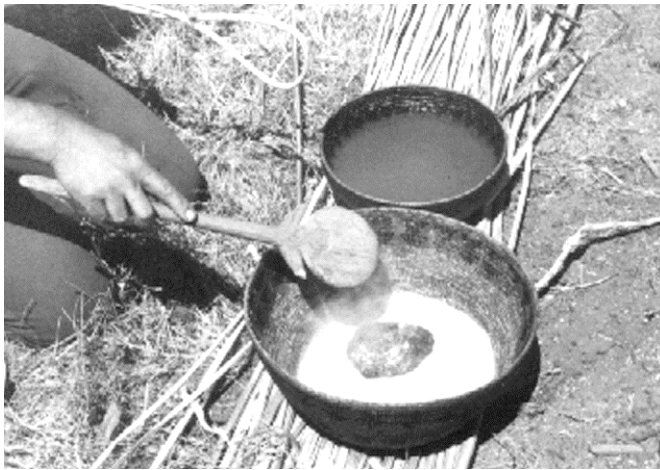


# Acorns as Food

*History, use, recipes, and bibliography*



Cooking acorn mush with a hot rock ©DAB

**David A. Bainbridge**

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# Acorns as Food

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There is a growing recognition that tree crops can play an important role in sustainable food production. Trees can be grown with less annual disturbance of the agricultural ecosystem and their deep roots allow the trees to reach nutrients and moisture in the deep soil. Acorns are an excellent example of a grain that grows on trees. We must begin to consider these traditional crops that fit temperate and semi-arid climates rather than trying to change the environment to fit crops that require extensive inputs of fertilizer and water.

The acorns from oaks (*Quercus*) and tan oaks (*Lithocarpus*) have been used as food for many thousands of years. They occur in the archaeological record of the early town sites in the Zagros Mountains, at Catal Hüyük (6000 BC), and oak trees were carefully inventoried by the Assyrians during the reign of Sargon II. They have been used as food for thousands of years virtually everywhere oak trees are found. In Europe, Asia, North Africa, the Mid-East, and North America, acorns were once a staple food.

They were a staple food for people in many areas of the world until recently and are still a commercial food crop in several countries. The Ch'i Min Yao Shu, a Chinese agricultural text from the sixth century recommends *Quercus mongolica* as a nut tree. A large commercial harvest still occurs in China, and acorns are sold on the streets by acorn vendors. The commercial harvest in Korea (where 1-2.5 million liters are harvested each year) provides prepared acorn starch and flour that reaches the American markets. Some acorns are collected in Japan. Acorns are still harvested and used in several areas of the United States, most notably Southern Arizona and California. There is still some harvesting in Mexico. Historically acorns were particularly important in California. For many of the native Californians, acorns made up half of the diet and the annual harvest probably exceeded the current sweet corn harvest in the state.

While it is often thought that oaks were a "wild crop" it is now clear that the oaks were planted, transplanted, and intensively managed. Informants and traditional songs tell of the selection and planting of oak trees. The early travelers often remarked on the "orchard like" settings encountered. How surprised they would be to find they were indeed orchards.

Acorn food products are sold in the U.S. at many Korean delis, from both imported and locally processed acorns. In San Diego (2005) I can buy acorn flour from four different companies as well as acorn starch. Acorns may be also be sold as a block of acorn meal that resembles tofu and is used in cooking in much the same way.

A modest commercial harvest takes place each year in Southern Arizona and Northern Mexico and some acorns are sold at markets that cater to Native Americans and Mexican-Americans. Acorn foods also remain on the market in Korea, China, and North Africa.

An evaluation of the acorns from all 500+ species of oaks is long overdue. Although the acorns of some oaks are too small or hard to open for widespread use, there are many species that could find commercial use as food. Acorns are also valuable feed for domestic animals and birds and wildlife, especially deer and wild turkeys.

The factors that made acorns a major food source in the past make them attractive candidates for use in the future. They are easy to collect, often ripen all at once, and are simple to process. They store well and were kept by the native Californians for several years in simple storage bins. They are relatively simple to prepare, even for the varieties that need to be leached. Although most species are bland, as are corn and wheat, some trees have very good flavor and can be used in place of other nuts.

When the long-lived, deep-rooted oaks can reach sufficient water; acorn production can be very high, with yields of more than 6,000 pounds per acre. Acorn yields can be high on hilly lands where comparable annual "grains" such as corn and wheat cause severe soil erosion, Table 1.

**Table 1: Soil Erosion for Corn v/s Acorn**

Land Use	Percent slope	Soil Loss tons/acre/yr
Continuous corn crop, Wisconsin	16	89
Continuous corn crop, Missouri	4	20
Corn, contour furrows, Iowa	10	24
Oak forest	10	0.002

**Acorn Harvesting**

The harvesting of acorns is very similar to the harvesting of other commercial nuts such as almonds or filberts. Wolf showed that it was possible to collect 50-300 pounds of acorns per hour with very simple hand tools. My own experience has been similar when harvesting black oak (*Q. kelloggii*) and canyon live oak (*Q. chrysolepis*). However, when

harvesting a small acorn such as *Q. gambelli* or *Q. emoryii* in an off year it may be possible to collect only a few pounds per hour.

Acorns should be picked from the tree if possible or gathered the same day they fall. Native Americans would knock them off with sticks and children would climb into the trees to shake the branches. This was a joyous time for the people as the entire family was usefully employed in the beautiful fall air. The ground was often cleared by annual burning after the grass seed was collected. Today, acorns can be knocked onto a large tarp and easily collected. Tree shakers, commonly used with pecans and almonds, should work very well on smaller oak trees. Collected acorns should be spread out in the sun on a clean surface and dried before they are stored in a well ventilated, cool, dry area.

### Acorn Food Value

Acorns vary considerably between species. The range of composition of acorns in 18 species tested is shown in Table 2, much of the difference is related to water content when tested.

**Table 2: Acorn Composition**

	Percent
Water	8.7-44.6
Protein	2.3-8.6
Fat	1.1-31.3
Carbohydrate*	32.7-89.7
Tannin	<0.1-8.8
KCAL/lb	1,200-2,600

\* or N free extract

The structure of acorn starch falls between that of corn and potatoes, and like them, acorns have been used to brew alcohol. Acorns are also good sources of some vitamins, with 5-54.8 mg of Vitamin C per 100 gm of raw acorn. This compares favorably with the Negev lemon, with 58.1 mg per 100 g. Acorns are also an excellent source of Vitamin A, with 180 IU per gm in *Q. phellos*. Twenty-seven grams, or less than tenth of pound of acorns, would meet the suggested daily requirement of 5,000 IU for Vitamin A. This may prove of great benefit in poorer areas of the world where vitamin A deficiency is common.

Thorough testing may well discover other species with even higher levels of these and other vitamins and trace elements. Acorns include many essential amino acids. When acorns are cooked with hardwood ash, to neutralize bitterness, the acorns dishes should

also be a good source of calcium. The ash may also make more niacin available if the tests Ruttle conducted on corn are applicable to acorns. It is not surprising that acorn-based cultures prospered for thousands of years with this excellent food base.

