

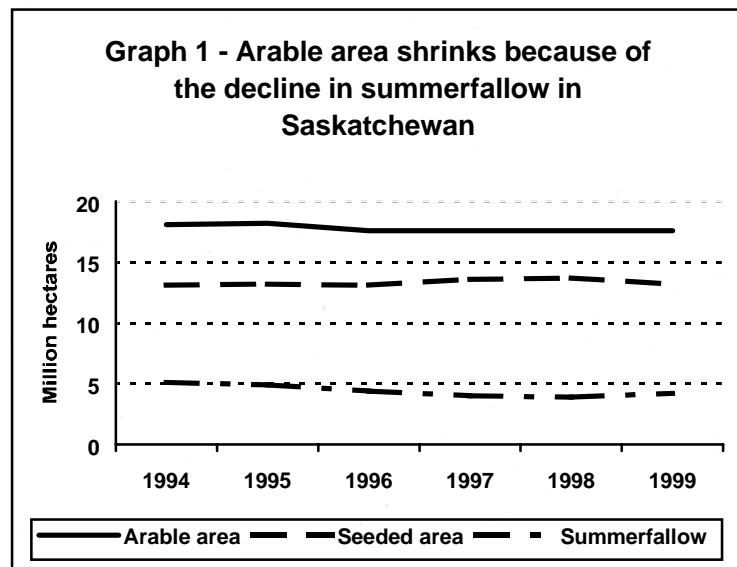
Catalogue No. 21-004-XIE

March 2000

Little change in the diversity of land cover since the end of the Crow rate

By Ben Bradshaw

Contrary to expectations, the end of subsidized grain transport has not yet led to more diverse cropping patterns in Saskatchewan. A more diversified mix of land covers was anticipated after the demise of the Western Grain Transportation Act (WGTA) in 1995, based on both theoretical arguments about the general response of farmers to subsidy removal and specific land use projections in the case



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of the WGTA. Crop producers were expected to move away from dependence on just a few traditional crops to better protect themselves from the income risks associated with price downturns and climatic events. Based on Statistics Canada survey data from Saskatchewan, there is only limited evidence to support this hypothesis, at least over the period 1994 to 1999.

Statistics Canada annual crop survey

The data used in this research derive from a random sample of 29,300 farms surveyed by the Crops Section of Statistics Canada. The survey, which is conducted annually in late May and early June via a computer assisted telephone interview, asks producers to report planted areas of each crop. The information is then extrapolated to generate estimates of the totals for each province and crop. In the case of Saskatchewan, the sample sizes for the period 1994-98 ranged from 8,890 to 10,314 farms drawn from a population of 56,995 farms identified in the 1996 Census of Agriculture.

Evidence of Land Use Diversification in Saskatchewan

At the provincial scale, the data reveal an overall decline in total arable land from 18.1 million hectares in 1994 to 17.6 million hectares in 1999. This decline can be attributed primarily to a

VISTA on the Agri-Food Industry and Farm Community

ISSN 1481-899X

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VISTA is a semi-annual newsletter published by the Agriculture Division of Statistics Canada and distributed to users of agriculture, food and rural statistics. Subscriptions are available by mail or FAX from:

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Agriculture Division
Statistics Canada
12th floor, Jean Talon Bldg.
Ottawa, Ontario
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FAX: (613) 951-3868

VISTA is also available on the Internet without charge at www.statcan.ca.

Published by authority of the Minister responsible for Statistics Canada.

□ Minister of Industry , 2000.

