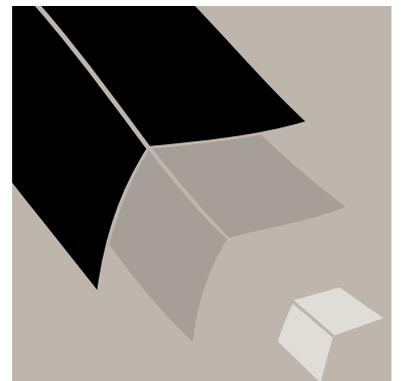
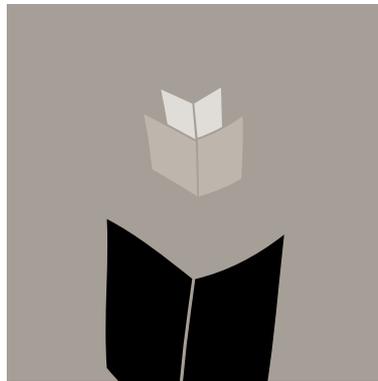
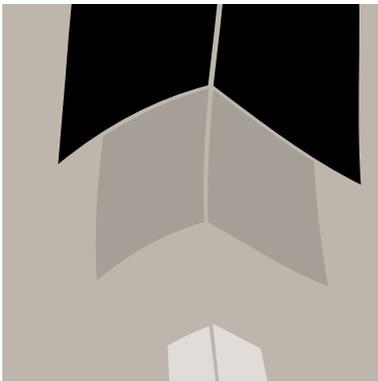
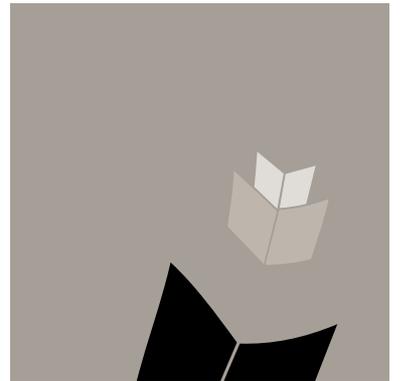
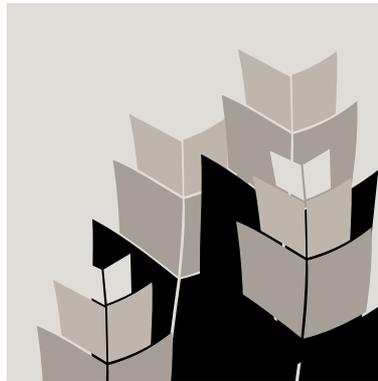
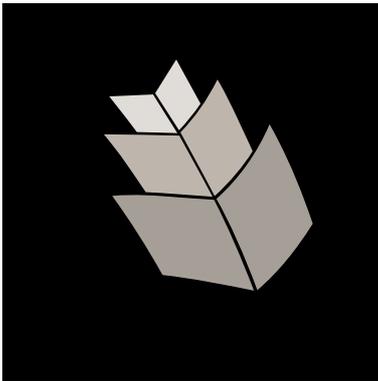
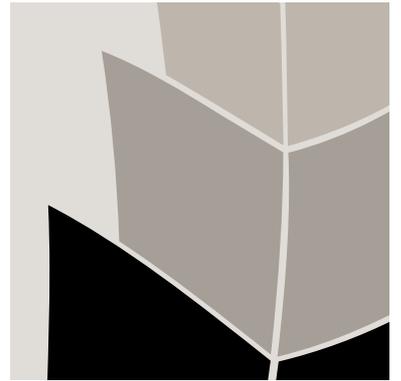
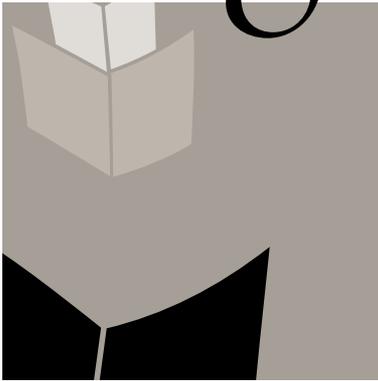


# The Changing Face of Agriculture

Agriculture in the Classroom 2000 Study Series





**Agriculture In The Classroom (Sask) Inc.** is a non-profit organization funded by the agri-food industry with assistance from Saskatchewan Agriculture and Food. AITC is mandated to assist Saskatchewan learners and educators in increasing their awareness and understanding of the complexities and importance of agriculture through partnerships with educators, agri-business, and agriculture organizations. AITC's efforts enable more people to make informed choices and decisions related to food, the environment, lifestyles, and agriculture practices.

The agriculture and agri-food industry in Saskatchewan makes a significant contribution to the provincial economy, to the well being of both rural and urban communities, and to the environment. This industry is constantly evolving from the traditional family farm to large international agri-businesses. It is important to provide the general public with a greater awareness and understanding of industry changes and the impact they have on Saskatchewan people.

This series of two publications on Agriculture in Saskatchewan, *The Changing Face of Agriculture* and *The Living Soils*, has been produced with major assistance from Canadian Adaptation and Rural Development in Saskatchewan as well as industry Program Partners. The material for these publications was developed by Saskatchewan teachers, members of the industry, professional agrologists and various organizations as part of the Agriculture in the Classroom 2000 Summer Writing Workshop.

