

# Plant Data Sheet

## California Black Oak *Quercus Kelloggii*



<http://www.fs.fed.us/database/feis/plants/tree/quekel/habitat.jpg>

### Taxonomy:

**Family scientific name:** Fagaceae

**Family common name:** Oak

**Genus:** *Quercus* L.

**Species:** *kelloggii*

**Species authority:** Newberry

**Variety:**

**Sub-species:**

**Cultivar:**

**Authority for Variety/Sub-species:**

**Common synonym(s):** *Quercus californica* (Torr.) Cooper (7)

**Common Name(s):** California black oak, Kellogg's Oak (3)

**Species Code:** QUKE

### General Information:

#### *General Distribution and Range:*

It has a north-south range of 780 miles. Found most commonly in western California. Its natural range in Oregon extends from just north of Eugene through the valleys west of the Cascade Range. It is also found along lower slopes in sections of the Klamath and Cascade Mountains but never near the Pacific Ocean (4).



[http://www.na.fs.fed.us/pubs/silvics\\_manual/volume\\_2/quercus/kelloggii.htm](http://www.na.fs.fed.us/pubs/silvics_manual/volume_2/quercus/kelloggii.htm)

### *Ecological Distribution:*

Found in Douglas-fir, Ponderosa Pine, Redwood, Western hardwood, and Chaparral-mountain shrub ecosystems (8).

### *Climate and elevation range:*

Grows best in elevation ranges from 450-3000m (6) and in areas where snowfall accounts for 10-50 percent of annual precipitation (4). Prefers areas with cool, moist winters and hot, dry summers (1).

### *Local habitat, abundance, and commonly associated species:*

Grows in foothills and lower mountains (8). Most commonly associated with *Pinus ponderosa* var. *ponderosa*. Also, serves as a nurse tree to conifers such as Douglas-fir and incense-cedar (*Libocedrus decurrens*) (4).

### *Plant strategy type / successional stage:*

Its shade tolerance varies with age. Intolerant of shade for most of its life, although young seedlings can tolerate it. Saplings grow tall and thin toward openings of light (2). Short epicormic branches (1).

### *Plant Characteristics:*

Trees are typically 30-80 feet in height. These oaks sometimes grow in scrub form on dry, infertile soil. Bark of mature trees is 0.75 to 2 inches thick (8).

## **Propagation Details:**

**Ecotype:**

**Propagation Goal:** plants (9)

**Propagation Method:** seed, acorn collection (7)

**Product Type:** Container (plug) (9)

**Stock Type:**

**Time to Grow:** two years (9)

**Target Specifications:** When roots have completely occupied the container but not yet root-bound (9)

**Propagule Collection:** Seed collection happens in the fall and seeds are put in cold storage conditions until stratification (9).

**Propagule Processing/Propagule Characteristics:** Black oak acorns are most likely found beneath parent trees where they number up to 45/m<sup>2</sup> (4). Seeds quickly lose viability if allowed to dry out (5).

**Pre-Planting Propagule Treatments:** After-ripening period to overcome dormancy is required. Acorns can be stratified by cold storage in sealed polyethylene bags thick enough to inhibit moisture loss, but still allowing for emission of respiration byproducts. Storage temperature should be just above freezing and moisture needs to be kept at a level where cotyledons are turgid or slightly flaccid (4).

**Growing Area Preparation:** Moist, well-aerated mineral soil or undisturbed leaf litter make good seedbeds (4).

**Establishment Phase:** Seeds removed from stratification and planted in large containers after they show a radical. Seeds should be inserted in the wing vertical position. This occurs from late winter through mid spring. Space containers so that seedlings have light and space for growth. An isobutylidene diurea top dressing is applied to each container several weeks after seedling transplant. Wil-Gro (Wilbur-Ellis), a 18-6-12 with Mg, S and Fe elements, is applied as follows: 1/16 cup for 1-gallon containers, 1/8 cup for 2, 3 and 4-gallon containers. Seedlings are only fertilized once each year. During the establishment phase, seedlings are irrigated 1 to 2 times per week (9).

**Length of Establishment Phase:** two months (9)

**Active Growth Phase:** Seedlings are irrigated in early morning with low wind exposure. Irrigation scheduling is based on moisture content of the plug. However, it is not generally allowed to dry down very far below field capacity. Seedlings are hand-weeded every six weeks (9).

**Length of Active Growth Phase:** three months (9)

**Hardening Phase:** Begins in late summer with reduction in irrigation frequency. Seedlings grow hardy to low temperatures but are still protected from winter freezes. The bottom inch of each root plug will be pruned to prevent roots from accumulating at the bottom of the container. (9)

**Length of Hardening Phase:** three months (9)

**Harvesting, Storage and Shipping:** Seedlings are not stored or extracted from containers before shipping. Transported in steel racks in enclosed trucks (9).

