

Topic: Crop Development Centre - Beyond King Wheat

Prepared by Amy McInnis, November 2004, for the Winning the Prairie Gamble exhibit, North Battleford WDM

1. Introduction

“Since the [Crop Development] Centre was established in 1971, millions of dollars of income have been generated because of crops and cropping techniques developed by the team of scientists and researchers. The Centre has quietly made bold strides in helping the Saskatchewan agricultural economy diversify from being predominantly a wheat-oriented focus to an industry competing in a broad world grains market,” enthused Joe Ralko in the Spring 1998 edition of the University’s alumni publication *Green & White*.¹ To its credit, the internationally known Crop Development Centre (CDC) has released over 160 crop varieties since 1977, representing 14 different crop kinds. CDC varieties have set the marketplace standard in several instances. Notable varieties include Harrington malting barley, CDC Teal wheat, Brier feed barley, Derby oat, Sceptre durum, Laird lentil and Vimy flax. The research activities of the CDC extend beyond plant breeding to include pulse pathology, weeds, environmental stress and crop production, with an ever-present commitment to developing crops and products that are in consumer demand and accepted in world markets.²

2. History and Objectives

The Crop Development Centre (CDC) was formed in 1971 as a unit of the University of Saskatchewan’s Department of Plant Sciences. As an applied research centre, the CDC is funded outside of the University’s budget, namely by Saskatchewan Agriculture and Food, as well as other external granting agencies.³ The CDC’s mission statement eloquently asserts the integral role of the Centre in Saskatchewan agriculture, and the scope of research conducted: “The Crop

¹Ralko, Joe. “Crop Development Centre Changes the Field.” *Green & White*. Spring 1998. University of Saskatchewan website. 25 May 2004
<http://www.usask.ca/alumni/alumnisite/publications/green_white/issues/spring1998/89628>.

² University of Saskatchewan Department of Plant Science. “Crop Development Centre.” Department of Plant Science website. 12 May 2002
<<http://www.usask.ca/agriculture/plantsci/cdc.html>>.

³ Ibid. and University of Saskatchewan College of Agriculture. “Outstanding in their Field” in *Agknowledge* (November 2004), 8.

Development Centre is a field crop research organization which seeks to increase the diversification of crops and their products for the farmers and agriculture industry of Saskatchewan by improving existing crops, creating new uses for traditional crops and introducing new crops.”⁴

2.0 Notable Varieties

2.1 Cereals

2.1.1 Barley

Harrington 2-row malt barley, developed by CDC scientists Dr. Brian Harvey and Dr. Brian Rossnagel, was registered in 1981. According to former CDC director Gordan Rowland, “Harrington barley, developed here, has become a world benchmark”.⁵ Harrington owes its success to its excellent malting and brewing characteristics and “...has earned an excellent reputation for the Canadian malting barley industry”. Domestic and export markets were opened up due to Harrington’s renowned quality.⁶

Although Harrington is currently the most widely produced two-row malting variety in North America, the industry is looking to new varieties for the future.⁷ After greater than two decades of success, researchers and producers are looking to new high yielding barley varieties to fill Harrington’s niche, due to waning agronomic and disease resistance issues.⁸ Once again, the CDC is responding to the needs of barley growers with high-yielding, high-quality varieties.

⁴ University of Saskatchewan Department of Plant Science. “Crop Development Centre.”

⁵ Rowland as quoted in Ralko.

⁶ “Quality Advantages and Processing Characteristics of Canadian Malting Barley Variety Portfolio.” Alberta Agriculture, Food and Rural Development website. 25 May 2004 <[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/allfcd7481?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/allfcd7481?opendocument)>.

⁷ “Malting and Brewing.” Western Grains Research Foundation website. 25 May 2004 <http://www.westerngrains.com/barley/b_malt.html> and Schwarz, Paul and Horsley, Richard. “A Comparison of North American Two-Row and Six-Row Malting Barley.” in *The Brewers’ Market Guide*. Online magazine. 25 May 2004 <<http://www.brewingtechniques.com/bmg/schwarzsb2.html>>.

⁸ Alberta Agriculture, Food and Rural Development

CDC Select and CDC Copeland show particular promise. According to Dr. Bryan Harvey, “CDC Copeland and CDC Select represent a substantial jump in yield compared to previous releases from our two-row breeding program” (Harvey as quoted in SeedQuest).

