

showed symptoms. These individuals may not be able to exclude sodium from their roots, but instead may be able either (a) to exclude sodium from their mesophyll cells, or else (b) can tolerate higher sodium concentrations within their mesophyll cells.

Suggested precautions are the maintenance of adequate curbing where sugar maples adjoin city streets, and greater care with the use of deicing salts.

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### Literature Cited

- Baker, J.H. 1965. *Relationship between salt concentrations in leaves and sap and the decline of sugar maples along roadsides*. Mass. Exp. Station Bulletin 553:1-15.
- Banfield, W.M. 1967. *Significance of water deficiency in the etiology of maple decline*. Phytopathology 57:338.
- Button, E.F. 1964. Refinement of the potentiometric method for determining chlorides in plant material. Conn. State Highway Dept. Report. 5p.
- DiSanzo, C.P. and R.A. Rohde. 1969. *Xiphinema americanum associated with maple decline in Massachusetts*. Phytopathology 59:279-284.
- Guttay, A.J.R. 1976. *Impact of deicing salts upon the endomycorrhizae of roadside sugar maples*. Soil Sci. Soc. Am. J. 40:952-954.
- Hall, R., G. Hofstra, and G.P. Lumis. 1973. *Leaf necrosis of roadside sugar maples in Ontario in relation to elemental composition of soil and leaves*. Phytopathology 63:1426-1427.
- Hepting, G.H. 1971. Diseases of forest and shade trees of the United States. U.S.D.A. Forest Service Agric. Handbook No. 386:56-58.
- Hibben, C.R. 1969. *Ozone toxicity to sugar maple*. Phytopathology 59:1423-1428.
- Kielbaso, J.J., and K. Ottman. 1976. *Manganese deficiency — contributory to maple decline?* J. Arboriculture 3:27-32.
- LaCasse, N.L., and A.E. Rich. 1964. *Sugar maple decline in New Hampshire*. Phytopathology 54:1071-1075.
- Lagerwerff, J.V., and A.W. Specht. 1970. *Contamination of roadside soil and vegetation with cadmium, nickel, lead, and zinc*. Environ. Sci. Tech. 4:583-586.
- Mader, D.L., B.W. Thompson, and J.P. Wells. 1969. Influence of nitrogen on sugar maple decline. Mass. Agric. Exp. Station Bulletin 582:1-19.
- Miller, P.M. 1957. *A method for the quick separation of nematodes from soil samples*. Plant Disease Repr. 41:194.
- Riffle, J.W., and J.L. Kuntz. 1966. *Nematodes in maple blight and maple decline areas in Wisconsin*. Plant Disease Repr. 50:677-681.
- Worf, G.L., and J.L. Kuntz. 1973. Maple (Acer) and other trees. Disorder: Miscellaneous causes of maple decline. Urban Phytonarian Series Fact Sheet A2414.

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## SURVEY OF BUSINESS AND MANAGEMENT PRACTICES OF COMMERCIAL KANSAS ARBORISTS<sup>1</sup>

by Charlotte Jones and Steven M. Still

**Abstract.** In 1978 a survey of the business and management practices of commercial Kansas arborists revealed that the typical Kansas arborist owns his own business and has been in operation for less than 10 years. Net income is directly related to the size of population served. Fees are based on use of equipment, professional time, and cost of chemicals and materials. Low net incomes are the result of inadequate fee structures, according to the respondents. Skill at financial analysis varies widely between private owners and corporations.

There is a vast range of experience and knowledge in the profession of arboriculture to-

day, much of it fortunately having to do with the care of trees. Apparently, however, many arborists have neglected to improve their knowledge of business practices and do not have a plan for ongoing training in business management to help themselves keep current and operate more efficiently. Actually, little has been written about or studied about the management practices of the commercial arborist, although several interested organizations have recently conducted surveys of various types. The National

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Arborist Association (NA) is doing the leading research and conducts annual membership surveys that inquire into many aspects of business management. In 1971 the Midwestern Chapter of the International Shade Tree Conference (ISTC) conducted an 11-state survey dealing with the activities of commercial arborists. Further research is needed in this important phase of the arboriculture profession.

