

**TOWARDS DEFINING A WOODLOT MANAGEMENT
PROGRAM FOR THE PRAIRIE PROVINCES**

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INTRODUCTION

The use of natural resources is dictated by supply-demand considerations, fiscal and human resources and circumstances at a given time. The forest industries of Canada are concentrated in the boreal forest of the North, the Eastern Hardwood and Softwood forests, and the West Coast forests. Tree quantity and quality in the Prairie region often limit economic benefit, but there are extensive areas of private lands that contain sufficient acreage and quality of trees to warrant commercialization. These areas are concentrated along the prairie-forest fringe in all three provinces, with particularly valuable stands in Alberta. Woodlots in intensively farmed regions provide fuelwood, posts and rails and natural areas for recreation, hunting and trapping. The greatest values of woodlots on farmland, however, may be aesthetic and their use for soil and water conservation.

As cultural and economic circumstances change, the societal values placed on environmental concerns have enhanced the value of woodlots. Concerns with water balance control, soil erosion, shelter, and wildlife conservation have increased. Similarly, urbanization has spurred the need for "rural" properties on which to recreate or rest, and interest often centers on remaining forested land. Coupled with recent trends in agricultural economies, the perceived need to exact income from all resources on private land has renewed interest in diversification using woodlot resources. Once neglected resources, therefore, are being viewed in a different light.

The purpose of instituting woodlot programs at the governmental level is to assist private landowners in the management of their forest resources. To do so effectively requires that policies and programs identify and address the purposes of woodlot management deemed of greatest value to landowners. The diversity of types and locations of woodlots will be matched by a diversity of reasons for owning, retaining or developing forested areas. A woodlot program, therefore, either must be flexible and offer a wide range of options, or consist of a series of individual specialized programs.

The purpose of this research is to identify and analyze 1) the reasons why landowners protect or develop woodlots, and 2) the types of policies, programs and incentives that they would like to see in a woodlot management program. The research applies to the areas of predominately privately owned land in Manitoba, Saskatchewan and Alberta.

Information is presented for the following topics:

- 1) size of landholding,
- 2) previous attitudes and experiences of landowners regarding private forest management,
- 3) reasons for owning woodlots,
- 4) perceived knowledge of forest management,
- 5) awareness of opportunities in forest product development,
- 6) previous and potential commercial development,
- 7) interest in woodlot management,
- 8) program elements of greatest potential interest, and
- 9) socio-demographic characteristics of woodlot owners.

Methods

The three Prairie provinces are divided into areas according to Forest Sections or Forest Management Units. Using this stratification to derive a sample assures that private woodlot owners or potential woodlot developers with a variety of situations, needs and interests are surveyed. In turn, this assists the design and delivery of appropriate management programs and strategies to a broad spectrum of private landowners.

Within each Forest Section in each province, 200 private landowners were selected randomly to receive a survey questionnaire. The number of Forest Sections or areas determined the number of landowners surveyed. A minimum of 1200 landowners was surveyed in each province. Survey details are listed separately for each province in the report.

Data are aggregated in a number of ways, and results are presented and discussed in a similar manner for each geographical area. First, survey methods are explained and results are summarized. Included is an explanation of the geographic areas used (forest sections) to present results. Second, the characteristics of woodlot owners and their properties is presented. Characteristics included are age, occupation, gender, marital status, place of residence, distance from residence to woodlots and educational backgrounds of respondents. Land characteristics assessed are acres owned, acres rented, treed acreage, inherited land, commercially valuable forest areas, ownership status and a description of woodlot resources.

A third set of parameters involves identifying the reasons for owning and uses made of woodlots. Reasons given are rated for importance and ranked. Similarly, woodlot activities are defined and awareness of market opportunities, products sold and methods of selling and income derived are assessed. Additional questions regarding the economics of woodlots are discussed. Finally, management and information aspects of woodlots are presented, including consideration of programs.

Framework for Association Analysis

Cross-tabulations are used as the principal analytical tool to assess data. Owing to the high number of categories or possible responses to questions, many chi-square data tables are invalid because of low numbers of responses in some cells of the framework. Accordingly, frequencies were derived for all variables used and categories or responses are collapsed into combinations when numbers are low. Readers are cautioned that combined categories are not used to report descriptive information, and are not necessarily visible in cross-tabulations.

The following categories are used for analytical purposes only. **Age** has five categories; 1) >71 yrs. 2) 41-50 yrs., 3) 51-60 yrs., 4) 61-70 yrs., and 5) <40 yrs. (combines <20 yrs., 21-30 yrs. and 31-40 yrs. into one category). **Occupation** is reduced from 11 to 7 categories: 1) farmer-rancher, 2) labourer, 3) skilled trade, 4) professional, 5) retired, 6) business (combines business, commerce, clerical, office manager), and 7) others (combines homemaker and others). **Distance from residence to woodlot** is collapsed into five categories: 1) surrounds residence, 2) <5 miles, 3) 5-24 miles, 4) 25-99 miles (combines 25-49 and 49-99 miles), and 5) >100 miles. **Total acres owned** is reduced from five to four categories: 1) <320 acres, 2) 321-640 acres, 3) 641-1280 acres, and 4) >1281 (combines all responses above 1,281 acres). **Total acres rented** is reduced from four to three categories: 1) <320 acres, 2) 321-640 acres, and 3) >640 acres (combines all responses above 640 acres). **Total acres treed** is reduced to six categories: 1) <20 acres, 2) 21-40 acres, 3) 41-80 acres, 4) 81-120 acres, 5) 121-200 acres (combines two categories) and 6) >201 acres (combines two categories).

Length of ownership was originally categorized into eight categories, but is reduced to five categories for analysis: 1) <1950 (combines three categories), 2) 1951-1960, 3) 1961-1970, 4) 1971-1980, and 5) >1981 (combines two categories). **Type of ownership** is reduced from four to three categories: 1) respondent and spouse, 2) respondent only, and 3) partnerships (combines two categories). No changes are made in the number of categories for **level of education** or **distribution of woodland** on private properties. Notwithstanding these changes, many cross-tabulations are invalid owing to too few responses in too many categories. These are not reported.

A NOTE TO READERS

This report is written to serve a wide readership. Many readers may not be familiar with the statistical analysis used, or the meaning of numbers reported. It is important that results reported are supported by analyses so that human judgement (what we think we see) is tempered by the reality of the information reported (non-biased mathematical view). If you are not familiar with association analysis, please "read through" the numbers as they are meant only to support the words anyway. A brief explanation is given below if you want to know more.

Explaining Association Analysis

The notations used are X^2 (chi-square), df (degrees of freedom) and "p=" (probability that observed patterns occur by chance). The X^2 number is calculated by deriving a value for each possible category that reflects differences between observed values and expected values based on frequencies within the data for each category. The X^2 value is higher as differences increase. Its meaning, however, is interpreted in light of how many possible combinations of responses there are in the data. This determines the "degrees of freedom" which in turn determines whether or not a given value of X^2 is "significant." Here, significance is reported by the level of probability. If the chi-square (X^2) value would occur by chance, given the number of degrees of freedom, only 5 times or less in 100 ($p < 0.05$) the term "strong association" is used. If the probability of occurrence by chance is between 5 and 10 times per 100 ($p < 0.10$) the term "weak association" is used. This convention is intended to improve readability.

Inspection of the actual cross-tabulated numbers usually suggests "patterns" of association between the two variables tested. For example, if the five age categories are cross-tabulated to responses to a "yes" or "no" question, 5x2 or "10 cells" are formed in the data. Patterns emerge by inspecting the actual numbers in each "cell". If the derived X^2 value is large enough to be statistically significant ("p" is < 0.05 or < 0.10), the association is "real" and not just what we "think we see". It may be evident, for instance, that as respondents get older they respond with "yes" more often than younger respondents do. Age, therefore, would be significantly associated with the yes/no response likelihood, and the pattern changes from "no" to "yes" as age increases.

Association analysis does **not** allow determination of cause and effect relationships between variables.

WOODLOTS IN MANITOBA

The Province of Manitoba is divided into ten forest sections (Figure 1). Among these, significant areas of private land occur in five forest sections: Aspen Parkland, Pineland, Interlake, Mountain and Saskatchewan River. When respondents fail to identify the location of their properties they are placed into a "missing" category.

Owing to differences in area and population density among the forest sections the number of surveys mailed also varied. In Aspen Parkland, which is the largest most densely populated forest section, six landowners were selected randomly from each of 86 Rural Municipalities, yielding a total of 516 landowners. For Pineland, 40 landowners were selected randomly from each of the five Rural Municipalities involved, and two names were selected for the separate area of Victoria Beach, for a total of 202 landowners. Similarly, 25 landowners were selected randomly from the tax rolls of the eight Rural Municipalities in the Interlake, for a total sample of 200. In the Mountain forest section, 12 landowners were selected from each of the 18 Rural Municipalities, for a total of 216 landowners. Finally, 100 landowners were selected from the thinly populated Local Government District of Consul in the Saskatchewan River forest section.

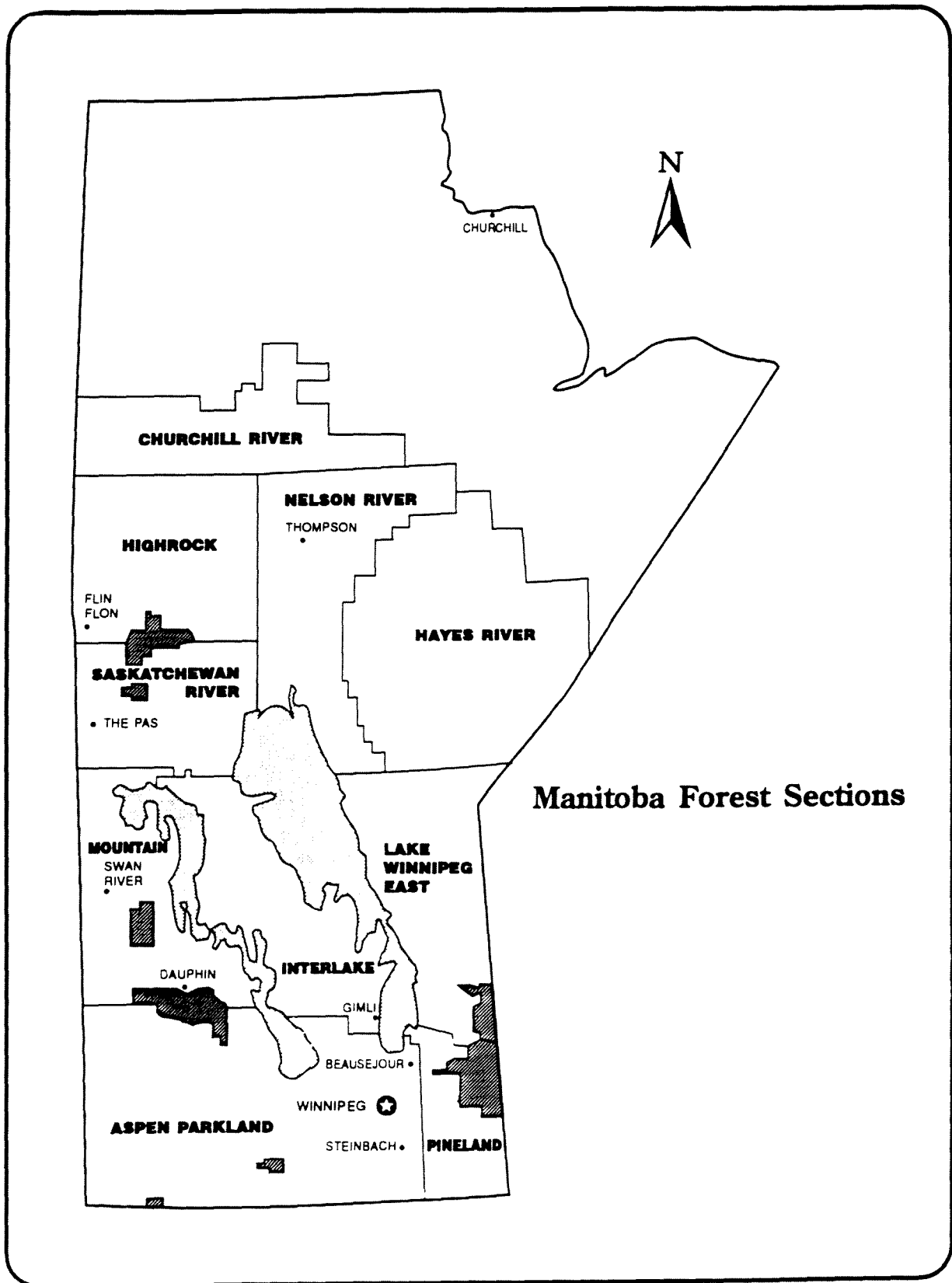
The total number of surveys mailed in Manitoba was 1,234. Twenty-two of these could not be delivered and were returned, leaving 1,212 possible respondents. Sixteen of 277 surveys returned were not usable. Returns that are usable in whole or in part, therefore, number 261, or 23 percent of the possible responses. The sample frame for Manitoba is summarized below. The actual number of usable returns varies for each question.

Sample Frame for Manitoba Woodlot Surveys

Forest section	No. Rural Municipalities	No. Landowners/RM	Special	Total sample
Aspen Parkland	86	6	0	516
Pineland	5	40	2	202
Interlake	8	25	0	200
Mountain	18	12	0	216
Saskatchewan River	1	100	0	100
Total possible				1,234
Returned to sender				22
Number returned				277
Incomplete returns				16
Usable returns				261

Figure 1

Manitoba Forest Sections



Characteristics of Woodlot Owners in Manitoba

A total of 241 respondents indicated age on surveys returned in Manitoba. Most landowners are distributed evenly in categories between 31-70 years of age, with less than 10 percent above and 10 percent below these values (Table 1). Landowners are somewhat older in the Pineland Forest Section, and somewhat younger in the Interlake and Mountain Forest Sections. The 26 respondents who did not indicate their home region are somewhat older.

Table 1. Age characteristics of respondents within each forest section in Manitoba

Age category	Forest sections													
	Aspen								Saskatchewan					
	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<20 years	1	1	0	0	0	0	0	0	0	0	0	0	1	<1
21-30	4	3	3	13	1	4	3	8	1	8	3	12	15	6
31-40	20	17	2	8	7	26	8	22	2	17	3	12	42	17
41-50	31	17	4	17	3	11	7	19	3	25	7	27	55	23
51-60	29	25	6	25	9	33	7	19	3	25	4	15	58	24
61-70	18	16	8	33	6	22	7	19	3	25	8	31	50	21
>71	13	11	1	4	1	4	4	11	0	0	1	4	20	8
Totals	116	100	24	100	27	100	36	100	12	100	26	100	241	100

More than half of the woodlot owners (54 percent) are farmers or ranchers, but this varies considerably among forest sections (Table 2). Agriculturalists are dominant in Aspen Parkland, the Interlake and Mountain Sections, are common in Pineland and "missing" data, but constitute only 18 percent of owners in Saskatchewan River. Retired persons comprise 16 percent of the overall sample, and are most numerous in the Interlake. No other occupation category has more than 10 percent of the owners overall, but labourers, skilled tradespersons and professionals are important groups in various forest sections.

Table 2. Primary occupations of owners by forest section in Manitoba

Occupation	Forest sections													
	Aspen				Saskatchewan									
	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Farming/ranching	68	57	10	42	18	67	23	59	2	18	12	43	133	54
Labourer	7	6	3	13	0	0	6	15	1	9	1	4	18	7
Clerical	1	1	0	0	0	0	0	0	0	0	0	0	1	<1
Skilled trade	3	3	2	8	0	0	1	3	2	18	4	14	12	5
Business/commercial	5	4	0	0	1	4	2	5	1	9	0	0	9	4
Office manager	1	1	0	0	0	0	0	0	1	9	0	0	2	1
Professional	10	8	4	17	0	0	2	5	3	27	5	18	24	10
Homemaker	1	1	0	0	0	0	1	3	0	0	0	0	2	1
Retired	19	16	3	13	7	26	4	10	1	9	5	18	39	16
Other	4	3	2	8	1	4	0	0	0	0	1	4	8	3
Total	119	100	24	100	27	100	39	100	11	100	28	100	248	100

Woodlot owners were asked if their residences are rural, in a town or village, or urban (>10,000 people) (Table 3). Three-fourths of the 247 respondents listed rural, signifying either farms or permanent rural exurbanites. Of the remainder, 15 percent live in towns or villages and 10 percent in cities.

Table 3. Location of residences of woodlot owners in Manitoba

Location	Forest sections													
	Aspen								Saskatchewan					
	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Rural	87	73	21	88	22	82	30	79	8	73	18	64	186	75
Town/village	21	18	2	8	3	11	3	8	3	27	5	18	37	15
City (>10,000 pop.)	11	9	1	4	2	7	5	13	--	--	5	18	24	10
Totals	119	100	24	100	27	100	38	100	11	100	28	100	247	100

Men responded most often to the survey. Of a total of 247 responses to gender, 214 (87 percent) are males and 33 (13 percent) are females. This pattern was evident in all forest sections, with males ranging between 81-96 percent of respondents. Marital status follows a similar pattern, with 80 percent of responses coming from married persons, 14 percent from single persons and 6 percent from widowed individuals. Married respondents varied only between 75-84 percent among forest sections.

Landowners were asked to indicate the distance from their residence to their forested property. Most live near their woodlots (Table 4). Among 242 respondents, 119 (49 percent) have residences within woodlots and an additional 58 (24 percent) live within 5 miles of their forested property. The remaining 26 percent is distributed between the 5-24 mile and >100 mile categories. Those in the latter group are definitely non-resident owners, while those within <25 miles may be owners of fragmented farms or woodlots near towns. Similarly, many non-farm permanent residences are located in forested areas. Variations in sample sizes make it difficult to interpret regional patterns, but >70 percent of residences in all forest sections are <5 miles from, or adjacent to woodlots.

Table 4. Distance between residence and woodlots for Manitoba properties

Category	Forest sections													
	Aspen								Saskatchewan					
	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Surrounds residence	53	46	13	54	17	71	13	35	9	90	14	50	119	49
<5 miles	29	25	5	21	4	17	14	38	--	--	6	21	58	24
5-24 miles	18	16	4	17	1	4	3	8	1	10	--	--	27	11
25-49 miles	2	2	--	--	--	--	1	3	--	--	--	--	3	1
50-99 miles	1	1	2	8	1	4	1	3	--	--	4	14	9	4
100+ miles	13	11	--	--	1	4	5	14	--	--	4	14	26	11
Totals	116	100	24	100	24	100	37	100	10	100	28	100	242	100

Woodlot owners have generally a low level of formal education (Table 5). One-third have less than high school and an additional 29 percent completed high school and stopped. About one-quarter have either college or university training. Those with less than high school are the major group in all but Aspen Parkland, and account for >40 percent of respondents in three regions. Those with some or complete post-secondary education account for about one-third of all respondents, but the sub-categories are unevenly distributed among forest sections.

Table 5. Educational background of woodlot owners in Manitoba

Highest level completed	Forest sections													
	Aspen Parkland		Pineland		Interlake		Mountain		Saskatchewan River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<High school	37	31	10	44	10	33	11	32	5	42	12	48	85	35
High school	38	32	5	22	8	27	10	29	3	25	7	28	71	29
Some post-secondary	10	9	3	13	3	10	4	12	1	8	3	12	24	10
College/technical	16	14	2	9	6	20	7	21	1	8	1	4	33	14
University	17	14	3	13	3	10	2	6	2	17	2	8	29	12
Totals	118	100	23	100	30	100	34	100	12	100	25	100	242	100

Characteristics of the Lands Controlled by Woodlot Owners in Manitoba

The average size of owned properties reported by 258 Manitoba respondents is 720 acres (Table 6). By forest section, the average owned property varied significantly from 181 (Saskatchewan River) to 980 acres (Interlake). Rented acreage is considerably lower, averaging 211 acres overall, and varying considerably from 1-296 acres among regions.

Table 6. Land characteristics of properties of woodlot owners in Manitoba

Land characteristics	Forest sections													
	Aspen		Pineland		Interlake		Mountain		Saskatchewan		Missing		Total	
	Parkland								River					
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
How many total acres of land do you own (1993)	121	847	25	411	32	980	37	614	13	181	30	549	258	720
How many total acres of land do you rent (1993)	92	242	19	98	29	296	28	217	11	1	27	120	206	211
How many owned acres of land is treed/forested	116	115	25	149	32	220	35	120	13	34	30	117	251	128
If inherited, how many years land been in family	61	55	12	58	22	50	26	51	6	46	17	44	144	52
How much owned forested land contains trees of commercial value	90	19	22	38	28	37	34	22	11	21	77	31	212	25

Woodlot owners were asked to indicate the number of treed acres on their owned properties. The overall average of 128 acres is 18 percent of total owned acreage. The average treed acreage varies between 34 and 200 acres among forest sections. The percentages of treed land on rural properties among forest sections are as follows: Aspen Parkland, 16 percent; Pineland, 36 percent; Interlake, 22 percent; Mountain, 20 percent; Saskatchewan, 19 percent; and properties in unknown areas, 21 percent. Data are consistent across forest sections.

Inherited land has been passed among generations for decades, with the average length of family ownership at 52 years. The averages vary only between 44 and 58 years among forest sections, suggesting that long-held family lands are widely distributed.

Forested land with commercially valuable trees is not common on owned properties of respondents. The overall average of only 25 acres is only 20 percent of the average treed acreage, or 4 percent of total owned acreage. The percentages of acreage of commercially viable trees as a percentage of acreage of forested land (first number) and total owned land (second number) among regions are as follows: Aspen Parkland, 16 percent and 2 percent; Pineland, 26 percent and 10 percent; Interlake, 17 percent and 4 percent; Mountain, 18 percent and 4 percent; Saskatchewan River, 62 percent and 12 percent; and those from unknown areas, 27 percent and 6 percent.

The size distribution of owned properties ranges widely (Table 7). Nearly half of the properties surveyed (43 percent) are less than 320 acres. These smaller properties are most common in the Saskatchewan River Forest Sections (77 percent) and least common in the Interlake. Properties between 321-640 acres comprise 19 percent of the total sample, and range only between 16-23 percent among forest sections. About one-quarter of the properties are 641-1280 acres in size and are most common in the Interlake and Mountain areas. Larger properties are not common overall, but are important in the Interlake (19 percent).

Table 7. Size distribution of total acres of land owned by woodlot owners in Manitoba

Acres owned	Forest sections													
	Aspen				Saskatchewan									
	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<320	49	41	15	60	8	25	15	41	10	77	15	50	112	43
321-640	23	19	4	16	5	16	7	19	3	23	7	23	49	19
641-1280	30	25	5	20	11	34	12	32	0	0	5	17	63	24
1281-1860	6	5	1	4	6	19	3	8	0	0	2	7	18	7
>1861	13	11	0	0	2	6	0	0	0	0	1	3	16	6
Totals	121	100	25	100	32	100	37	100	13	100	30	100	258	100
\bar{X}	847		411		980		614		181		549		720	
SD (unbiased)	1060		370		849		445		151		712		869	
Range	10->6246		17->1400		40->3800		20->1600		22->500		14->3500		10->6246	

Most woodlot owners in Manitoba also rent some land (Table 8). Of these, 80 percent rent less than 320 acres. This pattern is consistent among forest sections. Only about 10 percent of the respondents rent more than a section of land (640 acres).

Table 8. Total acres rented by woodlot owners in Manitoba

Acres owned	Forest sections												Total	
	Aspen				Saskatchewan									
	Parkland		Pineland		Interlake		Mountain		River		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<320	70	76	17	90	21	72	23	82	11	100	23	76	165	80
321-640	11	12	2	11	4	14	1	4	0	0	2	7	20	10
641-1280	9	10	0	0	1	3	4	14	0	0	2	7	16	8
1281-1860	1	1	0	0	3	10	0	0	0	0	0	0	4	2
>1861	1	1	0	0	0	0	0	0	0	0	0	0	1	0.5
Totals	92	100	19	100	29	100	28	100	11	100	27	100	206	100
\bar{X}	242		98		296		217		2		170		211	
SD (unbiased)	390		170		502		328		5		311		369	
Range	0->2000		0->520		0->1760		0->1120		0->16		0->1280		0->2000	

Treed acreage is widely distributed among nine size categories ranging from <20 to >401 acres (Table 9). The <20 acre category has the highest percentage representation (23 percent), but only one other category exceeds 15 percent of the properties. A wide variety of sizes of woodlots is apparent on Manitoba farms and ranches.

Table 9. Size distribution of treed acreage on properties of woodlot owners in Manitoba

Acres forest/treed	Forest sections													
	Aspen				Saskatchewan									
	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<20	32	28	2	8	2	7	7	20	7	54	6	20	50	23
21-40	13	11	2	8	5	16	5	14	1	8	5	17	26	12
41-80	17	15	7	28	3	10	4	11	4	31	9	30	35	16
81-120	14	12	2	8	5	16	4	11	1	8	4	13	26	12
121-160	11	10	4	16	1	3	5	14	0	0	0	0	21	10
161-200	13	11	3	12	2	7	6	17	0	0	2	7	24	11
201-300	7	6	2	8	5	16	2	6	0	0	2	7	16	7
301-400	5	4	1	4	2	7	1	3	0	0	1	3	9	4
>401	4	3	2	8	6	19	1	3	0	0	1	3	13	6
Totals	116	100	25	100	31	100	35	100	13	100	30	100	220	100
\bar{X}	115		149		226		120		34		117		129	
SD (unbiased)	137		132		236		120		32		191		159	
Range	0->500		0.5->500		0->1080		2->600		0->90		4->1000		0->1080	

Eighty-five percent of the 245 properties for which answers are known are owned by the respondent and spouse (63 percent) or the respondent only (25 percent), indicating "family" owned operations (Figure 2). Partnerships comprise about 8 percent of owned properties. Respondent only ownership is relatively consistent among forest sectors, but respondent and spouse ownership is less common in Aspen Parkland and the Interlake than elsewhere. Partnerships control >10 percent of the properties only in Aspen Parkland and the Interlake.

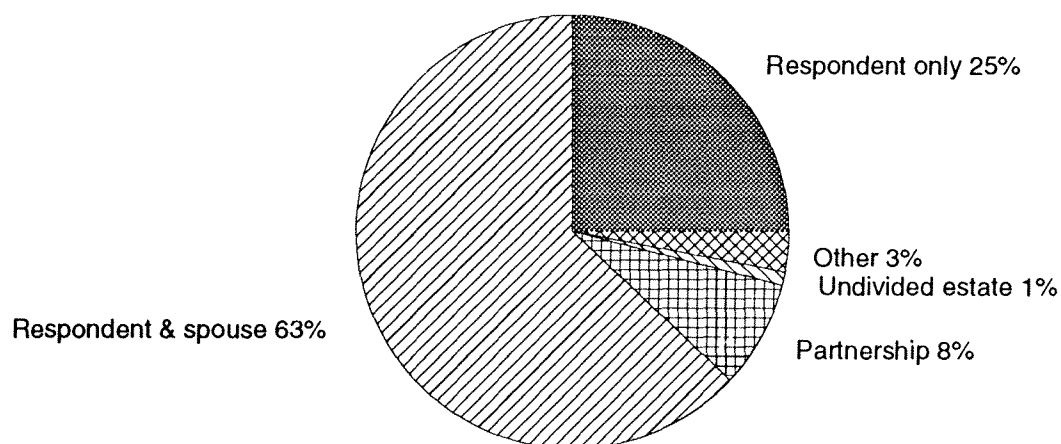
Manitoba's woodlots also have been in their current ownership for various periods of time (Table 10). About 30 percent came into present ownership since 1981, another one-third during the 1970's, and the remainder prior to 1970. Less than 10 percent of the woodlots were owned by current residents prior to 1950.

Table 10. Starting year of becoming a forest land owner in Manitoba

Year	Number	Percent
<1930	3	1
1931-1940	6	3
1941-1950	9	4
1951-1960	26	11
1961-1970	47	20
1971-1980	77	33
1981-1990	56	24
>1991	9	4
Total	233	100

Figure 2

Manitoba Ownership Status of Private Lands with Woodlots



Obvious variation occurs in forested land distribution on private properties in Manitoba. Landowners were asked to select one of five statements that best describe the distribution of their forested lands (Table 11). One or more large and several smaller parcels describes between 30 and 68 percent of the properties among forest sectors. Conversely, many smaller woodlots represent between 10 and 37 percent of the farms in various areas. Planted shelterbelts are scattered throughout most areas. Overall, 38 percent of the properties had one or more large parcels and several smaller parcels of forest. Many smaller parcels was the second most common description. The significance of the distribution of woodlots relates to management practice and the potential for commercial operations.

Table 11. Wooded land distribution within private properties in Manitoba

Distribution pattern	Forest sections													
	Aspen Parkland		Pineland		Interlake		Mountain		Saskatchewan River		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
One or more large parcels of land and several smaller parcels	36	31	17	68	10	33	18	47	1	8	13	45	95	38
Many smaller parcels	35	30	1	4	11	37	4	11	1	8	5	17	57	23
One large parcel of forest	17	15	6	24	7	23	5	13	6	50	4	14	45	18
Few smaller parcels	12	10	0	--	2	7	7	18	2	17	4	14	27	11
Primarily planted shelterbelt	15	13	1	4	0	--	4	11	2	17	3	10	25	10
Totals	115	100	25	100	30	100	38	100	12	100	29	100	249	100

Reasons for Owning and Uses Made of Woodlots in Manitoba

Woodlot owners were asked to rate the importance of 17 reasons for owning forested land (using a 5-point scale; Table 12). The number of responses for each rating category are reported for each forest section, and each "reason" is assigned, and ranked by an average derived from the 5-point scale.

Retaining treed areas around their personal residences is the highest ranked reason with a mean of 1.67 (Table 12). Most respondents answered this question, signifying strong opinions, with consistency among forest sections. Wildlife habitat and soil and water conservation also received strong response and have high average ratings of 1.83 and 1.92, respectively. Again, few people entered a "no opinion" on these questions. Heritage for the future also is a consistently highly ranked reason for retaining woodlots.

Table 12. Reasons for owning or retaining forested land and/or woodlots in Manitoba¹

Reason	Strongly agree					Moderately agree					Neutral					Moderately disagree					Strongly disagree					No opinion					TotalRating							
	(1)*					(2)					(3)					(4)					(5)										No.	Ave.						
	A	P	I	M	S	B**	A	P	I	M	S	B	A	P	I	M	S	B	A	P	I	M	S	B	A	P	I	M	S	B								
Personal residence	73	14	20	25	12	12	14	3	3	-	2	6	2	-	1	-	1	1	1	2	2	-	-	5	1	1	1	-	1	5	1	2	-	-	1	215	1.67	
Wildlife habitat	53	13	17	18	8	11	31	7	6	10	1	7	16	-	1	3	2	3	3	1	2	1	-	-	3	-	-	1	-	-	2	1	2	2	-	1	227	1.83
Conservation	54	6	17	13	6	6	32	6	7	10	2	7	10	5	2	6	3	5	3	-	1	1	-	-	2	-	-	1	-	-	2	2	1	2	1	215	1.92	
Heritage	44	12	15	14	8	10	29	5	5	9	1	2	12	2	3	4	2	3	6	-	-	2	-	1	2	-	2	1	-	1	7	1	2	4	1	212	2.10	
Personal fuelwood	26	9	10	15	7	7	19	6	7	9	2	3	27	6	1	5	2	2	12	1	4	-	1	2	10	-	3	4	-	-	11	-	2	2	1	2	218	2.61
Incidental part	31	3	10	11	2	6	33	9	5	6	2	7	20	2	5	6	4	2	6	1	2	2	-	1	8	3	2	2	-	1	6	2	3	4	2	4	213	2.62
Grazing	30	4	8	15	3	6	25	7	7	-	3	22	3	1	5	4	1	3	3	3	2	2	-	-	15	1	6	1	-	4	9	1	4	4	3	3	212	2.79
Recreation use	23	6	5	9	7	3	21	5	7	6	2	4	29	5	7	7	3	1	6	1	3	3	-	0	6	3	4	2	-	2	13	1	1	6	2	3	206	2.87
Hunting/fishing	25	7	8	8	2	5	13	4	2	6	2	1	31	5	6	9	1	2	3	2	3	2	2	2	18	2	5	3	-	3	11	-	2	4	3	3	205	3.03
Non-timber products	12	5	5	7	2	2	17	7	4	7	2	3	27	1	7	7	3	5	8	-	2	1	-	-	16	5	6	4	-	4	18	2	2	6	5	3	205	3.40
Timber for own use	6	2	2	5	2	2	4	8	7	6	2	6	28	7	4	10	3	1	7	3	2	2	1	4	28	1	9	4	1	2	23	1	3	6	1	1	204	3.70
Investment	11	3	1	5	-	1	14	4	2	3	1	3	31	3	6	5	3	6	4	3	6	1	2	2	24	2	7	9	1	1	14	4	5	8	3	3	201	3.74
Fuelwood for sale	6	3	1	3	1	1	9	1	2	1	-	2	24	5	7	9	3	3	10	3	3	-	-	1	29	6	12	9	1	5	19	2	2	8	5	4	200	4.08
Seasonal residence	11	1	3	3	1	2	9	1	1	2	-	2	20	3	4	3	1	2	5	-	3	-	1	-	27	8	8	10	1	3	26	6	7	13	7	7	201	4.31
Timber prod'n for sale	4	1	-	2	-	1	1	5	3	2	1	4	23	3	7	6	4	2	5	4	1	3	-	2	35	5	12	9	-	4	29	3	3	8	5	3	200	4.33
Tax incentives	2	-	-	4	-	3	5	1	1	1	-	-	25	7	11	6	1	2	9	2	1	1	1	2	26	5	9	7	-	3	27	4	5	11	9	7	198	4.41
Business	2	-	-	-	-	-	4	2	2	1	-	1	23	3	8	5	2	4	8	2	1	2	1	2	27	7	11	8	-	5	30	5	5	14	7	4	196	4.60

¹

All numbers are the number of respondents in each category, except the last column.

*

A response of 1 is highest rating. Multiple responses possible.

**

A=Aspen Parkland, P=Pineland, I=Interlake, M=Mountain, S=Saskatchewan River, B=Blank

The highest ranked "product" response is use for personal fuelwood (5th), which is followed by grazing (7th), recreation use (8th), and hunting and fishing (9th). Timber products for sale (15th), fuelwood for sale (13th), non-timber products (10th) and timber products for own use (11th) all have average ratings of >3.4/5.0. Using woodlots for businesses or tax incentives is virtually unknown. The number of "no opinions" is high for some reasons for owning or retaining woodlots (Table 12).

To provide focused priorities, landowners were asked to select the three most important reasons for owning or retaining woodlots in order of priority (Table 13). Responses are scored by allowing 3 points for first priority, 2 for second, and 1 for third, and reasons are ranked by weighted scores. The top five reasons listed are residence, wildlife habitat, soil and water conservation, personal fuelwood and grazing. The last two move up slightly in importance over the individual rankings in Table 14, but few shifts in relative importance are apparent. Spearman rank correlation was applied to the rankings and no significant difference is apparent ($p < 0.01$; $r_s = 0.92$, $n = 17$).

Woodlot owners were requested to respond to a series of reasons for using their forested land by listing first, second and third most important uses. Again, first rank is assigned 3 points, second rank 2 points and third rank 1 point, scores are derived, and reasons are ranked according to scores (Table 12). Based on actual use wildlife habitat, recreation and grazing are not only equally important, but also of far greater importance than any other reasons. Timber products for personal use, edible forest products and hunting and fishing are important secondary uses. Any commercial use of woodlots (other than grazing) are insignificant current uses.

Table 13. Number of responses, importance ratings and rankings of the reasons for **owning or retaining** forested land/woodlots in Manitoba

Reason	Weighted score ¹	Most important		Second most important		Third most important		Totals	
		No.	%	No.	%	No.	%	No.	%
Residence	301	81	35	21	9	16	7	118	17
Wildlife habitat	249	28	12	56	25	53	24	137	20
Conservation	210	35	15	42	19	21	10	98	14
Personal fuelwood	143	20	9	27	12	29	13	76	11
Grazing	106	17	7	22	10	11	5	50	7
Heritage for future	102	13	6	18	8	27	12	58	9
Recreation	61	8	3	11	5	15	7	34	5
Incidental part of farm	56	10	4	6	3	14	6	30	4
Hunting/fishing	35	5	2	5	2	10	5	20	3
Financial investment	32	6	3	3	1	8	4	17	3
Timber for own use	14	1	1	3	1	5	2	9	1
Tax incentives	13	2	1	2	1	3	1	7	1
Fuelwood for sale	10	0	-	5	2	0	-	5	1
Seasonal residence	10	1	1	1	1	5	2	7	1
Non-timber products	10	2	1	0	-	4	2	6	1
Timber prod'n for sale	2	0	-	1	1	0	-	1	1
Business	0	0	-	0	-	0	-	0	0
Other reasons	22	5	2	3	1	1	1	9	1
Total		234	100	226	100	222	100	682	100

¹ Weighted scores are derived by allocating 3 points for each response to most important, 2 points for second most important and 1 point for third most important

Table 14. The three most important reasons for **using** forested private land in Manitoba

Reason	Weighted score ¹	Most important		Second most important		Third most important		Totals	
		No.	%	No.	%	No.	%	No.	%
Wildlife habitat	264	35	16	61	30	37	20	133	22
Recreation	248	46	21	37	18	36	19	119	19
Grazing livestock	245	67	30	18	9	8	4	93	15
Timber for own use	121	14	6	27	13	25	13	66	11
Edible forest products	89	3	1	21	10	38	20	62	10
Hunting/fishing	71	8	4	13	6	21	11	42	7
Seasonal home	40	11	5	2	1	3	2	16	3
Forest land not used	40	8	4	4	2	8	4	20	3
Timber for sale	15	2	1	4	2	1	1	7	1
Bed & breakfast operation	12	2	1	3	2	0	-	5	1
Tourism	11	0	-	4	2	3	2	7	1
Outfitting/trapping	9	1	1	2	1	2	1	5	1
Forest products	6	1	1	1	1	1	1	3	1
Other	92	23	10	9	4	5	3	37	6
Total		221	100	206	100	188	100	615	100

¹

Woodlot Activities, Products and Marketing Knowledge in Manitoba

A series of questions was presented to woodlot owners concerning activities undertaken in their treed areas, market awareness for woodlot products, actual products sold and related economic matters. Landowners were asked to indicate whether they, someone else or both engaged in any of 14 activities during the last 10 years. The highest number of owners cut firewood (60 percent), an activity that is by far most common amongst those listed (Table 15). The three silvicultural practices of tree planting and site preparation, tree thinning or spacing and vegetation control all are common, involving 26-38 percent of woodlot owners. Conversely, 20 percent of the owners had cleared land without salvaging forest products. The commercial activities of cutting posts and rails (16 percent), cutting Christmas trees (8 percent), cutting sawlogs (7 percent), rough lumber production (6 percent), cutting pulpwood (4 percent) and value-added lumber (1 percent) are less common. Development activities such as wildlife habitat improvement (16 percent), roadbuilding (13 percent), and building trails (9 percent) may have commercial implications.