### **Eating Acorns**

The acorns from many species of oaks are edible raw, just as they are harvested. I have found sweet acorns from *Quercus gambelii*, *Q. mongolica.*, *Q. emoryii*, *Q. dumosa*, *Q. virginiana*, and *Q. macrocarpa*. Other species reported to be sweet include: *Q. vaccinifolia*, *Q. stellata*, *Q. garryana*, *Q. lobata*, *Q. pumila*, *Q. muehlenbergii*, *Q. alba*, *Q. michauxii*, *Q. brandegeeii*, *Q. gramuntia*, *Q. E'sculus*, *Q. aegilops*, and *Q. ilex var ballota*. Undoubtedly, other species and varieties are equally sweet and more flavorful.

A careful worldwide search for good cultivars is long overdue because there is hope of finding sweet acorns even in those species normally considered bitter. Some of these include the best tasting acorns, with cashew and chocolate overtones. The more tropical oaks with fist sized acorns that are reportedly sweet and flavorful are of special interest.

### **Using bitter acorns -- Acorn Leaching**

It is also practical to harvest and use bitter acorns, but the bitterness must be removed. Some cases of acorn poisoning have occurred when people have eaten too many untreated bitter acorns during periods of mass starvation. But the tannin which causes the bitterness can easily be leached from acorns with water. Hot water hastens the process. Ground up acorns are easiest to leach (for small quantities they can be leached in a clean nylon stocking tied to a faucet--it may take minutes or hours depending on the degree of bitterness and water temperature) but with patience shelled whole acorns can also be treated. Studies at Dong-guk University in Seoul, South Korea showed the tannin level in one species of bitter acorns was reduced from 9% to 0.18% by leaching, without losing essential amino acids. Virtually all of the acorns the native Californians used were bitter and they were leached or soaked in water to remove the bitterness. They apparently based their preference on oil content, storability, and flavor rather than sweetness.

Native Americans also sweetened bitter acorns with iron-rich red earth, wood ashes (clean ash from oak is preferred), and other ingredients to neutralize the acids. These practices were also followed in other areas, from Sicily to China. Cooking in a cast iron pot will help remove the last vestiges of bitterness. Bicarbonate of soda can also be used to remove tannins from foods, soak ground up acorns in water with 1 teaspoon of bicarbonate of soda per quart for 12-15 hrs, then rinse well (see Higgins, 1985). Repeat if necessary. Steaming or baking is sufficient for less bitter acorns.

## **Cooking with Acorns**

Acorn meal can be substituted for corn meal in most recipes. Acorns can also be used in place of chickpeas, nuts, peanuts, and olives in a variety of dishes. Acorn meal and acorn pieces are especially good in soups and stews. Acorns can also be treated with pickle brines or the lye treatment used for olives.

## **Recipes**

The proof of the pudding is in the eating, however, and it doesn't matter how nutritious the food is if you don't like it. I'm confident you'll like the flavor of acorns and will enjoy the recipes presented here. You can also explore new recipes on your own.

Acorn meal can be used in many ways. Some ideas to get you started: acorn meal in place of corn meal; whole acorns, acorn meal, or acorn flour instead of chestnuts or chickpeas; in most recipes in whole or part as a replacement for buckwheat groats or millet, and in some cases as total or partial replacement of bulgur, whole wheat, or wheatberries.

<p><b>A Cautionary Note:</b> All recipes are for sweet acorns, either those varieties that are naturally sweet or bitter varieties that have been leached or neutralized.</p>
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The considerable variation in acorn composition may make some adjustment in the recipes necessary, with less or more oil and less or more fluid. If your acorns are bland (many are) more spice may be added, or if the flavor is very good let it stand more on its own. Experiment to make recipes work with your acorns. Throw out spoiled acorns. They discolor and become a bit darker as they dry, but don't use ones with mold or decay. (Although some tribes enjoyed a special moldy acorn bread and treated acorns to maximize mold.)

### **Peggy Edward's Unleavened Acorn Bread**

Grease 3 loaf pans.	Mix thoroughly:
1 cup oil	3-3/4 cups leached and ground acorn meal
5 beaten eggs	1-1/8 cups whole wheat flour
1-1/4 cups honey	1-1/2 tsp. salt
1-1/2 tsp. vanilla	1/2 tsp. baking powder
1-1/2 tsp. cinnamon	1-1/2 tsp. baking soda

Add pine nuts, dried elderberries, currants and/or etc. Pour mixture into pans and bake at 350° for 1 hour or more.

### **Catherine Gearing's Leavened Acorn Bread**

Ingredients:

1-2/3 cups milk	1 Tbsp salt
3 Tbsp sugar	1/4 cup shortening
3/4 cup warm water	
2 packages active yeast <u>or</u> 2 cakes compressed yeast	
4 cups flour	3 cups acorn flour

Combine milk, sugar, salt, and shortening and beat until bubbles appear and shortening melts. Cool to lukewarm. Put water in a bowl. Mix in yeast. Combine flour and acorn flour, then add to mixture. Beat until smooth; add enough remaining flour until dough is easy to handle. Turn onto a floured board. Knead 5 minutes or until smooth and elastic. Put dough in a large greased bowl. Turn over to bring greased side up. Cover with damp towel. Let rise at 85° for 1-1/2 hours or until doubled. Grease two loaf pans, punch dough down. Turn out onto board and knead to distribute air bubbles. Divide in half. Shape each half into a loaf, and place in loaf pans. Cover. Let rise 1 hour. Bake at 425° for 25-30 minutes. Above 3500' elev., set oven to 475°F.

### **Mediterranean Soup**

8 oz. garbanzos

8 oz. acorn chunks or meal

1 1/2 cups water

2 cups chicken broth

1/3 cup olive oil

1/3 cup fresh mint leaves (1/2 tsp. dry) or basil

lemon juice from one lemon

1/2 to 1/4 cup parsley sprigs

3 tsp. chopped garlic

1 small onion, chopped fine

1/4 tsp. salt (optional)

Simmer beans and acorn chunks in broth until tender. In blender, combine olive oil, mint, parsley, lemon juice, garlic and mix with masher. Add 1/2 beans and acorns and reblend. (Chicken or turkey chunks can be added for more body).

*(acorns work particularly well in soups and stews)*

### **Pancakes**

In a bowl, blend together:

1 egg

1 Tbsp. honey or sugar

1 Tbsp. of cooking oil

1/2 cup of acorn flour

Then add:

1/2 cup of cornmeal

1/2 cup of whole wheat flour

2 tsp. of double-acting baking powder

1/2 tsp. salt and a pinch of cinnamon

Stir enough milk into the above mixture to make a thin batter. Then pour the batter out onto a hot, greased skillet and fry the cakes slowly on both sides until brown. Serve with plenty of butter and honey.



## **Muffins**

Beat together in a bowl:

2 Tbsp. of cooking oil

3 Tbsp. of molasses

1 egg

Stir in:

1/2 cup of milk

1 cup of acorn flour

Then add:

1 cup whole wheat flour

1 tsp. double-acting baking powder

1/2 tsp. soda

1/4 tsp. salt

1/2 tsp. of ginger

Stir quickly until all the dry ingredients are moistened and the batter is slightly lumpy. Then pour the batter into a greased muffin tin and bake at 425°F for 20 to 25 minutes. Remove the tin from the oven, allow it to cool five minutes, turn the muffins over and serve.

## **E. S. O'Neils Acorn Pound Cake**

Blend together in bowl:

1/2 cup cooking oil

1 cup sugar

2 eggs

1/2 cups of acorn meal

In another bowl, sift together:

1-1/4 cups all purpose flour

1/8 tsp. salt

1/2 tsp. cream of tartar

1/4 tsp. soda

Stir the second mixture into the first (a small amount at a time) alternately with 1/4 cup of milk. Add 1/2 tsp. of vanilla extract and 1/4 tsp. of mace and beat well. Pour the batter into an oiled and floured circular pan (8" inside diameter) and bake at 350° for about one hour.(E. S. O'Neill, 1977).

