Chapter 7
Economic Value of Port-Orford-Cedar

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Introduction

Port-Orford-cedar is a commercial conifer tree in southwestern Oregon and northwestern California. In the past, it has commanded prices as high as $12,000 per thousand board feet. It is a valuable timber resource and has impacts on the economy in the Pacific Northwest. This chapter will explore those impacts.

Inventoried Standing Volume

The inventory of standing volume of Port-Orford-cedar is difficult to ascertain. Port-Orford-cedar is a minor species in most stands where it occurs and is often located in isolated pockets. The inventory information has a high level of uncertainty because inventory of neither public nor private ownerships has been conducted at an intensity level that provides a high degree of accuracy. As a result, all inventory information presented here has a high probability of some degree of error.

Table 7.1 displays the most current information for the federal inventories of Port-Orford-cedar, as well as the inventories reported in Stuntzer (1991). The latter is volume from lands considered at the time to be in the timber base and available for harvest. The 1998 inventories are shown for all land. The volume estimates have not been reduced for designations such as the Smith River National Recreation Area or the Northwest Forest Plan (NFP) (USDA and USDI 1994).

The inventory of Port-Orford-cedar on private lands is not possible to estimate with any degree of reliability and has not been attempted here. Most of the major private landowners are unwilling to disclose this proprietary information. Historically, due to the high value of Port-Orford-cedar, there has been a tendency to harvest the species at a higher rate than is proportional to forest stocking level (Zobel 1986). As a result of these practices, most of the Port-Orford-cedar on private lands today is second growth.

Table 7.1—Port-Orford-cedar inventory from Forest Service and Bureau of Land Management (BLM) lands

Agency	Inventoried Port-Orford-cedar Volume (mbf)		
	1990*	1994**	1998***
BLM - Coos Bay		117	121
BLM - Roseburg		8	8
BLM - Medford		10	10
Siskiyou National Forest	240		422
Six Rivers National Forest	87		420
Klamath National Forest	17		18
Shasta-Trinity National Forest			75

*from Stuntzer 1991; land considered to be in the timber base
**Coos Bay and Roseburg figures from Brattain and Stuntzer 1994; Medford figures from February 1994 continuous forest inventory
***short log volumes; all land allocations

Effects of the Northwest Forest Plan

Implementation of NFP has reduced timber sale levels in southwestern Oregon and northwestern California well below previous levels projected by forest plans and resource management plans of the Forest Service and Bureau of Land Management (BLM). The NFP reduces volumes to approximately 17 percent of the prior sales levels. The volumes shown as available for harvest are likely to be over-estimates, since the agencies have had trouble meeting the NFP sale volumes. In addition to lands contained in Wilderness Areas and other congressional set-asides, lands designated by the NFP as Late-Successional Reserves (LSR), with an objective to protect and enhance the conditions of late successional and old-growth forest ecosystems which serve as habitat for late-successional and old-growth forest related species, and Riparian Reserves, with objectives including stream protection and landscape connectivity, limit volume that may be harvested. Many of the inventoried high quality Port-Orford-cedar trees are in LSRs. Also, Riparian Reserves, with widths up to two tree heights on each side of the stream, have been established. In some locations, Riparian Reserves encompass much of the moist habitat where Port-Orford-cedar may be found.

Export of Port-Orford-Cedar

Export Volume

The first commercial shipment of Port-Orford-cedar lumber left Port-Orford, Oregon, in 1854, and harvest probably went on regularly after the first settlement there in 1851 (Zobel 1986). A significant portion of this harvest has been exported to Japan, the People's Republic of China and South Korea, with the majority going to Japan (Warren 1998).

The data for export volumes are based on U.S. Department of Agriculture Forest Service and Pacific Northwest Research Station information for all ports in the Columbia Snake Customs District, including all Oregon ports and the ports of Longview and Vancouver, Washington (Warren 1998). Added to these, are the Port-Orford-cedar volumes shipped out of Humboldt Bay, California, using data supplied by Humboldt Bay Forest Products, Inc.

Export volumes declined between 1961 and 1998. The volume exported in 1963 was 64 million board feet. This declined to 3 million board feet in 1997 (fig. 7.1) (USDA 1973, Warren 1985, Warren 1998). During the 1990s the amount of Port-Orford-cedar volume exported continually decreased. In 1996, the amount reached its lowest level of the period, at 1.5 million board feet. In 1997, the export volumes reversed the trend and increased from the previous year by 700 thousand board feet. Indications are that final export volumes for 1998 will be slightly higher than 1997. The overall decline in export volume may be attributed to reduced harvest of old-growth Port-Orford-cedar.

