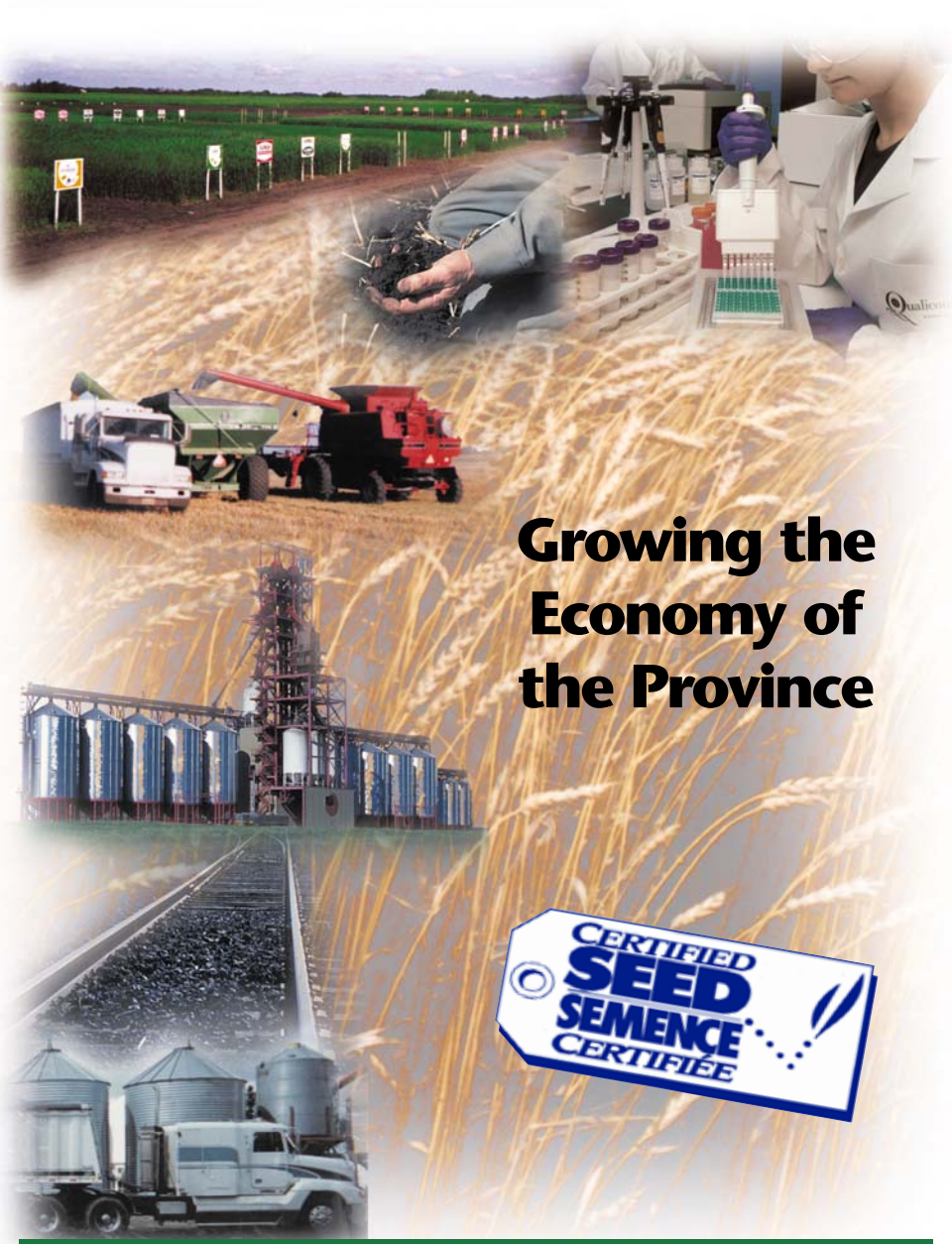

Saskatchewan Pedigreed Seed Industry

Introduction

Saskatchewan's Pedigreed Seed Industry is worth over a third of a billion dollars annually to the economy of the Province.