2.1.2 Winter Wheat

Winter wheat production in Saskatchewan is increasing. In the January 2004 Agricultural Statistics Fact Sheet, winter wheat acreage in Saskatchewan was reported to be 150,000 acres. There are many benefits cited for planting winter wheat as summarized in the article “Winter Wheat Production” in the Farm and Food Report:

Successful winter wheat producers report numerous benefits, such as improved weed control with less herbicide use; increased economic returns with higher yields and lower pesticide costs; and more efficient use of spring soil moisture and precipitation. The practice of sowing in the fall also contributes to wildlife habitat conservation, efficient use of equipment, and workload distribution. The CDC’s winter wheat breeding program is led by Dr. Brian Fowler (Saskatchewan Agriculture Food and Rural Revitalization).

The CDC, led by Dr. Brian Fowler, is working hard to improve winter wheat varieties for Saskatchewan producers. Important strides have been made by Fowler’s breeding program, resulting in varieties which are more resistant to rust, along with good yields and quality (Western Grains Research Foundation, “Winter wheat breeding improvements polish off rust”). Notable promising varieties released include CDC Buteo, CDC Falcon, CDC Raptor and CDC Harrier (Western Grains Research Foundation). The prairie climate can be very cold and dry, which are important considerations for breeding winter wheat for Saskatchewan producers. Fowler is currently participating in a \$9 million project funded by Genome Canada to investigate cold tolerance genes, which may have future implications for other crops (University of Saskatchewan College of Agriculture).

CDC winter wheats account for 90% of the varieties grown on the prairies. Producers are pleased with the performance of the new CDC varieties. Winter wheat producers like Bob Linnell, also Executive Manager of Winter Cereals Canada, give CDC’s varieties good reviews:

... When Brian [Fowler] came out with the varieties CDC Kestrel and CDC Claire, we saw a lot better package and a 20 to 25 percent yield advantage. Now, with the newer varieties such as CDC Falcon, CDC harrier, and CDC Raptor, we’re seeing another 25 to 30 percent yield advantage above CDC Kestrel and CDC Claire (as quoted in Western Grains Research Foundation, “New varieties help fuel winter wheat boom”).

2.2 Pulse Crops

Since its establishment in 1971, the CDC has developed into a world leader in pulse crop research and development. Prior to this, Saskatchewan had little pulse crop industry to speak of. "...the Centre is widely viewed as the birthplace of the province's pulse crop industry, due in large part to the plant breeding, extension and tireless promotion of ... Dr. Al Slinkard" (*AgKnowledge*, "Outstanding in their field"). Pulse crop production has ballooned in Saskatchewan from a few thousand acres in the 1970s, to several million acres at present. Pulse crops are a good diversification option to include in a farmer's crop rotation, as they generally command a higher value than most grains, and require fewer inputs because they fix their own nitrogen. Slinkard is credited with developing the large-seeded Laird variety of lentil which was registered in 1978. Laird has become the most widely known lentil worldwide, and according to Saskatchewan Agriculture Food and Rural Revitalization, "...[Laird] was the single most important factor contributing to the rapid expansion of the lentil industry in Canada. Laird is well adapted to most of the lentil producing regions of western Canada, and was instrumental in the development of the large green lentil market" (*Lentil in Saskatchewan*).

In addition to lentil, the CDC has made significant contributions to the development of other pulse crops in Saskatchewan including peas, chickpeas and dry beans. Saskatchewan production now accounts for more than 90% of lentils produced in Canada, which has become the world's largest exporter (SPG- lentil). Saskatchewan is also the world's largest exporter of dry peas (SPG-peas).

3.0 The Future of the CDC

CDC researchers continue to breed tried-and-true Saskatchewan crops like wheat, durum, barley, flax, lentils and peas to keep one step ahead of disease, to improve quality and to refine growing practices to maximize farmers' yields and profits. In addition, new crops are assessed for their suitability to prairie growing conditions. CDC Director Rick Holm summarizes the CDC's focus for the future: "We're limited in the number of species that will grow in this climate," he explains, "so I don't think that success in agriculture is going to come from bringing in some new species that occupies millions of acres and displaces all this wheat that nobody wants to grow anymore. We're going to have to develop new ways to make our existing crops more valuable" (as quoted in *Agknowledge*, 9). The CDC plays a large and important role in Saskatchewan agriculture. CDC varieties have opened up a range of options for Saskatchewan farmers, which continues to be important as summerfallow acreage declines in the province in favour of more diversified crop rotations. Many CDC varieties have become industry standards in quality, and have had an important economic spin-off for farmers and industry (*Agknowledge*, 9).

References:

Ralko, Joe. "Crop Development Centre Changes the Field." *Green & White*. Spring 1998. University of Saskatchewan website. 25 May 2004
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University of Saskatchewan Department of Plant Science. "Crop Development Centre." Department of Plant Science website. 12 May 2002
<<http://www.usask.ca/agriculture/plantsci/cdc.html>>.

University of Saskatchewan College of Agriculture. "Outstanding in their Field" in *Agknowledge*. November 2004.