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CALIFORNIA TREE SEED ZONES

The California Tree Seed Zones publication from 1970 is reprinted here for background and reference purposes.

The California Tree Seed Zones were/are an integral part of USDA's seed collection reporting system. California forest tree seed zones were originally established in 1946 based on collection criteria adopted in the USDA forest seed policy of 1939. The policy specifies that seed should (1) be collected within 100 miles north or south of the planting site and (2) differ in elevation by less than 1,000 feet, and (3) careful consideration should be given to areas having unusual climatic, topographic, or soil conditions that might greatly affect tree growth.

The State is divided into six physiographic and climatic regions, 30 sub-regions, and 85 seed collection zones. A GIS data layer of the zones is available. For NRCS in California, it is the "TreeSeedZones_ca" shapefile stored in the climate folder of geodata.

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Division of Forestry
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1970

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by

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California forest tree seed zones were established originally by Fowells (1946), with revisions proposed by Roy (1963) and Schubert (1966). The Forest Tree Seed Committee^{1/} of the Northern California Section, Society of American Foresters, has revised the original reports. Fowells' (1946) Research Note should be reviewed for background material. Portions of Schubert's (1966) proposals were incorporated in the new system.

The Forest Tree Seed Committee acknowledges the assistance of foresters and tree seed dealers in California and the Pacific Northwest who reviewed the revised zone map and reporting system.

The California Tree Seed Zone map (attached) is an integral part of the seed collection reporting system. Zones are delineated on the basis of collection criteria adopted in the USDA forest seed policy of 1939 (U.S. Forest Service 1948). The policy specifies that seed should (1) be collected within 100 miles north or south of the planting site and (2) differ in elevation by less than 1,000 feet. Also, (3) careful consideration should be given to areas having unusual climatic, topographic, or soil conditions that might greatly affect tree growth. On the basis of these three criteria, the State was divided into six physiographic and climatic regions, 30 subregions within regions, and 85 seed collection zones. One region is divided into four physiographic and climatic areas having 18 of the 85 zones (see p. 3, 900 Series).

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Seed collection zones are limited to about 50 miles in latitude. Where possible, boundaries have been chosen to follow natural features, such as crests of mountain ranges, ridgetops, and rivers, or physical features, such as highways, canals, and railroads.

The seed collection zones and three-digit method of designating the various zones are coordinated with the map and coding system developed by the Western Forest Tree See Council in 1966 and now used in Oregon and Washington.

The six physiographic and climatic regions are:

- **090 Series -- North Coast Redwood:** The redwoods extend along the coast in the fog belt, 10 to 30 miles wide, from extreme southwestern Oregon as far South as Monterey Bay. An exception is an area near Cape Mendocino, which has no redwood. The redwood belt north of Cape Mendocino is a relatively high site and contains Douglas-fir and the minor species, including western hemlock, Sitka spruce, grand fir, Port-Orford-cedar, and western redcedar. South of Cape Mendocino, the redwood stands are generally of lower site and include Douglas-fir as a second major species.
- **100 Series -- Central Coast**
- **300 Series -- North Coast Interior:** This region extends from the summit of the Siskiyou's south to San Francisco Bay and lies between the coastal fog belt and the Sacramento Valley. The western portion is predominately Douglas-fir, while the eastern portion is mixed conifer. An isolated seed zone (zone 390), predominantly Douglas-fir, is located on the coast in the Cape Mendocino area.
- **500 Series -- West Slope Cascades-Sierra:** This region is an extension of the west slope Cascade mountain region in Oregon and extends south to the Tehachapi Mountains. Its west and east boundaries are, respectively, the Central Valley and the crest of the Cascade and the Sierra Nevada. Fowells' Zones II, III, IV, V, VII, and VIII are generally included in this enlarged region.

Fowell (1946) points out that "The west slope of the Sierra Nevada supports two broad timber types, the mixed conifer and the subalpine. On the lower and middle west slope of the Sierra Nevada and in the southern extension of the Cascade Range the timber stands are typically mixed conifer, containing ponderosa pine, sugar pine, Pacific white fir, and California incense-cedar, with Douglas-fir included in the northern part. In the vicinity of the Mokelumne River, Douglas-fir ceases to be an important part of the stand." The upper slopes of the Sierra Nevada support a subalpine forest of California red fir, Jeffrey pine, lodgepole pine, and western white pine.