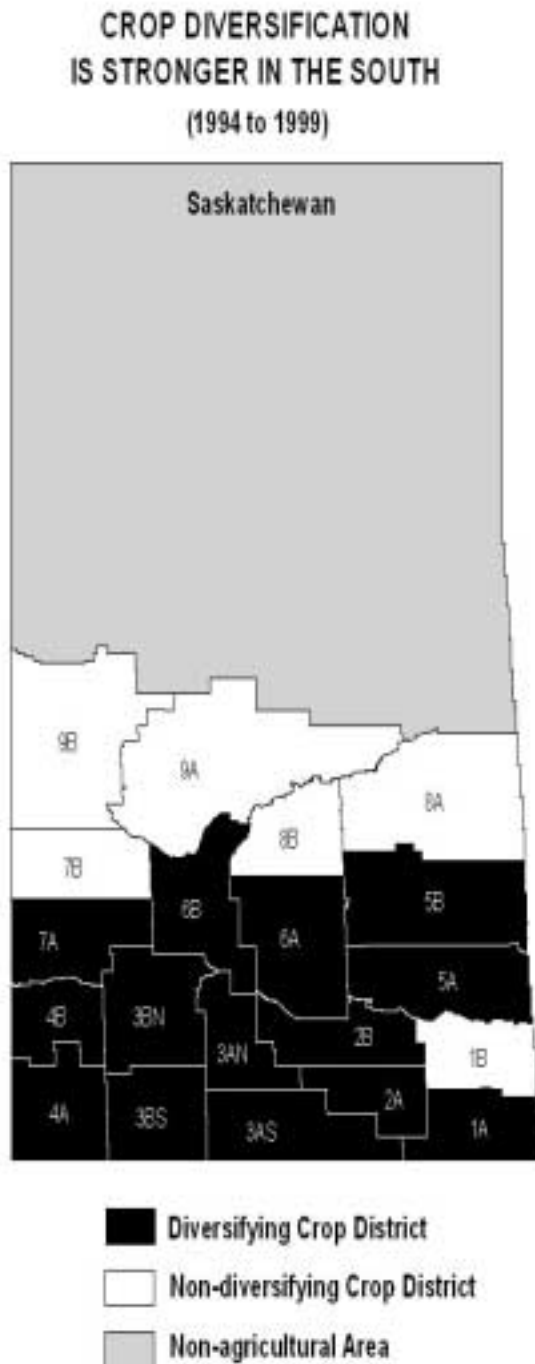
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Canada owes the success of its statistical system to a long-standing cooperation between Statistics Canada, the citizens of Canada, its businesses and governments. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

reduction in the area of summerfallow. The area of seeded land in Saskatchewan experienced a small increase from 13.1 million hectares in 1994 to 13.2 million hectares in 1999. Graph 1 shows the variation in land use for Saskatchewan for the period 1994 to 1999.



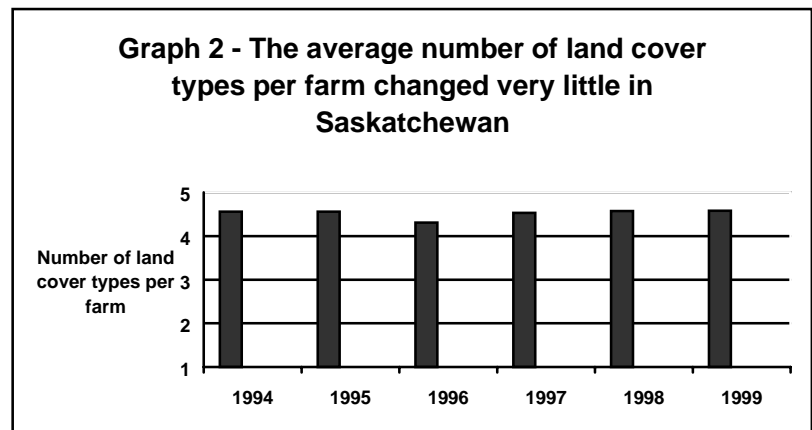
To quantify the degree of diversification, the area of each of twelve major land cover types was expressed as a percentage of total arable land in each year. The land cover types included wheat, oats, barley, rye, flaxseed, canola, five special crops and summerfallow. An increase in crop diversification would be indicated if the standard deviation of these percentages declined from one year to the next. The data show a slight increase in diversification at the province level as the standard deviation among crop percentages dropped from 11.7% in 1994 to 10.6% in 1999. However, land use diversification only occurred after the 1996 crop year. In that year, a significant increase in wheat production, both in terms of total acreage and as a proportion of total arable land, caused the standard deviation among crop percentages to increase to 12.7%.

The same method of assessment was applied to land use data at the crop district level to determine how much diversification occurred within Saskatchewan's twenty crop districts. Based on change in the standard deviation among crop percentages between 1994 and 1999, the data reveal increases in diversification in 14 of the 20 regions (see the map and Table 1). Crop District 2B, in the south central part of the province, showed the greatest shift toward diversification (12.8% in 1994 to 10.0% in 1999). Of the regions drifting toward specialization, Crop

District 8A, in the north-east corner of the crop growing area, had the greatest change (9.1% in 1994 to 11.1% in 1999). Averaging the results from all regions, the data reveal a small overall increase in diversification. As with the province level data, the results indicate an initial decline in diversification owing to an increase in wheat production in 1996, followed by an eventual increase in diversification.

The evidence for diversification as a strategy to combat price and climatic variability, of course, becomes clearer when the decisions of individual crop producers are examined. Based on the annual survey of Saskatchewan farmers, the average number of land cover types per farm (a measure of the degree of land use diversification) was identified for the years 1994 to 1999 (see Graph 2). While some farms reported as many as 15 land cover types, and many others reported just one, the average farm had roughly 4.5 varieties of land cover. As with the larger scale data, these results show a decline in diversity in 1996, followed by a return to a level of diversity roughly equal to that of 1994.