In 1978 a survey of commercial arborists in Kansas was conducted under the sponsorship of the Kansas Arborists Association. The purposes of the survey were (1) to establish statistical information concerning the arboriculture industry in Kansas, (2) to establish a data base that individual arborists could use to compare their businesses and professional practices to a Kansas norm, and (3) to use this information as an educational tool to improve the industry.

Surveys were sent to 119 active commercial arborist firms; 36 responded, which is a 30% return. Data gathered from this survey were compared to those obtained from surveys conducted by NAA (1,2,3,4) and by the ISTC (5). Although only 30% of the firms responded, this percentage should be sufficient to indicate trends. When the ISTC survey was mailed to Kansas arborists, only 27% responded (5). The National Arborist Association experienced similar results in its 1976 and 1977 surveys, with responses of 37% and 30%, respectively.

### General Information

Sixty-nine percent of the arborist firms identified their primary business interest as arboriculture; the remaining 31% indicated landscape maintenance. Several arborists indicated that they were expanding their businesses into the landscape area, such as turf management. Seventy-eight percent of the responding arborists were in business by themselves, 6% in partnerships, and 16% in corporations.

The Kansas arborists were relatively new to their profession (Table 1). Fifty-eight percent had been in business 10 years or less. Interestingly, the arborists in the midwest survey conducted by ITSC reported only 27% in business 10 years or less, with many (49%) having been in business

21 years or longer. One explanation for the high percentage of new arborists in Kansas might be the spread of Dutch elm disease across the state. Other areas of the country, such as Illinois, experienced this disease earlier and there are now few American elms left that need treatment or removal. In Kansas increased numbers of dead and/or diseased trees may have encouraged the development of new arboricultural firms.

**Table 1. Years in business as indicated by International Shade Tree Conference data (1971) and Kansas data (1978).**

Years in business	Percentage of total	
	Kansas	ISTC
0 to 5	24	11
6 to 10	34	16
11 to 20	18	24
21 to 30	18	16
31 to 40	6	20
40 +	0	13

Kansas is also a prairie state where widespread interest in trees and arboriculture has only recently been aroused. In 1954 the Department of Horticulture, Kansas State University, held its first Kansas State Shade Tree Conference, and four years later the Kansas Arborists Association was founded. Through the impetus of the Urban Forestry Program of the State and Extension Forestry Department at Kansas State University, three tree commissions and 140 tree boards have been established, which have undoubtedly increased the interest in arboriculture as a profession in Kansas.

Twenty-three responding arborist firms reported income information. In Table 2 their net incomes are compared to the size of population they serve. The location of the business seems to be of significance. Those businesses indicating a higher net income were located in larger population areas. Increased population and increased net income were directly correlated except for the arborists located in the 25,000 to 50,000 population areas. We could determine no apparent reason for lower income in this range. Metropolitan areas provide the arborists with a large number of potential customers — utilities, businesses, and homeowners.

The distribution of work based on percentage of

gross income by Kansas arborists is compared to NAA data in Table 3. Kansas arborists derived more income from tree removal and less from pruning compared to NAA data. Again the spread of Dutch elm disease across the state could account for the higher rate of tree removal. Once the diseased elms have been removed the tree removal percentage should decrease.

**Table 2. Net income of Kansas arborists vs. size of population served (Sample of 23).**

<i>Population Served</i>	<i>Frequency</i>	<i>Mean Net Income</i>
1,000 to 5,000	3	\$7,000
5,000 to 7,500	0	—
7,500 to 25,000	7	10,500
25,000 to 50,000	6	6,040
50,000 to 100,000	3	19,300
100,000 +	4	22,100

**Table 3. Distribution of work based on percentage of gross income by Kansas arborists compared to National Arborists Association (1975).**

<i>Work Activities</i>	<i>Kansas</i>	<i>NAA</i>
Pruning	22. %	37%
Tree removal	26. %	16%
Fertilizing	3. %	6%
Spraying	14. %	18%
Stump removal	8. %	—
Cavity work	.7%	1%
Grade changes	.3%	—
Cabling/bracing	2. %	2%
Line clearance	12. %	8%
Other	12. %	12%

In our survey 86% of the responding arborists gave free estimates and 78% provided free consultations. Free estimates are a method of increasing business. The arborist sells a service, not a product, and free estimates bring the arborist and the prospective customer together. Although time consuming, free estimates are probably a necessity.

