61st Annual Report
National Cooperative Dry Bean Nurseries

2010

Compiled by
Phillip N. Miklas, Coordinator
USDA-ARS

Cooperative Investigation among California, Colorado, Idaho, Maryland, Michigan, Montana, Nebraska, New York, North Dakota, Washington, and Wyoming -State Experiment Stations and Agricultural Research Centers- as part of the Regional W2150 Multi-State Project

and

University of Guelph, Canada

and

Agriculture Research Service – USDA

Call for 2011 Cooperative Dry Bean Nursery

Seed Submissions

It is time to request seed submission for 2011 Cooperative Dry Bean Nurseries. I would like to receive **the list of seed submission** no later than **April 1, 2011** and **the seed** must be here no later than **April 15, 2011**. 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**.

As in the past, all lines must be:

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

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

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 2011 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. Phil Miklas
USDA/ARS - IAREC
24106 North Bunn Road
Prosser, WA 99350
Office (509) 786-9258, -8492 cell
Fax (509) 786-9277
Email: phil.miklas@ars.usda.gov

Table 1. List of Contributors and Cooperators - 2010

Name	Location	Seed Submit	Planting seed	Locations no.
Shree Singh	Kimberly, ID	yes	yes	1
Mike Moore	Powell. WY		yes	2
Steve Temple	Davis, CA		yes	3
Phil Miklas	Othello, WA	yes	yes	4
Mark Brick, Barry Ogg	Ft. Collins, CO		yes	5
Juan M. Osorno	Fargo, ND	yes	yes	6
Carlos Urrea, Jim Schild	Scottsbluff, NB	yes	yes	7
Jim Kelly, Evan Wright	Frankenmuth, MI	yes	yes	8
Don Halseth Eric Sandsted	Freeville, NY		yes	9
Joyce Eckhoff	Sidney, MT		yes	10
Peter Pauls, Tom Smith	Elora R.S, Ont	yes	yes	11
Talo Pastor-Corrales	Beltsville, MD		yes (rust test)	
Bill Dean	Kimberly, ID	yes	yes (1 rep)	
James Beaver	Isabela, PR		yes	

Table 2. Data contributors for 2010 Cooperative Dry Bean Nursery

Loc	Last	First	Affiliation	EMAIL	Phone
CA	Steve	Temple	University of CA – Davis	srtemple@ucdavis.edu	530-752-8216
CO	Mark	Brick	Colorado State University	Mark.Brick@colostate.edu	970-491-6551
	Barry	Ogg	Colorado State University	Barry.Ogg@Colostate.edu	
ID	Shree	Singh	University of Idaho	singh@kimberly.uidaho.edu	208-423-6559
MD	Marcial	Pastor-Corrales	USDA/ARS	pastorm@ba.ars.usda.gov	301-504-6600
MI	Jim	Kelly	Michigan State University	kellyj@msu.edu	517-355-0271 Ext. 1181
MT	Joyce	Eckhoff	MSU Eastern Ag Research Center	jeckhoff@sidney.ars.usda.gov	406-433-2208
NE	Jim	Schild	University of Nebraska	jschild@unl.edu	308-632-1480
NY	Donald	Halseth	Cornell University	deh3@cornell.edu	607-255-5460
	Eric	Sandsted	Cornell University	ers23@cornell.edu	
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
	Ali	Navabi	AFC	alireza.navabi@agr.gc.ca	519-824-4120 ext. 56829
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

