

MEMORANDUM

TO: *Prairie Recommending Committee for Pulse and Special Crops*
FROM: A. Vandenberg, A. Vargas, S. Banniza, S. Boechler, J. Horner, S. Wagenhoffer, B. Barlow, Y. Liu, D. Raymond, K. Mikituk and D. DeSilva
Crop Development Centre, 51 Campus Drive, University of Saskatchewan
Saskatoon, Saskatchewan S7N 5A8
DATE: February 05, 2025

SUBJECT: Request for Support for Registration of Spanish Brown Lentil Line CDC23.11S

Lentil line CDC23.11S was tested for three years in the Specialty Lentil Trials from 2022-24. Agronomic and disease performance data summaries in those trials are included in the accompanying Tables 1, 2 and 3. CDC23.11S is tolerant to imidazolinone herbicide. Table 1 (9 site years) indicates the yield of CDC23.11S was 103% of the Spanish brown market class check CDC SB-4. Cotyledon colour, flowering time, maturity, plant height are similar to CDC SB-4. The seed coat of CDC23.11S is grey with a dotted pattern, similar to CDC SB-4. Seed thickness is 17% greater than that of CDC SB-4, providing efficiencies in de-hulling and reducing mechanical damage during handling.

Strengths: High yield compared to CDC SB-4.
Thicker seed compared to CDC SB-4 making CDC23.11S more efficient in the dehulling process.
Tolerant to imidazolinone herbicide.

Neutral: Similar agronomic and maturity characteristics compared to CDC SB-4.
Similar Anthracnose and Ascochyta resistance characteristics compared to CDC SB-4.

Weakness: No noticeable improvement in disease resistance

Figure 1. Visual comparison of CDC23.11S, Spanish brown check CDC SB-4 and CDC Nimble included for comparison.

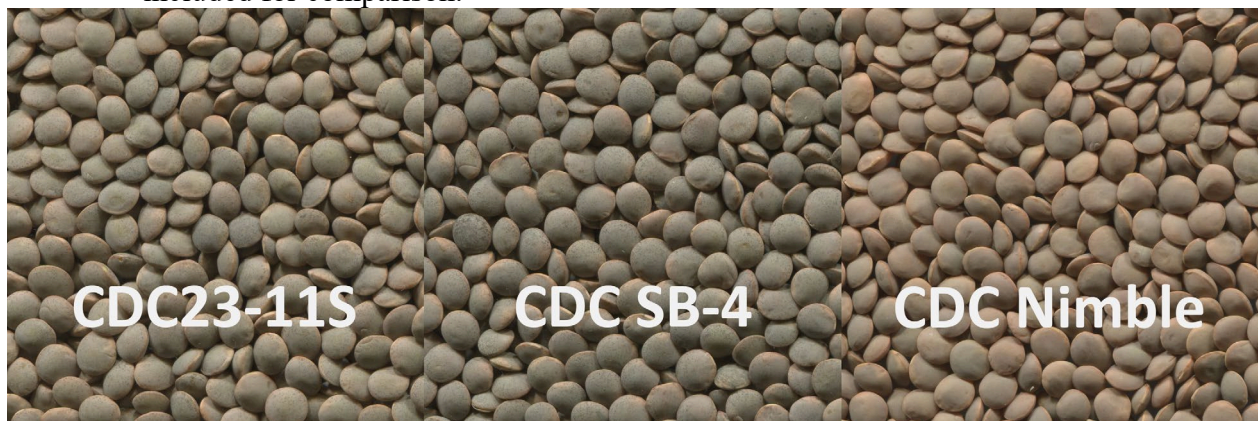


Table 1. Three year summary of agronomic performance for Spanish Brown (SB) CDC23.11S in the 2022-2024 Specialty lentil trial

