Plant Propagation Protocol for
California Black Oak
Quercus kelloggii

ESRM 412 – Native Plant Production

URL: https://courses.washington.edu/esrm412/protocols/*2026*/*QUKE.pdf*

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TAXONOMY	
Plant Family	
Scientific Name	Fagaceae
Common Name	Beech
Species Scientific Name	
Scientific Name	*Quercus kelloggii* **Newb.**
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	Quercus californica (Torr.) Cooper
Common Name(s)	California Black Oak, Black Oak, Kellogg Oak
Species Code (as per USDA Plants database)	QUKE
GENERAL INFORMATION	
Geographical range	SW Oregon, South through Coast Ranges, and Sierra Nevada to Southern tip of Baja, California[1,2,3,12,13];
Ecological distribution	Found in oak woodlands, mixed hardwood and conifer forests, often with Ponderosa Pines (it's most common botanical associate), and serves as a nurse tree to conifer seedlings at lower elevations[4]
Climate and elevation range	Hot, dry summers and cool moist winters; Elevation of of 200m to 2400m[2]

Local habitat and abundance	Common in sandy or gravelly soils of valleys and slopes[3]; associated with well draining soils[4]
Plant strategy type / successional stage	Becomes important in Sierra Nevada Mixed Conifer and Pacific Ponderosa Pine forest types after severe disturbance or fire, however, the successional status is not clear[4]
Plant characteristics	Long lived deciduous tree, often 75' tall (max of 130'), shrubby at high elevations; crooked trunk. Only lobe leaved red oak native to the West.; Acorns are biennial[5] however, really good crops were found to occur only every eight years or so.[1,3,12,13]
PROPAGATION DETAILS: FROM SEED	
Eco-type	Use local seed zone/collection area when possible.[4,12,13,14]
Propagation Goal	Plants[4]
Propagation Method	Seed[4]
Product Type	Container(plug) or bareroot; both are used in the nursery setting depending on the outplanting goals[7]
Stock Type	Container: deep, ribbed forestry tubes[7]
Time to Grow	Single season (6-10 months)[7]
Target Specifications	Straight stem, healthy terminal bud, and non-circling root system[6]; Firm plug in container[7]
Propagule Collection Instructions	Acorn maturity window is in the fall, the cue is when the acorn base turns brown and detaches easily from the cup. Collect acorns from the ground within a few days after dispersal to avoid losses to predators. This species should be done promptly to avoid mold[1,2,6,7]
Propagule Processing/Propagule Characteristics	Let acorns dry at room temp for a few hours to dry out unsound acorns, then place in water for a float test overnight at the end of the collection day. Sound acorns will sink. Cleaned seed weight has a range of 115-325 seeds/kg with the average being 210[1,2,4,6,7]
Pre-Planting Propagule Treatments	After float test, discard floaters, and store for up to three years by maintaining moisture levels above 30% and storing just above freezing (1-3°C) in containers that allow some gas exchange[1]. Many oaks have desiccation sensitive seeds not suitable for conventional dry seed banking[2,7]
Growing Area Preparation / Annual Practices for Perennial Crops	Well drained, aerated nursery mix in deep tube containers to support taproot. Maintain consistent moisture to avoid drying. Use screens or cages to protect acorns and seedlings from predators[1,2,4,6,7]

Establishment Phase Details	Black Oak acorns exhibit variable dormancy periods. Sow outdoor in the fall to overwinter or so after cold stratification.[1,2,4,6,7]
Length of Establishment Phase	Under warming spring conditions (1-2 months after sowing), radicle emerges first, shoot may lag 10-20 days after radicle.[1,2,4,6,7]
Active Growth Phase	Begins in early summer, seedlings irrigated deeply in early morning, protect from weeds and other vegetation, drying winds, grasshoppers, and mammals that might feed on roots, leaves, or trunks.[2,8]
Length of Active Growth Phase	Nursery dependent, average is 3 months [1,2,4,7.8]
Hardening Phase	Begins in late summer, reduce irrigation frequency, continue to protect from elements, prune the bottom inch of the root plug to prevent roots from accumulating.
Length of Hardening Phase	Nursery dependent, average is 3 months [1,2,4,7.8]
Harvesting, Storage and Shipping	Seedlings are to remain in their containers during shipping, avoid moisture and temperature stress during shipping and handling.[8,9]
Length of Storage	Keep as short as feasible; if cold storing avoid freezing of non-hardy stock and avoid refreezing after thaw[9]
Guidelines for Outplanting / Performance on Typical Sites	Seedlings planted in early spring after soil has thawed. Performance dependent on ability to protect from elements at site[8]
Other Comments	
PROPAGATION DETAILS: VEGETATIVE	
Ecotype	Local stands; sprouting as a response to a disturbance.[1,4,10]
Propagation Goal	Plants
Propagation Method	Oaks in general are extremely difficult to propagate vegetatively on a commercial scale. Few successes have been reported. Grafting and budding have been somewhat successful for ornamental selections.[1,10]
Product Type	On site sprout regeneration and stand management; nursery not involved.[10]
Stock Type	Sprout stems managed on site.[10]
Time to Grow	Unable to ascertain, individual stands and groves may form a post fire cohort.[10]
Target Specifications	N/A
Propagule Collection Instructions	N/A
Propagule Processing/Propagule Characteristics	N/A
Pre-Planting Propagule Treatments	N/A

Growing Area Preparation / Annual Practices for Perennial Crops	N/A
Establishment Phase Details	Protect sprouts from repeated damage and browsing from predators.[10]
Length of Establishment Phase	N/A
Active Growth Phase	Protect sprouts from repeated damage and browsing from predators.[10]
Length of Active Growth Phase	N/A
Hardening Phase	Protect sprouts from repeated damage and browsing from predators.[10]
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	Post fire sprouting explains many one age groves[11]
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Protocol Author	Sartain, S. M.
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