Taxon: Kummerowia stipulacea (Maxim.) Makino **Family:** Fabaceae

Common Name(s): Korean clover
Korean lespedeza

Synonym(s): Lespedeza stipulacea Maxim.

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 18 Mar 2022

WRA Score: 2.0 **Designation:** L **Rating:** Low Risk

Keywords: Annual Herb, Weedy, Fodder, Self-Fertile, Animal-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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)	Low
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)	Low
202	Quality of climate match data	(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	n
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	n
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-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
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		

Qsn #	Question	Answer Option	Answer
303	Agricultural/forestry/horticultural weed		
304	Environmental weed		
304	Environmental weed		
305	Congeneric weed		
305	Congeneric weed		
401	Produces spines, thorns or burrs	y=1, n=0	n
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
402	Allelopathic		
403	Parasitic	y=1, n=0	n
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals		
405	Toxic to animals		
406	Host for recognized pests and pathogens		
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle		
409	Is a shade tolerant plant at some stage of its life cycle		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	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
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	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
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	n
603	Hybridizes naturally	y=1, n=-1	n
604	Self-compatible or apomictic	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	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
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
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	y
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed		
705	Propagules water dispersed		
706	Propagules bird dispersed		
706	Propagules bird dispersed		
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)		

Qsn #	Question	Answer Option	Answer
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
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
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		
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**
	Hanelt, P. (ed.). (2001). Mansfeld's Encyclopedia of Agricultural and Horticultural Crops, Volume 2. Springer-Verlag, Berlin, Heidelberg, New York	[No evidence] "Like K. striata cultivated as pasture and forage crop, for soil improvement and erosion control, mainly in the central and south-eastern states of USA, grown also as grass-legume mixture, in permanent pastures and as cover plant in cereal fields. The cultivation area extends farther north than that of L. striata; L. stipulacea is also better for hay production. First experimental trials had been made in the first decades of the 20th cent., in the thirties the species was already more important than L. stipulacea; the American cultivars had been selected mostly from Chinese and Korean accessions."

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. (2022). Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. (2022). 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"**	**Low**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Anhui, Fujian, Guangdong, Guangxi, ?Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Taiwan, Zhejiang [Japan, Korea, Russia; naturalized in SE United States]."
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 16 Mar 2022]	"Native Asia-Temperate RUSSIAN FAR EAST: Russian Federation [Primorye, Amur] CHINA: China (except s.) EASTERN ASIA: Korea, Japan (Honshu, Kyushu), Taiwan (c.)

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 16 Mar 2022]	

Qsn #	Question	Answer
203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	Useful Temperate Plants. (2022). Kummerowia stipulacea. Temperate Plants Database, Ken Fern. https://temperate.theferns.info. [Accessed 17 Mar 2022]	"Kummerowia stipulacea is a plant of the temperate and subtropical zones, where it is found at elevations up to 1,000 metres. It generally does not thrive in tropical climates. It grows best in areas where annual daytime temperatures are within the range 14 - 24°c, but can tolerate 6 - 30°c[418]. The plant is frost-tender[310]. It prefers a mean annual rainfall in the range 1,000 - 1,300mm, but tolerates 500 - 1,700mm[418]."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Roadsides, grasslands, mountain slopes, stable or semistable sand dunes; 100–1200 m."

Qsn #	Question	Answer
204	**Native or naturalized in regions with tropical or subtropical climates**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Roadsides, grasslands, mountain slopes, stable or semistable sand dunes; 100–1200 m. Anhui, Fujian, Guangdong, Guangxi, ?Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Taiwan, Zhejiang [Japan, Korea, Russia; naturalized in SE United States]."
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence as of 2019

Qsn #	Question	Answer
205	**Does the species have a history of repeated introductions outside its natural range?**	**y**
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Introductions and spread in North America: The introduction of Japanese clover to North America preceded that of Korean clover by about 70 years. Although Japanese clover was likely first introduced accidentally, intentional introductions of both Japanese and Korean clover followed this accidental introduction. Spread of both species was facilitated by human activities, which included construction and use of travel routes and deliberate plantings for erosion control, forage production, and mine rehabilitation. Several cultivars and strains were developed to extend the range in which these species could be utilized in North America [52,64]"