Table 15. Activities in Manitoba's woodlots during the last 10 years

Activity	Done by							
	Self		Someone else		Both		Total	
	No.	% ¹	No.	%	No.	%	No.	% ²
Cutting firewood	136	25	11	20	9	27	156	60
Tree planting or preparation for tree planting	90	16	2	4	6	18	98	38
Weeding or vegetation control	63	12	3	6	2	6	68	26
Tree thinning or spacing	51	9	6	11	3	9	60	24
Cleared land without salvaging forest products	36	7	11	20	4	12	51	20
Cutting posts or rails	39	7	2	4	1	3	42	16
Wildlife habitat improvement	37	7	2	4	1	3	40	16
Roadbuilding	20	4	11	20	3	9	34	13
Building hiking or crosscountry ski trails	17	3	2	4	3	9	22	9
Cutting christmas trees	19	4	--		1	3	20	8
Cutting sawlogs	15	3	2	4	--		17	7
Rough lumber	14	3	2	4	--		16	6
Cutting pulpwood	8	2	1	2	--		9	4
Value-added lumber	3	1	--		--		3	1

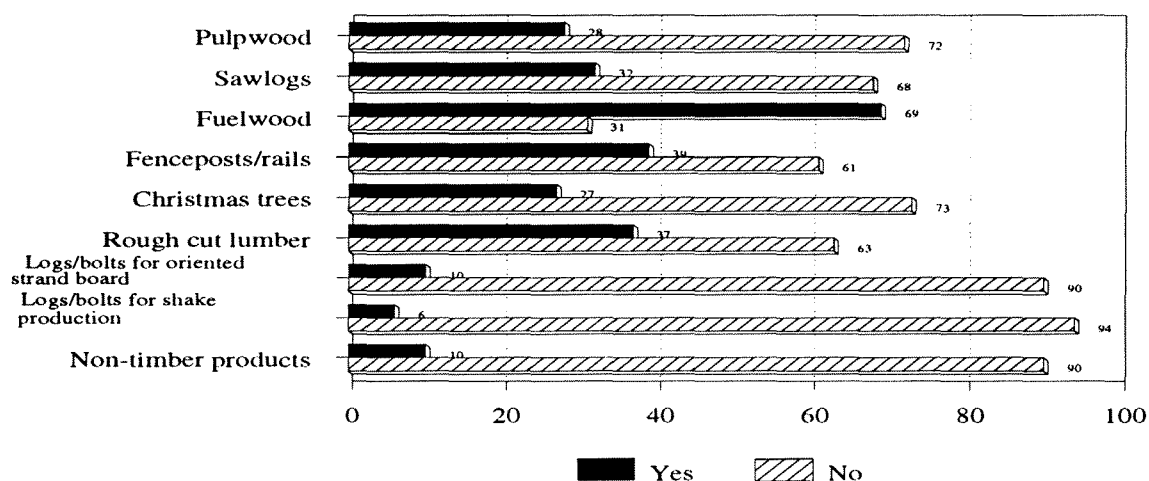
¹ Calculated as a percent of all activities listed (e.g. tree planting accounts for 25% of all activities by landowners).

² Calculated as percent of all possible respondents (e.g. tree planting occurs on 60% of the properties of all respondents).

The woodlot owners themselves have completed the work more than 70 percent of the time for all but one activity (roadbuilding), and more than 80 percent of the time for all but three activities (trail building, roadbuilding and land clearing). The only activities that landowners frequently tender, therefore, are those requiring specialized heavy equipment. Woodlot owners and others work cooperatively on some activities, but numbers are not high (Table 15).

Woodlot owners were asked to indicate whether or not they were aware of marketing opportunities for nine categories of forest products (Figure 3). Fuelwood is the only product for which more than half of the 248 respondents can identify markets. Between 28-40 percent are aware of where or how to sell pulpwood, sawlogs, posts and rails, Christmas trees and rough lumber. Markets are not widely known for log/bolt specialty products or non-timber products.

Figure 3
Awareness of Marketing Opportunities
for Forest Products by Woodlot
Owners in Manitoba



Few owners, however, have actively marketed woodlot products. Only 18 total responses were received to product marketing questions, and 7 of these involved directly delivered fuelwood (Table 16). Two persons delivered spruce and aspen to sawmills and one delivered pulpwood to a pulpmill. Four products were sold at roadside by one person each, and only one person sold standing pine trees. Direct delivery to buyers and mills account for 13 of 18 responses, and is the most common form of marketing.

The low numbers of sellers of commercial woodlot products is reflected in income projections from forested land (Table 17). Ninety-seven percent of 190 respondents state that <10 percent of their income is derived from forested land, 1 percent each list 11-30 percent and 31-50 percent, and one owner (0.5 percent) derives 51-70 percent of the property income from forest products. Income from all lands, however, is distributed bimodally with the highest percentages in the <10 percent and >91 percent categories. This likely reflects non-farm holdings in the lower categories, and large farms in the higher categories.

Table 16. Products sold and the method used to sell woodlot resources in Manitoba

Product sold	Sold at roadside		Sold standing trees		Delivered to buyers		Delivered to sawmill/pulpmill		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Vegetables (mushrooms)	1	25	--		1	10	--		2	11
Christmas trees	1	25	--		--		--		1	6
Berries	1	25	--		1	10	--		2	11
Pine	0	--	1	100	--		--		1	6
Lumber	0	--	--		1	10	--		1	6
Firewood	1	25	--		7	70	--		8	45
Spruce/Aspen	0	--	--		--		2	67	2	11
Pulpwood	0	--	--		--		1	33	1	6
Totals	4	100	1	100	10	100	3	100	18	100

Other: Hunting 20%; Trapping 20%; Wildlife 20%; Own Use 20%; Berries 20%.

Table 17. Estimated percent of income derived from forested and total land bases in Manitoba

Income percentage	From forested land		From all land	
	No.	%	No.	%
<10%	185	97	84	39
11%-30%	2	1	21	10
31%-50%	2	1	27	12
51%-70%	1	1	11	5
71%-90%	-	-	21	10
>91%	-	-	53	24
Totals	190	100	217	100

An effort was made to determine the level of economic return that woodlot owners would require in order to encourage management. Expectations are not too high for most as <\$50 per year per acre accounted for more than half of the responses (Table 18). An additional 21 percent would expect \$51-100 per acre per year. A few individuals responded in the remaining categories ranging to a high of >\$551 per acre per year.

Table 18. Level of return needed for owners to consider forest management in Manitoba

\$ ac/yr	Number	Percent	\$ ac/yr	Number	Percent
<\$50	37	53	301-350	--	--
51-100	15	21	351-400	1	1
101-150	3	4	401-450	1	1
151-200	2	3	451-500	3	4
201-250	--	--	501-550	--	--
251-300	2	3	>551	6	9
			Total	70	100

Those who indicated that they had harvested products from their woodlots were asked what they did with the cutover land. Among the 131 responses, 104 (79 percent) allowed natural regeneration to occur, and 3 (2 percent) actively reforested the area. An additional 24 woodlot owners (18 percent) converted the cutover land to other uses (presumably farmland).

Those who indicated that they had not harvested woodlot products gave a variety of reasons (Table 19). Simply not wanting to cut down their trees is mentioned most often, with not enough trees or not large enough trees being the second most frequent response. Maintaining the conservation or recreational benefits, and too busy to work woodlots are common responses. A few landowners listed not knowing how to market, inability to locate a buyer and low prices as restraints.

Table 19. Reasons for not harvesting woodlot products listed by Manitoba woodlot owners

Reason	Number	Percent
Do not want to cut trees	119	26
Not enough trees or no large trees	104	23
Maintain conservation benefit	75	17
Maintain recreational benefit	49	11
Too busy to work woodlots	46	10
Don't know how to market	18	4
Can't do work myself	11	2
Can't find buyer	11	2
Road or access problems	9	2
Low prices	7	2
Financially adverse effects	3	1
Total	452	100

All landowners also were asked to answer a question that called for rating of responses regarding willingness to harvest and sell woodlot products as opposed to preserving them. Half of the 207 respondents agreed or strongly agreed that they would be willing to forego profits for the aesthetic value of woodlots, 18 percent were neutral and 16 percent disagreed. Only 15 percent expressed no opinion on the issue (Table 20).

Table 20. Responses from Manitoba landowners to a question concerning willingness to forego profits from woodlots to protect aesthetic values

Question	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		No opinion	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
I am willing to give up profits from the sale of timber products in order to promote or preserve aesthetic values of woodlots	53	26	53	26	38	18	19	9	14	7	30	15

Three responses were solicited to a question concerning what cutting practices would be employed if a profit could be realized from harvesting woodlots. Seventy percent (125) of the 178 respondents would harvest on a small area basis, 18 percent (32 owners) would clear cut and use the land for agriculture, and 21 (12 percent) would clear cut and replant trees.

Management and Information Aspects of Woodlots in Manitoba

When asked if they were aware of the extent of forested land on their properties, 93 percent of the owners said they were aware. The average rating for the question was 1.31/5.0. Similarly, 91 percent of the landowners said that they are aware of the tree species on their property. A question concerning the age and condition of their woodlots, however, suggests lower levels of awareness. Only 66 percent of the owners agreed that they were aware of the condition of their woodlots, and the average response for the question was 2.2/5.0. There is, therefore, a general feeling among landowners that they understand the most basic parameters of their forest resources.

Further information was sought concerning the landowners perceptions of threats or problems relating to woodlots. They rated responses to five problems on a scale in which 1=not concerned and 5=very concerned. Fire danger received not only the highest average value overall, but also is the greatest perceived threat in four of the five forest sections identified and in unidentified locations (Table 21). Trespass is the second greatest concern overall, and the highest ranked problem in the Aspen Parkland Forest Section. Problems relating to disease are considered moderate threats, especially in Aspen Parkland, Pineland and Interlake forest sections. In total, all five problem categories cause some concern among woodlot owners.

Table 21. Rating (average) of potential woodlot problems in Manitoba (scale 1-5)¹

Potential problem	Forest sections													
	Aspen								Saskatchewan					
	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Fire	108	3.4	23	4.4	27	3.9	36	3.8	13	4.5	30	3.9	237	3.7
Trespassing	108	3.5	22	3.5	29	2.8	36	3.1	11	2.9	27	3.3	233	3.3
Disease problems	108	3.3	22	3.2	26	3.4	33	2.9	10	2.9	25	3.0	224	3.3
Vandalism	105	3.3	22	2.9	30	2.6	31	3.0	11	2.9	25	3.2	224	3.1
Insects and pests	108	2.9	23	3.1	30	3.1	32	2.8	10	3.0	26	2.8	229	2.5

¹ 1=not concerned; 5=very concerned

Two questions probed woodlot owners interests in managing their forest land. First, they were asked what management purposes would interest them in existing woodlots. Second, they responded to a question concerning why they would consider planting trees to expand their forest resources, or enhance existing resources. Fifty-one of 207 respondents (25 percent) are not interested in woodlot management, and 45 of 213 respondents (21 percent) are not interested in planting trees on their property.

Managing woodlots to provide shelter for residences, wildlife habitat and soil and water conservation receive the highest and almost equal positive responses (61-67 percent). Recreational use and replacing dead or harvested trees are significant secondary reasons. Commercialization, or expanding the forest resource are mentioned by about one in five persons who said management would interest them (Table 22).

Table 22. Purposes of managing existing woodlots or planting trees on their properties that interest Manitoba owners

Purpose	Managing				Planting trees			
	Yes		No		Yes		No	
	No.	%	No.	%	No.	%	No.	%
Shelter for residence	159	67	80	34	155	63	92	37
Wildlife habitat	151	63	90	37	122	49	125	51
Soil and water conservation	146	61	92	39	139	56	108	44
Recreational use	104	44	132	56	70	29	176	71
Replacing dead or harvested trees	95	40	143	60	88	36	158	64
Insect or disease control	83	35	155	65	n/a		n/a	
Expanding your forest resource	45	19	193	81	48	18	202	82

Management interest was defined further by asking for priorities among management options. Woodlot owners were asked to rank four options as first to fourth priorities. Results suggest that all four options are reasonably attractive to landowners, as mean priorities range only between 1.69 and 2.29 on a 4.0 scale. Wildlife habitat again receives highest overall ratings, but personal forest product supplies also are important. Commercial sales of products received fourth priority. Only two other suggestions were received.

Some variation is evident among forest sections. Wildlife habitat, for example, is the number one response overall, but is rated number one only in Aspen Parkland and the Interlake among regions (Table 23). Commercial sale of products is the top response in Pineland and personal forest products in Mountain, Saskatchewan River and undesignated locations. These data suggest wide variation not only in woodlots, but also in their perceived value by owners.

Table 23. Number of responses to types of woodlot management that interest landowners (ordered by average preference)

Type	1st priority						2nd priority						3rd priority						4th priority						Total (n)	Rating (X)
	A	P	I	M	S	B	A	P	I	M	S	B	A	P	I	M	S	B	A	P	I	M	S	B		
Wildlife habitat	27	6	9	7	3	3	17	4	6	4	3	2	5	3	1	1	1	2	1	1	-	1	-	1	108	1.69
Personal forest product supply	12	2	4	6	3	5	5	5	3	1	1	2	6	1	1	2	-	2	1	1	-	-	-	-	63	1.75
Recreation	9	4	-	1	1	1	19	2	1	-	2	2	6	2	4	1	1	1	1	-	1	-	-	-	60	2.15
Commercial sale of products	5	4	1	-	-	2	6	4	1	2	-	3	1	1	1	1	1	-	2	-	2	1	2	1	41	2.29

* A=Aspen Parkland; P=Pineland; I=Interlake; M=Mountain; S=Saskatchewan River; B= missing forest sections.

Three questions sought to identify the knowledge landowners have about sources of information regarding woodlot management. Nearly half of the respondents are uncertain whether there is enough information on private forest land opportunities available. Only 23 percent thought there was enough information. In total, therefore, three out of four woodlot owners do not know the status of information (Table 24). About one-third of the respondents do now know how to obtain available information and another third are uncertain. Most owners, therefore, are not familiar with the persons or agencies that could help them with woodlot management. The availability of tree planting stock, however, is widely known as 69 percent of landowners were aware of sources. A long history of involvement with PFRA likely accounts for most of this knowledge, but local nurseries, provincial and other federal programs also are available.

Table 24. Knowledge of information sources for woodlot management among Manitoba owners

Question on information	No		Yes		Uncertain	
	No.	%	No.	%	No.	%
Is there enough info on private forested land opportunities available to land owners?	75	31	56	23	112	46
Do you know how to obtain available information?	93	38	70	29	80	33
Do you know where to get tree planting stock?	38	16	168	69	39	16

When asked if income from and investment in forest activities on their land is currently an important source of alternative income only 6 (2 percent) of 247 Manitoba woodlot owners said yes. When asked if they foresee woodlot income as a long term future option, however, 50 (22 percent) said yes. This suggests that landowners are looking for economic options other than production agriculture, as 43 owners (18 percent) viewed woodlots as a long term diversification possibility. Among 183 respondents, 15 (8 percent) said they would prefer a one-time liquidation of their forest resources and 168 (92 percent) prefer to manage and harvest over time. Ninety-three percent of the respondents want to manage their own woodlot resources.

Table 25. Management preferences and economic expectations expressed by Manitoba woodlot owners

		Forest sections													
		Aspen						Saskatchewan							
Occupation	Response	Parkland		Pineland		Interlake		Mountain		River		Missing		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Is present income/ investment important	No	108	98	23	92	31	97	38	97	13	100	28	100	241	98
	Yes	2	2	2	8	1	3	1	3	--	--	--	--	6	2
Could income/invest- ment be important in future	No	19	18	9	39	5	17	6	18	2	15	9	36	176	78
	Yes	84	82	14	61	24	83	27	82	11	85	16	64	50	22
Is your woodlot a long term diversification option	No	16	14	14	14	27	90	33	90	10	77	21	75	199	82
	Yes	94	86	10	10	3	10	4	11	3	23	7	25	43	18
Would you prefer one- time liquidation of woodlot resources	No	81	94	12	12	23	92	26	90	10	100	16	89	168	92
	Yes	5	6	3	3	2	8	3	10	--	--	2	11	15	8
Prefer management by	Myself	94	93	29	94	31	94	11	100	--	--	22	92	208	93
	Someone else	6	6	1	3	2	6	--	--	--	--	--	--	13	6
	Both	--	--	1	1	1	3	--	--	--	--	--	--	3	1

Woodlot Management Programs

Landowners responded to two questions concerning the need for woodlot programs. An average rating of 2.7/5.0 resulted from a question concerning the need for a provincial woodlot management program. Since a value of 1.0 signifies strong agreement, the overall value suggests that rural property owners are split on the issue of program need. Need was strongest in Saskatchewan River, Pineland and Interlake forest sections, and weakest in Mountain. All values, however, range only between 2.3 and 3.1.

Table 26. Average rating of responses to statements of program need by Manitoba woodlot owners

Statement	Forest sections							Total No.
	Aspen	Pineland	Interlake	Mountain	Saskatchewan		Unknown	
	Parkland				River			
	Ave.				Ave.			
Provincial woodlot management programs should be developed to assist the private forest land-owners on the prairies	2.7	2.5	2.6	3.1	2.3	2.7	227	2.71
I would benefit from an organization that represented the interests of private woodlot owners	3.3	2.9	3.5	3.3	3.4	2.9	221	3.20

Even less need is expressed for organizations to represent the interests of private woodlot owners. The overall average of 3.20/5.0 for 221 responses suggests little perceived need. Average ratings among forest sections ranged only between 2.9 and 3.5.

Those who expressed interest in woodlot programs also responded to questions on program content. Woodlot information and education receive the highest overall rating of 1.56/5.0 (Table 27). It also receives highest ratings in the five specified forest sections. Technical assistance also rates highly and is second most important in four of the five specified forest sections. Financial assistance is the lowest rated of the three program elements, but is important in Mountain forest section, and the overall rating is not widely divergent from the other program elements. In total, the three components probably will have to be combined in an effective program.

Table 27. Program priorities for a provincial woodlot management program in Manitoba

Program element	Forest sections						No.	Total Ave.
	Aspen	Pineland Ave.	Interlake Ave.	Mountain Ave.	Saskatchewan			
	Parkland Ave.				River Ave.	Unknown Ave.		
Woodlot information and education	1.61	1.47	1.39	1.71	1.13	1.68	177	1.56
Technical assistance	1.96	2.05	2.00	2.23	2.14	1.62	173	1.98
Financial assistance	2.14	2.35	2.33	1.95	2.67	2.27	144	2.19

Landowner organizations are the preferred vehicles for delivery of woodlot programs (Table 28). They receive the highest overall rating among agencies by a wide margin (2.16/5.0), and are the preferred group in all forest sections except Saskatchewan River. Provincial governments, private sources and government-private partnerships are rated about equally. Intergovernmental partnerships and the federal government, however, are not viewed as appropriate program delivery organizations.

Table 28. Average ratings of organizations who should assist a provincial woodlot management program in Manitoba

Organization	Forest sections						No.	Total Ave.
	Aspen	Pineland	Interlake	Mountain	Saskatchewan	Unknown		
	Parkland Ave.	Ave.	Ave.	Ave.	River Ave.	Ave.		
Landowner organizations	2.0	2.4	2.5	2.1	1.7	2.2	134	2.16
Provincial government	2.5	2.8	2.1	3.3	1.3	3.3	113	2.65
Government-private partnerships	2.8	3.0	3.6	2.3	3.7	2.5	96	2.79
Private sources	2.6	3.5	2.9	3.2	2.8	2.6	102	2.84
Intergovernmental partnerships	3.4	4.4	3.2	3.7	4.0	2.3	88	3.44
Federal government	3.5	3.7	3.1	4.6	4.7	4.2	87	3.80

ASSOCIATION ANALYSIS FOR MANITOBA

Woodlot Activities

Manitoba woodlot owners strongly prefer to manage their own forest resources (Table 25). In keeping with this fact one would expect landowners to control activities on their properties. Association analysis, however, allows testing of patterns between various woodlot activities, characteristics of the owners and properties and preferences in conducting activities themselves sharing responsibility or allocating rights to others. Associations that do occur may provide insight into the design and presentation of programs. The ten characteristics tested include 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education of owner, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership and 10) pattern of woodlot distribution.

Tree planting on private properties is associated with age in Manitoba ($X^2=19.15$, 8df, $p=0.01$). As landowners get older they are prone to letting others do tree planting on their properties. **Tree thinning** also is associated with age ($X^2=23.17$, 8df, $p=0.01$), but the pattern is not clear. Tree thinning also is associated with distance between residence and woodlot, with owners who live in or near woodlots preferring to do thinning operations themselves. Those who own properties individually (as opposed to spousal or partnerships) prefer to share or allocate thinning operations ($X^2=7.89$, 4df, $p=0.10$). No associations are evident for **vegetation control** in woodlots. Roadbuilding activities are associated with length of ownership in that those with longest tenure prefer to let someone else do the work ($X^2=12.14$, 6df, $p=0.06$).

No significant associations are apparent for the important activities relating to **wildlife habitat**. There is, however, an observable trend towards more willingness to share or allocate responsibility to others as the size of owned and rented properties increases.

The low number of responses to the activities of **cutting pulpwood, cutting sawlogs, producing rough lumber and producing value-added lumber** did not allow valid analysis. The only noticeable trend in the data is a propensity for the owners of small woodlots to have others produce rough lumber.

The common practice of **cutting firewood** is associated with several of the characteristics tested. First, those who rent larger acreages are more willing to share firewood management or allocate rights to others ($X^2=7.84$, 4df, $p=0.10$). This tendency is apparent across the Prairie region. Second, length of ownership is associated with the cutting of firewood ($X^2=19.18$, 8df, $p=0.01$), but the pattern is irregular. Generally, those who have held tenure longest allow others to cut firewood. Third, the Prairie-wide pattern of type of ownership and firewood cutting is weakly identifiable in Manitoba. Others are allowed to cut on properties with one owner, spousal owners cut their own fuelwood resources, and partnerships share responsibility. Finally, those with large parcels of woodlots tend to cut their own firewood, while those with small woodlots allow others to cut ($X^2=14.52$, 8df, $p=0.07$). No associations are apparent for **cutting of posts and rails**.

Owners of smaller farms prefer to do their own **trail building** in Manitoba ($X^2=11.29$, 6df, $p=0.08$). Also, one owner properties share or allocate trail building to others ($X^2=8.54$, 4df, $p=0.07$). There are no significant associations between **Christmas tree farming** and the **clearing of land** and the ten characteristics tested in Manitoba.

When analyzed for individual or property characteristics, **age** is important because older owners tend to let others to tree planting and tree thinning operations. **Occupation** could not be analyzed accurately. **Distance from residence** indicates that owners who live near their woodlots prefer to do tree thinning themselves. **Education level** of owners made no difference in who performed woodlot activities. Owners of smaller farms (**acres owned**) prefer to develop their own woodlot trails, while owners who rent extensive areas (**acres rented**) prefer to let others do, or share firewood cutting. **Total acres treed** did not associate with any activity responsibilities. **Length of ownership** indicates that those who have held woodlots longest prefer to let others do road building. **Type of ownership** affected tree thinning and trailbuilding activities in that properties with one owner share or allocate these responsibilities most often. Similarly, owners of large parcels of woodland (**woodlot distribution**) prefer to cut their own firewood.

Awareness of Marketing Opportunities for Forest Products in Manitoba

Association analysis was applied to responses regarding landowner awareness of markets for nine forest products: 1) pulpwood, 2) sawlogs, 3) fuelwood, 4) posts and rails, 5) Christmas trees, 6) rough cut lumber, 7) strand board, 8) shake products and 9) non-timber forest products. Associations were sought for ten characteristics of landowners or their properties: 1) age of owners, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership and 10) distribution of woodlots on their properties. No significant associations occur between occupation, total acres owned, total acres rented and length of ownership and market awareness.

Awareness of **pulpwood markets** in Manitoba is associated with level of education ($X^2=10.54$, 4df, $p=0.03$), type of ownership ($X^2=4.60$, 2df, $p=0.10$) and woodlot distribution ($X^2=7.56$, 4df, $p=0.10$). As their level of education increases landowners are less aware of pulpwood markets. Properties owned jointly by spouses show greater market awareness, and landowners with larger parcels of forested land are more aware of markets.

Older woodlot owners are less aware of **sawlog markets** ($X^2=8.29$, 4df, $p=0.08$). Those who live closest to and furthest away from their woodlots are more aware of sawlog markets, but the association is weak ($X^2=8.89$, 5df, $p=0.10$). Much stronger associations are evident between type of ownership ($X^2=6.53$, 2df, $p=0.04$) and woodlot distribution ($X^2=13.49$, 4df, $p=0.01$) and market knowledge. Owners of properties owned by spouses and those with large parcels of woodland are most aware of sawlog markets.

Age is weakly associated with awareness of **fuelwood markets**, with the oldest landowners being least aware ($X^2=7.66$, 4df, $p=0.10$). Much stronger association is evident for total acres treed ($X^2=8.68$, 2df, $p=0.01$) and woodlot distribution ($X^2=18.67$, 4df, $p=0.01$). Those who own extensive acreage of woodland and/or woodlots that occur in large parcels are most aware of fuelwood markets.

A similar pattern exists for knowledge of markets for **posts and rails**. As treed acreage increases, awareness increases among landowners ($X^2=6.32$, 2df, $p=0.04$). Also, those who own woodlots distributed as large parcels are more aware of markets for posts and rails ($X^2=15.71$, 4df, $p=0.01$).

Knowledge of **Christmas tree markets** is associated with age of owners ($X^2=11.59$, 4df, $p=0.02$) and woodlot distribution ($X^2=11.14$, 4df, $p=0.03$). Although the pattern is inconsistent, older landowners generally are less aware of Christmas tree markets. The pattern is inconsistent for woodlot distribution, but awareness tends to increase as the size of woodlots increases.

Awareness of **rough lumber markets** is associated with distance to residence, total treed acreage and woodlot distribution. The association with distance to residence is strong ($X^2=12.08$, 5df, $p=0.03$), but the pattern is inconsistent. It appears that those who live close to and furthest away from their woodlots are most informed. The other associations show consistent patterns. As total treed acreage increases awareness also increases ($X^2=5.14$, 2df, $p=0.08$). Similarly, those whose woodlots occur as large parcels are more aware of rough lumber markets ($X^2=10.81$, 4df, $p=0.03$).

Age is associated with knowledge of **strand board** markets ($X^2=10.07$, 4df, $p=0.04$). The youngest and oldest woodlot owners are most aware. No characteristics are associated significantly with awareness of markets for **shake products** or **non-timber products**.

Analyzing information by characteristics shows that awareness of markets for sawlogs, fuelwood, Christmas trees and strand board is associated with **age**. Generally, associations are weak and older landowners are least aware. **Distance to residence** is weakly linked only with knowledge of sawlog markets. Similarly, **level of education** of owners is associated with only one market, that for pulpwood, and those with higher levels of education are less aware. **Acres owned** and **acres rented** do not associate with market awareness in Manitoba. **Acres treed**, however, does link with fuelwood, post and rail and rough lumber markets. In all cases, awareness of markets increases as treed acreage increases. Similarly, those whose **woodlots** occur as large parcels are most aware of markets for pulpwood, sawlogs, fuelwood, posts and rails, Christmas trees and rough lumber. These last two characteristics are the only ones showing widespread consistency in both association and pattern. **Spousal ownership** of property is associated with greater awareness of pulpwood and sawlog markets.

Program Priority Associations in Manitoba

Manitoba woodlot owners were asked to rank three possible woodlot program components as first, second and third priorities: 1) woodlot information, 2) technical assistance, and 3) financial assistance (Table 27). Association analysis was applied to priority responses for each program component and each of the following ten characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties. No significant associations occur for any of the three program components for the following characteristics: 1) age of owners, 2) occupation, 3) total acres treed, 4) length of ownership, and 5) type of ownership.

Education of owners is weakly associated with **information component** priority. Those with less than grade 12 and those with university degrees rate information as highest priority ($X^2=14.60$, 8df, $p=0.07$). The only other characteristic associated with priority for information is woodlot distribution. Those who own large parcels and those with primarily planted woodlots rate information as highest priority ($X^2=18.89$, 8df, $p=0.02$).

Manitoba woodlot owners do not associate priorities for **technical assistance** with any of the ten characteristics tested.

Priorities associated with **financial assistance** occur for distance to residence, total acres owned and total acres rented. The association with distance to residence ($X^2=17.02$, 8df, $p=0.03$) presents no discernible pattern. Acres owned ($X^2=11.51$, 6df, $p=0.07$) and acres rented ($X^2=7.84$, 4df, $p=0.10$) are weakly associated with similar patterns of owners of larger properties giving lower priority to financial assistance.

Each of the five characteristics showing associations are linked with only one of the program components. **Level of education** and **woodlot distribution** associate with the information component. **Distance to residence**, **acres owned** and **acres rented** all associate with priorities for financial assistance.

Association Analysis of Program Need in Manitoba

Woodlot owners were asked to rate the need for provincial woodlot management programs and landowner woodlot organizations on a 5-point scale ranging from strongly agree to strongly disagree. These responses were tested for association with the following ten characteristics of landowners or their properties: 1) age of owner, 2) occupations, 3) distance from residence to woodlot, 4) level of education of owners, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) woodlot distribution on private land.

Only the age of landowners is associated with **program need** and this association is weak ($X^2=23.38$, 16df, $p=0.10$). The apparent pattern is that older owners are more positive toward a program than are younger owners.

Total acres treed and woodlot distribution are associated with the need for **landowner organizations** to promote woodlot management. As the treed acreage on their lands increases owners become more favourable toward establishing organizations ($X^2=15.61$, 8df, $p=0.05$). Also, if woodlots occur as large parcels on their lands owners are more positive about the need for organizations ($X^2=24.77$, 16df, $p=0.07$).

Association Analysis of Current Uses of Woodlots in Manitoba

Owners were asked to indicate in order of priority the three most important current uses made of their woodlots by their families. A list of 13 uses and an "other" (open-ended) category was available for importance rating (Table 14). Many of the possible choices received few responses, obviating association analysis for those variables. Inspection of frequency printouts suggests that the most valid and interpretable results are achieved by analyzing the most frequently listed response categories. Total usable cases diminish rapidly owing to the need for full response to three major questions to qualify. Four use categories are defined from the data: 1) recreation, 2) commercial production, 3) personal use of forest products, and 4) wildlife habitat. Associations were sought for these categories for ten characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private lands.

No significant associations occur in Manitoba for any use category for eight of the ten characteristics tested: age of owner, occupation, distance from residence to woodlot, level of education, total acres owned, acres treed, length of ownership, and type of ownership. Personal use of woodlot products is associated with total acres rented ($X^2=7.23$, 3df, $p=0.07$). Those who rent few acres are more likely to use woodlot products personally. Also, commercial use of products increases if woodlots occur in large parcels on private lands ($X^2=13.48$, 8df, $p=0.10$).

Program Delivery Associations in Manitoba

Woodlot owners responded to a question concerning what agency or group they preferred to deliver woodlot management programs. The following choices were listed in order of priority by respondents: provincial government, federal government, private sources, inter-governmental partnerships, government-private partnerships and landowner organizations (Table 28). Associations were calculated for ten characteristics of landowners or properties: 1) age, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties.

In Manitoba, no significant associations are apparent for seven of the ten characteristics and priority of delivery agency. **Level of education** is associated with priority for landowner organizations ($X^2=29.64$, 16df, $p=0.02$). The pattern of association is defined poorly but suggests that those with less formal education prefer landowner organizations. Owners of the largest and smallest properties (**total acres owned**) are least favourably disposed to delivery by federal agencies ($\chi^2=27.06$, 16df, $p=0.04$). Only two forms of delivery, therefore, are associated with the tested characteristics in Manitoba: delivery by **federal government agencies** and **landowner organizations**.

Analysis Of Users Of Private Woodlots

Manitoba woodlot owners were asked to indicate who is allowed to use their woodlots and for what purposes. The three responses allowed are 1) used by self and family, 2) used by others, and 3) shared by self and family and others. The 12 uses assessed include 1) second homes, 2) bed and breakfast operations, 3) outfitting and trapping, 4) tourism, 5) recreation, 6) hunting and fishing, 7) wildlife habitat, 8) livestock grazing, 9) timber for sale, 10) timber for personal use, 11) edible products, and 12) collection of other products (eg. cones). Responses are cross-tabulated for the user categories for each woodlot use category against the following characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties.

Use of woodlots for **second homes** (or cabins) is weakly associated with age of owner and users ($X^2=13.78$, 8df, $p=0.09$). Young owners let others use, or share use with others more often than do older owners of woodlots with second homes.

Occupation of owners is associated weakly with who is allowed to **hunt or fish** in private woodlots. Labourers, tradespersons and those in business use their woodlots more themselves, while farmers and professionals share these activities with others, and farmers and retired persons allow others to use their woodlots ($X^2=19.75$, 12 df, $p=0.07$). Also, retired owners are most likely to allow others to **graze** livestock in their woodlots, while farmers are most likely to share grazing rights ($X^2=27.18$, 12df, $p=0.01$).

Distance from residence to woodlot is associated with user patterns for four woodlot activities. **Second homes** are restricted to use by family members as distance increases ($X^2=13.28$, 8df, $p=0.10$), with use by others virtually non-existent if owners live more than five miles away. **Grazing** is predominantly controlled by family members only if residences are close to woodlots ($X^2=45.86$, 8df, $p=0.01$). Conversely, **selling of timber** is shared more with others as distance increases ($X^2=15.11$, 6df, $p=0.02$). Similarly, self use of **edible products** decreases with distance to woodlots ($X^2=15.77$, 8df, $p=0.05$).

User patterns for **hunting and fishing** are the only ones associated with level of education of the owners. Owners with lower levels of education tend to restrict use to themselves and family, while those with higher educations share these uses with others ($X^2=16.86$, 8df, $p=0.03$).

Similar use patterns occur for **hunting and fishing** and **edible forest products** in association with total acres owned. As the number of owned acres increases, owners are more willing to share these activities with others. The association is strong for hunting and fishing ($X^2=14.74$, 6df, $p=0.02$), and weak for edible products ($X^2=10.20$, 6df, $p=0.12$).

Five associations occur when analysis is applied to total acres rented. Holders of extensive rented acreage are more willing to share **recreational use** with others ($X^2=7.46$, 4df, $p=0.11$), **hunting and fishing privileges** ($X^2=10.72$, 4df, $p=0.03$), and **wildlife habitat** ($X^2=9.73$, 4df, $p=0.05$). A similar pattern occurs for **personal timber and other products** but data are limited and chi-square values are suspect. There is, however, a strong association for user patterns of **edible products** ($X^2=27.11$, 10df, $p=0.01$), with use by others increasing as total acres treed increases.

Length of ownership is associated significantly with user patterns for **hunting and fishing**. Recent owners restrict use to their families more than do those who have owned woodlots for long periods of time ($X^2=16.43$, 8df, $p=0.04$).

Woodlots owned by one owner are shared with owners in use for **recreation** with others, while those in spousal ownership or partnership allow more use by others without family members ($X^2=9.03$, 4df, $p=0.06$). **Hunting and fishing** are weakly associated with use by family members if owned singly, and more linked to use by owners and others if held by partnerships ($X^2=7.81$, 4df, $p=0.10$). A strong association between user patterns for **personal timber** and type of ownership ($X^2=12.86$, 4df, $p=0.01$) presents no clear pattern owing to limited data.

Only one significant association occurs for distribution of woodlots and user patterns. **Edible products** are shared more by owners of large parcels of forest, while owners of small woodlots restrict use primarily to members of family ($X^2=13.61$, 8df, $p=0.09$).

In summary, **acres rented** shows association with user patterns for six (6) different uses, and **distance from residence to woodlots** for four (4) uses. These two variables, therefore, affect more use patterns than others. **Type of ownership** is linked to three (3) uses, and all other variables are associated with only one (1) or two (2) use categories.

Among use categories, six (6) different variables are associated with user patterns for **hunting and fishing**: 1) occupation, 2) level of education, 3) total acres owned, 4) total acres rented, 5) length of ownership, and 6) type of ownership. Many factors, therefore, play a role in who is allowed to hunt and fish on properties with private woodlots. Five variables are associated with user patterns for **edible forest products**, but fewer owners are involved. Other use categories have only one (1) or two (2) associated variables except bed and breakfast, outfitting and trapping and tourism, which have no associated variables in Manitoba.

Analysis Of Land Use Practices Following Harvest

Owing to the fact that some aspects of woodlot programs encourage harvest of treed areas, it is important to determine what landowners who already have harvested woodlots have done to the land following cuttings, and to ask those who could harvest in the future what they anticipate land use to be after harvest. Three responses were optional to a question concerning what was done with the land after harvest has occurred: 1) the area was actively reforested, 2) the area was allowed to regenerate naturally, or 3) the land was converted to non-forest use. Three answers also were options for responses from those who might make income by cutting woodlots in the future: 1) clear cut and convert land use to agriculture, 2) clear cut and replant the trees, and 3) clear cut on a sustained yield basis. Both sets of responses are cross-tabulated with the following characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private lands. Many analyses at the provincial level are

limited by low numbers of responses in some categories. Only linkages with clearly defined patterns of association and reasonable response levels are reported.

Only two significant associations are evident in Manitoba in responses from those who already have harvested woodlots. **Age** is associated with actual land use practices following harvest of woodlots ($X^2=19.15$, 8df, $p=0.07$). Younger owners are prone to convert woodland to other uses following cutting, while older owners are more likely to allow natural regeneration. **Total acres treed** is associated with land use in that owners with small acreage prefer to reforest areas following cutting, and natural regeneration is favoured as acreage increases ($X^2=9.65$, 4df, $p=0.05$).

Analysis of responses relating to probable future land use if harvest did occur suggests only one significant association. Woodlot owners who live less than 5 miles from their treed acreage would convert cut-over areas to other land uses, those living between 5-24 miles would replant cleared areas, and those living more than 100 miles away prefer to harvest on a sustainable yield basis ($X^2=14.43$, 8df, $p=0.07$).

SUMMARY

A total of 261 usable returns (23 percent) from 1,221 possible respondents comprise the Manitoba sample of woodlot owners. Respondents are distributed evenly in age classes between 31-70 years of age. About half of the respondents are farmers, but occupational mixes vary somewhat among areas. Three-quarters are rural residents and one-quarter live in towns, villages or cities. Eighty-seven percent of the respondents are males. Half of the woodlot owners live in, and another quarter live within 5 miles of their woodlots. About 10 percent live more than 100 miles from their woodlots. About one-third of the respondents never finished high school, one-third did finish high school, and one-third have either some, or have completed post-secondary educations.

The characteristics of the properties owned by respondents vary widely. The average property size is 720 acres, but varies among regions from 181 to 980 acres. Average rented acreage is 211 acres, but varies from 1 to 296 among regions. Properties have an average of 128 acres of trees, or 18 percent of the land. Forested land perceived as having economic value by owners averages only 25 acres per property, or 4 percent of total acreage. Nearly half of the properties are less than 320 acres and one-quarter are between 641-1280 acres. The sample, therefore, is comprised of many small and fewer large properties. A wide variety of sizes of woodlots is apparent on Manitoba rural properties. Most properties are owned jointly by spouses or by one person. Partnerships comprise only 8 percent of ownerships. About one-third of the properties have been owned since before 1970, one-third were purchased during the 1970's and one-third came under current ownership since 1980.

Woodlot owners own or retain treed acres primarily for shelter for residences, wildlife habitat, soil and water conservation and heritage. Product or use responses of greatest importance are personal firewood, grazing, recreation and hunting and fishing. Commercial uses of woodlots is not common. Among all reasons, the top five priority ratings are 1) residence protection, 2) wildlife habitat, 3) soil and water conservation, 4) personal firewood, and 5) grazing.

Principal reasons for actually using woodlots are 1) wildlife habitat, 2) recreation, and 3) grazing. Timber products for personal use, edible forest products and hunting and fishing are important secondary uses. Among woodlot activities during the past ten years, 60 percent of owners have cut firewood. The only other activities that involved more than one-quarter of owners are the related tasks of tree-planting, vegetation control and thinning or spacing of trees. Most work is completed by the owners, but tasks such as clearing land and roadbuilding often involve others.

When questioned about knowledge of markets for products, more than half of the landowners were aware of only one product area -firewood. Market awareness for pulpwood, sawlogs, posts and rails, Christmas trees and rough cut lumber are known by 25-35 percent of owners. Only 18 woodlot owners have sold products, 7 of which sold firewood. Direct delivery to buyers or mills was done by 13 of the 18 respondents. This lack of

commercial use of woodlots is reflected in the fact that 97 percent of respondents make less than 10 percent of their annual income from woodlot products. Anticipated income per acre to make forest management feasible is \$100 or less per acre per year for three-quarters of the respondents.

Among 131 owners who had harvested some woodlots, 104 (79 percent) allowed natural regeneration to occur, 24 (18 percent) converted cut-over land to agriculture, and 3 (2 percent) reforested the area. The two main reasons for not harvesting are no desire to cut down trees and not enough trees or large enough trees to harvest. Major secondary reasons are to maintain conservation benefits and recreational benefits, and being too busy to work in the woodlots. Market factors such as price, buyers and access are mentioned infrequently.

Half of the respondents said they would forego profits to preserve the aesthetic value of woodlots. If they did decide to harvest, 70 percent would cut on a small area basis, 18 percent would clear cut and convert the land to agriculture and 12 percent would clear cut and replant the trees.

Woodlot Management Preferences

Nearly all landowners believe they are aware of the extent and type of woodlots on their properties, but only two-thirds are aware of the condition of the treed areas. Fire is the greatest perceived problem for woodlots, but trespass, disease and vandalism are rated nearly as significant.

