REPORT # ESD/LM/00-2
PUB NO. T/560

MARKET ASSESSMENT OF THE NATIVE PLANT INDUSTRY IN WESTERN CANADA

Alberta
ENVIRONMENT

Market Assessment of the Native Plant Industry in Western Canada

Jay Woosaree
Alberta Research Council

Pub. No: T/560
ISBN: 0-7785-1384-X Printed Edition
ISBN: 0-7785-1385-8 On-line Edition
Web Site: http://www.gov.ab.ca/env/protenf/landrec/index.html

Although prepared with funding from Alberta Environment (AENV), the contents of this report/document do not necessarily reflect the views or policies of AENV, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Any questions on this document may be directed to:

Environmental Sciences Division
Alberta Environment
4th Floor, Oxbridge Place
9820 – 106th Street
Edmonton, Alberta T5K 2J6
Phone: (780) 427-5883
Fax: (780) 422-4192
Email: land.management@gov.ab.ca

Additional copies of this document may be obtained by contacting:

Information Centre
Alberta Environment
Main Floor, Great West Life Building
9920 – 108th Street
Edmonton, Alberta T5K 2M4
Phone: (780) 944-0313
Fax: (780) 427-4407
Email: env.infocent@gov.ab.ca

This publication may be cited as:

Woosaree, J., 2000. Market Assessment of the Native Plant Industry in Western Canada. Prepared for Alberta Environment and Alberta Agriculture, Food and Rural Development by Alberta Research Council, Vegreville, Alberta. Report # ESD/LM/00-2. ISBN: 0-7785-1384-X, Publication No: T/560. 106 pp.

TABLE OF CONTENTS

Page

LIST OF TABLES

PAGE

LIST OF FIGURES

PAGE

Acknowledgements

I am grateful to Alberta Environment for providing funding of this study. I would like to thank members of the Reclamation and Remediation Research Users Group for approving funding of this study.

I would also like to thank Byron James, Darren Robinson, Ken Fry, and Michelle Hiltz for reviewing this report, and to Nabi Chaudhary, Lorna Allen, Andy Hammermeister, Ross Wadell, and Diane Gertzen for providing input on developing the survey questionnaire.

I would also like to acknowledge the contribution of Denise Pewarchuk and Laurie Checkel for assisting in mailing the questionnaires and for entering all the information into the computer.

My thanks also go to Pauline Coleman for setting up a database of all the survey participants and to Lorraine Yakemchuk for formatting of this document.

At last, I am grateful for the support I received from Heather Sinton and Chris Powter throughout this project.

Executive Summary

The native plant industry in Alberta has been in existence for approximately thirty years. Over time, interest in the use of native plants has been growing steadily. Many consumer magazines and newspaper articles have coined the native plant industry as a "fledgling market" or a "burgeoning industry".

Publicly available production information and financial figures on native seed sales or even reclamation seed sales do not exist in western Canada. The objective of this project was to conduct a comprehensive market assessment of the native plant industry in order to provide the following information:

- seed sources,
- current market demand and future production of native plant materials,
- geographical areas where the plant materials are used,
- market value of the industry,
- original genetic source of native plant materials., and.
- obstacles affecting the industry.

The information presented in this report is based on results of a survey questionnaire and telephone interviews.

Two hundred and forty three survey questionnaires were mailed to a list of producers and suppliers of native plant materials as identified by the native plant councils of Alberta, British Columbia and Saskatchewan. There was a forty five percent response rate. Responses by province were: Alberta (39%), British Columbia (29%), Saskatchewan (15%), Manitoba (11%) and other provinces and the United States (6%).

Results of the survey indicate that 6% of the respondents have been producing native plant materials for more than 25 years. The industry has been growing steadily with 36% of the respondents producing native plants in the last 10 to 25 years followed by another 58% joining the industry in the last decade. About half of the respondents spent less than 20% of their time in

the native plant business and only 23% of the respondents work in the native plant industry on a full-time basis. Most commonly reported income range in 1998 was $25,000 or less and the total gross income (n=38) during that year was $7.03 million. There is no significant relationship between amount of time spent in the native plant business, years producing native plant materials and gross revenue. In reality the native plant industry is worth more than $7.03 million since many producers did not provide revenue information. Revenue distribution for Alberta, Western Canada and the Great Plains are $1.33 million, $4.85 million and $5.08 million respectively.

Over 250 species of various plants were collected from native landscapes. The amount of material collected for a particular species ranged from 10 g to 50 kg of seeds and from 10 plants to 10,000 plants. In 1998, 726 kg of seeds and 14,481 plants were collected from native landscapes.

In 1999, the amount of seed collected went down by 65% and the number of plants collected increased by over 80%. A number of respondents indicated that they collected seeds and plants from native prairies but did not indicate the amount of plant material collected. Over 50% of the collecting activity occurred in the Great Plains ecoregion.

Thirty two percent of the seed source originates from Alberta, 24% from British Columbia, 12% from Saskatchewan, 10% from Manitoba, 19% from the United States and about 3% from other places. When producers were asked which ecoregions they source their native plant materials from, the majority of them (37%) checked the Great Plains. When the same question was asked about the natural region, 63% of the respondents obtained their plant materials within the Grassland, Parkland and Foothills natural region.

Approximately 57 species of grasses, 14 wetland species, 103 forbs species and 73 species of woody plants were produced in 1998 and 1999. In 1998, 299,450 kg of grass seeds and 13,930 plants were produced. Seed production increased up to 387,425 kg while the number of plants produced decreased to 9,950 in 1999. Forb production was 22,137 plants in 1998 and increased to 42,678 in 1999. Similarly, production of wetland plants went up by 33% to 2,700 plants and production of woody plants decreased by 13% to 717,020 plants. In total, the amount of native

seed produced went up by 23% to 394,160 kg and the number of plants went down by 11% to 772, 348 plants.

Most of the plant materials sold were used in the Grassland region (26%), followed by Parklands and Foothills with 12% and 8% respectively. The producers indicated that 46% of plant material was sold in the Great Plains. British Columbia and Alberta accounted for 56% of the native plant materials used. Nineteen percent of the plant materials were used in Saskatchewan and Manitoba. About 9% of plant materials were sold to Minnesota, North Dakota, Washington and Oregon.

Producers indicate that they sold native plant materials to various industries. These included agriculture (9%), horticulture (19%), landscaping (18%), wildlife habitat mitigation (15%), wetland restoration (9%), medicinal uses (1%), and reclamation (29%). The reclamation sector was further divided into oil & gas (11%), sand & gravel (5%), railways & roadways (7%), and mines (6%).

Of the users surveyed (n=22), 36% indicated they had been using native species in their operation for 10 to 25 years. Among the reasons for using native plants, 21% of the respondents indicated that native plants performed better than introduced species, 24% indicated changing regulations and another 24% said to increase biodiversity. Other reasons included, aesthetic value, conservation of the natural ecosystem or less invasive when compared to forage species. Thirty seven percent of respondents indicated they do not use native species for a number of reasons, including cost of native seed, lack of available of species, lack of quality, lack of information and have not been requested by government regulatory agencies.

Most of the plant material purchased was used in the Great Plains (55%). The majority of respondents showed no preference for type of plant material, whether a cultivar, ecovar or wild harvested seeds.

Sixty nine percent of the respondents were aware of the original genetic source of materials purchased. Thirty one percent did not have any information of the original genetic source of their

plant material. Three quarters of the respondents received information such as seed germination, purity, and source of seed from the producer.

Among the users of native plants, the horticulture industry represents 20%, landscaping 17%, wildlife habitat mitigation 9%, wetland restoration 9%, medicinal 6%, landfills 3%, agriculture 6%, prairie restoration 6% and reclamation 24%. The reclamation is further divided into oil & gas (14%), sand & gravel (2%), railways & roadways (2%), and mines (6%).

Introduction

The native plant industry in Alberta has been in existence for approximately thirty years. Early interest was mainly directed to using native plants in reclamation. Over the last decade there has been a change in public attitude towards the use of native species. This interest is mainly due to increased public awareness about the need to protect the natural environment and also the change in land management policies by public agencies. In the past 10 years, Public Lands Division of Alberta Agriculture, Food and Rural Development (AAFRD), the Land and Forest Service of Alberta Environment (AENV) and the Special Areas Administration of Alberta (Municipal Affairs) have recommended the use of native plants for the rehabilitation of disturbances on public lands in Alberta.

Lately, many consumer magazines and newspaper articles have described the native plant industry as a "fledgling market", "cottage industry" or "burgeoning industry". The surge in interest has resulted in new entrepreneurs joining the industry. This has also led to increased demand for information on growing and marketing of native plants.

In the past few years, a number of pioneering efforts stemming from AAFRD, AENV and Alberta Research Council (ARC) have taken place. These include:

- An international workshop on native plant production (Native Plant Summit IV);
- Annual workshops on growing and marketing of native plants, held at Alberta Research Council, Vegreville;
- The publication on *Growing Native Plants of Western Canada* and the *Guide to Using Native Plants on Disturbed Lands*, both of which are published and available through AAFRD;
- Release of videos entitled *Restoring our Prairie Heritage* and *Reclaiming Native Prairie* available through AAFRD.

Until now there have been no government agricultural statistics reporting on the annual output or value of the native seed industry in western Canada. The exception being Saskatchewan, where a market assessment was done in 1997.

This study differs from the Saskatchewan survey in that it looks at the geographical distribution of native plant material, genetic origin of the native plant material and identifies the sectors and

geographical areas where native plant material is used. This survey provides comprehensive information about production and future demand for native plants and the quantity of plant material currently in production and use.

Objective

The objective of this project was to complete a market assessment of the native plant industry in the western Canadian provinces by collecting the following information:

- seed sources,
- current market demand and future production of native plant materials,
- the geographical areas where the plant material is used,
- the market value of the industry,
- species in demand,
- the original genetic source of native plant material, and
- obstacles affecting the industry.

Methodology

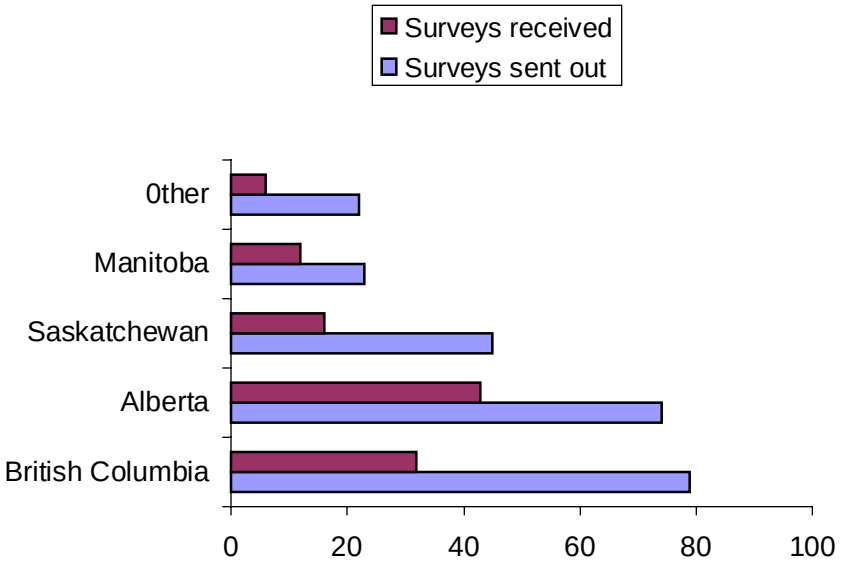
The information provided in this report is based on the data collected in the survey and telephone interviews. The survey questionnaire was developed in consultation with the native plant councils of Alberta (ANPC), Saskatchewan (SNPC) and British Columbia (BCNPC). Both BCNPC and SNPC were interested in conducting a similar survey and this approach will eliminate duplication. It was hoped that the producers and suppliers of native plant material would identify the various sectors using native plant material. The survey was mailed to seed growers and suppliers of native plant material identified on lists provided by ANPC, BCNPC and SNPC and selected producers identified by the Canadian Seed Trades Association. A user survey was also developed and randomly sent to some users of native plant material in Alberta in order to collect additional information from a user's point of view. A total of 243 questionnaires were mailed out. Telephone interviews were conducted and e-mail enquiries were sent out to addresses where questionnaires were not returned.

Definitions

Cultivated native	Species originally collected from the wild and grown for production.
Cultivar	A named variety, which has been produced by artificial selection techniques for better performance.
Ecovar	An ecological variety (coined by Ducks Unlimited) of a native plant species artificially selected to produce a population containing maximum genetic variability.
Forb	Broad-leaved flowering plant with net-like veins.
Genetic origin	The place where the plant material was first collected.
Legume	Any plant in the Leguminosae family. The fruit consists of a dry pod (e.g., peas).
Native landscape	A view on land that contains indigenous plants and plant communities that have not been substantially altered by man.
Native plant	Any species of plant that existed in western Canada, prior to European settlement.
Native plant material	Any plant parts used for propagation such as seed, cuttings, rootstocks and bulbs.
Producer	A person or business that grows native plant material to be used or consumed by others
Shrub	A woody plant, mostly less than 5 m tall and usually with several stems.
Supplier	A person or business that makes native plant material available to the users.
Wild harvest	Plant material taken directly from the natural habitat.

Results (n=109)

Figure 1. Distribution of survey questionnaires and number of responses received



Two hundred and forty three surveys were mailed out. One hundred and nine responses were received, representing a 45% response.

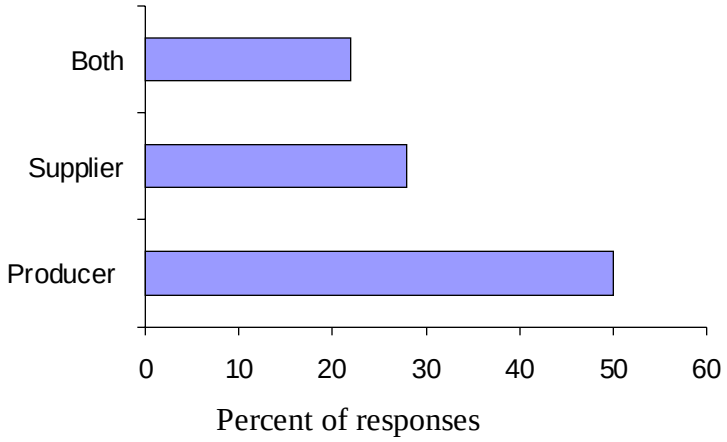
"Other" includes responses from the United States and other provinces. The producer survey was sent to the United States and other provinces because some plant materials are purchased from outside the western provinces.

A. Native Plant Producers Survey

(n = 55 total)

1. Please indicate whether you are a producer, supplier or both of native plant materials.

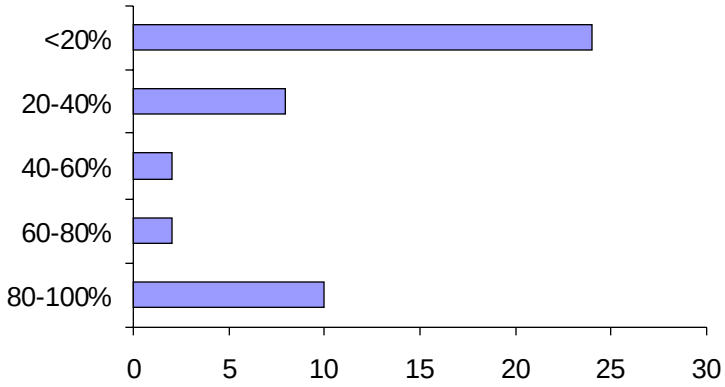
Figure 2. Category of responses



Fifty percent of the respondents were producers. Twenty eight percent of the respondents are suppliers and 22% of the respondents were both suppliers and producers of native plant material.

2. During the last year, how much of your work time is devoted to the native plant business?

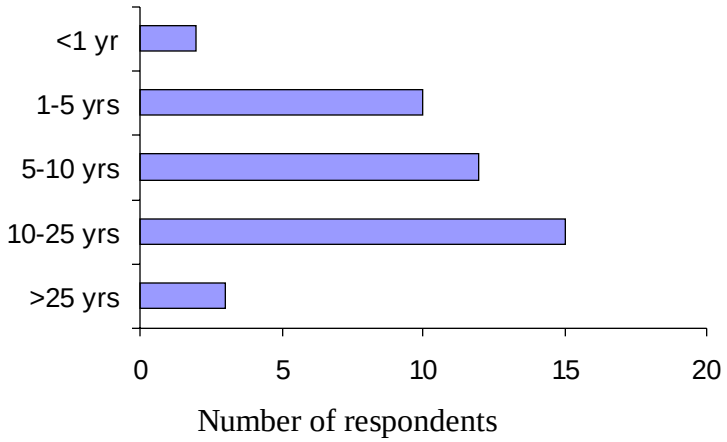
Figure 3. Time allocated to native plant business



Twentyfour respondents devote less than 20% of their time to running their native plant business. Eight respondents spent 20% to 40% of the time running their business. Four respondents spent 40% to 60% and another 4 respondents spent 60% to 80% of the time in their native plant business. Ten respondents work full time in their native plant business.

3. How many years have you been in the native plant business?

Figure 4. Years in the native plant business



Fifteen respondents have been in the business for 10 years or more. Twelve respondents have been in the business for 5 to 10 years and 10 respondents have been in business for 1 to 5 years. Two respondents have recently started growing native plants and 3 respondents have been in business for more than 25 years.

4. In 1998, how many acres / # of plants did you have in production? **Greenhouse operators, if plants are propagated, please use number of plants.**

Table 1. Production of native plant species

	Grasses	Forbs	Legumes	Shrubs	Wetland species
Total number of acres	2,300	19	28	160	61
Number of respondents	10	10	8	11	5
Total number of plants	73,050	160,900	52,400	1,571,900	61,150
Number of respondents	8	9	5	11	4

Note. The legumes are not part of the forb component.

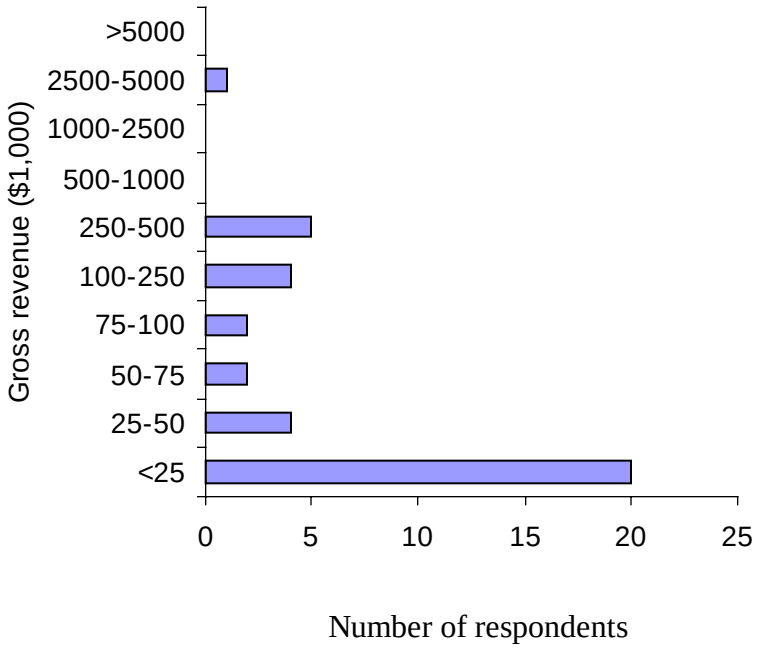
5. In 1998, what is your total native clean seed production (kg) from cultivation and wild harvesting?

Table 2. Native clean seed production from cultivated fields and wild harvesting.

	Cultivation (kg)	Wild harvest (kg)
Total seeds	181,579 (n=17)	726 (n=13)
Average amount of seed per producer	10,681	55.8

6. In 1998, what was your total gross revenue ($) from sales of native plant material?

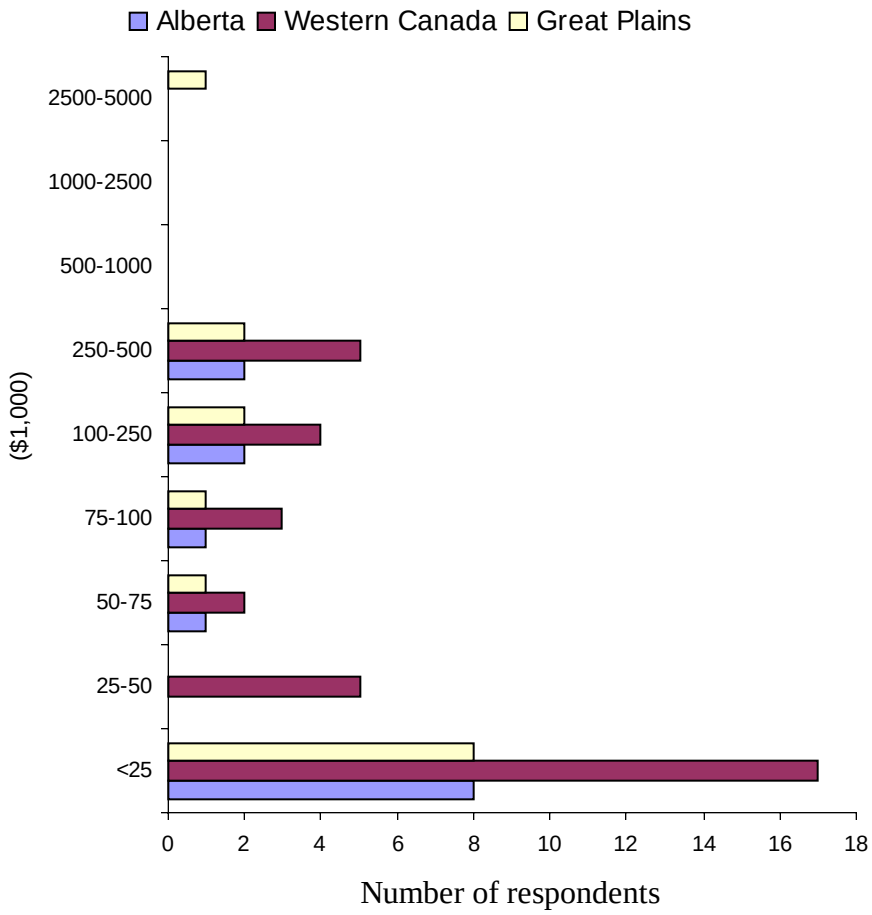
Figure 5. Total gross revenue



More than half (Mode) of the respondents (n=38) had gross income of less than $25,000 in 1998. Fourteen respondents reported income of more than the $100,000 range with one producer reported income of more than $2.5 annually.

The total worth of the industry based on the number of responses received was $7.03 million. The average gross income per producer was $184,868 in 1998 while median income reported was $25,000 or less. The species most commonly sold included shrubs and trees for landscaping and horticulture and grasses for reclamation.

Figure 6. Revenue distribution for Alberta, Western Canada and the Great Plains



Most commonly reported income range is less than $25,000.

Table 3. Revenue distribution for Alberta, Western Canada and the Great Plains

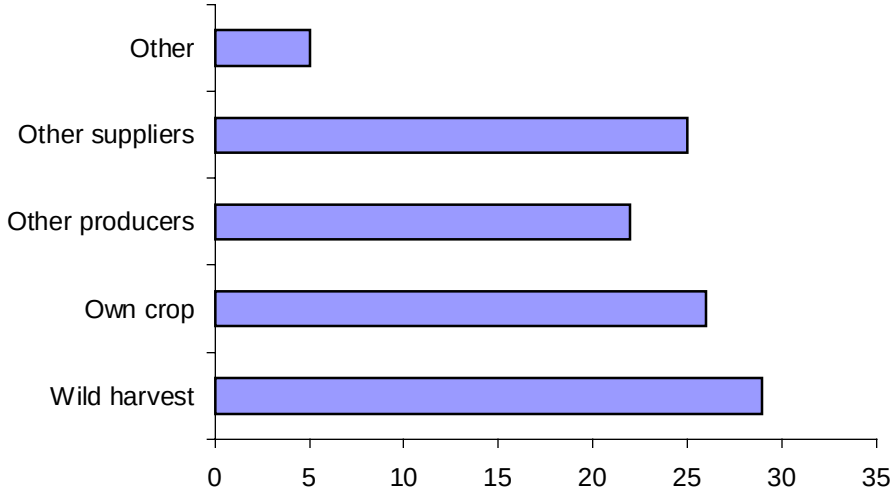
	Alberta	Western Canada	Great Plains
Total Income ($)	1,330,000 (n=14)	4,850,000 (n=36)	5,080,000 (n=15)
Average Income ($)	95,000	134,722	338,667
Median Income ($)	<25,000	25,000-50,000	25,000-50,000

Note. Western Canada and the Great Plains values include Alberta.

