

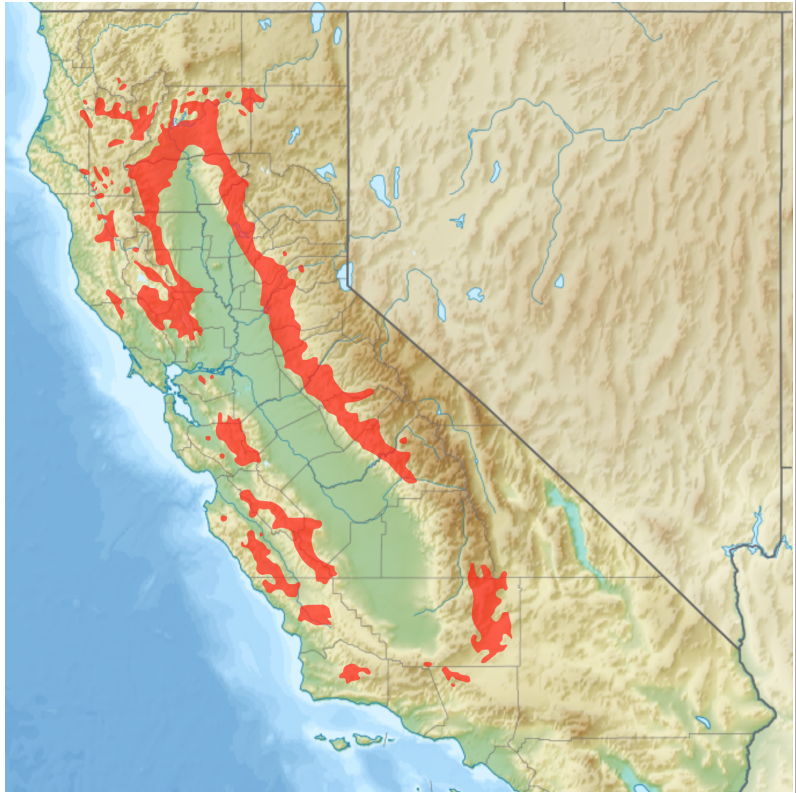
Plant Propagation Protocol for *Pinus sabiniana*

ESRM 412 – Native Plant Production

Amy Burdick

URL: [https://courses.washington.edu/esrm412/protocols/\[2023\]/\[PISA2.pdf\]](https://courses.washington.edu/esrm412/protocols/[2023]/[PISA2.pdf])

TAXONOMY	
Plant Family	Pine Family
Scientific Name	<i>Pinaceae</i>
Common Name	Pine
Species Scientific Name	<i>Pinus</i>
Scientific Name	<i>Pinus sabiniana</i> Douglas ex Douglas (USDA)
Varieties	Douglas
Sub-species	None shown
Cultivar	<i>Pinus sabiniana</i>
Common Synonym(s)	<i>Pinus sabiniana</i> Douglas
Common Name(s)	Gray Pine, foothills pine, bull pine ("SPECIES: <i>Pinus sabiniana</i> ", n.d.)
Species Code (as per USDA Plants database)	PISA2
GENERAL INFORMATION	
Geographical range	Endemic to California, found throughout Sierra Nevadas, Klamath, cascades, and Sierra foothills. From Siskiyou County to Ventura County ("SPECIES: <i>Pinus sabiniana</i> ", n.d.)



Map of California foothill pine dispersal among CA.
https://commons.wikimedia.org/wiki/File:Pinus_sabiniana_distribution_map.svg

Ecological distribution	Woodlands and foothills(Kral 2020)
Climate and elevation range	30-1900m in elevation range (Kral 2020)
Local habitat and abundance	Cascade foothills, dry rocky hillsides in groups (Kral 2020)
Plant strategy type / successional stage	Late successional (Kral 2020)
Plant Characteristics	Tree, tall, overstory. Drought resistant, establishes in poor soil on dry rocky hillsides, well known in the Central Valley of California (Kral 2020)
PROPAGATION DETAILS	
Ecotype	Seeds are gathered from cones (USDA, n.d.)
Propagation Goal	plant