During the 1990s, Port-Orford-cedar harvest was heavily concentrated on private lands (fig. 7.2), and most of the timber came from second growth stands. As a result, a substantial amount of second growth Port-Orford-cedar was exported during the 1990s[11] The trend toward second growth, combined with the Japanese market conditions, has resulted in a movement away from exports and towards domestic use.[12]

[11] Lyon, Frank. 1998. Personal communication. Timber Manager. Menasha Corporation, P.O. Box 588, North Bend, OR 97459.

[12] Data were taken from the Yield Tax information, California Board of Equalization, for public and private lands; the Western Oregon Privilege Tax information, Oregon Department of Revenue, for private lands; and the Siskiyou National Forest, Roseburg, Coos Bay and Medford BLM (Kirk Casavan, Roseburg BLM); and Coos County (Robert LaPort, County Forester) for public lands. On file with: Barnes and Associates, 3000 NW Stewart Parkway # 204, Roseburg, OR 97470.

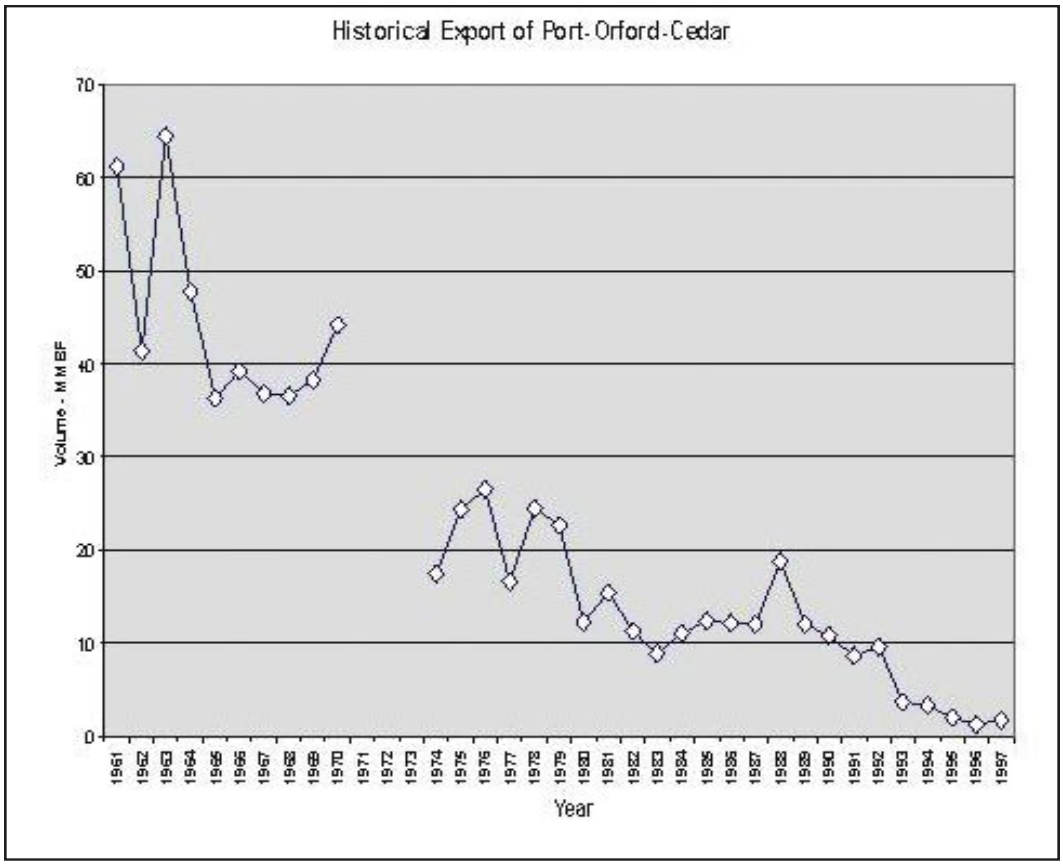