7. From which of the following sources do you receive your native plant materials? Please check more than one if applicable.

☐ I collect the seed from native landscapes (wild harvest).
☐ I collect the seed from my own crop
☐ I purchase the seed from other producer.
☐ I purchase the seed from other supplier.
☐ Other (please specify) _____

Figure 7. Sources of native plant material



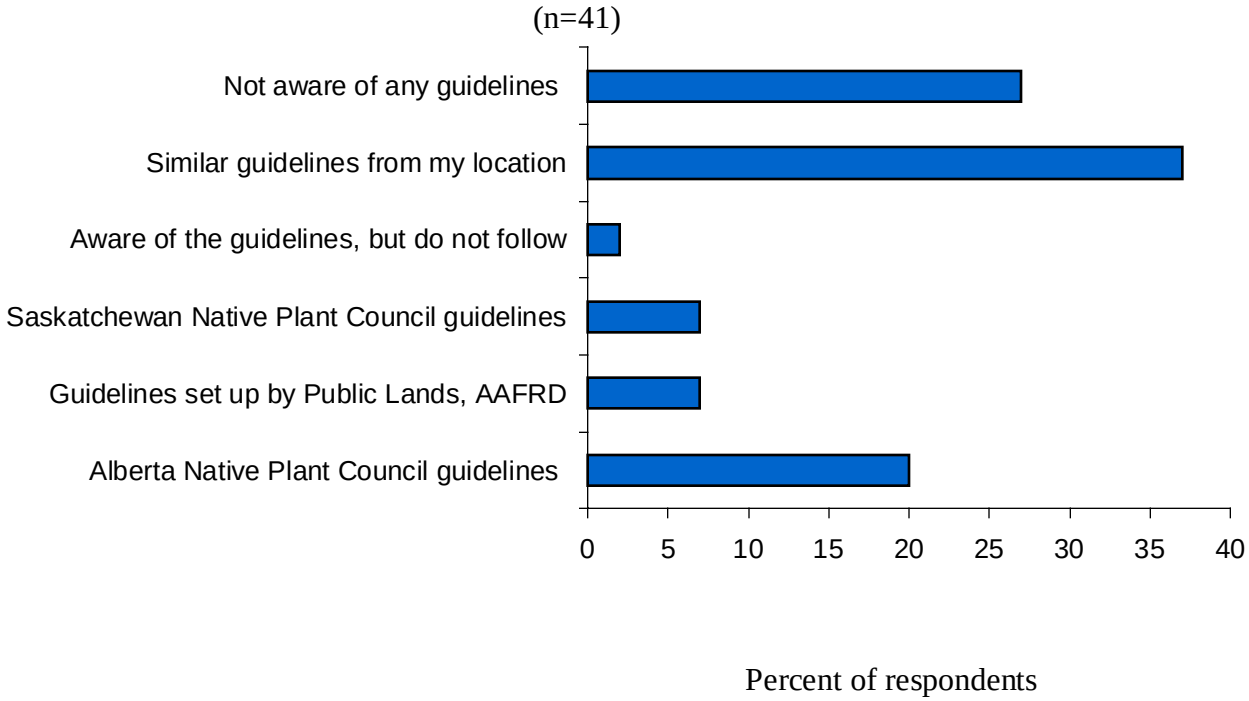
Seventy eight percent of the respondents use multiple sources for their native plant material.

Other sources include:
1. Bulbs rescued from disturbed sites.
2. Ducks Unlimited.
3. Exchange with other collectors, botanists and botanical gardens.
4. Grower – collected cuttings.
5. Plugs from other suppliers.
6. Vegetative propagation from own stock.

8. Do you follow any guidelines, for example as set up by the Alberta Native Plant Council when harvesting from native landscapes.

(a) I follow the Alberta Native Plant Council guidelines.
(b) I follow Saskatchewan Native Plant council guidelines *Recommendations for the collection & use of native plants.*
(c) I follow the guidelines as set up by Public Lands, Alberta Agriculture, Food and Rural Development.
(d) I am aware of the guidelines, but do not follow them.
(e) I follow similar guidelines from my location.
(f) I was not aware of any guidelines.

Figure 8. Guidelines followed



The majority of the respondents followed some kind of guidelines. 37% followed guidelines developed by their local area. Others followed the Alberta Native Plant Council guidelines (20%) and an equal number of respondents (7%) followed the guidelines as defined by the Saskatchewan Native Plant Council and Public Lands Division of Alberta Agriculture, Food and Rural Development. A very small number of respondents were aware of guidelines about collecting plant materials from native landscapes but chose not to follow them. It is interesting to note that a high percentage of the respondents (27%) are not aware of any guidelines regarding wild harvesting.

Other guidelines are:

1. British Columbia Nursery and Landscape Association.
2. Following their company guidelines.
3. Only harvest wild seed (not plants), collect less than 59% of seed from wild sources, never harvest at the same site in consecutive years and careful to limit impact on native prairie.
4. Ministry of Forests, Government of British Columbia.
5. Native Plant Society of British Columbia.
6. Society for Ecological Restoration.
7. Washington State guidelines.

9. Please fill out the following table showing the species harvested from the wild, the amount harvested and the ecoregion region it was harvested. Please refer to map for ecoregion.

Table 4. Amount of plant materials harvested from native landscapes in each ecoregion during 1998 and 1999.

	1998		1999		Ecoregions								
	Seed (kg)	Number of plants	Seed (kg)	Number of plants	G.P	Tun	Taig	A.cord	NADst	NWFMt.	N.for	Other	Unk.
Grasses	1.98 (n=8)	0	3.8 (n=10)	4000 (n=3)	21	0	0	0	0	9	2	0	0
Forbs	18.53 (n=40)	2970 (n=4)	112 (n=31)	5650 (n=3)	71	0	0	0	0	9	11	9	0
Woody Plants	92 (n=33)	10000 (n=1)	86 (n=36)	10000 (n=1)	49	0	0	0	0	37	0	31	0
Wetland Plants	5.9 (n= 4)	1511 (n=12)	59 (n=1)	6700 (n=5)	38	0	0	0	0	8	17	2	0
Total	118.41	14,481	261	26,350	179	0	0	0	0	63	30	42	0

Note. N equals the number of responses received. The number in the ecoregion columns shows the number of responses received for each category. Each respondent collects several species from each ecoregion. A number of respondents collected seeds and plants but did not record the amount and the ecoregion from which it was harvested. Details are in Appendix 1.

G.P. = Great Plains
Tun = Tundra
Taig = Taiga
A.cord = Arctic Cordillera
NADst = North American Deserts
NWFMt. = Northwestern Forest Mountains
N.for = Northern Forests

Over 250 native species of grasses, forbs, woody plants, sedges and wetland plants were collected from native landscapes during 1998 and 1999. In 1998, a total of 118 kg of seed and 14,481 plants were harvested from native landscapes. In 1999, that number increased to 261 kg of seeds and 26,350 plants. This represents over 100% increase in both seeds and number of plants collected from wild harvesting. **The value reported for 1998 is far less than previously indicated (Question 5, seed harvested from native landscape = 726 kg) as seed collectors indicated the species harvested and did not indicate the quantity of seed harvested.** The majority of plants were collected from the Great Plains (179 responses), followed by North Western Forest Mountain and Northern Forest. A few entries were received from other locations.

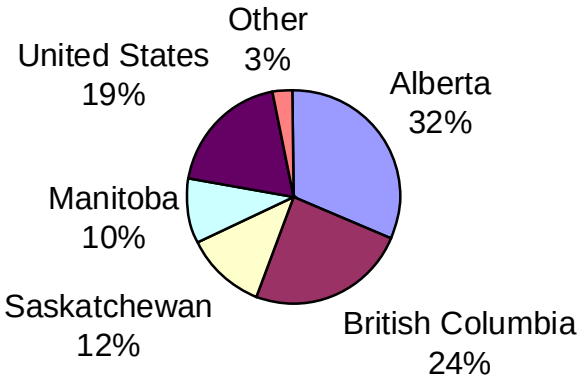
Table 5. Species, most commonly* collected from native landscapes in 1998 and 1999.

	1998	1999
Grasses	*Stipa virdula* *Stipa spartea*	*Poa palustris* *Panicum capillare* *Calamagrostis purpurescens*
Wetland plants	*Myriophyllum exalbescens* *Lemna minor* *Hippuris vulgaris* *Carex aquatilis* *Equisetum hyemale*	*Myriophyllum exalbescens* *Lemna minor* *Sagittaria cuneata* *Hippuris vulgaris* *Carex aquatilis*
Forbs	*Aster ericoides* *Asclepias incarnata* *Antennaria rosea*	*Aster ericoides* *Asclepias incarnata* *Antennaria rosea*
Woody plants	*Rubus parviflorus* *Amelanchier alnifolia* *Acer spp.*	*Rubus parviflorus* *Amelanchier alnifolia* *Acer spp.*

* Based on the number of plants collected. All of the above species (except grasses) were plants collected from native landscapes.

10. If native plant material is purchased from other producers/suppliers, from which province (state) do they originate?

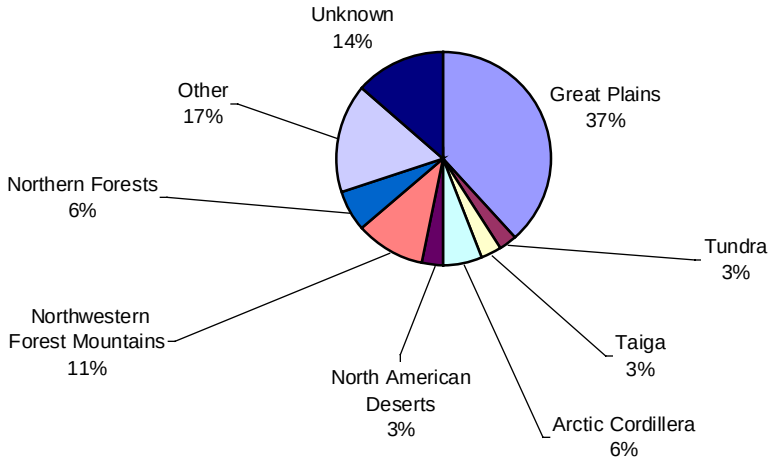
Figure 9. Source of native plant materials (n=58)



Thirty two percent of respondents received their plant materials from Alberta, followed by British Columbia with 24%, Saskatchewan 12%, Manitoba 10% and USA 19%. One producer stated that he obtained his native plant materials from Germany.

11. If native plant material is purchased from other producers/suppliers, from which ecoregion do they originate?

Figure 10. Source of native plant materials by ecoregion (n=36)



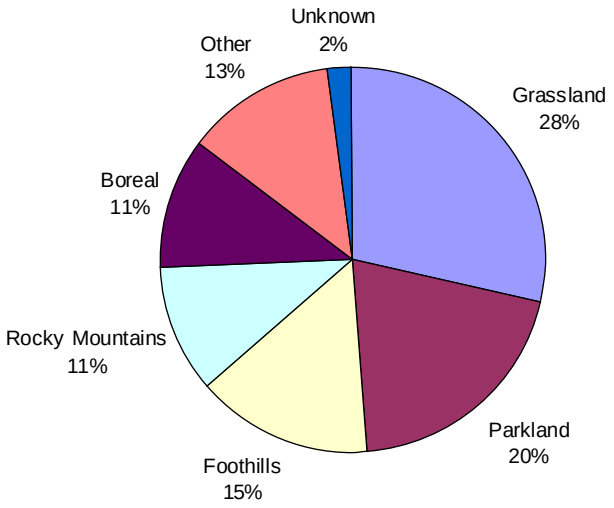
The majority of respondents (37%) obtained their native plant materials from the Great Plains. A small percentage of the respondents obtained plant materials from other ecoregions. It is interesting to note that 14% of the respondents do not know from which ecoregion their native plant materials originated.

Ecoregions included in the "other" category are West Coast Marine Forest and temperate beaches.

Note. Different respondents answered questions 10 and 11.

12. If native plant material is purchased from other producers/suppliers, from which Natural Region do they originate?

Figure 11. Source of native plant materials by Natural Region (n=55)



A small percentage of the respondents did not know the origin of their plant materials.

Thirteen percent of the respondents got their plant material from the West Coast Marine Forest ecoregion (Other).

13. For each statement below, please rate on a scale of 1 to 5 (1 being strongly disagree, 5 strongly agree and 0 being no opinion.) your level of agreement of each statement. (Circle a number.)

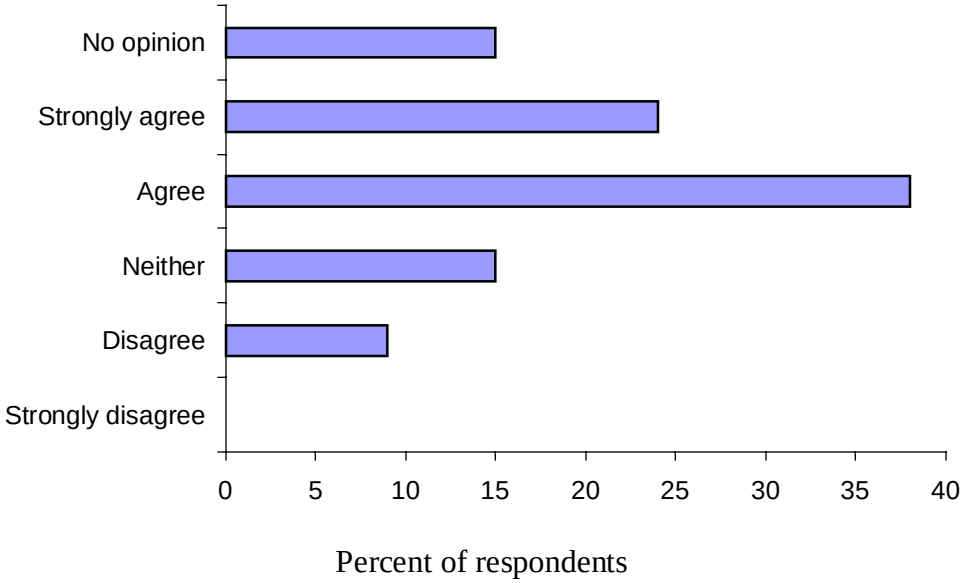
Statement:

a: ecovar is an acceptable source of native plant material. 1 2 3 4 5 0

b: cultivar is an acceptable source of native plant material. 1 2 3 4 5 0

c: wild harvesting is an acceptable source of native plant material. 1 2 3 4 5 0

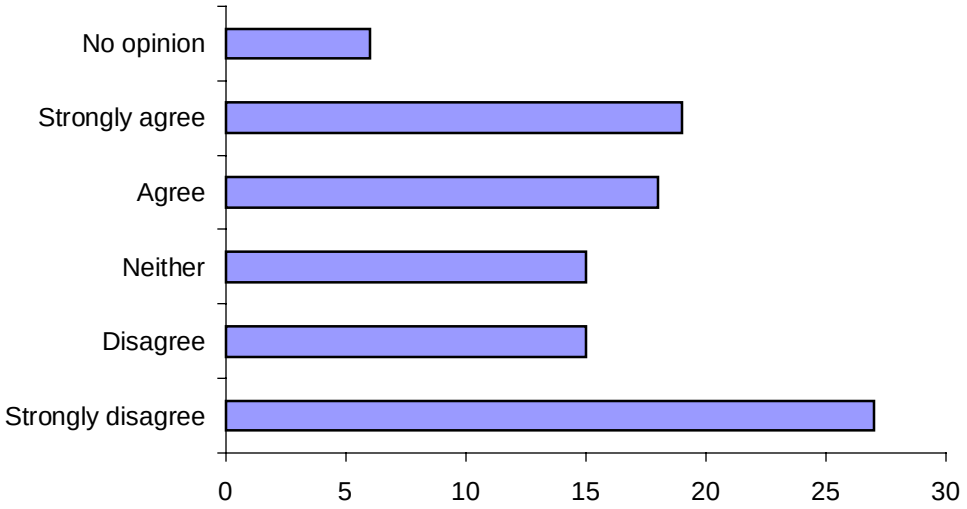
Figure 12. Ecovar is an acceptable source of native plant material (n = 34)



Sixty two percent of the respondents felt that an ecovar is an acceptable source of native plant material.

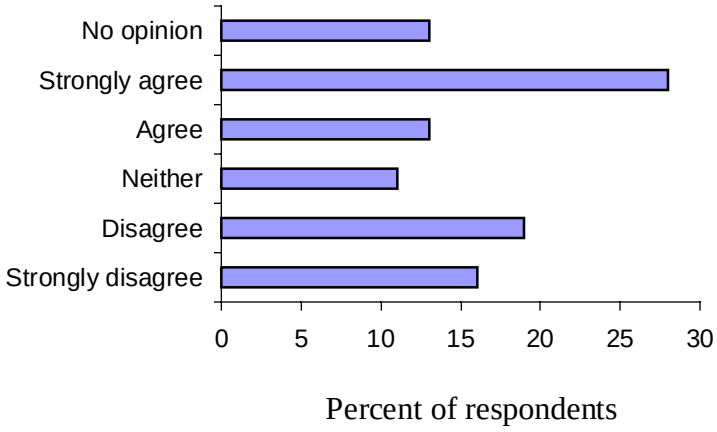
Eight percent do not feel it is an acceptable source.

Figure 13. Cultivar is an acceptable source of native plant material (n = 33)



Thirty seven percent of the respondents felt that a cultivar is an acceptable source of native plant material while 42% of the respondents disagree with this statement. Fifteen percent of the respondents neither agree nor disagree and 6% of the respondents have no opinion.

Figure 14. Wild harvesting is an acceptable source of native plant material (n = 32)



Forty one percent of the respondents agree that wild harvesting is an acceptable source of native plant material while 35% disagree with this statement.

14. Please identify your 1998 and 1999 production by species and variety, including, amount sold and place of seed origin.

Table 6. Amount of native species sold during 1998 and 1999 and the ecoregions the plant materials originated from.

	1998		1999		Ecoregions								
	Seed (kg)	Number of plants	Seed (kg)	Number of plants	G.P	Tun	Taig	A.cord	NADst	NWFMt.	N.for	Othe	Unk.
Grasses	299,450 (n=32)	13,930 (n=13)	387,425 (n=37)	9,950 (n=13)	21	0	0	0	0	9	2	0	0
Forbs	214 n=(23)	22,137 (n=60)	34 (n=18)	42,678 (n=58)	44	0	0	0	0	0	0	0	0
Woody Plants	0.67 (n=3)	831,160 (n=57)	6,701 (n=4)	717,020 (n=66)	34	0	0	0	0	1	0	25	0
Wetland Plants	0.1 (n=1)	1,800 (n=10)	0	2,700 (n=12)	12	0	0	0	0	6	2	2	0
Total	299,665	869,027	394,160	772,348	111	0	0	0	0	16	4	27	0

Note. N equals the number of responses received. The number in the ecoregion columns shows the number of responses. Respondents sold their product in more than one ecoregion. Total responses recorded in the various categories of species are greater than the number of responses across the ecoregions because a number of respondents selling their product had not recorded the ecoregion the plant materials originated from. Details of species are in Appendix 2.

G.P. = Great Plains
Tun = Tundra
Taig = Taiga
A.cord = Arctic Cordillera
NADst = North American Deserts
NWFMt. = Northwestern Forest Mountains
N.for = Northern Forests

Approximately 250 native species of grasses, forbs, woody plants, sedges and wetland plants were sold during 1998 and 1999. In 1999, native grass seed sales went up by 32% while plant sales decreased by 11%.

Compared to 1998, seed sales of forb plants decreased by six times and plant sales were up 94% in 1999.

Number of woody plants sold in 1999 decreased by 14% while seed sales increased significantly.

Sale of wetland plants increased by 50% in 1999.

The majority of plants were sold in the Great Plains (111 responses, followed by North Western Forest Mountain and Northern Forest).

Table 7. Species most commonly sold in 1998 and 1999.

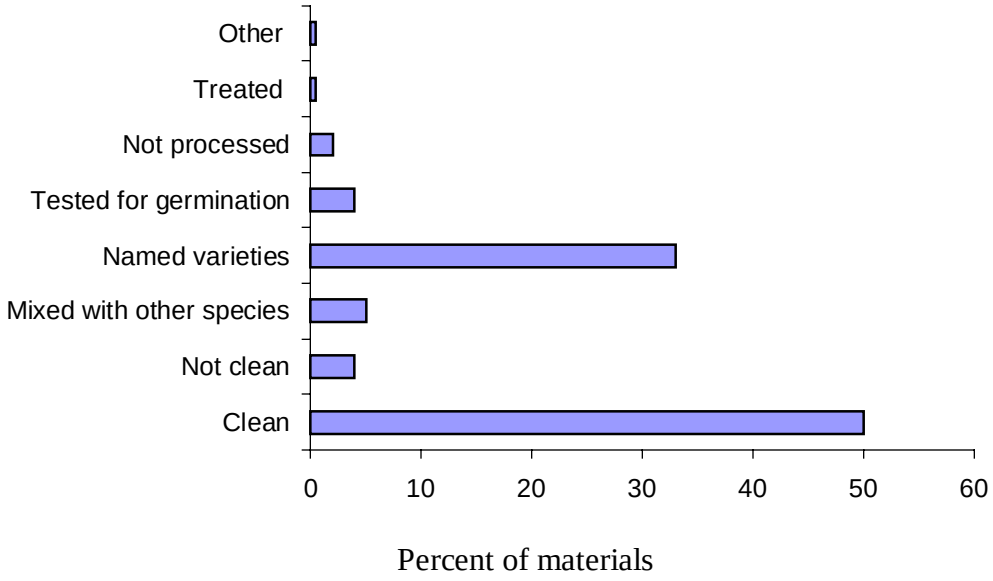
Categories	1998	1999
Grasses (greater than 10,000 kg of seed)	*Agropyron trachycaulum* *Agropyron dasystachyum* *Agropyron smithii* *Agropyron riparium* *Bromus carinatus* *Festuca hallii* *Poa alpina* *Panicum capillare*	*Agropyron trachycaulum* *Agropyron dasystachyum* *Agropyron smithii* *Agropyron riparium* *Bromus carinatus* *Festuca hallii* *Poa alpina* *Panicum capillare*
Wetland plants (greater than 100 plants)	*Caltha palustris* *Juncus ensifolius* *Alisma plantago-aquatica* *Eleocharis palustris* *Petasites sagittatus* *Myriophyllum exalbescens* *Lemna minor* *Hippuris vulgaris* *Equisetum hyemale*	*Carex aquatilis* *Equisetum hyemale* *Caltha palustris* *Juncus ensifolius* *Alisma plantago-aquatica* *Eleocharis palustris* *Petasites sagittatus*
Forbs (greater than 1,000 plants)	*Caltha palustris* *Rudbeckia hirta* *Anemone patens* *Liatris ligulistylis* *Monarda fistulosa*	*Caltha palustris* *Rudbeckia hirta* *Anemone patens* *Liatris ligulistylis* *Monarda fistulosa* *Geum triflorum* *Petalostemon purpureum* *Heliopsis helianthoidesscabra* *Antennaria rosea* *Iris versicolor*
Woody plants (greater than 10,000 plants)	*Picea glauca* *Pinus contorta* *Populus tremuloides* *Populus balsamifera* *Rosa acicularis* *Alnus crispa* *Salix exiqua* *Amelanchier alnifolia* *Arctosphylos uva-ursi* *Cornus stolonifera* *Rosa woodsii*	*Picea glauca* *Pinus contorta* *Rosa acicularis* *Alnus crispa* *Salix exiqua* *Amelanchier alnifolia* *Arctosphylos uva-ursi* *Cornus stolonifera* *Rosa woodsii* *Pinus banksiana*

Marketing/processing information

15. How is your native plant material sold? **Select all options, which are appropriate. (Sum to 100%).**

- ☐ Cleaned
- ☐ Not cleaned
- ☐ Mixed with other species
- ☐ Named varieties
- ☐ Tested for germination and purity
- ☐ I do not process the seed prior to selling.
- ☐ Treated
- ☐ Other _____

Figure 15. How is seed sold?