## **Datori Mook**

This Korean dish uses the acorn blocks (like tofu) available at Korean food stores.

Acorn (oak nut) jelly--1/2 lb cut into cubes  
2 large garlic cloves, chopped or mashed  
4 scallions, chopped  
1 green pepper, sliced  
Soy sauce (to taste)  
Black pepper (to taste)  
Ginger (fresh grated root--1tbsp or more)  
Beef strips 1/4 lb (optional)

Heat cooking oil in a wok or frying pan. Mix garlic and onions and cook until transparent. Add ginger, pepper, green pepper, soy sauce and acorn jelly.

### **Preparing acorn gel the Korean Way**

1. Shell acorns
2. Crush acorns
3. Put in a big pot with a hole in the bottom with cheesecloth over the hole
4. Run water over the acorns for five days (or until sweet)
5. Put acorn mush in a mixer, add water and mix until creamy
6. Pour off excess water
7. Put mush in pot, add fresh water and boil
8. Put in refrigerator in a bowl of desired shape, maintain a little water on top to keep it from drying out.
9. Slice or cube jelled acorn mush, use like tofu.

The jelled acorn takes up sauce flavors very well and is very pleasant to eat.

Acorns have also been used to make a coffee substitute in many areas of the world. The quality of the acorn coffee depends on the particular nut and technique used. Most recipes call for roasting clean rough ground acorns. *Q. muehlenbergii* was especially favored for this purpose in the Midwest. *Q. robur* and *Q. frainetto* have been used in Europe where the resulting drink is referred to as "Eichel kaffee", or acorn coffee. A similar acorn coffee has also been used in Mexico. Raccahout, a spicy Turkish acorn drink more like hot chocolate, was included in the *Larousse Gastronomique* until recently.

### Acorn Oil

Acorn oil can be extracted by boiling, crushing, or pressing. Acorn oil has been used as a cooking oil in Algeria, Morocco, and the eastern United States. It was used by the Indians of the eastern U.S. as a salve for burns and injuries. Some varieties contain more than 30% oil, comparable to the best oil olives. The oil is very similar to olive oil and has a comparable flavor. It is possible that acorn oil could be produced more economically than olive oil because acorns are not be as sensitive to spoilage during harvest as the fleshy olives. The development of an American acorn oil industry might capture some of the \$160 million dollars now spent on imported olive oil each year.

**Table 3: Acorn oil**

Species	<i>Q. agrifolia</i>	<i>Q. ilex</i>	5 species, avg.	Olive	Corn
Specific gravity	0.917	0.909	0.910	0.914-.919	0.916-922
Refractive index	1.47	1.47	1.46	1.47	1.47
Saponification value	192.3	189.1	191.5	187-196	187-196
Oleic acid%	-- 57.1	58.3	83.5-84.4	84	49
Palmatic acid%	-- 12.4	11.4	6.9-9.4	7	10
Linoleic acid%	-- 30.5	37.5	4.0-4.6	4.6	34
Flash point	--	--	320°C	225°C	321°C
Flash point	--	--	360°C	343°C	393°C

### **Starting an acorn business**

With current California prices for acorn meal of \$ 0.90/lb wholesale and up to \$30+ per gallon for specialty nut oils it seems possible that an entrepreneur could establish a profitable acorn business. This business will be easier to establish if processing techniques and palatability tests are conducted by University researchers. These studies could also refine acorn processing techniques and help refine products that can compete in the marketplace. I think a talented cook/marketeer could make a satisfactory entrance into the market with acorn oil, acorn chips and crackers, acorn breads and muffins, or pickled acorns.



## Acorn use: country or region and species (when known)

Albania	Food	<i>Q. aegilops?</i>
Algeria	Food	<i>Q. ilex</i> var. <i>ballota</i>
Asia & S.M. Asia	Food	<i>Q. brantii</i> , <i>Q. leucotricophora</i> , <i>Q. ilex</i> , <i>Q. mongolica</i>
Assyria (N. Turkey)	Food	<i>Q. cerris?</i>
Saudi Arabia and Yemen	Food, acorn oil	<i>Q. ilex?</i>
Barbary	Food, acorn oil	<i>Q. ilex</i> var. <i>ballota</i>
Canada	Food	<i>Q. alba?</i>
China	Food	<i>Q. cornea</i> , <i>Q. fenzeliana</i> , <i>Q. acutissima</i> , (leaves eaten), <i>Q. liaotungensis</i> , <i>Q. gilva</i> , <i>Q. myrsinifolia</i> , <i>Q. mongolica</i> , <i>Q. silvicularum</i> (leaves eaten), <i>Q. bambusifolia</i> , <i>Q. variabilis</i>
England	Food	<i>Q. robur</i> , <i>Q. petrea</i>
Europe	Food	<i>Q. rotundifolia</i> , <i>Q. petrea</i>
France	Primarily drinks, food	<i>Q. ilex</i> var. <i>ballota</i> , <i>Q. aesculus</i> , <i>Q. robur</i>
Greece	Food	
Guatemala	Food	<i>Q. brachystachys</i>
Hong Kong	Food	<i>Lithocarpus cornea</i>
Himalayas (N. India, Nepal, Bhutan)	Food	<i>Q. glauca</i> , <i>Q. semecarpifolia</i> , <i>Q. dilatata</i> (edible galls)
Hungary	Food	<i>Q. frainetto</i>
Iraq	Food	<i>Q. persica?</i> <i>Q. robur</i> (Michaux gave the acorns sold in Bagdad his highest rating)
Japan	Food	<i>Q. glauca</i> , <i>Q. cuspidata</i> , <i>Q. glabra</i> , <i>Q. mongolica</i> , <i>Q. paucidentata</i> , <i>Q. yaeyamensis</i> , <i>Q. phillyraeoides</i> , <i>Q. miyagii</i> , <i>Q. aliena</i> , <i>Q. nipponica</i> , also <i>Lithocarpus</i> sp.
Korea	Food	<i>Q. mongolica</i> , <i>Q. dentata</i> , <i>Q. aliena</i>
Mediterranean Region	Food, oil	<i>Q. ilex</i> var. <i>ballota</i> , <i>Q. fruticosa</i> , <i>Q. coccifera</i>
Eurasia	Food	<i>Q. robur</i> , <i>Q. macrolepis</i> , <i>Q. cerris</i> (including "manna")
Mexico	Food, drink	<i>Q. albocincta</i> , <i>Q. rhodophlebia</i> , <i>Q. brandeegi</i> , <i>Q. reticulata</i> , <i>Q. glaucoides</i> , <i>Q. oblongifolia</i> , <i>Q. durafolia</i> , <i>Q. emoryi</i> , <i>Q. watsonia</i> ; also leaves eaten, <i>Q. durifolia</i> , <i>Q. epileuca</i> , <i>Q. hypoleucoides</i> , (also mentioned in Aztec period)
Morocco	Food	<i>Q. ilex</i> var. <i>ballota</i>
Norway	Food	
Palestine (now Israel)	Food	<i>Q. aegilops</i> , <i>Q. lusitanica</i>
Persia (now Iran)	Food	<i>Q. persica</i> , <i>Q. brantii</i>
Portugal	Food	<i>Q. ilex</i> var. <i>ballota</i> , <i>Q. fruticosa</i>
Southern Europe and North Africa	Food	<i>Q. suber</i> , <i>Q. pubescens</i>
Siam (now Thailand)	Food	<i>Q. junghuhni</i> , <i>Q. lindleyana</i> , <i>Q. polystachya</i> , <i>Q. sootepensis</i> , <i>Q. thomsoni</i> , <i>Q. truncata</i>
Spain	Food	<i>Q. ilex</i> var. <i>ballota</i> , <i>Q. gramuntia</i>
S.W. Asia	Food	<i>Q. tauricola</i> , "manna", <i>Q. brantii</i>
Syria	Food	<i>Q. aegilops</i>
Tunisia	Food	<i>Q. ilex</i> var. <i>ballota?</i>
Turkey	Drink	<i>Q. cerris?</i>
United States	Food and oil	<i>Q. kelloggii</i> , <i>Q. douglasi</i> , <i>Q. gambelli</i> , <i>Q. virginiana</i> , <i>Q. agrifolia</i> , <i>Q. wislizenii</i> , <i>Q. garryana</i> , <i>Q. chrysolepis</i> , <i>Q. lobata</i> , <i>Q. emoryi</i> , <i>Q. palustris</i> , <i>Q. oblongifolia</i> , <i>Q. alba</i> , <i>Q. phellos</i> , <i>Q. stellata</i> , <i>Q. marilandica</i> , <i>Q. prinus</i> , <i>Q. undulata</i> , <i>Q. michauxii</i> , <i>Q. muehlenbergii</i> , <i>Q. dumosa</i> , <i>Q. macrocarpa</i> , <i>Q. nigra</i> , <i>Q. vaccinifolia</i> , <i>Q. stadleriana</i> , <i>Q. prineides</i> , <i>Q. bicolor</i> , <i>Q. velutina</i> , <i>Q. ellipsoidalis</i> , <i>Lithocarpus densiflora</i>

