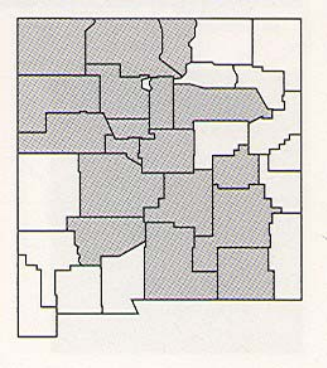
New Mexico State University
Weed-Factsheet: Russian Knapweed
(*Acroptilon repens*)

INTRODUCTION

Russian Knapweed (*Acroptilon repens*) is a creeping herbaceous perennial weed that is currently invading New Mexico. Within New Mexico it can readily invade pastures, degraded croplands, hayfields, rangeland, roadsides, riparian areas, and irrigation ditches. Russian knapweed shoots emerge early in the spring and form a rosette. By late spring flowering stems begin to develop with flowers visible by early summer. Flowers will senesce by mid summer, but shoots will remain green and photosynthetic until the first frost in the fall.



Originally from the southeastern Asia, it is widespread in several northern states including Colorado, Montana and Wyoming. In New Mexico, it was first documented in 1943 in Quay County and to date can be found throughout most counties. Distribution is isolated with limited populations except the northern counties of New Mexico where large infestations exist. These small populations are increasing in size, however and if not managed, Russian knapweed infestations could be common throughout the entire state. Rapid response and eradication of these small infestations is critical to prevent the spread of this invasive weed.

IDENTIFICATION

Russian knapweed shoots are erect, branched and are typically 1 to 3 feet tall when mature. Leaves on the lower portion of the stem are 2 to 4 inches long and deeply lobed, while upper leaves are smaller and less lobed with smooth margins. Dense grey hairs cover the surface of both shoots and leaves. Flower heads occur on shoot tips, and are urn-shaped generally 1/4 to 1/2 inch in diameter with smooth papery bracts. However, flower color can range from pink to lavender or white. Roots of Russian knapweed can be found growing vertically or horizontally in the soil and have a brown to black scaly appearance, especially near the soil surface. These black roots can be used to distinguish Russian knapweed from other closely related highly invasive knapweeds (Whitson et al 1996).

REPRODUCTION & SPREAD

Russian knapweed is not a prolific seed producer, but each shoot can produce 50 to 500 seeds, which remain viable in the soil for 2 to 3 years (Ivanova 1966). The main method of spread for Russian knapweed is not by seed however, but from adventitious buds on a creeping perennial root system. Roots have been observed to grow 6 to 8 feet deep in one season, and a single plant can expand radially up to 14 yd^2 in two seasons (e.g. Frazier 1944). As infestations develop they displace nearly all herbaceous resident vegetation creating dense stands of Russian knapweed. A major reason for this plant's competitiveness is believed to be from its ability to release allelopathic chemicals that inhibit growth of other plants (e.g. Renney and Dent 1958). These compounds have been found to hamper revegetation of previously infested land even after plants have been removed. Light disturbance of the soil surface has been shown to alleviate this problem (Bottoms & Whitson 1998).

MANAGEMENT

Management of Russian knapweed can be difficult, as fields with infestations are not managed for many years. This allows infestations to establish large stands that have stored carbohydrates belowground allowing plants to tolerate future management methods. Prevention, early detection and eradication are the best management tools, as large infestations are difficult to eliminate. It has been found that small establishing infestations require few resources to eradicate and associated plants will rapidly recover from management methods eliminating the need to restore the site. Currently, the best management plan includes cultural control combined with mechanical and chemical control techniques. A single control strategy, such as mowing or herbicide use, is not sufficient to control old, dense infestations (Beck 2003).

Physical/Mechanical/Cultural

Several nonchemical control methods have been tested, but have shown limited effectiveness. Mowing will suppress shoots, but needs to be continually repeated to have any long-term reduction in Russian knapweed populations (Beck 2003). Foraging animals do not effectively graze Russian knapweed due to the bitter flavor of the forage. In addition, Russian knapweed forage has been demonstrated to be toxic to horses (Young et al. 1970a, b). Disking or plowing infestations breaks roots into fragments. These fragments can survive desiccation and be deposited into uninfested areas, increasing the infestation size.

Biological control

The Russian knapweed gall nematode has been released in New Mexico in the Farmington region. This nematode feeds on leaves, stems and root crowns by forming visible galls containing the nematodes (Rees et al. 1996). Unfortunately releases have not shown any reduction in Russian knapweed populations. Several insects are currently being evaluated for releases into the western United States, but field releases are not expected for several years.

Herbicides

Select herbicide treatments, can be effective in short-term management of Russian knapweed. Herbicide control of Russian knapweed can vary dramatically due to environmental variables, but several options are available that provide consistent short-term control (1-3 years)

(Beck factsheet). See table 1 for a list of herbicides available for management of Russian knapweed. It is important to read the herbicide label BEFORE making any application, as different herbicides will have different requirements and restrictions.

Table 1. Herbicide options for management of Russian knapweed

Herbicide	Active Ingredient	Rate of Herbicide	Timing of application	Comments
Tordon 22K[*#]	**Picloram**	**1-2 qts/A**	Anytime plants are actively growing; best results in the fall after frost	Residual herbicide; Selective, will not harm many grass species
Tordon 22K[*#] + 2,4-D[1*]	**Picloram + 2,4-D**	**1 – 1.5 qt/A + 0.5 lbs ai/A**	Anytime plants are actively growing; best results in the fall after frost	Residual herbicide; Selective, will not harm many grass species
Reclaim + 2,4-D[1*#]	**Clopyralid + 2,4-D**	**1.0 pts/A + 0.5 lbs ai/A**	Anytime plants are actively growing; best results in the fall before frost	Residual herbicide
Transline[#] (or Reclaim)	**Clopyralid**	**0.67-1.33 pts/A**	Anytime plants are actively growing; best results in the fall before frost	Residual herbicide
Plateau + methylated seed oil	**Imazapic + methylated seed oil**	**12 fl oz/A + 1 qt/A**	Late fall after frost	Residual herbicide
Arsenal[#]	**Imazapyr**	**2 pts/A**	Anytime plants are actively growing; best results in the fall after frost	Residual herbicide
Many compounds[1#]	**Glyphosate[1]**	**3-4 lbs ae/A**	Flowerbud stage	Poor control can result some years
Escort[#]	**Metsulfuron**	**0.75 – 1.0 oz/A**	Flowerbud stage	Residual herbicide; Selective, will not harm many grass species
Telar[#]	**Chlorsulfuron**	**1.0 – 2.0 oz/A**	Flowerbud stage	Residual herbicide; Selective, will not harm many grass species

[1] Many types of this herbicide are available for use.
[*] Indicates product is a restricted use pesticide in New Mexico
[#] Use of a nonionic surfactant at 0.5 – 1.0 % is recommended.

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SELECT WEBSITES ON RUSSIAN KNAPWEED

http://www.dot.state.az.us/ABOUT/natres/weeds_russian%20knapweed.htm

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http://www.cdfa.ca.gov/phpps/ipc/weedinfo/acroptilon.htm

http://tncweeds.ucdavis.edu/esadocs/documnts/acrorep.pdf

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http://www.ext.nodak.edu/extpubs/plantsci/weeds/w1146w.htm

http://www.montana.edu/wwwpb/pubs/knapweed/circ311.html

http://www.ext.colostate.edu/pubs/natres/03111.html

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