*While the material in this publication is deemed reliable and accurate to the best of AITC's knowledge, author contributors of the materials to this collaborative effort are solely responsible for the content and information which they have contributed to produce this booklet. The views of the authors and contributors do not necessarily represent the views of AITC.*

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Potash Corporation of Saskatchewan  
Saskatchewan Seed Growers  
Federated Co-op  
Mary Yeo

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# The Changing Face of Agriculture

## Important Dates in Saskatchewan Agriculture

**1740** Fur trade established at Cumberland House, first wheat crops grown at Fort a la Corne

**1860** John Palliser sets boundaries for settlements, says the land is "only good for bison"

**1870** Land sold to Canada by the Hudson Bay Company

**1882** Railway built - makes grain trade to the east possible

**1901** Population of Saskatchewan is 91,000

**1905** Saskatchewan becomes a province

**1911** Population jumps to 492,000 because immigrants are escaping poverty in Europe

**1930-1938** Drought defines Saskatchewan

**1949** International Wheat Agreement negotiated, establishing a price for wheat

**1974-1975** Farm net income tops one billion dollars

**1984** Elimination of the Crow Rate (a freight subsidy)

**1990** Trade negotiations; NAFTA attempts to establish a level playing field

What drives change in agricultural technology in Saskatchewan and what advances can we expect in the future? How do Saskatchewan farmers compete in a global economy? How have farmers diversified? What are the issues facing farmers today? What are the social effects on farm families and communities? What challenges, changes, and choices must farmers deal with in order to be successful now and in the future? These are some of the questions that arise when considering the changing face of agriculture in Saskatchewan.

As statistics show declining numbers of family farms, an aging farmer population, and continuing economic pressures, it is easy to see how some may call the current situation in farming a crisis. But with advances in technology, and the ingenuity of farmers who create diverse ways to compete in a global economy, it is apparent that farming in Saskatchewan is far from dead. Rather, it is a dynamic system, that is changing in response to economic and environmental forces. Today's farmer is a savvy, forward thinker who is able to adapt to these changes.

Although there are many factors that influence change in agriculture, most change results from the need to adapt to changing physical and economic conditions.



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# The Changing Face of Agriculture

## What Drives Change

Factors such as drought, erosion, and nutrient depletion in soil have led farmers to develop many innovative ways to conserve their soil and water resources. Institutions such as the Prairie Farm Rehabilitation Administration (PFRA), Agriculture and Agri-food Canada Research Stations, and the University of Saskatchewan College of Agriculture are also committed to finding better ways for farmers to adapt to their environment, improve productivity, and be good stewards of the land.

Economic forces also drive change. Farmers continuously seek new ways to diversify, improve efficiency, and increase production in order to stay competitive. They have adapted to changing economic forces by developing new equipment growing new types of crops and raising specialized types of livestock. They have also sought ways to add value to the raw produce that comes from their land.

Throughout the history of agriculture in Saskatchewan, farmers have adapted to ever changing economic and physical conditions by the orderly application of knowledge and technological innovation. Since necessity is often the mother of invention, farmers are often the key innovators within the agricultural industry. The individual creativity and inventiveness of farmers coupled with institutional cooperation have led to many rapid advances in farm technology. An individual producer like Seager Wheeler (developer of new grain varieties) is a good historical example of an innovative farmer.

### Formative Events in Agriculture

1. Sale & settlement of land
2. Development of transportation, railway, and communication links.
3. Development of grain handling and food processing plants
4. Development of agricultural research stations
5. Continued development of agricultural education (College and School of Agriculture, and Agricultural Extension Service).

Note: In the K-12 system, there has been curriculum about agriculture for more than a hundred years.

Institutional Structure + Farmers' Creativity = Accelerated Technological Advances in Farming.

## Innovative Agricultural Technology in Saskatchewan

Agricultural Engineering and design is perhaps the area where farmers' creativity shines brightest. The result has been that, with each new generation, equipment has become bigger, better, faster, and more efficient. Dramatic advances in farm equipment are evident on every farm. Tremendous change has occurred in the development of equipment for grain storage, transportation, and handling. Saskatchewan owes its reputation as a world leader in the creation and manufacture of direct seeding equipment to the individual creativity of farmers. Short line equipment manufacturing companies such as Bourgeault, Conserva-Pak, Flexi-coil, and Morris got their beginnings from the workshops of farmers who had the desire to innovate.



Precision Agriculture is a new technology that uses Global Positioning Systems (GPS) to link a ground based position with input such as crop yield, and nutrients and salinity in the soil. With the use of a computer and a Geographic Information System (GIS) farmers can accurately monitor changes in production and the impact of management on their fields. The computer is becoming an integral tool in farming today.



The study and classification of our soils has led to a better understanding of how to manage and maintain this precious natural resource in Saskatchewan. Most farmers have adopted conservation practices on their farms. Improved knowledge of nutrient dynamics has prompted many producers to adopt crop rotations that maintain or enhance the natural fertility of the land.



Innovations in Crop Science have led to new oilseed crops such as Canola, and pulse crops such as lentils, peas, and chick peas that are well adapted to our climate. Research and development of crop varieties that are more resistant to disease and insect infestations has also helped increase farm productivity over the years.



Agronomic research detailing specific cultural practices such as best seeding rates, seeding dates, nutrient requirements, etc., have helped reduce risk to producers who are trying new crops. Most crops in Saskatchewan have specific production packages available, detailing the basic how to's of crop production.



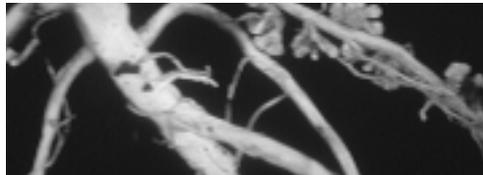
Innovations in Animal Science have led to animal fertility advances like in-vitro fertilization and cloning. A better understanding of animal behavior has reduced animal injury by developing more livestock-friendly handling systems. Improvements in our knowledge of animal nutrition have resulted in increased growth rates and health of livestock.



Plant Ecology and Rangeland Management research led to the development of grazing methods that consider the needs of both the forage selected and the grazing animal. A systems approach to grazing management is characterized by goal setting, planning, control of timing, intensity, and frequency of grazing.



Innovations in Applied Microbiology have led to the development of inoculants for legume crops, and better understanding of nitrogen fixation and phosphate absorption and release from soils.



The development of Agricultural Biotechnology has generated herbicide tolerant (e.g., "Round-up Ready") canola, pest resistance, and other Genetically Modified Organisms (GMOs) or Genetically Enhanced Materials (GEMs).