**Length of Storage:**

**Guidelines for Outplanting / Performance on Typical Sites:** Seedlings are planted in early spring when soil has thawed. Plugs are placed in holes so that top is several inches below the surface of the soil and no media is exposed. Water will be stored in the resulting depression. Other, competitive plants are removed from surroundings (9).

**Other Comments:**

Lifespan may reach 500 years (10).

### **Information Sources:**

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#### *References:*

1. Burns, R. and B. Honkala 1990. *Silvics of North America, Volume 2, Hardwoods*. Agricultural Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, D. C. 877 p.
2. *Hardwoods of the Pacific Northwest*, S.S. Niemiec, G.R. Ahrens, S. Willits, and D.E. Hibbs. 1995. Research Contribution 8. Oregon State University, Forest Research Laboratory.
3. Hitchcock & Cronquist, 1998; *Flora of the Pacific Northwest* (11th ed.); ISBN 0-295-95273-3.

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5. "Plants for a Future: Database Search Results." [http://www.ibiblio.org/pfaf/cgi-bin/arr\\_html?Quercus+kelloggii](http://www.ibiblio.org/pfaf/cgi-bin/arr_html?Quercus+kelloggii).
6. Rose, R., C. Chachulski and D. Haase. 1996. Propagation of Pacific Northwest Native Plants: A Manual, Volume Two, First Edition. Nursery Technology Cooperative, Oregon State University, Corvallis, Oregon, 73 p.
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***Secondary Source:***

10. Zhang, Yongjiang. "Plant Data Sheet." May 12 2003.  
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## **Plant Data Sheet California black oak, Quercus kelloggii**

### **Range**

California black oak grows in Oregon and California in the coastal ranges and the Sierra Nevada range. (1)

### **Climate, Elevation**

California black oak grows in the area with hot dry summers and cool moist winters. (2) Elevation ranges from 450-3000m. (1)

### **Local occurrence (where, how common)**

California black oak is a component of six forest cover types. It is the prime constituent of California Black Oak (Society of American Foresters Type and a major component in two others: Douglas-Fir-Tanoak-Pacific Madrone and Pacific Ponderosa Pine-Douglas-Fir. (2)

### Habitat preferences

It prefer well-drained, deep, sandy, and gravelly soils. (1)

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)

Short epicormic branches. The tolerance of black oak to shade varies with age. (2)

### Associated species

Douglas-fir, Tanoak-pacific madrone, and Pacific ponderosa Pine. (2)

May be collected as: (seed, layered, divisions, etc.)

Seed. (1)

### Collection restrictions or guidelines

Acorns mature in two years; collect from late September to early November (Niemic et al. 1995) by shaking them onto canvas sheets or picking them promptly after they fall to prevent mold from destroying the cotyledon.(1)

### Seed germination (needs dormancy breaking?)

Stratification is required for 30-45 days at 1-5°C in moist sand and peat for spring sowing. (1)

### Seed life (can be stored, short shelf-life, long shelf-life)

Short. Should be planted immediately or place under cool, moist storage conditions of 15-16°C until the planting following spring. (1)

## Recommended seed storage conditions

Plant acorns immediately or place under cool, moist storage conditions of 15-16°C until planting the following spring. (1)

## Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)

Collect acorns, plant acorns. (1)

## Soil or medium requirements (inoculum necessary?)

Mulch fall beds with leaves or straw. (1)

## Installation form (form, potential for successful outcomes, cost)

Seed or container-plants grown from seeds. (1)

## Recommended planting density

110-325 seeds per kilogram.(1)

## Care requirements after installed (water weekly, water once, never water, etc.)

Cut roots frequently to promote the fibrous root system necessary for successful transplanting. (1)

## Normal rate of growth or spread; lifespan

Age-heights are 20 years, 8 m (26 ft); 40 years, 13 m (43 ft); 60 years, 17 m (56 ft); 100 years, 22 m (72 ft); and 140 years, 25 m (82 ft) (2).

Lifespan may up to 500 years. (2)

## Sources cited

(1) Rose, R., C. Chachulski and D. Haase. 1996. Propagation of Pacific Northwest Native Plants: A Manual, Volume Two, First Edition. Nursery Technology Cooperative, Oregon State University, Corvallis, Oregon, 73 p.

(2) Burns, R. and B. Honkala 1990. Silvics of North America, Volume 2, Hardwoods. Agricultural Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, D. C. 877 p.

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