That is the finding of an economic impact study conducted by the University of Saskatchewan Department of Agriculture Economics in 2002-2003.

The study, **"Value of the Pedigreed Seed Industry to the Saskatchewan Economy and the Impact of Potential Industrial and Regulatory Changes"** was commissioned by the Saskatchewan Seed Growers Association to demonstrate the contribution of the pedigreed seed industry to Saskatchewan and Canadian agriculture and to the economy of the province.

In addition to measuring the value-added benefits of the seed industry, other objectives of the study were to present some of the anticipated changes in legislation, standards and testing and discuss how the industry will be able to expand and extract value from the changing environment.

Researchers took a "snapshot" of the industry in the 2001-2002 crop year, and analyzed the function, role and contribution of the various segments of the industry.

Three primary sources of information were accessed for the project. The expert opinions of plant breeders, seed growers and industry participants were gathered to help identify the key parameters of the industry; an array of published and unpublished data from SSGA, Canadian Seed Growers Association, Statistics Canada and Saskatchewan Agriculture, Food and Rural Revitalization was reviewed; and an extensive survey of seed growers, research organizations and seed marketing firms was conducted.

This booklet is a summary of those findings.

Industry Description

Pedigreed Seed is genetically pure, true-to-type seed of a known variety, developed for a specific purpose with characteristics that have been evaluated in extensive field research trials. Genetically pure and true-to-type means that all the benefits developed by the plant breeder in a specific variety are retained as the seed is multiplied from the initial development level through to certified seed which can then be used for commercial production.

There are two identifiable stages in the production and final certification of pedigreed seed.

The first stage involves the field production of a seed crop. If the seed crop is to be of pedigreed status, the field must be inspected to verify that the requirements for varietal purity and crop standards are met. If all of the requirements are met, the Canadian Seed Growers' Association (CSGA) issues a crop certificate. The production of pedigreed seed is a formalized identity preserved production and marketing system managed by CSGA and the Canadian Food Inspection Agency (CFIA).

Saskatchewan's Seed industry is worth an estimated $389 Million to the Economy of the Province

CSGA is named in the Canada Seeds Act as having the authority and responsibility of setting varietal purity standards for pedigreed seed. Not only does the CSGA set the standards for the production of pedigreed seed they also administer the certification process of seed fields.

The second stage which starts after harvest of the seed involves the conditioning, testing and grading of seed by Registered Seed Establishments to determine its eligibility for labelling with a Canada pedigreed grade name under the Seeds Act and Regulations. If the seed meets the standards, the resulting product will be labelled with an appropriate tag.

The Canadian Seed Institute (CSI) is a non-profit, industry-run organization responsible for seed quality assurance in Canada. CSI evaluates Registered Seed Establishments and Seed Laboratories against CSI quality systems standards; assesses graders' and operators; conducts periodic reviews of industry performance; is responsible for training and accreditation of quality systems experts and recommends to CFIA the accreditation of seed establishments, processing facilities, seed labs, operators and graders.

Comparison of Pedigreed Seed Industries

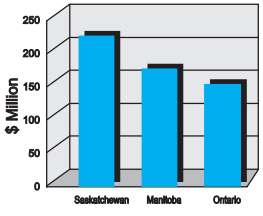

FIGURE 1

Saskatchewan Pedigreed Seed Industry

Economic Impact

The total crop-based activities in the provincial economy contribute approximately $4.3 billion gross revenues to the economy, mostly through exports to other provinces and countries **(Figure 2)**.

The pedigreed seed industry is the foundation for Canadian agriculture, and contributes to that activity in four ways:

- The production of pedigreed seed generates additional value-added that is captured by the seed growers;
- The conditioning of seed for the pedigreed seed market generates value added for the conditioners;
- The marketing of pedigreed seed to producers generates value for the seed trade; and
- The presence of the seed sector facilitates and supports the local research and development community focussed on new variety development.

Each of these stages adds value for the core groups as well as supporting expenditures in other parts of the economy.

The pedigreed seed industry contributes approximately $235 million directly and another $60 million in indirect activity to the provincial economy.