Oak trees also provide: fodder for animals, both acorns and leaves; cork for insulation (R-3.5 per inch), bottle corks, and many other products; a variety of hardwoods for use in furniture, building, and manufacturing; excellent fuel wood and charcoal; leaves high in nutrients widely used as a garden fertilizer; food for wildlife, especially game species (deer, turkeys, and bears); sugar from scale insects ("the manna from heaven" mentioned in the Bible); erosion control; excellent shapes and colors for use in landscaping and for shade; and food for silkworms. Oaks are also involved in several types of mushroom and fungi production, including *shitake* mushrooms and truffles.

Oaks should be more widely used for land reclamation and sustainable food production in many areas of the world. They provide a opportunity for growing "grain" on dry, steep slopes and poor soils. Oak species with edible acorns are suitable for a very wide range of climatic and soil conditions including very hot or cold climates, very saline or alkaline soil, and wet or intermittently flooded ground.

For more access to the literature of agroforestry and sustainable agriculture see:

Bainbridge, D.A. and Edwards, P. 1992. **Tree Crops for America's Future**. Sierra Nature Prints. 33 pages. (coloring book) {out of print}

Mitchell, S. and Bainbridge, D.A. 1991. **Sustainable Agriculture for California: A Guide to Information**. UC Sustainable Agriculture Research and Education Program. University of California, Division of Natural and Agricultural Sciences, Publication 3349. 6701 San Pablo Avenue, Oakland, CA 94608. 196 pages.

Shipek, F. 1989. An example of intensive plant husbandry: the Kumeyaay of southern California. pp. 159-170. In D.R. Harris and G.C. Hillman editors. *Foraging and Farming*, Unwin Hyman, London.

Anderson, K. and G.P. Nabhan. 1991. *Gardeners in Eden*. Wilderness. Fall 27-30

Blackburn, T.C. and M.K. Anderson. 1993. *Before the Wilderness*. Ballena Press, Menlo Park, CA 476p.

Ebeling W. 1986. *Handbook of Indian Foods and Fibers of Arid America*. Berkeley, CA:University of California Press, CA. 971 p.

*My apologies for incomplete references. When I began this work in the late 1960's I was unaware of where it would lead and I kept less complete records than I would now. Corrections and additions most welcome.*

## ACORN BIBLIOGRAPHY by David A. Bainbridge

### Key Word -- Letter Code

F = Human Food

E = Ecology

P = Processing

O = Oak byproducts cork, etc.

H = Oak hardwood

G = Growing oaks

A = Animal food

W = Wildlife food

D = Diseases and pests

I = Insects

T = Taxonomy

M = Medicine

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F

Agricultural Fisheries Statistics Office. 1981. Yearbook of Agriculture and Forestry Statistics. Republic of Korea.

AFW

Anon. 1830. Vegetable Substances. Wells and Lilly, Boston.

F

Anon. 1972. Kernels and fruits in the confectionery industry. *Kerne und fruechte in der suesswakenindustrie*. International Review for Sugar and Confectionery 25(9):415-417.

FG

Arts, W. & Kofman, P.D. 1980. The use of a seed harvester for the collection of acorns. *Het gebruik van de zaadoogstmachine voor het verzamelen van eikels*. Vereniging Nederlands Bosbouw Tijdschrift 52(5):125-129.

EFGW

Ashby, W.C. & Fritts, H.C. 1972. Tree growth, air pollution, and climate near LaPort, Indiana. American Meteorological Society Bulletin 53(3):246-251.

F

Bainbridge, D.A. 1981. Acorns are for eating. Countryside 65(12):32-33. December.

F

Bainbridge, D.A. 1984a. Acorns. Nutshell, Northern Nut Growers Association Newsletter, Fall.

AFGW

Bainbridge, D.A. 1984b. The grain that grows on trees. Mother Earth News Sept/Oct. 80-84.

F

Bainbridge, D.A. 1985a. Acorns: a crop for the future. Unasyuva 37(4):63-64.

FAHW

Bainbridge, D.A. 1985b. Oaks and Acorns. *Permaculture Activist* 2:9.

FE

Bainbridge, D.A. 1985c. The rise of agriculture: a new perspective. *Ambio*.14(3):148-151.

FAHO

Bainbridge, D.A. 1986a. Quercus: a multi-purpose tree for temperate climates. *International Tree Crops Journal* 4(3):291-289.

FEAOHG

Bainbridge, D.A. 1986b. Multipurpose Tree Crops for Arid Lands. Permaculture Conference, Olympia, WA. 12 p.

F

Bainbridge, D.A. 1986c. Cooking with acorns. Dry Lands Research Institute, U.C. Riverside. 22p.

F

Bainbridge, D.A. 1986d. Eichen, Eicheln. *Okó Journal* 14(1):26-28.

F

Bainbridge, D.A. & Asmus, K. 1986e. Acorn Testers News. Riverside, CA 1(1):1-8.

FAE

Bainbridge, D.A. 1987. The use of acorns in California: past, present, future. pp 453-458. *In: T.R. Plumb & N.H. Pillsbury, eds. Proceedings of the Symposium on the Multiple-use Management of California's Hardwoods, Cal Poly, San Luis Obispo, November, 1986. Pacific Southwest Range and Experiment Station, Berkeley, California.*

FAE

Bainbridge, D.A. 1988. The oaks: a neglected multi-use tree crop. pp. 657-662. *In: P. Allen & D. Van Dusen, eds. Global Perspectives on Agroecology and Sustainable Agricultural Systems. Agroecology Program, University of California, Santa Cruz.*

F

Bainbridge, D.A. 1989a. Acorns as food. *International Development Digest* 2(2):5

FEAHGO

Bainbridge, D.A. & Felger, R. 1989b. Agroforestry for rural development and environmental protection in Portugal. Drylands Institute, Tucson, Arizona 10p.



