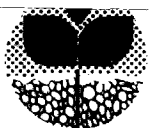


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Special Report 910

April 1993

IRCA and Oregon Agricultural Industries

*Nursery Crops, Christmas Trees, and Strawberries in the Willamette Valley
and Pears in the Hood River Valley*

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and Pears in the Hood River Valley*

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Agricultural Industries in Oregon

Nursery Crops, Christmas Trees, and Strawberries in the Willamette Valley and Pears in the Hood River Valley

Robert Mason, Timothy Cross, and Carole Nuckton

Executive Summary

The Immigration Reform and Control Act of 1986 (IRCA) became law to achieve, without harming producers, an adequate supply of legal workers who benefit from improved wages and working conditions. This study reports the impact of IRCA on four Oregon crops: nurseries, strawberries, Christmas trees, and pears. Data were collected from interviews with growers, workers, farm labor contractors, key informants, and ex-farmworkers. In all, 300 people were interviewed.

Impact on Workers

The law has enabled Special Agricultural Workers (SAWs) to work in the state without fear of deportation. Workers' wages have uniformly increased—more as the result of an increased (and enforced) state minimum wage than a regulated supply of legal workers. Employers and workers consistently report current wages at or above \$5.00 per hour, an improvement over pre-IRCA wages. We have found that the supply of agricultural labor is adequate and apparently has increased since 1986. Basic economics shows that an increased supply of labor should lead to a decline in wages. This clearly has not happened, suggesting that demand for labor also has increased, offsetting the forces that might otherwise drive wages down.

Workers generally have reported that working conditions in agriculture have remained the same or have improved since IRCA. Many associate these improvements with higher wages, but other factors, such as lengthened employment periods, also were mentioned. Many workers

are attracted, especially by pear and nursery operations, to return year after year to the same employers.

We found little evidence that SAW provisions have affected the level of union activity.

Some workers mentioned that less work is available now, due to increased numbers of job-seekers in the area. A large labor pool may lead to underemployment of some workers, but most of those we interviewed did not complain about un- or underemployment. However, because our sample was, for the most part, among those who were employed, we were not likely to find much complaint about unemployment. Some indirect evidence, however, suggests that unemployment is not a major problem: Very few workers' family members were unemployed.

Eighty to 90 percent of the workers interviewed plan to continue farm work in the United States. Of the 10 to 20 percent of the work force not planning to continue, about half described plans to return to Mexico, and half planned to seek nonfarm employment. This suggests that about 5 to 10 percent of SAW workers will leave agriculture annually. A worker's age is important in determining departure from agriculture for nonfarm employment each year. (However, some workers moving into the nursery industry referred to this as nonfarm employment.)

Besides this planned exit from agriculture is a natural attrition, particularly as workers age. Growers and workers agree that most productive workers in piece-rate jobs are those between the ages of 20 and 40. As seasonal workers age, their productivity declines as do their wages. The physically demanding work, sooner or later, forces them to leave employment as hand-harvest labor.

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Impact on Employers

Many growers indicate that the supply of workers has increased since IRCA. Since many applying for work are alien migrants, it seems reasonable that SAW provisions have contributed to the adequacy of the labor supply. More significant, however, is that many of those available for work carry false documents. IRCA has created a substantial market for false documents, both for those who could never get legal documents and for those who would have qualified for SAW status but were unable to establish their employment history on paper. Labor supplies also have increased as SAW workers bring their families to the United States. These family members are often employed illegally in agriculture.

Growers in all four of the industries studied mentions visits by inspectors from the U. S. Department of Labor or the Immigration and Naturalization Service. Most employers expressed considerable frustration at having to serve as IRCA's enforcement arm. Without exception, every employer viewed IRCA's new reporting requirement as unnecessarily burdensome and costly. Moreover, growers feel trapped with regard to hiring workers. On the one hand, they are afraid of hiring illegal workers and being fined; on the other, they fear they could be accused of discrimination if they don't hire a particular worker.

Agricultural labor management practices in these industries are, by most standards, not very modern. However, the situation may be improving. Health insurance, bonuses, paid vacation and sick leave, and family housing are examples of some benefits employers are offering. One indicator that management practices need improvement is the fact that several growers have experienced labor shortages, in spite of the apparently ample supply of workers during the last five years.

Costs for providing housing have increased dramatically because SAWs and other legal workers are bringing their families to the United States. A housing unit that previously housed four workers may now house only one worker and his family.

Labor management in Oregon is performed largely by employer-owners without the heavy dependence on farm labor contractors. Even the labor contractors we interviewed indicated that they run small to moderate-size crews, allowing them to maintain some degree of contact with their workers. The contractors served an average of five growers, an indication that the scale of contract labor

is small for the industries studied. Oregon does not appear to have the labor management problems experienced in states that use substantially more contract labor.

Impact on the Industry

Oregon faces two special challenges in successfully attracting seasonal labor. First is the great distance from Mexico, the source for most seasonal workers. Workers must have the incentive to come as far north as Oregon; this incentive is apparently provided by offering slightly higher wages than California offers for similar work.

The second challenge the state faces is the lack of a distinct Hispanic community in the area and, therefore, of a systematic delivery system for specifically Hispanic social services and programs. A well-developed Hispanic community could serve as a strong magnet attracting potential workers, but it would also provide a disincentive for existing workers to learn English and adapt to the non-Hispanic culture of the state. Without this strong community, workers are encouraged to learn English, which may hasten their departure from agriculture.

Growers are aware that they face increased competition from foreign imports but even more thought they were enjoying greater opportunities to export their products. So, IRCA apparently has not adversely impacted Oregon's competitive position in these crops. However, a decrease labor supply in the future could push up wage rates, increasing production costs and reducing the state's competitive advantage over other production areas.

Final Observations.

Foreign labor is the backbone of Oregon's seasonal labor force. Most employers prefer to hire foreign workers because of their productivity and strong work ethic. The current supply of workers is adequate, but we believe that many workers carry false documents. As the supply of SAWs dwindle, we expect that immigrants from Mexico—both legal and illegal—will replace them. Alien migrants are willing to come to work in the state, and growers are willing to employ them at equitable wages. A program for legalizing replacement SAWs will be needed eventually to ensure a supply of legal workers.

Preface

This study of Oregon farm labor markets is built on a case study methodology that employed sample surveys of target populations, including growers, workers, farm labor contractors, key informants, and ex-farmworkers. Individuals sampled were contacted by bilingual interviewers who used a standard interview schedule for each group.

Selection of Commodities

Four commodities were selected because of their differing demands for farm labor. Crops chosen were nursery crops, Christmas trees, and strawberries in the Willamette Valley, Oregon, and pear in Hood River County.

The nursery industry was selected because it hires more of a year-round work force than it does workers hired seasonally for hand-harvest purposes. As noted in Chapters 2 and 3, the nursery industry is one of the largest employers of farmworkers in the state. Yet, little is known about the industry's labor demands or how it functions under IRCA. While the industry is slowly shifting from a seasonal to a year-round work force, the adjustments associated with this change in labor management have not been documented. A study of the nursery industry permits an analysis of IRCA-related adjustments.

The Christmas tree industry was selected because it also hires large numbers of farmworkers. It is another significant industry for which little is known about its labor management or how it has adjusted to the new immigration law. While the major labor demand is associated with November and December harvests, nontrivial supplies of seasonal labor are employed early in the year and during the summer for planting and shearing operations. Inclusion of this commodity makes possible a description of IRCA impacts on a different industry with a unique set of demands and labor questions.

Strawberries were chosen because they are one of the first crops harvested in the year, employing up to 50,000 workers. The strawberry harvest in June is thought to attract the major work force for seasonal harvest of many

Willamette Valley crops that follow strawberries, such as caneberries, sweet cherries, processed vegetables, hops, grapes, apples, and pears. The size and prominence of this work force permit an assessment of the strength and diversity of IRCA impacts on a labor supply that serves a group of related commodities.

Pears have been grown in the Hood River Valley since the early 1900s. This industry is located 60 miles east of the Willamette Valley and is somewhat isolated from where the other three commodities are grown. By studying labor in the pear industry, the impacts of IRCA on agriculture east of the Cascades can be evaluated. For example, Hood River pear growers compete for workers with eastern Washington fruit growers. This competition, along with IRCA, is expected to influence labor management practices in the region.

Sampling Methods

Within the four case studies, random sampling methods were used whenever possible to ensure a representative cross-section of individuals for interviewing. A total of 300 people were interviewed, including 87 employers, 144 workers, 26 farm labor contractors, 25 key informants and 18 ex-farmworkers.

As a first step in compiling a sample, 50 nursery employers, 50 Christmas tree employers, and 50 strawberry employers were selected from lists of all growers. The names selected represented a range of operational sizes. University horticulturists and industry association specialists who were familiar with the industries helped in the selection. Strata were employed to group the sample according to annual sales for nurseries and acres harvested for strawberries and Christmas trees. A total of 24 nursery operators, 33 strawberry growers and 35 Christmas tree growers were selected at random for interviewer contact. Sample sizes were dictated primarily by budget considerations.

In Hood River, 12 growers were identified by an Oregon State University Extension Service agent as representative of the pear growers in the area. All 12 growers agreed to participate, but due to time constraints, only 11 interviews were completed.

Face-to-face interviews were conducted by bilingual interviewers. Interviewers were selected based on recommendations by 1990 census supervisors, from the knowledge of one interviewer supervisor who has worked in Oregon for years as a bilingual interviewer and translator, and from Employment Service applicants. They were trained specially for this study and used interview schedules approved by the research director of the U.S. Commission on Agricultural Workers.

Reasonably high completion rates were achieved for employer interviews—87 percent for nursery employers, 91 percent for Christmas tree employers, and 92 percent for pear growers. The interview completion rate for strawberry growers was lower at 70 percent due to the effects of a series of raids by the Immigration and Naturalization Service (INS) during the strawberry harvest when the interviews were being conducted. Growers uniformly refused to talk to us while the raids were going on, so we waited until the harvest was completed to resume contact. Even then, ten growers refused to talk to us.

No adequate frame was available to sample farmworkers, but an effort was made to ensure that at least one-third of the workers interviewed were employees of the growers whom we had also interviewed. This was achieved by contacting some workers while interviewers were at the work site and requesting the location of their living quarters. Most interviews were scheduled off the work site. Other workers were identified from our knowledge of the location of labor camps and apartments. Some worker interviews were also conducted in Oregon Employment Division field offices.

We sought to arrange interviews with a portion of each interviewed grower's workers in order to compare growers' and workers' reported values for certain critical information, such as wages and benefits, hours worked, and recruitment methods. Should major discrepancies arise, we could search for possible explanations. For example, if workers did not understand the tax withholding requirements, the wages they reported might differ from those reported by employers. (No major discrepancies were observed between the responses of employers and workers to questions asked of both groups.) Interviews were completed for 33 nursery workers, 34 Christmas tree workers, 44 strawberry workers, and 33 pear workers.

Random methods were employed to sample 30 farm labor contractors from the most recent list of state-licensed

contractors. Interviews were completed with 26 of them, an 87 percent completion rate.

Nonrandom, purposive samples were employed to select key informants—those who provide job and other information to farmworkers. Key informants are described in Section F of Chapter 4. The interviewer, Esperanza Garcia, sought out known informants in Marion, Washington, and Yamhill counties for interviews. A "snowball" technique whereby key informants gave the interviewer names of other informants was employed to select additional respondents. A total of 25 key informants were located and interviewed.

Nonrandom methods also were employed to select ex-farmworkers, since no frame was available for sampling purposes. Eighteen individuals were located and interviewed. These ex-farmworkers, who lived in the same three counties as key informants, were located through personal knowledge of our bilingual interviewers, who were aware of apartments and other dwelling units that housed ex-farmworkers.

Acknowledgments

A number of individuals and organizations contributed valuable advice and suggestions. They include the interviewers, Ben Aanderud, David Ellis, Mabel LeBlanc, Helena Ormando, Ron Prado, Concha Solano, Kathy Van Raden, and Anthony Whyte. Madelon Taylor supervised and reviewed the interviewers' work and completed many of the interviews herself. Esperanza Garcia located, interviewed, and summarized results of contacts with key informants.

Industry and state government personnel and members of public interest groups provided valuable advice and comments concerning IRCA impacts on the state's farmworkers and employers. They include Marilyn Becker, chair, and the Labor Committee, Oregon Association of Nurseries; Jan Shroeder, executive secretary of the Oregon Strawberry Commission; Bryan Ostland, Executive Secretary, Northwest Christmas Tree Association; Larry Kleinman and Ramon Ramirez, Northwest Treeplanters and Farmworkers United (PUCN); Jim Green, Department of Horticulture, Oregon State University; and Clark Seavert, Hood River County Extension Service, Oregon State University; Luis Caraballo, IRCA program executive; Lucretia Elder, Oregon Bureau of Labor and Industries; and Sue Brewer, Robert Cortinas, Lillie Leikes, Mary Lewis, and Diego Leon of the Oregon Employment Division.

Chapter 1:

Background on the Study Area

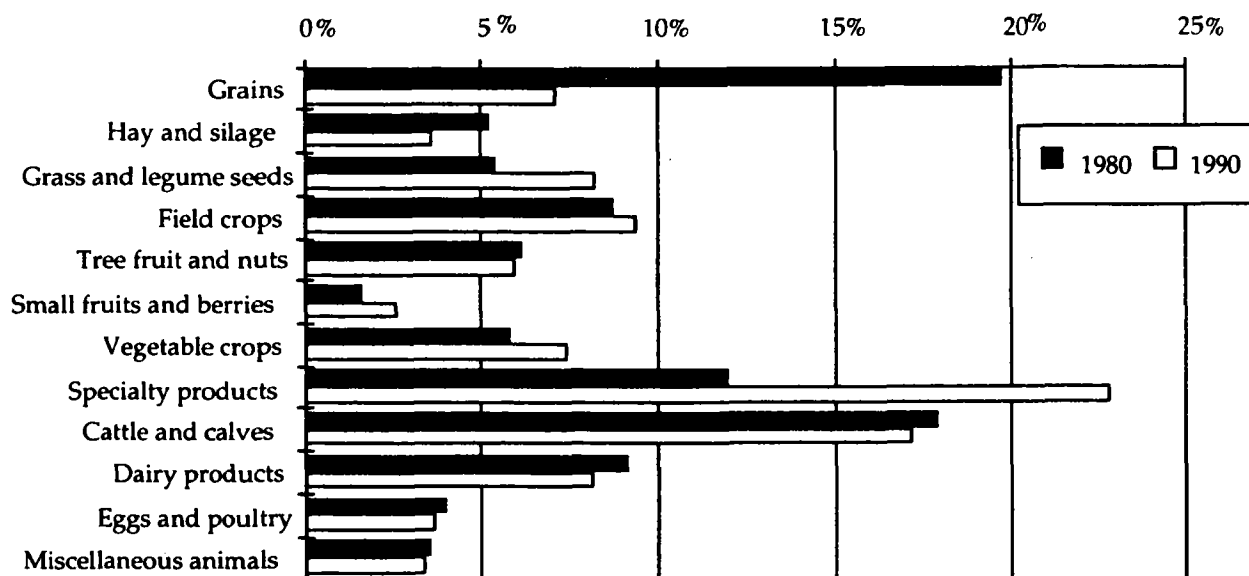
Agriculture is Oregon's second largest industry after forestry, with gross farm sales of over \$2.6 billion in 1990 (OSU Extension 1991a). At least another \$1 billion is added to the farm products by the marketing sector, which packs, stores, processes, packages, and ships to final consumers. Over 85 percent of the agricultural products leave the state for other states and nations. The deep seaport of Portland is a hub of agricultural trade where cargo vessels laden with wheat and other commodities leave almost daily for ports in the Pacific Rim and other foreign destinations.

Oregon's product mix is very diverse in the number of commodities produced, with over 85 of them grossing more than \$1 million annually (OSU Extension 1991a). Oregon ranks first nationally in peppermint, cool season grass seeds, and hazelnuts; second in hops, sweet cherries, onions, and snapbeans for processing; third in strawberries,

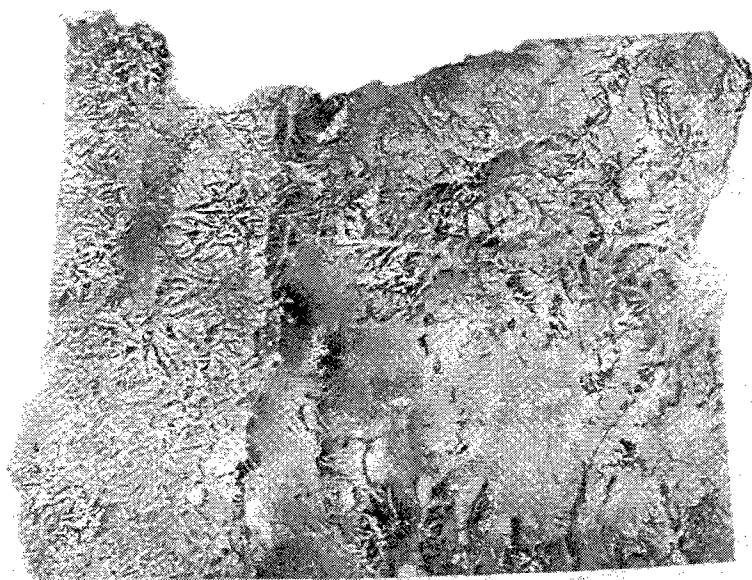
pears, and cauliflower; and fourth in potatoes (fall), cranberries, prunes and plums, tart cherries, broccoli, and sweet corn for processing.

Oregon's crop mix held rather stable over the 1980s (Oregon Agricultural Statistics Service, 1990), except for a large shift in the share of total value away from grains, toward "specialty crops" (see Figure 1.1). The largest influence in this shift is the expansion of the nursery and Christmas tree industries, which are included in the specialty products category. Oregon's vast land mass (62 million acres) is made up mostly of mountains, forests, and desert. But among this rugged terrain are found pockets of fertile soil, special microclimates, and productive range where the state's diverse agriculture thrives (see Figure 1.2). About 29 percent of the total land mass (17.8 million acres) is classed by the census as "land in farms," of which

Figure 1.1. Percentage of Total Farm Value Represented by Various Commodity Groups, 1980 and 1990



Source: Oregon State University Extension Service, *Oregon County and State Agricultural Estimates*, Special Report 790, January 1991; and Special Report 607, March 1981.

Figure 1.2 – Oregon Topography

58 percent is pasture and range land and 29 percent is cropland (less than 3 million acres of which is *harvested* cropland). Chief among these farming “pockets” is the cool, moist Willamette Valley where more than 170 different crops are grown, including tree fruits and nuts, wine grapes, berries, vegetables for processing, nursery products, grains, grass seed, hay, livestock and poultry, and Christmas trees. Amid the foothills near Mt. Hood is nestled Hood River, a valley known for its high-quality tree fruit, especially pears.

Note that parts of Willamette Valley counties extend eastward into the Cascades, and Lane County extends to the coast; county-level statistics in this report thus include more than the valley proper (see Figure 1.3).

The study areas—the Willamette Valley and Hood River—lie just below $45\frac{3}{4}$ degrees north latitude, with the valley extending south to about $43\frac{1}{2}$ degrees and Hood River about $45\frac{1}{2}$ degrees. This means that mid-summer days are relatively long—about one hour longer than in Los Angeles (Miles 1985); the opposite is true in winter.

The proximity to the Pacific Ocean means moderate summer and winter temperatures for both areas. In the northern Willamette Valley at Portland, the average temperatures range from 38.1°F in January to 67.1°F in July; in the southern part of the valley at Eugene, the range is from 39.4°F in January to 66.9°F in July (Miles). Hood River temperatures are in the same general ranges.

From October to April, storms move across the state from west to east, running into the Cascade Mountain barrier just east of the Willamette Valley. The topography creates the precipitation patterns shown in Figure 1.4 (Miles 1985). Along the coast and on the west side of the Cascades, over 50 inches of rain fall yearly. The hills surrounding the valley proper receive from 40 to 50 inches, while the valley floor gets from 30 to 40 inches.

Only occasional and small amounts of snow fall on the valley floor—in some years, none at all. Snow fall increases in

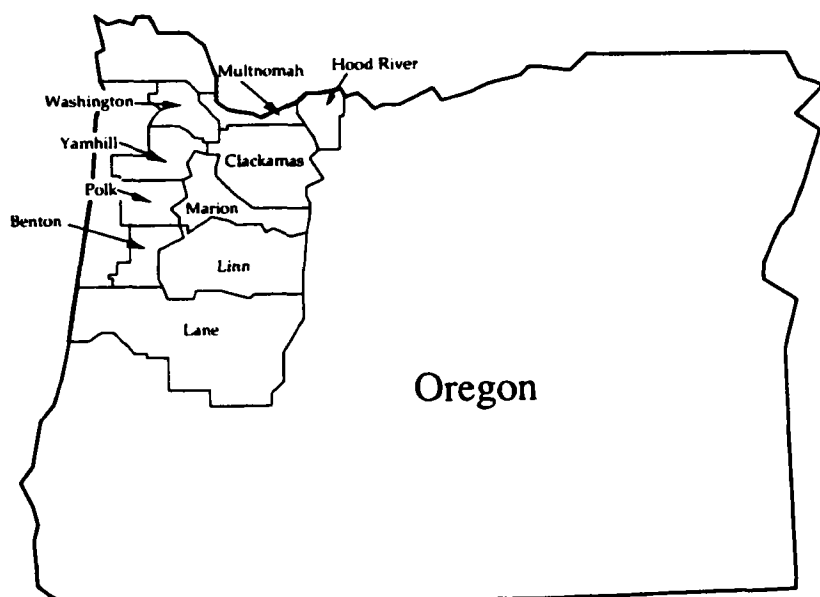
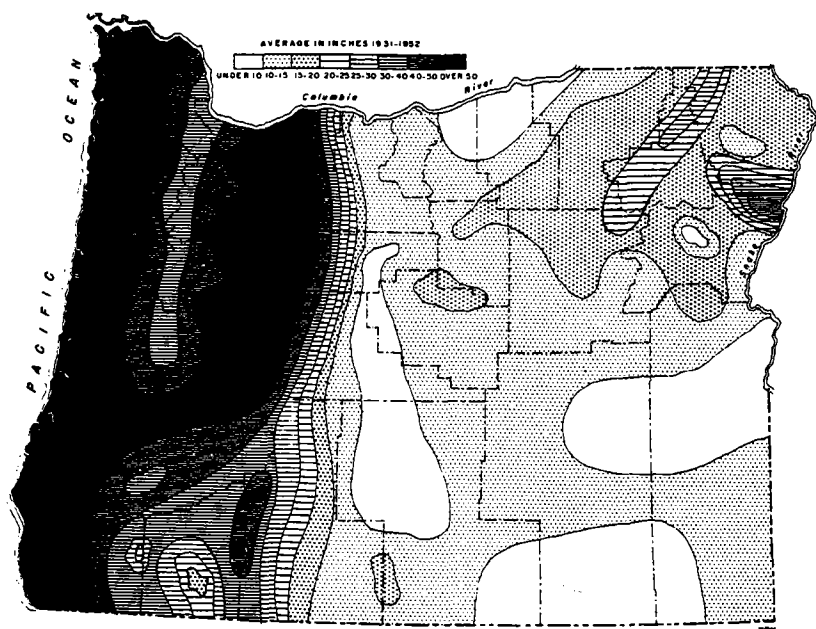
Figure 1.3 – Willamette Valley County Boundaries

Figure 1.4 – Rainfall in Oregon



the foothills, up to several hundreds of inches in some places in the Cascades.

In Hood River County, the storms run into Mt. Hood, depositing large amounts of rain and snow yearly (312.9 inches of snow at Timberline Lodge). Precipitation levels decrease by bands from west to east across the county. The Hood River valley itself climbs from the Columbia River at 100 feet above sea level up to Mt. Hood at 11,245 feet. More details about the climate there are given in the section on Hood River that appears later in this chapter.

Because of the long, dry summers, much of the agriculture in both valleys is irrigated. The snow pack of the Cascades generally keeps the stream flow abundant in both valleys.

The Willamette Valley

History and Geography

The Willamette Valley is a large trough between the Cascade and the Coast ranges as they converge to form the valley closure some 150 miles south of the Columbia River (Myatt 1958). The valley is roughly triangular in shape and about 85 miles across at its widest part. The wide alluvial plain with gentle rolling hills along side is about 12,000 square miles (7.7 million acres); about 5 million acres are

arable (Clark 1927). The valley floor is about 130 miles long and from 25 to 30 miles wide or about 3,500 square miles (2.2 million acres) (Myatt 1958).

The Willamette River that drains the valley is formed by the junction of three main tributaries—the middle fork draws from the Calapooia Mountains at the south of the valley and from the Cascades, the coastal fork comes in from the west, and the McKensie from the Three Sisters area of the Cascades. Moving northward from the McKensie, the Calapooia, Santiam, Pudding, Malalla, and Clackamas join the Willamette from the east; the Long Tom, Mary's, Luckiamute, Yamhill, and Tualatin join from the west.

July temperatures average 67 to 68°F. There are about seven days per year over 90°F at Portland, 11 days at Albany (mid-valley), and 13 days at Eugene (south valley). Humidity is under 50 percent, with absolute maximum temperatures registered at 105 to 108°F (Myatt 1958). Winters are mild and gloomy. Minimums

below 0°F are very rare; average minimum temperatures range in the low 30s, with winter maximums about 45°F.

The growing season ranges from 263 days in the north valley around Portland, through 232 days in mid-valley, to 205 days in the south valley around Eugene, with fluctuations from year to year. Seasons in the valley merge into one another rather than being sharply demarcated. Some vegetation stays green all year; precipitation increases as summer turns gradually to fall.

Several Indian tribes once lived along the Willamette River, including the Willamettes from the Clackamas River to the falls at what is now Oregon City, and the Multnomah, who lived north from the falls to the Columbia. The river became known as the Wallamette, which means "to spill or pour water" (Clark 1927).

The Willamette Valley—with its abundant rainfall, mild climate, access to the sea, and land that could be directly plowed without having to be cleared—soon became a goal of settlers. Peter Ogden, of Hudson's Bay Company, wrote in his diary in 1814:

A finer stream than the Willamette is not to be found; soil good; wood of all kinds in abundance, roots, elk, deer, salmon and sturgeon abundant; man could reside here and with but little industry enjoy every comfort. No doubt ere many years a colony will be found on the stream and I am of the opinion it will, with little care, flourish, and settlers, by having a seaport so near

them, with industry, might add greatly to their comforts and to their happiness (Clark 1927:30).

Several "colonies" did form here: The valley is now the location of the state's three largest cities and many other smaller cities and towns. At the mouth of the Willamette River where it flows into the great Columbia River, is the city of Portland in Multnomah County. Today almost 44 percent of the people of Oregon live in the Portland area, including its contiguous communities. Salem, in nearly the exact geographical center of the valley is the state's capital. And Eugene, at the southern end of the valley, is the home of the University of Oregon. Almost 70 percent of Oregonians live in the Willamette Valley.

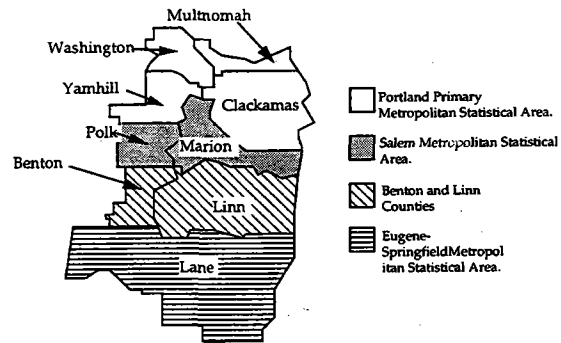
Supported by the resources of forest and agriculture, a favorable climate, central location and well developed road, rail and water transportation facilities, and proximity to mountains, lakes and streams, the growing population finds opportunity for work and play in the heartland of the state. The Willamette Valley was, is, and will likely remain the most favored region and the hub of Oregon's economy (Myatt 1958:8).

Demographics and Economics

It is useful to divide this great valley into several districts in order to present and discuss various descriptive statistics. We use those of the Job Training Partnership Administration (JTPA) (see Figure 1.5). The Portland Primary Metropolitan Statistical Area (PMSA) includes Multnomah, Clackamas, Washington, and Yamhill counties. Marion and Polk counties constitute the Salem Metropolitan Statistical Area (MSA). Another JTPA district is made up of Benton and Linn counties, while Lane County coincides with the Eugene-Springfield MSA.

Of the 750,788-person increase in the state's population over the two decades, 69 percent occurred in the Willamette Valley while 43 percent of the increase oc-

Figure 1.5. JTPA Districts of the Willamette Valley



curred in the Portland area (Table 1.1). The overall percentages are the same: 69 percent of the state's population lives in the Willamette Valley, while 43 percent lives in the Portland area.

The most rapid growth in the valley and in the state occurred in the 1970s. The recession in the early 1980s slowed population growth dramatically; some valley counties experienced net outmigration. However, in the late 1980s, the pace picked up as people moved to the area, attracted by its natural beauty and other amenities, including improved employment opportunities.

The state's Hispanic population is less than 4 percent of the total population; two-thirds of this group lives in the Willamette Valley and 39 percent in the Portland PMSA (Table 1.2).

Per capita income in the Willamette Valley is above the state's per capita income, with the Portland area raising the valley's average. The other districts—the Salem MSA, Benton and Linn counties, and Lane County—are below the state average (Table 1.3). In 1987, the Salem MSA ranked 229th out of 318 U.S. metropolitan areas in terms of per capita income; the Eugene-Springfield MSA (Lane County) ranked 218th, while the Portland PMSA ranked 85th (JTPA 1990-91).

Table 1.1. – Population Growth, Willamette Valley, 1970–1990

	Portland PMSA	Salem MSA	Benton-Linn	Lane Co.	Wm Valley	State
1970.....	918,889	186,658	125,690	213,358	1,444,595	2,091,533
1980.....	1,105,750	249,895	158,450	275,226	1,789,321	2,633,156
1990.....	1,239,842	278,024	162,038	282,912	1,962,816	2,842,321

Source: JTPA reports and U.S. Bureau of the Census, 1990 Census of Population.

The Portland area's unemployment rate runs about a point below the average for the state, indicating better job opportunities in Oregon's largest metropolitan area. The other valley districts are much closer to the average rate for the state as a whole, generally varying by only a few tenths of a percent (Table 1.4).

Although only 2.6 percent of valley employees are in farming, 47 percent of all agricultural employment in the

state is in the valley (Table 1.5). Of course, with nearly 70 percent of the state's population living in the Willamette Valley, the highest percentage of each type of employment is also there. In fact, 73 percent of all nonfarm employment in the state is in the valley, including 70 percent of retail, 76 percent of service, 78 percent of finance-insurance-real estate, and 71 percent of government employment.

Table 1.2 – Population by Ethnicity, Willamette Valley, 1990

	Portland PMSA	Salem MSA	Benton-Linn	Lane Co.	Wm Valley	State
Total.....	1,239,842	278,024	162,038	282,917	1,962,821	2,842,321
Hispanic.....	44,049	21,027	3,912	6,852	75,840	112,707
Non-Hispanic						
White.....	1,101,442	246,363	151,184	265,391	1,764,380	2,579,732
Black.....	37,852	2,231	751	2,040	42,874	44,982
Native American	10,277	3,674	1,502	3,017	18,470	35,749
Asian.....	45,299	4,527	4,610	5,419	59,855	67,422
Other.....	923	202	79	193	1,397	1,729

Source: U.S. Bureau of the Census, 1990 Census of Population.

Table 1.3 – Total and Per Capita Income, Willamette Valley, 1989

	Portland PMSA	Salem MSA	Benton-Linn	Lane Co.	Wm Valley	State
Total (\$1,000) ..	22,053,147	4,057,381	2,304,844	4,131,598	32,546,970	45,129,472
Per Capita (\$)...	18,164	14,706	14,569	15,049	16,996	16,009

Source: Oregon Economic Development Department data obtained from the U.S. Bureau of Economic Analysis.

Table 1.4 – Unemployment Rate, Willamette Valley, 1983-1991 (percentage)

Year	Portland PMSA	Salem MSA	Benton-Linn	Lane Co.	State
1983.....	9.8	10.3	10.2	11.4	10.8
1984.....	8.0	9.1	9.3	9.2	9.4
1985.....	7.4	8.2	9.4	8.9	8.8
1986.....	7.1	8.5	8.8	8.6	8.5
1987.....	5.3	6.2	6.1	5.7	6.2
1988.....	4.8	5.8	6.0	5.6	5.8
1989.....	4.5	5.9	6.2	5.6	5.7
1990.....	4.2	5.4	5.9	5.8	5.5
July 1991.....	4.7	5.2	6.1	6.0	5.6

Sources: Oregon Employment Division, Research and Statistics Section, 1991; First Interstate Bank, *Oregon Economic Indicators*, September 1991.

