Christmas Tree Production in the California Sierra Foothills

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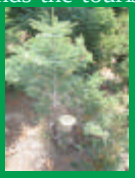
Introduction

Christmas trees can be a lucrative specialty crop grown on California's Sierra foothill small farms. A large variety of true fir species, (*Abies* sp.), as well as Douglas fir, (*Pseudotsuga menziesii*), are grown on relatively small 'Choose 'n Cut' farms in traditional tree fruit and winegrape agritourism locations. These farms provide the area with a unique crop that extends the tourism season, provides open space and enhances biodiversity.

Stump Culture





Several Christmas tree growers in El Dorado county successfully utilize a practice known as "stump culture". Instead of cutting down the entire tree at harvest, the tree is cut so that the stump is left with a few whorls of lower branches. These "nurse branches" act to provide the stump with energy to regenerate new sprouts. Sometimes the stump is covered with a plate to help heal the wound. After a couple of years, the grower will choose the best leader to become the next tree, pruning the competing leaders and branches. Stump culture reduces the time to harvest for a White Fir from approx. 8-10 years to approx. 5-7 years. One stump can provide as many as five harvested trees. Some consumers like the stump culture concept since they consider the tree is not "killed", it is "renewed". In El Dorado county, where land is expensive, stump culture provides an efficient means to utilize small farm acreage.

Christmas Tree Pests






Christmas tree pests include (left to right in above photos): 1.) Balsam twig aphid (*Mindarus kinseyi* Voegtlin), a unique species found and described on White Fir in El Dorado county that is related to *M. abietinus* Koch. 2.) Giant conifer aphid (*Cinara* spp.) attack all species and produce copious amounts of honeydew, resulting in sooty mold. Lady beetles often come into plantations and lend some control. 3.) Cribrate weevil (*Otiorhynchus cibricollis*) infesting neighboring apple orchards has been found to cause significant damage on young seedlings, girdling branches. 4.) A phenomenon referred to locally as "curly needle" can be due to aphid feeding. A thrips has also been indicated but not yet positively identified. 5.) *Armillaria* root rot, or oak root fungus, is prevalent in many foothill soils. The white mycelial "fan" under the trunk bark is a positive identifier. 6.) *Phytophthora cinnamomi* root rot is a devastating problem on some farms. White and Noble fir appear especially susceptible while Doug fir appears less susceptible.

Local Christmas Tree Research Initiated

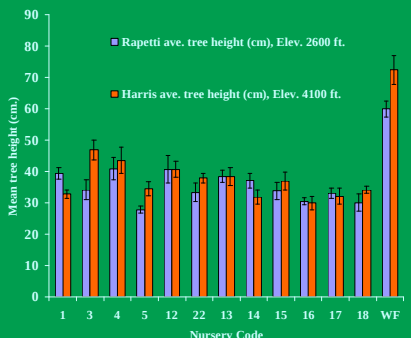
Several research projects in Christmas tree production are underway in El Dorado county, thanks to the support of local growers. Trials have been initiated in collaboration with Gary Chastagner, WSU Plant Pathologist, to investigate the resistance of 12 seed sources of Nordmann and Turkish fir to *Phytophthora*. In addition to disease resistance, data is being collected on the growth characteristics of these seed sources, compared to White Fir from local seed, on three farms. Two of these farms vary greatly in elevation (see Fig. 1.).

A cost study for foothill Christmas tree production, the first for Christmas trees in California, has also been initiated. Working with local growers from El Dorado and Placer/Nevada counties, Farm Advisor Cindy Fake and UC economists Karen Klonsky and Rich DeMoura, the study analyzes a hypothetical Choose and Cut farm operation, makes basic assumptions about resources and calculates sample costs of production for Doug and White Fir production. The study results will be published on the UC Davis Dept. of Agriculture and Resource Economics website at **http://coststudies.ucdavis.edu/.**

Growth measurements of Nordmann and Turkish fir are compared to local White fir in different microclimates.

Turkish and Nordmann fir seed sources will be screened for *Phytophthora* resistance in naturally infested field sites like this one.

Figure 1. Average tree height of twelve seed sources of Nordmann and Turkish fir compared to local White Fir at two farm elevations. Trees were planted in 2004.



Note: Nursery codes 1-4 are Turkish firs from various provenances in Turkey, 5-12 and 22 are various provenances of Nordmann fir from Turkey and Denmark, 13-18 and 20 are Nordmann fir clonal progeny from the Vallo seed orchard in Denmark.