



# Direct Seeding of Trees

Conservation Solutions for your Pennsylvania Farm

## 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

## 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.

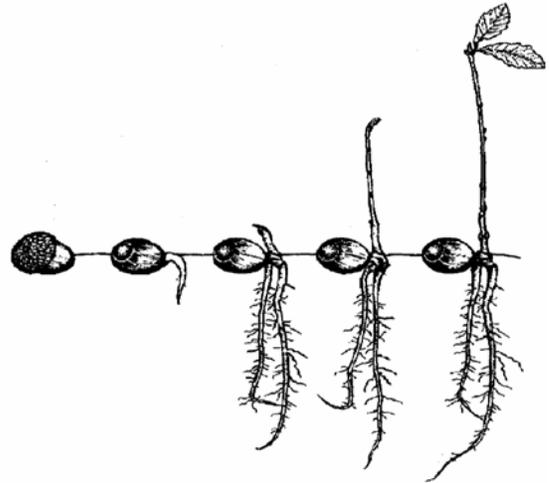
**Seed Collection:** For species that are collected from the ground, clearing of the area under the tree before the seeds will be helpful.

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:

### Heavy Seeded Species

Black Walnut	Pecan
Oak	Hickory
Persimmon	Hazelnut
Kentucky Coffeetree	Buckeye

### Light Seeded Species

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

# Direct Seeding

## 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*

# Help is Available



## CONSERVATION SOLUTIONS FOR YOUR PENNSYLVANIA 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*

<b>NRCS FIELD OFFICES:</b>		
Adams: 717-334-2317 ext 3	Delaware: 610-696-0398 ext 3	Montgomery: 610-372-4655 ext 3
Allegheny: 717-482-4800 ext 3	Elk: 814-375-2125 ext 3	Northampton: 610-625-8392 ext 3
Armstrong: 724-545-1022 ext 3	Erie: 814-796-6760 ext 3	Northumberland: 570-286-7114 ext 3
Beaver: 724-482-4800 ext 3	Fayette: 724-437-7971 ext 3	Perry: 717-582-4144 ext 3
Bedford: 814-623-7900 ext 3	Forest: 814-226-8160 ext 3	Pike: 570-282-8732 ext 3
Berks: 610-372-4655 ext 3	Franklin: 717-264-8074 ext 3	Potter: 814-274-8166 ext 3
Blair: 814-695-6291 ext 3	Fulton: 717-485-3812 ext 3	Schuykill: 570-622-1312 ext 3
Bradford: 570-265-6969 ext 3	Greene: 724-627-5821	Snyder: 570-837-0007 ext 3
Bucks: 215-453-9527 ext 3	Huntingdon: 814-627-1626 ext 3	Somerset: 814-445-6876 ext 3
Butler: 724-482-4800 ext 3	Indiana: 727-463-8547 ext 3	Sullivan: 570-836-2490 ext 3
Cambria: 814-472-5502 ext 3	Jefferson: 814-375-2125 ext 3	Susquehanna: 570-278-1011 ext 3
Cameron: 814-375-2125 ext 3	Juniata: 717-436-8953 ext 3	Tioga: 570-724-1726 ext 3
Carbon: 610-625-8392 ext 3	Lackawanna: 570-282-8732 ext 3	Union: 570-523-3280
Centre: 570-726-3196 ext 3	Lancaster: 717-299-5361 ext 3	Warren: 814-563-3125
Chester: 610-696-0398 ext 3	Lawrence: 724-652-5811	Washington: 724-222-3060 ext 3
Clarion: 814-226-8160 ext 3	Lebanon: 717-272-3908 ext 3	Wayne: 570-282-8732 ext 3
Clearfield: 814-375-2125 ext 3	Lehigh: 610-625-8392 ext 3	Westmoreland: 724-834-3970 ext 3
Clinton: 570-726-3196 ext 3	Luzerne: 570-799-0645 ext 3	Wyoming: 570-836-2490 ext 3
Columbia: 570-784-1062 ext 3	Lycoming: 570-433-3902 ext 3	Venago: 814-437-2473 ext 3
Crawford: 814-724-1852 ext 3	McKean: 814-274-8166 ext 3	York: 717-755-2966 ext 3
Cumberland: 717-249-1037 ext 3	Mercer: 724-662-3740 ext 3	
Dauphin: 717-921-2380 ext 3	Mifflin: 717-248-9541 ext 3	
	Monroe: 610-625-8392 ext 3	