

# Reforestation Strategies in the Age of Drought and Climate Uncertainty



**Guy M. Anderson**  
**Forestry Assistance Specialist**  
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# Ecological Considerations

For the West slope of the Sierra Nevada moisture or precipitation is the main limiting factor in determining tree growth and tree species selection.

Higher Elevation, more precipitation more tree growth and greater tree species selection

# Five Key Steps

Planting represents a large investment that is carried out over the life of a stand. It is in your best interest to:

1. Plan regeneration operations carefully (timing, species, spacing, etc). A year in advance.
2. Prepare your planting site
3. Take proper care of your planting stock
4. Closely supervise the planting crew
5. Follow through with regeneration surveys that indicate where replanting and brush maintenance is needed

Your planting efforts can only be as successful as the weakest link in these five steps.

– *Forestland Steward Fall 2006*

# **Where to Plant, When to Plant, What to Plant**

# Where To plant

Consider what you are planting today may become a hazard and major expense tomorrow

Trees should be planted so they don't grow into powerlines, leech lines or septic systems. Plant trees so future removal cost are minimal.

Avoid planting conifers in shallow rocky soils on south facing slopes. Plant oaks in instead.

# Characteristics of a good Planting Spot

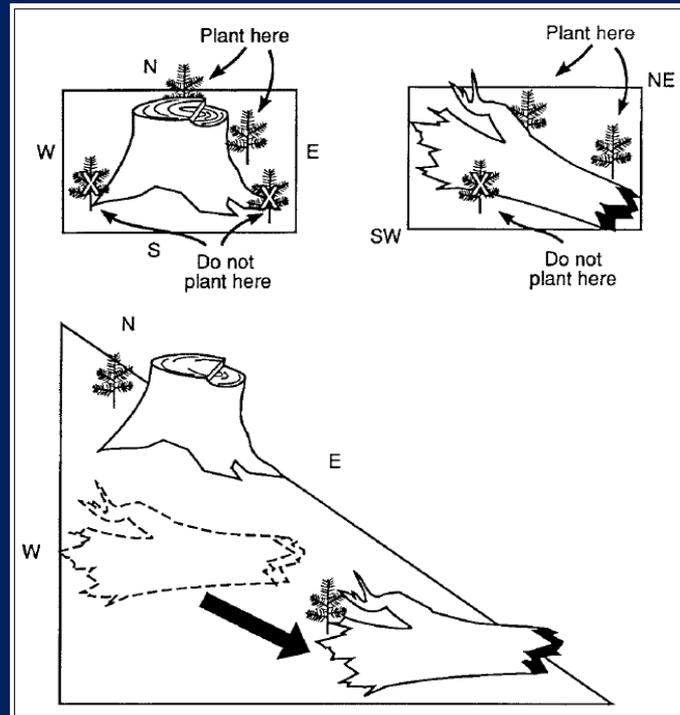
Planting Area has exposed mineral soil.

Away from animal holes and game trails.

Away from concentrations of sprouting brush.

A protected shaded area next to a log or stump.

# Characteristics of a good Planting Spot



# When to Plant

For lower elevation Sierra Nevada plant tree in the late fall or early spring depending on seasons storm outlook.

Avoid planting after April in lower elevations ( Below 5,000 feet).

