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CDC Spectrum yellow field pea

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CULTIVAR DESCRIPTION

CDC Spectrum yellow field pea

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CDC Spectrum, a yellow cotyledon field pea (*Pisum sativum* L.) cultivar, was released in 2016 by the Crop Development Centre, University of Saskatchewan for distribution to Select seed growers through the Variety Release Committee of the Saskatchewan Pulse Growers. CDC Spectrum has good lodging resistance, medium-sized, round seeds, and good yielding ability. CDC Spectrum is adapted to the field pea growing regions of western Canada.

Key words: field pea, *Pisum sativum* L., cultivar description

CDC Spectrum is a field pea (*Pisum sativum* L.) cultivar developed by the Crop

Development Centre (CDC), University of Saskatchewan. It was issued registration number 7973 on April 8, 2016 by the Canadian Food Inspection Agency, Variety Registration Office.

Breeding Methods and Pedigree

CDC Spectrum was developed from the pedigree CDC 653-8/Ceb 4132//CDC Bronco, whereby the F_1 from the simple cross was used to develop the second cross made in 2005. CDC Bronco was developed by the Crop Development Centre, University of Saskatchewan (Warkentin et al., 2005), as was CDC 653-8 which was later registered as CDC Meadow (Warkentin et al., 2007). Ceb 4132 was developed by Cebeco Zaden (The Netherlands), having good yield potential, and later registered as Polstead. The objective of this cross was the development of a high yielding cultivar with good lodging resistance and medium seed size. Selection for seed size and shape was conducted in the F_1 and F_2 generations in Saskatoon. The $F_{2:3}$ family was evaluated in field trials in Saskatoon in 2007. Preliminary replicated yield trials were conducted in the F_4 in Saskatoon in 2008. An F_4 line, 2936-7, was selected based on good yield and good lodging resistance. This line was evaluated in replicated yield trials in Saskatoon, Rosthern, Meath Park, Pasqua and Wilkie, Saskatchewan and Barrhead, Alberta in 2009, then in 2010 at the same six locations plus Outlook, Milden, Yorkton, Saskatchewan, Morden, Manitoba, and St. Albert and Vegreville, Alberta. In 2011, the F_7 line was grown in replicated yield trials at Saskatoon, Rosthern, Meath Park, Pasqua, Milden, Yorkton, Morden and Lacombe. It was then entered as CDC 2936-7, an $F_{2:8}$ line, in the Field Pea Co-operative Registration

Test-B in 2012 and 2013.

These trials were conducted by the following organizations at the following locations:

British Columbia Ministry of Agriculture research site at Fort St. John, B.C., Alberta

Agriculture Food and Rural Development research sites at Brooks, Barrhead, St. Albert,

and Vegreville, AB, University of Saskatchewan in Saskatoon, Limerick, Yorkton, and

Moose Jaw, SK, Agriculture and Agri-Food Canada (AAFC) Research Centres located in

Indian Head, Scott, Melfort, and Swift Current, SK, Lacombe, AB, and Brandon, MB,

with disease evaluate at AAFC, Morden, MB.

Breeder seed of CDC 2936-7, later named CDC Spectrum, was derived by bulking 16 F_{6,9}

lines in 2013, after discarding phenotypic outliers.

Performance

In two years of testing in the Field Pea Co-operative Test-B (21 site-years), CDC

Spectrum had significantly greater yield than the check cultivars Agassiz and CDC

Golden (Table 1). CDC Spectrum was two days later maturing on average than Agassiz

and four days later than CDC Golden, with longer vines compared to the checks. CDC

Spectrum had better lodging resistance than both checks. CDC Spectrum had greater

seed weight than the checks, with similar seed shape, and somewhat lower protein

concentration than CDC Golden. CDC Spectrum had a similar percentage of seed coat

breakage (Reichert et al., 1986) as the checks. CDC Spectrum is adapted to the field pea

growing region of western Canada.

Other Characteristics

CDC Spectrum has a semileafless leaf type, white flowers, yellow cotyledons, opaque seed coat and round, smooth seed. CDC Spectrum was evaluated in mist-irrigated field disease nurseries at Morden and Saskatoon as part of the Field Pea Co-operative Registration Test in 2012 and 2013. CDC Spectrum was resistant to powdery mildew, as were Agassiz and CDC Golden (Table 1). CDC Spectrum was moderately susceptible to mycosphaerella blight [*Mycosphaerella pinodes* (Berk. & Bloxam) Vestergren] and moderately susceptible to Fusarium wilt [*Fusarium oxysporum* Schlecht. emend. Snyder & Hans. f. sp. *pisi* (van Hall) Snyder & Hans], similar to the checks (Table 1).

Availability of Propagating Material

Breeder seed of CDC Spectrum is maintained by the Crop Development Centre, University of Saskatchewan, 51 Campus Drive, Saskatoon, Saskatchewan, Canada, S7N 5A8. Distribution rights for CDC Spectrum are held by the Saskatchewan Pulse Growers (207-116 Research Drive, Saskatoon, Saskatchewan, Canada, S7N 3R3). Breeder seed of CDC Spectrum was first distributed in 2016 to seed growers qualified as Select seed growers by the Canadian Seed Growers' Association.

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Table 1. Summary of agronomic, quality, and disease data for CDC Spectrum and yellow cotyledon check cultivars Agassiz and CDC Golden for all station-years based on data from Field Pea Co-operative Test-B in western Canada, 2012-2013

Cultivar	Yield (t ha ⁻¹)	Maturity (d)	Vine length (cm)	Lodging score (1-9) ^a	Seed wt (g 1000 sd ⁻¹)	Seed shape (1-5) ^b	Seed coat breakage (%) ^c	Protein (%) ^d	Mycosphaerella blight		Powdery mildew (0-9) ^f	Fusarium wilt (%)
									MB	SK		
CDC Spectrum	5.50	100	90	3.2	232	2.5	2	23.9	5.8	4.2	0.0	25
CDC Golden	4.74	96	85	5.0	206	2.5	1	24.7	6.5	5.0	0.0	33
Agassiz	5.20	98	87	4.4	219	2.5	5	23.8	5.8	4.5	0.0	26
LSD (P=0.05)	0.27	1.1	3.7	0.4	6.3	0.1	4.2	0.6	0.5	2.5	-	15
Site-yr (n)	21	19	16	21	21	21	7	11	2	2	2	2

Note: ^a1 = no lodging, 9 = completely lodged, assessed at physiological maturity.

^b1 = round, 5 = cubed.

^cBased on Reichert et al. (1986) with the following modifications: seed equilibration to 14% moisture content, use of equal seed volumes per well, instead of equal numbers of seeds per well, and without arcsin data transformation.

^dProtein content (N X 6.25) expressed as dry weight basis, predicted by near infrared spectroscopy (NIR).

^e0 = no disease; 9 = whole plant severely blighted.

^f0 = no disease; 9 = whole plant severely mildewed.