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SPECIAL EDITION: 2009 Research & Resource Guide

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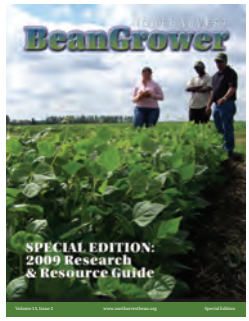
Volume 15, Issue 2 — 2009 Research & Resource Guide

Resource Directory

Northarvest Dry Bean Research Update

2008 Dry Bean Variety Trials



On the Cover

Dr. Juan Osorno, NDSU dry bean breeder (right) examines dry beans in the flowering stage at research plots in Carrington, North Dakota. Angela Linares (left) a PhD graduate student from Puerto Rico takes notes, and Ronald Dorcinvil (center) a summer intern from Haiti, assists. Osorno points out that each year, scientists and students come to NDSU from around the world to learn more about dry bean breeding and production in the Northarvest region. *(Photo taken by Bahadir Sezegen, a graduate student in the NDSU Dept. of Plant Sciences).*

The Northarvest Bean Grower is published five times a year by the Northarvest Bean Growers Association, 50072 E. Lake Seven Road, Frazee, MN 56544, Phone: (218) 334-6351, Website: www.northarvestbean.org, Email: nhbean@loretel.net.

Send advertising materials and editorial information to Marlene Dufault, Prairie Ag Communications, 2607 Wheat Drive, Red Lake Falls, MN 56750, 218-253-4391. Email: mdufault@gvtel.com. Publication of editorial or advertising material in the Northarvest Bean Grower magazine does not imply endorsement by the Northarvest Bean Growers Association. Check agronomic advice with local sources and always read and follow product labels.

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Bean Organizations

Company Name	Address	Phone/Fax
United States Dry Bean Council (Headquarters)	Pierre, SD 57501	Ph: 605-494-0280 / Fax: 605-494-0304
United States Dry Bean Council (Gov't Affairs Office)	Washington, DC 20036	Ph: 202-466-4500 / Fax: 202-466-5777
California Bean Shippers Association (CBSA)	Sacramento, CA 95814	Ph: 916-441-2514
California Dry Bean Advisory Board (CDBAB)	Dinuba, CA 93618	Ph: 559-591-4866
Colorado Dry Bean Administrative Committee (CDBAC)	Buena Vista, CO 81211	Ph: 303-903-2004
Idaho Bean Commission (IBC)	Boise, ID 83720-0015	Ph: 208-334-3520
Michigan Bean Commission (MBC)	St. Johns, MI 48879	Ph: 989-224-1361
Michigan Bean Shippers Association (MBSA)	East Lansing, MI 48823	Ph: 517-336-0226
Minnesota Dry Bean Research & Promotion Council	Frazee, MN 56544-8963	Ph: 218-334-6351
Nebraska Dry Bean Commission (NeDBC)	Scottsbluff, NE 69361	Ph: 308-632-1258
New York State Bean Shippers Assn. (NYSBSA)	Seneca Castle, NY 14547	Ph: 585-526-5427
North Central Bean Dealers Assn. (NCBDA)	Thompson, ND 58278-0391	Ph: 701-261-4157
North Dakota Dry Edible Been Seed Growers Assn.	Fargo, ND 58105	Ph: 701-231-8067
Northarvest Bean Growers Assn. (NHBGA)	Frazee, MN 56544-8963	Ph: 218-334-6351
North Dakota Dry Bean Council	Frazee, MN 56533-8963	Ph: 218-334-6351
Rocky Mountain Bean Dealers Assn. (RMBDA)	Denver, CO 80234	Ph: 303-646-8883
Washington Bean Dealers Assn. (WaBDA)	Quincy, WA 98848	Ph: 509-787-1544
Western Bean Dealers Assn. (WBDA)	Buhl, ID 83316	Ph: 208-731-1702

