
The Ohio Christmas Tree Industry

Who Are We and Where Are We Going?



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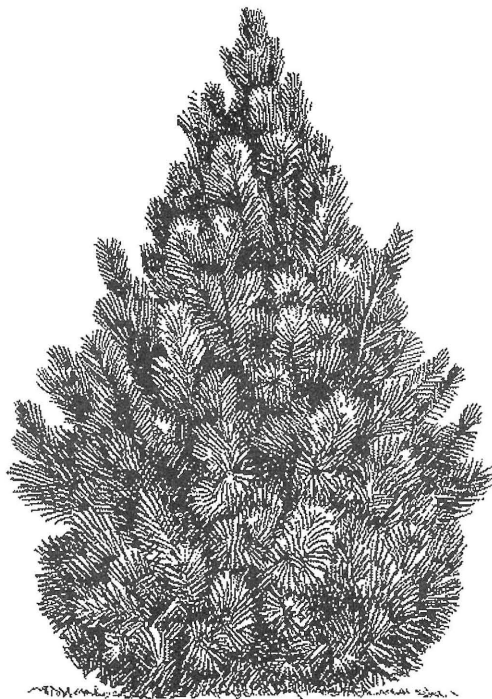
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Christmas tree production is an attractive, profitable agroforestry enterprise in Ohio which has contributed substantially to individual incomes and the economy of the state. Ohio's climate and land are suitable for the production of a variety of Christmas tree species, and its large urban population and close proximity to other heavily populated states provide ample markets. Based on Ohio 1990 census data and the National Christmas Tree Association's estimate of real tree usage in the United States (Baumann, 1997), the Ohio market alone is estimated at more than 1.4 million real Christmas trees per year.

To be competitive and financially successful in current and future Christmas tree markets, producers must grow high-quality trees of desired species and market them aggressively and effectively. To do this, producers must understand the demographics of their industry and its production and marketing trends. The last comprehensive survey of the Ohio Christmas tree industry was completed in 1981 (Brown, 1983). Since that time many changes have occurred in the industry. This report looks at the Ohio Christmas tree

producing industry in the 90s, identifying important demographic characteristics and planting and harvesting levels and trends. This information should provide a strong base to individuals and the industry as a whole as they plan management and marketing strategies for the next decade.

Methodology

A questionnaire was mailed during early spring 1994 to 1,326 individuals identified as potential Christmas tree producers. A second mailing was sent to nonrespondents two months later. The list of potential producers was developed from Ohio Christmas Tree Association membership lists for the previous four years, respondents to the last survey (Brown, 1983), attendees at Ohio State University Extension workshops and meetings, and an Ohio State University Extension list of known and possible producers. The questionnaire contained questions on producer demography, planting and marketing history for the past five years, and planting and marketing plans for the next three years.

Seven hundred thirty-six questionnaires were returned. Three hundred seventy-three of the returned questionnaires were Christmas tree producers, of which 209 were members of the Ohio Christmas Tree

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Association. Seventy-six of the 590 nonrespondents were randomly selected, contacted by phone, and asked an abbreviated set of questions which included their geographic location, total number of trees, planting history for the previous three years, and percent of income from Christmas tree operation. Twenty-three of the seventy-six were Christmas tree producers, including nine Ohio Christmas Tree Association members. Because responses to the telephone survey differed from the written questionnaire, data from the telephone survey were used to characterize the Christmas tree producers who did not respond to the written questionnaire. These data were then combined with the data from the 373 written respondents to produce coefficients to estimate the entire population. When checked against a known characteristic of the industry, the number of Ohio Christmas Tree Association members, this procedure proved quite valid, predicting Ohio Christmas Tree Association membership within three percent (seven members).

Demographics of Ohio Christmas Tree Producers

Number of Producers, Number of Trees, Size of Operation

In 1994 there were 552 Christmas tree producers in Ohio growing an average of 17,009 trees for a total of 9.39 million trees (Table 1). Of the 552 producers, 279 (50.5 percent) were Ohio Christmas Tree Association members growing an average of 24,995 trees for a total of 6.97 million trees. Another 273 producers were not Ohio Christmas Tree Association members, and they averaged 8,849 trees for a total of 2.42

million trees. By comparison, in 1981 when the last survey was done (Brown, 1983), there were 498 producers growing an average of 17,821 trees for a total of 8.87 million trees. Of the 498 producers in 1981, 237 (46.2 percent) were Ohio Christmas Tree Association members growing an average of 28,996 trees for a total of 6.87 million trees; 261 were not Ohio Christmas Tree Association members, and they averaged 7,674 trees for a total of 2.0 million trees.

At least two things are apparent. First, either there has been little change in the size of Ohio's Christmas tree producing industry in the last decade and a half, or, if there has been, it has returned very nearly to its early 1980s size. Second, while members of the Ohio Christmas Tree Association constitute only about half of the total Ohio producers, they grow a high percentage of the total trees produced (74 percent). This fact is further emphasized by looking at the size distribution of Ohio producers (Table 2).

There are substantially fewer Ohio Christmas Tree Association members than non-members managing 10,000 trees or less (156 vs 218). Fifty of the fifty-seven producers with 26,000 trees or more are Association members, and all nine producers with more than 100,000 trees are Association members. It is also interesting to note that just as the number of producers and total number of trees in 1994 were similar to that in 1981, the size distribution of the industry in 1994 is very similar to that in 1981 (right four columns of Table 2). It should be noted, however, that the average size of operation of Ohio Christmas Tree Association members, 24,995 trees, is somewhat misleading (Table 1). If the nine largest producers are deleted (>100,000 trees), the average size of operation for Ohio Christmas Tree Association members drops to 19,205 trees.

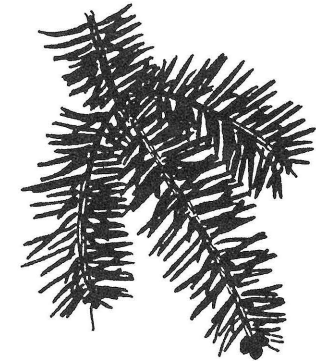


Table 1. Number and Size of Ohio Christmas Tree Growers.

POPULATION	NUMBER GROWERS 1981	NUMBER GROWERS 1994	NUMBER TREES 1981	NUMBER TREES 1994	NUMBER TREES/GROWER 1981	NUMBER TREES/GROWER 1994
OCTA Members	237	279	6,872,000	6,973,471	28,996	24,995 ¹
Not OCTA Member	261	273	2,003,000	2,415,808	7,674	8,849
Total	498	552	8,875,000	9,389,279	17,821	17,009

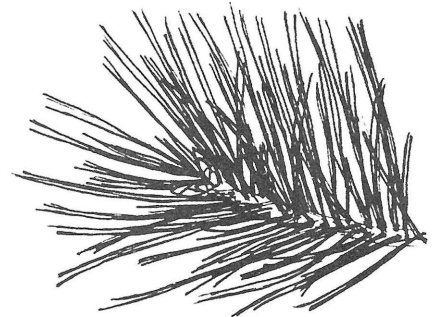
¹ The number of trees per OCTA grower reduces to 19,205 if the 9 largest growers are deleted (those >100,00 trees).

Table 2. Size Distribution of Ohio Christmas Tree Growers.

GROWER SIZE (Trees)	1994 OCTA MEMBERS¹	1994 Non-OCTA²	1994 TOTAL	1994 %	1994 TOTAL	1981 %
≤ 10,000	156	218	374	68	338	68
11,000-25,000	73	48	121	22	78	16
26,000-50,000	27	5	32	6	51	10
51,000-100,000	14	2	16	3	21	4
101,000-150,000	4	0	4	<1	4	<1
>150,000	5	0	5	<1	6	<1
TOTAL	279	273	552	100%	498	100%

¹ Member Ohio Christmas Tree Association, April, 1994.

² Not a member of Ohio Christmas Tree Association, April, 1994.



Distribution of Producers and Trees

Figure 1 presents the distribution of Ohio Christmas tree plantations and trees by county and identifies the geographic areas reported in Table 3. Table 3 presents the distribution of plantations and trees by geographic areas of the state identical with those used by Brown in the 1981 survey (Brown, 1983). Data in Figure 1 and Table 3 are the actual plantation and tree numbers reported in the survey and have not been expanded from the sample to estimate the total trees and plantations within the counties or areas. The expansion coefficients used in this study were developed from statewide data and their application to smaller geographic areas could be quite misleading. Note also that Figure 1 and Table 3 present the number of plantations reported in each county and area, not the number of producers. Three hundred seventy-three producers responded to the questionnaire; three hundred ninety-five plantations are identified in Figure 1 and Table 3. Twenty-two Ohio producers have plantations in more than one county.

As in 1981 (Brown, 1983), most of Ohio Christmas tree plantations (70 percent) and the greatest proportion of trees (85 percent) are located in the eastern half of the state, with 51 percent of the plantations and 54 percent of the trees in the northeastern quarter of the state. As in 1981, the 14-county area centered around Carroll County¹ can be identified as the largest center of production. In 1994 this area contained 32.4 percent of Ohio's producers and 45.6 percent of Ohio's trees; in 1981 it contained 37 percent of the producers and 36 percent of the trees. If adjacent Medina County is added, the contiguous 15-county

area accounts for 37.7 percent of Ohio's plantations and more than 50 percent of Ohio's trees.

Table 3 highlights what appears to be a substantial difference in average producer size between eastern and western Ohio, with producers in eastern Ohio averaging almost two and one-half times as many trees (17,233) as producers in western Ohio (7,210). However, this difference in size may not be as meaningful as it appears. All of the Christmas tree producers with more than 100,000 trees who responded to the survey are located in eastern Ohio. If their trees are deleted from the data, the average size of an eastern Ohio Christmas tree grower drops to 11,821.

