

Non-Timber Forest Products and Implications for Forest Managers



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Seed Collection for Direct Seeding

by John Olds, *One Stop Forestry*

Admittedly, establishing hardwood forest by direct seeding is unique. But, admittedly, this truly is not rocket science! Nature has been doing a good job of regeneration for a long time.

If you consider what a seedling endures during a typical planting regime--yanked out of the soil in a nursery, refrigerated, shipped, and then planted by a landowner on an 89 degree day--it's no mystery that another option for regeneration was needed for landowners.

Direct seeding is the process of establishing a stand of trees by planting tree seed instead of the conventional use of seedlings. Not all sites may be suited for direct seeding (e.g., steep slopes, rocky ground), but where it can be used, there is a great potential for establishing thousands of seedlings per acre.

High density plantings result in seedlings growing faster to compete for the limited available sunlight, which in turn results in better formed trees. These plantings, if properly maintained, will often canopy or shade the ground after three

or four growing seasons. The shade inhibits the growth of competing weeds and grasses and also reduces evaporation resulting in a more favorable growing environment.

Other advantages include the more natural appearance of the ensuing forest, improved wildlife habitat, and often the fact that direct seeding overwhelms the wild critters and seed survive.

A couple of disadvantages of direct seeding include the need to make many passes over a field, and the fact that seed availability and quality varies widely from year to year, making the planning of these projects a bit uncertain.

Seedings are typically done in fall because this is when most of the seed drops and becomes available. Fall seeding also allows for the natural, over-winter stratification most seeds need prior to germinating.

Seed Collection and Handling

Most native hardwood species, such as black walnut, oak species, ash species, sugar maple, black cherry, and hickory drop their seed in the fall. Collection should take place as soon as possible after the

seed drops. The season may begin in late August with bur oak and end in late October or even early November with red oak and walnut.

Walnuts can be sown with husks on. If they are husked keep the nuts moist to prevent loss of viability. In addition, avoid large piles of walnuts. This creates heat that will destroy the seed. Smaller piles of 10 inches or less will more effectively dissipate any heat.

Consider the following when handling acorns:

- Acorns lose their viability if they become dehydrated, so collect them soon after they drop.
- Store the collected acorns in breathable bags such as onion sacks, burlap bags, or standard feed sacks. These bags will reduce heat buildup, allow the seed to breath, and permit excess moisture to drain off.
- Immediately after collecting, immerse the acorns in water for up to 24 hours, remove, and allow the bags to drain for 30 minutes. Store the soaked acorns in a cool (34-40 degrees Fahrenheit) dark place until planting. If the acorns have been stored for an extended period, rehydrate for several hours prior to planting.

Ash and maple seed should be air-dried and stored in a cool, dry place until sown.

Site Preparation

The site should look like it is ready to be planted with corn. The ideal site immediately prior to planting is one with as much exposed soil as possible. Soil to seed contact is critical to the success of direct seedings. Turning over existing sod also appears to greatly reduce mice and vole populations.

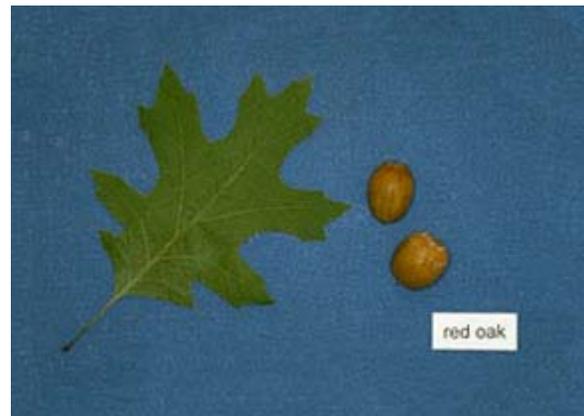
Grass and weed control is critical. If the site to be planted is in perennial grasses, mow the site in mid-August. After the grass has grown back 2 to 4 inches (usually by early to mid-September) broadcast the field with Roundup Ultra at the rate of 1.5-2.0 quarts per acre. Add 1/2 pint of 2,4-D if legumes are present. Always check and follow label recommendations.

