seed production is recognized as an important adaptation, studies on their pollination ecology, which is the basis of seed production, have remained neglected. One of the adaptations expected in weed species is autogamy which enables them to set seeds even in uncertain pollination environments. This is particularly important for annual weeds as they have only one chance to set seeds in their life and if they miss this chance, population survival is at risk. Pollination ecology and seed set were studied in eight common annual weed species–Achyranthes aspera, Crotalaria pallida, Malvastrum coromondelianum, Melochia corchorifolia, Solanum nigrum, Stachytarpheta indica, Tridax procumbens and Triumfetta rhomboidea. The extent of autogamous self-pollination and seed set were studied in bagged flowers and compared with those which have access to floral visitors. Autogamy was prevalent in all the species leading to high seed set. There was no significant difference in the extent of pollination and seed set between bagged and open-pollinated flowers in any of the species. Floral visitors were recorded only in three of the species. Reproductive assurance through autogamy is an important adaptation in annual weeds which contributes to their success."

605	Requires specialist pollinators	n
	Source(s)	Notes

Qsn #	Question	Answer
	Kubitzki, K., Rohwer, J.G. & Bittrich, V. (eds.). 1993. The Families and Genera of Vascular Plants: Volume II. Flowering Plants. Dicotyledons: Magnoliid, Hamamelid and Caryophyllid Families. Springer-Verlag, Berlin, Heidelberg, New York	"Information is scanty on pollination in the family, but it seems clear that anemophily is the norm in Amaranthus, and probably many other genera. However, entomophily seems also to play an undoubted part, particularly in by bees."
	Shivanna, K. R. (2014). Reproductive assurance through autogamy in some annual weed species. Proceedings of the National Academy of Sciences, India Section B: Biological Sciences, 84(3), 681-687	[Pollinators not required for seed set] "Pollination ecology and seed set were studied in eight common annual weed species–Achyranthes aspera, Crotalaria pallida, Malvastrum coromondelianum, Melochia corchorifolia, Solanum nigrum, Stachytarpheta indica, Tridax procumbens and Triumfetta rhomboidea. The extent of autogamous self-pollination and seed set were studied in bagged flowers and compared with those which have access to floral visitors. Autogamy was prevalent in all the species leading to high seed set. There was no significant difference in the extent of pollination and seed set between bagged and open-pollinated flowers in any of the species. Floral visitors were recorded only in three of the species."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). (1983). Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Propagation: By seed."
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	"The species regenerates naturally from coppice and seed."

607	Minimum generative time (years)	1
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"A coarse, rambling or erect widely branched annual or short-lived perennial with a semi-woody base" [Annual or perennial life cycles]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"This species is readily distinguished by the opposite leaves, branched stem and spiny bracts that are erect before flowering but then become reflexed and readily adhere to animals and clothing" ... "It frequently occurs in waste areas, and along roadsides, foot paths, railroads and sand dunes. It often infest fence rows, open woodland, and the boarders of forests and coffee fields."

702	Propagules dispersed intentionally by people	n
	Source(s)	**Notes**
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	"The risk of introduction of A. aspera is high. It is a widespread weedy pantropical species readily transported to new habitats because its spiny fruits easily detach and stick to clothes, fur, and feathers. Consequently, seeds of this species may be easily transported to new habitats by birds, mammals, and humans."

703	Propagules likely to disperse as a produce contaminant	y

Qsn #	Question	Answer
	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, Pasture"
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 28 Feb 2020]	"potential seed contaminant" [No further details given, but this common weed of crops could easily contaminate produce]

704	Propagules adapted to wind dispersal	n
	Source(s)	**Notes**
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	"Spiny bracts cause the fruits to stick to the hair of animals, clothing etc. There is evidence of dispersal by livestock (Bullock and Primack, 1977)."

705	Propagules water dispersed	n
	Source(s)	**Notes**
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	"Spiny bracts cause the fruits to stick to the hair of animals, clothing etc. There is evidence of dispersal by livestock (Bullock and Primack, 1977)."