Fifty-one (25 percent) of 207 respondents are not interested in woodlot management, and 45 of 213 (21 percent) are not interested in planting trees. Two-thirds of respondents, however, listed three major interests in woodlot management: 1) shelter for residences, 2) wildlife habitat, and 3) soil conservation. Owners were asked to list their top four management priorities, with wildlife habitat, personal forest products, recreation and commercial sale of products all receiving moderate priority.

About half of the owners are not certain if enough information is available concerning management of woodlots. An additional one-third do not believe information is available. Most also do not know or are uncertain about where to go to obtain information. Conversely, two-thirds of landowners do know where to obtain tree planting stock.

Although only 2 percent of owners now derive important alternative income from woodlots, 22 percent said that woodlots may become economically important in the future. Eighteen percent of respondents viewed woodlots as a long-term diversification possibility while 8 percent would prefer a one-time liquidation of woodlots with agricultural use following land clearing. Nine-out-of-ten owners prefer to manage their own woodlots and harvest products on a sustained yield basis.

Landowners held a diversity of opinions concerning the need for a provincial woodlot management program. Overall, support is moderate to weak. Even less enthusiasm is indicated for formation of woodlot organizations comprised of owners. Elements that should be included in a program, however, are defined more clearly. First priority should be given to information and education, second priority to technical assistance, and third priority to financial assistance. All three components receive moderate to strong support.

Program delivery preferences clearly define landowner organizations as the preferred agent. Secondly, provincial departments and private sources are preferred to federal departments and agencies.

WOODLOTS IN SASKATCHEWAN

The Province of Saskatchewan is divided into seven Resource Management Regions that may be deemed equivalents to forest sections (Figure 4). Although the amount of private land and the density of population varies among regions, only the La Ronge area was not sampled owing to lack of private land ownership. If respondents did not indicate their region on the survey they were placed in a "missing" category.

Saskatchewan does not have a computerized central tax roll system necessitating contact with each municipality to obtain names of private landowners. Owing to the fact that there are hundreds of municipalities in Saskatchewan, ten (10) municipalities were selected randomly from each of the six (6) management regions (forest sections) surveyed.

Original maps of forest sections included an additional area (Regina) which subsequently was included in the Swift Current and Melville regions shown on Figure 4. The 10 municipalities selected for the Regina region are assigned to Swift Current (n=5) and Melville (n=5), increasing the sample to 15 municipalities in these two regions. Only seven (7) municipalities are selected for Meadow Lake because private land occurs only in the southern section of this region.

The administrator for each municipality was asked to select 20 landowners from their numbered tax rolls using a set of random numbers provided. To avoid small holdings, administrators were asked to omit landowners with less than 10 acres of property. The sample frame for Saskatchewan is summarized below.

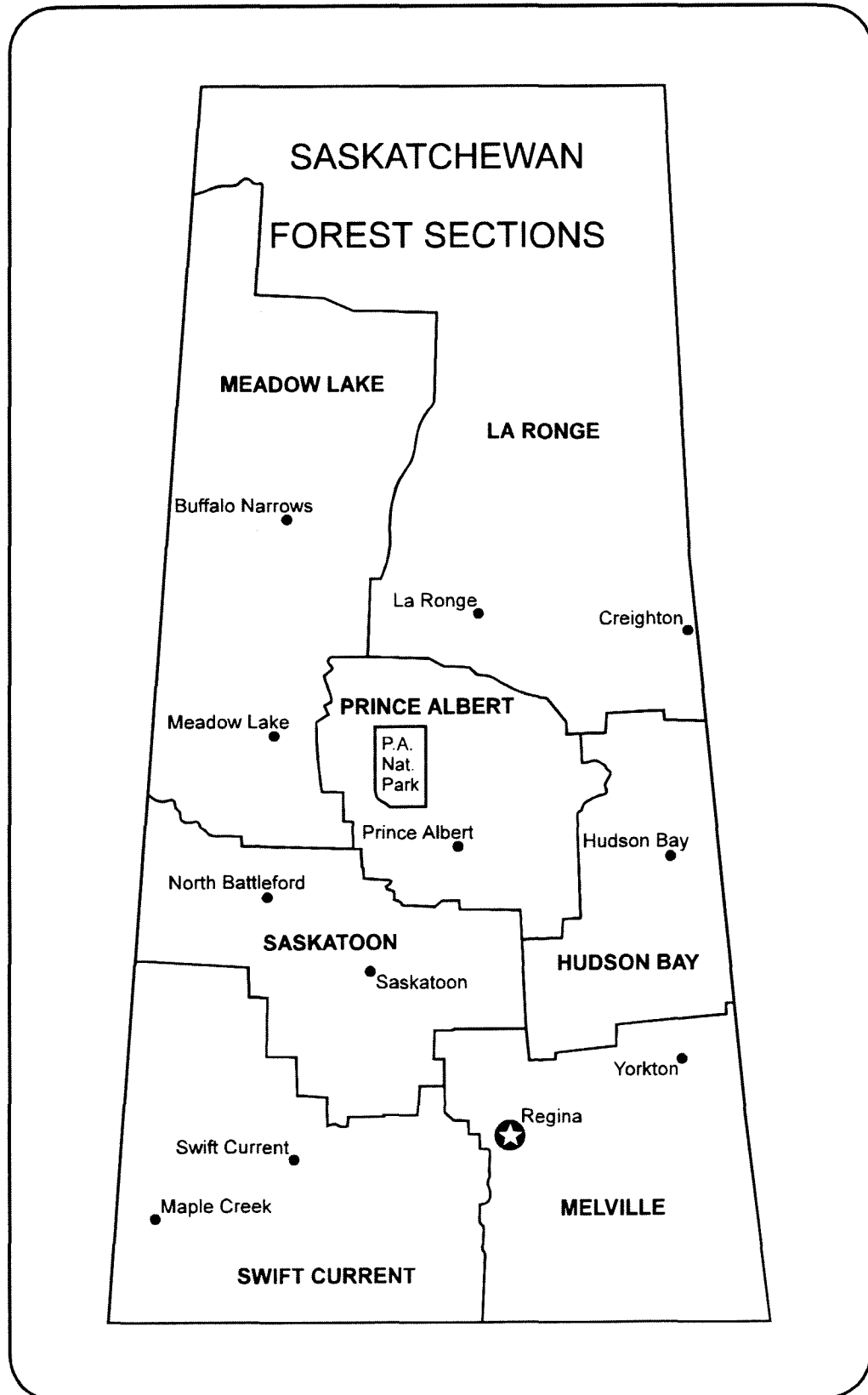
Fifteen of the 1,410 surveys mailed to Saskatchewan were returned to the sender, leaving 1,395 possible returns. Of the 258 surveys actually returned, 240 (17 percent) were complete enough to use. The actual number of responses varies for each question.

Sample Frame for Saskatchewan Woodlot Surveys

Forest section (Resource Region)	No. random municipalities	No. random landowners	Total sample
Swift Current	15	20	300
Melville	15	20	300
Saskatoon	10	20	200
Prince Albert	10	20	200
Hudson Bay	10	20	200
Meadow Lake	7	30	210
Total possible			1,410
Returned to sender			15
Number returned			258
Incomplete returns			18
Usable returns			240

Figure 4

Saskatchewan Forest Sections



Characteristics of Woodlot Owners in Saskatchewan

A total of 224 Saskatchewan respondents to the woodlot survey indicated their age. Between 20 - 30 percent of respondents were distributed in each 10 year category between 30 and 60 years (Table 29). An additional 25 percent were older than 61 years, but only 2 percent were younger than 30 years. Among the seven forest sections, landowners between 31-40 years of age are most numerous in Meadow Lake, those 41-50 years in Hudson Bay, Prince Albert and Swift Current, and those 51-60 years in Saskatoon and Melville. Twenty-five respondents did not indicate a forest section.

Table 29. Age characteristics of respondents within each forest section in Saskatchewan

Age category	Forest sections																Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<20 years	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
21-30 years	1	3	--	--	1	3	1	4	1	3	1	3	--	--	5	2		
31-40 years	5	13	11	36	6	16	5	21	8	24	7	19	5	20	47	21		
41-50 years	9	24	6	19	13	35	8	33	14	42	10	28	5	20	65	29		
51-60 years	12	32	8	26	9	24	6	25	2	6	11	31	4	16	52	23		
61-70 years	10	26	3	10	4	11	--	--	5	15	5	14	8	32	35	16		
>71	1	3	3	10	4	11	4	17	3	9	2	6	3	12	20	9		
Totals	38	100	31	100	37	100	24	100	33	100	36	100	25	100	224	100		

Two-thirds of the Saskatchewan respondents are farmers or ranchers (Table 30). An additional 11 percent are retired, leaving only 20 percent of the respondents scattered among six other occupational categories. Primary producers, therefore, dominate Saskatchewan woodlot owners.

Table 30. Primary occupations of owners by forest section

Occupation	Forest sections																Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Farming/Ranching	25	64	21	66	27	71	12	50	28	82	27	73	13	52	153	67		
Labourer	--	--	3	9	1	3	3	13	--	--	3	8	2	8	12	5		
Clerical	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Skilled Trade	4	10	3	9	--	--	1	4	--	--	--	--	2	8	10	4		
Business/Commercial	2	5	1	3	--	--	--	--	--	--	--	--	1	4	4	2		
Office Manager	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Professional	2	5	1	3	4	11	2	8	1	3	2	5	--	--	12	5		
Homemaker	2	5	1	3	2	5	1	4	2	6	0	--	--	--	8	4		
Retired	4	10	2	6	4	11	3	13	2	6	4	11	7	28	26	11		
Other	--	--	--	--	--	--	2	8	1	3	1	3	--	--	4	2		
Totals	39	100	32	100	38	100	24	100	34	100	37	100	25	100	229	100		

Respondents were asked to indicate if their residences are located in a rural location, a town or village, or a city (>10,000 population). Nearly 4 out of 5 woodlot owners in Saskatchewan are rural residents, while 14 percent live in towns or villages and 8 percent in cities (Table 31).

Table 31. Location of residences of woodlot owners in Saskatchewan

Table 51. Location of residences of woodlot owners in Saskatchewan																		
Location	Forest sections																Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Rural	30	77	29	88	31	84	17	71	31	91	26	70	15	60	179	78		
Town/Village	5	13	4	12	4	11	5	21	0	--	9	24	5	20	32	14		
City (>10,000 pop.)	4	10	--	--	2	5	2	8	3	9	2	5	5	20	18	8		
Totals	39	100	33	100	37	100	24	100	34	100	37	100	25	100	229	100		

Men responded to the survey most frequently. Of a total of 234 responses to gender, 204 (87 percent) are males and 30 (13 percent) are females. This pattern is evident in all forest sections. Marital status indicates that 89 percent of responses came from married persons, 7 percent from single persons, and 5 percent from widowed individuals.

A total of 214 landowners indicated the distance between their place of residence and their wooded land (Table 32). Half live in circumstances where the woodlot surrounds their residence, and an additional 22 percent live within 5 miles. Eight percent of the respondents, however, live more than 100 miles from the woodlots. This pattern occurs in all forest sections, with some variation among regions. Greatest variation occurs in the 5-24 miles category.

Table 32. Distances between residence and woodlots for Saskatchewan properties

Distance	Forest sections														Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Surrounds residence	14	37	17	55	20	56	14	58	18	64	14	41	10	44	107	50
<5 miles	7	18	11	36	9	25	6	25	--	--	8	24	5	22	46	22
5-24 miles	9	24	2	6	3	8	1	4	6	21	7	21	5	22	33	15
25-49 miles	3	8	--	--	--	--	1	4	--	--	1	3	--	--	5	2
50-99 miles	4	11	--	--	2	6	--	--	--	--	--	--	--	--	6	3
>100 miles	1	3	1	3	2	6	2	8	4	14	4	12	3	13	17	8
Totals	38	100	31	100	36	100	24	100	28	100	34	100	23	100	214	100

Thirty-six percent of Saskatchewan's woodlot owners have less than high school educations (Table 33). Those who finished high school comprise another 23 percent of owners. Those with some or complete college or university training comprise between 10-18 percent among categories. Among forest sections, those with less than high school are most numerous in all but two forest sections. In Prince Albert, college/technical and university educated owners comprise 50 percent of the small sample.

Table 33. Educational background of woodlot owners in Saskatchewan

Highest level completed	Forest sections																Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<High school	14	36	12	38	15	41	5	21	10	31	10	27	14	58	80	36		
High school	10	26	7	22	9	24	4	17	8	25	10	27	4	17	52	23		
Some post-secondary	6	15	5	16	2	5	3	13	5	16	7	19	1	4	29	13		
College/Technical	5	13	6	19	4	11	8	33	8	25	5	14	5	21	41	18		
University	4	10	2	6	7	19	4	17	1	3	5	14	--	--	23	10		
Totals	39	100	32	100	37	100	24	100	32	100	37	100	24	100	225	100		

Characteristics of Lands Controlled by Woodlot Owners in Saskatchewan

The average size of 229 owned properties reported in Saskatchewan is 945 acres (Table 34). Considerable variation occurs among forest sections, with a low average of 552 acres in Prince Albert, and a high of 1,483 acres in Swift Current. Rented land varied even more among forest sections, ranging between averages of 126 acres and 729 acres. Most respondents did rent some land, and the average rented is 356 acres.

Table 34. Land characteristics of properties of woodlot owners in Saskatchewan

Land characteristics	Forest sections															
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing		Total	
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Total acres of land <u>owned</u> (1993)	38	1009	34	991	38	574	24	552	32	1483	37	1062	26	865	229	945
Total acres of land you <u>rented</u> (1993)	37	210	31	729	35	126	24	203	31	591	36	305	23	361	217	356
How many acres of land you own is treed/or forested	38	90	34	259	37	108	24	68	34	25	36	58	22	154	225	108
If inherited how many years has this land been in your family	24	58	27	60	25	48	13	51	14	58	17	67	15	50	135	56
How much of your forested land contains trees of commercial value (%)	36	95	33	97	34	92	23	96	28	82	29	81	20	91	203	90

On average forested land comprised 108 acres on Saskatchewan farms and ranches, or 11 percent of the average owned land. Forested land is least common in Swift Current where it comprises only 2 percent of owned properties. The highest percentage of wooded private land occurs in Meadow Lake (26 percent of acreage). All other forest sections range between 5-18 percent. Saskatchewan landowners consider nearly all of their wooded acreage to contain commercially valuable trees. On average, 203 of the 225 wooded acres owned, or 90 percent, is listed as containing valuable stock. This is consistent among forest sections, as estimates range from 81-97 percent.

Inherited land has been in present families for an average of 56 years, a value which adequately represents all areas. Inherited land is common in Saskatchewan, as 135 properties are in whole or in part inherited farms.

A wide range of farm size is apparent in Saskatchewan (Table 35). The most frequent size is 641-1280 acres, but only 35 percent of the properties are included. Small farms (<320 acres) are second most frequent. At the other end of the spectrum, 27 respondents owned >1861 acres.

Small farms are most common in the Hudson Bay and Prince Albert forest sections. Mid-size farms are common in all sections, and most noticeable in the Meadow Lake region. Although scattered throughout Saskatchewan, large farms are most noticeable in the Swift Current forest section. Absolute ranges and standard deviations are high for all regions, indicating extreme variation in the size of woodlot properties.

Table 35. Size distribution of total acres of land owned by woodlot owners in Saskatchewan

Table 33: Size distribution of total acres of land owned by woodlot owners in Saskatchewan

Acres owned	Forest sections														Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<320	8	21	7	21	17	45	12	50	5	16	10	27	10	39	69	30
321-640	10	26	5	15	9	24	2	8	5	16	4	11	2	8	37	16
641-1280	12	32	15	44	11	29	9	38	11	34	14	38	7	27	79	35
1281-1860	3	8	4	12	--	--	1	4	3	9	4	11	2	8	17	7
>1861	5	13	3	9	1	3	--	--	8	25	5	14	5	19	27	12
Total	38	100	34	100	38	100	24	100	32	100	37	100	26	100	229	100
Average	1009		990		574		552		1483		1062		865		945	
SD (unbiased)	1010		752		509		458		1835		1005		765		1037	
Range	3.5-5400		3-3000		15-3100		15-1440		10-9999		40-4500		0.75-2383		0.75-9999	

Acreage rented by woodlot owners is, on average, much less than acreage owned (Table 36). Nearly three-fourths of all respondents rent <320 acres. An additional 21 percent rent between 321-1280 acres, and only 5 percent rent >1281 acres. Again, ranges are great and standard deviations exceed the averages in all areas. Wide variability, therefore, is evident in rented acreages in Saskatchewan.

Table 36. Total acres rented by woodlot owners in Saskatchewan

Table 56: Acres rented by woodlot owners in Saskatchewan

Acres rented	Forest sections														Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<320	30	81	20	65	31	89	19	79	15	48	27	75	19	83	161	74
321-640	4	11	4	13	2	6	1	4	6	19	3	8	1	4	21	10
641-1280	2	5	3	10	2	8	3	13	6	19	5	14	2	9	23	11
1281-1860	1	3	1	3	--	--	1	4	--	--	--	--	--	--	3	1
>1861	--	--	3	10	--	--	--	--	4	13	1	3	1	4	9	4
Total	37	100	31	100	35	100	24	100	31	100	36	100	23	100	217	100
Average	210		729		126		203		591		305		361		356	
SD (unbiased)	380		1556		269		378		692		471		1041		802	
Range	0-1600		0-7100		0-1200		0-1500		0-2560		0-2000		0-5000		0-7100	

Most Saskatchewan woodlots are small (Table 37). Among 225 woodlot owners who responded to a question, 93 (41 percent) indicated that the treed area on their land is <20 acres. An additional 25 percent listed 21-80 acres. In total, therefore, two-thirds of the landowners have <80 acres of wooded land. All acreage categories >80 acres are represented, but only 6 percent of the respondents have woodlands exceeding 400 acres.

Land ownership appears to have changed considerably during the last 25 years in Saskatchewan (Table 38). When asked when they first became owners of forested land, approximately two-thirds of the respondents listed answers between 1971 and 1994. The greatest percentage change in ownership occurs during the 1970's, a time of agricultural expansion across the prairies in Canada. Only 11 percent of current owners controlled their woodlots prior to 1950.

Table 37. Size distribution of treed acreage on properties of woodlot owners in Saskatchewan

Acres forest/treed	Forest sections														Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<20	12	32	6	18	7	19	7	26	31	91	22	61	8	36	93	41
21-40	7	18	1	3	7	19	7	26	--	--	5	14	2	9	26	12
41-80	6	16	2	6	10	27	4	15	--	--	4	11	3	14	29	13
81-120	5	13	6	18	2	5	7	26	1	3	3	8	2	9	26	12
121-160	1	3	1	3	--	--	--	--	1	3	--	--	2	9	5	2
161-200	3	8	4	12	6	16	1	4	--	--	1	3	1	4	16	7
201-300	2	5	4	12	2	5	1	4	--	--	--	--	--	--	9	4
301-400	--	--	3	9	3	8	--	--	--	--	--	--	1	4	7	3
>401	2	5	7	21	--	--	--	--	1	3	1	3	3	14	14	6
Totals	38	100	34	100	37	100	27	100	34	100	36	100	22	100	225	100

Table 38. Starting year of becoming a forest land owner in Saskatchewan

Year	Number	Percent
<1930	8	4
1931-1940	5	3
1941-1950	7	4
1951-1960	20	11
1961-1970	30	16
1971-1980	72	39
1981-1990	32	18
>1991	9	5
Total	183	100

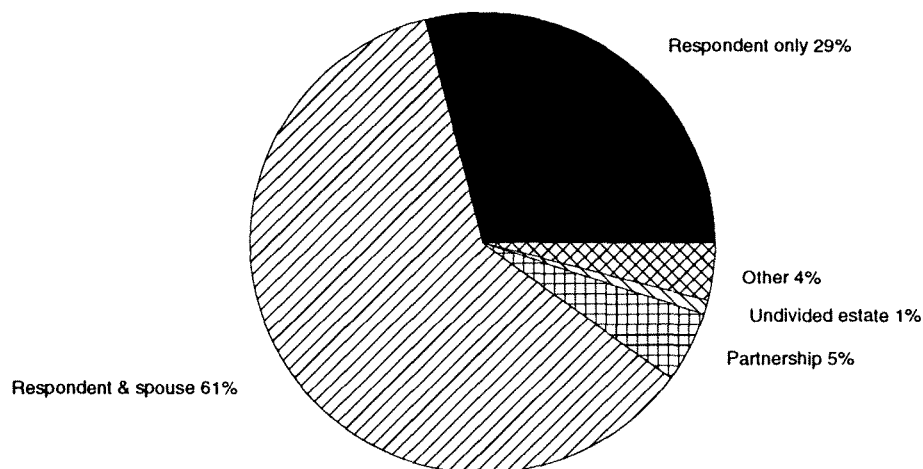
Woodlot owners in Saskatchewan were asked to describe the distribution of wooded acreage on their properties. Four categories received almost equal response (Table 39): many smaller parcels, primarily planted shelterbelts, few smaller parcels, and one large parcel of woodland. The only category with few responses is "one or more large parcels of woodland, and several smaller parcels". Overall, therefore, woodlots take on a wide variety of natural and artificial forms, various sizes and distribution patterns on Saskatchewan farms and ranches.

Table 39. Wooded land distribution within private properties in Saskatchewan

Land distribution	Forest sections														Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
One or more large parcels of woodland and several smaller parcels	--	--	3		3		5		1		1		2		15	7
Many smaller parcels	7		17		10		6		--	--	9		6		55	27
One large parcel of forest	16		7		6		4		1		6		3		43	21
Few smaller parcels	5		2		11		4		5		9		8		44	22
Primarily planted shelterbelt	5		3		2		3		23		9		2		47	23
Totals	33	100	32	100	32	100	22	100	30	100	34		21	100	204	100

Woodlot owners in Saskatchewan were asked to indicate the ownership status of their properties. Sixty-one percent of the properties are owned jointly by the respondent and spouse, and 29 percent by the respondent only. Partnerships constitute 5 percent of the ownerships, undivided estates 1 percent, and all other arrangements 4 percent (Figure 5). These patterns are consistent among forest sections.

Figure 5
**Saskatchewan Ownership Status of
Private Lands with Woodlots**



Reasons for Owning and Uses Made of Woodlots in Saskatchewan

Using a 5-point scale, Saskatchewan woodlot owners were asked to rate the importance of 17 reasons for owning forested land (Table 40). Between 178 and 204 landowners responded to the various reasons, indicating considerable interest in the question. The reasons are ordered according to the overall average ranking by all respondents.

The top three rankings received averages below 2.0 on a 5-point scale. Shelter for personal residences, soil and water conservation, and wildlife habitat are by far the most important reasons why Saskatchewan woodlot owners retain forested land. "Heritage" ranks fourth. In combination, these aesthetic and protective aspects of woodlots are the major factors behind retention or planting of treed areas. Similarly, two aesthetic uses of woodlots (recreation, ranked 6; hunting and fishing, ranked 8) are in the top 10 reasons.

Table 40. Reasons for owning or retaining forested land and/or woodlots in Saskatchewan¹

Reason	Strongly agree							Moderately agree							Neutral							Moderately disagree							Strongly disagree							No opinion							Total (n)	Ave. rating
	S	ML	H	P	SC	M	B	S	ML	H	P	SC	M	B	S	ML	H	P	SC	M	B	S	ML	H	P	SC	M	B	S	ML	H	P	SC	M	B									
Personal residence	25	21	26	18	21	22	15	1	3	2	1	3	5	2	3	3	1	1	--	2	--	1	2	2	--	--	--	--	1	1	3	1	1	2	--	3	--	1	--	2	2	1	198	1.67
Conservation	22	18	18	13	15	12	12	4	6	8	7	8	14	3	4	4	5	--	1	4	1	2	--	1	2	1	4	--	--	1	--	--	--	1	--	1	1	2	--	1	--	1	195	1.78
Wildlife habitat	21	17	19	15	10	16	10	11	8	11	2	7	9	3	4	4	5	4	7	6	2	--	1	1	--	2	3	--	--	2	--	--	--	--	1	--	2	2	3	--	2	207	1.86	
Heritage	13	15	15	10	8	8	8	11	9	11	4	9	13	6	2	1	1	2	3	8	4	2	1	1	--	1	2	--	1	2	2	--	1	2	--	4	1	5	4	4	1	--	195	2.30
Incidental part	7	12	14	8	9	8	7	10	9	12	4	4	9	4	6	4	4	4	6	9	1	--	3	--	1	1	2	--	4	3	1	2	2	2	2	6	--	4	3	3	2	3	195	2.59
Recreational use	4	8	8	6	2	5	6	6	10	8	3	7	5	4	10	6	8	3	3	10	6	5	1	5	1	--	2	--	3	3	1	2	4	3	2	6	1	5	1	9	7	--	192	3.07
Grazing	7	11	10	2	3	8	1	3	5	6	5	3	7	5	12	7	11	5	4	7	5	4	5	2	2	--	3	--	3	3	2	4	5	7	1	4	--	3	4	9	2	2	193	3.11
Hunting/fishing	7	8	6	4	1	6	5	3	6	7	2	1	6	2	9	9	4	6	11	10	3	1	2	2	--	1	2	--	7	3	2	5	3	3	2	7	1	2	2	7	6	3	187	3.22
Personal fuelwood	3	11	14	3	3	4	3	6	4	8	5	3	5	5	8	6	4	3	4	6	5	2	2	3	1	2	2	--	8	4	2	3	4	7	3	6	1	3	3	9	9	1	188	3.28
Non-timber products	3	3	7	3	4	1	1	4	9	8	3	3	7	4	13	7	7	5	4	4	7	2	4	4	1	--	3	1	5	3	4	2	6	8	2	6	2	4	6	8	8	3	189	3.55
Timber production own use	--	6	11	4	--	--	3	--	6	5	1	2	2	1	10	8	4	6	2	5	6	1	--	1	--	2	3	--	10	6	4	4	6	9	2	9	2	9	5	12	12	3	182	3.99
Investment	1	6	3	2	2	1	1	1	2	--	2	--	--	3	7	5	15	6	5	8	4	3	5	2	1	--	6	--	7	4	3	4	4	8	4	14	6	10	4	13	10	3	186	4.22
Seasonal residences	3	2	4	2	--	4	2	--	1	1	1	1	3	3	6	5	9	6	4	6	3	4	3	3	1	1	2	--	9	6	3	3	5	6	3	11	12	12	5	13	10	4	182	4.32
Fuelwood for sale	--	1	1	--	--	--	2	--	1	5	1	--	2	1	8	9	12	7	5	10	6	4	4	6	1	--	1	1	12	7	3	6	5	7	3	8	7	5	4	13	13	3	184	4.33
Timber production for sale	--	3	2	1	--	--	3	--	5	9	2	--	1	1	7	10	7	4	3	6	6	1	1	3	--	--	1	--	13	6	3	5	6	10	3	12	4	9	7	15	13	3	185	4.36
Tax incentives	--	--	2	1	--	--	--	--	--	1	--	1	2	1	7	13	10	6	4	6	8	2	1	3	1	1	--	--	9	11	4	3	5	12	4	14	3	14	8	13	10	4	184	4.58
Business	--	1	--	--	--	--	--	1	1	1	1	2	4	1	6	10	9	7	1	6	6	1	3	2	--	--	1	--	11	7	5	4	5	8	4	13	6	17	7	16	11	5	183	4.68

¹ Forest sections are rated as follows: S=Saskatoon; ML=Meadow Lake; H=Hudson Bay; P=Prince Albert; SC=Swift Current; M=Melville; B=Missing or Unknown area.

The highest ranked economic use aspects of woodlots are grazing (#7), personal fuelwood (#9), non-timber products (#10) and timber products for personal use (#11). None of these reasons, however, received rankings higher than 3.0/5.0. Commercial reasons for retaining woodlots all rate below 4.0/5.0, and occupy 5 of the 6 lowest rankings on the list (Table 40).

To provide focus to the independent rankings for reasons to own or retain treed land, Saskatchewan woodlot owners were asked to list the three most important reasons in order of priority. First priority was allotted 3 points, second was allotted 2 points and third was allotted 1 point. Each reason was allocated a score and their order is based on these calculations (Table 41). Shelter for residence, soil and water conservation and wildlife habitat are by far the most important priorities among the 18 reasons scored. A second grouping of heritage, personal fuelwood, and grazing receives moderate priorities scores, but all other reasons are unimportant overall.

Table 41. Number of responses, importance ratings and rankings of the reasons for **owning or retaining** forested land/woodlots in Saskatchewan

Reason	Weighted score ¹	Most important		Second most important		Third most important		Totals	
		No.	%	No.	%	No.	%	No.	%
Residence	300	82	41	22	12	10	5	114	20
Conservation	237	33	17	58	30	22	11	113	19
Wildlife habitat	203	27	14	40	21	42	22	109	19
Heritage for future	86	7	4	12	6	41	21	60	10
Personal fuelwood	77	10	5	16	8	15	8	41	7
Grazing	72	12	6	12	6	12	6	36	6
Incidental part of farm	60	10	5	8	4	14	7	32	6
Recreation	22	2	1	5	3	6	3	13	2
Non-timber products	22	1	1	7	4	5	3	13	2
Timber for own use	19	2	1	4	2	5	3	11	2
Timber for sale	17	2	1	2	1	7	4	11	2
Seasonal residence	16	5	3	0	0	1	1	6	1
Hunting/fishing	13	0	0	4	2	5	3	9	3
Other reasons	8	2	1	0	0	2	1	4	1
Financial investment	8	1	1	1	1	3	2	5	1
Business	6	2	1	0	0	0	0	2	1
Fuelwood for sale	5	1	1	0	0	2	1	3	1
Tax incentives	0	0	0	0	0	0	0	0	0
Total		199	100	191	100	192	100	582	100

¹ Weighted scores are derived by allocating 3 points for each response to most important, 2 points for second most important and 1 point for third most important

Saskatchewan woodlot owners also were asked to list the three most important reasons for **using** their forested land. Responses are somewhat different than those for owning or retaining woodlots, and were scored and ranked on a 3, 2, 1 point allocation for first, second and third priorities (Table 42). Woodlot use for wildlife habitat received the highest score, followed closely by commercial grazing of livestock. Recreation ranks a significant third, with hunting and fishing as important recreational components (rank 5th). Edible forest products and timber for personal use rank about equal to hunting and fishing. Commercial products or uses are not important. About 4 percent of the woodlots are not used at all.

Table 42. The three most important reasons for using forested private land in Saskatchewan

Reason	Weighted score ¹	Most important		Second most important		Third most important		Totals	
		No.	%	No.	%	No.	%	No.	%
Wildlife habitat	243	34	18	56	34	29	20	119	24
Grazing livestock	232	62	33	17	10	12	8	91	18
Recreation	192	34	18	34	21	22	15	90	18
Other	88	23	12	8	5	3	2	34	7
Hunting/fishing	63	3	2	19	11	16	11	38	8
Edible forest products	62	2	1	12	7	32	22	46	9
Timber for personal use	55	6	3	12	7	13	9	31	6
Forest land not used	43	10	5	3	2	7	5	20	4
Seasonal home	24	8	4	0	--	0	--	8	2
Timber for sale	23	5	3	2	1	4	3	11	2
Outfitting/trapping	12	2	1	1	1	4	3	7	1
Tourism	9	1	1	2	1	2	1	5	1
Forest products	3	0	--	0	--	3	2	3	1
Bed & breakfast operation	0	0	--	0	--	0	--	0	--
Total		190	100	166	100	147	100	503	100

¹ Weighted scores are derived by allocating 3 points for each response to most important, 2 points for second most important and 1 point for third most important

Woodlot Activities, Products and Marketing Knowledge in Saskatchewan

Questions were asked pertaining to woodlot activities, market awareness for woodlot products, actual products sold and related economic matters (Table 43). Landowners were asked whether they, someone else or both engaged in 14 woodlot activities during the last 10 years. In total, little woodlot activity has occurred in Saskatchewan during the last 10 years. Tree planting and vegetation control are most common, but were mentioned by only 23 and 18 landowners, respectively. No other activity occurred on more than 10 farms. Land clearing commonly is done by the owner and someone else. Nearly all other activities (88 percent) were completed by the owners acting alone.

Market awareness for woodlot products generally is low among Saskatchewan woodlot owners, but varies among products (Figure 6). Fuelwood markets are known to slightly more than half of the owners. Markets for rough cut lumber, sawlogs, posts and rails and pulpwood are known to about one-third of the respondents, and Christmas tree markets to one-fifth. Markets for logs/bolts for specialty products and non-timber products are not known widely. In total, about 25 percent of the respondents indicated awareness across product markets.

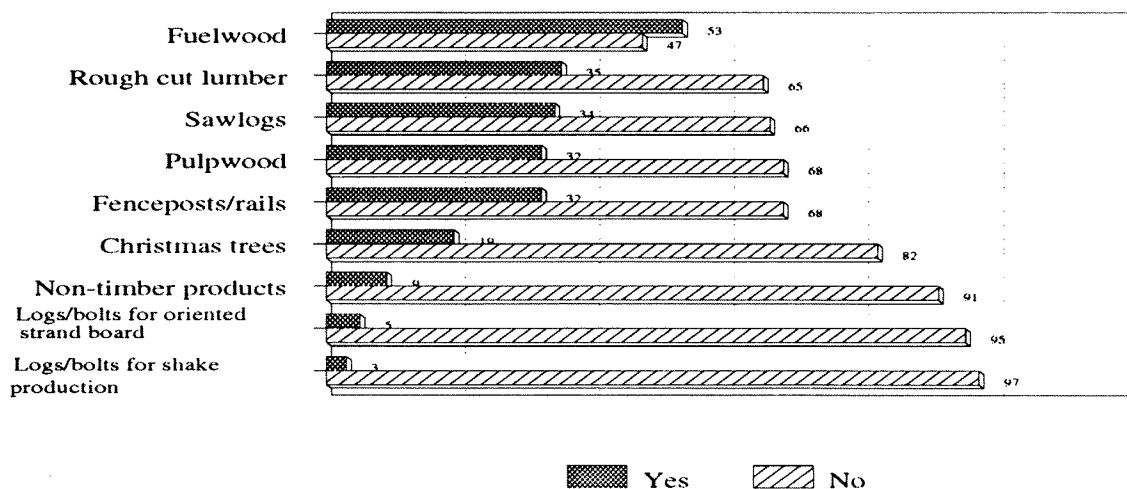
Table 43. Activities in Saskatchewan's woodlots during the last 10 years

Activity	Done by							
	Self		Someone else		Both		Total	
	No.	% ¹	No.	%	No.	%	No.	% ²
Tree planting or preparation for tree planting	23	35	--		--		23	10
Weeding or vegetation control	17	26	--		1	20	18	8
Cutting firewood	8	12	1	25	1	20	10	4
Tree thinning or spacing	7	11	--		1	20	8	4
Wildlife habitat improvement	6	9	--		--		6	3
Cleared land without salvaging forest products	--		3	75	2	40	5	3
Cutting posts or rails	2	3	--		--		2	1
Roadbuilding	1	2	--		--		1	<1
Building hiking or crosscountry ski trails	1	2	--		--		1	<1
Cutting christmas trees	1	2	--		--		1	<1

¹ Calculated as percent of all activities listed (e.g. tree planting accounts for 35% of all activities by landowners)

² Calculated as percent of maximum possible number of respondents (n=229) (e.g. tree planting occurs on 10% of the properties of all respondents)

Figure 6
Awareness of Marketing Opportunities for Forest Products by Woodlot Owners in Saskatchewan



Only 18 Saskatchewan woodlot owners indicated that they had sold forest products in recent years (Table 44). Delivery of products directly to a buyer or directly to a mill comprise 12 of the 18 responses, and involve six different products. Only three respondents sold at roadside and three others sold standing trees. Firewood was the most common product and constituted one-third of the commercial activities using woodlots. Seven other products were marketed in various ways.

Table 44. Products sold and the method used to sell woodlot resources in Saskatchewan

Product sold ¹	Sold at roadside		Sold standing trees		Delivered to buyers		Delivered to sawmill/pulpmill		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Berries	--		--		2	29	--		2	11
Lumber	1	33	--		1	14	--		2	11
Firewood	2	67	--		2	29	--		4	27
Spruce/Aspen	--		1	33	--		--		1	6
Pulpwood	--		--		1	14	1	20	2	11
Oak	--		1	33	--		--		1	6
Poplar	--		1	33	1	14	1	20	3	17
Logs	--		--		--		3	60	3	17
Totals	3	100	3	100	7	100	5	100	18	100

Other: Jams/Jellies = 1

¹ No response was received for cordwood, vegetables and Christmas trees

Income from woodlot products comprises <10 percent of all land based income for 97 percent of Saskatchewan farmers (Table 45). Forest products comprised between 11-30 percent of total land-based income for three farmers, and between 31-50 percent for three others. This contrasts with total land-based incomes where more than half of the respondents earn more than half of their total income from the land. Currently, therefore, income from forest products is insignificant in rural Saskatchewan.

Table 45. Estimated percent of income derived from forested and total land bases in Saskatchewan

Income percentage	From forested land		From all land	
	No.	%	No.	%
<10%	203	97	48	22
11%-30%	3	1	24	11
31%-50%	3	1	28	13
51%-70%	--	--	16	8
71%-90%	--	--	39	18
>91%	--	--	59	28
Totals	209	100	209	100

The economic return from forest products on an annual per acre basis that would interest Saskatchewan farmers received responses from only 56 landowners. This suggests either that they are not interested in commercializing woodlots, or have not considered the economic potentials of the resource. Of those who did respond, more than half listed <\$50 per acre per year, and nearly three-fourths listed <\$100 acre per year. Most farmers, therefore, would be content with relatively low returns as incentives for management (Table 46).

Table 46. Level of return needed in order for owners to consider forest management in Saskatchewan

\$ ac/yr	Number	Percent	\$ ac/yr	Number	Percent
<\$50	30	54	301-350	--	--
51-100	12	21	351-400	1	2
101-150	5	9	401-450	--	--
151-200	3	5	451-500	3	5
201-250	--	--	501-550	--	--
251-300	1	2	>551	1	2
			Total	56	100

Management and Information Aspects of Woodlots in Saskatchewan

Saskatchewan woodlot owners are aware of the extent of woodland on their properties. On a 5-point scale with a value of 1 as strongly agree and 5 as strongly disagree, the mean value on the question was 1.43/5.0. Similarly, most of the respondents indicated that they knew the tree species in their woodlots (ave.=1.47/5.0). They are less aware of the age and condition of the trees on their property (ave.=1.89/5.0). Overall, most landowners express a basic awareness of their woodlot resources.

Those who indicated that they had harvested products from their woodlots were asked what they did with the cutover land. Among the 75 responses, 50 (67 percent) allowed natural regeneration, 21 (28 percent) converted the cutover land to other uses and 4 (5 percent) actively reforested the area. Small sample size precludes analysis by forest section, but predominately agricultural regions appear to have more cleared land converted to non-forest uses.

Those who indicated that they had not harvested woodlot products provided a variety of reasons (Table 47). The three related answers of not having enough trees or large enough trees and not wanting to cut trees are mentioned most frequently. Wanting to maintain the soil and water conservation values of woodlots is listed by 82 landowners (19 percent). Being too busy to harvest woodlots is mentioned by 10 percent of the respondents. All other reasons are mentioned infrequently.

Table 47. Reasons for not harvesting woodlot products listed by Saskatchewan woodlot owners

Reason	Number	Percent
Not enough trees or no large trees	122	28
Do not want to cut trees	112	26
Maintain conservation benefit	82	19
Too busy to work woodlots	42	10
Maintain recreational benefit	28	7
Low prices	12	3
Can't do work myself	11	3
Don't know how to market	10	2
Can't find buyer	7	2
Road or access problems	6	2
Total	432	100

All landowners also were asked to answer a question that called for rating of responses regarding willingness to harvest and sell woodlot products as opposed to preserving them (Table 48). Forty-five percent of the 184 respondents agreed or strongly agreed that they would be willing to forego profits for the aesthetic value of woodlots, 22 percent are neutral and only 13 percent disagreed and strongly disagreed. One in five of the responding landowners expressed no opinion on the issue.