Following dieback, till under all vegetation. Plowing (moldboard or chisel) and then disking is the most effective means of site prep tillage. If the site is currently in soybeans or corn, disk the stubble once after the harvest, then seed.

Seed Needed



(photo by Rick Klevorn)



(photo by Rick Klevorn)

Seeds of native trees should be selected to match the growing conditions of the planting site (e.g., bottomland, upland, heavy soils, light soils, etc.) Species we now use include red, white, bur, and swamp white oak; black walnut; shagbark hickory; green, white, and black ash; black cherry; and sugar maple. We have plans to expand to other species. We have also seeded white birch and several shrub species. The results of these species won't be known for a growing season or two.

To get the desired high number of seedlings to germinate, we must plant tens of thousands of seeds per acre; even more if local populations of deer, turkeys, and squirrels are high. These high numbers are easily obtained by using green ash seed. This species is quite common, is a fairly consistent annual seed producer, and has approximately 120,000 seeds per bushel.

White ash and black ash are used as well, but the seed is harder to locate. Ash is also a quick grower, forcing the oak and walnut to grow fast and straight.

We recommend the following seeding ranges. Use whatever rate and combination of species that is appropriate for the site and meets the goals of the landowner. Seed costs will range from \$180/acre up to \$300/acre depending on species and rates. An average figure is \$250/acre.

Note in the following chart that these are minimum rates; the more the better.

Species and seeding rate in bushels/acre

Species	Bushels of Seed to use per Acre
Ash (Green, white, black combined)	1/2 to 1
Red Oak	1/2 to 1
White Oak	1/4 to 1
Black walnut	10 to 15
Swamp white oak	1/4 to 1
Shagbark hickory	1/4 to 1
Sugar maple	1/8 to 1/2
Black cherry	1/4 to 1/2

Seeding

The acorns, walnuts, and hickory nuts should be seeded first by broadcasting over the entire field. Disk these in to a depth of 1/2 to 2 inches. Then broadcast the ash, cherry, and maple seed and lightly disk, culti-pack, or drag to a depth of 1/4 to 1/2 inch. Seeding labor costs will range from \$60/acre up to \$110/acre depending on the size of the project.

Maintenance

At least one other advantage of direct seeding is the shortened period of maintenance required to control competing grasses and broadleaf weeds. Ten thousand seedings per acre will shade out the competition much sooner than 700; often within a period of three years.

We have yet to settle on an exact prescription for chemical weed control, but we feel we are getting close. Our first year recommendations are to wait for the weeds to sprout, identify them, and treat in early to mid June. We are using Transline at a rate of 1/2 to 3/4 pint per acre to control broadleaves, and Envoy at 1 pint/acre for grasses. Best results will be seen when spraying weeds less than 12 inches tall.

The second year's application will depend on the competition observed after the first growing season. Typically we are applying, in the fall or early spring, a solution of 1/2 oz/acre of Oust and 2 qts./acre of Princep. Another alternative may be to repeat the Transline and/or Envoy treatment at the beginning of the second growing season. The need for chemical weed control after the second growing season should become more of a spot spraying concern.

By the end of three growing seasons, many of the seedlings should be 6 feet or more in height, and one inch caliper. At this point, the planting is on its own until the first thinning after year 9 or 10.

Most of the above applications will run from \$40/acre up to as much as \$75/acre depending on herbicides and rates used. With direct seeding, we grow twice the volume in 1/2 the time.

Seed Collection

One Stop Forestry purchases seed. We want to buy from people whose hearts are in it! Approximate prices are \$40/bushel red oak; \$45/bushel white oak; \$15/bushel bur oak; and \$40/bushel ash.



Dumping acorns.
(photo by Rick Klevorn)

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