Table 3. List of 2010 Cooperative Dry Bean Nurseries Entries

	Line	Number	Breeder	Class
1	Othello	Check		Pinto
2	PT9-18	*Co-4*^{2} line	Miklas	Pinto
3	Lariat	ND020069	Osorno	Pinto
4	Stampede	ND020351	Osorno	Pinto
5	ND307	ND010307	Osorno & TVSC	Pinto
6	Santa Fe	P04205	Kelly	Pinto
7	IP08-2		Singh	Pinto
8	Max		ISB	Pinto
9	Sequoia		ISB	Pinto
10	Jackpot		ISB	Pinto
11	Odyssey		ISB	Pinto
12	NE2-06-08		Urrea	Pinto
13	T-39	Check		Black
14	Zorro	B04554	Kelly	Black
15	Eclipse	ND9902621-2	Osorno	Black
16	Avalanche	ND012103	Osorno & TVSC	Navy
17	Lightning	OAC 04-2	Pauls/Smith	Navy
18	OAC 07-2		Pauls/Smith	Navy
19	CELRK	Check		LRK
20	Bellagio		Kelly	Cran-vine

The 2010 CDBN

The 2010 CDBN comprised 17 test entries and three checks (numbered from 1 to 20)

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 was treated by Syngenta (Sam Thornton & Doug Deschamp) with Maxim XL + Apron XL (MSDS are included with bean shipment) unless nursery operator requested otherwise. Note Idaho Seed Bean received 100 seeds of each entry for observation and UPR (J. Beaver) received 150 seeds for winter nursery observation.

Disease Nurseries

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

DATA RECORDING

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.

Table 4. 2010 CDBN means across locations for major agronomic traits and disease notes.

						NE	CO	MD	MD
Line	Class	Yield	Sdwt	HM	DF	CBB 1-9	Rust 1-6	Rust 1-9	Rust
Eclipse	Black	2638	19.2	95	50	5.6	1	1	Res
Zorro	Black	2576	19.6	99	50	5.6	5,6	5	Inter
T-39	Black	2432	19.7	100	50	6.6	1	3	Res
Bellagio	Cran	2100	53.6	100	45	5.6	3	5	Inter
CELRK	LRK	2053	53.1	89	43	8.6	3	4	Inter
Avalanche	Navy	2626	19.3	97	48	7.6	4,5	5	Inter
OAC 07-2	Navy	2473	19.0	102	47	2.6	1	2	Res
Lightning	Navy	2455	20.3	97	46	8.6	1	3	Res
Lariat	Pinto	3126	40.4	98	48	7.6	1,2,3	5	Inter
PT9-18	Pinto	3068	34.4	98	44	7.6	5,6	7	Sus
Stampede	Pinto	3025	37.4	95	46	8.6	1	4	Inter
Odyssey	Pinto	2961	37.9	91	44	8.6	5	9	Sus
ND307	Pinto	2938	39.0	97	46	7.6	1	4	Inter
Santa Fe	Pinto	2702	41.8	94	45	7.6	2,3	3	Res
Othello	Pinto	2666	36.4	86	42	8.6	5,6	9	Sus
NE2-06-08	Pinto	2658	39.5	91	45	5.6	1	2	Res
Max	Pinto	2630	40.1	86	43	7.6	5,6	9	Sus
Jackpot	Pinto	2553	36.9	89	46	8.6	5,6	9	Sus
Sequoia	Pinto	2374	34.4	92	45	8.6	1	1	Res
IP08-2	Pinto	2128	32.8	103	48	3.6	4,5,6	8	Sus

Common bacterial blight (CBB) 1=best and 9=worst, mean=6.5, lsd 0.05=0.7, CV=1.9, checks XAN 159=2.7, Orion=8.2, NE GN Sel#27=3.3, USPT-CBB-6=3.7
Rust 1-6 based on pustule grades
Rust 1=best and 9=worst, checks UI114=8, Aurora=4, Buster=2.

Table 5. 2010 CDBN yield (lbs/A) across locations with planting dates also in the heading.

