

PLANTING LARGE BLACK WALNUT SEEDLINGS ON CULTIVATED SITES

ROBERT D. WILLIAMS 1

Black walnut planting stock studies have shown that large seedlings survive and grow better than small ones on cleared forest sites and strip mined banks when competition is not controlled (Williams 1965). When intensive site preparation and clean cultivation were recommended for black walnut plantations (Clark 1966), some foresters theorized that smaller seedlings could be used on these sites. However, 2-year results from a study in which different sizes of black walnut seedlings were planted on a plowed site and cultivated as required after planting show that large seedlings are preferable for these sites also.

The Study

Seedlings for the study were grown at Indiana's Jasper-Pulaski State Nursery from seed collected in Rush County, Ind. The seedlings were graded into five stem-diameter classes, measured 1 inch above the root collar: 4/32, 6/32, 8/32, 10/32, and 12/32 inch (fig. 1). Very short, very tall, diseased, and damaged seedlings in each size class were excluded. Roots were pruned to a maximum length of 10 inches. All seedlings were planted in 9-inch diameter auger-bored holes in a plowed and disked bottom land field on the Kaskaskia Experimental Forest in southern Illinois. Nine 10-tree rows of each size class were planted in a randomized block design. Competing vegetation was controlled by mechanical cultivation during the 2 years the study was in progress.

Results and Conclusions

The 10/32- and 12/32-inch seedlings showed the best survival (98 percent) at the end of 2 years, while the 4/32-inch seedlings showed the poorest survival (table 1). Seedlings 8/32 inch and larger in diameter grew faster than the smaller seedlings and were taller at the end of the experiment.

Today's informed black walnut planter plows his planting site, sprays 3 to 5 pounds of 80-W simazine-atrazine per acre before planting, and resprays

1 Associate Silviculturist, USDA Forest Service North Central Forest Experimental Station in cooperation with Southern Illinois University.

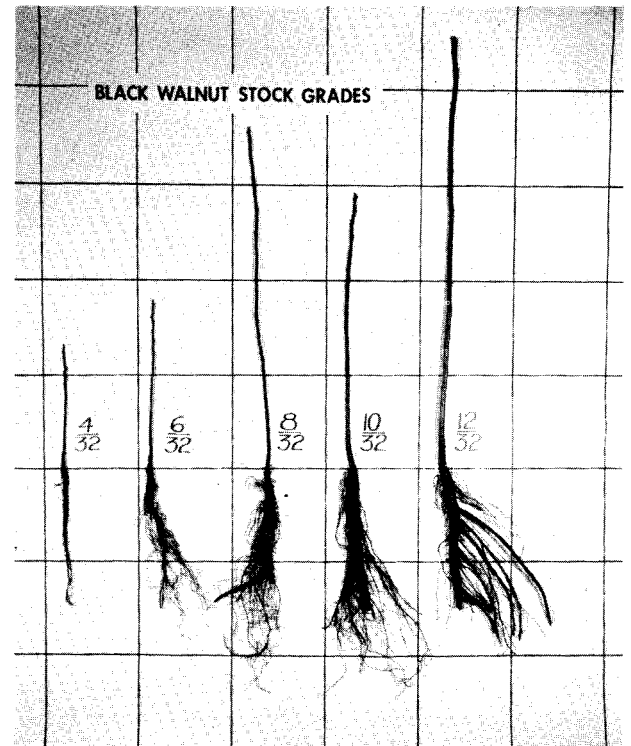


Figure 1.—Representative 1-0 black walnut seedlings from each size class.

TABLE 1.—Average second-year survival, height, and height growth of black walnut seedlings by diameter class

| Diameter class (inches) | Survival | Height | Height growth |
|----------------------------|----------------|-------------|------------------|
| | <i>Percent</i> | <i>Feet</i> | <i>Feet</i> |
| 4/32----- | 57 | 2.4 | 1.5 |
| 6/32----- | 84 | 2.7 | 1.8 |
| 8/32----- | 89 | 3.3 | 2.1 |
| 10/32----- | 98 | 3.5 | 1.9 |
| 12/32----- | 98 | 3.6 | 2.1 |
| *x----- | — | .09 | .11 |

annually if necessary to keep down weed competition. With these relatively expensive site preparation and maintenance practices only high-quality seedlings should be planted. If graded planting

stock is not available from the nursery, the planter should cull the seedlings before planting. Seedlings 4/32 inch or smaller are obviously inferior and should not be used. Because large black walnut seedlings survive better and grow faster than small seedlings, only healthy seedlings 8/32 inch and larger in diameter should be planted.

Literature Cited

Clark, F. Bryan.

1966. Planting black walnut for timber. USDA Forest Serv. Leaflet 487, (rev.) , 8 p., illus.

Williams, Robert D.

1965. Plant large black walnut seedlings for best survival and growth. USDA Forest Serv. Central States Forest Exp. Sta. Res. Note CS-38, 5 p. Columbus, Ohio.