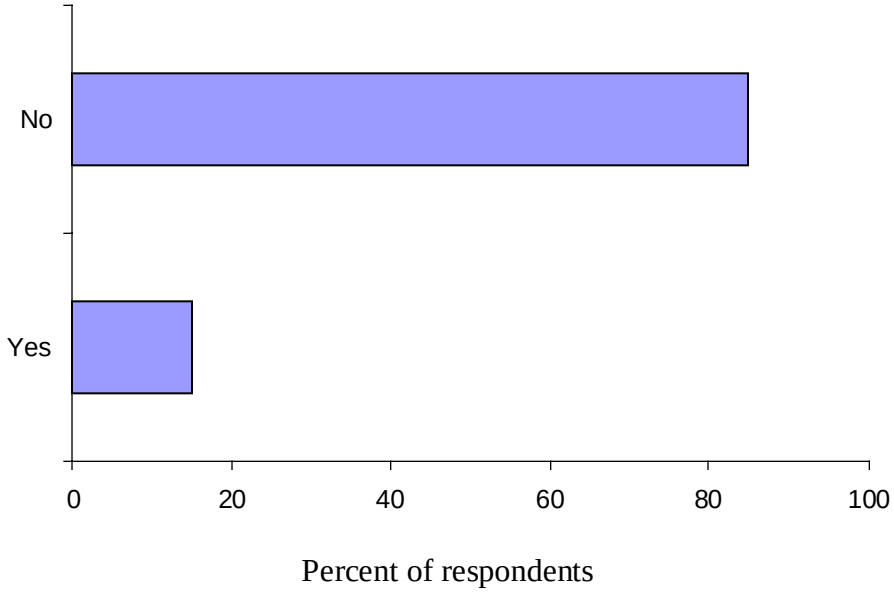


Only 18 respondents answered this question. Fifty percent of seeds were sold as clean seed and 30% of the seeds were named varieties.

16. Do you sell all the native plant material in a typical year?

☐ Yes.
☐ No. On average, what is the percentage of crop that is carried over? _____ %.

Figure 16. Plant materials sold in a typical year (n=12)



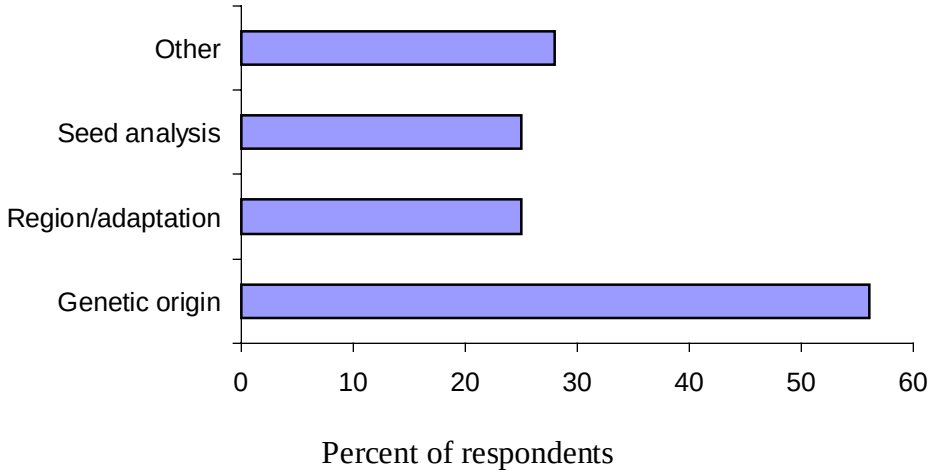
Only 15% of the respondents sold all the plant materials within a year. Eighty five percent have crops carried over to the next year.

On average, 38% of the plant material is carried over to the next year.

17. What information do you provide to the users of native plant species?

☐ Genetic source of seed. (Place of origin).
☐ Region of geographic adaptation where seed is tested or grown.
☐ Seed analysis certificate.
☐ Other_____

Figure 17. Information provided to users of native plants (n=39)



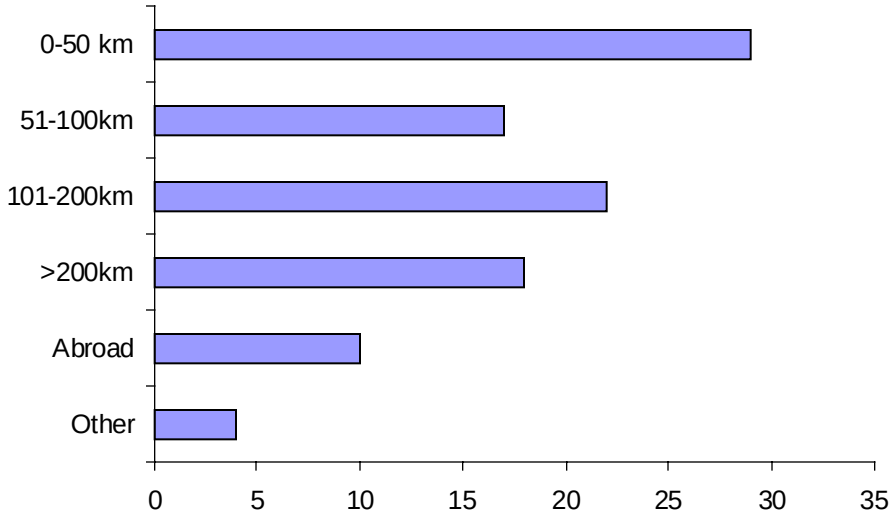
Fifty six percent of the respondents provided information on the genetic origin of the plant material. Twenty five percent provided information on the region where the plant material was obtained. Another twenty five percent provided information on seed analysis and 28% of the respondents received other type of information. Thirty four percent of the producers provided more than one piece of information.

Other information provided by the producers and suppliers included;
1. Catalogue,
2. Cultural requirements, compatible plants,
3. Date of harvest, scientific names,
4. Germination instruction, suggestions for site, description of soil and plant community,
5. Literature/additional information and advice concerning the species, planting, harvesting,
6. Pure live seeds, utilization.

18. What percentage of the product is sold within the following distances from your place of business? Please fill in all that apply.

_____% 0-50 km
_____% 51-100 km
_____% 101-200 km
_____% Over 200km
_____% Abroad (overseas)
_____% Other (please specify)

Figure 18. Distances plant materials sold from main point of business (n=33)



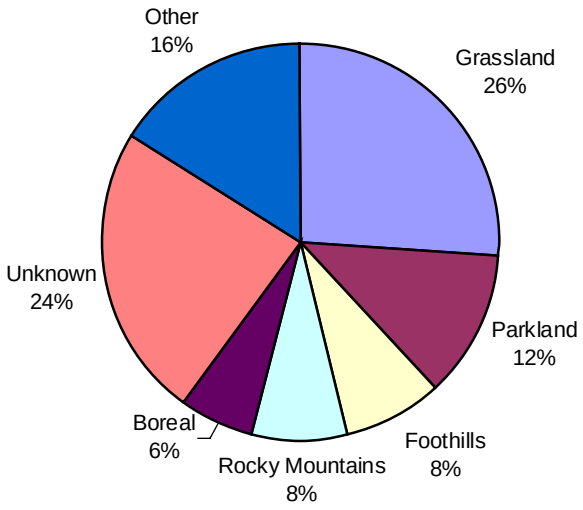
Most native plant materials are sold closer to the main point of business. However, both producers and suppliers will sell plant material over a wide area. Seventy five percent of the respondents sold their product at multiple distances from their main point of business.

"Other" localities include:
- United States, which includes Northern Minnesota, North Dakota, and Washington
- Alberta.

19. Please identify the natural region where your native plant material sold last year, was used **(check as many as apply). Sum up to 100%.**

☐ Grassland	_____% materials used
☐ Parkland	_____% materials used
☐ Foothills	_____% materials used
☐ Rocky Mountains	_____% materials used
☐ Boreal	_____% materials used
☐ Don't know	_____% materials used

Figure 19. Average percent of materials used in the natural region (n=32)



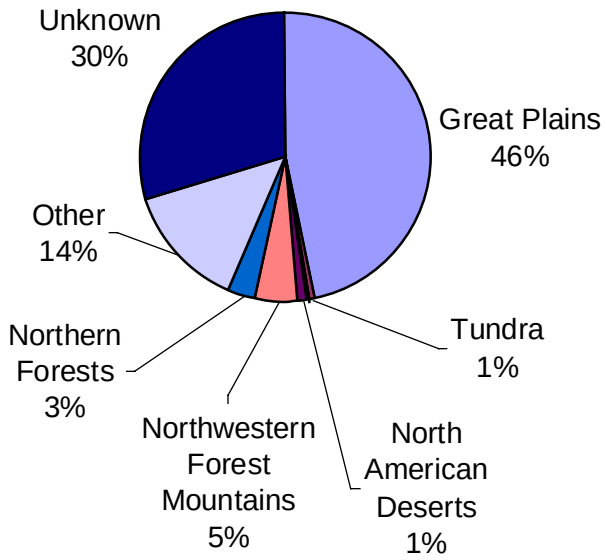
"Other" areas are Vancouver and Chilliwack, British Columbia.

Almost one quarter of the respondents do not know where the plant materials are being used.

20. Please identify the **ecoregion** where your native plant material, sold last year, was used **(check as many as apply). Sum up to 100%.**

☐ Great Plains	_____% materials used
☐ Tundra	_____% materials used
☐ Taiga	_____% materials used
☐ Arctic Cordillera	_____% materials used
☐ North American Desert	_____% materials used
☐ North Western Forest Mountain	_____% materials used
☐ Northern Forest	_____% materials used
☐ Other	_____% materials used
☐ Don't know	_____% materials used

Figure 20. Ecoregions where native plant materials were used (n=26)



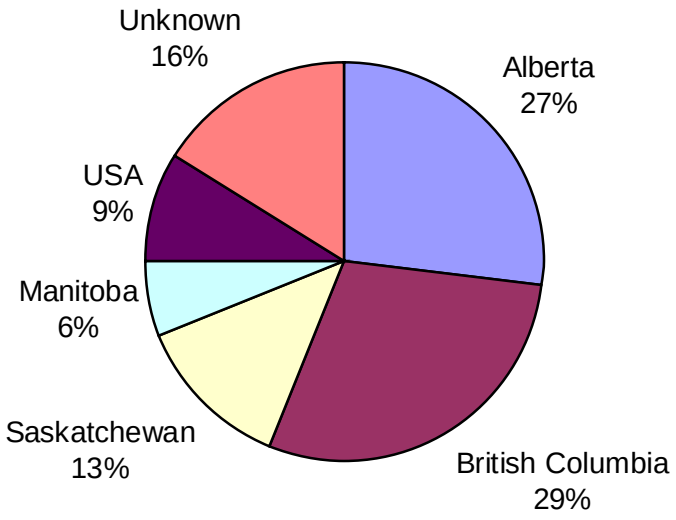
"Other" regions include Marine West Coast Forest and urban gardens.

Almost one third of the respondents do not know where the plant materials are being used.

21. Please identify the province where your native plant material sold last year was used **(check as many as apply). Sum up to 100%.**

☐ Alberta	_____% materials used
☐ British Columbia	_____% materials used
☐ Saskatchewan	_____% materials used
☐ Manitoba	_____% materials used
☐ United States (State_____)	_____% materials used
☐ Don't know	_____% materials used

Figure 21. Average percent of native plant materials used by the various provinces (n=38)



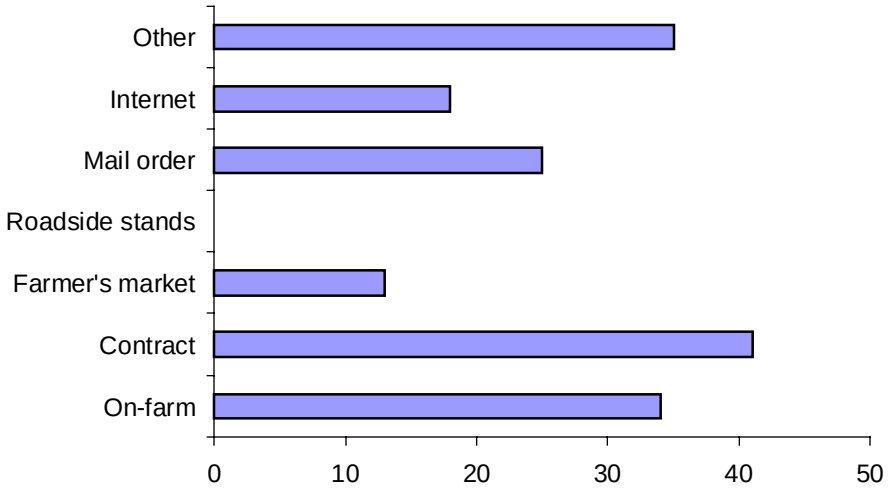
States in USA are: Minnesota, North Dakota, Washington, Oregon, and several other states.

Other provinces mentioned are Ontario, Quebec but no amounts were reported.

22. How do you market your products? **Check all that apply**.

☐ On-farm sales
☐ Contract
☐ Farmer's market
☐ Roadside stands
☐ Mail order
☐ Internet
☐ Other _____

Figure 22. Marketing means of native plants



Forty one percent of producers use contracts to market their products. That applies mostly to shrubs and tree seedlings for landscaping and reforestation. Thirty four percent of the plant materials are sold at the farm gate. Fifty seven percent of the respondents used multiple sales methods to market their product.

"Other" is listed below;

1. Brochures, pamphlets, faxes,
2. Consultants, Saskatchewan Native Plant Society,
3. Consignment,
4. Landscapers, resource companies, seed customers, garden centers,
5. Large seed companies,
6. Networking,
7. Retail nurseries,
8. Specialist meetings & events,
9. Walk-in,
10. Wholesale, and
11. Word of mouth.

23. What percentage of your product is sold to the following sectors **Sum to 100%.**

(a)	☐ Reclamation industry	_____%
	- ☐ oil & gas	_____%
	- ☐ sand & gravel	_____%
	- ☐ railways & roadways	_____%
	- ☐ mines	_____%
(b)	☐ Agriculture	_____%
(c)	☐ Horticulture	_____%
(d)	☐ Landscaping	_____%
(e)	☐ Wildlife habitat restoration	_____%
(f)	☐ Wetland restoration	_____%
(g)	☐ Medicinal uses	_____%
(h)	☐ Reforestation	_____%

Figure 23. Average percent of native plant materials used by various industries (n=33).

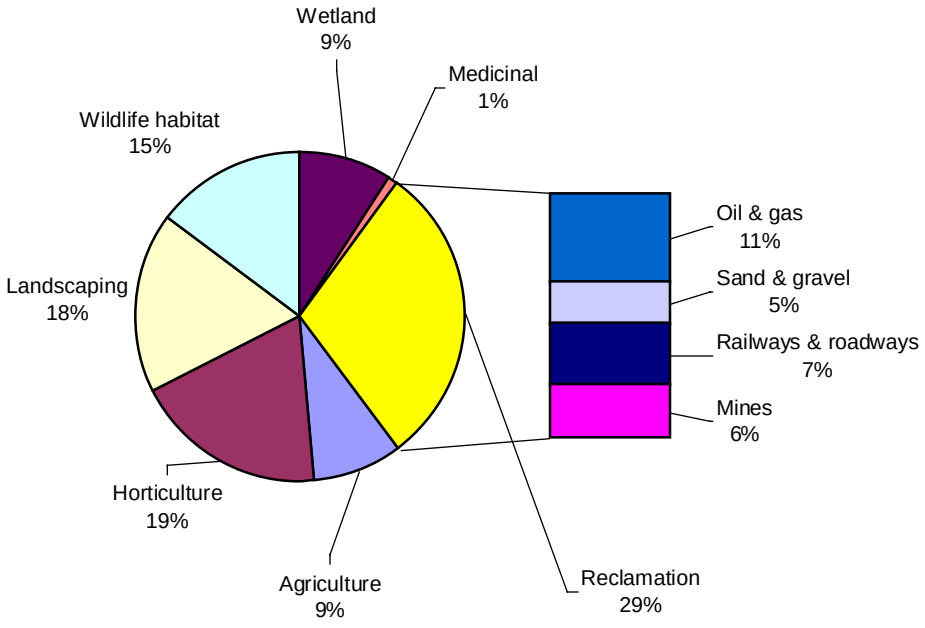


Table 8. Long- term forecast of native plant production.

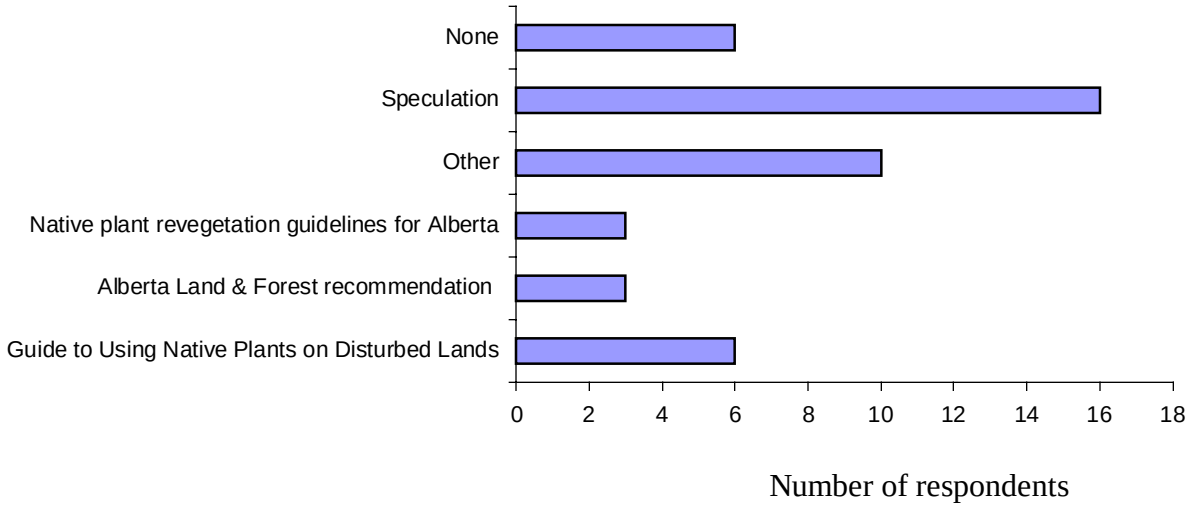
	2000		2002		2005	
Species	**Seed (kg)**	**# of plants**	**Seed (kg)**	**# of plants**	**Seed (kg)**	**# of plants**
Grasses	130,001 (n=17)	2,100 (n=3)	192,200 (n=19)	0	184,700 (n=18)	0
Forbs	10 (n=1)	7,000 (n=4)	1,020 (n=2)	12,000 (n=5)	520 (n=2)	4,000 (n=3)
Woody plants	0	12,000 (n=7)	0	10,000 (n=1)	0	10,000 (n=1)
Wetland plants	0	15,000 (n=29)	0	4,300 (n=12)	0	5,750 (=12)

Note: N equals number of responses received. For a detailed list of species, see Appendix 3.

25. Are any of the species targeted for future production, based on information provided in the (**Check all that apply)**.

- ☐ *Guide to Using Native Plants on Disturbed Lands*. By H. Gerling, M. Willoughby. A. Schoepf, C. Tannas and K.Tannas. 1996.
- ☐ *Recommended Native Grasses and Legumes for Revegetating Disturbed Lands in the Green Area*. Land and Forest Service. Alberta Environmental Protection. 1996.
- ☐ Guidelines as set up by Public Lands, Alberta Agriculture, Food and Rural Development: Appendix F –*Commercial availability of native plant and* Appendix H – *Available native plant for use in Alberta*.
- ☐ I follow some other guidelines. **(Specify)** _____
- ☐ Speculation.
- ☐ None of the above.

Figure 24. Information used to target production (n=29)



More than half of the respondents based their production targets on speculation of market demand. Twenty eight percent of the respondents used multiple sources of information when targeting production.

"Other" options used when planning native plant production include:

1. British Columbia Lands and Landscapes,
2. Customer recommendations,
3. Common sense,
4. Demand by garden centres,
5. Experience from observation,
6. Growing Native Plants of Western Canada, and
7. Other books (unlisted).

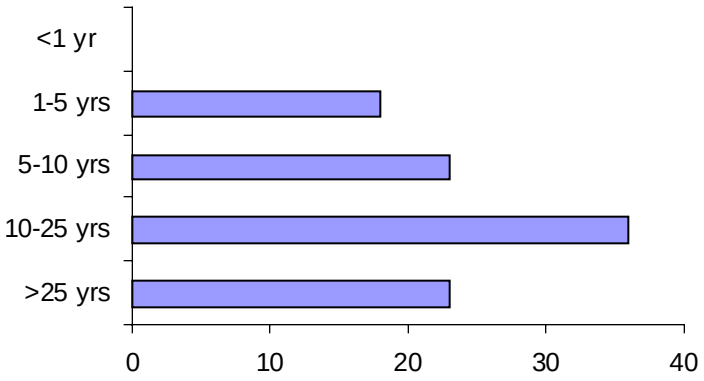
Native Plant User Survey

B. Native Plant User Survey

(n = 22)

1. For how many years have you been using native plant materials?

Figure 25. Years using native plant materials

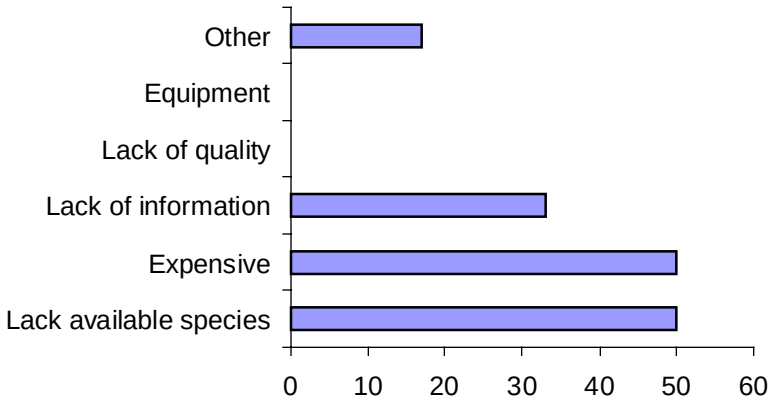


The majority of the respondents (58%) have been using native plants for more than 10 years.

2. I do not use native plants because. (Please check as many as apply.)

☐ Lack of available species.
☐ Seeds/plant materials are too expensive.
☐ Lack of production information.
☐ Lack of quality
☐ Equipment
☐ Other (Please specify) _____

Figure 26. Reasons for not using native plant material (n=6)



Lack of availability of species (50%) and native seeds being expensive (50%) are the most common responses as to why native plants were not used. A lack of information (33%) concerning native plant materials was also a relevant issue.

Fifty percent of the respondents have more than one reason for not using native plants.

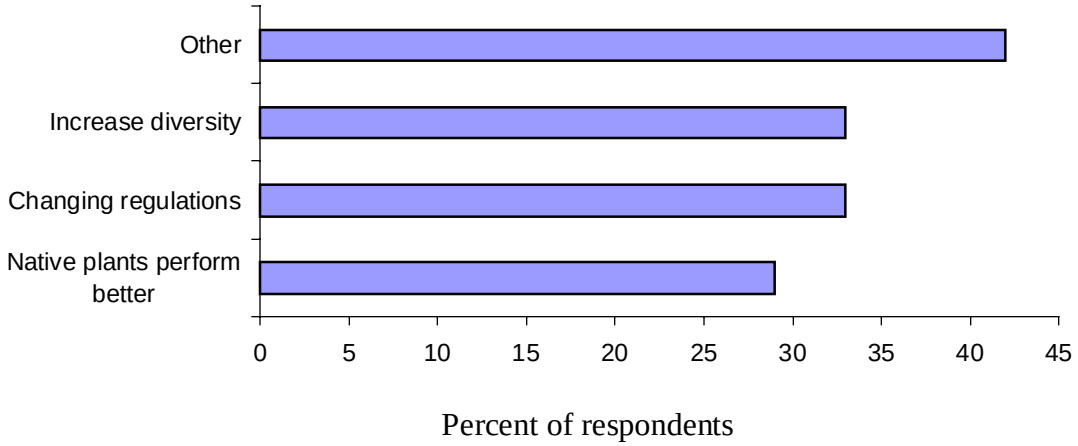
" Other" response included:

- Has not been requested on public lands for the forest industry.

