# CDC Inca yellow field pea

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| Complete List of Authors: | Warkentin, Tom; University of Saskatchewan, Crop Development Centre/Plant Sciences  
Tar'an, Bunyamin; University of Saskatchewan, Plant Sciences  
Banniza, Sabine; University of Saskatchewan, Crop Development Centre  
Vandenberg, Albert; University of Saskatchewan, Plant Sciences  
Bett, Kirstin; University of Saskatchewan, Plant Sciences  
Arganosa, Gene; University of Saskatchewan, Plant Sciences  
Barlow, Brent; University of Saskatchewan, Crop Development Centre  
Ife, Scott; University of Saskatchewan, Crop Development Centre  
Horner, Jaret; University of Saskatchewan, Crop Development Centre  
DeSilva, Devini; University of Saskatchewan, Crop Development Centre  
Wagenhoffer, Stacey; University of Saskatchewan, Crop Development Centre  
Liu, Yong; University of Saskatchewan College of Agriculture and Bioresources  
Prado, Thiago; University of Saskatchewan, Crop Development Centre  
Mikituk, Kevin; University of Saskatchewan Department of Plant Sciences |
| Keywords: | field pea, Pisum sativum, cultivar description |
CULTIVAR DESCRIPTION

CDC Inca yellow field pea

Tom Warkentin¹, Bunyamin Tar'an, Sabine Banniza, Albert Vandenberg, Kirstin Bett, Gene Arganosa, Brent Barlow, Scott Ife, Jaret Horner, Devini de Silva, Stacey Wagenhoffer, Yong Liu, Thiago Prado, and Kevin Mikituk

Crop Development Centre, University of Saskatchewan,

51 Campus Drive, Saskatoon, SK, S7N 5A8

¹corresponding author, email: tom.warkentin@usask.ca.

CDC Inca, a yellow cotyledon field pea (Pisum sativum L.) cultivar, was released in 2015 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 Inca has good lodging resistance, medium-sized, round seeds, and good yielding ability. CDC Inca is adapted to the field pea growing regions of western Canada.

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

CDC Inca is a field pea (Pisum sativum L.) cultivar developed by the Crop Development Centre (CDC), University of Saskatchewan. It was issued registration number 7666 on
Breeding Methods and Pedigree

CDC Inca was developed from the pedigree Ceb4149/CDC Golden//MP1826 whereby the F$_1$ from the simple cross was used to develop the second cross made in 2005. Ceb4149 was developed by Limagrain, The Netherlands and was later registered as Noble. CDC Golden was developed by the Crop Development Centre, University of Saskatchewan (Warkentin et al., 2004). MP1826 was developed by Agriculture and Agri-Food Canada and was later registered as Thunderbird (Bing et al., 2006). The objective of this cross was the development of a high yielding cultivar with improved lodging resistance and medium seed size. Selection for seed size and shape was conducted in the F$_1$ and F$_2$ generations. 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, 2847-21, 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, SK in 2009, then in 2010 at eight SK locations, the same five plus Outlook, Milden and Yorkton, as well as Morden, MB, and Barrhead, St. Albert, and Vegreville, AB. It was then entered as CDC 2847-21, an F$_{2:7}$ line, in the Field Pea Co-operative Registration Test-B in 2011 and 2012.

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 and Forestry research site at Brooks, Barrhead, St. Albert, and
Vegreville, AB

- University of Saskatchewan in Saskatoon and Moose Jaw, SK
- Canada-Saskatchewan Irrigation Diversification Centre in Outlook, SK
- Agriculture and Agri-Food Canada Research Centres located in Indian Head, Scott, Melfort, and Swift Current, SK, Lacombe, AB and Morden and Brandon, MB

Breeder seed of CDC 2847-21, later named CDC Inca, was derived by bulking 39 F_{6,9} lines in 2012, after discarding phenotypic outliers.

**Performance**

In two years of testing in the Field Pea Co-operative Test-B (19 site-years), CDC Inca had significantly greater yield than the check cultivars Agassiz and CDC Golden (Table 1). CDC Inca had the same time to maturity as Agassiz, two days later than CDC Golden, with slightly longer vines compared to the checks. In the lodging score, CDC Inca was superior to both checks. CDC Inca had similar seed weight to Agassiz, slightly greater than CDC Golden, with similar seed shape to the checks, and somewhat lower protein concentration. CDC Inca had similar percent seed coat breakage (Reichert et al., 1986) as CDC Golden, lower than Agassiz. CDC Inca is adapted to the field pea growing region of western Canada.

