

THE PAST, PRESENT AND FUTURE OF PULSE CROPS IN SASKATCHEWAN

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ABSTRACT:

Pulse crop production in Saskatchewan has increased from about 10,000 ha of pea in 1968 to 322,000 ha in 1992, consisting of 190,000 ha lentil, 130,000 ha pea, 900 ha dry bean, 800 ha faba bean and 200 ha chickpea. Furthermore, peas should increase to 160,000 ha in 1993 and total pulse crop production should exceed 400,000 ha by the year 2000. Pulse crop production embodies all the priority attributes promoted by various levels of government: crop diversification, value added processing (200 cleaning, bagging and pea splitting operations in western Canada), new industries (the new legume inoculant industry started in 1987) and increased sustainability of our soils (N_2 fixation and reduced fallowing). This increased production traces back to 1976 when the Saskatchewan Pulse Crop Growers Association (SPCGA) was organized. In 1985 this group reorganized into the Saskatchewan Pulse Crop Development Board and was empowered to collect a mandatory levy of 0.5% on initial sales of Saskatchewan-grown pulse crops. This levy was partially matched by the Saskatchewan Agriculture Development Fund and Agriculture Canada. This money is used by the SPCDB to fund pulse crop research and market development. Research is expensive, but it is an investment in the future and required to make Saskatchewan farmers more competitive globally.

INTRODUCTION:

Saskatchewan traditionally has had a one-crop economy, based on Canada Western Red Spring Wheat (CWRS). Recurring wheat surpluses and resultant low prices for wheat over extended periods of time have been disastrous for the agricultural economy. Saskatchewan has been more adversely affected than other provinces due to its extreme reliance on wheat production (8.5 million ha of CWRS and durum wheat vs. 6.0 million ha of summerfallow out of 18.6 million ha of cultivated land in 1990, i.e., 67% of the cropped land was devoted to wheat production).

This problem has not escaped the attention of the Federal and Provincial governments. Over the years government policy has been to promote agricultural diversification, crop diversification, value added processing, increased sustainability of our soils and agriculture, increased competitiveness globally, new industries and various other aspects of rural

development. Crop diversification has been the most successful, largely through the efforts of the Crop Development Centre (CDC) and Agriculture Canada at Saskatoon. In 1971, the year the CDC was established, fewer than 100,000 ha of specialty crops (mustard, sunflower, canary seed, lentil and pea) were grown in western Canada. The CDC has concentrated on pea and lentil breeding and management. Thus, in 1971 only 34,000 ha of pea and lentil were grown in western Canada with fewer than 2,000 ha in Saskatchewan (Table 1). The increase in area devoted to pea and lentil production since 1971 has been spectacular. Accordingly, the past, present and future of the pea and lentil crops in Saskatchewan will be discussed in some detail.

Table 1. Area devoted to pulse crop production in Western Canada and Saskatchewan, 1970-2000

Year	Western Canada	Saskatchewan
1970	34,000	2,000
1975	39,000	6,000
1980	113,000	50,000
1985	158,000	88,000
1990	265,000	161,000
1991	442,000	200,000
1992	558,000	320,000
1993*	570,000	340,000
2000*	643,000	360,000

* Predicted

Source: Saskatchewan Agriculture and Food, 1992b and previous reports of the same title.

PEA PRODUCTION IN SASKATCHEWAN:

Pea was grown on 3200 ha in Saskatchewan in 1971 with an average yield of 1600 kg/ha and was sold at a farm gate price of \$73/t (Saskatchewan Agriculture and Food, 1992a). Pea production gradually increased to 28,000 ha by 1985 (Table 2) with an average yield of 2000 kg/ha and a farm gate price of \$209/t. Prior to 1985 most of the peas had been sold into the food pea market, but in 1985 the European Economic Community market for feed peas opened up and greatly increased the demand and price for peas. The high price in 1984 and 1985 stimulated a large increase in area devoted to peas in Saskatchewan: 66,000 ha in 1986, 136,000 ha in 1987 and 152,000 ha in 1988. Saskatchewan replaced Manitoba as the major pea

producing province in 1986. Dry pea plantings in western Canada peaked at 290,000 ha in 1988 (59% in Saskatchewan; Saskatchewan Agriculture and Food, 1992 b.).

Table 2. Pea plantings and prices in Saskatchewan, 1983-1992

Year	Hectares	Yield kg/ha	Pea farm gate price \$/t	#1 HRS wheat farm gate price \$/t	Pea price as % of HRS price
1983	18,000	1865	176	178	99
1984	24,000	1509	201	175	115
1985	28,000	2018	209	134	156*
1986	66,000	1791	194	105	185*
1987	136,000	1620	176	115	153*
1988	152,000	919	198	183	108
1989	64,00	1304	181	152	119
1990	52,000	1964	174	115	151*
1991	77,000	2023	166	114	146*
1992	130,000	1811	178	(135)†	132*
1993	(160,000)†				

† Predicted.

* Farm gate pea price greater than 125% of the farm gate price for # 1 CWRS wheat.
Source: Saskatchewan Agriculture Food, 1992a,b.

Coincidentally, the price of CWRS wheat increased in 1988 and 1989, decreasing the price premium for peas and pea plantings dropped 1990 and 1991.

A "rule of thumb" has been devised to explain why pea plantings increase or decrease each year. In its simplest form this rule of thumb states that "pea production will increase the year following the year when the farm gate price of peas is greater than 125% of the farm gate price of #1 CWRS wheat". Thus, in Table 2 the farm gate price of pea exceeded 125% of the farm gate price of #1 CWRS wheat in 1985, 1986, 1987, 1990 and 1991 and in every case pea plantings increased the following year. Furthermore, the pea premium to #1 CWRS wheat should be about 35% in 1992, leading to a predicted 20% increase in pea plantings in 1993. This will be the largest pea planting ever in Saskatchewan, and the future promises even more peas.