3. Why are native plant materials used in your particular industry? (Please check as many as apply.)

☐ Native plants performed better than introduced species.
☐ Because of changing regulation governing the industry.
☐ Increase diversity.
☐ Other (Please specify) _____

Figure 27. Reasons for using native plants in your particular industry (n=21)



Thirty eight percent of the respondents have multiple reasons for using native plants.

"Other" reasons included:

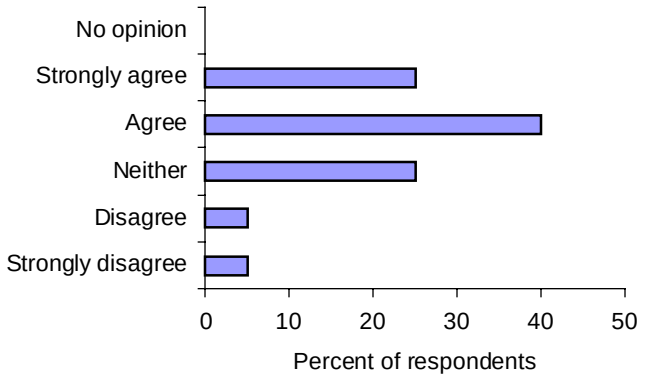
1. Aesthetic value,
2. Conservation of mixed grass prairie,
3. Increased awareness of the use of native plant,
4. Less invasive in rangeland and more palatable to livestock,
5. Preserving the natural ecosystems, and
6. Research.

4. For each statement below, please rate on a scale of 1 to 5 (1 being strongly disagree, 5 strongly agree and 0 being no opinion.) your level of agreement of each statement. (Circle a number.)

Statement:

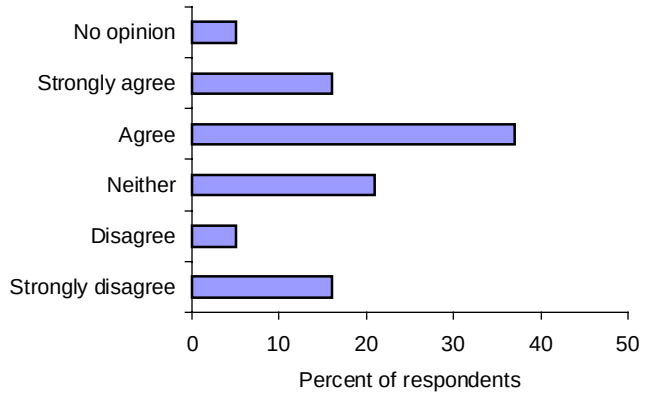
a: ecovar is an acceptable source of native plant material. 1 2 3 4 5 0
b: cultivar is an acceptable source of native plant material. 1 2 3 4 5 0
c: wild harvesting is an acceptable source of native plant material. 1 2 3 4 5 0

Figure 28. Ecovar is an acceptable source of native plant material (n=20)



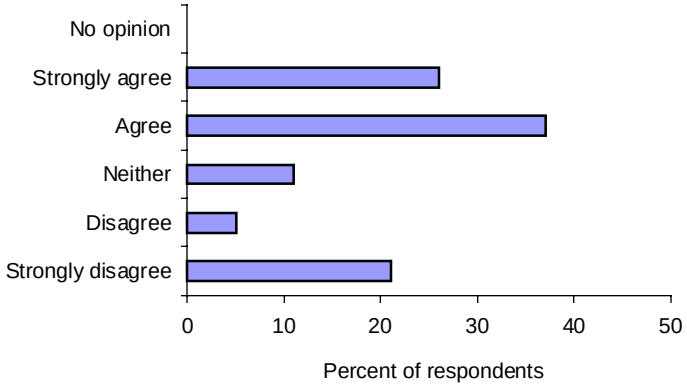
65% of respondents agree that ecovar is an acceptable source of native plant material. Only 8% of the respondents disagree with this statement.

Figure 29. Cultivar is an acceptable source of native plant material (n=19)



Fifty eight percent of the respondents agree to the statement that cultivar is an acceptable source of native plant material. Twenty one percent of the respondents disagreed with this statement.

Figure 30. Wild harvesting is an acceptable source of native plant material (n=19)



Sixty three percent of the respondents feel that wild harvesting is an acceptable source of native plant material. Twenty-six percent disagree with this method of obtaining native plant materials.

5. Please complete the following table. For each species of grass, wildflower (forb & legume), and shrub provide the quantity purchased, amount spent ($), and the ecoregion in which the seed/plant was used.

Table 9. Amount of native species purchased and the ecoregion the plant materials were used during 1997, 1998, and 1999..

	1997			1998			1999			Ecoregions		
	Kg.	No.		Kg.	No.		Kg.	No.		**GP**	**Boreal**	**NWFM**
	Seed	**Plts**	**($)**	**Seed**	**Plts**	**($)**	**Seed**	**Plts**	**($)**			
Grasses	2,468 (n=23)	0	53,675	2,245 (n=7)	0	1,850	2,708 (n=17)	0	48,619	35	7	3
Forbs	10									5		
Woody	0	165,050 (n=8)	1,550		78,000 (n=7)	630	0	82,530 (n=10)	1,000		12	10
Total	2,478	165,050	$55,225	2,245	78,000	$2,480	2,708	82,530	$49,619	40	19	13

Note. N equals number of responses received. Not all respondents knew the ecoregion the plant material came from.

GP = Great Plains

NWFM = Northwestern Forest Mountains

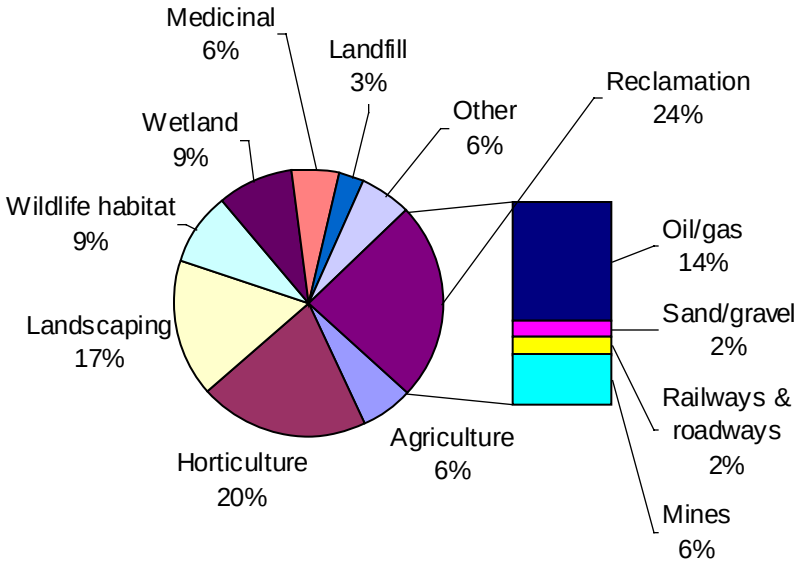
The amount of plant materials consumed and the amount of money spent by the users seemed small. In reality a greater number of species are being used, as many users indicated that they do not keep a record of the species or the amount of money spent on the purchase of native plant materials. Only 4 users have provided information on expenditures in 1997 and 1999 and only 2 of them have provided the same information for 1998. Most of the plant materials (do not include trees) are used in the Great Plains ecoregion.

6. Which of the following sectors best represent the industry for which you have purchased any of the native plant materials? Also, please indicate the amount (percent) of seeds or plants species used in each of these sectors.

(a) ☐ Reclamation industry _____%
- ☐ oil & gas _____%
- ☐ sand & gravel _____%
- ☐ railways & roadways _____%
- ☐ mines _____%

(b) ☐ Agriculture _____%
(c) ☐ Horticulture _____%
(d) ☐ Landscaping _____%
(e) ☐ Wildlife habitat restoration _____%
(f) ☐ Wetland restoration _____%
(g) ☐ Medicinal uses _____%
(h) ☐ Landfill _____%
(i) ☐ Reforestation _____%
(j) ☐ Other _____ _____%

Figure 31. Industry sectors using native plant materials (n=35)



"Other" 6% includes:

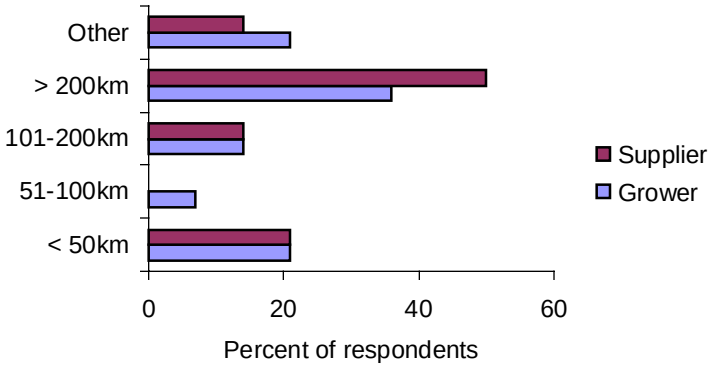
1. Prairie restoration.
2. Tree seedling production.

7. What is the distance between your place of business and your native plant materials grower or supplier?

Grower
_____0-50 km
_____51-100 km
_____101-200 km
_____Over 200km
☐ Other (Please specify) _____

Supplier
_____0-50 km
_____51-100 km
_____101-200 km
_____Over 200km
☐ Other (Please specify)_____

Figure 32. Distance between business place and the grower/supplier (n=14)



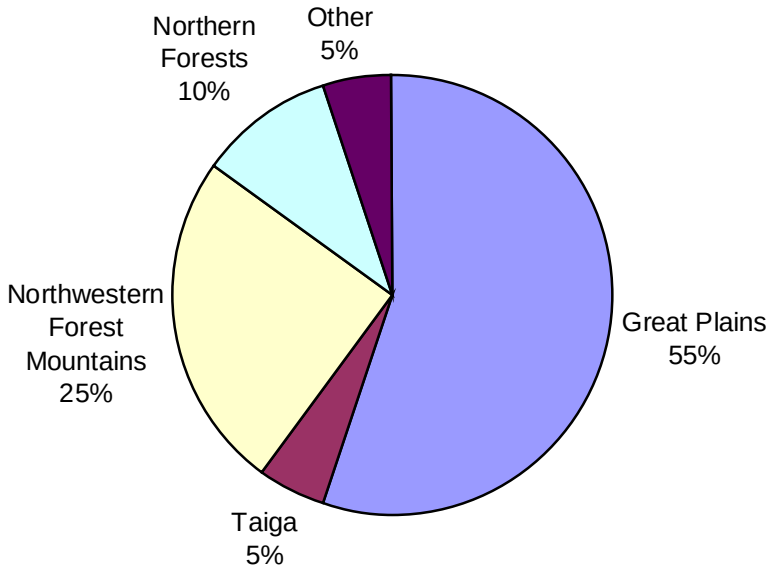
About 50% of the respondents received their plant materials from a distance of more than 200 km.

"Other" - no details were provided.

8. Please identify the ecoregion where the native plant materials bought were used, (check as many as apply). Please refer to ecoregion map.

☐ Great Plains	_____% materials used
☐ Tundra	_____% materials used
☐ Taiga	_____% materials used
☐ Arctic Cordillera	_____% materials used
☐ North American Desert	_____% materials used
☐ Northern Forest	_____% materials used
☐ North Western Forest Mountain	
☐ Other	_____% materials used
☐ Don't know	_____% materials used

Figure 33. Average percent of material used by ecoregion (n=15)

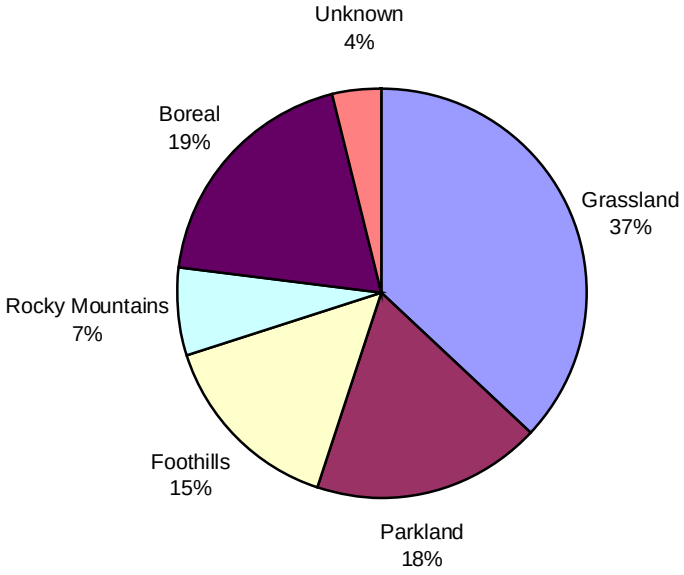


Other reported (5%) but no specifics were given.

9. Please identify the geographical area where the native plant materials bought were used, (check as many as apply).

☐ Grassland	_____% materials used
☐ Parkland	_____% materials used
☐ Foothills	_____% materials used
☐ Rocky Mountains	_____% materials used
☐ Boreal	_____% materials used
☐ Don't know	_____% materials used

Figure 34. Average percent of material used by geographical area (n=15)

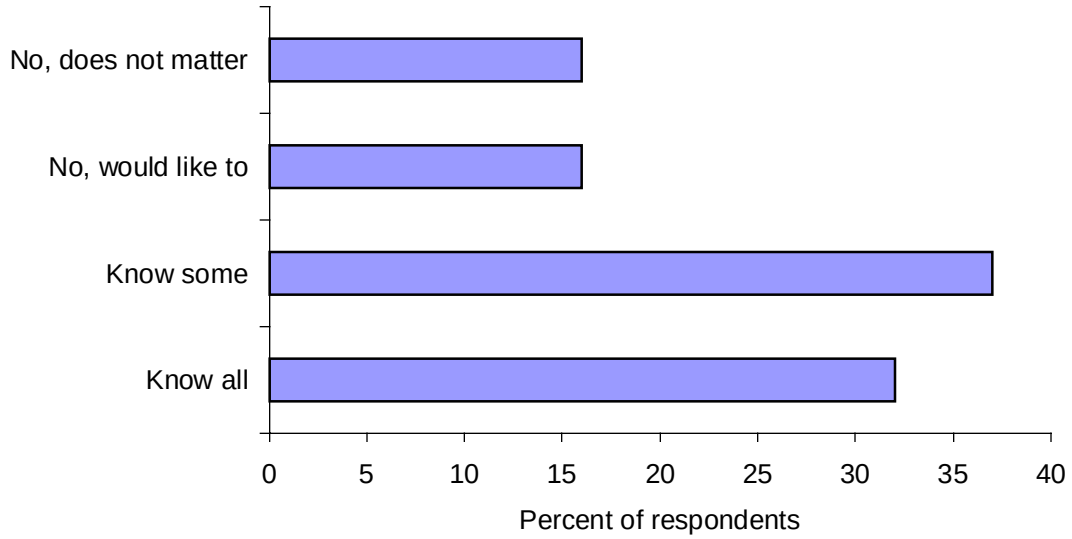


Four percent stated they did not know where their native plant material was used.

10. Do you know the geographical origin (original genetic source) of the native plant material you purchased last year or in past years?

- ☐ I know the geographical origin of all native plant materials I purchased.
- ☐ I know the geographical origin of some native plant materials I purchased.
- ☐ I do not know the geographical origin of any native plant materials I purchased, wish I did.
- ☐ I do not know the geographical origin of any native plant materials I purchased, but it does not matter.

Figure 35. Knowledge of original genetic source of the plant material purchased (n=19)

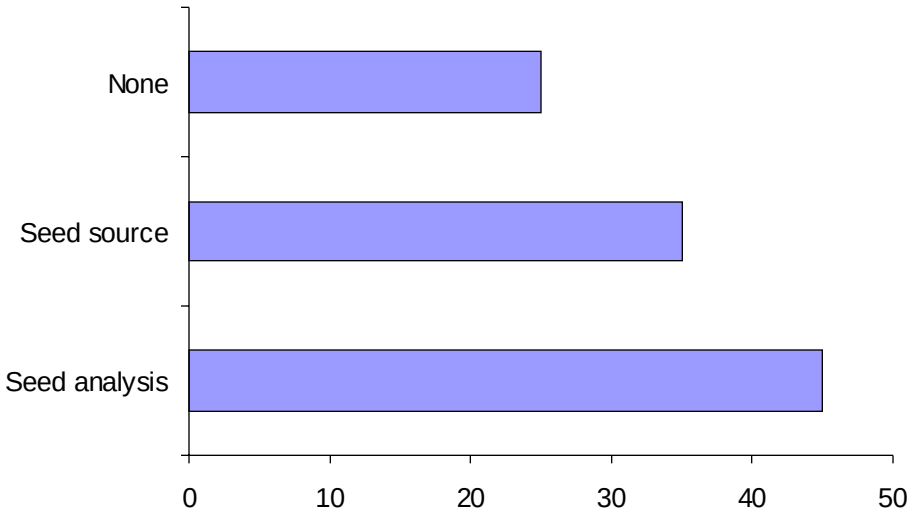


Sixty-nine percent of the respondents reported they were informed of at least some or all of the genetic sources of the material they purchased. Sixteen percent reported they were given no information but would have preferred to know and 16% reported that it did not matter to them if they were provided with the information.

11. Does the grower/supplier provide you with any information regarding the native plant materials you purchased?

☐ Seed analysis (purity & germination) ☐ Source of seed ☐ None

Figure 36. Information provided regarding native plant material purchased (n=20)

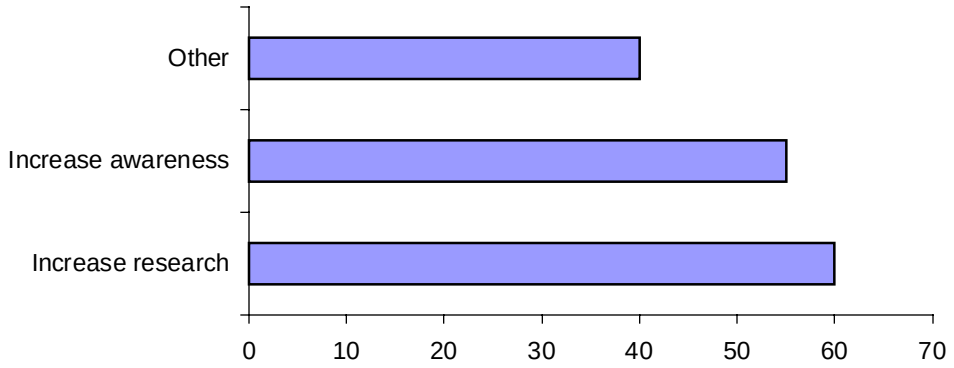


One respondent (5%) provided more than one piece of information.

12. In your opinion, what has to be done to increase the use of native species.

☐ Increase research for development of native species.
☐ Increasing public awareness on the use of native species by holding workshops, etc.
☐ Other (Please specify) _____

Figure 37. How to increase the use of native plant materials (n=20)



Sixty five percent of the respondents provided multiple reasons for increasing the use of native plants. Respondents tended to agree that the native plant industry needs more research (60%) and increased awareness (55%). Other (40%) gave suggestions on how to increase use of native plants. These included:

1. Educate and inform public and industry,
2. Increase selection and supply,
3. Limit wild harvesting,
4. Lower prices,
5. More information on cultivar development,
6. Tighten government regulations, and
7. Regulations should be more clearly defined, re: Native Plant Policy.

13. Please fill the following table, based on your anticipated use of native plants in the year 2000 and 2001.

Table 10. Projected use and ecoregion of native plant material in 2000 and 2001.

	Projected Use				Ecoregions		
	2000		2001				
	(kg)	Plants	(kg)	Plants	GP	Boreal	NWMF
Grasses	3,693 (n=30)	0	1,744 (n=18)	0	23	6	1
Forbs	0	0	0	0	0	0	0
Wetland Plants	0	0	0	0	0	0	0
Woody	8.5 (n = 4)	512,800 (n=13)	0	250,800 (n=11)	0	9	8
Total	3,701.5	512,800	1,744	250,800	23	15	9

Note. N equals number of responses received. Details are in Appendix 4. Only 9 users provided information for the year 2000 and 4 of them provided the same information for the year 2001. Ecoregions information is for year 2000.

User Comments

The following issues were raised by some of the users of native plants. These are:

1. **Wild harvesting controls.** Some suggested that harvesting from native landscapes should be restricted or even banned.

2. **Information on ecovar and cultivar development.** Users of native plant material wanted to have knowledge of what is happening in the research and development sector.

3. **Information on weed control.** Some of the respondents who have been using native plants do not know how to deal with weedy areas in their field. It was indicated that information on the use of herbicides on native species should be made available.

4. **Improved government regulation.** One respondent suggested that the government should have clear, defined guidelines.

5. **Native plant producers group.** Others indicated the need for a native plant producers group*. This can allow for easy sourcing of plant materials.

6. **Alberta native plant guidelines need to be reviewed.** One user indicated the need to review the native plant guidelines in Alberta.

Conclusions

There was a forty five percent response rate. Response by province was divided as follows, Alberta (39%), British Columbia (29%), Saskatchewan (15%), Manitoba (11%) and other provinces and the United States (6%). This compares well to similar surveys done in Saskatchewan (37%) and Minnesota (28%).

The industry is no longer in its formative stage as suggested in past publications. It is growing steadily. Most commonly reported income bracket in 1998 was $25,000 or less and the total gross income (n=38) reported during that year was $7.03 million. There is no significant relationship (p=0.26) between amount of time spent in the native plant business, years producing native plant materials and gross revenue. In reality the native plant industry is worth more than the $7.03 million as many producers did not provide revenue information.

* The Native Plant Producers Association was formed in November of 1999. For more information, contact Ken Wright at (403) 686-4434 or e-mail to bowpoint@agt.net

In 1998 over 250 different species of various plants were collected from native landscapes. The amount collected varies among species and ranges from 10 gm to 50 kg of seeds and from 10 plants to 10,000 plants[*]. In 1998, 726 kg of seeds and 14,481 plants were collected from native landscapes.

In 1999, the amount of seeds collected went down by 65% and the number of plants collected increased by over 80%[‡]. A number of respondents indicate that they collected seeds and plants from native prairies but have not indicated the amount of plant materials collected. Over 50% of the activity occurred in the Great Plains ecoregion.

Grass species most commonly (based on the amount of plant material) collected during 1998 and 1999 are *Poa palustris, Panicum capillare, and Calamagrostis purpurescens.* Wetland plants included *Myriophyllum exalbescens, Lemna minor, Sagittaria cuneata, Hippuris vulgaris* and *Carex aquatilis.* The forbs include: *Aster ericoides, Asclepias incarnata, Antennaria rosea* and the shrubs are *Rubus parviflorus, Amelanchier alnifolia,* and *Acer spp.*

There were over 250 species of native plants in production during 1998 and 1999. In 1998, 299,450 kg of grass seed and 13,930 grass plants were produced. That number increased to 387,425 kg of grass seed and number of grass plants decreased to 9,950 in 1999. Forb production was 22,137 plants in 1998 and increased to 42,678 in 1999. Similarly, production of wetland plants went up by 33% to 2,700 plants and woody plants went down by 13% to 717,020 plants. In total, the amount of native seed produced increased by 23% to 394,160 kg and number of plants decreased by 11% to 772,348 plants. Most commonly produced grass species in 1998 and 1999 are *Agropyron trachycaulum, Agropyron smithii, Festuca hallii, Bromus carinatus, Poa alpina, Panicum capillare, Agropyron dasystachyum* and *Agropyron riparium.*

The forb species with the highest demand in 1998 and 1999 included: *Rudbeckia hirta, Monarda fistulosa, Iris versicolor, Anemone patens* and *Geum triflorum.*

[*] Did not provide details on whether the whole plant or parts of the plant were collected.

