RURAL DEVELOPMENT INSTITUTE

BRANDON UNIVERSITY

2014 Shelterbelt Survey

Prairie Producers' Use of and Attitudes Towards Shelterbelts

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DECEMBER 2014

This survey is part of the Demonstration and Investigation into Agroforestry Based Livestock Systems Adoption project which is funded by the Agriculture Greenhouse Gases Program of the Federal government.

RURAL DEVELOPMENT INSTITUTE

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Rural Development Institute, Brandon University

Brandon University established the Rural Development Institute in 1989 as an academic research centre and a leading source of information on issues affecting rural communities in Western Canada and elsewhere.

RDI functions as a not-for-profit research and development organization designed to promote, facilitate, coordinate, initiate and conduct multi-disciplinary academic and applied research on rural issues. The Institute provides an interface between academic research efforts and the community by acting as a conduit of rural research information and by facilitating community involvement in rural development. RDI projects are characterized by cooperative and collaborative efforts of multi-stakeholders.

The Institute has diverse research affiliations, and multiple community and government linkages related to its rural development mandate. RDI disseminates information to a variety of constituents and stakeholders and makes research information and results widely available to the public either in printed form or by means of public lectures, seminars, workshops and conferences.

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Introduction

BACKGROUND

This survey is part of the Demonstration and Investigation into Agroforestry Based Livestock Systems Adoption project. This joint project of the Upper Assiniboine River Conservation District and the Rural Development Institute is funded by the Agriculture Greenhouse Gases Program of the Federal government.

This project has established a demonstration site for alley cropping, giving an on-the-ground example of how multiple shelterbelts can be used to shelter crops and winter-feeding livestock. The project is also investigating the attitude of producers toward shelterbelts and their use of shelterbelts in their farming operations. Several in-person surveys of beef producers have been completed giving insight into perceived barriers and benefits of shelterbelt use.

PURPOSE

The survey was designed to gather information about producers' practices and thoughts about shelterbelts and their use and value to their farming operations, together with producers' preferred methods of communication. The results will be used to inform future information sharing tactics and strategies relating to shelterbelts in the prairies.

SURVEY METHODOLOGY

The survey was conducted online through Survey Monkey.net from July 16 to August 8, 2014. The survey link was distributed to more than 50 organizations: Manitoba and Saskatchewan producer organizations, conservation districts and MAFRD (Manitoba Agriculture, Food and Rural Development). Over the 3 weeks of the survey these partners passed the link on to more than 1800 producers through direct emails, inclusion in newsletters and tweets.

All Manitoba agricultural producers were targeted, as well as some in Saskatchewan. Previous surveys covered beef producers, this survey hoped to gain insight into the thoughts of all producers on shelterbelts, including grain and oilseed farmers.

Mixed farmers who grow cash crops and keep cattle are particularly relevant to this study, as they may have the most to gain from an alley-cropping system. As an incentive for producers to participate in the survey, participants had the opportunity to enter a draw for a $150 Canadian Tire gift certificate.

There were two parts to the survey, one for producers, the other for producer organizations and associations. Some respondents completed both parts of the survey.

- The producer survey gathered information on:
  - Demographics of the producers and their farms
  - Quantity, planting and removal of producer shelterbelts and their use in farm operations
  - Value of shelterbelts to the producer and perceived barriers and benefits.
  - Preferred communication methods regarding farming practices
- The survey for organizations asked about their perceptions of producer attitudes to shelterbelts and their communication methods with their members or clients. Analysis of these results is not included in this report.

Online surveys have the advantage of being fast, cost effective and flexible. It is possible to use skip logic, so participants don't get asked questions that are not relevant to them; the order of questions can be randomized too, which takes away one possible source of bias on multi-part ranking questions. However, web-based surveys do have some limitations: some producers may not have internet access and a portion of the surveys will be "false-starts" or incomplete. These are not considered to be significant limitations in this case, 21 additional respondents did not answer any questions; they were not included in the analysis. Problems with accessibility are decreasing as internet is more available than in the past, for example this survey could be completed on a smart-phone.

The question of whether the producers surveyed are a representative sample of all producers should also be considered. Distribution through many organizations meant that many producers of different commodities had the opportunity to complete the survey. It is possible that producers with an interest in shelterbelts may have been more likely to complete the survey; if this is the case it may introduce some bias to the results. This was also a consideration with previous in-person surveys which were also voluntary.

The degree of confidence that a survey result reflects the true result for the whole population is measured using confidence intervals, or margins of error. 95% confidence levels were calculated for some results in this survey; meaning that 95 times out of 100 the true percentage for the population is in the range indicated. The calculated range is dependent on the size of the actual population, the size of the sample and the percentage. Larger sample sizes give more confidence; and there is less confidence in the actual number if the percentage is 50%, compared with a percentage of 90%.

In this survey 230 participants answered questions on shelterbelts or communication (198 producers and 55 organizational representatives), from all agricultural regions of Manitoba, with about 15% from Saskatchewan. An estimate of 20,000 producers for the actual producer population and 198 respondents gives a 95% confidence interval of 50%+- 7% (or 43-57%) and 90% +-4% (or 86-94%).

This report presents the survey responses in graphical form together with discussion and analysis of the results.

Note: In the bar-charts in this report, the y axis refers to the number of producers, except where indicated as %.

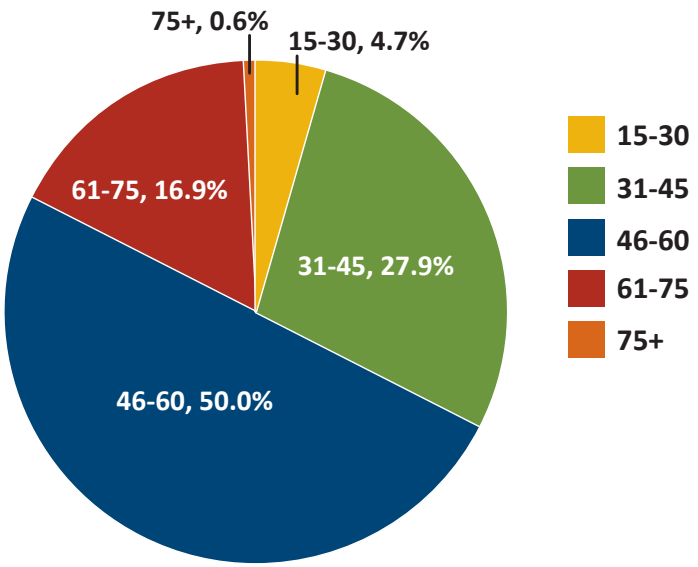
Producers Survey

198 producers completed the survey. All questions were optional, and “skip-logic” was used so only producers with shelterbelts answered questions on shelterbelts; so the number of responses varied for each question.

DEMOGRAPHICS

Age

Age Ranges of Producer Respondents

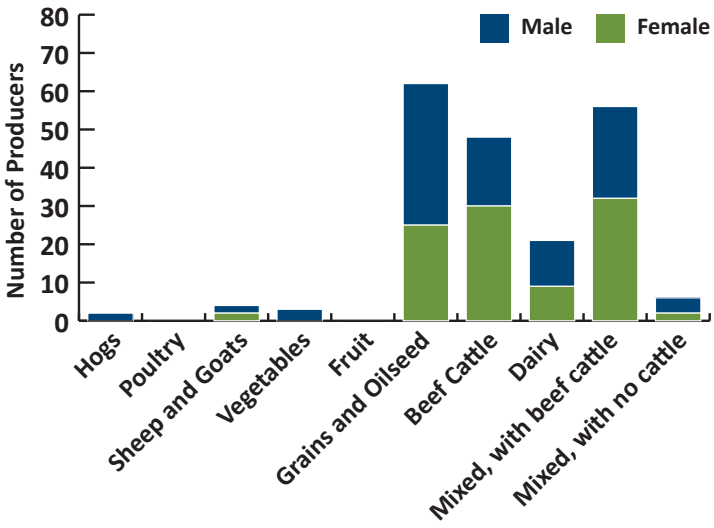


Two thirds of producers surveyed were aged 46 and over. 2011 Statistics Canada data has 81% of Manitoba producers “oldest operator” in the 45 and older age range, our sample is little younger. This could be because farming is often multi-generational or maybe because younger people were more likely to complete an on-line survey.