Line	Class	CA 7/1	CO 6/3	ID 5/25	MI 6/11	MT 5/20	NE 6/9	NY 6/25	ON 6/18	WA 5/27	WY 5/20	Mean
Eclipse	**Black**	2514	1156	3076	1700	2697	2717	3465	1430	3225	4398	**2638**
Zorro	**Black**	2647	1328	2980	1820	2180	2918	3544	1674	3634	3039	**2576**
T-39	**Black**	2402	1156	2709	1710	2243	2636	3211	1628	3583	3044	**2432**
Bellagio	**Cran**	2521	780	1806	830	2273	2534	3124	1667	2697	2768	**2100**
CELRK	**LRK**	2213	533	2209		2523	1980	3230	1702	2176	1915	**2053**
Avalanche	**Navy**	2884	1270	3196	1370	2833	3038	2758	1713	3791	3408	**2626**
OAC 07-2	**Navy**	2587	1309	2517	1740	2333	2978	3358	1983	3110	2812	**2473**
Lightning	**Navy**	2416	1011	2884	900	2860	2900	3197	1818	3274	3286	**2455**
Lariat	**Pinto**	3201	1564	4352	1570	2480	3125	3546	2482	4220	4719	**3126**
PT9-18	**Pinto**	3465	1197	3871	1580	3060	3562	3498	2196	3755	4500	**3068**
Stampede	**Pinto**	2845	1134	4052	1560	2857	3458	3559	2770	4186	3825	**3025**
Odyssey	**Pinto**	3617	1125	3480	1830	2993	3314	2680	2222	3356	4995	**2961**
ND307	**Pinto**	3300	1099	3714	1600	2477	3565	3572	2243	3588	4220	**2938**
Santa Fe	**Pinto**	2944	1158	3582	980	2857	3129	3112	2341	3496	3420	**2702**
Othello	**Pinto**	3392	953	3666	1840	3237	3510	2827	1455	2066	3711	**2666**
NE2-06-08	**Pinto**	3142	933	3522	1290	3033	3317	3023	1734	3175	3416	**2658**
Max	**Pinto**	3307	1217	3293	1650	2903	3109	2846	1072	3244	3662	**2630**
Jackpot	**Pinto**	3076	1040	3113	1260	2597	2841	2414	1832	3267	4089	**2553**
Sequoia	**Pinto**	2145	744	2914	1440	2493	2550	2856	2362	2963	3278	**2374**
IP08-2	**Pinto**	2911	739	2438	850	2510	2586	1634	1468	2583	3557	**2128**
Mean		**2876**	**1072**	**3169**	**1448**	**2672**	**2988**	**3073**	**1890**	**3269**	**3603**	**2609**
LSD 0.05		**261**	**282**	**613**	**400**	**380**	**361**	**381**	**368**	**895**	**653**	
CV %		**9**	**13**	**12**	**18**	**9**	**9**	**8**	**16**	**16**	**13**	

This figure shows adaptation and stability of the lines for yield across test locations based on geometric means (adaptation) and coefficient of variation for Z (stability). The Z statistic from Airton et al. (BIC 48:182-183, 2005) measures adaptation and is correlated with geometric mean (Rayapati and Despain, BIC 49:249-250, 2006). Lariat exhibited the best adaptation and PT9-18 the best stability.

