Direct Seeding of Trees

Small Scale Solutions for your Farm

NRCS
Natural Resources Conservation Service

Purpose of Direct Seeding of Trees:

- Planting tree seeds by hand or with a machine.

How Direct Seeding Can Help:

- Direct seeding can reduce tree cost of planting trees.
- Tree seed is normally more available and less expensive than seedlings.
- Direct seeding is usually faster than planting seedlings.
- Direct seeding is usually easier than planting seedlings.

Buckeye tree

Do you have areas where you would like to grow trees?

Riparian Corridor being fenced and restored

Growing Trees By Direct Seeding Can:

- Enhance water quality
- Provide erosion control
- Provide wildlife habitat
- Establish woody plants for forest products
- Establish woody plants for fruit and nut production
- Protect areas from wind
- Provide shade
- Provide screening of unsightly areas

Costs to Direct Seeding:

If you do the seed collection and planting yourself, there may be very little out of pocket expense. Labor and some equipment expenses are all that will be needed.
Whether you do it yourself or hire someone, some of the costs for direct seeding of trees are:

Site Preparation—Spray herbicide and prepare seedbed.
Seed—Cost will vary depending on species.
Planting—Large sites may need to be done mechanically, while small sites can be done by hand labor.
Maintenance—Chemical and/or mechanical weed controls are often needed for the first few years.

Direct Seeding of Trees

How to Install the Practice:

The first step is to develop a seeding plan to determine the species to be used and the amount of seed needed for each type of tree.

Seeds should be obtained from reliable seed vendors or collected within 100 to 150 miles of the planting location.

- Collect seeds from different trees to insure species diversity.
- Choose healthy, vigorous trees
- Collect from trees that are well formed.
- Collect from mature trees.
- Avoid isolated trees.

Collect from trees growing in their typical habitat.

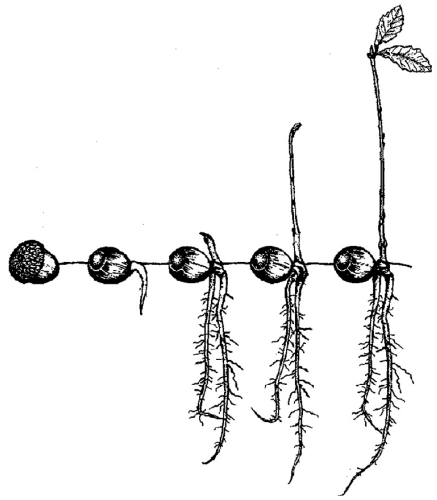
Seed Collection: For species that are collected from the ground, clearing of the area under the tree before the seeds will be helpful.

Some species have a very short time when seeds fall, while others drop their seeds for long periods. For some most trees you will be competing with squirrels, mice and other wildlife for the seeds. Know when the seeds fall and be ready to collect them.

Avoid picking seeds before they are mature. Seed maturity can be checked by cutting the seed and inspecting the center. If the seed has a well formed seed coat and the center is generally white, firm and fills the seed cavity, the seed is probably ready for collection.

Plant as soon after collection as possible. If seeds must be stored before planting use the following precautions.

Surface dry seeds before placing in storage. Store in plastic bags in a cool location with plenty of room for air movement.



From "Growing Illinois Trees by Seed", Cooperative Extension Service, Circular 1219

If possible store white oak acorns between 32 and 40 degrees to slow germination.

Site Preparation: Prepare sites by killing existing vegetation either chemically, mechanically, or both. Site preparation can be done on the entire field, in strips or by spot treatment on small areas.

Trees to use: The following trees have been successfully established using direct seeding:

<u>Heavy Seeded Species</u>

Black Walnut	Pecan
Oak	Hickory
Persimmon	Hazelnut
Kentucky Coffeetree	Buckeye

<u>Light Seeded Species</u>

Ash	Yellow Poplar
Maple	Bald Cypress
Basswood	Redbud
Sweetgum	Dogwood
Hackberry	Paw Paw
Black Cherry	

Direct Seeding of Trees

Seed Inspection, Care and Storage: Randomly inspect seeds to insure only undamaged, viable, mature seeds are used.