Consultations, on the other hand, should not be given gratis. The professional arborist should be compensated for his knowledge and time devoted to consultations. Unfortunately, the horticulture industry as a whole has created a precedent of providing free advice. Perhaps the commercial arborist should consider the establishment of a consultation fee. If he is hired to do the work, this fee could be deducted from the bill.

Retirement policies had been established by only 5% of the arborists, while 78% of the arborists

had no sick leave policy. This differs greatly from the 1977 NAA survey, which reported that 22% of their responding members had a retirement policy and 36% had a sick leave policy. The 1977 NAA survey also indicated that 84% of the companies had vacation policies; however, only 58% of the reporting Kansas arborists provided such policies.

**Financial Information**

The highest, lowest, and average fees charged for several arboricultural services are indicated in Table 4. The range in charges is quite wide (for example, the charge for limb removal varied from \$13 to \$250). Although 97% of the arborists indicated that they based their charges on their time and cost of materials, 53% considered competition and 86% considered the demand for a particular service.

One of the survey questions asked, "How does your present fee structure for services compare with what you consider ideal for your operation?" Comparison of the responses to this question with net income of the reporting arborists showed a correlation between what was considered an adequate fee structure and high net income (Table 5). Arborists who reported their fee structures as inadequate had lower net incomes than arborists who indicated their fee structures to be adequate. This was true for all nine operations listed in Table 5. Comparison of the area of lowest net return with fee adequacy for a particular operation and then with net income revealed that businesses with low net incomes (\$10,000 or less) reported that the fee for the area providing the lowest net return was inadequate. Obviously these latter arborists need to analyze their service charges and make necessary adjustments.

**Business Management**

The Kansas arborists reported that they spent an average 5% of their gross income for advertising, the same average percentage reported by the NAA in 1976. Most of this money was spent on yellow page and newspaper ads, but some businesses advertised by radio, mail, business cards, and on trucks.

For financial comparisons, corporations were separated from the individually owned businesses

**Table 4. Charges for Arboriculture Services Reported by Kansas Arborists (1978).**

<i>Service</i>	<i>Low</i>	<i>High</i>	<i>Mean</i>
Removal of 3' stump (2' tall)	\$15	\$100	\$34
Removal of 12" diameter cottonwood branch	13	250	47
Elm leaf beetle spray on a 60' Siberian elm with a 35' canopy	6	25	14
Fertilization of 60' honeylocust (dbh=28") and canopy diameter of 40' by the following methods:			
Surface application	15	30	24
Water lance	10	24	35
Punch-bar	15	75	37
Installation of a triangle of cables in a Siberian elm (40' tall with branches approximately 3' apart)	25	150	60
Line clearance on a Siberian elm (original height = 40' with a 25' diameter canopy). Reduce height to 5' below wires	25	225	75

**Table 5. Present fee structures compared to mean net income by reporting Kansas arborists (1978).**

<i>Operation</i>	<i>Adequate</i>		<i>Inadequate</i>	
	<i>Frequency</i>	<i>Income</i>	<i>Frequency</i>	<i>Income</i>
Pruning	13	\$20,000	9	\$ 5,722
Tree removal	13	14,538	6	5,416
Fertilizing	11	18,681	6	6,083
Spraying	9	14,666	8	13,750
Stump removal	10	15,350	5	3,800
Cavity work	7	15,171	3	8,333
Grade change	4	35,250	3	8,333
Line clearance	9	14,000	2	8,500
Cabling/bracing	10	19,300	3	8,333

and partnerships to examine the differences among their recordkeeping procedures. Corporations are required by the Internal Revenue Service to keep very accurate records, and because of this they often have more sophisticated accounting systems.