2009 Northarvest Resource Directory

Seed Bean Suppliers & Commercial Buyers

Company Name	Address	Ph/Fax/Web/Email	Beans
ADM Edible Bean Specialties, Inc	P.O. Box 149, 22nd St. N. Olivia, MN 55277	Ph: 320-523-1637 / Fax: 320-523-5683	Navy
ADM Edible Bean Specialties, Inc.	P.O. Box 255, 557 Industrial Drive St. Thomas, ND 58276	Ph: 701-257-6721 / Fax: 701-257-6577	Navy
ADM Edible Bean Specialties, Inc.	P.O. Box 124, Hwy 7 W Appleton, MN 56208	Ph: 320-289-2430 / Fax: 320-289-2008	Navy
ADM Edible Bean Specialties, Inc	16255 Hwy. 13 Barney, ND 58008	Ph: 701-439-2266 / Fax: 701-439-2723	Pinto, Navy
ADM Edible Bean Specialties, Inc.	P.O. Box 249, 1804 Front Street Casselton, ND 58012	Ph: 701-347-5321 / Fax: 701-347-5552	Pinto, Navy
ADM Edible Bean Specialties, Inc.	9451 Hwy. 18, P.O. Box 676 Cavalier, ND 58220	Ph: 701-265-8385 / Fax: 701-265-4804	Pinto
ADM Edible Bean Specialties, Inc.	P.O. Box 98, 108 MN Ave W Galesburg, ND 58035	Ph: 701-488-2214 / Fax: 701-488-2538	Pinto, Navy
ADM Edible Bean Specialties, Inc.	77 East 3rd Street, P.O. Box 25 Grafton, ND 58237	Ph: 701-352-1030 / Fax: 701-352-3430	Pinto
ADM Edible Bean Specialties, Inc.	P.O. Box 437 Northwood, ND 58267	Ph: 701-587-5900 / Fax: 701-587-5927	Pinto, Navy
Alvarado Bean Co.	P.O. Box 961, 120 1st Ave. E. Alvarado, MN 56710	Ph: 218-965-4668 / Fax: 218-965-4916 albean@wiktel.com	Pinto, Pink
B T R Farmers Co-op	6001 60th Ave NE Leeds, ND 58346	Ph: 701-466-2281 / Fax: 701-466-2022 Web: btrfarmerscoop.com Email: btr@gondtc.com	Pinto, Black
Barlow Grain & Stock Exchange	260 Elevator Road Carrington, ND 58421	Ph: 701-984-2617 / Fax: 701-984-2616	Pinto
Bird Island Bean Co. LLC	P.O. Box 249 Bird Island, MN 55310	Ph: 320-365-3070 / Fax: 320-365-3811	Navy
Bollingberg Seeds	5353 Highway 15 Cathay, ND 58422	Ph: 701-984-2486 / Fax: 701-984-2485	Pinto
Bonanza Bean LLC	P.O. Box 164, 8 Industrial Blvd. Morris, MN 56267	Ph: 320-585-2326 / Fax: 320-585-2323	Dark Red Kidney, Light Red Kidney
C & F Foods/ Turtle River Bean Co.	P.O. Box 55, Highway 33 Manvel, ND 58256	Ph: 701-696-2040 / Fax: 701-696-2042	Black, Pinto
C & F Foods	404 1st Ave E Oslo, MN 56744	Ph: 218-695-2201 / Fax: 218-695-3006	Black, Pinto, Navy, Small Red
Cando Farmers Grain & Oil	Box 456 101 9th Street Cando, ND 58324	Ph: 701-968-4446 / Fax: 701-968-4447	Pinto
Cavalier Bean Co.	P.O. Box 297, 308 Industrial Park Cavalier, ND 58220	Ph: 701-265-8495 / Fax: 701-265-8576	Pinto
Central Valley Bean Cooperative	401 Broadway P.O. Box 162 Buxton, ND 58218	Ph: 701-847-2622 / Fax: 701-847-2623 Web: www.centralvalleybean.com gary@centralvalleybean.com	Pinto, Navy
Chippewa Valley Bean Co., Inc.	N2960 730th St Menomonie, WI 54751	Ph: 715-664-8342 / Fax: 715-664-8344 cbrown@cvbean.com	Dark Red Kidney, Light Red Kidney
Colgate Commodities	HC 2, Box 17 Colgate, ND 58046	Ph: 701-945-2580 / Fax: 701-945-2634 nelsondm@polarcomm.com	Black, Pinto, Great Northern, Light Red Kidney, Navy, Pink
Diversified Bean LLC	38026 330th Ave SW Climax, MN 56523	Ph: 218-857-3341 / Fax: 218-857-3390	Black, Pinto, Great Northern, Navy, Pink, Small Red
Engstrom Bean & Seed	6131 57th Ave NE, Leeds, ND 58346	Ph: 701-466-2398 / Fax: 701-466-2076	Black, Pinto
Falkirk Farmers Elevator Co.	101 Main St. Washburn, ND 58577	Ph: 701-462-8572 / Fax: 701-462-8574	Pinto
Farmers Elevator Co. of Honeyford	2472 30th St. NE Gilby, ND 58235-9711	Ph: 701-869-2466 / Fax: 701-869-2456	Pinto, Navy