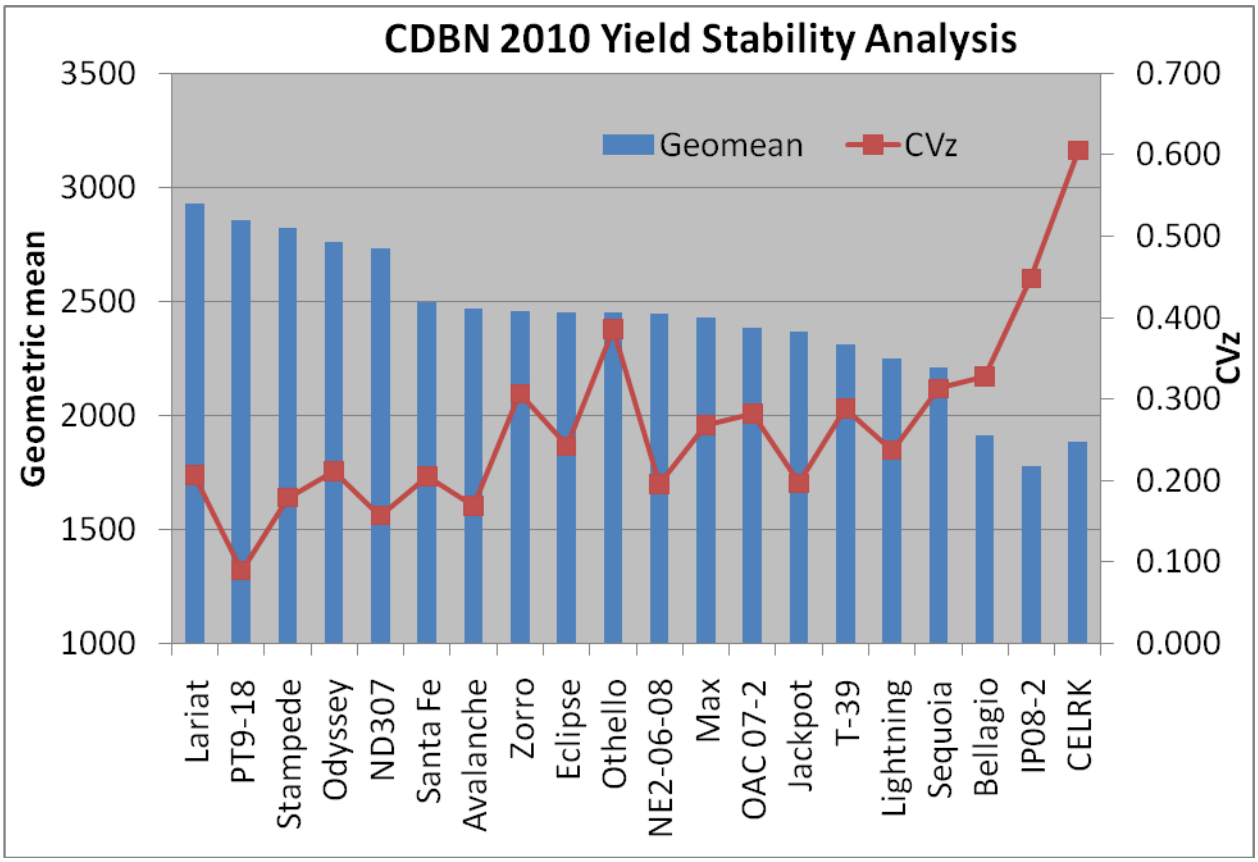

Table 6. 2010 CDBN seed weight (g 100 seeds^{-1}) averaged across locations.

Line	Class	CO	ID	MI	MT	NE	NY	ON	WA	WY	Mean
Eclipse	**Black**	18.1	18.3	20.2	19.7	17.6	19.9	20.2	19.1	20.0	**19.2**
Zorro	**Black**	19.6	18.9	19.1	18.7	18.1	21.5	20.4	19.9	20.0	**19.6**
T-39	**Black**	18.6		20.6	17.4	17.3	20.9	22.2	21.6	19.0	**19.7**
Bellagio	**Cran**	48.8	56.2	42.8	57.3	51.0	64.2	56.9	53.9	51.0	**53.6**
CELRK	**LRK**	51.3	35.6		56.0	50.1	70.6	54.6	53.5	53.0	**53.1**
Avalanche	**Navy**	19.5	20.0	20.6	19.0	18.1	18.9	19.4	20.5	18.0	**19.3**
OAC 07-2	**Navy**	18.6	16.2	20.8	18.7	17.5	20.0	19.8	21.3	18.0	**19.0**
Lightning	**Navy**	20.2	20.3	18.8	20.0	19.1	21.3	20.3	22.0	21.0	**20.3**
Lariat	**Pinto**	41.1	40.4	40.4	37.2	37.0	41.5	38.0	44.9	43.0	**40.4**
PT9-18	**Pinto**	33.0	35.9	34.8	32.4	32.3	34.5	33.6	36.8	36.0	**34.4**
Stampede	**Pinto**	38.1	36.1	39.5	36.1	34.6	34.6	37.2	41.6	39.0	**37.4**
Odyssey	**Pinto**	31.6	42.6	36.2	34.6	34.1	40.1	42.4	38.5	41.0	**37.9**
ND307	**Pinto**	35.1	40.3	35.5	38.8	37.7	43.5	38.6	42.7	39.0	**39.0**
Santa Fe	**Pinto**	41.6	43.2	39.0	40.7	39.7	42.5	43.1	45.7	41.0	**41.8**
Othello	**Pinto**	31.8	40.5	31.9	37.5	35.6	38.7	34.6	39.2	38.0	**36.4**
NE2-06-08	**Pinto**	37.2	41.1	40.2	40.5	38.3	36.9	37.7	43.3	40.0	**39.5**
Max	**Pinto**	35.6	42.3	36.4	38.7	38.9	43.2	38.6	45.1	42.0	**40.1**
Jackpot	**Pinto**	33.0	35.8	38.5	37.4	34.8	38.3	35.9	40.7	38.0	**36.9**
Sequoia	**Pinto**	30.9	35.2	33.5	33.6	31.2	37.4	36.9	37.2	34.0	**34.4**
IP08-2	**Pinto**	28.6	32.8	34.7	32.1	32.3	28.5	36.1	36.8	33.0	**32.8**
Mean		**31.6**	**34.3**	**31.8**	**33.3**	**31.8**	**35.8**	**34.3**	**36.2**	**34.2**	**33.7**
LSD 0.05		**3**	**5**	**4**	**2**	**3**	**2**		**3**	**2**	
CV %		**4**	**22**	**6**	**4**	**1**	**3**		**4**	**4**	

