PRODUCTION OF 1_0 BLACK WALNUT SEEDLINGS

By

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Black Walnut seedlings are produced at our Nursery each year for distribution to Missouri landowners. Annual production varies according to the available seed supply, generally ranging between 200M and 700M 1-0 seedlings.

Seed is procured by nursery crews, by purchasing from private landowners, and by collecting seed from superior trees or stands by our Farm Foresters. Seed is purchased as un-hulled nuts from local people at a cost of $.50 per bushel. Nuts are measured as they are delivered to the Nursery and payment is to the individual collector by State Voucher some time after the collecting of seed is completed.

A serious attempt is being made to up-grade the quality of the timber from which our collections are made. Seed of superior timber trees is being kept separated, to be later planted in seed production areas for further testing. As our tree - improvement specialist finds trees of definitely superior characteristics, grafting will be undertaken to further produce this clonal material in seed orchards. As the State of Missouri encompasses a wide climatic variation from our Northern to our Southern borders, selections are being made in both areas for further testing of climatic and soil tolerance.

Getting back to the Nursery: Seed collection and purchasing begins soon after the first killing frost. Seed falling prior is of no value. As seed is delivered to the nursery, care is taken not to pile it up, as heating takes place quite rapidly in green Walnuts. We have had problems in caring for nuts for a short time, as we have had 3,000 bushels of nuts delivered to the nursery before noon on Saturday in good crop years. Last fall we purchased a total of 6,100 bushels.

As we measure out the Walnuts, they are placed immediately into the manurespreader which we use for seeding. We de-activate the shredder and beater mechanism allowing only the platform elevator to function.

A four-foot seedbed is used, raised about four inches above the pathways . One hundred bushels of un-hulled Walnuts are spread upon a well roto-tilled seedbed, containing 1,500 square feet of bed area. This will figure out to be about 30,000 seeds (300 per bu.) which will produce 15,000 seedlings, or 10 seedlings per square foot. Fifty percent germinative capacity is considered to be normal. Seed is planted just as soon after receipt as is possible but preferably the same day. After a slight amount of raking and distributing by hand, the seed is pressed into the soft seedbed by using a tractor mounted seedbed roller weighing 300 pounds.

The same manure spreader is then used to mulch the seedbed with 3" of Oak sawdust. The sawdust is then tied in place with 54" Mulch-Net, produced by Bemis Bros. Bag. Co. Seedlings begin to germinate in late March or early April at which time the Mulch-Net is removed.

Soil fertility practices include a 2-1 rotation of crops, using a Sorghum-Sudan hybrid as the intervening green manure crop. All mineral fertilizers are added prior to the sowing of the cover crop. Soil tests are taken in each fallow area to determine the needed additions. pH is maintained at 6.0 or 6.5 in the hardwood production blocks. Nutrient ratios are maintained at 1-3-5 as recommended by Dr. Wilde. After plow-down of the cover crop, fallow areas are fumigated with Methyl-Bromide at the rate of 1 lb. per 100 sq. ft. This is generally in early September, giving enough time for fumigation before fall seeding begins.

All Walnut seedlings are fall lifted when completely dormant, graded and heeled-in over winter. All seedlings 1/4" or less one inch above the root collar are discarded. Seedlings are tied in bunches for heeling, using a preservative treated twine ,25 trees per bunch. Care must be taken in the heeling-in beds, or poor survival will result. Trenches are dug deep enough to completely cover the roots and about 3" of the stem. Soil is well tramped about t he roots to fill all air pockets. If the season is unusually dry,a fire hose is used to pack the soil and preclude air pockets. The entire heeling-in bed is then covered with 3 or 4 inches of Oak sawdust. This aids as an excellent mulch for the seedlings and also allows removal of the seedlings should a heavy freeze occur during spring shipment.

Lifting is accomplished with a tractormounted agitator lifter run under the seedbed just as deep as two Oliver 006 crawlers will pull it. If any of the large taproots are severed in the lifting operation, the tree

is discarded. A "V" shaped blade is used on the lifter and this is invaluable to us for several reasons. As the blade is mounted forward of the tractor hitching points, tilting of the lifter forward by shortening the center link of the three point hitch pitches the blade to a deeper level than would be possible with a straight blade. The slope of the lifter then tilts the seedlings forward during the operation, causing no skinning of the seedlings and no damage to the terminal buds.

Baling is done in Fibreen #920 Industrial Packaging paper, 5OO seedlings per bale, using Sphagnum Moss as the moisture holding agent. Seedlings are baled in one direction, tops only protruding from the bale. The bale is firmly bound with steel strapping to insure delivery in good condition.

Insect and disease problems are of no great importance. Anthracnose will defoliate the seedlings in August if precautions are not taken. Sprays of Zineb (Dithane Z-78) using 3 lbs. Dithane per acre are applied weekly through August and early September. A Hanson Brodjet sprayer is used to spray the seedlings.