Table 1.5. Employment by Industry, Willamette Valley, 1989

	Portland PMSA	Salem MSA	Benton-Linn	Lane Co.	Wm Valley	State
Total	768,773	138,521	81,635	150,512	1,139,441	1,573,746
Farm	14,083	8,253	4,413	2,484	29,233	61,776
Nonfarm	754,690	130,268	77,222	147,130	1,109,310	1,511,970
Agricultural services, forestry, fisheries, other.....	8,009	3,334	1,420	2,941	15,704	30,713
Mining.....	846	117	37	289	1,289	2,132
Construction	38,348	6,721	3,018	6,519	54,606	74,666
Manufacturing.....	106,713	16,666	16,815	23,001	163,195	231,419
Transportation & utilities	41,559	3,729	3,011	5,990	54,289	74,246
Wholesale	54,892	4,444	2,139	6,276	67,751	80,956
Retail.....	129,528	22,841	12,350	28,134	192,853	272,662
Finance, insurance, and real estate services	6 6,002	8,944	3,913	9,456	88,315	112,733
Services.....	221,071	31,934	17,798	40,987	311,790	406,458
Government, federal, state, and local ...	87,722	31,438	16,671	23,537	159,368	225,985

Source: Oregon Economic Development Department data, obtained from the U.S. Bureau of Economic Analysis.

Overview of Farming

Almost half of the state's farms (48 percent) are in the Willamette Valley, while only 10 percent of the land in farms is there (Table 1.6). Therefore, average farm size is a little over 20 percent the size for the state whose average includes large-acreage ranches east of the Cascades. Note that the average farm size is much smaller and the per acre land value is much greater in the Portland PMSA than in the other districts or in the state as a whole. The average farm acreage in the Salem and Eugene-Springfield are about twice that in the Portland area. Per acre values are greater in the Salem area than in Lane County. The most rural district, Benton and Linn counties, has the largest farm size and the lowest per acre value.

Although only 10 percent of the state's land in farms is in the Willamette Valley, valley agricultural sales represent 43 percent of the state's total. The bulk of sales comes from a relatively small number of larger farms; A large number of very small farms together contribute only a small portion of total sales; 56 percent of these smaller valley operators have a principal occupation other than farming (Table 1.6).

Fifty-six percent of the state's total value of crop sales came from the Willamette Valley in 1990, but less than one-third of animal product sales were from the valley (Table 1.7). The valley's top crop category is specialty products, representing 74 percent of the state's total sales in this category. Eighty percent of the value of this category is represented by two case study crops—nursery and Christmas trees. Grass and legume seeds are the second

most important sales category in the valley, followed by vegetables (mostly for processing).

Another way of looking at these 1990 crop sales data is presented in Table 1.8. The third column computes per acre crop sales values, allowing us to locate production of the most high-value, and generally the most labor-intensive, crops. The Willamette Valley crop value per harvested acre (\$985) was 1.7 times the statewide average (\$579).

Where land values are higher, partly because of proximity to urban areas, growers naturally tend to produce higher-value crops. The crops bringing the most in sales per-acre were grown in the Portland area, which is dominated by the nursery industry. The second highest per-acre crop values were in the Salem area (District 3), where processing vegetables, berries, nursery, tree fruits, wine grapes, and other specialty crops are grown. Third in per-acre values is Lane County. The lowest crop values are in the most rural district, Benton and Linn counties. Although Linn County has the most harvested acreage in the valley, grass and legume seed production is of relatively less value on a per-acre basis and is also less labor intensive, predominates.

Going along with these findings, higher labor shares to production expenses are found in the Portland and Salem areas, where higher-value (and more labor-intensive) crops are produced. These crop labor needs raise the valley share above the overall state average (Table 1.9). In contrast, in Linn and Benton counties, where grass and legume seeds are the most important crop, the labor share is below the state average.

Annual precipitation varies by location and elevation, averaging just over 30 inches at the city of Hood River, to 46 inches up the valley at Parkdale, to over 100 inches on the slopes of Mt. Hood. More of the precipitation occurs as snow at higher elevations, but some snow also falls lower in the valley. At the town of Hood River, at the mouth of the valley, the average temperatures range from 33.1°F in January to 66.8°F in July. Higher up in the valley at Parkdale, the range is 31.1°F to 65.0°F.

When the first white settlers arrived in 1840, the valley was heavily forested. The first fruit trees were planted by Nathaniel Coe in 1854; and the first commercial orchard (30 acres of apples) was planted by E.L. Smith in 1876 (Hood River News 1991). More and more fruit trees were planted as the timber in the valley was removed.

Fruit production soon became the main economic force in the county. At first, apple orchards were planted in the east side of the valley; peaches, prunes, and strawberries were also grown. The Hood River Fruit Company began in 1893. With irrigation on the west side of the valley, the fruit industry, especially apple production, expanded rapidly in the first decade of this century. The Hood River Experiment Station, now the Mid-Columbia Research and Extension Station, started in 1912 and soon became a center for tree fruit innovation, including the development of new varieties. The Apple Growers Association of Hood River, established in 1914, continues to this day as Diamond Fruit Growers.

The Columbia River highway was completed from Portland to Hood River in 1916 paved in 1920 and extended to The Dalles in 1922, relieving some of the isolation experienced by early valley residents (Hood River News 1991). A severe freeze in 1919 was a setback for the young tree fruit industry. Replanting was with frost-resistant varieties of apples and pears.

Historic events in the valley include the opening of the Columbia Gorge Hotel in 1921; the completion of two bridges spanning the Columbia in 1924 and 1926; a construction boom associated with the Bonneville Dam, completed in 1933; the freeway along construction the Columbia that began in 1948 and is now Interstate 84.

In the mid-1980s, a new sporting sensation occurred in the Hood River Valley, as sailboard enthusiasts discovered the forceful winds along the Columbia River. For five months of the year, wind surfers come to Hood River in droves, radically changing the summertime character of this once-quiet town.

Demographics and Economics

The population of Hood River County increased 28 percent over the period 1970-1990 (Table 1.10). Like the

rest of Oregon, the area grew faster in the 1970s than in the 1980s, slowed by the recession in the early 1980s. Population growth recently has picked up, as support services for wind surfing and tourism have become more permanent and more and more retirees have discovered the beautiful valley.

Table 1.10 – Population, Hood River County, 1970-1990

1970	13,187
1980	15,800
1982	15,870
1987	16,500
1990	16,903

Sources: 1970 data: Portland State University, Center for Population Research and Census; 1980 data: JTPA reports; 1990 data: U.S. Bureau of the Census, 1990 Census of Population.

The main industry in the county is growing, handling, and shipping tree fruit. (Details are provided in Chapter 2.) The fruit industry employs some 5,000 full- and part-time workers and pumped \$75 million into the local economy in 1990 (Macht 1991). Because of employment in the area's fruit industry, Hispanics represent a much higher proportion of the total population (16.3 percent) than they do in most other parts of Oregon (Table 1.11). In fact, 2.4 percent of all Hispanics in the state live year-round in this small area.

Table 1.11 – Population by Ethnicity, Hood River County, 1990

	Hood River	State
Total	16,903	2,842,321
Hispanic	2,752	112,707
Non-Hispanic		
White	13,628	2,579,732
Black	36	44,982
Native American	186	35,749
Asian	284	67,422
Other	17	1,729

Source: U.S. Bureau of the Census, 1990 Census of Population.

The per capita income of the county is somewhat above the statewide average (Table 1.12). Besides agricultural, other important industries are timber harvesting and manufacture of lumber and wood products, recreation, tourism, and other manufacturing, including fishing lures, electrical accessories, sailboard equipment and accesso-

ries, computer software, Hispanic foods, malt beverages, wine, and liquor (Hood River News 1991). Many small sawmills in the area were combined to form one large company, Hanel (in three locations), that employs 300, has a payroll of about \$10 million, and produces 130 million board feet, mostly for the U.S. housing market. Dee Forest Products manufactures hard board products and employs some 80 people. There are several other smaller wood products firms in the area. The Lava Nursery in Parkdale specializes in conifer seedlings for reforestation and for wholesaling to Christmas tree farms (Hood River News 1991).

Table 1.12 – Total and Per Capita Income, Hood River County, 1989

	Hood River	State
Total (\$1,000)	253,005	45,129,472
Per Capita (\$)	16,687	16,009

Source: Oregon Economic Development Department data, obtained from the U.S. Bureau of Economic Analysis.

Because of the area's dependence on agriculture, lumber, and tourism, there is a sharp upswing in employment in the summer and a sharp decline in the fall. Lack of employment in the winter months raises the county's annual unemployment rate several points above the average for the state (Table 1.13). Although the rate dropped in July 1991 from the previous annual average, it still was over 1 percentage point above the state figure.

Table 1.13 – Unemployment Rate, Hood River County and Oregon, 1983–1991 (Percentage)

Year	Hood River	State
1983	13.2	10.8
1984	12.9	9.4
1985	13.2	8.8
1986	13.6	8.5
1987	8.9	6.2
1988	9.1	5.8
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July 1991	6.9	5.6

Sources: Oregon Employment Division, Research and Statistics Section; 1991 data: First Interstate Bank, *Oregon Economic Indicators*, September 1991.

The importance of farming to the county's economy can be seen in Table 1.14. Nearly 16 percent of the county's total employment is in the farm sector. This contrasts

sharply with the counties in the Willamette Valley, where farming is very important but does not represent a large share of total employment (see Table 1.5). Statewide, 3.9 percent of workers are employed in the farm sector.

Table 1.14 – Employment by Industry, Hood River County, 1989

	Hood River	State
Total	10,501	1,573,746
Farm	1,649	61,776
Nonfarm	8,852	1,511,970
Agricultural services, forestry, fisheries, other	372	30,713
Mining	0	2,132
Construction	355	74,666
Manufacturing	1,284	231,419
Transportation & utilities	645	74,246
Wholesale	683	80,956
Retail	1,668	272,662
Finance, insurance, and real estate services	405	112,733
Services	2,283	406,458
Government, federal, state, and local	1,154	225,985

Source: Oregon Economic Development Department data, obtained from the U.S. Bureau of Economic Analysis.

Overview of Farming

Of the 573 farms in Hood River County, 280 (48.9 percent) are very small, selling less than \$10,000 of product in 1987; together they accounted for only 1.7 percent of the total cash receipts that year. Meanwhile 124 larger farms, with sales of \$100,000 and over, sold 78.2 percent of the total. Although the average farm size is very small in terms of acreage—only 50 acres—because of high-value crops grown, the average farm is worth \$4,763 per acre (Table 1.15). Seventy-two percent of the county's land in farms is in cropland, and 88 percent of the cropland is harvested. Most of the rest of the cropland is in young orchards, not yet bearing. Ninety-three percent of the cropland is irrigated. (both bearing and nonbearing). Livestock represent only a very small part of the county's agricultural sales; over 96 percent of total sales was from crops, mostly tree fruit.

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Table 1.15 – Farming Characteristics, Hood River County, 1987

	Hood River	State
Number of farms	573	32,014
Land in farms (acres)	28,611	17,809,165
Average size (acres)	50	556
Cropland (acres)	20,617	5,236,393
Harvested cropland (acres)	18,109	2,832,663
Irrigated cropland (acres)	19,088	1,648,205
Value of land and buildings (\$/acre) ..	4,763	542
Market value of agricultural products sold (\$1000)	41,074	1,846,067
Market value of crops sold (\$1000) ..	39,491	1,048,616
Number of farms with sales		
<\$10,000	280	20,306
Number of farms with sales		
>\$100,000	124	3,845
Number of operators whose principal occupation is farming...	329	15,359
Number of operators whose principal occupation is not farming	244	16,655

Source: U.S. Bureau of the Census, 1987 Census of Agriculture.

Table 1.16 and Figure 1.6 offer a better picture of the county's crop mix. As can be seen in the figure the main crop of Hood River County is pears. (Details are provided in Chapter 2.)

Table 1.16 – Gross Farm Sales by Commodity Group, Hood River County, 1990 (\$1,000)

	Hood River	State
Grains	0	186,760
Hays and silage	147	96,670
Grass and legume seeds	0	215,644
Field crops	0	246,784
Tree fruits, wine grapes, and nuts ..	63,058	156,733
Berry crops	244	68,955
Vegetable crops	54	194,928
Specialty horticulture	1,780	598,658
All crops	65,283	1,765,172
Cattle and calves	659	452,097
Dairy products	304	215,129
Eggs and poultry	544	97,779
Miscellaneous animals	263	90,553
All animal products	1,770	855,558
Total gross sales	67,053	2,620,730

Source: Oregon State University Extension Service, 1990 *Oregon County and State Agricultural Estimates*, Special Report 790, Revised January 1990.

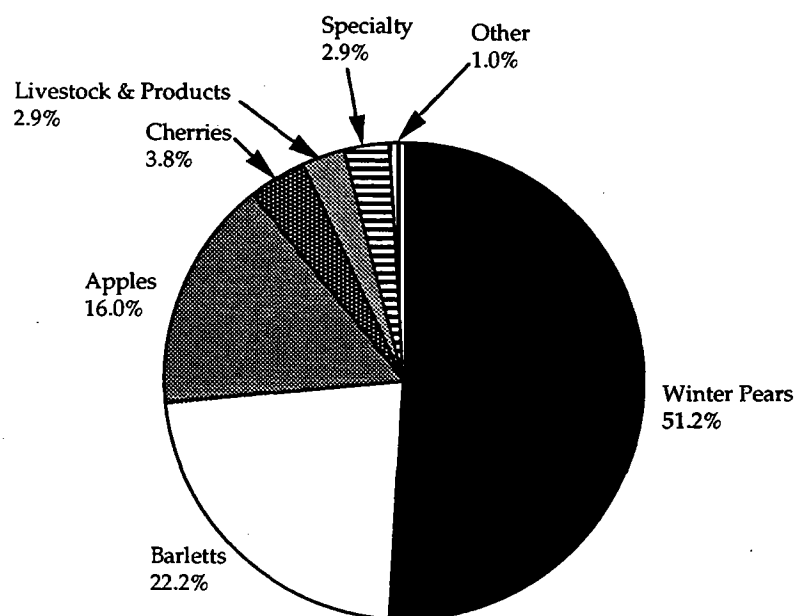
The preponderance of tree fruit in the county's crop mix means labor-intensive agricultural production. Labor's share of production expenses for 1987 and 1989 is given in Table 1.17. In 1987, the Hood River labor share was over two times the state's share.

Table 1.17 – Hired Farm Labor's Share of Production Expenses, Hood River County, 1987 and 1989

	Hood River	State
1987		
Production expenses (\$1,000)	33,650	1,535,162
Hired farm labor(\$1,000)	13,427	257,760
Labor share	39.9%	16.8%
1989		
Production expenses (\$1,000)	34,427	1,987,558
Hired farm labor (\$1,000)	7,219	273,841
Labor share	21.0%	13.8%

Sources: Data for 1987 are from U.S. Bureau of the Census, 1987 *Census of Agriculture*. Data for 1989, which were collected by the Oregon Economic Development Department, were obtained from the U.S. Bureau of Economic Analysis.

Figure 1.6. Hood River County Commodity Sales, 1990



Source: Oregon State University Extension Service, Hood River County.

Note: Specialty sales include nursery and Christmas tree production.

Other includes Asian peaches, Asian pears, hay and forage, berries, and vegetables.

Chapter 2

Background on the Case Study Crops

This report focuses on hired farm labor in four Oregon crops: nursery products, Christmas trees, and strawberries in the Willamette Valley; and pears in the Hood River Valley. This chapter gives some background on each crop.

Nursery Crops

Specialty horticulture includes floriculture (cut flowers, potted flowering plants, foliage plants, bedding plants, and cut cultivated greens); nursery plants (ornamentals and landscape trees and shrubs, fruit and nut plants for commercial and home orchards and vineyards, and trees for reforestation and Christmas tree plantations); bulbs; vegetable and flower seeds; sod; greenhouse vegetable products; and other greenhouse and nursery crops. Most growers specialize within a category and provide a wide variety of products.

Our case study focuses on nursery plants at the wholesale level, including deciduous shade trees (e.g., maples); deciduous flowering trees (e.g., crabapples); broad-leaf evergreens (e.g., azaleas, rhododendrons); narrow-leaf evergreens (e.g., junipers, pines, spruces, yews); other environmental (e.g., shrubs, ground covers, roses, vines); and fruit and nut plants (e.g., deciduous fruit and nut trees, grape vines, berry plants).

Although the focus here is on nursery products, some statistics on nursery and greenhouse crops will place the subject in perspective. The nation's nursery crop and greenhouse industry grew dramatically over the 1970s and 1980s. In 1969 there were 18,000 producers generating \$897 million in sales (D. Johnson 1990). By 1987 the number had grown to 37,298 farms grossing \$5.77 billion in sales. Today this sector of the agricultural economy is first in terms of sales per farm (\$154,818 per farm in 1987).

World trade in greenhouse and nursery products (including Christmas trees) in 1988 totalled \$5.4 billion (D. Johnson 1990). The United States exported \$157 million of products, while importing some \$575 million. A

substantial portion of U.S. imports consists of plants and flowers from Colombia and other tropical countries.

The top ten states contribute over two-thirds of the total value of nursery and greenhouse crops. Oregon entered this top ten in 1964 with 2.5 percent of the nation's total sales. Table 2.1 summarizes Oregon's advance over the years to a fifth position in 1988. The numbers also reflect the tremendous growth that occurred: In real terms (deflating receipts by the Consumer Price Index), the value of the nation's nursery and greenhouse crops increased over elevenfold between 1960 and 1988 (\$660 million to \$7.7 billion) while Oregon's increased more than fifteenfold (from \$16 million to \$251 million).

Table 2.1 – Grower Cash Receipts for Greenhouse and Nursery Crops, Oregon and the United States, 1960-1988 (\$1,000)

Year	Oregon	United States	Oregon's Rank
1960	16,122	661,308	not in top ten
1965	20,498	823,058	9th
1970	27,647	958,375	9th
1975	44,404	1,689,422	9th
1980	143,476	3,418,788	5th
1981	142,476	3,656,621	5th
1982	132,520	4,015,485	8th
1983	145,353	4,529,351	7th
1984	172,413	5,175,579	7th
1985	153,170	5,757,144	9th
1986	186,737	6,286,648	6th
1987	211,952	7,232,511	6th
1988	251,354	7,577,253	5th

Source: Doyle C. Johnson, *Floriculture and Environmental Horticulture Products, A Production and Marketing Statistical Review, 1960-88*, U.S. Department of Agriculture, Economic Research Service, Statistical Bulletin No. 817, September 1990.

In 1989, Oregon nursery and greenhouse sales were up to \$287 million; in 1990, sales totalled \$320 million (Miles and Green 1991). These totals do not include sales

by retail dealers (some of whom are also producers) or landscapers.

Farm wholesale greenhouse and nursery sales ranked second in the state among agricultural commodities in 1990, following cattle and calves (Oregon Agricultural Statistics Service 1991). Oregon leads the nation in production of English holly, lily bulbs, bearded iris, and liner-stock of fruit, flowering, and shade trees (Crabtree et al. 1991).

Oregon greenhouse production is relatively less important than field production of nursery products because of suboptimal winter sunlight for many crops (Crabtree et al. 1991). Looking at nursery crops, excluding greenhouse crops, Oregon moves up to third place in the nation (D. Johnson, 1991, using 1987 agricultural census data). California led with 25 percent of the U.S. total sales, followed by Florida's 11.4 percent and Oregon's 6.9 percent. Table 2.2 shows how the cash receipts from Oregon's and the nation's nursery and greenhouse crops were allocated between floriculture and other types of nursery and greenhouse crops in 1988. Floriculture represents over 30 percent of the nation's total receipts, but only 17 percent of total receipts in Oregon. In Oregon, "other environmental crops" (nursery products, sod, bulbs, etc.) represent a much larger share (83 percent) of the total.

Table 2.2. – Growers' Cash Receipts from Floriculture and Other Nursery Crops, 1988 (\$1,000)

	Floriculture ^a	Other Environmental Crops	Total
Oregon	42,915	208,439	251,354
U.S.	2,293,238	5,284,005	7,577,243

Source: Doyle C. Johnson, *Floriculture and Environmental Horticulture Products, A Production and Marketing Statistical Review, 1960-88*, U.S. Department of Agriculture, Economic Research Service, Statistical Bulletin No. 817, September 1990.

^a Includes cut flowers, potted flowering plants, foliage plants, bedding and garden plants, and cut cultivated greens.

Table 2.3 sharpens the focus on Oregon's nursery industry, the subject of this case study. Over 55 percent of Oregon growers in the large and varied nursery and greenhouse sector are producers of nursery crops, and they represented over two-thirds of the total sales value of the sector in 1987.

Table 2.3 – Number of Farms, Area under Glass or other Protection, Open Acreage, and Sales, Oregon and the United States, 1987.

	Farms (number)	Area under Protection (million sq. ft.)	Open acreage (acres)	Sales (\$1,000)
Total greenhouse and nursery crops				
Oregon	1,612	17.6	28,158	205,723
U.S.	37,298	762.0	578,955	5,774,391
Nursery crops ^a				
Oregon	889	7.4	16,021	138,396
U.S.	15,352	110.8	260,656	1,991,009

Source: Doyle C. Johnson, *Floriculture and Environmental Horticulture Products, A Production and Marketing Statistical Review, 1960-88*, U.S. Department of Agriculture, Economic Research Service, Statistical Bulletin No. 817, September 1990.

^a Excludes floriculture, sod, bulbs, vegetable and flower seeds, greenhouse vegetable production and other greenhouse and nursery crops.

Table 2.3 reports 889 farms producing nursery crops in Oregon, based on the 1987 census of agriculture. A special census of specialty horticulture in 1988 counted 361 "establishments" in the Oregon nursery industry (one establishment may represent several operations under one management). Crabtree et al. reported 1,525 licensed wholesale production nurseries in the state. (Each location of a multi-operation establishment must have a separate license). Finally, a 1990 Oregon State University survey of nursery and greenhouse growers, using an American Nursery Association list to draw its sample, counted 1,345 growers of specialty horticulture crops (Miles and Green 1991).

Of the total acreage in nursery and floricultural crops in Oregon, 84 percent is used to produce "woody plants," 14 percent is used for container production, and 2 percent is devoted to greenhouse use (Miles 1991). Oregon has been a leader in commercial propagation of woody plants by tissue culture (Crabtree et al. 1991).

Most of Oregon's nursery industry is located in the northern part of the Willamette Valley. Table 2.4 gives the 1990 sales value for nursery crops by Willamette Valley JTPA district and for the rest of the state. The Willamette Valley accounted for 95 percent of the state's total sales in 1990, with the four-county Portland PMSA contributing 71 percent of the state total.

Table 2.4 – Cash Receipts for Oregon Nursery Crops, by County, District, and State Total, 1990 (\$1,000)

County	Receipts
Clackamas.....	61,800
Multnomah.....	24,500
Washington.....	49,000
Yamhill.....	36,700
Portland PMSA total.....	172,000
Marion.....	49,000
Polk.....	1,100
Salem MSA total.....	50,100
Benton.....	700
Linn.....	950
Benton-Linn Total.....	1,650
Lane County.....	5,700
Willamette Valley.....	229,450
State total.....	241,402

Source: Oregon State University Extension Service, Economic Information Office, unpublished data, March 8, 1991.

The nursery industry got started in the 1920s in the northern Willamette Valley, where the climate is ideal for many species. The moist marine air cools the valley much of the year, until pushed out by a continental high that produces a long spring and warm summer growing season. According to Norbert Kinen of J. Frank Schmidt & Son wholesale nursery, there is "nowhere else on earth better for producing maples." Kinen also noted that, despite distance from important eastern U.S. markets, the climate drew growers of certain species to the northern Willamette Valley. The industry began by mass producing what grew best in the area, but as it expanded and associated services agglomerated, a cross-fertilization of ideas took place. Growers began to grow species that also do well in other locales, and they are now able to offer just about everything except tropical plants.

To offer a more diverse product mix, some of the largest companies in the nursery industry have sites in several states to take advantage of different microclimates. Weyerhaeuser Company led the nation with \$67.8 million in sales in 1990, but the company is planning to sell its ornamental businesses, retaining only its reforestation nurseries (Kadera 1990). Monrovia (discussed below), which ranked fourth with \$35 million sales, operates in California and Oregon. Bailey Nursery of Minnesota and Oregon ranked 13th with \$19 million in sales. Schmidt

(also discussed below) and Oregon Garden Products, which operate only in Oregon ranked 19th and 15th, respectively.

Nursery products are produced and marketed in two basic ways: field-grown and marketed balled and potted, bareroot, or balled and burlapped and container-grown in large pots, cans, and reinforced plastic bags. (U.S. Bureau of the Census 1991).

About 60 percent of Oregon's nursery product sales in 1988 was from field-grown production systems; slightly less than 40 percent was from container-grown plants. According to a special census of horticultural specialties, field-grown establishments in Oregon sold \$73.4 million of a total product value of \$121.4 million in 1988 (U.S. Bureau of the Census, 1991). Although the exact amount of sales from the container-grown establishments was not disclosed to the census, it seems reasonable that most of the rest of the total (about 40 percent or \$48 million) must have been generated by container-type operations.

Many Oregon nurseries use both field-grown and container-grown production methods. The total number of nursery product establishments was 361, yet the special census counted 329 field-grown, 179 container-grown, and three "other" establishments. For example, J. Frank Schmidt & Son Co, primarily a field-grown specialist, moved into container-grown production methods in 1984.

Table 2.5 gives total and wholesale sales values for the main types of nursery products and some of the most important species sold in the state. Nearly all of Oregon's products are wholesaled and over 90 percent is shipped out of state.

Much of the field-grown product is "re-wholesaled"—that is, sold to wholesale nurseries in other states to be put back in the ground for awhile before being retailed. Many operators using both production methods grow their own seedlings to transplant to containers. Oregon container plants are also re-wholesaled or sold directly to retail outlets.

The state sales total of \$121.4 million represented 10.7 percent of the nation's nursery product sales in 1988. Deciduous shade trees from Oregon accounted for 15.9 percent of the nation's sales of that type of tree, led by the Norway maple with over 37 percent of U.S. sales of these maples. Oregon deciduous flowering trees were 13.5 percent of U.S. total sales; broad-leaf evergreens, 11.4 percent; narrow-leaf evergreens, 14.0 percent; other environmentals, 4.2 percent; and fruit and nut plants, 3.3 percent.

Table 2.5. – Total and Wholesale Sales for Oregon Nursery Products, 1988 (\$1,000)

	Total	Wholesale
Total nursery plants sold.....	121,426	118,082
Deciduous shade trees.....	25,080	24,950
Ash.....	2,531	2,530
Honey locust.....	2,969	2,968
Norway maple.....	5,484	5,479
Red maple.....	3,437	3,421
Deciduous flowering trees ...	14,975	14,892
Crabapple.....	4,255	4,252
Broad-leaf evergreens.....	14,975	14,892
Rhododendron.....	8,620	8,033
Azalea.....	6,610	6,500
Narrow-leaf evergreens.....	35,868	35,001
Juniper.....	14,707	14,684
Spruce.....	7,571	7,481
Pine.....	5,861	5,705
Other environmentals.....	8,366	7,347
Fruit and nut plants.....	3,727	3,588

Source: U.S. Bureau of the Census, *1987 Census of Agriculture*, Vol. 4, *Census of Horticultural Specialties* (1988), August 1991.

Although not included by the census as “nursery products,” closely related to our case study are operations producing “unfinished plant materials”—cuttings, liners, plug seedlings, prefinished plants, and tissue culture plantlets. According to the special census, there were 98 establishments in this category with total sales of \$13.3 million in 1988; wholesale sales totaled \$11.1 million. These sales represented nearly 7 percent of the U.S. total. Presumably, many of these establishments are also running field-grown and container wholesale nurseries.

Marketing

The tremendous growth in the nation's and state's nursery and greenhouse industries (see Table 2.1) has been in response to increased demand for their products. Increased public awareness of the importance of the environment has led to programs such as “America the Beautiful,” partially federally supported urban beautification projects that include street tree planting. Every public project now must include a landscape plan, and large corporations strive to create campus-like settings. A related environmental effort is that of the American Nursery Association and the American Forestry Association to develop model cooling projects for energy conservation. The approach is to paint surfaces a light color and plant shade trees.

Still, demand for many nursery products is highly cyclical, subject to the ups and downs of the general economy. A recession means fewer housing starts, more unemployment, and lower incomes—which contributed to reduced demand for nursery plants; in contrast, boom times mean expanded construction activity and increased demand. A freeze or a drought that kills existing landscaping suddenly creates a large demand for replacement plants. Yet it is very difficult for producers to anticipate demand correctly in order to be ready with the needed supply.

To alleviate some of these difficulties, the industry has been doing more product merchandising. The Oregon Association of Nurserymen (OAN) has developed new marketing techniques and promotes the quality of Oregon products through trade shows and by sponsoring consumer events such as home and garden shows. Buyers can use the OAN 800 number to request certain plants, and OAN locates a nursery that can fill the order. This OAN program was started on a trial basis in two counties but is being expanded to all OAN members.

Electronic markets such as the OAN 800 number program offer considerable promise in facilitating the marketing process by bringing together buyers and sellers that normally would not interact at all. Standards are set for producers to accurately describe their products and for buyers to know exactly what is available. Market information becomes public, available to all. With better information, prices should reflect more of a competitive market structure rather than local, isolated prices. Supply and demand factors are better understood, marketing costs are reduced, and market power is more evenly distributed.

An Environmental Issue

A major environmental concern is waste effluent discharge from container nursery operations. In producing plants in containers, relatively large amounts of irrigation water, fertilizer, and other agricultural chemicals are used; these chemicals are applied by overhead irrigation systems (Green 1990). The overhead application is inefficient, allowing a large volume of water containing the chemicals to fall on the surface between the containers. In many operations containers are placed in areas where the topsoil has been removed, which speeds up the leaching and runoff of these chemicals into ground and surface water supplies.

As it became aware of these problems, the industry has responded by improving management of existing systems, for example, by changing container spacing and recycling water, and by installing in drip irrigation and completely closed integrated production systems. By May 1, 1992, Oregon's container operations will have met the Depart-

ment of Environmental Quality's standards for waste effluent discharge.

Structure

The bulk of the state's nursery products is sold by very large operations. Twenty-two of Oregon's 361 establishments in 1988 had sales over \$1 million and as a group represented 80 percent of the total sales that year. Adding in the 62 establishments with sales between \$100,000 and \$1 million, those with sales of \$100,000 or more accounted for 92 percent of the total. It is these larger firms that hire most or nearly all of the farm labor. As is true with most other agricultural commodities, a large number of small firms (in this case 277 establishments) sell only a small portion of the total product.

Preliminary data from a recent Oregon State University survey of 1,345 nursery and greenhouse operators in the state give supporting information on size distribution. The 1,070 growers with sales of \$100,000 or less represented only 6 percent of total sales in 1990, while the 99 larger growers (with sales of \$500,000 or more) accounted for 80.3 percent of total sales of nursery and greenhouse products. Two of these larger operations, described here in more detail, are J. Frank Schmidt & Son Co., which uses primarily field-grown production systems, and Monrovia, a container-grown nursery.

J. Frank Schmidt & Son Co.

(Higginbotham 1988 and Kadera 1990). In 1946, J. Frank Schmidt, Jr., founded the company on a few acres near Gresham in Clackamas County. Although budded cultivar technology facilitated increased product variety, he specialized by mass producing certain deciduous tree species that did especially well in the area. By continual experimentation and by staying in touch with consumer demand, Schmidt improved product quality and gradually expanded the company's product line.

Today the company markets bareroot, balled and burlapped, and containerized shade and flowering trees to all but four states. So far exports are limited to Canada. A sales force located in various regions of the country feeds back information from local wholesalers about what is needed in their areas. About half the products are re-wholesaled to nurseries that replant before selling them; garden centers buy another third; and landscapers directly purchase the rest.

Standardization of named cultivars and excellent product consistency enables Schmidt's buyers to know exactly what they're ordering when selecting from catalogs describing hundreds of offerings. Research efforts have

greatly expanded cultivar characteristics that combine beauty, disease resistance, and landscape usefulness.

The company's eight farms on a total of 2,930 acres allow it to take advantage of differing microclimates and produce over 250 varieties of plants. Hood Acres, the 665-acre headquarters farm near Boring, grows bare-root shade and flowering trees. Sunset Farm (540 acres) 35 miles south of Hood Acres near Canby, is flat and warmer, and offers good growing conditions for bare-root shade and flowering trees. Barlow Farm (409 acres), in the Aurora area, also produces bare-root shade and flowering trees. Independence Farm (527 acres), on the Willamette River near Salem, about 70 miles from headquarters, also produces bare-root shade and flowering trees. High Forest Farm (211 acres), near headquarters, is the company's propagation operation, producing seedlings for sale and for lining out at Schmidt's other farms. Milton Farm (320 acres), in eastern Oregon enjoys a more continental, dryer, warmer climate and is well suited for honey locust, ash, Amelanchier, and crabapple. Cottrell, which grows about 45 acres of container and 50 acres of balled and burlapped plants, is just northeast of headquarters. Northwest Shade Trees, a separate company located on 166 acres near headquarters, is half owned by Schmidt family members and half by company employees; it produces two to four-inch caliper balled and burlapped trees for the western market.