Figure 7.1—Volume of Port-Orford-cedar exported 1961 – 1997

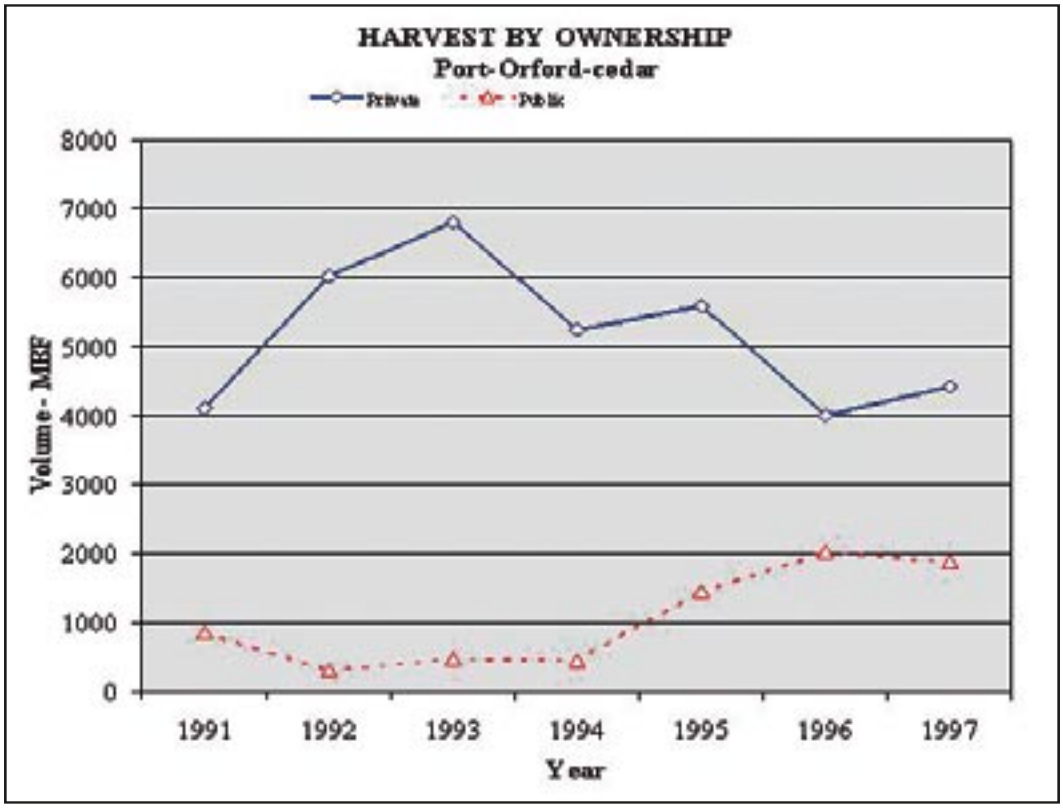

Figure 7.2—Harvest levels by ownership sector in the United States

Export Values

The Japanese have placed a high value on Port-Orford-cedar for many years. Although these values fluctuated substantially during the 1990s, they continue to be much higher than the values on the domestic market (figs. 7.3 and 7.4). Export values per thousand board feet (MBF) began the 1990s averaging $2,672, reached a low in 1992 at $1,947, then increased dramatically in 1994 to $5,645 (per MBF). The higher grades of Port-Orford-cedar were selling for approximately $10,000 per MBF with occasional sales exceeding this value[13]. In 1997, the average value of Port-Orford-cedar logs exported was $2,944 per MBF. It is important to note, even with the tremendous drop in export values from 1994 to 1997, the 1997 values are still higher than the average values during 1990 through 1992. Export values have been volatile (fig. 7.3).