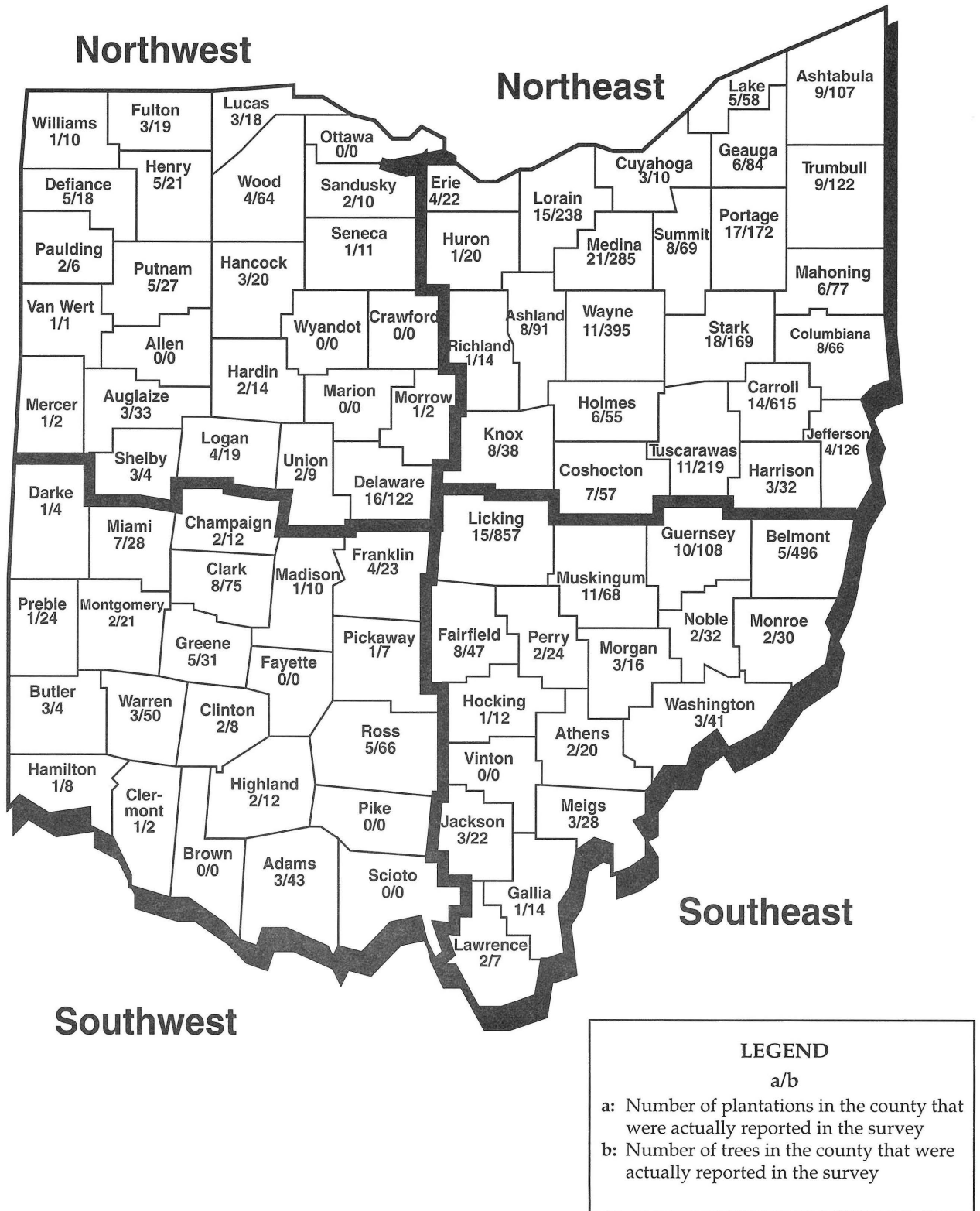
While Table 3 suggests that the number of plantations and trees and the size of operations have not changed substantially in eastern Ohio, there have been some changes in western Ohio. These changes are most notable in northwestern Ohio where the number of plantations more than doubled, now accounting for 17 percent of the state total, and the average size of operation decreased substantially from 10,148 trees in 1981 to 6,418 in 1994. In southwestern Ohio the number of producers in 1981 and 1994 were essentially the same (51 vs 52), but the total number of trees, and therefore average size, decreased substantially from 14,373 to 8,230.

Producer Age and Experience

The average age of Ohio Christmas tree producers is 52 years. Seventeen percent are less than 40 years old, 55 percent are between 40 and 60 years old, and 28 percent are over 60. The experience levels of Ohio producers in 1994 and 1981 are presented in Figure 2. In 1994 producers averaged 11.5 years of experience; in 1981 they

¹ Carroll, Harrison, Jefferson, Columbiana, Stark, Tuscarawas, Belmont, Guernsey, Coshocton, Holmes, Wayne, Summit, Portage, and Mahoning.

Figure 1. Distribution of Ohio Christmas Tree Plantations and Trees by County and Geographic Areas Summarized in Table 3.



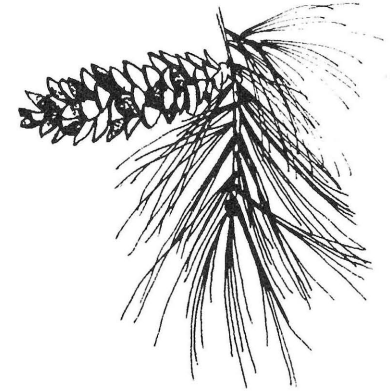


Table 3. Distribution by Area of State of Ohio Christmas Tree Plantations and Trees Reported by Survey Respondents.

	NORTHEASTERN OHIO		SOUTHEASTERN OHIO		NORTHWESTERN OHIO		SOUTHWESTERN OHIO	
	1981	1994	1981	1994	1981	1994	1981	1994
# Plantations (% of Total)	215 (56%)	203 (51%)	93 (24%)	73 (19%)	27 (7%)	67 (17%)	51 (13%)	52 (13%)
# Trees (% Total)	3,772,000 (54%)	3,141,000 (51%)	2,274,000 (32%)	1,822,000 (31.3%)	274,000 (4%)	430,000 (7.4%)	733,000 (10%)	428,000 (7.3%)
Average # Trees In Plantations	17,544	15,473	24,452	24,959	10,148	6,418	14,373	8,230

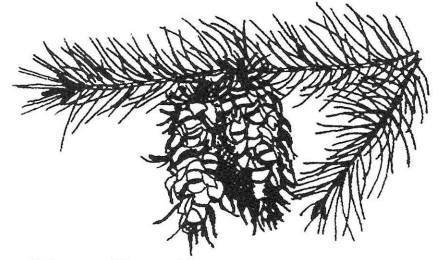
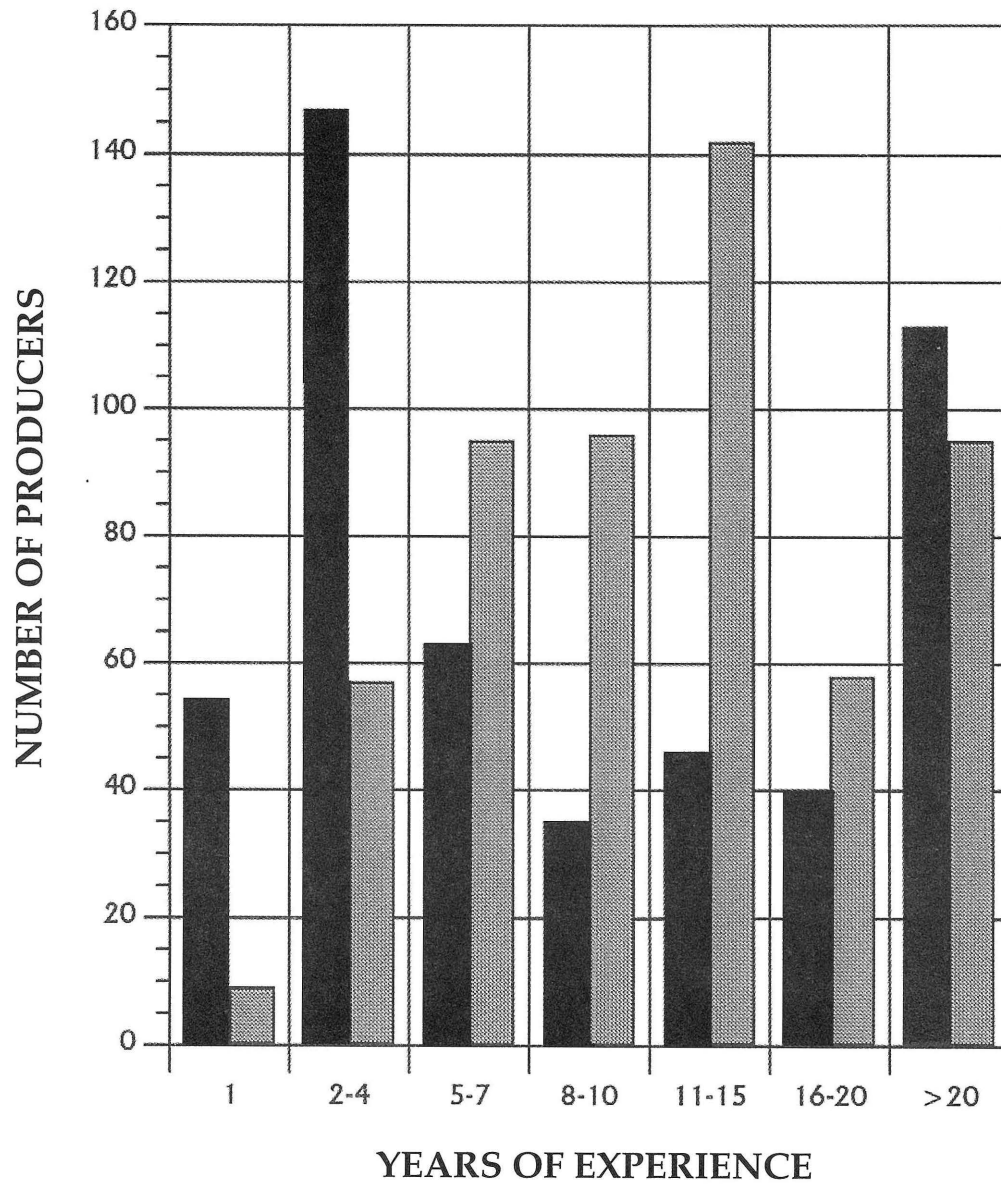


Figure 2. Experience Level of Ohio Christmas Tree Producers
1981 versus 1994



■ # Growers in 1981

▨ # Growers in 1994

averaged 9.6 years of experience. This similarity is, however, somewhat misleading. While the number of producers with more than 15 years of experience in 1994 and 1981 is similar (28 percent vs 30 percent), the number of producers with 5–15 years of experience was dramatically higher in 1994 (60 percent vs 29 percent), and the number of producers with less than five years of experience was markedly higher in 1981 (40 percent vs 12 percent). Looking at it in terms of knowledge and experience accumulated, in 1994, 71 percent of the producers had completed at least one rotation (eight years experience), while in 1981 only 47 percent had completed one rotation.

The age and experience data suggest that there may be major changes in Ohio's Christmas tree industry in the next 10 to 20 years. Certainly, most of the producers over 60 years of age and many of those in the 40- to 60-year age range will retire from Christmas tree production. These two age groups include 83 percent of Ohio's producers, and obviously those with the most experience. They are also the all-important mentors of younger producers. While age data is not available for the 1981 survey, a comparison of the experience levels in 1981 and 1994 suggest that the grower population in 1981 was substantially younger, or at least more evenly distributed among age classes. Certainly if Ohio's Christmas tree industry is to maintain or expand its production, it would seem that new, younger producers must join the industry to offset the inevitable attrition in the next 10 to 20 years of a large number of older producers.

As Figure 3 shows, there are some slight differences in the level of experience of Ohio Christmas Tree Association members as compared with nonmembers. Most notably, there are fewer Ohio Christmas Tree Association members with less than

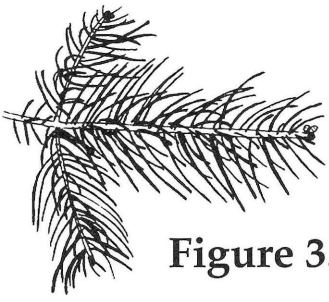
five years experience and more with 11 to 15 years experience.

