

MN NWAC Risk Assessment Worksheet (04-2011)	Common Name	Latin Name
	Russian Knapweed	<i>Acroptilon repens</i> (L.) DC. Synonyms are <i>Centaurea repens</i> L. and <i>C. picris</i> Pall. Ex Wild.
Reviewer	Affiliation/Organization	Date (mm/dd/yyyy)
Monika Chandler	MN Dept. of Agriculture	08/24/14

Russian knapweed is a serious weed of dryland crops in the native range. It is suggested that Russian knapweed likely established in North America wherever Turkestan alfalfa had been planted as a contaminant of the alfalfa seed (Zouhar 2001).

Russian knapweed is a long-lived creeping perennial. It is the most widely distributed knapweed species in North America. It displaces desirable vegetation. Once established Russian knapweed can form a monoculture and overtake large areas. Resulting infestations can reduce forage and wildlife habitat.

Box	Question	Answer	Outcome
1	Is the plant species or genotype non-native?	Yes, Russian knapweed is native to central Asia.	Go to Box 3
3	Is the plant species, or a related species, documented as being a problem elsewhere?	Yes. It is regulated in AK, AZ, CA, CO, HI, ID, IA, KS, MT, NE, NV, NM, ND, OR, SC, SD, UT, WA and WY (USDA, NRCS. 2014). It was previously designated a noxious weed in MN (Agricultural Weed Laws of Minnesota, 1969).	Go to Box 6
6	Does the plant species have the capacity to establish and survive in Minnesota?	Yes. Russian knapweed is present in surrounding states and in provinces north of Minnesota indicating that it is sufficiently hardy in Minnesota.	Go to Box 7
	A. Is the plant, or a close relative, currently established in Minnesota?	The only documented record on Russian knapweed in Minnesota is at the Bell Herbarium with a sample collected on 06/01/1981 in Lac Qui Parle County at the Tillbury Farm, probably near Madison. North American Russian knapweed ( <i>Acroptilon repens</i> (L.) D.C.) inventory by Zimmerman, K. with the University of Wyoming published in 2000 that Russian knapweed is in many western counties in Minnesota. Unfortunately, the inventory and methodology used is no longer accessible.	

**Box**      **Question**      **Answer**      **Outcome**

GENERAL IMAGES SYNONYMS CLASSIFICATION LEGAL STATUS RELATED LINKS

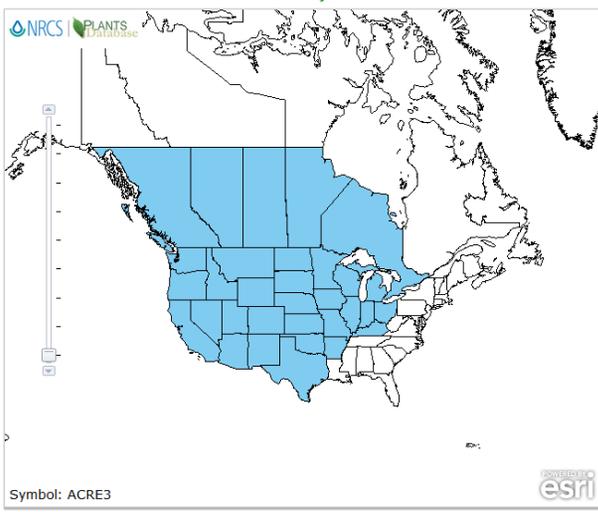
*Acroptilon repens* (L.) DC. hardheads Show All



**General Information**

Symbol:	ACRE3
Group:	Dicot
Family:	Asteraceae
Duration:	Perennial
Growth Habit:	Forb/herb
Native Status:	CAN I L48 I

