

*A food-producing nut tree may well be growing, unappreciated, in your own backyard.*

## Acorns: The Grain That Grows on Trees



*Since you can find oaks in almost every part of the United States, it's easy to locate a suitable acorn hunting ground. Foraging in the wilds (TOP) . . . or even among ornamental oaks in a city park (CENTER) . . . can provide you with a bountiful harvest of kernels (BOTTOM).*



PHOTOS SUPPLIED BY THE AUTHOR

### David Bainbridge

Before white settlers ventured onto this continent, acorns were one of the staple foods of many of its indigenous peoples. The oak crop provided a reliable and nutritious source of food for these Native Americans, and many families would harvest and eat as much as half a ton of acorns in a year's time. The nuts were also boiled or crushed to produce an oil, which was prized for cooking and as a salve for burns and wounds. In addition, acorns were the main diet of the deer, bear, and the many other animals and birds that were consumed by the Indians.

However, the use of acorns as a human food began declining in the early 1600's as oak forests were cleared for annual crop production—in particular, for corn. Nowadays, almost four billion bushels of corn are harvested in this country every year, while only a handful of Native Americans and wild-food enthusiasts take advantage of the free-for-the-gathering acorn bounty. It seems a shame that the food which once served as the staff of life to human cultures is now widely disregarded.

Acorns have even lost their place as a forage crop for livestock in this country . . . although they're still widely used for this purpose in other lands (particularly in southern Europe, where oaks supply fodder for hogs). Whereas our frontier forebears fed themselves on acorn-fattened pork, the U.S. now relies on corn as the basis for meat production.

### THE TRADE-OFF

Unfortunately, when the costs and benefits of growing corn and acorns are compared, it becomes apparent that the changeover has not been much of a bargain. As a perennial tree crop, acorns can be grown year after year without cultivation, fertilization, irrigation, or—in most cases—spraying for pests. The oak also has the ability to yield well on marginal land, including steep, erosion-prone hillsides. Acorn production has other benefits, as well. The trees contribute to soil deposition, provide increased rainfall retention for replenishing the groundwater supply, act as windbreaks, supply summer shade, and furnish harvests of hardwood lumber and firewood and—in the case of one oak (*Quercus*

suber)—cork. What's more, the tannin present in many acorn varieties is a sought-after commercial product.

Corn, in contrast, is an annual that usually requires much cultivation (which contributes to soil erosion), heavy applications of fertilizers and pest-control sprays (resulting in adverse environmental effects), and, often, irrigation (thus helping to *deplete* our ground-water stores).

Furthermore, as shown in Table 1, acorns are nutritionally quite similar to corn. You'll note that the nuts are exceptionally high in fat and carbohydrates . . . and the kernels are reported to be easy to digest, as well, once the tannin is removed.

Although it would be unrealistic to suggest that the American farmer immediately switch from growing corn to raising acorns, a *gradual* incorporation of selected oak species into the farming scheme would make economic sense. Corn yields generally range from 2,500 to 10,000 pounds per acre. In comparison, acorn yields in natural forests have been recorded as high as 2,000 pounds per acre from the live oak (*Q. virginiana*), and—in a good year—I've recorded black oak (*Q. velutina*) yields per tree that would amount to more than 6,000 pounds per acre in a pure stand. And J. Russel Smith, in *Tree Crops: A Permanent Agriculture*, cited an individual oak that produced a full ton of acorns annually. If a 100-foot spread is assumed for that tree, it seems possible that a yield of 10,000 pounds of acorns per acre could be achieved. [EDITOR'S NOTE: *These figures are the exception, with typical yields in an oak forest being considerably lower and variable from year to year.*]

Granted, acorn production *does* have its problems. Among them are the variable time (anywhere from 3 to 20 years) before a tree will bear, the competition with forest creatures for the harvest (as well as actual production difficulties in procuring the harvest), weevil and fungal damage to the crop, the need for leaching out the bitter tannin in some acorn varieties, and the unusual flavor—some folks describe it as rather bland—and dark color of the flour. In other words, don't go out and establish a plantation of oaks and expect to make a living solely from the acorn harvests! However, in light of the many admirable qualities of the oak, it's clearly time we gave the acorn its due consideration both as a source of livestock fodder and as a food for human consumption.