FEAHGO

Bainbridge, D.A. 1991. The oaks. TIPS Journal 1(2):9-12

F

Bean, L. & Saubel, K.S. 1961. Coahuilla Ethnobotanical Notes: The Aboriginal Uses of the Oak. Univ. Calif., Los Angeles Dept. of Anthropology & Sociology. Arch. Survey Annual Report 237-245.

AEFGW

Beck, D.E. 1977. Twelve-year acorn yield in Southern Appalachian oaks. USDA Forest Service Research Note Southeastern Forest Experiment Station, Asheville, NC. No. SE-244 8p.

F

Benardot, D. 1974. Edible wild plants--try it, you may like it. Home 38(5):25-26. May/June.

F

Bishop, I. 1891. Journeys in Persia and Kurdistan. John Murray, London.

EFG

Bonner, F.T. 1973. Storing red oak acorns. U.S. Forest Service, Tree Planters Notes 24(3):12-13 Aug.

AEFGW

Bonner, F.T. 1976. Maturation of Shumard and white oak. (*Quercus shumardii*, *Quercus alba*). acorns. Forest Science 22 2. 149-154, Ref. June.

AFG

Bonner, F.T. 1970. Storage of acorns and other large hardwood seeds -- problems and possibilities. *Quercus*, *Carya*. In Proceedings Southeastern Nurserymen's Conference 77-82.

AFOW

Bostock, J. & Riley, H.T. 1855. The Natural History of Pliny. Henry Bohn, London.

AFO

Brandis, D. 1874. Forest Flora of NW and Central India. Bishen Singh, Dehra Dun reprinted 1972. .

EF

Brewer, W.H. 1966. Up and Down California in 1860-64. U.C. Press, Berkeley

F

Brown, V. 1969. The Pomo Indians of California. Naturegraph.

F

Brusa, B.W. 1975. Salinan Indians of California. Naturegraph.

F

Bryant, E. 1967. What I Saw in California 1846-47. Russ and Haines, Minn.

FP

Buron, Arias I. 1977. Variation in lipid composition of acorn oil with extraction time. Anales del Instituto Nacional de Investigaciones Agrarias, Tecnologia Agraria No. 4, 85-89.

FP

Buron, Arias I. & Garcia, Teresa R. 1977. Bases for optimizing extraction conditions of acorn oil by hexane percolation. Anales del Instituto Nacional de Investigaciones Agrarias, Tecnologia Agraria No. 4, 105-122.

FP

Buron, Arias I & Garcia, Teresa R. 1977. Correlation between physical properties of acorn oil-hexane mixtures and kinetics of extraction process. Anales del Instituto Nacional de Investigaciones Agrarias, Tecnologia Agraria No. 4, 91-104.

F

Carpenter, T.M. & Steggerda, M. 1939. The food of the present day Navajo Indians of N.M. and Ariz. Journal of Nutrition 18:297-305 .

AFP

Chae, S.-K & Yu, T.-Journal 1973. Studies on the hydrolysis of tannin in food by fungal tannase. I. Screening test of moulds on the production of acorn tannin hydrolysing enzyme and studies on the cultural conditions of selected strain. Korean Journal of Food Science and Technology 5(4):258-267.

HGFA

Chalupa, V. 1973. *Prognoza urody zaludu Quercus robur L.* Prediction of acorn crop of oak *Quercus robur L.* Pr Vyzk. Ustav. Lesn. Hospod. Myslivosti. 43:49-67. Eng. sum.

F

Chang, K.S. & Chun, J.K. 1982. Studies on the thermal properties of foods. I. Thermal properties of some Korean foods. Korean Journal of Food Science and Technology 14(2):112-121.

FOP

Chesnut, V.K. 1904. Plants Used by the Indians of Mendocino County, California. Contribution for the U.S. National Herbarium Vol. VII, repr. by Mendocino County Historical Society 1974.

AEFW

Christisen, D.M. 1951. Yield of acorns from a Post oak (*Q. Stellata*). *Journal of Wildlife Management*. 15:332-333 .

AEFW

Christisen, D.M. 1955. Yield of seed by oak in the Missouri Ozarks. *Journal of Forestry* 53(6):439-441.

AEFW

Christisen, D.M. & Kearby, W.H. 1984. Mast Measurement and Production in Missouri. *Terrestrial Series #3*, 34 p. Missouri Dept. of Conservation, Jefferson.

AEFW

Christisen, D.M. & Korschgen, L.J. 1955. Acorn yields and wildlife usage in Missouri. *Transactions North American Wildlife Conference* 20:337-356.

AFP

Chung, D.H., Yu, I.J. & Choi, B.K. 1975. Studies of the utilization of acorn starch. I. Properties of acorn starch. *Journal of the Korean Agricultural Chemical Society* 18(2):102-108

F

Churchill, J.E. 1970. Food without farming. *Mother Earth News #3*. pp. 57-58.

AFP

Cicogna, M., Ciarrocchi, L., Piali, S., Gardella, G. & Di Lorenzo, C. 1972. Trial on the possibility to substitute maize by rice germ meal, acorns and denatured sugar in diets for broilers. *Ricerche Sperimentali Sulla Possibilita di Sostituire, Nelle Miscele per Pulli da Carne, Il Mais Con Gemma di Riso, Ghiande e Sacchrosio*. *Riv. Zootec* 45(4):187-200. Eng. sum. Apr.

AEFW

Collins, J.O. 1961. Ten year acorn mast production study in Louisiana. Louisiana Wildlife & Fish Commission P.R. Rept. W29R-8, 33 p.

F

Coquillet, M. 1959. *Les glands de chene dans l'alimentation de hommes prehistoriques*. Societe Linneenne de Lyon, *Bulletin Munsuel* 28:28-32.

FT

Coyle, J. & Roberts, N.C. 1975. *A Field Guide to the Common Wild Plants Of Baja California*. Natural History Publishing Co.

AEFW

Cypert, E. & Webster, B.S. 1948. Yield and use of wildlife of acorns of *Q. nigra* and *Q. phellos*. *Journal of Wildlife Management*. 12(3):227-231.

AEFW

Dalke, P.D. 1953. Yields of seeds and mast in second growth hardwood forest South Central Missouri. *Journal of Wildlife Management*. 17(3):378-380.

AF

Davies, D.J.G. 1979. Miscellaneous nut trees (Macadamia, beechnut, acorns, ginkgo, Araucaria, Karaka nuts). *Alternative land uses in New Zealand: with emphasis on temperate tree crops. Proceedings of a course held at Lincoln College, Canterbury, New Zealand, 8-10 Feb.:*103-108.

FM

Djordjevic, N. 1954. *Vitamin C u ziru semen Quercus*. *Acta. vet., Belgrade Institute of Pharmacology*. 4(2):49-51.

FP

Douglas, J.S. 1978. *Alternative Foods*. Pelham Books, London.

AEFG

Downs, A.A. 1944. Estimating acorn crops for wildlife in the Southern Appalachians. *Journal Wildlife Management*. 8(4):339-340.

AFGW

Downs, A.A. 1944. Seed production of Southern Appalachian oaks. *Journal of Forestry* 42(12):913-920.