Table 7. 2010 CDBN harvest maturity and days to flower across locations.

		Harvest Maturity (days after planting)								Days to flower (50% bloom)						
Line	**Class**	**MI**	**NE**	**NY**	**ON**	**WA**	**WY**	**Mean**		**CO**	**MI**	**NE**	**NY**	**ON**	**WY**	**Mean**
Eclipse	**Black**	86	88	90	98	103	107	**95**		51	39	48	44	47	72	**50**
Zorro	**Black**	89	93	93	105	109	106	**99**		49	41	49	44	47	72	**50**
T-39	**Black**	89	91	93	110	109	107	**100**		50	42	49	43	49	70	**50**
Bellagio	**CRAN**	93	92	94	104	108	107	**100**		45	36	46	40	40	65	**45**
CELRK	**LRK**		85	78	88	100	96	**89**		41		44	35	33	61	**43**
Avalanche	**Navy**	90	92	92	98	107	104	**97**		46	39	48	43	44	70	**48**
OAC 07-2	**Navy**	90	96	94	108	118	108	**102**		46	37	48	43	42	68	**47**
Lightning	**Navy**	93	90	88	99	108	106	**97**		45	39	45	41	42	65	**46**
Lariat	**Pinto**	92	93	90	100	107	107	**98**		48	39	47	41	46	67	**48**
PT9-18	**Pinto**	98	93	88	100	105	103	**98**		40	38	44	42	39	62	**44**
Stampede	**Pinto**	90	90	87	92	104	107	**95**		46	36	47	40	41	66	**46**
Odyssey	**Pinto**	90	83	85	95	95	97	**91**		43	35	46	40	38	61	**44**
ND307	**Pinto**	90	91	93	97	104	107	**97**		45	36	46	41	42	66	**46**
Santa Fe	**Pinto**	89	89	87	94	99	103	**94**		45	36	45	39	42	66	**45**
Othello	**Pinto**	85	82	77	84	89	96	**86**		40	35	44	38	37	61	**42**
NE2-06-08	**Pinto**	87	88	80	88	99	105	**91**		43	36	46	39	40	68	**45**
Max	**Pinto**	85	82	83	82	91	96	**86**		40	35	45	38	37	61	**43**
Jackpot	**Pinto**	85	84	82	86	98	98	**89**		45	36	45	40	41	67	**46**
Sequoia	**Pinto**	91	90	86	92	96	98	**92**		44	36	48	41	42	61	**45**
IP08-2	**Pinto**	100	95	96	105	115	104	**103**		44	40	49	44	44	67	**48**
Mean		**90**	**89**	**87**	**94**	**102**	**102**	**94**		**45**	**37**	**46**	**41**	**41**	**66**	**46**
LSD 0.05		**1**	**2**	**5**	**3**	**6**	**3**			**2**	**1**	**3**	**2**	**2**	**3**	
CV %		**1**	**2**	**3**	**3**	**3**	**2**			**3**	**1**	**4**	**3**	**1**	**3**	