The survey data also provide a number of key characteristics of the average Saskatchewan farm in the sample that speak to some of the other projections made in light of the termination of the WGTA. The area of arable farmland on the average sample farm increased from 404 hectares in 1994 to 458 hectares in 1999, an 18.5% increase. In contrast to many projections, the area given to wheat on the average sample farm increased between 1994 and 1999, especially in 1996 when it stood over 100 hectares higher than in 1994. Even as a proportion of total farm land, wheat production on the average sample farm increased in 1996, and remained higher than the 1994 level in every year until 1999. In support of earlier projections, the area in pasture and forage crops increased on the average sample farm, both in terms of acreage and as a proportion of total farmland. In contrast to earlier projections, the area in fallow declined on the average sample farm, both in terms of acreage and as a proportion of total farmland.



The anticipated effects of removal of the WGTA

While in existence, the WGTA was criticized in some quarters for a variety of reasons, including its perceived effects on land use. The Act was said to promote excessive cultivation of prairie soils by subsidizing, and hence favouring, the production of a limited number of grains and oilseeds over perennial forage crops. The inverse of this contention would suggest that its termination should alter this favouritism, and thereby reduce soil cultivation in the prairies and promote output diversification. This reasoning is generally supported by a number of evaluative studies of the WGTA. Among those studies which sought to assess the likely production impacts of the termination of the WGTA, most projected minor changes in prairie production, including decreased wheat and barley production, increased canola, flaxseed and livestock production, and some conversion of arable land to pasture.

A report published by Agriculture and Agri-Food Canada in 1992 (1) developed projections of the land use implications of terminating the WGTA. The authors suggested that the policy change could be expected to encourage farmers to reduce grain and oilseed production, and increase permanent cover forage crops, especially in economically marginal areas where profit margins would be narrowed by increased freight expenses. Furthermore, the authors projected an increase in summerfallow, and a reduction in the use of inputs such as chemical fertilizers and pesticides as a consequence of reduced marginal returns on traditional outputs. Lastly, and of particular interest to this study, it predicted that the termination of the WGTA would promote a diversification of farm-level production into high value, low volume outputs such as livestock and specialty crops.

Output Diversification as a Response to Subsidy Removal

The Termination of the Western Grain Transportation Act

The historical roots of the Western Grain Transportation Act (WGTA) can be traced to an 1887 agreement between the Canadian government and the Canadian Pacific Railway, popularly known as the Crow's Nest Pass Agreement, which provided the railway with a construction subsidy in exchange for a freight rate ceiling on grains heading east. Over the ensuing century, the WGTA, in tandem with the Feed Freight Assistance Program (FFA), provided below cost shipping of prairie grains and oilseeds to Canadian ports and livestock producers. However, as one of the key cuts to agricultural support contained in the 1995 Canadian federal budget, the annual \$560 million subsidy to the railways under the WGTA was terminated, as was the FFA subsidy.

Given the recent policy shift towards reducing agricultural support among many western countries, theory suggests that, among other responses, farmers will diversify farm output in order to decrease their reliance upon single commodities which may suffer from market downturns or climatic hazards. From an environmental perspective, a shift from intensive monoculture production towards more diversified land use can generally be expected to also produce a number of benefits deriving from, for example, improved wildlife habitat and reduced pesticide use.

While on-farm output diversification provides a means of dealing with the market and production risks of single output farming, this strategy faces numerous challenges. Firstly, an increase in output diversification on individual farms would constitute a significant break in the trajectory of western agriculture over the past half-century. While the advice of government extension officers and the influence of commodity specific subsidies invariably contributed to product specialization, other factors such as the relative affordability of agrochemicals, the marginal cost advantage of increasing the

scale of production, high grain prices in the 1970s, increased demand for standardized output, and pressure from agribusiness and creditors also promoted this. These other factors will continue to influence production mixes on individual farms, and thereby discourage diversification. In addition, not all farm operations are similarly able to undertake alternative outputs

1 "An Environmental Assessment of Land Use Changes due to Proposed Modifications of the Western Grain Transportation Act"

because of problems of location and/or limited resources. Indeed, owing to resource endowments and the distance to markets, farmers in many regions of Saskatchewan may find it difficult to pursue a diversification strategy. Given these constraints to diversification, specialization may remain the preferred revenue-maximizing strategy for many farmers.

