PRODUCTION OF 1-0 BLACK WALNUT SEEDLINGS AT THE GEORGE O. WHITE STATE FOREST NURSERY

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This paper is a discussion of our procedures in the production of suitable black walnut seedlings.

Soil management is on a 2-year rotation, 1 year in black walnut followed by 1 year in a cover crop of Sorghum Sudan. The cover crop is sown in May along with an application of 8-24-8 fertilizer at 200 pounds per acre. In mid-July the cover crop is plowed under and kept well disced for 45 days. When the crop is decomposed, soil tests are made to determine further soil treatment. Ground is then treated with methyl bromide gas at the rate of 1 pound per 100 square feet. Prior to seed sowing, soil test results are studied and fertilizer added to bring the level of nutrients up to a 1-3-5 ratio. Rates are usually 100 pounds of nitrogen, 300 pounds of superphosphate, and 500 pounds of potash per acre with pH at 6.0 to 6.5.

Walnut seed are collected by nursery crews, purchased locally, and collected from superior stands by State and Government foresters. Seed of select sources is kept separate and seedlings are returned to the supplier. Due to our large production quota, seedlings are produced from source identified seed, a condition unfavorable to quality production, but as yet unsolved. Superior trees are rare in southern Missouri so we are now searching the northern half of the State for trees or stands of better than average quality. Seed are purchased after collection in late-October and early-November, preferably following a heavy killing frost. Seeds fall readily after a heavy frost, but nuts falling prior to frost are generally of poor quality.

Seed are sown as it arrives at the nursery to prevent spoilage of the nuts in sacks or bulk storage. Sowing is done with a 90-bushel capacity manure spreader with the distributor blades deactivated and the feed mechanism allowed to operate normally. Unhulled nuts are sown at the rate of 90 bushels to a 1,500-square-foot seedbed. Unhulled walnuts average 300 nuts per bushel, which gives us 27,000 nuts per bed. Germination will average 50 percent giving a total of 13,000 to 14,000 seedlings per bed, or 8 to 10 per square foot, which is the desired density for prime planting stock. Seed are sown on a raised, well rot o-tilled bed. A small amount of hand raking is usually necessary to distribute the nuts evenly over the bed area. A 350 pound tractor mounted roller is then used to press the nuts into the loose soil. Seedbeds are immediately mulched with 2 inches to 3 inches of sawdust, using the same manure spreader. A permanent hood mounted on the spreader keeps the sawdust within the limits of the 4-foot seedbed. Mulchnet keeps the sawdust in place over winter. The mulchnet is left in place until germination is well underway in the spring.

Insects have not been a problem in the production of black walnut seedlings. Late-August generally finds the leaves infected with Anthracnose and defoliation will occur if the disease isn't controled. Sprays of Zineb are used weekly from August 1 until natural defoliation by frost. The foliage is wet completely with a spray mixture of 1-1/2 pounds of 75 percent Zineb to 50 gallons of water.

Seedlings are lifted following a heavy killing frost, which usually occurs in early-November. The tree lifter is run at a depth of 12 inches to 15 inches, or deep enough to go completely under the tap roots. It is often necessary to use two Oliver 006 crawlers to pull the lifter at this depth in our heavy soil. Seedlings are placed in square metal washtubs and removed from the field immediately to prevent drying of the roots. The graders discard seedlings under 1/4-inch diameter 1-inch above the root collar. Seedlings are tied into bunches of 25 and heeled in immediately. Care is used to make the trenches deep enough so the soil will completely cover all roots and about 3 inches up on the stems. Soil is well-packed about the roots by foot and moisture added if the soil is unnecessarily dry. A 3-inch sawdust mulch is applied making bundles readily available throughout winter and spring.

Seedlings are wrapped in bales of 500 seedlings using sphagnum moss. Kraft baling paper (30-90-30), oak slats, and steel banding are used in the baling operation. Seedlings are placed in the bale in one direction with the roots entirely enclosed and a portion of the tops exposed.

Discussion

Q. (Peevy) How do you stratify black walnut?

A. (Mugford) We don't. We have tried many ways, but have found little success.

Q. (Gammage) What was your stem length in the nursery?

A. (Mugford) Three feet.

Q. (Gammage) How do you plant them?

A. (Mugford) Post hole diggers.