Table 48. Responses from Saskatchewan landowners to a question concerning willingness to forego profits from woodlots to protect aesthetic values

Question	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		No opinion	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
I am willing to give up profits from the sale of timber products in order to promote or preserve aesthetic values of woodlots	42	23	41	22	40	22	13	7	11	6	37	20

Three responses were solicited to a question concerning what cutting practices would be employed if a profit could be realized from harvesting woodlots. Sixty-three percent (83 owners) of the 132 respondents would harvest on a small area or sustained yield basis, 30 (13 percent) would clearcut and use the land for agriculture, and 19 (14 percent) would clearcut and replant the area to trees. These patterns are consistent among forest sections.

Landowners also were asked to rate their level of concern relating to five potential problems with forest resources (Table 49). A response of 1 indicates "not concerned" and a response of 5 indicates "very concerned". Trespass received the lowest average value, thus indicating the least serious problem. The related factor of vandalism was ranked second, and nearly equal to trespass. Insect and disease problems received nearly equal ratings, but more concern was expressed with these potential threats. Fire received the highest average mean, signifying a high level of concern among landowners. These rankings are consistent among forest sections. For example, trespass ranked lowest, and fire ranked highest in five of the seven areas. Overall concern is high in the Melville and Swift Current sections, moderate in Saskatoon, Meadow Lake and Hudson Bay, and lowest in Prince Albert and unknown areas. The average of all responses to all potential problems across the Province is 2.97/5.0.

Table 49. Rating (average) of potential woodlot problems in Saskatchewan (scale 1-5)¹

Potential problems	Forest sections														Total	
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing			
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Fire	35	3.7	32	3.4	32	3.4	23	3.9	23	2.8	33	2.8	23	3.6	201	3.36
Disease problems	32	3.1	31	3.2	33	2.9	21	3.9	25	3.2	32	2.5	20	3.5	194	3.13
Insects and pests	34	3.0	31	3.2	35	2.8	23	3.9	27	3.3	32	2.6	20	3.5	202	3.11
Vandalism	33	2.7	31	2.7	32	2.7	21	3.2	24	2.0	32	2.4	20	3.4	193	2.69
Trespassing	34	2.4	31	2.5	34	2.9	22	2.7	24	1.8	32	2.5	22	2.9	199	2.53
Totals	168	3.0	156	3.0	166	2.9	110	3.3	123	2.6	161	2.6	105	3.4	989	2.97

Saskatchewan woodlot owners were asked to respond to two questions concerning management of their forest resources. First, they were asked to indicate interest in seven management practices (Table 50). Improving or expanding woodlots to provide shelter for residences received the highest number of positive responses (72 percent). Soil and water conservation (66 percent) and wildlife habitat (56 percent) were the only other management practices that received more than half positive responses. Management of planting trees for the purpose of expanding forest resources received only 18 percent positive response.

Table 50. Purposes of managing woodlots or planting trees on their properties that interest Saskatchewan owners

Purpose	Managing				Planting trees			
	Yes		No		Yes		No	
	No.	%	No.	%	No.	%	No.	%
Shelter for residence	147	72	58	28	149	72	58	28
Soil and water conservation	134	66	70	34	137	66	70	34
Wildlife habitat	115	56	89	44	92	45	114	55
Replacing dead or harvested trees	83	41	121	59	75	36	131	64
Insect or disease control	70	34	134	66	n/a		n/a	
Recreational use	59	29	145	71	52	25	153	75
Expanding your forest resource	36	18	168	82	30	15	177	86

Management interests were defined further by asking landowners to list their top four management interests in order of preference. Wildlife habitat received first priority overall (ave.=1.71/4.0), but was followed closely by personal forest product supply (Table 51). Similarly, commercial sale of products and recreation were evaluated evenly, but at a somewhat lower level. The differences, however, range only between 1.71 and 2.13. Notice should be given to the fact that the number of respondents varies considerably in each management category, and only a moderate number of landowners replied to this question. Some variation is evident in priorities among forest sections. For example, recreation was fourth overall, but was top priority in Hudson Bay and Prince Albert. Similarly, personal forest products ranked highest in three of the seven sections.

Table 51. Number of responses to types of woodlot management that interest Saskatchewan landowners (ordered by average preference)

Type	Forest sections															
	Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing		Total	
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Wildlife habitat	13	1.5	12	1.9	8	1.6	8	1.9	7	1.9	14	1.6	6	1.7	68	1.71
Personal forest product supply	2	2.0	9	1.9	6	1.5	7	1.8	4	1.3	14	1.8	6	2.3	34	1.76
Commercial sale of products	2	1.5	8	2.0	4	2.3	4	2.3	1	1.0	4	2.5	4	2.3	28	2.11
Recreation	3	1.3	9	3.1	4	1.3	5	1.8	6	2.2	7	1.8	6	2.2	40	2.13

Three questions were designed to identify the knowledge of landowners concerning sources of information regarding woodlot management (Table 52). A majority of landowners were uncertain about whether or not enough information was available concerning opportunities in private woodlot management. Fifty-eight farmers (27 percent) said there is not enough information available, while 39 (18 percent) thought that there is enough information. Two-thirds of the respondents either do not know (36 percent) or are uncertain (35 percent) about how to obtain available information. Conversely, 75 percent of landowners are aware of where to obtain tree planting stock.

Table 52. Knowledge of information sources for woodlot management among Saskatchewan owners

Question on information	No		Yes		Uncertain	
	No.	%	No.	%	No.	%
Is there enough info on private forested land opportunities available to land owners?	58	27	39	18	118	55
Do you know how to obtain available information?	78	36	62	29	76	35
Do you know where to get tree planting stock?	35	16	167	75	20	9

Only 5 (2 percent) of 214 respondents indicated that income from and investment in forest activities currently is an important source of alternative income, but 45 landowners (23 percent) suggest that woodlot activities could be important in the future. Among 209 respondents, however, 82 percent do not view woodlot resources as a long-term diversification option on their properties. Even fewer (7, or 5 percent) woodlot owners are interested in a one-time liquidation of their forest resources. Almost all landowners would prefer to manage their own woodlots.

Table 53. Management preferences and economic expectations expressed by Saskatchewan woodlot owners

Question	Response	Forest sections															
		Saskatoon		Meadow Lake		Hudson Bay		Prince Albert		Swift Current		Melville		Missing		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Is present income/investment important	No	36	100	30	94	36	97	22	92	31	100	34	100	20	100	209	98
	Yes	--	--	2	6	1	3	2	8	--	--	--	--	--	--	5	2
Could income/investment be important in future	No	26	87	12	41	29	83	15	65	28	97	29	91	15	71	154	77
	Yes	4	13	17	59	6	17	8	35	1	3	3	9	6	29	45	23
Is your woodlot a long-term diversification option	No	34	92	18	55	28	80	20	91	28	93	30	94	13	65	171	82
	Yes	3	8	15	45	7	20	2	9	2	7	2	6	7	35	38	18
Would you prefer one-time liquidation of woodlot resources	No	25	100	11	73	24	92	21	100	23	100	25	96	14	100	143	95
	Yes	--	--	4	27	2	8	--	--	--	--	1	4	--	--	7	5
Prefer management by	Myself	27	93	30	94	30	94	20	91	21	100	24	86	16	89	168	92
	Someone else	2	7	2	6	2	6	1	5	--	--	3	11	--	--	10	6
	Both	--	--	--	--	--	--	1	5	--	--	1	4	2	11	4	2

Woodlot Management Programs

Saskatchewan landowners responded to two questions concerning the need for woodlot programs (Table 54). With a rating of 1.0 signifying strong agreement, an average rating of 2.9/5.0 resulted from a question concerning the need to develop provincial programs to assist private landowners in woodlot management. Support was strongest in Meadow Lake and Prince Albert forest sections, and weakest in the Saskatoon region. Support, however, is not strong anywhere. Even less support is evident for the need for an organization to present the interests of private woodlot owners. The provincial average of 3.4/5.0 suggests little support for such an organization, and values in four of the seven regions are below the overall average.

Table 54. Average rating of responses to statements of program need by Saskatchewan woodlot owners

Statement	Forest sections							Total	
	Saskatoon Ave.	Meadow Lake Ave.	Hudson Bay Ave.	Prince Albert Ave.	Swift Current Ave.	Melville Ave.	Unknown Ave.	No.	Ave.
Provincial woodlot management programs should be developed to assist the private forest landowners on the prairies	3.2	2.5	3.1	2.5	3.1	3.2	2.6	192	2.91
I would benefit from an organization that represented the interests of private woodlot owners	3.5	3.0	3.5	3.1	4.3	3.9	2.7	188	3.44

About half of the Saskatchewan woodlot owners responded to a question concerning the priorities of a provincial woodlot management program (Table 55). Based on a five-point scale with 1.0 representing strong agreement, an information and education program received the highest priority (1.6/5.0), and relatively strong support. This program component is rated highest by landowners in all forest sections. Technical assistance (ave.=2.06) and financial assistance (ave.=2.15) received somewhat lower, but relatively strong support. The priority of these two program elements varies among regions, but no average values drop below 2.4/5.0. All three elements, therefore, are considered important, but information and education probably should come first.

Table 55. Program priorities for a provincial woodlot management program in Saskatchewan

Program element	Forest sections							Total	
	Saskatoon Ave.	Meadow Lake Ave.	Hudson Bay Ave.	Prince Albert Ave.	Swift Current Ave.	Melville Ave.	Unknown Ave.	No.	Ave.
Woodlot information and education	1.74	1.39	1.64	1.61	1.57	1.37	1.58	132	1.55
Technical assistance	1.90	2.19	2.05	2.00	2.00	2.24	1.92	132	2.06
Financial assistance	2.22	2.29	1.94	1.92	2.38	2.10	2.17	118	2.15

Landowner organizations are the preferred structures to deliver woodlot programs (Table 56). The Saskatchewan government and government-private groups ranked second and third, and about equal in average ratings. The federal government and inter-governmental partnerships are the least favored options. Overall, about one-third of all respondents answered this question.

Table 56. Average ratings of organizations who should assist a provincial woodlot management program in Saskatchewan

Organization	Forest sections							Total	
	Saskatoon Ave.	Meadow Lake Ave.	Hudson Bay Ave.	Prince Albert Ave.	Swift Current Ave.	Melville Ave.	Unknown Ave.	No.	Ave.
Landowner organizations	2.2	2.4	1.8	3.0	2.8	1.9	3.1	88	2.38
Provincial government	2.6	2.6	2.6	1.8	3.8	2.2	3.4	72	2.58
Government-private partnerships	2.3	2.5	2.1	3.0	1.8	3.3	3.3	60	2.62
Private sources	3.0	2.5	2.6	4.1	2.9	3.0	2.9	67	2.97
Intergovernmental partnerships	3.3	3.0	4.2	3.3	3.1	2.4	3.9	59	3.24
Federal government	3.1	3.7	4.5	3.0	4.1	3.9	4.1	55	3.71

ASSOCIATION ANALYSIS FOR SASKATCHEWAN

Woodlot Activities

Saskatchewan woodlot owners strongly prefer to manage their own forest resources (Table 53). Accordingly, one would expect landowners to control activities on their properties. Association analysis, however, allows testing for patterns between various woodlot activities, the characteristics of owners and properties, and preferences for conducting activities themselves, sharing responsibility, or allocating rights to others. Associations that do occur may provide insight into the design and presentation of programs. The ten characteristics tested include 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education of the owner, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) pattern of woodlot distribution.

Tree planting in Saskatchewan is associated with education of the woodlot owner ($X^2=19.13$, 8df, $p=0.01$). As the education level increases landowners are more willing to share tree planting activities. A similar pattern occurs for **tree thinning** operations ($X^2=14.60$, 8df, $p=0.07$).

No associations are evident with **vegetation control**, **roadbuilding** or **wildlife habitat** on private properties in Saskatchewan. Similarly, no associations occur with the commercial extractive activities of **cutting pulpwood or sawlogs** or **producing rough or value-added lumber**.

Only one pattern is evident for **cutting of firewood**. The complex association between ownership and cutting of firewood is weakly evident in Saskatchewan. This parallels the significant Prairie association in which one owner properties allocate cutting to others, owners cut wood themselves, on properties owned by spouses, and properties under partnerships share the task.

No associations occur between any of the ten characteristics and the cutting of posts and rails, building of trails, Christmas tree management, and woodlot clearing in Saskatchewan. In total, woodlot activities are not common in Saskatchewan and few activities are associated with the ten characteristics tested. Many areas in Saskatchewan have very limited woodlot resources.

When analyzed by owner or property characteristics, **age**, **occupation** and **distance to residence** have no association with who completes woodlot activities. **Level of education** of the owner, however, is associated with both tree planting and tree thinning activities. As their education level increases owners are more likely to share those responsibilities. The property characteristics of **acres owned**, **acres rented** and **acres treed** show no associations with activities. The same is true for the owner characteristics of **length of ownership** and **type of ownership**, as well as the **pattern of distribution of woodlots**.

Awareness of Marketing Opportunities for Forest Products in Saskatchewan

Association analysis was applied to responses regarding landowner awareness of markets for nine products: 1) pulpwood, 2) sawlogs, 3) fuelwood, 4) posts and rails, 5) Christmas trees, 6) rough cut lumber, 7) strand board, 8) shake products and 9) non-timber products. Associations were sought for ten characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlots, 4) level of education, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership and 10) distribution of woodlots on their properties. No significant associations occur between occupation, total acres rented and length of ownership.

Awareness of **pulpwood markets** among Saskatchewan woodlot owners is associated with distance to residence, type of ownership and woodlot distribution. Those who live close to their woodlots are most aware of markets ($X^2=11.66$, 5df, $p=0.04$), especially if the properties are owned by spouses ($X^2=4.46$, 2df, $p=0.10$). Similarly, those with larger parcels of woodland are more aware of pulpwood markets ($X^2=12.70$, 4df, $p=0.01$).

Five characteristics are associated with knowledge of **sawlog markets**. Older owners (age) are less aware of markets ($X^2=8.29$, 4df, $p=0.08$). Those who live closest to and furthest away from their woodlots are more aware of sawlog markets ($X^2=11.76$, 5df, $p=0.04$). Those with smaller properties ($X^2=7.42$, 3df, $p=0.06$), but with more treed acreage ($X^2=14.94$, 2df, $p=0.01$) distributed in large parcels ($X^2=18.21$, 4df, $p=0.01$) also have greater awareness of sawlog markets. Finally, spousal ownership is associated with greater knowledge of markets ($X^2=5.96$, 2df, $p=0.05$).

The same characteristics are associated with awareness of **fuelwood markets**. Weak associations are evident as older respondents are less aware ($X^2=8.54$, 4df, $p=0.07$), those who are closest to their woodlots are more aware ($X^2=10.21$, 5df, $p=0.07$) and spousal owners are more aware ($X^2=5.54$, 2df, $p=0.06$). Strong associations are evident for those who have more treed acres ($X^2=11.91$, 2df, $p=0.01$), especially if it is distributed in large parcels ($X^2=16.37$, 4df, $p=0.01$).

Spousal owners are most aware and partnerships least aware of **post and rail markets** ($X^2=4.41$, 2df, $p=0.10$), and those with larger parcels of woodlots are more aware ($X^2=7.53$, 4df, $p=0.10$). Neither association, however, is strong.

Knowledge of **Christmas tree markets** is linked with distance to residence, level of education of owners, and total acres owned. Those who live closest and furthest away from their woodlots ($X^2=17.87$, 5df, $p=0.01$), those with the least and most formal education ($X^2=9.83$, 4df, $p=0.04$), and those who own smaller properties ($X^2=6.93$, 3df, $p=0.09$) are most aware.

Those who own smaller properties also are more aware of **rough cut lumber markets** ($X^2=11.05$, 3df, $p=0.01$). Properties, however, have more treed acreage ($X^2=5.21$, 2df, $p=0.07$) that is distributed in larger parcels ($X^2=11.99$, 4df, $p=0.02$) as awareness increases.

Knowledge of **strand board and shake markets** does not associate with any characteristic tested. This results primarily from low numbers of respondents. Awareness of **non-timber products markets** is associated with woodlots distributed as large parcels ($X^2=9.54$, 4df, $p=0.05$).

When analyzed by characteristics, **age** is involved only once as older woodlot owners are less aware of fuelwood markets. **Distance to residence**, however, is an important factor in market awareness in four product areas. As distance increases awareness decreases for pulpwood and fuelwood markets, and those living closest to or furthest away from their woodlots are most aware of sawlog and Christmas tree markets. The owners **level of education** is associated only with Christmas tree markets, as those with the least and most education are most aware.

Total acres owned associated with awareness of markets for sawlogs, Christmas trees and rough cut lumber. In all cases, owners of smaller properties are most aware of markets. Similarly those who owned more **treed acreage** are more aware of markets for sawlogs, fuelwood and rough cut lumber. **Woodlots distributed** as large parcels are associated with increased knowledge about pulpwood, sawlogs, fuelwood, posts and rails and rough cut lumber. Spousal ownership increases awareness of pulpwood, sawlog, fuelwood and post and rail markets in Saskatchewan.

Program Priority Associations in Saskatchewan

Saskatchewan woodlot owners were asked to rank three possible woodlot program components as first, second and third priorities: 1) woodlot information, 2) technical assistance, and 3) financial assistance. Association analysis was applied to priority responses for each program component and each of the following ten characteristics of landowners or their properties: 1) age of owners, 2) occupation, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlot on private properties.

Few associations are evident in Saskatchewan. No significant associations occur for any program component for the following characteristics: 1) age of owners, 2) occupation, 3) distance to residence, 4) level of education, 5) acres treed, 6) length of ownership, 7) type of ownership and 8) woodlot distribution.

Total acres rented is associated with the **woodlot information component** in that those who rent small acreages are most interested ($X^2=10.99$, 4df, $p=0.03$). Both acres owned ($X^2=10.33$, 6df, $p=0.10$) and acres rented ($X^2=17.52$, 4df, $p=0.01$) are associated with priority for **technical information**. In both cases those with larger properties give higher priority to this component. The opposite pattern occurs for associations between acres owned and acres rented for priority given to **financial assistance** program components. As total acres owned ($X^2=15.92$, 6df, $p=0.01$) and ranked ($X^2=7.62$, 4df, $p=0.10$) increased the priority of financial assistance decreases.

Only two characteristics, therefore, are associated with program component prioritization in Saskatchewan. Total acres owned is associated with technical and financial components, and total acres rented with all three components.

Association Analysis of Program Need in Saskatchewan

Woodlot owners were asked to rate the need for provincial woodlot management programs and landowner woodlot organizations on a 5-point scale ranging from strongly agree to strongly disagree. These responses were tested for association with the following ten characteristics of landowners or their properties: 1) age of owners, 2) occupations, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) woodlot distribution on private land.

Only two significant associations occur for **woodlot program need** in Saskatchewan. Although the pattern is inconsistent, recent woodlot owners appear to be more positive about establishing programs than do long-term owners ($X^2=26.31$, 16df, $p=0.05$). Type of ownership also is associated with program need. Spousal owners are most interested in programs, partnerships are neutral, and single owners are negative ($X^2=16.97$, 8df, $p=0.03$).

The need for **landowner woodlot organizations** is associated only with distance from residence to woodlot. Those who live furthest from their woodlots are least interested in organization ($X^2=24.74$, 16df, $p=0.08$).

Association Analysis of Most Important Current Uses of Woodlots in Saskatchewan

Owners were asked to indicate in order of priority the three most important current uses made of their woodlots by their families. A list of 13 uses and an "other" (open-ended) category was available for importance rating (Table 42). Many of the possible choices received few responses, obviating association analysis for these variables. Inspection of frequency printouts suggest that the most valid and interpretive results are achieved by analyzing the most frequently listed response categories. Total usable cases diminish rapidly owing to the need for full response to three major questions to qualify. Four use categories are defined for the data: 1) recreation, 2) commercial production, 3) personal use of forest products, and 4) wildlife habitat. Associations were sought for these categories for eight characteristics of landowners or their properties: 1) distance from residence to woodlots, 2) level of education, 3) total acres owned, 4) total acres rented, 5) acres treed, 6) length of ownership, 7) type of ownership, and 8) distribution of woodlots on private lands.

Level of education is linked to personal use of woodlot products, but no clear pattern is evident in the association ($X^2=15.55$, 8df, $p=0.05$). Commercial use of woodlots is favoured more by owners of **large properties**, but the association is very weak ($X^2=9.98$, 6df, $p=0.12$). Finally, **length of ownership** is associated with two use categories. Recent owners rate recreational use of their woodlots highly ($X^2=14.08$, 6df, $p=0.03$). Also, use for wildlife habitat is strongly associated with length of ownership ($X^2=14.70$, 6df, $p=0.02$), but the pattern of association is confused, with no clear trend.

Program Delivery Associations in Saskatchewan

Woodlot owners responded to a question concerning what agency or group they preferred to deliver woodlot management programs. The following choices were listed in order of preference by respondents: provincial government, federal government, private sources, inter-governmental partnerships, government-private partnerships and landowner organizations. Associations were calculated for ten characteristics of landowners or their properties:

1) age, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties.

In Saskatchewan, no significant associations for any category occur for six of ten tested characteristics. **Age** is associated with preference for landowner organizations for program delivery ($X^2=26.30$, 16df, $p=0.05$). Middle-aged landowners give higher priority to landowner to landowner organizations. Owners with small **acreage of trees** prefer provincial program delivery ($X^2=16.82$, 8df, $p=0.03$). Acres treed also is associated with priority for landowner organizations, but the link is weak and the pattern is confused ($X^2=13.51$, 8df, $p=0.10$). **Length of ownership** is associated with delivery categories in that those who purchased woodlots between 1950 and 1970 prefer inter-governmental partnership ($X^2=25.71$, 16df, $p=0.06$).

Association Analysis of Users of Private Woodlots in Saskatchewan

Saskatchewan woodlot owners were asked to indicate who is allowed to use their woodlots and for what purposes. The three responses allowed are 1) used by self and family, 2) used by others, 3) shared by self and family and others. The 12 uses assessed include: 1) second homes (cabins), 2) bed and breakfast operations, 3) outfitting and trapping, 4) tourism, 5) recreation, 6) hunting and fishing, 7) wildlife habitat, 8) livestock grazing, 9) timber for sale, 10) timber for personal use, 11) edible products, and 12) collection of other products (e.g. cones). Responses are cross-tabulated for the user categories for each woodlot use category against the following characteristics of landowners or their properties: 1) age of owners, 2) occupation, 3) distance from residence to woodlot, 4) education level, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties.

Use of woodlots for **second homes** or cabins is weakly associated with age of owner and patterns of users ($X^2=13.81$, 8df, $p=0.09$). Younger owners allow others to use, or share use with others more than do older owners. Professionals and retired persons who own woodlots with second homes tend to restrict use to themselves, while labourers, tradespersons and farmers are more prone to sharing ($X^2=18.09$, 8df, $p=0.01$).

User patterns for three activities are associated with distance from residence to woodlots. Shared use or use by others for **recreation** is common if distance from residence is less than 5 miles ($X^2=19.48$, 8df, $p=0.01$). **Grazing**, however, is restricted more to family if residences and woodlots are in close proximity ($X^2=15.09$, 8df, $p=0.06$). Finally, use by others or sharing increases for **edible forest products** as distance increases ($X^2=13.69$, 6df, $p=0.03$).

Use for **general recreation** and collection of "other" forest products is associated with total acres rented. The association for recreation is not only weak ($X^2=8.69$, 4df, $p=0.07$), but also has no discernible pattern. Collection of other products is weakly associated with user patterns, with holders of extensive rented land sharing less personal interest in this activity ($X^2=8.87$, 4df, $p=0.06$).

Total acres treed is associated weakly with user patterns for **general recreation** ($X^2=16.50$, 10df, $p=0.09$) and **collection of edible products** ($X^2=17.49$, 10df, $p=0.06$). In both use categories landowners are more willing to share use with others as treed acreage increases.

Recent purchasers of woodlots restrict **hunting and fishing** to family members, those with tenure of average length tend to share these activities and those who have owned woodlots for longest periods of time allow more use by others ($X^2=13.29$, 8df, $p=0.10$). Conversely, recent purchasers are more willing to share use as **wildlife habitat** with others ($X^2=12.72$, 8df, $p=0.12$).

Hunting and fishing privileges are restricted more to family if properties are owned by one person, and more shared with others if partnerships own the land ($X^2=8.39$, 4df, $p=0.08$).

No significant user-use associations occur for level of education of owner, total acres owned, or distribution of woodlots on private properties.

In summary, distance from residence to woodlot is associated with use pattern for general recreation, grazing and collection of other products. Total acres rented, acres treed and length of ownership each are associated with user patterns in two use categories, while age, occupation and type of ownership are associated with one use category each.

Among use categories, general recreational use of private woodlots is associated with three characteristics of landowners or properties, second homes, hunting and fishing, and use of other products have two associations each, and wildlife habitat, grazing and use of edible products have one association each. Many use categories and some landowner characteristics had limited response which limits valid association analysis. In total, however, user-use-characteristics associations in Saskatchewan are few, weak and often poorly defined.

Association Analysis of Land Use Practices Following Harvest of Woodlot Products in Saskatchewan

Owing to the fact that some aspects of woodlot programs encourage harvest of treed acres, it is important to determine what landowners who already have harvested woodlots have done to the land following cutting, and to ask those who could harvest in the future what they anticipate land use to be after harvest. Three responses were optional to a question concerning what was done with the land after harvest has occurred: 1) the area was actually reforested, 2) the area was allowed to regenerate naturally, or 3) the land was converted to non-forest use. Three answers also leave options for responses from those who might make income by cutting woodlots in the future: 1) clear cut and convert the land to agriculture, 2) clear cut and replant trees, and 3) control cut on a sustained yield basis. Both sets of responses are cross-tabulated with the following characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private lands. Many analyses at the provincial level are limited by low numbers of responses in some categories. Only linkages with clearly defined patterns of association and reasonable response levels are reported.

Only one significant association is evident in Saskatchewan for responses from those who already have harvested woodlots. Total acres owned is linked to land use following woodlot harvest ($X^2=13.54$, 6df, $p=0.04$). Owners of small properties vary most in land use actions following cutting. They are least likely either to reforest or to convert the land to other uses, and are most likely to allow natural regeneration. Owners of larger properties are most likely to convert cleared land to allow other uses.

There are no significant associations between land uses and woodlot harvest for responses from owners who anticipate harvesting in the future.

SUMMARY

A total of 240 usable returns (17 percent) of 1,395 possible respondents comprise the Saskatchewan sample of woodlot owners. Respondents are distributed evenly in age classes between 31-70 years of age. Two-thirds are farmers. Retired person comprise 11 percent of the sample, but no other occupational group accounts for more than 5 percent of the total. Seventy-eight percent live in rural areas, 14 percent in towns and villages, and 8 percent in cities. Nearly 90 percent of responses came from males, and 89 percent of the respondents are married. Half of the woodlot owners live in residences surrounded by woodlots and an additional 37 percent live within 25 miles of their woodlots. More than one-third did not finish high school and 23 percent have no training beyond high school. About one-third have completed technical, college or university training.

The characteristics of properties owned by respondents vary widely. The average property size is 945 acres, but varies from 552-1,483 acres among regions. Rented land averages 356 acres per respondent, but varies from 126-729 acres among regions. Forested land comprises an average of 108 acres, or 11 percent, of owned land. Saskatchewan owners consider 90 percent of their woodlots to contain commercially valuable trees. Two-thirds of respondents own less than 80 acres of wooded land, with only 6 percent owning more than 400 treed acres. Two-thirds of respondents

have owned their land for 25 years or less. Most land purchases took place during the 1970's. About two-thirds of the properties are owned jointly by spouses. Only 5 percent are partnerships.

Woodlot owners retain treed areas primarily for shelter for residences, soil and water conservation and wildlife habitat. Aesthetic and protective reasons are more important than commercial uses. Direct priority ratings confirmed this pattern of reasons for owning woodlots. Actual use made of woodlots differ, however, as wildlife habitat, commercial grazing and recreation are the major current uses. Woodlot management activities are not common in Saskatchewan, with tree planting and vegetation control as the major activities, but these are reported by less than one in ten owners.

Market awareness for woodlot products generally is low among Saskatchewan woodlot owners. Half of the owners are aware of fuelwood markets, and almost one-third know markets exist for rough cut lumber, sawlogs, posts and rails and pulpwood. Only 18 owners had sold forest products in recent years. A variety of products are involved and most are delivered directly to buyers or mills. Income from woodlots comprises less than 10 percent of land-based income for 97 percent of the respondents. Owners indicate that \$50-\$100 per acre per year income from woodlots would be enough to warrant management and harvest.

Owners are aware of the acreage and composition of their woodlots, but are less aware of the age and condition of trees. Among those who have harvested products, two-thirds allow natural regeneration to occur, 28 percent convert cleared land to other uses, and 5 percent reforest the area. Those who have not harvested list the three main reasons as not having enough trees, no trees large enough to harvest, or simply not wanting to cut down their trees.

About half of the woodlot owners are willing to forego profits to maintain the aesthetic and protective values of woodlots. If they did harvest, 63 percent would cut on a small area sustained yield basis, 13 percent would clear cut and use the land for agriculture, and 14 percent would clear cut and replant the area to trees. Fire is perceived as the greatest threat to woodlots, but disease, insects and pests, vandalism and trespass all are moderate concerns.

Three purposes for managing woodlots received positive responses from more than half of the landowners: 1) shelter for residences, 2) soil and water conservation, and 3) wildlife habitat. Only 18 percent express interest in expanding forest resources. Only the first two reasons above received more than half positive responses as reasons for planting trees. When asked to list their top four management interests, however, wildlife habitat received first priority, personal forest products is second, commercial products third, and recreation fourth. Many woodlot owners did not respond to questions concerning management priorities.

More than 80 percent of owners are uncertain or do not believe that enough information is available concerning woodlot management. About two-thirds either do not know or are uncertain about where to obtain information. Conversely, three-fourths know where to obtain tree planting stock.

Although only 2 percent of respondents now earn important income from woodlots, 23 percent suggest that woodlot activities could become more important in the future. Eight of 10 owners, however, do not view woodlots as an important long-term diversification option. Only 5 percent are interested in a one-time liquidation of their woodlots. Managing their own woodlots is the preferred option for 92 percent of owners.

Woodlot owners are split on the question of need for a provincial program and only moderate support is evident. Even less support is expressed for formation of private woodlot associations. Among the half of owners who responded to program priority questions, strongest support is given to information and education components, with moderate support for technical assistance and financial assistance. Preferred delivery agents are landowner organizations, provincial governments and government private partnerships.

WOODLOTS IN ALBERTA

The Province of Alberta required modifications in survey methods. Although ten (10) forest sections are recognized, the major southeastern agricultural region in the Province is excluded. Owing to the emphasis on private land woodlots in this report, this region is important because it contains primarily private properties. Accordingly, lines were drawn east-west through the cities of Edmonton and Calgary, arbitrarily dividing the region into three sections: South Agricultural, Central Agricultural and North Agriculture (Figure 7). Responses, therefore, may apply to 13 geographic areas in Alberta. If respondents did not list their locations, their properties are placed into a "missing" category.

Alberta also presents extreme variations in land use, land ownership and forest resources owing to topographic diversity. The lack of a central tax assessment system and three forms of municipal government also necessitate variation in methods of selecting landowners for the survey. Each municipal office was contacted, supplied with a list of random numbers and asked to provide a list of 20 names of owners with more than 10 acres of land. Twenty landowners were identified in each of 28 counties (total of 560 names), 12 Improvement Districts (total of 240 names) and 25 Municipal Districts (total of 500 names). The Alberta sample, therefore, consists of 1300 landowners.

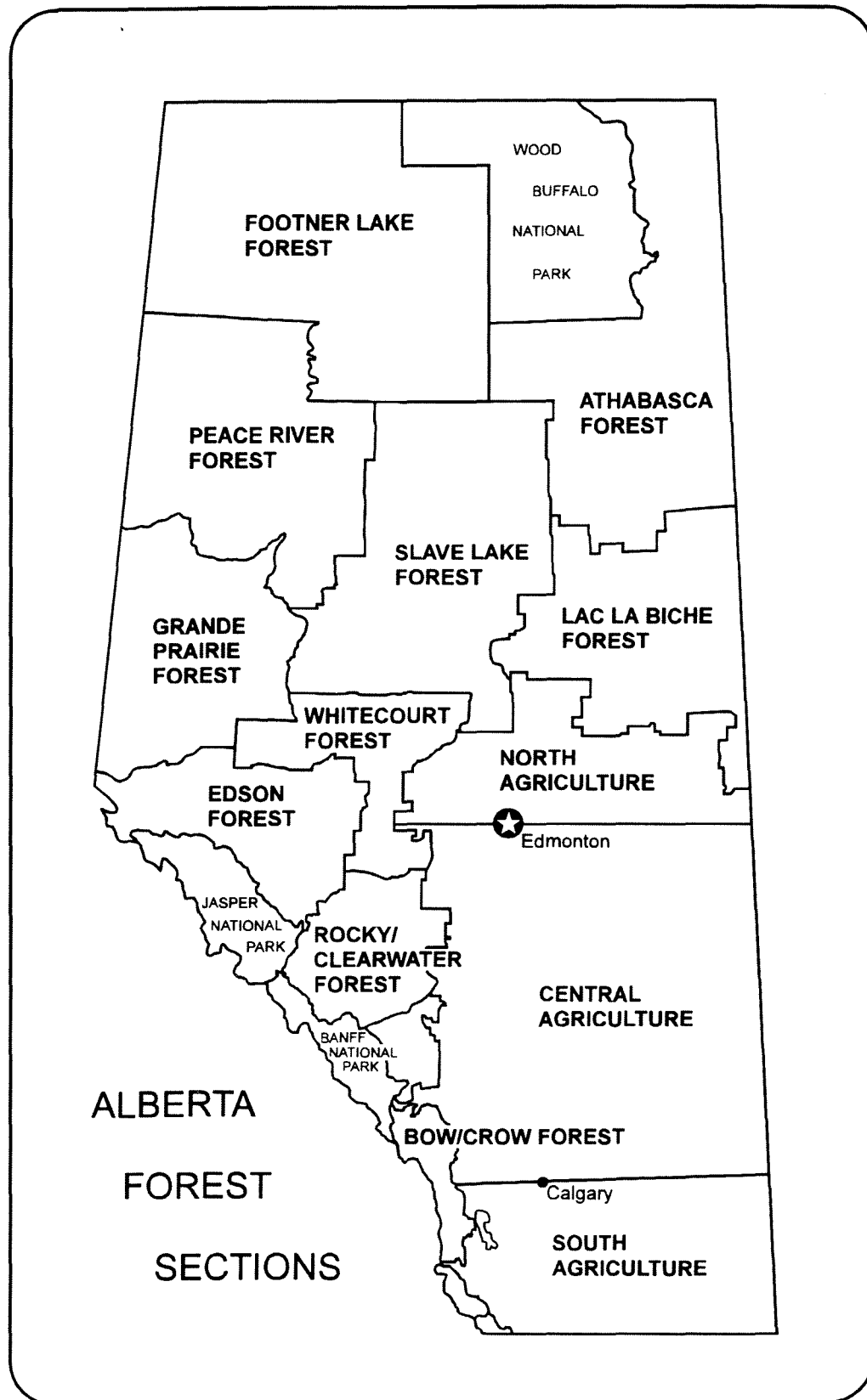
Eighty surveys were returned to sender, leaving 1220 possible returns in Alberta. A total of 242 surveys were returned (20 percent). Of these, 231 were complete enough to be used for all or part of the study (19 percent). The actual number of usable responses varies for each question. The sample frame for Alberta is summarized below.

Sample Frame for Alberta Woodlot Surveys

Municipal gov't form	No. landowner/ jurisdiction	No. jurisdictions	Total sample
Counties	20	28	560
Improvement Districts	20	12	240
Municipal Districts	25	25	500
Total possible			1300
Returned to sender			80
Number returned			242
Number incomplete			11
Usable returns			231

Figure 7

Alberta Forest Sections



Characteristics of Woodlot Owners in Alberta

Two hundred and nine Alberta woodlot owners indicated age on survey returns (Table 57). Landowners are distributed evenly through categories ranging between 31-70 years of age, with only 10 percent either younger or older than this range. In the forest sections with adequate returns, the ages fall within the overall dominant categories, but any given category may be most common in a forest section.

Table 57. Age characteristics of respondents within each forest section in Alberta

Age category	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<20 years	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-30 years	1	2	--	--	2	11	1	5	--	--	1	5	--	--	5	2
31-40 years	13	23	12	18	2	11	6	29	5	31	4	21	3	27	45	22
41-50 years	20	36	16	24	7	37	4	19	4	25	7	37	--	--	58	28
51-60 years	9	16	17	25	4	21	2	10	4	25	2	11	6	55	44	21
61-70 years	5	9	17	25	3	16	7	33	2	13	4	21	2	18	40	19
>71	8	14	5	8	1	5	1	5	1	6	1	5	--	--	17	8
Totals	56	100	67	100	19	100	21	100	16	100	19	100	11	100	209	100

¹ "Forest fringe" represents the number of responses from the following forest sections (grouped): Whitecourt (n=4), Athabasca (n=4), Slave Lake (n=3), Edson (n=3), Bow/Crow (n=3), Lac La Biche (n=2)

Approximately half of Alberta's woodlot owners are farmers and ranchers (Table 58). The only other category with more than 10 percent is retirees. Others among the 220 respondents are distributed among eight occupational categories, suggesting complex ownership patterns of private woodlots in Alberta. Farmers and ranchers comprise between 50 and 70 percent of owners in the five forest sections where agriculture dominates, and these five account for most returns (86 percent).

Table 58. Primary occupations of woodlot owners by forest sections in Alberta

Occupation	Forest sections																Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Farming/Ranching	30	50	39	56	15	71	12	57	10	59	4	22	5	39	115	52		
Labourer	3	5	4	6	--	--	--	--	3	18	1	6	--	--	11	5		
Clerical	2	3	--	--	--	--	--	--	--	--	2	11	2	15	6	3		
Skilled Trade	5	8	5	7	4	19	2	10	--	--	3	17	--	--	19	9		
Business/Commercial	5	8	2	3	--	--	1	5	1	6	2	11	--	--	11	5		
Office Manager	--	--	--	--	--	--	1	5	--	--	--	--	1	8	2	1		
Professional	2	3	7	10	1	5	2	10	1	6	2	11	1	8	16	7		
Homemaker	4	7	1	1	--	--	--	--	1	6	--	--	1	8	7	3		
Retired	8	13	11	16	1	5	2	10	1	6	1	6	3	23	27	12		
Other	1	2	1	1	--	--	1	5	--	--	3	17	--	--	6	3		
Totals	60	100	70	100	21	100	21	100	17	100	18	100	13	100	220	100		

¹ "Forest fringe" represents the number of responses from the following forest sections (grouped): Whitecourt (n=3), Athabasca (n=4), Slave Lake (n=3), Edson (n=3), Bow/Crow (n=3), Lac La Biche (n=2)

Alberta woodlot owners were asked to indicate if their residences are located in a rural area, a town or village, or a city (>10,000 population). More than 80 percent live in rural locations, and the remaining are evenly divided between towns or villages and cities (Table 59). This pattern is evident in all known forest sections.

Table 59. Location of residences of woodlot owners in Alberta

Table 3-34. Location of residences of workers who live in town

Location	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Rural	47	80	59	84	19	86	17	81	17	100	17	94	8	62	184	84
Town/Village	5	9	4	6	2	9	3	14	--	--	--	--	2	15	16	7
City (>10,000 pop.)	7	12	7	10	1	5	1	5	--	--	1	6	3	23	20	9
Totals	59	100	70	100	22	100	21	100	17	100	18	100	13	100	220	100

¹ "Forest fringe" represents the number of responses from the following forest sections (grouped): Whitecourt (n=4), Athabasca (n=4), Slave Lake (n=3), Edson (n=3), Bow/Crow (n=2), Lac La Biche (n=2)

Men responded to the survey most frequently. Of the total 214 responses to gender, 193 (90 percent) are males and 21 (10 percent) are females. This pattern is evident in all forest sections, with males ranging between 84-93 percent of respondents. Marital status indicates that 88 percent of responses are from married persons, 8 percent from single persons, and 4 percent from widowed individuals.

Of the 215 Alberta woodlot owners who indicated the distance between their place of residence and their wooded land (Table 60), 58 percent live within their woodlots. The second most frequent response is less than 5 miles. Combined, therefore, nearly three-fourths of the landowners live within 5 miles of their wooded land. Only 14 percent live more than 24 miles from their woodlots.