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Table 1 - Analysis of Land Use Type Diversification at the Province and Crop District Level

(standard deviation between land cover types expressed as a percent)

Crop District	1994	1995	1996	1997	1998	1999	Diversifying ?
1A	13.1	12.7	13.9	12.2	10.6	10.5	Yes
1B	9.9	9.6	10.9	10.8	9.0	10.0	No
2A	15.3	14.9	16.2	14.7	13.3	12.8	Yes
2B	12.8	12.5	13.3	12.5	11.9	10.0	Yes
3AN	16.4	17.4	17.5	16.9	16.0	14.6	Yes
3AS	16.7	17.1	18.3	17.7	16.9	15.5	Yes
3BN	15.6	15.8	15.9	15.7	15.7	15.2	Yes
3BS	16.9	16.9	17.2	16.7	16.7	15.8	Yes
4A	15.5	15.8	16.1	15.7	15.4	14.5	Yes
4B	17.7	18.1	18.3	18.0	17.7	17.5	Yes
5A1	10.1	9.6	10.2	9.7	8.6	9.0	Yes
5B	10.2	10.4	10.5	10.2	9.5	10.0	Yes
6A	11.8	11.8	12.6	11.7	10.2	10.1	Yes
6B	10.9	11.0	12.9	11.6	10.6	10.3	Yes
7A	13.8	13.9	14.4	14.2	13.7	12.5	Yes
7B	11.6	11.7	12.6	11.9	11.2	11.9	No
8A	9.1	9.1	9.8	9.9	10.0	11.1	No
8B	9.8	10.0	11.5	10.4	10.3	11.2	No
9A	9.9	10.0	10.8	10.5	10.3	11.5	No
9B	9.8	10.1	11.0	10.7	10.3	11.1	No
Average	12.8	12.9	13.7	13.1	12.4	11.7	Yes
Province	11.7	11.8	12.7	11.9	11.0	10.6	Yes

Canadian agriculture at a glance

Canadian agriculture at a glance, a lively and educational book released by the Census of Agriculture, brings to life many aspects of Canada's agriculture sector in over 40 short, readable articles.

Full-colour maps, photographs, charts and graphs add visual interest to over 300 pages of wide-ranging subjects. Titles such as "Would you like fries with that?", "The revolution in tillage", "What is value added anyway?", "Try the alternative way," "The ups and downs of Canadian wheat prices," and "The foods we eat: a recipe for change" are meant to whet the appetite of non-agricultural readers.

For others more familiar with agriculture, the book has its own value-added components. Features on issues confronting the sector and explanations of the factors that shape agriculture in Canada add valuable analytical depth. Many authors have blended census numbers with numerous data sources for a new perspective on familiar subjects. Half the articles are by authors outside Statistics Canada.

Canadian agriculture at a glance (96-325-XPB, \$49), the final product in the 1996 Census of Agriculture series of publications, is now available.

Check out sample articles from the book at
<http://www.statcan.ca/English/kits/agric/articl.htm>.

CURRENT CANADIAN AGRICULTURAL INDICATORS

	1998	1999	Percent Change
Crop Production December 3 Estimate (million tonnes)			
Wheat	24.4	26.9	10
Oats	4.0	3.6	-10
Barley	12.7	13.2	4
Canola	7.6	8.8	16
Flaxseed	1.1	1.0	-9
Corn for Grain	8.9	9.1	2
Soybeans	2.8	2.8	0
Dry Peas	2.3	2.3	0
Cattle on Farms (million head)			
Total Cattle - Year End	12.8	12.7	-1
Calves Born	5.2	5.1	-2
Pigs on Farms (million head)			
Total Pigs - Year End	12.4	12.3	-1
Sows Farrowed July-December	1.3	1.3	0
Sows to Farrow January-June 1999, 2000	1.2	1.4	17
Milk Sold Off Farms (million kilolitres)			
January - December	7.5	7.5	0
Chicken Meat Production (thousand tonnes)			
Total	799	847	6
Egg Production (million dozen)			
Total	499	508	2
Planted Area of Fruit (thousand hectares)			
Apples	30.1	28.9	- 4
Strawberries	6.1	5.6	- 8
Blueberries	35.4	36.8	4
Grapes	7.7	7.5	- 3
Planted Area of Vegetables (thousand hectares)			
Field Vegetables	114	113	-1
Potatoes	159	158	-1