Table 8. 2010 CDBN miscellaneous traits.

		ID	ID	ID	NE	NE	MT	WA	MI	MI	MI	ON	NY	NY
Line	Class	Adaptation	Seed quality	Growth habit	Growth habit	Test wt lbs/bu	Stand %	Stand 1-9	Lodging 1-9	Height cm	Desirability 1-9	Harvestability 1-5	Biomass lbs/A	Harvest index
Eclipse	Black	6L	6.5	II	2ab	62	93	2.3	1.0	48	4.6	3.5	6343	55
Zorro	Black	6L	6	II	2a	63	93	3.0	1.0	48	4.9	3.3	6667	53
T-39	Black	5L	-	III	3a	62	92	4.2	2.0	49	4.6	4.5	5982	54
Bellagio	CRAN	7L	6	IIB	3b	60	85	2.7	2.0	51	4.5	2.0	5562	56
CELRK	LRK	6E	6.5	I	1a	58	92	1.7				4.0	6328	51
Avalanche	Navy	6L	6	III	3b	62	93	3.5	2.0	49	4.9	2.3	5600	49
OAC 07-2	Navy	7L	6.5	IIB	2b	63	90	7.0	1.5	47	4.0	3.5	6371	53
Lightning	Navy	6L	6	II	2b	62	95	4.0	1.5	50	3.1	2.5	5990	53
Lariat	Pinto	4L	6	IIB	2b	60	93	1.3	2.0	53	4.5	2.3	6689	53
PT9-18	Pinto	6	6.5	II	2b	60	93	3.0	2.0	52	3.0	3.0	6420	54
Stampede	Pinto	6L	6	IIB	2b	59	95	1.7	1.0	52	6.0	2.5	6098	58
Odyssey	Pinto	6M	6	III	3b	61	95	2.0	3.5	45	3.5	4.8	4667	57
ND307	Pinto	5L	6	III	3a	59	93	1.0	2.0	48	5.0	3.0	6212	57
Santa Fe	Pinto	6L	5.5	II	2b	58	90	2.7	1.5	49	5.5	3.0	5307	59
Othello	Pinto	6E	6	III	3b	61	95	2.0	3.0	46	3.0	5.0	4783	59
NE2-06-08	Pinto	6	6	III	3b	59	92	2.0	2.0	48	4.0	4.8	5069	60
Max	Pinto	6E	5.5	III	3a	61	93	1.0	4.0	44	3.0	5.0	5170	55
Jackpot	Pinto	6M	6	III	3b	59	95	2.0	4.0	42	3.0	5.0	4413	55
Sequoia	Pinto	6M	6.5	III	3b	61	90	2.3	1.5	54	4.5	2.3	5096	56
IP08-2	Pinto	7	6.5	II	2b	59	88	5.7	2.5	49	2.5	4.0	4634	35
Mean						60	92	2.8	2.1	48	4.1	3.5	5670	54
LSD 0.05						1	4	1.0	0.5	7	0.8	0.6	550	5
CV %						1	2	22.0	13.3	7	8.4	14.46	6	6

Adaptation, the letters M=medium maturity (90-100days), L=late (>100days), E=early (85-90days).

Seed quality scored on a 1 to 9 scale, where 1=excellent and 9=very poor, after 3 months of post harvest storage at room temperature, shape. and largely includes oxidation, color and seed

Stand and lodging 1=best and 9=worst.

Desirability 1=worst and 9=best.