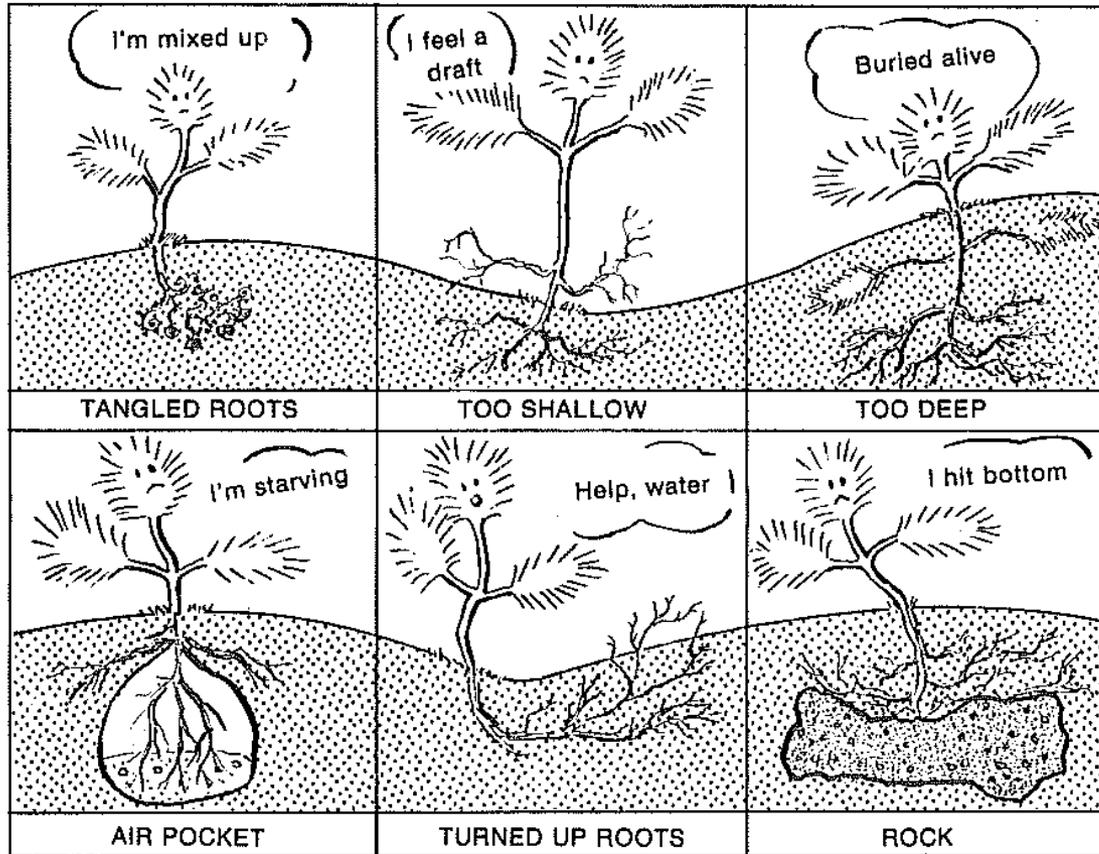
# What to Plant

Consider Native Oaks and grey pine below 3,000 feet.

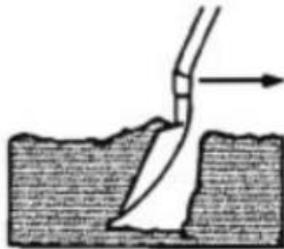
Consider planting trees that came from seed stock 2-3 seed zones south.

Consider planting trees from seed stock that came lower elevations.

# Tree Planting Errors



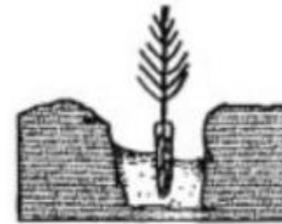
# Proper Planting Technique



Insert shovel vertically with blade reversed, push handle forward, then pull soil back and out of hole. The hole should be large enough so the entire root plug easily fits into it.



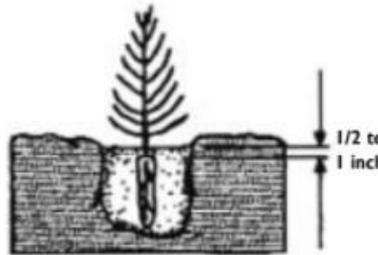
Straighten back of hole and insert seedling at proper depth. The top of the root plug should be at least 1/2 to 1 inch below the soil line as long as the foliage will not be buried.



Hold the seedling in place and fill the hole half way with moist soil.



Fill the hole with moist soil, pack with your hand and cover surface with a mulch of loose, dry soil.



This properly planted seedling had its original plug buried 1/2 to 1 inch below the soil line. None of its foliage is buried.



Avoid the "Death Stomp." Packing the soil with your foot or planting tool severely compacts the soil and decreases seedling growth.