Employment, Income, and Method of Sale

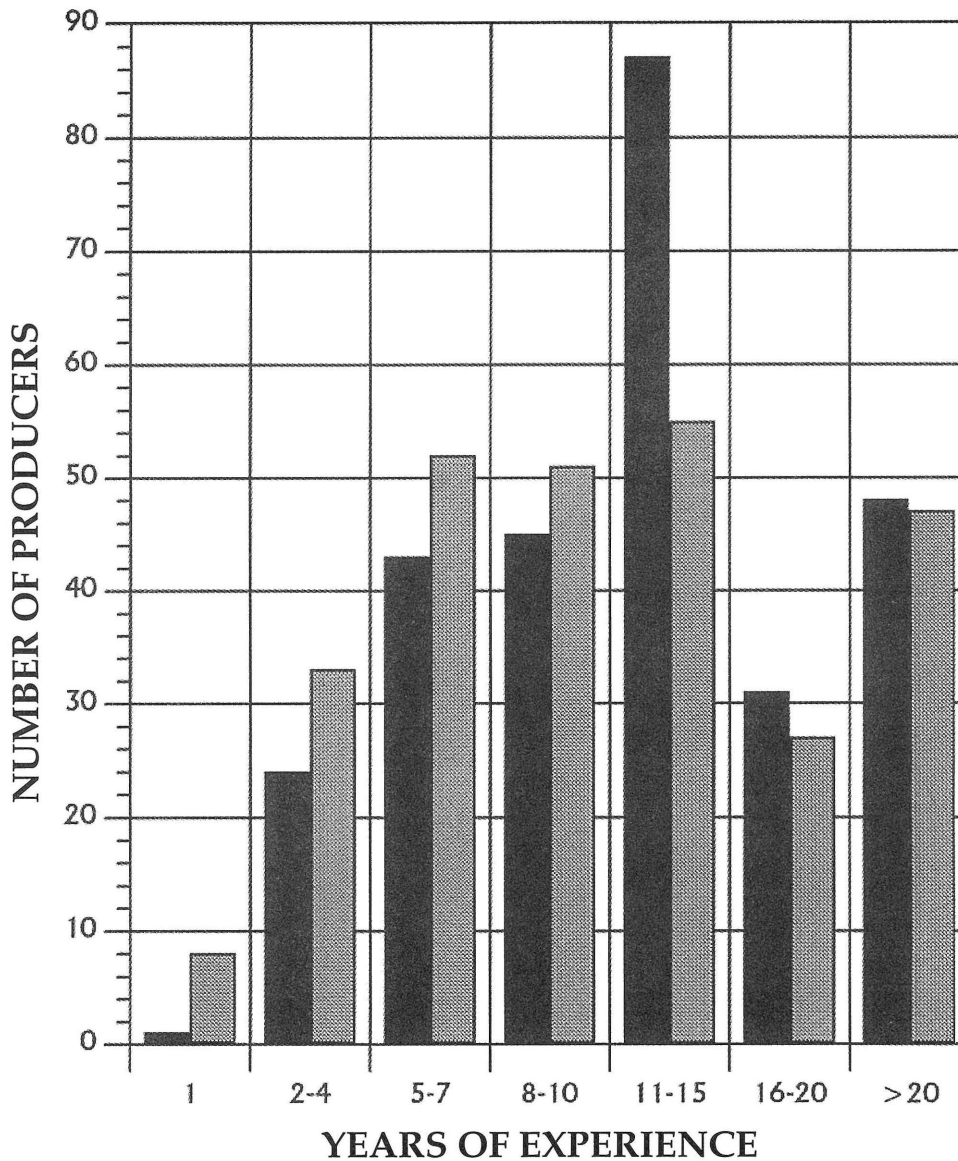
It will come as news to no one that Ohio's Christmas tree industry is predominately a part-time industry. Ninety percent of Ohio producers are part-time, with 66 percent employed at another job and 23 percent retired from another job. Ten percent are full-time Christmas tree producers, with half of these being retired from another job.

As would be expected with a predominately part-time industry, slightly more than 80 percent of the producers derive less than 10 percent of their total income from Christmas trees, and 63 percent derive less than 5 percent of their income. Only five percent of Ohio's producers receive 30 percent or more of their total income from Christmas tree production.

It is also no surprise that, in terms of grower participation, Ohio's Christmas tree industry is predominately retail, with 47 percent of the producers receiving more than three-fourths of their Christmas tree revenue from retail sales (33.5 percent from choose and cut), and only nine percent receiving more than three-fourths of their Christmas tree revenue from wholesale sales. The retail nature of the industry is further emphasized by looking in Table 4 at the percent of producers participating in different forms of sales. Note that since some producers use more than one method of sale, the percentages in the table do not add to 100 percent.



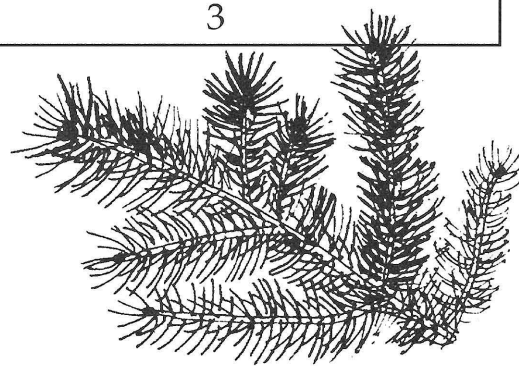
**Figure 3. Experience Level of Ohio Christmas Tree Producers
OCTA versus NON-OCTA MEMBER**



■ OCTA Member
▨ Not OCTA Member

Table 4. Percentage of Ohio Christmas Tree Growers Participating in Different Methods of Sale.

METHOD OF SALE	% GROWERS PARTICIPATING IN METHOD
Direct to Instate Retailer	16
Direct to Out-of-State Retailer	3
Direct to Wholesaler	6
To (Through) Cooperative	3
Retail on Farm (Cut Trees)	26
Retail other than Farm (Cut Trees)	10
Choose & Cut	51
Dug Christmas Trees (Wholesale)	10
Dug Christmas Trees (Retail)	3



Planting Trends of Ohio Christmas Tree Producers

All Species

Figure 4 shows the total number of Christmas trees planted per year as reported by producers in the 1981 survey (Brown, 1983) and the 1994 survey. Ohio producers planted approximately one million trees each year during the middle 1970s. During the late 1970s and early 1980s, this number increased dramatically, peaking at more than 1.6 million trees in 1982. Although planting estimates are not available for the period 1985 to 1988, data from the two surveys and experience suggest that Ohio producers planted somewhat more than 1.25 million trees annually during the middle and late 1980s. From 1989 until the present there has been a gradual but consistent decline in the number of trees planted each year, with less than one million trees planted annually between 1993 and 1996.

This decline in the total number of Christmas trees planted annually could have important implications concerning the future abundance and availability of Ohio-grown Christmas trees. In 1993, Ohio producers reported selling 356,000 cut and dug Christmas trees. These trees were, for the most part, harvested from trees planted in the mid 1980s when more than 1.25 million trees were planted each year. Annual planting rates in the mid 1990s have declined to around 900,000 trees. It would appear that unless producers markedly increase the proportion of planted trees they harvest, Ohio-grown Christmas trees sold annually in the next five to 10 years could decrease by as much as 100,000 trees to around 250,000 trees per year.

Individual Species

Figure 5 shows the number of trees of each species producers reported planting annually for the time periods 1977 to 1984 (Brown, 1983) and 1989 to 1996. Figure 6 shows the percentage composition by species of each year's planting for the same time periods. Looking at the two figures together, several trends stand out.

The most dramatic change in the number of Ohio Christmas trees planted annually has been the large decrease in Scotch pine, from a high around 700,000 in 1984, to around 230,000 today. Ohio producers are planting only about one-third as many Scotch pine today as they did in the early 1980s. Scotch pine now constitutes only about one-quarter of the trees planted.

A similar but less precipitous decrease is seen in the number of white pine planted. Today, Ohio producers are planting slightly more than 200,000 white pine per year, somewhat less than half what they planted during the early 1980s. However, for the past five or six years, the proportion of white pine in Christmas tree plantings has been relatively stable, fluctuating between 18 and 23 percent

In contrast to Scotch and white pine, the four single-needle conifers — blue spruce, Douglas-fir, Fraser fir, and West Virginia balsam fir — are becoming more abundant in Ohio Christmas tree plantations. During the late 1970s and the 1980s, the amount of blue spruce planted fluctuated considerably. During the 1990s it has remained relatively stable, generally fluctuating between 160,000 and 180,000 trees annually, and accounting for around 17 percent of the trees planted. The numbers of Douglas-fir and Fraser fir planted each year have both increased substantially in the 1990s, with more than 50,000 Douglas-fir and close to 100,000 Fraser fir now being planted each