[‡]No reasons were provided for the decrease in the amont of seed and increase in the number of plants collected from native landscapes during 1999.

The woody species with the highest demand in 1998 and 1999 included: *Picea glauca, Populus tremuloides, Populus balsamifera, Rosa acicularis, Salix exiqua, Amelanchier alnifolia, Cornus stolonifera* and *Alnus crispa*. The most commonly produced wetland species included: *Caltha palustris, Carex aquatilis, Equisetum hyemale, Lemna vulgaris,* and *Alisma plantago-aquatica*.

Most of the plant materials sold were used in the grassland region (26%), followed by Parklands and Foothills with 12% and 8% respectively. Producers and suppliers did not know where 40% of the materials were to be used. There may be an opportunity here for producers and suppliers to work with end users of native plant in determining market trend. The producers identified that 46% of the plant materials are sold in the Great Plains. British Columbia and Alberta accounted for 56% of the native plant materials used. About 9% of plant materials are sold to Minnesota, North Dakota, Washington and Oregon.

Producers indicate that they sold native plants materials to various industries. These included: horticulture (19%), landscaping (18%), wildlife habitat mitigation (15%), agriculture (9%), wetland restoration (9%), medicinal uses (1%), and reclamation (29%). The reclamation sector was further divided into oil and gas (11%), sand and gravel (5%), railways and roadways (7%), and mines (6%).

A user survey was also developed and sent out to a group of users or potential users of native plants, representing the various sectors of the industry in Alberta. It was meant to obtain some additional information from a user's point of view.

Of the users surveyed (n=22), 36% indicated they had been using native species in their operation for 10 to 25 years. It is interesting to note that 21% of the respondents indicated that their main reason for using native plants was that native plants performed better than introduced species. Twenty four percent of the users indicated changing regulations and another 24% said a desire to increase biodiversity were their main reasons for using native plants. Other reasons cited are aesthetic value, conservation of the natural ecosystem, or less invasive when compared to forage species. An equal number of respondents also do not use native species for a number of reasons, including: high cost of seeds, lack of available of species, lack of quality, lack of information, or not requested by government regulatory agencies.

Most of the plant materials purchased were used in the Great Plains (55%) and the Grassland (37%). Opinions varied widely among both producers and users about the type of plant material preferred, whether it is a cultivar, ecovar or wild harvested seeds.

Based on statistical analysis for the acceptance of cultivar, ecovar, and wild harvested seed as sources of native plant material, no significant differences ($p > 0.05$) were observed. However, both producers and users have indicated greater inclination towards plant material that has been performance tested. The users want plant material that has been tested for geographic adaptation, vigour and growth whereas the seed growers also wanted seed production information. Another interesting comment was that harvesting from native landscapes should be restricted or even be prohibited.

Sixty nine percent of the respondents were aware of the original genetic source of the materials they purchased. Thirty one percent did not have any information on the original genetic source of their plant materials. Three quarters of the respondents received information such as seed germination and purity, and source of seed from the producer.

Among the users of native plants, the horticulture industry represents 20%, landscaping 17%, wildlife habitat mitigation 9%, medicinal 6%, wetland restoration 9%, landfills 3%, agriculture 6%, prairie restoration 6%, and reclamation 24%. Reclamation is further divided into oil & gas (14%), sand & gravel (2%), railways & roadways (2%), and mines (6%). There are differences between the values reported by the producers and users of native plants. This shows that the producers were selling their plant materials to users other than those who participated in this survey.

The total amount of money spent on the purchase of native grasses during 1997, 1998 and 1999 was $104,144. Only 4 users (n=22) provided expenditures on native plant materials. Nevertheless, over 47 species are being used, indicating great diversity. Forecasted use of native species looks encouraging. For example, average (9 users responded) number of plants used in year 2000 is approximately 57,000. That number increases to approximately 63,000 plants by the year 2001. Some users indicated that they were not able to provide information on the

amount spent and quantity of materials purchased as these are handled by a number of individuals within a company, (including contract personnel) and most of the time, no one keeps a record of that information.

Recommendations for Future Actions

To ensure success of the native plant industry, the following concerns by the producers and users of native plants should be addressed.

1. **Lead time to set up a production plan**. Customers need to understand that a substantial amount of time is needed to plan production of many species. Native species usually do not produce a seed crop in the year of establishment. As a result, native plant users should give at least a year's notice, to allow the grower to plan production of any particular species. Some growers suggest 1 to 2 years lead time for contract growing and, in some cases at least 5 years. The latter would mostly apply to shrubs and trees where the users require a certain size girth.

2. **Labour intensive.** Working with some species can be quite labor intensive and uncertain markets make it a risky venture.

3. **Herbicides.** Information is lacking on appropriate use of herbicides.

4. **Experienced staff**. It is difficult to find staff knowledgeable about native plants.

5. **Lack of information**. A lack of written material or methods on growing, propagation, seed harvesting, germination, cleaning, etc of native seeds hinders the market.

6. **Contract growing**. Growing under contract will help guarantee a market for the product. Sometimes producers cannot get a contract because their crop is not assured. In other cases producers cannot find markets for plants already grown.

7. **Lack of government support.** Strong government competition in the United States (e.g., Conservation Reserve Program) makes it hard for local producers to compete. In Manitoba, there is a significant lack of government support for the use of local native species.

8. **Research funding**. More funds should be allocated to research and development. For example, research on seed production and plant performance in various regions. To ensure success in the market place, seed production ability should be the focus of new selections. Some species are sporadic in their seed production. The plants grow really well one year, then very poorly the next year. For example, American vetch. More research on native species with agricultural potential should also be conducted. (This would help to diversity markets for native plant materials.) There is a need to provide more information on ecovar and cultivar development. Other research area includes weed control. For example, an oil & gas company is interested in maintaining bio-diversity and is currently using native species in revegetating oil wellsites. Their main problem is controlling weeds, which can increase the cost of reclamation.

9. **Regulation**. There is a need for definite reclamation guidelines. This will boost the use of native species. One company suggested that they will be willing to use native seed, but instead use a forestry mix, which is cheaper. The requirement for native species needs to come from government regulators before industry would be motivated to use expensive, less available native species. The native plant guidelines within Alberta need to be re-evaluated and the evaluation has to be conducted on an eco-site level. Another user of native plants suggested that wild harvesting should be regulated or even outlawed, except for some seed harvesting, but no plants should be removed from native prairie.

10. **Need to educate the public**. There is a lack of public education on the benefits of native plants and a general apathy about the importance of the need to use native species. There is a need to get the public on side. There is also a need to provide end

users, the public and government bureaucrats with valid, updated information on benefits of native plants. There seemed to be confusion over the use of the word "native". One participant described it as "a label without reference to native to any particular ecoregion*". For example, an ecotype collected and reared very far away may be acceptable while a local species from across some imaginary line is not considered native.

11. **Availability of seed**. Demand from contractors, designers, consultants, etc. far outstrips supply. One user has been using locally collected seed for rearing and planting of woody plants for more than 20 years and it is only recently that they have found it necessary to acquire native grass and legume seed. As yet they have not been able to acquire native legume seed in sufficient quantities for their use. They indicated that it would have been desirable if the logistics of seed supply had been worked out prior to regulatory imperatives respecting native seed use. The user best describes it by stating "the inability to sow legumes is a step backward in the science of reclamation and neither are the logistics in place for providing native/local seed of dependable purity and performance".

12. **Cost**. Because seed sources are scarce, costs are high when compared to agronomic species. Several growers raised this concern. If price and availability of desired species were more reasonable, more users would use native species.

*Note. The Native Plant Revegetation Guidelines for Alberta defined the word "native" on the basis of Natural Regions and Subregions.

13. **Quality control.** There are few sources of good quality seed. Limited availability of clean seed for reclamation was identified as a significant issue. The requirement for reliable seed quality sources will grow as markets develop. Good quality seed will give the industry a good image.

14. **Cost of seed testing**. Seed testing is expensive, especially for limited quantities of seed.

15. **Capital investment.** It takes a huge capital investment to get into the native plant business. High overhead, high cost of equipment and high cost of production of some species hinders the industry. It seems that it is a specialized industry and there is not a harvesting machine that works on a variety of crops. As a result it can lead to higher costs of seed.

16. **Processing**. Certain species, e.g., *Stipa* are difficult to process. Weather conditions can have an adverse impact on production. Seed harvest and cleaning are very slow processes. For example, to produce 4 kg of cleaned forb seed in 1998 required approximately 30% of one person's work time. The oil and gas industry currently uses native grasses for reclamation, but would like to use more forbs wherever possible.

17. **Marketing.** Information is needed on how to find a market for the plant materials one is growing.

18. **Honest marketing**. Seed companies with proprietary claims to cultivars are not making these cultivars readily available to small producers. Also, other producers do not compete fairly (unethical, selling "natives" or "wildflowers" from United States) and that hinders the market.

19. **Competition**. It is a very competitive business. Development of native varieties takes years, only to be undone in one year of planting by another seed grower.

This is a very secretive industry. Suppliers and producers of native plant species are somewhat hesitant to provide information for fear of competition from other producers and suppliers. However based on the information received, the native plant industry seems to be very diverse and growing.

References

1. Alberta Native Plant Council. 1998. Native Plant Source List and Collection and Use Guidelines. Edmonton, Alberta.

2. Gerling, H.S., M.G. Willoughby, A. Schoepf, K.E. Tannas and C.A. Tannas. 1996. A Guide to Using Native Plants on Disturbed Lands. Alberta Agriculture, Food and Rural Development and Alberta Environmental Protection. 247pp.

3. Market Assessment of Native Plant Materials in Saskatchewan. 1997. Prepared by Native Plant Society of Saskatchewan and Northwest Saskatchewan Grasslands Association. 51pp.

4. Minnesota State Department of Agriculture. 1993. Native plant survey. Minnesota, USA. 42pp.

5. Moss, E.H. 1983. Flora of Alberta. 2nd Edition revised by J.G. Packer. University of Toronto Press. 687pp.

6. Native Plant Working Group. 1999. Draft native plant revegetation guidelines for Alberta. H.S. Gerling (ed.), Alberta Agriculture, Food and Rural Development. Edmonton, Alberta.

7. Zar, J.H. 1984. Biostatistical Analysis, Second Edition, Prentice-Hall, New Jersey. 718pp.

8. Map of Ecoregions of North America. http://www.cprc.uregina.ca/ccea/ecozones/level1.html

9. Map of Natural regions of Alberta. **h**ttp://www.gov.ab.ca/env/parks/anhic/anhic.html

APPENDIX 1 - Species harvested in the wild, by amounts and by ecoregion.

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Grasses															
Agropyron albicans	1											1			
Agropyron dasystachyum	1						1								
Agropyron smithii	1						1								
Agropyron subsecundum	1						1								
Agropyron subsecundum	2		0.1		0.1		1					1			
Agropyron trachycaulum	1														
Agropyron trachycaulum	1		0.58				1								
Agropyron violaceum	1											1			
Agrostis scabra	1														
Agrostis variabilis	*1*						*1*								
Andropogon hallii	1														
Andropogon gerardi	1														
Beckmannia syzigachne	2														
Bouteloua gracilis	1		0.1		0.1		1								
Bouteloua gracilis	2														
Bouteloua curtipendula	1														
Bromus anomalus	1											1			
Bromus ciliatus												1			
Bromus ciliatus	1						1								
Bromus carinatus	1											1			
Calamagrostis canadensis	1						1								
Calamagrostis purpurascens		1				1000									
Calamovilfa longifolia	1														
Deschampsia cespitosa	1														
Deschampsia	2		0.2				2								
Distichlis stricta	1														
Elymus Canadensis	1				0.1							1			
Elymus Canadensis	2														
Eriophorum sp.	1														
Festuca saximontana	1						1								
Festuca halli	1						1								
Glyceria grandis	1		0.1		1							2			
Glyceria grandis	1														
Helictotrichon hookeri	1														
Hierochloe odorata	4														
Koeleria cirstata	1				0.1								1		
Koeleria cirstata	1						1								
Koeleria gracilis	1														
Muhlenbergia asperifolia	2														
Muhlenbergia richardsonis	1														
Oryzopsis hymenoides	2														
Panicum capillare	1			1		2000									
Panicum capillare	1														
Panicum virgatum	2														

*Note. Numbers in first two columns indicate the number of responses received for each species harvested, but in many cases, neither the amount of seed or plants, nor the ecoregion were reported

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Phleum commutatum	1						1								
Poa alpina	1						1								
Poa palustris	1					1000	1								
Puccinellia distans	1														
Schizachyrium scoparium	1		0.1		0.1		1								
Schizachyrium scoparium	2														
Sorghastrum nutans	1														
Sorghastrum nutans	1														
Spartina gracilis	2														
Spartina pectinata	1				0.1								1		
Spartina pectinata	1														
Sphenopholis obtusata	1														
Sporobolus cryptandrus	1														
Sporobolus heterosepsis	1														
Stipa comata	1						1								
Stipa curtiseta	1														
Stipa richardsonii	2														
Stipa spartea	1				0.25		1								
Stipa viridula	4														
Stipa viridula	1		0.8		1.9		1								
Aquatic, Sedge, etc.															
Alisma plantago-aquatica	1		1		1		1					1			
Calla palustris		1		50			1					1			
Caltha palustris		1		50											
Caltha palustris	1														
Caltha palustris	4	1	2	50	2	50	3					2			
Eleocharis acicularis	1						1								
Eleocharis palustris	1														
Eleocharis palustris	1						1								
Equisetum hyemale		1		50								1			
Equisetum hyemale		1					1							1	
Hippuris vulgaris		1		50		50						1			
Juncus ensifolius	1						1								
Lemna minor		1		100		100						1			
Lemna minor	1						1								
Myriophyllum exalbescens		1		1000		2000						1			
Petasites sagittatus	1						1								
Polygonum amphibium		1		50											
Ranunculus cymbalarla	1						1								
Sagittaria cuneata	1		0.1												
Sagittaria cuneata		1				500	1						1		
Scirpus acutus		1		25									1		
Scirpus microcarpus		1		50									1		
Scirpus validus		1		25									1		
Trlglochin maritima		1		10			1						1		
Typha latifolia		1			50								1		
Typha latifolia	1	1					1							1	
Viola cucullata	1														
Forbs															
Achillea millefolium	3														
Achillea siberica	1														
Acocynum cannabinum	1														
Actaea rubra	1														
Agastache	2														

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
foeniculum															
Agoseris glauca	2														
Alisma plantago-aquatica	1														
Allium cernuum	2														
Allium textile	1														
Anaphalis margaritacea	1														
Anaphalis margaritacea	1														
Anemone canadensis	4														
Anemone cylindrica	3														
Anemone multifida	3														
Anemone multifida	2						1								
Anemone occidentalis	1						1								
Anemone patens	1														
Anemone patens	2		1.3		1		2								
Anemone patens	3						2								
Anemone virginiana	1														
Antennaria aprica	1														
Antennaria parvifolia	1														
Antennaria parvifolia	1														
Antennaria pulcherrima	1														
Antennaria rosea		1		600		1000									
Apocynum androsaemifolium	1		0.1		0.1		1								
Aquilegia brevistyla	1														
Aquilegia flavescens	1														
Aquilegia formosa	1		0.01		0.01									1	
Aquilegia jonesii	2														
Aralia nudicaulis	1														
Arnica chamissonis	1														
Arnica fulgens	2						1								
Arnica mollis	1		0.7				1								
Arnica sororia	1														
Artemisia frigida	4														
Artemisia ludoviciana	3														
Asclepias incarnata	1			300		1350									
Asclepias incarnata	1														
Aster sericeus	1														
Aster alpinus	1														
Aster conspicuus	1														
Aster ericoides	1			450		600									
Aster ericoides	1														
Aster falcatus	1														
Aster laevis	5														
Aster novae-angliae	1														
Aster puniceus	1														
Aster umbrellatus	1														
Astragalus americanus	1		0.1		0.1		1								
Astragalus bisulcatus	1														
Astragalus Canadensis	3														
Astragalus crassicarpus	2		0.1		0.1		1								
Astragalus drummondii	2														
Astragalus frigidus	1														
Astragalus missouriensis	1														
Astragalus striatus	1														
Astragalus tenellus	1														

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Caltha palustris	1	1												1	
Campanula rotundifolia	1														
Campanula rotundifolia	2														
Castilleja lutescens	1														
Castilleja miniata	2														
Castilleja occidentalis	1														
Heterotheca villosa	1														
Heterotheca villosa	2		0.1		0.1		1								
Clematis ligusticifolia	1														
Cleome serrulata	2		0.15				1								
Convolvulus sepium	1														
Cornus canadensis	1		0.01		0.01									1	
Cornus canadensis	3		0.25		0.25										
Corydalis sempervirens	1														
Coryphantha vivipara	1														
Delphinium bicolor	1														
Delphinium glaucurn	1														
Dodecatheon conjugens	3														
Dodecatheon pauciforum	1														
Dodecatheon pauciforum	2		0.1		0.1		1								
Dryas drummondii	2														
Dryas octopetala	1														
Epilobium angustifolium	3														
Epilobium latifolium	1														
Erigeron caespitosus	3		0.1		0.1		1								
Erigeron glabellus	1														
Erigeron philadelphicus	2														
Eriogonum flavum	1														
Eriogonum umbellatum	1														
Eupatorium maculatum	1														
Eurotia lanata	1														
Fragaria virginiana	1														
Fragaria virginiana	1						1								
Gaillardia aristata	4		1.6		0.1		3								
Gaillardia aristata	1														
Galium boreale	7														
Gentiana andrewsii	1														
Gentianella amarella	1				0.5		1								
Geranium richardsonii	1														
Geranium viscosissimum	1														
Geum macrophyllum	2														
Geum triflorum	5		0.14		03		3								
Geum rivale	1														
Glycyrrhiza lepidota	1														
Glycyrrhiza lepidota	2		0.1		0.1		1								
Grindelia squarrosa	2														
Gutierrezia sarothrae	1														
Habenaria hyperborea	1		0.1	0.1			1								
Hedysarum alpinum	2						1								

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Hedysarum boreale	2														
Helenium autumnale	1														
Helenium autumnale	1														
Helianthus annus	3		0.25		0.5		1								
Helianthus laetiflorus	1														
Helianthus maximilianii	2														
Helianthus nuttallii	1														
Helianthus maximillianii	1														
Helianthus subrhomboideus	1														
Heliopsis helianthoidesscabra	1														
Heuchera richardsonii	1		0.1		0.1		1								
Heuchera richardsonii	1														
Hymenoxys richardsonii	1														
Iliamna rivularis	2														
Impatiens biflora	1														
Iris versicolor	1														
Iris missouriensis		1												1	
Lactuca pulchella	1														
Lathyrus venosus	1														
Liatris ligulistylis	3														
Liatris punctata	2														
Liatris punctata	3		0.1		0.1		1								
Lilium philadelphicum	1		1		1		1								
Linum lewisii	3														
Linum lewisii	2		0.15				1								
Linum rigidum	1														
Lithospermum incisium	1														
Lobelia spicata	1														
Lupinus argenteus	1														
Lupinus sericeus	1														
Maianthemum canadense	2														
Maianthemum canadense	1		1		1		1								
Mentha arvensis	3														
Mimulus guttatus	2														
Mimulus lewisii	1														
Monarda fistulosa	1		1.1		1.1		2								
Monarda fistulosa	1				0.1		1								
Oenothera serrulata	1						1								
Oenothera serrulata	1						1								
Oenothera serrulata	1														
Oenothera biennis	1		0.8												
Oenothera biennis	2														
Oenothera nuttallii	1														
Opuntia polyacantha	1		0.2				1								
Orthilia secunda	1														
Orthocaipus luteus	1														
Orthocarpus tenuifolia	1														
Oxytropis deflexa	1														
Oxytropis monticola	2														
Oxytropis sericea	2														
Oxytropis splendens	2														
Oxytropis viscida	1														
Parnassia palustris	1														

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Pensternon albidus	2														
Penstemon confertus		1												1	
Penstemon gracilis	1		0.1		0.1		2								
Penstemon gracilis	2														
Penstemon nitidus	3		0.1		0.1		1								
Penstemon procerus	1						1								
Penstemon serrulatus	1		0.01		0.01									1	
Petalostemon purpureum	1														
Petalostemon purpureum	1														
Petalostemon purpureum	2		0.1		0.4		1								
Petalostemon candidurn	4														
Petasites palmatus		1												1	
Petalostemon villosum	1														
Plantago eriopoda	1														
Polemonium pulcherrimum	1														
Polygala senega	1														
Potentilla anserina	2														
Potentilla argentea	1														
Potentilla fruticosa	1														
Potentilla pensylvanica	1						1								
Potentilla pensylvanica	1														
Prenanthes racemosa	1														
Psoralea esculenta	2		0.1		0.1		1								
Psorelea argophylla	1														
Ratibida columnifera	1						1								
Ratibida columnifera	3		2												
Rhus glabra	1														
Heliopsis helianthoides	1														
Rudbeckia hirta	3														
Rudbeckia laciniata	2														
Rumex venosus	1														
Salicornia rubra	1														
Sanicula marilandica	1														
Senecio canus	2														
Shepherdia canadensis	1														
Sisyrinchium montanum	4														
Smilacina racemosa	1														
Smilacina stellata	1		1		1							1			
Smilacina stellata	2														
Solidago canadensis	2														
Solidago decumbens	2														
Solidago missouriensis	1		0.16				1								
Solidago missouriensis	2						1								
Solidago mollis	1						1								
Solidago nemoralis	1														
Solidago ptarmicoides	1														
Solidago riddelli	1														

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Solidago rigida	2														
Thalictrum dasycarpum	1														
Thalictrum venulosum	1														
Thermopsis rhombifolia	2		0.1		0.1		1								
Veronicastrum virginicum	1														
Vicia Americana	1		2				2								
Viola adunca	2														
Viola nephrophylla	1														
Viola nuttallii	1														
Viola pedatifida	2														
Viola pubescens	2														
Yucca glauca	2														
Zigadenus elegans	1														
Zizea aurea	5														
Woody															
Amelanchier alnifolia	1		0.01		0.01									1	
Amelanchier alnifolia	2													1	
Amelanchier alnifolia	1	1	2		0.5		1					1			
Abis spp.	1		0.1		0.01									1	
Acer spp.	1		21		15.5										
Acer glabrum	1														
Acer glabrum	1	1												1	
Alnus crispa							1								
Alnus crispa	1		0.5				1								
Arctostaphylos rubra	1		0.25		0.5		1								
Arctostaphylos uva-ursi	1														
Arctostaphylos uva-ursi	1		1.5		0		1							1	
Artemisia carnpestris	1														
Artemisia cana	2														
Artemisia frigida	1														
Berberis repens	2	1	0.5		0.5		1								
Betula glandulosa	1		0.25		0		1								
Betula papyrifera	1				0.1									1	
Betula papyrifera	1														
Betula papyrifera	1		0.25		0.1									1	
Betula pumila	1														
Ceanothus velutinus	1		0.0005		0.005									1	
Cornus stolonifera	3													1	
Cornus stolonifera	3		034		0.85		3							3	
Corylus cornuta	2		5.1		5.1		1							1	
Crataegus douglasii	1		0.1		0.1									1	
Crataegus rotundifolia	1		0.1		0.1		1								
Elaeagnus commutata	3		4.1		6.1		2								
Fraxinis pennsylvanica	1														
Gaultheria hispidula	1													1	
Quercus macrocarpa	1														
Juniperus communis	1														
Lonicera involucrata	1		0.01		0.01									1	
Picea glauca	1													1	
Pinus banksiana	1						1								
Pinus contorta	1						1								
Pinus contorta	1													1	

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Pinus flexilis	2						2								
Pinus monticola	1		0.5		0.5										
Populus balsamifera	3						2								
Populus deltoides	1						1								
Populus deltoides	1														
Populus tremuloides	1						1								
Potentilla fruticosa	1														
Prunus pensylvanica	1		0.1		0.1		1								
Prunus virginiana	1				0.76		1							1	
Prunus virginiana	4		076		0.5		5								
Pseudotsuga menziesii	1						1								
Rhus trilobata	1														
Ribes spp.	1		0.01		0.01									1	
Ribes aureurn	1														
Rosa acicularis	1						1								
Rosa acicularis	1		3.4		1		3								
Rosa acicularis	1														
Rosa arkansana	1														
Rosa woodsii	1		1		1									1	
Rosa woodsii	3													2	
Rubus parviflorus		1		10000		10000								1	
Salix amygdaloides	1						1								
Salix amygdaloides	1														
Salix discolor	2						2								
Salix exigua	1						1								
Salix lutea	1						1								
Sambucus racemosa	1						1								
Sambucus racemosa	1				0.2		1								
Shepherdia argentea	1						1								
Shepherdia argentea	1				0.5		1								
Shepherdia canadensis	1						1								
Shepherdia canadensis	1		0.1		0.1		1								
Sorbus scopulina	1				0.5		1								
Sorbus sitchensis	1				0.2		1								
Spiraea alba	1														
Spiraea alba	1													1	
Spiraea betulifolia	1														
Symphoricarpos albus	2						1							1	
Symphoricarpos occidentalis	1						1								
Ulmus americana	1														
Viburnum opulus	2		0.04		0.04									2	
Viburnum opulus	1													1	

Species	*Seed Harv.	Plant Harv.	1998 Kg.	Plts	1999 Kg.	Plts.	Ecoregion G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
275 Various species[¶]	1		50		50									1	
Too many to list species[¶]	1											1			

Note. [¶] The producer did not wish to provide details on the number and amount of species collected from native landscapes.