It also supports approximately $100 million of crops-based research and development. In total, the Saskatchewan pedigreed seed industry is estimated to contribute a net direct and indirect economic impact of approximately $389 million. **(See Table 1, below)**

These economic impact results can be compared with findings of recent studies conducted in Manitoba and Ontario.

The Manitoba study determined that the economic impact from pedigreed seed industry amounted to $180 million, while the Ontario study found that the value of pedigreed seed produced and sold in that province was $155 million.

Neither of those studies included an estimate of their impact on R&D. On a comparative basis, Saskatchewan's seed industry contributes $235 million. **(See Figure 1, opposite)**

Pedigreed Seed Industry in the Context of the Crop Industry

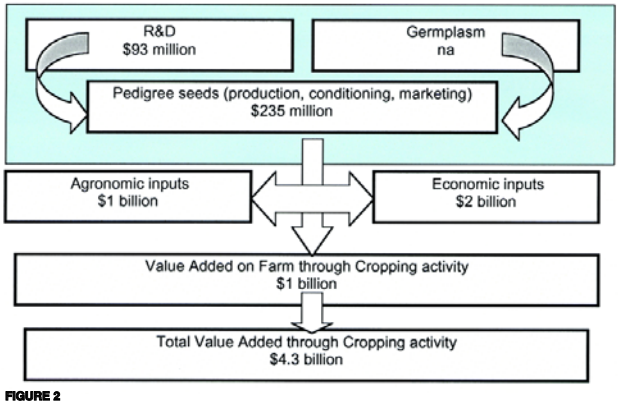

FIGURE 2

Employment

This economic activity also translates into employment in the agricultural industry. It is estimated that the pedigreed seed industry is responsible for as many as 9,000 agricultural jobs. The average number of equivalent full-time positions per farm is 4.5 for the production of pedigreed seed and when this labour figure is extended across the entire industry, the total value of wages paid is $90 million.

As many as 9000 agricultural jobs are created by the Pedigreed Seed Industry

The labour required for processing of pedigreed seed per farm is equivalent to 1.5 full-time positions and this labour receives a slightly higher wage rate of $29,000. The value of these wages when extended across the industry is $10 million.

Total Economic Impact of Saskatchewan Pedigreed Seed Industry

	Economic Impact ($ Millions)		
Value added by key activity	Direct	Indirect	Total
Pedigreed seed sales	$216	$54.3	$270.3
Non-pedigreed grain conditioning	$20	$5.9	$25.9
Related research and development	$93	N/A	$93
Total	**$329**	**$60**	**$389**

Farm Gate Value

Pedigreed seed growers generate economic value by selling certified seed to commercial farmers. By adhering to the production standards defined by the federal regulatory agencies, pedigreed seed growers are able to place a blue tag on bags of seed, indicating that the seed contained in the bag meets the standards for certified seed. The amount of pedigreed seed produced is gathered annually by Statistics Canada and the data for Saskatchewan was used to determine both the gross amount of pedigreed seed produced and the net value of pedigreed seed sold in 2001.

The total direct and indirect economic impact of pedigreed seed produced in Saskatchewan was estimated to have a gross potential value of $269 million in 2001. However, not all of the pedigreed seed produced is sold as pedigreed seed.

Data was collected from a variety of seed industry representatives that identified what level of seed production was sold as pedigreed. Similar studies in Manitoba and Ontario estimated that 70% of seed was sold as pedigreed but the advice was that on average, about 80% was sold as pedigreed in Saskatchewan. The remainder of the pedigreed seed produced would be used on farm, stored or sold as commercial grain. Therefore, the potential value of pedigreed seed sales was estimated at $215 million in 2001.

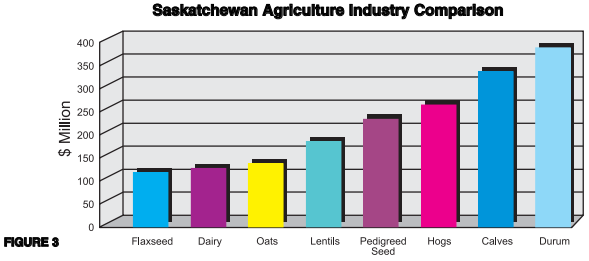

FIGURE 3

Marketing

In addition to producing seed, marketing pedigreed seed to commercial farmers is a major business activity for many seed growers. Many more new crop varieties are being developed now than in previous years, and marketing is required to make farmers aware of the benefits of adopting these new varieties. Marketing costs of between $1.50/acre to $3.00/acre were identified, depending on the crop kind. The total value of this activity is estimated at $1.07 million.