55% of producers had been farming for more than 26 years; 75% more than 15 years.

Gender

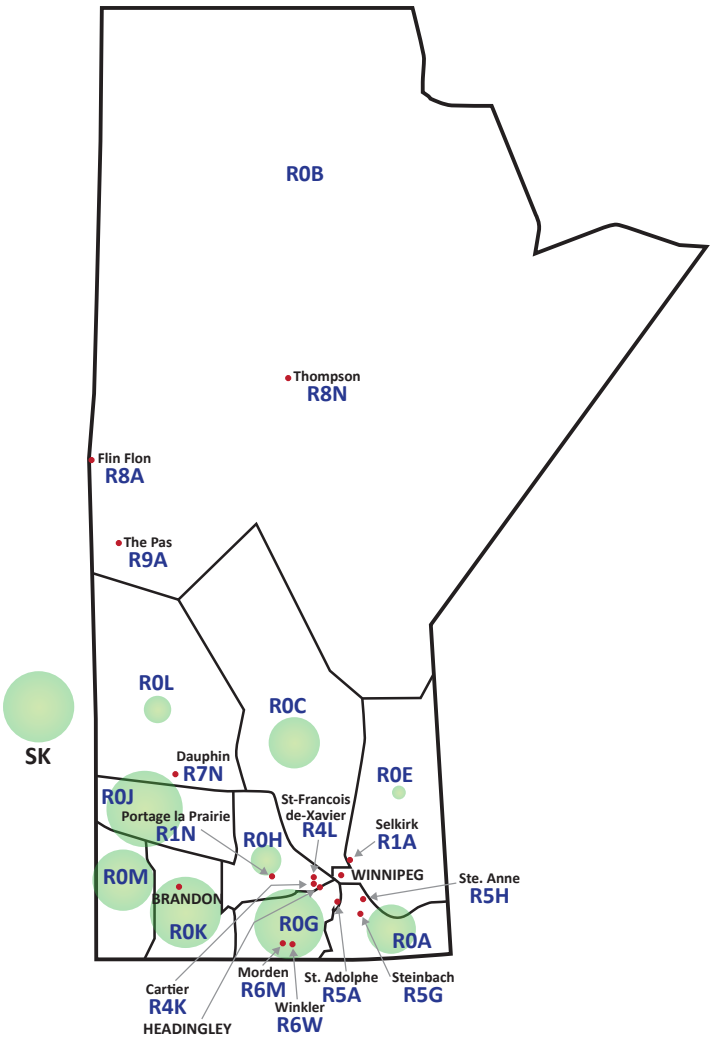
Type of Farm?



68% of the producers that completed the survey were male, 32% female. This ratio differed according to the type of farm for grains & oilseeds 24% were female; beef producers were more likely to be female (44%). Statistics Canada’s gender ratio for farm operators for 2011 was 76% male, 24% female.

Location

Location of survey respondents, by postal code area



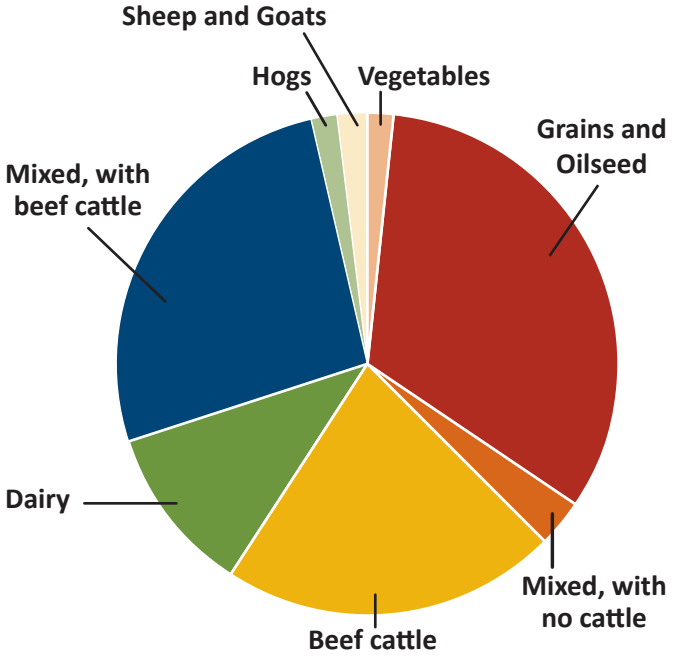
The location of the survey respondents was determined by the first part of their postal code. 141 Manitoba producers completed the survey; with an additional 27 from Saskatchewan. This covered all the agricultural areas of Manitoba, with a variety of types of landscape. It is assumed that Manitoba and Saskatchewan producers have similar opinions on the survey questions.

Type of Farm

Type of Farm?

168 producers specified their "type of farm". Many types of farm producers were covered by this survey:

Statistics Canada data reports farms as being of one



type based on their major type of production, so data on mixed crop with beef cattle is not available. The table gives a comparison with 2012 Statistics Canada data for numbers of producers of various types.

Source CanSIM Table 002-0038

	THIS SURVEY	2012 (STATISTICS CANADA)
Grain & oilseed	33%	52%
Mixed with beef cattle	26%,	Not available
Beef	21%	29%
Dairy	11 %	5%
Other types of farm	9%.	14%

It is difficult to assess whether the sample gives a representative sample of the types of producer in Manitoba. Dairy is slightly over-represented and "other" types, both crop and animal, under-represented. Given the available information, this sample is not noticeably biased to any one type of producer, especially if most "mixed with beef" producers reported to Statistics Canada as "grain and oilseed".

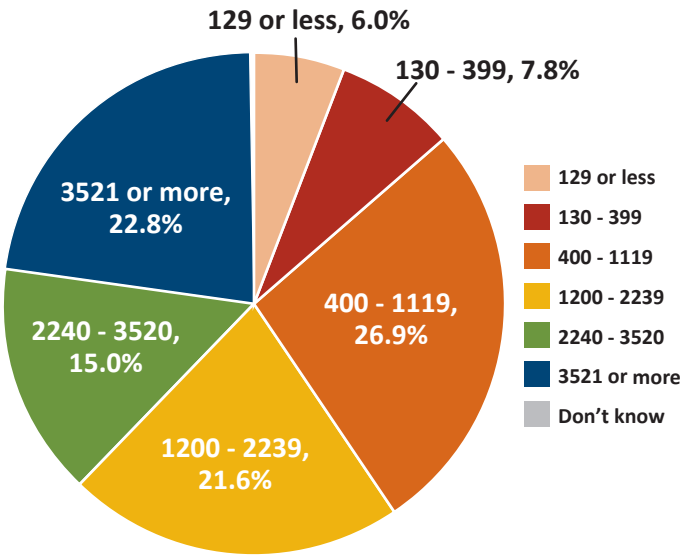
In the analysis all producers were considered together. The farms were also grouped into two types for purposes of comparison of some survey responses.

- Livestock (103, 62%): Mostly beef, mixed with beef and dairy with a few hogs, sheep and goats.
- Crop (65, 38%): Mostly grain and oilseed producers with some mixed with no beef and vegetable producers.