### ACORNS FOR EATING

There are at least 50 species of deciduous or evergreen oak trees native to this country. And because the oaks hybridize readily in nature, new species are continually being discovered. Conventionally, oaks have been divided into two subgroups: the *white oaks* and the *black, or red, oaks*. White oak acorns mature in one year, have a smooth inner cup surface, and are generally sweeter than the acorns of the black oaks . . . while the black oak acorns take two years to mature, have hairy inner cap surfaces, and taste bitter. However, these characteristics are somewhat arbitrary and vary greatly among the many hybrid forms, so for the purposes of this discussion, I've broken the species down into *sweet* and *bitter* acorns (see the accompanying guide for a sampling of species).

Many types of oaks have acorns that are perfectly edible in their raw, just-harvested state. In particular, I've gathered sweet acorns from the gambel oak (*Q. gambelii*), the mongolian oak (*Q. mongolica*), and the huckleberry oak (*Q. vaccinifolia*) . . . and other foragers have reported similar sweetness for the chinquapin oak (*Q. muehlenbergii*), the white oak (*Q. alba*), the swamp chestnut oak (*Q. michauxii*), the ballota oak (*Q. ilex* var. *rotundifolia*), and the emory oak (*Q. emoryi*). Undoubtedly, there are other equally tasty varieties that deserve further investigation.

In addition to these sweet species, there's hope for finding sweet individuals among the more bitter, tannin-containing types, since even trees of the same species can vary considerably in the flavor of their nuts. (I've eaten supposedly bitter acorns that had a flavor similar to that of cashews.)

### FROM THE FOREST TO THE FRYING PAN

Since some species of oaks grow in virtually every part of the U.S., you shouldn't have much trouble finding a suitable acorn hunting ground. Sample the bounty from several oaks to determine your best local tree, and then begin gathering the goods in earnest. Pick only freshly fallen acorns, and discard any kernels with weevils. (In fact, if weevil or rodent competition is particularly fierce in your area, you might want to harvest the acorns directly from the tree. Ripe nuts will have a characteristic bluish and should pull from the branches easily.)

Once you've accumulated a substantial haul (for reference purposes, it takes roughly three cups of acorns to make one cup of meal), you'll need to decap, hull, and dry the kernels. Some varieties are easier to shell after roasting, while others are simpler to hull when fresh. And although you can heat your harvest in a low (200°F) oven, I prefer to let the nuggets sun-dry. Do be sure to discard any discolored acorns, as they may spoil the taste of the other nuts.

If the acorns are bitter-tasting, you'll need to leach out the tannins present in the kernels. Fortunately, these substances are water-soluble, so the leaching process is simply a matter of repeated rinsings. First grind the acorns, either by hand using the mortar-and-pestle method or by adding a bit of water to the nuts and whizzing them in a blender (a coffee grinder also works well for pulverizing small harvests). Next, place the meal in a nylon stocking, a cloth bag, or a dish-towel-lined colander and rinse the mass under a slow stream of water while gently working the

(continued on next page)

TABLE 1 FOOD FOR PEOPLE

	CORNMEAL		ACORNS	
		Bur Oak	Live Oak	Post Oak
Water	12.5%	29.6%	18.3%	16.5%
Fat	1.9	11.5	9.4	9.4
Protein	9.2	3.9	7.4	6.2
Carbohydrates	74.4	79.5	77.5	79.3
Tannin	—	0.7	0.9	0.9

TABLE 2 FOOD FOR LIVESTOCK

	Acorns	Wild	Red Clover	Cowpeas
	(leached)	Lespedeza (hay)	(hay)	(shelled)
Water	12.0%	11.0%	15.3%	14.6%
Protein	1.5	13.8	12.3	20.5
Carbohydrates	63.0	39.0	38.1	56.3
Fat	20.0	3.7	3.3	1.5
Ash	0.2	8.5	6.2	3.2

These tables were compiled in part from studies by C.H. Merriam, published in the August 1918 issue of *National Geographic*; J.C. Holmes, *The Country Gentleman*, December 13, 1913; and R.P. Ofcarcik and E. Burnes, *The Journal of Food Science*, Vol. 36, 1971. Percentages vary according to species.

# A Forager's Guide to Acorns

## Sweet Acorns:

**Ballota Oak** (*Quercus ilex* var. *rotundifolia*): A medium-size evergreen oak from southwestern Europe and northern Africa with large, edible acorns that take two years to mature.

**Bur Oak** (*Q. macrocarpa*): A medium-size, drought-resistant deciduous tree found in the mideastern U.S., Canada, and south to Texas. This slow-grower prefers limestone soils and is used commercially for its wood. The 2" acorns mature in one season, and an acorn-producing cultivar, *Q.m. Ashworth*, is available commercially.