Qsn #	Question	Answer
301	**Naturalized beyond native range**	**y**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Japanese and Korean clovers occur as nonnative species in eastern North America. Both species are native to eastern Asia [140]; Korean clover is native to Korea, and Japanese clover is native to Japan and China [38]. In North America, these clovers occur from New York to Florida and west to Texas, Kansas, and Iowa. Although the distributions of these clovers overlap to a great degree, Japanese clover is more common in the southern part of this range and also occurs in New Mexico [65,93,106]. Korean clover is more common in the northern part of this range, and also occurs in Michigan, Wisconsin, and Nebraska. It is unclear whether Korean clover currently occurs in Florida [109,152]. Records indicate that Korean clover was planted for pasture forage in Hawaii in 1932, but persistence to the current day is doubtful [107,156]."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"naturalized in SE United States"

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	Swearingen, J., C. Bargeron. (2016). Invasive Plant Atlas of the United States. University of Georgia Center for Invasive Species and Ecosystem Health. http://www.invasiveplantatlas.org/. [Accessed 17 Mar 2022]	"Ecological Threat. K. stipulacea occurs in old fields, roadsides, grasslands, mountain slopes, stable or semistable sand dunes. It is native to Korea and was introduced into the United States and has become established in natural areas." [Present in natural areas. Impacts not specified]
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Ecology Korean clover can endure barren, drought situations and usually forms an advantageous population in ruderal community. Harmfulness A common weed."
	USDA NRCS Northeast Plant Materials Program. (2006). Plant Fact Sheet - Kummerowia stipulacea (Maxim.) Makino. http://Plant-Materials.nrcs.usda.gov. [Accessed 18 Mar 2022]	"This plant may become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed. Please consult with your local NRCS Field Office, Cooperative Extension Service office, or state natural resource or agriculture department regarding its status and use."
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 18 Mar 2022]	[A disturbance-adapted weedy plant of ambiguous impacts] "Impacts: Few sources reported that Japanese and Korean clovers have negative impacts on natural vegetation. Although some aggressive growth by the clovers has been reported in prairies [101], other herbaceous communities [105], and reclaimed mine sites [19], the clovers are not usually weed management priorities. Their persistence and spread typically require recurring disturbance [73,101,144]."

303	Agricultural/forestry/horticultural weed	
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 18 Mar 2022]	"Impacts: Few sources reported that Japanese and Korean clovers have negative impacts on natural vegetation. Although some aggressive growth by the clovers has been reported in prairies [101], other herbaceous communities [105], and reclaimed mine sites [19], the clovers are not usually weed management priorities. Their persistence and spread typically require recurring disturbance [73,101,144]."

Qsn #	Question	Answer
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as an agricultural weed in several references, but evidence of impacts has not been corroborated

304	Environmental weed	
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Impacts: Few sources reported that Japanese and Korean clovers have negative impacts on natural vegetation. Although some aggressive growth by the clovers has been reported in prairies [101], other herbaceous communities [105], and reclaimed mine sites [19], the clovers are not usually weed management priorities. Their persistence and spread typically require recurring disturbance [73,101,144]."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as an environmental weed, but impacts have not been corroborated