30 producers did not specify a type of farm, their results were not considered in these comparisons, but were included in overall results.

Size of Farm

How many acres do you farm?



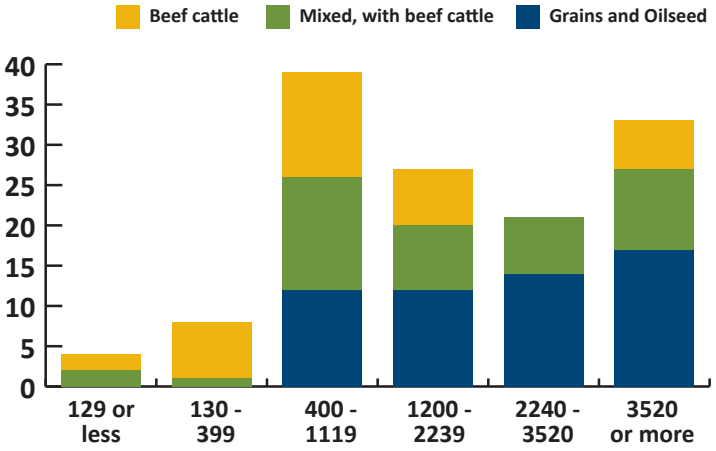
A wide range of farm sizes were covered by this survey.

13% were less than 400 acres (0.6sq ml)

27% were in the 400 to 1119 acre (about 0.6 to 2 section) range

23% were very large farms more than 3521 acres (5.5 sq. miles).

How many acres do you farm?



Variation by farm type

The sizes of the 3 major "types" of farms were compared; grain and oilseed, mixed with cattle, and beef. Producers who described themselves as beef producers made up the majority of operations of less than 400 acres. Grain and oilseed, and mixed farms with cattle tended to be larger. About half of farms surveyed (48%) were between 400 and 2239 acres; 23% were over 3520 acres.

FARM SHELTERBELTS

The majority of producers surveyed have shelterbelts on their farms, 91% of 191 respondents. This indicates that between 87 and 95% of producers have shelterbelts (95% confidence level).

169 producers have farm-site shelterbelts, and 85% of these actively use them in their farming operation. This is 71% of all the producers surveyed.

104 producers (53% of all surveyed) had field shelterbelts established elsewhere on their farms, all types of producers had a similar likelihood of having field shelterbelts. Again 85% (+-7%) use them in their farming operation. As a proportion of all producers surveyed, 45% +- 7% (38-52%) used field shelterbelts in their farming operation.

Miles and acres of field shelterbelts

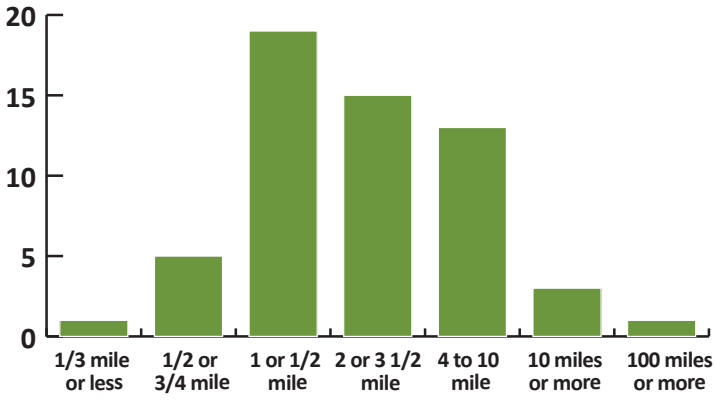
In terms of types of shelter in their fields; 40% of producers have both planted & bush, 37% just bush, 23% just planted field shelterbelts.

85 producers shared the size of their field shelterbelts and bush; this does not include farm-site shelterbelts. The total miles in shelterbelts for all 188 producers would be significantly more than the 300 reported here for 58 producers. In addition to planted field shelterbelts there is also significant area of bush reported by these producers.

	FIELD SHELTERBELTS (57 PRODUCERS)	BUSH (58 PRODUCERS)
Total	297.4 miles	3201.25 acres
Average	5.2 miles	55.2 acres

Note: 1 section = 1 sq. mile = 640 acres

The length of field shelterbelts



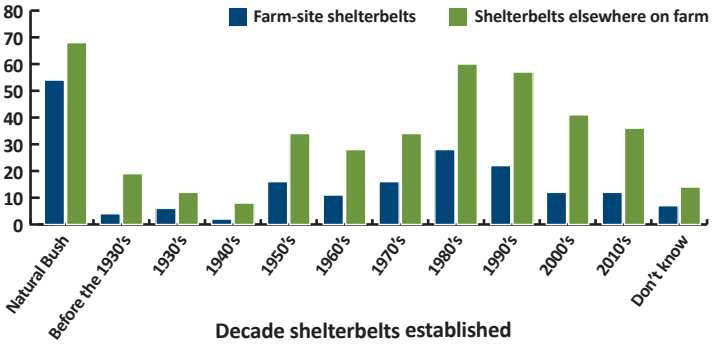
The length of field shelterbelts reported by producers varied from less than 1/3 mile to 110 miles, the capacity for shelterbelts obviously depends on the size of the farm. A large number of producers (60%) had between 1 and 3 ½ miles of field shelterbelts on their farm. Another 30% had more than 4 miles of field shelterbelt on their farms, which is a significant amount, even for a large operation.

Ages of shelterbelts

Producers reported their estimates of the ages of their farm-site shelterbelts (168 producers) and field shelterbelts (105 producers).

This data shows more field shelterbelts than farm-site, as producers had multiple field shelterbelts of various ages.

When shelterbelts were established



Relatively few trees are left that are more than 65 years old, planted before 1950.

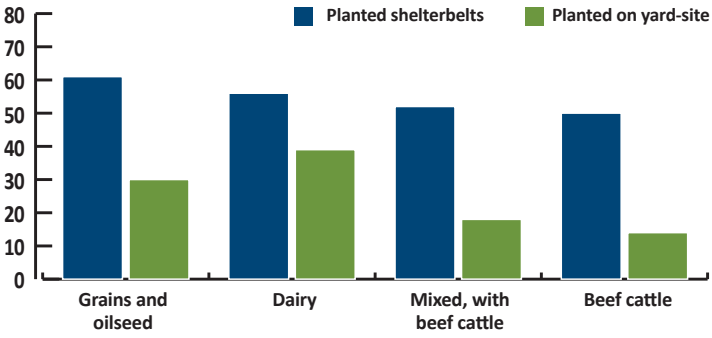
Both yard-site and field shelterbelts show a similar pattern: consistent planting through the 1950's to 70's which was in part due to Manitoba Agriculture initiatives which planted over 5,700 miles in these decades. The peak in the 1980's and 90's was likely due to the concerted promotion of shelterbelts through PFRA (Indian Head) in those years, this was in-part a response to drought conditions in the 1980s.

Depending on the species some of the older trees (e.g. poplar) may be coming to the end of their life cycle after 50 years and planned replacement may be needed to retain the shelterbelts.

PLANTING AND REMOVING SHELTERBELTS

Who is planting?

Planted shelterbelts by producer type

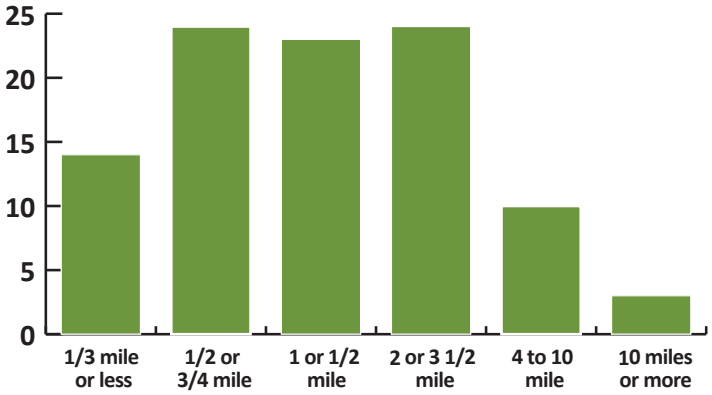


All types of producers had planted shelterbelts. 55% (+-7%) of the producers (108) have planted new shelterbelts in the past 10 years.

