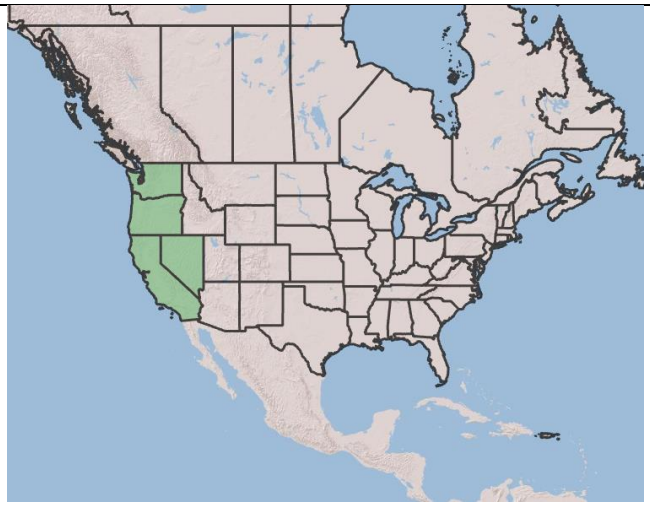
Plant Propagation Protocol for *Stachys rigida*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/*2022*/*STRI.pdf*

Vanderhoff, 2017

TAXONOMY	
Plant Family	
Scientific Name	Lamiaceae
Common Name	Mints
Species Scientific Name	
Scientific Name	*Stachys rigida* Nutt. ex Benth.
Varieties	var. *quercetorum* (A. Heller) G.A. Mulligan & D.B. Munro var. *rigida* Nutt. ex Benth
Sub-species	ssp. *quercetorum* (A. Heller) Epling ssp. *rivularis* (A. Heller) Epling
Cultivar	No information available
Common Synonym(s)	*Stachys rigida* ssp. *typica* Epling
Common Name(s)	Rough Hedgenettle, Rigid Hedgenettle
Species Code (as per USDA Plants database)	STRI

GENERAL INFORMATION	
Geographical range	 (USDA, n.d.)  (USDA, n.d.)
Ecological distribution	Found mostly west of the Cascades in Washington ranging from Washington to California and adjacent Nevada (Giblin, n.d.).
Climate and elevation range	Annual Precipitation: 4.8" - 158.0" Summer Precipitation: 0.16" - 5.80" Coldest Month: 28.0" - 58.8" Hottest Month: 47.3" - 87.5" Humidity: 0.01" - 38.31" Elevation: -23" - 8910" (CNPS, n.d.)
Local habitat and abundance	Stream banks and moist bottom lands, mostly at low elevations (Giblin, n.d.).
Plant strategy type / successional stage	Somewhat drought tolerant. Attracts many pollinators (Klamath siskiyou, 2022)
Plant characteristics	Rhizomatous perennial herb. 2-3 ft. tall. Flowers are white to pink whorled flower clusters blooming in Spring (Klamath siskiyou, 2022)

PROPAGATION DETAILS Little propagation information found for *S. rigida*, propagation detail provided for *S. ajugoides*, a related species in the Lamiaceae family	
Ecotype	Presidio, CA (Young, 2001).
Propagation Goal	Plants (Young, 2001).
Propagation Method	Seed (Young, 2001).
Product Type	Container (plug) (Young, 2001).
Stock Type	4 in. pot (Young, 2001).
Time to Grow	September 1st to early spring (Young, 2001)
Target Specifications	Root system: firm plug in container (Young, 2001).
Propagule Collection Instructions	Seeds collected between June 9th and September 21st. Mature inflorescences are brown, seed is black at maturity (Young, 2001).
Propagule Processing/Propagule Characteristics	Rub seed capsules over a No. 10 screen to extract seeds. 2730 seeds/gram (Young, 2001).
Pre-Planting Propagule Treatments	Seeds stored in a refrigerator, dry (Young, 2001).
Growing Area Preparation / Annual Practices for Perennial Crops	Fully controlled greenhouse. Seeds sown on September 1st in flats containing Sunshine Mix #4 Aggregate Plus (peat moss, perlite, major and minor nutrients, gypsum, and dolomitic lime). Watered in an automatic mist and irrigation system. Germination: 40% (Young, 2001)
Establishment Phase Details	Seeds germinate 15 days after sowing (Young, 2001)
Length of Establishment Phase	15 days (Young, 2001)
Active Growth Phase	Seedlings transplanted 15 days after germination into individual 4 inch containers with standard potting mix of peat moss, fir bark, perlite, and sand. Transplant Survival average: 75% (Young, 2001)
Length of Active Growth Phase	No information provided
Hardening Phase	Decrease heating for increasing amounts of time over hardening period. (Spruce, 2022)

Length of Hardening Phase	14 days (Spruce, 2022)
Harvesting, Storage and Shipping	No information found
Length of Storage	No information found
Guidelines for Outplanting / Performance on Typical Sites	The *Stachys* genus is extremely hardy once established. Plant seedlings after last frost with high chance of survival (Spruce, 2022)
Other Comments	
INFORMATION SOURCES	
References	Giblin, David. "Stachys Rigida." Burke Herbarium Image Collection, University of Washington, https://biology.burke.washington.edu/herbarium/imagecollection/taxon.php?Taxon=Stachys+rigida. Iannotti, Marie. "How to Harden off Plants for Transplanting." The Spruce, The Spruce, 6 Mar. 2022, https://www.thespruce.com/how-to-harden-off-plants-1402554. "Rough Hedgenettle, Stachys Rigida." California Native Plant Society (CNPS), https://calscape.org/Stachys-rigida-(). "Stachys Rigida Nutt. Ex Benth." Integrated Taxonomic Information System, ITIS, https://www.itis.gov/servlet/SingleRpt/SingleRpt?search+topic=TSN+&searchvalue=32316#null. "Stachys Rigida Nutt. Ex Benth." USDA Plants Database, United States Department of Agriculture, https://plants.usda.gov/home/plantProfile?symbol=STRI. "Stachys Rigida-Rough Hedgenettle." Klamath Siskiyou Native Seeds, 13 Jan. 2022, https://klamathsiskiyouseeds.com/product/stachys-rigida-rough-hedgenettle/. Young, Betty. "Stachys (Ajugoides)." RNGR, 2001, https://rngr.net/renderNPNProtocolDetails?selectedProtocolIds=lamiaceae-stachys-701.
Other Sources Consulted	Dode, Luciana Bicca, et al. "In vitro propagation of Ocimum basilicum L.(Lamiaceae)." *Acta Scientiarum Biological Sciences* 25.2 (2003): 435-437. Epling, Carl. "NOTES ON STACHYS RIGIDA NUTT." *Madroño* 4.8 (1938): 270-272.

	Mantovska, Desislava, Kapchina, Veneta, and Yordanova, Zhenya. "In vitro propagation of the Balkan endemic species Stachys leucoglossa Griseb." *Bulg. J. Agric. Sci* 25 (2019): 1211-1215. Hosoki, T., and T. Yasufuku. "In vitro mass-propagation of Chinese artichoke (Stachys sieboldii Miq.)." *International Symposium on Transplant Production Systems 319*. 1992.
Protocol Author	Corina Cruz
Date Protocol Created or Updated	05/25/22