

Plant Propagation Protocol for *Chrysothamnus viscidiflorus*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/CHVI8.pdf>

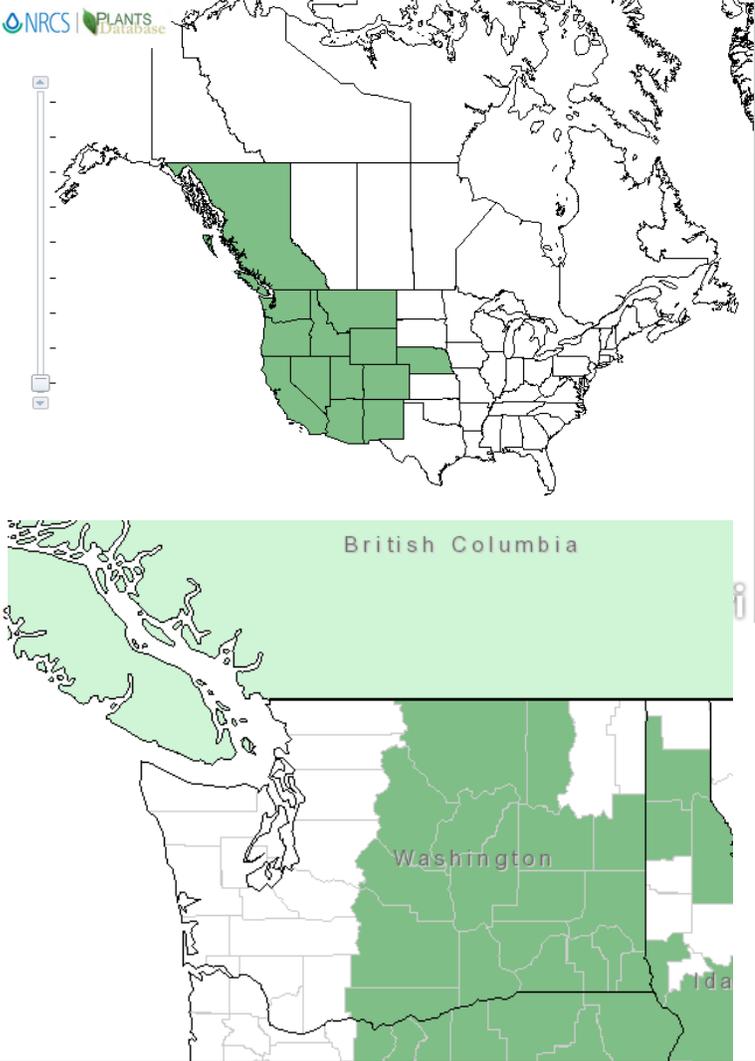


Photo from USDA-NRCS PLANTS Database

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae/Compositae
Common Name	Asters
Species Scientific Name	
Scientific	<i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt.
Varieties	<i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. var. <i>latifolius</i> (D.C. Eaton) Greene <i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. var. <i>stenophyllus</i> (A. Gray) H.M. Hall <i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. var. <i>viscidiflorus</i>
Sub-species	<i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. subsp. <i>axillaris</i> (D.D. Keck) L.C. Anderson <i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. subsp. <i>lanceolatus</i> (Nutt.) H.M. Hall & Clem. <i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. subsp. <i>planifolius</i> L.C. Anderson

	<i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. subsp. <i>puberulus</i> (D.C. Eaton) H.M. Hall & Clem. <i>Chrysothamnus viscidiflorus</i> (Hook.) Nutt. subsp. <i>viscidiflorus</i>
Cultivar	
Common Synonym(s)	<i>Crinitaria viscidiflora</i> Hooker <i>Ericameria viscidiflora</i> (Hook.) L.C. Anderson
Common Name(s)	Yellow Rabbitbrush, Douglas rabbitbrush, Green rabbitbrush, Low rabbitbrush, Sticky-leaf rabbitbrush, Viscid rabbitbrush
Species Code (as per USDA Plants database)	CHVI8

