

Reforestation and obtaining seedlings in California

The following memo was created for field staff to understand a process developed for the 2012-13 planning season for locating conifer seedlings for customers. Orders to the nurseries must be completed by the end of November to have seedlings ready by 2013/14 planting season.

The loss of conifer seedling production for non-industrial private forest (NIPF) landowners due to the closing of the State CAL FIRE nursery have resulted in critical shortages of seedlings. Funding reductions have also adversely affected seed collection and storage at the State's conifer seed bank.

NRCS has identified a need of approximately 1,050,000 seedlings for cost share programs in the 2012/13 planting season and anticipated need of nearly 700,000 seedlings the next planting season. If there is a sound seedling source available, additional landowners will sign up.

Currently, speculative growing of conifer seedlings no longer occurs. Cost share recipients for both CAL FIRE and NRCS must "place an order" for seedlings with private nurseries, typically when they first sign up. This order needs to identify species, seed zone, elevation, quantities, and date needed. It takes 12 to 18 months to grow a desirable seedling.

The Seed Bank at CAL FIRE's L.A Moran Reforestation Center in Davis, CA provides the seed zone specific seed to private nurseries. Connecting the appropriate seed with potential seedling growers is a critical to assure conservation seedlings are planted. Before completing a contract with a landowner, the private nursery being asked to grow conservation seedlings must consider the available seed in that seed zone stored at the Seed Bank. Many seed zones do not have seed available to grow seedlings and the landowners and NRCS planners need to know this before going into contract.

To obtain seedlings, landowners must contract directly with a private nursery to grow site specific seedlings. There are no fiscal or other arrangements between agencies (NRCS or CAL FIRE) and the seedling growers. Usually there will be a deposit required at the time the order is placed with the remainder due at time of delivery. The amount of the deposit will vary by nursery. The contracted landowner will be eligible for cost share reimbursement only after they have paid for the seedlings and planted according to contract specifications.

In most cases, landowners can order seedlings directly through the private nursery and the private nursery would provide order information to the State CAL FIRE seed bank for seed to fill the seedling orders. The seed cost is usually passed on to the landowner in the cost of their seedlings. However, some nurseries do not provide this step and the landowners must coordinate between the CAL FIRE seed bank and the desired private nursery.

Attached is a list of conifer producing nurseries that responded to our request. We also noted if these nurseries have grown conifers to USFS Region 5 contract standards. The listed private nurseries have indicated they could work directly with individual landowners on relatively small orders, some down to 500 seedlings. There are contracted situations where seedling orders of NIPF landowners are too small and alternative partnerships and other mechanisms are being explored for next year.

The Forestry Consortium has created a universal seedling order form that addresses the needs of the agencies for their cost share programs and for NIPF landowners to utilize in placing their orders for contract growing with nurseries. The order form is useful for the CAL FIRE seed bank to determine if seed is available for the project.

Nurseries vary on what they produce for seedlings. A contract for container or bare root seedlings is a decision for the landowner to make in consultation with their forester or technical specialist. Some nurseries do not have the option of growing both bare root and container seedlings. Nurseries prefer that landowner pick up their seedlings but some do ship via refrigerated truck and UPS if needed. A few nurseries have cold storage facilities for seedlings for planting time flexibility.

Landowners can also access and utilize services by NRCS Staff, CAL FIRE Forestry Assistance Specialists and Seed Bank Staff, consulting RPF's, RCD employees and non-profit groups such as the Society of American Foresters (SAF). The NRCS Plant Materials Center staff will have extensive knowledge on reforestation services and are available to guide clients and landowners on seedling species, quality and planting techniques.

Seed, seedlings and technical support is also available on the CAL FIRE website under (http://www.fire.ca.gov/resource_mgt/resource_mgt_statenurseries.php) and by calling the Stewardship Help line, 800-738-TREE. The Forestland Steward is an excellent communication source that can provide technical information that can help landowners become better stewards of their forestland. The Forestland Steward @ <http://ceres.ca.gov/foreststeward/newsletter.html> has past issues on their web site. All NRCS contracts must include basic information on planting and planting techniques.

If you are planning or are contracted to plant conifer seedlings please use the following information: Guide for ordering seedlings, Nursery Order Form, and List of Nurseries (with USFS contract specifications).

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Step 1. Identify where, when, what kind, and how many seedlings to be planted.

With help from a registered professional forester (RPF), CAL FIRE or Natural Resources Conservation Service staff, identify species, seed zone, elevation, quantities, and date needed.

It takes 12 to 18 months to grow a desirable seedling.