## What Technological Advances Can We Expect in the Future?

- Bigger, better, faster, and more efficient machines
- Increased use of information technology like Expert Systems and Information Management
- Increased use of professional agronomy consultants and other professionals that provide services like the following: site specific soils and climate information; site specific crops and nutrient planning; design of precision farming strategies; Soil maps, aerial photos, yield maps, and test strips
- More cropping options
- New types of crops adapted to our growing conditions (e.g., upright dry beans, edible oil mustard, Sea Buckthorn)
- Increased applications of life science technologies: bio-fuels, bio-plastics, bio-pharmaceuticals; increased food conversion; fractionation - breaking into parts and utilizing those parts; new crop protection products; development of sustainable organic farming systems.

Technological change over the past ten years has been dramatic. Technological innovations will continue to accelerate because physical and economic drivers will not go away. Today's farmer makes use of many tools in order to stay competitive. Research and education and individual creativity has served in the past and will continue to serve in the future.

# The Changing Face of Agriculture

## Competing in a Global Economy

The marketing of Saskatchewan produce has been adapted to the global marketplace constantly over the past hundred years. Prairie agriculture was set up in the late 1880's for the export market. Even in the 1930-31 crop year after the crash that started the Great Depression, Canadian wheat exports accounted for 40 percent of the world trade (Fowke, 1957). Canadian farmers have always faced the global market and global competition.

The Canadian Wheat Board was formed voluntarily in 1935 due to frustration encountered by farmers during the Great Depression and in response to global forces that had accompanied Prairie agriculture from the start. (After the failure of the private market during WWI, the CWB was formed for one year, in 1919. Between 1919 and 1935 a selling agency known as the Canadian Cooperative Wheat Producers Limited was formed and operated by the prairie pools to market grain, until the CWB was re-created in 1935. See the CWB website: <http://www.cwb.ca>)

The CWB became a single desk selling body that sought new markets, negotiated for all grain growers, and organized the sale and transport of Canadian Wheat and Barley to trading nations. Originally, the CWB had its Commissioners appointed, but recently responded to a royal commission report by setting up a typical corporate structure with a fifteen member Board of Directors (consisting of five appointed directors and ten farmer elected directors).

The CWB is responsible for the marketing of all wheat and barley to be exported and for domestic use. The revenues from all sales of grain by the CWB, less marketing costs, are passed back to farmers. Oilseeds, pulse crops, and feed variety cereals are sold on the open market. On the open market, the producers must negotiate for themselves with any number of buyers. Advancements in technology have meant farmers are no longer tied to their local elevators, as they were in the first half of the twentieth century. Now, telephone and fax machines, and, increasingly, the internet, connect producers to buyers around the world. Farmers have found a new sense of power in the marketing of their produce.

### Did You Know?

The CWB is the largest exporter of wheat and barley in the world! The CWB is Canada's fifth largest exporter, after three auto companies and IBM!

Today, the CWB does overseas business differently. Although the CWB continues to sell directly to foreign government agencies, like the Japanese Food Agency, it also sells directly to private companies. Offices are being set up in foreign countries so buyers have access to sellers. Educational programs are being presented to show how to use Canadian grain, and experts are helping buyers in how to store and handle our grain.

Farmers are venturing into new markets and implementing new strategies to increase production and sustain their resources. Organic farming, value-added crops, livestock like bison and deer, and new crops like chickpeas, are examples of ways that farmers are meeting the challenge of a global economy.

### **How Have Farmers Diversified?**

Agriculture in the Classroom Saskatchewan, through the Summer Writing Workshop series, has produced several booklets that will provide insight into some of the new directions in which agriculture in Saskatchewan is moving. The following titles are available from Agriculture in the Classroom:

- Biotechnology
- Plant Agriculture
- Animal Agriculture
- Horticulture
- Livestock
- Value-Added Crops
- Nutraceuticals

### **Organic Farming**

Organic Farming is one of many ways in which Saskatchewan farmers are diversifying in order to meet the challenges of the global market. Organic produce currently enjoys strong prices in the marketplace. A growing number of consumers, particularly in Europe, want produce that is grown without pesticides or manufactured fertilizers. As a result, organic farmers must adhere to strict guidelines for the production, storage, and handling of their crops. Of course, pest control becomes a major challenge for these farmers.

For more information on organic farming:  
Canadian Organic Growers Inc.  
<http://www.cog.ca>  
Organic Crop Improvement Association International  
<http://www.ocia.org>

# The Changing Face of Agriculture Facing Today's Issues

Statistics show that fewer family farms exist today, the average age of farmers is increasing, and that farm stress and safety are growing concerns. In light of these facts, what is it that keeps today's farmer going? In the face of economic stresses, how does today's farmer in Saskatchewan survive?

