

CFAES OHIO STATE UNIVERSITY EXTENSION



Tree Planting From A to Z

 **THE OHIO STATE UNIVERSITY**
COLLEGE OF FOOD, AGRICULTURAL AND ENVIRONMENTAL SCIENCES

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Why Plant Trees?

One way of being able to control species composition

Creates an area that can better meet your goals and objectives than just letting succession take place

- aesthetics
- wildlife habitat
- products (timber, maple syrup etc.)
- erosion control
- water quality



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Why Plant Trees?

Aesthetics

- ✓ Fall Color
- ✓ Unique Shape
- ✓ Good Shade Tree
- ✓ Interesting Seeds
- ✓ Sentimental Value
- ✓ Provides Visual Screen




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Wildlife Habitat

Hard Mast


- ✓ species include oaks, hickory and walnut

Soft Mast

- ✓ species include maples, ash and dogwood

Cover

- ✓ species include white pine, norway spruce and arborvitae

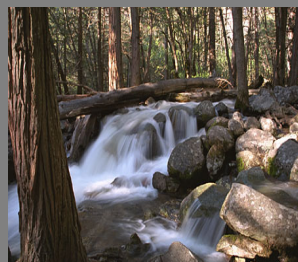


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Water Quality

Trees planted for water quality purposes are usually located adjacent to a stream and are called riparian buffers

Trees for this function need to be somewhat flood tolerant





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Erosion Control

Trees planted for erosion control usually need to be fast growing. They are used to:

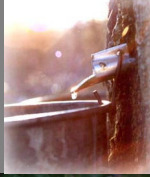
- ✓ control bank erosion
- ✓ hold erosion prone slopes in place
- ✓ hold bank in place while trees planted in the buffer take hold

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Specialty Products

- ✓ Christmas Trees – usually planted in high concentrations in a rotation
- ✓ Maple Syrup – maples planted for the express purpose of producing syrup in the future
- ✓ Nut Production – trees valued for their fruit: English walnut, hazelnut, black walnut, pecans



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3 Types of Planting Material

Seed



Bare root stock



Balled & Burlap/Container



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Seed

Can purchase seed from vendors (either local or national)

Can collect seed from local parks and golf courses (historic trees, sentimental trees etc.)

Seed is planted in the fall – makes it good for reforestation streamside forests that could be underwater with spring floods



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Tree seed is often more practical if you are wanting to plant 'native' species

Allows for more normal root development

Allows for natural in the ground seed stratification that most seeds need to germinate

Potentially higher tree populations reduce the need for extended periods of weed control and promote self-pruning



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Seed can be planted in rows (precision sown)



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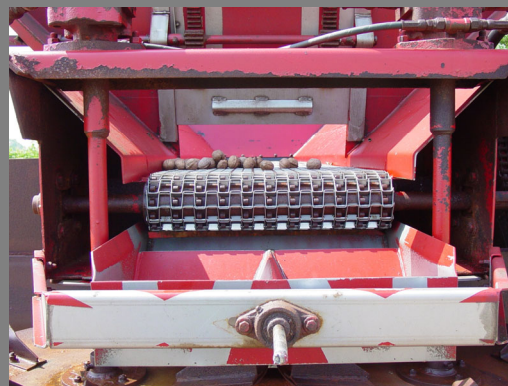


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Seed mixture can be broadcast



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First Year
Seedlings From
Seed



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Direct Seeding - Site preparation

Destroy competing vegetation by either herbicide or cultivation or both



Destroy either strips (if precision sowing) or entire area (if broadcast seeding)

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Seeding Rates

Heavy Seeds (acorns, walnuts etc.)

3000 seeds/ac. for row planting

4500 seeds/ac for broadcast

Oaks, hickory etc. 3-4 bushels/ac

Walnut 10 – 15 bushels/ac

Light Seeds (maple, sycamore etc.)