305	Congeneric weed	
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 18 Mar 2022]	[K. striata a potential disturbance-adapted weed of ambiguous impacts] "Impacts: Few sources reported that Japanese and Korean clovers have negative impacts on natural vegetation. Although some aggressive growth by the clovers has been reported in prairies [101], other herbaceous communities [105], and reclaimed mine sites [19], the clovers are not usually weed management priorities. Their persistence and spread typically require recurring disturbance [73,101,144]."
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	[Kummerowia striata] "Ecology Japanese clover suits for numerous habitats, and usually establishes monocultures in sandy soils, roadsides, or even grasslands. It tolerates barren, drought situations and also fits for wet conditions but cannot suit for submerged or flooding surroundings. Harmfulness A common weed."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Kummerowia striata] "Weed of: Pastures"
	Allred, B. W., Fuhlendorf, S. D., Monaco, T. A., & Will, R. E. (2010). Morphological and physiological traits in the success of the invasive plant Lespedeza cuneata. Biological Invasions, 12(4), 739-749	[Members of the genus Lespedeza are documented to be invasive] "The objective of this study was to examine possible strategies of competition and tolerance, which may be responsible for or aid in the successful invasion of Lespedeza cuneata (Dum.-Cours.) G. Don. L. cuneata is an introduced herbaceous perennial legume that is expanding throughout the southern Great Plains (Brandon et al. 2004; Cummings et al. 2007). Introduced from Asia in the late 1800s, L. cuneata has primarily been planted for forage production, erosion control, and land reclamation. Invasion of L. cuneata into disturbed habitat (Brandon et al. 2004) and quality rangeland (Cummings et al. 2007) is rapid, displacing native species and forming dense monocultures."

401	Produces spines, thorns or burrs	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Herbs, prostrate, ascending, or erect. Stem and branches with sparse upward-pointing white hairs. Stipules ovate, 3-8 mm, longer than petiole or sometimes nearly equal, shortly ciliate; petiole short; leaflets obovate or broadly obovate, terminal one 0.5-1.8 cm × 3-12 mm, base cuneate, apex emarginate or nearly truncate. Flowers 1 or 2, axillary. Pedicel hairy. Calyx broadly campanulate; standard elliptic, shorter than keel, base attenuate, clawed, apex emarginate; wings narrowly lanceolate, nearly equal to standard; keel obtuse, with dark purple spots adaxially, intermixed with apetalous flowers. Legume ovoid or elliptic, ca. 3 mm, usually 2.5-3 × as long as calyx, slightly compressed."

402	Allelopathic	
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	[Unknown for Kummerowia stipulacea] "Allelopathy: Laboratory experiments showed that root exudates from Japanese clover inhibited the growth of lettuce radicles [29]. How these findings may apply to other vegetation and field conditions is unknown."

403	Parasitic	n
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs, prostrate, ascending, or erect." [Fabaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Japanese and Korean clovers are utilized by both wildlife and livestock. The clovers provide palatable, high-quality forage for livestock and deer. Foliage and seeds are often seasonally important in the diets of a variety of small mammals and birds [140]. A review reports that the clovers are among the most important winter quail foods in the South, consumed extensively by doves in the spring when other foods are scarce, preferred by wild turkeys in Missouri, and important summer deer food in Ohio. They are also eaten by cotton rats, rabbits, mallards, starlings, juncos, cardinals, towhees, and English sparrows, although they are rarely a predominant diet component [37]."
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Utilization The whole plant is used medicinally as a diuretic, for reducing fever, and for treating diarrhea. It is also used for forage and green manure."

405	Toxic to animals	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Tull, D. (2013). Edible and Useful Plants of the Southwest. University of Texas Press, Austin, TX	[May be indirectly toxic if moldy] "Moldy hay from the sweet clovers (Melilotus species) and Korean bush clover (Kummerowia stipulacea, formerly classified as Lespedeza stipulacea) has caused death in cattle and other livestock. In sweet clover hay the mold creates coumarin, which breaks down into dicoumarin. Dicoumarin causes severe hemorrhaging. The discovery of coumarin in sweet clover mold led to the development of several important products, such as warfarin, which is used in rodent poisons, and an anticoagulant used medicinally to prevent and treat blood clots (Lewis and Elvin-Lewis 1977)."
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	[Possibly if hay is moldy] "Cattle: Japanese and Korean clover may cause hemorrhaging in cattle (similar to that caused by sweetclovers) when hay is moldy [38,140], but some studies report high levels of clover use by cattle."