G.P. = Great Plains
Tun = Tundra
Taig = Taiga
A.cord = Arctic Cordillera
NADst = North American Deserts
NWFMt. = Northwestern Forest Mountains
N.for = Northern Forests

APPENDIX 2 - Amount and origin of plant materials sold in 1998 and 1999.

	1998		1999		Ecoregion								
Species	Kg.	#Plts	Kg.	# Plts	G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Grasses													
Agropyron albicans			28550							1			
Agropyron dasystachyum	40000		40000										
Agropyron dasystachyum	15000	350	70000	1100	1								
Agropyron riparium	30000		30000										
Agropyron smithii	40000		40000										
Agropyron smithii	10000		5000		1								
Agropyron subsecundum	2200		1950		1					1			
Agropyron trachycaulum	50000		50000										
Agropyron trachycaulum			0.1		1								
Agropyron violaceum	700		700							1			
Agrostis scabra				600									
Agrostis variablilis	35000		50000		1								
Bouteloua gracilis	300		25										
Bouteloua gracilis		100		200	1								
Bromus anomalus	500									1			
Bromus carinatus	10300		10700										
Bromus ciliatus	2700		3250										
Bromus ciliatus			800		1								
Calamagrostis canadensis			50		1								
Deschampsia cespitosa	7000		5000		1								
Deschampsia cespitosa	1000		1000										
Deschampsia cespitosa		300	0.1	750	1								
Distichlis stricta	5000		5000										
Elymus canadensis	5000		5000							1			
Elymus canadensis	200	300		100									
Festuca halli	10000		10000										
Festuca halli	0.1	20	0.1		1					2			
Festuca saximontana	1500	600			1								
Hierochloe odorata		300		700									
Koeleria cirstata	5000		5000								1		
Koeleria cirstata	1500		4000		1								
Koeleria gracilis		400		500									
Oryzopsis hymenoides	1000		1000										
Oryzopsis hymenoides													
Panicum capillare	10000		10000										
Panicum virgatum		100		1100									
Phleum commutaturn			25		1								
Poa alpina	10000		13000		1								
Poa alpina	500		100										
Poa palustris	5000		5000										
Poa palustris			2000		1								
Schizachyrium scoparium		560		1400	1								

Note. Some species are repeated more than once as in some cases neither the amount of seed or plants sold, nor the ecoregion were reported.

	1998		1999		Ecoregion								
Species	Kg.	#Plts	Kg.	# Plts	G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Sorghastrum nutans		400		700									
Spartina gracilis				50							1		
Sphenopholis obtusata				750									
Sporobolus heterolsepsis		200		800									
Stipa comata	50		25										
Stipa comata			250		1								
Stipa spartea					1								
Stipa viridula		300		1200									
Stipa viridula					1								
Aquatics, Sedge, etc.													
Alisma plantago-aquatica		250		300	1					1			
Calla palustris				150	1					1			
Caltha palustris		400		400	1					1			
Caltha palustris		150		250	1								
Carex aquatilis		50		250	1					1			
Eleocharis acicularis				100	1								
Eleocharis palustris		150		200	1								
Eleocharis palustris													
Equisetum hyemale		100		200	1							1	
Equisetum hyemale										1			
Juncus ensifolius		300		300	1								
Lemna minor										1			
Mentha arvensis													
Petasites sagittatus		100		150	1								
Ranunculus cymbalarla		100		150	1								
Sagittaria cuneata	0.1												
Typha latifolia		200		250	1						1	1	
Typha latifolia											1		
Forbs													
Achillea millefolium													
Actaea rubra	1	300		500									
Agastache foeniculum		300		500									
Allium stellatum		50		20									
Anaphalis margaritacea		250		300									
Anemone canadensis		200		100									
Anemone multifida		450		500									
Anemone multifida	0.25			3	1								
Anemone multifida													
Anemone occidentalis			0.25		1								
Anemone patens	0.3	1200		1200									
Anemone patens					1								
Anemone patens			0.1		1								
Anemone patens	0.1		0.1		1								
Antennaria parvifolia	0.82	600		900									
Antennaria rosea		600		1000									

	1998		1999		Ecoregion								
Species	Kg.	#Plts	Kg.	# Plts	G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Aquilegia canadensis		300		300									
Arnica fulgens					1								
Arnica mollis	0.46				1								
Artemisia frigida		200		500									
Artemisia ludoviciana		400		700									
Aster alpinus		600		800									
Aster laevis		750		450									
Astragalus americanus					1								
Astragalus crassicaipus					1								
Caltha palustris		2000		2000									
Campanula rotundifolia		300		400									
Clematis ligusticifolia													
Cleome serrulata		0.1			1								
Corydalis sempervirens	0.15	50		50									
Dodecatheon pauciforum		200		250									
Dodecatheon pauciforum			0.1		1								
Epilobium angustifolium		350		500									
Erigeron caespitosus					1								
Erigeron philadelphicus		350		600									
Eupatorium maculatum		700		900									
Eurotia lanata													
Fragaria virginiana		300			1								
Fragaria virginiana		60		60									
Gaillardia aristata	0.1	600		600									
Gaillardia aristata					1								
Gaillardia aristata			0.4		1								
Gaillardia aristata			1		2								
Galium boreale	0.46	100		100									
Gentianella amarella					1								
Geum triflorum		900		1100	1								
Geum triflorum				0.2	1								
Glycyrrhiza lepidota	0.14	100		200									
Glycyrrhiza lepidota					1								
Habenaria hyperborea					1								
Hedysarum alpinum			1		1								
Helenium autumnale	0.33	50											
Helianthus annus			1		1								
Helianthus maximillianii		200		850									
Heliopsis helianthoidesscabra		800		1000									
Heterotheca villosa					1								
Heuchera richardsonii		50		125	1								
Impatiens biflora		45		60									
Iris versicolor		100		1005									
Lathyrus venosus													
Liatris ligulistylis		1000		14500									
Liatris punctata		300		300	1								
Liatris punctata			0.2		1								

	1998		1999		Ecoregion								
Species	Kg.	#Plts	Kg.	# Plts	G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Lilium philadelphicum	0.35			300	1								
Linum lewisii		500		400									
Oenothera serrulata	0.8	150		150	1								
Oenothera serrulata					1								
Opuntia polyacantha			0.35		1								
Penstemon gracilis	0.25	100											
Penstemon gracilis	0.2		0.15		2								
Penstemon procerus			0.3		1								
Petalostemon purpureum	0.25	800		1600									
Petalostemon purpureum													
Petalostemon purpureum	2.1		0.2		1								
Petalosternon candidurn	3.75	300		500									
Petalosternon candidurn													
Potentilla pensylvanica			0.45		1								
Ratibida columnifera	1.6	750		700									
Ratibida columnifera		2											
Ratibida columnifera			2.8		1								
Rudbeckia hira		1300		1005									
Rudbeckia laciniata		100		200									
Solidago missouriensis													
Solidago missouriensis	0.16		0.1		1								
Solidago mollis	0.1		0.1		1								
Solidago rigida		300		800									
Thalictrum dasycarpurn		100		600									
Vicia americana			25		2								
Viola adunca	200	400		300									
Viola nephrophylla		100		400									
Viola pedatifilda		300		150									
Viola pubescens		200		400									
Zizea aurea		300		350									
Zizia aptera		450		550									
Woody													
Acer glabrurn		1000											
Acer glabrurn		1000		1500								1	
Alnus crispa		11000		11000	1								
Amelanchier alnifolia		10000											
Amelanchier alnifolia		3000		5000									
Amelanchier alnifolia		250		500								1	
Arctostaphylos uva-ursi		10000		10000	1							1	
Arctostaphylos uva-ursi		1000		10000									
Betula nana		0		50								1	
Betula papyrifera		100		100								1	
Ceanothus velutinus		1000											
Clematis occidentalis			1										
Cornus stolonifera	0	1000	6500										
Cornus stolonifera		25000										1	
Cornus stolonifera		10000		10000									

	1998		1999		Ecoregion								
Species	Kg.	#Plts	Kg.	# Plts	G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Cornus stolonifera		100		300								1	
Cornus stolonifera				60	2							1	
Corylus cornuta		300			1								
Crataegus douglasii		1000		1000								1	
Elaeagnus commutata		1000		1000									
Elaeagnus commutata		1000			1								
Philadelphus lewisii		2000											
Philadelphus lewisii		50		250								1	
Physocarpus malvaceus				150								1	
Picea glauca		200000		340000									
Picea glauca		1000		1000								1	
Pinus banksiana		8000		31000	1								
Pinus contorta		36000		37000	1								
Pinus contorta		1000		1000								1	
Pinus flexilis		1000		1000	1								
Populus balsamifera		15000		15000	1								
Populus balsamifera				100	1								
Populus deltoides		5110		10000	1								
Populus tremuloides		25000		2500	1								
Populus tremuloides		10000											
Populus tremuloides				40	1								
Prunus virginiana	0.27	1000		1000	1							1	
Prunus virginiana		8600		8600	1								
Prunus virginiana			0.27		2								
Pseudotsuga menziesii		1000		1000	1								
Rosa acicularis	0.4				1								
Rosa acicularis		15000		15000	1								
Rosa acicularis			0.1		2								
Rosa acicularis				100									
Rosa acicularis													
Rosa arkansana		100	200	200									
Rosa woodsii		10000		10000								1	
Rosa woodsii		1000											
Rosa woodsii		200		200								1	
Salix arnygdaloides		4000		4000	1								
Salix discolor		4000		4000	1								
Salix discolor		1000		1000									
Salix discolor				20	1							1	
Salix discolor				50								1	
Salix exigua		11000		11000	1								
Salix lutea		1000		1000	1								
Sambucus racemosa		2300		2300	1								
Sambucus racemosa		1000		1000								1	
Sambucus racemosa		500			1								
Shepherdia argentea		6000		6000	1								
Shepherdia canadensis		1000		1000	1								
Spiraea alba				100									

	1998		1999		Ecoregion								
Species	Kg.	#Plts	Kg.	# Plts	G.P.	Tun	Taig	A.Cord	NADst	NWFMt.	N.For	Other	Unk
Symphoricarpos albus		1000		1000	1								
Symphoricarpos albus		1000		1000									
Symphoricarpos albus		500										1	
Symphoricarpos albus		50		700								1	
Symphoricarpos occidentalis				100	1								
Vaccinium myrtilloides		1000		5000									
Vaccinium vitis-idaea		1000		1000								1	
Virburnum opulus		1000		1000								1	
Virburnum opulus				100								1	
275 Various species¶		250,000										1	
Too many to list species¶		125,000		150,000						1			

Note. ¶ No further details were provided by the producers.

G.P. = Great Plains
Tun = Tundra
Taig = Taiga
A.cord = Arctic Cordillera
NADst = North American Deserts
NWFMt. = Northwestern Forest Mountains
N.for = Northern Forests

APPENDIX 3 - Longterm forecast of native plant production.

	Long-term production					
Species	2000		2002		2005	
	Kg.	# Plts.	Kg.	# Plts.	2005	# Plts.
Grasses						
Agropyron dasystachyum	5000		10000		10000	
Agropyron dasystachyum¶						
Agropyron smithii	10000		10000		10000	
Agropyron subsecundum	10700		20000		16000	
Agropyron riparium	6800		13000		13000	
Agropyron trachycaulum	76000		90000		80000	
Agropyron violaceum	1500		1500		5000	
Andropogon gerardi¶						
Beckmannia syzigachne	1					
Bouteloua gracilis±						
Bouteloua gracilis	200		200		200	
Bromus anomalus			1000		2000	
Bromus ciliatus	5000		5000		5000	
Bromus carinatus	3000		6000		6000	
Calamagrostis purpurascens		100				
Deschampsia caespitosa	500		7000		5000	
Deschampsia caespitosa¶						
Elymus canadensis±						
Elymus canadensis	300					
Elymus glaucus			2000		4000	
Elymus innovatus	500		500			
Glyceria grandis		1000				
Panicum capillare		1000				
Poa juncifolia			1000		4000	
Schizachyrium scoparium	500		500		500	
Stipa viridula	10000		20000		20000	
Stipa viridula			4500		4000	
Aquatics, Sedge, etc.						
Alisma plantago-aquatica		150				
Alisma plantago-aquatica		400		600		800
Calla palustris		150				
Calla palustris		200		300		500
Caltha palustris		300		450		600
Carex aquatilis		100				
Carex aquatilis		300		400		500
Eleocharis acicularis		100		100		100
Eleocharis palustris		2000				
Eleocharis palustris		250		400		600

¶ Note. Seed grower indicated that the particular species will be in production but no estimated values were provided.

	Long-term production					
Species	2000		2002		2005	
	Kg.	# Plts.	Kg.	# Plts.	2005	# Plts.
Equisetum hyemale		400		300		400
Hippuris vulgaris		200				
Juncus balticus		200				
Juncus ensifolius		300		350		400
Juncus nodosus		2000				
Lemna minor		200				
Lemna minor		400		600		800
Myriophyllum exalbescens		2000				
Petasites sagittatus		100				
Petasites sagittatus		200		300		400
Polygonum amphibium		1000				
Ranunculus cymbalarla		200		300		400
Sagittaria cuneata		500				
Scirpus acutus		2000				
Scirpus microcarpus		200				
Scirpus validus		500				
Trlglochin maritima		500				
Trlglochin maritima		150		200		250
Forbs						
Antennaria rosea		1000		1000		1000
Aster alpinus		1000		1000		1000
Astragalus canadensis			1000	5000		
Caltha palustris		2000		2000		2000
Gaillardia aristata					500	
Petalostemon purpureum		3000		3000		
Ratibida columnifera	10		20		20	
Vicia americana						
Woody plants						
Arctostaphylos uva-ursi		10000		10000		10000
Betula papyrifera		100				
Picea glauca		1000				
Populus balsamifera		50				
Populus tremuloides		750				
Prunus pensylvanica		100				

APPENDIX 4 - Amount spent on native species, projected use and ecoregions of consumption

	Quantity of Species									Projected Use				
	1997			1998			1999			Year 2000		Year 2001		
Species	**kg**	**Plts**	**$**	**kg**	**Plts**	**$**	**kg**	**Plts**	**$**	**kg**	**Plts**	**kg**	**Plts**	**Ecoregion**
Agropyron albicans										50		50		GP
Agropyron dasystachyum	6.3		35				4		20	6		6		GP
Agropyron dasystachyum	20		250	20		250								
Agropyron dasystachyum			20000			30000			25000	400		400		GP
Agropyron dasystachyum	2			716			851			544				NWMF
Agropyron smithii	6.3		35				4		20	6		6		GP
Agropyron smithii	20		250	20		250				400		400		GP
Agropyron smithii										1				
Agropyron subsecundum							270		3800	300				Bor/MixW
Agropyron subsecundum										50		50		GP
Agropyron riparium	20		250	20		250				6		6		GP
Agropyron riparium	6.3		35				4		20	400		400		GP
Agropyron trachycaulum	20		250	20		250				200				GP
Agropyron trachycaulum	6.3		35							6		6		GP
Agropyron trachycaulum										400		400		GP
Agrostis scabra							100		2000					Bo
Bouteloua gracilis	10		600	10		600								GP
Bouteloua gracilis	12		700							12		12		GP
Bouteloua gracilis										1				GP
Bromus anomalus	2													GP
Bromus ciliatus	625		7450				200		2500	200				Bor/MixW
Bromus ciliatus	2													GP
Bromus carinatus	478			568			362							NWMF
Calamovilfa longifolia	2													GP
Deschampsia caespitosa	175		4540				230		5240	250				Boreal
Elymus canadensis										2		2		GP
Elymus canadensis	2		10				0.5		10					GP
Elymus innovatus	1		5							2		2		GP
Elymus innovatus	2													GP
Festuca saximontana	225		7410				145		4560	100				Boreal
Festuca hallii	1		15				0.5		5	1		1		GP
Festuca hallii	2													
Koeleria gracilis										1		1		GP
Koeleria gracilis	175		6990				30		1930	50				Boreal
Koeleria gracilis	2									1				GP
Munroa squarrosa	0		250	20		250								GP
Poa alpina	239			851			181							NWMF
Poa palustris	375		4480				325		3510	300				Boreal
Poa sandbergii	2													GP
Puccinellia nuttalliana	1		5							0.25		0.3		GP
Schizachyrium scoparium	2													GP
Stipa comata	2		40				0.5		2	1		1		GP
Stipa comata	2													GP
Stipa spartea							0.5		2	1				GP
Stipa viridula	2		40							1		1		GP

	Quantity of Species									Projected Use				
	1997			1998			1999			Year 2000		Year 2001		
Species	**kg**	**Plts**	**$**	**kg**	**Plts**	**$**	**kg**	**Plts**	**$**	**kg**	**Plts**	**kg**	**Plts**	**Ecoregion**
Stipa viridula	2									1				GP
Astragalus canadensis	2													GP
Helianthus maximilianii	2													GP
Lathyrus ochroleucus	2													GP
Petalostemon purpureum	2													GP
Petasites palmatus	2													GP
Acer spp.		500	500		300	300		500	500		500		500	NWFMtn
Alnus crispa											9000		9000	Bor/MixW
Alnus crispa		100	75		200	150		500	400		200		200	NWFMtn
Amelanchier alnifolia											7000		7000	Bor/MixW
Betula glandulosa		200	175		100	80		100	100		100		100	NWFMtn
Cornus stolonifera										4				NWFMtn
Cornus stolonifera											1000		1000	Bor/MixW
Corylus cornuta		4000						19240						Boreal
Lonicera involucrata					100	50								NWFMtn
Picea glauca											175000		175000	Bor/MixW
Picea glauca										2				NWFMtn
Picea glauca					30700			6940			125000			Boreal
Picea mariana								4680						Boreal
Pinus banksiana											24000		24000	Bor/MixW
Pinus banksiana										2				NWFMtn
Pinus banksiana		58800						5520						NWFMtn
Populus balsamifera		100	500								7000		7000	Bor/MixW
Populus tremuloides											20000		20000	Bor/MixW
Populus tremuloides										0.5				NWFMtn
Populus tremuloides		58800			23500			37050			125000			Boreal
Prunus pensylvanica		300	300											
Rosa woodsii											7000		7000	Bor/MixW
Salix exigua					100	50								NWF Mtn

APPENDIX 5 - Native Plant Market Assessment – Producer/Supplier Survey

Thank you for your assistance in helping us conducting the market assessment of the native plant industry in the western provinces. For our purpose, the following definition will be adopted.

Native plants are any species of plant that existed in western Canada, prior to European settlement.

Native plant material is any plant parts used for propagation such as seed , cuttings, rootstocks, bulbs, etc

Wild harvest is defined as plant material taken directly from the natural habitat.

Cultivated native is a species originally collected from the wild and grown for production

Cultivar is a named variety, which has been produced by artificial selection techniques for better performance.

Ecovar is an ecological variety (coined by Ducks Unlimited) of a native plant species artificially selected to produce a population containing maximum genetic variability.

A shrub is a woody plant, mostly less than 5 m. tall and usually with several stems.

Legume refers to any plant in the Leguminosae family; the fruit consist of a dry pod. E.g. peas.

Forbs are primarily broad-leaved flowering plants with net-like veins.

Genetic origin is defined as the place where the plant material was first collected.

Map of Ecoregions of North America. http://www.cprc.uregina.ca/ccea/ecozones/level1.html

Map of Natural regions of Alberta. http://www.gov.ab.ca/env/parks/anhic/anhic.html

I. Producer/ supplier Information

1. Please indicate whether you are a producer, supplier or both of native plant materials. I am presently a:

Producer	supplier
☐ Yes	☐ Yes
☐ No	☐ No

If no to neither one, please go to question # 24, 25 and 26

2. During the last year, how much of your work time is devoted to the native plant business?

☐ 80-100 %
☐ >60 to 80%
☐ >40 to 60%
☐ >20 to 40%
☐ <20 %

II. Production Information

3. How many years have you been in the native plants business?
_____ years

4. In 1998, how many acres / # of plants did you have in production? **Greenhouse operators, if plants are propagated, please use number of plants.**

Grasses	_____ ac	_____ plants
Forbs	_____ ac	_____ plants
Legumes	_____ ac	_____ plants
Shrubs	_____ ac	_____ plants
Wetland species	_____ ac	_____ plants
Tree species	_____ ac	_____ plants

5. In 1998, what is your total native clean seed production.

_____ kg from cultivation
_____ kg from wild harvesting.

6. In 1998, what was your total gross revenue ($) from sales of native plant materials?

☐ >2.5 million – 5 million
☐ >500,00- 1 million
☐ >100,000-250,000
☐ >50,000 - 75,000
☐ <25,000
☐ > 5 million
☐ >1million –2.5 million
☐ >250,00 –500,000
☐ >75,000 - 100,000
☐ >25,00 – 50,000

7. From which of the following sources do you receive your native plant materials? Please check more than one if applicable. **People doing wild harvesting, please answer question 12 and 13. Please check as many as apply.**

☐ I collect the seed from native landscapes (wild harvest).
☐ I collect the seed from my own crop
☐ I purchase the seed from other producer.
☐ I purchase the seed from other supplier.
☐ Other (please specify) _____

8. Do you follow any guidelines, for example as set up by the Alberta Native Plant Council when harvesting from native landscapes.

☐ I follow the Alberta Native Plant Council guidelines.
☐ I was not aware of any guidelines follow Saskatchewan Native Plant Council guidelines" Recommendations for the Collection & Use of Native Plants".
☐ I follow the guidelines as set up by Public Lands, Alberta Agriculture, Food and Rural Development.
☐ I am aware of the guidelines, but do not follow them.
☐ I follow similar guidelines from my location. (Please specify) _____ _____.
☐ I was not aware of any guidelines.

9. Please fill out the following table showing the species harvested from the wild, the amount harvested and the **ecoregion** region it was harvested. Please refer to map for ecoregions. **A list of species has been provided for your convenience. Please use the number in the adjacent column instead of writing the species, unless the species is not listed**. **Use extra sheet if need be.**

a. **Seeds**

Species	Amount of seed harvested (kg) in 1998	Ecoregions seeds were harvested	Amount of seed harvested (kg) in 1999	Ecoregions seeds were harvested

b. **Plants**

Species	Number of plants harvested in 1998	Ecoregions seeds were harvested	Number of plants harvested in 1999	Ecoregions seeds were harvested

10. If native plant material is purchased from other producers/suppliers, from which **province** (**state**) do they originate?