1 bushel /acre (could be as many as 100,000 seeds)



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Maintenance

Dense seedings result in dense plantings creating shade for weeds and grasses

Mowing is not an option with broadcast seeding

Approximately 3 years worth of chemical treatment should get the planting off to a good start

Chemicals typically used are Fusilade and Transline – however, you need to know what you are trying to control and what species are in the planting!

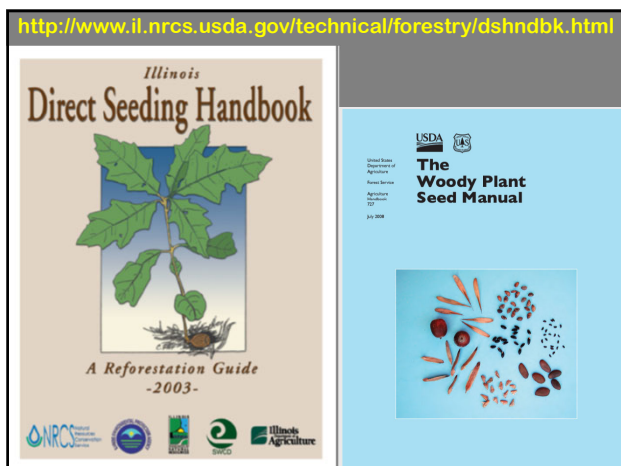
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Bare Root Seedlings

Sold as 1-0, 2-0, 2-1 etc.

Wide variety of species available

Order in the fall and plant in the spring (late February/early March to around May 1st)

Can be planted either by hand or with a planting machine

Requires maintenance to get the seedlings off to a successful start

Most economical when doing large plantings

Order from nurseries in same plant hardness zone or less

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Planting Methods

Machine

- ✓ Requires a tractor with a 3 pt. hitch and usually at least 50 hp.
- ✓ Site conditions need to be good so that no damage is done to the site while planting
- ✓ Can usually install 4000 trees or more per day with a 3 person crew



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Planting Methods

Hand

- ✓ Allows planting in sites not dry enough for a machine



- ✓ Experienced vendor plants 1000/day
- ✓ Must keep roots moist – i.e. bucket of water or planting bag with water

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Planting

No matter which method you use you must make sure that:

- ✓ Slit is closed
- ✓ Tug on seedling – if it moves - replant it
- ✓ Roots are vertical – prune if necessary



<https://ohiodnr.gov/discover-and-learn/safety-conservation/woodland-management/tree-planting-guide>

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Spacing dictates numbers of trees to order

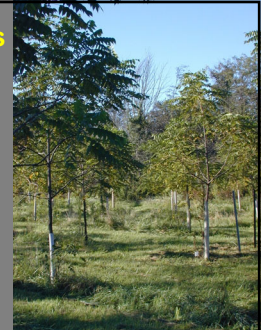
Maintenance methods help to dictate spacing requirements

- 10 foot bush hog – allow at least 12 foot wide rows for mowing maintenance access

Some plantings have almost 'standard' spacings

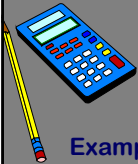
- Windbreaks – 10' x 10' or 12' x 12'

- Christmas trees – 6' x 6', 7' x 7' etc.



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Once spacing is determined figure out how many trees to order



$\frac{43560 \text{ sq. ft./acre}}{\text{Spacing sq. ft.}} = \# \text{ of trees/acre}$

Example: (10 acre planting)

Selected spacing – 10 ft. x 8 ft.

$10' \times 8' = 80 \text{ sq. ft per tree}$

$43560/80 = 544.5 \text{ trees/acre (round to 540 or 530)}$

540 trees/acre x 10 acres = 5400 trees to order!!