LENTIL PRODUCTION IN SASKATCHEWAN:

Lentil was first grown commercially in Canada in 1969 at Richlea, SK. Plantings increased to 6,000 ha when late wet springs and early fall frosts in 1973 and 1974 essentially wiped out commercial lentil production in Canada. CDC started working on the agronomy of lentil in 1972 and had developed a package of agronomic practices by 1976. Prices were favourable in 1976, so more farmers were interested in growing lentil in 1977, the year the CDC first had field scale demonstrations on the package of agronomic practices. One cooperator near Regina did everything perfectly, it even rained nicely in July, and he produced 2000 kg/ha on 120 ha - a real success story! However, the other lentil-producing area in N. American, the Palouse Area of N. Idaho and E. Washington, experienced a devastating drought and their lentil yields were only 30% of normal. Lentil brokers had forward sold part of the anticipated lentil crop for delivery that winter, but no lentils were available in the U.S. Accordingly, they bid up the Canadian lentil crop to a record \$778 per tonne (Table 3) for the entire crop. Consequently, the lentil cooperator from Regina grossed over \$1500/ha for his 1977 lentil crop. The 1978 lentil plantings increased 7-fold and have increased 13 of the 16 years since 1976.

The "rule of thumb" in its simplest form for lentil states that "lentil production will increase the year following the year when the farm gate price of lentil is greater than 200% of the farm gate price of #1 CWRS wheat. Table 3 indicates that the farm gate price of lentil exceeded 200% of the farm gate price of #1 CWRS wheat 13 out of 16 years since 1976 and that in every case except one (1987) the lentil plantings increased the next year. Lentil plantings actually decreased the year following 1987 due to the large crop and large carryover in combination with high wheat price at planting time in 1988 which reduced lentil plantings. On the other hand, lentil plantings actually increased the year following 1983 when the lentil premium was less than 100%. The net result is that lentil plantings in Saskatchewan have increased every year since 1976 except for 1983, 1988 and 1989.

Table 3. Lentil plantings and prices in Saskatchewan, 1976-1992

Year	Hectares	Yield kg/ha	Lentil farm gate price \$/t	# 1 HRS wheat farm gate price \$/t	Lentil price as % of HRS price
1976	240	894	444	105	423*
1977	1,200	1119	778	104	748*
1978	8,400	1079	333	143	233*
1979	12,000	711	484	177	273*
1980	24,800	543	660	207	319*
1981	34,000	1107	441	189	233*
1982	50,000	1344	331	172	192
1983	36,400	1233	331	178	186
1984	52,000	472	408	175	233*
1985	60,000	763	661	134	493*
1986	106,800	1341	474	105	451*
1987	200,000	1294	265	115	230*
1988	120,000	410	366	183	200
1989	88,000	892	441	152	290*
1990	108,000	1578	440	115	382*
1991	177,000	1519	312	114	274*
1992	190,000	1388	300	(135)†	222*
1993	(190,000)†				

† Predicted.

* Farm gate lentil price greater than 200% of the farm gate price for # 1 CWRS wheat.
Source: Saskatchewan Agriculture and Food, 1992a,b.

The Future:

The fact that both lentil and pea plantings have increased nearly every year since 1975 for lentil and since 1983 for pea indicates that more and more farmers are recognizing that these two crops provide a greater return than # 1 CWRS wheat most years. However, production of lentil was greater than the market demand in 1987 and will be again in 1993. Similarly, the EEC feed pea market cannot continue to expand without drastic price reductions due to over production in Canada and Australia. Thus, if Saskatchewan and western Canada are to continue increasing their pea and lentil production, we must develop new "niche market" cultivars so that we can access additional markets and thereby increase the demand for Canadian peas and lentils.

The CDC has a "niche market" cultivar development program underway with the following new (and old) types under development with registration pending:

1993: zero tannin lentil, large seeded early faba bean

1994: Spanish Brown type lentil (ascochyta resistant), desi chickpea, early black bean

1995: Austrian winter type pea, red pea, green lentil, French Green lentil

1996: Ascochyta resistant desi chickpea, marrowfat pea, Ascochyta resistant small red lentil

1997: Direct cut pinto bean, Ascochyta resistant Laird lentil, early pea bean, bleaching tolerant green pea.

Many of these niche market cultivars may only be grown on 2,000 to 4,000 ha, but they will increase the demand for Canadian peas, lentils, faba beans, chickpeas and beans. Thus, pulse production can and will continue to increase in Saskatchewan and western Canada, but at a slower rate than in recent years.

SUMMARY:

Breeding research at the CDC will result in:

1. more niche market cultivars of various pulse crops.
2. development of a direct cut bean and appropriate harvest technology.
3. development of desi chickpea as a new crop.

These niche market cultivars will result in continued increases in pulse crop production in western Canada with related effects on the pulse processing industry:

1. Fewer larger processing plants on mainline railroads
2. Establishment of a lentil decorticating and splitting plant in Saskatchewan
3. Development of a domestic feed pea industry, initially geared to hog finishing rations.

REFERENCES CITED:

Saskatchewan Agriculture and Food. 1992a. Agricultural statistics - 1991. Saskatchewan Agriculture and Food, Regina.

Saskatchewan Agriculture and Food. 1992b. 1992 Specialty crop report. Saskatchewan Agriculture and Food, Regina.