

Protocol Information

Natural Resources Conservation Service -
Appalachian Plant Materials Center
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United States Department of Agriculture

Family Scientific Name: **Juglandaceae**
Family Common Name: **Walnut family**
Scientific Name: *Carya ovata* (Mill.) K. Koch
Common Name: **shagbark hickory**
Species Code: **CAOV2**
Ecotype: **Stones River National Battlefield source**
General Distribution: **Shellbark hickory is widely distributed throughout most of the eastern and central states from Texas, Kansas and Nebraska eastward to Georgia and north to New York, Massachusetts and Maine.**
Known Invasiveness: **None**
Propagation Goal: **Plants**
Propagation Method: **Seed**
Product Type: **Bareroot (field grown)**
Stock Type: **1-0**
Time To Grow: **2 Years**
Target Specifications: **A second spring seedling ranging in height from 8" to 16" with a 1/16" to 3/16" caliper stem and a compact, well developed tap root system.**
Propagule Collection: **Seeds are collected from established natural stands within the confines of Stones River National Battlefield in the fall immediately after the nuts have matured and begun to fall from the tree.**
Propagule Processing: **Seeds (nuts) are collected in the fall, typically September and October, when the nuts have matured and begun to fall from the tree. Seed may**

be air dried to allow the outer husk to dry and separate from the nut. Once the outer husk has separated and been removed, the nut should be immediately planted to attain the 90 to 120 days of natural cold stratification required to break embryo dormancy prior to germination.

Pre-Planting Treatments: Seed may be floated in water to help determine viability. Seed that floats is normally poorly filled and has low or no viability. Floaters are discarded, while the seed that sinks is retained for planting.

Growing Area Preparation/

Annual Practices for Perennial Crops: Best germination and growth of seedlings is in raised beds or sandy soil with adequate moisture. Prepare beds by deep rototilling or other tillage methods that achieve thorough loosening and mixing of soil. Seed are placed into 3/4" to 1" deep furrows scribed into the tilled soil. Furrows are spaced 2" apart and seed are placed 1" apart within furrows to optimize seedling development. Seed are covered with soil to a depth equal to 1 and 1/2 times the average diameter of the seed; usually 3/4" to 1" of soil. Beds should then be covered with a 2 - 3 inch thick layer of straw to insulate against frost heaving. When seedlings begin to emerge, one-half of the straw should be removed.

Establishment Phase: Germination and establishment occur from late April to early June. The seedlings rapidly develop a long taproot, but shoot growth is initially slow.

Length of Establishment Phase: 2 months

Active Growth Phase: Plants require little maintenance during active growth other than application of at least 1 inch of water per week during drouth conditions and elimination of weed competition. Weeds must be removed during early growth phases to avoid uprooting the seedlings.

Length of Active Growth Phase: 4-6 months

Hardening Phase: Since the plants are grown outside, no additional hardening is required.

Length of Hardening Phase: None

Harvesting, Storage and Shipping: Seedlings are harvested in late winter while dormant. The best harvesting method employs a nursery bed lifter/shaker which undercuts the seedlings and gently loosens the soil around the roots. Bare root seedlings are then plucked from

the loosened soil by hand. Refrigeration is employed to maintain seedling dormancy after harvest until shipping. Optimal temperatures for maintenance of dormancy are 35-40 degrees Fahrenheit. Root dessication during storage is prevented through packing in aged, moistened hardwood sawdust.

Length of Storage: **1-2 months**

Outplanting performance on typical sites: **Best survival and growth of shellbark hickory is achieved by planting while the plants are dormant between the date of the first frost in the fall and the date of the last frost in the spring. Plantings for wildlife habitat improvement or forest restoration should be established at a ten foot spacing between plants and rows. Plantings for seed orchards or wildlife habitat improvement where seed production is a primary goal should be established at a spacing of fifteen to twenty feet. Dipping bareroot plants in root gel before planting to retain moisture around the roots may enhance survival and growth. Applying a slow release fertilizer at planting will also enhance survival and early growth.**

References: **USDA, NRCS. 2014. The PLANTS Database (<http://plants.usda.gov>, 7 February 2014). National Plant Data Team, Greensboro, NC 27401-4901 USA.**

Citation:

Vandevender, John 2014. Propagation protocol for production of field-grown *Carya ovata* (Mill.) K. Koch plants (1-0); Natural Resources Conservation Service - Appalachian Plant Materials Center, Alderson, West Virginia. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 28 March 2014). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.