Figure 4. Total Number of Ohio Christmas Trees Planted
1977-1996

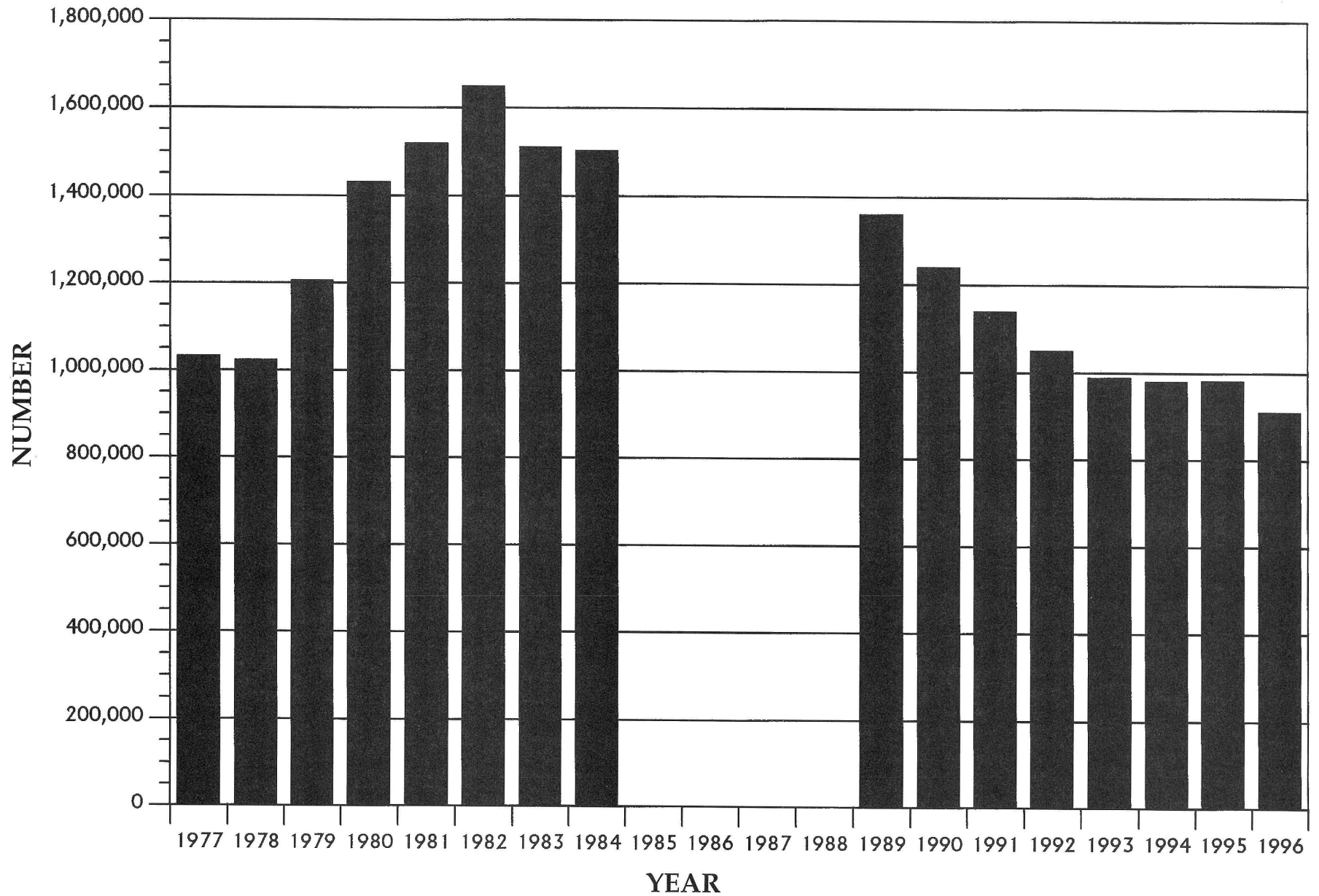
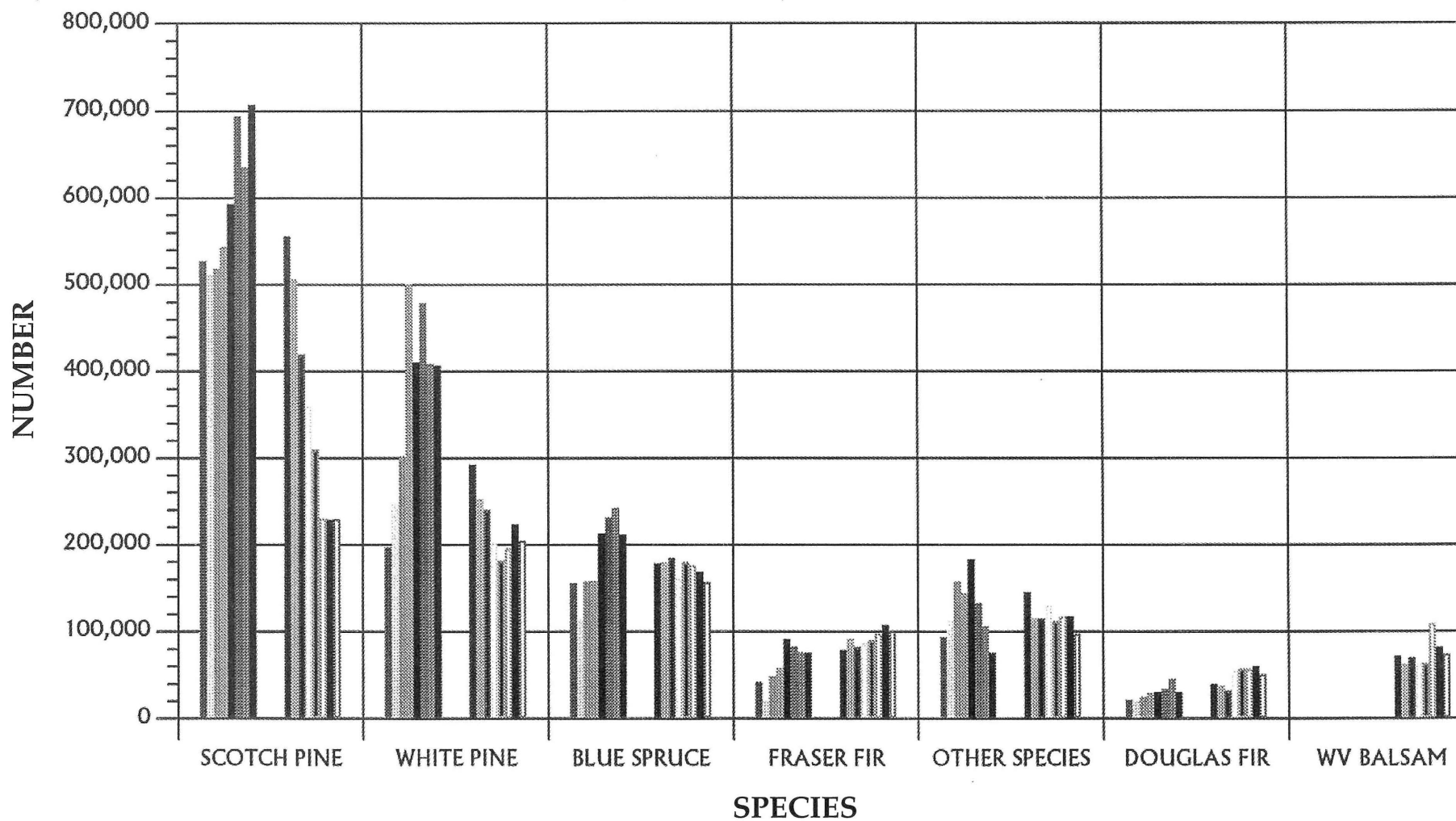
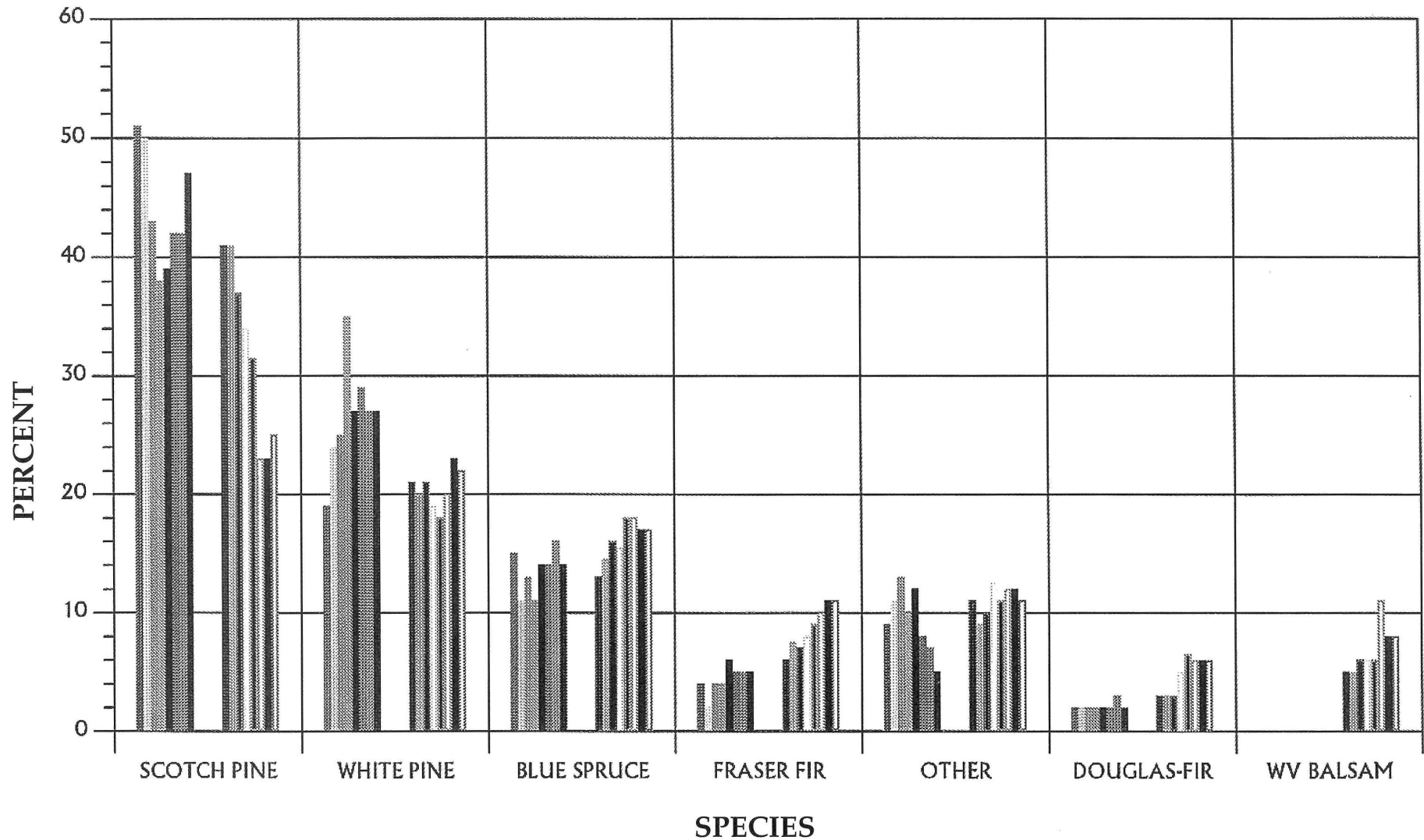


Figure 5. Total Number of Ohio Christmas Trees Planted by Species
1977-1996¹



¹Successive bars over each species represent trees planted from 1977-1996 with 1985-1988 missing. WV Balsam Fir data 1992-1996 only. 1982-1984 Grower estimates in 1981; 1995-1996 grower estimates in 1994.

Figure 6. Percentage Composition by Species of Christmas Trees Planted
1977-1996¹



¹Successive bars over each species represent the percentage of total trees planted that that species accounted for from 1977-1996 with 1985-1988 missing. WV Balsam Fir data 1992-1996 only. 1982-1984 Grower estimated in 1983; 1995-1996 grower estimated in 1994.

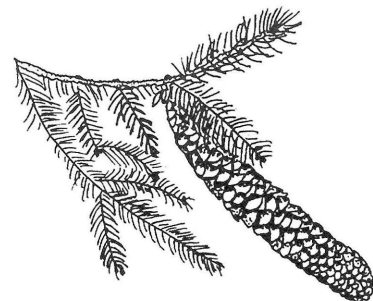
year. Douglas-fir now accounts for about six percent of the total trees planted and Fraser fir about 10 percent. With the exception of 1994, the amount of Canaan fir planted during the 1990s has been relatively stable, averaging close to 70,000 trees per year, and representing about 6 percent of the total trees planted.

Scotch pine, white pine, blue spruce, Douglas-fir, Fraser fir, and Canaan fir together account for close to 90 percent of the Christmas trees planted in Ohio. In addition to these species, Ohio Christmas tree producers annually plant small amounts of a wide variety of other species that collectively averaged about 118,000 trees per year during the 1990s, and represented between 9 and 12 percent of the total trees planted. The two most commonly planted species in this group have been Norway spruce and Austrian pine. Norway spruce plantings during the 1990s have averaged 49,000 trees per year, ranging from a high in 1989 of 60,916 to a low in 1990 of 36,662 trees, and representing close to 4.5 percent of the total trees planted. By comparison, Brown (1983) reported that Norway spruce consistently accounted for around 3 percent of the total number of trees planted between 1977 and 1984. Austrian pine plantings during the 1990s have averaged 36,000 trees per year, ranging from a high of 50,588 trees in 1990 to a low of 24,888 trees in 1993, and representing slightly less than 3.5 percent of the total trees planted. The remaining plantings have included small amounts of a variety of pines, spruces, and firs, including balsam fir, red pine, white spruce, concolor fir, Serbian spruce, and others.

The data suggest that major changes are occurring in the species composition of Ohio-produced Christmas trees. Producers are planting less pine, particularly Scotch pine, and more single-needle conifers, particularly Douglas-fir and the true firs. It

is, in fact, this decrease in Scotch and white pine planting that explains, to a large extent, the overall decrease in total trees planted. While producers have increased the number of other species they are planting, these increases have been much smaller than the decreases in Scotch and white pine.

There are undoubtedly several reasons for these changes in species planted, including a perceived decrease in consumer demand for Scotch and white pine, a perceived increase in consumer demand for single-needle conifers (particularly the firs), increased sales of dug trees (discussed later), and the seemingly ever increasing difficulty of managing Scotch pine pests and producing a quality tree. In Ohio, however, there would seem to be a definite limit to this species shift. A substantial consumer demand for Scotch pine and white pine will continue, and it will be particularly important for choose-and-cut operations to meet this demand or risk the loss of customers. Further, agricultural land in Ohio suitable for economically growing the more site-demanding species such as Douglas-fir and Fraser fir is limited. While the increased availability and use of West Virginia balsam fir (Canaan fir) may increase the acreage planted to firs, much of Ohio's current Christmas tree land will continue to be suitable only for the production of pines or spruces. In fact, the expansion of fir and Douglas-fir planting in some areas may be influenced by the availability and affordability of suitable land not currently in agricultural use.



Harvesting Trends of Ohio Christmas Tree Producers

Total Trees Harvested

Figure 7 shows the total number of Ohio-grown Christmas trees harvested per year as reported by producers in the 1981 (Brown, 1983) and 1994 surveys. The similarity in trees reported as harvested per year in those studies is striking. From 1976 through 1980 Ohio producers harvested a relatively consistent number of trees, averaging 341,000 trees per year. From 1981 through 1983, producers predicted harvests would increase to slightly more than half a million trees per year. Overall, the average estimated annual harvest from 1976 through 1983 was 367,000 trees.

From 1989 to 1993 the number of trees harvested annually gradually increased from slightly more than one-quarter million to more than one-third million, averaging 316,089 trees per year. As in the 1981 survey, producers predicted that harvests would increase in the next three years to slightly more than half a million trees per year by 1996. Overall, the average estimated annual harvest from 1989 through 1996 was slightly more than 368,000 trees.