Direct seeding should be done from October – June if adequate soil moisture is available. If possible, seed should be planted immediately. The longer seeds are stored the less chance they will sprout.

Seeding rate: Plant 2500 - 4000 seed per acre when planted in rows. Broadcast seeding rates will range from 5000 – 15,000 seeds per acres depending on the species planted.

Seeding method: Seeds may be planted either mechanically or by hand, in rows or broadcast. Hand seeding is usually not feasible for areas larger than five acres. Many kinds of existing farm equipment can be adapted for planting tree seeds.

Row seeding: Plant heavy seeded species in an open trench 2-3 inches deep. Deeper planting is recommended if the soil surface is dried out. When hand planting, use any device to open a hole 2-3 inches deep. After the rows are planted, compact rows to provide good contact between the soil and the seed. Below are some spacings for 3000 seeds per acre.

Row Spacing	Seed Spacing	Seed/Acre
6 ft	2.4 ft	3025
8 ft	1.8 ft	3025
10 ft	1.5 ft	2900
12 ft	1.2 ft	3025
14 ft	1.0 ft	3100

Broadcast Seeding: Broadcast heavy seeded species over the entire field and disk in to 2-3 inches, then cultipack to obtain a firm soil to seed contact. Broadcast the light seeded species and lightly disk, drag or cultipack seed in to 1/4 – 1/2 inches deep.

How to Maintain the Practice:

Weeds and grasses need to be controlled for at least a 2 foot radius around seedlings for 2-3 years or until the tree reaches 6 feet tall.

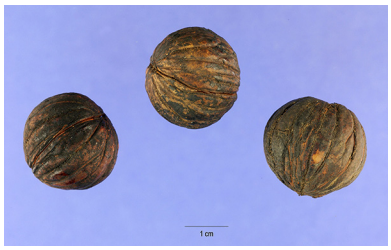
One advantage of direct seeding is with the higher seeding rates per acre, the tree crop will shade out its competition sooner. Chemical or mechanical weed controls are still needed for the first 2-3 years.

Other Benefits:

As long as there is adequate soil moisture, and viable seeds are available, direct seeding can be done during most of the year. This can be an advantage over seedlings that must be established at specific times of the year.

When using native species, a wide variety of species can easily be planted.

Direct seeding allows for more normal root development, avoids seedling transplant shock, and may increase the quality of trees that are eventually developed.



Black Walnut seed

Red Oak seed

Help is Available

NRCS Natural Resources Conservation Service

SMALL SCALE SOLUTIONS FOR YOUR FARM

Technical Help Is Available

Your local Natural Resources Conservation Service (NRCS) office has experienced conservationists that can assist you with direct seeding of trees. They can also help you develop a Conservation Plan to solve other problems you have identified on your farm.

There is no charge for our assistance. Simply call your local office at the number listed below to set up an appointment and we will come to your farm.

You may also be eligible to receive financial assistance, through a state or federal program. Your NRCS office will explain any programs that are available so you can make the best decision for your operation. All NRCS programs and services are voluntary.

Helping People Help the Land

For More Information Contact the:

Natural Resources Conservation Service

60 Quaker Lane, Suite 46
Warwick, RI 02886
(401) 828-1300
Web Address: www.ri.nrcs.usda.gov
E-mail Address: NRCSInfo@ri.usda.gov

NRCS accepts applications on a continuous basis throughout the year.

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basic of race, color, national origin, gender, religion, age, disability, political beliefs sexual orientation, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at 202-720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Ave., SW, Washington, D.C., 20250-9410, or call (202) 720-5964 (voice) or (202) 720-1127 (TDD). USDA is an equal opportunity provider and employer.

January 2009