Market class	Line	Cotyledon Colour	Yield			Seed weight (g/1000)	Days to flower	Days to mature	Lodging (1-5)	Plant height (cm)	% seed over 12/64th round	% seed over 6.5/64th slotted
			2022-24 Mean	% of SB-4	% of Maxim							
SR	CDC Maxim	red	1635	89	100	38	53	88	1.3	36	64	30
SB	SB-4	yellow	1840	100	113	39	56	88	1.2	36	56	35
SB	CDC23.11S	yellow	1895	103	116	39	56	91	1.2	35	50	52
Mean			1790	97	109	38	55	89	1	36	57	39

[] indicates number of sites
Market Classes: SR-small red; FG-french green

Table 2. Two year Seed diameter and seed thickness summary for CDC 23.11S

Market Class	name	Seed diameter distribution % on roundhole 64th inch screens							Seed thickness distribution % on slotted screens						
		>15/64	>14/64	>13/64	>12/64	>11/64	>10/64	>9/64	>8/64	>7.5/64	>7/64	>6.5/64	>6/64	>5.5/64	>5/64
SR	CDC Maxim	0	4	20	41	25	8	2	0	1	5	24	31	28	11
SB	SB-4	0	1	14	41	33	9	2	0	1	5	30	42	19	3
SB	CDC23.11S	0	0	6	44	39	9	2	0	0	7	44	38	9	1
GRAND MEAN		0.1	1.5	13.3	41.8	32.5	8.7	2.2	0.1	0.8	5.6	32.5	37.1	18.9	5.1
CV		324.6	209.5	86.2	32.2	29.1	61.0	25.6	227.8	138.7	79.6	38.7	36.0	47.8	82.4
LSD		0.2	2.8	12.1	18.1	17.4	19.0	6.9	0.1	0.9	4.1	12.8	21.9	26.5	28.1

Table 3. Two year disease summary for Spanish Brown lentil CDC23.11S in the 2023-24 Specialty Market class lentil trial

Market class	Line	Ascochyta				Anthracnose					
		2023		2024		2023		2024		2024 Race 1	
		Mean (%)	*Sign	Mean (%)	*Sign	Mean (%)	*Sign	Mean (%)	*Sign	Mean (%)	*Sign
SB	SB-4	45	ABCD	15.6	GHIJKLM	78.125	F	88.125	BCD	91.9	A
SB	CDC23.11S	42.5	ABCD	16.25	GHIJKLM	81.3	EF	74.4	F	90.6	A
SG	Eston	58.75	A	53.8	A	95.0	A	95.0	A	95.0	A
SG	CDC Viceroy			29.4	DEF					45.0	F
SR	CDC Redberry	32.5	D	13.1	HIJKLM	95.0	A	91.3	ABC	86.9	AB
ESR	CDC Robin			11.9	HIJKLM					31.3	G
LR	CDC KR-1	40.0	BCD			86.9	ABCDE	88.8	BCD		
SB	CDC SB-2	34.4	CD	11.9	HIJKLM	53.8	G	92.5	AB	57.9	DE
LG	CDC Greenstar			10.6	IJKLM					91.3	A
	LR-59-81							34.4	G		
	CV	26.5		44.0		6.9		5.2		10.0	

*Significance (Sign) Entries with a letter in common are not significantly different from each other.

Disease checks are shaded:

Eston-susceptible to Ascochyta and Anthracnose race 1

Robin, Redberry, Viceroy and KR-1 resistant to Ascochyta and Anthracnose race 1

Greenstar resistant to Ascochyta and moderately susceptible to Anthracnose race 1

LR-59-81 resistant to Anthracnose race 0

Disease testing was conducted indoors

Table 4. Yield (KG/HA) performance summary of Spanish Brown (SB) lentil CDC23.11S

Market class	Line	check	2022 LSEYT			2023 LSEYT			2024 LSEYT			Yield % of		
			Sutherland	Rosthern	Moos Jaw	Rosthern	Sutherland	Sutherland	erlan	Lucky Lake	MEAN	CDC SB-4	CDC Maxim	
SR	CDC Maxim	check	2023	855	1126	1874	1095	1940	2501	2050	1250	1635	89	100
SB	CDC SB-4	check	2275	918	1294	2106	1134	2345	2906	2258	1326	1840	100	113
SB	CDC 23.11S		2584	999	868	2234	1074	2554	3546	1938	1254	1895	103	116
Mean			2294	924	1096	2072	1101	2280	2985	2082	1277	1790	97	109
LSD (0.05)			414.8	131.5	236.2	398.6	198.9	532.1	371.5	284.9	184.8			
CV (%)			10.7	8.3	11.3	12.6	12.5	13.9	7.2	9.5	8.8			