Figure 8 separates the total Christmas trees harvested from 1989 through 1996 into cut and dug trees. As expected, far more Ohio trees were cut for Christmas trees than were dug, but the percentage of trees dug has gradually increased from slightly more than seven percent in 1989 to 14 percent in 1996. Ohio producers appear to be expanding fairly rapidly into the dug Christmas tree market. As reported in Table 4, 10 percent of Ohio producers reported participating in wholesale dug tree sales and three percent in retail dug tree sales. Small to medium trees were reported as the most

commonly dug trees sold, with 44 percent being 3–5 feet tall and 40 percent 6–8 feet tall.

The number of Christmas trees reported harvested per year by producers is substantially lower than production levels commonly claimed for Ohio producers. This would suggest that either the survey missed a substantial number of producers, the producers provided inaccurate information, or Ohio's productivity is, in fact, lower than commonly believed.

While the survey undoubtedly missed some Ohio producers, its accuracy in predicting a known population, members of the Ohio Christmas Tree Association, suggests that the methodology was sound and the results accurately portray Ohio's Christmas tree harvests. This conclusion is further reinforced by noting the similarities in results between the 1981 and 1994 surveys, particularly when both harvest and planting data are compared as is done in the section (later in this report) entitled "Harvest-to-Planting Success Ratio."

A second possible explanation of the low estimates of annual harvest is that producers did not accurately report harvesting data. Such misreporting could be unintentional because producers did not accurately know the requested information, or intentional because producers did not want to share the requested information but did not want to appear to be uncooperative. In an attempt to evaluate these two potential sources of error in the harvesting data, more than 100 producers were interviewed individually or in groups and asked to verify that the reported harvests were their best estimate and to comment on the apparent low success ratio. Producers confirmed that they did, in fact, provide as accurate as possible estimates of the number of trees harvested. While there undoubtedly was some unintentional grower error in esti-

Figure 7. Total Number of Ohio-Grown Christmas Trees Harvested
1976-1996

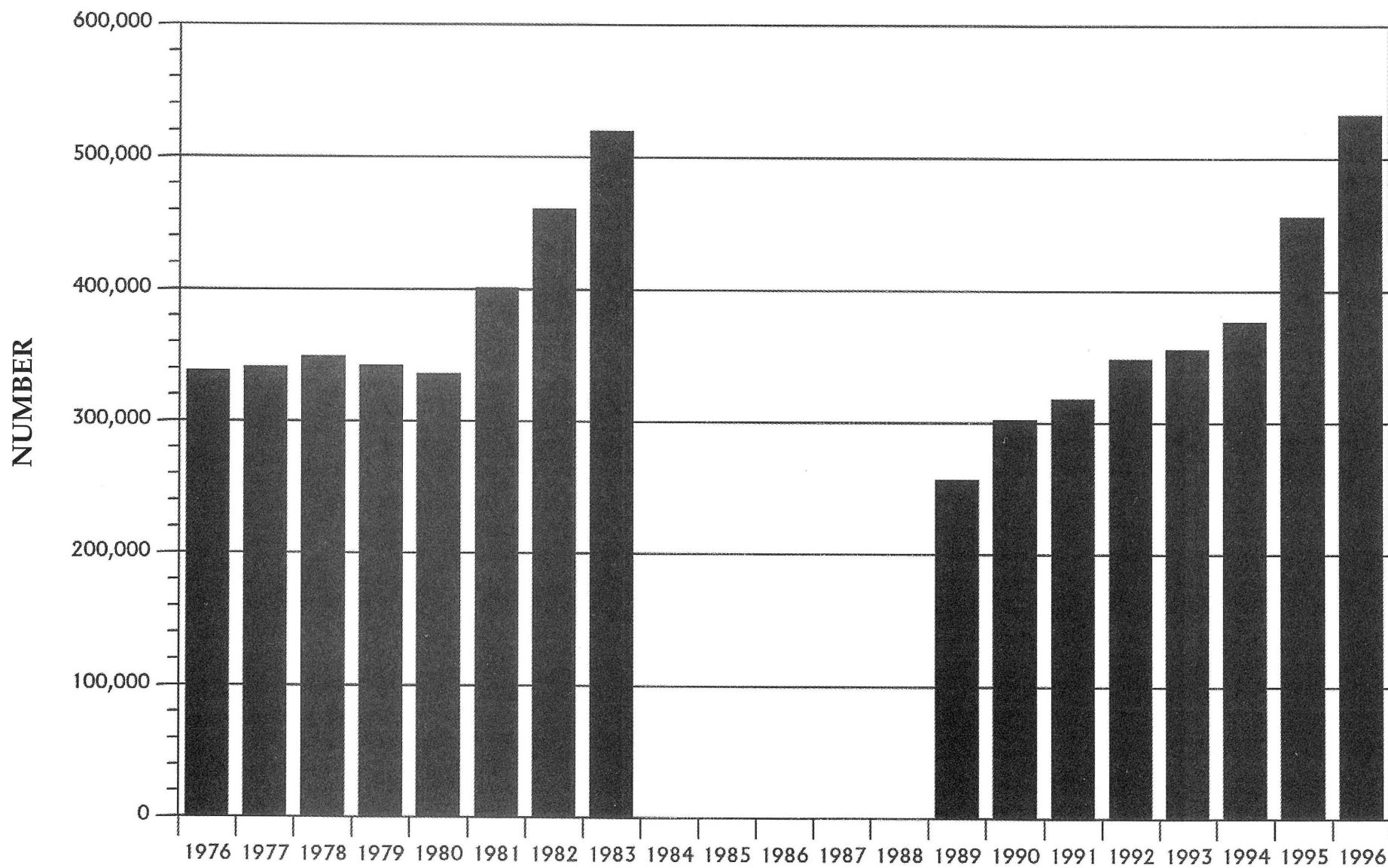
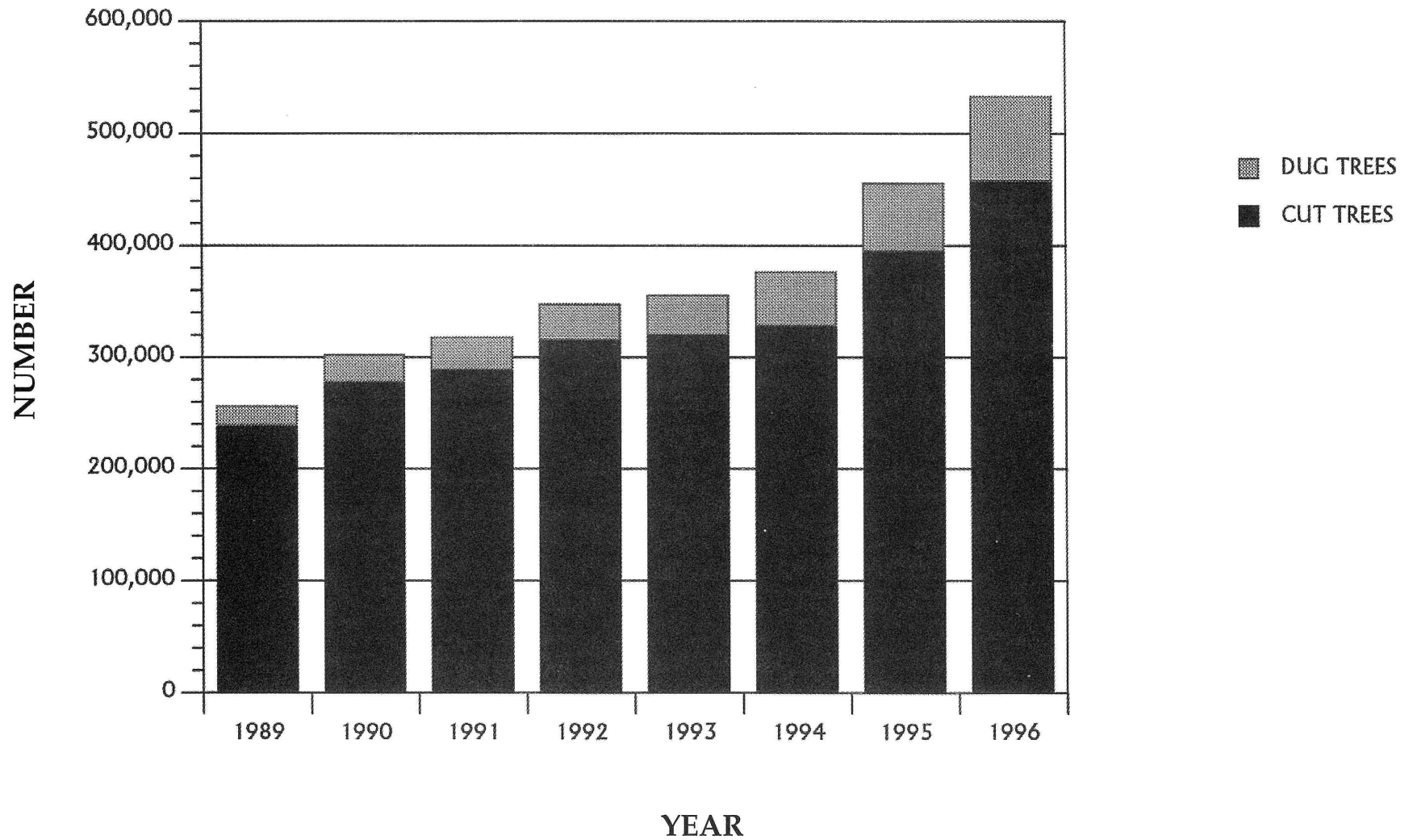


Figure 8. Total Number of Cut and Dug Trees Harvested for Christmas Trees
1989-1996



mating the number of trees harvested, grower interviews indicated little, if any, intentional misreporting.

These survey results, then, appear to provide a reasonably accurate estimate of Ohio Christmas trees harvested from 1976 through 1980 and from 1989 through 1993. It is important to note that harvest data for the years 1981 through 1983 and the years 1994 through 1996 were based on grower estimates of their future harvests. These estimates of future harvests represented substantial increases over their previous harvests and may, in fact, be higher than the harvest levels actually achieved in those years.

Harvest by Species

Figures 9, 11, and 13 present, respectively, the number of total, cut, and dug trees harvested by species from 1976 through 1996. Figures 10, 12, and 14 present, respectively, the percentage composition by species of total, cut, and dug trees harvested from 1976 through 1996. Figure 9 shows that the gradual increase in the total number of Christmas trees harvested between 1989 and 1996, seen in Figure 7, was the result of an increase in numbers for all species. However, Figure 10 suggests that the relative composition of the harvest has changed. Between 1989 and 1996, the percentage of harvested trees that were Scotch pine decreased substantially; white pine, Douglas-fir, and "other species" remained relatively constant; and blue spruce, Fraser fir, and West Virginia balsam increased substantially. These trends are consistent with the common perception that consumer demand has shifted away from Scotch and the other pines to the firs and Douglas-fir.