**Other Characteristics**

CDC Inca has a semileafless leaf type, white flowers, yellow cotyledons, opaque seed
coat and round, smooth seed. CDC Inca was evaluated in mist-irrigated field disease
nurseries at Morden and Saskatoon as part of the Field Pea Co-operative Registration
Test in 2011 and 2012. CDC Inca was resistant to powdery mildew, as were Agassiz and
CDC Golden (Table 1). CDC Inca was moderately susceptible to mycosphaerella blight
[Mycosphaerella pinodes (Berk. & Bloxam) Vestergren] and moderately resistant to
Fusarium wilt [Fusarium oxysporum Schlecht. emend. Snyd. & Hans. f. sp. pisi (van
Hall) Snyd. & Hans], similar to the checks (Table 1).

Availability of Propagating Material

Breeder seed of CDC Inca is maintained by the Crop Development Centre, University of
Saskatchewan, 51 Campus Drive, Saskatoon, Saskatchewan, Canada, S7N 5A8.

Distribution rights for CDC Inca are held by the Saskatchewan Pulse Growers (207-116
Research Drive, Saskatoon, Saskatchewan, Canada, S7N 3R3). Breeder seed of CDC
Inca was first distributed in 2015 to seed growers qualified as Select seed growers by the
Canadian Seed Growers’ Association.

Appreciation is expressed to the pulse crop breeding staff at the Crop Development
Centre, University of Saskatchewan, for their technical assistance in the development of
CDC Inca, and to Dave Benallack and Craig Ells (also at the Crop Development Centre)
for breeder seed production. Financial support of the Saskatchewan Pulse Growers, and
Saskatchewan Ministry of Agriculture is gratefully acknowledged.
References


Table 1. Summary of agronomic, quality, and disease data for CDC Inca and yellow cotyledon check cultivars Agassiz and CDC Golden for all station-years based on data from Field Pea Co-operative Test-A in western Canada, 2011-2012

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Yield (t ha(^{-1}))</th>
<th>Maturity (d)</th>
<th>Vine length (cm)</th>
<th>Lodging score (1-9(^a))</th>
<th>Seed wt (g 1000 sd(^{-1}))</th>
<th>Seed shape (1-5(^b))</th>
<th>Seed coat breakage (%)(^c)</th>
<th>Protein (%)(^d)</th>
<th>Mycosphaerella blight MB SK</th>
<th>Powdery mildew (0-9)(^f)</th>
<th>Fusarium wilt (%)(^g)</th>
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<tbody>
<tr>
<td>CDC Inca</td>
<td>4.90</td>
<td>99</td>
<td>90</td>
<td>3.6</td>
<td>213</td>
<td>2.5</td>
<td>2</td>
<td>22.8</td>
<td>3.9</td>
<td>5.2</td>
<td>0.0</td>
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<tr>
<td>CDC Golden</td>
<td>4.02</td>
<td>97</td>
<td>80</td>
<td>4.6</td>
<td>199</td>
<td>2.4</td>
<td>1</td>
<td>24.5</td>
<td>5.0</td>
<td>5.4</td>
<td>0.0</td>
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<tr>
<td>Agassiz</td>
<td>4.53</td>
<td>99</td>
<td>85</td>
<td>4.4</td>
<td>212</td>
<td>2.6</td>
<td>4</td>
<td>23.8</td>
<td>4.0</td>
<td>5.5</td>
<td>0.0</td>
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<tr>
<td>LSD (P=0.05)</td>
<td>0.24</td>
<td>0.9</td>
<td>2.9</td>
<td>0.5</td>
<td>5.4</td>
<td>0.1</td>
<td>1.3</td>
<td>0.6</td>
<td>1.6</td>
<td>1.6</td>
<td>-</td>
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<tr>
<td>Site-yr (n)</td>
<td>19</td>
<td>17</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>7</td>
<td>11</td>
<td>2</td>
<td>2</td>
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Note: \(^{a}\) = no lodging, 9 = completely lodged, assessed at physiological maturity.

\(^{b}\) = round, 5 = cubed.

\(^{c}\) Based 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.

\(^{d}\) Protein content (N X 6.25) expressed as dry weight basis, predicted by near infrared spectroscopy (NIR).

\(^{e}\) 0 = no disease; 9 = whole plant severely blighted.

\(^{f}\) 0 = no disease; 9 = whole plant severely mildewed.

\(^{g}\) Percent of plants with symptoms of Fusarium wilt.