The company has introduced many patented plants for its original breeders and hybridizers but has also bred many introductions of its own. The Red Sunset, a vigorous, improved red maple, has been Schmidt's top seller. It was developed from one exceptional red maple and reproduced asexually through budding or soft wood cuttings from this single parent. Pacific Sunset, a hybrid with larger leaves and genetic resistance to cold and drought, may someday surpass Red Sunset sales. The company has also developed a strong reputation for its crabapple varieties and is developing a virus-free crabapple stock block.

The production cycle requires both labor-intensive handwork and machine-driven efficiency. About 80 percent of the crop starts as seed sown into furrows by hand, then rolled in and covered with sawdust mulch. Seedlings are watered with overhead sprinklers, and their tops are mowed. They are harvested by undercutting and shaking, and then workers grade them, prune their roots, and box them for cold storage.

In the spring, machines line out the seedlings in pre-fertilized rows, carefully spacing them according to the needs of each cultivar. Cultivation is the main weed control method. The soil is hilled up to the bases right after planting and then blown out before budding. Contract labor buds 85 percent of the crop; the rest is budded by Schmidt employ-

ees. In early September, crews apply herbicides and use other pest-control methods.

The top two or three feet of growth is mowed in February, and in March workers precision prune the last few inches with pneumatic hand pruners and insert a "grow straight" around each base. Suckers are removed by hand, and trees are staked with steel rods. Two- and three-year-old trees receive special attention—dormant pruning, topping to develop branch structure, and training leaders.

Trees are harvested in November and December by undercutting, shaking away the soil, and then are loaded into pallets that are hauled to warehouses where workers grade and bundle the trees. Most are shipped between mid-February and mid-April.

The Schmidt labor force numbers about 550 at its peak. The company strives to offer full-time, year-round employment to 300 of its workers. Its eight facilities help to even out the work load over the year and reduce layoffs. After two years of at least 1,000 hours of work, employees can participate in Schmidt's profit-sharing plan; the company has historically contributed 12 to 15 percent of annual salary to the plan. Other benefits include health insurance; group auto, home owners and renters insurance; credit union services; and an excellent safety program. The company worked with its employees to help them put their papers in order before IRCA was passed. Now that all workers have legal status and could go elsewhere for work, many are choosing careers with J. Frank Schmidt & Son.

Monrovia

(S. Johnson 1991). A branch of the largest U.S. container nursery industry is located in Dayton, Yamhill County, about 20 miles north of Salem. The company was founded in 1926 in Monrovia, east of Los Angeles, by a Danish immigrant, Harry Rosedale. Today his son, Miles, runs the two-state operation.

The California company's presence in Oregon began in 1984 when it bought the 60-acre container operation of the Carlton Nursery. The expansion has enabled the company to offer many more varieties, such as rhododendrons and blue spruce, that don't do well in warmer climates. The Oregon operation now produces 600 varieties of plant stock on 550 acres, and another 300 acres will be opened up in the near future. Sales in 1990 were about \$30 million, or about one-tenth of the state's total nursery industry sales.

This innovative nursery uses the latest technology, compounds its own soil mixes, automates to speed up some of its processes, and recycles its irrigation water and fertilizer. But proper care of the plants requires much hand work, including meticulous pruning. The Oregon operation has 16 work divisions, each with its own manager, assistant manager, and permanent crew. About 80 percent of the 515

employees are Hispanic, including most of the division managers.

The company strives to provide permanent full-time employment for most of its workers. It offers medical, dental, and life insurance coverage; overtime pay; a company-funded pension plan; and two weeks' paid vacation. To reduce its high turnover rate (about 40 percent), Monrovia is offering eight weeks of unpaid leave with benefits during the slack season from November to February.

Christmas Trees

Some 35 to 45 million Christmas trees are harvested in the United States each year. Oregon leads in terms of numbers of trees harvested and their aggregate sales value. In 1988 Oregon harvested 6.5 million of the nation's 45.2 million trees. Michigan was second with 5.9 million, followed by Wisconsin with 5.2 million, California with 3.3 million, and North Carolina with 3.0 million. Other states that harvested significant numbers of Christmas trees include Pennsylvania and Washington, which each cut over 2 million in 1988; and Georgia, Minnesota, New York, Ohio, and Virginia, each of which cut over 1 million trees (D. Johnson 1990).

Scotch pine, the best-selling tree across the nation, represented 38 percent of trees sold (Northwest Christmas Tree Association 1990). Douglas fir is second with 22 percent of U.S. sales. The other 40 percent is composed of other firs and other varieties.

Scotch pine is more prevalent in the East and Midwest; it represented 51 percent of Wisconsin's crop and 41 percent of Pennsylvania's in 1988 and is the dominant species in Minnesota (D. Johnson 1990). A large portion of California's crop is Monterey pine, which grow fast in the warmer climate but are a relatively low-quality tree. In the Pacific Northwest, the Douglas fir represents 62 percent of the trees grown; the noble and Shasta fir, 25 percent (mostly noble); grand fir, 7 percent; and pine, 4 percent (Northwest Christmas Tree Association 1990). About 70 percent of Oregon's Christmas trees are Douglas fir, making the state number one in the nation in this type of Christmas tree. Noble fir represents about 20 percent of the state's harvest, and the rest is a mixture of other types of firs, pines and spruces (Duncan 1989).

There are two types of Christmas tree cultural operations: harvest of natural stands and plantations. Several decades ago, most trees were harvested from natural stands. In today's natural stand operations, the soil isn't tilled, but owners protect the trees from disease and insects and may shear the trees.

Table 2.6 – Number of Trees Harvested and Planted and the Ratio of Plantings to Cuttings, Oregon and the United States, 1984–1988

Year	Oregon			United States		
	Number Cut (million)	Number Planted (million)	Ratio	Number Cut (million)	Number Planted (million)	Ratio
1984	3.9	9.7	2.5	26.4	80.5	3.0
1985	4.3	8.6	2.0	28.1	81.0	2.9
1986	4.6	9.6	2.0	32.4	87.3	2.7
1987	5.6	8.9	1.6	38.2	87.5	2.3
1988	6.5	8.7	1.3	45.2	87.2	1.9

Source: Doyle C. Johnson, *Floriculture and Environmental Horticulture Products, A Production and Marketing Statistical Review, 1960-88*, U.S. Department of Agriculture, Economic Research Service, Statistical Bulletin No. 817, September 1990.

Plantations began in the 1940s and by the late 1950s, with changing consumer demand for more perfectly shaped Christmas trees, commercial plantation operations became the prevalent form of production. Plantation trees must be cared for year-round to produce a high-quality product, which calls for labor-intensive work. There are 10 to 12 times as many trees per acre on a plantation as on a natural stand. Willamette Valley plantations average from 1,200 to 1,300 trees per acre.

Oregon has both types of cultural operations, with some 57,000 acres of plantation and 3,400 acres of natural stand (Northwest Christmas Tree Association 1990). In Washington, harvest of natural stand is relatively more important: Washington has 33,000 acres of natural stand Christmas trees and 23,000 acres of plantation. The total of both types of Christmas tree operations nationally amounts to about 1 million acres.

Table 2.6 shows growth in numbers of trees harvested in Oregon from both types of operations through the mid-1980s, but a slowing in the rate of replanting—from $2\frac{1}{2}$ trees planted for every one harvested to about $1\frac{1}{3}$. Replanting is at a greater rate nationwide (almost 2 to 1), but it also slowed over the time period.

Christmas trees ranked ninth among Oregon agricultural commodities in 1990 with farm-level sales value of some \$65 million (OSU Extension 1991). Crabtree et al. report a value of \$76 million for the same crop at the wholesale/retail level. Since 1980, the rank of Christmas trees in Oregon has ranged between 14th (in 1980 and 1981) and 8th (in 1983, 1984, and 1987). Farm level sales value of Christmas trees increased over two and one-half times, from \$24.2 million in 1980 to \$65.2 million in 1990 (OSU Extension 1991). In real terms (accounting for inflation by dividing the figures by the Consumer Price Index), sales value increased 70 percent over the decade.

Table 2.7 gives Oregon harvested acreage, number of trees harvested, and sales value. The number of trees cut is less than the number reported in Table 2.6 for the same year (based on data from a different source), but Table 2.6 includes those harvested from natural stands.

Table 2.7. – Oregon's Plantation Christmas Trees, Harvested Acreage, Number of Trees Harvested, and Sales Value, 1985–1990

Year	Harvested Acres	Number of trees (million)	Value of Production (\$1,000)
1985	3,160	4.087	43,481
1986	3,410	4.415	47,397
1987	4,100	5.274	48,250
1988	4,510	5.788	52,151
1989	5,290	6.805	58,750
1990	5,570	7.095	65,208
1991	5,990	7.662	67,793

Sources: Oregon State University Extension Service, *Oregon County and State Agricultural Estimates*, 1985-1988, Figures for 1989-1990 are revised by the OSU Extension Service, Economic Information Office; 1991 data are unpublished data of that same office.

The Willamette Valley's cool, moist climate; proximity to rail, truck, and shipping lines; and widespread availability of suitable, cleared agricultural lands provide an ideal location for the plantation type Christmas tree operation. Most of Oregon's plantation Christmas trees are grown there, led by Clackamas County. Together, Clackamas, Marion, and Benton counties represent 68 percent of the state's total sales value; the Willamette Valley as a whole accounts for almost 95 percent of the value. Table 2.8 shows where Christmas tree production is located.

Table 2.8 – Harvested Acres of Oregon Plantation Christmas Trees, Yield, Total Production, and Sales Value, by County, District and State Total, 1990

	Acres	Yield (trees/acre)	Production (1000s of trees)	Value (\$1,000)
Clackamas	1,400	1,296	1,815	17,606
Multnomah	90	1,300	117	1,135
Washington	240	1,113	267	2,590
Yamhill	230	1,300	299	2,542
Portland PMSA total	1,960	—	2,498	23,873
Marion	1,100	1,300	1,430	13,585
Polk	540	1,300	702	7,020
Salem MSA total	1,640	—	2,132	20,605
Benton	1,210	1,305	1,580	13,430
Linn	90	1,300	117	995
Benton-Linn total	1,300	—	1,697	14,425
Lane Co.	260	1,250	325	2,763
Willamette Valley	5,160	1,290	6,652	61,666
State total	5,570	1,270	7,095	65,208

Source: Oregon State University Extension Service, Economic Information Office, unpublished data, December 13, 1991.

Marketing

In 1989, the National Christmas Tree Association commissioned the Gallup Organization to conduct a nationwide survey of consumer Christmas tree purchases. When asked if they had a Christmas tree in their house or apartment during the 1989 season, 38 percent of the respondents said they had purchased a real tree, 40 percent had used an artificial tree, and 22 percent had not displayed a tree. These percentages differ markedly from the 1965 percentages: 60 percent had purchased a real tree, 10 percent had used an artificial tree, and 30 percent had not displayed a tree. Younger age groups (18 to 34) and higher income groups were much more likely to have had a tree in 1989, either real or artificial. More tree customers in the West use real trees—70 percent of those who use trees, compared to 48 percent for the United States as a whole.

Christmas trees are marketed primarily in two ways: wholesale/retail and U-Cut (purchasers cut their own trees). U-Cut farms are found near urban centers across the nation. According to the Gallup survey, among those using live trees, 61 percent bought at a retail lot, 25 percent bought at U-Cut farms, and the rest got their trees by growing their own, as a gift, from their church, or by mail order. This indicates a substantial increase in the proportion represented by U-Cut operations since the mid-1960s: In

1965, 1.7 million trees of the 34.2 million sold (5 percent) were from U-Cut farms; by 1989, 8.6 million trees (24 percent) in the United States were purchased this way (Douglas 1990).

At least 90 percent of Oregon's wholesale/retail trees are shipped to other states or exported, with the largest percentage going to California. Brokers make the connections between smaller growers and retail outlets; they also deal with those larger growers who do not wholesale their own products.

Structure

As with most agricultural commodities, the bulk of the sales value (and most of the farm labor) is represented by rather large wholesale operations, such as Holiday Tree Farms, in Corvallis; in Monroe Tree Farm, Monroe; Noble Mountain Tree Farm, in Salem; and Yule Tree Farms, in Aurora. However, during the 1970s and 1980s, many smaller operations got started. Some of these producers market using U-Cut. Of the 700 Oregon and Washington growers who belong to the Northwest Christmas Tree Association, 500 have less than 40 acres and 21 have more than 300 acres. According to Lisa Ostland of the Pacific Northwest Christmas Tree Association, many of these smaller Christmas tree farmers were not previously in agriculture. For many it represents a career change.

Strawberries

Strawberries are sold fresh or for processing—frozen; canned; or used in jam, jelly, ice cream, yogurt, fruit juice blends, and occasionally wine. They are one of the most capital- and labor-intensive crops (Palerm 1991). Perishability and vulnerability to disease, weather, and market conditions make strawberries a very risky crop to grow and sell, yet they hold promise for very rewarding returns.

The versatility of the genetic makeup of the strawberry plant allows it to be adapted to a variety of environmental conditions and produced worldwide (Brun et al. 1991). The various cultivars differ markedly in their response to, for example, day length and temperature, and thus they are developed specifically for certain regions. Those cultivars from other parts of the United States, say California, for example, often perform poorly in Oregon relative to those developed for and adapted to Pacific Northwest conditions.

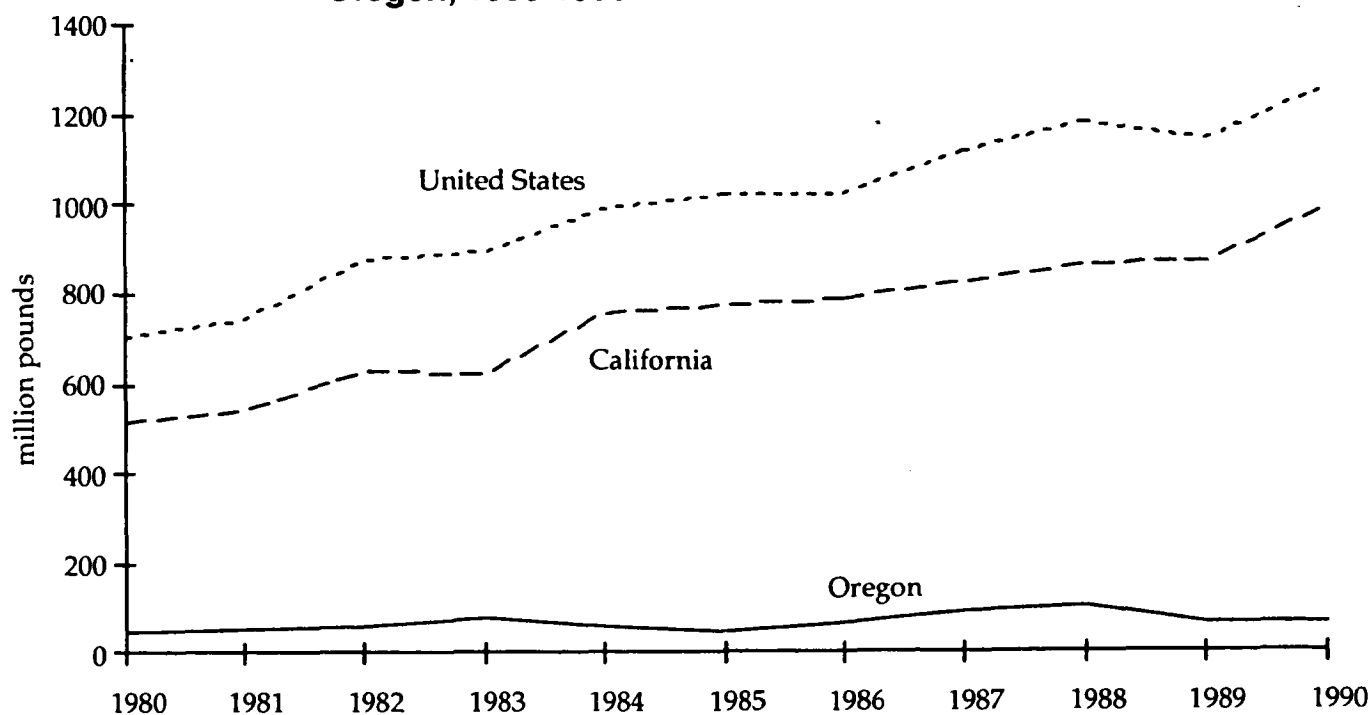
According to the census of agriculture, 9,398 U.S. farms grew strawberries in 1987, harvesting 959 million pounds on 53,085 acres (42,584 of these were irrigated). California produces about three-fourths of the total U.S. crop (725 million pounds on 16,600 acres in 1987). Second

in production in 1987, but far behind California, was Oregon with 76 million pounds, according to census data. Third was Florida's winter crop of 51 million pounds, followed by Washington (21 million) and Michigan (14.5 million). By 1990, USDA data show that Florida was in second place with 117 million pounds, under California's lead of 990 million. Oregon's 6 million pounds put the state in third place but far ahead of the next states, New York (17 million), Michigan (14 million), and Washington (13 million).

Strawberry production in the United States has grown steadily over the last decade (Figure 2.1). In 1980, 702 million pounds were produced; by 1990 production was up to 1,257 million pounds. Of this 1990 quantity, about 70 percent was sold fresh; the rest was processed (Cook et al. 1991).

This increased production was in response to greater U.S. consumer demand, particularly for fresh strawberries. Per capita strawberry consumption figures are shown in Table 2.9. Consumption of fresh berries almost doubled between 1970 and 1989, while consumption of frozen berries increased very little.

Figure 2.1. Strawberry Production, United States, California, and Oregon, 1980-1990



Source: Oregon State University Extension Service, Economic Information Office, *Commodity Data Sheet, Strawberries*, February 1991 and other issues.

In 1988, the United States imported 39.4 million pounds of fresh and 72.1 million pounds of frozen strawberries, 19.6 million pounds of strawberry jam, and 3.3 million pounds of otherwise prepared strawberries (USDA 1991a). The bulk of the imports comes from Mexico.¹ In 1990, of the 104.3 million pounds of fresh and frozen berries imported, 88.7 million (85 percent) came from Mexico. Most of the rest came from Central American (7.0 million pounds) and Canada (0.9 million pounds) (USDA 1991a).

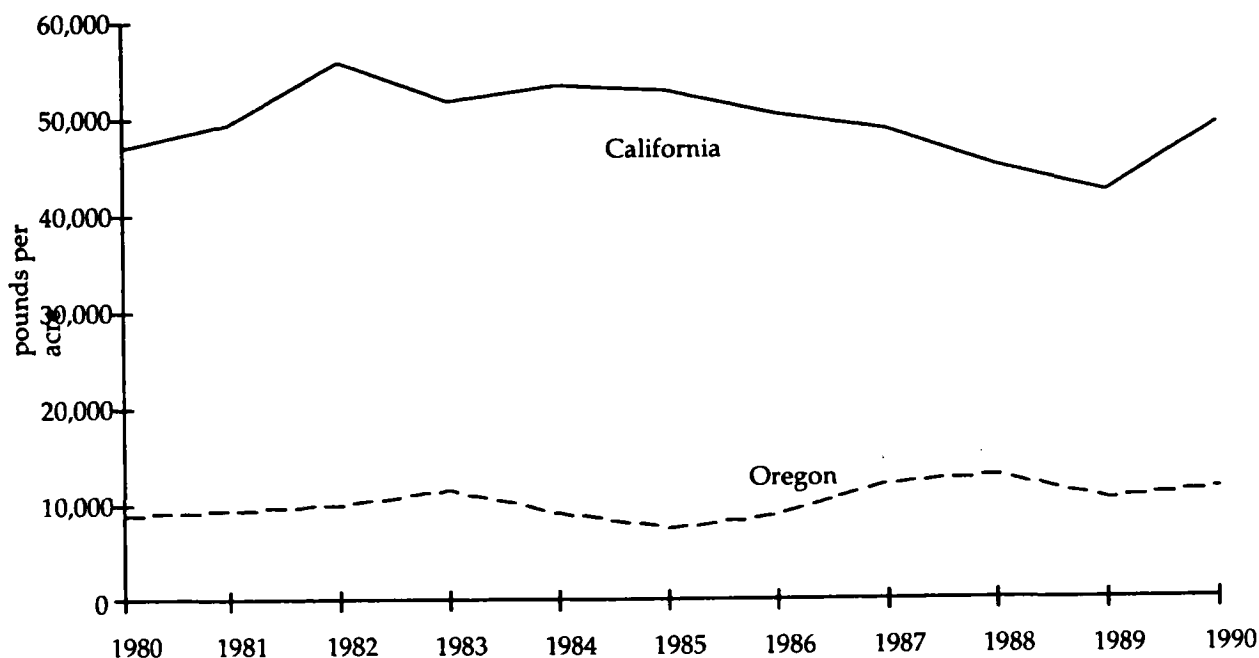
In 1988, the United States exported 30.7 million pounds of fresh and 17.8 million pounds of frozen strawberries. The two main buyers of U.S. strawberries are Canada and Japan. However, Japan is the most important importer of berries from the Pacific Northwest (PNW), buying well over half of PNW total exports in recent years (Brun et al. 1991). The Japanese percentage of PNW exports increased from 54.3 percent in 1985 to 71.2 percent in 1988; while the Canadian percentage of total PNW exports dropped from almost 35 percent in 1985 to under 12 percent in 1988 (Brun et al. 1991).

Table 2.9. – U.S. Per Capita Strawberry Consumption, 1970–1988 (pounds)

	Fresh	Frozen	Total
1970.....	1.6	1.2	2.8
1975.....	1.7	1.4	3.1
1980.....	1.8	1.4	3.2
1985.....	2.8	1.2	4.0
1986.....	2.8	1.3	4.1
1987.....	3.0	1.3	4.3
1988.....	2.9	1.3	4.2
1989.....	3.1	1.5	4.6

Source: Judith Jones Putnam and Jane F. Allshouse, *Food Consumption, Prices, and Expenditures, 1968-89*, USDA, ERS, Statistical Bulletin No. 825, May 1991.

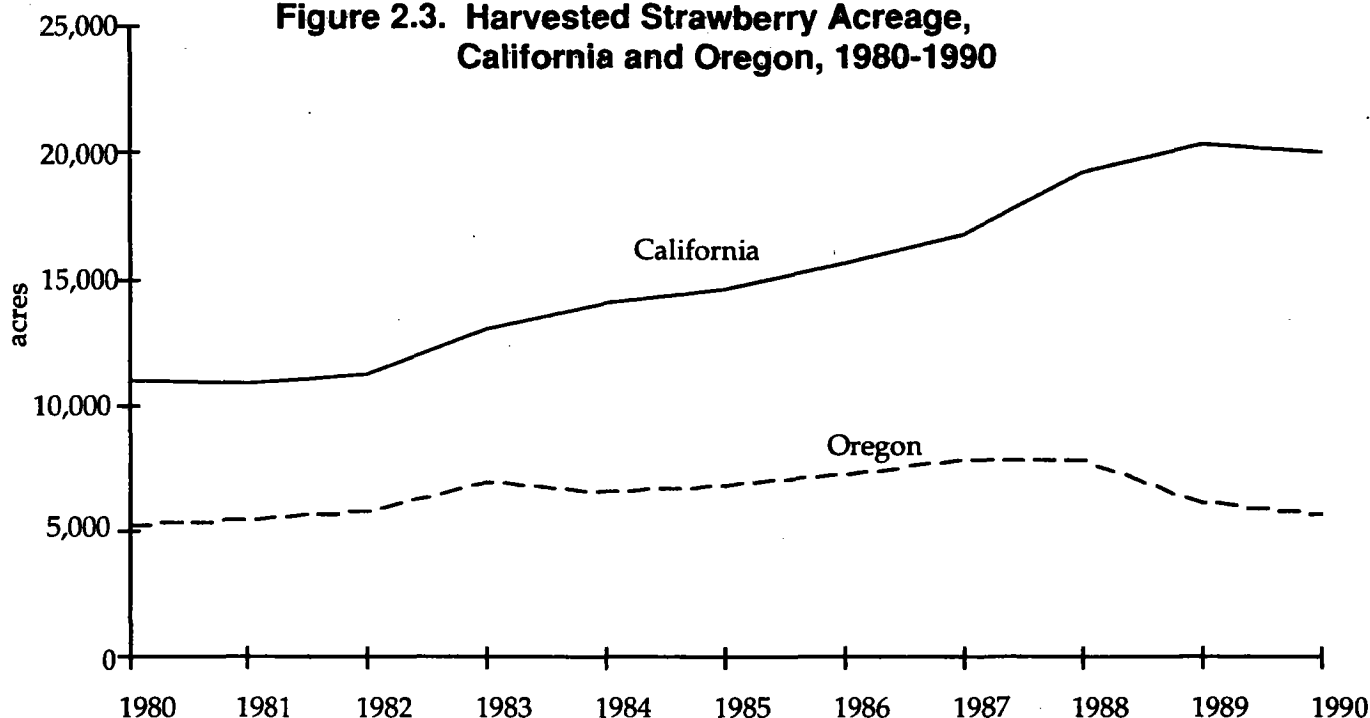
Figure 2.2. Strawberry Yields, California and Oregon, 1980-1990



Source: Oregon State University Extension Service, Economic Information Office, *Commodity Data Sheet, Strawberries*, February 1991 and other issues.

¹ The Mexican strawberry freezer industry got started in 1948 and expanded rapidly through the mid-1970s, helped by low field and plant wages, subsidized sugar prices, a stable peso relative to the dollar, and the Klondyke berry, popular with processors (Runsten 1987). However, by the late 1970s, Mexico became a less certain supplier due to a number of factors: the oil boom and an overvalued peso, increased sugar prices, better demand and prices for fresh berries in Mexico, flat U.S. demand for processed berries, disease problems, lack of research and/or successful technology transfer, disorganization in the industry, and competition from California's high-yielding, high-tech-produced, low-cost processed berries.

Figure 2.3. Harvested Strawberry Acreage, California and Oregon, 1980-1990



Source: Calculated as production divided by per acre yield as reported in Oregon State University Extension Service, Economic Information Office, *Commodity Data Sheet, Strawberries*, February 1991 and other issues.

A California/Oregon Comparison

The bulk of the upward production trend in Figure 2.1 is accounted for by California, which represents about three-fourths of the nation's total strawberry production. California's production nearly doubled—from 517 million pounds in 1980 to 990 million pounds in 1990. And the 1980 quantity represented a 40 percent increased production in the mid-1970s. This increased production in California is accounted for by higher yields and expanded acreage (Figures 2.2 and 2.3).

California strawberry yields are over four times those of Oregon (Figure 2.2). This is due to the different cultivars grown, the much longer harvest season in California, and California's practice of replacing plants every year (annual production). In contrast, Oregon treats the crop as a four-year perennial, replanting only about one-fourth of its acreage each year. Also, California's research thrust has been to develop large-berried, higher-yielding varieties, suited for annual production.

California strawberry acreage increased steadily from 8,100 acres in 1973. California entered the 1980s with over twice as much acreage in strawberries as Oregon, increasing its lead to over three and one-half times as much by 1990 (Figure 2.3). California growers were planting in response to increasingly favorable returns; per-acre returns

jumped from \$12,000 in the mid-1970s to almost \$25,000 in the late 1980s (Mamer and Wilkie 1990).

Meanwhile Oregon acreage increased only gradually to a high of 7,800 harvested acres in 1987 and 1988. After the 1988 crop, growers replanted less than usual, so Oregon acreage dropped to 6,200 in 1989 and then to 5,700 in 1990. Mason surveyed Oregon strawberry growers after their 1987, 1989, and 1990 harvests, and, among other things, elicited their replanting intentions and their production-marketing concerns (Mason et al. 1992). Worry over an adequate labor supply was apparently behind the decision to reduce acreage: sixty-four percent of those surveyed in 1988 cited picker availability as their number one concern. Other problems noted by growers were burdensome government regulations and paperwork (54 percent), unfavorable prices expected for the 1989 crop (29 percent), possible bad weather (19 percent), production costs (14 percent), and supply of worker housing (3 percent).

There are many factors behind the apparent competitive success of the California strawberry industry. For one thing, California has a very long growing season; six months a year (compared to Oregon's three-plus weeks). Runsten 1987 describes several other important advantages: (1) an industry structure that is highly organized in cooperatives and grower-shipper corporations and with a marketing order that has supported research and promo-

Table 2.10 – Utilization of the Strawberry Crop, Oregon, California, and United States (million pounds)

	Oregon		California		United States	
	Fresh	Processed	Fresh	Processed	Fresh	Processed
1980.....	4.3	42.0	356.1	160.9	482.1	219.6
1981.....	4.5	46.7	397.3	142.3	535.6	204.1
1982.....	4.5	53.5	405.7	221.5	585.2	292.7
1983.....	4.8	74.6	410.7	213.3	583.6	308.1
1984.....	4.7	56.0	590.8	163.6	748.2	242.7
1985.....	4.3	46.0	580.4	193.4	754.1	264.7
1986.....	5.0	58.5	580.4	207.4	734.8	284.5
1987.....	5.6	88.0	600.2	223.0	778.6	336.5
1988.....	6.4	95.0	659.0	205.0	855.5	323.6
1989.....	6.1	59.0	657.0	210.0	861.6	280.4
1990.....	5.8	59.8	673.5	316.5	867.2	390.1

Source: Oregon State University Extension Service, Economic Information Office, *Commodity Data Sheet, Strawberries*, February 1991 and other issues.

tion; (2) research and development, funded by the California Strawberry Advisory Board, with an emphasis on breeding plants with larger berries and very high yields; (3) capital-intensive, high-tech production and marketing methods; and (4) both fresh and processing market outlets. This final point is of particular relevance as we consider the competitive position of Oregon's industry.

Almost three-fourths of California's crop is sold fresh, whereas Oregon's goes primarily to processing (Table 2.10). Still, even the portion of California's crop that is processed is over five times Oregon's quantity processed. The cultivars grown in California are developed specifically for the higher-price fresh market. A major success has been the state's ability to market these cultivars first to fresh, then to processing. As the harvest season progresses from south to north along the California coast and it becomes too hot for fresh berries, the late berries go to processing after growers have already sold most of their crop in the lucrative fresh market (Runsten 1987). Sales to processing, therefore, merely have to cover part of the variable costs (harvesting and transportation). Thus, the portion of California's crop to processing is subsidized by the relatively high-priced fresh market.

With Oregon's processed quantities absolutely overwhelmed by residual low-cost berries from California, one might wonder why Oregon stays in the strawberry business at all. The answer lies in a strong demand for high-quality, excellent tasting Pacific Northwest berries for processed products—for example, to add flavor and color to jams made mainly from California fruit or to use in high-quality ice cream or yogurt products.

Table 2.11 shows prices received for California's late, residual berries for processing and the premium paid for processing berries from Oregon. Because of extreme perishability, only 8 percent of Oregon's crop is sold fresh, mostly at roadside stands, farmers' markets, or U-Pick operations.

Table 2.11. – Farm Prices Received for Fresh and Processing Strawberries, California and Oregon, 1980-1990 (cents/pound)

	California		Oregon	
	Fresh	Processed	Fresh	Processed
1980.....	46.3	24.2	45.0	31.9
1981.....	47.1	25.6	45.8	34.4
1982.....	55.7	30.9	54.0	43.0
1983.....	53.2	28.5	55.0	38.0
1984.....	49.1	17.6	54.0	22.5
1985.....	51.9	16.9	53.0	29.0
1986.....	58.2	22.6	65.0	44.2
1987.....	58.0	26.7	60.0	32.0
1988.....	52.0	23.0	62.0	28.9
1989.....	49.3	23.0	68.0	34.7
1990.....	52.3	25.0	61.0	44.9

Source: Oregon State University Extension Service, Economic Information Office, *Commodity Data Sheet, Strawberries*, February 1991 and other issues.

The Pacific Northwest Industry

Most of the cultivars adapted to growing conditions in the Pacific Northwest (PNW) are also those with better flavor, texture, and color for processing. Basically, the PNW strawberry is an entirely different product than California's. PNW strawberries grow primarily in the cool marine climatic regions west of the Cascades, in Oregon's Willamette Valley, and north through Washington state to the Fraser Valley in British Columbia.

In Oregon, Marion and Washington counties lead in the state's strawberry production (Table 2.12). The Willamette Valley represents 95 percent of the state's total production.