**Chestnut Oak** (*Q. prinus*): A medium-size tree of the eastern U.S. that's tolerant of a wide range of soils and sites. This slow-grower produces quality wood and 1" to 1-1/2" acorns that mature in one season.

**Chinquapin Oak** (*Q. muehlenbergii*): A widely distributed medium-size deciduous tree of the Midwest and eastern U.S. that prefers alkaline soil. The chinquapin grows rapidly, has very durable wood, and produces 1" acorns in one season.

**Dwarf Chinquapin Oak** (*Q. prinoides*): A small tree or shrub of the eastern U.S. that's common to dry, rocky slopes. The 1" acorns mature in one season.

**Emory Oak** (*Q. emoryi*): A small to medium-size tree of the southwestern U.S. Its sweet acorns take one year to mature.

**Gambel Oak** (*Q. gambelii*): This small to medium-size tree is the most common oak of the Rockies. The sweet 1" acorns, which mature in one season, were used extensively by the Indians.

**Huckleberry Oak** (*Q. vaciniifolia*): A shrubby mountain evergreen found at elevations up to 10,000 feet in California's Sierra Nevada mountains. The small acorns mature in their second year.

**Live Oak** (*Q. virginiana*): A large, spreading evergreen oak found primarily in the southern states. This fast-growing species is tolerant of moist, sandy soils and produces very dense, durable wood. The 1" acorns mature in one season.

**Mongolian Oak** (*Q. mongolica*): A tall deciduous oak native to northeastern Asia. This important lumber tree has small, 3/4" acorns that mature in one season and are extremely sweet.

**Swamp Chestnut Oak** (*Q. michauxii*): A medium-size tree of the southeastern U.S. that prefers moist locations. The very sweet acorns are about 1" in length and mature in one season.

**Swamp White Oak** (*Q. bicolor*): A medium-size deciduous tree that's found in the northeastern U.S. and west to Nebraska. It's tolerant of swampy conditions and grows rapidly, producing good wood that was once favored for barrels. The large (up to 4") acorns mature in one season.

**Valley Oak** (*Q. lobata*): This is the largest of the western oaks and is restricted to California. It's most common in rich bottomland but can be found up to 6,000 feet. The wood is of value only as firewood, but one tree may yield as much as a ton of 2" acorns in one year.

**Valonia Oak** (*Q. aegilops*): A semi-evergreen oak of the eastern Mediterranean. The acorn is reportedly sweet, and the cap was formerly harvested for its tannin.

**White Oak** (*Q. alba*): This medium to tall tree of the eastern U.S. tolerates a wide variety of conditions. It's an excellent tree for wood and a prolific producer of 3/4" acorns that mature in one season.

## Bitter Acorns:

**Black Oak** (*Q. velutina*): This species favors dry soils and is found primarily in the central and eastern U.S. Its acorns mature in two years.

**California Live Oak** (*Q. agrifolia*): An attractive evergreen tree of the California coast that produces firewood-quality wood and 1-3/4" acorns that mature in one season.

**Cork Oak** (*Q. suber*): These long-lived (to 500 years) evergreen trees are native to the Mediterranean, yet have done well from Maryland to California. The species is an attractive ornamental and produces cork at 10- to 20-year intervals. The acorns, which mature in one season, may be as large as 1-1/2".

**Kellogg Oak** (*Q. kelloggii*): An attractive medium to large tree with a broad crown. This species tolerates a range of conditions from clay to gravelly soil. Its wood is of no value except as firewood, but the 1-3/4" acorns, which take two seasons to mature, were favored by the Indians. One tree may produce in excess of 1/2 ton of acorns a year.

**Laurel Oak** (*Q. laurifolia*): This rapidly growing medium-size tree of the South is short-lived (it matures in 50 years), but it produces heavily. The 1" acorns mature in their second season.

**Northern Pin Oak or Jack Oak** (*Q. ellipsoidalis*): A fast-growing medium-size tree of the Midwest that produces good wood for flooring and furniture. The 3/4" acorns mature in their second season.

**Red Oak** (*Q. rubra*): A fast-growing medium-size tree of the northeastern U.S. that does well on a variety of soils. It's used ornamentally here and in Europe, and the 1" acorns mature in their second season.

**Scarlet Oak** (*Q. coccinea*): A rapidly growing deciduous tree of the north-central U.S. that's often used as an ornamental because of its bright red foliage. The 1" acorns take two years to mature.