61% of grain and oilseed producers who responded had planted shelterbelts; half of these were on a farm-site. About 50% of producers with beef cattle had planted shelterbelts; these were more likely to be away from the farm-site.

Miles planted

Shelterbelts planted in the last 10 years



Length of Shelterbelts Planted in last 10 years

98 producers planted over 200 miles between them, an average of about 2 miles each. 60% had planted 1 ½ miles or less in the last 10 years. A quarter of the producers planted trees primarily as protection for their yard-site.

The distribution of miles of trees planted shows that a shelterbelt planting program could reasonably expect producers to plant ¼ to 1 mile of shelterbelt in a year.

Why shelterbelts were planted

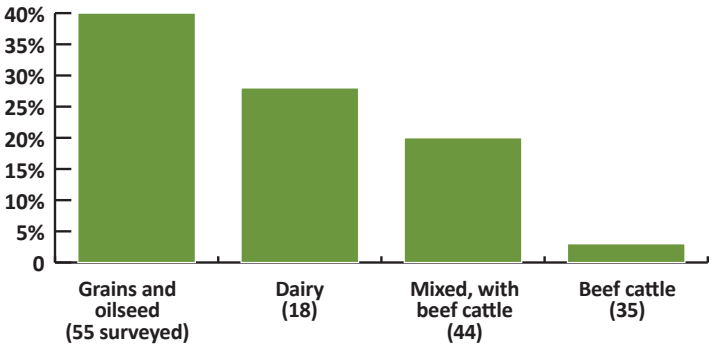
Many producers gave multiple reasons for planting trees. The most quoted reasons were protection for yard-site (wind, weather, dust, noise) and a windbreak for livestock. Prevention of wind erosion of soil, snow control, to protect crops from wind, shade, wildlife habitat and liking trees (aesthetics) were also common reasons. A number of producers were replacing shelterbelts that had died or been removed.

Shelterbelts removed

A quarter (18-30%, 95% confidence interval) of producers surveyed had removed shelterbelts in the past 10 years (44 of 183 respondents).

A significant proportion of these shelterbelts were removed by crop producers: 43% (+-12%) of reporting crop producers had removed shelterbelts and 14% (+-7%) of livestock producers (20% of mixed with cattle, and 3% of beef producers).

Percent of producers who have removed shelterbelts



37 producers reported how much bush or shelterbelt they removed. 15 producers removed between 1 and 50 acres each, an estimated total of 233 acres (average 15 acres).

27 producers removed over 62 miles of shelterbelt, an average of 2.3 miles per producer. When producers removed more than 3 miles of shelterbelt the reason was to make room for irrigation pivots or to accommodate zero-till or large machinery.

Why shelterbelts were removed

The reasons for removing shelterbelts were most often related to old or broken-down trees. Expansion of fields, moisture and delayed seeding due to snow capture and removal to make room for large equipment or irrigation pivots were other reasons. 5 mentioned they were replacing the trees they had removed.

SHELTERBELTS AND FARM DECISIONS

In this section of the survey producers were asked to rank various factors related to shelterbelts and how they relate to their farm operations and decisions. These rankings were from 1 to 5 with 5 being a 'very important factor' and 1 being 'not a factor'. In the charts below the darkest shading represents 5, the lightest 1.

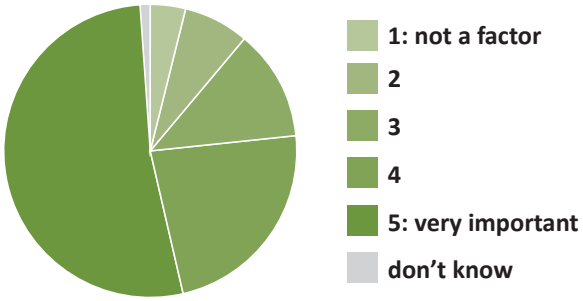
Importance to farm

94 producers (53%) said shelterbelts were very important to their farm; 65 of these producers had planted shelterbelts in the last 10 years.

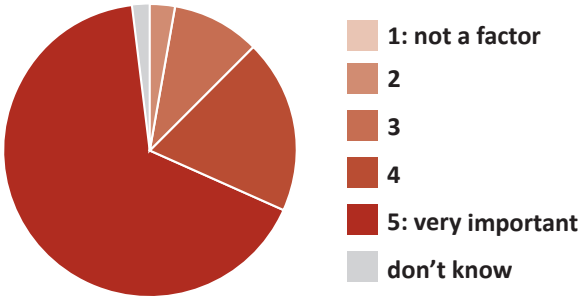
The group of producers consulted in this survey mostly considered shelterbelts to be important to their farming operation (75% ranked 4 or 5). There was a noticable difference between livestock and crop producers with livestock producers giving significantly more importance to shelterbelts than crop producers in all ranking categories. See pie graphs on opposite page.

How important are shelterbelts to your farm?

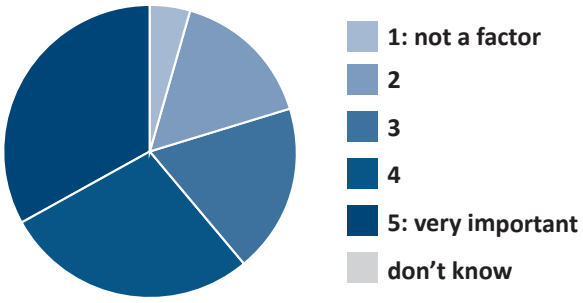
On a scale of 1-5 with 1 being "not a factor" and 5 being "very important".



ALL PRODUCERS (total 179)
Very important (5) - 94, 53% (+-7%)
Ranked (4 or 5) - 135, 75%

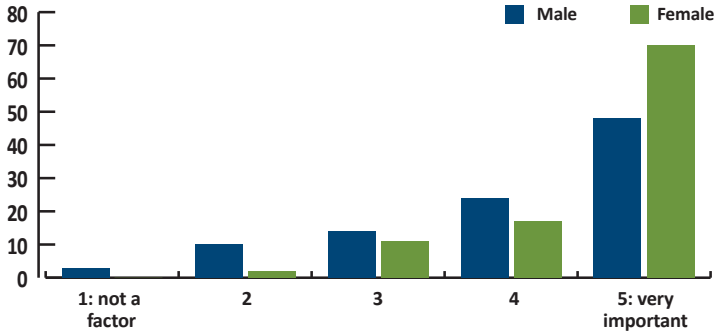


LIVESTOCK PRODUCERS (80)
Very important (5) - 55, 70% (+-10%)
Ranked (4 or 5) - 89, 89%



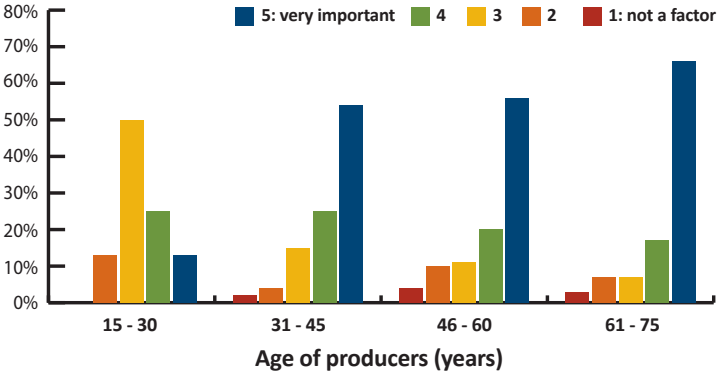
CROP PRODUCERS (63)
Very important (5) - 20, 32% (+-11%)
Ranked (4 or 5) - 39, 61%

How important are shelterbelts to your farm? Variation with Gender



There was also a noticeable difference between the genders on this question, this may have been partially related to their "type" of farm, 62% of female producers were beef or mixed with beef; compared with 42% of male producers.