Most nurseries need to have an order in by early November.

Step 2. Fill out generic nursery order form.

Most nurseries will accept the generic form or have one with equivalent information.

Select type of seedling (bare root/container) and alternative species.

Determine shipping, storage and post shipment handling.

Step 3. Contact and make a contract with nursery.

Find the nursery that will produce the desired product including cost, proper seed, storage, handling, and transport.

If seed is not part of the nursery services, contact CAL FIRE Seed Bank (530) 753-2441 to arrange seed shipping to the selected nursery and payment.

Deposits will be required and there is financial risk if project is not currently approved under conservation contract and may not be approved in the future.

If the number of trees needed is below the minimum number a nursery will grow, check with your local NRCS/RCD/CALFIRE office for potential alternatives.

USFS Conifer Seedling Guidelines

There is no certification group for seedling quality. The USFS contracts with private nurseries to grow trees for public lands and their contract specifications provide excellent results. Most production-based conifer nurseries in CA have grown conifer seedlings for the USFS Region 5. The following are USFS seedling specifications for contract growing for the USFS Placerville Nursery.

Seedling Specifications

Species	Top Height	Tolerance	Diameter	Tolerance	Root Length
All	10 cm	-3 cm	3 mm	- 0.5 mm	20.5 to 26 cm max.
		+6 cm		+ 4 mm	

Top height of 10 cm measured to the nearest centimeter from the base of the terminal bud to the root collar, defined as a point on the stem 2.5 cm below the cotyledonary scar. Needles are specifically excluded from height measurement.

Stem diameter is the cross sectional diameter measured to the nearest 0.1 millimeter at a point 2.5 cm below the cotyledon scar.

In addition to meeting the minimum size standards listed above, all acceptable seedlings must be alive and free of any insects, disease, chlorosis or mechanical damage. All seedlings shall meet phyto-sanitary certification regulations of any State (California or grower State or Province), or U. S. Federal regulations pertaining to shipments of trees into the U. S. and the State of California. Only one live seedling per cavity is permitted. For rust resistant sugar pine, sow one seed per cavity. For the other species, grow one seedling per cavity, but thinning is permitted. The seedlings must have evident, tight terminal buds at time of scheduled delivery.

Root elongation from bottom of containers will be restricted by growing seedlings in a manner which will provide air-pruning of roots. Shoot to root ratio is approximately 2:1.

Conditioning for Field Planting

From at least 45 days immediately prior to the delivery date, the seedlings shall be gradually hardened off. This may include reducing the amounts of water and/or fertilizer and also exposing the seedlings to ambient air temperatures. Full dormancy shall be attained by December 15. Unless otherwise arranged, seedlings are to be delivered to the Placerville Nursery by March 1.

Packing and Shipping of Containers or Plugs

The containers or plug seedlings shall be prepared for transportation prior to delivery as follows or by mutually agreeable alternative methods:

Seedling shall be removed from tubes and crates, and packed vertically approximately 15 seedlings to each individual plastic bag. Plastic bags containing seedlings shall then be packed in heavy-waxed treated corrugated paper boxes (used in the conifer tree seedling industry) containing a moisture barrier on the bottom.

Stored trees shall be maintained at 0-1 degrees C, (32-34 degrees F) and with 90%+ relative humidity. A recording hygrothermograph shall be used in the tree storage room. The recordings shall be available for inspection by the Contracting Officer's Representative.

All containers, bags or boxes, shall be labeled on one side with a minimum of one-inch high numerals. The label shall contain species, elevation, number of seedlings, seed lot or source ID code number, and bid item number. The seedlot number shall incorporate the Placerville (seedbank) and Nursery short code (5-digit number). Shipping of trees shall be in a refrigerated truck at temperatures no lower than 32 degrees F or higher than 34 degrees F. Delivery of the trees shall be to the Placerville Nursery in Camino, CA. Telephone Nursery Manager (530) 642-5025, prior to shipment to arrange for help unloading seedlings from the truck.

Seedlings shall be delivered without being subjected to drying, heating, freezing, or delays. Once the trees are in shipment they must not be allowed to sit on docks or in any way delayed during transit. Moisture stress will be equal to or less than one atmosphere of pressure.



