



NORTHERN HARDWOOD NOTES

Direct Seeding

At present, direct seeding of hardwoods in the Lake States is more of a supplemental than a *primary* means of artificial regeneration. Direct seeding may be used to augment a poor seed crop or increase the proportion of a preferred species. In the future, it will no doubt play a bigger role-in anticipation of this we need to collect and store the amounts of seed needed. With direct seeding, stand treatments would not have to be scheduled around good seed crops, species composition could be carefully controlled, and genetically superior seed could be sown. "Immediate" regeneration would be possible.

To direct-seed successfully, favorable germination temperatures must be achieved and maintained early in the season when moisture conditions are best. Predation by rodents must be reduced too. The following steps will encourage success:

1. Prepare the site by shallowly mixing organic and mineral soil; this also eliminates any existing regeneration.
2. Leave an overstory of 70 to 80 percent crown cover until the regeneration is 2 to 4 feet high. This reduces competition from herbs and prevents the surface soil and seedlings from drying out. Seeding open fields or clearcut areas will not work.
3. Make sure you use enough seed.

Special Requirements

Sugar Maple-No site preparation is required. Sugar maple germinates at temperatures just above freezing in greater numbers than desired. To reduce its numbers, prepare sites in late spring after soil temperature rises. Most other hardwoods will outgrow maple if they are regenerated before or at the same time maple germinates. Sow 3 to 9 pounds per acre.

White Ash-This species does not require scarification and it germinates at both low and high temperatures. Probably only 1 in 3 of the fall seed "crops" contain viable seed because of male flower abortion. Rodents do not seem to eat ash seed. Sow 2 to 7 pounds per acre.

Yellow and Paper Birch-The birches are very demanding as to seedbed, surface moisture, and amount of competition, but they are easy to regenerate if requirements are met. Sow $\frac{1}{8}$ to $\frac{1}{3}$ pound per acre.

Hemlock-Hemlock is similar to yellow birch in needs but requires much supplemental seeding because the relatively few cones generally contain only about two viable seeds each. The seedlings are highly susceptible to damping off. Sow $\frac{1}{3}$ to $\frac{2}{3}$ pound per acre.

Basswood-Most basswood seeds are eaten by rodents; probably less than 2 percent escape destruction. Scarify or burn in early fall to avoid seed predation; or sow stratified seed late in the spring. The few years that new seedlings appear seem to coincide with low rodent populations. Sow 4 to 10 pounds per acre.

Northern Red Oak-Combine scarification or burning with early spring sowing of pregerminated acorns. Scarification minimizes seed predation and extends the period of low temperature favorable for germination. Sow 500 to 1,500 acorns per acre.

See also: Crop Frequency, Optimum Germination Temperature, Yellow Birch-Special Problems, Hemlock-Special Problems, and Prescribed Burning for Site Preparation.

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