From Acorn to Sapling
by M. Nigel Wright

To the mystification of the seed collector, the production of acorns by oak trees is often of variable nature; therefore, to quote Miller & Lamb from *Oaks of North America*, "No species of oak can be expected to produce a crop of acorns continually and individual trees may vary greatly in their ability to produce acorns." There are many factors involved in the production of acorns that can be compared to fruit production as in apples and pears. Acorns rely upon an early spring flower production and cross-pollination to be unhindered by damaging frosts which destroy the delicate flowers and hence jeopardize eventual yield. Acorns also need a certain amount of sunlight and heat to mature and ripen through a season. A tree with a large crown and spread will fruit better than slender, competing trees because of its ability to activate more photosynthesis and thus provide more energy for the production of acorns. The amount of cool days and lack of sunlight during this past summer in the northeastern United States may be partially responsible for the poor acorn harvest, especially when contrasted with the previous year's drought conditions and seemingly over-exuberant acorn production.

Perhaps another factor involving acorn production brings to light a distinction between the two major oak groups, those being the White oak group (sub-genus *Lepidobalanus*) whose acorns mature within one year and the Black oak group (sub-genus *Erythrobalanus*) whose acorns mature in the second year after flowering. One could speculate on the ability of each sub-genus to fruit consistently from year to year, but this difference merits close observation and scientific survey that would be of use to all seed collectors.

Collecting acorns can be an easy task and a very fulfilling activity, providing certain procedures are followed and the timing of collection is just right. As in music (and many other things), timing is an intangible coefficient that gauges all endeavors. One can not just look up in a book when to collect from a certain tree. Much is left to experience and finding out the conditions that the trees have been under; furthermore, knowing the difference between species in the ripening of acorns, for example Red Oak (*Q. rubra*) fall much earlier than other species in our area.

The perfect timing of an acorn harvest usually occurs when the acorns are falling from the tree as you collect them from the ground, avoiding the acorns that either dry out in the field or become a squirrel's winter food source. Sometimes you might be late, but you can judge the soundness of an acorn by weighting it in your hand (another trick of experience); if it is lighter or floats in water, the acorn either has dried out or has not matured thoroughly and the tree has thrown it off prematurely. Another field test is pressing the acorn between your fingers, if the acorn resists the pressure, it can be a good indication of the endosperm being intact. If it "mushes" in your clasp, then the acorn either has rotted or become prey to acorn weevils, which leave evidence of their stay by tiny entrance/exit holes near the top of the acorn where the edge of the cap would be. If you still are uncertain about the acorn's viability, carefully remove the pericarp ("shell") and examine the embryo -- if it is sound, this will not destroy the seed. Perhaps the most fail-safe method of collection is picking acorns directly from the tree, "green." Smaller trees and specimens that have low sweeping branches facilitate easy collection.
and a good indication of ripeness is when the fruit will pull easily from the cap, except, of course, for species whose cap encloses the acorn like *Q. lyrata*, *macarocarpa*, or *dentata*. Though I do not endorse the mauling of trees, sometimes limbs are a little too high and high jump maneuvers and umbrella handles have been resorted to pulling branches lower to gain access to the previously unattainable acorns. This, of course, is followed by an apology to the tree in mention, an explanation that you are assuring it of its future ancestry and, depending on your religion, a hug, extending your arms around the bole of the tree.

Once you have collected your acorns, there is the matter of handling and storage to attend to. A successful procedure is to put your acorns directly into a small plastic “zip-lock” freezer bag with proper identification written on the outside of the bag. After the harvest it is a good idea to “float” the acorns in water to separate the sound seed from ones that are dried out, hollow, or damaged by weevils. The viable seed will sink to the bottom. The acorn caps are buoyant, and must be removed before the float test if they have not already fallen free. Remove the hollow seed that floats at the top and drain the water. Dry the excess moisture from the outside of the acorn and place back in the bag with moistened peat. It is very important that the peat not be too moist or the acorns will eventually rot; too dry and the seed might dry out. To avoid the build-up of fungus and mold in the bag with acorns collected from the ground, it is beneficial to cleanse the seed with a 10 percent bleach solution. For long term stratification, a fungicide may be applied to the surface of the acorns, but personal experience has not revealed a lasting brand to span the entire winter without enventual mold build-up.

Long-term storage can be avoided when one directly sows their acorns in prepared beds in autumn. When doing this, however, adequate protection must be provided to avoid acorn consumption by squirrels, chipmunks or mice. One-half inch mesh wire cloth, used for guttering covers, is probably the best material for this, and should be left on for an entire growing season until the leaves drop off in early winter. The depth of the sowing should be gauged by the length of the acorn or up to two times its length. In my beds, I fill the top portion of the area with complete sand. This makes it easier to make “drills” by pulling a trowel against a straight-edge. Where you have made a groove, space the acorns apart in these gutters and cover by pushing the sand back over and even applying more sand. This makes for a neat and orderly sowing of acorns and well worth the effort. The pure sand at the top of mix facilitates easy weeding once the acorns have germinated. Since the oaks’ roots go deep into the soil, beyond the layer of sand, the nutrient deficient sand has no bearing on the development of seedlings. The sand has a tendency to dry out quickly, so keep the beds well watered until the acorns establish themselves or apply a layer of coarse vermiculite to the top, which retains moisture effectively. Proper labeling (and spacing from similar species) will avoid confusion later.

Bed sowing is probably the easiest and most effective way of growing oaks, but sometimes various shipments of acorns may not arrive until late in the winter and, in areas of cold winter, the ground may be frozen solid. When this occurs, it may be necessary to store and stratify the acorns in the refrigerator. The acorns of the white oak group usually need no period of cold stratification and have been known to have their radicles emerging on the ground in autumn, as seen with *Quercus alba*. It will not harm the acorns if they are put into cold storage or even frozen; additionally, these...
emerging radicles can be clipped back to induce the formation of several lateral roots rather than a single taproot. This will be of aid later when the trees are transplanted to their permanent home. Members of the black oak family need a period of cold stratification in a medium of moist peat; and usually, three months is sufficient.

When storing acorns in plastic bags, one can sometimes "play" with the timing and force the early germination of acorns. I have stored my acorns in a cooler and left them outside in the colder months of the winter, so they go through their cold stratification (I believe it helps with both groups and unifies germination). Special acorns and species I pull out of the cooler and bring into a heated facility with supplementary light (optional). I sow these acorns in the special long pots which allow the optimum growth of the roots. Sowing acorns in shallow pots is useless, because the taproot will simply spiral at the bottom of the container. Sowing acorns as a group in large 5-gallon containers, 10 to 30 per pot, also can be done. Just remember to protect your acorns as with the bed sowing. Apply mesh or use plenty of mouse traps with cats on guard. Even in the most sealed area, mice will gain access and plunder the rewards. In my experience, even saplings that I forced in February and had 6 to 12 inches of growth were bitten in half by chipmunks and the acorn subsequently dug out of the pot, when place outside the greenhouse. Fortunately most of the specimens had adequate root systems from which to recover.

At times, growing a tree from an acorn may seem a "perilous journey," but it is a relatively easy task that is of great reward. There is nothing that can match the feeling of hope and promise when collecting acorns in autumn. Like with many things, there may be no obvious reason why one seed germinates and another does not, but we will leave the explanations to the mystery and beauty of nature, which we come closer to when dealing with this enchanting group of trees.

I have not intended this article to be an absolute guide to collection, storage, and growing of oaks: and, indeed, there is much that can be added. This, I hope, may stimulate others to share their experiences and knowledge, so that we may all be enlightened and fulfilled with our efforts to grow oaks.