An economic formula was applied to the direct impact of $216 million (which includes many of the incremental input costs) to provide an estimate of the total direct and indirect impact of the economic impact created from the production of pedigreed seed. The net impact is estimated to be about $269 million.

Grain Conditioning

Seed conditioning, a vital adjunct to pedigreed seed production, is estimated to contribute an additional direct and indirect economic impact of $25.9 million.

The conditioning of seed is an important element for maintaining seed and ultimately, crop quality. Due to the high percentage of farmers who use bin-run seed, especially when planting cereal crops, the presence of weed seeds and seeds from other crop varieties reduce the overall quality of the marketable commodity post-harvest. While many private seed cleaning plants are in operation around the province, many members of the SSGA clean seed for local clients on a commercial basis. The value of seed cleaning in Saskatchewan based on the price charged by growers, was estimated to be $20.7 million, which produces an aggregate direct and indirect economic impact of $25.9 million.

As the focus of crop production shifts to quality from quantity, this activity offers considerable potential for pedigreed seed growers, given their vast experience with producing pure forms of seed and the importance of clean seed for quality assured production.

An overall comparison of the direct impact of the pedigreed seed industry relative to other agricultural activities, indicates that in terms of direct economic contributions to the provincial economy the pedigreed seed industry is slightly larger than the lentil industry; considerably larger than the flax, dairy and oat industries, although smaller than some livestock industries and the durum industry. **(See Figure 3, above)**

A comparison with other non-agricultural activities in the province, shows that the pedigreed seed industry generates more direct value added than the clothing sector and the fabricated metals sector and almost as much as the chemicals sector. **(See Figure 4, below)**

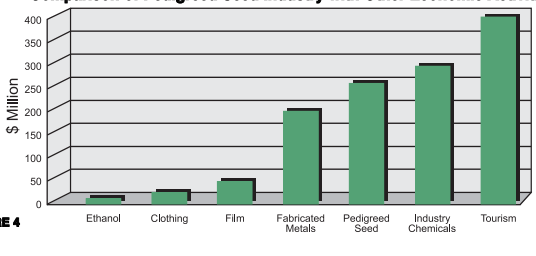

FIGURE 4

Classification of Pedigreed Seed

In order for a new variety to be registered for sale in Canada, it must show agronomic merit; equal or surpass accepted check varieties, or have some unique characteristic that would be of value to Canadian agriculture. Merit standards and the evaluation process are established under the authority of the Seeds Act and Regulations.

To administer the system, CFIA has established variety recommending committees, composed of plant breeders, farmers, end users, seed industry representatives, agronomists, pathologists, quality experts and marketing experts to determine whether the new variety meets or exceeds minimum standards established in regulations for that crop and grade.

Once a variety is registered, qualified seed growers multiply the seed through various classes until there are sufficient quantities for commercial production.

All pedigreed seed falls into one of five classes. Regulations for each class are stringent and production of all classes is carefully controlled and monitored.

Breeder Seed is the highest class of pedigreed seed and is developed by the plant breeder with unique characteristics It is the seed stock from which all other pedigreed classes emanate. Once this seed becomes available for multiplication, it is distributed to qualified Select Seed Growers.

Select Seed is the approved progeny of Breeder Seed and is produced by qualified Seed Growers authorized by the Canadian Seed Growers Association (CSGA). Select Seed may be produced from Select Seed for a maximum of 5 multiplications from Breeder Seed. Select Seed is not a seed of commerce.

Foundation Seed is the approved progeny of Breeder or Select Seed produced by qualified growers authorized by CSGA for the production of seed of this class, and which has been managed to maintain its specific genetic identity and purity. People accredited by CFIA grade the seed. Foundation is the highest class of seed of commerce.

