

Growing Nut Tree Seedlings in Containers

William Reid
Pecan Experiment Field
Kansas State University

Growing nut tree seedlings in containers has become an increasing common practice for nut growers wishing to grow their own trees for establishing new orchards. Although many people have been successful in growing trees in flower pots, most have been disappointed by slow growth rate or poor seedling performance. Growing large, healthy trees in a container requires a specific recipe that includes a soil-less media, complete fertilizers, and specially designed containers. By following the simple steps outlined below, you should be able to grow superior seedlings for your new orchard.

Seed and seed stratification. Strong seedlings grow from large well filled nuts. I prefer using nuts from grafted trees to grow seedlings. For pecan seedlings, I use Colby seed while Kwik-Krop is my choice for black walnut. Always use fresh seed by collecting nuts as soon as they ripen in the fall. To achieve uniform germination, nuts should be stored in cool moist conditions for 120 days before planting. This cold treatment is called stratification, which mimics what happens in nature when squirrels bury nuts in the fall. Prepare pecans for stratification by soaking fresh seed in water overnight. Black walnut seed should be hulled and washed cleaned before stratifying. To stratify nuts, place nuts in a plastic bag along with an ample supply of moistened peat moss or saw dust. Place nuts in a refrigerator at 35°, making sure nuts remain moist throughout the 120 stratification process. Frost-free refrigerators will pull moisture out of plastic bags, so check to be certain the peat moss or saw dust remains moist throughout the stratification process.

Soils, pots, and fertilizers. Strong tree seedling growth is stimulated by providing a soil environment that encourages the growth of a fibrous roots system. Specially designed containers, a coarse potting soil, and slow release fertilizers are the keys for growing a healthy root system.

Most nut tree seedlings produce a strong taproot. In the wild, a taproot helps a nut tree survive, but when nut trees are grown in containers, the tap root can circle the bottom of a conventional nursery pot, creating a tree with poor potential for survival after transplanting in the field. Special bottomless pots have been designed for tap rooted species. When these open bottomed pots are placed on a screen wire nursery bench, the tap root grows to the bottom of the pot and then is air-pruned. This air-pruning stops the tap root from growing and stimulates the growth of lateral roots. For pecan and walnut seedlings use a tall narrow pot that measures 4 inches by 4 inches on top and is 10 to 14 inches deep.

The soil mix used for container growing trees should contain pine bark, peat, and vermiculite to provide a well drained root environment. I have used two commercially available soil mixes with good results; Fafard Growing Mix 52 and Scotts Metro-Mix 702. These soil mixes have little or no nutrients available for tree growth requiring you to mix both macro- and micro-nutrients into the soil before planting filling the pots. For the macronutrients (N, P, K), incorporate a slow release fertilizer such as Osmocote 19-6-12 into the soil mix at the rate of 3 cups Osmocote per bag of soil mix (each bag has 3 cubic feet of potting soil). There are many formulations of Osmocote available but each formulation has a different release time. I use Osmocote 19-6-12 because it is rated to last 12-14 months. Micronutrients should also be added to the soil mix by adding a product called “Micromax Micronutrients” at the rate of ½ cup per bag of soil mix. Make sure that you mix the fertilizers in thoroughly before filling the pots with soil.

Filling bottomless tree pots with soil takes a little extra care so that the soil won't just fall out the bottom. Slightly moisten the soil mix before pot filling. As you fill each pot, place the pot on a bench and pack the soil firmly into the bottom of the pot. By packing the soil in tightly, you will ensure that all the soil will remain inside the bottomless container when moving the pot to the nursery.

Growing Seedlings. Air pruning the taproot requires that tree pots must be placed on a raised, wire-mesh potting bench. I have used ½ inch hardware cloth tacked onto a wooden frame made with 2x6 treated lumber. After the average date of last spring freeze, take your seed nuts out of the refrigerator and plant a single nut in each pot about 2 inches deep into the potting soil. The nut should be placed on its side

One of the disadvantages of using a very porous potting soil is that you will need to water the trees every day. Setting up an automated watering system is advised and can be as primitive as using a lawn sprinkler and battery-powered timer. Make sure the soil in the pot is completely soaked at every watering. During the heat of the summer (temperatures above 94) water the trees in the morning and in mid-day to keep tree roots from over-heating.

Fall Planting. Transplant your containerized trees into the field around the 1st of October. The planting hole should be dug only as deep as the pot you are using. Dig the planting hole wider than the pot. Spread out the fibrous roots and place them in direct contact with field soil as you fill in the planting hole. Pack the soil in firmly around the roots and water in thoroughly.

You can store seedlings in containers over winter only if you protect the roots from freezing below 19 degrees. Protect the roots by burying the trees pots in a soil trench or moving the trees to a protected environment. Trees require chilling to break dormancy so make sure trees are stored in a location with temperatures that average below 40 degree for much of the winter.

Supply Sources. There are several sources of horticultural supplies that can provide you with the pots, soil, and fertilizers you will need for growing nut tree seedlings. Many of the suppliers listed below are wholesale suppliers which require you to set up a business account for sales tax purposes. High quality supplies can not be found at Wal-Mart

Anderson Die & Mfg. Co.
1-503-654-5629

Tree Bands (for growing air pruned trees) and flats

BWI Companies, Inc.
800-247-4954

Soil Mixes, osmocote fertilizer, micromax

Hummert International,
1-800-325-3055

Tree pots, soil mixes, osmocote fertilizer, micromax, irrigation equipment, greenhouse equipment.

Stuewe and Sons, Inc.
1-800-553-5331

Tree pots