Data Source and Documentation



Symbol: ACRE3

Native Status:  L48  AK  HI  PR  VI  CAN  GL  SPM

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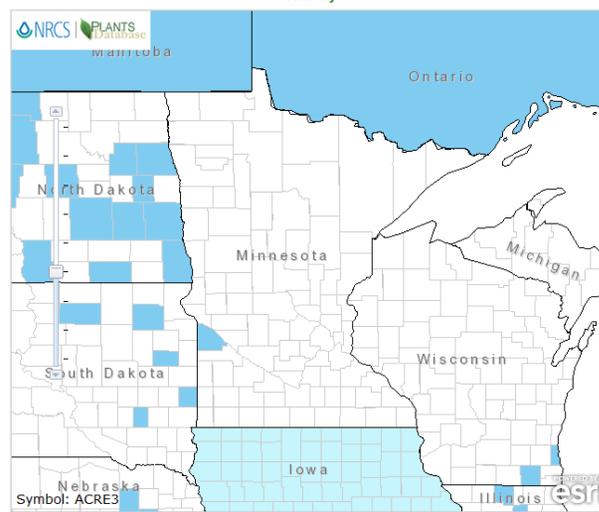
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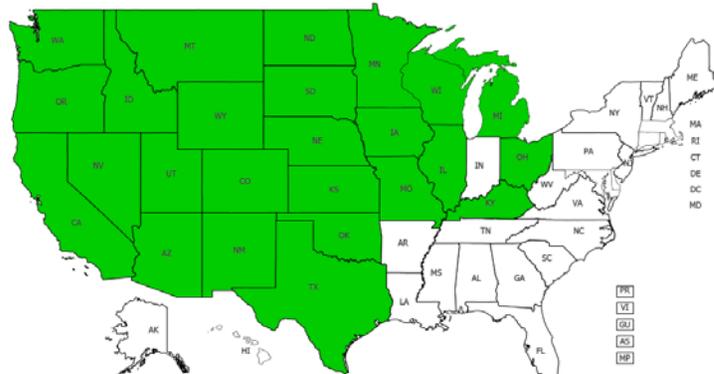


Symbol: ACRE3

Native Status:  L48  AK  HI  PR  VI  CAN  GL  SPM

*Rhaponticum repens* (L.) Hidalgo

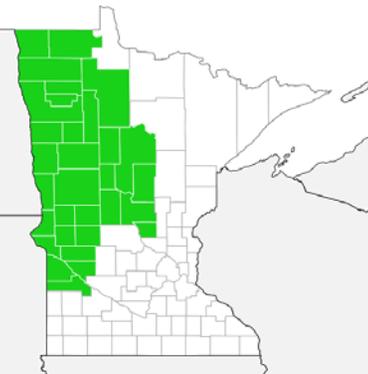
States Counties Points GIS



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*Rhaponticum repens* (L.) Hidalgo

States Counties Points GIS



USDA Plants (above) shows a very different Russian knapweed distribution in Minnesota than EDDMapS (left). A herbarium sample was collected for the single Russian knapweed find in Lac qui Parle County. All other reports in EDDMapS are based upon a University of Wyoming inventory of Russian knapweed in North America that is no longer available and herbarium samples were not collected.

Box	Question	Answer	Outcome
7	Does the plant species have the potential to reproduce and spread in Minnesota?	Yes	
	A. Does the plant reproduce by asexual/vegetative means?	Yes, reproduction is mainly vegetative from adventitious buds on the horizontally spreading roots (Zouhar 2001).	Go to Question B
	B. Are the asexual propagules effectively dispersed to new areas?	Root fragments can be moved with equipment or with infested soil but primary long range dispersal is by seed.	Yes – Question I <i>No – Question C</i>
	C. Does the plant produce large amounts of viable, cold-hardy seeds?	<i>Yes. Literature documents that a single plant produces either 50-500 seeds or about 1,200 that are viable for 2-3 years. Seeds have dormancies and do not germinate readily. Russian knapweed is monoecious and is an obligate outcrosser . (Zouhar 2001)</i>	<i>Go to Question F</i>
	F. Are sexual propagules – viable seeds – effectively dispersed to new areas?	<i>Yes, the seed can be moved by wind, water, wildlife, equipment, and vehicles.</i>	<i>Go to Question I</i>
	I. Do natural controls exist, species native to Minnesota, that are documented to effectively prevent the spread of the plant in question?	No	Go to Box 8
8	Does the plant species pose significant human or livestock concerns or has the potential to significantly harm agricultural production, native ecosystems, or managed landscapes?	Yes. Because Russian knapweed does not produce abundant seed, it is slow to colonize new site. However, once established, it is very competitive and spreads aggressively by creeping roots.	Go to Box 9
	A. Does the plant have toxic qualities, or other detrimental qualities, that pose a significant risk to livestock, wildlife, or people?	Forage for cattle and wildlife is reduced both by the loss of existing forage and by the low palatability of Russian knapweed to many herbivores. The plants contain sesquiterpene lactones that are toxic to horses (Zouhar 2001).	Go to Box 9
	B. Does, or could, the plant cause significant financial losses associated with decreased yields, reduced crop quality, or increased production costs?	<i>Yes. In addition to the loss of forage, hay contaminated with Russian knapweed has decreased feed and market value.</i>	<i>Additional information to the decision tree</i>
	C. Can the plant aggressively displace native species through competition (including allelopathic effects)?	<i>Yes. Russian knapweed is allelopathic (Zouhar 2001) and aggressively displaces other vegetation.</i>	<i>Additional information to the decision tree</i>