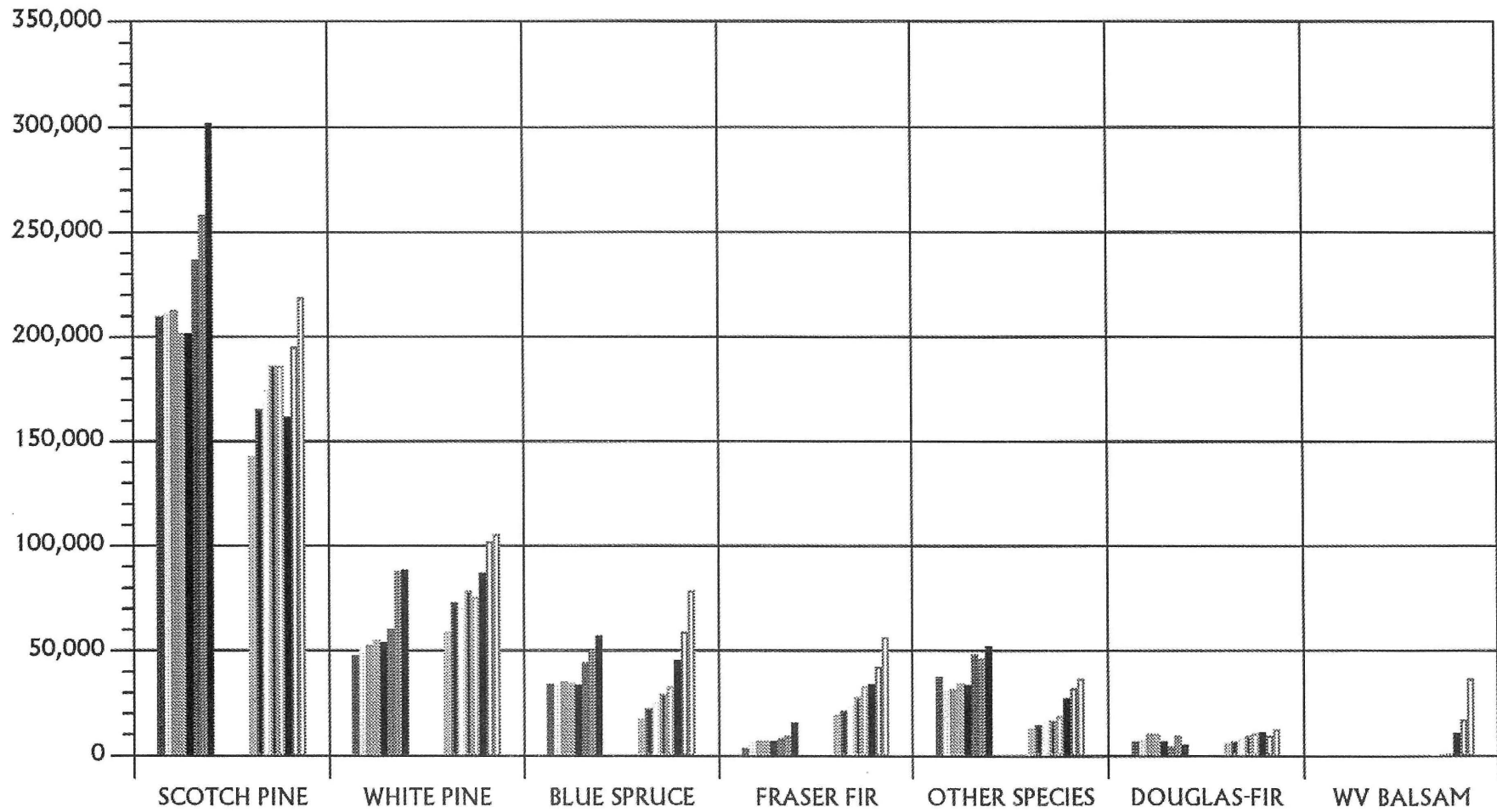
Figures 11 through 14 detail the relative importance of cut and dug trees in deter-

mining these trends and provide the basis for much of the remaining discussion in this section. In the case of Scotch pine, since more than 99 percent of Ohio-grown Scotch pine Christmas trees are sold as cut trees, the cut tree trends mirror the total tree trends. Between 1989 and 1996 the number of Scotch pine cut annually increased from 140,265 to over 216,000, while its percentage of cut trees decreased from 59 to 47 percent. The small amount of Ohio-grown Scotch pine sold as dug Christmas trees has remained relatively constant during the eight-year period, and the percentage of Scotch pine in the Ohio-grown dug-tree harvest has decreased. Earlier it was noted that the amount of Scotch pine planted in Ohio has decreased dramatically in the past eight years from 41 percent of the Christmas trees planted in 1989 to around 25 percent in 1996 (Figure 6). This planting trend would suggest that the proportion of Scotch pine in Ohio's Christmas tree harvest will continue to decrease.

The number of white pine cut for Christmas trees increased from 52,312 in 1989 to 85,853 in 1996, maintaining a relatively consistent percentage of Ohio-grown cut trees, fluctuating between 19 to 23 percent. In contrast, although the number of white pine dug for Christmas trees during the same time period almost tripled, the percentage of white pine in the Ohio-grown dug-tree harvest appears to be decreasing somewhat.

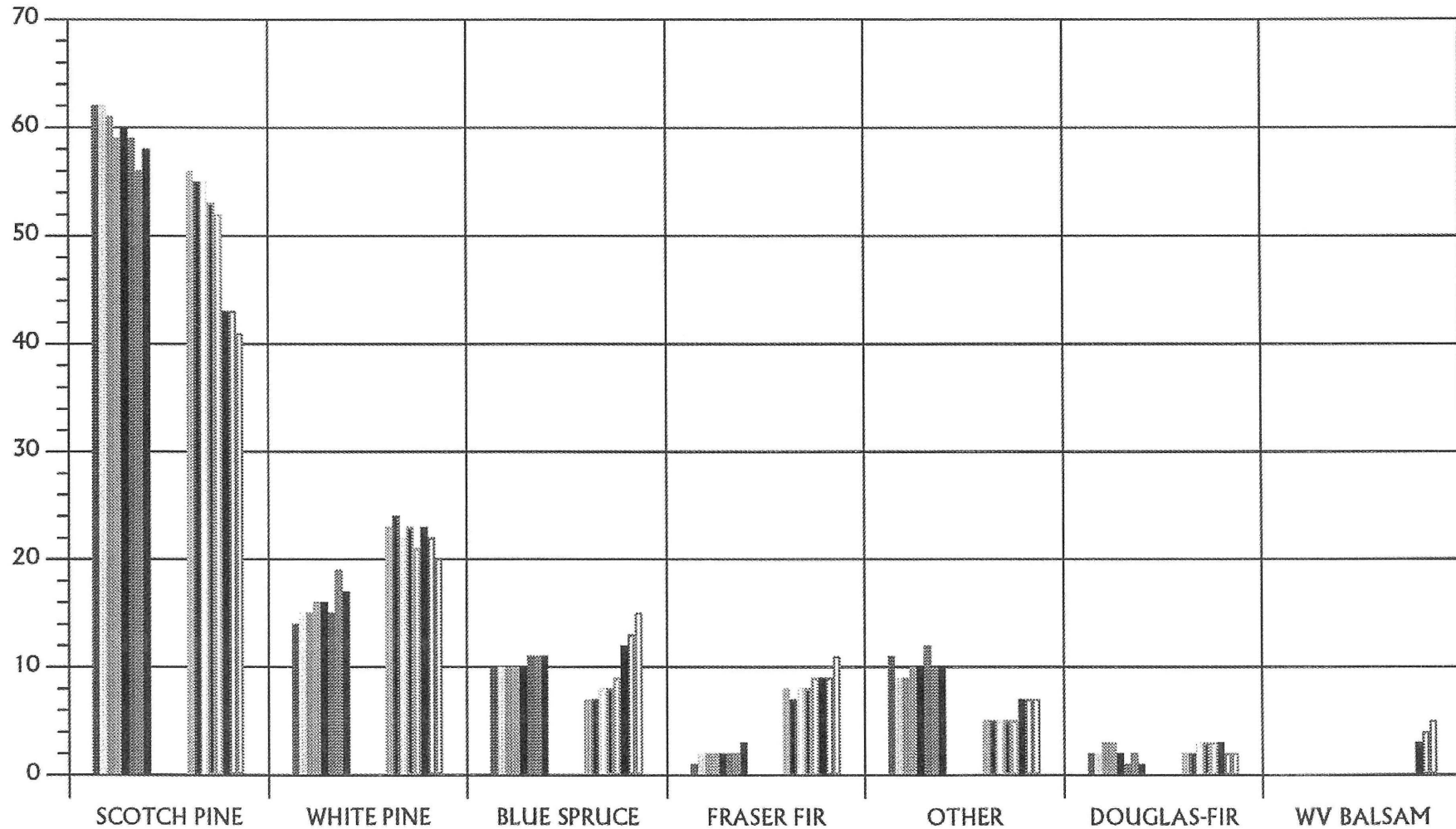
Though representing a very small proportion of the total harvest, Douglas-fir is important because it is a species in high demand. The number of Ohio Douglas-fir cut and the number dug for Christmas trees have both increased substantially since 1989, doubling and tripling respectively. These increases have maintained Douglas-fir as a relatively stable part of both the Ohio-grown cut- and dug-tree harvest,

Figure 9. Total Number of Ohio Christmas Trees Harvested by Species, 1976–1996¹



¹Successive bars over each species represent trees harvested from 1976–1996 with 1985–1988 missing. WV Balsam Fir data 1992–1996 only.

Figure 10. Percentage Composition by Species of Total Christmas Trees Harvested, 1976–1996¹



¹Successive bars over each species represent the percentage of total trees harvested that that species accounted for from 1976–1996 with 1984–1988 missing. WV Balsam Fir data 1992–1996 only.

Figure 11. Number of Cut Trees Harvested for Christmas Trees by Species, 1989–1996¹

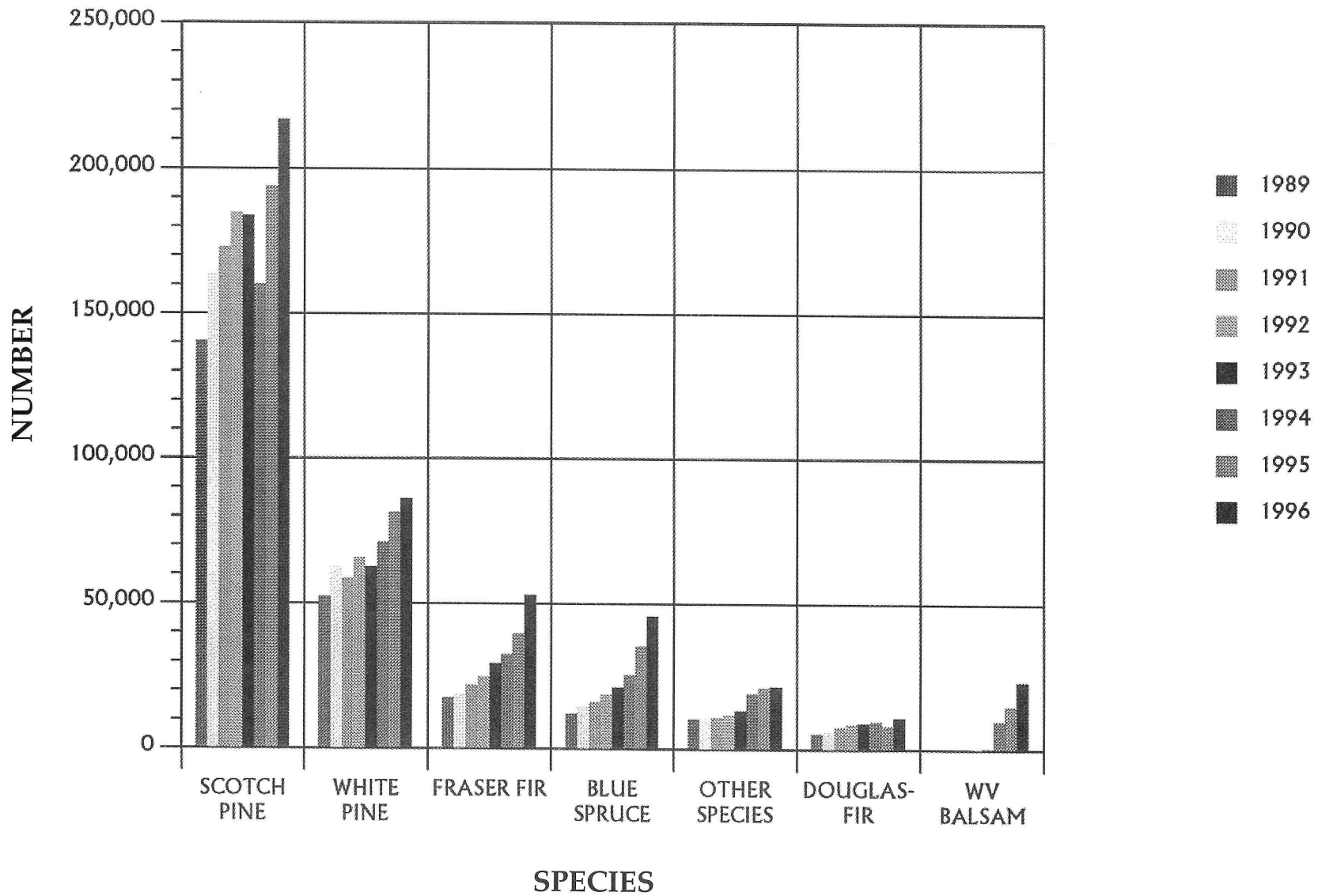


Figure 12. Percent Species Composition of Cut Trees Harvested for Christmas Trees
1989–1996¹