Table 60. Distances between residences and woodlots for Alberta properties

Distance	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Surrounds residence	31	53	39	57	12	60	9	45	10	59	16	84	7	54	124	58
<5 miles	14	24	9	13	4	20	4	20	5	29	--	--	--	--	36	17
5-24 miles	4	7	10	15	2	10	4	20	2	12	2	11	1	8	25	12
25-49 miles	2	3	4	6	1	5	--	--	--	--	--	--	1	8	8	4
50-99 miles	4	7	2	3	--	--	--	--	--	--	--	--	1	8	7	3
>100 miles	3	5	4	6	1	5	3	15	--	--	1	5	3	23	15	7
Totals	58	100	68	100	20	100	20	100	17	100	19	100	13	100	215	100

¹ "Forest fringe" represents the number of responses from the following forest sections (grouped): Whitecourt (n=4), Athabasca (n=4), Slave Lake (n=3), Edson (n=3), Bow/Crow (n=3), Lac La Biche (n=2)

Alberta's woodlot owners are about equally divided between those who have high school educations or less, and those with some or complete post-secondary training or education (Table 61). Similarly, those with less formal education are equally divided between those who have and those who have not completed high school. College or technical training accounts for about half of those with post-secondary education. These patterns are reasonably consistent among forest sections.

Table 61. Educational background of woodlot owners in Alberta

Highest level completed	North Ag		Central Ag		South Ag		Forest sections Peace River		Grande Prairie		Forest fringe ¹		Missing		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<High school	12	21	18	28	4	18	6	29	6	40	5	29	2	17	53	26
High school	14	25	16	25	1	5	5	24	2	13	4	24	5	42	47	23
Some post-secondary	10	18	6	9	6	27	4	19	2	13	2	12	1	8	31	15
College/Technical	14	25	13	20	9	41	3	14	4	27	4	24	2	17	49	24
University	6	11	12	19	2	9	3	14	1	7	2	12	2	17	28	14
Totals	56	100	65	100	22	100	21	100	15	100	17	100	12	100	208	100

¹ "Forest fringe" represents the number of responses from the following forest sections (grouped): Whitecourt (n=3), Athabasca (n=4), Slave Lake (n=3), Edson (n=2), Bow/Crow (n=3), Lac La Biche (n=2)

Characteristics of Lands Controlled by Woodlot Owners in Alberta

The average size of 196 private properties with woodlots reported in Alberta is 676 acres (Table 62). Considerable variation occurs among forest sections, all of which are listed in Table 62. Although sample sizes are limited, the smallest woodlot properties occur in forest fringe areas in Whitecourt (ave.=189 acres), Edson (ave.=129 acres) and Bow/Crow (ave.=68 acres). Among predominantly agricultural forest sections, the largest average size occurs in the South Agricultural area (ave.=1338 acres), with average farm size decreasing in central and northern farming areas.

Table 62. Size distribution of total acres of land owned by woodlot owners in Alberta

Acres owned	North Ag		Central Ag		South Ag		Forest sections Peace River		Grande Prairie		Whitecourt	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<320	37	62	35	52	9	45	5	24	4	25	3	75
321-640	12	20	12	18	4	20	6	29	1	6	1	25
641-1280	7	12	10	15	2	10	3	14	6	38	--	--
1281-1860	2	3	6	9	2	10	3	14	2	13	--	--
>1861	2	3	5	7	3	15	4	19	3	19	--	--
Totals	60	100	68	100	20	100	21	100	16	100	4	100
Average	453.82		614.16		1337.55		1029.76		1203.00		189.00	
SD (unbiased)	574.33		640.39		2428.12		915.34		1025.90		118.62	
Range	5-3400		0-2400		0-9999		80-3000		33-4000		86-360	

Acres owned	Athabasca		Slave Lake		Edson		Forest sections Bow/Crow		Lac La Biche		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<320	3	75	1	25	3	100	3	100	1	50	113	52
321-640	--	--	1	25	--	--	--	--	1	50	40	18
641-1280	1	25	2	50	--	--	--	--	--	--	33	15
1281-1860	--	--	--	--	--	--	--	--	--	--	15	7
>1861	--	--	--	--	--	--	--	--	--	--	17	8
Totals	4	100	4	100	3	100	3	100	2	100	218	100
Average	393.75		732.50		129.00		67.5		315.00		676.23	
SD (unbiased)	592.28		548.29		45.53		82.27		233.35		1005.57	
Range	40-1280		10-1280		80-170		2.5-160		150-480		0-9999	

Almost all Alberta woodlot owners also rent land (201/218, 92 percent; Table 63). The average size of rented acreage is about one-half the average owned acreage, but wide variation occurs among forest sections. Rented acreage is most common in the major agricultural areas of the province.

Treed land averages 131 acres of the woodlot owners' properties, or 19 percent of the average land owned. Family lands (inherited) in agricultural forest sections have been held for more than 50 years on average, but much shorter tenure is evident on inherited lands in forest-fringe areas. Overall, only 53 of the 218 woodlot owners hold some inherited property.

Table 63. Land characteristics of woodlot properties in Alberta

Land characteristic	Forest sections											
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Missing	
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Total acres of land <u>owned</u> (1993)	60	454	68	614	20	1338	21	1030	16	1203	13	332
Total acres of land you <u>rented</u> (1993)	56	215	62	435	20	718	19	212	16	381	11	324
How many acres of land you own is treed/or forested	59	146	66	83	20	72	21	231	15	265	13	63
If inherited how many years has this land been in your family	29	55	34	56	11	57	6	52	11	44	7	61
How much of your forested land contains trees of commercial value (%)	51	28	63	11	19	11	18	30	14	16	12	8

Land characteristic	Forest sections												Total	
	Whiterock		Athabasca		Slave Lake		Edson		Bow/Crow		Lac La Biche			
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Total acres of land <u>owned</u> (1993)	4	189	4	394	4	733	3	129	3	68	2	315	218	676
Total acres of land you <u>rented</u> (1993)	4	40	3	12	4	240	3	--	2	1500	1	550	201	357
How many acres of land you own is treed/or forested	4	88	4	153	3	410	3	71	2	16	1	70	211	131
If inherited how many years has this land been in your family	2	60	2	36	3	15	1	21	--	--	--	--	106	53
How much of your forested land contains trees of commercial value (%)	4	46	3	42	4	49	3	60	3	20	2	38	196	21

Forested land with commercially valuable trees is not common on owned properties in Alberta, ranging from 11 - 49 percent among forest sections. In primarily agricultural areas, commercial quality trees occupy only 11-30 percent of the woodlands. Forest fringe areas generally contain a higher percentage of good quality trees.

Acreage rented by woodlot owners averages much less than acreage owned (Table 64). Three-fourths of the respondents rent less than 320 acres of land, and an additional 25 percent rent between 321-640 acres. Only 10 percent, therefore, rent more than a section. Among predominately farming forest sections (first five listed), between 55-85 percent of owners rent less than 320 acres, but wider variation occurs in the higher acreage categories. Only 17 of 201 renters live in forest fringe areas, and most rent small land areas.

Table 64. Total acres rented by woodlot owners in each forest section in Alberta

Acres rented	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<320	48	86	42	68	11	55	14	74	13	81	14	82	8	73	150	75
321-640	5	9	12	19	7	35	2	11	1	6	2	12	1	9	30	15
641-1280	2	4	2	3	1	5	3	16	1	6	--	--	2	18	11	6
1281-1860	--	--	1	2	--	--	--	--	--	--	--	--	--	--	1	1
>1861	1	2	5	8	1	5	--	--	1	6	1	6	--	--	9	5
Total	56	100	62	100	20	100	19	100	16	100	17	100	11	100	201	100
Average	215		435		718		212		381		142		324		357	
SD (unbiased)	605		1009		2199		315		1002		178		472		1016	
Range	0-4300		0-6000		0-9999		0-1000		0-4000		0-3000		0-1280		0-9999	

¹ "Forest fringe" represents the number of responses from the following forest sections (grouped): Whitecourt (n=4), Athabasca (n=3), Slave Lake (n=4), Edson (n=3), Bow/Crow (n=2), Lac La Biche (n=1).

Among 211 responding landowners, 53 (25 percent) own less than 20 acres of treed land, and 79 (36 percent) own between 21-80 acres (Table 65). About two-thirds of the properties, therefore, have less than 80 acres of woodlot. The remaining one-third are distributed among the other size categories. The size distribution of woodlots varies among forest sections, but they tend to be larger in less intensively farmed areas (e.g. North Ag and Grande Prairie).

Table 65. Size distribution of treed acreage on properties of woodlot owners in Alberta

Acres forest/treed	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<20	15	25	19	29	11	55	2	10	--	--	1		5	39	53	25
21-40	7	12	14	21	2	10	4	19	1	7	2		3	23	33	16
41-80	13	22	12	18	3	15	6	29	4	27	6		2	15	46	22
81-120	6	10	9	14	1	5	--	--	1	7	3		--	--	20	10
121-160	9	15	4	6	--	--	2	10	2	13	1		2	15	20	10
161-200	--	--	--	--	1	5	1	5	3	20	--		1	8	6	3
201-300	4	7	4	6	--	--	3	14	1	7	1		--	--	13	6
301-400	--	--	4	6	1	5	--	--	1	7	2		--	--	8	4
>401	5	9	--	--	1	5	3	14	2	13	1		--	--	12	6
Totals	59	100	66	100	20	100	21	100	15	100	17	100	13	100	211	100
Average	146		83		72		231		265		143		63		131	
SD (unbiased)	258		104		131		352		367		90		66		224	
Range	1-1600		0-400		0-460		2-1400		40-1500		2-640		12-200		0-1600	

¹ "Forest fringe" represents the number of responses from the following forest sections (grouped): Whitecourt (n=4), Athabasca (n=4), Slave Lake (n=3), Edson (n=3), Bow/Crow (n=2), Lac La Biche (n=1).

Land ownership involving parcels with woodlots has changed on nearly half of the properties since 1981 (Table 66). An additional 39 percent changed ownership between 1961 and 1981, leaving only about 17 percent of the properties in current ownership for more than 35 years. Some of this change occurs within families, as evidenced by the number of inherited properties (Table 63). Only 57 woodlot owners answered this question.

Table 66. Starting year of becoming a forest land owner in Alberta

Year	Number	Percent
<1930	1	2
1931-1940	1	2
1941-1950	2	4
1951-1960	5	9
1961-1970	11	19
1971-1980	11	19
1981-1990	16	28
>1991	10	18
Total	57	100

Respondents were asked to describe the distribution of woodlot acreage on their properties. One or more large parcels and several smaller parcels best describe one-third of the properties (Table 67). A wide range of woodlot distribution is evident, however, as all four other categories are represented by 13-20 percent of the responses. Few small woodlots and primarily planted shelterbelts combined account for 27 percent of the responses.

Table 67. Description of wooded land distribution within private properties in each forest section in Alberta

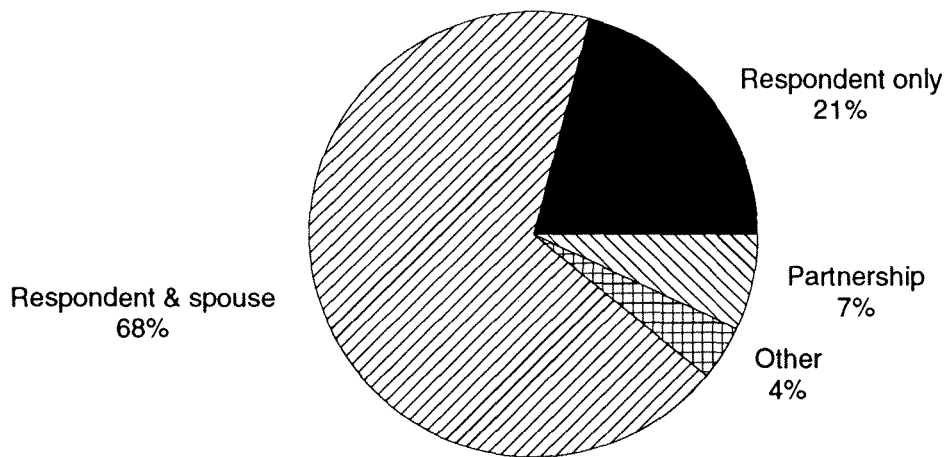
Land distribution	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
One or more large parcels of woodland and several smaller parcels	19	35	20	33	4	18	9	45	5	31	6	30	6	46	69	34
Many smaller parcels	9	16	15	25	4	18	3	15	5	31	4	20	1	8	41	20
One large parcel of forest	12	22	8	13	2	9	4	20	1	6	8	40	4	31	39	19
Few smaller parcels	10	18	8	13	3	14	3	15	3	19	1	5	2	15	30	15
Primarily planted shelterbelt	5	9	9	15	9	41	1	5	2	13	1	5	--	--	27	13
Totals	55	100	60	100	22	100	20	100	16	100	20	100	13	100	206	100

¹ Add forest fringe as: Whitecourt (n=4), Athabasca (n=4), Slave Lake (n=4), Edson (n=1), Bow/Crow (n=3), Lac La Biche (n=2)

Woodlot owners in Alberta were asked to indicate the ownership status of their properties. Sixty-eight percent of the properties are owned jointly by the respondent and spouse, and 21 percent by the respondent only (Figure 8). All other ownership arrangements account for 10 percent of the lands. These patterns are relatively consistent among Forest Sections.

Figure 8

**Alberta Ownership Status of Private
Lands With Woodlots**



Reasons for Owning and Uses Made of Woodlots in Alberta

Using a 5-point scale, woodlot owners were asked to rate the importance of 17 reasons for owning forested land (Table 68). The number of responses is indicated for each category for each forest section, and reasons are ranked by an average from the 5-point scale.

Four reasons received average ratings of less than 2.0/5.0. Retaining trees around residences ranks first with a rating of 1.54, but wildlife habitat, soil and water conservation and heritage also are important reasons for maintaining woodlots. Grazing (2.7) and personal fuelwood (2.8) are the highest ranked reasons with direct "economic" implications. Commercial forestry and investment reasons are rated poorly, and rank as the five lowest priorities among the 17 reasons listed (Table 68).

Table 68. Reasons for owning or retaining forested land and/or woodlots in Alberta

Reason	Strongly agree							Moderately agree							Neutral							Moderately disagree							Strongly disagree							No opinion							Total No.	Rating Ave.
	(1)							(2)							(3)							(4)							(5)															
	NA ¹	CA	SA	P	G	FF	M	NA	CA	SA	P	G	FF	M	NA	CA	SA	P	G	FF	M	NA	CA	SA	P	G	FF	M	NA	CA	SA	P	G	FF	M	NA	CA	SA	P	G	FF	M		
Personal residence	42	58	16	13	10	13	8	4	4	3	2	3	4	12	1	2	3	3	0	3	1	1	1	0	0	1	0	1	4	2	0	1	0	1	0	2	2	0	0	0	0	0	205	1.54
Wildlife habitat	34	36	10	8	9	10	4	14	13	8	4	3	6	6	6	10	2	5	1	2	1	0	5	1	0	0	1	1	1	1	0	2	0	0	0	0	0	0	0	0	0	0	204	1.73
Conservation	28	36	8	9	6	5	5	16	18	8	5	5	6	4	6	5	3	3	0	6	1	1	2	1	1	1	1	0	2	1	0	2	0	1	0	0	1	0	0	0	0	1	198	1.83
Heritage	26	32	8	9	8	6	4	18	16	6	4	3	9	5	6	11	3	3	1	2	1	1	2	0	2	0	0	0	4	2	1	0	0	0	0	0	1	0	0	0	0	1	195	1.86
Incidental part	20	19	2	8	5	7	1	13	18	7	3	3	4	4	11	12	3	5	2	5	1	1	2	2	1	1	2	2	5	4	4	2	1	1	1	4	7	1	1	1	1	1	197	2.60
Recreational use	16	11	3	3	1	7	2	14	15	6	5	7	7	4	11	20	4	5	2	0	3	7	1	1	1	1	2	0	4	8	1	3	0	1	0	1	6	3	0	0	0	1	188	2.66
Grazing	16	18	7	1	1	7	4	13	19	5	6	5	5	4	5	14	2	1	3	5	1	8	3	0	0	1	1	0	10	6	0	5	1	1	3	2	3	5	4	0	0	0	195	2.70
Personal fuelwood	16	9	1	3	2	8	1	15	15	7	5	5	3	5	10	22	3	3	4	6	4	3	1	2	1	2	2	1	7	9	0	4	0	0	0	4	6	6	1	0	0	0	196	2.84
Hunting/fishing	11	7	3	4	3	3	1	4	6	3	3	1	6	3	14	15	4	4	4	5	5	4	7	2	2	1	0	0	14	20	3	3	1	4	2	3	8	4	1	1	0	0	190	3.37
Non-timber products	11	2	2	1	2	1	1	14	17	4	6	1	3	1	10	14	2	5	3	6	4	4	4	2	1	1	3	1	8	12	2	4	0	2	2	2	12	5	2	4	3	1	188	3.46
Timber production own use	9	6	0	2	1	3	1	12	7	3	1	3	4	4	10	13	5	6	4	6	3	0	4	0	2	3	3	0	17	18	5	4	1	1	2	4	13	4	2	1	0	1	188	3.56
Investment	6	8	1	3	0	3	1	8	12	5	2	0	3	3	11	18	3	4	4	7	4	5	4	0	1	3	2	0	14	9	2	4	2	4	2	9	11	5	4	2	0	2	191	3.58
Seasonal residences	4	9	1	2	1	1	2	5	4	1	1	1	1	0	8	11	3	4	2	5	2	2	1	0	2	1	0	0	20	19	2	2	1	7	5	13	14	9	6	5	5	2	188	4.23
Fuelwood for sale	2	4	0	0	0	3	1	3	0	1	0	0	1	1	8	18	4	6	5	4	4	9	2	1	4	2	2	1	21	24	5	5	2	5	2	7	13	7	2	2	4	2	187	4.25
Timber production for sale	2	3	0	2	1	2	0	5	1	0	0	0	3	1	11	11	3	7	5	3	4	1	5	1	1	0	2	1	25	26	7	5	2	5	3	7	15	6	2	4	2	3	186	4.32
Business	1	5	1	0	1	1	0	2	1	0	0	0	0	1	12	19	6	5	2	10	2	3	2	0	2	0	1	2	22	18	4	4	2	2	3	11	16	6	6	6	3	2	185	4.36
Tax incentives	1	0	0	0	0	0	0	2	4	1	0	0	2	1	10	18	4	3	2	6	3	2	3	2	3	1	2	0	22	17	3	6	1	4	3	14	18	6	5	6	4	3	182	4.54

¹ Forest sections: NA = North Ag, CA = Central Ag, SA = South Ag, P = Peace River, G = Grande Prairie, FF = Forest fringe (Whitecourt, Athabasca, Slave Lake, Edson, Bow/Crow, Lac La Biche), M = Missing

To provide focus on the independent rankings for reasons to own or retain treed land, Alberta owners were asked to list the three most important reasons in order of priority. First priority was allocated 3 points, second 2 points and third 1 point. Each reason was allotted a score and ordered based on these calculations (Table 69). Shelter for residences is by far the most important reason to retain woodlots, receiving a weighted score of 330. Providing wildlife habitat and soil and water conservation are major secondary reasons, both achieving scores of more than 200. Heritage for the future and grazing of woodlots are tertiary considerations. Recreational activities and use of products either personally or commercially generally receive less than 10 percent response, and rank low in the order.

Table 69. Rankings of the three most important reasons for owning or retaining forested land/woodlots in Alberta

Reason	Weighted score ¹	Most important		Second most important		Third most important		Totals	
		No.	%	No.	%	No.	%	No.	%
Residence	330	88	42	24	12	18	9	130	21
Wildlife habitat	206	20	9	58	28	30	15	108	17
Conservation	203	27	13	50	24	22	11	99	16
Heritage for future	122	17	8	15	7	41	20	73	12
Grazing	99	19	9	16	8	10	5	45	7
Recreational	63	10	5	12	6	9	4	31	5
Incidental part of farm	56	9	4	8	4	13	6	30	5
Personal fuelwood	41	5	2	3	1	20	10	28	5
Hunting/fishing	29	2	1	7	3	9	4	18	3
Financial investment	<23	<3	<1	<4	<2	<6	<3	<13	<2
Timber for own use	14	1	<1	3	<1	5	2	9	1
Timber for sale	13	1	<1	3	1	4	2	8	1
Seasonal residence	13	2	1	1	<1	5	3	8	1
Non-timber products	11	2	1	0	0	5	2	7	1
Business	10	2	1	1	<1	2	1	5	1
Other reasons	10	2	1	1	<1	2	<1	5	<1
Fuelwood for sale	7	1	<1	1	<1	2	1	4	<1
Total		211	100	208	100	202	100	622	100

¹ Weighted scores are derived by allocating 3 points for each response to most important, 2 points for second most important and 1 point for third most important

Alberta woodlot owners also were asked to list the three most important reasons for using their forested land. Responses differ from those for owning or retaining woodlots, and were allocated scores and ranked on a 3, 2, 1 point system for first, second and third priorities (Table 70). Grazing livestock, recreation and wildlife habitat are by far the most frequent uses made of woodlots. All other reasons are far lower in overall weighted value. Personal uses of forest products ranks considerably higher than commercial use. Some commercial non-product use is evident in bed and breakfast, guiding and outfitting and tourism responses.

Woodlot Activities, Products and Marketing Knowledge in Alberta

Questions were asked pertaining to woodlot activities, market awareness for woodlot products, actual products sold and related economic matters. Landowners were asked whether they, someone else or both had engaged in 14 woodlot activities during the last 10 years. A number of activities are common in Alberta. Tree planting and associated weeding or vegetation control and tree thinning or spacing have been done by about half of the total possible respondents, and cutting of firewood was listed by 101 owners (Table 71). Wildlife habitat improvement and the clearing of land without salvaging forest products occurred about equally. The commercial activities of cutting Christmas trees and posts or rails each occurred on 40 properties. Timber products such as pulp, sawlogs, rough lumber or value-added lumber are not common activities. Roadbuilding and land clearing are the two activities most frequently completed by someone other than the owner.

Table 70. The three most important reasons for using forested lands in Alberta

Reason	Weighted score ¹	Most important		Second most important		Third most important		Totals	
		No.	%	No.	%	No.	%	No.	%
Grazing livestock	246	64	33	22	12	10	7	96	18
Recreation	241	44	23	39	22	31	20	114	22
Wildlife habitat	233	32	17	54	30	29	19	115	22
Other	77	22	11	2	1	7	5	31	6
Edible forest products	62	1	<1	15	8	29	19	45	9
Timber for personal use	53	2	1	16	9	15	10	33	6
Hunting/fishing	53	4	2	13	7	15	10	32	6
Forest land not used	44	9	5	5	3	7	5	21	4
Vacation or second home	43	9	5	7	4	2	1	18	3
Outfitting/trapping	15	3	2	2	1	2	1	7	1
Timber for sale	9	0	0	4	2	1	<1	5	1
Tourism	8	2	1	0	0	2	1	4	1
Bed and breakfast	6	2	1	0	0	0	0	2	<1
Forest products	6	0	0	1	<1	4	3	5	1
Total		194	100	180	100	154	100	528	100

¹ Weighted scores are derived by allocating 3 points for each response to most important, 2 points for second most important and 1 point for third most important

Table 71. Activities in Alberta's woodlots during the last 10 years

Activity	Self		Done by Someone else		Both		Total	
	No.	% ¹	No.	%	No.	%	No.	% ²
Tree planting or preparation for tree planting	108	18	4	7	3	11	115	52
Cutting firewood	101	17	7	11	5	18	113	51
Weeding or vegetation control	89	15	5	8	4	14	98	45
Tree thinning or spacing	55	9	7	11	0	0	62	28
Wildlife habitat improvement	40	7	4	7	2	7	46	21
Cutting christmas trees	40	7	0	0	0	0	40	18
Cutting posts or rails	38	6	0	0	2	7	40	18
Cleared land without salvaging forest products	37	6	9	15	6	21	52	24
Roadbuilding	29	5	14	23	1	4	44	20
Building hiking or crosscountry ski trails	21	4	1	2	2	7	24	11
Cutting sawlogs	15	3	5	8	3	11	23	11
Rough lumber	13	2	1	2	0	0	14	6
Cutting pulpwood	2	<1	4	7	0	0	6	3
Value-added lumber	1	<1	0	0	0	0	1	<1

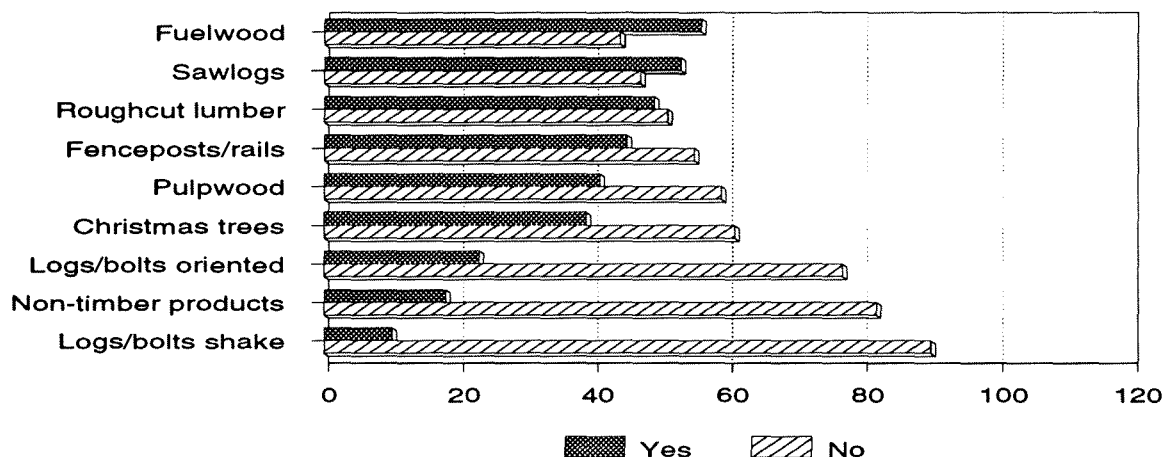
¹ Calculated as percent of all activities listed (e.g. tree planting accounts for 18% of all activities by landowners)

² Calculated as percent of all possible respondents (e.g. tree planting was done on 52% of the properties of all respondents)

Awareness of markets varies for different forest products (Figure 9). About half of Alberta woodlot owners are aware of markets for fuelwood, sawlogs, roughcut lumber, fence posts and rails. Pulpwood and Christmas tree markets are known by 40 percent of the respondents, but markets for other products are not known widely.

Figure 9

Awareness of Marketing Opportunities for Forest Products by Woodlot Owners in Alberta



Only about 10 percent of responding woodlot owners indicated that they had sold forest products in recent years (Table 72). Lumber is sold most frequently. Firewood and spruce/aspen trees are listed by three owners each. All other products are listed by only one or two respondents. Selling at roadside, sale of standing trees and direct delivery to buyers are used equally as methods of selling. Nine different products were sold by Alberta owners.

Table 72. Products sold and the method used to sell woodlot resources in Alberta

Product sold	Sold at roadside		Sold standing trees		Delivered to buyers		Delivered to sawmill/pulpmill		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Berries	--	--	--	--	2	29	--	--	2	9
Lumber	4	57	1	17	2	29	1	50	8	36
Firewood	2	28	--	--	2	29	--	--	4	18
Spruce/Aspen	1	14	1	17	--	--	1	50	3	14
Pulpwood	--	--	1	17	--	--	--	--	1	5
Poplar	--	--	2	33	--	--	--	--	2	9
Logs	--	--	1	17	1	14	--	--	2	9
Totals	7	100	6	100	7	100	2	100	22	100

Other: Hunting 20%; Trapping 20%; Wildlife 20%; Own Use 20%; Berries 20%

Income from forest products comprises less than 10 percent of all land based income for 97 percent of Alberta woodlot owners (Table 73). Only 2 of 192 landowners reported more than 30 percent of their income from forest products. Conversely, about half of the respondents earn more than 50 percent of their total income from their land, suggesting primary agriculture as the major activity. Forest products currently are an insignificant component of private land based income in Alberta.

Table 73. Estimated percent of income derived from forested and total land bases in Alberta

Income percentage	From forested land		From all land	
	No.	%	No.	%
<10%	187	97	71	36
11%-30%	3	2	23	12
31%-50%	1	<1	15	8
51%-70%	--	--	9	5
71%-90%	1	<1	32	16
>91%	--	--	50	25
Totals	192	100	200	100

Landowners indicated the level of economic return from forested land that would be required to create interest in woodlots (Table 74). Approximately half indicated either less than \$50 per acre or \$51-100 per acre. Although most other income categories are represented, only two others, \$151-200 per acre and more than \$551 per acres received more than 10 percent of the responses.

Table 74. Level of return needed in order for owners to consider forest management in Alberta

\$ ac/yr	Number	Percent	\$ ac/yr	Number	Percent
<\$50	13	27	301-350	--	--
51-100	10	21	351-400	2	4
101-150	3	6	401-450	--	--
151-200	8	17	451-500	2	4
201-250	--	--	501-550	--	--
251-300	1	2	>551	9	19
			Total	48	100

Eighty Alberta woodlot owners answered a question concerning what they did to the lands harvested. Forty-two owners (53 percent) allowed natural regeneration, 35 (44 percent) converted the land to other uses and 3 (4 percent) actively reforested the area. Although small sample size limits comparison, there appears to be consistency among forest sections for both rates of natural regeneration and conversion to other uses.

Those who had not harvested woodlot resources listed eleven reasons for not using their woodlots for profit (Table 75). Simply not wanting to remove their trees, not having enough trees or large enough trees and wanting to maintain the soil and water conservation aspects of woodlots received most frequent mention. Maintaining the recreational value of woodlots is the only other reason that involved more than 10 percent of the responses. Economic consideration such as market knowledge and low prices are mentioned infrequently as inhibiting factors.

Table 75. Reasons for not harvesting woodlot products listed by Alberta woodlot owners

Reason	Number	Percent
Do not want to cut trees	121	27
Not enough trees or no large trees	99	22
Maintain conservation benefit	95	21
Maintain recreational benefit	55	12
Too busy to work woodlots	28	6
Don't know how to market	13	3
Low prices	13	3
Can't do work myself	6	1
Can't find buyer	6	1
Road or access problems	6	1
Financially adverse effects	1	<1
Total	443	100

All landowners also were asked to answer a question that called for rating of responses regarding willingness to harvest and sell woodlot products as opposed to preserving them (Table 76). Approximately half of the respondents agreed or strongly agreed that they would be willing to forego profits to preserve the non-economic values of woodlots. An additional 43 owners (22 percent) are neutral and 18 (9 percent) expressed no opinion. Only 16 percent of the 195 respondents, therefore, disagreed or strongly disagreed with the statement.

Table 76. Responses from Alberta landowners to a question concerning willingness to forego profits from woodlots to protect aesthetic values

Question	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		No opinion	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
I am willing to give up profits from the sale of timber products in order to promote or preserve aesthetic values of woodlots	54	28	49	25	43	22	12	6	19	10	18	9

Management and Information Aspects of Woodlots in Alberta

More than 90 percent of woodlot owners are aware of the extent and composition of their woodlots. On a 5-point scale with a value of 1 as strongly agree and 5 as strongly disagree, the average value on the question of extent is 1.37/5.0. Similarly, the respondents indicated that they knew the tree species in their woodlots (ave.=1.40/5.0). They are less aware of the age and condition of the trees on their property (ave.=1.84/5.0). Overall, most landowners express a basic awareness of their woodlot resources.

Alberta woodlot owners were asked to rate their level of concern for five potential problems with forest resources (Table 77). A response of 1 indicated "no concern" and a response of 5 indicates "very concerned". Little differentiation is evident among ratings. All potential problems create moderate concern, with four average ratings between 3.15-3.25. Fire creates the greatest concern, both overall and in five of the six forest sections. Overall concern is approximately the same in agricultural areas and non-agricultural regions.

Table 77. Ranking (mean) of potential woodlot problems in each forest section in Alberta (scale 1-5)¹

Potential problem	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Trespassing	55	3.6	62	3.1	18	3.2	20	2.9	15	2.9	19	3.4	12	2.2	201	3.15
Disease problems	52	3.2	62	3.5	19	3.1	19	3.3	16	3.5	20	2.8	12	2.9	200	3.23
Insects and pests	56	3.1	63	3.6	20	3.1	19	3.0	16	3.8	20	2.7	12	2.8	206	3.24
Vandalism	54	3.7	58	3.1	19	3.2	18	3.0	14	2.9	19	3.2	12	2.7	194	3.25
Fire	58	3.9	60	3.6	19	3.4	20	3.8	16	4.1	20	4.2	12	3.3	205	3.76
Total	275	3.5	305	3.4	95	3.2	96	3.2	77	3.4	98	3.3	60	2.8	1006	3.33

¹ "Forest fringe" represents the maximum number of responses from the following forest sections (groups): Whitecourt (n=4), Athabasca (n=4), Slave Lake (n=4), Edson (n=3), Bow/Crow (n=3), Lac La Biche (n=2)

Alberta landowners were asked to respond to two questions concerning management of their forest resources. First, they were asked to indicate interest in seven management practices (Table 78). Soil and water conservation, shelter for residence and wildlife habitat received positive responses from approximately 75 percent of the respondents. Pest control, recreational use and replacing dead or harvested trees interested about half of the woodlot owners. Management for the sole purpose of expanding forest resources, however, interests only one in four owners.

Table 78. Purposes of managing woodlots or planting trees on their properties that would interest Alberta owners

Purpose	Managing				Planting trees			
	Yes		No		Yes		No	
	No.	%	No.	%	No.	%	No.	%
Soil and water conservation	151	76	49	24	123	64	70	36
Shelter for residence	147	74	53	26	129	67	64	33
Wildlife habitat	145	73	55	27	96	50	97	50
Insect or disease control	102	51	98	49	n/a		n/a	
Recreational use	102	51	97	49	69	36	124	64
Replacing dead or harvested trees	87	44	112	56	75	39	118	61
Expanding your forest resource	51	26	149	74	39	20	154	80

When asked what purposes would interest them for planting trees, similar reasons dominated (Table 78). Shelter for residences, soil and water conservation and wildlife habitat are most important, followed by replacing trees and recreational use. Planting trees to expand their forest resources interests one in five landowners.

Management was defined further by asking landowners to list their top four management interests in order of preference. Wildlife habitat is the highest overall priority (1.76/4.0), but is followed closely by personal forest product supply and recreation. Commercial sale of products is rated noticeably lower than other options. Notice should be given to the number of respondents for each option, as well as the average ratings. Ratings of various types of management vary somewhat among forest sections, but generally follow the provincial averages.

Table 79. Type of woodlot management that interests Alberta landowners (ordered by average preference)

Potential problem	Forest sections															
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing		Total	
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Wildlife habitat	29	1.8	28	1.8	8	1.5	9	1.4	7	2.0	8	2.7	6	2.0	95	1.76
Personal forest product supply	18	1.7	13	2.0	2	1.5	5	2.2	4	1.8	7	2.4	2	1.0	51	1.86
Recreation	23	1.9	16	2.1	3	1.7	6	2.5	4	1.3	6	3.5	5	1.6	63	1.89
Commercial sale of products	13	2.5	10	2.3	1	1.0	7	2.4	3	2.7	7	2.0	2	4.0	42	2.40

¹ Forest fringe includes responses from Whitecourt, Athabasca, Slave Lake, Edson, Bow/Crow and Lac La Biche

Three questions were designed to identify the knowledge of landowners concerning sources of information regarding woodlot management (Table 80). Most landowners are uncertain about whether or not enough information is available concerning opportunities in private woodlot management. Only 46 landowners (21 percent) said that there is enough information available, while 64 (30 percent) said there is not enough and 105 (49 percent) are uncertain. Knowledge of where to obtain information received one-third of the responses in each category. Knowledge of where to get tree planting stock, however, is evident among two-thirds of the respondents.

Table 80. Knowledge of information sources for woodlot management among Alberta landowners

Question on information	No		Yes		Uncertain	
	No.	%	No.	%	No.	%
Is there enough info on private forested land opportunities available to land owners?	64	30	46	21	105	49
Do you know how to obtain available information?	76	36	69	33	67	32
Do you know where to get tree planting stock?	52	24	139	64	25	12

Only 8 (4 percent) of 210 respondents indicated that income from and investment in forest activities currently is an important source of alternative income, but 60 landowners (31 percent) suggest that woodlot activities could be important in the future. Responses are consistent among forest sections for the present situation, but varies somewhat in future possibilities. Among 210 respondents, 43 (20 percent) view their woodlot resources as a long term diversification option. Opportunities are most noticeable in the Peace River and Forest Fringe areas. One time liquidation of resources is not a preferred management option. Almost all landowners would prefer to manage their own woodlots.

Table 81. Management preferences and economic expectations expressed by Alberta woodlot owners

Question	Response	Forest sections														Total	
		North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe		Missing			
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Is present income/investment important	No	57	96	60	92	17	100	21	100	16	100	19	95	12	100	202	96
	Yes	2	4	5	8	--	--	--	--	--	--	1	5	--	--	8	4
Could income/investment be important in future	No	38	70	44	75	11	61	15	79	11	73	10	50	7	58	136	69
	Yes	16	30	15	25	7	39	4	21	4	27	9	50	5	42	60	31
Is your woodlot a long-term diversification option	No	45	78	53	84	15	79	16	76	14	87	14	70	10	77	167	80
	Yes	13	22	10	16	4	21	5	24	2	13	6	30	3	23	43	20
Would you prefer one-time liquidation of woodlot resources	No	42	96	47	98	12	100	13	87	11	85	12	86	8	89	145	94
	Yes	2	4	1	2	--	--	2	13	2	15	2	14	1	11	10	6
Prefer management by	Myself	52	96	54	96	16	100	19	91	16	100	17	94	12	100	186	96
	Someone else	2	4	1	2	--	--	2	9	--	--	1	6	--	--	6	3
	Both	--	--	1	2	--	--	--	--	--	--	--	--	--	--	1	1

Three responses were solicited to a question concerning what cutting practices would be employed if a profit could be realized from harvesting woodlots. Seventy percent (103 owners) of the 148 respondents would harvest on a small area or sustained yield basis. Thirty-seven owners (25 percent) would prefer to clearcut and use the land for agriculture and eight others (5 percent) would clearcut and reforest the land. These patterns are reasonably consistent among forest sections in Alberta.

Woodlot Management Programs

Alberta landowners responded to two questions concerning the need for woodlot programs (Table 82). With a rating of 1.0 signifying strong agreement, an average of 2.9/5.0 resulted from a question concerning the need to develop provincial programs to assist private landowners in woodlot management. Support is moderate in primarily agricultural areas (approximately 3.0/5.0), but somewhat stronger in forest fringe areas. Even less support is evident for the need to establish an organization that represents the interests of private woodlot owners. The provincial average of 3.47 is reflective of all areas except the forest fringe, where somewhat stronger support is evident.

Table 82. Rating of responses to statements of program need by Alberta woodlot owners

Statement	Forest sections														Total	
	North Ag		Central Ag		South Ag		Peace River		Grande Prairie		Forest fringe ¹		Missing			
	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.	No.	Ave.
Provincial woodlot management programs should be developed to assist the private forest landowners on the prairies	55	3.0	60	3.1	16	2.8	21	2.9	15	3.2	17	2.0	12	2.7	196	2.91
I would benefit from an organization that represented the interests of private woodlot owners	54	3.4	61	3.7	17	3.7	21	3.4	15	3.7	17	2.8	12	2.9	197	3.47

¹ "Forest fringe" includes responses from Whitecourt, Athabasca, Slave Lake, Edson, Bow/Crow and Lac La Biche

About three-fourths of the Alberta woodlot owners who returned surveys responded to a question concerning the priorities of a provincial woodlot management program (Table 83). Based on a five-point scale with 1.0 representing strong agreement, an information and education program received highest priority (1.4/5.0), and strong support. This program component is rated highest in all forest sections. Technical assistance received moderate support while financial assistance programs received average support (2.36/5.0). Both the absolute and relative values of the average ratings for technical and financial programs are consistent among forest sections.