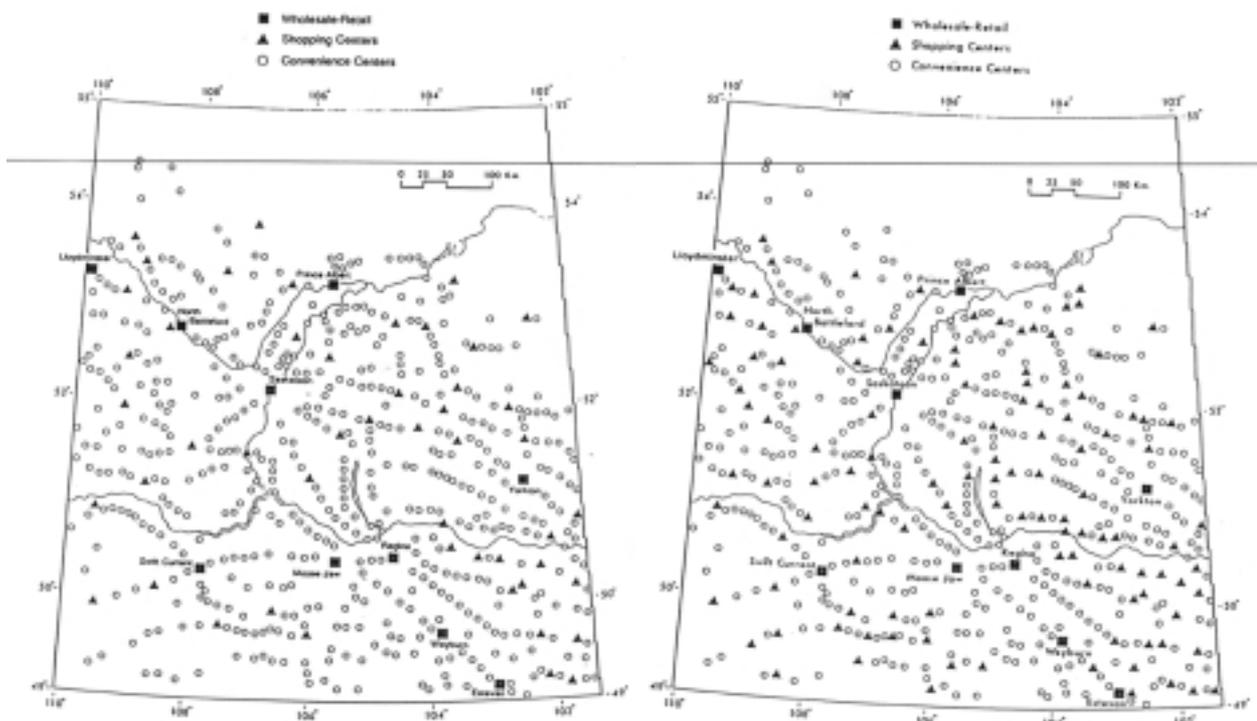
Some of factors that influence farm families today include:

- Low commodity prices, high input costs
- Rural depopulation and loss of community
- Transportation issues and costs, roads in poor shape
- Intergenerational land transfer
- Chemical use, exposure to grain dust, and farm safety
- Stress and fear: "what happens if we lose the farm?"
- Acute care in rural areas, health reform
- Lack of understanding of rural life by professionals and / or policy makers
- Balancing work and family, excess work, feeling undervalued
- Gender roles

These issues are largely economic and have a profound impact on farm families and communities.. These data are merely a starting point to understanding trends in rural Saskatchewan.

Maps and data compiled from Stats Canada by Stabler, Olfert, and Fulton, and Dr. Bob Stirling, of the University of Regina.

Figure 1 Maps of Saskatchewan Trade Centers 1961 and 1990



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These maps show the decline of local business in rural Saskatchewan.

Figure 2 Size of Farms, Canada and Saskatchewan, 1976 - 1996

	1976 Canada	1976 Sask	1981 Canada	1981 Sask	1986 Canada	1986 Sask	1991 Canada	1991 Sask	1996 Canada	1996 Sask
Acres	%	%	%	%	%	%	%	%	%	%
Under 3	1.1	0.2	1.5	0.4	1.6	0.5	1.4	0.3	1.8	0.3
3 - 9	3.1	0.4	3.7	0.4	3.4	0.4	3.5	0.3	4.2	0.5
10 - 69	12.0	1.3	12.7	1.8	12.1	1.7	12.6	1.9	13.7	2.5
70 - 129	13.0	1.1	12.5	1.5	11.5	1.6	11.7	1.6	11.4	2.0
130 - 179	12.0	7.8	12.0	8.8	11.8	8.7	11.9	9.6	12.0	10.5
180 - 239	7.2	0.7	6.6	0.8	6.4	0.8	6.1	0.9	5.9	1.2
240 - 399	15.6	13.9	14.8	12.7	14.6	11.8	14.0	11.3	13.5	11.3
400 - 559	9.3	13.1	8.7	11.5	8.6	10.3	8.3	9.6	7.8	8.5
560 - 759	7.9	15.3	7.5	13.8	7.5	12.5	7.1	11.3	6.5	9.9
760 - 1,119	8.7	20.6	8.7	20.1	9.0	19.4	8.7	18.2	7.9	15.8
1,120 - 1,599	5.3	14.0	5.7	14.9	6.4	15.6	6.6	15.6	6.3	15.2
1,600 and over	4.9	11.6	5.6	13.5	7.2	16.6	8.2	19.3	8.9	22.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

This table shows how farm sizes have changed in Saskatchewan and Canada over a twenty year period. Observe the increase of large farm operations, and decline of middle-sized farms, and that smaller operations have changed relatively little.

Figure 3 *Rural and Urban Population and Number and Size of Farms, Saskatchewan, 1931 - 1996*

	1931	1941	1951	1956	1961	1966	1971	1976	1981	1986	1991	1996
Population												
Total	921,785	895,992	831,728	880,665	925,181	955,344	926,242	921,323	968,313	1,009,610	988,928	990,237
Urban	290,905	295,506	252,479	322,003	398,091	468,327	490,627	511,333	563,166	620,195	623,397	627,178
Rural	630,880	600,486	579,249	558,662	527,090	487,017	435,615	409,990	405,147	389,415	365,531	363,059
% Rural	68.4	67.0	69.6	63.4	57.0	51.0	47.0	44.5	41.8	38.6	37.0	36.7
Non-Farm	66,868	85,819	179,776	196,431	221,350	205,928	201,823	207,280	217,984	220,910	205,806	217,499
Farm	564,012	514,677	399,473	362,231	305,740	281,089	233,792	202,710	187,163	168,505	159,725	145,560
% Farm	61.2	57.4	48.0	41.1	33.0	29.4	25.2	22.0	19.3	16.7	16.2	14.7
Number of Farms	136,472	138,713	112,018	103,391	93,924	85,686	76,970	70,958	67,318	63,431	60,840	56,995
Average Farm Size												
Acres	408	432	550	607	686	763	845	923	974	1,036	1,091	1,152
Capital	9,325	6,459	17,787	22,384	30,504	57,332	71,008	161,969	465,976	460,838	421,364	536,121

Source: Statistics Canada Cat. no. 21-201, Annual Censuses, and Saskatchewan Agriculture and Food, Agricultural Statistics 1997

This table shows how the population, which has remained relatively constant since the 1930's has shifted from mostly rural to mostly urban, and how the percentage of farm population has declined.

