

What a Seed Needs to Succeed

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The Basics for Site preparation

Seed Biology-When does the species you are planting naturally germinate, spring or fall? Does it require cold stratification? Scarification, inoculant?

Soil testing-Has a soil test been done at your site? This will help determine soil pH/nutrient balance and requirements for fertilizers and amendments. Many weeds will thrive in areas where soil nutrients are imbalanced.

Soil moisture-Time planting with natural rain events or at least pre-irrigate site so the soil is not parched.

Seed to soil contact-Loosen compacted soil, prepare seedbed.

Cultivation and tillage-Can be helpful for weed control, but can stir up more weeds, so allow for a flush of weeds and then light harrowing to remove them after 10 days when they are tiny.

Weed control-Must be done pre-and post planting, either mechanically or with chemicals; however herbicide residue compromises soil microbiome.

Mycorrhizae-These fungal communities help establish plant roots, and exchange water and nutrients. Mycorrhizal inoculants can help restore the natural balance for many native plants.

Planting Methods

Species Selection-Select species appropriate to your soil and habitat type

Methods-

Drill Seeding is most effective but requires heavy equipment and a relatively level site

Broadcast seeding needs to be raked or harrowed and requires more seed per acre

Hydroseeding with protective mulch

Seed balls/seed pellets-Mixing seeds with clay and nutrient rich soil provides resources for seed to germinate in arid environments (Borderlands Restoration)

Cover crops-Help build soil health and compete with weeds. Plant seed into cover crop stubble: either Sudangrass in summer for fall planting, or winter rye planted in fall for planting the following spring (Cornell).

Calculating Seed

Calculating Seeding Rate for a Single Species

Target # seeds X Linear ft. X 1lb X = X lbs of seeds

1 per linear ft 1 known # of seeds per lb

Remember increase seeding rate for broadcast method

Xerces Seed Mix Calculator is an incredible resource with built in formulas for calculating seed (Xerces Society).

Consider the Pollinators

It is critical that your pollinator habitat is high quality, with abundant diversity and density of flowers. The goal is to create new homes for native bees & rest stops for migrating species. Bumblebees and honeybees will also benefit from these planting strategies.

Pollinator Habitat Needs-

Pollinators need season-long forage; from emergence (triggered by warm temperatures) to late fall. Know the background nectar landscape at your site, (baseline monitoring) and start by planting species that bloom when there aren't many floral resources for pollinators to forage. Also, consider migrating pollinators (hummingbirds, bats, Monarchs) who will need resource abundant rest-stops along their migration path with blooms that coincide with the migration. Native bees are critical pollinators in most of the arid Southwest. Most have smaller foraging distances (less than 30 m). Consider other habitat needs of pollinators: bare/undisturbed ground, tree snags, rock piles, drinking water, reduced exposure to chemicals.

Planting Design-

Planting smaller patches (around 5 meters diameter) of high-quality forage is better than general broadcasting seeds. Patches can be spaced 30-50 meters apart. Planting container plants could be a better, more reliable way to establish some plant species. You will need to water these new plantings for a few years to establish.

Site Maintenance

Herbicide Treatment-Weeds will be a challenge the first year, spot treat with herbicide or hand weed. Utilize volunteers! Remember that weeds do have a role post disturbance. They stabilize soil, serve as nurse plants, build soil moisture capacity and feed pollinators. Prioritize!

Mowing- Helps control annual weeds by not letting them go to seed. Mow for at least one year post planting. Cut the planting to 4-6 inches whenever growth reaches 10-12 inches during the first growing season and into season 2.

Burning-Depending on your site, burning might be appropriate after 2 years-if that is a natural part of the ecology.

References

Borderlands Restoration: <http://borderlandsrestoration.org/resources/diyseedpellets/>

Byron Shire Chemical Free Landcare: <http://byronshirechemicalfreelandcare.org/>

Chandrasena, N, 2014. *Living with weeds – a new paradigm*. *Indian Journal of Weed Science* 46(1): 96–110.

Cornell Cover Crops: <http://covercrops.cals.cornell.edu/pdf/sudangrass.pdf>

NRCS Plant Materials Publications:

<https://www.nrcs.usda.gov/wps/portal/nrcs/rpublications/plantmaterials/technical/publications/?ptype=PR>

Orion, Tao. 2015. *Beyond the War on Invasive Species: A Permaculture Approach to Ecosystem Restoration*. Chelsea Green Publishing.

Pawnee Buttes Seed Mycorrhizal

Inoculum: <http://www.pawneebuttesseed.com/am-120-mycorrhizal-inoculum/> and Grass Seeding:

<http://www.pawneebuttesseed.com/wp-content/uploads/2013/01/Grass-Seeding-Guidelines.pdf>

Xerces Society: <http://www.xerces.org/xerces-seed-mix-calculator/>