How important are shelterbelts to your farm? Variation with Age

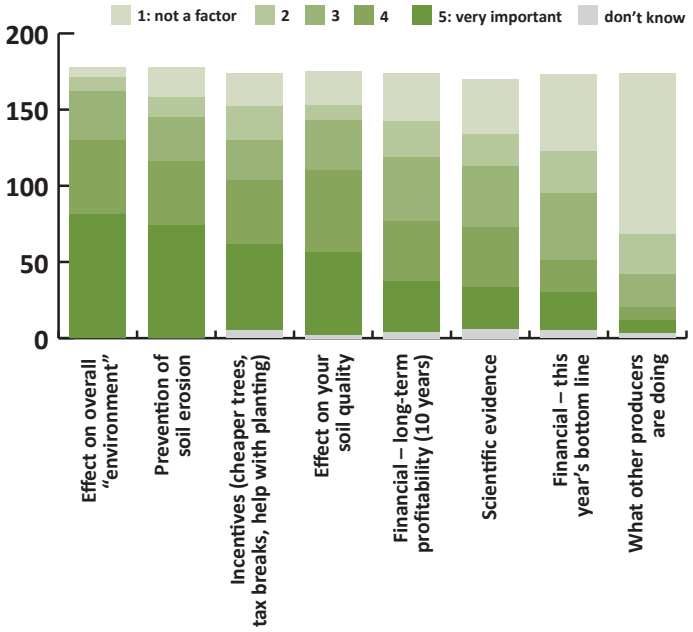


Over 50% of producers aged over 30 thought shelterbelts were very important to their farm, with a similar pattern for all age ranges. Younger producers (under 30) thought shelterbelts were less important, however this is based on a small sample (8 producers).

Influences affecting farming shelterbelt decisions

How important are the following in your decision to use or not use shelterbelts in your farming operation?

On a scale of 1-5 with 1 being "not a factor" and 5 being "very important".



Producers considered the most important influencer regarding shelterbelts in their operations to be the overall effect on the environment with 46% (+-7%) ranking this as very important, 73% ranked 4 or 5. Prevention of soil erosion, quality of soil and incentives for planting were all ranked as important, with about 60% of producers giving a ranking of 4 or 5.

Effect on the bottom-line and scientific evidence, were considered very important by only 15% and 20% of producers. The results indicate that producers think financial gain associated with shelterbelts is more long-term.

What other producers are doing was not considered a strong influence, only 10% ranked this as important (4 or 5), and 61% said this was not a factor.

There was no significant difference between different types of producer on this question.

Several other factors were added as important influencing factors, these included: shelter for cattle (winter, shade, brush, well-being, safety); yard windbreaks; snow control and aesthetics. One producer considered field shelterbelts to have a negative environmental impact.

How important are shelterbelts in the following?

Shelterbelts were considered to be most important for shelter for livestock, and reducing wind erosion. Shelter for crops was ranked third with financial sustainability considered important (4 or 5) by 24% of producers.

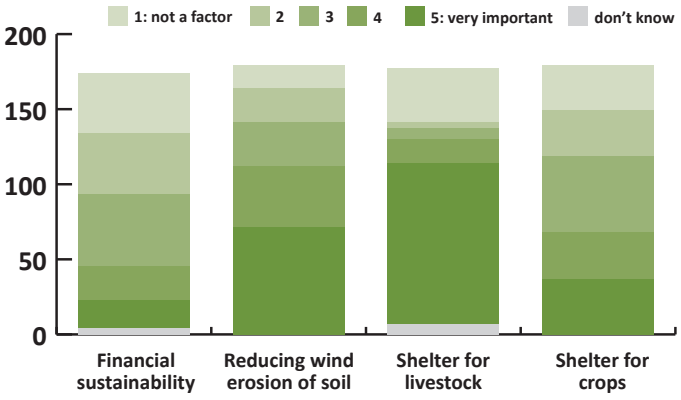
Other important factors suggested by producers were: snow control, yard shelter, odor mitigation, water management and shelter for wildlife and birds.

Livestock producers considered all the listed factors to be more important than did crop producers, including reducing wind erosion of soil and shelter for crops. This is consistent with the result that livestock producers consider shelterbelts to be more important to their farming operations. Not surprisingly more than 90% of livestock producers thought that shelter for livestock was an important factor (4 or 5). Shelter for livestock was not relevant to crop producers themselves, which may explain the bimodal distribution, either very important or not a factor.

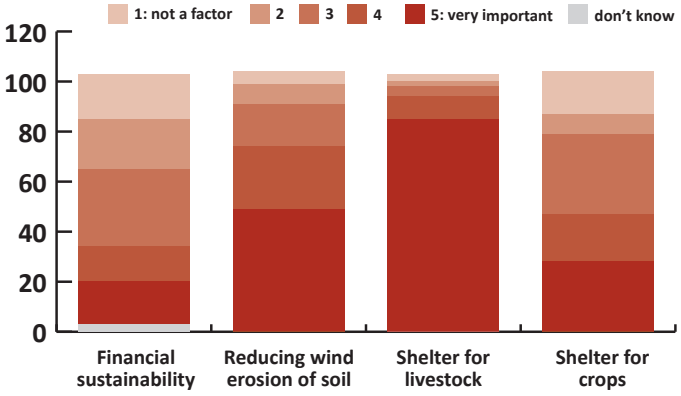
Important Shelterbelt Benefits

On a scale of 1-5 with 1 being "not a factor" and 5 being "very important".

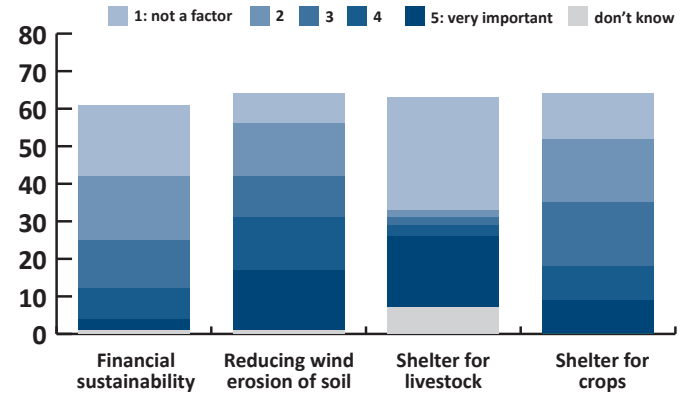
ALL PRODUCERS SURVEYED



LIVESTOCK PRODUCERS

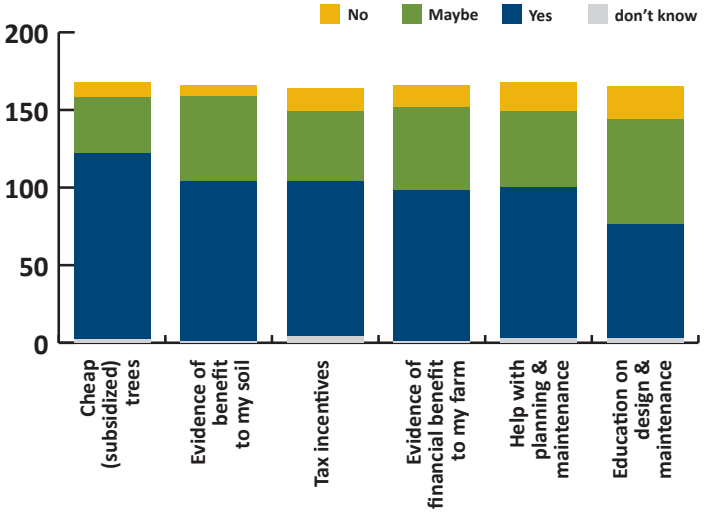


CROP PRODUCERS



INCENTIVES AND BARRIERS TO SHELTERBELT USE

Which of the following would encourage you to plant and retain shelterbelts?