406	**Host for recognized pests and pathogens**	
	Source(s)	**Notes**
	USDA NRCS Northeast Plant Materials Program. (2006). Plant Fact Sheet - Kummerowia stipulacea (Maxim.) Makino. http://Plant-Materials.nrcs.usda.gov. [Accessed 18 Mar 2022]	"Pests and Potential Problems - Annual lespedezas are relatively unaffected by insect pests and diseases."
	CABI. (2022). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Wild host of: Meloidogyne arenaria (peanut root-knot nematode) Host of (source - data mining): Phakopsora pachyrhizi (soyabean rust)"

407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Utilization The whole plant is used medicinally as a diuretic, for reducing fever, and for treating diarrhea. It is also used for forage and green manure."
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 18 Mar 2022]	[Moldy hay potentially hazardous to cattle, but risk to humans is minimal or non-existent] "Cattle: Japanese and Korean clover may cause hemorrhaging in cattle (similar to that caused by sweetclovers) when hay is moldy [38,140], but some studies report high levels of clover use by cattle."

408	**Creates a fire hazard in natural ecosystems**	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 18 Mar 2022]	[Kummerowia does not appear to limit fire spread but is also not documented to increase fire risk] "Fuels: Based on 2 studies that evaluated the flammability of Japanese clover, it seems unlikely that Japanese clover would limit fire spread during the dry season unless it was severely grazed. When Japanese clover was tested as a firebreak in pond pine (Pinus serotina) vegetation in the North Carolina Piedmont, it was rated as moderately flammable. It rated from a 5 to a 6.5 on a flammability scale, where 1 was nonflammable and 10 was highly flammable. When grazed, Japanese clover was dry enough during the fire season to burn with a pressure torch [130]. In Texas, Lay [85] reported that when grazed short, Japanese clover functioned as a firebreak in the absence of extreme fire weather conditions. Japanese clover stopped "normal" fires but only slowed "hazardous" fires burning in high winds. For best firebreak functioning, plowed strips were needed around the grazed Japanese clover [85]. Fire regimes: As of 2010, there was no information available on the typical fire regimes in Japanese or Korean clover habitats or on the effects of large Japanese or Korean clover populations on the fire frequency or fire severity in US habitats. See the Fire Regime Table for further information on fire regimes of vegetation communities in which Japanese and/or Korean clover may occur."

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	Useful Temperate Plants. (2022). Kummerowia stipulacea. Temperate Plants Database, Ken Fern. https://temperate.theferns.info. [Accessed 17 Mar 2022]	"Grows best in a sunny position, tolerating light shade[418]."
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Open sites are likely best for establishment of Japanese or Korean clover."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Soils: While growth of Japanese and Korean clovers may be best on fertile, well-drained soils [49,93,140], plants survive in a variety of soil textures and in infertile, acidic, or limestone soil types. Both clovers have been reported on dry soils in West Virginia [139], sands in eastern Texas [38] and Missouri [142], sandy loams on the Coastal Plain, and clays in the Piedmont [58]. In the southeastern United States, the clovers grew best on fertile bottomlands, and although described as fairly drought tolerant, plants were most productive in areas with "adequate" moisture [58]. In 2- to 3-year-old fields in South Carolina, production of Japanese clover was greatest (13.5 g/m²) in fields with poorly drained soils (44% silt+clay in subsoil). Productivity was much lower (0.5-2.7 g/m²) on soils with moderate to excellent drainage (9-20% silt+clay in subsoil) [112]. While soil may have been important to Japanese clover abundance, past land use and proximity to a clover seed source were also likely important. Growth of the clovers can also be good on eroded, acidic soils with low levels of phosphorus (review by [93]). A review reports that Korean clover is less tolerant of acidic soils and more tolerant of alkaline soils than Japanese clover (review by [113])."
	Useful Temperate Plants. (2022). Kummerowia stipulacea. Temperate Plants Database, Ken Fern. https://temperate.theferns.info. [Accessed 17 Mar 2022]	"Succeeds in a wide range of well-drained soils, from sandy to clayey, growing best in moderately fertile conditions but also where the fertility is low[418]. Prefers a pH in the range 6 - 6.5, tolerating 5.5 - 8[418]. Plants are moderately drought-tolerant[418]."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Herbs, prostrate, ascending, or erect."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	[Pure stands of this plant do not inhibit establishment of other vegetation] "In crop-production reports, Japanese and Korean clovers are not considered especially aggressive, and established stands are easily invaded by other vegetation. Reports indicate that weeds encroach rapidly in pure stands of Japanese and Korean clover, and due to their short growing season, the clovers do not "compete well" with other "weedy" plants [8,113]. Growth of the clovers does not appear to be inhibited by nonsod-forming grasses, but the clovers can be eliminated by the second growing season when grown with sod-forming grasses such as Bermuda grass or carpetgrass (Axonopus spp.) [58]."

