

70th Annual Report
National Cooperative Dry Bean
Nurseries

2019

Compiled by
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Univ. of Nebraska, Panhandle Res. and Ext. Center

**Cooperative Investigation among California, Colorado, Idaho,
Maryland, Michigan, Montana, Nebraska, North Dakota,
Washington, and Wyoming -State Experiment Stations and
Agricultural Research Centers- as part of the Regional W-3150
Multi-State Project**

and

University of Guelph, Canada

and

Agriculture Research Service – USDA

Call for 2020 Cooperative Dry Bean Nursery

Seed Submissions

It is time to request seed submission for 2020 Cooperative Dry Bean Nurseries. I would like to receive **the list of seed submission** no later than **April 8, 2020** and **the seed** must be here no later than **April 15, 2020**. All entries will be planted in replicated test plots across several locations in the United State and Canada. Data will be taken for seed yield, 100-seed weight and several agronomic and marketing characteristics. They will also be included in several disease nurseries including bean rust and Michigan will conduct canning tests.

The seed requirements for each of the three groups are as follows:

1. Small-seeded (Black, Navy, Others): **~15 lbs/line**.
2. Medium-seeded (Great Northern, Pink, Pinto, Small Red, Others): **~25 lbs/line**.
3. Large-seeded (Cranberry, Kidney, Others): **~35 lbs/line**.

Or 20,000 seeds

As in the past, all lines must be:

- X Western grown (West of the Rocky Mountain)
- X Pathogen free
- X If susceptible to BCMV, an ELISA test will be required.
- X Acceptable commercial quality (no broken, decayed, or off-color seed)
- X **Seed should be untreated**

Fees: This fee structure was decided by the W-1150 members at The Annual meeting in Mayaguez, Puerto Rico in 2003as follows:

- Public institutions: \$150/line submitted
- Private institutions: \$300/line submitted

NURSERY OPERATIONS

Public institutions that request a nursery will be charged US \$150 to defray seed handling expenses including treating, bagging, boxing and shipping costs. Please let me know if your institution is going to submit the seeds and participate in the field trial for 2020 CDBN. Should you have any questions or concerns about the submission or participant fees please contact me or if you know anyone else who might like to submit seed or plant the nursery please let me know.

Contact and Shipping Information:

Dr. Carlos Urrea
University of Nebraska
Panhandle Research & Extension Center
4502 Avenue I
Scottsbluff, NE 69631
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email: currea2@unl.edu

Table 1. List of Contributors and Cooperators - 2019

Name	Location	Seed Submitted	Planting Seed	Locations No.
Mike Moore	Powell, WY		yes	1
Paul Gepts, Antonia Palkovic	Davis, CA		yes	2
Phil Miklas	Othello, WA	yes	yes	3
Maria Munoz Amatriain, Barry Ogg	Ft. Collins, CO		yes	4
Juan M. Osorno, Albert J. Vander Wal, John Posch	Hatton, ND; Park Rapids, MN	yes	yes	5
Carlos Urrea, Eduardo Valentin Cruzado	Scottsbluff, NE	yes	yes	6
Jim Kelly, Evan Wright	Frankenmuth and Entrican, MI	yes	yes	7
Peter Pauls, Tom Smith	Elora R.S, Ontario	yes	yes	8
Talo Pastor- Corrales	Beltsville, MD		yes (rust test)	9
Jim Heitholt	Lingle, WY		yes	10
Martin Hochhalter	Mapleton, ND	yes		

