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Update on the Development of the Dry Bean Industry in Saskatchewan

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INTRODUCTION

There are historical records of dry bean production in Saskatchewan dating back to the 1920s (McGregor, 1931). There are also records from the 1940s of seed stock multiplication of great northern and Norwegian brown dry bean seed by the Crop Science Department of the University of Saskatchewan (P.J. Hucl, personal communication). During the 1970s, the Crop Development Centre at the U of S evaluated germplasm accessions of dry bean in numerous market classes (Slinkard, 1971-1978). In the late 1970s, an irrigated dry bean demonstration program using row crop production technology was initiated in the South Saskatchewan River Irrigation District #1 near Outlook. Production of up to 300 acres was reported. In the early 1980s, production ceased because (1) growers were not willing to use row crop production methods, (2) dry bean prices reached historical lows, and (3) the earliest cultivars of coloured bean market classes were marginally adapted to the south-central Saskatchewan environment.

Since the early 1980s, pulse crop production in Saskatchewan has greatly expanded. Pea and lentil production have increased so that these crops are now grown by thousands of Saskatchewan farmers. In 1990, Canada was the world's largest producer and exporter of green lentil. Interest in dry bean production in Saskatchewan remains high because (1) dry bean is the world's number one pulse crop in both production and trade, and (2) the lentil industry in particular has developed production technology and market contacts that enables Saskatchewan farmers to grow and market dry bean crops.

DRY BEAN RESEARCH AND DEVELOPMENT

Research on irrigated dry bean was initiated in 1986 by the Crop Development Centre through a grant from the Agriculture Development Fund (ADF). A series of agronomic experiments conducted at the Saskatchewan Irrigation Development Centre (SIDC) in Outlook provided basic information on seeding date, harvest date, seeding rate, row spacing and harvest loss associated with direct harvesting (Vandenberg and Slinkard, 1989).

Since then, additional applied research and demonstration projects have been conducted at SIDC through the Specialty Crops Development Program. This is funded by the Canada/Saskatchewan Irrigation Based Economic Development Agreement implemented by

PFRA and Saskatchewan Water Corporation. The research and demonstration program focuses on germplasm evaluation and investigation of improvements in local production methods. Emphasis is placed on improvements in seeding technology (using airseeders, for example) in controlling *Sclerotinia* and in harvesting straight cut systems. Enough information is now available to publish the first edition of a production guide tailored for irrigated conditions in Saskatchewan.

Local pulse crop cleaning and marketing companies show a keen interest in developments in the dry bean industry. They realize the domestic North American market is large. For example, the pinto bean production equivalent of 700,000 acres is consumed annually in the United States alone. There are cleaning plants that can now handle pinto bean using belt conveyors and bean ladders to reduce handling loss. At least one marketing company is offering contracts for pinto bean production in the spring of 1991. The production area since 1986 is shown in Table 1.

There is increasing interest in dryland production by lentil growers. They realize that in years of overproduction of lentil like 1987 and 1991, prices will drop. Adding another pulse crop to the rotation would be beneficial for economic reasons. Another consideration is diversification of climatic risk. Lentil is seeded early while dry bean is seeded late. The rainfall pattern in a given year will favour one crop relative to another. Dry bean is at this time the only crop that fits in well as a potential large market pulse for the dark brown soil zone. If this crop can be grown on dryland using lentil equipment, the main production risk is the length of the growing season and rainfall.

Formal evaluation of dryland production of pinto bean began with demonstrations involving farm scale cultivar tests in 1988 and 1989. These were supported by the Saskatchewan Pulse Crop Development Board (SPCDB) and by ADF. This was a disaster because of the drought. In 1989, however, it was observed that the cultivars Othello and Fiesta were able to maintain reproductive development under severe drought conditions. Cultivar trials on dryland from North Dakota, Alberta (1988-89) and in Saskatchewan (1990) showed that Othello is more drought tolerant than most other pinto bean cultivars (Annual Report of Yield Trial Results 1990, Crop Development Centre). It is also one of the earliest maturing cultivars and will be the cultivar of choice in the short term. The Crop Development Centre has started a pinto bean breeding program with funding from SPCDB. The objective is to develop a cultivar with earlier maturity and similar or better drought tolerance than Othello.

ADF has supported a dryland dry bean demonstration project started in 1990 at three sites. In 1991, this will expand to six sites distributed throughout the dark brown soil zone. Othello will be grown in 1991. Production from a ten acre site on summerfallow will be compared to adjacent Laird lentil. The objective is to obtain production-related practical information on seeding rates, weed control and harvest methods.

Table 1. Production area for dry bean in Saskatchewan from 1987 to 1991

Year	Irrigated	Dryland	Total
	---------- acres ----------		
1987	35	0	35
1988	35	25	60
1989	150	50	200
1990	500	500	1000
1991 (estimate)	500	1500	2000

Table 2. Selected actual and estimated production area for specialty crops in Saskatchewan

Crop	Actual 1978	Estimated in 1979 for 1985 production	Actual 1986
	---------- acres ----------		
Canaryseed	3 000	20 000	164 000
Buckwheat	2 000	2 000	4 700
Fababean	6 000	25 000	4 400
Pea	27 000	50 000	165 000
Lentil	21 000	80 000	267 000
Sunflower	11 000	200 000	7 500

Source: Saskatchewan Agriculture

Harvesting remains the number one farm machinery-related problem for pinto bean production. The crop does not shatter but low-hanging pods are often difficult to harvest. Various harvesting strategies will be evaluated, including swathing, field rolling or redesigning pickups and lifters. One of the more intriguing possibilities is development of an air-jet guard system which uses air to lift pods above the cutter bar.

The dry bean industry is in its early stages in Saskatchewan. There are no market-related restrictions on how large it will become. By overcoming the current barriers of production by developing improved harvesting techniques and an earlier cultivar, production could reach 50,000 acres by the year 2000. This represents only a small market share.

A last word about predictions. Table 2 provides insight into what can happen to new specialty crops in the long run. These six crops were grown on less than 50,000 acres each in 1978. By 1986, production exceeded predictions for three out of six. We hope that the dry bean will join this group.

REFERENCES

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