- **700 Series -- East Slope Cascades-Sierra:** This is an extension of the east slope Cascade mountain region in Oregon and extends south on the east slope of the Cascades and the Sierra Nevada to Walker Pass in Kern County. The timber stand of the east slope of the Sierra Nevada and of the Columbian Plateau of northeastern California consists of ponderosa pine and Jeffrey pine with mixtures of white fir and incense-cedar.

- **900 Series -- Four Areas:** The 900 series in the Northwest encompasses southeastern Oregon; in California it serves as a "catchall" for four separate areas to keep the numbering system within the three-digit designation.

The four areas are:

950 -- Great Basin, Northeastern California

960 -- Central Valley

980 -- Southern California Desert

990 -- Southern California Mountains (this area contains most of the natural conifer stands found in southern California)

Numbering System for Seed Zones

The three-digit designation (XYZ) used in numbering the seed collection zones also serves another purpose. It helps determine the suitability of seed for a planting area. Major areas in California having similar topographic, climatic, and edaphic conditions are given the name "Physiographic and Climatic Regions". These regions are differentiated by the hundred-digit in the X position.

Divisions of the regions, called subregions, are shown by the ten-digit in the Y position. Divisions of the subregions, called zones, are indicated by the unit digit in the Z position. Thus:

Zone number = XYZ

Physiographic and climatic region = X

Physiographic and climatic subregion = Y

Zone = Z

If the zone number (Z) is zero (0), the zone is unique, and is considered a subregion. If the zone number is from one through nine, the zone is an arbitrary breakdown of the subregion to keep zones about 50 miles long in latitude. Examples of this designation are:

A. Zone 390 - 3YZ represents the 300 series, or North Coast Interior physiographic and climatic region. 39Z represents one of the 10 subregions of this region. 390 is a unique zone. It is, in effect, a subregion, since there are no other 39Z zones.

- B. Zone 525 - 5YZ represents the 500 Series, or West Slope Cascades-Sierra physiographic and climatic region. 52Z represents one of the seven subregions of this region. 525 is a zone, an arbitrary unit of the subregion. Other zones in the subregion are 521, 522, 523, 524, and 526.

Rules

The following rules for using seed (or planting stock raised from seed) collected from California Tree Seed Zones should be closely observed:

1. Whenever possible, use seed from the seed zone in which planting or seeding is to be done.
2. If seed from this seed zone is not available, use seed from an immediately adjacent seed zone within the same physiographic and climatic subregion (both seed zones having the same XY number a Z number differing by only one or two numbers).
3. If seed from an immediately adjacent seed zone within the same subregion is not available, use the closest available seed from a seed zone within the same subregion (both seed zones having the same XY number).
4. If seed from a seed zone within the same subregion is not available, use seed from a seed zone within the same physiographic and climatic region (both seed zones having the same X number) or from an immediately adjacent seed zone in another region.
5. Movement of seed from one region to another should be done only with considerable caution to insure meeting the silvical requirements or the introduced seed.
6. Elevational distribution must always be considered, whether within individual seed zones or between regions. The 1,000-foot criteria adopted as USDA forest seed policy must be followed closely. Therefore, each seed lot must be separated by seed zone and by 500-foot elevational differences.

Standardized Labeling System for Seed

A standardized labeling system for seed has been adopted by the SAF Section Tree Seed Committee, the U.S. Forest Service, and the California Division of Forestry. It provides for species, zone, elevation, and year of collection. Codes for scientific names of California wildland plants have been established (Reed, Powell, and Bal 1963). The codes are used to identify the species in the labeling system. Elevation is designated with a two-digit number indicating the

elevation of the upper limit of the collection; for example, the number for 0 to 500 feet is 05, and for 4,001 to 4,500 feet is 45.

In the seed lot code, zone is represented by a whole number, elevation by a decimal, and year of collection by two numbers after a dash. For example, the code PIPO 525.40-67 represents *Pinus ponderosa* seed collection in zone 525, at an elevation between 3,501 and 4,000 feet, and collected in 1967. Other seed source information, such as township, range, and section, may be added to the seed lot records, if desired.

Adoption of the California Tree Seed Zones and the labeling system for seed lots makes possible a "universal language" for working with tree seeds and planting stock. All persons who are in regeneration work, whether as a seed dealer, nurseryman, someone requesting seeds or planting stock or doing the seeding or planting, will have a common understanding of the source of the seed or planting stock.

Use of the standardized seed zones and labeling system will provide a basis for testing and adequacy of the zone classification, for evaluating geographic variation, and for determining any needed adjustment in seed zone boundaries.

References

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STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF FORESTRY AND FIRE PROTECTION

CALIFORNIA TREE SEED ZONE MAP