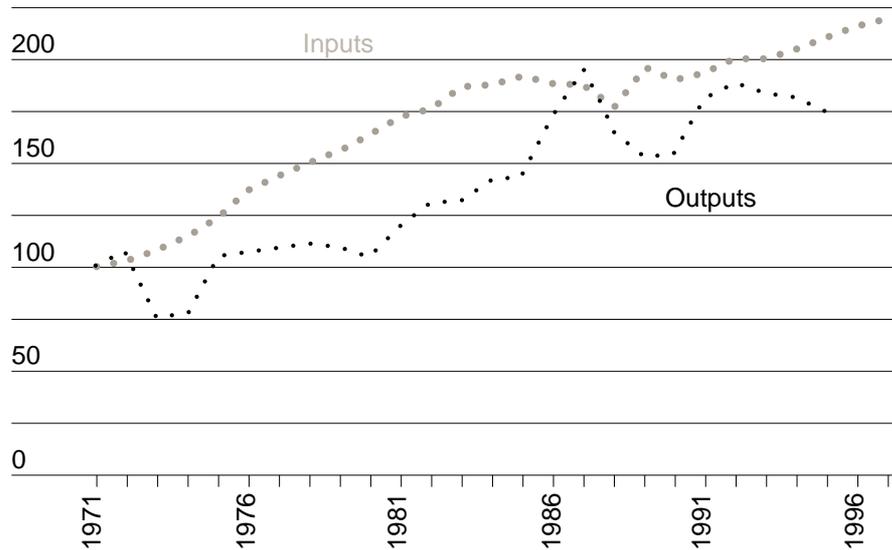
Figure 4 *Net to Gross Income Ratio, Saskatchewan Farms, 1926 - 1997*



This graph shows how farm net income has been very low (during the Great Depression), boomed after the war and again in the seventies, and is currently on a long decline.

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Figure 5 *Index of Saskatchewan Farm Inputs and Outputs, 1971 = 100*



This graph shows how farm input costs have been steadily rising while outputs have not kept up.

# The Changing Face of Agriculture

## Social Effects on Farm Families & Communities

While the quantitative perspective is one way to examine the stresses farmers face, the qualitative perspective is also valid.

In her current study on the Changing Roles of Farm Women, Wendee Kubik (Canadian Plains Research Centre, University of Regina) conducted a survey that revealed many of the social issues faced by farm families, communities, and particularly farm women. Her study suggests that on average rural families more continuously face a greater variety of stresses with fewer coping resources or supporting services than do urban families. One woman's response to the survey explains some of these stresses:

*"Coming out of the income shortfall very directly, of course, is the excess of work because farm couples are having to seek off-farm employment just to pay the grocery bills let alone keep the farm afloat. That has a spin-off into the community in that there are not as many people in the community to operate the community as there used to be, so you're finding shortfalls in the people needed to operate*

*church events. It's getting harder to find people to run the rink. It's getting much harder to get people out to farm organization meetings because people are just too tired at the end of the day and may not have the time. Plus the off-farm work will often take them out of the community so that the basic sense of belonging to a community lessens."*

*"There comes a point for a lot of families when they feel that it's just not worth the effort anymore and that's usually a difficult decision. But at some point, it has to be made when year, after year, after year, you're basically working to support the farm instead of the farm supporting you. So you have families leaving farms. There usually isn't a job in the local community so they end up going into the city and so you end up with the whole community suffering from a population shortfall."*

*"And of course, you have very high stress loads, on both the husband and the wife, in different ways depending on how individual operations are set up. You know you've got the usual gender thing where the wife has a double workday anyway. If she's farming, she may have a triple workday. The farm is more likely to be handed down in the husband's family than the wife's is. Although that's changing to some extent but the husband will quite often have kind of that added stress of, you know, being the fourth or fifth generation and being the one who can't make it. So that has a whole other set of stress effects on him and of course he may also be working off-farm."*†

*"Now for the men in some ways, when they're working off-farm there's a chance that it may be even more stressful for the wife because of the nature of the work that men may be likely to get. If they're planning to continue farming they're going to be looking for jobs like long distance trucking or pipeline jobs. They seek jobs in industries that may actually take them away from home for a period of time with the idea that they'll be able to come home to seed and come home to harvest.*

*Sometimes that works and sometimes it doesn't. But there is the added chance for some of those men that they are going to be spending extensive periods of time away from the family, not in the majority of cases but in a substantial number of cases. It's amazing how many farmers are driving trucks long-distance. Those are the kinds of choices that many farm men are having to make and of course, that adds a whole series of stresses both on the husband and on the wife."*

Stress is a major issue in the lives of farm families. In a study on 'Balancing work and family' conducted in Saskatchewan in 1998 it was noted that workers in small towns and rural areas are more stressed and depressed than those living in Saskatoon and Regina. Linda Duxbury, author of the study, said that

*"stress levels on farms are even greater because farmers are working harder for less money and are often holding off-farm jobs".*

There are many things currently that farm families do not have control over, primarily economics, but there are other issues tied in with the financial factors or that come out of it. Some of the effects of stress on farm families include:

- An increase in the break-up of marriages, which often leads to the farm dissolving.
- An increase in alcoholism, depression, and suicides in rural areas.
- An increase in abuse and violence.