**Shumard Oak** (*Q. shumardii*): A southeastern deciduous oak that reaches up to 130' in height. The wood is valued for veneer, furniture, and flooring. The 1" acorns take two years to mature, and the tree produces a heavy crop every 2 to 4 years.

**Water Oak** (*Q. nigra*): This southeastern oak grows rapidly and is frequently grown as a street tree. The 3/4" acorns mature in their second year.

## Non-Oak Acorns:

**Tanbark Oak** (*Lithocarpus densiflorus*): This medium-size tree is native to California and Oregon and thrives in humid areas. The sweet 3/4" acorns mature in two years.

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pulp with your hand. When the liquid runs clear and the bitterness is gone from the meal, you're done. Dry the resulting chocolate brown flour in a solar dryer or a low oven (you may need to regrind the meal after it dries if it becomes clumped). [EDITOR'S NOTE: Lee Peterson, in his excellent reference, *A Field Guide to Edible Wild Plants, suggests leaching the tannin by boiling the whole kernel (stripped of its shell), or the acorn meal, in repeated changes of water until the liquid no longer turns brown.*]

The possibilities for using acorn meal are limited only by your own ingenuity. You can add it to soups, stews, and stuffings or use it to replace part of the flour or cornmeal in your favorite bread, cake, or cookie recipes (when substituting, you may want to reduce the amount of oil called for, since acorn meal is high in fat). As you try the recipes given here or some of your own creations, keep in mind that considerable variation occurs between different acorn species and even between individual trees . . . so you might want to experiment with several types of acorns, and stick to the easier (and less expensive)

recipes, until you find a variety that suits your tastes.

### TRADITIONAL INDIAN ACORN MUSH

- 1 cup of acorn meal
- 3 cups of water
- a pinch of clean ash (optional)

To make this Native American staple food, mix the ingredients and simmer the mush for about half an hour in a double boiler. Or, to be truly authentic, cook it by dropping hot stones from the fire into the batter, then peel the "acorn chips" from the rocks.

### TONY MONTOYA'S ACORN TORTILLAS

- 3 cups of acorn meal
- 3 cups of whole wheat flour
- 1 tablespoon of baking powder
- 1 teaspoon of salt
- 1 teaspoon (or more) of shortening
- 1/2 cup of warm water

Combine the dry ingredients and work in the shortening—adding water as necessary—until the mixture is the consistency of pie

dough. Then roll the dough into tortillas and fry them in oil or toast them in the oven. These tortillas are great for tacos or tostadas, or just as snack chips.

### PEGGY CARKEET'S ACORN BREAD

- 1 cup of oil
- 5 beaten eggs
- 1-1/4 cups of honey
- 1-1/2 teaspoons of vanilla
- 3-3/4 cups of acorn meal
- 1-1/8 cups of whole wheat flour
- 1-1/2 teaspoons of salt
- 1/2 teaspoon of baking powder
- 1-1/2 teaspoons of baking soda
- 1-1/2 teaspoons of cinnamon
- currants, pine nuts, or elderberries (to taste)

This recipe makes a one-of-a-kind bread that fairly begs to be eaten. Thoroughly mix the first 10 ingredients, then add (to taste) currants, pine nuts, or dried elderberries . . . pour the batter into three greased loaf pans . . . and bake the bread at 350°F for an hour or more.

**EDITOR'S NOTE:** To find out more about acorns and other edible-nut tree crops, you might want to peruse J. Russell Smith's *Tree Crops: A Permanent Agriculture* (Devin-Adair, 1977), which is out of print but may be available at

your local library. Another excellent volume is *Nut Tree Culture in North America*, edited by Richard A. Jaynes and published by the Northern Nut Growers Association, Inc. It's available for \$17.50 postpaid from NNGA, 13

Broken Arrow Rd., Hamden, CT 06518. David Bainbridge would like to hear from readers who find flavorful acorn species in their region. You can reach him at 1625 Curtis St., Berkeley, CA 94702. ●

## Grow Your Own

Once you've gathered (and sampled!) acorn harvests for a season or two, you might want to plant a food tree in your own yard. By propagating local stock, you'll be able to grow varieties that are well suited to your soil and climate and that may be difficult to purchase.

The first step in planting an oak is to select large, well-formed, healthy acorns from your favorite parent tree. Experience in gathering the nuts for eating will help you in this respect, as you'll be able to recognize a suitable seed simply by its sheen, color, and feel. Discard any acorns that sport worm holes or are discolored, and remove the caps from good nuts soon after you harvest them.