**FIGURE 4.1**

*Proper planting technique.*

Source: Dumroese, R.K.; Wenny, D.L.; Mahoney, R.L.; 1990. *Plant your container-grown seedlings right.* Moscow, Idaho: University of Idaho Cooperative Agricultural Extension Service, Current Information Series, No. 528. 4 p.

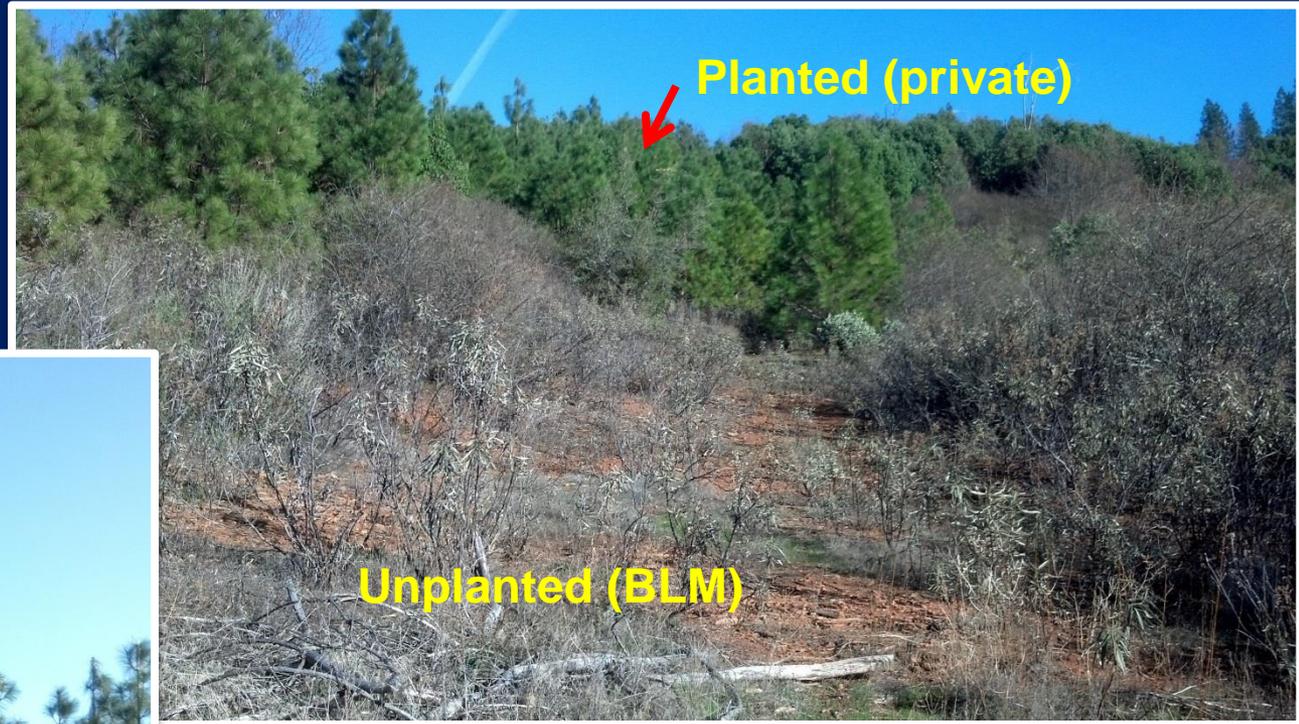
# Tree Planting Checklist

1. Handle seedlings gently and little as possible.
2. Keep seedlings cool (34-36 F) protect from freezing or temperatures above 40 F
3. Protect seedlings from drying out especially the roots, by reducing exposure to drying air
4. Avoid touching the roots

# Number of Trees Required for Different Spacings

Spacing in feet	Number of trees per acre
8 x 8	681
10 x 10	544
12 x 12	303
14 X 14	222
16 x 16	170
20 x 20	108

# Replant!



Trees planted in 2000 following the 1999 Pendola fire in Yuba County, photos taken in 2014

Photos: J. Calvert, CAL FIRE





# Controlling Weeds

- Shrubs compete for water and nutrients and shade out seedlings, limiting seedling survival and growth
- Maintain at least 3' x 3' weed-free area around seedlings for the first 2 to 3 years
- Hand weeding, herbicides, or fabric weed-barriers are options
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