706	Propagules bird dispersed	y
	Source(s)	**Notes**
	De Lange, P. J., Scofield, R. P., & Greene, T. (2004). Achyranthes aspera (Amaranthaceae) a new indigenous addition to the flora of the Kermadec Islands group. New Zealand Journal of Botany, 42(2), 167-173	"Because Macauley Island is remote and difficult to access, we consider it very unlikely that A. aspera was introduced to the island by humans. It is suggested that the species colonised Macauley Island naturally via an avian vector, from seeds dispersed by sea birds travelling between the Norfolk Island group and Macauley Island." … "Achyranthes aspera is a widespread weedy pantropical species readily transported to new habitats because its spiny fruits easily detach and stick to clothes, fur, and feathers (Ridley 1930; Whistler 1994)." … "Given that the seeds of Achyranthes are well suited to avian dispersal (Ridley 1930; Whistler 1994), and there is evidence of sea bird movement between the Norfolk Island group and the Kermadec Islands, we think it most likely that A. aspera reached Macauley Island naturally, attached to the feathers of a sea bird or birds rather than by human agent."
	Choi, C. Y., Nam, H. Y., & Chae, H. Y. (2010). Exotic seeds on the feathers of migratory birds on a stopover island in Korea. Journal of Ecology and Environment, 33(1), 19-22	"Seeds of Achyranthes aspera have been transported by seabirds such as noddies (Anous spp.) and terns (Sterna spp.) to Aldabra Atoll in the Indian Ocean (Diamond 1979)."

707	Propagules dispersed by other animals (externally)	y
	Source(s)	**Notes**
	Agnew, A. D. Q., & Flux, J. E. 1970. Plant dispersal by hares (Lepus capensis L.) in Kenya. Ecology, 51(4): 735-737	"Of 369 hares examined, 160 had a total of 810 disseminules of 17 plant species in their fur. The six commonest plants were Tragus berteronianus, Achyranthes aspera, Pupalia lappacea, Boerhavia repense, Harpachne schimperi, and Themeda triandra. Female hares carried almost three times as many burs as did males. The incidence of zoochory by wild mammals seems unexpectedly variable in different regions."

Qsn #	Question	Answer
	Bullock, S. H., & Primack, R. B. (1977). Comparative experimental study of seed dispersal on animals. Ecology, 58(3), 681-686	"Studies of the plants Achyranthes aspera, Bidens sp. and Petiveria alliacea establish examples of seed attachment and detachment on dispersal surfaces that occur continuously during movement of a dispersal agent." … "Within and around established populations of Achyranthes, for example, the mean dispersal distance ranged from < 5 m to > 2.4 km, showing that settlement is selective and depends on the structure of existing vegetation. This relationship is also affected by the vertical distribution of seeds on the disperser."
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"This species is readily distinguished by the opposite leaves, branched stem and spiny bracts that are erect before flowering but then become reflexed and readily adhere to animals and clothing"

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	"Spiny bracts cause the fruits to stick to the hair of animals, clothing etc. There is evidence of dispersal by livestock (Bullock and Primack, 1977)." [Adapted for external dispersal]

801	Prolific seed production (>1000/m2)	
	Source(s)	**Notes**
	Lyaruu, H. V., Eliapenda, S., & Backéus, I. (2000). Floristic, structural and seed bank diversity of a dry Afromontane forest at Mafai, central Tanzania. Biodiversity & Conservation, 9(2), 241-263	[Not in this study] "Table 4. Seed bank flora of the Mafai forest (all species included), showing average depth distribution, species density and seed dispersal mechanisms." [Achyranthes aspera - Density (in m-2) = 15]
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. (1997). World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	[Potentially Yes] "A single A. aspera plant produces from 2970 seeds/plant in Cuba (Rodriguez and Cepero 1984), 3600 in India (Hosamani et al. 1971) to 9450 in the Philippines…"