Table 83. Program priorities for a provincial woodlot management program in Alberta (average ratings on five-point scale)

Program element	Forest sections							Total	
	North Ag Ave.	Central Ag Ave.	South Ag Ave.	Peace River Ave.	Grande Prairie Ave.	Forest fringe ¹ Ave.	Missing Ave.	No.	Ave.
Woodlot information and education	1.5	1.4	1.4	1.4	1.7	1.2	1.0	147	1.40
Technical assistance	1.9	2.0	1.8	2.1	1.7	2.1	2.4	139	1.97
Financial assistance	2.3	2.4	2.4	2.4	2.3	2.5	2.4	113	2.36

¹ "Forest fringe" represents responses from Whitecourt, Athabasca, Slave Lake, Edson and Bow/Crow

Landowner organizations are the preferred structures to deliver woodlot programs in Alberta (Table 84). Provincial government and private sources received average ratings of 2.4 and 2.8, respectively. Various partnerships received weak support, while programs operated solely by the federal government are not favoured. Although variation is evident among forest sections, landowner organizations, provincial government and private sources generally are first, second and third order choices.

Table 84. Average ratings of organizations who should assist a provincial woodlot management program in Alberta (five-point scale; 1 = strong support)

Organization	Forest sections							Total	
	North Ag Ave.	Central Ag Ave.	South Ag Ave.	Peace River Ave.	Grande Prairie Ave.	Forest fringe ¹ Ave.	Missing Ave.	No.	Ave.
Landowner organizations	2.1	1.9	2.3	1.9	1.8	1.9	1.3	96	1.92
Provincial government	2.3	2.4	2.0	3.1	1.8	2.0	3.3	80	2.39
Private sources	3.9	2.3	2.6	2.4	3.5	2.6	2.2	73	2.78
Government-private partnerships	2.5	3.1	2.2	3.7	2.7	2.8	3.8	68	3.01
Inter-governmental partnership	2.3	4.3	2.8	3.2	2.0	3.9	3.4	59	3.27
Federal government	3.8	5.0	4.7	5.0	4.0	4.0	5.0	51	4.63

¹ "Forest fringe" represents responses from Whitecourt, Athabasca, Slave Lake, Edson and Bow/Crow

ASSOCIATION ANALYSIS FOR ALBERTA

Woodlot Activities

Alberta woodlot owners strongly prefer to manage their own forest resources (Table 81). Accordingly, one would expect landowners to control activities on their properties. Association analysis, however, allows testing for patterns between various woodlot activities, the characteristics of owners and properties, and preferences for conducting activities themselves, sharing responsibility, or allocating rights to others. Associations that do occur may provide insight into the design and presentation of programs. The ten characteristics tested include 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education of the owner, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) pattern of woodlot distribution.

Tree planting on private lands in Alberta is associated with ownership in that partnerships generally have others do the work ($X^2=10.25$, 4df, $p=0.04$). **Tree thinning** also is associated with ownership, but here properties with one owner tend to share responsibility or allocate management to others ($X^2=5.04$, 2df, $p=0.08$). Tree thinning also is associated with length of woodlot ownership ($X^2=12.55$, 4df, $p=0.01$) but the pattern is confused. **Vegetation control** is allocated to others more frequently as the total rented acres increases ($X^2=7.96$, 4df, $p=0.09$).

Woodlot owners who live in or near their forested land prefer to do their own **road building** ($X^2=12.95$, 8df, $p=0.10$), but the association is weak. No associations occur for **wildlife habitat**, **cutting of pulpwood**, **cutting of sawlogs**, **production of rough sawn lumber**, or **production of value-added lumber**.

Alberta landowners whose residences lie in or near woodlots prefer to cut their own **firewood** ($X^2=15.99$, 8df, $p=0.04$). Those who own larger properties share firewood cutting or allocate the practice to others ($X^2=10.95$, 6df, $p=0.09$). The Prairie regional trend of single owner properties allowing others to cut, spousal owned properties cutting their own wood, and partnerships sharing the task is weakly apparent in Alberta. No associations occur for the **cutting of posts and rails** in Alberta.

The prairie regional trend of owners of small properties doing their own **trail building** is weakly evident in Alberta ($p=0.13$). Trail building also associates with type of ownership ($X^2=6.81$, 2df, $p=0.03$), but no pattern is evident in the data. No associations occur with **Christmas tree** management. Woodlot owners who live in or near their forested land prefer to do their own **land clearing** ($X^2=13.23$, 8df, $p=0.10$). Properties with individual or spousal ownership often share or allocate land clearing to others, while partnerships prefer to clear their own land ($X^2=9.75$, 4df, $p=0.05$).

The only somewhat consistent pattern in associations is that woodlot owners who live near their forest resources are more apt to become personally involved in harvest or management activities. Conversely, partnerships appear to be more conducive to owner initiated activities that may require considerable financial outlay (e.g. land clearing).

When analyzed for individual owner or property characteristics, no **age-related** associations are apparent in Alberta. Data relating to **occupations** do not allow valid analysis. **Distance from residences** to woodlots is associated with roadbuilding, cutting firewood, and clearing land. No significant associations occur with **education** of owners. **Total acres owned** is associated with cutting firewood and total **acres rented** with vegetation control, but **acres treed** show no patterns of association.

Length of ownership affected tree thinning responsibility, but no clear pattern is evident. Type of ownership, however, is important in five activities. Tree planting is allocated to others when partners own properties. Tree thinning, conversely, is shared or allocated to others more frequently by single owners of properties. Cutting of firewood and building of trails also are associated with type of ownership. Finally, land clearing is done by different actors under different ownerships.

In total, more associations are evident in woodlot activities in Alberta than in the other Prairie provinces. This probably reflects the greater diversity of woodlots and economic activities in Alberta, and the higher profile of forestry in the province. This may necessitate a somewhat broader system of management options.

Awareness of Marketing Opportunities for Forest Products in Alberta

Association analysis was applied to responses regarding landowner awareness of markets for nine products: 1) pulpwood, 2) sawlogs, 3) fuelwood, 4) posts and rails, 5) Christmas trees, 6) rough cut lumber, 7) strand board, 8) shake products, and 9) non-timber forest products. Associations were sought for ten characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on properties. No significant associations occur between age of owner, occupation, length of ownership or type of ownership in Alberta.

Awareness of **pulpwood markets** associates strongly with three characteristics tested: acres owned ($X^2=10.15$, 3df, $p=0.02$), treed acreage ($X^2=30.55$, 2df, $p=0.01$), and woodlot distribution ($X^2=19.93$, 4df, $p=0.01$). Owners of larger properties, those with more treed acreage and those with large parcels of forested land are most aware of pulpwood markets.

Knowledge of **sawlog markets** also is associated with total acres owned, but the pattern is reversed in that owners of smaller properties are most informed ($X^2=7.24$, 3df, $p=0.07$). Properties, however, are characterized by having more treed acreage ($X^2=14.18$, 2df, $p=0.01$) and forest land distributed in large parcels ($X^2=24.66$, 4df, $p=0.01$) as awareness increases.

Fuelwood markets are most familiar to those who live near their woodlots ($X^2=15.73$, 5df, $p=0.01$). Awareness also increases if landowners have large parcels of forested land ($X^2=16.69$, 4df, $p=0.01$). Having large woodlots ($X^2=13.45$, 4df, $p=0.01$) and more total treed acreage ($X^2=4.85$, 2df, $p=0.09$) also enhance knowledge of **post and rail markets**. Awareness also is associated with total acres rented, with knowledge increasing as acreage increases ($X^2=6.34$, 2df, $p=0.04$). Knowledge of **Christmas tree markets** is associated weakly with woodlot distribution ($X^2=8.96$, 4df, $p=0.06$), but no clear pattern of association is evident.

Awareness of **rough cut lumber markets** associates strongly with acres treed and woodlot distribution. Knowledge increases as the number of treed acres increases ($X^2=10.78$, 2df, $p=0.01$). Woodlots that occur as large parcels are associated with increased awareness ($X^2=20.53$, 4df, $p=0.01$).

Strand board markets associate with three characteristics. Owners with less formal education are somewhat more aware of markets ($X^2=7.96$, 4df, $p=0.09$). Stronger associations occur as treed acres increase ($X^2=6.99$, 2df, $p=0.03$) and if woodlots occur as large parcels ($X^2=10.58$, 4df, $p=0.03$). Those with less formal education also are more aware of **markets for shake products** ($X^2=8.08$, 4df, $p=0.09$). No associations are evident for markets for **non-timber products**.

When analyzed by characteristics of owners or properties, **distance to residence** is associated only with fuelwood markets, with those living closest to their woodlots being most aware. **Level of education** is associated weakly with market knowledge for strand board and shake products, with those having less education being most aware.

Total acres owned is associated with two products, but patterns vary. Those with large properties are more aware of pulpwood markets while those with small properties are more aware of sawlog markets. As more **total acres are rented**, awareness of post and rail markets increases. As **treed acreage** increases, however, market awareness increases for five product categories: pulpwood, sawlogs, posts and rails, rough cut lumber and strand board. **Woodlot distribution** is important in seven product categories: pulpwood, sawlogs, fuelwood, posts and rails, Christmas trees, rough cut lumber and strand board. These last two variables, **treed acreage** and **woodlot distribution**, are by far the most important characteristics tested.

Program Priority Associations in Alberta

Alberta landowners were asked to rank three possible woodlot program components as first, second and third priorities: 1) woodlot information, 2) technical assistance, and 3) financial assistance. Association analysis was applied to priority responses for each program component and each of the following ten characteristics of landowners or their properties: 1) age of owners, 2) occupations, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private land.

Few associations are apparent in Alberta. No associations occur for any program component for the following characteristics: 1) age of owner, 2) occupation, 3) distance from residence, 4) level of education, 5) acres treed, and 6) type of ownership. Owners of smaller properties give higher priority to **information components** ($X^2=11.36$, 6df, $p=0.08$). More recent owners of woodlots also give higher priority to information ($X^2=15.13$, 8df, $p=0.06$). Finally, those who own forests distributed as large parcels rate the information component highly ($X^2=18.09$, 8df, $p=0.01$).

Total acres rented is associated with priority ratings for **technical information** ($X^2=9.69$, 4df, $p=0.05$) but no pattern is discernible in the data. Those who have owned woodlots the longest, however, clearly rate the need for technical information as a high priority ($X^2=21.33$, 8df, $p=0.01$). There are no significant associations for priority of **financial assistance** as a program component.

Association Analysis of Program Need in Alberta

Woodlot owners were asked to rate the need for provincial woodlot management programs and landowner woodlot organizations on a 5-point scale ranging from strongly agree to strongly disagree. These responses were tested for association with the following ten characteristics of landowners or their properties: 1) age of owners, 2) occupations, 3) distance from residence to woodlots, 4) level of education, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) woodlot distribution on private lands.

Occupation and total treed acres are associated with **program need** in Alberta. Owners in the trades, business and the professions rate program need highest ($X^2=43.29$, 28df, $p=0.03$). Owners with extensive acreage of forest land also are more favourable toward program development ($X^2=21.66$, 8df, $p=0.01$).

The need for **landowner woodlot organizations** is associated with occupation and type of ownership. Owners in the trades, business and professions favour organizations ($X^2=50.13$, 28df, $p=0.01$). Amongst owners partners are neutral and single owners negative toward landowner organizations ($X^2=12.89$, 8df, $p=0.10$), but this association is weak.

Association Analysis of Most Important Current Uses of Woodlots in Alberta

Owners were asked to indicate in order of priority the three most important current uses made of their woodlots by their families. A list of 13 uses and an "other" (open-ended) category was available for importance rating (Table 69). Many of the possible choices received few responses, obviating association analysis for these variables. Inspection of frequency printouts suggests that the most valid and interpretable results are achieved by analyzing the most frequently listed response categories. Total usable cases diminish rapidly owing to the need for full response to three major questions to qualify. Accordingly, four use categories are defined for the data: 1) recreation, 2) commercial production, 3) personal use of forest products, and 4) wildlife habitat. Associations were sought for these categories for eight characteristics of landowners or their properties: 1) distance from residence to woodlots, 2) level of education, 3) total acres owned, 4) total acres rented, 5) acres treed, 6) length of ownership, 7) type of ownership, and 8) distribution of woodlots on private lands.

Personal use of products is less likely as the **level of education** of the owner increases, but the link is very weak ($X^2=13.01$, 8df, $p=0.11$). **Total acres rented**, however, is associated with three characteristics. First, recreational use is rated lower as the number of rented acres increases ($X^2=14.20$, 3df, $p=0.01$). Similarly, use for wildlife habitat is rated lower as rented acreage increases ($X^2=5.96$, 3df, $p=0.11$). Only one other weak association occurs in Alberta. Personal use of woodlot products is limited to types of ownership, but no clear pattern is evident ($x^2=7.47$, 4df, $p=0.11$).

Program Delivery Association in Alberta

Woodlot owners responded to a question concerning what agency or group they preferred to deliver woodlot management programs. The following options were listed in order of preference by respondents: provincial government, federal government, private sources, inter-governmental partnerships, government-private partnerships and landowner organizations. Associations were calculated for ten characteristics of landowners or their properties: 1) age, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties.

In Alberta five of the ten characteristics tested associate significantly with priority ratings of at least one of the program delivery options. **Age** associates with three options. First, older respondents give higher priority to provincial government delivery ($X^2=24.42$, 16df, $p=0.08$). Second, older respondents also prefer private source delivery ($X^2=24.14$, 16df, $p=0.09$). Finally, younger respondents prefer landowner associations ($X^2=26.87$, 16df, $p=0.04$).

Total acres owned is associated with higher ratings for inter-governmental partners ($X^2=22.72$, 12df, $p=0.03$). Both the smallest and largest properties show preference for these partnerships. A weak association with the same pattern also occurs for **total acres rented** and inter-governmental partnerships ($X^2=13.49$, 8df, $p=0.10$). A much stronger association is evident in a preference for landowner organizations by those who rent few acres ($X^2=20.19$, 8df, $p=0.01$).

Those who share **ownership** of the property as spouses prefer inter-governmental partners ($X^2=16.02$, 8df, $p=0.04$). Also, there is a weak association between **woodlot distribution** and landowner organizations. Landowner organizations are preferred more by owners of wooded land ($X^2=24.62$, 16df, $p=0.08$).

Four of the delivery options, therefore, have some associated characteristic. Preference for **provincial government** agencies is associated with age. Private source delivery also associates with age. **Landowner organizations** as delivery agents are associated with age, total acres rented and woodlot distribution. **Inter-governmental partnerships** as program delivery agents associate with total acres owned, total acres rented and type of ownership.

Association Analysis of Users of Private Woodlots in Alberta

Alberta woodlot owners were asked to indicate who is allowed to use their woodlots and for what purposes. The three responses allowed are 1) used by self and family, 2) used by others, and 3) shared by self and family and others. The 12 uses assessed include 1) second homes (cabins), 2) bed and breakfast operations, 3) outfitting and trapping, 4) tourism, 5) recreation, 6) hunting and fishing, 7) wildlife habitat, 8) livestock grazing, 9) timber for sale, 10) timber for personal use, 11) edible products, and 12) collection of other products (eg. cones). Responses are cross-tabulated for the user groups for each woodlot use category against the following characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level of owner, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties.

No significant associations occur for user patterns for any use category for five characteristics: 1) age, 2) occupation, 3) education of owner, 4) total acres owned, and 5) distribution of woodlots.

Distance from residence to woodlot is linked to user patterns of **second homes** ($X^2=15.69$, 8df, $p=0.05$). Those who live more than five miles from their second homes generally restrict use to family members. Conversely, those who live close to their woodlots restrict **grazing** to themselves more than do those who live further away ($X^2=40.62$, 8df, $p=0.01$). Similarly, self use decreases and sharing increases as distance increases for **edible products** ($X^2=14.24$, 8df, $p=0.08$).

Total acres rented is linked to user patterns for four (4) use categories. For **general recreation** a weak association occurs ($X^2=8.07$, 4df, $p=0.09$), but no use pattern is apparent. Renters of extensive acreages allow more shared access to their woodlots for **hunting and fishing**, while renters of few acres restrict access to family members ($X^2=9.51$, 4df, $p=0.05$). A strong association between **wildlife habitat** user patterns and acres rented ($X^2=15.17$, 4df, $p=0.01$) is not clearly defined. Finally, access for **edible products** is given more frequently to non-family members as the number of rented acres increases ($X^2=8.96$, 2df, $p=0.01$).

A strong association occurs between user patterns for **second homes** and total acres treed ($X^2=25.18$, 10df, $p=0.01$). Use both by family only and sharing increase as treed acreage increases. Use by others occurs primarily on properties with limited acreage of trees.

Length of ownership is linked weakly with access for **hunting and fishing** in Alberta ($X^2=14.08$, 8df, $p=0.08$). Recent owners restrict those uses mainly to family, those with middle length of ownership share access, and those who have owned woodlots longest allow others to hunt and fish. Use of woodlots for **wildlife habitat** is family-oriented if the land is owned by one person, and both family use and sharing occurs if spousal or partnership ownership occurs ($X^2=13.02$, 4df, $p=0.01$).

In summary, few associations are apparent between user patterns for various activities and characteristics of properties or landowners in Alberta. No significant associations occur for five (5) characteristics (age, occupation, education, acres owned, and distribution of woodlots) or for five (5) uses (bed and breakfasts, outfitting and trapping, tourism, timber sale, and personal use of timber). Acres rented is the only characteristics that is associated with three (3) uses, and distance from residence to woodlot relates to two (2) characteristics. Three (3) other characteristics associate with only one use category. Similarly, three (3) use categories have two associated characteristics and four (4) others have only one associated characteristic. Overall, therefore, user patterns for the uses assessed are not associated commonly with the characteristics tested.

Association Analysis of Land Use Practices Following Harevest of Woodlot Products in Alberta

Owing to the fact that some aspects of woodlot programs encourage harvest of treed areas, it is important to determine what landowners who already have harvested woodlots have done to the land following cutting, and to ask those who could harvest in the future what they anticipate land use to be after harvest. Three responses were optional to a question concerning what was done with the land after harvest: 1) the area was actively reforested, 2) the area was allowed to regenerate naturally, and 3) the land was converted to non-forestry use. Three answers also were options for responses from those who might make income by cutting woodlots in the future: 1) clear cut and convert the land to agriculture, 2) clear cut and replant trees, and 3) control cut on a sustained yield basis. Both sets of responses are cross-tabulated with the following characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private lands. Many analyses at the provincial level are limited by low numbers of responses in some categories. Only linkages with clearly defined patterns of association and reasonable response levels are reported.

Three significant associations occur for responses from woodlot owners who have harvested their treed acreage. First, **total acres owned** is associated with subsequent land use ($X^2=16.69$, 6df, $p=0.01$). Although data are limited a clear pattern of association is apparent. Owners of small properties have allowed natural regeneration following harvest. Conversely, owners of larger properties often have converted cleared land to agricultural use. Second, **type of ownership** is linked weakly with land use in that one-owner properties usually allowed regeneration, while partnerships often convert cut-over land to agriculture use. Third, the **distribution of woodlots** is associated with land use following harvest ($X^2=24.38$, 8df, $p=0.01$). Areas of trees that were planted and harvested generally are replanted after cutting, or are converted to agriculture. Natural regeneration, of course, may not occur on previously planted areas, obviating this option.

Those who responded to the question of preferences for land use if they decided to harvest woodlots in the future are more definitive in choices as associations occur for six of the characteristics tested. A weak association with a poorly defined pattern is evident for **distance from residence** to woodlot ($X^2=13.47$, 8df, $p=0.09$). It appears that those who live within or adjacent to woodlots are least likely either to cut and convert land use, or to clear cut and replant. Rather, they prefer to cut on a sustainable basis.

Level of education associates with land use in that those with less than high school are prone to conversion following harvest, those with university degrees are least likely to convert areas to other uses, and those with high school or some post-secondary training more often would replant areas ($X^2=15.31$, 8df, $p=0.05$). **Length of ownership** cross-tabulations suggest that the most recent owners are in favour of sustainable harvest ($X^2=14.52$, 8df, $p=0.07$).

Total acres owned is linked to preferred land use following potential harvest ($X^2=22.94$, 6df, $p=0.01$). Owners of small properties prefer controlled harvest while owners of large properties would opt for clear cutting and conversion of land to other uses. **Total acres treed**, however, shows a different pattern of association. Those with small areas of woodland would clear cut and replant their woodlots ($X^2=8.16$, 4df, $p=0.09$). Finally, distribution of woodlots is associated with preferred land use if woodlots are harvested in the future ($X^2=25.07$, 8df, $p=0.01$). Those with primarily planted woodlots would clear cut and convert the areas to other uses. Those with larger parcels of forest, however, would prefer sustained yield harvest.

SUMMARY

A return of 231 (19 percent) of 1,220 total questionnaires comprise the Alberta sample of private woodlot owners. Respondents are distributed evenly in age groups between 31-70 years of age. Farmers comprise half of the respondents, retired persons account for 12 percent, and the remainder are distributed among eight occupational categories. Eighty-four percent of respondents live in rural locations, 7 percent in towns or villages, and 9 percent in cities. Men comprise 90 percent of respondents, and 88 percent of respondents are married. Nearly 60 percent live within their woodlots, and an additional 17 percent live within 5 miles of their forested land. Only 7 percent live more than 100 miles from their woodland properties. Alberta woodlot owners are comprised of approximately equal percentages of individuals who never completed high school, completed high school, attended or completed technical or college training, or attended or completed university.

The properties of Alberta woodlot owners average 676 acres owned and 357 acres rented. Wide variation occurs in both averages. Treed land averages 131 acres, or 19 percent of average land owned. Agricultural land has been held by families for long periods, but forest fringe properties have changed ownership more recently. Commercial quality trees are present in 11-30 percent of woodlots in agricultural areas, but forest fringe areas generally contain high percentages of commercial forest. About two-thirds of the properties reporting contain less than 80 acres of woodlots. About half of the properties have changed ownership since 1981. The distribution pattern of woodlots on Alberta properties varies widely. Ownership on 68 percent of the properties is spousal, while one owner controls 21 percent, and partnerships and other arrangements, 11 percent.

Woodlot owners retain treed acres primarily for shelter for residences, wildlife habitat, soil and water conservation and heritage. Grazing and personal fuelwood are the major "products", and commercial reasons are ranked lowest. When priority was given to responses, shelter for residences was first, and by far the most important reason. Wildlife and conservation values are important secondary considerations. Priorities for current uses of woodlots differ from reasons for owning them. First use priority is grazing livestock, second is recreation and third is wildlife habitat. Personal use ranks higher than commercial use.

A number of woodlot activities are common in Alberta . Tree planting, weed control and thinning are reported by about half of the total possible respondents. Cutting of firewood also is common, and commercial activities such as Christmas trees and posts and rails are completed on about 40 properties. About half of the owners are aware of markets for fuelwood, sawlogs, rough lumber and posts and rails. Markets for Christmas trees and pulpwood are known to 4 out of 10 owners. Only 10 percent of respondents, however, have sold forest products in recent years. Lumber and firewood are most often sold. Roadside sales, sale of standing trees and direct delivery to buyers are used equally as methods. Woodlot income comprises less than 10 percent of land-based income on 97 percent of the properties. About half of the respondents indicate that income of \$100 or less per acre would be sufficient to induce management. Others expected higher rates of return. Of those who had harvested woodlots, 55 percent allowed natural regeneration, 44 percent converted cleared land to other uses, and 4 percent reforested. Reasons for not harvesting include not wanting to remove trees, not enough trees, not large enough trees, and maintaining conservation values.

Management Aspects of Woodlot Programs

Most owners express a knowledge of the extent and nature of their woodlot resources. Five potential woodlot problems were rated almost equally and considered moderate to serious concerns. Fire is considered the greatest threat. Three-fourths of the owners stated positive interest in managing for soil and water conservation, shelter and wildlife habitat. Pest controls, recreational use and replacing dead or harvested trees interests half of the respondents. Expansion of forest resources interests only one in four owners. Similar responses were given as reasons for planting trees. When placed in order of priority, wildlife habitat, personal forest products and recreational use are the most important management interests.

Only 21 percent of woodlot owners felt that there is enough information available for owners. One-third know where to obtain available information. The availability of tree planting stock is known to two-thirds of owners.

Although only 4 percent of respondents now earn significant alternative income from forest products, 31 percent believe it could be important in the future. Twenty percent of owners view their woodlots as potential long-term diversification resources

One-time liquidation of resources is not a preferred option. Also, 96 percent of landowners would like to manage their own resources. Among harvest options if a profit could be realized, 70 percent of owners would prefer small area sustained yield harvest, 25 percent would clear cut and convert the land to other uses and 5 percent would clear cut and replant the area to trees.

Moderate to weak support is evident for provincial private woodlot management programs. Support is strongest in non-agricultural areas. The need for private woodlot associations receives even less support. If programs are instituted, information and education components are wanted most, followed by technical assistance and financial assistance. Landowner organizations are preferred delivery agents.

PRAIRIE REGIONAL WOODLOTS

Although the methods of sampling necessarily had to vary among the provinces of Manitoba, Saskatchewan and Alberta, all landowners who received a survey were selected randomly. The three provincial data sets are presented and analyzed both comparatively and combined into a single Prairie region. Owing to the existing boundaries of forest sections, resource management units or similar subdivisions, the number of private properties and landowners varies among regions. Random selection of landowners occurred within each unit to ensure geographic coverage of all agricultural and ecological zones, but the chance of being selected varies according to the number of owners in each area. Results, therefore, are most accurate when related to geographic subdivisions. Details of each sampling frame are provided in the preceding provincial reports.

A total of 3,944 surveys were mailed in the three Prairie regions: 1,234 in Manitoba, 1,410 in Saskatchewan and 1,300 in Alberta. Of these, 117 were returned to the sender. Returned surveys number 776 (20 percent) of which 732 (19 percent) are usable. Response rates are similar among provinces, with 261 (22 percent) from Manitoba, 240 (17 percent) from Saskatchewan and 231 (19 percent) from Alberta. Therefore, Manitoba returns account for 36 percent of the Prairie regional total, Saskatchewan responses for 33 percent, and those from Alberta for 32 percent.

Characteristics of Prairie Woodlot Owners

A total of 674 landowners indicated age on surveys returned. Approximately 87 percent are distributed evenly in four classes ranging between 31-70 years of age (Table 85). An additional 9 percent are more than 71 years of age. These age distributions are consistent for all three prairie provinces.

Table 85. Age distribution of respondents to the woodlot survey, Prairie region

Age category	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
<20 years	1	<1	--	--	--	--	1	<1
21-30	15	6	5	2	5	2	25	4
31-40	42	17	47	21	45	22	134	20
41-50	55	23	65	29	58	28	178	26
51-60	58	24	52	23	44	21	154	23
61-70	50	21	35	16	40	19	125	19
>71	20	8	20	9	17	8	57	9
Total	241	100	224	100	209	100	674	100

Nearly 60 percent of the prairie woodlot owners are farmers and ranchers (Table 86). The only other occupational group with more than 10 percent of respondents are retired persons. Among provinces, Saskatchewan has the highest percentage of farmers and ranchers, and Manitoba has the highest number of retired persons. Only minor differences are evident in other occupations. Overall, the occupational characteristics of woodlot owners are relatively uniform in the three provinces.

Table 86. Primary occupations of woodlot owners, Prairie region

Occupation	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
Farmer/rancher	133	54	153	67	115	52	401	58
Labourer	18	7	12	5	11	5	41	6
Clerical	1	<1	--	--	6	3	7	1
Skilled trade	12	5	10	4	18	9	40	6
Business/commerce	9	4	4	2	11	5	24	3
Office manager	2	1	--	--	2	1	4	<1
Professional	24	10	12	5	16	7	52	8
Homemaker	2	1	8	4	7	3	17	2
Retired	39	16	26	11	27	12	92	13
Other	8	3	4	2	6	3	18	3
Totals	248	100	229	100	220	100	697	100

Woodlot owners were asked if their residences are rural, in a town or village or urban (>10,000 people) (Table 87). Most (79 percent) live in rural locations, and this characteristic is consistent in all three provinces. Alberta respondents are less likely to live in towns and villages than are those in Manitoba and Saskatchewan.

Table 87. Location of residences of woodlot owners, Prairie region

Location	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
Rural	186	75	179	78	183	84	548	79
Town/village	37	15	32	14	16	7	85	12
City (>10,000 pop.)	24	10	18	8	20	9	62	9
Total	247	100	229	100	219	100	695	100

Men responded most often to the survey. Of a total of 695 responses to gender, 611 (88 percent) are males and 84 (12 percent) are females. This pattern is evident in all three provinces, with the percentage of males ranging between 87 - 90 percent of respondents. Marital status follows a similar pattern, with 86 percent of responses coming from married persons, 10 percent from single persons and 6 percent from widowed individuals. Married respondents varied between 80-89 percent among provinces.

Landowners were asked to indicate the distance from their residence to their forested property (Table 88). Most live near their woodlots, with 52 percent having woodlots surrounding their residences, and an additional 21 percent living within 5 miles of their woodlots. Only 13 percent of the respondents live more than 25 miles from their woodlots, but most of these live more than 100 miles away. Distances between residences and woodlots is similar in all three provinces.

Table 88. Distance between residence and woodlots, Prairies region

Category	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
Surrounds residence	119	49	107	50	124	58	350	52
<5 miles	58	24	46	22	36	17	140	21
5-24 miles	27	11	33	15	25	12	85	13
25-49 miles	3	1	5	2	8	4	16	2
50 - 99 miles	9	4	6	3	7	3	22	2
100+ miles	26	11	17	8	15	7	58	9
Totals	242	100	214	100	215	100	671	100

The educational backgrounds of woodlot owners varies somewhat among provinces. Overall, 32 percent of respondents never completed high school, but this number varies by 10 percent between Alberta (26 percent) and the other two provinces. The percentage with high school diplomas is relatively consistent among provinces. Alberta landowners, however, have more college/technical and university training than those in Manitoba and Saskatchewan. Overall, 57 percent of the prairie woodlot owners have complete high school or less, and 43 percent have some, or have completed post-secondary training (Table 89).

Table 89. Educational background of woodlot owners, Prairie region

Highest level completed	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
<High school	85	35	80	36	53	26	218	32
High school	71	29	52	23	47	23	170	25
Some post-secondary	24	10	29	13	31	15	84	12
College/technical	33	14	41	18	49	24	123	18
University	29	12	23	10	28	14	80	12
Totals	242	100	225	100	208	100	675	100

Characteristics of the Lands Controlled by Prairie Woodlot Owners

The average size of properties owned by responding woodlot owners is 780 acres (Table 90). Owned properties in Saskatchewan are larger than those in Manitoba and Alberta. In addition, woodlot owners rented an average of 308 acres, with rented average in Manitoba being less than that in Saskatchewan and Alberta. Total operated land bases, therefore, average more than 900 acres in Manitoba, 1000 acres in Alberta, and 1300 acres in Saskatchewan.

The percentage of treed land on owned acreage also varies among provinces. In Manitoba, 18 percent of owned land is treed, in Saskatchewan 11 percent is woodlot, and in Alberta 19 percent is forested. On a Prairie regional basis, 16 percent of the land base of respondents is woodland. The 385 respondents who indicated that all or part of their land was inherited all listed average family tenures of more than 50 years (Table 90).

Table 90. Land characteristics of properties of woodlot owners, Prairie region

Land characteristics	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	Ave. acres	No.	Ave. acres	No.	Ave. acres	No.	Ave. acres
How many total acres of land do you <u>own</u> (1993)	258	720	229	945	218	676	705	780
How many total acres of land do you <u>rent</u> (1993)	206	211	217	356	201	357	624	308
How many owned acres of land is treed/forested	251	128	225	108	211	131	687	122
If inherited, how many years land been in family	144	52 yrs.	135	56 yrs.	106	53 yrs.	385	54 yrs.
How much owned forested land contains trees of commercial value (%)	212	25%	203	90%	196	21%	611	45%

Responses varied considerably to a question concerning the percentage of forested land that contains commercially valuable trees. In Manitoba and Alberta, landowners estimated averages of 25 and 21 percent, respectively. In Saskatchewan, however, where wooded acreage is minimal, farmers stated that 90 percent of all trees are commercially valuable. The reasons for these differences are not known, but may relate to variations in landowners perceptions of value owing to site and situation.

Although the average owned land base in the Prairie region is 708 acres, nearly half of the respondents own less than 320 acres (Table 91). Alberta has a high percentage of smaller properties. An additional 17 percent of Prairie farmers own between 321-640 acres. The average of 708 acres, therefore, is comprised of many small and fewer large properties.

Table 91. Size distribution of total acres of land owned by woodlot owners, Prairie region

Acres owned	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	%	No.	%	No.	%	No.	%
<320	112	43	69	30	150	75	331	48
321-640	49	19	37	16	30	15	116	17
641-1280	63	24	79	35	11	6	153	22
1281-1860	18	7	17	7	1	<1	36	5
>1861	16	6	27	12	9	5	52	8
Totals	258	100	229	100	201	100	688	100

Eighty-eight percent of the Prairie woodlot owners also rent land (Table 92). Three-fourths of the respondents rent less than a half section (320 acres) and 87 percent rent less than a section (640 acres). The distribution of size of rented properties is consistent among provinces.

Table 92. Total acres rented by woodlot owners, Prairie region

Acres rented	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
<320	165	80	161	74	150	75	476	76
321-640	20	10	21	10	30	15	71	11
641-1280	16	8	23	11	11	6	50	8
1281-1860	4	2	3	1	1	<1	8	1
>1861	1	<1	9	4	9	5	19	3
Totals	206	100	217	100	201	100	624	100

Although the most frequent response regarding size of treed acreage on their owned properties is less than 20 acres, a wide range in woodlot sizes is evident across the Prairies (Table 93). Approximately 50 percent of the properties have less than 80 acres of treed land, while 10 percent have more than 300 acres. The size distribution of woodlots is relatively consistent among provinces, but Saskatchewan has a higher percentage of small woodlots (<20 acres) and Alberta has more woodlots between 21-80 acres.

Table 93. Size distribution of treed acreage on properties of woodlot owners, Prairie region

Acres treed	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
<20	50	23	93	41	53	25	196	30
21-40	26	12	26	12	33	16	85	13
41-80	35	16	29	13	46	22	110	17
81-120	26	12	26	12	20	10	72	11
121-160	21	10	5	2	20	10	46	7
161-200	24	11	16	7	6	3	46	7
201-300	16	7	9	4	13	6	38	6
301-400	9	4	7	3	8	4	24	4
>401	13	6	14	6	12	6	39	6
Totals	220	100	225	100	211	100	656	100

A majority (62 percent) of current owners have controlled properties with woodlots for less than 25 years (Table 94). Responses suggest that considerable land acquisition occurred during the 1970's and 1980's. Among Provinces, Alberta has had considerably more recent ownership change, as 46 percent of the respondents acquired wooded land since 1981.

Table 94. Starting year of becoming a forest land owner, Prairie region

Year	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
<1930	3	1	8	4	1	2	12	3
1931-1940	6	3	5	3	1	2	12	3
1941-1950	9	4	7	4	2	4	18	4
1951-1960	26	11	20	11	5	9	51	11
1961-1970	47	20	30	16	11	19	88	19
1971-1980	77	33	72	39	11	19	160	34
1981-1990	56	24	32	18	16	28	104	22
>1991	9	4	9	5	10	18	28	6
Totals	233	100	183	100	57	100	473	100

Prairie woodlot owners were asked to indicate the ownership status of their properties. About two-thirds of the responses represent properties that are owned jointly by the respondent and spouse. Most of the remainder are owned solely by the respondents. Only about 10 percent of the respondents listed partnerships, undivided estates or other forms of ownership (Table 95). These ownership patterns are consistent among the provinces.

Table 95. Ownership status of private lands with woodlots, Prairie region

Category	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
Respondent and spouse	154	63	132	61	141	68	427	64
Respondent only	61	25	63	29	44	21	168	25
Partnership	20	8	10	5	15	7	45	7
Undivided estate	2	1	1	1	1	1	4	1
Other	8	3	9	4	7	4	24	4
Totals	245	100	215	100	208	100	668	100

Ninety-three percent of respondents answered a question concerning the distribution of wooded land on their properties (Table 96). All five descriptive categories received many responses. One large and several smaller parcels, and many small parcels each received about one-quarter of the responses. One large parcel, few small parcels and planted shelterbelts, however, all are indicated by between 15 and 20 percent of the owners. Wooded land distributions are similar for Manitoba and Alberta, but Saskatchewan has fewer properties with one large and several smaller parcels, and higher representation in the few small parcels and planted shelterbelts categories.

Table 96. Description of wooded land distribution within private properties, Prairie region

Land distribution	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
One or more large parcels of woodland and several smaller parcels	95	38	15	7	69	34	179	27
Many smaller parcels	57	23	55	27	41	20	153	23
One large parcel	45	18	43	21	39	19	127	19
Few smaller parcels	27	11	44	22	30	15	101	15
Primarily planted shelterbelt	25	10	47	23	27	13	99	15
Totals	249	100	204	100	206	100	659	100

Reasons for Owning and Uses Made of Prairie Woodlots

Using a 5-point scale, woodlot owners were asked to rate the importance of 17 reasons for owning forested land (Table 97). The number of responses and average rating on the 5-point scale were derived for each province and the Prairie region.

Table 97. Reasons for owning or retaining forested land or woodlots, Prairie region

Reason	Province									Prairie total		
	Manitoba			Saskatchewan			Alberta					
	No.	Ave. rating	Rank	No.	Ave. rating	Rank	No.	Ave. rating	Rank	No.	Ave. rating	Rank
Personal residence	215	1.7 ¹	1	198	1.7	1	205	1.5	1	618	1.6	1
Wildlife habitat	227	1.8	2	207	1.9	3	204	1.7	2	638	1.8	2
Conservation	215	1.9	3	195	1.8	2	198	1.8	3	608	1.8	3
Heritage	212	2.1	4	195	2.3	4	195	1.8	4	602	2.1	4
Personal fuelwood	218	2.6	5	188	3.3	9	196	2.8	8	602	2.9	6
Incidental part	213	2.6	6	195	2.6	5	197	2.6	5	605	2.6	5
Grazing	212	2.8	7	193	3.1	6	195	2.7	7	600	2.9	7
Recreation use	206	2.9	8	192	3.1	7	188	2.7	6	586	2.9	8
Hunting/fishing	205	3.0	9	187	3.2	8	190	3.4	9	582	3.2	9
Non-timber products	205	3.4	10	189	3.6	10	188	3.5	10	582	3.5	10
Timber for own use	204	3.7	11	182	4.0	11	188	3.6	11	574	3.8	11
Investment	201	3.7	12	186	4.2	12	191	3.6	12	578	3.8	12
Fuelwood for sale	200	4.1	13	184	4.3	13	187	4.3	14	571	4.2	13
Seasonal residence	201	4.3	14	182	4.3	14	188	4.2	13	571	4.3	13
Timber for sale	200	4.3	15	185	4.4	15	186	4.3	15	371	4.3	15
Tax incentives	198	4.4	16	184	4.6	16	182	4.5	17	564	4.5	16
Business	196	4.6	17	183	4.7	17	185	4.4	16	564	4.6	17

¹ A response of 1.0 is highest rating. Multiple response possible.

Retaining woodlots to provide shelter for residences is the highest rated reason not only for the region, but also for each province (Table 98). Wildlife habitat, soil and water conservation and heritage also are rated strongly and consistently in all provinces. The fact that woodlots are an incidental part of property is rated as the fifth most important reason. The only reason that has noticeably different ratings among provinces is the importance of personal fuelwood, which ranked fifth in Manitoba, but ninth in Saskatchewan and eighth in Alberta. Overall, prairie woodlot owners rate the 17 reasons for owning or retaining woodlots equally both in terms of average ratings, and in order of importance. Spearman rank correlation shows no differences in ranks between any pairings of the orders of averages ($p < 0.05$).

The highest ranked "product" is personal fuelwood (sixth), which is followed by grazing (seventh), recreational use (eighth) and hunting and fishing (ninth). All timber products other than personal fuelwood received average ratings below 3.5/5.0, and are the lowest ranked reasons. Spearman rank correlation indicates no significant differences among any pairs of ranks among provinces or between provinces and the Prairie region ($n=17$, $r_s=0.97$ to 0.99, $p < 0.01$).

To provide focused priorities, landowners were asked to select (in order of priority) the three most important reasons for owning or retaining woodlots. Responses are scored by allocating 3 points for first priority, 2 points for second, and 1 point for third, and reasons are ranked by the derived weighted scores (Table 98). Shelter for residences is the top priority and received by far the highest score (933). Wildlife habitat (666) and soil and water conservation (654) are major secondary priorities. Heritage for the future is the fourth ranked priority.