Table 2. Contact information for 2019 Cooperative Dry Bean Nursery

Loc	First Name	Last Name	Affiliation	E-Mail	Phone
CA	Paul	Gepts	University of CA – Davis	plgepts@ucdavis.edu	530-752-774
	Antonia	Palkovic	University of CA – Davis	antoniapalkovic@gmail.com	
CO	Maria	Munoz Amatriain	Colorado State University	Maria.Munoz_Amatriain@colostate.edu	970-491-3691
	Barry	Ogg	Colorado State University	Barry.Ogg@Colostate.edu	
ID	John	Dean	Idaho Seed Bean Co.	isbco@filertel.com	208-734-5221
MD	Marcial (Talo)	Pastor-Corrales	USDA/ARS	talo.pastor-corrales@ars.usda.gov	301-504-6600
MI	Jim	Kelly	Michigan State University	kellyj@msu.edu	517-355-0271
	Evan	Wright	Michigan State University	wright294@msu.edu	
ND	Juan	Osorno	North Dakota State University	juan.osorno@ndsu.edu	701-231-8145
	Martin	Hochhalter	Meridian Seeds	mhochhalter@meridianseeds.co	701-532-3975
NE	Eduardo	Valentin Cruzado	University of Nebraska	evalentincruzado2@unl.edu	308-632-1480
	Carlos	Urrea	University of Nebraska	currea2@unl.edu	308-632-0556
NY	Phillip	Griffths	Cornell University	pdg8@cornell.edu	315-787-2222
ON	Peter	Pauls	University of Guelph	ppauls@uoguelph.ca	519-824-4120 ext 52460
	Tom	Smith	University of Guelph	thsmith@uoguelph.ca	519-824-4120 ext 8339
PR	James	Beaver	University of Puerto Rico	j_beaver@hotmail.com	787-832-4040 ext. 2566
WA	Phil	Miklas	USDA-ARS	phil.miklas@ars.usda.gov	509-786-9258
WY	Mike	Moore	University of Wyoming	mdmoore@uwyo.edu	307-754-9815
	Jim	Heitholt	University of Wyoming	Jim.Heitholt@uwyo.edu	307-776-3104

Table 3. List of 2019 Cooperative Dry Bean Nursery Entries.

No.	From	ID	Market Class
1	ADM Seedwest	PNE-6-94-75/Kodiak, LAPAZ	pinto
2	Treasure Valley	NW410//VICTOR/AURORA, OTHELLO	pinto
3	Miklas	PT11-13-1	pinto
4	Miklas	PT16-9	pinto
5	Osorno	ND121448, ND FALCON	pinto
6	Urrea	NE2-17-37	pinto
7	Urrea	NE4-17-6	pinto
8	Urrea	NE4-17-10	pinto
9	Treasure Valley	ND9902621-2, ECLIPSE	black
10	Smith	ACUG 15-B4, OAC VORTEX	black
11	Meridian	MS KNIGHT RIDER	black
12	Urrea	NE14-18-4	black
13	Meridian	W2363X-67629BL/OAC Rex, AC PORTAGE	navy
14	Smith	ACUG-16-6	navy
15	Urrea	NE13-18-2	small red
16	Kelly	SR9-5/R09508, CAYENNE	small red
17	Osorno	ND121630, ND PEGASUS	great northern
18	Urrea	NE1-17-36	great northern
19	Treasure Valley	CELRK	LRK
20	Osorno	ND122386, ND WHITETAIL	WK
21	Kelly	K06621/USDK-CBB-15, RED CEDAR	DRK
22	Meridian	AAC SCOTTY	Cranberry
23	Smith	14-C2, OAC RACER	Cranberry
24	Smith	15-C2, OAC CANDYCANE	Cranberry
25	Urrea	NE9-18-3	Cranberry

The 2019 CDBN

The 2019 CDBN comprised 21 test entries and four checks.

Agronomic nurseries

There were approximately 1600 seeds supplied to each location sufficient to plant four 4-row replications, 20 to 25 feet long, for each entry. Seed treatment was provided by Syngenta Seed Co. and consisted of Cruiser, Maxim XL + Apron XL (MSDS are included with bean shipment unless nursery operator requested otherwise).

Disease Nurseries

There were 400 seeds (untreated) supplied to Beltsville, MD, for rust screening.

