

Successful  
1-y storage of  
**swamp  
white  
oak  
acorns**

ABSTRACT

Although acorns of the white oaks (*Quercus* spp. [Fagaceae]) deteriorate rapidly during storage, necessitating prompt planting of acorns in the nursery, we successfully stored swamp white oak (*Q. bicolor* Willd.) acorns for 1 y. After storage, stored acorns produced seedlings comparable to freshly sown acorns. In Missouri, swamp white oak acorns are difficult to obtain in sufficient quantities, so these results offer some promise for more efficient use of large acorn crops.

Hoss G. 2006. Successful 1-y storage of swamp white oak acorns. *Native Plants Journal* 7(1):69–71.

**KEY WORDS**

*Quercus bicolor*, *Quercus alba*, acorns, seed storage, Fagaceae

**NOMENCLATURE**

USDA NRCS (2005)

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Photo by Gregory Hoss

**S**wamp white oak (*Quercus bicolor* Willd. [Fagaceae]) is found throughout eastern North America from southern Quebec and Ontario south to Missouri, Alabama, Tennessee, and Virginia and west to southern Minnesota. It inhabits low swamp forest, moist slopes, and poorly drained uplands at elevations from sea level to 1000 m (0 to 3280 ft) (FNA 1997).

Acorns are large, light-brown nuts, up to 2.0 to 3.0 cm (1.0 to 1.5 in) long, oblong to ovoid in shape, and partly enclosed in a hemispheric fringed cup. In south central Missouri, seeds mature from September to December. Acorns of the white oak group are mature when they are brown in color; when a light, white, or cream-colored cup scar is visible at the top of the acorn; when cups slip easily from the acorns; and when cotyledons are white or light yellow after performing a cutting test. Cup scar color remains brightly colored for only a few days after separating from cups. Fresh acorns that are viable on the ground will still have an ivory or off-white cup scar color, not dark. If cup scars are dark on freshly mature acorns, they are probably not viable. On the average, 265 acorns weigh a kg (120/lb) (Bonner 2004).

Under natural conditions, white oaks will germinate immediately after disper-

sal. Acorns of the white oak group are recalcitrant and are usually planted immediately after collection. White oak species germinate more readily in storage than black oaks, and consequently, are rarely stored longer than 6 mo (Bonner 2004). One researcher reported that nearly 90% of white oak acorns stored for 90 d at 4 °C (40 °F) had sprouted or decayed during storage. Storage of acorns at -2 °C (28 °F) prevented sprouting but viability was lost in more than 60% of acorns (Connor 2004). We have found that our seed sources of white oak (*Quercus alba* L.) are definitely recalcitrant and cannot be stored for any length of time; we sow this species immediately after processing.

### STORING ACORNS

In Missouri, we routinely have difficulty obtaining enough swamp white oak acorns to meet our needs. In 2003, a bumper crop of swamp white oak acorns yielded plenty of acorns for our fall planting—in fact, we had too many. Therefore, we attempted to store swamp white oak acorns. The acorns were supplied by a seed collection contractor and were probably floated in water to remove the empties. When the acorns

arrived at our facility in September, we further cleaned the acorns by running them through our Jessee Aspirator (Gene M Jessee Inc, Chico, California). The acorns were soaked to ensure they had a moisture content of at least 45%, were surface dried, and then placed into white plastic “feed bags.” These 22.5-kg (50-lb) bags were placed on racks in our cooler at 1 °C (34 °F). The bags are woven out of strips of plastic and are “breathable.” After 2 mo (and the rush of fall planting subsided), we resacked the acorns into sealed 2-mil plastic bags; put these bags inside the original white plastic feed bags, which were also resealed; and placed the bags back into the cooler for 10 mo. From November through April our cooler is used to store bareroot seedlings, which means we maintain very high relative humidity levels.

In November 2004, we removed the acorns from storage. They were a bit slimy, but 90% of the acorns remained intact (no sprouts). Cutting tests indicated that most acorns were still viable, although some had begun to turn grayish around the edges. We planted the acorns into our bareroot beds following our general methods and at our usual sowing densities (Hoss 2004, 2005). Although deer usually seek out our swamp white oak beds and eat the acorns, the deer did not

Photos by Gregory Hoss



Figure 1. (left) Acorns in the white oak group are soaked prior to sowing. Any acorns that float are nonviable and discarded. (right) Employees place swamp white oak acorns into 2-mil plastic bags for cold storage.

seem interested in these stored acorns, which made me very nervous. The acorns did well, however, and the resulting yield and growth were similar to that of fresh-sown acorns. In fall 2005 we had extra swamp white oak acorns, so we are repeating this trial to see if we can duplicate our success. Rather than resacking, we inserted the feed bags into the 2-mil plastic bags. Other growers may also wish to try this storage technique.

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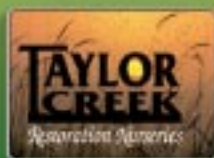
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