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Bare Root Seedling Site Preparation



Current Cover

Bare ground
Heavy sod
Brush
Weed trees
Compacted soil
Bare ground

Tree Planting Cover

seed to a cover crop of grasses/legumes
treat with chemicals to reduce competition
deaden and remove by hand or machine
at least girdle, perhaps remove
disk or plow & seed to cover crop
may leave alone if planting material dictates

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Post Plant Care



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Balled & Burlap & Container - Grown

Most expensive of the 3 planting materials options

Less options in species selections – more cultivars vs native species

More labor involved in planting

Longer planting season – container trees almost anytime, balled and burlap less impacted by frost heaving



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Container Grown

- ✓ higher initial cost
- ✓ little bit faster growth rate (if container grown)
- ✓ more labor to plant than bare root
- ✓ spring, summer and fall planting season
- ✓ Depending on container size frost heaving may be an issue



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Ball & Burlap

- ✓ highest cost
- ✓ slower growth rate for the first few years
- ✓ more labor to plant and care afterwards needed
- ✓ spring, summer and fall planting season
- ✓ Less susceptible to frost heaving



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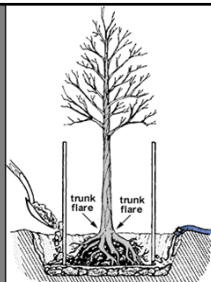
Planting Methods

The phrase '\$100 hole for a \$20 tree' is very true

Identify the trunk flare of the tree
Trunk flare and root ball should be at grade

Dig the space at least 1.5 - 2 times the diameter of the root ball

Break up compacted soil. Sides of planting space should not be packed. Leave bottom of space firm

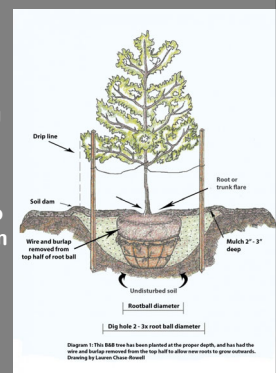


Cut and remove wire baskets from B&B

Begin refilling with soil, watering as you fill to firmly set tree. Gently tamp.

Fill soil up to the tree base just to where roots begin to branch from trunk

Stake and brace most trees at planting time. Support tree but allow it to move or sway.



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Mulch lightly and evenly with 2" of composted material at least to the diameter of crown of tree.

Leave 3" circle of bare soil around the trunk.

Deep water regularly throughout the first growing season. Allow water to run slowly, soaking the soil, once or twice a week. Do not over water. Water at the perimeter or edge of planting site.

Joe Boggs, OSU Extension

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Prune dead or injured branches immediately

Prune while young to maintain size and shape beginning in the second growing season

Replace mulch as needed. Keep grass and weeds out of mulched area.

Remove stakes and strapping after one year unless site is extremely windy. Do not stake longer than two years.

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Soils

Always check the soils into which you are planting

Match tree species to appropriate soil type

Utilize soil surveys – available at the county SWCD office

Some soils information is now available on the web at:

<https://www.nrcs.usda.gov/resources/guides-and-instructions/soil-survey-manual>

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County Soils Map

good for larger sites

take it as a general starting point

if the description doesn't seem to fit your site go the next step and take a soil test

look at what vegetation is growing there naturally – it may yield clues to the type of soil

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Web Soil Survey

<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

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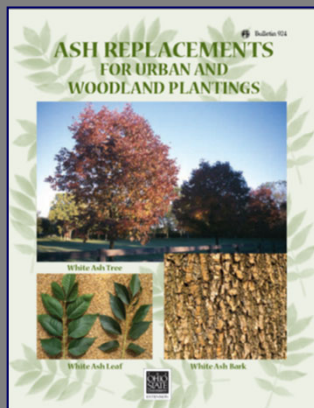
<https://www.nwf.org/nativeplantfinder/>

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Bulletin # 924

Available from
the county
Extension office
or online at:

<http://estore.osu-extension.org/>



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<https://www.amleo.com>

<https://www.forestry-suppliers.com>

<http://www.treepro.com>

<https://www.plantra.com/>

<http://www.growtube.com/shelters.html>



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Resources

<https://www.nrcs.usda.gov/resources/guides-and-instructions/soil-survey-manual>

<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

Woody Plant Seed Manual

https://www.fs.usda.gov/nsl/nsl_wpsm.html

<https://extension.psu.edu/forest-landowners-guide-to-tree-planting-success>



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