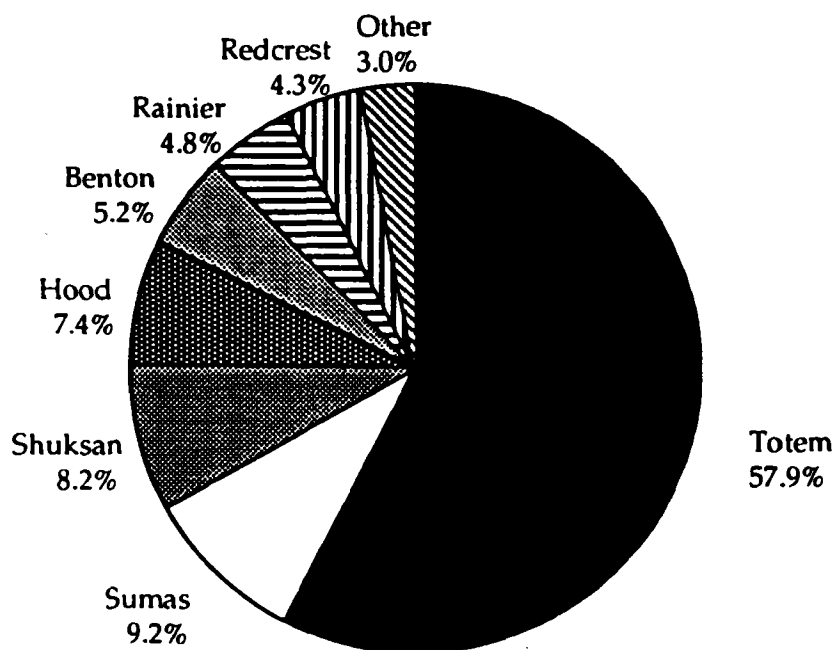
While there were 2,400 acres of strawberries in Washington state in 1988, acreage dropped to 1,900 acres in 1989, including some recently established in eastern Washington. Brun et al. (1991) show production in British Columbia just under Washington's 12 to 14 million pounds.

Table 2.12 – Location of Oregon's Strawberry Production, 1990

County	Harvested Acres	Production (\$1,000 lbs.)	Sales Value (\$1,000)
Clackamas	650	7,538	3,474
Multnomah	270	3,132	1,494
Washington	1,900	23,556	10,785
Yamhill	220	2,552	1,179
Marion	1,900	22,037	10,067
Linn	200	2,320	1,224
Lane	140	1,344	682
Willamette Valley	5,280	62,479	28,905
Columbia	125	750	335
Other counties	295	2,371	1,148
State total	5,700	65,600	30,388

Source: Oregon State University Extension Service, Economic Information Office, *Commodity Data Sheet, Strawberries*, February 1991.

Figure 2.4. Pacific Northwest Strawberry Cultivars—Percentage of 1990 Sales



Source: Charles A. Brun, William P.A. Scheer, Bernadine Strik, Craig B. MacConnell, and Robert Norton, *Pacific Northwest Strawberry Production Guide*, Draft Revision, Washington State University and Oregon State University Cooperative Extension, October 1991.

The highest-quality PNW berries are processed as individually quick frozen (IQF) at 10°F and placed in retail 8 ounce poly bags (Brun et al. 1991). Berries not meeting IQF standards are frozen in bulk (30 pounds pails or 400 pounds drums), or they are sliced and sugared to buyers' specifications. Fruit is also used for juice stock.

Most PNW cultivars are June-bearers for the processing market (Brun et al. 1991). Strawberry breeding programs are conducted at Oregon State University in cooperation with the U.S. Department of Agriculture, at Washington State University, and at Agriculture Canada's research station in Vancouver, British Columbia. In Oregon, new selections are tested at the field station at Aurora and by cooperating growers. It takes about 10 years to develop a successful new variety. Totem is the leading PNW strawberry cultivar, representing 57.9 percent of sales in 1990 (Figure 2.4). Oregon produces mainly Totem, Redcrest, and Benton. Brief descriptions of the leading PNW varieties follow (Brun et al. 1991).

Totem, a 1971 British Columbia release, is a mid-season cultivar, producing firm, conic-shaped fruit with good internal red color but a somewhat harsh taste. The plant has good resistance to virus, red stele (soil-borne fungi), fruit rot, and winter damage but is susceptible to late spring frosts, particularly in the northern Willamette Valley.

Sumas, a 1986 British Columbia release, is an early season cultivar (i.e., late May, early June), producing large attractive fruit. Plants are high yielding and have good resistance to virus, winter damage, and red stele, but the early fruit tends to develop seedy tips, and preharvest fruit rot is a problem.

Shuksan, a 1970 Washington release, is a mid-season cultivar, producing large-wedged, conic-shaped fruit with a glossy bright red color and a tough skin that makes the fruit good to sell on the fresh market. Because it remains firm after thawing, it is also very good for frozen processing. However, it is relatively difficult to cap and is susceptible to viruses and leaf spot.

Hood, a 1965 USDA-OSU release, is an early season cultivar with excellent quality for preserve manufacture, commanding a premium price in that outlet. Its medium-size berries are round-conic, uniform, and medium firm with a red glossy skin, a good bright red internal color, and fresh flavor. However, the plant is lower yielding than some other cultivars and has extreme virus susceptibility.

Benton, a 1975 USDA-OSU release, is a mid- to late-season cultivar (i.e., late June, early July), producing large, uniform-shaped, medium-bright-red, fresh-flavored berries, but with a relatively pale interior and softness—making them less ideal for processing than some other cultivars. They are very productive, virus-resistant plants.

Besides the processing outlet, Benton is also grown for local fresh markets and in home gardens.

Rainier, a 1972 Washington late-season cultivar, produces large, smooth, attractive conic-shaped berries with bright red skin, slightly sunken yellow seeds, and a bright-red interior. They are excellent for frozen processing, preserves, and the local fresh market. However, because they have fewer fruits per cluster, they yield less than some other cultivars, the berries are somewhat difficult to cap, and long clusters let the berries touch the ground inducing rot, particularly in wet weather.

Redcrest, a 1990 USDA-OSU release, is a late-season cultivar, producing a good, firm, excellent processing berry with high acidity, good texture and internal color, capping easily. However, its resistance to viruses is not as good as that of Totem or Sumas.

The Future of the Oregon Strawberry Industry

Oregon's industry is up against tough competition from its powerful neighbor to the south. California has invested heavily in strawberry research and promotion and has developed a highly capital-intensive industry that is a formidable competitor on the U.S. and world markets. High-yielding, disease-resistant varieties have propelled the California industry to dominate fresh sales, with extra profits added as late-season berries go to processing.

Still, Oregon berries fill an important niche. For processing, the Oregon berry is more brightly colored throughout, of better texture for freezing, and more flavorful. Aggressive marketing strategies that emphasize these quality attributes and differentiate the state's product from lower-cost alternatives may allow the state's industry to continue to compete successfully and enjoy premium prices.

Hood River Pears

Hood River County is largely forest covered, except for a beautiful, long, narrow valley, carved by glaciers, that climbs south from the Columbia River toward Mt. Hood. Its volcanic soils and unique microclimate provide an ideal climate for tree fruit production, which has flourished there since the late nineteenth century. In 1989, the Hood River tree fruit industry generated \$73.3 million for the county, counting direct, indirect, and induced personal income earned (Agricultural Opportunities Task Force 1991).

The industry is composed mainly of winter pears, Bartlett pears, and apples. In 1990, 51.2 percent of total farm gate sales were accounted for by winter pears, 22.2 percent by Bartletts, and 16.0 percent by apples (See Figure

1.1). This case study focuses on pears; however, because many workers work in both pears and apples, some background on apples is also given.

According to the 1987 census of agriculture, 10,092 U.S. farms harvested 1.74 billion pounds of pears on 84,247 acres. There were 11.8 million pear trees in the nation in 1987; of these, nearly two million were not yet bearing. California is the leading state in pear acreage and production, followed by Washington and then Oregon (Table 2.14). Other states with significant production in 1987 include New York (26.2 million pounds), Michigan (11.1 million), and Pennsylvania (10.9 million).

Table 2.14 – U.S. Pear Production: Harvested Acreage, Number of Trees, and Pounds Harvested by Leading States, and U.S. Totals, 1987

State	Harvested Acreage (acres)	Number of Trees (million)	Harvest (million lbs.)
California	28,144	4.40	695
Washington	25,300	3.68	576
Oregon	19,346	2.68	399
U.S.	84,247	11.75	1,741

Source: U.S. Bureau of the Census, *1987 Census of Agriculture*, April 1989.

Of the 19,346 pear acres in Oregon, 10,966 acres (56.7 percent) were in Hood River County and 7,371 acres (38 percent) were in Jackson County (U.S. Bureau of the Census 1989). Together, these two counties accounted for almost 95 percent of the state's pear acreage. There were also 92 acres in Wasco County (adjacent to Hood River County), 230 in Douglas and Josephine counties (adjacent to Jackson County), 477 acres in the Willamette Valley, and 240 acres in other counties in 1987.

There are two basic types of pears: Bartletts and winter pears. A 1986 fruit tree survey gives a breakdown of acreage by variety for Hood River County (Table 2.15).

Table 2.15 – Acreage by Pear Variety, Hood River County, 1986

Variety	Total Acres	Planted Before 1970	Planted Before 1980
Bartlett	3,250	2,560	3,045
Red Bartlett	300	20	75
Winter pears:			
Anjou	4,860	3,540	4,310
Red Anjou	95	0	0
Comice	110	30	60
Red Comice	15	0	0
Bosc	790	290	560
Seckel	10	0	0
Forelle	60	20	45
Other & unknown .	60	15	25
Total	9,550	6,475	8,120

Source: Oregon Agricultural Statistics Service and U.S. Department of Agriculture, *1986 Oregon Fruit Tree Survey*, 1986.

Table 2.15 also shows that much of Hood River County's pear acreage is quite old: Two-thirds of the total standing in 1986 was planted before 1970. A pear tree begins to bear commercially in four years after planting, reaches full production in 10 years, produces at peak levels for around 25 years, after which yields may begin to decline. With newer technology, trees stay at peak levels until they are at least 35 years old. In the 1986 survey, 35 percent of the pear trees standing were planted before 1955 and so were then over 30 years old. Growers (in some cases, the third generation in pear production) are now facing replanting decisions.

Another impetus toward replanting is that the trend has been to plant new acreage more densely. More densely planted acreage produces an earlier harvest with higher yields. Calculating density (number of trees per acre) by age group from the 1986 survey data shows that trees planted before 1955 averaged 108 trees per acre; density continues to increase in subsequent years, rising to 173 trees per acre in 1980-1985.

Hood River's overall density was 125 trees per acre, compared to Jackson County's 147 trees per acre and California's 156 trees per acre (U.S. Bureau of the Census 1989). Hood River County's acreage may be yielding less than before because of aging trees and may yield below than its potential because of less dense plantings.

Note also in Table 2.15 that most (94 percent) of the older acreage was in Bartletts or Anjous. While the last year for which acreage data by variety are available is 1986, much of the diversification into other varieties, including

the reds, occurred after 1980. Presumably, as growers replace older acreage, this trend toward diversification will continue.

Varieties²

Bartlett pears originated in England. In Hood River, Bartletts are ready to harvest in late July or early August. The medium-large, bell-shaped fruit is green when picked and yellow when ripened to maturity. Its white flesh is sweet and juicy. It holds its shape well when baked, poached, or canned and is excellent for eating fresh. Red Bartlett is a bud sport of Bartlett, maturing 12 to 15 days later than its parent. Its high red blush makes the fruit particularly attractive.

Winter pears include Anjous, Boscs, Comices, Forelles, and Seckels. Anjou pears originated in Belgium. In Hood River, Anjous are harvested in October. The fruit is large, nearly egg-shaped, with a short stem and thin, edible skin. It is light green at harvest and cream to green after ripening. The Anjou ripens after a month's storage under refrigeration and is eaten fresh. The flesh is fine textured, mild, juicy, and "spicy." The red Anjou is a red-skinned variation.

Bosc pears, which also came from Belgium, are harvested in Hood River in September. The fruit is large and green to dark yellow with russeting. Its narrow, symmetrical shape and long neck distinguish it from other pear varieties. Its white flesh is tender, juicy, and sweet. The Bosc is excellent for cooking, baking, or eating fresh.

Comice pears originated in France. They are harvested beginning in October. The plump, rounded, short-stemmed fruit is greenish-yellow when mature, yellow with russet dots when ripe, and sometimes highlighted with a crimson blush. Its flesh is buttery, sweet, tender, juicy, and aromatic. It is superb for fresh eating and is often used as a dessert pear.

Forelle pears are a smaller, bell-shaped pears with a sweet juicy flesh. They are harvested in October. As the fruit ripens, its freckles turn bright crimson and the skin a golden yellow. Forelles are excellent when eaten fresh.

Seckel pears, which came from New York, are also harvested in October. The fruit is small and reddish-brown over yellow-brown with russet. Its creamy white, sweet flesh has an excellent flavor when eaten fresh or in preserves.

Hood River also has 15 acres of Asian pears, out of a total of 90 acres in the state.

Data on shipments of fresh pears by variety for 1990-1991 are shown in Table 2.16. Although over one-third of the county's pear acreage is in Bartletts (Table 2.15), only 11.7 percent of the association's fresh shipments are Bartletts. A large part of the Bartlett crop—and smaller sizes of some of the other varieties—go to processing. According to the Oregon State University Extension Service, 71 percent of Oregon's Bartlett crop was processed in 1990. (Three-fourths of Washington's and California's Bartlett crops are also processed.) Hood River Bartletts are processed by Truitt in Salem and in Vancouver and Yakima, Washington.

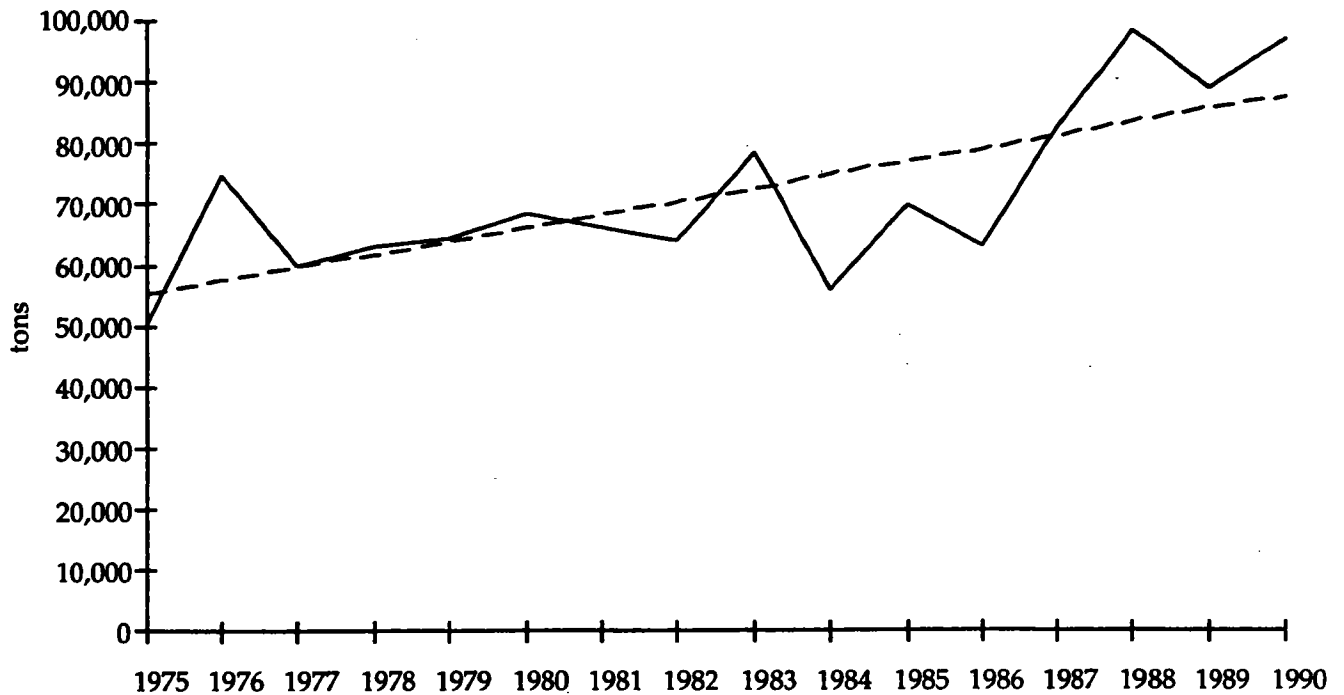
Table 2.16 – Shipments of Apples and Pears by Variety, 1990–1991

	Number of Boxes	Percentage of Total
Apples		
Pippin	486,142	47.8
Red delicious.....	404,424	39.8
Golden delicious.....	85,718	8.4
Miscellaneous	39,799	3.9
Pears		
Bartlett.....	579,730	11.7
Anjou	3,874,889	78.3
Bosc	408,249	8.2
Comice	53,890	1.1
Forelle.....	20,703	0.4
Miscellaneous	10,338	0.2

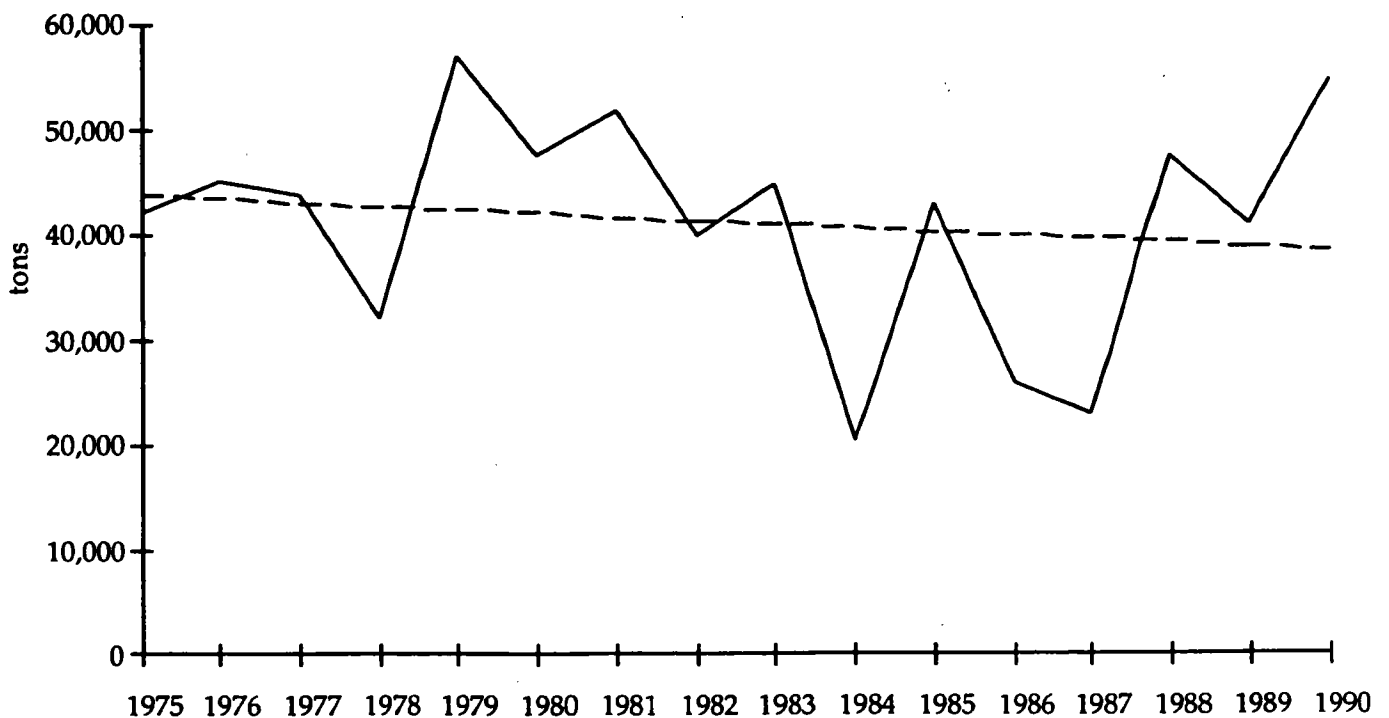
Source: Hood River Grower-Shipper Association, Odell, Oregon. October 1991.

Winter pear production has generally trended upward since the mid-1970s (Figure 2.5), with tonnage exhibiting considerable fluctuation about the trend as is common with all tree fruit. The trend line for Bartlett production shows a slight decline over the 1975-1990 period, and there is (Figure 2.6), greater variation from year to year for the Bartlett than for winter pears in general. In contrast, Hood River apple production has declined over 25 percent since the mid-1970s (Figure 2.7).

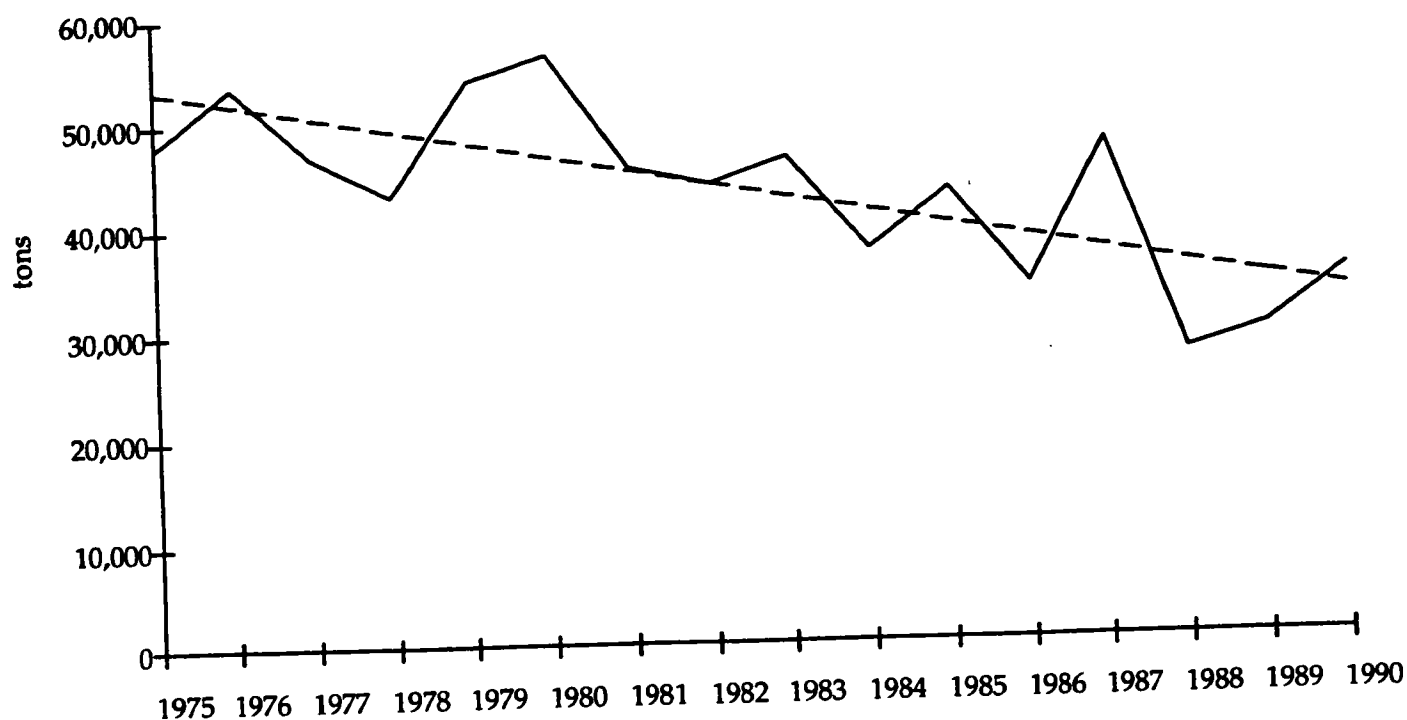
2 Information in this section is from Lance Walheim and Robert L. Stebbins, *Western Fruit, Berries, and Nuts—How to Select, Grow, and Enjoy* (Tucson: H.P. Books, 1981); and Mid-Columbia Pear Growers and Shippers, "Pick Pears for a Healthy Heart," promotional brochure published in cooperation with the American Heart Association.

Figure 2.5. Hood River Winter Pear Production, 1975-1990

Source: Oregon State University Extension Service, Economic Information Office,
Commodity Data Sheet, Pears, March 1991 and other issues.

Figure 2.6. Hood River Bartlett Pear Production, 1975-1990

Source: Oregon State University Extension Service, Economic Information Office,
Commodity Data Sheet, Pears, March 1991 and other issues.

Figure 2.7. Hood River Apple Production, 1975-1990

Source: Oregon State University Extension Service, Economic Information Office, *Commodity Data Sheet, Apples*, March 1991 and other issues.

Since production is acreage times yield, increased production may be due to more acreage and/or technological improvements—for example, more trees per acre. However, decreases in production usually reflect acreage removals. Acreage data show increased winter pear acreage since 1980 and decreased apple and Bartlett pear acreage (Table 2.17).

Table 2.17 – Hood River Apple and Pear Acreage, 1980-1991

Year	Apples	Bartlett Pears	Winter Pears
1980.....	4,700	4,400	5,200
1985.....	4,900	3,600	5,500
1990.....	3,200	3,300	5,600
1991.....	3,100	3,300	5,700

Source: Oregon State University Extension Service, Economic Information Office, unpublished data.

Handlers

Besides on-farm employment for orchardists and orchard workers, the tree fruit industry provides considerable employment with the county's commercial fruit handlers.

Packing houses offer full- and part-time jobs for many workers, including family members of orchard workers. They also offer some opportunity for continued employment after the harvest work is done. Hood River's fruit packing houses range from large cooperatives and corporations to small family enterprises.

The following descriptions of nine packing houses are from a special publication of the *Hood River News* (Macht 1991). Besides these, there are a few other family-owned and-operated packers that sell through the major houses. And another packing house, Underwood, located across the Columbia, also handles and ships some Hood River fruit.

Diamond Fruit Growers, a 79-year-old co-operative, is the valley's largest packer. Diamond packs from 2.5 to 3 million bushels a year and exports almost 30 percent of its total pack. The co-op employs 85 year-round workers and takes on as many as 500 more during the peak period from September on into November. Its annual sales reach \$37 million; its payroll is more than \$5 million.

Duckwall-Pooley Fruit Company, the second largest handler, packs between 1.3 and 1.5 million bushels annually. The company resulted from a 1970 merger of Duckwall Fruit Co., founded in 1919, and Pooley Packers, founded in the 1920s. Duckwall-Pooley has recently opened a second packing house northeast of Odell, allowing it to reduce the amount of fruit contracted to other

valley packers. It also exports about 30 percent of its total pack.

Stadelman Fruit Company, based in Yakima, Washington, has almost all of its pear operation in Odell. Its Hood River division packs about 857,000 bushels a year, amounting to sales of \$11 million. Stadelman employs 14 year-round and up to 75 more workers in the fall at its Odell packing house and cold storage plant.

Walter Wells and Sons is now a third-generation growing, packing, and shipping operation. Its Viewmont label has been used since 1930. Ninety percent of the fruit packed is grown on the family's farm and consists of about two-thirds apples and one-third pears. About one-fourth of the farm is now in young trees, not yet bearing.

Moore Orchards, Inc., is another family-held business, now run by a third generation. This operation handles all

its own fruit plus some from other growers (about 275,000 bushels) and markets it through Stadelman.

Lage Orchards Cold Storage packs about 250,000 bushels a year. The Lages began packing fruit in the 1920s and now operate as a Stadelman satellite.

Walton Orchards is a very new house, which began with cherries in 1985 and expanded to pears and apples in 1989. The company packed 120,000 boxes of fruit in 1990.

Columbia Gorge Organic Fruit Co., formerly Stewart Orchards, packs 65,000 bushels of apples and pears and custom packs Golden Delicious apples for Duckwall-Pooley.

Bickford Orchards Cold Storage reopened its packing house in 1989 after not using it for 25 years. The Bickfords, who are third-generation orchardists, pack their own and other growers' fruit under the Stadelman label, plus some organic fruit under the Made in Nature label.

Chapter 3

Agricultural Labor in Nursery Crops, Christmas Trees, and Strawberries in the Willamette Valley and Pears in the Hood River Valley

This chapter gives a brief overview of agricultural labor as it is used in these four very different types of farming operations. Details about labor use are provided in Chapter 4, along with the results of the survey of employers and workers in these industries.

Because we took a closer look at Oregon's competitiveness in strawberries (see Chapter 2) and were also able to draw on previous research on labor use in strawberries, the information is more complete for strawberries than for the other three crops.

The Nursery Industry³

The nursery industry is heavily dependent on hired labor. Crabtree et al. (1991) estimate that ornamental crop production, including nursery products, Christmas trees, greenhouse plants, and bulbs, requires about 8,000 full-time and 16,000 seasonal workers in Oregon. The special census on horticulture (U.S. Bureau of the Census 1991) reported that labor used in nursery crop production in 1988 consisted of 3,375 full-time employees, who were paid \$47.9 million, and 10,097 part-time employees who were paid \$17.1 million, for a total payroll of almost \$65 million. Total production expenses for the state's nursery sector were not reported in the census, but the Oregon State University Extension Service estimate of cash receipts that year is \$133 million. Thus, labor costs could represent nearly half of the product sales value.

As the Oregon industry began to expand rapidly in the mid-1960s, labor shortages occurred. Attempts were made to recruit blue collar workers to "make a career in the

nursery industry" (Kinen). However, most treated their jobs as temporary, always planning to move on to something else. Today, the majority of the hired work force is Hispanic (Kinen).

Harvest of field-grown shade trees occurs in the winter, an off season for most other crops. Conifers are balled and harvested in the fall and spring. Hence, some seasonal harvest workers are able to piece together nearly year-round employment by moving within the nursery industry and on to harvest other crops. Besides harvesting there are many other skilled and even highly skilled tasks that require hand labor (such as pruning). It appears that Oregon's diverse nursery industry offers opportunities for job advancement and career development for many workers. (The survey results in Chapter 4 shed more light on this subject.)

The Christmas Tree Industry

Workers shear, prune, and spray the trees and keep the weeds down. Douglas firs are sheared by workers who, carrying a trimmer mounted in a backpack, walk around each tree. Noble firs are hand-pruned by machete. Because of their longer growth period (nine years compared with seven years for a Douglas fir) and the greater hand work required, noble firs command a higher price: Douglas firs wholesaled between \$7 and \$11 in 1989-1990; nobles, between \$13 and 19 (Northwest Christmas Tree Association 1990).

At harvest, efficient handling and good timing are essential to get fresh trees to market. Trees are cut and moved, often by helicopter, to landings where they are

3 (Also see the discussion of labor use by two large nursery companies, J. Frank Schmidt & Son and Monrovia, in Chapter 2.)

baled, bundled, and stacked into (sometimes refrigerated) trucks for shipment to market.

Although there is much hand work, some of the operations—for example, chemical applications, harvesting, and baling—are becoming more mechanized. Individual trees are pushed by machine into their string sacks. Careful sacking allows many more trees to be hauled per truck. Gerald Mast of Yoder, Oregon, has invented an experimental trimming machine that extends across several rows of trees, hanging six devices each of which holds one worker and moves in a circle around a tree (Henderson 1991).

The Strawberry Industry

The acreage and yield increases in California (Figures 2.2 and 2.3) have more than doubled the agricultural labor hours required (Palerm 1991). Mamer and Wilkie (1990) estimate that strawberry farming used an average of 1,098 labor hours per acre per season between 1973 and 1987. Of this total, 208 hours were supplied by regular workers and 890 by seasonal workers. Harold Otto, an Orange County farm advisor, provided estimates of labor needs by month and by task for production and harvesting of winter-planted strawberries in 1989 (reported in Mamer and Wilkie [1990]). Total hours were 1,533, with 1,299 seasonal hours and 234 regular hours. Harvesting, which begins there in January and continues through June, utilized a total of 1,100 hours, all provided by seasonal workers. R.A. Brendler, a farm advisor in Ventura County, estimated 1,612 hours needed per strawberry acre in 1987 (1,422 seasonal and 190 regular). In Ventura County, harvest begins in February and continues through July, requiring 1,177 hours per acre (1,150 seasonal; 27 regular).

Mason et al. (1992) provide estimates of Oregon's strawberry harvest labor by numbers of workers rather than hours. In 1988, some 50,700 workers (adjusted for double counting, 41,522) were hired to pick Oregon's 7,800 acres of strawberries. The numbers exhibit a strong peak: Ninety-one percent of them worked from late May through early July. By 1990, Oregon's acreage had decreased 27 percent (from 7,800 to 5,700 acres) and yields were down (from 13,000 to 11,500 pounds per acre), so demand for workers was also down. Mason et al. (1992) estimate that 28,186 workers were hired to pick the 1990 crop.

The main reason for the very large discrepancy between California's and Oregon's harvest labor needs⁴ lies

mainly in the tremendous difference in the length of their respective harvesting seasons: The California season is six months; Oregon's season is three weeks. Even before the end of the short Oregon season, workers tend to leave strawberries for employment harvesting other crops such as cherries. The result is a labor shortage and often some crop loss toward the end of the picking season. Mason, et al. (1992) note that there were labor shortages in both the 1989 and 1990 seasons, resulting in a loss of about \$1.8 million each year.