DATA RECORDING AND SCALES

The following were commonly recorded data by the CDBN collaborators. For ease and uniformity of reporting we shall describe and abbreviate each trait:

1. **Early Vigor (EV):** Scored on a 1 to 9 scale, where 1= excellent and 9= very poor, within the first 3 weeks after emergence.
2. **Days to Flower (DF):** Actual number of days from planting to when approximately 50% plants in a plot have at least one opened flower.
3. **Days to Maturity (DM):** Actual number of days from planting to when approximately 50% of plants in a plot have at least one dry pod.
4. **Plant Height (PH):** Record in cm from the base of the plant (soil surface) to the top node bearing at least one dry pod with seed.
5. **Growth Habit (GH):** Record during flowering and verified when crop is senescent as type I=determinate erect or upright, II= indeterminate erect, and III= indeterminate prostrate.
6. **Lodging (LG):** Scored at harvest on a 1 to 9 scale, where 1= 100% plants standing erect, and 9= 100% plants lay flat on the ground.
7. **Pod Clearance (PC):** Recorded at harvest as percent of pods on plants not touching the ground or in contact with the soil surface.
8. **Biomass Yield (BY):** Total plant dry weight recorded at 12% moisture and rounded up to the nearest whole number (lb/a).
9. **Seed Yield (SY):** Recorded in lb/a at 12 % moisture and rounded up to the nearest whole number.
10. **Harvest Index (HI):** The ratio of SY/BY expressed in % BY at 12% moisture.

11. **Weight of 100 seeds (SW):** Weight of 100 randomly taken undamaged seed in grams at 12 % moisture.

12. **Appearance Desirability (SD):** An aggregate value for seed size, shape, color and brilliance for the respective market class recorded by various scales (see footnotes).

For other traits and scoring methods, a footnote is provided with associated details.

ID	Market Class	Yield	100-seed weight	Days to Flowering	Days to Harvest Maturity	Rust (CO)	Canning Score*
		lbs/acre	g	days	days	(1-6)	(1-5)
La Paz	PTO	3129	40.2	49	92	1	3.4
Othello	PTO	2361	40.0	40	80	5,6	4.6
PT 11-13-1	PTO	3647	40.2	46	92	1	3.1
PT 16-9	PTO	3197	41.0	47	92	1	4.8
ND Falcon	PTO	2855	40.2	51	99	1	2.8
NE2-17-37	PTO	2456	38.1	44	90	1,2	4.8
NE4-17-6	PTO	2557	42.7	42	87	1	4.2
NE4-17-10	PTO	2723	44.5	42	87	1	4.8
Eclipse	BLK	3107	22.0	49	94	3,5	3.3
ACUG-15-B4, OAC Vortex	BLK	3270	23.7	49	101	4, 5, 6	3.6
MS Knight Rider	BLK	3075	21.7	49	103	5,6	3.5
NE14-18-4	BLK	2784	26.5	46	91	3,5,6	2.3
AC Portage	Navy	2195	21.5	43	91	1	2.0
ACUG-16-6	Navy	3043	20.0	48	99	3 5, 6	4.6
NE13-18-2	RED	2508	40.2	43	90	1	.
Cayenne	RED	3120	35.7	47	89	5,6	4.1
ND Pegasus	GN	3301	41.1	47	98	1,2	2.0
NE1-17-36	GN	2934	43.0	45	90	1,2	2.8
Cal Early	LRK	2117	51.1	39	82	3	3.1
ND Whitetail	WK	2123	51.2	44	94	1	2.1
Red Cedar	DRK	2037	50.8	44	95	1, 3	3.6
AAC Scotty	CRAN	2255	58.3	41	89	1	3.4
14-C2, OAC Racer	CRAN	2599	60.4	40	83	1	2.7
15-C2, OAC Candycane	CRAN	2199	61.4	43	87	1	3.0
NE9-18-3	CRAN	2272	54.2	40	88	1,3	3.2
GRAND MEAN		2603	43.2	45	90		

* Canning data from Michigan: these are visual ratings based on overall appearance averaged across a group of 15 evaluators. The scale is 1 to 5, where 1 = undesirable, and 5 = desirable.

Table 5. 2019 CDBN. Summary for seed yield (lbs/acre) for individual locations.