- ☐ Alberta
- ☐ British Columbia
- ☐ Manitoba
- ☐ Saskatchewan
- ☐ United States State _____

11. If native plant material is purchased from other producers/suppliers, from which **ecoregion** do they originate?

- ☐ Great Plains
- ☐ Tundra
- ☐ Taiga
- ☐ Arctic Cordillera
- ☐ North American Desert
- ☐ North Western Forest Mountain
- ☐ Northern Forest
- ☐ Other
- ☐ Don't know

12. If native plant material is purchased from other producers/suppliers, from which **natural region** do they originate?

- ☐ Grassland
- ☐ Parkland
- ☐ Foothills
- ☐ Rocky Mountains
- ☐ Boreal

13. For each statement below, please rate on a scale of 1 to 5 (1 being strongly disagree, 5 strongly agree and 0 being no opinion.) your level of agreement of each statement. (Circle a number.)

Statement:

a: ecovar is an acceptable source of native plant material.	1 2 3 4 5	0
b: cultivar is an acceptable source of native plant material.	1 2 3 4 5	0
c: wild harvesting is an acceptable source of native plant material.	1 2 3 4 5	0

14. Please identify your 1998 and 1999 production by species and variety, including, amount sold and place of seed origin. (please use extra sheets if necessary). **A list of species has been provided for your convenience. Please use the number in the adjacent column instead of writing the species, unless the species is not listed**. Use extra sheet if need be.

a. **Seeds**

Native seeds	Amount sold (kg)		Place of genetic origin (Ecoregion)	
	1998	1999	1998	1999

b. **Plants**

Native plants	Amount sold (kg)		Place of genetic origin (Ecoregion)	
	1998	1999	1998	1999

III. Marketing/ processing information

15. What percent of your native plant material sold is_____. **Select all options, which are appropriate. (Sum to 100%).**

- ☐ Cleaned
- ☐ Not cleaned
- ☐ Mixed with other species
- ☐ Certified (named varieties)
- ☐ Tested for germination and purity
- ☐ I do not process the seed prior to selling.
- ☐ Treated
- ☐ Other _____

16. Do you sell all the native plant material in a typical year?

- ☐ Yes.
- ☐ No. On average, what is the percentage of crop that is carried over? _____ %.

17. What information do you provide to the users of native plant species?

- ☐ Genetic source of seed. (Place of origin).
- ☐ Region of geographic adaptation where seed is tested or grown.
- ☐ Seed analysis certificate.
- ☐ Other_____

18. What percentage of the product is sold within the following distances, from your place of business? Please fill in all that apply.

_____% 0-50 km
_____% 51-100 km
_____% 101-200 km
_____% Over 200km
_____% Abroad (overseas)
_____% Other (please specify)

19. Please identify the **natural region** where your native plant material sold last year, was used **(check as many as apply). Sum up to 100%.**

☐ Grassland	_____% materials used
☐ Parkland	_____% materials used
☐ Foothills	_____% materials used
☐ Rocky Mountains	_____% materials used
☐ Boreal	_____% materials used
☐ Don't know	_____% materials used

20. Please identify the **ecoregion** where your native plant material , sold last year, was used **(check as many as apply). Sum up to 100%.**

☐ Great Plains	_____% materials used
☐ Tundra	_____% materials used
☐ Taiga	_____% materials used
☐ Arctic Cordillera	_____% materials used
☐ North American Desert	_____% materials used
☐ North Western Forest Mountain	_____% materials used
☐ Northern Forest	_____% materials used
☐ Other	_____% materials used
☐ Don't know	_____% materials used

21. Please identify the **province** where your native plant material sold last year, was used **(check as many as apply). Sum up to 100%.**

☐ Alberta	_____% materials used
☐ British Columbia	_____% materials used
☐ Saskatchewan	_____% materials used
☐ Manitoba	_____% materials used
☐ United States (State_____)	_____% materials used
☐ Don't know	_____% materials used

22. How do you market your products? **check all that apply**.

☐ On-farm sales
☐ Contract
☐ Farmer's market
☐ Roadside stands
☐ Mail order
☐ Internet
☐ Other _____

23. What percentage of your product is sold to the following sectors **Sum to 100 %.**

(a)	☐ Reclamation industry	_____%
	- ☐ oil & gas	_____%
	- ☐ sand & gravel	_____%
	- ☐ roadways & railways	_____%
	- ☐ mines	_____%
(b)	☐ Agriculture	_____%
(c)	☐ Horticulture	_____%
(d)	☐ Landscaping	_____%
(e)	☐ Wild life habitat restoration	_____%
(f)	☐ Wetland restoration	_____%
(g)	☐ Medicinal uses	_____%
(h)	☐ Reforestation	_____%

24. Please identify your short and long term production plan for native plant materials. Please use extra sheet, if need be. **A list of species has been provided for your convenience. Please use the number in the adjacent column instead of writing the species, unless the species is not listed**.

Native plant species	2000 Acreage		2002 Acreage		2005 Acreage	
	Seed (kg)	# of plants	Seed (kg)	# of plants	Seed (kg)	# of plants

25. Are any of the species targeted for future production, based on information provided in the (**Check all that apply)**.

☐ "Guide to Using Native Plants on Disturbed Lands". By H. Gerling, M. Willoughby. A. Schoepf, C. Tannas and K.Tannas. 1996.
☐ Recommended Native Grasses and Legumes for Revegetating Disturbed Lands in the Green Area. Land and Forest Service. Alberta Environmental Protection. 1996.
☐ Guidelines as set up by Public Lands, Alberta Agriculture, Food and Rural Development: Appendix F –Commercial Availability of Native Plant and Appendix H – Available Native Plant for Use in Alberta.
☐ I follow some other guidelines. **(Specify)** _____
☐ Speculation.
☐ None of the above.

26. Please identify and discuss what you believe to be obstacles in the expansion of your native plant materials business. Topic may includes production, seed sources, availability of markets, Cost, etc.

_____
_____
_____
_____
_____

Additional comments.

_____
_____
_____
_____

Thank you kindly for participating in our survey.

PLEASE RETURN SURVEY BY DECEMBER 10th IN ENVELOPE PROVIDED. A COPY OF THE SURVEY RESULTS WILL BE MAILED OUT TO YOU BY NEXT APRIL.

Name: _____
Business: _____
Address: _____
City/State: _____

Phone #: _____ FAX #: _____ E-Mail: _____

APPENDIX 6 - Native Plant Market Assessment – User Survey

Thank you for your assistance in helping us, conducting the market assessment of the native plant industry in the western provinces. For our purpose, the following definition will be adopted.

Native plants are any species of plant that existed prior to European settlement.

Native plant material is any plant parts used for propagation such as seed, cuttings, rootstocks, bulbs, etc

Wild harvest is defined as plant material taken directly from its natural habitat.

Cultivated native is a species originally collected from the wild and grown for production

Cultivar is a named variety, which has been produced by artificial selection techniques for better performance.

Ecovar is an ecological variety of a native plant species (coined by Ducks Unlimited) artificially selected to produce a population containing maximum genetic variability.

A shrub is a woody plant, mostly less than 5 m. tall and usually with several stems.

Legume refers to any plant in the Leguminosae family; the fruit consist of a dry pod. E.g. peas.

Forbs are primarily broad-leaved flowering plants with net-like veins.

Genetic origin is defined as the place where the plant material was first collected in the wild.

Map of Ecoregions of North America. http://www.cprc.uregina.ca/ccea/ecozones/level1.html

Map of Natural regions of Alberta. http://www.gov.ab.ca/env/parks/anhic/anhic.html

1. For how many years have you been using native plant materials?

   ☐ _____ Year(s)
   ☐ I have not purchased or used native plant materials in the past. (**If not a user, please answer question 2 & 13.)**

2. I **do not** use native plants because. (Please check as many as apply.)

   ☐ Lack of available species.
   ☐ Seeds/plant materials are too expensive.
   ☐ Lack of production information.
   ☐ Lack of quality
   ☐ Equipment
   ☐ Other (Please specify) _____

3. Why are native plant materials used in your particular industry? (Please check as many as apply.)

☐ Native plants performed better than introduced species.
☐ Because of changing regulation governing the industry.
☐ Increase diversity.
☐ Other (Please specify) _____

4. For each statement below, please rate on a scale of 1 to 5 (1 being strongly disagree, 5 strongly agree and 0 being no opinion.) your level of agreement of each statement. (Circle a number.)

Statement:

a: ecovar is an acceptable source of native plant material. 1 2 3 4 5 0
b: cultivar is an acceptable source of native plant material. 1 2 3 4 5 0
c: wild harvesting is an acceptable source of native plant material. 1 2 3 4 5 0

5. Please complete the following table. For each species of grass, wildflower (forbs & legumes), shrubs, provide the **quantity purchased, amount spent ($), and the Ecoregion** in which the seed was used. **A list of species has been provided for your convenience. Please use the number in the adjacent column instead of writing the species, unless the species is not listed**. **Use extra sheet if need be**

Species	1997			1998			1999		
	Amt. of materials bought	Amt. spent ($)	Ecoregion used	Amt. of materials bought	Amt. spent ($)	Ecoregion used	Amt. of materials bought	Amt. spent ($)	Ecoregion used

6. Which of the following **sector** best represent the industry for which you have purchased any of the native plant materials? Also, please indicate the amount (percent) of seeds or plants species used in each of these sector.

(a) ☐ Reclamation industry	_____%
- ☐ oil & gas	_____%
- ☐ sand & gravel	_____%
- ☐ roadways & railways	_____%
- ☐ mines	_____%
(b) ☐ Agriculture	_____%
(c) ☐ Horticulture	_____%
(d) ☐ Landscaping	_____%
(e) ☐ Wildlife habitat restoration	_____%
(f) ☐ Wetland restoration	_____%
(g) ☐ Medicinal uses	_____%
(h) ☐ Landfill	_____%
(i) ☐ Reforestation	_____%
(j) ☐ Other _____	_____%

7. What is the distance between your place of business and your native plant materials grower or supplier?

Grower	**Supplier**
_____0-50 km	_____0-50 km
_____51-100 km	_____51-100 km
_____101-200 km	_____101-200 km
_____Over 200km	_____Over 200km
☐ Other (Please specify) _____	☐ Other (Please specify)_____

8. Please identify the **ecoregion** where the native plant materials bought were used, (check as many as apply). Please refer to ecoregion map.

☐ Great Plains	_____% materials used
☐ Tundra	_____% materials used
☐ Taiga	_____% materials used
☐ Arctic Cordillera	_____% materials used
☐ North American Desert	_____% materials used
☐ Northern Forest	_____% materials used
☐ North Western Forest Mountain	_____% materials used
☐ Other	_____% materials used
☐ Don’t know	_____% materials used

9. Please identify the **geographical area** where the native plant materials bought were used, (check as many as apply).

☐ Grassland	_____% materials used
☐ Parkland	_____% materials used
☐ Foothills	_____% materials used
☐ Rocky Mountains	_____% materials used
☐ Boreal	_____% materials used
☐ Don't know	_____% materials used

10. Do you know the **geographical origin (original genetic source)** of the native plant material you purchased last year or in past years?.

☐ I know the geographical origin of all native plant materials I purchased.
☐ I know the geographical origin of some native plant materials I purchased.
☐ I do **not** know the geographical origin of any native plant materials I purchased, wish I did.
☐ I do **not** know the geographical origin of any native plant materials I purchased, but it does not matter.

11. Does the grower/supplier provide you with any information regarding the native plant materials you purchased?

☐ Seed analysis (purity & germination) ☐ Source of seed ☐ None

12. In your opinion, what has to be done to increase the use of native species.

☐ Increase research for development of native species.
☐ Increasing public awareness on the use of native species by holding workshops, etc.
☐ Other (Please specify) _____

13. Please fill the following table, based on your anticipated use of native plants in the future. **A list of species has been provided for your convenience. Please use the number in the adjacent column instead of writing the species, unless the species is not listed**. **Use extra sheet if need be**.

Species	Projected use		Ecoregion plant materials to be used	Projected use (kg of seed or # of plants)		Ecoregion plant materials to be used
	Year 2000			Year 2001		
	Seed (kg)	# of plants		Seed (kg)	# of plants	

Comments

_____

_____

_____

_____

Thank you kindly for participating in our survey.

Name: _____

Business: _____

Address: _____

City/State: _____

_____

Phone #: _____ FAX #: _____ E-Mail: _____

PLEASE RETURN SURVEY BY DECEMBER 10th IN ENVELOPE PROVIDED. SURVEY RESULTS WILL BE MAILED OUT BY APRIL

APPENDIX 7 - List of participants

Distribution List

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
		A.E. McKenzie Co. Inc.	30 - 9th Street, Suite 100	BRANDON	MB	R7A 6E1
		Ag-Vision Seeds Ltd.	Box 550	CARROT RIVER	SK	S0E 0L0
		Alberta Nurseries & Seeds Ltd.	Box 20	BOWDEN	AB	T0M 0K0
		ALCLA Native Plant Restoration Inc.	3208 Bearspaw Drive NW	CALGARY	AB	T2L 1T2
		Aquatic Enterprises	1404 Meadow Brooks Drive	AIRDRIE	AB	T4A 2B3
		BC Landscape & Nursery Association (BCLNA)	101-5830 176 A Street	Surrey	BC	V3S 4E3
		Bedrock Seed Bank	7842 - 106 Ave	EDMONTON	AB	T6A 1H5
		Betty Van Exan Enterprises	3621 Webber Road	WESTBANK	BC	V4T 1J9
		Bishop Seeds Limited	Box 338	BELLEVILLE	ON	K8N 5A5
		C.E. Jones & Associates Ltd. Native Plant Nursery	204 - 26 Bastion Square	VICTORIA	BC	V8W 1H9
		Canadian Wildlife Service	Box 280	SIMPSON	SK	S0G 4M0
		Cannor Nurseries Ltd.	48291 Chilliwack Central Road	CHILLIWACK	BC	V2P 6H3
		Co-op Atlantic	P.O. Box 750	MONCTON	NB	E1C 8N5
		Cowie Farms Ltd.	1642 - 11th Ave. NW	MOOSE JAW	SK	S6H 6W9

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
		D N A Gardens	Box 544	ELNORA	AB	T0M 0Y0
		Devonian Botanic Garden	The University of Alberta	EDMONTON	AB	T6G 2E1
		Foster's Seed & Feed Ltd.	Box 210	BEAVERLODGE	AB	T0H 0C0
		Golden Acre Seeds	Box 1090	FAIRVIEW	AB	T0H 1L0
		Grounds Department	University of Calgary, 2500 University Drive	CALGARY	AB	T2N 1N4
		Hallman Nurseries	200 Old Divide Road	GANGES, SALT SPRING ISLAND	BC	V8K 2G7
		Hutchinson Nursery Sales	18997 - 54th Avenue	SURREY	BC	V3S 8E5
		Hybrid Nurseries Ltd.	12682 Woolridge Road	PITT MEADOWS	BC	V3Y 1Z1
		Industrial Forestry Service Ltd.	1595 Fifth Avenue	PRINCE GEORGE	BC	V2L 3L9
		Janus Gardens [Sold]	26059 Dewdney Trunk Road	MAPLE RIDGE	BC	V4R 1Y5
		Jones Nurseries Ltd.	16060 Westminster	RICHMOND	BC	V6V 1A8
		Kenneth C. Long Seeds Ltd.	P.O. Box 100	SPRING COULEE	AB	T0K 2C0
		Knutson & Shaw Growers	Box 295	VULCAN	AB	T0L 2B0
		Lafarge Canada Inc., Western Region	Highway 1A, P.O. Box 160	EXSHAW	AB	T0C 2C0
		Lindenberg Seeds Limited	803 Princess Avenue	BRANDON	MB	R7A 0P5

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
		Linnaea Nurseries Ltd.	3666 - 224th Street	LANGLEY	BC	V2Z 2G7
		Mixed Grass Prairie Habitat Restoration Project	Box 280	SIMPSON	SK	S0G 4M0
		Moore Seed Processors Inc.	Box 360	DEBOLT	AB	T0H 1B0
		Nature's Garden Seed Co.	P.O. Box 40121	VICTORIA	BC	V8W 3N3
		Newfield Seeds	Box 100	NIPAWIN	SK	S0E 1E0
		North American Native Plant Society	Box 336, Station F	TORONTO	ON	M4Y 2L7
		Northstar Seed Ltd.	Box 2220	NEEPAWA	MB	R0J 1H0
		Northwest Native Plants	4262 Wriths Road	Clayburn	BC	V0X 1E0
		Picket's Nurseries Ltd.	14610- Neaves Road	PITT MEADOWS	BC	V3Y 1Z1
		Pickseed Canada Inc.	P.O. Box 304	LINDSAY	ON	K9V 4S3
		Pickseed Canada Inc.	Box 3230	SHERWOOD PARK	AB	T8A 1A6
		Piroche Plants Inc.	20542 McNeil Road	PITT MEADOWS	BC	V3Y 1Z1
		Prairie Fire Resources	Box 607	CROSSFIELD	AB	T0M 0S0
		Prairie Seeds Ltd.	1805 - 8 Street	NISKU	AB	T9E 7S8
		Richardson Seed	4055 McConnell Drive	BURNABY	BC	V5A 3A7
		Roberts Seed Company	P.O. Box 206	TANGENT	OREGON	

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
		Sagebrush Nursery	38084 - 93rd Street (Island Road)	OLIVER	BC	V0H 1T0
		Sask. Forage Council	c/o Dept. of Crop Sci. & Plant Ecology, 51 Campus Drive	SASKATOON	SK	S7N 5A8
		Saskatchewan Wildlife Federation	444 River St. W.	MOOSE JAW	SK	S6H 6J6
		SaskEnergy/TransGas	15 - 1945 Hamilton Street	REGINA	SK	S4P 2C7
		Secan Association	200-57 Auriga Drive	NEPEAN	ON	K2E 8B2
		Shand Greenhouse	Box 280	ESTEVAN	SK	S4A 2A3
		Sunshine Village	P.O. Box 1510	BANFF	AB	T0L 0C0
		Tartan Tree Farms Ltd.	18071 Westminster Highway	RICHMOND	BC	V6V 1B1
		The Conservancy	51563 Range Road 212 A	SHERWOOD PARK	AB	T8G 1B1
		United Grain Growers Ltd.	P. O. Box 7430	EDMONTON	AB	T5E 6K1
		W-L Research Inc.	8701 West Highway 14	EVANSVILLE	WI	
		Wild Rose Seeds Inc.	Box 9	SEXSMITH	AB	T0H 3C0
		Woodland Native Plant Nurser	4060 Happy Valley Road	VICTORIA	BC	V9B 5T7
Aarts	Leo	Aarts Nursery Ltd.	7200 - 216th Street	SURREY	BC	V3A 4R7
Adamson	Dave	Adamson's Heritage Nursery	1832 - 240th Street	LANGLEY	BC	V2Z 3A5

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Albush	Vern	Smokey River Coal Ltd.	P.O Box 2000	GRANDE CACHE	AB	T0E 0Y0
Allen	John	Value Added Seeds Inc.	Box 2000	LUMSDEN	SK	S0G 3C0
Anders	Tom	Tib Szego Associates	R. R. 3	FENELON FALLS	ON	K0M 1N0
Anderson	Jim	Byland's Nurseries	1600 Byland Road	KELOWNA	BC	V1Z 1H6
Barnard	Frank	Western Tree Seed Ltd.	P.O. Box 144	BLIND BAY	BC	V0E 1H0
Bassi	Suki	Dinesen Nurseries Ltd.	16161 - 110th Avenue	SURREY	BC	V4N 1R1
Bauman	Gary	Limagrain Canada Seeds Inc.	4-411 Downey Road	SASKATOON	SK	S7N 4L8
Beck	Gloria	Parkland Nurseries	RR #2	RED DEER	AB	T4N 5E2
Bender	Linda		Box 393	DODSLAND	SK	S0L 0V0
Benschop	Katie	Blooming Prairie	9535 - 76 Ave.	EDMONTON	AB	T6C 0K1
Berg	Clayton	Valley Nursery	P.O. Box 4845	HELENA	MT	
Berggren	Chris	Alberta Nurseries & Seeds Ltd.	Box 20	BOWDEN	AB	T0M 0K0
Berry	Byron or Donald	Norfarm Seeds, Inc.	Box 725	BEMIDJI	MN	
Bloski	J.C.	Early's Farm & Garden Centre Inc.	2615 Lorne Ave	SASKATOON	SK	S7J 0S5
Bobbee	Paul and David	Triple "B" Seeds	Box 972	ARBORG	MB	R0C 0A0
Bollefer	Dean		Box 242	LAKE LENORE	SK	S0K 2J0

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Brockmayer	Jim	Bluestem Nursery	1949 Fife Road	CHRISTINA LAKE	BC	V0H 1E3
Bron	Vince	Bron & Sons	Box 2643 - Carson Road	GRAND FORKS	BC	V0H 1H0
Budd	Warden & Sylvia	Rangeland Seeds	Box 928	VULCAN	AB	T0L 2B0
Burke	Patrick	Bitterroot Restoration Inc.	445 Quast Lane	CORVALLIS	MT	
Bylenga	Neil	Ground Effects Wholesale Nurseries Ltd.	6123 - 216th Street	LANGLEY	BC	V3A 6Y3
Campbell	Cathy	Springbank Wildflowers	Box 15, Site 2, RR2	CALGARY	AB	T2P 2G9
Carvell	David	Performance Seeds Canada Ltd.	Box 35028	REGINA	SK	S4X 4C6
Cassels	Anne	Nathan Creek Nursery	7321 - 272nd Street	LANGLEY	BC	V3A 4P9
Castonguay	Gary	Rivershore Nurseries Ltd.	2514 Nechako Drive	KAMLOOPS	BC	V2E 2C9
Charleson	Lee	PRT - Reid, Collins Nurseries Ltd.	Box 430	ALDERGROVE	BC	V4W 2T9
Charteris	Neil		Box 530	KERROBERT	SK	S0L 1R0
Cloutier	Denis C.	Cloutier Agra Seeds Inc.	P.O. Box 145	WINNIPEG	MB	R3V 1L5
Collinson	Tom	Gabriola Growing Co.	RR1, Site 3CA	GABRIOLA ISLAND	BC	V0R 1X0
Conners	Susan	Coyote Coulee Seeds	RR #2	CRESSFORD	AB	
Cool	Marc	Barenbrug USA-Marketing Div.	P.O. Box 239	TANGENT	OR	
Couturier	Pierre	Cloverdale Nursery	17814 - 60th Ave	SURREY	BC	V3S 1V4

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Cruse	Eve	Eve's Leaves	9850 - 154 St.	EDMONTON	AB	T5P 2G6
Curry	Phil	Ducks Unlimited Canada	P.O. Box 2139	MELFORT	SK	S0E 1A0
Dangi	Om P.	Agriculture & Environment Renewal Canada (AERC) Inc.	250B Greenbank Road	NEPEAN	ON	K2H 7N9
Dawson	John	Dawson Seed Co.	B 17802 - 66th Avenue	SURREY	BC	V3S 7X1
Dawson	John or Gordon	Dawson Seed Company Ltd.	17802 - 66th Ave., Bldg. B	SURREY	BC	V3S 7X1
De Jong	Doug	Misty Meadow Nursery	18439 - 80th Avenue	SURREY	BC	V4N 3G3
Dyck	Tim or Lloyd	Brett-Young Seeds Ltd.	P.O. Box 99	ST. NORBERT	MB	R3V 1L5
Dyck	David	Dyck Forages & Grasses	P.O. Box 275	ELIE	MB	R0H 0H0
Dzisiak	David	Dow Agrosciences	1144 - 29 Avenue NE, Suite 201	CALGARY	AB	T2E 7P1
Entz	Peter	James Richardson International	One Lombard Place	WINNIPEG	MB	R3B 0X8
Everts	Debbie & Ernie	Grumpy's Greenhouses & Gardens	Box 2488	PINCHER CREEK	AB	T0K 1W0
Falkenburg	Janet	Greenview Nurseries & Tree Farm	Box 12, Site 16, RR7	CALGARY	AB	T2P 4G7
Fargey	Pat		Box 150	VAL MARIE	SK	S0N 2T0
Fischer	Christiane	Alpenflora Gardens	17985 - 40th Avenue	SURREY	BC	V4P 1M5
Fishley	Rita		Box 212	SASKATOON	SK	S7K 3J7
Fodchuk	Roman	Borealis Botanicals	Box 91	COCHRANE	AB	T0L 0W0