Other reasons for greater labor hours in California include the fact that that state's labor while harvesting must also service the drip irrigation system. And picking for the fresh market requires more time and care than does picking for processing.

Fruit for the fresh market is picked with the caps left on. Pickers gently grasp the fruit between the thumb and first two fingers. With an upward twist of the wrist, they snap the stem off about one-half inch above the cap (Brun et al. 1991). Fruit is gently placed in a container without squeezing. In contrast, berries for processing are picked with the stem and cap removed. The cutting edge of the fingernail and thumbnail is applied against the stem and cap, while a pulling force is applied. (Hood, Benton, and Sumas strawberries cap more easily than Rainier, Shuksan, and Totem.)

Palerm describes the harvesting task for California fresh strawberries:

Pickers must practically crawl on the ground, seek, select, cut and pack the strawberries into small baskets while insuring excellent quality and appearance. The harvester, moreover, must at the same time prune plant suckers to insure future production, clean the surroundings of rotting fruit and leaves which can spoil the plantation, and examine drip irrigation nozzles to make sure they are working properly. Not only is it tedious backbreaking work but it is also highly skilled; an inexperienced picker can easily diminish the value of the crop as well as jeopardize the season's production (Palerm 1991).

Table 3.1 compares the two states' labor share of total production costs using data for Oregon and Santa Cruz County, California. Labor's share of total production costs in Oregon is a high 61 percent of total cost, compared to California's 47 percent. If so much more labor is used on a California strawberry acre, why is the labor share of costs higher in Oregon?

⁴ Over 1,000 hours per acre per season in California would imply some 100 workers per acre; yet Mason's 8,451 workers picking Oregon's 5,700 acres in 1990 would mean just over four workers per acre.

Table 3.1. – Strawberry Production Costs per Acre, Oregon and Santa Cruz County, California, 1990

	Oregon	California
Total cost.....	\$4,831.00	\$17,039.00
Variable cost.....	3,832.00	15,576.00
Labor cost.....	2,927.00	7,978.00
Labor's share of total cost ...	61%	47%

Source: Santa Cruz County Cooperative Extension and Oregon State University Extension Service enterprise budgets.

Labor costs in California are spread out over a very long season and mixed with very costly, highly capital-intensive operating equipment. For example, more costly drip irrigation is the rule in California. In Oregon, Brun et al. (1991) report that it is hard to justify installing drip systems when overhead sprinklers are already in place for supplemental moisture and frost protection.

It could be argued that an increase in labor costs would hurt the Oregon industry more since labor is a higher share of costs. Dividing each state's total cost by average yield (12,000 pounds per acre in Oregon; 40,000 in California) gives breakeven (BE) prices of 40 cents per pound. in Oregon and 43 cents per pound. in California. Increasing labor cost, say, 10 or 20 percent would raise the price needed to break even. Looking at prices received in the recent past (Table 2.11), the Oregon processing price was about five cents above BE in 1990; if labor costs increased, it could easily fall below BE. Meanwhile, the California processing price is already well below BE. However, recall that the California grower's average price includes sales in the high-price fresh market. The California processing price need only cover harvest labor and transportation. Therefore, because of the lucrative fresh market, the California industry could better afford increased labor costs. Although an increase would cut into profits, it would not cause farmers to go out of business.

Mason et al. (1992) noted a considerable shift in the composition of the work force between 1988 and 1990. In 1988, about 49 percent were foreign-born, 25 percent were U.S. migrants, 13.5 percent were local adults (over age 16), and 12.4 percent were local teenagers. By 1990, aliens represented 79 percent of the total hired; all other categories were down (U.S. migrants, 13 percent; local adults, 2 percent; and local teenagers, 5 percent). He reasoned that the increase in the minimum wage provided incentives for growers to hire the most proficient workers, and that alien workers were far more productive than the others. He estimated that the average alien harvests 3,003 pounds of berries during a season, compared to 1,947 pounds for a

U.S. migrant, 1,679 pounds for a local adult, and 1,020 pounds for a local teenager.

Although a mechanical harvester has been developed for strawberries, considerable labor would still be required to keep the soil weed-free. Also, with existing cultivars, it would still be necessary to cap the berries after harvest. Another serious problem with mechanical harvesting is that most machines are once-over-the-field types and a cultivar with concentrated ripening is not yet available.

Hood River Pears

In the spring, orchard workers prune the trees for almost a four-month period (3.7 months, according to this survey). During this same time, for 2.4 months, workers spread and space the branches and train leaders, striving for a good open canopy. During bloom (1.8 months), workers thin by stripping blossoms. Especially in the upper valley, around Parkdale, frost protection is often necessary; wind fans and smudge pots are used.

Irrigation, mostly by under-tree sprinklers, is used for about four months. Irrigation both provides needed moisture and cools the developing fruit during the summer heat. In some areas, water is diverted from the river above the orchards, so there is no power cost; if water is pumped instead, water rights cost less. In either case, water is relatively inexpensive. However, in some cases, better irrigation management is needed in order to avoid overwatering young trees. Water may become more of a problem in the future if restrictions are placed on usage so as to allow more water to flow into the Columbia.

Spraying and fertilizing take place over a period of four months. General orchard maintenance is almost continual.

Picking begins in mid-August with the Bartlett crop. Harvest crews keep employed over two and one-half months by moving on to apples and then to later varieties of pears, but also by moving up to higher elevations in the valley. Fruit is picked into burlap sacks and dumped into bins that measure four feet by four feet by two feet. Workers are paid by the bin, so bins at the end of the rows are identified individually. As bins are loaded onto trucks bound for the packing house, row bosses punch tickets to credit the bins picked.

Some growers arrange for some on-farm sorting by the harvest crews. In this case, workers do "ring picking," surrounded by three or four burlap sacks, workers sort by size.

Farming operations in the Hood River Valley are somewhat isolated from other farming regions in the state and from urban areas where workers can find housing on the local economy. Hence, many orchard operators in the valley have historically provided housing for their workers.

Chapter 4

Findings of the Survey with a Particular Emphasis on IRCA

This chapter provides the survey results from interviews with 87 employers and 144 workers in four Oregon crops—nursery products, Christmas trees, and strawberries in the Willamette Valley and pears in the Hood River Valley. In addition, we report on interviews with 26 farm labor contractors (Section E), 25 key informants who constitute a job- and other-information network for farmworkers (Section F), and 18 ex-farmworkers (Section G).

Willamette Valley Nursery Crops

Employer Survey Results

General Information about the Growers' Operations

The 21 employers interviewed had been in the nursery business an average of 17 years; the most recent entry was four years ago, while one employer had been working in the industry 36 years. The nurseries they managed had been operating an average of 35 years; the oldest nursery had been in business 83 years. The sample was distributed among the various sales classes as shown in Table 4.1.

Table 4.1 – Nursery Employers Surveyed by 1990 Gross Sales

Gross Sales	Number of Employers
≤\$100,000	1
\$100,000–249,000	1
\$250,000–499,999	3
\$500,000–999,999	5
\$1,000,000–4,999,999	7
≥\$5,000,000	4

About half of the employers interviewed grew up in the nursery business. One was a fourth-generation nursery grower; others came into nursery by apprenticeship or by shifting from other occupations, including other agriculture. Chapters 2 and 3 described the wide range of products offered by this industry; the sample has this same range, including field-grown deciduous shade trees for re-wholesale, container operations, combinations of both, and one employer who exclusively grows flowers and bedding plants. All employers interviewed were wholesalers; one also sold at the retail level.

The number of acres in nursery is not as meaningful a measure as it is for many other crops because of the variation in density of plantings or in spacing of containers. However, the average acreage for the container operations in the sample was 35 acres; for field-grown plants, the average acreage was 295. Nine of the container crop growers had increased their area an average of 67 acres, while the eight field-crop operators who had expanded had increased by an average of 122 acres.

Seventeen of the 21 nurseries interviewed were family operations; four were incorporated. Eight of the employers supervised the nursery; seven had a manager; two had a foreman; and four a combination of self and other. Twelve of the owners took complete responsibility for the major nursery management supervision decisions, while the others shared such decisions with their managers and/or family members.

Ten of the nurseries subcontracted for certain services including spraying (some aerial), digging and baling, liming, grafting and budding, propagation, and bookkeeping. One used a consulting firm, and one contracted for greenhouse construction.

Marketing

These wholesale nurseries all sold nationally, with national being the primary level of sales for most (18) of them. Nineteen said they also sold statewide, so two of

them sold nationally only, not directing any sales to Oregon. Fourteen also sold locally in the Willamette Valley.

Sixteen participated in the international marketplace, exporting some of their product. Only two mentioned any increased competition from imports. (A major part of nursery imports are flowers and tropical plants, not in competition with Oregon products [see Chapter 2].) All but one of those who are currently exporting saw expanded opportunities for shipping abroad.

Marketing methods mentioned included product advertising in trade publications and elsewhere; use of catalogs and brochures, direct mailings, and telemarketing; representation at trade shows; listings in nursery directories; and employing sales representatives and using brokers. Word of mouth, referrals from other nurseries, other personal contacts, and repeat buyers were also important. Some offered tours of their nurseries to potential buyers.

Nine of the 21 said they had changed their approach to marketing in recent years, and 13 planned to adopt a new approach in the future. Those who had altered their marketing approach or were planning to do so expressed appreciation for how much the industry had changed in recent years. Some felt they needed to become more aggressive marketers. Others had diversified in order to offer a broader product line. One saw the need for better stock list organization and inventory control and was planning to computerize these functions. Several expressed the need for better communication. One respondent noted the need for better connections with other professionals including landscape architects and urban foresters.

Electronic markets offer considerable promise in facilitating the marketing process. Standards are set for producers to accurately describe their products and for buyers to know exactly what is available. Electronics can bring together buyers and sellers who normally would not interact at all. The Oregon Association of Nurserymen (OAN) has started an electronic bulletin board on a two-county trial basis that it is now expanding to all its members. Buyers use the 800 number to request certain plants, and OAN locates a nursery that can fill the order.

Nonlabor Costs

Seventeen of those interviewed said that their nonlabor costs—such as fertilizers, pesticides, interest changes on debt, and equipment—had increased since 1986. They estimated an average increase of almost 30 percent. One grower had seen a slight decrease in nonlabor costs, while the other three had not noticed a significant change.

Labor Demand and Supply

Many tasks in nurseries are several-month to year-round activities. Averaging the months needed for the

various tasks, such as potting, storing, digging, and pruning, would not mean much across the diverse types of operations in the sample. Those whose operations required any of the various tasks that were mentioned on the survey form are listed in Table 4.2. (The table does not include the large miscellaneous category of other tasks reported by respondents.) Crews ranged in size from an average of 3.75 workers for spraying/fertilizing to 24 for preparing for storing/shipping. Getting plants ready for storing and shipping called for the largest number of workers. This finding parallels the peak numbers required for harvesting other crops. Pruning and staking are tasks that also require a large number of workers.

Table 4.2 – Number of Growers Hiring Workers, by Task, and Total Number Hired by Sample for Each Task

Task	Number of Growers Reporting	Average Number Workers Used
Potting	17	19
Spacing	11	26
Storing/shipping	21	57
Grading	19	21
Digging	20	25
Pruning/staking	21	35
Propagating	21	21
Irrigating	19	7
Spraying/fertilizing	20	6
Overwinter protection	13	18

Growers reported that some of these tasks have been partially mechanized. Seven said that there used to be more hand digging, six said that potting had become more mechanized, and several mentioned more machine use in planting, fertilizing, cultivating, spraying, staking, and pruning/stubbing. Thirteen saw potential for increased mechanization in the future, particularly in planting and pruning.

Responses were evenly divided to the question, "Over the past five years, has the number of nursery workers per acre increased, decreased, or stayed the same?" Nine said that their per-acre demand for labor was about the same. Six said it had increased; their average estimate was that the labor demand had more than doubled. Another six reported that their per-acre demand for workers had decreased over 20 percent on average.

As a group, those interviewed hired an average of 72 year-round workers and another 32 seasonal workers. The largest nursery had 500 year-round workers and another

150 seasonal workers, while the smallest hired no help of either kind.

Of the year-round workers, 83 percent were alien migrants, 15 percent were local adult workers, and 2 percent were U.S. citizen migrants. Seven thought that the percentage of alien migrants in their permanent work force had increased an average of almost 30 percent over the past five years. One saw a slight decrease in the number of alien migrants, but the others saw no change.

In response to the same questions about the nurseries' seasonal workers, growers reported that 86 percent were alien migrants, 11 percent were local adults, and 3 percent were local teenagers. Seven said the number of aliens had increased since 1986; the range of their estimated increase was from 15 to 600 percent, with an average of 126 percent increase. Three saw a slight decrease, while the rest noticed no change.

When asked whether any particular group of workers was more productive, nearly all were definite in naming alien migrants, particularly Mexicans. Some said that married, middle-aged men tended to be more productive than single men, especially among workers who had been in Oregon for awhile. However, another said that most of those who showed up for work were single, recent arrivals. In regard to women workers, two growers preferred the single status, saying that they missed work less often.

Growers elaborated that alien migrants are the best, most motivated, reliable workers; that they are eager to work, skilled and consistent at their assigned tasks; and that they have a "good work ethic." Others, who were somewhat less enthusiastic, admitted that no one else is interested in the work. "Local people all complain of back problems and go on workers' compensation claims."

From these comments, one would expect all employers to prefer to hire alien migrants. But only 14 of the 21 admitted this preference. Two said they preferred U.S. citizen migrants, four said it would make little difference, and one had no opinion. We can speculate that these seven didn't like the increased risk associated with possible false documentation of alien migrants.

Twenty of the 21 nurseries depended on word-of-mouth references to recruit new workers. Eighteen hired walk-ons, and 18 had workers return year after year. Five used newspaper advertisements and other methods to recruit workers. There was no difference in their recruitment methods for year-round and seasonal employees. None of the nurseries used a labor contractor.

All said they had more workers apply than they hired, and 90 percent said they did some screening before hiring. During a typical work week, growers said they had to replace from 0 to 40 percent of their work force, with an average of just over 3 percent. Because most of the workers

are alien migrants, they were the ones who occasionally needed to be replaced. However, six nurseries said they also had to replace local adult hires. Six respondents said worker turnover had increased since 1986, seven said it had decreased, and the rest either didn't know or thought it had stayed about the same. When asked about actions that might reduce worker turnover, better pay was most frequently mentioned as were better benefits and affordable housing. One employer who described how his workers had bonded as a group said it would help to have someone come in to teach English at mid-day.

Eleven growers had experienced some labor shortage since 1986. Growers were divided on the question of whether it was easier or harder to recruit new workers now than it was five years ago. Nine said it was easier; seven, harder; and the rest saw no difference. Among those who thought it was harder to recruit new workers, one grower mentioned that the substantial growth in the nursery industry had increased competition for the same skilled workers. Others agreed that skilled workers, particularly bilingual ones, were harder to find. One said that entry-level recruiting was much easier than finding skilled workers. However, some said that the task had become somewhat easier. Oregon, in general, and nursery, in particular, are gaining a reputation among workers for offering relatively stable employment.

Even though only seven growers said it was harder to find workers now, 15 said they worried about labor shortages in the future. When asked what they could do to prepare, 14 said it was very likely that they would adopt additional mechanical alternatives in the future. They noted that machines can help take the drudgery out of nursery work, making the work more attractive to workers. Others said they could become more competitive in attracting workers by offering better benefits and higher pay. Even though all planned to remain in the nursery business, a few thought it very or somewhat likely that they would reduce the size of their operations in the event that labor shortages occurred in the future. Regardless of their view on present or future labor shortages, growers expected the costs of getting the work done to increase.

Only eight of the 21 required workers to have had some experience or training in nursery operations as a condition of employment; experience was regarded as even more important in the case of crew leaders and supervisors. All provided on-job training. Thirteen of the employers have someone else do the training, six do it themselves, and the rest use a mix. A new employee, can learn by example from working with experienced employees and with the foreman. One grower put new employees directly with the foreman to expose them to the multiple tasks of the operation.

Being able to read was a skill that some employer's said was important for workers. One nursery owner complained about orders getting mixed up because workers couldn't read. Having a driver's license was mentioned as a plus by some employers.

Fifteen of the 21 had encountered a need to discipline one or more workers. All gave verbal warnings first and then followed up with additional verbal or written warnings before any eventual firing. One nursery employer reported using a merit system; another used annual evaluations and positive reinforcement of good performance to motivate workers.

All employers reported that they moved workers among tasks. Six said they kept workers with the same crew while changing tasks; the rest shifted them among crews. Four reported that they also switched workers with other local nurseries.

Eight worked with other employers in the area to recruit and retain workers; three of these cooperated extensively with others. One coordinated with neighbors to achieve full employment; another shared workers with a close relative's nearby nursery; and another shared workers with berry farmers. Others looked to other nurseries only when they were short of help. One mentioned cooperating through the OAN, which provided hiring guidelines and information on legislation.

As a group, their average hourly wage rate was \$6.36 for year-round employees (a range of \$5.00 to \$7.75) and \$4.85 for seasonal help (a range of \$3.75 to \$5.75). Most nurseries paid their year-round and seasonal workers weekly or twice monthly. One paid seasonal workers monthly; another paid both types of workers daily. All said they currently paid higher wages than they had paid five years ago; some also mentioned an increased frequency of payments (e.g., from monthly to twice a month).

Table 4.3 summarizes the benefits provided by the 21 growers interviewed. The paid education benefit was mainly training in English.

Twelve of the 21 mentioned knowing or hearing about labor organization and/or union activity. Several mentioned the Piñeros y Campesinos Unidos del Noreste (PCUN), the Northwest Treeplanters and Farmworkers United, based in Woodburn, Oregon. PCUN started out in forestry among workers who replanted trees. Now the union has broadened into agricultural commodities, including nursery and Christmas trees.

Ten growers reported some type of check by the U.S. Department of Labor (DOL) or the Immigration and Naturalization Service (INS) during the past five years. Incidents mentioned included a labor camp inspection, a drive-through inspection that picked up two workers, an INS audit, a DOL visit, an INS visit that uncovered three

Table 4.3 – Benefits Provided by Interviewed Growers

Benefit	Number of Growers
Housing	5
Bonuses	17
Profit sharing	11
Paid education	10
Childcare	0
Health insurance	16
Paid vacation/sick leave	18
Transportation	1
Work equipment	18
Other ^a	8

^a Medical bills, Christmas turkey, Christmas party, reduced-cost work clothes, safety equipment, interest-free loans.

faulty ID numbers but resulted in no fines, and a check on working conditions. One grower reported no visits to his nursery since IRCA was passed.

Growers ranged widely in the number of workers they had helped become legalized under SAW—from zero to 400. The median number helped by the 21 nurseries was 12. On average, it cost growers \$9.29 to help a worker become legal, with a range from \$2 to \$50.

Seventeen of the nurseries were aware of workers leaving agriculture for nonfarm jobs including employment in hotels, restaurants, canneries, reforestation, lumber and steel mills, construction, mobile home manufacture, a cabinet factory, a flooring business, commercial fishing, and janitorial work. They said that some leave for better pay; others for shorter hours. One grower predicted that more would leave agriculture when the economy improves.

When asked how IRCA had affected them, most growers complained about the increased paperwork. They spoke of their need to carefully scrutinize documents, which increased hiring costs. Some have had to turn workers away even though they were needed. And there was the underlying concern that in spite of good-faith efforts to follow the rules, an employer might still be in violation.

When asked to indicate the importance of seasonal labor to their operation, respondents offered the following comments:

- *I'd be out of business without foreign workers.*
- *Hispanic workers are the backbone of the industry. Without them, we couldn't operate.*
- *Without seasonal workers, nursery and the rest of agriculture couldn't survive. Other industries also need them.*

- *Alien migrants are the only way to get the work done. Locals would go on welfare before they'd work in a nursery.*
- *Local people have no incentive to do the work.*
- *Some people are culturally not prone to seeking advancement or taking on more responsibility, so there will always be workers to fill the bottom rung of jobs.*
- *This country has a heritage of immigration. The first generation does the dirty work, then the second may open small stores and businesses.*
- *We must have a dependable workforce. We should not make it so difficult that good workers who want to work aren't able to. We need to simplify and standardize all forms and extend work permits.*
- *If workers come to work in agriculture they should be required to stay, rather than leaving for industrial and service jobs.*
- *I have a good full-time crew, but I worry about getting seasonal workers. I'm not sure the Replenishment Agricultural Workers (RAW) plan will work.*
- *A supply of migrant workers is critical, and the less government interference, the better. However, IRCA really seems to have benefitted qualified workers, making a more stable work force.*
- *Since IRCA there has been a shift in workers' attitudes toward a worried, looking-over-the-shoulder stance. But they (SAW workers) seem to work harder than before.*
- *IRCA has made workers more fearful. It has not accomplished what it was supposed to.*
- *The increased numbers with false documents compete with and thereby penalize legal employees.*
- *The quality of alien workers has improved since IRCA, but the law has created a massive problem for our local social services.*
- *We need to monitor the numbers of aliens so those who don't find work don't become a burden on the public.*
- *IRCA has caused more problems than it has solved. Unemployed whites will not do the work, but then we are penalized for hiring those who will do it.*
- *I-9s are an infringement of civil liberties, and the forms are so complicated that many U.S. citizens wouldn't be able to fill them out. They constitute discrimination of the worst kind.*
- *Withholding taxes and Social Security isn't fair, because the worker who pays often will not benefit.*
- *Attempting to seal the border doesn't work. The government can't enforce the law, so why should we have to? The government and the media should stop making us the bad guys.*
- *Illegal aliens will find ways to come across regardless of the laws.*
- *Before IRCA, workers were illegal and we knew it. All IRCA did was create more government jobs.*
- *Congress doesn't understand agriculture and thinks farmers abuse their workers.*
- *We should throw out IRCA and use guest passes instead. After all, not everyone wants to be a U.S. citizen. The documentation being used is a joke. These migrants who chance it to come have an admirable risk-taking attitude, and they make up the only reliable labor pool.*
- *IRCA needs to be repealed. Workers were here before—with and without documents—and they're still here with and without documents. All IRCA did is create a huge amount of paperwork and shift enforcement to employers.*
- *A guest-worker program should be substituted for IRCA. Nursery operators would be willing to co-operate in such a program.*
- *We definitely depend on alien migrants, so we need to improve their situation here. We need to simplify the process for Mexicans, and then provide housing, education, and health care. Their access to health care now is difficult and entails long waits.*

Nursery Worker Survey Results

General Information about the Workers Interviewed

All of the 33 workers interviewed had been born in Mexico, and all spoke mostly Spanish at home. Thirty-one were male; two were female. As a group, they had come to the United States between 1974 and 1990. Eight of them had arrived in 1986 or after. Twenty-five of the 33 were married, seven were single, and one was separated. The workers' average age was 21, with the range from 18 to 56 years. They had completed almost five years of schooling on average, with a range of no school attendance to 12 years.

Twenty-two claimed Mexico as their permanent home. The other 11 called the United States home; of these, five lived in Washington County, four in Marion County, and one didn't know the county of residence.

The workers who had children 14 years or under, had an average of 2.9 children with a range of two to nine per family. Two-thirds of these children lived with the respondent in Oregon.

Table 4.4 – Information about Workers' Family Members in the United States

	1st ^a	2d	3d	4th	5th	6th	7th	Total
Relative								
Spouse	12	2	—	—	—	—	—	14
Child ≥15	2	3	3	4	3	2	1	18
Sibling	5	11	10	5	2	—	—	33
Parent	7	1	—	—	—	—	—	8
Total	26	17	13	9	5	2	1	73
Relative's Location								
In Oregon	21	11	7	6	4	2	1	52
In other states	5	6	6	3	1	—	—	21
Relative's Employment								
Farmwork	17	11	12	6	1	1	1	49
Nonfarm work	4	2	1	1	4	—	—	12
Not working	4	3	—	1	—	1	—	9
In school	—	—	—	1	—	—	—	1
Total	25	16	13	9	5	2	1	71
Relative's Legal Status								
Not legal	13	—	—	4	4	2	1	24

^aFirst relative mentioned by respondent.

Respondents were asked some details about family members in the United States. Interviewers recorded their responses according to the first person mentioned, the second, the third, and so on. They might have mentioned a spouse first, for example, or a child. Twenty-six workers talked about at least one relative; 17 of this group also talked about a second relative; 13 went on to discuss a third; nine mentioned a fourth; but only a few talked about more than four. Results are reported in Table 4.4.

Seventy-one percent of the relatives cited were in Oregon; the rest lived in other states. Sixty-nine percent of these relatives were in farmwork; 17 percent were in non-farm work; and 12.7 percent were not working. Only one relative was in school. Twenty-four of the 73 relatives (33 percent) were not legally in the United States; this number could be larger if the status of some who are here illegally was not reported accurately.

Four of the workers indicated that they had relatives who had left agriculture for at least one season to take another job. They listed a child (15 years of age or over), siblings, and a wife who had, either for better pay or because they hadn't liked farm work, taken jobs in construction, manufacturing, lumber, or with the county.

Nineteen of those interviewed said they spent considerable time in Mexico. Fifteen said they spent a month or

more in Mexico. The average of these 15 was 2.4 months in Mexico; the range, from one to four months. Four of the respondents spent less than a month out of the United States. The mean of these four was 3.25 weeks; the range, three to four weeks.

Information about their Jobs

The longest-term farmworker in the group began doing farmwork in the United States in 1957. The most recent began working in 1991. Ten of the 33 began doing U.S. farmwork after IRCA was passed.

In 1990, the group worked an average of 10 months doing farmwork in the United States, with a range of two to all 12 months in 1990. Twenty-three, reporting on a two-week pay basis, said they worked an average of 41.2 hours per week (range 33.5 to 60.5 hours). Five others, reporting their weekly hours, averaged a 40.2-hour week (range 32 to 49 hours).

Sixteen of the 33 worked with one crew leader, five with several crew leaders, 10 with a grower, and two with a combination of crew leader/grower. Twenty-four had been referred to their job by a friend, relative, or workmate. Nine had applied on their own. Three of the group had paid a fee to a person recruiting for the job.

The survey asked about their activities during the 1990 year. Their answers were categorized by their first (primary) activity: farmwork, nonfarm work, vacation, looking for work, not working, in school, or laid off/waiting for season to start. If the first response was farmwork, the respondent was asked about the type of crop and the primary, secondary, and tertiary tasks in that crop.

Summarizing these responses, 30 listed farmwork as their primary activity, two listed nonfarm work, and one listed vacation. The farmwork was done in Clackamas County (two respondents), Marion County (nine), Multnomah County (nine), Washington County (nine), and one elsewhere (possibly in California). Presumably, the vacation was taken in Mexico and the nonfarm work was in Washington state, according to the overall pattern of responses.

Twenty-seven of the 33 listed nursery (ornamentals/flowers/nursery plants) as their primary crop. Other primary crops mentioned were apples (one respondent), Christmas trees (one), and pasture/alfalfa (one). One worker listed strawberries as a secondary crop; another called pears/peaches a third crop.

Table 4.5 ranks various nursery tasks by whether a worker considered the task main, secondary, or tertiary. According to the table, the main tasks at the nurseries for most workers are pruning/shearing/thinning, digging/balling/packing/loading/baling, and working with containers.

Table 4.5 – First Activity, Farmwork: Number of Workers Ranking Various Tasks

Task	Task 1	Task 2	Task 3
General farmwork	2	1	—
Planting/transplanting	5	5	—
Pruning/shearing/thinning	9	2	—
Hoeing/weeding/cleaning/ seedling care	2	4	—
Spraying	2	—	—
Clean up/brushing	—	1	—
Digging/balling/packing/load- ing/baling	6	3	3
Row boss/organizer/foreman...	—	1	—
Unskilled labor	1	—	—
Skilled labor (equipment/plumbing)	—	—	1
Container work	5	—	—
Grafting	—	1	—

Looking now at what 22 of the 33 said about their second activity during the year, 11 continued to list farmwork, while seven vacationed, three were not working, and

one spent some time looking for work. Fourteen of these did their second activity Willamette Valley, in the—either farmwork, not working, or looking for work—three in Marion County, three in Multnomah County, seven in Washington County, and one in Yamhill County. The vacationers and one of those who was not working went to Mexico.

Of the 11 who listed farmwork as their second activity during the year, six ranked nursery as their main crop. Others mentioned work in strawberries, caneberries, vegetables (broccoli/cauliflower/cabbage and zucchini/cucumbers/squash), and other vegetables. Table 4.6 provides the responses for the 11 who also listed farmwork as their second activity in a year.

Table 4.6 – Second Activity, Farmwork: Number of Workers Ranking Various Tasks

Task	Task 1	Task 2	Task 3
General farmwork	1	—	—
Planting/transplanting	2	—	—
Picking/harvesting/cutting	3	—	—
Pruning/shearing/thinning	—	2	—
Hoeing/weeding/cleaning/ seedling care	2	1	—
Spraying	1	—	—
Digging/balling/packing/load- ing/baling	2	1	1
Row boss/organizer/foreman..	—	1	—
Grafting	—	1	—

As the questioning continued about the third, fourth, fifth, and sixth activities performed by the workers during a year, the numbers of respondents decreased to 15, 4, 2, and 1, respectively. As their third activity, farmwork was mentioned by 14 of the 15, and vacation by one. The tasks were similar, except one mentioned making Christmas trees as a secondary task. Among the four who talked about a fourth activity, one listed farmwork, one nonfarm work, one vacationed, and one spent time looking for work.

A slightly different question was asked about the crops and tasks performed in the last week of their present or most recent job. Twenty-nine of the 33 said they had done nursery work. Four specified work in each of strawberries, fruit, grapes, and other.

When asked what kind of work they had done that week, eight had done digging/balling/packing/loading/baling; six, planting/transplanting; six, pruning/shearing/thinning; five, hoeing/weeding/cleaning/seedling care; two, general farmwork; two, picking/harvesting/cutting; one had been a row boss; one had offered skilled labor; one did

container work; and one had done grafting. Twelve of the respondents described a second task: four had done planting/transplanting; four, hoeing; two, pruning, etc.; and two, digging, etc.

All the workers were paid an hourly wage. The average hourly wage for the group was \$5.28; the range was from \$4.50 to \$8.50. The workers put in an average of 7.9 hours per day; some worked as few as five hours; others worked up to nine hours. Only two indicated that they received a bonus: One got a Christmas bonus of \$300; the other received a "rainy day" bonus, probably a day's wages.

Nineteen were covered by medical insurance for on-the-job injuries; 12 were not; and one didn't know if he had medical insurance. However, medical insurance coverage for nonjob-related illness was only enjoyed by three of those interviewed. Fourteen of the group received a paid-vacation benefit.

On average, they had worked two years for their present employer, with a range of one to six years. Twenty-six were considered full-time employees; four were seasonal; and three didn't know which they were. Two of the four seasonal workers kept in touch with their employer between seasons; one was called by phone, while the other did the calling.

Eighty-eight percent (29 workers) rented housing from someone other than their employer; one worker had free housing provided by the employer; two owned their own housing; and one had some other arrangement. Twenty-three lived in flats or apartments, seven in houses, two had rooms in dorms or houses, and one lived in a vehicle. Most living arrangements were located off the farm.

Seven workers paid a fee to the grower or to a contractor for rides to work. However, respondents confused these commute-fee estimates with one-time fees to come to the area to work. That is, the range given was from \$1 to \$60. Another seven workers charged other workers for rides to work; these charges ranged from \$1 to \$10 per ride. Anecdotal evidence shows that providing rides to work constitutes a considerable monetary supplement to workers with cars and gives them certain clout with employers who are dependent on the worker-riders.

Twenty-six workers said that the employer provided all their work equipment, nine said they had to provide their own equipment, and four indicated a mix. All said that drinking water, wash water, and toilets were provided.

Workers were mixed about whether wages had gone up and whether working conditions had improved during the past three to five years. Thirteen thought things were about the same; nine said things were better now; two said

they were worse; and four said some things were better, some worse.

Seven said there were some jobs they would quit, would like to quit, or would never like to do again. Five said this was because of low pay. Two other reasons were that the task was too difficult and that the worker's wife couldn't work with him. Only one listed a dangerous work condition that involved pruning that had caused him to quit.

Twenty-seven were planning to do farmwork in the United States next year, two said they would not be doing farmwork, and the rest were unsure. Among those who plan to do farmwork, 25 specified nursery, and blueberries, grapes, and row crops were also mentioned.

Only two had had any experience getting together with other workers to improve wages or working conditions. One of these was a cooperative effort to improve their housing situation; the other worked had offered to help someone who had lost his job. Two of the workers had belonged to a union (United Farm Workers) during the last three years.