ID	Market Class	Davis	Frankenmuth	Park Rapids	Elora	Othello	Powell	Average
		CA	MI	MN	ON	WA	WY	
La Paz	PTO	2110	2355	.	3013	4772	3392	3129
Othello	PTO	2277	1808	.	1341	3596	2784	2361
PT 11-13-1	PTO	1965	2536	.	3467	5741	4524	3647
PT 16-9	PTO	1935	2407	.	2818	5111	3716	3197
ND Falcon	PTO	1878	2247	.	3244	3854	3049	2855
NE2-17-37	PTO	1210	2179	.	1894	3832	3163	2456
NE4-17-6	PTO	1166	1509	.	1967	4176	3969	2557
NE4-17-10	PTO	1695	2407	.	1961	4151	3399	2723
Eclipse	BLK	2296	2126	.	2636	4899	3581	3107
ACUG-15-B4, OAC Vortex	BLK	1893	2465	.	2854	4700	4439	3270
MS Knight Rider	BLK	2204	2214	.	2772	4454	3728	3075
NE14-18-4	BLK	1933	1924	.	2532	4305	3226	2784
AC Portage	Navy	1869	1653	.	1284	3663	2507	2195
ACUG-16-6	Navy	1986	2333	.	3131	4372	3390	3043
NE13-18-2	RED	1335	2079	.	1922	3442	3764	2508
Cayenne	RED	1691	2577	.	3056	4607	3668	3120
ND Pegasus	GN	1324	2697	.	3159	5530	3796	3301
NE1-17-36	GN	1840	2120	.	2087	4965	3659	2934
Cal Early	LRK	1950	2357 [‡]	1549	1502	2956	2391	2117
ND Whitetail	WK	1836	2029 [‡]	2209	1292	3030	2339	2123
Red Cedar	DRK	1000	3355 [‡]	2037	1227	2304	2300	2037
AAC Scotty	CRAN	2464	1984 [‡]	1293	1342	3647	2799	2255
14-C2, OAC Racer	CRAN	2214	3705	1605	1638	3623	2812	2599
15-C2, OAC Candycane	CRAN	1916	1747 [‡]	2172	1994	2747	2620	2199
NE9-18-3	CRAN	2273	2337	1618	1325	3357	2720	2272
GRAND MEAN		1859	2286	1911	2218	4073	3269	2603
LSD 0.05			360	402	264	812	993	
CV%		0.2	11.5	15.1	10.0	12.3	21.5	
[‡] Entrican, MI								

Table 6. 2019 CDBN. Summary for 100-Seed weight (g) for individual locations.

