

Christmas Trees: Plantations to Agroforestry Systems¹

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ABSTRACT: The Christmas tree industry in North America has changed substantially since the 1950's. Prior to that time most Christmas trees were produced in natural forest stands either intentionally or as a byproduct of the timber industry. Today most are produced in very intensively managed plantations. These plantations are planted with "exotic" species or improved selections of local species that produce the type of tree the market is demanding in the shortest time possible. On the road to this fast growing, easily managed, perfect tree, many growers have become the victims of high input costs and a poor return on their investment. Many growers have solved this problem by direct marketing to consumers. Growers who live in areas distant from population centers do not have this option.

In the southeast corner of British Columbia (the Rocky Mountain Trench), the forest grown or Natural Stand method of Christmas tree production is practiced on a large commercial scale. The introduction of modern horticultural methods has improved the efficiency of the system and the quality of the trees produced. Native stand production is very labor intensive, however, this is balanced by a high return on investment. This system also is well suited to the forest farming of floral greens and other forest farming crops. Developments in this industry and the potential to use this system as an alternative to right-of-way vegetation management are discussed.

Introduction

Since the early part of this century cultural practices used to produce Christmas trees in North America have changed considerably. Over the last 40 years there has been a dramatic shift away from forest-based production systems. Today most Christmas trees are produced in plantations that resemble agricultural nurseries. The East Kootenay area of British Columbia is one of the few areas left in North America where the natural stand production (forest production system) of Christmas trees is still practiced (other locations include areas of Montana and Washington State). For financial, environmental and social reasons there is a renewal in interest in the natural stand production system.

Christmas tree plantations were first established in large numbers in the 1950's. By the 1980's 95% of the trees harvested in North America were produced on plantations. In plantations all factors that lead to the production of high quality marketable trees can be controlled. A species is selected for the climate and market demand, a good site is selected, quality seedlings are planted, the trees are cultured and are protected from pests, diseases and weed competition. Shearing (shaping the tree) is used to create the tree shape the market wants. Exotic species can be planted for different color and texture; fertilizer is applied for growth and to improve color.

Inputs required for plantation production are high. As with all other agricultural crops, this industry has been experiencing a severe cost-price squeeze over the last few years. This started when more trees were grown than could be sold during the mid 1980's. To remain in business producers must work to improve quality, cut costs and change the way they market their trees. Farms located close to population centers are changing the way they market with the development of direct marketing U-Choose Christmas tree farms. Farms in rural areas must continue to cut and ship their trees to retailers in higher population centers. Some rural farms are developing natural stand production systems as one way to lower costs.

History

The first Christmas trees harvested commercially in British Columbia came from thickets of slow growing trees following a series of forest fires. Marketable trees were usually found on poor timber sites in low rainfall areas such as the mountainous East Kootenay area (14" - 16" rainfall area). There was a good market for wild harvested trees from the 1930's to the 1960's. In the 1950's and 1960's harvesters started to 'farm' the trees to improve quality. Today the East Kootenay produces an estimated 400,000 Christmas trees annually using improved natural stand farming methods.

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Natural Stand Production of Christmas Trees This Method Is Characterized By:

- the utilization of conifers that occur naturally in the area
- cultural treatments to increase the number of trees on the site if there are too few (seed trees, scarification)
- thinning or spacing of the trees to allow the trees to grow to maturity without touching neighboring trees (5 to 6 foot spacing)
- pruning and shearing trees as needed to produce consistent crops of consistent quality trees
- practicing stump culture - sustainable production on each stump (eliminates some of the need to regenerate, decreases the length of the crop rotation, increases opportunities for forest farming under the trees)
- fertilizing and controlling pests

Stump culture is initiated by growing the tree 3 or 4 feet taller than the height of tree to be harvested. During harvest several branches (30-40% of the foliage) are left on the stump to keep it alive. A new leader will be formed from a shoot or upturned branch. Two years after the tree was harvested the tree must be pruned to a single leader. Some stumps cultured in this way have produced a tree every 5 years for the last 60 years.

With improved cultural practices and proper fertilization it is now possible to produce high quality trees on natural stands that can compete with plantation trees. These trees are not only good to look at, they are produced in an environmentally friendly sustainable system, they have excellent post-harvest keeping qualities and provide a better return on investment than plantation trees. Dense sheared trees can be produced on natural stands in dry (less than 16" annual rainfall) areas if the above proper cultural methods are used.

In the dry East Kootenay area of British Columbia the vegetation growing under natural stand Christmas trees is primarily native grasses. These grasses are usually grazed with domestic animals to control the summer fire hazard and as another source of income. Once the natural stand stump culture system is established cattle do not bother the trees. This was the first true agroforestry system to be established in British Columbia.

In higher rainfall areas on the west coast of British Columbia and Vancouver Island a wide range of herbaceous and woody vegetation grows under natural

stand Christmas trees. These 'weeds' slow or eliminate the natural regeneration of seedlings. To overcome this lack of regeneration and the need to constantly apply herbicides to control the vegetation, some growers are adopting the stump culture production methods used in the dry East Kootenay area. Some of these 'weeds' are actually valuable crops to the floral industry

Natural stand stump culture of Christmas trees is just starting to be practiced as the foundation for a forest farming system that produces floral greens as an understory crop. Floral crops that require partial shade to produce the product quality the floral market is looking for include:

Salal (*Gaultheria shallon*)
Bear-grass (*Xerophyllum tenax*)
Falsebox (*Pachistima myrsintea*)
Sword Fern (*Polystichum munitum*)
Deer Fern (*Blechnum spicant*)
Evergreen Huckleberry (*Vaccinium ovatum*)

These plants can be cultured directly under the trees and between them if the density of trees is high enough to provide adequate shade. These shade-loving floral crops can also be cultured under conifers that are being grown for bough production (bough farms) or for timber. If the right species of tree is planted it can be grown for timber and boughs as well as provide shade for an understory crop.

Sun loving plants in demand by the floral industry that can be cultured in open or sunny areas between the Christmas trees include:

Scotch Broom (*Cytisus scoparius*)
Oregon Grape (*Mahonia nervosa*)

There are a number of other crops, both native and exotic that can be used as the ground crop under stump cultured Christmas trees. These include a range of medicinal, food and craft products.

The natural stand Christmas tree forest farming system is very suitable for replacing traditional vegetation management on power utility right-of-ways. Under most power transmission lines in British Columbia vegetation must be controlled to under 5 meters in height. The top of the tallest stump-cultured Christmas tree is usually under 5 meters. There is in excess of 100,000 hectares of land in power transmission right-of-ways in British Columbia with potential to utilize this system.

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