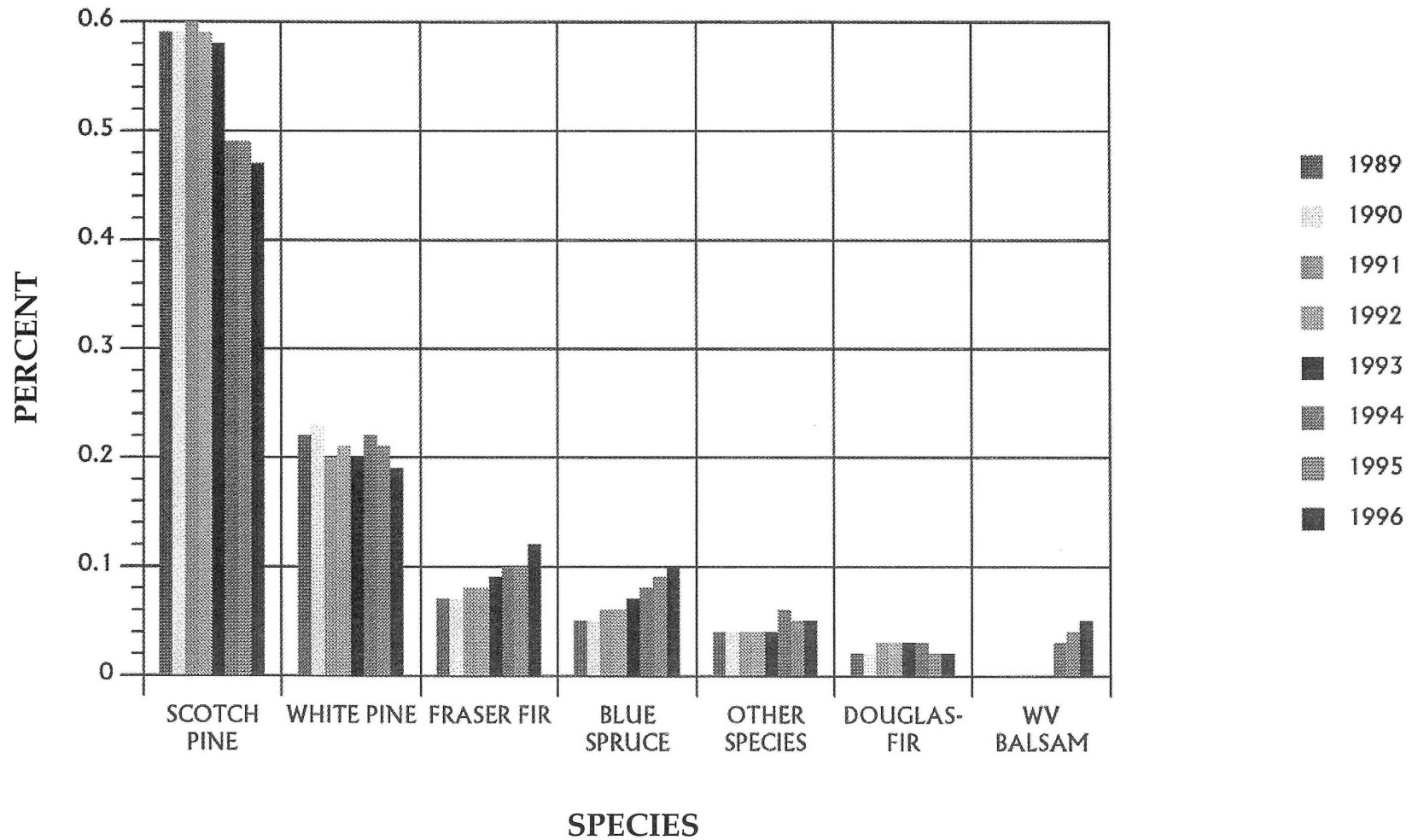


Figure 13. Number of Dug Trees Harvested for Christmas Trees by Species, 1989-1996¹

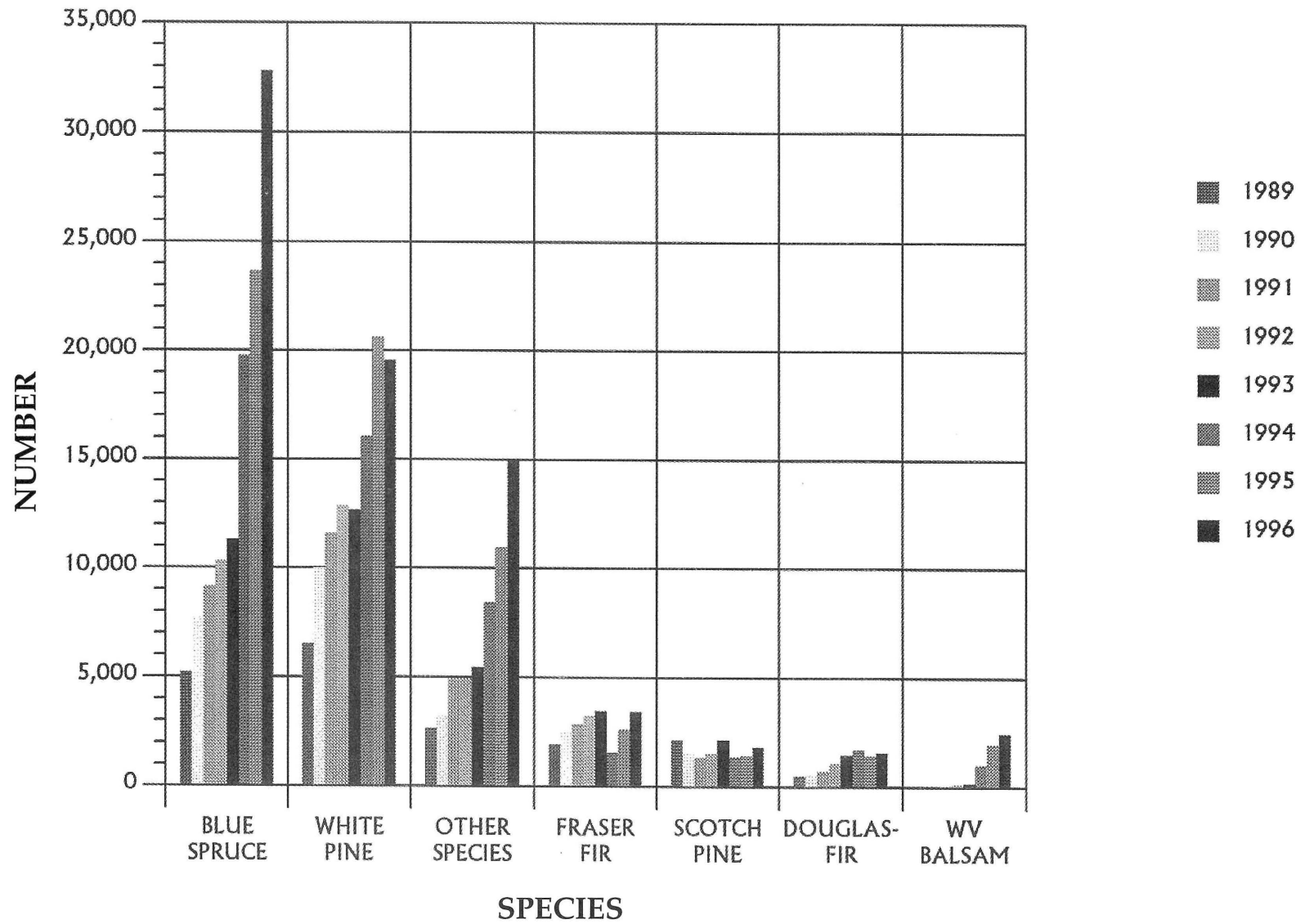
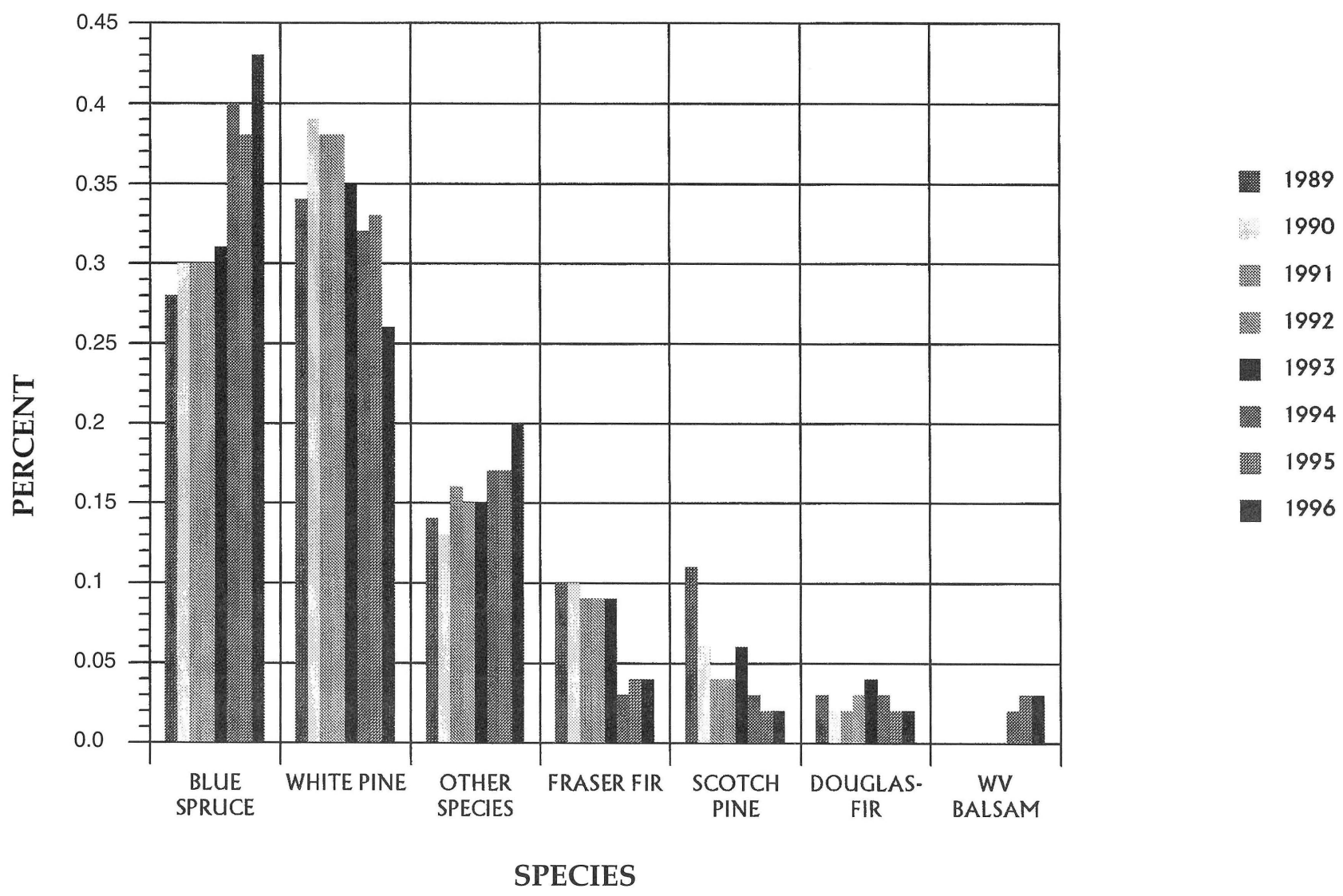


Figure 14. Percent Species Composition of Dug Trees Harvested for Christmas Trees 1989-1996¹



generally accounting for between two and three percent of each harvest.