Most of the workers made very positive comments about their work:

- *I like the work and am happy with the conditions.*
- *I like my work. It is not very tough and it gives me security.*
- *I like my work because I know what I am doing.*
- *All nurseries are fairly good employers. They treat us well.*
- *The work has allowed me to learn English at the community college. I can send money home.*
- *I like the varied duties of my job. It is not tedious or repetitive.*
- *I like working here. Employers are fair. California is too hot.*
- *My job teaches me skills that one day will enable me to earn more money.*
- *It's been a great experience. I've learned how agriculture operates here. In the future I want to buy or rent land and plant strawberries and maybe some other types of crops.*
- *Everyone is very happy in the nursery, and they have very good working conditions.*

Some were not nearly as enthusiastic:

- *The work is hard for the money I earn.*
- *The work is interesting, but I wish the wages were higher.*
- *The work is hard. I don't have insurance for my family—only myself. I don't get paid enough. I barely make enough to pay the rent, let alone food for my family.*
- *Some tasks are hard; some are easy. It is easy to be injured. I had to buy my own trimmers for \$25*

to replace one I lost. We have to eat in the fields and sometimes have to enter the fields too soon after spraying.

- I like agricultural work, but I don't have any protection for my family.*
- The place where we work is okay. Sometimes owners don't appreciate the work we do. Some don't pay enough. Some places don't provide workers' compensation.*

Willamette Valley Christmas Trees

Employer Survey Results

General Information about the Growers' Operations

The 32 employers interviewed had been raising Christmas trees an average of over 20 years; the range was from six to 43 years. The Christmas tree farms surveyed were of three types: large commercial operations exclusively growing and marketing Christmas trees, farms that had diversified by adding Christmas trees, and small acreages using trees to supplement nonfarm or retirement income. Several were operating businesses that had been in the family many years. One had begun by harvesting wild trees from the forest and then had gradually worked into plantations, now a year-round activity.

As shown in Table 4.7, those surveyed ranged in size of operation from one who had less than 50 acres to six who farmed over 1,000 acres.

Table 4.7 – Christmas Tree Employers by Size of Farm

Acres	Number of Employers
≤50.....	1
50–99.....	11
100–149.....	6
150–199.....	2
200–499.....	5
500–999.....	1
≥1,000.....	6

Many employers spoke of changes over the years. Consumer demand for better quality trees has radically changed production methods (see Chapter 2), which in turn has increased the demand for workers and the type of labor needed to produce "perfect" trees. Also, entry of new growers and expansion of existing operations have meant

increased competition in marketing trees, with associated lower prices.

Sixty-nine percent of the sample (22 growers) had increased their acreage over the past five years, an average increase of 106 acres (range 5 to 700 acres). Only one of the 32 had reduced acreage.

Twenty-eight of the 32 referred to theirs as a family business. Two of the total were incorporated; two classed themselves as "other." Eighteen of the respondents supervised the day-to-day activities of their workers themselves; seven used a manager; five, a combination of self-supervision and a manager; and two, "other." Nine said that one person made all the major management decisions; the other 23 shared the decision-making responsibility with family members or with partners or managers.

Nineteen of the 32 subcontracted some part of their operation. Helicopter services were the most frequently mentioned. Helicopters are used in spraying and in harvesting (to lift bundles of trees to a loading area). Several mentioned that some or all of their seasonal labor services were supplied by a contractor. One grower had a contractor for shearing Douglas firs, but did the Nobles himself.

Marketing

Nineteen were wholesale operations; the other 13 were retail. Nearly all (30 growers) sold to the national market. One grower sold exclusively in the local area, along with 21 others who also sold locally. Seven also exported trees. Only nine of the growers who sold nationally and/or internationally also sold statewide. In other words, many growers ship only out of state. Of those who sold to more than one market, most said the national market was the most important. Only two growers mentioned competition from imports. However, the question about increased competition for Oregon's trees probably should have asked about artificial trees. Twelve saw increased opportunities in export markets over the past five years, although only seven were actually exporting.

When asked about marketing activities, the wholesalers in the group mentioned sales calls to prospective and previous retailers; trade shows, references from previous customers; the use of catalogs, brochures, and price lists; a sales staff; direct consignment; advance contracts for trees; advertising; and use of the association. Some said they belonged to a marketing cooperative. Retailers used some of these same methods but also advertised in newspapers, posted highway signs, and sold from their own lots.

Thirteen said they had changed their marketing strategy in recent years. They mentioned becoming more aggressive marketers, putting more time and money behind their marketing efforts, using a sales force, joining a cooperative, advertising more, using a broker, using photos and

videos to show products, working through the association hotline, and stopping credit sales to retailers. When asked if they planned to change their approach in the future, nearly all said they would need to become more aggressive marketers. Several mentioned developing new markets and establishing new customers.

Nonlabor Costs

Ninety-one percent of the sample said their nonlabor costs—such as fertilizers, pesticides, interest on debt, equipment—had increased since 1986. Their estimates of increased costs, which ranged from 10 to 50 percent higher, averaged 21 percent.

Labor Demand and Supply

All 32 growers reported on the various tasks by month performed, the number of months, the number of crews, and the number of workers in each crew. In Table 4.8, we summarize this information by giving the average number of months spent on the respective tasks and the average number of workers employed by the sample for each task. Obviously, post-harvest cleanup would occur in December and January; harvest occurs in the late fall. Harvest requires by far the largest number of workers. As a group, these 32 growers employed 1,451 workers for the 1990 harvest. Most had only one crew, but the average number was over 46 workers in a harvest crew. Side shearing and top work also require many workers.

Table 4.8 – Average Number of Months Required for Task and Average Number Hired by the Sample for Each Task

Task	Number of Months Required	Average Workers Used
Post-harvest cleanup	1.4	4
Pruning (not shearing)	3.5	6
Herbicide spraying	2.0	2
Site preparation	1.6	2
Tree planting	2.0	6
Fertilizing	1.2	5
Spot spraying	2.5	3
Top work	3.0	9
Side shearing	3.3	15
Harvest	2.0	47
Other	0.2	1

Growers reported that machines had replaced some work that had been done by hand five or ten years ago. Fourteen of the respondents said that planting had become

partially mechanized, and 13 said they used a machine to fertilize. Machines were also used by a few to seed, spray, bundle trees, harvest, shear, cultivate, and grind stumps. When asked whether they envisioned any further operations being mechanized, 17 responded "yes." Fifteen saw mechanization coming in pruning, and several mentioned partially mechanized harvesting, shipping, planting, and spraying.

Twenty-one growers did not see much change in their per-acre demand for labor, but eight said it had increased between 10 and 50 percent (average 15 percent). Two, perhaps those who had partially mechanized, said their labor needs had decreased on average 43 percent.

The 32 Christmas tree operators in the survey hired an average of 5.6 year-round workers. The smallest farms had no year-round workers; the largest had 95. The average number of seasonal workers employed by the group was 82. Even the second smallest operation hired two seasonal workers, and the largest had 350.

Only 18 of the sample reported on the composition of their year-round work force. Over half of their year-round workers were local adults, who were supplemented by alien migrants (one-third) and U.S. migrants (one-sixth). Four of the 32 Christmas tree growers said the proportion of aliens working year-round had increased by from 50 to 100 percent over the last five years. One saw a 10 percent decrease; another said there had been a 50 percent decrease in alien year-round workers.

Alien migrants comprise a much higher proportion of the seasonal work force—82 percent of the total. Four percent of the total was represented by local adult workers; 1 percent by U.S. migrants; and less than 1 percent by local teenagers. Twelve of those interviewed said the percentage of alien migrants in their seasonal work force had increased; their average estimated increase was 58 percent (range 20 to 100 percent). The rest didn't see much change in the proportion of alien migrants working seasonally on their farms.

Twenty-four of the 32 Christmas tree farm employers were very definite that certain types of workers were more productive; 23 cited alien migrants as the most productive group. The rest didn't think there was much difference. One mentioned a hiring preference for ex-loggers of any age, but using aliens for baling. Two said they preferred local adults because they are close by, have a better understanding of what is wanted, and are dependable. Some of their comments follow:

- *Aliens from Mexico or Guatemala are more productive. Locals don't seem to be very motivated.*
- *Aliens are happy to work. Family members who return year after year are especially productive.*

- *I prefer Mexican migrant workers because they show up and work while here. Local Anglo workers don't work as hard. Out of 50 workers hired, six were Anglos. Without migrants I would not be able to get the job done.*
- *Migrants are more productive but less skilled. The language barrier makes them harder to train, and they don't adjust easily to different plants. But they are very motivated. Married workers are more serious and have better attendance.*
- *Hispanics have a better work ethic and are more capable. Mexicans really need the money, so they come to work.*
- *Aliens all around are much better.*
- *Alien migrants work as a group, so it is easy to get crew cohesion. They have good attendance and are serious about the work.*
- *Recent arrivals work best. The longer they are here, the worse their work habits become.*
- *They (aliens) work all day and show up every day.*

All but one employer had workers who return year after year. Twenty-six of the employers hire based on referrals by their present employees. Seventy-five percent hire walk-ons. Nine used labor contractors, two used the state employment office, and a few advertised for help in the newspaper. Most used the same methods to recruit year-round and seasonal workers. However, a few used a different strategy to hire year-round workers. One transferred workers from another business. Two hired permanent workers up from their seasonal worker ranks.

Twenty-nine employers had more workers apply than they hired. Only two hired all workers who applied. Twenty-three employers said they screened workers before hiring them.

On average, employers had to replace almost 7 percent of their work force during a typical week in 1990; the range was from 0 to 50 percent. Since alien migrants made up the bulk of their seasonal work force, they tended to be the ones who had to be replaced. However, some replacement was also necessary among local adults and U.S. migrants. Ten employers said that worker turnover had decreased since 1986; four disagreed, saying it had increased.

When asked how they thought worker turnover could be reduced, employers mentioned paying more; offering more benefits, including better housing; improving available transportation; and providing more continuous, even full-time work. One admitted needing to use a better selection process. Another said it would help to speak Spanish to the workers. Two, tongue in cheek, wished that something could be done about the rain.

Only ten reported requiring workers to have some kind of training or experience as a condition of hiring. They

particularly wanted experience in shearing, a crucial operation in creating perfect Christmas trees. But all of these said they provided paid on-the-job training. Besides experience and training in shearing, one mentioned training workers to prune, pack, bail, re-plant, and load. Another showed workers how to operate equipment safely. One proceeded by first explaining tasks and goals, then demonstrating, then letting workers try it by themselves, and finally, placing them in a crew. Eleven do the training themselves, 18 have someone else do it, and three use both methods.

Thirteen of the employers at one time had to discipline one or more workers. Most first used verbal warnings before taking stronger action leading to eventual discharge. One mentioned re-training a worker to do a better job.

Twenty-one of the employers used their workers on more than one job; 14 of these kept the crew together for task transfer. Thirteen switched workers with other local Christmas tree farms. Nineteen of the 32 cooperated with other employers in the area in recruiting and retaining Christmas tree workers. Some reported referring their good workers to other local growers and vice versa. Operators said that whenever work was short or finished, they referred workers to other tree farms. Loading crews sometimes work for several farms.

As a group, their average hourly wage rate was \$7.14 for year-round employees (range \$5.00 to \$12.00) and \$5.67 for seasonal help (range \$4.75 to \$8.30). Year-round workers were paid weekly by three employers, monthly by five, and twice monthly by ten. A majority (17) paid their seasonal workers weekly, three paid monthly, and 11 paid twice a month. Several mentioned that their payment schedules had become more regular, partly due to a more highly regulated system.

Table 4.9 summarizes the benefits provided by the 32 growers interviewed.

Only six of the employers interviewed had heard about any labor organization and/or union activity. Those who said they had heard rumors mentioned that the Pineros y Campesinos Unidos del Noreste might be trying to organize (see description of PCUN in the earlier nursery crop section of Chapter 4).

Eight of the 32 had had some kind of check by the U.S. Department of Labor (DOL) or the Immigration and Naturalization Service. Four had had their I-9 forms checked. The toilet and water facilities of several had been inspected; one had them look over worker housing. DOL had also checked on labor contractors' licenses and had spoken to workers about their overtime work.

One of the employers had helped some 25 workers become legalized under the SAW program. Another had helped one worker.

Table 4.9 – Benefits Provided by Interviewed Growers

Benefit	Number of Growers Providing	Average Number of Years Provided
Housing.....	5	3.8
Bonuses.....	21	6.8
Paid education.....	3	2.3
Health insurance.....	5	4.2
Paid vacation/sick leave.....	6	3.5
Transportation.....	11	5.6
Work equipment.....	18	9.9
Other ^a	3	6.5

^a Workers' compensation, rain gear, advance money

Seventeen of the employers were aware of workers leaving agriculture for nonfarm jobs. Their average estimate was that nearly 18 percent were leaving (range 1 to 80 percent). They mentioned employment in sawmills, landscaping, service stations, restaurants, fisheries, manufacturing, the K-mart, construction, grocery stores, upholstery and furniture, fast food restaurant, and the rental business. Still, only eight of the employers had experienced any labor shortage since 1986.

Most found that it was not much harder to recruit new workers than in the past. However, three did believe it was harder, mentioning not being able to recruit legal workers. Another said that labor camps were no longer a good source, since it had become difficult to arrange papers and be assured of workers' legality. One said that during the first year of the new law there had been a reduced supply of labor, but after that the supply had returned to normal.

Twelve thought recruiting workers had become easier. They said the supply had increased because there were more aliens looking for jobs and it was no longer necessary to look for locals to hire. Growers reported that their workers return year after year, and some bring their friends. The general view was that there is not enough work in the area for all who come.

About ten of the group were worried about possible labor shortages in the future. A few mentioned that increased mechanization would help in the event of a labor shortage. One suggested trying to keep good workers year-round.

Thirteen thought it very or somewhat likely that they would reduce their acreage in the future. Three of the group were planning to phase out of the Christmas tree business; one had just sold the farm. However, their decisions to cut

back or exit the business did not appear to be because of problems with labor.

Nearly all complained about the increased paperwork, time, and expense associated with IRCA. One called it "outrageous paperwork." Another called it a "hassle." One employer said he had had to hire extra help to handle the paperwork. Because of improper paperwork, one had to let several employees go. Some of their general comments about seasonal workers and IRCA follow:

- *Our business depends on aliens to harvest the trees.*
- *Alien migrants are irreplaceable for their productivity and cost. Local labor is not a possibility anymore.*
- *Alien workers are indispensable. My labor bill is the one bill that I don't mind paying. I see a real benefit in the labor I hire.*
- *Alien migrants are the backbone of the industry. They are critical for our success.*
- *Christmas tree operations depend entirely on alien workers. In the past we have hired local white workers, but they were not as productive and they generally quit after a short time.*
- *I wouldn't be in operation if it weren't for alien workers.*
- *Migrant workers filled the gap when local teenagers refused to continue to work.*
- *Lower wages paid to alien migrants reduce our costs. But when the work force stabilizes and they become more skilled, they want more money. It is critical to have good quality work, but it's tough to pay high wages when there is so much competition in the industry.*
- *Alien workers are very important to our operation. Local workers always have priority, but they just don't offer us a realistic, productive alternative.*
- *I could not continue in the tree business without migrant workers. They provide good labor at reasonable wages.*
- *It is critical for us to have seasonal help. The solution to the problem is not up to me. I need migrant work to harvest my trees. If I have to hire illegals, then I'll just have to tell them when to run.*
- *There's no way in the world we could continue without alien workers, given the current work ethic of our young generation.*
- *A lot of smart workers are forming crews to undercut farm labor contractors.*
- *There should be good housing in the area for good workers. We could set up zones for migrant housing. Government agencies need to work on this*

instead of continually issuing confusing regulations and increasing our paperwork.

- *There are no 'legal' alien farmworkers. I'm tired of being a policeman for the immigration service.*
- *How do you know if they're legal or not? The quality of forged papers is so much better.*
- *Growers should not be put in the position of having to judge the authenticity of documents.*
- *IRCA is a hypocrisy. Does anyone really know what documents are legal?*

Worker Survey Results

General Information about the Workers Interviewed

Thirty-one of the 34 Christmas tree workers interviewed were born in Mexico; two were born in Oregon; and one was born in Texas. Two speak mostly English at home; the rest, Spanish. Only one of those interviewed was female.

Those that were born in Mexico came to the United States between 1979 and 1991; 18 of them first arrived in 1986 or later. Twenty-nine still call Mexico their permanent home, while five consider Oregon home (two in Multnomah County, two in Marion County, and one in Washington County). Twenty-seven of the workers had

spent several months in Mexico the previous year. However, the average of 4.6 months spent in Mexico was raised by any recently arrived workers who reported spending 12 months in Mexico last year.

Eighteen were married; 16, single. Among the 14 who had children 14 and younger, the average was 3.4 children per family (a range of one to seven young children). But less than 40 percent of these children were with the respondent in Oregon—the average number of children with these 14 in Oregon was 1.4.

The average age of the group of workers interviewed was 28.5 years (a range of 16 to 52 years). Their average years of schooling was 5.9 years (a range of 0 to 12 years).

Nineteen of this group began doing farmwork in the United States in 1986 or later. One began as early as 1979; another had just started in 1991. The 32 who did farmwork in the United States in 1990 worked an average of 7.9 months (a range of two to 12 months). Twelve of them had one crew leader in 1990, 10 had several, six worked with the grower, and the rest had a combination of these arrangements.

Some of the workers answered questions about their family members in the United States. Table 4.10 gives their answers, reported according to which family member the respondent talked about first. Most (83 percent) of these

Table 4.10 – Information about Workers' Family Members in the United States

	1st ^a	2d	3d	4th	5th	6th	Total
Relative							
Spouse.....	4	1	1	1	—	—	7
Child 15.....	2	2	3	1	1	—	9
Sibling.....	15	8	3	1	1	1	29
Parent.....	1	1	—	—	1	—	3
Total.....	22	12	7	3	3	1	48
Relative's Location							
In Oregon.....	20	10	5	2	2	1	40
In other states.....	2	2	2	1	1	—	8
Relative's Employment							
Farmwork.....	19	9	6	2	1	1	38
Nonfarm work.....	2	3	1	—	1	—	7
Not working.....	1	—	—	—	—	—	1
In school.....	—	—	—	—	—	—	—
Total.....	22	12	7	2	2	1	46
Relative's Legal Status							
Not legal.....	9	2	4	1	1	—	17

^aFirst relative mentioned by respondent.

relatives were with the respondent in Oregon, and 83 percent were doing farmwork. Seven of the relatives mentioned were in nonfarm work; only one was not working; and none was in school. Of the 48 relatives that the group talked about, 17 did not have legal documentation. One worker had a sibling who had left agriculture for factory work because he had not liked working outside in bad weather and wanted better pay.

Information about Their Jobs

Looking now at the current employment arrangements of the 34 workers who were interviewed, 27 worked for a grower, five workers through a farm labor contractor, and two worked for a nursery. Over half the group (18 workers) was referred to their job by the employment service; five applied on their own; two were recalled after being laid off; six had a standing agreement with their employer; two were recruited by the employer or foreman; and one used some other method. Only one had paid a fee to someone for lining up the job.

Only ten of the workers estimated their hours on the job. One put it in terms of hours per day and reported putting in a 10-hour day. Five estimated hours for a typical week, giving an average of 50 hours, with a range of 38 to 55 hours. Two calculated on a two-week basis, claiming 108 hours, or 54 hours a week. One other worker reported 32 hours, presumably for a week.

All were paid individually. Eighty-five percent were paid on an hourly wage basis; 15 percent were paid by the piece rate. Converting the piece rate wages to hourly terms, the group averaged \$6.47 per hour; the range was from \$4.75 to \$9.00. Only three mentioned receiving some sort of bonus from the grower or farm labor contractor. These bonuses were for staying the season, exceeding the weekly quota, and as a safety incentive.

Most are not covered by medical insurance either on or off the job. Seventy-four percent (25 workers) said they were not covered if injured on the job, and only one of the group was covered for off-the-job injuries or illnesses. Only three of the workers received paid vacations from their present employer.

Fifteen of the workers had been with their present employer only one year. One had been with his current employer for 13 years. The average for the group was 2.7 years. Sixty-two percent of the workers were employed on a seasonal basis; the rest (13) were full-time employees. Fourteen of the seasonal workers had not been in contact with their employer on the off-season, four didn't know, and three had maintained some contact. One mentioned keeping in touch through family and friends.

Three workers were provided free housing; the family of one of these workers was also housed. Most (21 workers)

rented housing from someone other than the employer and lived off the farm; of the 10 who rented from the employer, six were housed on the farm where they worked. Their living arrangements varied; 29 percent lived in houses; 33 percent lived in flats or apartments; 24 percent had rooms or beds in houses or dorms, 6 percent lived in mobile homes, and 3 percent (one worker) lived in a labor camp (not employer-owned).

No worker was paid transportation costs to get to the job. Six paid someone else an average of \$6.17 for a day's commute (range \$2.00 to \$15.00). Five charged other workers an average of \$4.60 (range \$1.00 to \$10.00) to ride with them to work.

Exactly half of the workers said that the employer pays for all the equipment they use at work. The rest either provided some or all of their own equipment to do the job.

Most had drinking water, wash water, and toilet facilities available on the job. However, some reported not having these services at the work site. Seven said drinking water was not available, 11 reported that there was no wash water, and 10 said there were no toilets.

Eighteen of the 34 thought that wages and working conditions had been about the same over the last three to five years. Six thought wages and conditions had gone up, one mentioned better working conditions, and five noted better wages. One thought that even though wages were better, the cost of living had also increased.

Most answered "no" when asked whether there were any jobs they would quit or would like to quit; three answered "yes," saying that there were some jobs that were too difficult. Two complained about planting trees on a steep hillside and crowded equipment at a nursery, which they viewed as dangerous.

Workers were asked about the most important crop and task they performed during the last week of their present or most recent farm job. All answered that this work was in Christmas trees. Workers were interviewed during different months (one in August, 11 in September, seven in October, eight in November, and seven in December), so their responses to the question about the task or tasks they were performing during that week differed. Fifty-six percent said they were pruning, 32 percent were harvesting and tagging, and 32 percent were digging and packing. Hoeing and measuring trees were listed by two respondents.

Workers were also asked to look back on the year's work and describe their main activities. Thirty-two of the 34 said that their primary activity was farmwork, one had done nonfarm work and one was unemployed during a large part of the year. Of the 32 who listed farmwork first, 30 said their main crop was Christmas trees, one had worked in strawberries, and one in nursery. For those

whose main job was farmwork, Table 4.11 indicates the tasks they considered their most important during the year.

**Table 4.11 – Primary Activity, Farmwork:
Number of Workers Ranking Various Tasks**

Task	Task 1	Task 2
Planting/transplanting	2	—
Harvesting/cutting	11	2
Pruning/shearing/thinning	4	2
Digging/balling/packing/loading/ baling	4	1
Skilled labor	—	1

Twenty-five of the 34 talked about a second activity during the year. Two-thirds of these said their second activity was also farmwork, six did some nonfarm work, and two had spent time looking for work. Of the group doing farmwork as their second activity, three listed “fruit”; three worked in vegetable and other row crops; two listed caneberries; two worked in Christmas trees; two worked in nursery crops; and one each listed strawberries, pears/peaches, “seasonal” crops, and apples. When asked about their primary tasks in these crops, 13 of 19 said they did picking/harvesting/cutting.

Eleven described a third activity for the work year; seven of these talked again of their farmwork, including harvesting and other work in strawberries, vegetables, and other crops.

When asked if they planned to be doing U.S. farmwork the next year, 79 percent (25 workers) answered “yes.” Most of these expected to return to Christmas tree work, one didn’t know, and one expected to be doing more general seasonal work.

No one had gotten together with other workers in an attempt to improve working conditions or wages, but all but one had belonged to a union in the last three years.

Workers had some very positive comments about their work in Oregon:

- *Oregon is better than California.*
- *Oregon is a very nice place to work. Wages are fair but not high.*
- *I am very happy with all aspects of my experience in Oregon.*
- *If I can't find work at one place, I can always apply somewhere else. I love Oregon.*
- *Strawberry picking in previous years was bad. Working with the trees is better.*
- *I will return next year. Oregon is much nicer than California.*

- *I will maybe become a foreman next year. I am very happy to work in Oregon.*
- *The pay is very good if you work very hard. I try to send as much money home as possible—about 25 percent.*

Others were less satisfied:

- *Everything is hard. It's heavy work. Things cost a lot, and it's hard to find a place to live. We aren't paid very well for all the hard work we do.*
- *The wages are not too good here. I've come many years, and it's always difficult to live comfortably.*
- *I like working here, but I don't like the camp. Too many people (eight) are crammed into one room.*
- *It costs so much to live here. Rent is very high in this trailer park.*
- *The pay is low. I wish I earned more so I could visit the ocean.*
- *I've worked in logging before and this is pretty much the same, but the wages are lower.*

One concluded the interview with the comment,

- *I hope this survey helps us keep our jobs!*

Willamette Valley Strawberries

Employer Survey Results

General Information about the Growers' Operations

Twenty-three employers were interviewed. They had been growing strawberries in Oregon an average of 24 years (a range of 5 to 42 years). Although most were diversified into other crops besides strawberries, details were not solicited. Nineteen of the 23 were family farms; the other four were incorporated.

Their strawberry acreage ranges from 1 to over 40 acres; one-fourth had 40 or more acres in strawberries (Table 4.12).

**Table 4.12 – Strawberry Employers Surveyed by
Number of Acres**

Acres	Number of Employers
1–9	2
10–24	6
25–39	5
≥40	10

Among the farmers with over 40 acres in strawberries, two had large operations: One reported 150 acres in straw-

berries; another had begun with 500 acres in 1988 but had downsized to 250 acres by 1990. Seven of the 23 farmers said they had decreased their strawberry acreage in the past five years, while five had increased acreage an average of 20 acres each (a range of 7 to 40 acres).

One significant change in operations over the years, described by several of those interviewed, was the shift in the labor market when the law against child labor was enforced. Formerly, children under twelve, often working with their families, were important contributors to harvest labor. One long-time grower described the situation when he first planted cucumbers and strawberries: "We started with mothers and children as pickers. If we got behind, we would have winos bussed from Portland. Mexican crews started coming about 1970. There were no more school kids after the 12-year-old labor law came in."

Another important change was the move away from cash wages. Now with the new laws and regulations, payment is generally by checks that include various deductions.

Twelve reported doing the day-to-day supervision of their laborers themselves, five had a manager, four used a combination of self and manager, and two used other methods, perhaps a farm labor contractor. Fourteen shared major management decisions with a partner, family member, foreman, or manager. In the nine other operations, one person made the major decisions.

Eight said they subcontracted part of their operation. One used a labor contractor who provides transportation, manages the field work, and takes care of the payroll, taxes, and insurance. Three others also used a labor contractor. Four subcontracted for spraying; one of these employers contracted for bookkeeping as well.

Marketing

All 23 employers operated at the wholesale level, producing strawberries for the processing market (see Chapter 2). Three of the 23 were also growing some fresh berries that they sold retail (at roadside stands or to retailers).

Answers to the question about where they sold—locally, statewide, national, and/or international—are difficult to interpret. Most sell to processors in the area. Some might have called this a local sale; others may have been thinking of the national and international distribution of their processors' products (e.g., Häagen-Dazs ice cream, Smuckers jam) when they answered. Similarly, members of cooperatives may have been thinking about their coop's distribution channels. At any rate, 19 said they sold locally; eight, statewide; five, nationally; and three, internationally. When listing more than one market, as all 23 did, 16 called

the local market the most important level; four, the state market; and three, the national market.

Six of the group saw increased competition from imports over the past five years, but the rest saw little or no difference. Nine thought that export opportunities had increased.

Eleven of the group grew and marketed berries under direct consignment to or contract with processors. Three marketed through their cooperative. Others also sold to processors, though they didn't mention a contractual arrangement. There were three growers also selling some product retail. We assume these were fresh berries. One mentioned having a retail fruit stand.

Six said their marketing approach had changed in recent years, and two planned to make some changes. Several were considering trying fresh market sales, but one was going to quit retail and market entirely through the co-op. One mentioned sending a larger share to individually quick frozen (IQF) processing.

Nonlabor Costs

All but one of the 23 had seen their nonlabor production costs (e.g., chemicals, interest rates) increase over the last five years. Their average estimate was that costs had escalated by about one-third, with the range of estimates from 10 to 100 percent.

Labor Demand and Supply

From survey results we can get a picture of when the various tasks are performed on a strawberry operation. Hoeing is a many-month activity from spring through September. Planting occurs in May. (Recall that about one-fourth of Oregon's strawberry acreage is re-planted each year.) Harvesting is in June, though, depending on the season, it can begin in May or last into July. Because of these year-to-year differences, it is hard to predict exactly when harvest labor will be needed.

Respondents differed more on the timing of the other tasks. Renovating took place anywhere from March through October; fertilizing, spraying, and cultivating were generally in the spring and fall; and irrigating during the late spring through the summer, sometimes into October.

Table 4.13 reports the average number of workers hired by the group surveyed for each task. Obviously, most labor is hired for harvest.

Three growers had seen a partial mechanization of irrigating and cultivating tasks over the decade. Four mentioned that machines were used more now in weed spraying, while five noted their use in fertilizing and six in planting. Seven foresaw additional mechanization coming—six in harvesting and one in planting. One grower

concluded, "Don't plant anything unless you can pick by machine."

Table 4.13 – Total Number Hired by the Sample for Each Task

Task	Number of Growers Reporting	Average Number of Workers Used
Hoeing	22	14
Planting	22	11
Harvesting	22	243
Renovating.....	18	4
Fertilizing.....	20	2
Irrigating	21	3
Spraying.....	20	2
Cultivating.....	19	2
Mulching	18	4

Most growers (17 of the 23) did not see much change in their per acre demand for labor, but four said it had increased between 10 and 40 percent (average 24 percent). Two said their per acre labor needs had decreased.

Twenty of the group did not hire any year-round workers. One grower hired one year-round worker; one, three; and one, eight. The 23 hired an average of 272 seasonal workers. One farm hired as few as 20; another hired as many as 800. Eighty-six percent of their seasonal workers in 1990 were alien migrants. Five percent were U.S. migrant farmworkers; 7 percent, local adults; and 2 percent, local teenagers.

The group was mixed on whether they thought the percentage of alien migrants in their work force had increased or decreased during the last five years. Thirty percent thought the percentage of alien migrants had increased by over 40 percent on average; 17 percent said that it had decreased as much as 25 percent. The rest saw no change in the proportion of their workers who were alien migrants.

They all believed that a certain type of worker was more productive than the other types, and all but one pointed to migrants. (One said that he couldn't tell the difference between a U.S. migrant and an alien migrant.) One grower said that 85 percent of his workers were from Oaxaca, Mexico. Three others mentioned preferring rural Indians (from Mexico). One also hired Vietnamese workers and saw no difference in their productivity and that of Mexicans. Another hired workers from Guatemala. One concluded that "any ethnic group is better than nationals."

The respondents were split in their preference for single and married males. One had had some drinking

problems with single male workers and found married men steadier and more reliable. However, another said that when a family worked as a unit, it was not as productive overall as the same number of single men would be.

A few comments drawn from the interviews follow:

- *Alien migrants are more productive. They work every day, are reliable and loyal, and come back every year. They have a good work ethic. They are more serious, faster pickers. They are better workers, more motivated, and have fewer problems. They are more productive because they are willing to do the work. Aliens both know how to work and need the work.*
- *I couldn't afford to pay the minimum wage to unproductive workers, like local teens.*
- *Alien migrants are the only ones who come here to ask for work.*
- *I prefer to hire workers from Mexico and Central America because they are serious about working hard for two to three months and then returning home.*
- *Alien boat people pick a quality strawberry. They are not as concerned about volume as the Mexicans are. Because I sell directly (fresh) to the public, I need a quality job.*

All but one strawberry grower had workers who return to work year after year. Twenty-one relied on employee referrals to recruit new workers, and 20 hired walk-ons. Others used other methods were noted, including a labor contractor (seven growers), the state employment office (three), out-of-state phone solicitations for workers (two), and newspaper advertising (one). One grower said he used a farm labor contractor exclusively.

Fifteen employers found that more workers showed up than they could hire, while seven hired everyone who applied. Sixteen said they screened before hiring, while six said they hired anyone.

On average, they replaced about 10 percent of their work force during a typical week in 1990. The range was from 0 to 30 percent. Six said that worker turnover had increased since 1986, five said that turnover had decreased, and 12 either didn't know or thought it had stayed about the same. Again, since those most hired were alien migrants, they were the ones most frequently replaced.

When asked whether anything could be done to reduce worker turnover, nine answered in the affirmative. They suggested better housing, higher wages, making the experience friendlier, offering bonuses, changing the INS laws, and cutting down on paperwork. One suggested having the better pickers show the slower ones how to pick faster. Two elaborated:

- Try to target migrants who are serious and really want to work from three to eight months. Then require all seasonal workers to work a number of months before being able to draw benefits.
- Document workers specifically for agriculture to control their exodus to nonfarm employment. Businesses who hire workers away from agriculture should be fined.

