



APPLICATIONS UNDER EXAMINATION

FLAX

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(*Linum usitatissimum*)

Proposed denomination: 'CDC Kernen'
Application number: 20-10256
Application date: 2020/05/27
Applicant: University of Saskatchewan, Saskatoon, Saskatchewan
Breeder: Helen Booker, University of Saskatchewan, Crop Development Centre, Saskatoon, Saskatchewan

Varieties used for comparison: 'CDC Sorrel' and 'CDC Bethune'

Summary: *The petal of 'CDC Kernen' is shorter and narrower than that of 'CDC Bethune'. The distal end of the filament of 'CDC Kernen' is white whereas it is blue on 'CDC Bethune'. The distal end of the style of 'CDC Kernen' is pale blue whereas it is white on 'CDC Sorrel'. The capsule of 'CDC Kernen' is shorter than that of the reference varieties. When plants are fully developed, the stem length from the cotyledon scar to the top capsule is shorter for 'CDC Kernen' than for 'CDC Sorrel'. Ciliation of the false septa is present on the capsule of 'CDC Kernen' whereas it is absent for that of 'CDC Bethune'. The thousand seed weight of 'CDC Kernen' is less than that of 'CDC Sorrel' and greater than that of 'CDC Bethune'. The seed of 'CDC Kernen' is shorter than the seed of 'CDC Sorrel' and wider than that of 'CDC Bethune'.*

Description:

HYPOCOTYL: strong anthocyanin colouration

PLANT: oilseed type, matures early season

FLOWER: absent or very weak sepal dotting at bud stage, violet colour of crown at bud stage, flattened disk shape, medium sized corolla, violet when fully developed, no longitudinal folding of the petals, overlapping petal arrangement

FILAMENT: white at distal end, white at base

STAMEN: blue anthers, yellow pollen

STYLE: pale blue at distal end, blue at base

CAPSULE: small to medium size, indehiscent, ciliation of the false septa present

SEED: medium brown, medium size

AGRONOMY: good resistance to shattering, capsule loss and lodging

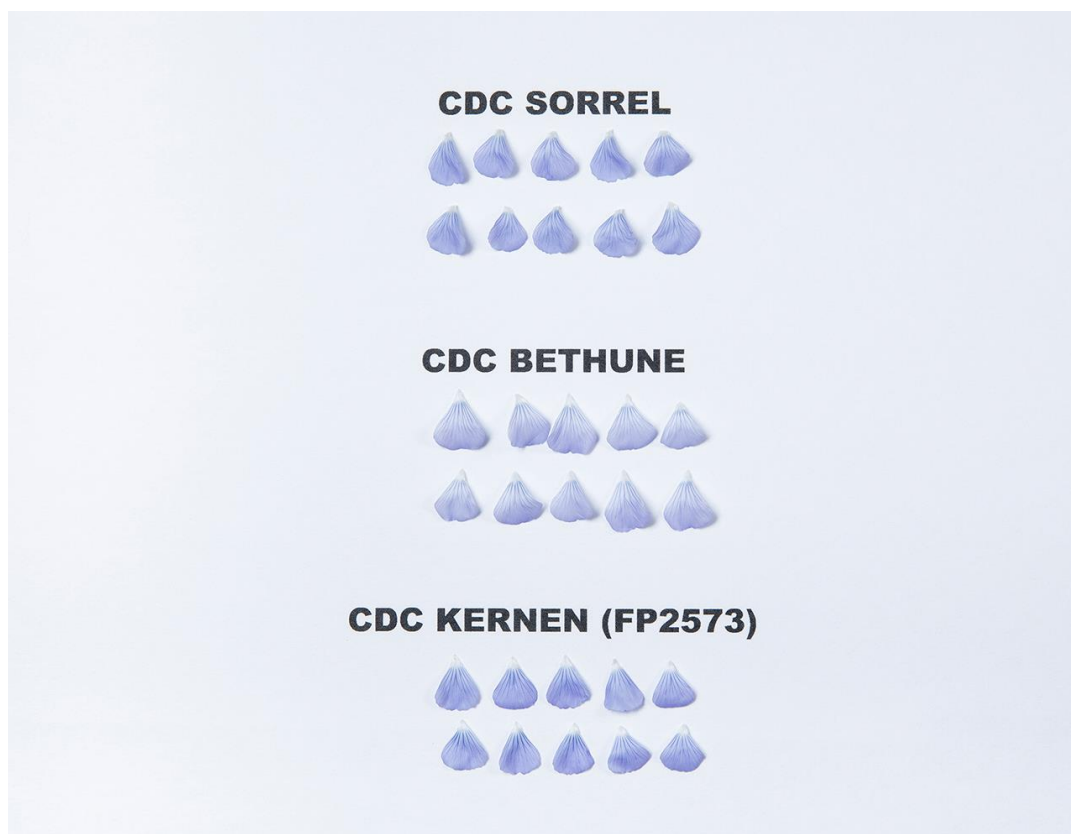
Origin and Breeding: 'CDC Kernen' (experimental designations FP2573 and F14187) was developed at the Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan. It is the result of a cross between two F6 breeding lines, HY09544 and HY09347, conducted in 2010, in the Phytotron at the University of Saskatchewan. The F2 population was grown at the Kernen Crop Research Farm in 2010 and advanced using the pedigree system from the F3 through to the F5 generation. The selection criteria used at each generation was primarily stand vigour, maturity, seed oil content and iodine value. A selected F6 line, designated as F14187, was evaluated in replicated field trials in Floral, Melfort and Saskatoon, Saskatchewan from 2014 to 2016 and assessed for disease resistances. The variety was entered and tested in the Flax Cooperative Trial as FP2573 in 2017 to 2019. Breeder seed was established from a bulk of 148 F9 derived lines in 2019.