### ACORN STORAGE

Fall is the preferred time for planting acorns, as many cold-climate oaks require a stratification period—that is, the nuts must remain at temperatures just above freezing for at least six weeks, and perhaps as long as 20 weeks, in order for the nuts to germinate. However, if you intend to store the seeds for planting at a later date, you can stratify them yourself: Set the kernels in a moist planting medium such as sand, peat moss, vermiculite, or sawdust and place them in cold storage. The acorns of the white oaks are generally viable for a month or two after ripening, while those of the black oaks are viable for six months or more. Drying the acorns to 60% of their initial fresh weight and then keeping them in cold storage (35–40°F) can lengthen the viability of white oak acorns to about eight months, and similar treatment might further extend the viability of black oak acorns, as well.

### PLANTING

Once you've collected your acorns, or received a supply of nuts from one of the firms listed in the accompanying editor's note, you'll need to decide on a propagation method.

Chances are that your acorn cache will be limited, so you'll probably want to grow seedlings in seedbeds, flats, or containers before setting them out in their permanent location. You can even germinate the acorns before planting them in their "nursery" area. To do so, place the nuts about 1" deep in a plas-

tic bag filled with moist, sterilized potting medium and store the package at 50–75°F. The acorns should sprout in a few weeks. When the sprouting root is 2–3" long, transfer the tiny tree to a deeper container or seedbed.

**Seedbeds.** Planting acorns in seedbeds is quite easy, especially if the timing of the seedlings' growth allows them to be transplanted directly into their permanent ground. This propagation method is not recommended for evergreen oaks, but it works fine for deciduous species.

**Flats.** Growing the seedlings in flats is more labor-intensive than seedbed planting because the small trees must be transplanted more frequently so that the roots don't become tangled. Use flats that measure 4" deep or more; if possible, they should have screen bottoms to allow for adequate drainage and to encourage air-pruning of the roots.

**Containers.** Starting your acorns in containers is a good method of propagation if you plan on growing only a few trees. A pot at least 2" X 2" X 8" deep is required (gallon vessels work well and are easy to locate). Trees intended for arid areas should be grown in even deeper containers to encourage taproot growth.

### TRANSPLANTING

The seedlings should be transferred to larger pots before they become root-bound. Because the roots typically grow much faster than the stem, this problem may occur before a great deal of aboveground growth is apparent, so keep close tabs on the progress of your seedlings. And, as when transplanting any crops, gradually harden off the plants before the move and minimize the shock of transplanting by setting the repotted plants in a partially shaded location and by keeping them moist.

Transferring the seedlings to their permanent home should be done when conditions favor growth. Spring is usually an ideal time, but if the autumn rainfall is more reliable in your area, you might opt to plant your young trees in the early fall. Again, harden off the seedlings by reducing water and nutrients and gradually exposing them to outdoor conditions. Supplemental watering during the first year or two will ease your trees' adjustment to their new home.

### HOW THEY'LL BEAR

Acorn production begins three years after planting for some oaks, and may take considerably longer for others. As with pecans and other nut crops, acorn yields often vary from year to year. This adaptation, known as predatory sanitation, enables trees to produce extremely high yields in boom years (thus ensuring that enough acorns will survive rodent and insect losses), while the low yields in bust years reduce the insect populations and contribute to the decline of other predators, as well.

Insects, fungal diseases, and pollutants can substantially reduce acorn yields. Although pesticides are sometimes used to combat infestations, especially in urban areas, many diseases can be eradicated only by destroying the infected tree. For that reason, prevention is by far the best policy. To promote tree vigor, match oak species with their preferred habitat . . . make certain that sufficient water, nutrients, sunlight, and space are available . . . avoid accidental injury to the tree (such as cuts, bruises, or broken limbs) . . . encourage natural insect and disease controls as much as possible . . . and remove and destroy fallen fruit and prune dead or infected limbs from your trees. In the event that chemical controls do become necessary, check with your state's forestry department or with the nearest office of the U.S. Department of Agriculture Forest Service for information.

**EDITOR'S NOTE:** If you prefer to grow your seedlings from commercially available cultivars, the following firms should be able to help you out. The seed catalogs are free unless otherwise noted, but—as always—we ask that you send along a dollar or two with your request, to help cover mailing costs.

Smith Nursery  
Box 515  
Charles City, IA 50616

Redwood City Seed Company  
P.O. Box 361  
Redwood City, CA 94064  
(catalog \$2.00 . . . ask for the tree crops supplement)

St. Lawrence Nursery  
RD 2  
Potsdam, NY 13676