

# FOREST NURSERY INDUSTRY: NOW AND THE FUTURE<sup>1</sup>

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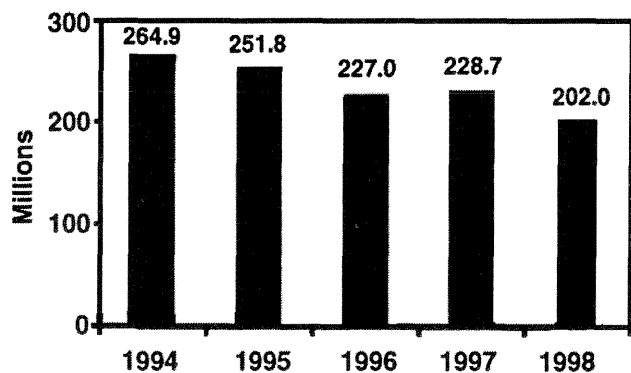
**ABSTRACT**—British Columbia, Oregon and Washington have all experienced a similar decline in the seedling market in recent years. This decline has led to stiffening of competition throughout the whole region. This decline in the market will likely stabilize at current levels with only short-term cyclic changes. During this same period, nursery managers throughout the region have experienced an increasing emphasis on seedling quality and customer service.

The future will bring about numerous changes as we move toward increased deployment of genetically improved material in the region. As this deployment increases, we will also see increased use of advanced technologies in vegetative propagation as we strive to bulk up high-value family and clonal material. The future may also bring an increased use of large container seedlings in the Pacific Northwest as we are challenged to shorten the time required to achieve plantation establishment and improved utilization of genetically improved seed.

## RECENT HISTORY

For many years, the nursery industry had remained relatively stable. The annual volumes and stock types seemed to change very little. In the coastal areas of Washington and Oregon bareroot seedlings were the primary planting stock. The competition from brush and browse from wildlife required a large sturdy seedling to withstand the environment following outplanting.

In British Columbia, the bareroot seedling classes had nearly been eliminated in favor of container grown seedlings. The container seedlings survived and performed better under their conditions. The foresters and nurserymen north and south of the border have had difficulty understanding why each chose the seedlings they did. A lack of understanding of planting site environments and the economics behind the different choices most likely were never fully understood.



(Source: Drew Blazier, BC Ministry of Forests)

Figure 1—Seedling production in British Columbia.

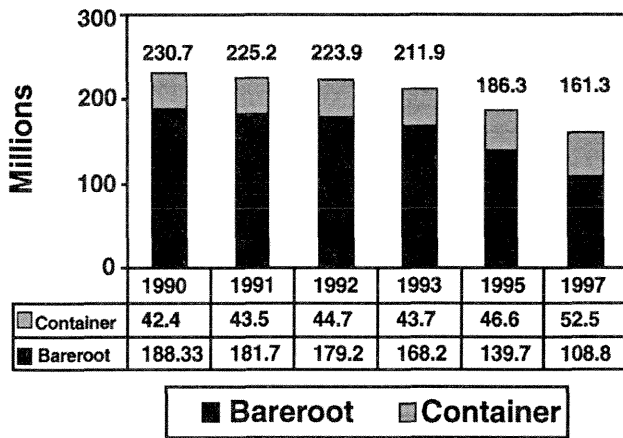
In recent years, both of our industries underwent major changes. The changes in British Columbia when the nurseries were privatized and the changes in the U.S. Pacific Northwest when the annual harvest levels sharply declined due to changes in the environmental regulations. The spotted owl single handedly (single winged), took on the land managers in both the public and private sectors and I must say the little creature brought about a significant change. The reduction in annual harvest in the Northwest has led to the closure of three large U.S. Forest Service nurseries in the West.

In British Columbia, a decline in demand for nursery stock also occurred during this time frame. A reduction in government funded planting and the down turn in the forest industry have been identified as significant contributing factors. In the last four to five years we experienced a 24 percent reduction in the volume grown for planting in British Columbia, Oregon and Washington. It is interesting that a similar decline occurred on both sides of the border even though different causes have been identified.