Tests and Trials: The comparative trials for 'CDC Kernen' were conducted in 2020 and 2021 at the Kernen Crop Research Farm in Saskatoon, Saskatchewan. Trials consisted of 3 replications of each variety arranged in a RCB design. There were 6 rows per replicate with a row length of 3.66 meters with 19 cm between rows (5.01 square metres total). The seeding rate was 750 seeds per square metre. Measured characteristics were based on 20 measurements per variety each year. Mean differences were significant at the 5% probability level based on a paired Student's t-test.

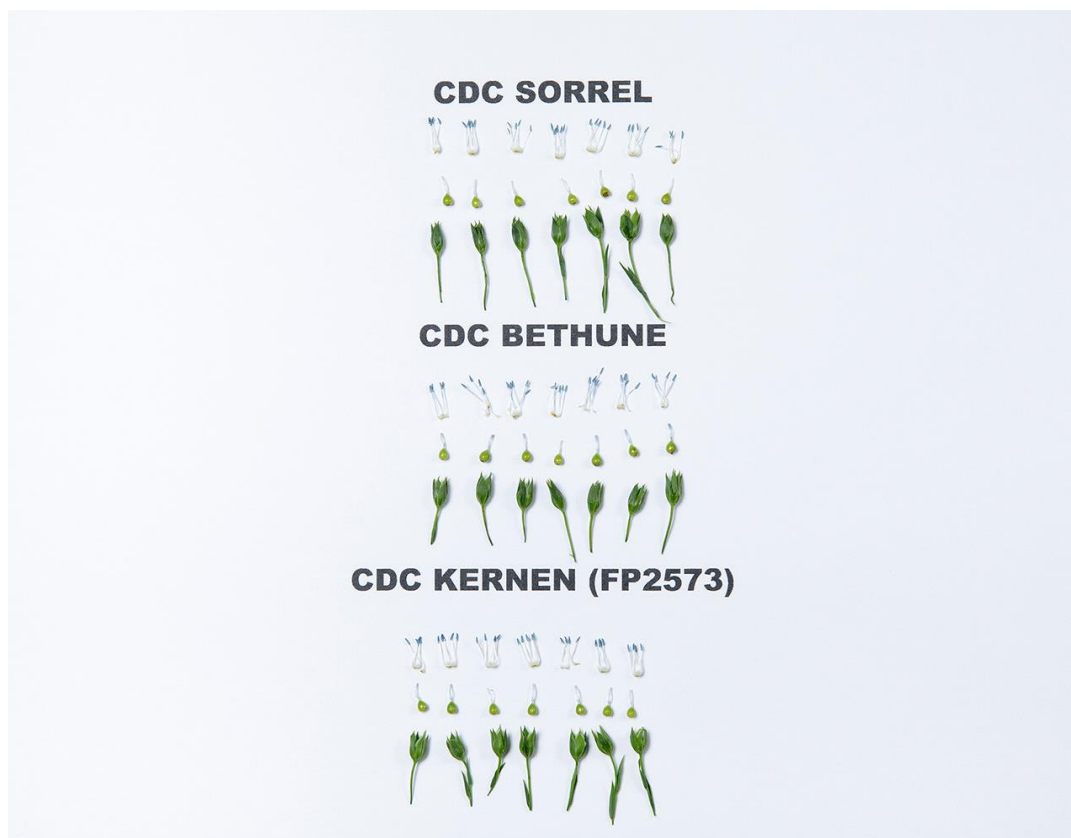
Comparison table for 'CDC Kernen'

	'CDC Kernen'	'CDC Sorrel'*	'CDC Bethune'*
<i>Flower petal length (mm)</i>			
mean 2020	12.83	13.30	13.46
std. deviation 2020	0.87	0.90	0.50
mean 2021	11.57	11.51	12.35
std. deviation 2021	0.55	0.48	0.55
<i>Flower petal width (mm)</i>			
mean 2020	10.52	11.19	11.27
std. deviation 2020	0.51	0.67	0.56
mean 2021	9.44	9.20	9.79
std. deviation 2021	0.50	0.69	0.47
<i>Capsule length (mm)</i>			
mean 2020	6.92	7.11	7.33
std. deviation 2020	0.35	0.17	0.38
mean 2021	6.89	7.14	7.06
std. deviation 2021	0.29	0.21	0.16
<i>Stem length from cotyledon scar to top capsule (when fully developed) (cm)</i>			
mean 2020	63.74	66.43	62.47
std. deviation 2020	2.40	3.30	2.95
mean 2021	39.06	45.75	37.23
std. deviation 2021	2.41	4.78	3.33
<i>Seed weight (grams per 1000 seeds) (g)</i>			
mean 2020	5.61	6.13	5.37
std. deviation 2020	0.12	0.09	0.07
mean 2021	5.97	6.12	5.17
std. deviation 2021	0.12	0.21	0.16
<i>Seed length (mm)</i>			
mean 2020	4.64	4.89	4.75
std. deviation 2020	0.24	0.16	0.25
mean 2021	4.47	4.90	4.57
std. deviation 2021	0.13	0.14	0.14
<i>Seed width (mm)</i>			
mean 2020	2.74	2.80	2.53
std. deviation 2020	0.14	0.16	0.15
mean 2021	2.62	2.64	2.44
std. deviation 2021	0.13	0.12	0.25

*reference varieties



Flax: 'CDC Kernen' (bottom) with reference varieties 'CDC Sorrel' (top) and 'CDC Bethune' (centre)



Flax: 'CDC Kernen' (bottom) with reference varieties 'CDC Sorrel' (top) and 'CDC Bethune' (centre)



Flax: 'CDC Kernen' (top) with reference varieties 'CDC Sorrel' (bottom left) and 'CDC Bethune' (bottom right)