Table 98. Priorities among reasons for owning or retaining land/woodlots, Prairie region

Reason	Province									Prairie total		
	Manitoba			Saskatchewan			Alberta					
	Score ¹	No.	%	Score	No.	%	Score	No.	%	Score	No.	%
Residence shelter	301	118	17	300	114	20	330	130	21	933	362	19
Wildlife habitat	249	137	20	203	109	19	206	108	17	666	354	19
Conservation	210	98	14	237	113	19	203	99	16	654	310	16
Heritage for future	102	58	9	86	60	10	122	73	12	312	191	10
Grazing	106	50	7	72	36	6	99	45	7	282	131	7
Personal fuelwood	143	76	11	77	41	7	41	28	5	234	194	10
Incidental part of farm	56	30	4	60	32	6	56	30	5	171	92	5
Recreation use	61	34	5	22	13	2	63	31	5	165	78	4
Hunting/fishing	35	20	3	13	9	3	29	18	3	78	51	3
Financial investment	32	17	3	8	5	1	23	13	2	75	35	2
Timber for own use	13	7	1	19	11	2	14	9	1	48	27	1
Non-timber products	10	6	1	22	13	2	11	7	1	48	26	1
Timber for sale	2	1	<1	17	11	2	13	8	1	45	20	1
Seasonal residence	10	7	1	16	6	1	13	8	1	39	21	1
Business	0	0	0	6	2	1	10	5	1	27	7	<1
Fuelwood for sale	10	5	1	5	3	1	7	4	<1	24	12	1
Other reasons	22	9	1	8	4	1	10	5	1	48	18	1
Total	--	682	100	--	582	100	--	622	100	--	1886	100

¹ Scores are derived by allocating 3 points for most important, 2 points for second in importance and 1 point for third in importance.

Among uses, only grazing (fifth) and personal fuelwood (sixth) received scores of more than 200, while recreation ranked eighth with a score of 165. All other uses received scores of less than 100 and are of minor significance overall. Spearman rank correlation indicates no significant difference between any paired provinces or between the provinces and the Prairie region ($n=16$, $r_s=0.85$ to 0.95, $p < 0.01$).

Because actual use may differ from reasons for owning woodland, landowners were asked to respond to a series of reasons for **using** their forested lands. The most important use is assigned 3 points, second most important 2 points, and third most important 1 point, and scores are derived. Based on actual use, wildlife habitat, grazing of livestock and recreation are by far the most important uses made of private woodlots, not only for the Prairies as a region, but also in each province. Edible forest products, timber for personal use, and hunting and fishing are major secondary uses, but are noticeably less important than the three top uses. Most other uses involve less than 5 percent of the respondents (Table 99). Spearman rank correlation indicates no significant difference between any paired ranks between provinces, or between provinces and the Prairie region ($n=13$, $r_s=0.93$ to 0.98 , $p<0.01$).

Table 99. The three most important reasons for **using** forested private land, Prairie region

Reason	Province									Prairie total		
	Manitoba			Saskatchewan			Alberta					
	Score ¹	No.	%	Score	No.	%	Score	No.	%	Score	No.	%
Wildlife habitat	264	133	22	243	119	24	233	115	22	740	367	22
Grazing livestock	245	93	15	232	91	18	246	96	18	723	280	17
Recreation	248	119	19	192	90	18	241	114	22	681	323	20
Edible forest products	89	62	10	62	46	9	62	45	9	213	153	9
Timber for own use	121	66	11	55	31	6	53	33	6	229	130	8
Hunting/fishing	71	42	7	63	38	8	53	32	6	187	102	6
Forest land not used	40	20	3	43	20	4	44	21	4	127	61	4
Seasonal home	40	16	3	24	8	2	43	18	3	107	42	3
Timber for sale	15	7	1	23	11	2	9	5	1	47	23	1
Outfitting/trapping	9	5	1	12	7	1	15	7	1	36	19	1
Tourism	11	7	1	9	5	1	8	4	1	28	16	1
Forest products	6	3	1	3	3	1	6	5	1	15	11	<1
Bed & breakfast	12	5	1	--	--	--	6	2	<1	18	7	<1
Other	92	37	6	88	34	7	77	31	6	257	102	6
Total	--	615	100		503	100		528	100		1646	100

¹ Scores are derived by allocating 3 points for first priority, 2 points for second priority and 1 point for third priority.

Woodlot Activities, Products and Marketing Knowledge - Prairie Region

A series of questions was presented to woodlot owners concerning activities undertaken in their treed areas, market awareness for woodlot products, actual products sold and related economic matters. Landowners were asked to indicate whether they, someone else or both had engaged in any of 14 activities during the last 10 years (details of who carried out activities are given in provincial reports).

Basing percentages on the total number of possible respondents by province and for the Prairie region, cutting firewood (39 percent), tree planting operations (33 percent) and vegetation control (26 percent) are the only three activities that involve more than 25 percent of landowners (Table 100). Thinning trees, clearing land, cutting posts and rails, wildlife habitat improvements and roadbuilding involve between 10 and 20 percent of woodlot owners. Most commercial activities in woodlots involve less than 10 percent of owners. Spearman rank correlation indicates no significant difference between any paired ranks between provinces, or between the provinces and the Prairie region ($n=14$, $r_s=0.95$ to 0.98 , $p<0.01$).

Table 100. Activities in private woodlots during the last 10 years, Prairie region

Activity	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	% ¹	No.	%	No.	%	No.	% ²
Cutting firewood	156	60	10	4	113	51	279	39
Tree planting or prep for tree planting	98	38	23	10	115	52	236	33
Weeding or vegetational control	68	26	18	8	98	45	184	26
Tree thinning or spacing	60	24	8	4	62	28	130	18
Cleared land without salvaging forest products	51	20	5	2	52	24	108	15
Cutting posts or rails	42	16	2	1	40	18	84	12
Wildlife habitat improvement	40	16	6	2	46	21	92	13
Roadbuilding	34	13	1	<1	44	20	79	11
Building hiking or crosscountry ski trails	22	9	1	<1	24	11	47	7
Cutting Christmas trees	20	8	1	<1	40	18	61	9
Cutting sawlogs	17	7	--	--	23	11	40	6
Rough lumber	16	6	--	--	14	6	30	4
Cutting pulpwood	9	4			6	3	15	2
Value-added lumber	3	1	--	--	1	<1	4	<1

¹ Percentages are calculated based on total number of possible respondents to the activities questions (Manitoba, n=258; Saskatchewan, n=229; Alberta, n=220; Prairie, n=707)

Knowledge of marketing opportunities for woodlot products was assessed among owners. Among the nine product categories, marketing opportunities are known to between 6 and 60 percent of the respondents (Table 101). Markets for fuelwood are known most widely and this is the only product group with more than half of the owners indicating awareness. Markets for rough cut lumber, sawlogs, pulpwood, fence posts and rails and Christmas trees are known to between 28-40 percent of woodlot owners. Specialty product markets are not known widely. Alberta landowners appear to be more aware of woodlot product markets than are landowners in Manitoba and Saskatchewan. Spearman rank correlation indicates no significant difference between any paired ranks for provinces, or between the provinces and the Prairie region (n=9, $r_s=0.87$ to 0.98 , $p<0.01$).

Table 101. Awareness of marketing opportunities for forest products by woodlot owners, Prairie region

Activity	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
Fuelwood	69	31	53	47	56	44	60	40
Rough cut lumber	37	63	35	65	49	51	40	60
Sawlogs	32	68	34	66	53	47	39	61
Fenceposts/rails	39	61	32	68	45	55	38	62
Pulpwood	28	72	32	68	41	59	33	67
Christmas trees	27	73	18	82	39	61	28	72
Logs/bolts for oriented strand board	10	90	5	95	23	77	12	88
Non-timber products	10	90	9	91	18	82	12	88
Logs/bolts for shake production	6	94	3	97	10	90	6	94

Only 53 respondents (8 percent of total possible), however, actually have sold woodlot products (Table 102). Fifteen owners have sold fuelwood, most directly to buyers. Eleven others have sold lumber by a variety of methods. The sale of standing trees is common and tends to be species specific. Answers do not allow clear definition of whether standing trees or logs are sold by species.

Table 102. Products sold and method used to sell woodlot resources, Prairie region

Product sold	Sold at roadside		Sold standing trees		Delivered to buyers		Delivered to mills		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Fuelwood	3	25	--	--	12	57	--	--	15	28
Lumber	5	42	1	10	4	19	1	10	11	21
Spruce/aspen	1	8	2	20	--	--	3	30	6	11
Poplar	--	--	3	30	1	5	1	10	5	9
Logs	--	--	1	10	1	5	3	30	5	9
Pulpwood	--	--	1	10	1	5	2	20	4	8
Berries	1	8	--	--	2	10	--	--	3	6
Vegetables (mushrooms)	1	8	--	--	--	--	--	--	1	2
Christmas trees	1	8	--	--	--	--	--	--	3	6
Oak	--	--	1	10	--	--	--	--	1	2
Pine	--	--	1	10	--	--	--	--	1	2
Totals	12	100	10	100	21	100	10	100	53	100

The low number of respondents who indicate sales of products is reflected in income estimates from woodlots. Among 591 respondents, 575 (97 percent) indicate that less than 10 percent of their land-based income is derived from forested areas (Table 103). This contrasts to 32 percent of owners earning less than 10 percent from their entire land base. Conversely, only one respondent earned more than 71 percent of total land-based income from forest products, while 254 (41 percent) earned this percentage from their total land base. This income pattern is consistent among provinces, but Saskatchewan has fewer respondents earning less than 10 percent of total income from land-based activities.

Table 103. Breakdown of income from forested and total land bases, Prairie region

Income percentage	Province												Prairie total			
	Manitoba				Saskatchewan				Alberta				Prairie total			
	Forested No.	%	All land No.	%	Forested No.	%	All land No.	%	Forested No.	%	All land No.	%	Forested No.	%	All land No.	%
<10%	185	97	84	39	203	97	48	22	187	97	71	36	575	97	203	32
11-30%	2	1	21	10	3	1	24	11	3	2	23	12	8	1	68	11
31-50%	2	1	27	12	3	1	28	13	1	<1	15	8	6	1	70	11
51-71%	1	1	11	5	--	--	16	8	--	--	9	5	1	<1	36	6
71-90%	--	--	21	10	--	--	39	18	1	<1	32	16	1	<1	92	15
>91%	--	--	53	24	--	--	59	28	--	--	50	25	--	--	162	26
Totals	190	100	217	100	209	100	209	100	192	100	200	100	591	100	631	100

Private woodlot owners were asked to indicate the economic return per acre that would be required to encourage management. Forty-six percent of respondents list less than \$50 per acre per year, and an additional 21 percent suggest \$51-100. Some variation is evident among provinces in that Alberta landowners generally have higher income expectations (Table 104). Only 173 responses were received to this question.

Table 104. Level of return needed for owners to consider forest management, Prairie region

\$ acre/year	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
<\$50	37	53	30	54	13	27	80	46
51-100	15	21	12	21	10	21	37	21
101-150	3	4	5	9	3	6	11	6
151-200	2	3	3	5	8	17	13	8
201-250	--	--	--	--	--	--	--	--
251-300	2	3	1	2	1	2	4	2
301-350	--	--	--	--	--	--	--	--
351-400	1	1	1	2	2	4	4	2
401-450	1	1	--	--	--	--	--	--
451-500	3	4	3	5	2	4	8	4
501-550	--	--	--	--	--	--	--	--
>551	6	9	1	2	9	19	16	9
Total	70	100	56	100	48	100	173	100

Sixty-nine percent of the 286 woodlot owners who have harvested forest products allowed natural regeneration to occur on cutover lands (Table 105). Eighty landowners (28 percent), however, converted cleared land to other uses, thus not replacing forest resources. Only 4 percent of the respondents actively reforested harvested lands. Manitoba has the lowest percentage of converted land and Alberta the highest percentage.

Table 105. Land use following harvest of woodlots, Prairie region

Land use	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
Allowed natural regeneration	104	79	50	67	42	53	196	69
Converted to other use	24	18	21	28	35	44	80	28
Actively reforested	3	2	4	5	3	4	10	4
Total	131	100	75	100	80	100	286	100

Those who indicated that they had not harvested woodlot products listed more than 1300 reasons why (multiple responses allowed) (Table 106). Not wanting to cut their trees, not having enough trees or large enough trees to harvest and wanting to maintain the conservation benefit of woodlots are listed most frequently. Maintaining recreational benefits and being too busy to work in woodlots are major secondary considerations. All other reasons comprise 2-3 percent of the responses each. The responses are similar in all three provinces.

Table 106. Reasons for not harvesting woodlot prairies, Prairie region

Reason	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	%	No.	%	No.	%	No.	%
Do not want to cut trees	119	26	112	26	121	27	352	27
Not enough trees or no large trees	104	23	122	28	99	22	325	25
Maintain conservation benefit	75	17	82	19	95	21	252	19
Maintain recreation benefit	49	11	28	7	55	12	132	10
Too busy to work woodlots	46	10	42	10	28	6	116	9
Don't know how to market	18	4	10	2	13	3	41	3
Low prices	7	2	12	3	13	3	32	2
Can't do work myself	11	2	11	3	6	1	28	2
Can't find a buyer	11	2	7	2	6	1	24	2
Road or access problems	9	2	6	2	6	1	21	2
Financially adverse effects	3	1	--	--	1	<1	4	<1
Total	452	100	432	100	443	100	1,327	100

Landowners also were asked to answer a question that called for rating of responses regarding willingness to harvest and sell woodlot products as opposed to preserving them (Table 107). About half of the Prairie landowners who responded agreed or strongly agreed that they are willing to forego profits for maintaining the aesthetic values of woodlots. An additional 21 percent are neutral and 14 percent express no opinion. Only 16 percent of the respondents, therefore, disagree or strongly disagree with the statement. Response rates are similar among Provinces.

Table 107. Responses from Prairie landowners to a question concerning willingness to forego profits from woodlots to protect aesthetic values

Question	Province/Area	Strongly agree		Agree		Neutral		Disagree		Strongly disagree		No opinion	
		No.		No.		No.		No.		No.		No.	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
I am willing to give up profits from the sale of timber products in order to promote or preserve aesthetic values of woodlots	Manitoba	53	26	53	26	38	18	19	9	14	7	30	15
	Saskatchewan	42	23	41	22	40	22	13	7	11	6	37	20
	Alberta	54	28	49	25	43	22	12	6	19	10	18	9
	Prairies	149	25	143	24	121	21	44	8	44	8	85	14

Three responses were solicited to a question concerning what cutting practices would be employed if a profit could be realized from harvesting woodlots (Table 108). Among the 458 owners who responded, 311 (68 percent) would cut small areas or on a sustained yield basis. Twenty-two percent, however, would clear cut the woodlots and convert the land to agricultural use. One in ten owners would prefer to clearcut and reforest the area.

Table 108. Preferred cutting practices of Prairie landowners if a profit could be realized from woodlots

Cutting practice	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	%	No.	%	No.	%	No.	%
Small area or sustained yield	125	70	83	63	103	70	311	68
Clear cut and use land for agricul.	32	18	30	23	37	25	99	22
Clear cut and reforest	21	12	19	14	8	5	48	10
Total	178	100	132	100	148	100	458	100

Management and Information Aspects of Woodlots, Prairie Region

More than 90 percent of owners in all provinces indicated that they are aware of the extent of forested land on their properties. The average ratings for this question are 1.31/5.0 in Manitoba, 1.43/5.0 in Saskatchewan and 1.37/5.0 in Alberta. Woodlot owners also are aware of the tree species on their lands (Prairie region average rating 1.45/5.0). Somewhat lower awareness is indicated about the age and condition of woodlots, as about 70 percent of respondents suggested awareness, and average ratings of 2.2/5.0 for Manitoba, 1.89/5.0 for Saskatchewan and 1.84/5.0 for Alberta were derived. Across the region, therefore, woodlot owners express a comfortable level of knowledge of the basic parameters of their forest resources.

Further information was sought concerning the landowners perceptions of threats or problems relating to woodlots. Responses to five problems are rated on a scale in which 1=not concerned and 5=very concerned. Fire danger received the highest rating (3.6/5.0) not only in the Prairie region, but also in each province (Table 109). The other four potential problems received average ratings between 2.9-3.2, suggesting moderate concern of about equal magnitude. Trespass and vandalism engender somewhat less concern in Saskatchewan, and insects and pests are less problematic in Manitoba.

Table 109. Ranking and average rating (scale 1-5)¹ of potential woodlot problems, Prairie region

Potential problem	Province						Prairie total	
	Manitoba		Saskatchewan		Alberta			
	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating
Fire	237	3.7	201	3.4	205	3.8	643	3.6
Diseases	224	3.3	194	3.1	200	3.2	618	3.2
Trespass	233	3.3	199	2.5	201	3.2	633	3.0
Vandalism	224	3.1	193	2.7	194	3.3	611	3.0
Insects and pests	229	2.5	202	3.1	206	3.2	637	2.9

¹ Scale 1 = not concerned, 5 = very concerned

Two questions probed woodlot owners' interests in managing their forest land. First, they were asked what management purposes would interest them in existing woodlots. Second, they responded to a question concerning why they would consider planting trees to expand their forest resources, or enhance existing resources. Managing woodlots and planting trees for shelter for residences and soil and water conservation are the most frequent positive responses (Table 110). Managing existing woodlots for wildlife habitat also engenders support, but fewer landowners are willing to plant trees for this purpose.

Managing woodlots for recreational use, replacement of dead or harvested trees and insect or disease control received about a 40 percent positive response. Expanding forest resources, however, appealed to only 1 in 5 respondents. These percentages are relatively uniform among the provinces, but somewhat lower interest in some aspects of management is apparent in Saskatchewan.

Table 110. Purposes of managing woodlots or planting trees on their properties that would interest landowners, Prairie region

Purpose	Province															
	Manitoba								Saskatchewan							
	Managing				Planting				Managing				Planting			
	Yes		No		Yes		No		Yes		No		Yes		No	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Shelter for residence	159	67	80	34	155	63	92	37	147	72	58	28	149	72	58	28
Soil and water conservation	146	61	92	39	139	56	108	44	134	66	70	34	137	66	70	34
Wildlife habitat	151	63	90	37	122	49	125	51	115	56	89	44	92	45	114	55
Recreational use	104	44	132	56	70	29	176	71	59	29	145	71	52	25	153	75
Replacing dead or harvested trees	95	40	143	60	88	36	158	64	83	41	121	59	75	36	131	64
Insect or disease control	83	35	155	65	--	--	--	--	70	34	134	66	--	--	--	--
Expanding forest resources	45	19	193	81	48	18	202	82	36	18	168	82	30	15	177	86

Purpose	Province															
	Alberta								Prairie total							
	Managing				Planting				Managing				Planting			
	Yes		No		Yes		No		Yes		No		Yes		No	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Shelter for residence	147	74	53	26	129	67	64	33	453	70	191	30	433	67	214	33
Soil and water conservation	151	76	49	24	123	64	70	36	411	67	211	33	399	62	248	38
Wildlife habitat	145	73	55	27	96	50	97	50	431	64	234	36	310	48	336	52
Recreational use	102	51	97	49	69	36	124	64	265	42	374	58	191	30	453	70
Replacing dead or harvested trees	87	44	112	56	75	39	118	61	265	41	376	59	238	37	407	63
Insect or disease control	102	51	98	49	--	--	--	--	255	40	387	60	--	--	--	--
Expanding forest resources	51	26	149	74	39	20	154	80	132	21	510	79	117	18	533	82

Management interest was defined further by asking for priorities among management options. Woodlot owners were asked to rank four options as first to fourth priorities. All four options are reasonably attractive to those who responded, but only between 17-38 percent of possible respondents answered the questions (Table 111).

Table 111. Type of woodlot management that interests landowners (top four priorities), Prairie region

Type management	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating
Wildlife habitat	108	1.69	68	1.71	95	1.76	271	1.72
Personal forest product supply	63	1.75	34	1.76	51	1.86	148	1.79
Recreation	60	2.15	40	2.13	63	1.89	163	2.04
Commercial sale of products	41	2.29	28	2.11	42	2.40	111	2.29

Management to enhance wildlife habitat received both the highest number of responses and the highest overall rating (Table 111). Personal forest product supply received the second highest priority rating, but received fewer responses than did recreation. Commercial sale of products received not only the lowest number of responses, but also the lowest average rating. These priorities are consistent among provinces.

Three questions sought to identify the knowledge landowners have about sources of information regarding woodlot management. Only 21 percent of the respondents state that enough information is available, while 29 percent said that there is not enough information. Half of the landowners are uncertain about how much information is available (Table 112). These response patterns are consistent among provinces.

Table 112. Knowledge of information sources for woodlot management, Prairie region

Question on information	Province											
	Alberta						Saskatchewan					
	No		Yes		Uncertain		No		Yes		Uncertain	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Is there enough information on private forested land opportunities available to land owners?	75	31	56	23	112	46	58	27	39	18	118	55
Do you know how to obtain available information?	93	38	70	29	80	33	78	36	62	29	76	35
Do you know where to get tree planting stock?	38	16	168	69	39	16	35	16	167	75	20	9

Question on information	Province											
	Alberta						Prairie total					
	No		Yes		Uncertain		No		Yes		Uncertain	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Is there enough information on private forested land opportunities available to land owners?	64	30	46	21	105	49	197	29	141	21	335	50
Do you know how to obtain available information?	76	36	69	33	67	32	247	37	201	30	223	33
Do you know where to get tree planting stock?	52	24	139	64	25	12	125	18	474	69	84	12

Responses to a question concerning knowledge about how to obtain information on woodlots received approximately equal numbers of yes, no and uncertain responses. Combining the negative and uncertain responses, most landowners do not know where to seek information. Conversely, two-thirds of Prairie woodlot owners do know how to obtain tree planting stock. Again, the pattern of responses is consistent among provinces.

Only 3 percent of 671 respondents state that present income and investment in their woodlots is important (Table 113). Twenty-five percent of the landowners, however, believe that investment and income in forest products could be important in the future. A slightly lower number of respondents view woodlot resources as long term diversification options on their properties. Responses are similar among the provinces, but future options are viewed somewhat more favorably in Alberta than in Manitoba and Saskatchewan.

Table 113. Management preferences and economic expectations expressed by Prairie region woodlot owners

Question	Response	Manitoba		Saskatchewan		Alberta		Prairie region	
		No.	%	No.	%	No.	%	No.	%
Is present income/ investment important	No	241	98	290	98	202	96	652	97
	Yes	6	2	5	2	8	4	19	3
Could income/invest- ment be important in future	No	176	78	154	77	136	69	466	75
	Yes	50	22	45	23	60	31	155	25
Woodlot is a long term diversification option	No	199	82	171	82	167	80	537	81
	Yes	43	18	38	18	43	20	124	19
Would you prefer a one-time liquidation of woodlot resources	No	168	92	143	95	145	94	456	93
	Yes	15	8	7	5	10	6	32	7
Prefer management by	Myself	208	93	168	92	186	96	562	94
	Someone else	13	6	10	6	6	3	29	5
	Both	3	1	4	2	1	1	8	1

Only 7 percent of 488 respondents would prefer a one-time liquidation of forest resources rather than long-term management (Table 113). The overwhelming majority of landowners, therefore, favor sustaining their woodlot resources. Similarly, 94 percent of the respondents prefer to manage their own woodlots rather than allow someone else to determine strategies.

Woodlot Management Programs

Landowners are neutral to slightly negative about the need to develop provincial woodlot management programs. Based on a 5-point scale in which a value of 1.0 is strongly positive, Prairie woodlot owners gave an average rating of 2.84 to a question concerning program need (Table 114). Average values are consistent among provinces, with only slightly stronger support evident in Manitoba.

Table 114. Rating of responses to statements of program need, Prairie region woodlot owners

Statement	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating
Provincial woodlot management programs should be developed to assist the private forest landowners on the prairies	227	2.71	192	2.91	196	2.91	615	2.84
I would benefit from an organization that represented the interests of private woodlot owners	221	3.20	188	3.44	197	3.50	606	3.37

Even less support is evident for the need for organizations to support and represent the interests of private woodlot owners (Table 114). Based on 606 responses, an overall Prairie average rating of 3.7/5.0 suggests weak support for formation of woodlot organizations. Responses in all provinces range between 3.20 and 3.50, indicating consistency among landowners.

Between one-half and two-thirds of Prairie region landowners responded to a question concerning the priorities of provincial woodlot management programs (Table 115). Woodlot information and education received a strongly positive response (1.51/5.0) not only for the Prairie region, but also in all three provinces. Although rated somewhat lower, technical assistance and financial assistance received positive responses across the region. Owing to the positive responses to all program elements, a balanced program is needed to respond to expressed needs.

Table 115. Program priorities for a provincial woodlot management program, Prairie region

Program element	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating
Woodlot information and education	177	1.56	132	1.55	147	1.40	456	1.51
Technical assistance	173	1.98	132	2.06	139	1.97	444	2.00
Financial assistance	144	2.19	118	2.15	113	2.36	375	2.25

Woodlot owners were asked to rate six potential groups/organizations that could deliver management programs. Landowner organizations received the strongest support averaging 2.15/5.0 (Table 116). Provincial government programs are rated as the second best alternative. Government-private partnerships and private sources received about equal and neutral ratings, while intergovernmental partnerships and federal programs received negative responses. The rankings of options is similar among provinces, but support for landowner organizations and private sources, and stronger negative response to federal program delivery are evident in Alberta.

Table 116. Ratings and rankings of organizations who should assist a provincial woodlot management program, Prairie region

Organization	Province							
	Manitoba		Saskatchewan		Alberta		Prairie total	
	No.	Ave. rating ¹	No.	Ave. rating	No.	Ave. rating	No.	Ave. rating
Landowner organizations	134	2.16	88	2.38	96	1.92	318	2.15
Provincial government	113	2.65	72	2.58	80	2.39	265	2.55
Government-private partnerships	96	2.79	60	2.62	68	3.01	224	2.81
Private sources	102	2.84	67	2.97	73	2.78	242	2.86
Intergovernmental partnerships	88	3.44	59	3.24	59	3.27	206	3.34
Federal government	87	3.80	55	3.71	51	4.63	193	3.99

Association Analysis

Woodlot Activity in the Prairie Region

The types of training and education offered in woodlot programs should account for the desire of landowners to do the management or work themselves, to share responsibility or to hire or allow someone else to management or harvest. If landowners want to do the work the programs should provide necessary instruction. If, however, they want to co-manage or allow others to manage, it may be more feasible to train a group of individuals who would provide the needed skills.

Landowners were asked not only what activities had occurred in their woodlots during the last ten years, but also whether they did the work, shared the activities, or hired or allowed someone else to do each activity. Association analysis was used to test for patterns and trends between who does each activity and ten property or landowner characteristics: 1) age of owner, 2) occupation, 3) distance of residence from woodlot, 4) education of owner, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) when woodlot was acquired (length ownership), 9) type of ownership, and 10) patterns of woodlot distribution. Patterns are considered significant if they would occur by chance only 1 time in 20 ($p < 0.05$), and are reported if they would occur only 1 time in 10 by chance ($p < 0.10$).

Tree planting was not associated with any of the 10 characteristics on a Prairie region level. In Manitoba, only age is associated, as older owners typically let others do tree planting ($X^2 = 19.15$, 8df, $p = 0.01$). In Saskatchewan, as landowners' education levels increase, they are more willing to co-manage tree planting ($X^2 = 19.13$, 8df, $p = 0.01$). Type of ownership is associated with tree planting in Alberta, as those in partnerships are prone to having others do the work on their properties ($X^2 = 10.25$, 4df, $p = 0.04$).

Age is the only characteristic associated with **tree thinning** in the Prairie region. As the age of owners increases they prefer that others do the thinning ($X^2 = 13.91$, 8df, $p = 0.08$). Age also is associated in Manitoba ($X^2 = 23.17$, 8df, $p = 0.01$) but the pattern is less definite. When their residences are located within a woodlot, Manitoba owners also prefer to do their own tree thinning ($X^2 = 27.02$, 8df, $p = 0.01$). Finally, Manitoba properties owned by one individual typically have more shared or allocated thinning practices ($X^2 = 7.89$, 4df, $p = 0.10$). In Saskatchewan, landowners with higher levels of education tend to co-op tree thinning ($X^2 = 19.13$, 8df, $p = 0.01$). Length of ownership is associated with tree thinning in Alberta ($X^2 = 12.55$, 4df, $p = 0.01$) but the pattern is confused and no trends apparent. Alberta owners also share thinning responsibilities with others if the property is held by one individual ($X^2 = 5.04$, 2df, $p = 0.08$).

Vegetation control (weeding) is associated with two factors on a Prairie regional basis. First, farmers (occupation category) appear to be more willing to let others do vegetation control than are those in other occupations, but the data are not complete enough to calculate a statistic. Second, the total number of treed acres on a property is weakly associated with vegetation control ($X^2 = 16.13$, 10df, $p = 0.10$), but no trend is apparent in the data.

Road building in woodlots is not associated significantly with any of the ten characteristics tested on a Prairie-wide basis. Only one association is apparent at provincial levels. In Manitoba, those who have owned a woodlot for long periods of time have someone else do road building ($X^2=12.14$, 6df, $p=0.06$).

Providing **wildlife habitat** is an important use of Prairie woodlots. Only two associations are apparent, however, in regional landowners' preferences for management for wildlife. First, wildlife habitat is associated with total acres owned ($X^2=14.89$, 6df, $p=0.01$) and second with total acres rented ($X^2=7.66$, 4df, $p=0.10$). In both cases the willingness to share or allocate management activities with others increases as the size of property increases. Similar trends and associations are apparent in Manitoba, but are not as obvious in Saskatchewan and Alberta.

Cutting of pulpwood on private lands is not associated significantly with any of the ten characteristics tested both for the Prairie region and for the provinces. Small sample size (low number of respondents engaging in pulpwood cutting) hindered analysis.

Cutting of sawlogs is associated with acres rented and length of ownership on a Prairie regional basis. As the number of rented acres increases, owners tend to share responsibility or allocate cutting rights to others ($X^2=10.45$, 4df, $p=0.04$). Similarly, those who have gained ownership of woodlots in recent years are more likely to allocate cutting of sawlogs to others ($X^2=13.47$, 8df, $p=0.10$). There are no significant associations for cutting of sawlogs at provincial levels, but small sample sizes hinder analysis.

No statistically valid associations are evident either regionally or provincially for the production of **rough lumber** or **value-added lumber** from private woodlots. A weak trend toward allocating production rights for rough lumber to others is apparent for properties owned by one person both regionally and in Saskatchewan. Also, a trend is evident in that as woodlots become smaller, owners allocate rough lumber production to others. This is noticeable regionally and in Manitoba and Saskatchewan.

Many associations occur between **cutting of firewood** and the ten characteristics tested. Age is weakly associated on a regional basis, with the youngest and oldest respondents most involved. Location of residence relative to woodlots also is important. Those who live in their woodlot cut firewood by themselves, while those who live away are more prone to sharing or allocating cutting rights. This pattern holds both regionally ($X^2=11.80$, 6df, $p=0.01$), in Alberta ($X^2=15.99$, 8df, $p=0.04$) and to a lesser extent in Manitoba. Also, as the number of acres owned increases landowners are more willing to share firewood with others (Prairie region $X^2=11.80$, 6df, $p=0.07$; Alberta $X^2=10.95$, 6df, $p=0.09$). The same association is evident with the number of acres rented (Prairie region $X^2=11.32$, 4df, $p=0.02$; Manitoba $X^2=7.84$, 4df, $p=0.10$). Length of ownership is associated with management of firewood cutting, but no trend is apparent in the data either for the region ($X^2=16.12$, 8df, $p=0.04$) or Manitoba ($X^2=19.18$, 8df, $p=0.01$). Association with ownership, on the other hand, is well defined on a regional basis as properties with one owner allocate firewood cutting to others, those with spousal ownership cut primarily by themselves, and those owned by partnerships share cutting practice ($X^2=9.28$, 4df, $p=0.05$). This pattern is apparent but not statistically significant in all three provinces. Finally, cutting of firewood is associated weakly with woodlot distribution in Manitoba ($X^2=14.52$, 8df, $p=0.07$), with owners of larger parcels cutting their own firewood, and those with small woodlots allowing others to cut.

Cutting of posts and rails is widespread but not common on the Prairies. Provincial numbers are low enough to restrict valid analysis. On a regional basis cutting of posts and rails from private woodlots is associated only with the distance of the woodlot from the owners residence. As distance increases landowners are more willing to share cutting responsibilities ($X^2=20.69$, 8df, $p=0.01$).

Building of trails in private woodlots is associated with total acres owned, with owners of smaller properties preferring to construct their own trails (Prairie region $X^2=24.21$, 6df, $p=0.01$). This pattern also is apparent in Manitoba and Alberta. In addition, trailbuilding is shared or allocated to others more frequently by single owners of properties on a Prairie basis ($X^2=11.24$, 4df, $p=0.02$) and in Manitoba ($X^2=8.54$, 4df, $p=0.07$).

The management of **Christmas tree** farms was assessed. The number of respondents was insufficient to allow valid association analysis.

The **clearing of treed land** is widespread, but no significant associations occur on a regional basis with any of the ten characteristics assessed. Provincially, two associations are evident in Alberta. First, landowners who live close to their woodlots prefer to do their own clearing ($X^2=13.23$, 8df, $p=0.10$). Second, properties owned by partnership are cleared by the owners, while those owned by one individual or spouses are prone to sharing or allocating clearing to others ($X^2=9.75$, 4df, $p=0.05$).

In total, there are few significant associations between who performs various woodlot activities and ten owner or property characteristics. **Age** of owners is important only for the possible related activities of tree thinning (older drop out) and cutting of firewood (oldest and youngest most active). Data for occupations are too diverse to allow proper analysis, but no trends are evident. The **distance between a residence and woodlot** is associated with cutting of firewood and posts and rails. In both cases, those who live near their woodlots prefer to do the work themselves, while others share or allocate responsibility. **Level of education** of owners is not associated with any of the activities assessed.

Total acres owned (size of property) is associated with wildlife habitat, cutting of firewood and building trails. In all cases, those who own extensive properties are more likely to share or allocate management of these activities, and those with smaller properties prefer to do the work themselves. This same pattern is apparent for **total acres rented**, which is associated with wildlife habitat, cutting of sawlogs and cutting of firewood. **Total acres treed** is associated with vegetation control, but no pattern or trend is apparent in the data.

The **length of time** someone has owned a woodlot is associated with cutting of sawlogs and firewood. Recent owners are prone to letting others cut sawlogs, but no clear pattern is evident for cutting of firewood. Similarly, **type of ownership** affected who cut firewood and built trails. In both cases, properties with one owner tend to have others perform these activities.

On a Prairie regional basis, only tree thinning is associated with the **distribution of woodlots**. No pattern of association, however, is evident.

Although the patterns of association are neither frequent nor consistent, those that do occur provide useful information for designing management programs. For example, the fact that owners of small properties who live on the properties in or near their woodlots are more likely to be interested in doing their own woodlot activities. Conversely, owners of larger properties and those who live away from woodlots are more likely to share activities or allocate management to others. An educational program that not only explains management purposes but also teaches management skills will best serve the interests of the owners of small properties. Programs that provide partnership arrangements or professional managers will best serve the needs of owners of large properties or absentee owners. The overall lack of significant associations, however, reflects the overwhelming desire of Prairie landowners to manage their own forest resources.

Association Analysis of Information Exchange - Prairie Region

Woodlot owners were asked to respond with yes, no or uncertain to three questions relating to information on woodlot management: 1) is enough information available, 2) do you know how to get information, and 3) do you know how to obtain tree planting stock? Responses are analyzed with tests of association with the following ten characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) woodlot distribution on private lands.

Age of owner and type of ownership are associated with responses to the question concerning adequacy of **available information**. Older landowners are prone to believing that enough information is available ($X^2=15.10$, 8df, $p=0.06$). Type of ownership exhibits two patterns of association: First, spousal owners have the highest response rates both positively and negatively, with the least uncertainty. Second, partnerships express greatest uncertainty. This association is strong ($X^2=10.74$, 4df, $p=0.03$) but the pattern is inconsistent.

Responses to knowledge of **how to obtain information** are associated weakly with two characteristics; total acres owned and type of ownership. Owners of smaller properties are least likely to know how to obtain information and owners of larger properties express more uncertainty ($X^2=10.25$, 6df, $p=0.11$). Type of ownership associates with responses ($X^2=8.48$, 4df, $p=0.08$) but no consistent pattern is evident.

Knowledge of **where to obtain stock** for tree planting is common among Prairie landowners (Table 112), and associations are evident with six of the characteristics tested. Among occupations, knowledge of available tree stock is lowest among owners in the trades and professions ($X^2=63.26$, 14df, $p=0.01$). Those who live furthest from their woodlots also are least aware of planting stock availability ($X^2=54.02$, 8df, $p=0.01$). Owners of small properties most often responded negatively or were uncertain ($X^2=39.74$, 6df, $p=0.01$). Although type of ownership is weakly associated with knowledge of tree stock ($X^2=8.48$, 4df, $p=0.08$) no pattern is consistent. Partnerships, however, do express greatest uncertainty. Finally, owners with large parcels of woodland are most uncertain about availability, and owners of small parcels and primarily planted woodlots are most aware ($X^2=16.39$, 6df, $p=0.04$).

Among characteristics, **age** of owners associates only with responses to the amount of information available, and **occupation** and **distance from residence** only with knowledge of available tree stock. **Total acres owned** is associated with knowledge of how to obtain information and available tree stock. **Length of ownership** is linked only with knowledge of tree stock availability, but **type of ownership** is associated with responses to all three information questions. Finally, **woodlot distribution** is linked only to knowledge of tree planting stock availability. No significant associations occur for education of owners, total acres rented, or total acres treed.

Awareness of Marketing Opportunities for Forest Products - Prairie Region

Association analysis was applied to responses regarding landowner awareness of markets for nine forest products: 1) pulpwood, 2) sawlogs, 3) fuelwood, 4) posts and rails, 5) Christmas trees, 6) rough cut lumber, 7) strand board, 8) shake products and 9) non-timber forest products. Associations were sought for ten characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership and 10) distribution of woodlots on their properties. No significant associations occur for occupations, level of education, total acres rented or length of ownership for any product category.

On a Prairie regional basis, awareness of **pulpwood markets** is associated with distance to residence ($X^2=14.89$, 5df, $p=0.01$), treed acreage ($X^2=37.36$, 2df, $p=0.01$), type of ownership ($X^2=6.80$, 2df, $p=0.03$) and distribution of woodlots ($X^2=32.98$, 4df, $p=0.01$). Awareness decreases among owners as the distance between their residence and forested land increases. This pattern also occurs in Saskatchewan. Both regional and Alberta data show greater awareness of pulpwood markets as the amount of treed area on their properties increases. When ownership is held jointly by spouses, owners are more aware. This pattern also is evident in Manitoba and Saskatchewan. Finally, owners with small woodlots are less aware of pulpwood markets not only on a regional level, but also in all three Prairie provinces.

Awareness of markets for **sawlogs** is associated with five characteristics on a regional basis: distance to residence ($X^2=17.03$, 5df, $p=0.01$), acres owned ($X^2=9.2$, 3df, $p=0.03$), acres treed ($X^2=25.99$, 2df, $p=0.01$), type of ownership ($X^2=11.69$, 2df, $p=0.01$) and woodlot distribution ($X^2=48.37$, 4df, $p=0.01$). Those who live furthest away from or closest to their woodlots are most aware of sawlog markets. This pattern also is evident in Manitoba and Saskatchewan data. Those who own smaller properties are more aware of sawlog markets in Saskatchewan and Alberta as well as the entire region. This may reflect the fact that smaller farms tend to be located in forest fringe areas. Similarly, acres treed relates to greater awareness as total forested area increases. Again, this pattern is evident in Saskatchewan

and Alberta as well as regionally. Spousal ownership engenders greater awareness regionally and in Manitoba and Saskatchewan. Finally, woodlot distribution is associated with awareness in all provinces. Those who own larger parcels of forest land are most aware of sawlog markets.