ID	Market Class	Davis	Frankenmuth	Park Rapids	Elora	Othello	Powell	Average
		CA	MI	MN	ON	WA	WY	
			WT. (g)					
La Paz	PTO	43.5	38.5	.	40.8	41.3	37.0	40.2
Othello	PTO	38.6	38.7	.	38.0	42.0	43.0	40.0
PT 11-13-1	PTO	43.7	36.6	.	42.7	45.1	33.0	40.2
PT 16-9	PTO	39.4	38.6	.	45.2	43.9	38.0	41.0
ND Falcon	PTO	36.0	37.5	.	45.9	42.9	39.0	40.2
NE2-17-37	PTO	32.4	39.0	.	40.1	44.8	34.0	38.1
NE4-17-6	PTO	35.7	41.6	.	43.2	49.8	43.0	42.7
NE4-17-10	PTO	39.1	41.8	.	45.7	48.8	47.0	44.5
Eclipse	BLK	23.7	19.0	.	21.8	24.4	21.0	22.0
ACUG-15-B4, OAC Vortex	BLK	24.7	21.1	.	24.7	23.9	24.0	23.7
MS Knight Rider	BLK	20.8	18.2	.	24.7	23.8	21.0	21.7
NE14-18-4	BLK	26.6	24.2	.	27.9	28.7	25.0	26.5
AC Portage	Navy	20.8	19.5	.	21.7	25.3	20.0	21.5
ACUG-16-6	Navy	21.4	17.5	.	19.4	22.6	19.0	20.0
NE13-18-2	RED	38.6	40.4	.	40.3	44.7	37.0	40.2
Cayenne	RED	34.9	33.9	.	34.6	39.2	36.0	35.7
ND Pegasus	GN	38.1	36.8	.	44.0	43.8	43.0	41.1
NE1-17-36	GN	42.5	39.1	.	42.4	49.2	42.0	43.0
Cal Early	LRK	44.8	65.79 [‡]	55.9	25.3	54.9	60.0	51.1
ND Whitetail	WK	42.6	59.83 [‡]	49.8	50.8	52.3	52.0	51.2
Red Cedar	DRK	43.7	57.85 [‡]	49.7	49.1	52.4	52.0	50.8
AAC Scotty	CRAN	52.0	65.2 [‡]	56.9	59.1	58.7	58.0	58.3
14-C2, OAC Racer	CRAN	49.1	70.9	61.0	56.9	60.3	64.0	60.4
15-C2, OAC Candycane	CRAN	52.3	68.4 [‡]	60.7	62.7	60.5	64.0	61.4
NE9-18-3	CRAN	47.4	60.9	53.0	55.4	55.4	53.0	54.2
MEAN		37.8	35.7	53.9	.	43.1	40.0	43.2
LSD 0.05			1.8	3.0	.	2.6	5.7	
CV%		0.1	3.6	4.0	.	3.9	10.1	

[‡] Entrican, MI

Table 7. 2019 CDBN. Summary for Days to Flowering (days) and Days to Harvest Maturity (days) for individual locations.

ID	Market Class	Days to Flowering (days)						Days to Harvest Maturity (days)					
		Frankenmuth	Hatton	Scottsbluff	Powell	Lingle	Average	Frankenmuth	Scottsbluff	Elora	Othello	Powell	Average
		MI	ND	NE	WY	WY		MI	NE	ON	WA	WY	
La Paz	PTO	42	51	48	56	60	51	93	83	98	93	94	92
Othello	PTO	33	42	41	43	48	41	90	75	81	81	73	80
PT 11-13-1	PTO	37	47	49	52	57	48	93	81	94	99	95	92
PT 16-9	PTO	39	49	48	52	59	50	94	81	94	96	96	92
ND Falcon	PTO	43	53	52	56	64	53	95	.	104	99	99	99
NE2-17-37	PTO	37	47	44	49	54	46	94	83	91	99	82	90
NE4-17-6	PTO	36	45	42	44	50	43	91	81	87	94	80	87
NE4-17-10	PTO	37	45	42	45	50	44	93	82	88	90	81	87
Eclipse	BLK	42	51	49	54	62	52	90	82	102	102	95	94
ACUG-15-B4, OAC Vortex	BLK	43	51	49	54	63	52	94	.	109	102	97	101
MS Knight Rider	BLK	43	50	49	54	64	52	94	.	108	108	101	103
NE14-18-4	BLK	39	50	45	52	54	48	94	81	97	95	86	91
AC Portage	Navy	38	45	42	49	64	48	90	81	97	103	86	91
ACUG-16-6	Navy	41	50	49	52	58	50	95	.	105	101	95	99
NE13-18-2	RED	37	43	43	49	54	45	94	81	96	96	85	90
Cayenne	RED	42	48	47	52	57	49	94	80	88	91	94	89
ND Pegasus	GN	37	50	48	53	60	50	94	.	101	98	99	98
NE1-17-36	GN	37	47	46	52	52	47	91	83	88	97	91	90
Cal Early	LRK	36 [‡]	42.5*	37	42	49	43	90 [‡]	74	86	82	77	82
ND Whitetail	WK	43 [‡]	43.5*	47	44	56	49	95 [‡]	.	103	93	84	94
Red Cedar	DRK	41 [‡]	44.3*	44	45	56	48	97 [‡]	.	98	95	90	95
AAC Scotty	CRAN	36 [‡]	44.5*	41	43	54	46	95 [‡]	81	99	92	77	89
14-C2, OAC Racer	CRAN	36	42.8*	37	43	49	41	93	76	88	84	75	83
15-C2, OAC Candycane	CRAN	43 [‡]	42.8*	41	43	52	45	92 [‡]	80	97	91	77	87
NE9-18-3	CRAN	38	43*	37	42	47	41	95	79	98	92	76	88
Mean		39	48	45	49	56	47	93	80	96	95	87	90
LSD 0.05		2.0	3.0	2.1	1.8	4		2.0	1.6	2.5	2.9	4.1	
CV%		3.7	2.0	2.4	2.7			1.2	1.0	2.8	1.9	3.3	
Mean*			43.9										
LSD 0.05*			1.9										
CV%*			3.2										

