

# MARYLAND WALNUT GUIDELINES

PRODUCED BY THE MARYLAND CHAPTER OF THE WALNUT COUNCIL

## Black Walnut Plantation Establishment

This is a summary of some of the key points to consider when establishing black walnut in fields or other open areas in Maryland. There is a great deal of information that we are not able to include here, and there are different approaches and options available to the land manager that are not discussed. Sources of further information are included at the end of this information sheet.

### Site Selection

Black walnut is very demanding of site conditions, needing fairly deep, fertile, and moist but well-drained soil. Use soil survey information and on-site soil sampling and excavation to establish that the soil and moisture conditions are suitable for walnut. It is much better to plant other species of trees, or at least mix in other species, on a poor or marginal walnut site. A good soil for walnut should have a fairly neutral pH, 5.5 - 7.5, with 6.5 - 7.2 being ideal, have a rooting depth of 30 inches of good soil free of any root restricting layers such as bedrock, hardpan, or high water table during the growing season. The soil should be a loam, silt loam, sandy loam, or clay loam, but not a soil made up mostly of sand, clay, gravel, shale, or rocks. Natural fertility should be good, although slightly depleted soils can be fertilized after the trees are well established. Stream valleys and floodplains can be good sites as long as the site is not flooded or saturated during the growing season. Steep slopes, especially south-facing ones, should be avoided. The presence of naturally occurring walnut nearby is not necessarily an indicator of a suitable site.

### Site Preparation

It pays to take the time to get the planting site into the proper condition before you plant, even if it means having to wait another year. It is much easier to make any soil modifications and deal with potentially problem vegetation before seedlings are present. Apply lime, according to soil test recommendations, if needed. Control competing vegetation through manual cutting, mowing, disking, or herbicide. Problem weeds such as Johnson-grass, thistle, honeysuckle, and multiflora rose should be eradicated the year before planting. Grass, especially fescue, should be eliminated (not just mowed) in the rows or spots where seedlings are to be planted. One commonly used type of site preparation is to spray 3 ft. wide strips of Roundup<sup>1</sup> or other glyphosate herbicide in September, where each row is to be planted the following spring. Done properly, this will eliminate most perennial grasses and broadleaf weeds in these strips, at least for a while.

### Sources of Seedlings

Walnut seedlings are available at a reasonable cost from Maryland's state nursery. Specific information on prices, quantities, and delivery is available from the local office of the MD DNR Forest Service, or directly from the nursery by calling 1-800-TREES-MD. There are also private nurseries outside of Maryland that sell walnut seedlings.

The quality of these seedlings is variable, and the price is generally higher, but small quantities can be ordered and used without limitation. A few Midwest nurseries advertise seedlings with some degree of genetic selection for growth rate, straightness, and/or nut production. Typically, these have not grown as well in Maryland as seedlings from Maryland or nearby seed sources. It is also possible to grow seedlings yourself by planting the nuts in a nursery bed, or by directly planting them in the field as you would seedlings. There is additional work involved and special precautions needed when planting nuts.

### **Planting Seasons**

Seedlings are best planted in the later part of March and the early part of April. Depending upon the weather, you can often plant up until the first week of May if the seedlings are kept in proper cold, dark, and moist conditions until planting.

### **Layout and Spacing**

It is much easier to maintain a plantation if the rows are straight, or gently curved to fit the contour or field shape. This can be done easily if machine planting, or by use of stakes and string when hand planting. Some prefer to align the rows in two directions to allow cross mowing. The spacing to use depends on the equipment to be used in maintaining the plantation and on the owner's objectives. Generally, where walnut is being grown for timber, spacings of 10' x 10'(436/ac), 10' x 12'(363/ac), or 12' x 12'(302/ac) are used. Close spacing encourages straighter trunks, smaller side branches, and earlier shading of competing vegetation, but means thinning will need to be done earlier. Wider spacing reduces the initial cost, extends the time before the first thinning is needed, and allows for earlier nut production. If timber is less important than nut production or wildlife habitat, spacings as wide as 15' x 15'(194/ac) are acceptable. If part of an agroforestry project (growing trees and crops or pasture together) spacings such as 6' x 40' may be used.

### **Planting Methods**

Walnut seedlings can be planted by planting bar, mattock, shovel, mechanical auger, or tractor-pulled tree planting machine. The critical factor is that the entire root system must be well buried without distortion, air pockets, or excessive compaction. Mechanical augers have the potential problem of compacting and "slicking" the side of the hole, especially in soils containing clay. If an auger is used, the sides of the hole should be manually gouged and roughened or collapsed before planting. With augers, it is also important not to drill too deep, which can cause soil settling to later sink the seedling below ground level. Walnut seedlings often have larger roots than other seedlings. This is good in the sense that the large root system helps greatly with survival and early growth, but requires a deeper and wider hole than for other seedlings. The larger size KBC planting bars are needed for planting even the smallest walnut seedling, and tree planting machines need to be set to maximum depth if they can be used at all. Check with the nursery when ordering, they may be able to provide seedlings that fit your planting methods. A slight amount of root or top pruning is acceptable. However, the larger the seedling and the larger the intact root system, the faster the seedling will grow.