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	**Notes**
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	"Has propagules that can remain viable for more than one year"
	Horticultural Impex. (2013). Achyranthes aspera. http://www.treeseedsindia.in. [Accessed 5 Sep 2013]	[Evidence that a persistent propagule bank is formed (>1 yr)? Possibly Yes] "Seed Longevity - 3-5 year"
	Royal Botanic Gardens Kew. 2008. Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/. [Accessed 5 Sep 2013]	[Possibly, but not based on field conditions] "Long-term storage under IPGRI preferred conditions at RBG Kew, WP. Oldest collection 13 years; germination change 97 to 93.8%, 12 years, 1 collection"

803	Well controlled by herbicides	y
	Source(s)	**Notes**
	CABI. 2013. Achyranthes aspera In: Invasive Species Compendium. www.cabi.org/isc	[Depends on life stage] "A. aspera is moderately resistant to 2,4-D and MCPA. In the young seedling stage, a reasonable kill can be obtained with rates of the order of 1.0 kg/ha but resistance increases rapidly with age and older plants require 2.0 kg/ha or more (Ivens, 1967)."

Qsn #	Question	Answer
	Kuldeep, S., & Khosla, S. N. (1987). Comparative evaluation of 2, 4-D lac slow release herbicide. Indian Journal of Forestry, 10(4), 256-261	[Well controlled by herbicides? Yes] "In a comparison of the effects of the slow release herbicide 2,4-D lac (17.7%) with those of 2,4-D (acid) (98%) and 2,4-D sodium (80%), 2,4-D lac killed Achyranthes aspera and Hordeum vulgare at much lower concn (1200 p.p.m.) than the other 2 formulations. In selectivity studies in wheat, 500-400 p.p.m. 2,4-D lac was comparable in efficacy to the other 2 treatments. At 500 -1000 p.p.m., 2,4 D lac enhanced yields by 12 and 6%, resp. Some leaf malformation occurred in okra [Hibiscus esculentus] grown after wheat treated with 3000-4000 p.p.m. 2,4-D lac or 2000 4000 p.p.m. of the other 2 formulations. The symptoms continued for 12-20 days with the 2,4-D lac treatment. 2,4-D and 2,4-D sodium at 2000-4000 p.p.m. caused premature flower shedding of wheat for up to 35-45 days; at this concn all formulations delayed ear emergence."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	**Notes**
	FAO Forestry Department. (1986). Some Medicinal Forest Plants Of Africa And Latin America. FAO, Rome, Italy	"The species regenerates naturally from coppice and seed."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	**Notes**
	Shafique, S., Bajwa, R., Javaid, A. & Shafique, S. (2007). Biological control of Achyranthes aspera and Xanthium strumarium in Pakistan. Pak. J. Bot, 39(7), 2607-2610	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown in Hawaii and Pacific] "Achyranthes aspera L., and Xanthium strumarium L. are two troublesome weeds that generally grow on wastelands. A mealy bug species was found to be a biological control agent severely damaging these two weeds. Very heavy infestation of mealy bug was recorded on these two weeds during the months of October and November in an open undisturbed area in Quaid-e-Azam Campus, University of the Punjab, Lahore. Mealy bug was feeding on terminal and axilliary buds, stem surface and inflorescence. The invaded plants first showed the symptoms of die back and ultimately dead. The mealy bug attack was not found on rice, maize and shorghum, the main crops in the season. Three wasteland weeds, however, viz., Malvestrum tricuspidatum A. Gray, Sida spinosa L., and Parthenium hysterophorus L., were found to be attacked by the mealy bug. Further study regarding the screening of other important crops against mealy bug attack is required before its use as a biological control agent against the studied weeds."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Broad climate suitability & thrives in tropical climates
• Elevation range exceeds 1000 m
• Widely naturalized
• Weed of agriculture and waste places
• Related Achyranthes species have become invasive
• Bracts and bracteoles are spine-tipped
• May have allelopathic properties
• Alternate host of tomato yellow leaf curl virus
• Tolerates many soil types
• Forms dense thickets
• Autogamous
• Can reach maturity in 1 year
• Seeds stick to clothes, fur, and feathers and easily transported by birds, mammals, and humans
• Forms a persistent seed bank
• Able to coppice

Low Risk Traits
• Medicinal uses
• Requires full sun
• Does not spread vegetatively
• Herbicides provide effective control during the seedling stage