Harvestability 1=best and 5=worst.

Table 9. This data was obtained in PR for the 2009 CDBN entries.

Performance of lines in the Cooperative Dry Bean Nursery planted at Isabela, Puerto Rico in December 2009.

Line	Mean common blight score[1] (1-9)	Maximum pustule size[2] (1-6)	Mean % infection with rust	Mean seed yield (kg/ha)
Lariat	3.3	3	0.5	2478
Stampede	3.3	3	0.3	2186
ND 307	4.5	5	1.0	2308
Avalanche	3.0	6	0.8	1934
Eclipse	3.0	4	0.3	2345
Croissant	3.0	6	0.5	2002
CO 33875	4.3	6	1.3	1488
Santa Fe	4.0	6	0.5	2175
Zorro	3.0	6	0.3	2296
Shania	3.5	6	0.3	2359
IP-08-2	3.0	6	2.0	1445
Dublin	3.0	6	0.5	1562
Lightning	3.0	1	0.0	1758
Sequoia	4.5	3	0.3	1331
Max	4.0	6	5.8	964
Jackpot	4.0	6	1.8	966
ISB 1218	3.0	4	0.8	1486
Othello	3.5	6	4.3	1315
T 39	3.5	6	0.3	2224
Fuji	3.3	6	1.5	1496
Mean	3.5		1.1	1806
LSD (0.05)	0.9		NS	451
CV (%)	19.2			17.6

[1] Rated on a scale from 1-9 where 1 = no symptoms and 9 = very severe symptoms.
[2] Rated on a scale from 1-6 where 1 = no symptoms, 3 = pustules < 300 µm in diameter, 4 = pustules 300-500 µm in diameter, 5 = pustules 500-800 µm in diameter and 6 = pustules > 800 µm in diameter (http://www.css.msu.edu/bic/PDF/Rust.pdf).

Individual location reports

California late planting date corresponds to double crop usually after winter wheat.

Michigan trial was direct harvested.

North Dakota trial was lost this year due to excessive flood damage.

CDBN information, Sidney, Montana
Corresponding cooperator: Joyce Eckhoff
Address: MSU Eastern Agricultural Research Center, 1501 N. Central Ave, Sidney, MT 59270
e-mail: jeckhoff@sidney.ars.usda.gov
phone: 406-433-2208
fax: 406-433-7336

CDBN site:
Altitude: 1950 ft
Latitude: 47° 40' N
Longitude: 104° 08'
Soil type: Savage silty clay
Previous crops: 2009 –sugarbeet, 2008 – onions, 2007 – safflower
Applied fertilizer: 400 lb/ac 18-46-0 applied in fall, 2009
Chelated zinc applied June 10 at a rate of 1 pt/ac
Herbicides: Sonolan at a rate of 3 pt/ac and Eptam at a rate of 3 pt/ac applied May 10 and incorporated immediately

Experimental design: Randomized complete block with three replications
Rows per plot: 3
Row length: 20 feet
Spacing between rows: 2 feet
Planted: May 20

Irrigated (sprinkler) on: July 18, August 5, and August 20

Precipitation April – August, 2010: 14.09 in
Ave (61 yr) precipitation April – August: 9.48 in
Precipitation September 2009 – August 2010:18.98 in
Ave (61 yr) precipitation September – August: 13.90 in

Comments:
It was generally a cool and very wet summer.

Harvested: September 1 and September 14
Harvest method: hand pulled, dried, and threshed with a Wintersteiger plot combine
Area harvested: 32 $feet^2$

FROM THE DESK OF:
M. A. Pastor-Corrales, Research Plant Pathologist
Soybean Genomics and Improvement Laboratory
Beltsville Agricultural Research Center, USDA-ARS
Room 118, Building 006, BARC-West
10300 Baltimore Avenue, Beltsville, MD 20705-2350, USA
Phone: (301) 504-6600 Fax: (301) 504-5555
E. Mail: talo.pastor-corrales@ars.usda.gov