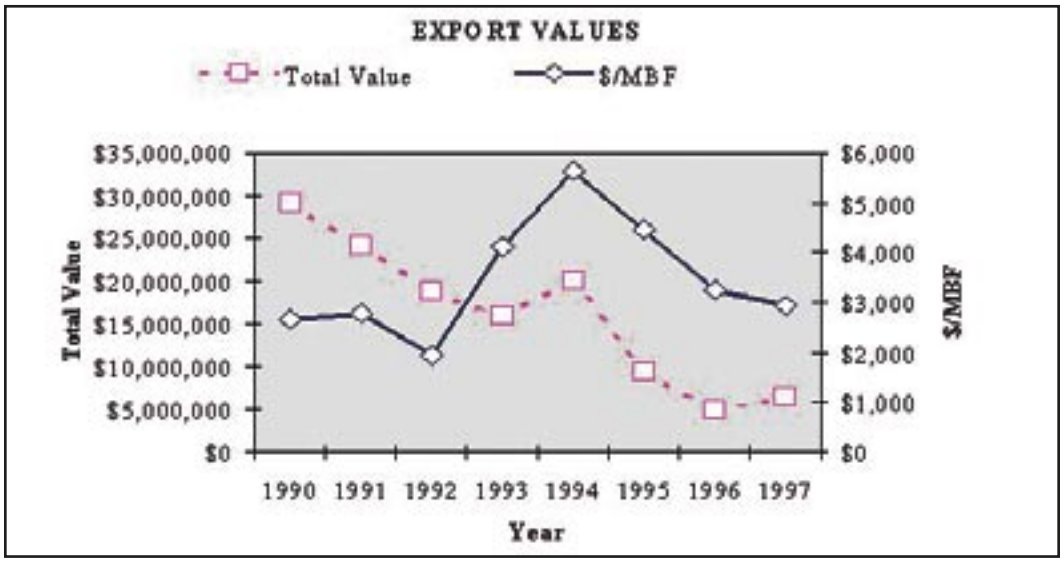

Figure 7.3—Value of exported Port-Orford-cedar 1990 – 1997

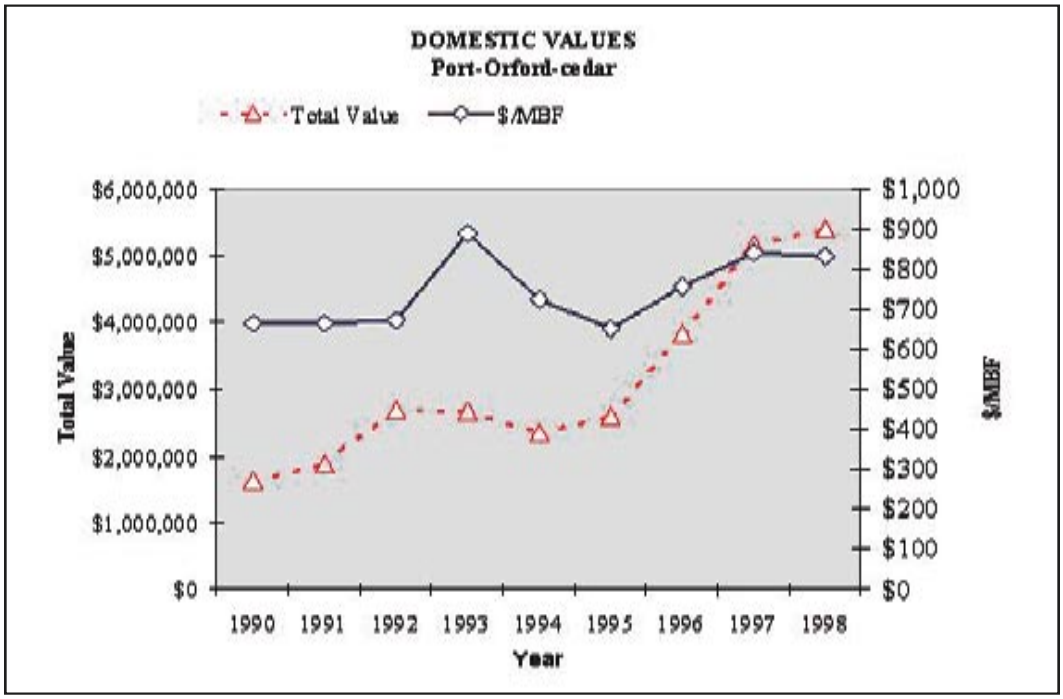

Figure 7.4—Domestic values of milled Port-Orford-cedar 1990 – 1998[14]

[13] Currie, Jim. 1998. Personal communication. Currie Log Marketing, 2159 Parkway Drive, Crescent City CA 95531.

The drop in volume of Port-Orford-cedar harvested was the driving force in the reduction in total export value during the 1990s. The total volume exported in 1997 was 20 percent of the volume exported in 1990. Correspondingly, the total value of Port-Orford-cedar exported in 1997 was 22 percent of the total volume exported in 1990.

Other factors, in addition to the drop in old-growth harvest, impacted the Japanese market. A cultural change there has resulted in a younger generation unwilling to pay exorbitant prices for Port-Orford-cedar.[15] The older generation valued the wood highly for such things as temples or luxury items. An additional possible cause of reduced exports may be the poor Japanese economy. The Port-Orford-cedar market may recuperate when the Japanese economy recovers.[16]

The total value of Port-Orford-cedar logs exported was approximately $29 million in 1990, then dropped steadily to a low of $4.9 million in 1996. By 1997, the total value of Port-Orford-cedar had risen slightly to $6.5 million.

In summary, the decrease in availability of Port-Orford-cedar (particularly old-growth), the depressed Japanese economy, and changing Japanese cultural values, are all impacting export values and volumes. Even though the export values have decreased substantially, they are still at least three times higher than the domestic market values.

Domestic Use of Port-Orford-Cedar

By the middle of the nineteenth century, the rapidly expanding population of California created an increasing domestic demand for wood, including Port-Orford-cedar which was the most expensive and useful. Harvest levels increased throughout the rest of the 1800s. From the 1920s until World War II, Port-Orford-cedar harvest levels were booming (fig. 7.5). One of the primary uses of Port-Orford-cedar was for the production of automobile storage batteries. In a single year, 1936, 1 billion wooden battery separators were made in Coos Bay, Oregon. By the late 1940s, however, substitute materials had been developed, and demand for Port-Orford-cedar quickly declined (Zobel et al. 1985).