[‡] Entrican, MI

*Park Rapids, MN

Table 8. 2019 CDBN. Bean Rust, Common Bacterial Blight (CBB) and Root Rots reaction in 2019.

ID	Market Class	Fort Collins, CO				Hatton, ND	Park Rapids, MN
		Rust (1-6) [‡]				CBB	Root Rots
		I	II	III	IV	(1-9)	(1-9)
La Paz	PTO	1	1	1	1	8	.
Othello	PTO	5,6	5,6	5,6	5,6	8.8	.
PT 11-13-1	PTO	1	1	2	1	7.5	.
PT 16-9	PTO	1	1	1	1	7.8	.
ND Falcon	PTO	1	1	1	1	5	.
NE2-17-37	PTO	2	1	1	1	7	.
NE4-17-6	PTO	1	1	1	1	8.3	.
NE4-17-10	PTO	1	1	1	1	7.8	.
Eclipse	BLK	3	3	3	5	6.8	.
ACUG-15-B4, OAC Vortex	BLK	5	5,6	4	5	6.3	.
MS Knight Rider	BLK	5	5,6	5	5	5.3	.
NE14-18-4	BLK	5,6	3	3	3	7.8	.
AC Portage	Navy	1	1	1	1	6.5	.
ACUG-16-6	Navy	3	5,6	5	5,6	7	.
NE13-18-2	RED	1	1	1	1	7.3	.
Cayenne	RED	5,6	5,6	5,6	5,6	6.5	.
ND Pegasus	GN	2	1	1	1	6	.
NE1-17-36	GN	2	1	1	1	7.5	.
Cal Early	LRK	3	1	3	3	.	4.8
ND Whitetail	WK	1	1	3	1	.	6.5
Red Cedar	DRK	3	1	1	1	.	5.9
AAC Scotty	CRAN	1	4	3	3	.	6.2
14-C2, OAC Racer	CRAN	1	1	1	5	.	2.5
15-C2, OAC Candycane	CRAN	1	1	1	1	.	5.6
NE9-18-3	CRAN	3	1	1	1	.	5.6
Mean						7.6	6.2
LSD 0.05						0.6	2.0
CV%						5.6	23.2

[‡] Bean Rust reaction to local endemic Colorado races: 1=no symptoms, 2 necrotic flecks, 3=small pustule, 4,5, or 6=susceptible.

Table 9. 2019 CDBN. Miscellaneous trait data for 2019 CDBN.