Qsn #	Question	Answer
501	**Aquatic**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Roadsides, grasslands, mountain slopes, stable or semistable sand dunes; 100-1200 m."

Qsn #	Question	Answer
502	**Grass**	**n**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 16 Mar 2022]	Family: Fabaceae (alt. Leguminosae) Subfamily: Faboideae Tribe: Desmodieae Subtribe: Lespedezinae

Qsn #	Question	Answer
503	**Nitrogen fixing woody plant**	**n**
	Source(s)	**Notes**
	Graham, P. H. (2008). Ecology of the root-nodule bacteria of legumes. In Nitrogen-fixing leguminous symbioses (pp. 23-58). Springer, Dordrecht	"Table 1. Recognized genera and species of legume root- and stem-nodule bacteria" [Includes Kummerowia stipulacea, a nitrogen-fixing annual herb]

Qsn #	Question	Answer
504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 16 Mar 2022]	"Belowground description: Japanese and Korean clovers produce shallow taproot systems"

Qsn #	Question	Answer
601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Roadsides, grasslands, mountain slopes, stable or semistable sand dunes; 100–1200 m. Anhui, Fujian, Guangdong, Guangxi, ?Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Taiwan, Zhejiang [Japan, Korea, Russia; naturalized in SE United States]."

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Diffusion Characteristics Seed reproduction."

Qsn #	Question	Answer
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Seed production: Although several sources report that Japanese and Korean clovers produce abundant seed, rates of seed production in wildlands were rarely reported in the literature. High levels of seed production by Korean clover occurred on eroded and intact old-field soils near Ashland, Missouri. First-year seed production was "good", and in the next growing season, stands were dense on both soil types [56]. Wheeler [161] reported that "well developed" Korean clover plants produce "hundreds of pods". Increased branching of Japanese clover was associated with increased seed production. "

603	Hybridizes naturally	n
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Hybridization between Japanese and Korean clover is unlikely. Experimental crosses between the clovers failed to produce viable seed [54]."

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Hanson, C. H., & Cope, W. A. (1955). Reproduction in the cleistogamous flowers of ten perennial species of lespedeza. American Journal of Botany, 42(7): 624-627	"Mature cleistogamous flowers in the ten perennial species of Lespedeza studied were about 1 to 1.5 mm. in length, and only one-tenth to one-sixth as long as the showy flowers of the corresponding species. Cleistogamous flowers of each species bore anthers. The mechanism of pollination appeared identical to that described previously for the annual species L. stipulacea."
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Pollination and breeding system: Japanese and Korean clover produce both cleistogamous flowers, which are obligately self fertilized, and chasmogamous flowers, which are capable of cross pollination [52]. Weather can affect the abundance of each flower type. High temperatures at the time of flowering can increase the abundance of chasmogamous flowers, while low temperatures can increase the production of cleistogamous flowers (review by [113]). Although some report that outcrossing in chasmogamous flowers is rare (review by [93]), others report outcrossing rates of up to 70% [45]. Outcrossing rates may differ by species. Korean clover flowers are partially self fertilized and partially cross fertilized (Hanson and Cope 1955 cited in [45]). Japanese clover flowers are primarily self fertilized (Johnson 1951 cited in [45])."

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Japanese and Korean clover produce both cleistogamous flowers, which are obligately self fertilized, and chasmogamous flowers, which are capable of cross pollination [52]."

