



FORESTRY

Leaflets

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Guidelines for Collection and Movement of Seed and Seedlings of Hardwoods and Wetland Species for Planting in North Carolina

When selecting hardwood seedlings or seeds for your forestland, you should select those that are adapted to the climate, geography and soil of your site's location in North Carolina. Choosing the correct seed source is particularly important when growing hardwood trees for commercial timber, since there will be a higher expectation to maintain adequate growth rates. The growth rate of some hardwood species can be limited or enhanced when planting a seedling that comes from a different region of the state.

If hardwood timber production is not your main goal, then using seeds or seedlings that come from more distant locations may be acceptable, even as far as 200 miles from the source.

For any hardwood tree planting to be successful, your site must be satisfactorily site-prepared to assure adequate survival and growth of your new hardwood seedlings. Poor seedling survival should not immediately be blamed on poor quality seedlings or seed source. More often, a lack of sufficient site prep and after-planting care will cause hardwood seedling mortality. Consider these factors when planning hardwood reforestation:

- Select a tree species appropriate for the soil, topography and moisture of the site.
- Have the site prepared to loosen the soil (if needed) and reduce competing undesirable vegetation. Plan to continue vegetation control for the first few years after planting.
- Be aware of damage to the seedlings by deer, rodent or other wildlife. Tree tubes or extensive fencing around the planted area may help. Follow-up plantings may be needed to assure adequate stocking.

To optimize the collection and movement of seeds in a manner that will obtain suitable tree survival and growth, follow these principles and refer to the table on the following page for guidelines on specific hardwood species.

1. Collect seed of a known geographic origin that is suitable to plant in your area. This includes seed that is collected from natural stands, seed production areas and orchards.
2. Using local seed sources is generally the safest approach if seed-source trees of good form and growth are available locally, in the absence of seed progeny test data.
3. Avoid using seed from isolated trees where limited or no cross-pollination may have occurred.
4. Collect seed from the main part of the species' range instead of from its extremities.
5. Seed collected from major 'red river bottom basins' can be moved up or down the same river system (Cape Fear; Catawba; Neuse; Roanoke; Tar-Pamlico; Yadkin/Pee-Dee).
6. To promote growth of a hardwood seedling, you can use seeds or seedlings that originate in a warmer climate if your planting site is in a cooler climate, following these guidelines:
 - In general, this means moving from south to north a maximum distance of 200 miles.
 - In the mountains, collect seed from the lower elevations in preference to seed from higher elevations.
 - Coastal Plain bottomland hardwood seed sources may be moved to the Piedmont.
7. South Carolina Coastal Plain and Piedmont seed sources that are within 50 miles of the South Carolina – North Carolina border are suitable for the North Carolina Coastal Plain and Piedmont, respectively.
8. Mountain sources from nearby states (GA, SC, TN, and VA) are suitable if the seed originated in the same elevation zone that is recommended for North Carolina mountain sources.

Preferred Seed Source Collection and Planting Zones for North Carolina

<i>Species</i>	<i>Seed Collection Zone</i>	<i>Tree Planting Zone (NC)</i>
Ash, Green	Coastal Plain	Coastal Plain
	Piedmont	Piedmont, Mountains
Ash, White	Mountains (1,500-3,000 ft)	Mountains, Piedmont
Atlantic White Cedar	Coastal Plain	Coastal Plain
Baldcypress	Coastal Plain	Coastal Plain, Piedmont
Black Cherry*	Mountains (2,000 ft or higher)	Mountains
	Upper Piedmont	Piedmont, Coastal Plain
Black Walnut; Bitternut Hickory Mockernut Hickory; Pignut Hickory	East of US Highway-220	Coastal Plain, Eastern Piedmont
	West of US Highway-220	Western Piedmont, Mountains
Blackgum; Swamp & Water Tupelo	Coastal Plain (NC or SC)	Coastal Plain
Hickory, Shagbark	Mountains (1,500-3,000 ft)	Mountains, Piedmont, Upper Coastal Plain
Oak, Black	Mountains (1,500-3,000 ft)	Mountains, Piedmont
Oak, Cherrybark	Coastal Plain	Coastal Plain, Eastern Piedmont
Oak, Chestnut	Mountains (1,500-3,000 ft)	Mountains, Piedmont
Oak, Laurel	Coastal Plain	Coastal Plain
Oak, Northern Red*	Mountains (1,500-3,000 ft)	Mountains (1,500-3,000 ft)
	Piedmont	Piedmont, Upper Coastal Plain
Oak, Overcup	Coastal Plain	Coastal Plain
Oak, Scarlet	Mountains (1,500-3,000 ft)	Mountains, Piedmont
Oak, Southern Red	Coastal Plain	Coastal Plain
	Piedmont	Piedmont, Mountains (2,000 ft or lower)
Oak, Swamp Chesnut; Water Oak	Coastal Plain	Coastal Plain, Eastern Piedmont
Oak, Willow	Coastal Plain	Coastal Plain
Oak, White*	Mountains (2,000 ft or higher)	Mountains
	Piedmont	Piedmont, Coastal Plain
	East of US Highway-220	Coastal Plain, Eastern Piedmont
	West of US Highway-220	Western Piedmont
Sweetgum*	Coastal Plain	Coastal Plain
	Piedmont	Piedmont
Sycamore*	Coastal Plain	Coastal Plain
	Piedmont	Piedmont, Mountains
Yellow Poplar	Coastal Plain - organic soil	Coastal Plain - organic soil
	Coastal Plain - mineral soil	Coastal Plain - mineral soil
	Piedmont	Piedmont
	Mountains (1,500-3,500 ft)	Mountains

* Denotes seed orchard sources available from either NCFS, USDA-FS, or Weyerhaeuser Co.

For more information about hardwood seedlings and steps for planting tree seedlings, refer to these publications available from the N.C. Forest Service:

- *Pocket Guide to Seedling Care & Planting Standards*
- *Riparian & Wetland Tree Planting Pocket Guide for North Carolina*



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