Figure 7.5—Logging decks of Port-Orford-cedar in the Coquille area of Oregon, 1939. The photo was marked on the back with the caption "Left all the old growth fir, took only cedar." ***Photograph Courtesy Douglas County Museum, Negative No. 14085.***

Since the mid-1980s, domestic manufacturing and use of Port-Orford-cedar has increased. The species is marketed for its strength, durability, and versatility, and is used for paneling, decking, fence posts and fence rails (fig. 7.6). Some Port-Orford-cedar is milled into cants for export to Japan.

Figure 7.6—A cabin built of Port-Orford-cedar near Powers, Oregon

[14] Data for domestic log utilization and values were obtained from:
Schroeder, Gary. Timber Manager. C & D Lumber Company, 1182 Pruner Road / PO Box 27, Riddle, OR 97469.;
Keller, Mike. Log Buyer. Keller Lumber Company, 4418 Keller Road, Roseburg, OR 97470.
Goirigolzarri, Javier. P & M Cedar Products, P.O. Box 7349, Stockton, CA 95267.
Standley, Cyrus. Timber Manager. Glide Lumber Products, 1577 Glide Loop Dr., Glide, OR 97443; and
Sproul, Bob. Owner. East Fork Lumber Company, P.O. Box 275, Myrtle Point, OR 97458.

[15] Green, Fred. 1998. Personal communication. Reservation Ranch, Coos Bay, OR.

[16] Green, Fred. 1998. Personal communication. Reservation Ranch, Coos Bay, OR.

Currently, the major manufacturers of Port-Orford-cedar lumber are located in Oregon. The primary manufacturers are C & D Lumber Company in Riddle, Keller Lumber Company and P & M Cedar in Roseburg, Glide Lumber Products in Glide, and East Fork Lumber Company in Myrtle Point.

C & D Lumber Company has aggressively marketed Port-Orford-cedar since the mid-1980s. Brochures have been produced showing the benefits of Port-Orford-cedar over other products. Most notably, Port-Orford-cedar outperforms western red cedar, incense cedar, redwood, and ponderosa pine when impact bending, crushing strength (parallel and perpendicular to grain), shearing strength (parallel to grain) and side hardness (perpendicular to grain) are analyzed. For example, Port-Orford-cedar is 45 percent stronger than redwood or western red cedar in impact bending and 30 percent stronger in crushing strength.

Domestic Volume

In 1990, there was approximately 2.5 million board feet of Port-Orford-cedar lumber domestically processed. This rate increased throughout the decade and reached 6.5 million board feet in 1998. This increase may be largely attributed to the success of the manufacturers' marketing campaigns and the resultant acceptance of Port-Orford-cedar in the domestic market.

Domestic Value

The value of Port-Orford-cedar fluctuated in the 1990s. The average value of a delivered log was $665 per MBF in 1990, and $834 per MBF in 1998. The total delivered log value increased substantially, from $1.6 million in 1990, to $5.4 million in 1998 (fig. 7.4).

Combined Export and Domestic Volume and Value

Prior to 1994, the export volume always exceeded the domestic volume. Since 1994, the trend has reversed. Total volume was at a low in 1995, at 6.1 million feet and has increased since that time. In 1997, the total volume was approximately 8.4 million board feet.

The total value decreased from 1990 to 1996. The 1997 value, $11.7 million, was about a third of the 1990 value of $30.8 million. The export and domestic values were nearly equal in 1997 (fig. 7.7).