The category “other species” includes Austrian pine, Norway spruce, balsam fir, red pine, concolor fir, Serbian spruce, and other species not specifically identified. In general, species in this group individually represent a small proportion of Ohio’s Christmas tree market, but collectively they are important. Between 1989 and 1996 the number of cut “other species” doubled from slightly more than 10,000 to over 21,000, maintaining it at between four and six percent of the Ohio-grown cut-tree harvest. During this time period the number of “other species” dug increased more than five-fold, from less than 3,000 to almost 15,000, resulting in an increase from 14 to 20 percent in the portion of the dug trees accounted for by “other species.” Because this species group contains several species, there are probably several reasons for the observed increases. One certainly would be grower experimentation with a variety of single-needle conifers, such as concolor fir and Serbian spruce, in an attempt to identify species that would grow successfully on their individual sites and would satisfy consumer demand for single-needle conifers. Another may be the perceived increase in the number of consumers interested in purchasing a living Christmas tree that can be planted after the holiday season. This category contains a number of species traditionally used for landscape planting in Ohio including Norway spruce, Serbian spruce, and Austrian pine.

Between 1989 and 1996 the number of blue spruce cut for Christmas trees increased approximately four-fold, from 11,970 trees to 45,555, resulting in a doubling of its percentage of the Ohio-grown cut-tree harvest, from five to 10 percent. The number of Ohio-grown blue spruce which were dug increased more than sixfold, from 5,185 to 32,760, resulting in an increase in

its percentage of Ohio-grown dug-tree harvest of more than six-fold. These somewhat dramatic increases probably have at least two causes. Blue spruce may be enjoying some increased demand because of the overall increase in demand for single-needle conifers. However, blue spruce has not traditionally been perceived as a highly desirable single-needle Christmas tree because its sharp needles make it difficult to handle and less desirable around children, and because of its undeserved reputation as having poor post-harvest needle retention. Nevertheless, the number of cut trees is increasing, as is the number of dug trees. This increase is undoubtedly due, at least in part, to the fact that blue spruce is a very attractive landscape tree that tolerates a variety of planting sites.

Current industry wisdom would suggest that single-needle conifers are the premium species for the latter part of the decade, and in the eastern United States, Fraser fir, balsam fir, and West Virginia balsam fir are the important single-needle conifers. Very little balsam is grown in Ohio because of its sensitivity to late spring frosts, and data on balsam was included in the “other species” category.

The amount of Ohio-grown Fraser fir cut for Christmas trees has increased threefold since 1989, and its percent of the Ohio-grown cut-tree harvest has increased from seven to close to 12 percent. While the number of Ohio-grown Fraser fir dug for Christmas trees has increased about 50 percent, only about 3,000 trees are dug annually, and its portion of the Ohio-grown dug-tree harvest has decreased since 1989 from 10 to around four percent. Industry “wisdom” suggests that, at least in the near future, consumer demand for the firs will increase or strengthen. Given this, and the increasing numbers of Fraser fir being planted by Ohio producers (Figure 4), Ohio-grown Fraser fir’s market share

should be maintained or expanded. There is, however, a limit to increases in Fraser fir production. It is a very site-specific species, and a high proportion of Ohio producers do not have land suitable for Fraser fir production.

West Virginia balsam fir, or Canaan fir as it is commonly referred to throughout much of the industry, is a relatively new variety to Ohio Christmas tree production, with widespread planting beginning only in the late 1980s and early 1990s. It is similar to Fraser fir, but has several characteristics that make it more suitable for Ohio producers, including a broader site tolerance and less susceptibility to late spring frosts. Significant numbers of West Virginia balsam fir are just now reaching market size and appear to be selling well. Most are being sold as cut trees, but West Virginia balsam fir would seem to have substantial potential as a dug tree. Its broader site tolerance, particularly of poorer drainage, and less susceptibility to late spring frosts could make it a more attractive landscape plant than many of the other single-needle conifers, including Fraser fir. Consumer and grower acceptance of West Virginia balsam fir, its suitability for many Ohio sites, and the number planted since 1989 would all suggest that the number of West Virginia balsam fir harvested in the next few years will increase markedly.

Harvest-to-Planting Success Ratio

A comparison of the number of trees reported harvested annually in Figure 7 with the number of trees reported planted in Figure 4 is striking. Data from both the 1981 and 1994 surveys suggest average annual harvests averaging close to 370,000 trees from plantings in excess of one mil-

lion trees per year. This success ratio of trees harvested to trees planted is lower than the frequently cited desired ratios of 50 to 60 percent or higher for Scotch pine and 80 percent or higher for the single-needle conifers. The lower a grower's success ratio, the lower the net profit. The critical question is "Why do Ohio producers appear to have such a low success ratio?"

Part of the explanation for this low success ratio may be found by looking at the character of Ohio's Christmas tree industry. As discussed earlier, the average Ohio Christmas tree grower is a small, part-time, choose-and-cut producer who receives less than 10 percent of annual income from Christmas tree sales. For such producers, Christmas tree production and marketing activities do not and cannot command the level of commitment invested by full-time producers. Other activities, including full-time jobs, often take priority over proper and timely Christmas tree production and marketing activities. Further, some part-time producers may be less willing or able to invest in needed equipment such as a planting machine or pesticide sprayer. And, part-time producers are less likely to have the time available to learn effective production and marketing techniques. Lack of proper and timely production practices can lead to a high proportion of unsaleable trees; lack of effective marketing can lead to reduced sales. Both result in a substantial reduction in trees successfully harvested.

Producers interviewed suggested that another factor contributing to Ohio producers low harvested-to-planted success ratio is the large number of trees planted on sites unsuited for the species planted. In some instances this "off site" planting is the result of producers not understanding the site requirements of Christmas tree species. In other instances, however, it is the result of choose-and-cut producers attempting to

produce a variety of species on a specific property to meet anticipated consumer demand. Small, part-time, choose-and-cut producers generally do not purchase land to grow Christmas trees, but utilize land they already own. Most often this land does not contain the quality and variety of sites necessary to produce the quality and variety of tree species that may be desired in a choose-and-cut operation. In an attempt to provide the desired variety of species, producers often plant species on sites less than suitable, resulting in substantially reduced harvest to planting success ratios.

And finally, some producers have noted that Scotch pine still makes up a substantial proportion of Ohio's Christmas tree inventory and that the historically expected harvested-to-planted success ratio of 50 to 60 percent or higher may be too high in today's production and marketing environment. They note that producing quality Scotch pine has, for many producers, become increasingly more difficult due, in no small part, to an ever-expanding array of insect and disease problems. At the same time, markets for lower quality Scotch pine have dwindled due to increased competition among producers and from the artificial tree, and increased consumer awareness and demand for quality.

Whatever the causes, many Ohio Christmas tree producers appear to have harvest-to-planting success ratios well below desirable levels. Identifying and correcting the causes of the low ratios on their individual operations would dramatically increase their net profits.

Summary

As noted in the introduction, Christmas tree production has been an attractive,

profitable agroforestry enterprise in Ohio which has contributed substantially to individual incomes and the economy of the state. To be competitive and financially successful in current and future Christmas tree markets, however, producers must grow high-quality trees of desired species and market them aggressively and effectively. To do this they must understand the demographics of their industry and its current production and marketing trends. The last comprehensive survey of the Ohio Christmas tree industry was completed in 1981 (Brown, 1983).

The current survey suggests that some of the overall characteristics of Ohio's Christmas tree industry in the mid-90s are quite similar to those of the early 80s. Noteworthy among those characteristics of the industry that were similar along with their 1994 values in parenthesis include the total number of growers (552), total number of trees (9.4 million), average grower size (17,009), high concentration of trees in the eastern half (70 percent) and northeastern quarter (51 percent) of the state, high proportion of part-time growers (90 percent), the total number of trees marketed (377,000), and the predominance of retail sales methods (47 percent of the producers receive more than three-fourths of their Christmas tree revenue from retail compared to only nine percent who receive more than three-fourths from wholesale sales).

However, the current survey also suggests that the Ohio Christmas tree industry of the mid-90s differs from that of the early 80s in some ways that are very important in planning future management and marketing strategies. The more important of these include:

- A grower age structure suggesting substantial retirement in the next two

decades, perhaps affording opportunities for new growers to become established or existing growers to expand their markets.

- A continuing decrease in the total number of trees planted each year which could result in a reduced number of Ohio-grown trees available for future harvest unless a greater proportion of trees planted is successfully harvested.
- A dramatic change in the tree species planted, with substantial and continual decreases in the numbers of Scotch pine and steady increases in the number of single-needle conifers including blue spruce, Douglas-fir, Fraser fir, and Canaan fir.
- A similar shift in the tree species harvested with the percentage of Scotch pine decreasing substantially; blue spruce, Fraser fir, and Canaan fir increasing substantially; and white pine, Douglas-fir, and "other species" remaining constant. These trends are consistent with the industry-wide perception that consumer demand has shifted and will continue to shift away from Scotch and other pines to the true firs and Douglas-fir.
- A relatively small but steadily increasing proportion of Christmas trees being dug rather than cut, rising from seven percent in 1989 to more than 13 percent by the middle of the 1990s.

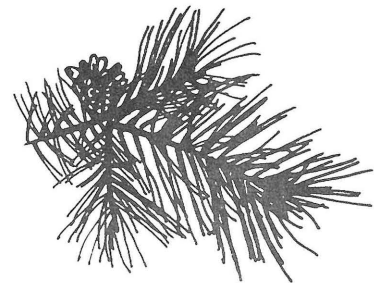
The data and analyses of "the state of Ohio's Christmas tree industry" presented in this report should provide valuable guidance to individuals and the industry as a whole as they develop management and marketing strategies for the next decade, and to the Ohio Christmas Tree Associa-

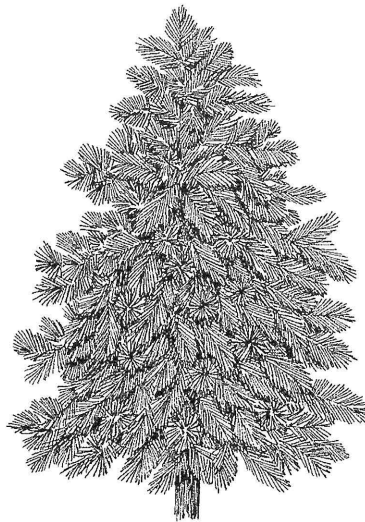
tion, Ohio State University Extension, and the Ohio Agricultural Research and Development Center as they plan and support educational and research programs to serve the industry.

Literature Cited

Baumann, David. 1997. 1996 Gallup Poll Results. *American Christmas Tree Journal* 41(2): 7-8.

Brown, J. H. 1983. Trends in Christmas tree production and marketing. *Ohio Report* 68(1): 3-6.





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