

MEMORANDUM

TO: Prairie Recommending Committee for Pulse and Special Crops
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DATE: February 18, 2022
SUBJECT: Request for Support for Registration of Black Bean 5501CBB-3-2

5501CBB-3-2 was tested in the SSNR Trials in 2020 -2021. It is derived from a cross between CDC Blackstrap and a breeding line selected from a cross between AG11155 and CDC Blackstrap (Fig. 1). The last cross was made in winter 2014. It carries the SU91 marker associated with CBB tolerance. It is higher yielding than CDC Blackstrap and on average 3 days later maturing. The plants are upright, indeterminate and are a few cm taller than CDC Blackstrap. Seeds are similar in size to CDC Blackstrap. The anthracnose data are a bit odd for this line, with test 1 coming up resistant and test 2 susceptible. The post cooking scores and canning results were as good or better than CDC Blackstrap.

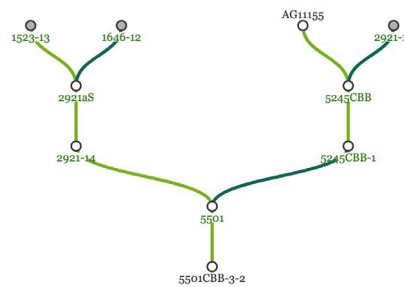


Figure 1. Pedigree of breeding line 5501CBB-3-2. 2921-14 = CDC Blackstrap

Strengths

Higher yielding than CDC Blackstrap (106 %)
 Carries the SU91 marker for CBB tolerance

Neutral Traits

Canning and cooking scores similar to the checks
 3 days later than CDC Blackstrap which is early in SK trials

Weaknesses

Reaction to anthracnose races 73 and 105 is not clear at this time. But CDC Blackstrap is susceptible so it won't be worse.

Performance Data

Table 1. Two year agronomic performance data from the 2020-2021 Short Season Narrow Row Dry Bean Co-operative Trial in western Canada

Line	Market Class	Yield(kg/ha)			% of MC-C	Days to flower			Days to mature		
		2020	2021	Mean		2020	2021	Mean	2020	2021	Mean
CDC Blackstrap	Black	1837	2713	2213	100	58	50	54	93	89	91
5501CBB-3-2	Black	2009	2791	2344	106	59	51	55	97	90	94

Line	Market Class	Pod Clearance (%)			Plant Height (cm)			Seed Weight (g/1000)			Lodging (1-5)
		2020	2021	Mean	2020	2021	Mean	2020	2021	Mean	
CDC Blackstrap	Black	79	85	81	40	55	45	196	210	203	1.3
5501CBB-3-2	Black	80	84	81	46	58	50	200	210	205	1.0

Table 2: Extract from Anthracnose data for entries in the 2021 Short Season Narrow Row Dry Bean Co-operative Trial in western Canada

Saskatoon Short Season Narrow Row Coop			Dry Bean Anthracnose Race Reactions - 2021							
Entry	Cultivar	Class	Race 73				Race 105			
			Test #1		Test #2		Test #1		Test #2	
			Est.	Rank	Est.	Rank	Est.	Rank	Est.	Rank
1	CDC Blackstr	BK	8.7	bc	9	bcd	9	c	7.8	c
15	5501CBB-3-2	BK	0.2	ad	7.5	bd	2.7	abd	7.3	c
25	Envoy	NA	0	abcd	0	ac	8.3	c	6	c
26	AC Pintoba	PT	8.6	abcd	9	bcd	9	c	8.2	c
27	Othello	PT	4.3	abcd	4.1	abd	0.8	abd	1.8	abd
28	Dresden	NA	0	a	0	ac	8.3	c	8	c

Num DF	27	27	27	27
Den DF	56	56	54	55
F Value	19.41	22.49	28.48	24.38
P>F	<.0001	<.0001	<.0001	<.0001
LSD(0.05)	2.4	2.3	2	2

a = significantly different than AC Pintoba

c = significantly different than Othello

Table 3: Extract from Cooking and Canning Quality Evaluation of Select Dry Bean Lines in the 2021 Short Season Narrow Row Dry Bean Cooperative Trial in western Canada

Genotype	100-seed wt. (g)	Hydration Co-efficient					Canning quality						Cooking quality				
		HCS (16 h, 21°C)	HCB (3 min, 93°C)	Drained Wt. (%)	Matting (1 to 4)	Appearance (1 to 4)	Dry color			Canned color			16 h at 21°C		20 min at 93°C		
						L*	a*	b*	L*	a*	b*	Texture (kg force)	Hard seed (%)	Partially hydrated seed (%)	Hard seed (%)	Partially hydrated seed (%)	
CDC Blackstrap	23.7	2.2	2.3	61.2	1.0	2.0	38.0	0.6	12.7	21.7	7.2	4.3	39.7	0.8	1.5	0	0.0
5501CBB-3-2	23.8	2.2	2.3	58.5	1.5	2.0	22.1	1.0	-0.4	22.2	7.1	4.3	36.7	0.0	0.0	0	0.0
LSD	1.7	0.1	0.1	2.7	1.0	0.8	27.0	0.8	22.1	1.8	1.0	1.2	4.6	4.2	3.6	0	1.5
CV	2.0	1.0	0.9	1.9	18.7	16.6	27.6	20.6	72.9	2.4	5.0	4.5	6.7	16.9	24.9		127.5