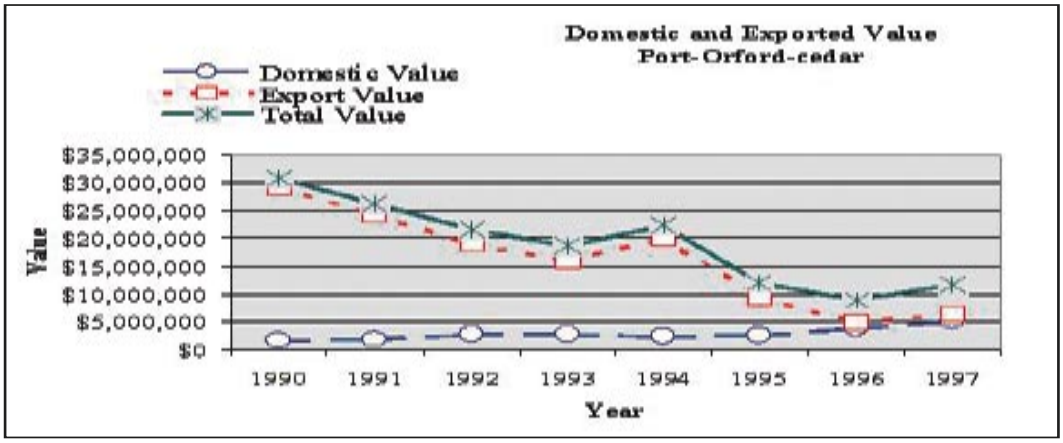

Figure 7.7—Value of domestic and exported Port-Orford-cedar 1990 – 1997

Value Added Components

In addition to the volumes and values shown in previous graphs, there are value added components to be recognized. For export logs, there is approximately $100 per MBF additional cost once the logs reach the log yard. These include costs associated with unloading trucks, log scaling, log sorting, careful log inspection, remanufacturing into ideal lengths, rescaling, moving logs to the deck, moving logs from decks to the dock, and loading the logs onto the ship.

The values previously shown for domestic manufacturing are the delivered log values. There is approximately $65 per MBF of value added to the logs in domestic manufacturing. This includes offsetting costs of log scaling, log yard operations, milling and planing, and loading for shipping. Once the lumber leaves the mill yard, and before it reaches the end consumer, value continues to be added by the trucking or rail companies, wholesale yards, retail yards, and the builder.

Specialty Products

There continues to be a strong market for Port-Orford-cedar specialty products. These products, including arrow shafts, arrow shaft bolts, and boughs, generate at least $1.5 million of value in the Port-Orford-cedar region each year. Demand exists to potentially double this value if a sufficient supply of raw materials were available. Most noteworthy of these products are arrow shafts and boughs.

Arrow Shafts

The unique strength, bending, and grain characteristics of Port-Orford-cedar have created a worldwide demand for Port-Orford-cedar arrow shafts. In the past, arrow shafts have been made by up to eleven manufacturers. Today only one arrow shaft manufacturer remains: Rose City Archery, Inc., of Myrtle Point, Oregon. Rose City Archery employs approximately 15 people year around with plans to add additional people in the near future.

Rose City Archery sells arrow shafts worldwide. The manufacturing process is labor intensive. Each arrow shaft is graded 14 times before it is completely through the process, and each shaft is individually tested for bending strength (fig. 7.8). A potential arrow shaft is first sawn into a square blank, then graded, sorted and dried. Once the square blanks are dry, each blank is shaped into an arrow shaft. These shafts are again graded and sorted. They are individually tested for bending strength, and sorted and graded again. With the by-products, Rose City Archery manufactures more than 100,000 garden stakes each year, as well as planter baskets and window boxes. Oil is distilled out of the sawdust and used for perfume, pet care products, aromatherapy, and mosquito repellant.

Port-Orford-cedar for arrow shafts is purchased by the cord (fig. 7.9), and between 250 and 300 cords are used each year. This wood comes from dead and down old-growth logs. In many cases these trees have been lying on the forest floor for many years. The present supply of old-growth Port-Orford-cedar needed for arrow shafts limits annual production to about 2.5 million. The demand exists to double the current production if additional old-growth logs were available.[17] The value of arrow shafts and the by-products have increased in each of the last five years.

[17] Dishion, Jerry. 1998. Personal communication. Owner. Rose City Archery, Inc., 94931 Quiet Valley Lane, P.O. Box 5, Myrtle Point, OR 97458.

Figure 7.8—Arrow shafts awaiting grading and sorting

Figure 7.9—Bolts of Port-Orford-cedar to be used for producing arrow shafts

Boughs

Port-Orford-cedar boughs are popular for use by the floral industry. A glycerin compound is drawn through the plant's vascular system, effectively preserving the boughs. Different colors of dye are added to the glycerin to color the boughs. Port-Orford-cedar is better adapted to this preserving and drying process than other species such as western red cedar or incense cedar. Collecting boughs and manufacturing products occurs throughout the year. Ten businesses were identified which purchase boughs. Some were small family businesses that operate during the summer and fall, bundling and packaging fresh boughs that are sold to wholesale florists. Individual company's annual Port-Orford-cedar purchases range from a few thousand to a million pounds.[18]

Harvesters purchase bough permits for approximately $.02 to $.05 per pound. The harvesters collect boughs, cut them to length, bundle, and deliver them to brush houses or post-harvest processors who pay $.25 to $.30 per pound. Brush houses accumulate large quantities of boughs and sell them throughout the United States to wholesale and retail floral outlets. It is estimated 1.2 million pounds of Port-Orford-cedar boughs are purchased annually, with a value of approximately $330,000 paid to the harvesters. The brush houses typically sell their products for about three times the value paid to harvesters.[19]

