

Storing Seeds of the White Oak Group
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Growing white oak trees from seed present special challenges. Species within the white oak group produce mature acorns in one growing season and the seeds do not require cold stratification to germinate.

Several times over the years, I have observed live oak acorns sprouting while still suspended from the tree as a result of frequent rain and high humidity at the time the acorn reaches physiological maturity.

With most species in the white oak group acorns must be collected quickly once they fall to prevent germination on site. The seeds can be planted immediately. This worked satisfactorily when seedlings were grown in ground beds and harvested bare-root. However, with further developments in propagation containers to stimulate root branching and accelerate growth, handling seeds from the white oak group needed further study.

The problem: If acorns were planted in containers most of the seeds germinated....

- a) The taproot and any secondary roots that emerge were now above ground and far more sensitive to cold temperatures versus being in or on the soil and covered with leaves. Temperatures much below freezing can cause root damage or death.
- b) If the containers were kept too warm shoots grow on some seedlings and become tall and spindly due to low light intensity, short days of late fall and winter and since there was no wind to flex the stem they were weak and spindly.
- c) Further, not all acorns germinate immediately after collecting and planting and the ones that do germinate vary a great deal in the extent of root and/or top development during the rest of the winter months.

To keep the acorns in containers in greenhouses and just above freezing can be done with heaters, however, keeping the air cool on sunny winter days so as to avoid weak top growth is far more challenging. During a sunny winter day greenhouse temperatures can easily reach 80°F or more even with good ventilation. Because germination and stem emergence is erratic, the seedling crop in propagation containers by early spring ranges from seeds that are just germinating to often 6 to 10" tall. Those slow to germinate generally end up as runts due to shading by the surrounding seedlings.

A practical solution: **collect acorns as soon as they fall, make sure the husks are dry, place acorns in sealed plastic bags and store at 34 to 35°F.** If the storage temperature is appreciably higher the acorns will germinate in the bags and become useless. If the acorns are too moist, mold is likely to develop in the bags and may damage embryos.

This procedure avoids the over wintering challenge. Further, when planted following cold storage germination is typically quite uniform and stem emergence is more uniform. Since light intensity is much higher, days are longer and the sun angle higher, stem strength is superior to seedlings that germinated and began to grow in the fall.

I have successfully collected stored and spring planted acorns of live oak, chinquepin, white, swamp white and bur oaks. The species requiring the greatest attention to details has been live oak.