



APPLICATIONS UNDER EXAMINATION

CHICKPEA

CHICKPEA
(*Cicer arietinum*)

Proposed denomination: 'CDC Bronze'
Application number: 21-10596
Application date: 2021/06/28
Applicant: University of Saskatchewan, Saskatoon, Saskatchewan
Breeder: Bunyamin Tar'an, University of Saskatchewan, Saskatoon, Saskatchewan

Varieties used for comparison: 'CDC Cory', 'CDC Consul' and 'CDC Sunset'

Summary: *The leaf of 'CDC Bronze' has less pairs of leaflets than that of 'CDC Cory'. The peduncle of 'CDC Bronze' is shorter than that of 'CDC Cory' and 'CDC Sunset'. One month after harvest, the seed of 'CDC Bronze' is yellowish brown while the seed of 'CDC Cory' is brown. The dry seed weight of 'CDC Bronze' is less than that of 'CDC Consul'. The seed of 'CDC Bronze' has weak to medium ribbing while that of 'CDC Cory' has medium to strong ribbing. The plants of 'CDC Bronze' are tolerant to imazamox herbicide whereas the plants of 'CDC Consul' are sensitive to imazamox herbicide.*

Description:

PLANT: erect to semi-erect growth habit after flowering, weak to medium ramification, medium height at full pod development, mid-season maturity

STEM: medium intensity of anthocyanin colouration

LEAF: medium green

FLOWER: flowers mid-season, white

POD: light to medium green, short to medium length beak, one to two ovules per pod

DRY SEED: yellowish brown one month after harvest, medium seed weight, round to angular shape, weak to medium ribbing, matures mid-season

Origin and Breeding: 'CDC Bronze' (experimental designation 2435-2) originated from a cross between the variety 'CDC Jade' and breeding line MM9 (ICCX8600047-9) conducted in the summer of 2010 at the Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan. A single plant selection was made at the F2 generation. The variety was advanced with subsequent selections made through the F3 to F8 generations based on yield, seed weight, seed size, seed coat colour, days to flower, days to maturity, plant height and disease resistance. In 2021, 17 F9 sub-lines were used to establish breeder seed.

Tests and Trials: The comparative trials for 'CDC Bronze' were conducted by the Crop Development Centre, University of Saskatchewan, at Elrose, Saskatchewan in 2021 and 2022. The trials were arranged in a RCB design consisting of 2 replications per variety. Each replicate consisted of 3 rows spaced 30 cm apart, with a row length of 3.66 metres and a planting density of 40 seeds per square metre. Measured characteristics were based on 20 measurements per variety per year except for seed weight which was based on 8 measurements per variety per year. Mean differences were significant at the 5% confidence probability level based LSD values. Herbicide tolerances were supported by data provided by the University of Saskatchewan using the methodology as published in Tar'an B. et al. 2014 Theor. Appl. Genet. 127: 1583-1591.

Comparison table for 'CDC Bronze'

	'CDC Bronze'	'CDC Cory'*	'CDC Consul**	'CDC Sunset**
<i>Number of pairs of leaflets (count)</i>				
mean 2021 (LSD=0.5)	5.6	6.8	6.1	5.9
std. deviation 2021	0.5	0.4	0.6	0.3
mean 2022 (LSD=0.2)	4.9	6.0	5.7	5.1
std. deviation 2022	0.3	0.6	0.5	0.6

Peduncle length (from stem to first pod) (mm)

mean 2021 (LSD=1.0)	6.3	7.8	6.5	8.0
std. deviation 2021	1.9	1.9	1.1	1.5
mean 2022 (LSD=1.1)	14.9	17.7	18.1	17.6
std. deviation 2022	3.5	2.6	2.4	3.1

Seed weight (grams per 100 seeds)

mean 2021 (LSD=1.26)	26.2	25.2	27.8	25.0
std. deviation 2021	0.46	0.73	0.60	0.46
mean 2022 (LSD=0.4)	31.6	30.0	33.4	30.7
std. deviation 2022	0.61	0.23	0.19	0.61

*reference varieties



Chickpea: 'CDC Bronze' (left) with reference varieties 'CDC Cory' (centre left), 'CDC Consul' (centre right) and 'CDC Sunset' (right)

Proposed denomination: 'CDC Sunset'
Application number: 20-10122
Application date: 2020/03/16
Applicant: University of Saskatchewan, Saskatoon, Saskatchewan
Breeder: Bunyamin Tar'an, University of Saskatchewan, Saskatoon, Saskatchewan

Varieties used for comparison: 'CDC Cory' and 'CDC Consul'

Summary: *One month after harvest, the seed of 'CDC Sunset' is yellowish brown while the seed of 'CDC Cory' is brown. The dry seed weight of 'CDC Sunset' is less than that of 'CDC Consul'. The seed of 'CDC Sunset' has weak to medium ribbing while that of 'CDC Cory' has medium to strong ribbing. The plants of 'CDC Sunset' are tolerant to imazamox herbicide whereas the plants of 'CDC Consul' are sensitive to imazamox herbicide.*

Description:

PLANT: erect to semi-erect growth habit after flowering, weak to medium ramification, medium height at full pod development, mid-season maturity

STEM: medium intensity of anthocyanin colouration

LEAF: medium green

FLOWER: flowers mid-season, white

POD: light to medium green, short to medium length beak, one to two ovules per pod

DRY SEED: yellowish brown one month after harvest, low to medium seed weight, round to angular shape, weak to medium ribbing

Origin and Breeding: ‘CDC Sunset’ (experimental designation 2510-2) originated from a cross conducted at the Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan. The initial cross occurred in 2010 between ‘CDC Cory’ and ‘GPE094’. The resulting F1 was then crossed to ‘CDC Consul’. A single plant selection was made at the F2 generation. The variety was advanced with subsequent selections made through the F3 to F8 generations based on yield, seed weight, seed size, seed coat colour, days to flower, days to maturity, plant height and disease resistance. In 2020, 32 F9 sub-lines were used to establish breeder seed.

Tests and Trials: The comparative trials for ‘CDC Sunset’ were conducted by the Crop Development Centre, University of Saskatchewan, at Elrose, Saskatchewan in 2021 and 2022. The trials were arranged in a RCB design consisting of 2 replications per variety. Each replicate consisted of 3 rows spaced 30 cm apart, with a row length of 3.66 metres and a planting density of 40 seeds per square metre. Measured characteristics were based on 20 measurements per variety per year except for seed weight which was based on 8 measurements per variety per year. Mean differences were significant at the 5% confidence probability level based LSD values. Herbicide tolerances were supported by data provided by the University of Saskatchewan using the methodology as published in Tar’an B. et al. 2014 Theor. Appl. Genet. 127: 1583-1591.

Comparison table for ‘CDC Sunset’

	‘CDC Sunset’	‘CDC Cory’*	‘CDC Consul’*
<i>Seed weight (grams per 100 seeds)</i>			
mean 2021 (LSD=1.9)	25.0	25.2	27.8
std. deviation 2021	0.46	0.73	0.60
mean 2022 (LSD=0.4)	30.7	30.0	33.4
std. deviation 2022	0.61	0.23	0.19

*reference varieties



Chickpea: ‘CDC Sunset’ (left) with reference varieties ‘CDC Cory’ (centre) and ‘CDC Consul’ (right)