Value is added by arranging boughs into fresh wreaths, garlands, and greens during the holiday season, and by preserving and coloring the boughs for use throughout the year as wreaths, garlands, and arrangement foliage. Fresh and treated boughs are trimmed to the specification of the product being constructed. Half the purchase weight will often be trimmed in this process. Products manufactured by this process, such as garlands and wreaths, will wholesale at about ten times the purchase value. The retail price will often be double the wholesale price. The total value added to the boughs when they are retailed is about 20 times the price paid to the pickers.[20] It is estimated boughs generate over $1 million in value annually to the local economy. The demand for boughs has substantially exceeded the supply in recent years. The Forest Service and BLM have greatly restricted the sale of boughs because of concerns of spreading the pathogen, *Phytophthora lateralis*. Supply is unlikely to increase in the near future with the uncertainty of supply from federal lands. There is, however, a developing private bough-producing business (fig. 7.10) that has the potential to fill this demand.

Figure 7.10—Port-Orford-cedar being cultivated for bough production

[18] Stevens, Mark. 1998. Personal communication. Hiawatha, Inc., 14301 Highway 42, Myrtle Point, OR 97458.
[19] 1999. Personal communication. Continental Floral Greens, 999 N. Front St, Coos Bay, OR 97420.

Employment

Domestic manufacturing and exporting of Port-Orford-cedar generates jobs to support the local and regional economies. Domestic manufacturing of any timber, from stump to finished product, is estimated to generate 9.07 direct jobs per million board feet in southwestern Oregon (USDA and USDI 1994). Jobs included are logging, saw milling, mill working, and processing other wood products (chips and sawdust). An additional 8.75 indirect and induced jobs are created for every million board feet processed (FEMAT 1993).

Exporting of Port-Orford-cedar generates a similar amount of direct employment, only in different sectors of the job market. Such jobs include logging, scaling, inspecting and re-manufacturing, sorting, yard handling, stevedoring, and ship moving (tugs). In many cases, the logging of high value export Port-Orford-cedar is labor intensive, especially in cases where only the high quality trees are removed from a stand. When this is the case, the U.S. Department of Agriculture employment projections may underestimate the actual employment numbers.

Figure 7.11 shows the impact of changes in domestic manufacturing and exporting on employment over time.[21] In 1990, the direct employment related to Port-Orford-cedar (excluding boughs) was estimated to be 138 jobs. The number of indirect jobs was estimated at 117, for a total of 255. A low was reached in 1995, with a total of 126 jobs, and rebounded to 166 jobs in 1997. This trend tracks the total volume of Port-Orford-cedar harvest during the period. No data were available for employment from bough harvesting and processing, although over a million pounds are harvested annually, and this requires a great deal of labor.

It is estimated that, in 1997, 166 jobs in northwestern California and southwestern Oregon were related to Port-Orford-cedar. The counties most affected by employment related to Port-Orford-cedar harvesting in Oregon are Douglas, Coos, Curry, and Josephine. Unemployment rates in those counties, in 1997 for example, were more than double the average for the United States as a whole, making jobs particularly valuable. The counties most affected by employment related to Port-Orford-cedar harvesting in California are Del Norte and Humboldt counties.