CURRENT CANADIAN AGRICULTURAL INDICATORS - concluded

	1998	1999	Percent Change
International Trade in Agricultural Commodities and Food			
(billion dollars)			
Exports	25.0	24.9	0
Imports	17.3	17.7	2
Price Indexes (1992=100)			
CPI Food Component - December	109.7	110.9	1
Farm Cash Receipts (billion dollars)			
Total	29.6	30.3	2
Bankruptcies - Agriculture and related service industries (number)			
Total January - November	254	265	4
Manufacturing Shipments of Food			
(billion dollars)			
Total Value	51.8	52.3	1
Retail Trade in Food Stores			
(billion dollars)			
Total Value	57.7	59.0	2
Population (million persons)			
October 1	30.3	30.6	1
Employment (million persons)			
December	14.2	14.6	3
Raw Unemployment Rate (percent)			
December	8.3	6.8	-18

Scheduled Releases of Agricultural Information

March 1, 2000 through September 1, 2000

Field Crops

- April 20 - March seeding intentions of principal field crops by province for 2000 (Catalogue No. 22-002-XPB).
- May 8 - Stocks of Canadian grain at March 31, 2000 (Catalogue No. 22-002-XPB).
- June 29 - Preliminary estimates of principal field crop area for 2000 (Catalogue No. 22-002-XPB).
- August 25 - July 31, 2000 estimate of production of principal field crops (Catalogue No. 22-002-XPB).

Grain Markets

- March 29 - Cereals and oilseeds market statistics, monthly (Catalogue No. 22-007-XPB).
- April 28
- May 30
- June 28
- July 27
- August 28
- May 30 - Grain Trade of Canada 1998-99 (Catalogue No. 22-201-XPB)

Horticulture Crops

- July 21 - Preliminary estimates of potato area by province for 2000 (Catalogue No. 23-008-UIB).
- June 15 - Area of fruit and vegetable crops by province for 2000 (Catalogue No. 22-003-XIB).
- April 28 - Greenhouse, sod and nursery industries (Catalogue No. 22-202-XIB).

Food Consumption

- June 15 - Supply, disposition and per capita disappearance of cereals, sugars, syrups, pulses, nuts, beverages, dairy products, poultry, eggs and meats for 1999 (Catalogue No. 32-229-XPB/XIB).

Livestock and Animal Products

- May 12 - Farm sales of milk for fluid and manufacturing purposes, production and stocks of creamery butter, cheddar cheese and other dairy products by province, quarterly (Catalogue No. 23-001QXPB/XIB).
- August 14
- May 3 - Inventories of pigs by province at April 1 (Catalogue No. 23-603-UPE).
- August 23 - Inventories of pigs, cattle and sheep by province at July 1 (Catalogue No. 23-603-UPE).
- May 3 - Wildlife fur production for 1999 (Catalogue No. 23-603-UPE).
- August 23 - Report on fur farms by province for 1999 (Catalogue No. 23-603-UPE).
- May 12 - Production of poultry and eggs by province, 1999 (Catalogue No. 23-202-XIB).

Scheduled Releases of Agricultural Information

March 1, 2000 through September 1, 2000

Livestock and Animal Products

March 15 - Aquaculture economic statistics (Catalogue No. 23-603-UPE).

August 23 - Aquaculture (Catalogue No. 23-603-UPE).

March 29 - Stocks of frozen meat products by province, monthly (Catalogue No. 23-009-XIE).

April 27

May 30

June 28

July 27

August 29

March 17 - Stocks of frozen poultry meat by province, monthly (Catalogue No. 23-603-UPE).

April 19

May 17

June 19

July 20

August 18

March 6 - Egg production and number of laying hens by province, monthly (Catalogue No. 23-003-XPB).

April 7

May 8

June 7

July 7

August 10

Farm Income and Prices

May 25 - Farm cash receipts by province, quarterly (Catalogue No. 21-001-XIB).

August 30

May 25 - Estimates of agricultural economic indicators for 1999: farm income, farm cash receipts, farm operating expenses and depreciation charges, current values of farm capital, farm debt outstanding and direct program payments (Catalogue No. 21-603-UPE).

Users may obtain these releases on the date of release through the contacts listed on the next page. Much of the data is available in machine readable form in CANSIM at the same time. The publications will be available at a later date.

AGRICULTURE DIVISION: WHO TO CONTACT

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Topic	Contact		Tel No.
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Cattle, Hogs, and Sheep	Robert Plourde	(613)	951-8716
Poultry and Cold Storage	Robert Plourde	(613)	951-8716
Aquaculture	Bernadette Alain	(902)	893-7251
Field Crop Reporting	Oliver Code	(613)	951-8719
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Horticultural Crops	Bill Parsons	(613)	951-8727
Potatoes and Furs	Barbara McLaughlin	(902)	893-7251
Farm Taxfiler Data	Daniel Michaud	(613)	951-0701
Farm Cash Receipts	Martin Beaulieu	(613)	951-6357
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