ID	Market Class	Othello	Frankenmuth	Frankenmuth	Elora	Frankenmuth	Elora
		WA	MI	MI	ON	MI	ON
		Emergence	Lodging	Plant Height		Des. Score	Harvestability
		(1-9)	(1-5)	(cm)		(1-5)	(1-5)
La Paz	PTO	2.0	1	50	49	4.5	2.4
Othello	PTO	2.0	2.5	43	37	3.5	1.5
PT 11-13-1	PTO	2.3	1.5	50.5	50	4.5	1.5
PT 16-9	PTO	2.3	1	53	47	5.5	1.5
ND Falcon	PTO	2.3	1	53	44	5.5	1.1
NE2-17-37	PTO	5.7	1	50.5	38	4	2.8
NE4-17-6	PTO	4.0	1.5	46	46	3.5	3.1
NE4-17-10	PTO	3.0	1	50	39	4.5	2.6
Eclipse	BLK	2.3	1	47	37	4	1.3
ACUG-15-B4, OAC Vortex	BLK	3.3	2	50.5	48	4	1.9
MS Knight Rider	BLK	5.0	1.5	51.5	48	4	1.9
NE14-18-4	BLK	2.7	1.5	47	36	4	2.1
AC Portage	Navy	2.7	1	46	36	3.3	3.1
ACUG-16-6	Navy	5.7	2	47.7	45	3	2.9
NE13-18-2	RED	2.3	1.5	49	46	4	2.4
Cayenne	RED	2.0	1	51	43	5.5	2.0
ND Pegasus	GN	3.0	1	54	60	5.5	1.9
NE1-17-36	GN	4.3	1	47.5	45	4	3.4
Cal Early	LRK	2.7	1 [‡]	42 [‡]	35	4 [‡]	2.8
ND Whitetail	WK	3.7	2.5 [‡]	46 [‡]	41	3 [‡]	2.8
Red Cedar	DRK	3.0	1 [‡]	49 [‡]	38	5.3 [‡]	3.3
AAC Scotty	CRAN	3.3	1 [‡]	45.7 [‡]	48	3.7 [‡]	2.9
14-C2, OAC Racer	CRAN	2.3			40		3.5
15-C2, OAC Candycane	CRAN	2.7	1 [‡]	47 [‡]	41	3.3 [‡]	2.4
NE9-18-3	CRAN	2.3	1	47	40	3	2.6
MEAN		3.1	1.3	48.4		4.1	2.4
LSD 0.05		1.1	0.6	2.3		0.9	23.1
CV%		22.4	29.3	2.8		11.7	0.7

[‡] Entrican, MI

2019 CDBN Notes

CDBN planted at Powell, WY

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In 2017, Wyoming ranked tenth nationally in dry bean (*Phaseolus vulgaris* L.) production, and fifth in the production of pinto beans. In the same year, Wyoming growers produced 933,000 hundred-weight of pinto beans on 39,000 harvested acres, averaging 23.9 hundred-weight per acre. The University of Wyoming Seed Certification Service coordinates the dry bean variety performance evaluation at the Powell location in a continuous and on-going program. In cooperation with the National Cooperative Dry Bean Nursery, and with funding from the Wyoming Bean Commission, a wide range of germplasm is evaluated each year, assisting producers in selecting varieties best suited for Wyoming soils and climate. Please note that this report represents only the Powell CDBN. The Lingle CDBN data are presented separately.

Materials and Methods

The experiment was located at the University of Wyoming Research and Extension Center in Powell, Wyoming. The soil, a Garland clay loam, (fine, mixed, mesic: Typic Haplarid), was prepared by roller harrow and leveled in the spring. Chemical weed control consisted of a preplant incorporated chemical treatment of 2 pints of Sonalan and 14 ounces of Outlook applied on May 14. The plots received 60 units of N, 60 units of P and 25 units of K per acre on May 14. The plots were planted on June 3 in three-row plots that were 5.5 feet wide by 20 feet long. IH 185 planter units with cone attachments were used, set on 22-inch row spacing. The experimental design was a randomized block with 4 replications. Cultivation occurred during the growing season when appropriate. Furrow irrigation was applied on June 14, July 15, July 27, and August 19. Visual estimates for days to 50 percent bloom (50 percent of plants at second bloom) and days to maturity (50 percent of the plants with one buckskin pod) were made. Subplots of one row by 10 feet were pulled by hand, and plots were threshed with an Almaco stationary plot thresher. The seed was hand-picked to remove dirt clods and seed mixtures. Samples were then weighed for clean seed yield per plot and seeds per pound.

Results and Discussion

Stand establishment was good, but cool wet spring conditions were followed by a cool summer with light hail events. All entries matured prior to the first frost. Flowering dates, maturity dates, and yield components are presented in Table 1 on page 2.