AFGW

Downs, A.A. 1949. Trees and food from acorns. *Yearbook of Agriculture, US Department of Agriculture, Washington, DC*.

F

Driver, H.E. 1953. The acorn in North American Indian Diet. *Indiana Academy of Science, Proceedings* 62:52-62.

F

Eldredge, Z.S. 1914. *History of California Vol. 5, Century History P.C.*

EG

Erhard, A. 1978. Acorns of 1974 and 1976. *Die Eichenmasten 1974 und 1976.. Silviculture, Allg. Forstz.* 33(9/10):216-218, 220. March 11

F

Feist, S. 1913. *Kultur, Ausbreitung und Herkunft der Indo-germanen*. Weidmannsch Buch, Berlin, p. 246.

FP

Fernald, M.L. & Kinsey, A.C. 1943. Edible Wild Plants of Eastern North America. Idlewild Press.

FP

Fernald, M.L. & Kinsey, A.C. 1958. Edible Wild Plants of Eastern North America. Harper & Brothers, NY.

AF

Fiestas Ros de Ursinos, J.A., Ramos Ayerbe, F. & Mazuelos Vela, F. 1969. *Estudio de fruto de la encina Q. ilex*. Grasas y Aceites 20(5):227-230 .

F

Figura, V. 1936. Nutritive value of acorns and their utilization in human diets. Att. R. Acad. Lin. 23:707-710.

FP

Figura, V. 1937. Nutritive value of acorns. Possibility of using them for human food. Quad. Nutrizione 4:18-31.

F

Fontana, B.L. 1979. Tarahumara. Northland Press, Flagstaff.

AFW

Fraps, G.S. 1919. Feeding values of certain feeding stuffs. Texas Agriculture Experiment Station Bulletin #245.

AF

Furr, A.K., MacDaniels, L.A., St. John, L.B. Jr., Gutenmann, W.H., Hakkala, I.S. & Lisk, D.J. 1979. Elemental composition of tree nuts. Bulletin of Environmental Contamination and Toxicology 21(3):392-396.

AEFG

Garbaye, Journal & Leroy, P. 1974. *Influence de la fertilisation sur la production de glands en foret de Berce et foret de Boulogne*. The influence of manuring on the production of acorns in the Berce and Boulogne forests. Revue Forestiere Francaise 26(3):223-228. May/June.

AFP

Garcia, R.I., Buron, I.A. & Jimenez, S.G. 1977. Factors affecting the storage of acorns and their flour, and deterioration indices. Revista de Aaroquimica y Tecnologia de Alimentos 17(4):492-500 .

FP

Garcia, Teresa R. 1977. Variation of state of oxidation of acorn oil with extraction temperature during hexane percolation. Anales del Instituio Nacional de Investigaciones Agrarias, Tecnologia Agraria No. 4, 81-84.

FP

Garcia, Teresa R. & Buron, Arias I. 1977. Comparison of chemical and physico-chemical properties of acorn oil with other edible oils. *Anales del Instituto Nacional de Investigaciones Agrarias, Tecnologia Agraria No. 4*, 123-148.

FP

Garcia, Teresa R. & Buron, Arias I. 1977. Determination of retention ratio of acorn meal during hexane extraction of the oil. *Anales del Instituto Nacional de Investigaciones Agrarias, Tecnologia Agraria No. 4*, 55-59.

FP

Garcia, Teresa R. & Buron, Arias I. 1977. Effect of extraction conditions on colour of oil extracted from acorn meal by hexane percolation. *Anales del Instituto Nacional de Investigaciones Agrarias, Tecnologia Agraria No. 4*, 61-79.

FP

Gibbons, E. & Tucker, G. 1979. *Handbook of Edible Wild Plants*. Unil. Lib.

F

Gifford, E.W. 1936. California balanophagy. reprinted *In* Heizer, R.F. & Whipple, M.A. 1971. *The California Indians*. U.C. Press, Berkeley.

AEFW

Globa-Mikhailenko, D.A. 1971. Form of *Quercus occidentalis* and *Quercus castaneifolia* with one or two acorn ripenings per year. *Moscow Gl. Bot. Sad. Byul* 80:28-31.

F

Goodrum, J. 1972. Acorns and baskets *Pacific Historian* 16:1934.

FP

Goodrum, J. 1973. Food of the Indians: acorn bread. *Pacific Historian* 17:77-80.

AEFW

Goodrum, P.D. 1959. Acorns in the diet of wildlife. *Proc. of the 13th Annual Conf. of S.E. Assoc. Game & Fish Commission, Baltimore, MD* pp 54-61.

AFW

Goodrum, P.D., Reid, J.H. & Boyd, C.E. 1971. Acorn yields, characteristics, and management criteria of oaks for wildlife. *Journal of Wildlife Management*. 35(3):520-532.

F

Gracian J. & Martel, J. 1969. Composition of the sterolic fraction of vegetable fats as determined by gas chromatography. *Grasas y Aceites* 20(5):231-234.

FP

Gray, E. 1965. Balanophagy among the Ahachmai. Pacific Coast Arch. Society Quarterly 1(2):22-24.

FP

Grinnel, E. 1958. Making acorn bread. University Calif. Arch. Survey 41:42-45.

EFGH

Gysel, L.W. 1956. Measurement of acorn crops. Forest Science 2(4):305-313.

Harenteau, S. 1978. Crunch it, munch it, and other ways to eat vegetables. Coward, McCann & Geoghegan, NY 38 p.

F

Harris, B. 1977. Foods that won the West. Vegetarian Times 20:22-23, July/August.

F

Harrison, P. 1980. The Third World Tomorrow. A Report from the Battlefield in the War Against Poverty. Penguin Books, Ltd. Harmondsworth, Middlesex, UK 380 p.

AEFW

Hashizume, H. 1979. Acorn production and seed characteristics in *Quercus acutissima* Carr. *Tottori Daigaku Nogaku-bu kenkyu hokoku*. Bulletin of the Faculty of Agriculture, Tottori University.

F

Hedrick, U.P. 1919. Sturtevant's Notes on Edible Plants. Report of the New York Agricultural Experiment Station, 20. Albany, NY.

FP

Heizer, R.F. 1978. Handbook of North American Indians: California. Smithsonian Institution.

EFP

Heizer, R.F. & Elsasser, A.B. 1980. The Natural World of the California Indians. University of California Press, Berkeley, CA. 271 p.

F

Higgins, B.C. 1985. Dietary tannins: consequences and remedies. LIFE Newsletter 18(3):1.

FP

Holmes, W.H. 1902. Anthropological studies in California. Smithsonian Institution Annual Report for the Year 1900.

FO

Hopkins, C.Y. & Chisholm, M.J. 1953. Some fatty acids of peanut, hickory, and acorn oils. *Canadian Journal of Chemistry* 31:1173-1180.

F

Howes, F.N. 1948. *Nuts*. Faber and Faber, London.

FP

Hudson, J.W. 1900. Preparation of acorn bread by Pomo Indians. *American Anthropologist* 2:775-776 .

FP

Jacob, H. E. 1944. *Six Thousand Years of Bread*. Doubleday-Duran.

F

Jamieson, G. 1943. *Vegetable Fats and Oils*. Reinhold Pub., NY.

AEFW

Johnson, F. L. 1975. White oak. *Quercus alba*. acorn production in the upland streamside forest of central Illinois. Forest Research Report. Agricultural Experiment Station. University of Illinois. 75-3, Mar.