## Weed Control

Other than poor soil conditions, lack of **proper** weed control has caused the most number of disappointing walnut plantations. Mowing alone is not adequate weed control, although mowing can play an important part in a weed control program by maintaining access and keeping vegetation low enough to control by other means. Mowing tends to intensify root competition and promotes the development of a grass sod. Grasses are very tough competitors of walnut trees of all ages, and fescue grass produces chemicals that can harm walnut. Cultivation, mulches or barriers, and herbicides can achieve effective weed control. Cultivation can be done manually by hoe, or mechanically by disking, or roto-tilling, to eliminate and prevent the re-growth of grasses and broadleaf weeds, but will need to be repeated several times during the growing season. Extreme caution must be used to avoid cultivating more than 2 inches deep, which could damage walnut roots, and to avoid getting close enough to damage the tender bark of the seedlings. For this reason weeds near the seedling may need to be removed manually. Mulching with organic matter such as wood chips and straw, or use of barriers such as black plastic mulch can also be effective. They may be expensive and difficult to apply initially, but may last for several years. However, mice often use these spots for nesting, and can cause girdling in winter. Another potential problem may arise from mulches or plastic being scattered or caught up in mowing equipment. Weed control through the use of herbicide has been shown to improve the growth rate of walnut seedlings more than cultivation, mulches, or black plastic. Various products are available to control certain existing weeds or prevent the germination of certain weed seeds. Some of these, such as Poast<sup>2</sup> and simazine, can be applied directly over the tree seedling without damage, while others such as Roundup<sup>1</sup> must be applied in a way that the spray does not contact the seedling. Depending upon the weeds involved, the timing, and the herbicides used, one to three applications per year may be made. Care must be taken to use the right product in the right way and to follow the label instructions. For more information on use of herbicides, an information sheet on use of herbicides for weed control is available. Often, complete control by any of the above methods is only applied in a 3 ft. wide strip down each row or a 4 ft. diameter circle around each seedling. The remainder of the area is usually maintained by minimal mowing. As the trees and their root systems grow the strips or spots should be expanded. As shade due to crown closure is achieved in 4-8 yrs. weed control can be greatly reduced, so long as grass sod or other problem weeds do not become established.

## Fertilization

If the soil is otherwise suitable for walnut, fertilization is usually **not** recommended prior to planting or during the first few years. Early fertilization can "burn" the seedling, and tends to make the competing weeds and grasses grow faster. Once crown closure is complete, an evaluation can be done to see if fertilization is needed.

## Protection

Insects, diseases, and animals can all cause damage to walnut seedlings. Fortunately, while insects and diseases are certainly present in most walnut plantings, the damage to the growth and survival of the trees is usually minor. Damage from animals is often more of a problem. Mice will sometimes chew the bark around the base of the trees in

the winter, and rabbits will clip the tops of very small trees. By far the most damage overall is done by deer. The degree of damage, if any, is related to the local population level, their food sources and feeding habits, and whether they frequent that particular site. Damage occurs from antler rubbing in the fall as well as from feeding in the winter and spring. Walnut is not as preferred a food as some tree species, though tenderness and nutrient content is a factor. Repellents based on odor or taste are available. These have varying degrees of success and must be periodically reapplied. The two most successful deer damage control methods are tree shelters, and electric fencing designed specifically for deer. Tree shelters are translucent plastic sleeves that are staked over the young seedling. Shelter heights of 4 ft. are usually best for walnut seedlings, and are effective in preventing deer rubbing or feeding. They have the additional advantages of clearly marking the location of the seedlings; help protect it from mechanical damage or contact with herbicides, and acting as a greenhouse to hold moisture and warmth around the seedling. While not a weed control measure themselves, they do facilitate easier and better weed control. Tree shelters will need to be maintained and be removed when the trees are about 1 inch in diameter at the top of the tube. Electric deer fencing can be very elaborate and expensive, or relatively simple and cheap, depending on what is needed in a particular situation. The materials and ideas used in deer fencing are in some ways different than for livestock. Generally, if a large area is to be protected, fencing is much cheaper than tree shelters. If a small area is to be protected, or individual trees scattered about, tree shelters are probably a better choice. Naturally, if deer damage were not likely to be a serious problem, these would be unnecessary.

### **Further Information**

Further information and assistance with specific situations is available through the local office of the MD DNR Forest Service. Regional offices are located in Cumberland (301) 777-2137, Bel Air (410) 836-4551, Leonardtown (301) 475-4755, and Salisbury (410) 543-6745. The Walnut Council International Headquarters: Wright Forestry Center, 1007 N 725 W, West Lafayette, IN 47906; phone 765-583-3501; email [ljackson@purdue.edu](mailto:ljackson@purdue.edu); website [www.walnutcouncil.org](http://www.walnutcouncil.org), is an excellent source of information. The Maryland Chapter of the Walnut Council can be reached at 6620 Zittlestown Road, Middletown, MD 21769; phone 301-791-4010; email [drobbins@dnr.state.md.us](mailto:drobbins@dnr.state.md.us); website [www.walnutcouncil.org/state-chapters/maryland.html](http://www.walnutcouncil.org/state-chapters/maryland.html). The local office of Maryland Cooperative Extension can provide information on soil testing, weed identification and control, and deer fencing. The local Soil Conservation District can provide soil survey maps and information.

- 1- "Roundup" is a trademark of Monsanto Co.
- 2- "Poast" is a trademark of BASF Corp.

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Phil Pannill, Forester  
Maryland Forest Service