Acknowledgements

This nursery was possible only with significant assistance of the Powell R & E Center staff Brad May and Keith Schaefer.

CDBN trial planted at Scottsbluff, NE

The trial at the Scottsbluff Ag lab were not harvested, because damage from multiple hailstorms [August 15 (golf ball size), 16, and 20]. Days to flowering and some days to physiological maturity are only reported

CDBN planted at Frankenmuth and Entrican, MI

The nurseries at Saginaw Valley Research Extension Center (SVREC), Frankenmuth, were planted late (18-19 June) due to an unusually wet spring (May-June; 12”). Bean trials received only 6.75” of rain following planting (June - mid Sept) with only 1.06” in August, so plants were under considerable stress during the reproductive phase resulting in overall lower yields. Harvest was direct and challenging due to rainfall totals of over 4” the last week of September. Root rot caused by Rhizoctonia strain AG2-2 caused significant damage throughout the nurseries. The Montcalm Research Farm (MFR), Entrican, was planted earlier (8-June) was irrigated and yields were higher but white mold devastated the cranberry entries at this location. This trial was pulled and windrowed.

CDBN planted at Lingle, WY

Table 1. Flowering date, maturity date, grain yield, seed size, no. seed per pound, end-of-season upright stature rating, height, and iron deficiency chlorosis (IDC) rating for a field test with 44 entries performed at Lingle in 2019. Upright rating is zero (0) if completely fallen over and 10 if completely upright. IDC of zero (0) indicates no chlorosis; IDC =10 indicates complete chlorosis. Market class is indicated as a footnote next to the variety name. The site experienced hail damage.

Genotype	Flowering	Maturity	Yield	Seed Size	Seed per Pound	Upright	Height	IDC
	dap	dap	lbs/a	mg	no.	visual	cm	visual
ACC-Scotty ^{cb}	54	95	807	423	1080	7.4	29	1.2
ACUG-16-6 ^{nv}	58	94	1340	149	3045	5.2	50	0.5
Cal Early ^{lrk}	49	89	396	435	1045	-	25	7.1
Candy Cane ^{cr}	52	94	995	461	985	8.6	32	-
Cayenne ^{sr}	57	91	841	285	1590	6.5	44	1.5
Eclipse ^{bk}	62	98	791	157	2895	7.8	37	3.3
Falcon ^{pt}	64	102	690	303	1500	8.2	45	3.5
Knight Rider ^{bk}	64	105	562	162	2795	7.8	34	3.0
La Paz ^{pt}	60	96	1460	331	1375	7.2	48	0.8

NE1-17-36 ^{gn}	52	90	1140	366	1245	7.0	47	1.6
NE13-18-2 ^{pk}	54	87	931	344	1320	4.5	39	1.8
NE14-18-4 ^{bk}	54	91	968	217	2090	8.1	26	3.0
NE2-17-37 ^{pt}	54	92	1230	319	1425	5.3	56	4.5
NE4-17-10 ^{pt}	50	88	1070	360	1260	6.1	58	1.9
NE4-17-6 ^{pt}	50	87	837	343	1330	6.7	46	1.7
NE9-18-3 ^{cb}	47	97	1610	469	967	6.7	36	1.1
Othello ^{pt}	48	85	909	325	1400	4.8	37	0.1
PT11-13-1 ^{pt}	57	92	1400	319	1425	7.2	45	0.5
PT16-9 ^{pt}	59	96	878	317	1430	7.6	43	3.7
Pegasus ^{gn}	60	98	962	329	1380	6.0	50	2.2
Portage ^{nv}	64	98	357	143	3180	-	27	7.9
Racer ^{cb}	49	90	663	444	1025	-	27	1.0
Red Cedar ^{drk}	56	99	332	348	1315	-	27	4.7
OAC Vortex ^{bk}	63	101	1055	161	2825	8.1	37	1.5
Whitetail ^{wk}	56	94	561	351	1295	7.1	30	3.0
LSD (0.05)	4	5	362	8	156	1.8	7	3.2
P > F	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001