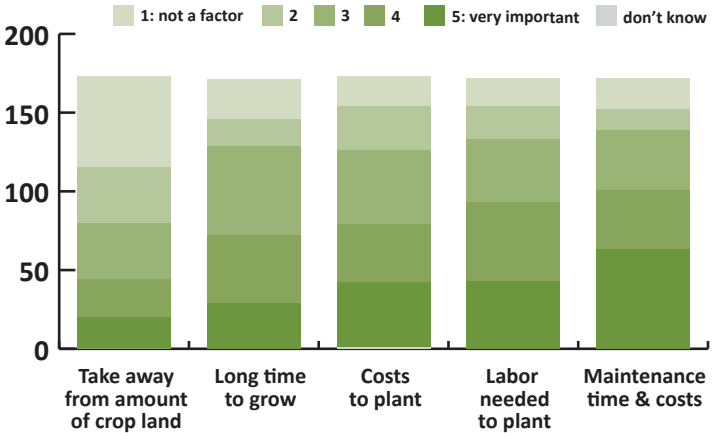
The most popular encouragement to plant and retain shelterbelt trees was cheap (subsidized) trees with 71% (+-7%) of producers responding 'yes'.

Education on design and maintenance was a factor for 44%.

All the other factors suggested would encourage more than 50% of producers, with tax incentives and benefit to their soil each encouraging 60% of respondents.

What are the barriers to planting and retaining shelterbelts?

On a scale of 1-5 with 1 being "not a factor" and 5 being "very important".



The biggest barrier to establishing shelterbelts was seen to be maintenance time and costs, followed by costs and labour for planting.

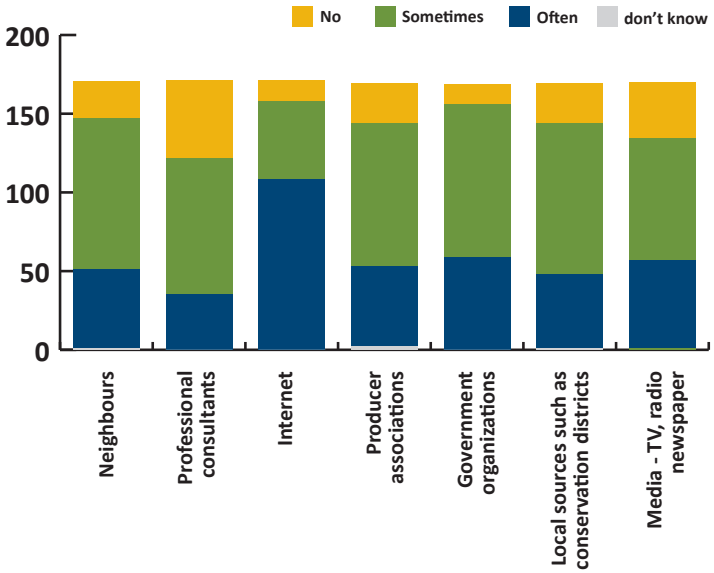
Taking away from crop land was a larger factor for crop producers. 22% (12-32% with 95% confidence) thought this was a very big barrier; compared with 5% (1-9% with 95% confidence) for livestock producers. For the other factors the responses were similar for the two groups of producers.

Other barriers were given by producers, many particularly relevant to crop producers, including:

- So hard to establish field shelter belts because of chemicals drift and weed control around them
- Diseases seem to be increasing and killing trees making it difficult to maintain a shelterbelt.
- Size of equipment to work around them
- Delayed seeding on fields due to moisture variation - especially in wet springs
- Wildlife habitat
- Time necessary to do it right.
- Trees usually delivered right at seeding (busy time)
- Access to tree planting equipment
- Huge amount of labor needed to cut down and dispose of dead trees
- Shelterbelts often make adjacent land unproductive

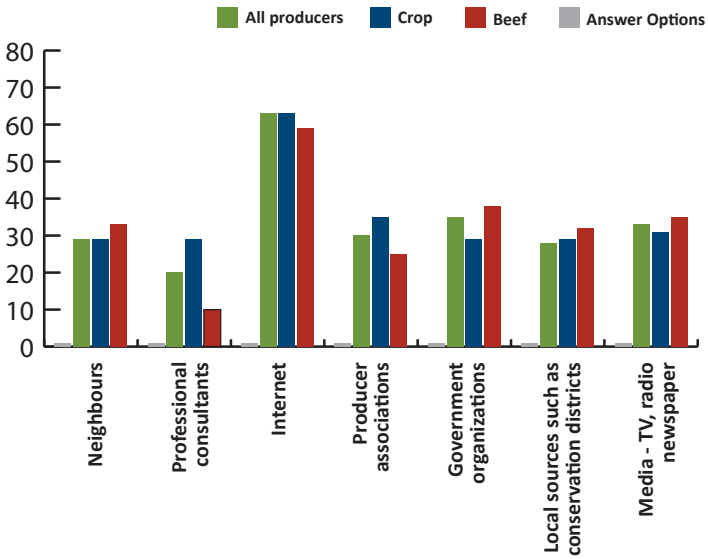
INFORMATION SOURCES

Which of the following sources do you use for information about farming practices?



Most of the resources were used at least some of the time by at least 70% of the producers. Internet was by far the most popular answer with about 60% of all producers often using this resource.

Sources consulted 'often' by producers.



Professional consultants were used often by only 20% of producers. 29% of crop producers used profession consultants compared with 10 % of livestock producers.

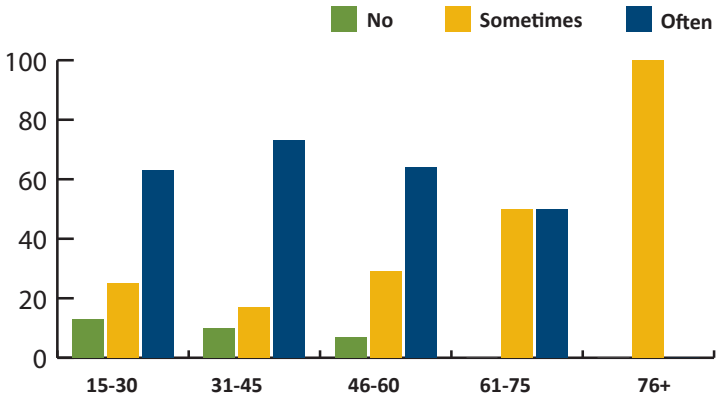
The other sources were used often by about 30% of producers. Interestingly crop producers were slightly more likely to consult producer associations and livestock producers were slightly more likely to consult government sources.

