Plant Propagation Protocol for *Senecio serra*

ESRM 412 – Native Plant Production

Protocol URL: https://courses.washington.edu/esrm412/protocols/SESE2.*pdf]*

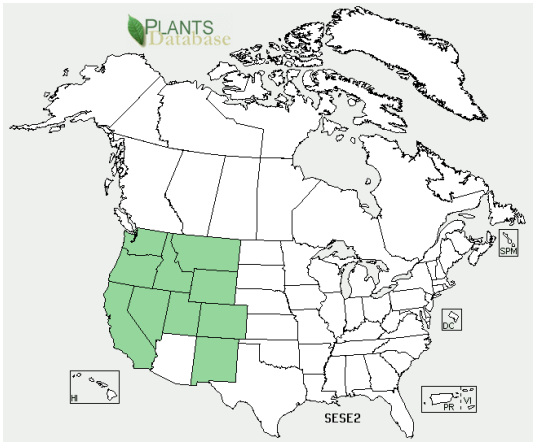

Photo source: Legler, B. Map Source: USDA Map Source: Turner, M.

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae, also known as Compositae
Common Name	Aster, also known as Daisy, or Composite
Species Scientific Name	
Scientific Name	*Senecio serra* Hook.
Varieties	*Senecio serra* var. *serra*, Tall Ragwort (USDA Plants Database) *Senecio serra* var.*admirabilis*, Tall Ragwort (USDA Plants Database)
Sub-species	
Cultivar	
Common Synonym(s)	
Common Name(s)	tall ragwort, serrated groundsel, tall butterweed, butterweed groundsel
Species Code (as per USDA Plants database)	SESE2
GENERAL INFORMATION	
Geographical range	Occurs in western North America from British Columbia down to the eastern Cascades in Washington down to California, east to the Rocky Mountains north of Arizona and New Mexico. (USDA) (Knoke)
Ecological distribution	Moist meadows and open, moist hillsides. Foothills to mid-elevations in the mountains, and in some open coniferous forests. (Knoke)
Climate and elevation	Mid elevation riparian and sub-alpine. (Keller)

range	
Local habitat and abundance	Facultative upland plant in the Pacific northwest. (USFWS) Found in subalpine woods, streamside, in disturbed areas and in forest openings. Conservation Status: Abundant; of no concern. (Knoke)
Plant strategy type / successional stage	Prefers openings, it can colonize disturbed sites like burned fields or clearcut forests. Reproduces sexually by seed. Fibrous rooted. Seeds are disseminated by wind and pollinated by wind or insects. (Stevens 1996) Valuable forage for sheep, deer, and elk. Not as valuable for cattle. (Stubbendieck)
Plant characteristics	Herbaceous perennial forb. Fruit type is achene. Flowers from June-September. Tall, (20-200 cm) upright plant with large, sharply toothed leaves the length of the stem, and yellow aster-like disk and ray flowers. (Keller) (Knoke)
PROPAGATION DETAILS	
Ecotype	Paradise Creek drainage near Pullman, Washington. (Skinner) The protocol can be adapted for like ecotypes.
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	10 in^3
Time to Grow	4 months
Target Specifications	Tight root plug in container. Target size not reported, but similar species, *Senecio triangularis* has a target size of 7 cm, and 4-8 true leaves. (Wick)
Propagule Collection Instructions	Blooms from June- September depending on elevation. Achenes (fruit type) ripen in July. Collect gray-brown seed as soon as the pappus starts expanding. The seeds disperse by wind and once they have, any seeds left on the plant are of questionable viability. A vacuum cleaner with a corrugated hose is a valuable tool to remove mature seed and minimize chaff collection. Store seeds in paper bags at room temperature. (Skinner) Seeds can also be harvested with a flail or reel-type combine to free mature seeds without damaging immature achenes. Hand beating into small hoppers is also feasible. (Stevens 1996)
Propagule Processing/Propagule Characteristics	With pappus intact, density of 600,000 seeds/lb and longevity of 2-4 years is reported. (Stevens 1996) Seeds are very small, and with pappus removed, just under 3.5 million/ lb is reported. (Stevens 2004)
Pre-Planting Propagule Treatments	Seeds can be freed from the pappus with gentle applied friction, such as rubbing between hands or beating with a paddle. An air column separator, fan, or wind can help to further separate seed from chaff.