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Seed Bean Suppliers & Commercial Buyers

Company Name	Address	Ph/Fax/Web/Email	Beans
Fessenden Coop Assn.	P.O. Box 126 900 Railway St Fessenden, ND 58438	Ph: 701-547-3354 / Fax: 701-547-3574 Web: www.fess coop.com gsmith@fesscoop.com	Pinto, Black
Forest River Bean Co., Inc.	P.O. Box 68, #1 Side Rd Forest River, ND 58233	Ph: 701-248-3261 / Fax: 701-248-3766	Black, Pinto, Mycoba, Pink, Small Red
Grafton Farmers Co-op Grain Co.	129 E 6th Street Grafton, ND 58237	Ph: 701-352-0461 / Fax: 701-352-0280	Pinto
Grand Forks Bean Co.	2120 N. Washington St PO Box 5357 Grand Forks, ND 58206-5357	Ph: 701-775-3984 / Fax: 701-775-3985	Pinto
Green Valley Bean	58473 St., Hwy 34 Park Rapids, MN 56470	Ph: 218-573-3400 / Fax: 218-573-3434	Dark Red Kidney, Light Red Kidney, Pink, White Kidney
Haberer Foods	41591 180th Street Morris, MN 56267	Ph: 320-795-2468 / Fax: 320-795-2986	Dark Red Kidney, Light Red Kidney, Black Turtle
JM Grain Inc.	12 N Railroad Street, PO Box 248 Garrison, ND 58540-0248	Ph: 701-463-7261 / Fax: 612-435-4868	Pinto
Johnstown Bean Co.	PO Box 5 Gilby, ND 58235	Ph: 701-869-2680 / Fax: 701-869-2692 jbc@polarcomm.com	Black, Pinto
Joliette Ag Systems Inc	15866 Highway 5 Pembina, ND 58271	PH: 701-454-6226 / Fax: 701-454-6244 jwarner@polarcomm.com	Black, Pinto
Kelley Bean Company	2407 Circle Drive PO Box 2488 Scottsbluff, NE 69363	Ph: 308-635-6438 / Fax: 308-635-7345 Web: www.kelleybean.com jswanson@kelleybean.com	Pinto, Dark Red Kidney, Great Northern, Light Red Kidney, Navy, Pink, Small Red