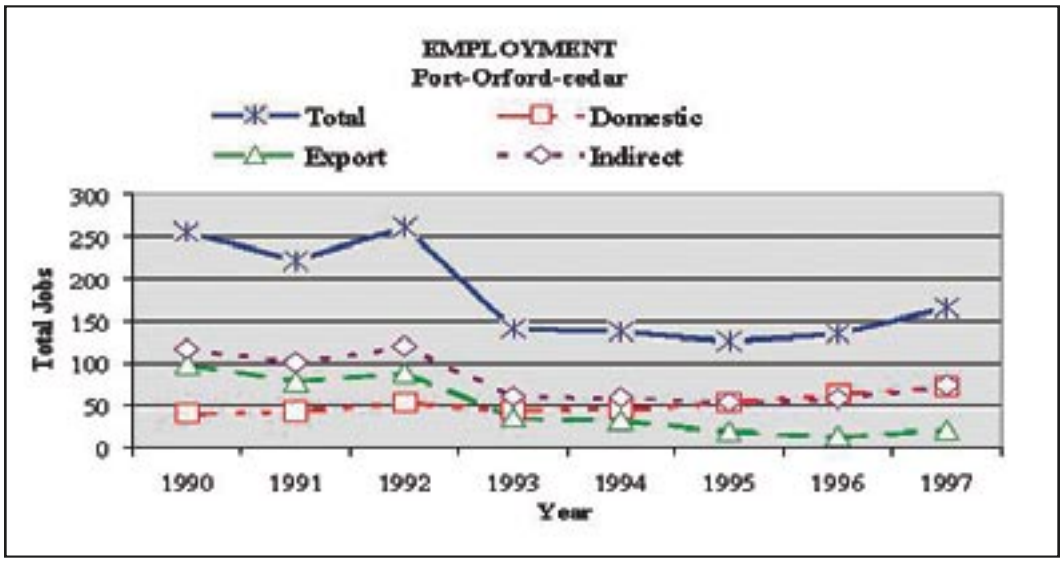

Figure 7.11—Number of jobs associated with Port-Orford-cedar 1990 – 1997

[21] Direct jobs were estimated using domestic and export volumes expanded by 9.07 jobs per million board feet. Seventeen jobs were added to account for arrow shaft production. Indirect jobs were estimated by expanding the volume by 8.75 jobs per million board feet.

County and State Revenues

Prior to 1994, county receipts from the federal government paid to counties in-lieu-of taxes were based on the revenues generated by federal timber sales within each county. This was calculated as 50 percent of BLM and 25 percent of Forest Service revenues. When a high value species, such as old-growth Port-Orford-cedar was exported, the increased value provided a boost to local county receipts.

Court injunctions greatly curtailed the federal timber sale program beginning in 1991. Timber volume harvested under contract with the federal government declined for the next several years as long-term contracts were completed. The NFP in 1994 called for an 80 percent permanent reduction from the level of federal timber harvest achieved during the 1980s. The timber volumes allowed under the NFP were just beginning to be realized by 1998, when court injunctions once again put a virtual halt to federal timber sales. Congress instituted a series of laws referred to as "safety net payments" to alleviate the impact of reduced income to the counties.[22] These payments provided a percentage of the average receipts received during 1986 through 1990. A declining scale of payments was provided for the period 1995 through 2002 which calculated payments using average receipts from 1986 through 1990. Counties received 82 percent of the average in 1995 and were to receive 61 percent in 2002, the final year the payments were to be in effect.[23]

In Oregon, timber taxes are required to be paid when timber is harvested. Private timber owners paid $119,791 for Port-Orford-cedar harvest in 1997 (Western Oregon Privilege Tax). The Western Oregon Harvest Tax paid by all landowners for Port-Orford-cedar, in that same year, was $12,460. The total tax paid for Port-Orford-cedar harvest was $132,252 (table 7.2).

In California, a tax is levied on timber removed from all lands, except Indian Reservations. In 1997, the total yield tax paid for Port-Orford-cedar was $32,525 (table 7.2).

The annual regional economic contribution of Port-Orford-cedar in 1997 is shown in table 7.3.

Table 7.2—Summary of Port-Orford-cedar timber taxes (1997 tax year)

California:		
California Yield Tax	$1,121,565 stumpage value * .029 =	$ 32,525
Oregon:		
Oregon Privilege Tax Industrial Land Owners	$3,743,488 stumpage value * .032 =	$119,792
Oregon Harvest Tax (Private lands)	4,035 MBF * $2.11 =	$ 8,514
Oregon Harvest Tax (Public lands)	1,870 MBF * $2.11 =	$ 3,946
Subtotal Oregon Tax		$132,252
Total California and Oregon Tax		$164,777

[22] Omnibus Budget Reconciliation Act of 1993, Sections 13982 and 13983, Public Law 103-66. 16 U.S.C. 500 note; 43 U.S.C. 1181f note).
[23] Update: In 2000, the "safety net payments" were repealed and replaced with a program that started in 2001 (Secure Rural Schools and Community Self-Determination Act of 2000 (Public Law 106-393; 16 U.S.C. 500 note). This program includes a series of payments spanning the years 2001 through 2006, and bases payments on each county's high three year average from receipts from federal lands within the county during the period 1986 through 1999. The future of payments to counties, after 2006, is unknown. Unless harvest levels increase substantially by that time, the volume and value of Port-Orford-cedar included in the timber harvest base will contribute little to county receipts.

Table 7.3—Annual regional economic contribution of Port-Orford-cedar (1997 tax year)

Value of logs exported	$ 6,501,005
Value added – export (2,208 MBF * $100)	$ 220,800
Value of domestic logs	$ 5,166,477
Value added – domestic (6,153 MBF * $65)	$ 399,945
Specialty products	$ 1,500,000
State timber taxes	$ 164,777
Total Direct Economic Value	**$13,953,004**

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