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Fraser	Richard & Nancy	Fraser's Thimble Farm	175 Arbutus Road	SALT SPRING ISLAND	BC	V8K 1A3
Friesen	Glen	Interlake Seeds	Box 190	FISHER BRANCH	MB	R0C 0Z0
Froehlich	Shirley	Prairie Originals	17 Schreyer Crescent	ST. ANDREWS	MB	R1A 3A6
Fung	Martin	Syncrude Canada	P.O. Bag 4009	FORT MCMURRAY	AB	T9H 3L1
Gleave	Chuck or Ebba	Notch Hill Nursery [In Development]	RR 1, S22, C4	SORRENTO	BC	V0E 2W0
Glenn	Robert		P.O. Box 228	MATSQUI	BC	V4K 3R2
Golas	Matt or Nathan	Norcan Seeds, Inc.	Box 305	FISHER BRANCH	MB	R0C 0Z0
Gregory	Paul or Lee	Interlake Forage Seeds	Box 190	FISHER BRANCH	MB	R0C 0Z0
Gregory	Doug or Sandy	Quality Seed Collections Ltd.	Box 1531	KAMLOOPS	BC	V2C 6L8
Grilz	Leon & Mary	Blazing Star Wildflower Seed Co.	Box 143	ST. BENEDICT	SK	S0K 3T0
Gunner	Andrea	Rosebank Farms	RR 4, C17	ARMSTRONG	BC	V0E 1B0
Hale	Jean	Cairnpark Nursery Services Inc.	3467 Glenora Road, RR 3	DUNCAN	BC	V9L 2S1
Hamilton	Ton or Mary	Sorrento Nurseries	Box 268	SORRENTO	BC	V0E 2W0
Hammermeister	Andy	Saskatchewan Native Plant Council	Box 28, RR6	SASKATOON	SK	S7K 3J9
Hammersley	Bobbie	Botanical Dynamics	RR 1 S72 C4	OLIVER	BC	V0H 1T0
Hammersley	Bobbie	K & C Silviculture	Box 459	OLIVER	BC	V0H 1T0

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Hannas	Patricia	Hannas Seeds	5039 - 49 Street	LACOMBE	AB	T4L 1Y2
Heal	Tom	Sunset Seed Company	Box 1176	CRESTON	BC	V0B 1G0
Hellenius	Peter	Silva Enterprises Ltd.	P.O. Box 2888, Station B	PRINCE GEORGE	BC	V2N 4T7
Hetland	Bill	Hetland Seeds Ltd.	Box 580	NAICAM	SK	S0K 2Z0
Heuver	Tony	Eagle Lake Nurseries Ltd.	Box 2340	STRATHMORE	AB	T1P 1K3
Hiebert	Bob	Agricore	Box 2700	CALGARY	AB	T2P 2P5
Hillson	Dick	The Hillson Nursery	P.O. Box 39	ROCHESTER	AB	T0G 1Z0
Hould	Jay	Big Sky Wholesale Seeds	Box 852	SHELBY	MT	
Howison	Bruce	Cargill Seed	Box 5900	WINNIPEG	MB	R3C 4C5
Ivanochko	Gerry	Saskatchewan Agriculture & Food	Box 5000	LA RONGE	SK	S0J 1L0
Johnsen	Sharon	Specimen Trees Wholesale Nurseries Ltd.	18598 Advent Road	PITT MEADOWS	BC	V3Y 2G8
Johnson	Keith or Brian	S.S. Johnson Seeds Ltd.	Box 3000	ARBORG	MB	R0C 0A0
Jordens	Deb	Farmers Co-op Seeds Ltd.	Box 579	RIVERS	MB	R0K 1X0
Jorgenson	Todd	Saskatchewan Agriculture & Food	4827 - 44th Street	LLOYDMINSTER	SK	S9V 0G7
Kaye	John	Adera Nurseries Ltd.	1071 Wain Road, RR 4	SIDNEY	BC	V8L 5V1
Kerschbaumer	Heather	The Grass Connection	Box 66	FAIRVIEW	AB	T0H 1L0

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Kesslering	Monte	Saskatchewan Wheat Pool	2625 Victoria Avenue	REGINA	SK	S4T 7T9
Kimoff	Peter	Kimoff Wholesale Nursery	6656 Welch Road	SAANICHTON	BC	V8M 1W6
Kingshott	Bruce or Lois	The Cedar Creek Seed Co. Inc.	254 E. 1st Street	NORTH VANCOUVER	BC	V7L 1B3
Kinkhorst	Don	Allied Seed Cooperative Inc.	1108 Hillsdale Drive	MACON	MO	
Klemmer	Norm	Newfield Seeds Company Ltd.	Box 100	NIPAWIN	SK	
Knudson	Bob	Agripro Seeds, Inc.	112 N. University Dr., Suite 309	FARGO	ND	
Krahn	Vic	Lakeshore Tree Farms Limited	Box 2A, RR 3	SASKATOON	SK	S7K 3J6
Kuperus	David	Coaldale Nurseries	Box 1267	COALDALE	AB	T1M 1N1
Labarre	Frank L.	Imperial Seed (1979) Ltd.	1038 Arlington Street	WINNIPEG	MB	R3E 2G1
Lahring	Jan & Heinjo	Bearberry Creek Water Gardens	RR2	SUNDRE	AB	T0M 1X0
Laidlaw	Ted & Eleanor	Laidlaw Nursery	Box 316	TOFIELD	AB	T0B 4J0
Lamont	Lionel		295 Henderson Drive	REGINA	SK	S4N 6C2
Landis	Tom	Nursery Specialist, USDA Forest Service, PO Box 3623		PORTLAND	OREGON	97208-3623
Lange	Harro or Elko	Lange's Landscaping Design and Nursery	9041 Highway 6	VERNON	BC	V1B 3B5
Larkin	Lee	B.C.'s Wild Heritage Plants	4733 Extrom Road	CHILLIWACK	BC	V2R 4V1

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Levelton	Peter or Jane	East Richmond Nurseries	18431 Westminster Highway	RICHMOND	BC	V6V 1B1
Lewis	Randy & Rachael	Arctic Alpine Seed Company	105 Granit Road	WHITEHORSE	YT	Y1A 2V8
Liu	Jiasen	Synphar Laboratories Inc.	#24, Taiho Alberta Centre, 4290 - 91 A Street	EDMONTON	AB	T6E 5V2
Lockwood	Barry	Avon Plants	4290 Blenkinsop Road	VICTORIA	BC	V8X 2C4
Lowen	Kerby	Prairie Seeds Inc.	1805 - 8 Street	NISKU	AB	T9E 7S8
Lyons	Keith	Dynamic Seeds Ltd.	Box 813	FAIRVIEW	AB	T0H 1L0
Lyons	Keith	Dynamic Seeds Ltd.	Box 813	FAIRVIEW	AB	T0H 1L0
Manness	Ron	Manness Seed	Box 58	DOMAIN	MB	R0G 0M0
Matthews	Glenn	Trees Plus Nursery	3204 Drinkwater Road, RR 4	DUNCAN	BC	V9L 3W8
McDougall	Brent	Elk Island National Park	Site 4, RR 1	FORT SASKATCHEWAN	AB	T8L 2N7
McGaw	Paul	Canadian Wildflower Society	43 Anaconda	SCARBOUGH	ON	M1L 4M1
McNaughton	Brian	Hytech Production Ltd.	P.O. Box 1454	LETHBRIDGE	AB	T1J 4K2
McTavish	Bruce	Pacific Plants Ltd.	12377 - 22nd Avenue	WHITE ROCK	BC	V4A 5L9
Mead	Doug	Shell Canada	400 - 4th Ave SW Box 100, Station M	CALGARY	AB	T2P 2H5
Milbradt	Tony	Rain Forest Nurseries Inc.	1470 - 227th Street	LANGLEY	BC	V5A 6H5

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Miller	Mack		426 Keeley Way	SASKATOON	SK	S7J 4B2
Miller	Kenneth or Mary	Miller Seeds	Box 87	MILK RIVER	AB	T0K 1M0
Miller	Mack & Lee	Millers' Native Plants	426 Keeley Way	SASKATOON	SK	S7J 4B2
Mistol	Dave		Box 70	ST. PAUL	AB	T0A 3A0
Morgan	Carol & John	Prairie Habitats Inc.	P.O. Box 1	ARGYLE	MB	R0C 0B0
Mosterman	Theo or Sylvia	Mosterman Plant Propagators	43583 Adams Road	CHILLIWACK	BC	V2R 4L1
Murray	Hugh	Scafri Farms	4571 - 40th Steet NE	SALMON ARM	BC	V1E 4M4
Nataros	Rod	N.A.T.S. Nursery Ltd.	17127 Fraser Highway	SURREY	BC	V3S 4R5
Nernberg	Dean	Canadian Wildlife Service	115 Perimeter Road	SASKATOON	SK	S7N 0X4
Newkirk	Deanne S.	SaskPower	Environmental Programs, 2025 Victoria Avene	REGINA	SK	S4P 0S1
Nielsen	Al	The Professional Gardener Company Limited	915 - 23 Avenue SE	CALGARY	AB	T2G 1P1
Orlowsky	John	Nechako Nursery	RR 6, S11, C21	PRINCE GEORGE	BC	V2N 2J4
Ostergard	Arne or Jack	Jaro Forest Services Ltd	2882 Carlisle Lane	CUMBERLAND	BC	V0R 1S0
Oud	Richard	R. Oud Native Plants	4056 Saanich Road	VICTORIA	BC	V8X 1Z5
Peel	Bruce or Lauren	Peel's Nurseries Ltd.	11610 Sylvester Road	MISSION	BC	V2V 4J1

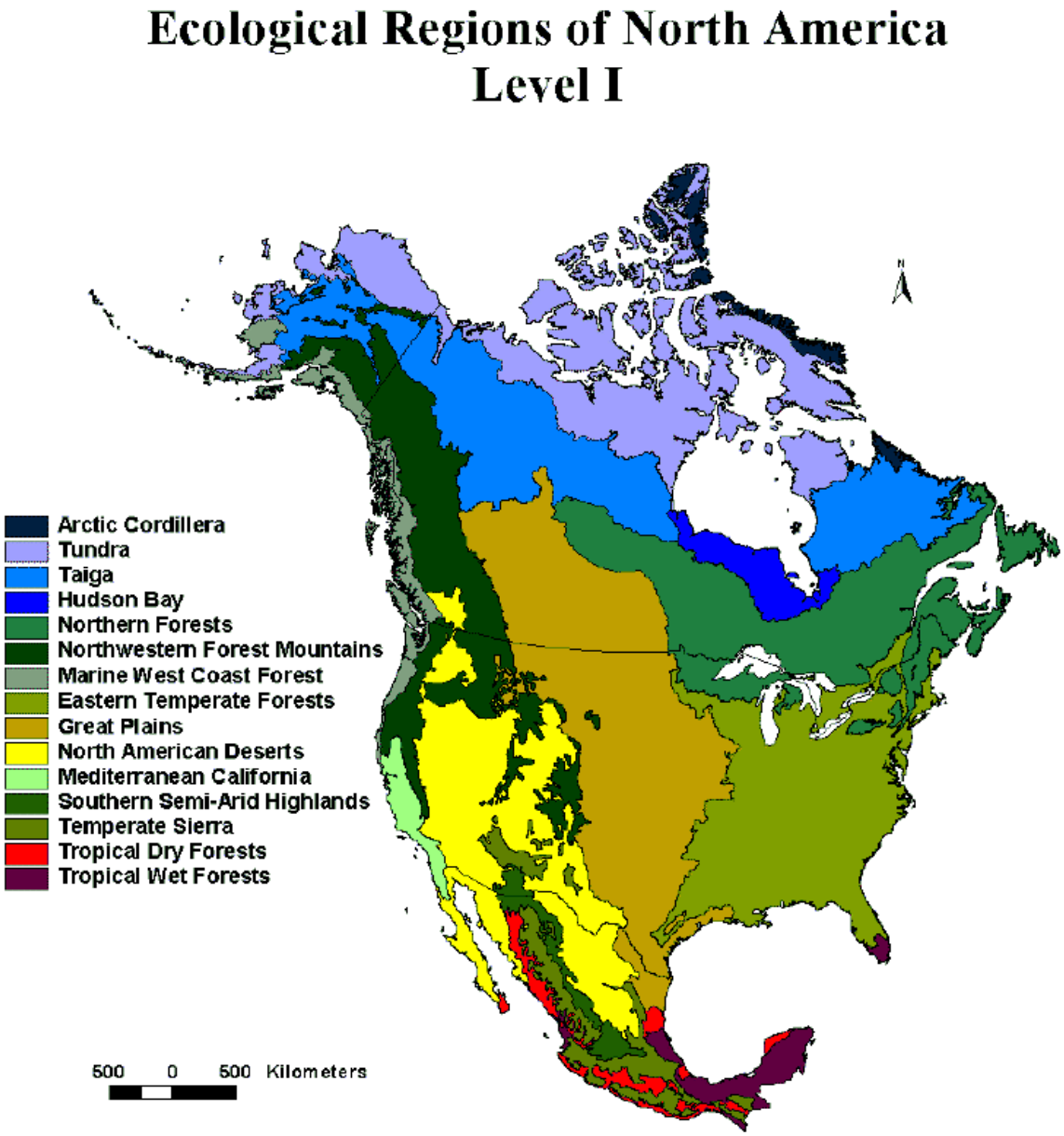
Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Pengelly	Ian	Banff National Park	Box 900	BANFF	AB	T0L 0C0
Peterson	Jerry	Peterson Seed Company	P.O. Box 346	SAVAGE	MN	
Petherbridge	Vince	EnviroScapes	1213 - 5 Ave., S.	LETHBRIDGE	AB	T1J 0V6
Pewarchuk	Denise	Pewarchuk Farms	Box 811	LAMONT	AB	T0B 2R0
Phillips	Perry A.		Box 22, Site 6, RR1	SUNDRE	AB	T0M 1X0
Phillips	S.C. and Bill	Phillips Seeds Ltd.	Box 249	TISDALE	SK	S0E 1T0
Piggott	Don	Yellowpoint Propagation Ltd.	13735 Quesnel Road, RR3	LADYSMITH	BC	V0R 2E0
Porter	Barbara or Richard	Streamside Native Plants	3300 Fraser Road	COURTENAY	BC	V9N 8H9
Pulvermacher	Monique		Box 492	BRUNO	SK	S0K 0S0
Rehsler	Gotthard or Richard	Yarrow Nursery Ltd.	41480 Yarrow Central Road	YARROW	BC	V2R 5G5
Reimer	Greg	SWCC	Room 202, 2050 Cornwall St	REGINA	SK	S4P 2K5
Rempel	Blair	Riverview Seeds Ltd.	Box 3392	NIPAWIN	SK	S0E 1E0
Renkes	Blaine	Cardinal River Coal	Bag Service 2570	HINTON	AB	T7V 1V5
Richter	Conrad	Otto richter & sons Limited	357 Highway 47	GOODWOOD	ON	L0C 1A0
Rogers	Robert	Medicinal Plants of the Prairies	10326 - 81 Ave.	EDMONTON	AB	T6E 1X2
Rose	Robin	Nursery Technology Cooperative		CORVALLIS	MT	

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Roska	Clayton	Northern Vigor Seeds Ltd.	8002 Mission Heights Dr.	GRANDE PRAIRIE	AB	T8W 1Y9
Rowland	Gordon	Crop Development Centre	University of Saskatchewan	SASKATOON	SK	S7N 5A8
Ryrie	Jacqueline	Canadian Association of Agri-Retailers	107 - 1090 Waverley Street	WINNIPEG	MB	R3T 0P4
Salvail	Ken or Wendy	Okanagan Plant Propagators	Box 947	WINFIELD	BC	V0H 2C0
Schewe	Brian	True North Native Seeds	Box 847	BEAUSEJOUR	MB	R0E 0C0
Schwanke	Randall	Waterton Lakes National Park	Waterton National Park	WATERTON PARK	AB	T0K 2M0
Seaborn	Tom, Kirk & Sharon	Seaborn Seeds	Box 298	ROCKY MOUNTAIN HOUSE	AB	T0M 1T0
Simpson	B.E.	Vesey's Seeds Limited	Highway 25	YORK	PEI	C0A 1P0
Sippell	Dave	Canterra Seeds Ltd.	43 Scurfield Blvd	WINNIPEG	MB	R3Y 1G4
Small	Robert	Agritel Grain Ltd.	Box 808	BEAUSEJOUR	MB	R0E 0C0
Sprigings	Doug	Foothills Nurseries	2626 - 48 St. SE	CALGARY	AB	T2B 1M4
Steinwand	Ken	Peace Valley Seeds Ltd.	Box 100	RYCROFT	AB	T0H 3A0
Stewart	Nora & Don		Box 273	ARCOLA	SK	S0C 0G0
Stewart	Dan	Stewart Brothers Nurseries Ltd.	P.O. Box 1360, Postal Box Centre	KELOWNA	BC	V1Y 7V8
Stoffelsma	Hans	Arbutus Grove Nursery Ltd.	9721 West Saanich Road	SIDNEY	BC	V8L 5T5

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Sweeney	Robert and Frank	Sweeney Seed Company, Inc.	110 S. Washington Street	MOUNT PLEASANT	MI	
Swierstra	Dan or Theresa	Meadow Green Nursery	26362 Dewdney Trunk Road	MAPLE RIDGE	BC	V2W 1A1
Tannas	Kathy & Clare	Eastern Slopes Rangeland Seed Ltd.	Box 273	CREMONA	AB	T0M 0R0
Tebbutt	Gregg	Ron Tebbutts Seeds Ltd.	Box 664	NIPAWIN	SK	S0E 1E0
Thompson	Deryl	Public Works, City of Edmonton	12th Floor Century Place, 9803 - 102 A avenue	EDMONTON	AB	T5J 3A3
Timchishen	Don	Timchishen Seeds	Box 776	ARBORG	MB	R0C 0A0
Trawin	John and William	Trawin Seeds	Box 267	MELFORT	SK	S0E 1A0
Van Der Zalm	Art	Art's Nursery Wholesale and Retail	8875 Armstrong Road, RR 6	LANGLEY	BC	V1M 2R3
Van Vloten	Casey	Van Vloten Nurseries Ltd.	17616 Ford Road	PITT MEADOWS	BC	V3Y 1Z1
Veikle	Carl and Lorne	Veikle Seeds Ltd.	Box 548	CUTKNIFE	SK	S0M 0N0
Voogd	Harold & Hetty	Sunstar Nurseries Ltd.	810 - 167 Ave NE	EDMONTON	AB	T5B 4K3
Walker	Vince and Dave	Walker Seeds Ltd.	P.O. Box 457	STAR CITY	SK	S0E 1P0
Ware	Grahame	Natural Legacy Seed	RR 2, C1 Laird	ARMSTRONG	BC	V0E 1B0
Westhaver	Al	Jasper National Park	Box 10	JASPER	AB	T0E 1E0
Williamson	Tom	Williamson Seeds	Box 6	PAMBRUN	SK	S0N 1W0

Surname	Firstname	Business Name	Address	City	Prov	Postal Code
Willoughby	Mike	Land & Forest Services Alberta Environment	9920 - 108 Street	EDMONTON	AB	
Wills	Rob		Box 1266	MOOSE JAW	SK	
Wilson	Brian	Peace River Seed Co-op Ltd.	Box 40	RYCROFT	AB	T0H 3A0
Wolfater	Ron & Roberta		Box 177	EASTEND	SK	S0N 0T0
Woodgate	Lynn	Madrone Restoration Nursery	1877 Herd Road, RR 1	DUNCAN	BC	V9L 1M3
Woodsworth	Ingeborg	Mayo Creek Gardens [In Development]	6596 McLean Road, Box 351	LAKE COWICHAN	BC	V0R 2G0
Woodward	Paige or Pat	Pacific Rim Native Plants	44305 Old Orchard Road	SARDIS	BC	V2R 1A9
Wotherspoon	Jim	Cheyenne Tree Farms	Box 49040 Strathcona Industrial	EDMONTON	AB	T6E 6H4
Wright	Ken & Pam	Bow Point Nursery Ltd.	Box 16, Site 3, RR 12	CALGARY	AB	T3E 6W3
Yoshizawa	Dennis	Yoshizawa Nurseries Ltd.	9062 - 140th Street	SURREY	BC	V3V 5Y9
Young	David	David P. Young Native Plant Nursery	726 Windover Terrace, RR2	VICTORIA	BC	V9V 5B4

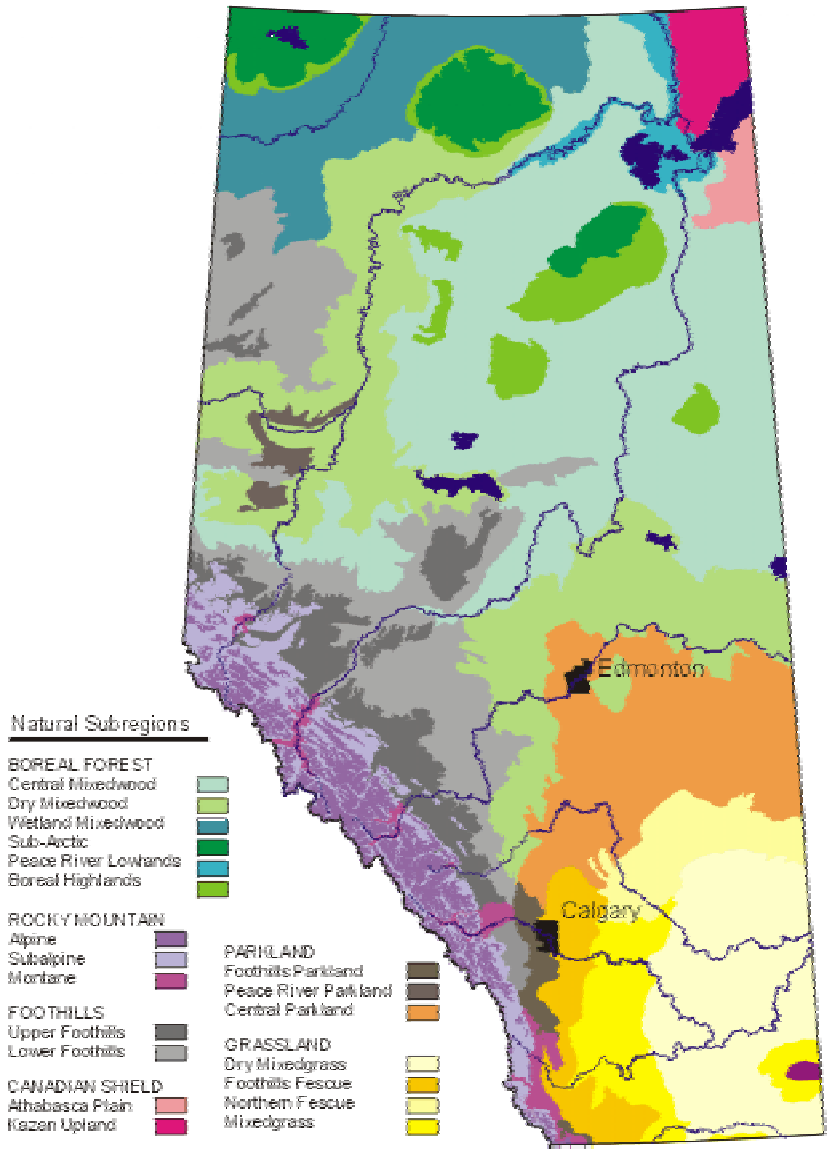
APPENDIX 8



Source: http://www.cprc.uregiona.ca/ccea/ecozones/levell.html

APPENDIX 9

Natural Regions of Alberta



Source: http://www.gov.ab.ca/env/parks/anhic/abhic.html