Table 5. 2022 Agronomic performance data by location for Spanish Brown lentil CDC23.11S

Market class	Line	Days To Flower (DTF)				Height (HT)			Days To Maturity (DTM)					Lodging (1-5)				Seed Weight		
		Sutherland	Rosthern	Elrose	MEAN	Sutherland	Rosthern	Mean	Sutherland	Rosthern	Elrose	Jaw	MEAN	Sutherland	Rosthern	Jaw	MEAN	Sutherland	Rosthern	MEAN
SR	CDC Maxim	56	55	57	56	35	33	34	97	90	88	88	91	1.5	1.3	1.0	1.3	39	38	39
SB	CDC SB-4	58	57	60	58	34	35	35	97	90	90	90	92	1.3	1.0	1.0	1.1	42	42	42
SB	CDC 23.11S	59	60	62	60	36	32	34	100	95	91	91	94	1.3	1.0	1.0	1.1	41	41	41
Mean		57	57	59	58	35	33	34	98	91	90	89	92	1.4	1.2	1.3	1.3	41	41	41
CV (%)		1.5	1.4	1.5		6.6	7.0		1.1	1.2	0.8	1.0		18.0	23.7	19.2		1.4	2.3	
LSD (0.05)		1.5	1.4	1.5		4.2	4.3		1.8	1.8	1.2	1.6		0.4	0.5	0.4		1.2	1.8	

MC-C = market class check Market Classes: SR-small red; SB-spanish brown

Table 6. 2023 Agronomic performance data by location for Spanish Brown (SB) lentil CDC23.11S

Market class	Line	Days To Flower			Days To Maturity			Height (HT)			Seed Weight		
		Rosthern	Sutherland	MEAN	Rosthern	Sutherland	Mean	Rosthern	Sutherland	Mean	Rosthern	Sutherland	MEAN
SR	CDC Maxim	50	47	49	90	90	90	35	37	36	40	42	41
SB	CDC SB-4	52	50	51	92	89	90	39	35	37	36	42	39
SB	CDC23.11S	52	49	50	95	92	93	40	37	38	39	42	40
Mean		51	48	50	92	90	91	38	36	37	36	39	38
CV (%)		1.0	2.5		1.5	2.5		4.0	7.1				
LSD (0.05)		0.9	2.1		2.4	3.7		2.6	4.6				

MC-C = market class check Market Classes: SR-small red; SB-spanish brown

Table 7. 2024 Agronomic performance data by location for Spanish Brown (SB) lentil CDC23.11S

Market class	Line	Days To Flower (DTF)				Height (HT)			DTM	Lodging (1-5)			Seed Weight		
		Sutherland	Rosthern	Lucky Lake	MEAN	Rosthern	Sutherland	Mean	Lucky Lake	Rosthern	Lucky Lake	Mean	Sutherland	Lucky Lake	MEAN
SR	CDC Maxim	55	58	55	54	55	38	85	1.8	1.0	1.4	35	32	33	
SB	CDC SB-4	59	60	57	56	58	36	82	1.5	1.0	1.3	36	33	34	
SB	CDC23.11S	60	60	56	59	59	33	86	1.5	1.0	1.3	34	34	34	
Mean		58	59	56	56	57	36	84	1.6	1.0	1.3	35	33	34	
CV (%)		1.6	1.1	2.1	1.6		9.7	1.3	21.5	28.0					
LSD (0.05)		1.6	1.2	2.0	1.5		6.2	1.9	0.8	0.9					

MC-C = market class check Market Classes: SR-small red; SB-spanish brown