F

Kane, P. 1859. *Wanderings of an Artist Among the Indians of North America*. London.

FP

Kavasch, B. 1979. *Native Harvest*. Vintage Books.

AF

Kekos, D. & Macris, B.J. 1983. Production of microbial protein from the edible fungus *Calvatia gigantea* grown on carbon sources containing high amounts of tannins. *Proceedings of the 6 th International Congress of Food Science and Technology* 2:165-166 .

FP

Khan, F.W., Gul, P. & Marwat, A.G. 1977. Chemical evaluation of *Q. ilex* seed and oil. *Pakistan Journal of Forestry* 27:98-100.

AFW

Kim, C.S. & Shin, E.T. 1975. Studies on the utilization of several varieties of acorns in Korea. *Korean Journal of Applied Microbiology and Bio-Engineering* 3(1):17-22.

F

Kim, T.-O. & Lee, M.-T.. 1976. Chemical evaluation of acorn starch from three species of *Quercus*. *Korean Journal of Food Science and Technology* 8(4):230-235.



AF

King, T.R. & McClure, H.E. 1943 or 4?. Chemical composition of some wild American feedstuffs. *Journal of Agricultural Research* 69(1):33-46 .

FP

Knudtson, P.M. 1977. The Wintun Indians of California. *Naturegraph*.

AEFG

Kofman, P.D. & Werkhoven C. 1977. Machine harvesting of tree seeds. *Mechanisch oogsten van boomzaden, Rijksinst. Nederlands Bosbouw Tijdschrift*, 49(9):264-273.

F

Krochmal, A. & C. 1982. Uncultivated Nuts of the U.S. USDA Forest Service.

FP

Kroeber, A.L. 1918. Handbook of Indians of California. U.S. Bureau of Ethnology.

F

Kunkel, G. 1984. Plants for Human Consumption: An Annotated Checklist of the Edible Phanerogams and Ferns. Koeltz Scientific Book, Koenigstein.

EFGH

Ledig, F.T., Beland, J.W. & Fryer, J.H. 1971. Breeding techniques for white oak. *Quercus alba*. Southern Conf. Forest Tree Improvement Proc. 11th: 275-283.

EFHO

Lefebvre, H. 1900. Les Forets de L'Algerie. Alger-Mustapha.

F

Leung, W.-T. 1972. Food Composition Table for Use in East Asia: Part I. FAO, Rome.

AEFGHOW

Loudon, J.C. 1844. Arboretum et Fruticetum Vol. III. Longman, Brown, Green and Longman, London.

AEFW

Lowe, W. 1978. *Die Eichenmast 1974 in Forstbezirk Wertheim*. The 1974 acorns in the Wertheim forest district, West Germany. *Allg. Forstz.* 33(13):337-338 .

FT

Luk'yanets, V.B. 1977. Use of an amino acid analysis of the acorns to characterize specific and intraspecific differences in oak. 313-314. *Sec Jnl Source: Referativnyi Zhurnal* 1978. 5V500.

FA

Luk'yanets, V.B. 1978. Content of amino acids in acorns of various species and climatypes of oak. *Leznoi Zhurnal, Lesotech Int. Vosonezh* 4.

AF

Lund, A.P. & Sandstrom, W.M. 1943. The proteins of various tree seeds. *Journal of Agricultural Research* 66(9):349.

FP

Mails, T.E. 1974. *The People Called Apache*. Rutledge Bk, NJ.

FGT

Makhmet, B.M. 1974. Features of the flowering and fruiting of *Quercus palustris* in a grafted seed orchard. *Osobennosti tsveteniya i plodonosheniya duba bolotnogo na privivochnoi semennoi plantatsii*. *Lesovedenie*, No. 2:105-109.

EFT

Mamontov, N.M., Yan'shin, V.P. & Mamontova, N.S. 1978. Individual variation of oak in capacity of the acorns for prolonged storage. *Genet., selektsiya, semenovod. i introduktsiya les. porod.*, No. 5: 37-39. *Sec Jnl Source: Referativnyi Zhurnal* 1979. 7. 56. 243.

FP

Margolin, M. 1978. *The Ohlone Way*. Heyday Books.

FP

Marwat, A.G., Gul, P. & Khan 1978. Chemical evaluation of *Quercus glauca* seeds and its oil. *Pakistan Journal of Forestry* 28:116-119.

FP

Mathews, J.J. 1961. *The Osages*. University of Oklahoma Press.

AFW

Maymone, B. & Durante, S. 1943. Use of acorns in pig fattening with special reference to the chemical constituents of the depot fat. *Ann. Quad. Nutrizione* 9:162-177.

F

McMichael, E. 1965. Ethnobotanical material from the Ohio Valley. *Proceedings: 21st South Eastern Arch. Conference*, New Orleans.

FP

Mead, G.R. 1972. *Ethnobotany of the Calif. Indians Occasional Publications in Anthropology. Ethno. Services #30*, University of Northern Colorado.

F

Memmo, G. 1894. The alimentation of individuals of different social conditions. Ann. d. Ist. d.'ig sper. d. University di Roma n. ser. vol. 4.

AEFOW

Menke, J.W. & Fry, M.E. 1980. Trends in oak utilization. Ecology, Management and Utilization of California Oaks. USFS Pacific SW Forest and Range Exper. Stat. Gen. Tech. Rept. PSW-44.

FP

Merriam, C.H. 1955. Studies of California Indians. U.C. Press, Berkeley, CA.

F

Merriam, C.H. 1918. The acorn, a possibly neglected source of food. National Geographic 34(2):129-137.

EFHOT

Michaux, A. 1810. Quercus, or Oaks. Trans. W. Wade. Graisberry and Campbell, Dublin.

ADEFH

Miller, H. & Lamb, S. 1985. The Oaks of North America. Naturegraph.

AFWM

Minieri, L. 1954. Total ascorbic acid in some acorns of Campania. *Acido ascorbico totale in alcune ghiandi della Campania*. Zootec Vet. 9:104-106.

AF

Monarca, C.J. & Lynn, E.V. 1937. Acorns of *Q. rubra*. Journal of American Pharmaceutical Association 26(6):493-495.

AFT

Morris, R.T. 1927. Edible acorns as food for man, livestock, and fowl. Proceedings. Northern Nut Growers Association.

F

Moyer, J., ed. 1978. Nuts and Seeds. Rodale Press.

F

Nakabayasai, I. 1968. Studies on tannins in fruit and vegetables. IV. Deproteinizing activity of tannins. Japanese Journal of Food Science and Technology 15(11):502-506.

AF

Nakabayashi, T. 1972. Tannins of fruits and vegetables. X. Adsorption of polyphenolics with insoluble polyvinylpyrrolidone (polyclar). Japanese Journal of Food Science and Technology 19(2):84-90.

AEFW

Nusslein, H. 1978. *Eichenmasten im Spessart und ihre Ausnutzung*. Acorns in Spessart and their utilization. Allg. Forstz. 33(23):667-668.

AF

Ofcarcik, R.P. & Burns, E.E. 1971. Chemical and physical properties of acorns. Journal of Food Science 36.

AF

Ofcarcik, R.P., Burns, E.E. & Teer, J.G. 1971. Acorns for human food. Food. Industry Journal 4(8):18.

M

Olechnowicz-Stepien, W. & Banach, R. 1979. Examination of fatty acids as substances dissolving gall stones. Oils from soybean, sunflower, rape, flax, and *Quercus rubra* acorns. *Badanie kwasow tluszczowych jako substancji rozpuszczajacych kamienie zolciwe*. Poznan: Panstwowe Wydawn. Naukowe Herba Polonica 25(4):93-302.