Qsn #	Question	Answer
	McGregor, S. E. (1976). Insect Pollination of Cultivated Crop Plants. Agricultural Research Service, USDA, Washington, D.C.	"Pieters (1939b) stated that L. striata and L. stipulacea are believed to be self-pollinated. There the matter seems to have rested without further study. The answer may lie in the fact that honey bees are not strongly attracted to these species (Pellett 1947*), and beekeepers make no effort to place their colonies near lespedeza fields. How the bees might act on the flowers under saturation distribution of colonies, such as is used in the pollination of alfalfa and some other crops, is unknown. The data indicate that floral visitation could be obtained on annual lespedezas if this were sufficiently desired. A study of the beneficial effect of bees on seed production of this crop would be most interesting and is needed."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Vegetative regeneration: Neither Japanese nor Korean clover reproduce vegetatively. Vegetative regrowth is common after cutting if the clovers are not cut too low to the ground or late in the growing season [14,113]."

607	Minimum generative time (years)	1
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Japanese and Korean clovers are warm-season annuals. Korean clover is said to mature earlier than Japanese clover [93,161]; however in field studies in Columbia, Missouri, Japanese clover began flowering 7 to 10 days before Korean clover. "

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Research indicates that clover seeds are dispersed in cattle and horse feces. The spread of clover along trails and roads suggests seed dispersal by humans as well [42]."

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Crop, Herbal, Ornamental, Pasture Dispersed by: Humans"
	WRA Specialist. (2022). Personal Communication	Sold commercially in seed mixes by a number of online vendors

Qsn #	Question	Answer
703	**Propagules likely to disperse as a produce contaminant**	**n**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Crop, Herbal, Ornamental, Pasture Dispersed by: Humans"
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Research indicates that clover seeds are dispersed in cattle and horse feces. The spread of clover along trails and roads suggests seed dispersal by humans as well [42]."
	WRA Specialist. (2022). Personal Communication	No evidence of seed contamination, despite widespread occurrence in disturbed and agricultural settings

704	**Propagules adapted to wind dispersal**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Legume compressed, 1-jointed, indehiscent, 1-seeded." ... "Legume ovoid or elliptic, ca. 3 mm, usually 2.5–3 × as long as calyx, slightly compressed." [No adaptations for wind dispersal]

705	**Propagules water dispersed**	
	Source(s)	**Notes**
	Yoshikawa, M., Hoshino, Y., & Iwata, N. (2013). Role of seed settleability and settling velocity in water for plant colonization of river gravel bars. Journal of vegetation science, 24(4), 712-723	[Possibly moved by water] "There was only one typical component of natural gravel bar vegetation: Kummerowia stipulacea."

706	**Propagules bird dispersed**	
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Birds: Many song and game birds feed on Japanese and Korean clover seeds or utilize the clovers as habitat or in nest construction. Of the birds that utilize the clovers, northern bobwhites have been studied most extensively." [Possibly, although birds apparently act as seed predators rather than dispersers]

Qsn #	Question	Answer
707	**Propagules dispersed by other animals (externally)**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. (2010). Flora of China. Vol. 10 (Fabaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Legume compressed, 1-jointed, indehiscent, 1-seeded." ... "Legume ovoid or elliptic, ca. 3 mm, usually 2.5–3 × as long as calyx, slightly compressed." [No means of external attachment]
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed]	"Research indicates that clover seeds are dispersed in cattle and horse feces." [Internally dispersed]

708	**Propagules survive passage through the gut**	**y**
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"Research indicates that clover seeds are dispersed in cattle and horse feces. The spread of clover along trails and roads suggests seed dispersal by humans as well [42]."

801	**Prolific seed production (>1000/m2)**	
	Source(s)	**Notes**
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 18 Mar 2022]	[Seed densities under natural conditions (i.e. not cultivated) unknown] "Seed production: Although several sources report that Japanese and Korean clovers produce abundant seed, rates of seed production in wildlands were rarely reported in the literature. High levels of seed production by Korean clover occurred on eroded and intact old-field soils near Ashland, Missouri. First-year seed production was "good", and in the next growing season, stands were dense on both soil types [56]. Wheeler [161] reported that "well developed" Korean clover plants produce "hundreds of pods". Increased branching of Japanese clover was associated with increased seed production. "