Variation of information sources with age

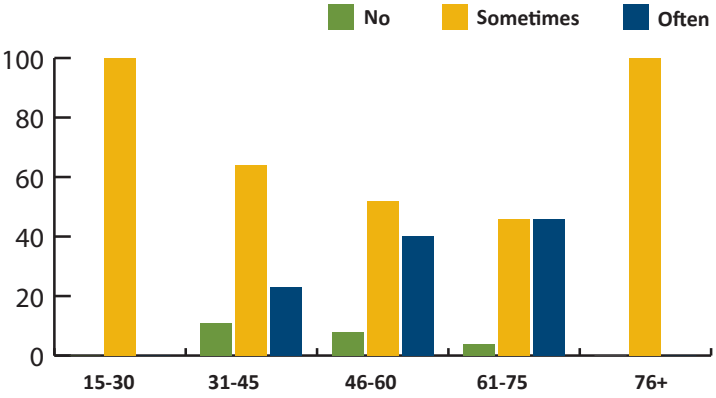
There was some variation of information sources used with age. Internet was an often used source for all age ranges. As would be expected, younger producers were more likely to consult this source often, though the data for the youngest age range is less reliable due to the small sample size (8). The consultation of producer associations and government sources also showed variations with age. This result shows that multiple sources should be used to target all age ranges of producer.

Variation of information sources with age

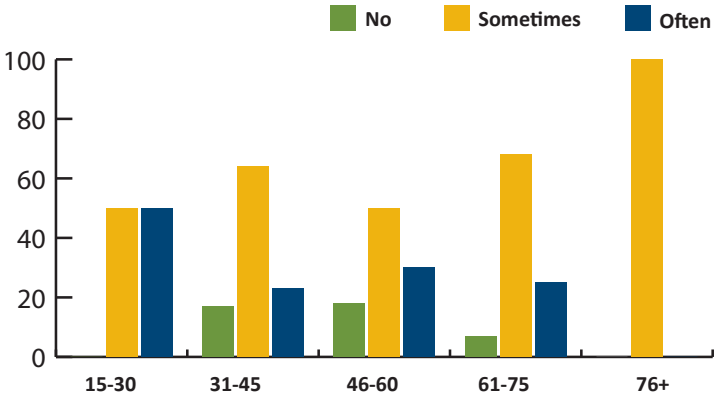
INTERNET



GOVERNMENT ORGANIZATIONS



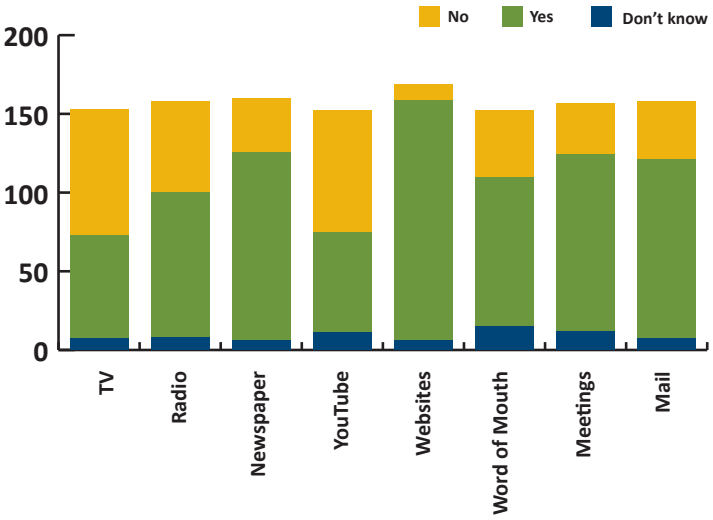
PRODUCER ASSOCIATIONS



# of producers in each age range

15-30	31-45	46-60	61-75	76+
8	48	84	28	1

How would you like to get your information on farming practices?



Each of the suggested sources was a source of choice for 40% or more of the producers surveyed. It is evident that producers use many diverse sources for information on farming practices.

The pattern of preferences was similar for the various producer groups.

The most popular source (90%) of information was web-sites This is consistent with producers currently getting information from the internet.

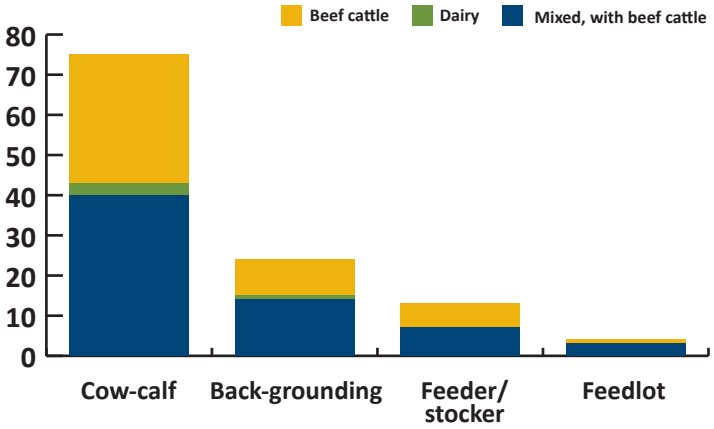
Other popular choices were newspapers, meetings and mail – over 70%; and word of mouth & radio - around 60%.

Producers suggested several other preferred information sources including: (cattlemens) magazines, social media (twitter), webinars and school, college or university.

DETAILS OF CATTLE OPERATIONS

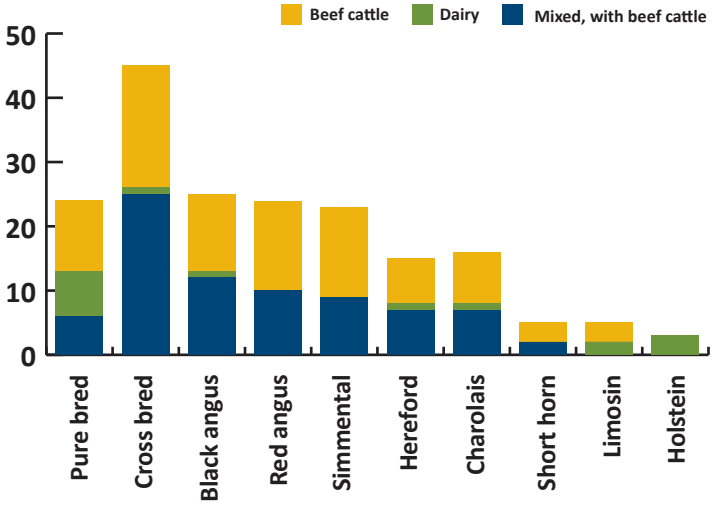
Producers who identified as beef producers, mixed producer with beef or dairy were asked additional questions on their cattle operations and farming practices.

Type of Operation?



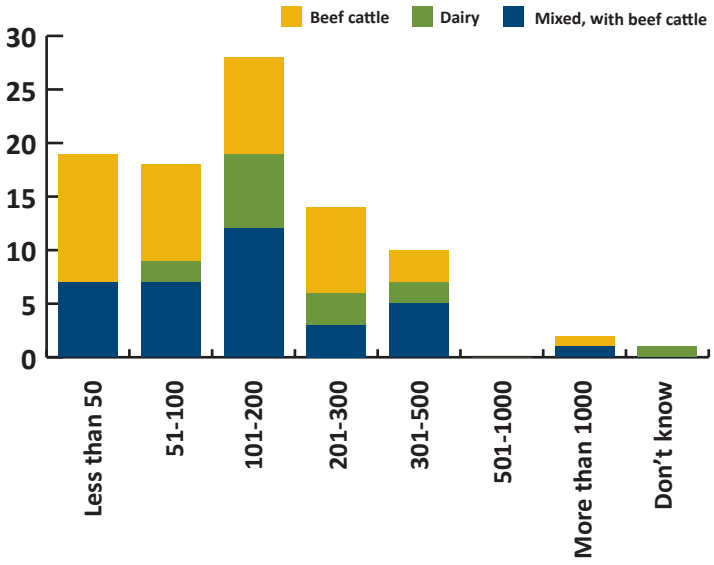
95% of (of 79 producers) had cow-calf operations, including 3 dairy farms. In addition 30% were back-grounding, and 16% feeder/stocker. 4 feedlot operators completed the survey, 3 of these were mixed crops and beef.