## Health and Safety Concerns in Farming

- "Farming is considered the most dangerous occupation in North America, along with mining and construction" (Monica Zasada, farm safety co-ordinator for the Saskatchewan Safety Council).
- Drinking water is very poor in some rural areas, affecting livestock as well as family.
- On average, 100 work-related fatalities occur on farms annually, according to the Canadian Agricultural Injury Surveillance Program. Children under the age of 15 account for about 10% of these fatalities.
- In 1995, 15,460 Canadian farm operators or 4% of the total, received a farm-related injury requiring medical attention. Male operators were twice as likely to get injured as their female counterparts. The injury rate for men was 4.6% compared to 2.3% for women.
- Farm operators in the three Prairie provinces had a higher rate of injuries than those in Eastern Canada. Manitoba's operators reported the highest injury rate at 4.6% of all operators. Those in Alberta and Saskatchewan also had injury rates higher than 4%. Farmers who worked with animals were most prone to injuries.
- Younger operators were more likely to get hurt. About 4.2% of individuals under the age of 55 received some form of injury in 1995. In contrast, only 3.7% of those aged 55 and over reported an injury. (Statistics Canada, 1996 Census of Agriculture: Profile of farm operators, Cat. No. 11-OOIE)
- An unstable economy is forcing parents to do work and child care at the same time. Farmers work longer hours under high stress levels, especially at seeding and harvest time. When fatigued or under time pressures and when finances are strained, farmers spend less time on safety.
- Agricultural work is very physically demanding. Musculoskeletal problems such as lower back pain, hips arthrosis, and degenerative arthritis are common complaints among farm workers
- Skin disorders are caused by exposure to animals chemicals allergenic plants, and allergenic crops.
- Accessibility to medical services for the farm population is limited.

## The Canadian Coalition for Agricultural Safety and Rural Health Presentation

(reported in The Globe and Mail July 6, 1994, page 4)

- About 150 people die in farm accidents in Canada every year and a quarter of them are children under 19 or adults over 65.
- Many farmers are disabled on the job - 58 out of 1,000 - more than in any other industry
- Half of farmers over 20 have lost more than 50% of their hearing
- Farmers have a 40% greater occurrence of chronic bronchitis than non-farmers because of exposure to chemicals, dust, toxins and microbes
- The suicide rate for farmers is more than double that of the general population.

Farms are a family unit - women and men equally involved. Both work incredibly long hours and face challenges balancing work and family especially when they are also holding off-farm jobs.

Farmers work longer hours than general population. Farm women work very long hours and may be doing two or three things at once such as child care and looking after farm animals. According to Saskatchewan Agriculture and Food (StatFacts 1996 Census), female farm operators averaged more weeks (44 compared to 41) of paid work per year, and more hours (32 compared to 30) of paid work per week than females in the general population.

Off farm work has two contrasting effects. On one hand it adds stress and pressure, but it also gives, especially for women, another perspective, one not so isolated. Off-farm work can promote equality on the farm.

Farming is a social, family activity that includes moral, cultural, and political activity in addition to economics. The data and testimonials of farming in Saskatchewan suggest that the elasticity and resiliency of Saskatchewan farm families is being severely tested.

Some may suggest that the family farm is dying. But it is not so much dying as it is in metamorphosis. Rural culture is still very much alive. There is vigorous rural organization around issues such as rural transportation, rural health care, and rural education. While many aspects of rural life and the family farm are changing, there is a strong determination among today's farm families to develop a new type of family farming that is suited not only to the global marketplace but also to their own social, community, and economic needs.

# The Changing Face of Agriculture

## Challenges, Changes, and Choices

It is clear that farmers are a resilient and innovative group. They have adapted to environmental, technological, economic, and social changes. This has been proven in the past, and will continue to be proven in the future.

An example of farmers' adaptability occurred when the Crow Rate (which prevented rises in grain transportation freight rates) was removed in 1984. Following that, freight rates increased, branch rail lines were abandoned, and many grain elevators closed. These changes meant that farms had to restructure, more large trucks appeared on the roads, and roads deteriorated. Farmers responded to the challenge in many ways. Some were unable to continue farming. Others, in order to compete, diversified their crops, added value (e.g., through processing), found new marketing opportunities, or bought their own trucks (custom work).

The following are some of the challenges and changes farmers face today:

- Over-expectant consumers (food is relatively inexpensive in Canada. What if it went from the current 9% of net income to 60%, as it is in some countries?)
- Food safety
- Urban environmental concern such as urban sprawl
- Water constraints and conservation
- Fossil fuel emissions
- Global population growth, production capacity and constraints
- World conflicts and upheaval
- Biotechnology and future research and development
- Agricultural environmental concerns, such as pesticide and fertilizer use, intensive livestock operations, soil conservation, global warming

What are some of the choices farmers are making to meet these challenges and changes?

- Learning from previous generations
- Lifelong learning
- Think with a broader perspective
- Use professionals and experts
- Use available tools, like the internet, and develop new ones
- Plan, not just for tomorrow, but for years ahead
- Consider alternatives for agricultural development and marketing
- Adapt management practices of live stock and crops
- Adapt to the changing agricultural map of Western Canada (there will soon be one tenth as many elevators as there once were)

Over the past hundred years, the Face of Agriculture in Saskatchewan has undergone many changes. Today's farmer in Saskatchewan is aware of the environment, technology, and the global economy. Today's farmer in Saskatchewan is thinking about the future. And although it cannot be predicted how it will look a century from now, it is certain that the ingenuity, dedication, and resiliency of Saskatchewan farmers, who have proven so adaptable, will find new ways to meet the challenges.

# The Changing Face of Agriculture

## Activities

1. Create T-charts or dramatic presentations that compare and contrast the activities and traditions of rural and urban families in the past and present.

Subject	Level
Social Studies	Elementary and Middle
Arts Education	Elementary and Middle
Visual Art	Elementary and Middle
English Language Arts	Elementary and Middle
Drama	Elementary and Middle

2. Create word searches or crossword puzzles using agricultural technology terms. The following website may help:  
<http://www.puzzlemaker.com>

Subject	Level
Science	Elementary

3. Apply research on innovations in Animal Science to create "animals of the future", describing such qualities as genetics, appearance, conversion of feed to meat, and breeding techniques.

Subject	Level
Arts Education	Middle
Science	Middle
Arts Education	Secondary
Visual Art	Secondary
Science 10	Secondary
Biology 20/30	Secondary

4. Create booklets that illustrate the adaptations farmers have made to their physical environment, and predict future adaptations.