2010 Protocol for Rust Evaluation under Field Conditions in Beltsville, Maryland

1. **The rust spreaders – comprised of the four dry and snap bean cultivars (Aurora, Slenderette, Mountaineer Half Runner, and Pinto 114) were planted on 6/14/2010, about two weeks before the other bean nurseries.**
2. **On 7/30/2010, 10 different bean nurseries were planted and later on the day the Spreaders rows were inoculated with a mixture of five races of the rust pathogen: 38, 39, 40, 41, and 43.**
3. **All bean lines/cultivars were evaluated in two reps, each rep was in a single rows (2m long). See map for arrangement of nurseries, check cultivars, and the spreaders.**

Common Bean Rust (*Uromyces appendiculatus*) Evaluation Scale-
The bean rust scale used here is recommended for use by bean researchers working under field conditions who are solely interested in classifying the germplasm reaction to the rust pathogen into three discrete categories: resistant, intermediate, or susceptible.

Each category includes three reaction grades. Resistant: grades 1, 2, and 3. Intermediate: 4, 5, and 6. Susceptible: 7, 8, and 9.

Bean Rust Scale:

1. Highly resistant: no visible rust pustule present.

3. Resistant: presence of only a few and generally small pustules on most plants that cover approximately 2% of the foliar area.

5. Intermediate: presence of generally small or intermediate pustules on all plants that cover approximately 5% of the foliar area.

7. Susceptible: presence of mostly large pustules often surrounded by chlorotic halos that cover approximately 10% of the foliar area.

9. Highly susceptible: presence of large and very large pustules, with chlorotic halos that cover more than 25% of the foliar tissue and cause premature defoliation.

UNIVERSITY
OF WYOMING
College of Agriculture
DEPARTMENT OF PLANT SCIENCES

Seed Certification Service

Cooperating with Wyoming
Crop Improvement Association

P.O. Box 983 • Powell, WY 82435
Ph. (307) 754-9815 • Fax (307) 754-9820
email: mdmoore@uwyo.edu

2010 Dry Bean Performance Evaluation

Mike Moore, Wyoming Seed Certification Service; Mike Killen, Powell Research and Extension Center, Randy Violet, Powell Research and Extension Center

In 2009, Wyoming ranked ninth nationally in dry bean (Phaseolus vulgaris L.) production, and fifth in the nation in the production of pinto beans. In the same year, Wyoming growers produced 680,000 hundred-weight of pinto beans on 34,000 harvested acres, averaging 20.0 hundred-weight per acre.

The University of Wyoming Seed Certification Service coordinates the dry bean variety performance evaluation at this location in a continuous and on-going program. In cooperation with the National Cooperative Dry Bean Nursery, a wide range of germplasm is evaluated each year, including promising new lines and newly released varieties, assisting producers in selecting varieties best suited for Wyoming soils and climate. Public and private (proprietary) varieties are tested.

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 Sonalan and 14 ounces Establish, which was applied on April 24. The plots received 65 units of N, 50 units of P, and 5 units of Zn April 15th. The plots were planted on May 20th 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 controlled weed escapes during the growing season. Furrow irrigation was applied on May 5th (preplant), June 30, July 12th, July 21st, July 28th, August 5th, August 11th, and August 23rd. 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 small plot thresher. The seed was then hand screened over a $^{10}/_{64}$ x ¾ inch slotted screen and 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 reasonable, with timely planting and reasonable soil temperatures. Moderate summer temperatures and limited summer precipitation, followed by an exceptional fall allowed the majority of the plants of all entries to reach maturity, although a frost the third week of September did affect the seed quality of the later lines. Yields across entries averaged 3,729 lbs. per acre, and ranged from 1,915 pounds per acre for ‘CELRK’ light red kidney bean to 4,995 pounds per acre for ‘Odyssey’ pinto bean.

Acknowledgements

This nursery is possible only with significant assistance from the staff at the Powell Research and Extension Center. The R & E Center staff manages the plots, takes growing season notes, and harvests the plots, and their efforts are greatly appreciated.