Only one of the group of 23 employers required any training or experience as a condition of employment. That employer required workers to have had some picking experience. Of the 15 that provided specific training for hired workers, 11 had someone else, for example, the crew leader, supervisor, or labor contractor, show workers how to do the task. A few of the respondents did the on-job training themselves (e.g., how to pick, sit on the row, carry flats, and screen the fruit). One said that safety and sanitary instructions were also given.

Most of the 18 who said they had to discipline one or more workers used verbal warnings first. Two sent workers out of the field for a day. Some workers were fined for drunken behavior and fighting. One grower said he discharges any workers who can't pick fast enough on the piece rate to earn the minimum wage (except older workers who are part of an extended family).

Twelve of the 23 hired workers for one task only, presumably picking. The others said they transferred workers to other tasks but kept most with the same crew. Two switched workers with other strawberry growers.

Seven of the group had worked with other employers in the area to recruit or retain strawberry workers. One employer described upgrading the labor camp, providing a good housing environment, and attempting to line up his own crops plus work with other farmers to provide employment for the workers from five to seven months. One trained his strawberry workers to hand-and machine-harvest blueberries, raspberries, and blackberries in order to offer them longer employment. Some were working toward national legislation to improve worker conditions and stabilize the work force. And several growers mentioned sharing workers with other farmers, calling when they needed more workers or sending surplus workers elsewhere.

As a group, seasonal workers' average hourly wage rate was \$5.59 (range from \$4.25 to \$11.00). Only three of the five growers who hired year-round employees reported wages paid; two paid \$6.00 per hour, and one paid \$7.50. Nineteen growers paid their seasonal workers weekly, three paid daily, and one paid twice a month. Two of the five growers paid their year-round workers daily, two paid twice a week, and one paid monthly.

When asked how wage rates and the payment system had changed, many described the old system of cash payments. "I used to pay cash and used punch cards. Now it's checks with computers and all that government stuff." Some, however, were still paying by cash. One grower said that the some-pay-cash-and-some-don't and the some-take-out-taxes-and-some-don't situations are confusing to workers and complicate the hiring process. About one-third of the respondents talked about wage increases. One said pickers' wages had gone up by as much as 50 percent in the last five years. Another pointed out that the Oregon minimum wage of \$4.75 per hour is higher than the national average.

Table 4.14 summarizes the benefits provided by some of the 23 growers.

Table 4.14 – Benefits Provided by Interviewed Growers

Benefit	Numbers of Growers Providing	Average Number of Years Provided
Housing	15	7.9
Bonuses	7	5.4
Profit sharing	2	na ^a
Paid education	3	na
Childcare	2	na
Health insurance	5	5.0
Paid vacation/sick leave	4	11.0
Transportation	15	12.3
Work equipment	14	20.7
Other ^b	4	na

^anot available

^bWorkers' compensation, wood for heat, food

Twelve of the growers knew about or had heard about labor organization or union activity in their area during the last five years. Most mentioned the Pineros y Campesinos Unidos del Noreste (see description of PCUN in the nursery crop section of Chapter 3). They talked about PCUN's attempt to organize, but so far nothing had come of it. However, one grower was actually experiencing Oregon's first farm labor strike at the time of the interview.

Seventeen of the 23 had had some kind of check by the U.S. Department of Labor (DOL) or the Immigration and Naturalization Service (INS). Several had been fined. The Occupational Safety and Health Administration had fined one grower for not having chemicals locked. The DOL had visited several farms, checking on working conditions, safety precautions, and wages and looking for

under-age children. Others had had visits from INS investigators to check I-9s. Because one grower had been investigated by the INS about bonus payments, he stopped giving bonuses.

Five of the growers had not helped any workers achieve legalized SAW status, while seven had helped from two to 40 workers, three had helped about 50, two had helped from 75 to 80, six had helped 100 or more workers get SAW papers, and two of the larger growers had helped over 1,000 workers since the SAW program was initiated.

Eighteen of the growers said that legalized SAW workers were leaving for nonfarm jobs. Their average estimate was that about one-third of the total legalized SAW work force was leaving. As many people do not consider the nursery industry as agriculture, nine of the 18 mentioned nurseries as the nonfarm destination of these workers. Strawberry work is probably the bottom rung of agricultural employment, while nursery employment is at the top, or is even considered nonfarm work. Besides nursery, workers also move on to service jobs in restaurants and motels, work in cannery and processing plants, and employment in construction and manufacturing (e.g., mattresses, mobile homes). Their learning English tends to speed their exit from agriculture.

Although it was not asked on the questionnaire, it is known that strawberry workers also leave for other (better) farm jobs. For example, when cherries or caneberries are ready to pick, workers may leave strawberries unharvested as they move on.

Sixteen of the 23 growers had experienced some labor shortages in their strawberry fields since 1986, and 12 thought it had become more difficult to recruit new workers. Reasons given were related to IRCA: INS regulations, increased paperwork, prospects of being fined for hiring improperly documented workers, and difficulty in finding legal workers partly because once legal they move on to other work. The child labor law was also cited as having caused the loss of families that had previously worked together at harvest.

Two growers thought it was somewhat easier to hire now. One of these used a farm labor contractor exclusively. The other said he turned away more workers than he could use.

Nearly all (22 respondents) anticipated labor shortages in the future. Twelve thought it very or somewhat likely that they would adopt some mechanical alternatives to hand work. Nearly three-fourths of the total group thought it very or somewhat likely that they would reduce their acreage in strawberries, should labor shortages occur.

When asked what they planned to do to avert labor shortages in the future, some spoke of improving conditions to make the work more attractive (e.g., better housing,

higher wages, better worker treatment in general); others were considering switching to less labor-intensive crops. One said he stood ready to disc under his berries when and if harvest labor becomes unavailable. Another planned to plant strawberry varieties that mature at different times so that peak demand for labor is more spread out. Only one planned to get out of strawberries entirely. He complained about excessive rules, fear of being fined, and constant checks by government agencies.

Some of their comments about how IRCA has affected their operations follow:

- *The worry about legal documents has become overwhelming. Workers come in big truckloads of 100 or so; out of these, only 30 will really be legal.*
- *We are no longer farmers; we have become paper pushers. Farmers should not have to pay fines for making mistakes when government regulations are so complicated.*
- *IRCA has affected workers' attitudes. They are less loyal and expect more. Workers are no longer afraid to complain about problems. Now we have to do something about them, rather than ignoring them, as in the past.*
- *The only change is the extra time it takes to sign workers up, check their documents—and worry about whether they are actually legal.*
- *It's a catch-22 situation. On the one hand, I'm scared to get fined for hiring illegals; on the other hand, I'm scared to get sued for discrimination by turning people away.*
- *I'm caught in the middle between the government and the migrants. I'm not a document expert, yet I must determine if persons are here legally, yet not turn someone away who can claim discrimination.*
- *I figure the extra paperwork costs me \$8 per person hired.*
- *IRCA has helped us to stabilize our work force. Once workers' paperwork is filed with us, we have withheld taxes and Social Security, and we are able to document their work history, they feel more permanent and secure with us.*
- *Farmers can't have complete control over the workers. For example, workers can come into the blueberry fields and not be seen, or can bring friends into their living quarters. Yet farmers get fined when they don't even know about the presence of illegals.*
- *Our labor costs have escalated from 10 cents to 17 cents per pound in five years. We have to pay crew leaders more to find legal workers, yet there are many fewer legal workers to choose from.*

- *The current system hurts both farmers and migrants.*

Finally, the 23 growers were asked about the importance of seasonal labor to their strawberry operation. Some focused on the importance of migrants, while others offered comments about how the system should be changed.

- *Without seasonal workers, I'm out of strawberries. I can plow them under in two hours.*
- *Aliens are the only viable work force available. There is no one else.*
- *Oregon's number one business, agriculture, depends on foreign workers. Yet farmers are continually hounded by the government. Most farmers who were really exploitative have reformed or left. Now it's time to lighten up and recognize that we farmers are really trying.*
- *I spend so much time trying to abide by the laws, I can't apply my expertise as a farmer. I think offering U.S. residency is not the right approach. Rather there should be a quota system for seasonal workers to come and work for a number of months and then go home. This would produce better workers and cost less for the government and for employers. Seasonal workers should work six or eight months before being eligible for any government benefits.*
- *Foreign workers are absolutely necessary because whites won't work in the fields. The U.S. government has to figure out a way to get Mexican workers to U.S. farmers without so much paperwork and threats of fines. It's not fair that farmers are fined when it should be the government that is responsible.*
- *Farmers need alien workers, so the government needs to develop a better system that doesn't punish farmers for not being experts in documentation. Some system is needed where they don't get fined for hiring illegals or sued for not hiring legals. Farmers need the workers, and the government needs the farmers. There must be a way by which workers could come without farmers' having to bear such risks.*
- *Hand harvesting of strawberries is all done by seasonal workers. All the rules and regulations make this difficult and risky. The INS can come and take a crew away and farmers are left losing a large percentage of a crop.*
- *Replacement workers are critical for us to maintain crews of pickers. Many workers don't intend to become citizens. They are here because of the economic work, so they need work permits.*

- *We need to develop a system that is positive for both workers and growers. One way would be to have the border patrol issue agriculture cards to work in California, Oregon, Washington, and Idaho from February through October. Workers not returning by November 15 would be fined. We could pay for the whole system by a \$100 fee at the border crossing.*
- *The United States needs to protect American agriculture from being run out of business by its own government. Future generations are not interested in farming because of all the government hassle. Our food supply may come from only Third World countries in the future.*
- *Farmers need foreign workers to pick their crops. There is no one else available. Workers who come to work in agriculture should have to remain in agriculture throughout their stay. They should not be allowed to get other jobs.*
- *Our government needs to figure out a system to provide workers to farmers for their seasonal use, then get them back to Mexico by November. The system need not be so negative. It could be run with the attitude that everyone is benefiting from a good system. However, an H-2A program is not very workable because farming is not precise enough to set exact dates when workers are needed (i.e., the timing and quantity of strawberry harvest are particularly difficult to predict). Also under H-2A, farmers would not be able to screen for good workers; they'd have to take what was sent.*
- *Aliens are necessary. A simplified system, such as the old Bracero Program, could eliminate a lot of the problems.*
- *A green card system could be used. Workers would simply come here to work and then return. Right now the system is so complicated. Workers don't understand it, and many are afraid to return home because they fear they won't be able to come back to work.*
- *Why should IRCA try to attract workers to become citizens? They want to come and work and then return home. Migrants and their families who do try to live here permanently suffer from language and cultural barriers, misunderstandings, poverty, and discrimination. They'd be much better off to work here and live at home.*

One employer said that he had many potentially legal SAW workers who found it much easier to get falsified documents than to go to the bother of following legaliza-

tion channels. This statement seems to indicate that IRCA has serious problems.

Worker Survey Results

General Information about the Workers Interviewed

All the 44 strawberry workers interviewed were Hispanic males. Twenty-three were single; 21, married. Their average age was 29.4 years; the youngest worker interviewed was 19; the oldest, 58. The average number of years of schooling for the group was 4.1 years. Eleven of the workers had no formal education at all, while one worker had completed through 11 years of school.

Forty-one spoke mostly Spanish at home; two, Mixtec; and one, English. All but two were born in Mexico; these two came from Central America. The workers had entered the United States between 1942 and 1991. Fourteen had first entered in 1986 or later.

Thirty-seven of the workers claimed Mexico as their permanent home. Of the seven who called the United States home, two lived permanently in California and five lived in Oregon (four in Washington County; one in Multnomah County).

Those who had children age 14 or under (21 workers) had an average of 3.3 children per family (a range of one to seven). Less than 45 percent of these children were with the respondent in Oregon; that is, the average number of children living with a respondent in Oregon was 1.5.

Thirty of the 44 had relatives with them in the United States. Table 4.15 summarizes their responses to questions about these relatives. The information is tabulated by the person first mentioned.

Sixty-seven percent of the relatives cited were in Oregon; the rest lived in other states. Almost three-fourths of their relatives were in U.S. farmwork; the other one-fourth was either in nonfarm work, not working, or in school. Over two-thirds of the relatives cited did not have legal status in the United States (Table 4.15).

Table 4.15 – Information about Workers' Family Members in the United States

	1st ^a	2d	3d	Total
Relative				
Spouse	8	2	—	10
Child ≥15	2	9	2	13
Sibling	12	0	8	20
Parent	8	4	—	12
Total	30	15	10	55
Relative Location				
In Oregon	22	10	5	37
In other state	8	5	5	18
Relative Employment				
Farmwork	21	12	7	40
Nonfarm work	3	1	1	5
Not working	6	0	0	6
In school	0	2	1	3
Total	30	15	9	54
Relative Legal Status				
Not legal	17	14	6	37

^aFirst relative mentioned by respondent.

Only three of their relatives (all siblings) had left U.S. agriculture for at least one season during the last three years to take other jobs. Having seen a want ad, desiring better pay, and/or not liking the agricultural work, one went into transportation, one took a construction job, and one moved on to restaurant work.

Twenty-four of the 44 spent an average of almost four weeks in Mexico during 1990. The range was from two to 11 weeks.

Information about Their Jobs

One of the workers began U.S. farmwork in 1946; 19 of the group interviewed had entered farmwork in 1986 or after. Eighteen of the 44 worked under one crew leader during their most recent work period; 14, with several; two, with the grower; and 10, with a combination of crew leader/grower. However, 40 of the 44 were employed directly by the grower, three were employed by a farm labor contractor, and one was employed by a packing house.

Almost two-thirds of the workers had been referred to their jobs by a friend or relative; 10 had applied for the job on their own; three had a standing agreement with their employer; one had been recalled; and one had been re-

cruited by the employer. None had paid a fee to anyone for locating the job.

Most (33 of the 44) were paid weekly. The others were distributed among other pay periods—daily (3), every two weeks (2), monthly (2), other (3), and one didn't know.

Seventeen had worked in strawberries during the last week of their present or most recent farm job; 11, in blueberries; three, in caneberries; eight, in hops; and the rest, in vegetables and cucumbers. What task they were doing during that particular week depended on the timing of the interview; that is, if it was not harvest time and they were working, they were doing other jobs, such as hoeing, tying-training, or digging. Twenty-nine were interviewed when their main job was harvesting. Four were row bosses, and seven were working in the cannery.

All were paid individually except one, who was paid as a crew member. Most workers, (36) were paid by the piece rate; the rest earned an hourly wage. The eight paid hourly earned between \$4.25 and \$6.50 per hour. Piece rate wages were reported in three ways: 24 reported in cents per pound picked (average 14¢/lb.; range 12¢-17¢/lb.); two reported in dollars per 9-pound box (average 14.7¢/lb.); and 10 reported in dollars per crate. Workers tend to report that they pick crates weighing 20 pounds, while growers try to get them to lighten up to 14-pound crates, so as not to crush the berries. However, growers will accept 18-pound crates. Assuming an 18-pound crate, the reported average of \$2.90 per crate would amount to 16¢ per pound with a range of 11¢ to 16.7¢ per pound.

A good, fast picker in a high-producing field (second picking) can average 1,000 pounds of fruit a day which could convert to about \$140 per day. More typically workers will pick about 50 to 60 pounds an hour which converts to about \$7.70 an hour (over \$1 more than the highest hourly wages). Of course, there is considerable variability in harvest rates depending on the yield of the plants being harvested and the skill of the workers.

Workers reported working an average of 7.3 hours per day, with a range from two to as many as 14 hours.

Two of the 44 workers received a bonus from their employers for staying the season. Six said they were covered by medical insurance if injured while on the job; three were covered if sick or injured while not at work. Most were not covered; a few didn't know. No one received a paid vacation.

The 44 workers interviewed had worked an average of 2.8 years for their present employer (a range of one to 15 years). Three of the workers interviewed were full-time employees; 41 were seasonal.

Four of the workers reported that their employer kept in touch with them; three kept in contact with the employer by phone and through family and friends.

No worker was provided an advance transportation payment when the job was finished. Twelve paid for rides to work; their charges ranged between \$1 and \$15, with an average of \$7 per ride. Four workers charged others for rides, earning between \$1 and \$10 per ride.

Eight lived in houses, 13 lived in flats or apartments, two lived in motels or hotel rooms, 11 had rooms or beds in houses or dorms, one lived in a mobile home, one in a vehicle. Fifteen were housed on the farm where they were employed, and one got off-farm housing from the employer. Of these, six were housed rent free, while 10 rented from the employer. Two others lived in a labor camp, renting from the government. Twenty-four rented off-farm housing from someone other than the employer.

Thirty-three said that their employer paid for the equipment they used at work, ten didn't know, and one used equipment provided by the farm labor contractor. Nearly all said that drinking water, wash water, and toilets were available at the work site (four said that drinking water was not available; five, that there was no wash water at the site; and two, no toilets).

Eighteen of the 44 thought that wages and working conditions had not changed during the last three to five years. Ten thought things had improved, mentioning that the grower was "less powerful" and that wages were better. Four said that conditions were worse—that there was less work available, there were too many workers, and that the cost of living had gone up. Three thought that things were better and some not as good.

Only four complained about farm jobs that they would quit or would like to quit. Two said they could not make an adequate living from the work that they were doing. One said that he wasn't good enough at picking, and one said the work was too difficult.

Three talked about job hazards. Two said that chemicals were a problem; one that fruit ladders were dangerous.

Thirty-six of the 44 planned to do farmwork in the United States next year, four did not, and four said they didn't know what they would do. Among those who planned to return to U.S. farmwork, 32 mentioned the crop(s): strawberries (19), seasonal crops in general (6), blueberries (2), nursery (9), Christmas trees (3), grapes (6), hops (1), caneberries (6), apples (1), cherries (1), and orchard work (1).

Only two of the 44 workers had belonged to a union during the last three years. They named the United Farm Workers.

Workers were asked to fill out an activities grid about their farmwork and other activities during the last 12 months. The intent was to get a picture of their year, including farm and nonfarm work, looking for work, periods of unemployment, and vacation. Additionally, if the

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Three talked about job hazards. Two said that chemicals were a problem; one that fruit ladders were dangerous.

Thirty-six of the 44 planned to do farmwork in the United States next year, four did not, and four said they didn't know what they would do. Among those who planned to return to U.S. farmwork, 32 mentioned the crop(s): strawberries (19), seasonal crops in general (6), blueberries (2), nursery (9), Christmas trees (3), grapes (6), hops (1), caneberries (6), apples (1), cherries (1), and orchard work (1).

Only two of the 44 workers had belonged to a union during the last three years. They named the United Farm Workers.

Workers were asked to fill out an activities grid about their farmwork and other activities during the last 12 months. The intent was to get a picture of their year, including farm and nonfarm work, looking for work, periods of unemployment, and vacation. Additionally, if the

Table 4.17 – Benefits Provided by Interviewed Growers

Benefit	Number of Growers	Received by:			1990 Cost (Average)	Number of Years Provided (Average)
		year-round	seasonal	both		
Housing	11	1	1	9	\$18,391	23
Bonuses	9	5	0	4	\$6,563	14
Profit sharing	1	1	0	0	\$8,600	12
Paid education	5	3	0	2	na	na
Childcare	0	0	0	0	0	0
Health insurance	4	4	0	0	\$7,275	19
Paid vacation/sick leave	5	5	0	0	na	na
Transportation	4	2	0	2	na	na
Work equipment	11	0	1	10	\$1,833	19
Other ^a	4	0	0	4	na	na

^a Picking party, medical expenses, food, clothing, etc.

methods for hiring year-round workers as they did for seasonals.

Ten of the 11 said that more workers applied than they were able to hire. Seven claimed to do some screening before hiring. As far as training or experience requirements, eight wanted workers to have previous experience. All growers said that they provided some training; eight did the training entirely themselves, two had someone else do it, and one shared training with others. Workers are mainly trained on the job, but the use of videos was mentioned. It was noted that tractor operation and pruning/thinning require special instruction.

Seven did not think that worker turnover had changed much over the last five years; three felt that turnover had decreased, while one didn't know. On average, about 5 percent of a growers' work force had to be replaced during a typical week in 1990; one grower had replaced as much as 30 percent. Because nearly all of the workers were alien migrants, they also tended to be the ones who had to be replaced. Good housing, good pay, and end-of-season travel bonuses were mentioned by growers as ways to reduce worker turnover.

Nine used their workers in more than one task but kept them in the same crew during a task transfer. Eight of the 11 switched workers with other local orchards. Table 4.18 reports work assignments, length of tasks, average number of workers per crew, and the total number of workers (reported in the survey) who performed a particular task.

Table 4.18 – Growers' Breakdown by Worker Task

Task	Number of Respondents	Number of Months (ave.)	Workers/ Crew	Total Workers
Pruning	11	3.8	13.5	148
Training	8	2.9	6.5	52
Thinning	11	1.8	17.7	195
Irrigating	8	4.3	3.0	24
Spray/fertilize ..	4	5.0	3.0	12
Picking	11	2.6	31.0	338
Other	4	3.5	12.8	51

Seven growers worked with other employers in the area when recruiting and/or trying to improve retention of orchard workers. Three of these growers worked with others "a little"; two, "quite a bit"; and two, "a lot." In working together, employers cooperated in providing and/or upgrading housing and by exchanging workers to lengthen their season or even to provide them year-round employment.

Nine of the 11 said they had occasion in 1990 to discipline a worker. Methods mentioned were verbal warnings and calling a halt to picking for from one hour to a full day.

Only two growers knew of any labor organization or union activity in orchards during the past five years. Of the little activity there may have been, it was apparently not successful. Three growers had been checked by either the U.S. Department of Labor (DOL) or the Immigration and

Naturalization Service (INS). One had a spot check by INS, another experienced routine spot checks, while a third had a DOL official come to discuss changes in child labor laws.

A total of 353 workers had been helped by the growers interviewed to become legalized under the SAW program (an average of 32 workers per grower). One grower hadn't provided this help, but one had helped 90 workers. All believed that legalized SAW workers in the area had been leaving agriculture for nonfarm jobs. They said that, on average, about 7 percent of SAW workers find jobs in service industries (restaurants, hotels, landscaping, construction), logging and forest products, manufacturing, nurseries (considered as "nonfarm" by some), and packing houses. The valley's fruit packing houses provide an intermediate step from the farm to the nonagricultural workplace.

When asked about the impact of IRCA on worker recruitment, seven said they had been affected in some way. Among the positive effects mentioned: They can use the state employment office to recruit now; more workers are available year-round; and they don't get raided anymore. On the negative side, others complained about the increased paperwork and the fact that it takes more time now to hire new workers.

Three of the 11 growers had experienced a shortage of orchard labor sometime during the past five years. Most growers saw no difference in the ease or difficulty of recruiting new orchard workers over the past five years. One said recruitment was easier, mentioning that the state employment office was now available for this purpose. Another said it was more difficult to get workers directly from Mexico.

Six worried that labor shortages might become more of a problem in the next five to ten years, while the other five didn't think so. Those who expressed concern about a shortage said that building more housing might help, as would training workers' children in farmwork. Another suggestion was to develop smaller (easier-to-pick) trees. (Recall that some of the older Hood River orchards are being replaced [Chapter 2]). Three growers thought that mechanical alternatives to hand work could be developed should labor shortages occur in the future; one said this was only somewhat likely. Only three thought it was somewhat likely that they would reduce orchard acreage or switch to other crops in the event of future labor shortages.

All 11 growers said that they planned to remain in the orchard business. When asked if they would like to tell the Commission on Agricultural Workers about the importance of temporary or foreign workers in their orchard operations, growers were very definitive:

– *They are absolutely essential.*

- *Without them, our industry is gone.*
- *There are no mechanical options.*

But they worried that the current workers are aging, so replacement workers will be needed.

Worker Survey Results

General Information about the Workers Interviewed

Ninety-seven percent of the 33 pear workers interviewed were born in Mexico; one indicated a birthplace "other," but not in the United States. Thirty-two workers were Hispanic, and one was white. There was one female worker. All had entered the United States before 1986 when IRCA was enacted. In fact, over 18 percent had entered the United States before the end of the Bracero Program in 1964.

Thirty-two of the 33 spoke Spanish at home; one spoke English. Two-thirds of the group still considered Mexico their home, while one-third called the United States home. Ten of these made their home in Hood River.

While five of the group interviewed had not left the United States during 1990, 28 said they did spend considerable time outside the United States. Twenty-seven went to Mexico; one, to Canada. They spent anywhere from one to eight months away, with the average stay from three to four months.

The workers' average age was 34; the youngest was 18 and the oldest 63. They had completed an average of 4.2 years of schooling, but four of the 33 had no schooling at all (or didn't give an answer). Among those who had some schooling, the average was 4.8 years (a range of one to 11 years).

Twenty-six of the group were married, six were single, and one was divorced. Some of the families had children 14 years old or younger; the number of young children per family ranged from none to five. Just over half of the group's children lived with their parents in Oregon.

Workers were asked about their relatives with them in the United States, including their children 15 years of age or older. Information about these relatives was recorded in the order that the respondents talked about them. Table 4.19 summarizes the information given.

By adding across the table, we can make a few generalizations about this group of relatives. Eighty percent of the relatives mentioned were in Oregon with the respondent. Seventy-one percent of these relatives were in farmwork; 8.8 percent were in nonfarm work; 12.2 percent were not working; and 6.6 percent were in school. Twenty of the 90 relatives (22 percent) were in the United States illegally.

Table 4.19 – Information about Workers' Family Members in the United States

	1st ^a	2d	3d	4th	5th	Total
Relative						
Spouse.....	9	3	2	—	—	14
Child ≥15	3	6	7	5	1	22
Sibling.....	7	11	9	9	8	44
Parent	7	3	—	—	—	10
Total.....	26	23	18	14	9	90
Relative's Location						
In Oregon	21	23	12	11	5	72
In other state	5	—	6	3	4	18
Relative's Employment.....						
Farmwork	18	18	13	8	7	64
Nonfarm work.....	2	1	1	2	2	8
Not working	6	3	1	1	—	11
In school	—	1	3	2	—	6
Total.....	26	23	18	13	9	89
Relative's Legal Status						
Not legal.....	8	4	2	5	1	20

^aFirst relative mentioned by respondent.

Information about Their Jobs

Eighty-eight percent of the workers interviewed were in U.S. farmwork before 1986 when IRCA was passed. One had been doing farmwork here since 1958. The most recent entry to U.S. farmwork was in 1988. The average date for farmwork entry for the group was 1978. The 33 workers had worked an average of seven months in 1990 doing U.S. farmwork (a range of zero to 10 months).

Twenty-two of the 33 worked under a grower in 1990, seven were with one crew leader, two had several different crew leaders, one was directed by a crew leader/grower combination, and one didn't know. All the workers were employed directly by a grower.

Twenty-one of the 33 had been referred to their job by a friend or relative, nine had applied for the job on their own, two had been referred by the employment service, and one was recruited by the employer. No worker had paid a fee to anyone for lining up the job.

Their pay periods varied widely among the group. Two were paid daily, three weekly, three every two weeks, two monthly, 12 by some other schedule, and five didn't know how they were paid.

When asked about their most important crop and task performed during the last week of their present or most recent farm job, most (85 percent) named pears. However, two said apples, one said cherries, one answered vegetable row crops, and one said general orchard work. Among the tasks they considered most important that week, 85 percent were picking fruit. Two were pruning/shearing/thinning, one was staking, and one worked as an equipment operator.

At the time of their interviews (from August through October 1991), all 33 were in the Hood River area; one was in adjacent Wasco County. Thirty-two were doing farmwork when interviewed; one was looking for work. They were asked further about the crops they work with and the tasks they perform on the farm, in order of importance. Most (28) were working in pears. Two were in seasonal crops, one was in orchard work, one was in caneberries, and one worked in row vegetable crops. Their farm tasks, by order of importance during their current work period (i.e., their first activity), are listed in Table 4.20.

Table 4.20 – First Activity, Farmwork: Number of Workers Ranking Various Tasks

Task	Task 1	Task 2	Task 3
General farmwork	4	30	33
Picking/harvesting	21	2	—
Pruning/shearing/ thinning	4	—	—
Digging/balling/packing/ loading/baling	1	—	—
Irrigation	2	1	—
Cannery work	1	—	—

Thirty of those interviewed also told about their location and activity just prior to their current one. Twenty-four were in Hood River, and three were in Wasco County. One was in Mexico, two in California, and three were somewhere else. Seventeen were doing farmwork, nine were looking for work, three were waiting for the season to start, one was doing nonfarm work, one was on vacation, and two were doing something else. Among the 17 doing farmwork, 10 were picking/harvesting as their first farm task, two were tying/training, and one each was doing general farmwork, planting/transplanting, pruning/thinning, irrigating, and unskilled labor. Of the four who mentioned a second task, two were picking and two were pruning. Eleven were working in pears, four in cherries, one in nursery, and one in general farmwork.

Thirty described their activity preceding the one just described. Twenty-two were in Hood River at that time; four were in Wasco County; two were in Mexico; and two were in California. Twenty-three listed farmwork as their activity, one was doing nonfarm work, two were on vacation, and two were waiting for the season to start. Thirteen were working in pears, eight in cherries, one in row vegetable crops, and one in "orchards."

Twenty-five workers reported on what they were doing three activities previous to the current period. Seventeen were in Hood River, one was in Wasco County, one was in Umatilla County, and one was in Clackamas County. Three were in Mexico, and one each was in Washington state and California. Fifteen of the 25 were doing farmwork; ten were in pears, two were in row vegetables, and one each was in strawberries, cherries, and ranch work.

Twenty-five also told about their fourth activity prior to their current one. Five were in California, four in Mexico, one in Michigan, and one in Idaho. Fourteen workers were in Hood River or nearby Wasco County. Seventeen were doing farmwork, five were on vacation, two were looking for work, one was not working, one was waiting for the season to start, and one was doing nonfarm work.

Again, most of those doing farmwork were working in pears at that time.

In their current farmwork job, the group worked an average of 8.8 hours per day with a range from six to 10 hours.

Thirty-one were paid individually, one was paid in a crew of two persons, and one didn't know. Forty-six percent (15 workers) were paid an hourly wage; 54 percent (18 workers) were paid on a piece-rate basis.

Among 14 of those reporting hourly wages, the lowest-paid worker earned \$5.00 per hour and the highest-paid worker earned \$7.25 per hour, with a mean hourly wage for the group of \$5.63. Piece-rate wages ranged from \$7.00 to \$13.00 per bin, with a mean of \$10.33 per bin. The large piece-rate range is due in part to the fact that when special care is needed in filling the bins, workers are asked to slow down but are paid more per bin. To convert piece rates to hourly wages, we asked about the number of bins picked per day. Eliminating one outlier (who claimed to pick 40 bins per day), the greatest number of bins picked per day was 19; the least, five. The hourly equivalent was \$9.30 per hour on average; the hourly minimum was \$4.75 and the hourly maximum was \$22.56.

We made another wage calculation based on the pay period and the most recent paycheck received, for the 26 answering these questions. The average hourly pay, after all deductions, was \$5.27. Eliminating two outliers (\$1.60 per hour and \$21.25 per hour) leaves a mean hourly wage of \$5.27 with a range of from \$2.31 to \$8.48.

Table 4.21 – Summary of Information on Workers' Pay

	Hourly	Piece Rate (hourly equivalent)	Most Recent Pay Check (hourly rate after deductions)
Range	\$5.00-\$7.25	\$4.75-\$22.56	\$2.31-\$8.48
Mean	\$5.63	\$9.30	\$5.27

In addition, eight of the workers were paid a bonus for "faithful service," and six others were paid a bonus to stay the season. Bonuses by the bin averaged \$.93 per bin with a range from \$.50 to \$1.50. One-time bonus payments to seven workers ranged from \$100 to \$500 with a mean of \$268.

The group was quite well informed about their benefits, including workers' compensation. Eighty-five percent said they were covered by medical insurance if injured on the job; two said they weren't covered; and three didn't know. However, only one of the group was covered by

medical insurance if sick or injured when not on the job. Only two were provided with paid vacations.

The group had worked an average of 6.5 years for their present employer (a range from one year to 20 years). Twenty-eight of the 33 were seasonal workers; five were full-time workers.

Fifteen of the respondents kept in contact with their employers when not working for them. Only one said that the employer kept in touch by mail. The others either didn't stay in contact or didn't know. Four of the workers said they would be given an advance transportation payment by the grower or contractor to return the next season.

Free housing was provided to most of the workers: Fourteen received housing for themselves; 13, for themselves and their families. Among the others, three rented housing from someone other than the employer (one rented from the government), two considered themselves homeless, and one did not indicate his housing arrangement.

Twelve of the workers lived in houses, three in flats or apartments, seven in mobile homes or trailers, nine in labor camps, and two were homeless. Twenty-six of the 33 lived on the farm where they were employed. No one paid fees for rides to work or charged others for providing rides.

The workers all said that their employer provided all the work equipment, drinking water, wash water, and toilets. (Only one said there was no toilet at the work site.)

Many (46 percent) said that wages and the work situation had remained about the same over the last three to five years. The 16 who thought things had improved cited better wages, including the increase in the minimum wage; less discrimination; better working conditions; and steadier, fuller employment. Two who thought things had gotten worse mentioned that there was less work available and too many workers.