GENERAL INFORMATION

Geographical range	<p>Yellow Rabbitbrush has been found from British Columbia, south to California and east to Nebraska, Colorado, Montana and New Mexico.⁷</p>  <p>The map displays the distribution of Yellow Rabbitbrush across North America. The range is indicated by green shading, extending from the Pacific Northwest (British Columbia, Washington, Oregon, California) eastward through the Great Basin (Nevada, Idaho, Utah, Arizona, New Mexico, Colorado, Montana, and Nebraska). A scale bar on the left indicates distance in kilometers and miles. The logo for the NRCS PLANTS Database is visible in the top left corner of the map area.</p>
--------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Ecological distribution	Yellow rabbitbrush occurs in desert to semi-desert habitats in western rangelands. Common areas include dry open slopes, grasslands, shrublands and open forest in the steppe and lower montane zones ¹
Climate and elevation range	This species ranges in elevation from 3000-10,000ft ²
Local habitat and abundance	Yellow Rabbitbrush is a common rangeland plant as it is desirable for foraging for both livestock and wildlife in fall and early winter. ⁷ It is commonly associated with other rabbitbrush species (<i>Chrysothamnus</i> and <i>Ericameria spp.</i>) and sagebrush species (<i>Artemisia spp.</i>). Other associates include broom snakeweed (<i>Gutierrezia sarothrae</i>), shadscale (<i>Atriplex confertifolia</i>), and winterfat (<i>Krascheninnikovia lanata</i>). ⁷
Plant strategy type / successional stage	Yellow rabbitbrush is adapted to coarse to medium well-drained soils and is drought and salt tolerant ⁹ . It is common on alkaline soils. ⁵ It is a seral species which colonizes disturbed areas making it well suited for use in restoration and revegetation plantings. Rabbitbrush is used as a reclamation species and establishes quickly, especially on disturbed sites including burns, flooded areas, slides, overgrazed areas and mine sites. It produces good cover for wildlife and excellent erosion control. ⁹ Yellow rabbitbrush often characterizes sagebrush communities for the first years following a wildfire as this species can sprout from its crown after the top portions are burned. ¹⁰
Plant characteristics	Yellow Rabbitbrush is a perennial low/moderate growing shrub reaching 8-39in tall. Leaves are alternate, narrow and linear, with varieties either glabrous or pubescent. Some have sticky leaves ³ . Flowers are yellow and occur in compact to open heads or cymes. The fruit produced is a hairy achene that is wind dispersed. It flowers from July to September, reproducing both from seed and vegetatively. ⁵ Yellow rabbitbrush has been used by a variety of Native American peoples. Paiute Indians used yellow rabbitbrush to treat colds and coughs, Hopi Indians used it as a dermatological aid, Gosiute and Paiutes used the latex from the roots as a chewing gum, and Hopi and Navajo people used the flowers to create orange and yellow dye. ⁷
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants ⁸

Propagation Method	Seed ⁸
Product	Bareroot (field grown) ⁸
Stock Type	1+0 ⁸
Time to Grow	1 year ⁸
Target Specifications	The target height is 6 inches, with a root system that is balanced with the top growth ⁸
Propagule Collection Instructions	Seeds are wild collected during fall months and should be kept separated according to site, elevation and source. ^{8,11}
Propagule Processing/Propagule Characteristics	Seeds are cleaned prior to storage and kept in air tight containers in a seed storage room at temperatures below freezing. ^{8,11} The fruit is a winged achene. ¹¹ There are approximately 733,000 seeds/lb. ⁷
Pre-Planting Propagule Treatments	None
Growing Area Preparation / Annual Practices for Perennial Crops	Field Bed Preparation: Mark out and form beds as needed and apply 0-45-0 (N:P:K) in April, and then apply 2 to 3 inches of compost to seed beds prior to sowing. Sulfur should be applied during May. Use overhead irrigation ¹¹
Establishment Phase Details	Seeds are surface sown by hand during the spring. Seeds are lightly pressed into prepared seed bed and irrigated immediately after sowing. Seeds are irrigated when soils appear to be drying out on warm days. Desired field density is 23 shrubs per square foot. ¹¹ Percent germination is often low ⁶
Length of Establishment Phase	1 month ^{8,11}
Active Growth Phase	Apply fertilizer at the rate of 120 lbs/acre (Morgro 21-0-0). Fertilizer is not applied when foliage is wet. Plants are pruned when they are 10 inches tall. Irrigate heavily for 2 to 3 days prior to pruning to saturate the root zone. Set pruning blade to slightly wrench seedlings as they are pruned. Check pruning depth frequently and adjust as needed. Irrigate for a minimum of 2 hours following root pruning to settle soil back around roots. This step is critical to eliminate post root pruning mortality. Irrigate field heavily for 2 to 3 days to further settle the soil. ¹¹
Length of Active Growth Phase	3 months ^{8,11}
Hardening Phase	Hardening begins during the third week of August or when dormancy is induced. No fertilizer should be applied after August 28th. Irrigation frequency and duration should be shortened and applied only when needed. ⁸
Length of Hardening Phase	2 months ^{8,11}
Harvesting, Storage and Shipping	Lifting window is during mid-November when seedlings are completely dormant. Seedlings can be hand lifted after the seedling beds have been undercut at a depth of 10 inches using a lifter. ¹¹