Eighty-eight percent of the responding arborists hired an accountant to prepare their income taxes. An outside accountant was hired by 100% of the corporations to prepare income tax, by 83% of the corporations to prepare profit and loss statements, by 83% of the corporations to prepare balance sheets, and by 66% of the corporations to provide analysis and consultation. Individual owners used accountants far less. Although 90% of the individual owners hired an outside accountant for income tax preparation, only 27% utilized an accountant to prepare profit and loss statements. Accountants were used by only 17% of the individual owners to prepare balance sheets and/or provide analysis and consultation.

There was considerable difference between corporations and individual owners with respect to their frequency of record review (Tables 6 and 7). For example, cash position, accounts receivable, and accounts payable should be reviewed at least monthly and preferably daily. In contrast, income statements and balance sheets should be reviewed quarterly. Table 6 indicates that the incorporated arborists' review of records was very close to the norm. However, the individual owners (Table 7) varied widely in their review process. For example, only 12% were reviewing their cash position daily, and, strangely enough, 12% were reviewing their cash position yearly. On the other hand, balance sheets, which should be reviewed quarterly, were being reviewed monthly or more often by 62% of the individual owners.

Gross income for the responding Kansas arborists ranged from \$3,500 to \$200,000 with an average of \$50,000. Total expenses varied from \$2,000 to \$140,000 with an average of \$38,000.

**Table 6. Frequency of review of records by corporations.**

Records	Daily	Weekly	Monthly	Quarterly	Yearly
Cash position	40%	20%	40%	—	—
Accts. rec.	33%	—	67%	—	—
Accts. payable	40%	20%	40%	—	—
Chem. inventory	—	50%	—	—	50%
Expenses	—	20%	60%	20%	—
Gross income	—	20%	40%	40%	—
Income stmt.	—	—	20%	60%	20%
Balance sheet	—	—	20%	60%	20%

**Table 7. Frequency of review of records by individual owners.**

Records	Daily	Weekly	Monthly	Quarterly	Yearly
Cash position	12%	56%	16%	4%	12%
Accts. rec.	17%	50%	29%	4%	—
Accts. payable	8%	44%	44%	4%	—
Chem. inventory	7%	37%	21%	14%	21%
Expenses	13%	26%	43%	9%	9%
Gross income	4%	8%	46%	21%	21%
Income stmt.	4%	9%	41%	32%	14%
Balance sheet	5%	5%	52%	15%	20%

### Summary

This survey has indicated that, to be successful, a commercial arborist should be as well versed in business management as he is in the technical skills of arboriculture. Practicing arborists, both old and new, will have to become skillful in both areas if they are not already so. Although this was a survey of Kansas arborists, many of the findings could be applied nationwide. Most states have some type of annual shade tree or arboriculture conference where information is given and shared among participating arborists. Often the material is directed toward the professional skills of the arborist and not toward business skills. On the basis of the results from this survey, the following recommendations are submitted as possible topics to be covered at an annual conference:

1. Examine the possibility of more arborists setting a fee for consultations. Arborists should be compensated for their professional time.
2. Provide training on recordkeeping and accounting procedures. Since a majority of arborists keep their own records, this training could be quite useful.
3. Invite accountants to speak on how they can assist the small business owner. Arborists used accountants mainly for income tax preparation, but they can provide many more services.
4. Examine the methods to attract and retain qualified employees by implementing sick leave, retirement, and vacation policies. The arborist profession can continue to grow only if there is an infusion of skilled and dedicated employees.

### Literature Cited

1. Felix, Robert. 1975. Industry Statistics, National Arborist Association.
2. \_\_\_\_\_. 1976. Industry Statistics, National Arborist Association.
3. \_\_\_\_\_. 1977. Industry Statistics, National Arborist Association.
4. \_\_\_\_\_. 1975. *Managing an Arborist Company*. Journal of Arboriculture 1(6): 116-118.
5. Neely, Dan and E.B. Himelick. 1971. *Activities of the Commercial Arborist*. Arborist's News 36(5): 49-51.

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