

**CDC Frontier Chickpea (*Cicer arietinum*) Plant Variety Protection Application****Exhibit A: Origin and Breeding History**

CDC frontier kabuli chickpea was developed from the cross FLIP 91-22C/ICC 14912 in 1993. FLIP 91-22C was developed by the International Center for Agricultural Research in Dry Areas (ICARDA) in Aleppo, Syria. ICC 14912 was developed by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Patancheru, India. The F<sub>2</sub>-derived family breeding method was used in the development of CDC Frontier.

F<sub>2</sub>-derived F<sub>3</sub> families were evaluated in the field in Saskatoon in three-row, 1.5m<sup>2</sup> microplots, with selection based on improved ascochyta blight resistance, early maturity, grain yield, and appropriate seed size, seed shape and seed coat color.

Replicated yield testing of selected F<sub>2</sub>-derived F<sub>4</sub> families was conducted in Saskatoon, SK, followed by multi-location testing in the F<sub>5</sub> generation at Saskatoon, Elrose, and Swift Current. A promising line, 95NN-29, was identified from these trials and tested in the Saskatchewan Regional Chickpea trial in 2001-2003, coordinated by the Saskatchewan Advisory Council on Grain Crops. Line 95NN-29 was re-named CDC Frontier in 2003. Breeder seed was produced in 2002 at Saskatoon, concurrent with regional testing, by bulking 24 F<sub>5</sub>-derived F<sub>9</sub> pre-breeder lines.

**CDC Frontier can be distinguished from direct parents by:  
Seed size, days to maturity and reaction to ascochyta blight.**

**Statement on Uniformity and Stability:**

CDC Frontier has been observed for 7 generations of increase and is stable and uniform.

Variants appear in CDC Frontier as purple flowers at an acceptable frequency of 2 in 10,000 at Breeder seed level, 4 in 10,000 at Select seed level, 6 in 10,000 at Foundation seed level, 8 in 10,000 at registered seed level and 10 in 10,000 at certified seed level, or

Variants appear in CDC Frontier as unifoliate leaf at an acceptable frequency of 2 in 10,000 at Breeder seed level, 4 in 10,000 at Select seed level, 6 in 10,000 at Foundation seed level, 8 in 10,000 at registered seed level and 10 in 10,000 at certified seed level, or

Variants appear in CDC Frontier as tall (60 cm) at an acceptable frequency of 2 in 10,000 at Breeder seed level, 4 in 10,000 at Select seed level, 6 in 10,000 at Foundation seed level, 8 in 10,000 at registered seed level and 10 in 10,000 at certified seed level, or

Variants appear in CDC Frontier as green cotyledons at an acceptable frequency of 2 in 10,000 at Breeder seed level, 4 in 10,000 at Select seed level, 6 in 10,000 at Foundation seed level, 8 in 10,000 at registered seed level and 10 in 10,000 at certified seed level.

These variants, besides the indicated characteristic at the specific acceptable levels at each seed multiplication stage are identical to the variety in all other characteristics as described in Exhibit C.