Box	Question	Answer	Outcome
	D. Can the plant hybridize with native species resulting in a modified gene pool and potentially negative impacts on native populations?	<i>Knapweeds and starthistles can hybridize (Wilson and Randall 2003). American starthistle (C. americana) is native to many states of the central US including WI and IA. Rothrock's knapweed (C. rothrockii) is native to AZ and NM. Alpine knapweed (C. transalpina) is documented in 8 states including MN. USDA, NRCS. 2013</i>	<i>Additional information to the decision tree</i>
	E. Does the plant have the potential to change native ecosystems?	<i>Russian knapweed can cause as much as an eightfold increase in zinc concentration in soil surface layers (Zouhar 2001).</i>	<i>Additional information to the decision tree</i>
9	Does the plant species have clearly defined benefits that outweigh associated negative impacts?	No	Go to Box 10
	A. Is the plant currently being used or produced and/or sold in Minnesota or native to Minnesota?	No	Go to Box 10
10	Should the plant species be enforced as a noxious weed to prevent introduction &/or dispersal; designate as prohibited or restricted?		
	A. Is the plant currently established in Minnesota?	Unknown, see Box A Question 6	Go to Question B
	B. Does the plant pose a serious human health threat?	No.	Go to Question C

Box	Question	Answer	Outcome
	C. Can the plant be reliably eradicated (entire plant) or controlled (top growth only to prevent pollen dispersal and seed production as appropriate) on a statewide basis using existing practices and available resources?	<p>Russian knapweed is difficult to control once established. Russian knapweed has been less responsive to herbicide treatments than other knapweeds and populations.</p> <ul style="list-style-type: none"> <li>• Mow at 2-3 week intervals before seed set to decrease seed and shoot production.</li> <li>• Deep cultivation (shallow cultivation is not recommended) repeated over 3 years can be effective. Per Roger Becker, deep tillage takes more energy, costs more and has more environmental consequences than use of a duck-foot cultivator at the late bud stage then every 30 days for 2-3 years.</li> <li>• Prescribed fire is ineffective and may stimulate new shoot growth from the roots.</li> <li>• There are a number of herbicide options.</li> <li>• Biological control with a gall-forming nematode, <i>Subanguina picridis</i>, is an option but is not considered sufficiently effective as a stand-alone method.</li> </ul>	

**Final Results of Risk Assessment**

	Review Entity	Comments	Outcome
	NWAC Listing Subcommittee	With conflicting information about distribution, it is difficult to determine an outcome for this species.	Prohibited Eradicate
	NWAC Full-group		Prohibited Eradicate
	MDA Commissioner	Rejected NWAC's Recommendation – No listing at this time due to conflicting distribution information and lack of evidence that this species will be problematic in MN.	None
	File #: MDARA00041RUSK_8_24_2014		

**References**

Wilson, L.M., and C.B. Randall. 2003. Biology and Biological Control of Knapweed. USDA-Forest Service FHTET-2001-07. 2nd Edition.  
 Zouhar, Kristin L. (2001, November). *Acroptilon repens*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2014, July 19].

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