California Tree Seed Zone Map

Society of American Foresters, 1987 edition

SEEDLING ORDER FORM FOR CAL FIRE & NRCS COST SHARE PROGRAMS

PLANTING SITE	USE	SHIPMENT	NURSERY USE ONLY	
NEAREST TOWN:	<input type="checkbox"/> REFORESTATION	<input type="checkbox"/> Pick-up at Nursery	Order number	
COUNTY:	<input type="checkbox"/> EROSION CONTROL & WATERSHED PROTECTION	<input type="checkbox"/> Truck (freight prepaid)		
	<input type="checkbox"/> WINDBREAKS	<input type="checkbox"/> Parcel service (prepaid)	Private	Public
ELEVATION:	<input type="checkbox"/> CHRISTMAS TREES	Customer's desired shipping or pick-up date:	Use Code	Seed zone
<input type="checkbox"/> SMALL OWNERSHIP SIZE (0 TO 5,000 ACRES)	<input type="checkbox"/> FUEL WOOD			
<input type="checkbox"/> WILL IRRIGATE TREES	<input type="checkbox"/> APPROVED RESEARCH PROJECT	(We ship Mon. - Wed., allow 2-3 days, no weekend deliveries)		

CUSTOMER NAME AND MAILING ADDRESS	CUSTOMER SHIPPING ADDRESS
	<i>if different from mailing address; use physical address, no P.O. boxes.</i>
EMAIL -	
CELL PHONE # ()	
DAYTIME PHONE # ()	
EVENING PHONE # ()	

NURSERY USE ONLY		SPECIES OF TREE	AGE	NUMBER	SECOND	SEEDLING	SHIPPING
SEED ORIGIN	LOT #			OF TREES	CHOICE SPECIES	COST	COST

SALES TAX EXEMPTION TAX EXEMPT I certify that these seedlings will be planted on my land for production of trees to be harvested and sold or that I am in the business of selling forest products and hold the following California Seller's Permit #: _____ Please initial _____	Calif. parcel service shipping & handling	Subtotals Sales tax (on seedlings only) (use planting county's sales tax rate) Shipping cost subtotal Total Cost
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Mail this order with check payable to:

See attached nursery list for mailing information

I hereby declare under penalty of perjury that this planting stock will be planted only for the purposes indicated above and that any information provided for the purpose of obtaining a discount or exemption is true.

SIGNATURE REQUIRED: _____

NURSERY USE ONLY								
Date	Type	Amount	Number	RC#	RC Date	Packed	Shipped	Via
	<input type="checkbox"/> MO <input type="checkbox"/> Chk <input type="checkbox"/> Other:							
	<input type="checkbox"/> MO <input type="checkbox"/> Chk <input type="checkbox"/> Other:					# Containers		
	<input type="checkbox"/> MO <input type="checkbox"/> Chk <input type="checkbox"/> Other:					Handled by:		

Potential Nurseries for NIPF Landowners, August 2012

Revision 3

Orders must be placed during October and November 2012 for delivery beginning in the fall of 2013 through the winter and early spring of 2014.

NURSERY	SEEDLING TYPE	APPROXIMATE MINIMUM ORDER SIZE*
Cal Forest Nursery** 1838 Eastside Road Etna, CA 96027 530-467-5211	Container	200 per seed lot
Fowler Nurseries** 525 Fowler Rd. Newcastle, CA 95658 916-645-8191	Bare Root	1000 per seed lot
Cornflower Farms** 9811 Sheldon Road Elk Grove, CA 95624 916- 689-1015	Container	500 to 1000 per seed lot
Hoopla Tsemeta Tribal Nursery 123 Marshall Lane P.O.Box 368 Hoopa, CA 95546 530-625-4206	Container	500 + per seed lot
IFA Nurseries** 1205 South Spring Street Klamath Falls, OR 97601 541-850-0952	Container & Bare Root	5000 per seed lot

<p>SilvaSeed Company 317 James Street Roy, WA 98580 253-843-2248</p>	<p>Container & Bare Root</p>	<p>1000 to 5000 per seed lot</p>
<p>USFS Placerville Nursery*** 2375 Fruitridge Road Placerville, CA 95709 530-642-2505</p>	<p>Container & Bare Root</p>	<p>500 per seed lot</p>
<p>CAL FIRE's L.A Moran Reforestation Center Seed Bank Division Davis, CA Teri Griffis, Mgr Teri.Griffis@fire.ca.gov 530-753-2441</p>		
<p>Industrial forestland owners/corporations Grow seedlings for their lands and often sell over-produced seedlings to neighbors within seed zones.</p>		

- * Confirm minimum order size with nursery as this number may go up or down depending upon other orders they are growing. Prices vary by nursery.
- ** These nurseries have grown conifers in the past to USFS Region 5 contract standards.
- *** The USFS Placerville Nursery is unable to grow directly for landowners but can grow for federal, state and local entities that want seedlings for NIPF landowners.