	For larger amounts, threshing with a machine, such as a hammermill must precede separation with an air screen cleaner. Store cleaned seed in a dry open warehouse at 40F with 40% relative humidity. (Skinner) Seeds exhibit physiological dormancy. (Baskin) Pre-treatment: Imbibing seeds and exposure to natural day/night temperature cycles before cold moist stratification can trigger seeds to germinate earlier than those imbibed during stratification. (Skinner) Treatment: Germination occurs without stratification but rates increase substantially after 14-16 weeks of cold moist stratification (35-40 F). (McDonough) (Skinner) Unpublished data from trials conducted at the Pullman Plant Materials Center demonstrated 47% emergence without stratification; 67% emergence with 45 days of cold, moist stratification; 99% emergence with 90 days of cold, moist stratification. (Skinner)
Growing Area Preparation / Annual Practices for Perennial Crops	In fall, seeds can be sown outdoors in 10 in^3 cell containers. (Skinner) Seed can also be directly sown in the field in the fall or early spring (Stevens 1996). 20-30 pure live seeds per linear foot of row. Make rows 30-40 inches apart. (Palouse) Ensure full sun to partial shade. (Palouse) Low, moderate amounts of fertilizer can be used. Soils should be moderately fertile, slightly basic, with strong texture and high water holding capacity (Stevens 1996)
Establishment Phase Details	Plant seeds ¼ to ½ inch deep. Lightly cover with soil and a fine layer of coarse grit to keep seeds down when watered. Germination may begin in a couple of days and is finished in one week. Ensure adequate moisture. (Skinner) If pappus is not removed, hand broadcasting can be used for direct outplanting. (Stevens 2004)
Length of Establishment Phase	1 week
Active Growth Phase	Water plants to saturation every other day. Fertilizer (soluble, micro-nutrient rich) application is acceptable once a week. (Skinner)
Length of Active	3-4 months

Growth Phase	
Hardening Phase	Move indoors to a greenhouse in early winter depending on minimum temperatures. Move out to a cold frame in late March or early April. Continue to water every other day in cool conditions and increase watering to everyday in hot conditions. (Skinner)
Length of Hardening Phase	2-4 weeks
Harvesting, Storage and Shipping	Transplant in spring to outdoor setting, for use in seed increase beds, gardens, or restoration sites. Take normal precautions and care during shipping.
Length of Storage	Not recommended to allow roots to bind and form sod until outplanted. Plant in beds or fields as soon as possible in spring. If storage is necessary, a similar species, *Senecio triangularis*, is recommended to overwinter in outdoor nursery under insulating foam cover and snow, for 5 months maximum. (Wick)
Guidelines for Outplanting / Performance on Typical Sites	Full sun to partial shade is optimal. Transplant in spring. An electric drill is useful to open 1.5" diameter holes in the ground. Weed removal and mulching is imperative to avoid seedling out-competition and mortality. (Skinner) Grows to 200 cm. The plants reproduce rhizomatously and can spread quickly. This can be controlled by repeated tillage and/or burning. In a controlled setting it is best to maintain in rows or beds. For seed increase, avoid sod-binding, as it will lead to production decreases. (Stevens 1996) Seedlings are tolerant to grazing. Flowers in late spring/summer, but 2-3 years are needed to fully establish. After 3 growing seasons, plants will reach full seeding potential. Plant alongside a grass mixture, to establish native community and minimize weedy out-competition. (Stevens 2004)
Other Comments	Use caution on delicate restoration or garden sites as it can be aggressive. Most useful in a moist wild or semi-wild area. (Palouse) No relevant pest information is reported. It does not appear to have pest problems.
INFORMATION SOURCES	
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