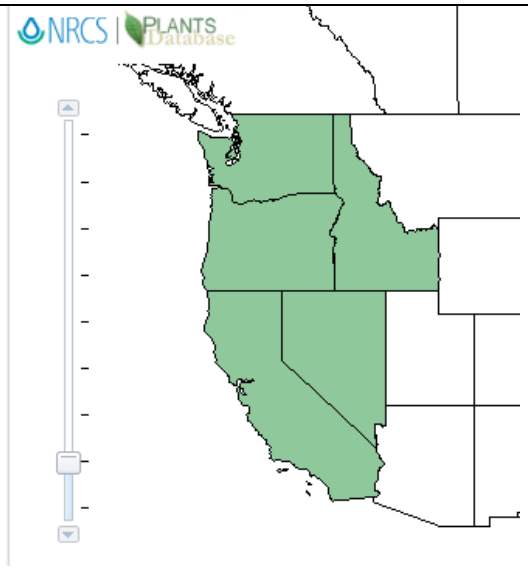
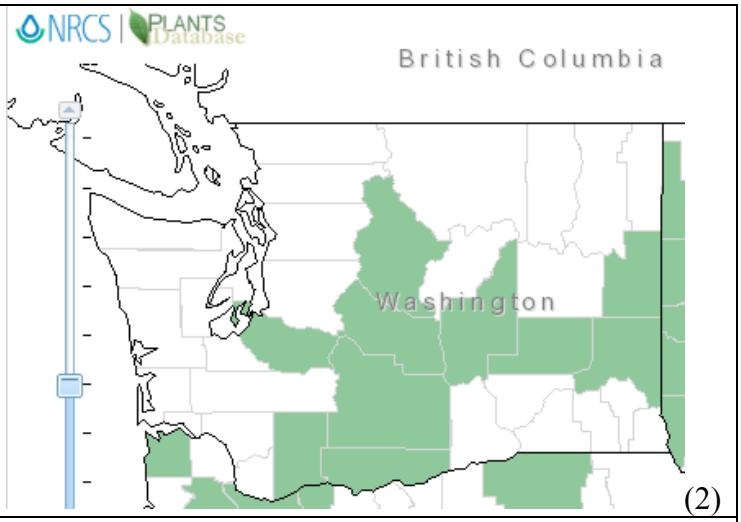
Plant Propagation Protocol for *Artemesia douglasiana*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*ARDO3*

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae (2)
Common Name	Sunflower Family (1)
Species Scientific Name	
Scientific Name	*Artemisia douglasiana* Besser (1)
Varieties	N/A
Sub-species	N/A
Cultivar	
Common Synonym(s)	*Artemisia campesrtis var. douglasiana, Artemisia vulgaris ssp. heterophylla, Artemisia vulgaris var. douglasiana* (3)
Common Name(s)	Douglas' sagewort, mugwort (3)
Species Code (as per USDA Plants database)	ARDO3 (2)
GENERAL INFORMATION	
Geographical range	

	 (2)
Ecological distribution	Ecosystems mugwort is present in are chaparral, valley grassland, wet-riparian zones, higher-elevation forests, mixed coniferous forests. Mugwort is known to colonize a vast array of different ecosystems. (1,2,3)
Climate and elevation range	This plant is found below 6,600 ft. and often in moist environments that receive either a lot of precipitation or water from a riparian system. (6)
Local habitat and abundance	This species is found commonly in riparian-wetland areas that are very moist. It is not often found on great slopes, but prefers more flat ground. It prefers moist soil, however it may grow in dry, sandy soils as well. It is associated with St. John's wort, grasses, and sweet clover. (6,9)
Plant strategy type / successional stage	It is an early successional species that will colonize an area after a disturbance. It can be found on forest edges and edges of roads. (6,8)
Plant characteristics	This plant is a perennial herb that grows into colonies of leafy stems from one root base. It can grow to have a woody base, and will be 2-5 feet tall. Its leaves are long and lance shaped, many times longer than wide. The color of the leaves are dull green-grey on top and a silvery whitish below. The leaves can be lobed near the base of the plant. The plant has a non-overpowering aroma of sage, and is commonly used in dream pillows, even to induce lucid dreams. Mugwort has white to cream colored, small inconspicuous flowers. (6, me)
PROPAGATION DETAILS	
Ecotype	Yosemite National Park (1)
Propagation Goal	Plants (1)
Propagation Method	Seed (1)
Product Type	Container (plug) (1)
Stock Type	10 cubic inch container (1)

Time to Grow	N/A
Target Specifications	Good root development filling the 10 cubic inch containers. (1)
Propagule Collection Instructions	N/A
Propagule Processing/Propagule Characteristics	Seeds are easily removed from other plant material using a brush machine or hammermill. In this case the seed was run through an air-screen with 1.40 mm top screen and 1.15 mm bottom screen with a light air. (1,4)
Pre-Planting Propagule Treatments	Seeds must be stored in cool-dry conditions, with temperatures around 10 degrees Celsius and a relative humidity ranging from 20-30%. (1)
Growing Area Preparation / Annual Practices for Perennial Crops	N/A
Establishment Phase Details	In this case Sunshine Mix #4 was used with no added fertilizer. 5 – 25 seeds were placed on the soil surface and pressed down. The seeds were then covered very lightly with pea gravel. The soil was kept moist with 20 minutes of daily watering from overhead sprinklers. This lasted 30 days. The day temperatures averaged around 24-29 degrees Celsius, with the nighttime temperatures around 21 degrees Celsius. (1)
Length of Establishment Phase	4 weeks (1)
Active Growth Phase	Depending on the viability of the seeds used, they may need to be thinned. After complete establishment, the plants received fertilizer once a week. Miracle Grow All Purpose Plant Food (15-30-15) was used as the fertilizer. After the initial 30 days, the watering schedule was changed to 40-60 minutes every other day. The plants may be manually trimmed down if they grow in a way to affect the sprinkler system. (1)
Length of Active Growth Phase	4 months (1)
Hardening Phase	The watering schedule was cut back to 60 minutes every 4 to 5 days. (1)
Length of Hardening Phase	1 week (1)
Harvesting, Storage and Shipping	The plants received a lot of water prior to being shipped out. The plants were shipped in a 10 degree Celsius refrigerated truck for 2 days. (1)
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	N/A
INFORMATION SOURCES	
References	1. Tilley, Derek. 2016. Propagation protocol for production of Container (plug) Artemisia douglasiana Besser Plants 10 cubic inch

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Other Sources Consulted	1. Wetzstein, H., Porter, J., Janick, J., & Ferreira, J. (2014). Flower morphology and floral sequence in Artemisia annua (Asteraceae)1. *American Journal of Botany, 101*(5), 875-85. 2. Smith, R. (1978). *THE ALLUVIAL SCRUB VEGETATION OF THE SAN GABRIEL RIVER FLOODPLAIN, CALIFORNIA.,* ProQuest Dissertations and Theses.
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Date Protocol Created or Updated	05/23/17