Figures 1 and 2 graphically present these trends experienced over the past several years. In figure 1, the data represents the volumes of seedlings sown for planting in BC. The data in figure 2, for the Northwest U.S., covers a slightly longer period going back seven years. Production declined 30 percent over this entire period. In this graph, also note the distribution between bareroot and container seedlings produced in the U.S. Pacific Northwest. Container seedling volumes have increased 10 million while bareroot volumes have declined nearly 80 million.

<sup>1</sup>Bryan, J.A. 1999. Forest nursery industry: now and the future. In: Landis, T.D.; Barnett, J.P., tech. coords. National proceedings: forest and conservation nursery associations—1998. Gen. Tech. Rep. SRS-25. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station: 87-90.

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(Source: USDA 1997 Pacific Northwest Directory and Report)

Figure 2—Seedling production in the U.S. Pacific Northwest.

### CURRENT SITUATION

With this brief review of the recent past, we are now ready to look at the current status of nurseries in British Columbia, Oregon and Washington.

### Customers and Markets

It was interesting to find that our customers; both in Canada and the United States are more alike than different. Our customers on both sides of the border demand high quality seedlings supported by strong customer service that helps them achieve their reforestation goals. While the prices charged for these products and services are still a concern, the price is secondary to seedling survival and performance.

We are all faced with an increasing market for a mixture of diverse species. The industry is no longer growing only the typical reforestation species found in our nurseries just a few years ago. Regulations governing reforestation and the general concern for preserving native plants have greatly expanded the numbers of species we are called on to grow. The species are varied. They range from non-commercial native trees and shrubs to many herbaceous plants and grasses.

Our market demand has likely stabilized for both bareroot and container seedlings in both regions. However, the demand for larger seedlings is increasing in both geographies. Many in western Oregon and Washington have been transitioning to larger stock, especially transplants.

Early in the 1980's, Weyerhaeuser began moving toward 1+1 Douglas-fir as the primary planting stock for our lands. The improved survival and performance we experienced over small 2+0 or container seedlings justified this move. 2+0, the main stock type for many years, was used only in limited quantities by the late 1980's. 2+0's are now a minor seedling type in our system and becoming so in other Northwest nurseries.

Recently, larger container grown stock is gaining favor in Oregon and Washington. Even though the survival of this stock is not significantly improved over transplant bareroot seedlings, there appears to be the potential for improved first year seedling growth due to reduced transplanting shock. The improved first year growth may be a critical factor in helping to meet the Green-Up issues in Western Washington and Oregon. The Green-Up regulations govern the harvest of timber stands adjacent to plantations. Harvest cannot occur until adjoining plantations reach prescribed heights at a specified stocking level. The incentive to reach these target heights quickly can be great. With the many regulations now imposed on landowners, removing this harvest limitation, by achieving the height target quickly, aids in the management of commercial forestlands.

The larger container seedlings, however, add substantially to reforestation costs. In many cases the seedling cost per acre is nearly doubled over large bareroot transplants or other container types. The move toward increasingly larger container sizes has likely peaked due to the economic impact the increased seedling costs have on reforestation costs.

### Genetics

We are all seeing rapid increases in the use of genetically improved seed. The seed orchards established in the 1960's and 70's are now fully meeting reforestation requirements for many of the larger organizations. As this seed reaches the nurseries, new challenges are being encountered. The cost of orchard seed is much higher than the field collected seed it replaces. We can no longer afford to solve problems in our growing processes by using large amounts of extra seed to cover losses from disease or lack of growth. Seed to seedling ratios have to be improved. We will never have enough seed or seedlings of the highest value material. Every seed we waste in our nursery growing processes, is one less genetically improved seedling that can be planted in the forest. Another challenge we are finding is individual families may grow differently in the nurseries. These differences will likely require family specific growing practices to optimize quality and yields. Weyerhaeuser and a number of other companies in the U.S. have made the commitment to manage their improved material as single families in order to capture the unique values of different families from the orchard through the nursery and operational stand. In the southeastern U.S. where family management has been a mainstay since the early 1980's, one of the biggest learnings has been the yield efficiency improvement that can come from understanding and managing families in the nursery.

With the many things we currently have in common in the two geographies, there is one major difference, the ownership of the land base. The private sector I represent in the U.S. likely has a different set of economic drivers influencing our decisions. It is interesting to note however; good sound forest management is good business no matter where you are. Renewing our forests is the right thing to do.