Although patterns vary somewhat and associations are weak, older landowners (age) are least aware of **fuelwood** markets on a regional basis ($X^2=9.40$, 4df, $p=0.05$) and in Manitoba and Saskatchewan. The same three jurisdictions show increased awareness as the total treed acreage increases (Prairies $X^2=25.54$, 2df, $p=0.01$). Spousal controlled properties indicate greater awareness of fuelwood markets in Saskatchewan and regionally, but the Prairie-wide association is weak ($X^2=4.60$, 2df, $p=0.10$). Finally, strong association is evident in all provinces and regionally ($X^2=48.59$, 4df, $p=0.01$) for awareness and the presence of large parcels of wooded land on private properties.

Markets for **posts and rails** are associated strongly with distance to residence ($X^2=12.80$, 5df, $p=0.03$), total acres treed ($X^2=12.10$, 2df, $p=0.01$) and woodlot distribution ($X^2=29.93$, 4df, $p=0.01$) on a regional basis. Although patterns are inconsistent, those who live closest to their woodlot have greatest awareness. This association, however, did not occur in any provincial level data. As the total treed acreage increases awareness increases, not only regionally, but also in Manitoba and Alberta. All jurisdictions have associations between woodlot distribution and awareness of post and rail markets, with those having large parcels of forested land being most aware.

Knowledge of **Christmas tree** markets is associated with four characteristics on the Prairie level: 1) age, 2) distance to residence, 3) total acres owned and 4) woodlot distribution. The pattern for age is inconsistent, but the oldest owners are least aware ($X^2=8.99$, 4df, $p=0.06$). This result also occurs in Manitoba data. The weak association with distance to residence presents no discernable trend ($X^2=9.12$, 5df, $p=0.10$) on a regional level, but in Saskatchewan those who live closest and those who live furthest away appear to be most aware. Also in Prairie-wide ($X^2=7.13$, 3df, $p=0.07$) data and in Saskatchewan those who own smaller properties are more aware of Christmas tree markets. Woodlot distribution, however, does not present a clear pattern of association. Those with larger parcels of woodland appear to be more aware of Christmas tree markets on a regional basis ($X^2=9.89$, 4df, $p=0.04$). This association also occurs in Manitoba and Alberta, but patterns vary somewhat.

Five of the ten characteristics tested show associations with prairie woodlot owners' knowledge of markets for **rough cut lumber**: 1) age ($X^2=7.76$, 4df, $p=0.10$), 2) distance to residence ($X^2=19.29$, 5df, $p=0.01$), 3) total treed acres ($X^2=19.68$, 2df, $p=0.01$), 4) type of ownership ($X^2=7.39$, 2df, $p=0.03$), and 5) woodlot distribution ($X^2=38.30$, 4df, $p=0.01$). Older woodlot owners are least aware of rough cut lumber markets. This also is evident in Manitoba. Distance to residence presents a confused pattern of association that suggests that those living closest to and those furthest away from their woodlots are most aware of lumber markets. This also occurs in Manitoba. Associations with total treed acreage is much better defined. Awareness increases as treed acreage increases in all four jurisdictions. Similarly, those who own large parcels of wooded land are more aware of rough lumber markets. This association is strong in all four jurisdictions. Spousal ownership also is associated with increased knowledge of markets both regionally and in Saskatchewan.

Markets for **oriented strand board** are less well known but the industry is expanding. As the number of treed acres increases landowners are more aware of these markets ($X^2=7.59$, 2df, $p=0.02$). This also is evident in Alberta. Spousal ownership is associated with greater awareness on a Prairie basis ($X^2=9.25$, 2df, $p=0.01$), but this association does not occur at the provincial level. A strong association ($X^2=14.56$, 4df, $p=0.01$) but poorly defined pattern occurs between woodlot distribution and awareness of strand board markets in the region and in Alberta. Generally, however, those who own large parcels of forested land are more aware of markets.

No significant associations are evident between the ten characteristics tested and knowledge of markets for **shake products**. Only two weak associations are evident for **non-timber forest products**. Distance to residence is associated with awareness ($X^2=9.80$, 5df, $p=0.08$) but no pattern is discernable. Spousal owned properties are more aware of these markets ($X^2=5.31$, 2df, $p=0.07$).

When analyzed by characteristics, some consistent patterns emerge. First, **age** associates with knowledge of markets for fuelwood, Christmas trees and rough cut lumber. In all cases, older woodlot owners are least aware of markets. **Distance to residence** is associated with five market categories, with two sub-patterns. Those who live closest to or furthest away from their woodlots are most aware of markets for pulpwood, sawlogs and rough cut lumber. Awareness decreases with distance, however, for posts and rails. Associations with markets for Christmas trees and non-timber products do not present clear patterns.

Total **acres owned** indicate that owners of smaller properties are most aware of markets for sawlogs and Christmas trees. Total **acres treed** consistently indicates that as the amount of forest land increases, awareness increases of markets for pulpwood, sawlogs, fuelwood, posts and rails, rough cut lumber and strand board. This is the strongest and most consistent association with market awareness and corresponds with similar results for **woodlot distribution**. Owners of larger parcels of forested land are more aware of markets for pulpwood, sawlogs, fuelwood, posts and rails, Christmas trees, rough cut lumber and strand board. The fact that spousal ownership is associated with greater market awareness defies explanation. The association, however, is consistent for pulpwood, sawlogs, fuelwood, rough cut lumber, strand board and non-timber products.

On a Prairie regional basis, therefore, distance to residence, acres treed, woodlot distribution and type of ownership are important in determining market awareness. Awareness of markets for pulpwood, sawlogs, fuelwood, post and rails and rough cut lumber not only associates with woodlot distribution and/or acres treed on a regional basis, but also is apparent in data from all three provinces.

Program Priority Associations - Prairie Region

Woodlot owners were asked to rank three possible woodlot program components as first, second and third priorities: 1) woodlot information, 2) technical assistance, and 3) financial assistance. Association analysis was applied to priority responses for each program component and each of the following ten characteristics of landowners or their properties: 1) age of owners, 2) occupations, 3) distance from residence to woodlot, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) total treed acres, 8) length of ownership, 9) type of ownership and 10) distribution of woodlots on private properties. No significant associations are apparent for any of the three program components for the following characteristics: 1) age of owners, 2) education level of owners, 3) total treed acreage, 4) length of ownership, and 5) type of ownership.

The **woodlot information component** of woodlot programs is associated with distances to residence, total rented acres and woodlot distribution on a Prairie regional basis. Landowners who live closest to and furthest away from their woodlots place higher priority on information ($X^2=13.58$, 8df, $p=0.09$), but the association is weak. Strong association exists, however, with total acres rented and woodlot distribution. Information is a higher priority for those who rent small acreages ($X^2=16.72$, 4df, $p=0.01$). This occurs also in Saskatchewan, but not in Manitoba and Alberta. Priority for this program component also is highest among those whose woodlots occur as large parcels ($X^2=24.60$, 8df, $p=0.01$). This pattern is consistent in Manitoba and Saskatchewan, but not evident in Alberta.

Priority ratings for the **technical assistance** component of woodlot programs is associated with property size and woodlot distribution. Highest priority is indicated by those who own larger properties ($X^2=11.55$, 6df, $p=0.07$), a pattern that is repeated in Saskatchewan. Similarly, those who rent more land rate technical assistance as a higher priority ($X^2=8.85$, 4df, $p=0.07$). This association also occurs in Saskatchewan and Alberta. The weak association with woodlot distribution ($X^2=15.55$, 8df, $p=0.09$) reflects a pattern of higher priority for those with large parcels of woodland and those who have primarily planted woodlots.

Occupation, total acres owned and total acres rented are associated with priority ratings for **financial assistance** components of woodlot programs. Highest priority is given by retired persons, farmers, professionals and business persons ($X^2=26.93$, 14df, $p=0.02$). A similar pattern is evident for acres owned ($X^2=15.52$, 6df, $p=0.02$) and acres rented ($X^2=9.17$, 4df, $p=0.06$). Those with the largest properties or who rent the most land give lowest priority to financial assistance. These patterns also are evident in Manitoba and Saskatchewan.

Association Analysis of Program Need - Prairie Region

Woodlot owners were asked to rate the need for provincial woodlot management programs and landowner woodlot organizations on a 5-point scale ranging from strongly agree to strongly disagree. These responses were tested for association with the following ten characteristics of landowners or their properties: 1) age of owners, 2) occupations, 3) distance from residence to woodlot, 4) level of education of owners, 5) total acres owned, 6) total acres rented, 7) total acres treed, 8) length of ownership, 9) type of ownership, and 10) woodlot distribution on private land.

The **need for provincial woodlot management programs** does not associate significantly with any of the ten characteristics on a regional basis. The **need for landowner organizations** does associate with four characteristics. First, when analyzed by occupation, landowners organizations are most wanted by owners in the trades, labourers and business ($X^2=38.98$, 28df, 0.08). Second, distance to residence shows a split pattern of association, with both strongest positive and strongest negative responses increasing with distance (bipolar distribution) ($X^2=23.86$, 16df, 0.09). Third, length of ownership shows a weak pattern of stronger support from recent owners ($X^2=24.62$, 16df, $p=0.08$). Fourth, a strong association exists between woodlot distribution and rated need for landowner organizations. Those whose woodlots occur as large parcels are more favourable toward belonging to a woodlot organization ($X^2=33.75$, 16df, $p=0.01$).

Association Analysis of Most Important Current Uses of Woodlots - Prairie Region

Owners were asked to indicate in order of priority the three most important current uses made of their woodlots by their families. A list of 13 uses and an "other" (open-ended) category was available for importance ratings (Table 99). Many possible choices received low responses, obviating association analysis for these variables. Inspection of frequency printouts suggests that the most valid and identifiable results are achieved by analyzing the most frequently listed response categories. Total usable cases diminish rapidly owing to the need for full response to three major questions to qualify. Four use categories are derived for the data: 1) recreation, 2) commercial production, 3) personal use of forest products, and 4) wildlife habitat. Associations were sought for these categories for eight characteristics of landowners or their properties: 1) distance from residence to woodlots, 2) level of education, 3) total acres owned, 4) total acres rented, 5) acres treed, 6) length of ownership, 7) type of ownership, and 8) distribution of woodlots on private lands.

No statistically significant associations are evident between **distance from residence** and the four use categories. Data do indicate weak associations for commercial and personal use, with both uses more likely if the owner lives close to the woodlot. **Level of education** is associated weakly with the personal use of forest products, with use declining as education level increases ($X^2=22.80$, 12df, $p=0.08$).

Total acres owned is not associated significantly with any of the four use categories. **Total acres rented**, however, is associated with two use categories. First, use of woodlots for recreation decreases as the number of acres rented increases ($X^2=16.09$, 3df, $p=0.01$). Second, commercial use increases as the number of acres rented increases ($X^2=7.67$, 3df, $p=0.05$). No significant associations occur for **acres treed** but weak patterns are evident for more commercial use as acres treed increases and use for wildlife habitat is associated weakly, but the pattern is not clear ($X^2=22.33$, 15df, $p=0.10$).

Two associations are evident between use patterns and **length of ownership**. Interest in recreation is strongest in both those with longest ownership and the most recent owners ($X^2=15.38$, 6df, $p=0.02$). Interest in commercial use is strongest in owners who acquired woodlots during the 1970's and lowest in those who acquired wooded land since 1981 ($X^2=11.66$, 6df, $p=0.07$).

No significant associations occur between uses and **type of ownership**, but a weak pattern of greater use for personal products occurs for spousal owned properties and other partnerships. One association is evident for use

related to **distribution of woodlots** on private lands. Use for wildlife habitat is most common when woodlots occur as small parcels and least common on large parcels ($X^2=14.50$, 8df, $p=0.07$).

Program Delivery Associations in the Prairie Region

Woodlot owners responded to a question concerning what agency or group they preferred to deliver woodlot management programs. The following choices were listed in order of priority by respondents: provincial government, federal government, private sources, inter-governmental partnerships, government-private partnerships and landowner organizations. Associations were calculated for ten characteristics of landowners or properties: 1) age, 2) occupation, 3) distance from residence to woodlot, 4) level of education, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, 10) distribution of woodlots on private properties. At the Prairie regional level, no significant associations are evident for occupation, acres treed and type of ownership.

Association with **age** indicates that older landowners prefer private sources and landowner organizations as woodlot program delivery mechanisms ($X^2=30.08$, 16df, $p=0.02$). Increasing priority for delivery by provincial agencies, however, is evident as **distance** increases between place of residence and location of woodlots ($X^2=27.48$, 16df, $p=0.04$). Priority for landowner organizations as the delivery agency decreases as the **level of education** increases ($X^2=32.73$, 16df, $p=0.01$).

Total acres owned is associated with priority ratings for program delivery by federal agencies ($X^2=25.68$, 12df, $p=0.01$). The association is bimodal with owners of the smallest and largest properties most against federal delivery. **Total acres rented** is associated significantly with three delivery options: provincial government ($X^2=14.63$, 8df, $p=0.07$), and landowner organizations ($X^2=16.49$, 8df, $p=0.04$). Priority for provincial delivery decreases as the number of acres rented increases. Patterns of associations, however, are confused for intergovernmental partnerships and landowner organizations.

Two associations are apparent between priority of program delivery agencies and **length of ownership** of woodlots. First, landowners who have owned their properties longest prefer private organizations as woodlot program deliverers ($X^2=23.44$, 16df, $p=0.10$), but the association is weak. Second, those who recently purchased woodlots are most amenable to delivery by landowner organizations ($X^2=26.45$, 16df, $p=0.05$).

Distribution of woodlots within private properties is associated with program delivery in two ways. First, owners of small parcels of woodland and those with primarily planted woodlots prefer provincial delivery of programs ($X^2=25.56$, 16df, $p=0.06$). Second, low priority for inter-governmental partnerships is associated with owners of properties with large parcels of woodland ($X^2=26.36$, 16df, $p=0.05$).

In total, few associations are apparent. Delivery by provincial governments associates only with distance from residence to woodlots, total acres rented and distribution of woodlots. Federal delivery is associated only with total acres owned. Private source delivery is associated with age of landowners and length of ownership. Priority for inter-governmental partnership program delivery is associated with total acres rented and woodlot distribution. Landowner organizations as delivery groups associate with level of education, total acres rented and length of ownership. In many cases, associations do not show clear patterns or trends. No associations occur for government-private partnerships.

Association Analysis Of Users Of Private Woodlots

Woodlot owners were asked to indicate who is allowed to use their woodlands, and for what purposes. The three responses allowed are 1) used by self and family, 2) used by others, and 3) shared by self and family and others. The 12 uses assessed include 1) second homes, 2) bed and breakfast operations, 3) outfitting and trapping, 4) tourism, 5) recreation, 6) hunting and fishing, 7) wildlife habitat, 8) livestock grazing, 9) timber for sale, 10) timber for personal use, 11) edible products, and 12) collection of other products (eg. cones). Responses are cross-tabulated for the user groups for each woodlot use category against the following characteristics of landowners or their properties: 1) age

of owner, 2) occupation, 3) distance from residence to woodlot, 4) education level, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private properties.

Prairie woodlot owners who use forested areas for siting a **second home** (or cabin) allow use by different groups or individuals depending on the age of the landowner ($X^2=15.15$, 8df, $p=0.06$). Young owners allow more use of second houses by others, or share use with others. Older woodlot owners tend to restrict use more to themselves and their families. A similar pattern is evident for use for **outfitting and trapping**, in that young owners allow more use by others, or share woodlots for these purposes ($X^2=16.92$, 8df, $p=0.03$). Young owners also allow more extra-family users for general recreation ($X^2=15.79$, 8df, $p=0.05$).

The above use pattern is reversed by age for **hunting and fishing** activities. Young woodlot owners hunt more with family members, while older owners allow more hunting and fishing by non-family members ($X^2=15.53$, 8df, $p=0.05$). No significant associations are evident for the other eight use categories.

Three associations are significant when occupations are involved in cross-tabulation. **Second homes** are used primarily by the owners if they are either retired or professionals. Labourers, tradesmen and farmers are more prone to share use with others, or allow use by others ($X^2=23.06$, 14df, $p=0.06$). Conversely, labourers, tradesmen and those in business restrict **hunting and fishing** more to themselves and family, while farmers and professionals are more likely to share these activities, and farmers are more likely to allow use by others ($X^2=26.60$, 14df, $p=0.02$). Agricultural use for **grazing** is associated significantly with occupation only with farming, as farmers and retired persons allow use by others, and active farmers are more prone to share grazing with others ($X^2=28.61$, 14df, $p=0.01$). It is not known if rent is extracted in these arrangements. It may be important to note that owners other than farmers do not apparently allow grazing on their woodlots.

Associations of use patterns for seven different uses occur for distance between residences and woodlots. Use of woodlots for **second homes** is restricted more to self and family as distance between residence and woodlot increases. In fact, use by others virtually disappears if residence and woodlot are separated more than 5 miles. This association is strong ($X^2=25.78$, 8df, $p=0.01$).

A similar, but weak association is evident for general **recreational use**. Sharing and use by others is more common if residences and woodlots are less than 5 miles apart ($X^2=13.55$, 8df, $p=0.09$). Also, **hunting and fishing** are shared with others if owners live near their woodlots, but restricted to self and family if woodlot and residence are separated ($X^2=15.25$, 8df, $p=0.05$).

Use of woodlots for **grazing** is strongly associated with user patterns. When residences and woodlots are in close proximity, grazing is done by the owner and family. As distance increases, use by others and shared use increase ($X^2=76.31$, 8df, $p=0.01$).

Associations occur for **timber for sale**, **personal use timber** and **edible woodlot products**, but low numbers of respondents in many categories necessitate careful interpretation. **Selling timber** through sharing or subletting appears to increase with distance between woodlots and residences ($X^2=17.20$, 6df, $p=0.01$). **Use of timber by owners** is associated with distance ($X^2=15.14$, 8df, $p=0.06$), but no pattern is apparent. Self use of **edible woodlot products** also decreases with distance, but the pattern is weakly defined ($X^2=19.80$, 8df, $p=0.01$).

No significant associations are evident between the level of education of owners and user patterns for the different uses tested.

Only one association occurs between total acres owned and user patterns. Woodlot owners are more willing to share and allow use by others for **hunting and fishing** if they own large properties ($X^2=22.38$, 6df, $p=0.01$).

An overall pattern of more total acres rented being associated with more shared use is evident. **Hunting and fishing** clearly illustrate the pattern as those who rent no or few acres restrict these activities more to family while renters of extensive acreages share these activities with others ($X^2=12.48$, 4df, $p=0.01$). Similar patterns occur for **grazing** ($X^2=11.47$, 4df, $p=0.02$), **personal use of timber** ($X^2=24.38$, 4df, $p=0.01$), and edible products ($X^2=8.39$, 4df, $p=0.08$). Associations also were significant for general **recreation** ($X^2=9.73$, 4df, $p=0.05$), **wildlife habitat** ($X^2=22.01$, 4df, $p=0.01$), and **other products** ($X^2=19.52$, 4df, $p=0.01$) but no pattern of association is evident in the data.

Three similar patterns of association are evident between acres treed and user groups involved. As the number of treed acres increases, owners are more willing to share their woodlots with others for purposes of general **recreation** ($X^2=15.82$, 10df, $p=0.11$), **hunting and fishing** ($X^2=15.79$, 10df, $p=0.11$) and collecting **edible forest products** ($X^2=28.29$, 10df, $p=0.01$). The first two associations are weak and the third is supported by a small sample, so all must be interpreted with caution.

Although only two significant associations occur between user patterns and length of ownership, both are strong and of interest. First, those who recently purchased woodlots (1981-present) restrict use for **hunting and fishing** more to family, those who have owned woodlots for a medium period of time (e.g. 1970-present) are prone to sharing with others, and those who have owned woodlots for long periods of time allow more use by others ($X^2=27.37$, 8df, $p=0.01$). For **wildlife habitat**, however, those who recently purchased woodlots are likely to share more with others ($X^2=17.10$, 8df, $p=0.03$).

Three ownership categories are recognized: 1) owned by one individual (single owner), 2) owned by spouses, and 3) partnerships. Type of ownership is associated with users for **hunting and fishing** ($X^2=12.13$, 4df, $p=0.02$). These activities are more restricted to family members if a single owner is involved and more shared if a partnership controls the woodlots. Single owners also restrict use of woodlots for **wildlife habitat** more to family, while both spousal owners and partnerships are more willing to share this activity ($X^2=15.58$, 4df, $p=0.01$). Significant associations also resulted with **personal timber** and **other product** categories. The association, however, appears to be more between greater use on spousally-owned lands than single or partnership properties rather than with use by family, others or both.

The pattern of distribution of woodlots on private properties is associated with user patterns for three use categories. If distributed in small parcels, woodlots with **second homes** are restricted to family use, whereas those with large blocks of woodland with second homes are shared with others ($X^2=17.11$, 8df, $p=0.03$). Association with **hunting and fishing** users is weak and no clear pattern is evident ($X^2=13.06$, 8df, $p=0.11$). If distributed as small parcels, family members collect most **edible products**, while owners of properties with larger parcels of forest are more prone to share this activity ($X^2=15.93$, 8df, $p=0.04$).

Users of woodlots for various activities are determined by different factors. **Hunting and fishing** activities are most complex in that user patterns are associated significantly with eight of the ten characteristics tested. Only the level of education of owners and the distribution of woodlots on private properties are not associated in some manner with user patterns for hunting or fishing. This group of activities obviously engenders both broad interest and decision-making that relates to many aspects of woodlot ownership.

Use of **second homes**, **general recreational** activity and **collecting of edible woodlot products** all are associated with four of the tested variables. Distance between residence and woodlots is the only variable common to all three use categories. Grazing, wildlife habitat and personal use of timber are linked to three variables.

Among the variables, distance from residence to woodlot and acres rented are most commonly associated with user patterns and are operative in seven use categories each. Age and type of ownership are listed with four activities each, while occupation and acres treed are associated with three uses each.

Association Analysis of Land Use Practices Following Harvest of Woodlot Products - Prairie Region

Owing to the fact that some aspects of woodlot programs encourage harvest of treed areas, it is important to determine what landowners who already have harvested woodlots have done to the land following cutting, and to ask those who could harvest in the future what they anticipate land use to be after harvest. Three responses were optional to a question concerning what was done with the land after harvest has occurred: 1) the area was actively reforested, 2) the area was allowed to regenerate naturally, or 3) the land was converted to non-forest use. Three answers also were options for responses from those who might make income by cutting woodlots in the future: 1) clear cut and convert land use to agriculture, 2) clear cut and replant to trees, 3) control cut on a sustained yield basis. Both sets of responses are cross-tabulated with the following characteristics of landowners or their properties: 1) age of owner, 2) occupation, 3) distance from residence to woodlots, 4) education level of owners, 5) total acres owned, 6) total acres rented, 7) acres treed, 8) length of ownership, 9) type of ownership, and 10) distribution of woodlots on private lands.

Age of owner is weakly associated with responses to land use following cutting for those who have harvested woodlots ($X^2=12.71$, 8df, $p=0.12$). Younger respondents tend to convert land to agriculture, older landowners allow natural regeneration, and those 41-50 years of age reforest more frequently. A similar pattern occurs in data for the Province of Manitoba.

Total acres owned is associated with land use after woodlot harvest ($X^2=11.54$, 6df, $p=0.07$). Land use is most variable on small properties, which are least likely to reforest or to convert land to agricultural use, but are most likely to allow natural regeneration. Owners of larger properties are most likely to convert land to agricultural use. Although weak, associations with clearly defined patterns are evident for **total acres rented** ($X^2=7.31$, 4df, $p=0.12$) and **acres treed** ($X^2=7.46$, 4df, $p=0.11$) and land use. Those who rent little or no land are prone to let natural regeneration occur after harvest. As rented acreage increases, owners are more likely to convert harvested land to agricultural uses. If a landowner has few treed acres, reforestation is often used following harvest. Natural regeneration increases as treed acreage increases. This pattern also occurs in Manitoba.

Finally, a significant association is evident between **distribution of woodlots** and land use following harvest ($X^2=25.88$, 8df, $p=0.01$). Owners of large parcels generally allow natural regeneration to occur after disturbance. Owners with primarily planted woodlots either replant or convert the area to agriculture following cutting. A similar pattern is evident in Alberta. No significant association were derived for occupation of owner, distance from residence to woodlot, education of owner, length of ownership or type of ownership.

Those who have not harvested woodlots were asked what they would prefer to do if they could make a profit by harvesting their treed areas. An association of responses relating to **occupation** ($X^2=28.73$, 14df, $p=0.01$) suggests that farmers are most likely to clear cut and convert the land to other uses, and least likely to cut on a sustained yield basis. Retired persons are prone to replanting cutover areas.

Associations between **level of education** and land use following profitable harvest suggest that those with less than high school educations are prone to converting cut-over areas, high school graduates will replace treed areas, and university graduates prefer to harvest on a sustained yield basis ($X^2=13.99$, 8df, $p=0.08$). This pattern also is evident in Alberta.

Total acres owned is associated with woodlot owners responses to after harvest land use ($X^2=18.23$, 6df, $p=0.01$). Owners of larger properties would prefer to convert woodlot areas to other uses and are less likely to harvest on a controlled basis. This pattern is repeated in Alberta. Similarly, those who **rent large acreages** prefer to clearcut and convert woodlots while those who rent no land or small acreages are more likely to cut on a sustainable basis ($X^2=8.26$, 4df, $p=0.08$).

Distribution of woodlots also is associated with after harvest land use options ($X^2=19.95$, 8df, $p=0.01$). If woodlots occur as small parcels landowners prefer either to clear cut and convert the land to agriculture, or to clear cut and replant the areas. Owners of larger parcels of bush are more likely to cut trees on a sustained yield basis. This pattern also occurs in Alberta. No significant associations are evident for age of owner, distance of residence from woodlots, acres treed, length of ownership and type of ownership.

SUMMARY

Of a possible 3,827 responses, 732 usable surveys were returned from woodlot owners in the three Prairie provinces. The regional sample contains 261 owners from Manitoba (36 percent) 240 from Saskatchewan (33 percent) and 231 from Alberta (32 percent). Respondents are distributed evenly in four age categories between 31-70 years of age, with only 9 percent older than 71 years and 4 percent less than 30 years of age. Only two occupational groups are represented by more than 10 percent of respondents: farmers and ranchers (58 percent) and retired persons (13 percent). Both age distribution and occupational mixes of owners are relatively uniform among provinces.

Seventy-nine percent of respondents live in rural locations, 12 percent in towns and villages, and 9 percent in cities. About 90 percent of regional returns are from men, and about 85 percent from married persons. Half of the landowners live in residences surrounded by woodlots, an additional 21 percent live within 5 miles of their treed areas, 17 percent live between 5-99 miles from their forested land, and 9 percent live more than 100 miles away. One third of the respondents never completed high school and one-quarter finished high school and took no further training. About 12 percent of respondents completed some post-secondary training, 18 percent completed college or technical training, and 12 percent completed university. Alberta woodlot owners generally have more education than respondents from Manitoba and Saskatchewan.

The average owned acreage of the 705 properties in the regional sample is 780 acres. Alberta farms average 676 acres, Manitoba farms 720 acres, and Saskatchewan farms 945 acres. In addition, respondents rent an average of 308 acres. On average across the region 122 of the 780 owned acres are forested (16 percent). This varies from 18 percent in Manitoba, to 11 percent in Saskatchewan, and 19 percent in Alberta. About half the Prairie properties are inherited and have been in the same families for more than 50 years. Most averages for the characteristics listed are comprised of many small units and fewer large units. For example, half of respondents own less than 320 acres in spite of the fact that the average property size is 708 owned acres.

A wide range of sizes of woodlots occur across the Prairies. Less than 20 acres is the most frequent response (30 percent). Sixty percent of respondents own less than 80 acres of forest. Only 16 percent own more than 200 treed acres. Considerable land exchange took place during the 1970s and 1980's. Average length of ownership in 1993 was 25 years, but many properties have been owned for more than 50 years and others for less than 10 years. Alberta has the highest percentage of recent woodlot owners. Consistent ownership patterns occur among Provinces with the regional averages of 64 percent of properties owned jointly by spouses, 25 percent by one individual, and 7 percent as partnerships being reasonably representative for all provinces.

The distribution pattern of woodlots on private properties varies greatly, with all five descriptive categories represented in the data. One or more large parcels with several smaller parcels is most common (27 percent), followed by "many smaller parcels" (23 percent). All other categories, however, received between 15-20 percent of the responses.

Among 17 reasons for owning or retaining woodlots, Prairie landowners rate shelter for personal residences, wildlife habitat, soil and water conservation and heritage as the four most important reasons. The order of priority does not vary significantly among provinces. When asked to list the three most important reasons, the first three priorities remained unchanged from the individual rankings above. Shelter for residences, however, is a much higher priority than either wildlife habitat or conservation.

Reasons for using woodlots differ from those for owning or retaining treed areas. Wildlife habitat, grazing and recreation are by far the most important actual uses of woodlots. Again there are no significant differences in ratings of uses among jurisdictions.

Landowners were asked to indicate whether they, someone else or both had engaged in any of 14 activities in their woodlots. Based on percentage of possible respondents, cutting fuelwood (39 percent), tree planting (33 percent) and vegetation control (26 percent) are mentioned most frequently. Most commercial activities involve less than 10 percent of owners. The patterns of use are similar in all Provinces.

Marketing opportunities for various products are known to between 6 and 60 percent of woodlot owners. Fuelwood markets are best known and more than half of the owners are aware of these markets. Between 28-40 percent of owners are aware of markets for rough cut lumber, sawlogs, pulpwood, fence posts and rails and Christmas trees. Markets for other products are not known widely. Although Alberta owners are more aware of markets than are owners in Manitoba and Saskatchewan, the ranking of categories does not differ among Provinces. Only 8 percent of respondents have actually sold woodlot products. Fuelwood and lumber are sold most frequently.

Ninety-seven percent of respondents earn less than 10 percent of their land-based income from forested areas. About half of the owners would accept less than \$50 per acre per year to initiate management, and another 21 percent expect \$51-100 per acre per year. Alberta landowners have higher income expectations from private woodlots.

Among those who have harvested some products, 69 percent allowed natural regeneration to occur, 28 percent converted the land to other uses, and only 4 percent reforested the areas. Alberta has the lowest rates of natural regeneration and highest rates of conversion to other uses. Most landowners who have not harvested woodlots do not have enough trees, do not have large enough trees, simply do not want to cut trees, or want to maintain conservation or aesthetic benefits of their woodlots. About half of the owners in all jurisdictions state a willingness to forego profits to retain the other benefits of forested areas. However, if a profit could be made, 68 percent of owners would prefer to cut on a sustained yield basis, 22 percent would clearcut and convert the land, and 10 percent would clearcut and replant.

Woodlot Programs

Landowners universally express awareness of the extent and composition of woodlots on their properties, but are not as aware of age and condition of trees. Fire is considered the greatest threat to forest resources in all Provinces, but diseases, trespass, vandalism and pests also are cause for concern.

Woodlot owners were asked what management purposes would interest them in existing treed areas and what purposes would encourage them to plant more trees. The three most common responses for both managing and planting are shelter for residences, soil and water conservation and wildlife habitat. Willingness to manage existing woodlots for these purposes is somewhat greater than willingness to plant more trees. These purposes are consistent among Provinces. When asked to place priorities on management options, landowners rated wildlife habitat, personal forest products, recreation and commercial sale of products as first to fourth choices. All ratings range from 1.7-2.3/4.0 indicating moderate interest in all categories.

Prairie totals for landowners' knowledge about sources of information on woodlot management adequately reflect results for all three Provinces. Half of the respondents are uncertain whether or not enough information is available, 29 percent suggest that information is lacking, and 21 percent believe enough information is available. Knowledge of how to obtain available information received about one-third of responses in all three categories (yes, no, uncertain). Conversely, 69 percent of owners are aware of where to obtain tree planting stock, while 18 percent are not aware and 12 percent are uncertain.

Only 3 percent of 671 respondents state that current investment in and income from woodlot resources is important. Twenty-five percent, however, believe that woodlots could be important in the future, and 19 percent view forest management as a long term diversification option. Future options are viewed most favourably in Alberta. Only

7 percent of owners prefer a one-time liquidation of woodlot resources as opposed to sustained-yield management. Almost all owners (94 percent) prefer to manage their woodlots themselves.

Landowners are neutral to somewhat negative about the need to develop woodlot management programs. Values of 2.7-2.9/5.0 are derived among Provinces, with the Prairie average of 2.8/5.0 adequately reflecting all areas. Even less support is evident for the formation of organizations to promote private woodlot management (3.4/5.0).

Between one-half and two-thirds of landowners responded to questions concerning priorities in a woodlot management program. Information and education elements receive strongest support (1.5/5.0), but both technical information (2.0/5.0) and financial assistance (2.3/5.0) also receive moderate support. All values are consistent among provinces.

Much stronger differentiation occurs in responses to which organization should deliver programs. Landowner organizations are supported most strongly, with provincial government departments, either solely or in partnerships with private groups, receiving moderate support. There is little support for federal involvement in woodlot management programs.

Conclusions and Recommendations

- 1) The low rate of return of surveys in all provinces (20 percent) may be attributed to a number of factors. Private woodlot management has not been promoted extensively as either an environmental or economic option on the Prairie landscape. Many randomly selected survey recipients likely had either little or no treed land or viewed their limited forest resources as insignificant or an impediment to agriculture. Also, timing necessitated mail-outs during the summer months when the major audience of farmers and ranchers is busy. Many responses were received that suggested that landowners have never given much thought to managing their forest resources.
- 2) It is clear that the major interests of woodlot owners for retaining, using and managing their forest resources relate to the environmental aspects of shelter, conservation and aesthetics rather than commercial products. One woodlot management program, therefore, should deal solely with assisting landowners in non-economic improvements on their properties. Part of the reason for this emphasis may relate to historic use patterns which do not identify woodlots as resources for economic gain. A non-economic program, therefore, allows access to landowners to create forest product interest should resources allow.
- 3) There is a small active group and a larger potential pool of woodlot owners who now realize the value of and profit from their forest resources. Many of these owners control large enough woodlots with valuable resources to consider controlled harvest and long-term planning of forest resources. Some woodlot management programs should explain and encourage development of product-specific plans.
- 4) In some instances the aesthetic and environmental aspects of woodlots may form the basis of non-harvest economic gain. Ecotourism, guiding and outfitting, bed and breakfast ventures and related activities, for example, may use woodlots as bases of operation. Some woodlot management programs should focus on development of forest related activities rather than just forest product orientation.
- 5) All woodlot management programs should recognize the fact that 97 percent of landowners want to manage their own resources.
- 6) All woodlot management programs should emphasize information and education as the primary components requested by landowners.

- 7) Creating interest in woodlot management programs may require promotion of the need for a potential gain from private forest practices. Landowners do not have great interest in managing woodlots and in many cases, do not realize the values that may accrue. A mass media campaign planned over long periods of time may be necessary to instill interest. "Participation" and "smokey the bear" campaigns may serve as examples.
- 8) Woodlot programs should be presented through woodlot associations comprised of landowners. Formation of associations, however, may prove difficult in some areas as landowners are not enthusiastic towards more groups. Rather than trying to force associations, governments should encourage and assist those who are interested and allow these to serve as examples for others to emulate.
- 9) Provincial departments, private agents or a combination of the two should deliver woodlot programs in the field.
- 10) Specific wildlife and wildlife habitat programs should be developed individually for all ecozones, environments or types of farming areas. Alternatively, or in combination with the above, habitat programs should be designed for individual wildlife species or species groups. Initial interest is high for wildlife programs and these may serve as the catalyst for future woodlot programs.
- 11) Low interest in commercial development of woodlots based on forest products suggests that wide-spread emphasis on these aspects may be met with indifference. Perhaps a better strategy would be to locate key landowners or key woodlots and develop demonstration areas to allow diffusion of knowledge of programs over time.
- 12) Two property characteristics are fundamental in designing and applying programs. First, owners of large properties (and those who rent extensive acreage) are least interested in woodlots and most interested in liquidating existing treed areas and converting them to agricultural use. Because farm size continues to increase, the number of such properties will increase. These are primarily "agri-businesses" based on both extensive and intensive primary production. They often occur in areas where forested land is limited, and thus more critical for conservation and aesthetic reasons. Programs and approaches should be designed for and aimed directly at these landowners.

Second, owners of smaller farms often have a higher percentage of treed acreage, but because total properties are small, the actual acreage is small. Although they are more interested in maintaining treed areas on a sustained yield basis, potential profits may be small. Other incentives such as wildlife habitat may have to be combined with commercial harvest to attract the attention of owners of small properties. Ultimately, commercial use of these woodlots may be facilitated by formation of a regional or local cooperative effort to pool resources and labour.

- 13) One of the most important characteristics of properties or landowners in determining use and attitudes appears to be the distance of residence from the location of woodlots. Those who live in or near their woodlots view them differently than do those who reside further away. A review of the associations identified herein should be conducted when designing or targeting any woodlot program. Local and absentee landowners may have to be approached differently.
- 14) Only 8 percent of those who responded have actually sold some forest product (primarily firewood), and only 3 percent consider forest products to be an important source of income. Market awareness varies greatly among products, ranging between 6 and 60 percent of woodlot owners. Either creating or increasing awareness of existing markets would encourage response to market demands and thus interest in woodlot management. Ninety-seven percent of owners now earn less than 10 percent of their land-based income from forest resources.
- 15) If woodlot programs are meant to promote multi-use sustainable private forests, however, careful attention should be given to the fact that 28 percent of those who have "harvested" woodlots have ultimately cleared the land and converted it to other uses. This harvest system is simply opportunistic use of short-term markets, rather than

woodlot management. Creating or encouraging markets, therefore, should be done with the knowledge that desired outcomes may be outweighed by other interests (primarily agricultural).

- 16) The fact that personal characteristics such as age, gender or level of education generally do not associate with use, knowledge or other aspects of woodlot management makes it difficult to target programs based on landowner characteristics. Program development should consider the associations that do occur, but broad-based strategies probably should be designed for specific uses, types of forests and regions, rather than "types of landowners".
- 17) Evidence suggests that woodlot owners are more interested in managing their existing forested areas than in planting more areas. Programs, therefore, should emphasize management techniques rather than resource expansion. Current emphasis on planting may be missing the primary audience.
- 18) Among uses and user patterns of woodlots, hunting and fishing is most complex as it associates with 8 of the 10 characteristics tested. Second homes (and cabins), general recreation and collecting edible products show some differentiation in use by characteristics of owners or properties. Patterns of use are important in multiple-use management strategies and should be considered when designing woodlot programs. Knowledge of given areas and situations may dictate changes in programs to accommodate desired uses, or to offset potentially unwanted outcomes of management.
- 19) A majority of landowners are uncertain about the amount, type and location of information available on woodlot management. Also, they are uncertain about the responsibility for program delivery amongst existing agencies. This clearly signals confusion at the landowner level and likely relates to the multiplicity of programs and delivery agencies now operating. Various aspects of private forest management occur at federal (federal forestry, agriculture, environment), provincial (forestry, wildlife, agriculture), municipal (conservation districts etc.) and private (Ducks Unlimited, game and fish organizations, etc.) levels.

To be effective, woodlot programs should be partnered among agencies, but each level should have specific roles to play. Data herein clearly indicate that landowners prefer program delivery by private or provincial organizations. Accordingly, the federal role may be to conduct research, design programs and increase public awareness of the potentials of private forest management. Since many aspects of woodlot management do not differ significantly among the Prairie provinces, there may be grounds for a Prairie program rather than three separate provincial programs.

The provincial role is to adjust programs to account for the local variations that do occur, and deliver, or assist in delivery to landowners. Municipal governments generally do not deal directly with private land woodlots, but they do affect land use and attitudes through local programs. When municipalities form super-municipal organizations for the purpose of resource conservation, such as Watersheds or Conservation Districts, a vehicle is created for "on-the-ground" delivery of woodlot programs. Since these existing organizations work directly with property owners, and since landowners are accustomed to going directly to the local organizations for information, these groups may be the appropriate level for delivery of programs. Since woodlot associations would be at the same level, and may involve the same individuals, information exchange would occur quickly and freely.

The important point here is that the process must allow for free flow of information and needs from the bottom up to the senior government level. Programs then can be flexible enough to accommodate local needs. For example, local conservation authorities could ask for provincial or federal programs with a variety of options, but then select the options they need locally. An area that is extensively treed may want a controlled harvest program, while an adjacent area wants tree planting programs. The role of senior governments thus becomes one of maintaining a small number of professionals who can respond to information and educational requests from municipal-level organizations. A top-down one program fits all approach appeases universality, but is not operational on the land.

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