Subject	Level
Arts Education	Elementary and Middle
Visual Art	Elementary and Middle
English Language Arts	Elementary and Middle
Social Studies	Elementary and Middle

5. "Adopt" local farms and create biographies for them that include such elements as stories, photos, drawings, and family trees.

Subject	Level
Art Education	Elementary and Middle
Visual Art	Elementary and Middle
English Language Arts	Elementary and Middle
Social Studies	Elementary and Middle

6. Conduct experiments in crop growth by planting a mini-crop, dividing it into sections, and adjusting the amounts of fertilizer. Include an examination of issues related to fertilizer use and the environment.

Subject	Level
Science	Elementary and Middle
Social Studies	Elementary and Middle
Science 10	Secondary

7. Create murals, collages, dioramas, or sculptures depicting subjects like the following:

- how grain handling in this province has developed.
- how farms have changed.
- how the technology of farming has advanced.
- how changes in transportation have affected farming.

Subject	Level
Visual Art	Elementary and Middle
Social Studies	Elementary and Middle

8. Debate topics such as the following:

- "GMO's (genetically modified organisms) are the future!"
- "The family farm must be preserved!"
- "Agricultural marketing strategies must evolve to compete in a Global economy!"
- "Fertilizers and pesticides can prevent the destruction of habitat!"

Subject	Level
Biology	Secondary
Economics	Secondary
Social Studies	Secondary
English Language Arts	Secondary
Agriculture Studies 30	Secondary

9. Explore the decline of the family farm and the rise of the corporate farm through activities like the following:

- a dramatic presentation
- a statistical analysis
- a written essay

Subject	Level
Economics	Middle and Secondary
Drama	Middle and Secondary
Social Studies	Middle and Secondary
English Language Arts	Middle and Secondary

10. Design posters that showcase researchers, scientists, inventors, or farmers who have made contributions to agriculture. (see Tours: Saskatchewan Agriculture Hall of Fame, 4-H Hall of Fame, Soil Conservation Canada's Hall of Fame)

Subject	Level
Social Studies	Elementary and Middle
Science	Elementary and Middle
English Language Arts	Elementary and Middle
Social Studies	Secondary
Science 10	Secondary
English Language Arts	Secondary
Graphic Arts	Secondary

11. Compile recipes and plan meals/menus that emphasize one of the following: organically grown products, uniquely Saskatchewan products, or pulse crops.

Subject	Level
Food Studies	Middle and Secondary

12. Write essays that explore topics like the following:

- Lessons from the "Dirty 30's": Soil Erosion
- Organic Farming
- Agricultural Innovations
- Social Impacts of Changes in Agriculture.
- The Formation of Prairie Wheat Pools

Subject	Level
Science 10	Secondary
Biology 20/30	Secondary
Economics	Secondary
English Language Arts	Secondary

13. Draw a map that traces the path of wheat or barley from seed, through growing, harvest, storage, and how it travels to China where it is made into a loaf of bread or a bottle of beer.

Subject	Level
Social Studies	Elementary and Middle

14. Compose stories set in the year 2050 that describe the lifestyle, implements, and type of food produced by a futuristic farm family.

Subject	Level
English Language Arts	Elementary and Middle
English Language Arts	Secondary

15. Submit editorial articles that discuss the pros and cons of current agricultural issues, such as Genetically Modified Organisms (GMO), summerfallowing, transportation / marketing subsidies, "should irrigation farming be allowed", etc.

Subject	Level
English Language Arts	Secondary
Media Studies	Secondary
Social Studies	Secondary
Journalism Studies	Secondary

16. Examine environmental concerns that will force change in agricultural practice, such as the following:

- Depletion of soil quality
- Urban growth
- Water constraints
- Use of fossil fuel
- Pesticide and Fertilizer use
- Intensive Livestock Operations

Subject	Level
Economics	Secondary
Canadian Studies 30	Secondary
Agricultural Studies 30	Secondary

17. Create presentations that compare and contrast the benefits and challenges of a variety of alternative or diversified farming methods or processes such as Organic, Zero-Till, Continuous Cropping, and Value-added crops (such as growing canola and making it into cooking oil before shipping it). Include field trips to farms, plants, or facilities.

Subject	Level
Science 10	Secondary
Social Studies	Secondary
Agricultural Studies 30	Secondary

18. Research trade agreements such as NAFTA and GATT as a background to holding a mock trade symposium in which students represent the interests of a variety of countries and negotiate the terms of a mock agreement.

Subject	Level
English Language Arts	Secondary
Social Studies	Secondary
Agricultural Studies 30	Secondary

19. Invent a game in the tradition of "Monopoly" or "The Price is Right" that uses farm implements and their prices, in which students to buy, use, and resell equipment while managing a cash flow.

Subject	Level
Mathematics	Secondary

20. Explore the stresses faced by the modern farm family by creating a short play, television sit-com, short story, or poem.

Subject	Level
Drama	All
Social Studies	All
English Language Arts	All
Arts Education	All

21. Order an all dressed pizza or bake a loaf of bread and explore the source of each ingredient to determine the involvement of the agricultural industry, or to examine career opportunities in agriculture. Then eat up!

Subject	Level
Health	Middle
Life Transitions	Secondary
Food Studies	Secondary

22. Design a marketing plan for a fictional food product. Include packaging design, advertising, and an analysis of potential markets.

Subject	Level
Media Studies 20	Secondary
Entrepreneurship 30	Secondary
Design Studies	Secondary

23. Study the energy sources used by farmers and hypothesize how they might meet the challenge if an energy source disappeared. Record the farmer's experiences in a journal.

Subject	Level
English Language Arts	Middle and Secondary
Science	Middle and Secondary

24. Incorporate the grain elevator, known as "the cathedral of the prairie", into an icon, logo, story, poem, song, sculpture, or other artwork, that symbolizes its importance in Saskatchewan history.

Subject	Level
Visual Arts	All
Canadian Studies 30	Secondary
English Language Arts	All
Arts Education	All

25. Draw political cartoons that satirize different aspects of the Changing Face of Agriculture.

Subject	Level
Social Studies	Secondary
Agriculture Studies 30	Secondary

26. Tour a seed facility and collect samples. Classify the seeds by colour, shape, and size, and the end use by the consumer.