## FOREST NURSERY IN THE FUTURE

### What's coming? Change, Change and More Change!

**The customer**—We can expect our customers will continue to demand excellent quality and a high level of service for a competitive price. They will be requesting more individualized service to help them achieve their regeneration targets. They will expect continued improvement in seedling quality and early vigorous growth following outplanting. We will need to act more like partners with our seedling customers to jointly work with them to solve reforestation problems.

**The market**—If we do not experience serious setbacks in our ability to manage our forestlands in the U.S., the market appears to be relatively stable for the future. I anticipate we will experience temporary down cycles throughout the region associated with normal fluctuations in the wood product markets. In the past, to enlarge our businesses, we just expanded to keep pace with an expanding market. This era may have come to an end. In the future, to expand a nursery business will require capturing increased market share by acquiring other facilities along with their customer base or enticing customers away from the competition with better products, services and prices. I expect the competition in the market will encourage innovation in production efficiencies through increased mechanization in handling and processing in an attempt to gain cost competitiveness. In the future, the nursery that can supply the customer's needs will likely prosper. Those that can't adjust to changing customer needs and demands will likely find difficult times ahead. One market segment that appears to have growth potential is the true fir Christmas tree market. Noble fir always seems to be in short supply.

**Genetics**—In my estimation, the most significant changes we have ahead in the next few years are in the implementation of forest genetics into the nurseries. The deployment of first generation genetically improved seed will become very wide spread. I also anticipate an increase in the nursery growing and possibly planting of individual families. This practice will further enhance the value of forest genetics programs. As you look around the world, you find the most advanced applications of forest genetics are through family or clonal deployment of improved material. You can never fully capture genetic gains unless this step is taken.

Weyerhaeuser's 1st generation seed orchards began producing seed in significant quantities approximately 15 years ago. Nearly 100 percent of our planting stock is from genetically improved seed. In the early 1990's when we began growing and planting by family, we were able to begin identifying family characteristics that were unique. In the future, as these differences are more fully understood, I am sure we will find some of our families will require modifications to the standard growing processes. It is unlikely many families will require special attention, but to maximize the genetic gains from our genetics programs, we will have to understand these differences and be willing to modify our growing processes accordingly.

The introduction of second generation Douglas-fir genetic material will appear shortly. As organizations operating these programs begin to use this seed in their regeneration programs, the amount of 1st generation seed available on the market will increase. Genetically improved seed will then be available to a wider range of land managers in the U.S. Northwest.

To best capture the value potential of genetic programs, vegetative propagation must occur. The highest value family or clonal material will likely be produced with vegetative propagation systems in order to bulk up the volumes available. I anticipate seeing large quantities of seedlings produced using vegetative systems not too distant into the future.

**The seedlings**—In the future, we will continue to be requested to grow an ever-increasing number of diverse species to meet environmental, regulatory and economic needs. This will be especially true in the government operated nurseries. Container systems may likely prove to be best suited for the production of the numerous native species generally ordered in small quantities and requiring unique cultural practices.

The trend toward large seedlings for reforestation will likely continue in Oregon and Washington due to site preparation restrictions and other planting site considerations. For a number of years into the future, good quality 1+1 seedlings will remain the primary seedling type being planted. With the excellent survival, growth and relatively low cost of this seedling, other stock types will find it hard to displace this seedling class in the market.

Even though 1+1 Douglas-fir will remain the primary seedling type planted, I believe we will see more large container seedlings used in the Pacific Northwest. Where the increased seedling cost can be justified, the larger container seedling will gain popularity. When early outplant vigor, expanded planting windows, better delivery on demand and improved seed efficiency is important; this stock type will increase in use.

## SUMMARY

To summarize, we will be facing interesting changes just ahead. The competition for market share will bring about innovation in our nursery processes as we strive to improve quality and service. The production of genetically improved seedlings will require us to be willing to change and customize how we grow our crops in the future. We will likely see new methods for producing trees for planting. The highest value family or clonal material will likely be produced with vegetative propagation systems that have the ability to bulk up small quantities of seed into large numbers of young trees.

For those who like change, the future will hold many exciting adventures.

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