Registered Seed is the approved progeny of Breeder, Select or Foundation seed, produced by seed growers and managed to maintain identity and purity. Registered seed is graded and labelled by personnel accredited or licensed by CFIA under the requirements of the Canada Seeds Act.

Certified Seed is the approved progeny of Breeder, Select, Foundation or Registered Seed produced by seed growers and managed to maintain identity and purity at a high level. It is the class of seed recommended for commercial crop production. The seed is graded by authorized personnel under the Canada Seeds Act.

At each stage of seed production, standards for isolation distances, land-use history, maximum levels of off-types, other crop kinds and weeds have been established by the CSGA. All seed growers must follow these rules to maintain crop and genetic purity.

Opportunities for the Saskatchewan Pedigreed Seed

There are several key challenges and opportunities facing the pedigreed seed industry as it moves forward:

- consumers are increasingly demanding more quality assured and differentiated foods;
- the global agri-food supply chain is continuing to industrialize and seeking to more closely manage proprietary food supply chains;
- technology is offering new products and identifying new risks in existing foods.

The provision of adequate supply and variety of safe, affordable and nutritious foods to feed a rapidly growing world population and increasingly more affluent consumers was one of the key accomplishments of the 20th century. But in response to rising standards of living, consumers are demanding more specific assurances of safety, provenance and quality of the foods they consume.

This heightened awareness and concern was partly triggered by a more open and integrated global food system. Consumers became more aware of the highly integrated supply chains that delivered foods from multiple regions and regulatory systems to their store shelves and expressed concerns about the increased pressures for international specialization and trade in primary commodities.

Meanwhile, the technology in the seed, food and feed market is putting pressure on global food supply chains. With the advent of biotechnology and substantial private investment in crop variety development, the rate of development of new varieties has jumped from one new variety every second year in the 1970s and early 1980s to more than 30 new varieties each year in the late 1990s.

As the number of new varieties grows, seed growers are required to provide the right quantities and qualities of seed in the right regions. Many of these varieties will only have a 2-5 year commercial life and rapid turnover will be the norm.

As their expertise becomes more and more in demand, Saskatchewan's Seed Growers are positioned to play a leadership role in ensuring the integrity of the world's food supply.

Production of Pedigreed Seed in Saskatchewan

When a crop variety is developed with unique characteristics such as disease resistance or special qualities for milling, or malt markets, it is the role of Saskatchewan Seed Growers to transfer that technology from the plant breeder to the commercial producer, according to standards and regulations set out by the Canadian Seed Growers Association.

Those standards are necessary to ensure that the unique characteristics of the variety are retained as the seed is multiplied from the initial development level through to certified seed which can then be used for commercial production.

The Canadian Seed Growers Association was established in 1904 and is recognized by the Canadian government as the sole seed pedigreed issuing agency for all agricultural field crops (except potatoes) in Canada. CSGA establishes the standards for crop purity, administers regulations covering the production of pedigreed seed and issues crop certificates for seed which meets those standards.

Saskatchewan Seed Growers produce more than a third of all the pedigreed acres in Canada

CSGA recognizes seven affiliated organizations in different regions of Canada, including British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and the Maritimes. Members of the affiliated organizations must also be members of the CSGA. While the affiliates are not involved in the crop pedigreed process, they are recognized as representing the views of the growers in their respective regions.

The Saskatchewan Seed Growers Association (SSGA) is the affiliate recognized by the CSGA in this province. First formed in 1928, SSGA is incorporated as a non-profit organization with the mandate to improve pedigreed seed production and usage within Saskatchewan. In 2001-2002, at the time this study was undertaken, there were 763 seed growers in Saskatchewan, producing over 433,000 acres of pedigreed seed.

That represents more than a third of all the pedigreed seed acreage in Canada; nearly 40% of all the pedigreed wheat seed produced; more than half of all the lentil seed; half the pedigreed flax acres; a third of the canola and mustard seed and nearly three quarters of the pedigreed pulse seed production.

Acknowledgements

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