Subject	Level
Science	Elementary

27. Interview senior citizens who grew up on farms and compile their stories. Identify the changes that have taken place in their generation.

Subject	Level
Social Studies	All
English Language Arts	All

28. Research and catalogue a list of agricultural innovations and inventions that originated in Saskatchewan.

Subject	Level
Social Studies	Middle and Secondary
Science	Middle and Secondary
Agriculture 20	Middle and Secondary

29. Explore mathematical concepts using examples from agriculture. For example, calculating the volume of grain bins and railway cars, or calculating how many acres of production is required to fill a 55,000 tonne vessel, and how many bins, truck, and railcars are necessary to carry the grain.

Subject	Level
Mathematics	Elementary and Middle

# Resources

## Organizations

Saskatchewan Agriculture and Food,  
Statistics Branch  
3085 Albert Street,  
Regina, SK, S4S 0B1  
306.787.5947

The Canadian Wheat Board, Regina  
Regional Office  
424 McDonald Street,  
Regina, SK, S4N 6E1  
306.751.2690  
306.751.2691 Fax

Innovators in the Schools  
800.336.7955 Toll free  
306.933.7904 Saskatoon  
306.791.7955 Regina

Department of Agricultural and Bioresource  
Engineering,  
University of Saskatchewan  
306.966.7881

Agriculture and Agri-Food Canada  
PFRA - Prairie Farm Rehabilitation  
Administration  
603-1800 Hamilton Street,  
Regina, SK, S4P 4L2

Crop Development Center,  
University of Saskatchewan  
306.966.5855

Crop Protection Institute of Saskatchewan,  
Provincial Council  
306.242.2606  
306.955.5561 Fax

Saskatchewan Soil Conservation  
Association  
Box 1360 Indian Head, SK, SOG 2K0  
306.695.4233

Agriculture Institute of Management in  
Saskatchewan (AIMS)  
306.787.5944  
306.787.5077 Fax

## Tours

Agriculture Canada Research Farms  
Indian Head, 306.695.2274  
Melfort, 306.752.2776

Canadian Western Agribition,  
Regina, SK  
306.565.0565

Conservation Learning Centre,  
Prince Albert, SK  
306.953.2796

Crop Production Show,  
Saskatoon, SK  
306.931.7149

Farm Progress Show,  
Regina, SK (June)  
306.781.9233

Seager Wheeler Farm,  
Rosthern, SK  
306.232.5957

Conserva-Pak Seeding Systems,  
Indian Head, SK  
306.695.2460

Western Development Museums  
Moose Jaw, SK 306.693.5989  
North Battleford, SK 306.445.8033  
Saskatoon, SK 306.931.1910  
Yorkton, SK 306.783.8361

4-H Hall of Fame  
Saskatoon, SK 306.933.7727

Soil Conservation Canada's Hall of Fame  
Saskatoon, SK 306.955.1992

Scott Experimental Farm  
Box 10, Scott, SK, SOK 4A0  
306.247.2011

Semi-Arid Prairie Agriculture  
Research Centre  
Swift Current, SK 306.778.7200

Saskatoon Research Station  
Saskatoon, SK  
306.956.7200

## Print

***The National Policy and the Wheat Economy***, Fowke. Toronto: University of Toronto Press, 1957.

***Grain News***, periodical.

***Western Producer***, periodical.

***Organic Farming on the Prairies***, Gary Smith and Wilma Groenen, 2000. Available through <http://www.saskorganic.com>

***Atlas of Saskatchewan***, 1999.

***The Changing Role of Rural Communities in an Urbanizing World 1961 - 1990***, Jack Stabler, M.R. Olfert and Murray Fulton. Regina: Canadian Plains Research Centre, University of Regina, 1992.

***The Canadian Wheat Board: Marketing in the New Millennium***, Andrew Schmitz and Hartley Furtan. Regina, SK: Canadian Plains Research Center, 2000.

***Chosen Instrument, A History of the Canadian Wheat Board: The McIvor Years***, William E. Morris. Winnipeg, MB: Canadian Wheat Board, 1987.

***Chosen Instrument II: A History of the Canadian Wheat Board: New Horizons***, William E. Morris. Winnipeg, MB: The Prolific Group, 2000.

***From Prairie Roots: The Remarkable Story of the Saskatchewan Wheat Pool***, Gary Fairbairn. Saskatoon, SK: Western Producer Prairie Books, 1984.

***CWB Annual Report and Statistical Review***. Available through CWB.

***Grains from Western Canada***. Available through CWB.

***Kid Kernal Colouring Books***. Available through CWB.

## Video

***Making a Sale of Grain in Malaysia*** (15 minutes) Available through the CWB. \*Note that Canadian Wheat Board resources are copyright free, and may be photocopied or duplicated for classroom use)

## Websites

Agriculture and Agrifood Canada  
<http://www.agr.ca>

Agriculture Saskatchewan  
<http://www.agr.gov.sk.ca>

Canadian Wheat Board  
<http://www.cwb.ca>

Agricultural Institute of Management in Saskatchewan (AIMS)  
<http://www.agr.gov.sk.ca/aims/>

Canadian Organic Growers Inc.  
<http://www.cog.ca>

Organic Crop Improvement Association International  
<http://www.ocia.org>

Statistics Canada  
<http://www.statcan.ca>

AginfoNet  
<http://www.aginfo.net.sk.ca>

The Saskatchewan Pulse Grower  
<http://www.skpulse.sk.ca>

Western Producer on-line  
<http://www.producer.com>

Canadian Fertilizer Institute  
<http://www.cfi.ca>

Potash and Phosphate Institute of Canada  
<http://www.ppi-ppic.ca>

PFRA - Prairie Farm Rehabilitation Administration  
<http://www.agr.ca/pfra>

# Thank You

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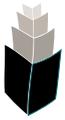
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