802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**y**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	[Seeds persist for at least 2 years in some situations] "The available seed bank studies suggest a short-lived seed bank, but experiments involving burial and recovery over time are rare. When Korean clover seed collected from plants in Kentucky and/or Tennessee was sown in moist soil and monitored for many years in a greenhouse with open windows and no temperature control, some seed germinated as late as year 2. No seed germinated in the later years of the 8-year experiment [12]. A seed burial study conducted outdoors at the USDA Seed Testing Laboratory in Indiana found 48% of lespedeza (Lespedeza spp.) seeds were viable after 20 years of burial [30]. The study failed to identify seeds to the species level, and although Japanese and Korean clovers were still classified in the genus Lespedeza at the time of this study, it is unclear whether they were among the seeds tested. "

803	Well controlled by herbicides	y
	Source(s)	**Notes**
	Zhenghao Xu & Meihua Deng. (2017). Identification and Control of Common Weeds: Volume 2. Zhejiang University Press, Hangzhou and Springer Nature, Singapore	"Management Chemical control can choose glyphosate and paraquat."
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	[Post-emergent herbicides apparently effective] "Chemical control: Very few studies (as of 2010) described in detail the effects of herbicides on clover populations. In Georgia, several herbicides and application timings were tested. In one trial, a single growing-season herbicide application provided good control (up to 99%) of Japanese clover within 2 years of its application in centipede grass (Eremochloa ophiuroides). Herbicides tested in March, before emergence of Japanese clover, provided little to no control [66]."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gucker, C. L. (2010). Kummerowia stipulacea, K. striata. In: Fire Effects Information System, [Online]. USDA, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. https://www.fs.fed.us/database/feis/plants/forb/kumspp/all.html. [Accessed 17 Mar 2022]	"As of this writing (2010), no studies have clearly documented the immediate fire effects on Japanese or Korean clover. Because they are annuals and do not regenerate vegetatively, plants are likely killed; however, regrowth is common after cutting if plants are not cut too low to the ground or late in the growing season [14,113]. The clovers have often established or occurred on burned sites [4,158], and a controlled study suggests that seeds can survive high temperatures [91]. However without more information, it is not possible to establish whether fire stimulates seed germination or if seed germination and seedling establishment are encouraged by the postfire environment." ... "Physical or mechanical control: Cutting or mowing the clovers after the flowering stage may provide some control. In a crop production article, the authors reported that the clovers were still capable of setting seed after being cut at about the time of 1st bloom [58]. In a review of cultivation materials, cutting clovers after flowering, cutting plants close to the ground, and cutting plants during drought conditions could lead to decreased abundance of the clover stands [113]. Cultivation is not likely tolerated by the clovers. When annual plowing was compared at various times of the year in Tallahassee, Florida, Japanese clover did not occur in plots plowed in December, February, April, June, or August, although plants did occur on plots plowed annually in October [71]."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	WRA Specialist. (2022). Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits
• Grows in regions with subtropical climates, but does best in temperate regions
• Naturalized in the southeastern United States
• A disturbance-adapted, weedy plant that may impact other agricultural crops or the natural environment, although specifics impacts have not been documented
• Moldy hay may be toxic to grazing animals
• Tolerates many soil types
• Reproduces by seeds
• Self-fertile
• An annual, reaching maturity in <1 year
• Seeds dispersed in cattle and horse feces, along trails and roads, possibly water, and through intentional cultivation
• Seeds may persist in the soil for two years or longer

Low Risk Traits
• Despite reports of naturalization and weediness, specific negative impacts have not been documented
• Unarmed (no spines, thorns, or burrs)
• Provides fodder for livestock
• Thrives in sunny, high light environments (dense shade may inhibit spread)
• Not reported to spread vegetatively
• Post-emergent herbicides may provide effective control if needed

Second Screening Results for Herbs or Low Stature Shrubby Life Forms

(A) Reported as a weed of cultivated lands? Yes. A weed of disturbed habitats associated with agriculture
(B) Unpalatable to grazers or known to form dense stands? No
Outcome = Accept (Low Risk)