Propagation Method	Seed
Product Type	Deep pot recommended container, bare-root (USDA, n.d.)
Stock Type	PISA2
Time to Grow	Slow, (USDA, n.d.)
Target Specifications	Single stem (USDA, n.d.)
Propagule Collection Instructions	Collect from seed when the plant is mature which is at 80 feet (USDA, n.d.)
Propagule Processing/Propagule Characteristics	Seed per pound is 580, (USDA, n.d.)
Pre-Planting Propagule Treatments	need cold stratification (6 weeks), cracking seed coats can also help germinate faster (“Foothill Pine, Pinus sabiniana”, n.d.)
Growing Area Preparation / Annual Practices for Perennial Crops	Coarse or clay soil, 1200 plants per acre, (“Foothill Pine, Pinus sabiniana”, n.d.)
Establishment Phase Details	Slow growth period, sow in containers after cold stratification of 6 weeks (“Foothill Pine, Pinus sabiniana”, n.d.)
Length of Establishment Phase	Two weeks
Active Growth Phase	5- 10 cm tall (“Pinus sabiniana PFAF Plant Database”, n.d.)
Length of Active Growth Phase	Continue actively growing and establishing roots throughout, Best to be planted young so they can further establish root systems in permanent areas. (“Foothill Pine, Pinus sabiniana”, n.d.)
Hardening Phase	Roots continue to grow and establish in soil, leaves come out, already in their permanent home. It takes 10-25 years for trees to be fully ready to produce seeds and cones. (“Foothill Pine, Pinus sabiniana”, n.d.)

Length of Hardening Phase	Early spring to summer, no time period listed, (“Foothill Pine, Pinus sabiniana”, n.d.)
Harvesting, Storage and Shipping	Harvest bare root, (“Pinus sabiniana PFAF Plant Database”, n.d.)
Length of Storage	A few months, seed in mid winter post 6-week cold stratification, gather seeds at end of bloom in fall (“Pinus sabiniana PFAF Plant Database”, n.d.)
Guidelines for Outplanting / Performance on Typical Sites	Outplant young- 5-10 cm tall, they establish roots better and will be more accustomed to their environment if outplanted early, that being said you must take action to protect them from weeds by mulching well and also from cold in the winter. (“Pinus sabiniana PFAF Plant Database”, n.d.)
Other Comments	Sun to full-sun, pH range from 5.5-6.5 (Leeth, n.d.)

INFORMATION SOURCES

References	<p>“Foothill Pine, Pinus sabiniana.” n.d. Calscape. Accessed May 15, 2023. https://calscape.org/Pinus-sabiniana-(Foothill-Pine).</p> <p>Kral, Robert. 2020. “Pinus sabiniana - FNA.” Flora of North America. http://dev.semanticfna.org/Pinus_sabiniana.</p> <p>Leeth, Frederick. n.d. “Pinus sabiniana (Digger Pine).” Backyard Gardener. Accessed May 15, 2023. https://www.backyardgardener.com/plantname/pinus-sabiniana-digger-pine/.</p> <p>“Pinus sabiniana PFAF Plant Database.” n.d. Pfaf.org. Accessed May 15, 2023. https://pfaf.org/user/Plant.aspx?LatinName=Pinus+sabiniana.</p>
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	<p>“SPECIES: Pinus sabiniana.” n.d. USDA Forest Service. Accessed May 15, 2023. https://www.fs.usda.gov/database/feis/plants/tree/pin_sab/all.html.</p> <p>USDA. n.d. - Wiktionary. Accessed May 15, 2023. https://plants.usda.gov/home/plantProfile?symbol=PI SA2.</p>
Other Sources Consulted	<p>Davis, Thomas S., Miranda D. Redmond, Nathaniel E. Foote, and William Miller. 2019. “Factors Associated with Establishment and Growth of Pinus coulteri and Pinus sabiniana in California’s Central Coast Bioregion.” <i>Society of American Foresters</i> 65, no. 6 (December): 703-713. https://sites.warnercnr.colostate.edu/davis-forest-health-lab/wp-content/uploads/sites/152/2021/05/Davis-2019-Factors-Associated-with-Establishment-and-Growth.pdf.</p> <p>Greene, Megan, and Lisa Redfern. 2018. “Ghost Pine - Produces Nuts in Harsh Growing Conditions.” Following Deer Creek. http://followingdeercreek.com/ghost-pine-produces-nuts-in-harsh-growing-conditions/.</p> <p>“Pinus sabiniana (Digger Pine).” 2013. Practical Plants. https://practicalplants.org/wiki/pinus_sabiniana/</p> <p>“Pinus sabiniana (gray pine) description.” 2023. The Gymnosperm Database. https://www.conifers.org/pi/Pinus_sabiniana.php.</p>
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