



# HERITAGE

seedlings, inc.

Unusual Deciduous Species

## SEEDING RATES AND METHODS

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### Timing

Willamette Valley native seed should be sown in the fall to allow for any possible stratification needs. However, many of our native grasses and forbs can be sown as late as early-March as long as there is sufficient rain. These species should be those that only need a very short period of moisture in conjunction with cold (two weeks). Our "Disturbed Ground / Late-Seeding" mixes are made up of these species.

### What Seeding Rate Should I Use?

Seeding rates vary depending on seeds/lb (species with many seeds/lb should be sown at a lower rate) as well as the desired end condition. They also vary depending upon starting site conditions, seeding method, and precipitation.

In general, the lowest rates can be used for seed that is drilled. This is due to the fact the seed has very good contact with the soil and protection from predation. Many native species need light to germinate so never mulch over drilled seed and sow the seed no more than 1/4 inch deep.

You should estimate a desired target number of seeds/sq. ft depending on the site conditions and sowing method. Assume you need to almost double your sowing rate for seed that is broadcast. If you broadcast the seed, pressing the seed into the soil with a water drum or cement roller will ensure better soil contact and the rate can be lowered accordingly.

### Calculating Seeding Rate for a Single Species (PLS = Pure Live Seed)

$$\frac{\text{Target \# of seeds}}{1 \text{ sq. ft.}} \times \frac{43,560 \text{ sq. ft.}}{1 \text{ acre}} \times \frac{1 \text{ lb}}{\text{Known \# of seeds per lb}} = \frac{\text{PLS lbs}}{\text{Acre}}$$

### Actual Seeding Rate vs. Calculated Seeding Rate

Since seed that is sold in PLS pounds will weigh more than an actual pound, you will need to convert the seeding rate in PLS lbs/acre to the actual or bulk seeding rate to ensure the desired number of seeds/sq. ft. are applied. This can be calculated two different ways:

- 1) Divide the PLS rate by both the % Purity and the % Germination (TZ) expressed in a decimal fraction (these are found on the seed tag).

OR

- 2) Use the following formula:

$$\frac{\text{Bulk Wt (lb)}}{1} \times \frac{\text{PLS lbs}}{\text{Acre}} \times \frac{1}{\text{lbs purchased}} = \frac{\text{actual lb}}{\text{acre}}$$

### Target Seeding Rates

A common target seeding rate for the Willamette Valley is about 30 – 100 seeds/sq. ft.

It is probably better to err on the side of more seeds / sq. ft. If the soil is poor and the sowing rate too low, the stand will not be full and make the space available for weeds to germinate.

My own experience and the data of others give the following ranges for seeding rates:

Drilled Seed: Larger seeded grass species 5 – 10 PLS lbs/acre (lower rates will leave room for forbs); forbs 3 – 8lb/acre. It is best not to mix grasses and forbs together. The early germinating grass species will take up space needed by later germinating species.

*Note:* If the site is going to be used to promote Streaked horned-lark habitat, the grasses should be sown at a very low rate to provide the needed bare patches used for nesting.

Broadcast Seed: grasses 10 – 15 lb/acre; forbs 4 – 11 lbs/acre. To increase seed/soil contact, press seed firmly into soil.

Seed Mixes of both grasses and forbs: 6 – 12 lbs/acres drilled, doubled to tripled for broadcast depending on starting conditions.

### How Much Seed Do I Need?

$$\frac{x \text{ ft. sq. to sow}}{1} \times \frac{1 \text{ acre}}{43,560 \text{ sq. ft}} = y \text{ acres} \times \frac{\text{PLS lbs}}{\text{Acre}} = z \text{ lbs of seed}$$

### Seeding Sedges, Rushes and Saxifrage sp – A Special Case

Sedges and rushes need four things to germinate: 1) good soil contact; 2) high soil temperatures; 3) water; and 4) light. Given these criteria, sedges, rushes, and Saxifrage sp should *only* be broadcast sown. The West Eugene Wetlands Project Ecologist also notes that soil fertility is a factor. They sow in the fall due to the inaccessibility of the sites during the winter. They also recommend sowing at a very high rate and over a period of two years if possible. If there is still sufficient rain, and the site is accessible, a late winter seeding is also

possible. This ensures the seed is on a wet soil surface when the daytime temperatures heat the soil but not buried. Pressing the seed into the soil will help improve seed/soil contact.

**SUGGESTED BROADCAST SOWING METHODS FOR NATIVE SEED**  
(For drilling suggestions, please see the prairie and oak information document.)

Sowing Rates for Small Areas:

On clean site: 1 oz/250 sq. ft. (approximately 11 lb/acre)

On site not clean of existing vegetation and/or weed seed: 1.5 – 2 oz/250 sq. ft.

Sowing Mantra:

Reduce weeds; ensure good soil contact; time the seeding to allow the appropriate amount of cold/moist treatment for germination (2 – 12 weeks depending on species, but a few only need heat); do not bury the seed too deeply (do not mulch with straw or sawdust.)

Cutting Agents:

Slightly moistened (not wet) medium-grade vermiculite; fertilizer; sawdust; or peat moss.

Sowing Methods:

- 1) Mechanical: A fertilizer (spinner) spreader can be rented at farm stores such as Wilco. Mix the seed with a cutting agent such as **medium-grade vermiculite** (my favorite) or fertilizer (0,45,0 is good so you don't really fertilize the site and make more weeds). Always err on the side of more cutting agent, and then go over the area more times. **One-two 3.5 cu ft bags or one 50 lbs of fertilizer** should cover **1 acre twice** (seed in different direction the second time). The amount of cutting agent depends on the type of mix. Mixes with bulky, large seeds do not flow as fast as mixes with small seeds. Be sure to wear a dust mask when mixing the seed with the cutting agent. While seeding, make sure the mix is flowing regularly and not bridging. Adjust the opening to about 3/4. Press seed into soil with metal or water drum roller if possible (harrowing can dredge up weed seed).
  
- 2) Hand: I like to use a five-gallon bucket. Mix seed in large bin with slightly moistened (do not breathe the dust) medium-grade vermiculite (available at Growers Nursery Supply in Keizer (503-393-6411), Jeff Viers Nursery Supply in Hubbard (503-981-1569) or other nursery supply stores. A 30 pound bag of vermiculite is 4 cu. ft. will do about 0.5 acres with two passes. Again err on the side of cutting more, and then go over the area a few times in a different direction. Press seed into the soil if possible.

*Note:* I have used a hand-crank seeder but you have to fill it up too often and the seed usually does not flow easily.

Small Garden Areas:

It is OK to cover seed with a light dusting of soil. (I sift potting soil through a sieve to dust the seeded area with fine soil.) Cover only until you can barely see the cutting agent. This will quicken germination and help avoid predation.

Legumes:

Legumes have a hard seed coat. If planted in the fall most legumes will germinate by spring. However, if planting late-winter or early-spring legumes will benefit from a light scarification prior

to sowing. Use fine sandpaper (150 grit.) Tape one piece of sandpaper into a bin with sides, and rub small amounts of seed on it with an additional piece of sandpaper. Thirty seconds should do it. The species with the hardest seed coat is *Lupinus polycarpus (micranthus)*. This species should be scarified no matter when sown.