F

O'Neill, E. S. 1977. Put more fun and nutrition into your life: eat acorns. Mother Earth News, Sept.-Oct.

F

Patterson, M. and R. 1982. Acorns a forgotten food. American Forests. 88:20-23. August

F

Pennington, C.W. 1963. The Tarahumar of Mexico. University of Utah Press, Salt Lake City, UT

EFGH

Petrides, G.A., Parmalee, P. & Wood, J.E. 1953. Acorn production in East Texas. Journal of Wildlife Management. 17(3):380-382.

AFW

Petrucci, E. 1947. Size and chemical composition of acorns of oaks *Q. robur sessiflora* Salsb. var. *pedunculata*, *Q. cerris* L. *Q. ilex* L. used for feeding pigs in the Campagna Romana. Ann. Sper. Agrar. 1(2):343-358.

F

Potts, M. 1977. The Northern Maidu. Naturegraph.

F

Powers, S. 1874. Aboriginal botany. Proceedings of the California Academy of Sciences. 5.

EF

Preston, W.L. 1981. *Vanishing Landscape*. U.C. Press, Berkeley. CA

AFOTW

Readers Digest. 1984. *Field Guide to the Trees and Shrubs of England*. Readers Digest Association, London.

F

Ritchie, W.A. 1965. Development of aboriginal settlement patterns in the N.E. Proceedings: 21st Southeastern Arch. Conference, New Orleans.

F

Ruttle, E.J. 1976. Cooking with ash. *Organic Gardening* 23(12):87-89.

Saunders, C.F. 1934. *Useful Wild Plants of the U.S. and Canada*. McBride and Co., NY.

AFW

Short, H.L. & Epps, E.A. Jr. 1976. Nutrient quality and digestibility of seeds and fruits from southern forests. Southeastern Forest Experiment Station. *Journal of Wildlife Management* 40(2):283-289.

F

Simpson, R. 1977. *Ooti: A Maidu Legacy*, Celestial Arts.

AEFGHOPTW

Smith, J.R. 1977 [1952]. *Tree Crops*. Devin-Adair. 408 p.

AFW

Souici, S.W., Fachman, W. & Kraut, H. 1981. *Food Composition and Nutrition Tables*. Wissenschaftliche Verlag mbh, Stuttgart.

F

Soyer, A. 1853. *The Pantropheon*. Simpkin Marshall, London.

F

Spier, L. & Sapir, E. 1930. Wisram ethnography. Univ of Washington, Publications in Ethnography 3:151-300.

DFG

Stanescu, E. & Ulase, I. 1969. On the acorn cryptogamic damages during a long preservation period under various moisture, airing and temperature conditions. *Rev. Padurilor* 84(3):129-132. Mar.

AFG

Suszka, Boleslaw. 1976. Studies on the long-term storage of acorns: Final Report. Institute of Dendrology, Polish Academy of Sciences, 112 p.

F

Sweet, M. 1976. Common Edible and Useful Plants of the West. Naturegraph.

AFG

Szczotka, Z. 1977. Changes in the activity of indoleacetic acid and abscisic acid in the embryo axes and cotyledons of *Quercus borealis* Michx. and *Quercus robur* L. acorns stored under controlled conditions. *Arbor Kornick* 22:257-273.

F

Thompson, S.& M. 1972. Wild Food Plants of the Sierra. Dragtooth Press.

F

Toland, J. 1970. *The Rising Sun*. Bantam, p. 839.

AFG

Tylkowski, T. 1977. Cold storage of *Quercus robur* L. Acorns in an atmosphere of increased content of CO<sub>2</sub> and a reduced O<sub>2</sub> level. *Arbor Kornick* 22:275-283.

F

Ulrich, E.J. 1980. A 'new' oak (*Quercus macrocarpa*) species for sweet acorns? *The North American Pomona* 13(4):202-204.

F

University of Calif. Extension Media Center. 1962. Acorns the staple food of the California Indians. 16 mm sound and color, 28 min. U.C. Berkeley

F

University of Calif. Extension Media Center. 1965. *The Beautiful Tree: Chishkale*. 16mm sound and color, 20 min. U.C. Berkeley.

F

Usai, A. 1969. *Il pane di ghiande la geofagia in Sardegna*. Editrice Sarda Fratelli Fossaturo. Cagliari, Sardinia.

F

Usher, G. 1974. *A Dictionary of Plants Used by Man*. Constable and Co., London. pp. 492-494.

AFW

Varela, G., Fonolla, J. & Ruano, J. 1956. Influence of maize on digestibility and feeding value of acorns. Av. Ali. Mejora Animal 6.

AF

Videl, C. & Varela, C. 1969. Aminograms of prickly pear and acorn and possibilities of improving the nutritive value of their proteins. Rev. Nutricion Animal, Madrid: 7:53-66.

FP

Vodret, A & Pes, A. 1975. *La composizione delle ghiande della Quercus suber L. Vegetante in Sardegna: Composition of the acorns of Quercus suber L. Growing in Sardinia. Composition of extracted oil. Studi.Sassar Sez III 23:157-174. Eng. sum. pub 1976.*

AFG

Vozzo, J.A. 1978. Carbohydrates, lipids, and proteins in ungerminated and germinated *Quercus alba* embryos. Forest Science 24(4.):486-493.

AFW

Waino, W.W. & Forbes, E.B. 1941. Chemical composition of forest fruits and nuts from PA. Journal of. Agricultural Research 62(10):627-635.

F

Wakefield, E.G. & Dellinger, S.C. 1936. Diet of the bluff dwellers of the Ozark Mountains. Annals of Internal Medicine 9:1412-1418.

AFOW

Walker, W. 1957. All the Plants of the Bible. Harper and Bros.

FM

Weiner, M.H. 1980. Earth medicine -earth food: plant remedies, drugs, and natural foods of the North American Indians. Macmillan, NY 230 p.

F

Weiske, H 1881. Versuche fiber die verdanlichkeit und den nahrwerth der eichlein. Jour. landw. jahrg 28:125-137.

F

Wolf, C.B. 1945. California Wild Tree Crops. Rancho Santa Ana Botanic Gardens, Orange County.

F

Wolfert, P. 1973. Couscous and Other Good Food from Morocco. Harper and Row, New York.

AEFGW

Wolgast, L.J. 1978. Effects of site quality and genetics on bear oak mast production. *American Journal of Botany* 65(4):487-489.

AEFW

Wolgast, L.J. 1979. Acorn yield in a mixed stand of bear oak *Quercus ilicifolia*. and dwarf chinkapin oak *Quercus prinoides*. *Bulletin Wildlife Society* 7(3):176-177.

AEFW

Wolgast, L.J. & Trout, J.R. 1974. Late spring frost affects yields of bear oak (*Quercus ilicifolia*) acorns. *Journal of Wildlife Management* 43(1):239-240.

F

Yanovsky, E. 1936. Food Plants of the North American Indian. USDA Miscellaneous Publication #237, Washington, D.C.

FP

Zhichenko, I.P. & Demidov, A.R. 1970. Effective methods of milling chicory and acorns in a hammer mill. *Muskovskii Tekhnologicheskii Inst. Pischchevui Promyshlennusii. Konservnaya I Oyoschesushti NHYH Prumysalennost* 12:11-13.