

 UI Extension Forestry Information Series

The Fate of Forest Seed

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You may have noticed many new tree seedlings as a result of a good seed year and favorable weather conditions. When witnessing such bounty, it is tempting to assume that mother nature will automatically reforest your site after a harvest or fire. Not necessarily. If you are counting on natural regeneration (natural seeding) to restock your forest, it is important to understand some basic natural regeneration processes.

Conifer seed production. Trees can produce a lot of seed, but they do not always do this predictably. Most conifers' seed production varies by species, climate, and other factors. For example, ponderosa pine normally produces good cone crops every 4-5 years, while lodgepole pine produces good cone crops every 1-2 years.

Even if cones have formed, it may not be a good seed year. Conditions may not have favored seed development within cones. Also, a variety of animals and insects feed on cones and seeds at several stages of their development on the tree. Most seed predators have large fluctuations in population size.

Even if you get lots of viable seed falling to the forest floor, conifer seeds are large, and easy prey for rodents, insects, and other forest organisms. For the viable seed that remains, germination conditions must be right. Most conifers (especially shade-intolerant species, such as larch and pines) germinate best on bare mineral soil (a minimum of *duff*—decaying needles, twigs, and other litter).

Tree seed: Stored in the forest floor? Some believe the forest floor is always chock-full of tree seed, just waiting for someone to do a timber harvest - then tree seedlings will spontaneously appear after a few years from stored seed. Trees do store seed in a

“seed bank” in the forest floor. But, *most Inland Northwest conifer seed does not last longer than 1 or 2 years after reaching the ground* (it will remain viable longer if stored in an environmentally controlled room). *If you recently had good seed years from desired species, the seed may be there - otherwise it won't.*

Brush seed lasts a long time (and seed isn't their only alternative!). Many shrub seeds last much longer than tree seeds. For example, redstem ceanothus seed can remain viable in the “seed bank” for decades or longer. Furthermore, shrubs, as contrasted to most coniferous trees, have an alternative to seed — they can grow vegetatively. When these species are burned or cut they often send up vigorous new shoots. If you do not get prompt, viable seed-fall and successful establishment from desired tree species, these shrubs may take over the site, and delay reforestation - possibly for decades or longer (200-300 years on some old burns).

Natural regeneration pointers. With this gauntlet of barriers, it may seem a wonder we have new, naturally seeded forests at all. Successful natural regeneration is often the result of: 1) trees producing so much seed on good years that they overcome these obstacles, or 2) minimizing the impact of those obstacles through carefully planned and timed management activities (or occasionally good luck). Adequate natural regeneration may not happen soon enough for you to meet the Idaho Forest Practice Act reforestation requirements, or beat brush to taking over the site. If you want to rely on natural regeneration, consider:

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- *Threat of brush?* How quickly is brush likely to dominate the site after disturbance? How have similar, neighboring properties behaved after disturbance? If heavy brush is likely, you may want to consider planting seedlings to ensure that trees get a head start, or plan on suppressing the brush with herbicides in the event the brush begins choking naturally regenerated seedlings.
 - *Seed Trees?* Since conifer seed stored in the forest floor is usually not adequate, do you have enough seed trees within or at the edges of the unit?
 - *Seed Source Quality?* Natural seeding may be desirable, but do you *want* seed from the trees left on or near the site? Are they the right species for the site? Do they have good growth and form characteristics, or are they the leftovers from a

- harvest which took the best genetic material?
- *Suitable Seed Bed?* Seed requires a suitable seed bed to successfully germinate. Historically, bare mineral soil was most commonly created by wildfire. Now it's also done through prescribed burning or with mechanical equipment (often in conjunction with logging). If you rely on the latter methods, try to balance between creating a good seed bed and minimizing soil erosion, compaction, or displacement.

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