Pure-bred/Cross-bred & Breeds of Cattle



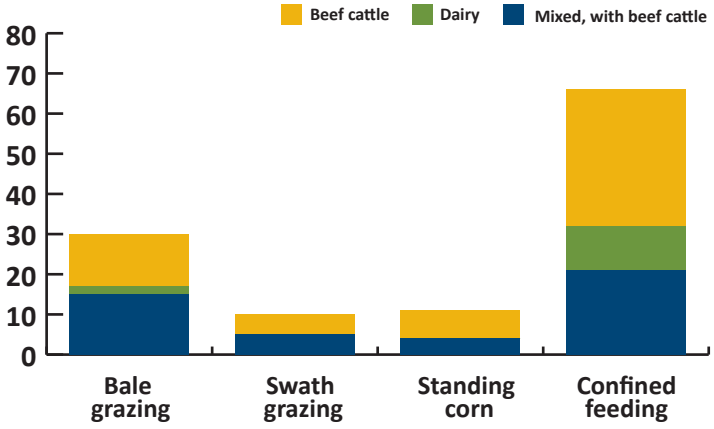
87 producers gave information on their cattle. 25% had pure-bred cattle and 52% cross-bred. 10 breeds were identified with red & black Angus & Simmental being the most numerous. Several producers had more than 3 breeds of cattle.

Number of Head?



A good range of herd sizes was represented in the producers surveyed. 42 of the 91 producers had a herd of between 100 and 300 head. 12 had more than 300 head and 37 had smaller herds of up to 100 head.

Type of Winter Feeding?



88 producers with cattle provided information about how they fed their cattle in winter.

Three quarters of these producers used confined feeding, and half used extended grazing; 27% use a combination of both methods. Bale grazing was the most popular method of extended grazing, used by 30 producers; standing corn and swath grazing were used by about 10 producers. Other types of winter feeding were stock-piled forage, bush feeding and rolled out round bales.

Winter Feeding Methods used by Surveyed Cattle Owners

	# Producers	SOME Confined Feeding	SOME Extended Grazing	ONLY Confined Feeding	ONLY Extended Grazing	BOTH Confined & Extended
Beef	35	60%	60%	40%	40%	20%
Mixed (with cattle)	40	85%	55%	45%	15%	40%
Dairy	13	92%	15%	85%	8%	8%
All with cattle	**88**	**76%**	**51%**	**49%**	**24%**	**27%**

Analysis of the producer's individual responses show the relative use of extended and confined feeding for the three groups of cattle owners.

Dairy farmers mostly used confined feeding; generally speaking the distances involved with extended grazing do not work well with milking.

85% of mixed farmers (crops with beef) used confined feeding some of the time, 45% were confined feeding only, 15% only extended grazing and 40% a combination of both methods.

Producers who concentrated on beef production were the most likely (60%) to use some extended grazing in their winter feeding; they are also more likely to use only extended grazing (40%) compared with 15% for mixed producers.

Summary and Conclusions

This survey was conducted to gather information on the opinions of producer regarding shelterbelts and their use in agriculture, together with gaining an insight into their preferred method of communication.

198 producers were surveyed; this is a large enough sample to give a 95% confidence interval of +- 7% for most of the questions.

This survey showed that most of the producers surveyed, (91%) have shelterbelts on their farms. Most of the producers had shelterbelts to protect their farm-site and 52% had field shelterbelts. Producers with shelterbelts were very likely to use them in their farm operations (85%). The shelterbelts were a wide range of ages, with a lot being planted in the 80's and 90's.

Half of the producers surveyed had planted shelterbelts in the past 10 years, and a quarter had removed them. This indicates that more shelterbelts are being planted than taken out; which does not agree with anecdotal evidence of widespread removal of older shelterbelts to accommodate large machinery and give more crop land. More research is needed to inventory and monitor field shelterbelt removal and renewal.

There was a pattern throughout the survey of livestock producers saying that shelterbelts were very valuable to their farms. This is to a large extent because of the winter shelter provided to livestock; farm-site shelterbelts with confined feeding or field shelterbelts with extended grazing. Most livestock producers (70%) said shelterbelts were very important to their farm; fewer crop producers (30%) thought shelterbelts were very important to their operation.

There was a deep understanding and appreciation of the value of farm-site shelterbelts, in terms of comfort, aesthetic value and energy savings. The benefits of field shelterbelts in terms of reducing wind erosion of soil were well understood by producers; and most thought the positive effect on the environment was a major reason to use shelterbelts. Fewer than 20% of all producers thought shelterbelts were very important for their bottom-line or financial sustainability.

Negatives associated with shelterbelts were maintenance time and costs, as well as the costs and labour to plant. Assistance with these barriers, especially subsidized trees would encourage producers to plant trees. For some crop farmers, problems with snow capture increasing moisture, spray-drift and large machinery were barriers to keeping or establishing shelterbelts.

Producers used many information sources including the internet, government, producer associations, and local sources. The communication method used by 60% and preferred by 90% of producers was the internet / websites. Producers also liked multiple other methods such as newspapers, meetings and mail.

APPLICATION OF SURVEY RESULTS TO PROMOTION OF SHELTERBELTS IN AGRICULTURE

This project aims to move forward with promoting the planting, retention and use of shelterbelts. The main focus will be on producers with beef cattle, especially those who also grow crops. These producers can gain from an alley-cropping system which utilizes trees to shelter both crops and livestock, facilitating extended grazing and its associated cost-savings. All ages of producers will be in the target group as there was relatively little variation in attitudes to and use of shelterbelts with age. There were few significant variations in answers between the genders; however the promotion would take into account that at least 25% of farm operators are female. Secondary target groups would be all other producers, who can also gain from the protection that shelterbelts provide to soil, crops, livestock and farm infrastructure.

An awareness campaign will be crafted to reinforce existing knowledge on the benefits of shelterbelts, such as prevention of soil erosion and shelter for livestock when field grazing in the winter. Increasing awareness of the long-term benefits of shelterbelts that are currently not well known would be a priority, including the increases in crop and forage yields that are associated with shelterbelts, as well as the multiple benefits of the alley cropping system, especially for mixed (beef and crop) producers. This awareness will enable producers to link shelterbelts to the long-term financial benefits they can provide. Producers indicated that environmental sustainability is important to them, so information will be provided on how shelterbelts affect GHG sequestration, reduction of wind and water erosion, biodiversity and soil health.

The awareness of producers about the benefits of shelterbelts will be moved to action by addressing the barriers and providing the incentives identified by producers in this survey. That is the provision of:

- Information, expertise, equipment and practical assistance with designing, planting and maintenance of shelterbelts.
- Subsidies for planting and maintenance of trees.

The use of shelterbelts in agriculture would be increased through three main actions by producers:

- Planting more shelterbelts for agricultural use, this could be for shelter of crops or livestock, or ideally both.
- Maintenance of existing shelterbelts, to keep them healthy. This would include succession planning for shelterbelts that are getting to the end of their life-span.
- Retention of shelterbelts, avoiding the removal of shelterbelts will have an immediate benefit. When an established shelterbelt is removed, all its associated benefits are immediately lost, and it will take up to 30 years to grow a replacement.

The survey indicated that producers prefer to get information through the internet, so a web-site would be a good communications hub for information sharing about shelterbelts. Producers do use multiple sources of information, so the web-site would be supplemented by other methods, such as newspaper articles, newsletters, meetings and field-days; these could include interested partner producer and governmental organizations; media and paid advertisements.

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