	Fall lifted seedlings are "heeled in" in sandy soils after being graded and bundled in bundles of 25. They are lifted in spring before they break dormancy then can be stored in a cooler on stacked pallets. Keep lifted seedlings in a cooler at between 36 to 42 degrees F and at a relative humidity of 92 to 98% with good air circulation. ¹¹
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Bareroot and containerized materials can be transplanted in the fall or spring. ⁷
Other Comments	

INFORMATION SOURCES

References	<p>¹"Chrysothamnus Viscidiflorus." <i>Lady Bird Johnson Wildflower Center:NPIN: Native Plant Database</i>. 21 June 2013. Web. 10 May 2016.</p> <p>²Dayton, William A., T. Lommasson, and Barry C. Park. <i>Range Plant Handbook</i>. Washington: U.S. Govt. Print. Off., 1937. Print</p> <p>³Kruckeberg, Arthur R. <i>Gardening with Native Plants of the Pacific Northwest: An Illustrated Guide</i>. Seattle: U of Washington, 1982. Print.</p> <p>⁴"Plants Profile for Chrysothamnus Viscidiflorus (yellow Rabbitbrush)." <i>USDA Natural Resources Conservation Service Plants Database</i>. Web. 10 May 2016.</p> <p>⁵"Range Plants of Utah: Yellow Rabbitbrush." <i>Utah State University Extension</i>. 2016. Web. 10 May 2016.</p> <p>⁶Robson, Kathleen A., Alice Richter, and Marianne Filbert. <i>Encyclopedia of Northwest Native Plants for Gardens and Landscapes</i>. Portland, Or.: Timber, 2008. Print.</p> <p>⁷Tilley, Derek, and Loren St. John. "YELLOW RABBITBRUSH Chrysothamnus Viscidiflorus (Hook.) Nutt." <i>USDA Plant Guide</i>. May 2012. Web.</p> <p>⁸Trimmer, Edie. "Chrysothamnus (viscidiflorus)." <i>RNGR: Native Plant Network Propagation Protocol Database</i>. Web. 10 May 2016.</p> <p>⁹"Yellow Rabbitbrush (Chrysothamnus Viscidiflorus) - Great Basin." <i>Great Basin Seeds</i>. Web. 10 May 2016.</p>
------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>¹⁰Young, James A., and Cheryl G. Young. <i>Collecting, Processing, and Germinating Seeds of Wildland Plants</i>. Portland, Or.: Timber, 1986. Print.</p> <p>¹¹Zeidler, Scott, and John Justin. "Protocol Information For: <i>Chrysothamnus (viscidiflorus)</i>." <i>RNGR (Reforestation, Nurseries, and Genetics Resources)</i>. 2003. Web. 10 May 2016.</p>
Other Sources Consulted	Rose, Robin, Caryn E. C. Chachulski, and Diane L. Haase. <i>Propagation of Pacific Northwest Native Plants</i> . Corvallis: Oregon State UP, 1998. Print.
Protocol Author	Bonnie Henwood
Date Protocol Created or Updated	05/25/2016