

Oak Shade Tree Production

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Species commonly grown in Middle Tennessee nurseries: Tenn. Nursery Buyer's Guide is excellent list:

<i>Quercus acutissima</i>	Sawtooth
<i>Q. alba</i>	White
<i>Q. bicolor</i>	Swamp white
<i>Q. coccinea</i>	Scarlet
<i>Q. ellipsoidalis</i>	Northern Pin
<i>Q. falcata</i>	Southern Red
<i>Q. imbricaria</i>	Shingle
<i>Q. lyrata</i>	Overcup
<i>Q. macrocarpa</i>	Bur
<i>Q. michauxii</i>	Swamp Chestnut
<i>Q. muehlenbergii</i>	Chinkapin
<i>Q. nigra</i>	Water
<i>Q. nuttallii</i>	Nuttall
<i>Q. palustris</i>	Pin
<i>Q. phellos</i>	Willow
<i>Q. prinus</i>	Chestnut
<i>Q. robur</i>	English
<i>Q. rubra</i>	Northern Red
<i>Q. shumardii</i>	Shumard

Comment:

Quercus nuttallii, Nuttall Oak may be the best of the red oaks, essentially unknown by landscapers, is beginning to replace *Q. palustris*, *Q. shumardii* and *Q. michauxii*. Nuttall is considered the superior oak by Plato Touliatos, Memphis nurseryman, owner of Trees by Touliatos, retired degreed forester with U.S. Forest Service. 40-60' tall. Zone 5-9.

Propagation

Standard nursery practice:

The seed are planted in a row. The seedlings will be there 1-2 years. They are then generally transplanted in a field at a spacing to ball. They will be grown 1-2 years to establish a root system. They may be 3 feet tall, but somewhat crooked. They will be cut back in March, 2 inches above the soil. Hopefully a bud will sprout. The established root system will be able to grow the new top fast; fast growth is straight. Three to five years are required to get a straight 3-4 foot oak seedling.

Hillis, Warren Co., High Country, and Bottoms grow a lot of oak seedlings with this method.

New technology: the Ohio Production System or OOPS by Dr. Dan Struve is certainly accelerated growth. Alan Stoner, Stoner Nursery, 931-934-2169; fax 2263; E-mail: Astoner@blomand.net and Mark Kuykendall, 931-473-2927; fax 931-506-5013; in Warren Co. have been successful with this method. Rennerwood, 903-928-2921; fax 2161; E-mail rwood@gower.net in Texas also produce an excellent potted liner.

The OOPS uses heat and artificial lighting to go from seed to a 4-6 foot liner in 10 months, Jan to Oct.

The seed are planted in Jan-Feb in a heated greenhouse in a bed, transplanted to 1 gallon containers in a few months, a combination of incandescent and Sodium lights extend day length and stimulate rapid growth. Shift to 3 gallon containers and move outside in May, space to allow some lateral branching so as to increase caliper, don't over fertilize, stake if necessary-but allow some movement to build stem strength. The pine bark media contains some slow release fertilizer, but liquid feeding is also done.

Site Selection

No special requirements. Soil does not have to be as well drained as for dogwood, white pine, peach, or hemlock, but is fine if available.

Fertility

Refer to Fertility Section for the recommended pH ranges for the different oak species or request it. A medium to high level of phosphorus and potassium is desirable. Soil test early enough so that any lime, phosphate or potash can be broadcast prior to planting.

Sidedress Feb-March and late June with no more than 75 pounds of actual nitrogen per acre. The first sidedress application after transplant should be 50 lbs. of actual nitrogen or less. Refer to the fertility section for examples.

Field Spacing

Spacing of shade trees in the field depends upon the size expected to be harvested.

Plant a minimum of 5-6 feet apart within the row to harvest a 1.5 - 2 inch caliper tree. Middles should be at least (width of widest tractor or implement used in middles plus 2 feet per side = 3' implement + 4' = 7' middle.

Spacing examples of trees on 1 solid acre:

5x5 = 1,742		4.5 x 5 = 1,936
5x6 = 1,452	6x6 = 1,210	4.5 x 6 = 1,613
5x7 = 1,245	6x7 = 1,037	4.5 x 7 = 1,383
5x8 = 1,089	6x8 = 908	4.5 x 8 = 1,210

Remember to skip a row or leave a 10-12 foot roadway to load, dig and spray from. Consider 4-8 rows per block. If hand dug, how far do you desire to carry 300 pounds? An air blast sprayer is convenient for pest control. An air blast sprayer should be able to penetrate the foliage on 4-8 rows of shade tree foliage. A tree spade will also require space to maneuver without damaging adjacent plants. A 4 row block offers 50 percent of its plants immediately accessible to a spade.

Planting

Exercise caution to not plant too deep. It is also critical not to allow cultivation to throw additional soil over the roots. Some producers replace the disc blade that throws the soil with a smaller diameter blade.

Insects (see borer information or request it)

Oak Psyllid - new foliage is wadded up, terribly distorted, insect will not be seen.

Spray Talstar, Cygon, Malathion, Sevin, Dursban, or Orthene prior to or at 1st sign. Scout.

Refer to UT Ext. pub. 1589 for a complete list of potential insects and the recommended controls.

Disease

Refer to UT Ext. pub. 1234 for a complete list of potential diseases and the recommended controls. Oaks seldom have disease problems, occasionally leaf spots, that are only cosmetic.

Herbicides

Refer to UT Ext. pub. 1226 for a complete list of labeled pre and postemergence herbicides.

Pruning

Maintain a straight central leader. Leave lower foliage or branches on to build caliper and a strong stem. Lower branches can be shortened to 6 inches, so as not to interfere with cultural practices.

Producers tend to remove lower foliage and branches too soon and too high. Producers want trees to look like trees every year. But research has proven the value of leaving lower foliage and branching to build stem strength and caliper. Remove large limbs periodically to avoid larger wounds later. Most lower branching can be removed 1-2 years before the anticipated harvest and the wounds will have time to heal.

The height that shade trees are limbed up to is decided by the buyer and the purpose. Trees planted into the landscape are generally limbed up to 4 feet. Municipalities generally require trees limbed up to 5 feet or so for increased visibility.

Harvesting

The most requested size oak is 1.5 - 2 inch caliper, which is generally a 5-6 year crop; depending on species, soil type, fertility, moisture, growth rate, pruning, etc; with harvesting occurring the last 2-3 years.

Digging the Correct Size Ball

The American Standard for Nursery Stock was written by the American Nursery & Landscape Assoc. (ANLA) (formerly the American Assoc. of Nurserymen, AAN). It establishes techniques for measuring plants and rootball size for particular plant sizes and different plant types. A copy of the Standards may be obtained by contacting the ANLA at 202-789-5980 ext 3019 for a few dollars.

Caliper in inches	Minimum Ball Diameter
1 1/4	18 inches
1 1/2	20 inches
1 3/4	22 inches
2	24 inches
2 1/2	28 inches
3	32 inches
3 1/2	38 inches
4	42 inches
4 1/2	48 inches

References:

"American Standard for Nursery Stock", American Association of Nurserymen, ANSI Z60.1-1996, approved Nov. 6, 1996, Section 1: Shade Trees.

Dirr, Michael A. 1998. Manual of Woody Landscape Plants, Stipes Publishing, Champaign, IL. 5th ed.

TNLA Buyer's Guide, 2000-2001.

Oak Prod March,2000 crop file