When asked if there were any farm jobs they would quit or would like to have quit, 30 percent responded in the affirmative. They mentioned not liking the work or that they couldn't make a living at it, that pay was low or they were getting less than was promised, that the employer or foreman was cheating or holding back pay, or that the employers were taking advantage of the workers. Three workers cited dangerous work conditions; two of these mentioned exposure to chemicals.

All but three planned to do farmwork in the United States next year. Seventy-three percent (24 workers) said they would work in pears; three said they would do general orchard work; and three planned to work in apples, cherries, and row crops.

Five of the workers described efforts to join with other workers to try to improve their situation. Three who had jointly asked for more money were told to go somewhere

else if they didn't like their employment situation. One had joined with other workers in an attempt to increase their hours. Of the five workers who had been associated with a union, four had been with the teamsters and one had been with a fruit packers union.

When asked to comment about their jobs, some made very positive remarks while others had complaints:

- *My present employer treats everyone who works here very well. She puts on a big fiesta when harvest season ends with a barbecue and a dance.*
- *I feel good about being able to make a decent living and support my wife, daughter, and two sons.*
- *For the most part, my farm experience in Oregon has been good. I am happy to have found seasonal work. My employer likes my work, and I do my best to serve him well.*
- *Unlike some other workers, I never have to worry about where I'm going to work because I know I will always have work with my present employer as long as I continue to serve him well.*
- *My only real complaint is about my living conditions. Also, the grower consistently holds back checks, and when they finally come, they are always short.*
- *I'm concerned about not being able to return next year, if I am not able to provide proper documents.*
- *The work doesn't last as long as it used to. Work that in the past took two weeks now takes one only. Work that used to last a week now takes only three days. This is because there are too many workers.*
- *I wish there were a way for it to be legally possible for my whole family to be together. I hope that this will someday happen.*

Farm Labor Contractors

The 26 farm labor contractors we interviewed clustered into two groups. One group of 17 served strawberry growers as well as employers who raised fruits and vegetables following the strawberry harvest. Eleven reported strawberry-caneberry-cucumber combinations (the caneberry harvest followed strawberries, and the cucumber harvest followed caneberries in late August and September). A few contractors reported combinations involving work with the blueberry harvest, the strawberry harvest, and other vegetables. The second group of nine contractors harvested Christmas trees. Seven labor contractors in this group worked exclusively for Christmas tree growers, and two worked for both Christmas tree and strawberry employers.

The Total Sample

Twenty-two of the 26 contractors in our sample had worked primarily in agriculture before becoming farm labor contractors. Several of these were farm or Christmas tree operators who had started a contracting business to ensure a supply of labor for their operations. One had been in construction, and one had been a skilled worker in manufacturing. Some entered the contracting business after seeing an unmet need to supply workers in agriculture and forestry. All 26 were licensed by the state. They averaged four and a half years as a labor contractor, ranging from one to 13 years in business. (We attempted to interview unlicensed contractors but were refused.)

Contractors were evenly divided on their primary language: 13 were Spanish speaking; 13, English speaking. Nine of the 13 Spanish-speaking contractors were bilingual.

Fifteen of the 26 contractors were born in the United States; 11 were born in Mexico. These 11 first entered the United States between 1958 and 1979. They averaged 10 years of formal schooling. Nineteen contractors were educated in this country.

Their ages ranged from 19 to 63, averaging 39 years. Twenty were married, 5 were single, and one was divorced. Five had relatives who were farm labor contractors.

Contractors employed an average of three foremen. An average of two family members also worked in the business, primarily as accountants or foremen. The contractors averaged 340 laborers in their work force (ranging from three to 1,500 workers), and their total annual payroll averaged \$370,540 (a range of \$6,000 to \$2,235,000). They worked for an average of five growers in 1990 (ranging from one to 32 growers).

Contractors employ a variety of recruitment methods. Chief among them is word-of-mouth recruitment. Some workers return year after year and bring family members with them to work. Others are known or related to foremen. Some contractors are well known in the community and either know workers or are sought out by workers looking for employment. Many workers are "drive-outs" who arrive in cars filled with workers seeking employment. No systematic outreach seems to be used except "spreading the word" that work is available, which seems sufficient to attract workers from as far away as Mexico and Central and South America. Eight contractors, however, hired subcontractors to supply labor for them.

Twenty-three contractors said they handled the I-9s, while the other three said that the grower assumed I-9 verification. Only eight of the 26 used written contracts. Six made oral agreements, and nine said they operated

under a mixture of oral and written agreements. Three contractors refused to describe their contract status.

Fifty-four percent of the work force had worked for the contractor the previous year (range 2 percent to 90 percent). Only three contractors required previous experience. Eighteen contractors said they provided transportation to the field for their workers. Sixteen provided housing, charging an average of \$6.18 a week. Twelve said they charged no rent, and one charged \$47 a week; the others charged intermediate weekly rents. Seventeen of the 26 contractors provided work equipment.

Twenty-one of the 26 contractor supervised their workers in the field, along with their foremen if they had one. Seven contractors said the grower also supervised work activity.

Seventeen contractors had helped workers become legalized under the SAW program; they said they expected that half their SAW workers will leave for nonfarm jobs. Workers who left agriculture went into construction, restaurant, motel/hotel, canneries, manufacturing or other blue collar or service jobs. Six contractors said their SAW workers will remain in agriculture because they have low English skills, close ties with other farmworkers, or prefer working out of doors. Fifteen contractors, however, believed workers will leave agriculture for better-paying jobs with benefits, jobs that do not require manual work, or jobs that offer more stable, year-round employment.

Thirteen contractors said that IRCA had affected their recruitment of farmworkers. Among the reasons given were increased paperwork, difficulty in finding workers with documents, and the difficulty in distinguishing between genuine and false documents. Nine contractors said they had experienced a labor shortage in 1989, and they doubted that RAWs or H-2As would supply additional workers if widespread labor shortages occurred.

Twenty contractors said that unlicensed contractors are working in the area, and 18 reported that their business suffers from the competition. They claimed that unlicensed contractors pay lower wages and don't pay Social Security or other overhead costs, including payroll taxes and I-9 reporting. Unlicensed contractors, they said, charge lower rates and take any available work. Further, unlicensed contractors recruit in labor camps at night, convincing workers to go somewhere else to work. Such contractors receive fees from each farmer to whom they deliver workers, so they move workers from place to place frequently, according to the contractors who were interviewed. More moves, more fees seem to be the case. The activity of unlicensed contractors also casts suspicion about the honesty of licensed contractors, the group reported. Licensed contractors contend that the public generalizes unfavorable

publicity associated with the discovery and punishment of unlicensed contractors, to all labor contractors.

Only six contractors said they expected to still be in business in 1995. These six hoped to be able to stay because of their good reputation and experience and because they liked the work and were doing well financially. They also believed that a large labor pool will continue to be available. Those who were pessimistic about the future feared the departure of SAWs and the inability of IRCA to replace them with legal workers. Other disincentives to remain in the business included possible fines, paperwork, and headaches associated with complying with the new law.

A Comparison of Strawberry and Christmas Tree Contractors

Seasonal work schedules differ for strawberry and Christmas tree contractors' crews. Strawberry harvesting occurs in June, with picking beginning in late May and ending in early July, depending on the weather and size of the crop. Nonharvest work involves planting and hoeing (April-May) and additional hoeing (July-October).

Christmas tree harvest occurs in November and early December. Nonharvest work involves tree planting and spraying (February-April) and shearing (July-October).

A comparisons of strawberry and Christmas tree contractors is presented for a number of activities in Table 4.22.

Table 4.22 highlights a number of interesting differences between the two crops and between harvest and nonharvest activities. Strawberry contractors provide harvest workers for twice as many growers as they do for nonharvest work. In contrast, Christmas tree contractors provide nonharvest workers for five times as many growers as they do for harvest work. Christmas tree contractors provide workers for eight times as many harvest acres and five times as many nonharvest acres as do strawberry contractors. Strawberry and Christmas tree contractors both work about the same number of hours per day during the harvest and nonharvest periods. There are two and one-half times more working days available in Christmas trees than in strawberries. Of the 86 days that contractors provided workers in strawberries, about 35 were for harvest. Christmas tree workers are paid 55 percent more than strawberry workers for nonharvest jobs. Wages by harvest units are not comparable between the two commodities. Average daily earnings for harvest work in Christmas tree averages of \$7.62 more per day than in strawberries. Christmas tree workers are paid about the same hourly wage for nonharvest and harvest work. Whereas strawberry workers are paid about a third more for harvest than for nonharvest work.

Table 4.22 – Comparisons Between Operations Served by Oregon Strawberry and Christmas Tree Contractors, 1989

	Strawberry Contractors (N = 17)	Christmas Tree Contractors (N=9)
Avg. number of growers:		
harvest	3.2	1.7
nonharvest	1.4	8.2
Avg. number of acres:		
harvest	106.2	840.7
nonharvest	122.9	782.6
Avg. hours worked/day:		
harvest	7.4	7.1
nonharvest	8.0	7.3
Avg. days worked/year:	86.3	221.8
Avg. wage paid workers:		
harvest	\$0.14/pound	\$6.30/hour
nonharvest	\$4.12/hour	\$6.41/hour
Avg. daily earnings/worker:		
harvest	\$51.95	\$59.57
nonharvest	\$33.66	\$62.20

Key Informants

Many employers we interviewed noted with interest that migrant workers seemed to have a "hidden" communication system they used to learn of farm work opportunities in the state. Workers frequently appeared when they were needed regardless of their previous work history or an employer's recruitment efforts. This informal system carries not only mystery but anxiety. The mystery stems from employers' not fully understanding how it works; the anxiety comes from employers' uncertainty that it may not always work and that laborers would not be available the next time they are needed.

Informal communication networks that match migrant workers with jobs and other services were investigated in this study. By questioning workers and individuals familiar with the farmworker community, we identified initial community informants in three locations of the state. These informants were asked to supply the names of others whom they knew who also helped farmworkers. We located and interviewed 25 key informants for this study.

Our results show that key informants are major players in providing assistance, information, and referrals to migrant and seasonal farmworkers. They are individuals who,

because of their strategic social position and specialized knowledge and experience, help migrant farmworkers solve problems. Their assistance includes help in finding jobs, housing, food and clothing, medical assistance, and transportation and responding to a host of other questions that typically affect the daily life of migrants. Key informants are successful because of their bilingual skills, their problem-solving abilities, and their sensitivity to the special needs of migrant farmworkers.

The typical key informant came to Oregon in the 1950s or 1960s from Texas or California as a child of migrant laborers. He or she enrolled in school and worked in the fields when not in school. The key informant's bilingual skills were employed early to find housing and work, and to solve numerous other problems confronting the family. He or she continued in this role informally after reaching adulthood, extending help voluntarily, in many cases, to alien farmworkers. The key informants we interviewed stayed in agriculture an average of 11 years; however, most left farmwork much sooner. The average is raised by a few who stayed in agriculture until they retired or were no longer physically able to do farmwork.

Most key informants are not connected to any governmental organization. They include registered farm labor contractors, store owners and clerks, restaurant owners and workers, professional translators, church volunteers, and lay community activists. They have lived in Oregon an average of 25 years and in their respective communities for 23 years. Eight out of ten were field workers during part of their early years in the state. Those who attended school also held blue-collar, nonfarm jobs after school, thereby setting a pattern of nonagricultural work at an early age. Those who went to college are now educators, social workers, translators, and business owners. Their average age is 45. Nine out of ten are Hispanic-Americans, the remainder European-Americans. Half are college graduates, 20 percent are high school graduates, and the rest have an elementary school education.

Nearly all communication between informants and farmworkers is by word of mouth. As long-time residents, informants are well known in the community by most Hispanics, by community agencies, and by other farmworkers who spread the word about their ability to help migrants. They also know each other and will refer a worker to another key informant if a more specialized talent is required. About one-third advertise on a local Spanish radio station or in local newspapers. One out of three said that government agencies knew of them and occasionally referred workers to them. Another third reported that former clients return for help. One in five stated that workers seek them out because they are "visible"; for example,

Hispanic business owners are sought because workers assume they are bilingual.

Key informants reported they help an average of 110 people a month and personally know an average of 430 farmworkers. Forty-two percent said they volunteer because they are bilingual and farmworkers asked them to help. Another third help because they believe that farmworkers have no other place to go. Others are professional translators who charge a fee for their services but insist that they also help farmworkers with other problems at no charge. Informants reported that farmworkers avoid government agencies because staff members do not speak Spanish. Informants said many workers also don't trust government, fearing deportation from some irregularity even though they have legal SAW documents.

More than half (56 percent) of the key informants interviewed do not refer clients to a state or federal agency. They cited three reasons: First, migrant farmworkers do not qualify for most services that state and federal agencies provide. Second, state and federal agencies lack bilingual staff to serve farmworkers. Third, agencies are insensitive to the needs of alien farmworkers. Instead, these informants refer clients to various nonprofit community resource groups, to local community action programs, or to local churches. Those informants who do refer farmworkers to governmental agencies (44 percent) work with the local Employment Division, Social Security, the INS, and adult and family service agencies.

Some key informants viewed their role as fulfilling a moral obligation to balance, in some respect, the unfairness and inequity of government policies toward Hispanic immigrants. For instance, they compare the situation of recent Asian immigrants, who are provided extensive public assistance while they attend vocational and educational programs, to the largely Hispanic IRCA immigrants, who are denied educational opportunities as well as public assistance for emergency food and shelter. The key informants we interviewed recommended better enforcement of mandated federal programs designed to help migrant and seasonal farmworkers, including the Employment Division Migrant and Seasonal Farmworker Program, JTPA training programs, and welfare assistance.

IRCA has created problems as well as produced benefits for alien farmworkers, according to our key informants. Seventy percent believe that IRCA has failed to accomplish its intended goals and has created more problems than it has solved. For instance, undocumented workers are coming into the state in larger numbers than in pre-IRCA times, creating a subculture of alien workers with fraudulent documents who will work at reduced wages. Moreover, key informants claimed that employers are continuing to hire undocumented workers to pick hand-harvested crops.

Some growers have cut their risk of detection by establishing three-hour-per-day work schedules. This practice has created competition and resentment among documented workers, who are making less money because they are working fewer than the agreed hours. Our informants believe that IRCA has further polarized and stigmatized Hispanics. Mexican-Americans, whether naturalized or native citizens, are seen by society as foreigners, perpetuating discrimination and stereotyping by non-Hispanics.

The SAW program had created high hopes of legal status among many dependents who applied and accompanied a SAW relative to this country. Thirty-five percent of our key informants cited the fact that IRCA did not legalize dependents of SAW immigrants as a major failing of the law. The waiting period has also created a hardship for workers who had families in the United States or who brought them to this country after receiving SAW approval. Disqualified from receiving public assistance, families are living in overcrowded housing or are homeless. Workers do not earn enough by picking fruit to pay food, clothing and housing bills for their families.

One-third of our informants recounted problems in dealing with the INS. They said that the agency has rejected much of the proof workers have provided, has inadequate staffing to process paperwork in a timely manner and has changed the type of documentation accepted, thereby making it more difficult for workers to obtain legal status. One in four of our informants believes that IRCA has encouraged fraud. IRCA has created an industry in false documents, these informants said. Many qualified SAW workers who had been living underground in the United States lack the documentation they need to qualify as legal workers; they continue to live and work here with false documents and therefore face immediate deportation when caught.

Among the benefits, 60 percent agreed that most farmworkers who received SAW documents were no longer fearful of deportation, although some workers avoided direct contact with government agencies for that reason. These informants believed that workers now have an opportunity to participate in education and training to improve their work and economic well-being. According to the key informants, SAW workers also are protected by U.S. laws and now travel to Mexico and return without paying a "coyote." Another 20 percent of the informants said that employers also benefitted from IRCA, since they now have an ample, predictable and identifiable work force to harvest their crops. Employers no longer worry about INS raids during harvest or deportation of workers as long as documented workers are hired. Ten percent of the informants said the country as a whole benefitted by settling

the migrant immigration issue; another 10 percent said IRCA provided no benefits at all.

To sum up, an extensive communication network exists among farmworkers that links them to key informants and, through them, to the world outside their immediate family. This network operates primarily by word of mouth between workers and informants and extends across state lines and into foreign countries. This network enables workers to get help in finding work and in meeting other basic needs. Moreover, the network serves the needs of both workers and employers and offers help that goes beyond the services of governmental agencies. Workers looking for jobs turn to their informants to learn who is hiring, what they are paying, and what working conditions are like.

The role of key informants is not well understood by those outside the system. The size and identifiable network connections remain clandestine to all but users of the network. Nevertheless, key informants have the potential to become a reliable source of information about migration patterns, allowing employers and government to better predict and balance agricultural labor markets.

Ex-Farmworkers

The 18 ex-farmworkers we interviewed were Hispanics who, on average, came to the United States eight years ago. They worked in agriculture an average of five years before leaving for work off the farm. They were paid an average of \$4.50 an hour on their last farm job. Pay for their first off-farm work averaged \$5.18 an hour. On their last farm job, their work averaged 32 hours a week; they held that job for an average of 16 months. On average, these ex-farmworkers had held their present job for 12 months, and their pay averaged \$6 an hour. All were working full time, and their current benefits included medical coverage for job-related illness, employment insurance, and paid vacations; they did not receive, housing or transportation. Most were satisfied with their present job and had no plans to return to agriculture. Sixty percent said their permanent home was in the United States. They were younger and had nearly twice as much schooling as the typical alien farmworker: Their average age was 26, and they had completed nearly nine school grades. Half were married. They said they spend an average of two weeks a year in Mexico, primarily on vacation. Most were fluent in English.

Much of their farm experience was in Oregon and California, on small fruit (strawberries and caneberries) as well as on tree fruit (sweet cherries, apples, pears, and oranges), vegetable, grape, or nursery operations. Their jobs included planting, pruning, cultivating, digging,

harvesting, spraying, and irrigating. Half the sample still had relatives living in the state who were employed in farmwork, and they reported that few of their relatives in agriculture planned to leave farmwork.

Our sample of ex-farmworkers left agriculture for two reasons: higher wages and better working conditions. Low pay and hard work in wet, cold weather prompted many to search for other employment. They sought help primarily from friends and relatives, who put them in touch with others who were aware of new hirings. "Others" frequently were the key informants described in the "Key Informants" Section of this chapter or members of volunteer groups that have formed to help migrant workers in the state. There is little evidence that use was made of employment offices or other governmental services that match jobs with people.

These ex-farmworkers had jobs in the construction, service, tourism, and restaurant industries. Nearly all were working at the same type of job, if not the same job, they had when they left agriculture.

Sixty percent believed that IRCA encourages workers to leave agriculture. The remaining 40 percent were not sure how the act affects worker motivation to leave or remain in agriculture. Most believed that the new law provides a stronger foundation to seek new and better jobs than pre-IRCA times. Nearly all we interviewed said that a worker's legal status and rights are more firmly secured than they were before IRCA was implemented. These ex-farmworkers said that IRCA makes it possible for workers to seek a wider range of employment choices without fear of deportation. Moreover, according to this group, the new law provides an incentive to learn English. They reported that many farmworkers believe that off-farm jobs are difficult to obtain without fluency in English, without references, or without work experience. The ex-farmworkers expressed the general belief that the law had secured foreign workers' status and widened their work choices in this country. This was true, they said, for workers who remained in agriculture as well as for those who sought employment elsewhere.

Chapter 5

Conclusions

Here, we glean from the abundance of data we have gathered on the four crops, some of the major points and answer the mandated questions specified by the commission. In particular, we address the impacts of IRCA on present and future seasonal agricultural employment in Oregon. Our conclusions are formulated around each of the commission's questions, followed by some final comments about the study's findings.

1. What has been the impact of the SAW provisions on the wages of domestic farmworkers?

Wages for seasonal agricultural workers have risen slightly since IRCA. Employers and workers consistently report current wages at or above \$5.00 per hour, an improvement over pre-IRCA wages. However, it is unlikely that this improvement is due to IRCA. A more likely cause is the increase in Oregon's minimum wage to \$4.75 per hour on January 1, 1991. Studies by the Oregon Employment Department suggest that the minimum wage sets a floor for hourly and piece work in agriculture. Oregon farmworkers in our study had been earning wages at or above the previous minimum wage when an increase in its level in 1991 drove up their wages further.

Our study found that employers paid (on average) hourly wages of \$4.85 in the nursery industry, \$5.59 in the strawberry industry, \$5.67 in the Christmas tree industry, and \$7.76 in the pear industry. Seasonal wages in nurseries are the lowest because that industry is much less dependent on seasonal labor than are the other three.

We have concluded elsewhere in this study that the supply of agricultural labor is adequate and has apparently increased. Basic economics suggests that an increased supply of a resource should lead to a decline in its price—but we've shown that in the case of agricultural labor, wages have increased even in the face of this increased supply. This implies that demand for labor has also increased and offset the forces that might otherwise drive down wage rates. Growth in the nursery industry and the positive overall economic performance of Oregon's agricultural sector have no doubt contributed to this increased

labor demand, which has occurred throughout the IRCA period.

2. What has been the impact of the SAW provisions on the working conditions of domestic farmworkers?

Workers generally said that working conditions in agriculture have remained the same or have improved since IRCA. While many of them associated these improvements with higher wages, other factors, such as lengthened employment periods, were also mentioned. A majority of workers expressed satisfaction with their jobs, working conditions in Oregon, and rapport with their employers. Of course, there were some in each crop who were much less positive. A few complained about low wages, safety problems including exposure to chemicals, and inferior housing.

An indication of their general satisfaction with working conditions is the high percentage of workers who return each year to the same employers. This is especially true in nursery and in pears. (Pear workers were employed an average of six and one-half seasons with the same growers.) Recruitment is largely accomplished in all four industries through referrals by employees, who themselves return year after year.

The observed phenomenon of workers returning year after year to the same operations is due, at least partly, to the fact that Oregon farm managers are usually also the owners. Thus, workers establish direct lines of communication with owners, resulting in some degree of mutual trust and cooperation. Problems associated with line personnel managers are largely eliminated. Owners are interested in their workers' welfare because it determines their work force in the coming years. This differs from other states with larger-scale agriculture, where the owner is seldom in contact with workers because middle managers handle most labor crews.

3. What has been the impact of the SAW provisions on the ability of agricultural workers to organize?

Labor union activities are most evident in two of the crops studied: Christmas trees and strawberries. Virtually all the Christmas tree workers interviewed had belonged to

a labor union sometime during the last three years. Strawberry workers were generally not union members; however, because many strawberry growers have other row crops, they were all aware of a one-day strike in a cucumber operation in the summer of 1991. Most union activities in the state are tied to PCUN, which originated in the forestry industry as a tree planters' union and now seeks to expand its influence to agriculture. We found little evidence that SAW provisions have affected the level of union activity.

4. What is the extent of unemployment and underemployment of farmworkers who are U.S. citizens or aliens lawfully admitted for permanent residence?

Seasonal agricultural workers are attracted to the Pacific Northwest by good prospects for employment, and Oregon is the first non-California employment site in the region. Some workers did mention that less work is available now, due to large numbers of workers in the area. A large labor pool may lead to underemployment of some workers, but most of the workers we interviewed did not complain about un- or underemployment. However, it is probably not warranted to conclude from this finding that un- or underemployment is not a problem among the state's seasonal work force. After all, our survey sample of agricultural workers was, for the most part, among those who were employed, and many of them worked for the employers we also interviewed. Thus, we were unlikely to find much complaint about unemployment. We do have some tangential evidence that unemployment is not a chronic problem: Very few of the workers' family members were unemployed, according to the family matrix portion of our worker survey.

5. What is the extent to which aliens who have obtained lawful permanent or temporary resident status under the SAW provisions continue to perform seasonal agricultural services?

Of the workers we interviewed, 80 to 90 percent plan to continue doing farmwork in the United States. In our study, employee turnover is highest for strawberries and lowest for pears. Of the 10 to 20 percent of workers not planning to continue farmwork, about half indicated plans to return to Mexico; the other half planned to seek nonfarm employment. This suggests that about 5 to 10 percent of SAW workers will leave agriculture annually. Again, some care is needed in interpreting this finding. Recall that most of the strawberry workers who planned to leave farming were moving into nursery work. They are still considered farmworkers in this study, even though these workers (and traditional agricultural employers) believe they are leaving agriculture. The critical point for growers is not where these workers go, but that some do leave their operation each year.

A worker's age is an important factor determining his departure from agriculture. Workers and employers both agree that the most productive workers in piece-rate jobs are those between the ages of 20 and 40 years. As seasonal workers age, their productivity declines, as do their associated wages. The physically demanding work, sooner or later, forces their exit from hand-harvest labor. Some are able to move to supervisory or managerial positions; others retire or leave agriculture for other employment. Retirement generally comes at a much earlier age than from other occupations.

6. What has been the impact of the SAW provisions on the adequacy of the supply of agricultural labor?

The supply of agricultural workers has been adequate, as shown by the fact that most employers reported that more workers apply than are hired. Nursery and pear employers, who desire trained, skilled workers to meet their labor needs, have worked within their industries to improve their ability to recruit and retain qualified workers.

Many growers indicated that the supply of workers has increased since IRCA. Since many of the workers applying for work are alien migrants, it seems reasonable that SAW provisions have contributed to the adequacy of the labor supply. Perhaps more significant, however, is that so many of these available workers carry false documents. IRCA created a substantial market for false documents, both for those who could never get legal documents and for those who would have qualified for SAW status but were unable to establish their employment history on paper. And there were even some workers who admitted to our interviewers that it was easier to obtain false documents than it was to get legal ones.

Labor supplies have also increased as SAW workers bring their families to the United States. These family members are often employed in agriculture after they arrive, since their skills are usually related to agricultural production. Based on the family matrix portion of our survey instrument, many of these family members are apparently illegally present in the United States.

7. What has been the impact of employers' sanctions on the adequacy of the supply of agricultural labor?

Growers in all four industries surveyed mentioned some visits by inspectors from the U.S. Department of Labor or the Immigration and Naturalization Service. The highest incidence of inspection was in strawberries, because of the nature of harvest employment, including its huge peak of labor demanding in June; employers complained about fines and other sanctions they had suffered.

Most employers expressed considerable frustration at having to serve as IRCA's enforcement arm. Without exception, every employer viewed IRCA's new documentation and reporting requirements as unnecessarily burden-

some and costly. While the primary record keeping and reporting requirements consist only of I-9 forms and ESA-92 reports, growers were also forced to comply with Social Security and federal income tax withholding requirements just after the adoption of IRCA. This caused them to associate much of the increased payroll record keeping burden with IRCA.

Growers feel caught in a trap with regard to hiring workers. On the one hand, they are afraid of hiring illegal workers and being fined; on the other, they fear they could be accused of discrimination if they don't hire a particular worker. IRCA has increased the frustration growers feel towards the "red-tape" associated with agricultural employment.

If a stronger and more effective policy of border enforcement and employer sanctions were implemented, growers worry that their labor supply could dry up. Employers in all four crop areas emphasized their complete dependence on Hispanic laborers to remain successful in production.

8. To what extent are the problems of agricultural employers in securing labor related to the lack of modern labor-management techniques in agriculture?

Agricultural labor management practices in these industries are not, by most accounts, very modern. However, many employers are attempting to improve their labor management. Health insurance, bonuses, paid vacation and sick leave, and family housing are examples of some benefits being offered by employers to recruit and retain workers. For example, in pears, 27 of 33 workers received free housing for themselves and their families. Nurseries are also widening the range of benefits offered. (Monrovia has added a childcare center, "a nursery at the nursery." *Capital Press*, February 21, 1992.)

One sign that labor management practices need improvement is the fact that during the last five years, several growers experienced labor shortages, in spite of the apparently ample supply of labor. Some of these shortages may have been due to economic circumstances, a locational disadvantage, or weather-related abnormalities (such as crops ripening too rapidly). However, in other cases it is more likely a case of needed improvement in management. Also, growers often compete with one another for labor at certain times of the year, resulting in labor shortages for some.

Largely because more families are in the United States with SAW and other legal workers, costs of providing housing benefits have increased dramatically. A labor housing unit that previously housed four workers may now house only one worker and his family. Therefore, more units are needed. Still, many employers are increasing their

available housing to attract and ensure an adequate labor supply.

Labor management in Oregon is largely performed by employer-owners, without the heavy dependence on farm labor contractors observed in some other states. Even the labor contractors we surveyed indicated that they run small to moderate-sized crews, allowing them to maintain some degree of contact with their workers. These labor contractors served an average of five growers, another indication that the scale of contract labor is small for the industries studied. Oregon does not appear to have the labor management problems experienced in states that use substantial amounts of contract labor.

9. What is the extent to which the agricultural industry relies on the employment of a temporary work force?

Growers expressed unanimous agreement that temporary or seasonal workers are essential to their continued production. Some employers are attempting to make seasonal work more attractive either by working with other employers to lengthen the period of available employment or by diversifying their production to accommodate a longer-term work force.

Mechanical innovations were suggested by many growers, but most are still experimental or nonexistent. About half the growers surveyed would adopt mechanical alternatives if they were available in order to diminish their need for hired labor, but prospects for innovations in harvest operations are minimal. However, pear growers are trying new orchard planting practices (shorter trees and great planting density) in part to reduce their labor needs.

10. Do certain geographic regions need special programs or provisions to meet their unique needs for agricultural labor?

Oregon faces two special challenges in successfully attracting seasonal labor. First is the great distance from Mexico, the source of most seasonal workers. Workers must have the incentive to come as far as Oregon; this incentive is apparently provided by offering slightly higher wages than California offers for similar work. However, if the supply of labor were constricted or California wages increased, Oregon employers could find themselves at a disadvantage, simply because of this distance factor.

The second challenge that Oregon faces in attracting seasonal labor is the lack of a distinct Hispanic community in the area. Hispanic workers settle throughout the Willamette Valley amidst an 89 percent white population. (Hood River County is an exception with its 16.2 percent Hispanic population.) One result of their minority status is that Hispanic workers and their families lack a systematic delivery system of social services and programs. The key informants we interviewed stressed the special needs these migrant workers have that are not being well met. Further-

more, the lack of a sizable Hispanic community may well hasten the departure of SAW workers from agriculture. Some aliens said they are learning English in order to adapt to life in the state. A proficiency in English also seems necessary for many jobs outside agriculture, and workers are more likely to search for better paying jobs once they learn English. However, while a well-developed Hispanic community would better serve the needs of alien workers, it could serve as a disincentive to learn English and to accommodate the non-Hispanic economy and culture.

11. What has been the impact of the SAW provisions on the ability of crops harvested in the U.S. to compete in international markets?

Many growers were aware that they faced increased competition from foreign imports, but even more thought they were enjoying greater opportunities to export their products. So, it does not appear that IRCA has adversely impacted Oregon's competitive position in these crops. However, a decreased labor supply in the future could push up wage rates, increasing costs of production and reducing the state's competitive advantage over other production areas.

12. What is the adequacy of the supply of agricultural labor in the U.S. and does this supply need to be further supplemented with foreign labor?

Foreign labor is the backbone of Oregon's seasonal labor force. Most employers prefer to hire foreign workers because of their productivity and strong work ethic. The current supply of workers is adequate, but we believe that many of these workers carry false documentation, as evidenced by their responses to several of the survey questions. (Twenty-six percent of the nursery workers we interviewed, 67 percent of the Christmas tree workers, and 40 percent of the strawberry workers first entered the United States in 1986 or later. And about one-third of the nursery, strawberry, and pear worker's relatives and two-thirds of the Christmas tree workers' relatives were in the United States illegally.) Growers also prefer foreign work-

ers because they apply for agricultural work in large numbers; able domestic workers may be available, but few apply.

Final Comments

IRCA's purpose is to achieve, without harming producers, an adequate supply of legal workers who benefit from improved wages and working conditions. Our data show that, at best, IRCA has only partially achieved that goal. Wages are uniformly higher (not because of IRCA), SAW workers have benefitted by protection from deportation, and growers generally have enough workers. However, IRCA has created a false-document industry that seriously undercuts the integrity of the law by flooding the state with deceptively illegal workers. Growers now must assume part of the enforcement burden through costly paperwork that the law requires. The threat of punishment is very real, since employers are faced with sanctions that were not on the books in pre-IRCA days.

Growers of Oregon's labor-intensive crops will continue to need a large supply of workers. Our analysis shows that there is room for agriculture to improve its labor management of both year-round and seasonal workers, which would help attract a supply of legal workers. However, even with improved management, a dependable labor supply is by no means assured. SAWs will sooner or later disappear from agriculture, yet no viable replacement program is in place. Ultimately, all segments of the state's agriculture that hire labor will be confronted with shortages of legal workers. Therefore, changes in the current law are imperative. Highly productive alien migrants are willing to come great distances to work in the state, and growers are willing to employ them at equitable wages. The problem is how to continue to match productive workers to available jobs, and how to do it within the law.

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