Seed Bean Suppliers & Commercial Buyers

Company Name	Address	Ph/Fax/Web/Email	Beans
Kelley Bean Company	PO Box 99 703 Division Ave South Cavalier, ND 58220	Ph: 701-265-8328 / Fax: 701-265-8533	Black, Pinto, Dark Red Kidney, Light Red Kidney, Navy, Pink
Kelley Bean Company	480 Hwy 18 NE Mayville, ND 58257-9001	Ph: 701-786-2997 / Fax: 701-786-4214 asvanstu@kelleybean.com	Navy
Kelley Bean Company	650 2nd Street NE, P.O. Box 253 Perham, MN 56573	Ph: 218-346-2360 / Fax: 218-346-2369	Dark Red Kidney, Light Red Kidney, Pink
Kelley Bean Company	1328 Dakota Ave, Hatton, ND 58240	Ph: 701-543-3000 / Fax: 701-543-4195	Black, Pinto, Navy
Kelley Bean Company	524 S 7th St, PO Box 290 Oakes, ND 58474	Ph: 701-742-3219 Fax: 701-742-3520	Black, Pinto, Dark Red Kidney, Light Red Kidney, Navy
Kirkeide's Northland Bean Co.	4520 12th St NE Fessenden, ND 58438	Ph: 701-547-3466 / Fax: 701-547-3539	Black, Pinto, Navy
Klindworth Seed & Bean Co.	2139 Highway 30 Fessenden, ND 58438-9441	Ph: 701-547-3742 / Fax: 701-547-2592	Pinto
Larimore Bean Co. Inc.	PO Box 607 Larimore, ND 58251	Ph: 701-343-6363 / Fax: 701-343-2842 lbc@polarcomm.com	Black, Pinto
Larson Grain Co.	100 2nd Ave Englevale, ND 58033	Ph: 701-683-5246 / Fax: 701-683-4233	Black, Pinto, Dark Red Kidney, Navy
Lee Bean & Seed Inc.	P.O. Box 37, 3 mile So. Hwy 9 Borup, MN 56519	Ph: 218-494-3330 / Fax: 218-494-3333	Black, Pinto, Navy
Manvel Bean Co.	2875 18th St NE, Manvel, ND 58265	Ph: 701-696-2271 / Fax: 701-696-8266	Pinto
Mayport Farmer's Co-op	Edible Bean Division, PO Box 338 Portland, ND 58274	Ph: 701-786-4062 / Fax: 701-786-4098	Black, Pinto
Miller Elevator Company/Trinidad Benham	Box 844 Valley City, ND 58072	Ph: 701-984-2489 / Fax: 701-984-2499	Pinto, Black
North Star Bean	4082 22nd Avenue NE McCanna, ND 58251	Ph: 701-397-5261 / Fax: 701-397-5783	Navy, Black, Pinto,
Northwood Bean Co. Inc.	301 Potato Road Northwood, ND 58267	Ph: 701-587-5206 / Fax: 701-587-5650 nbc@polarcomm.com	Black, Pinto
O'Brien Seed, Inc	PO Box 505, 321 2nd Ave SE Mayville, ND 58257	Ph: 701-788-9118 / Fax: 701-788-9119	Black, Pinto, Pink, Small Red
Red River Bean of Oslo	PO Box 227, 105 Oak Street Oslo, MN 56744	Ph: 218-695-3040 / Fax: 218-695-3040	Black, Pinto
SRS Commodities	411 2nd Avenue NE, PO Box 386 Mayville, ND 58257	Ph: 701-786-3402 / Fax: 701-786-3374	Black, Pinto, Otebo
St. Hilaire Seed Co.	PO Box 85 , Hwy 32 S St Hilaire, MN 56754	Ph: 218-964-5407 Fax: 218-964-5415	Black, Pinto
Stony Ridge Foods, Inc.	715 Atlantic Avenue Benson, MN 56215	Ph: 320-842-3401 Fax: 320-842-3403 dhughes@stonyridgefoods.com	Black, Dark Red Kidney, Light Red Kidney, Navy
The Bean Mill	42631 450th Ave Perham, MN 56573	Ph: 218-346-2151	Dark Red Kidney, Light Red Kidney, Pink
Thompsons USA Limited	PO Box 374, 41703 Highway 2 SW E Grand Forks, MN 56721	Ph: 218-773-8834 / Fax: 218-773-9809	Pinto, Kidney, Navy, Pink, Small Red
TMT Bean & Seed Farm	3718 67 Ave SE, Cleveland, ND 58424	Ph: 701-763-6544 / Fax: 701-763-6545	Pinto
Tronson Grain Co.	115 W 1st St, Doyon, ND 58327-2807	Ph: 701-398-3512 / Fax: 701-398-3609	Pinto
Walhalla Bean Co.	PO Box 67, 1920 Hwy. 32 N. Walhalla, ND 58282	Ph: 701-549-3721 / Fax: 701-549-3725 wbc@utma.com	Black, Pinto, Small Red
Walhalla Bean Company	7400 55th Street South Grand Forks, ND 58201	Ph: 701-775-3317 / Fax: 701-775-3289 wbcm@gfwireless.com	Black, Pinto, Small Red
Walton Ag Services	P.O. Box 9 Lisbon, ND 58054	Ph: 701-683-5743 / Fax: 701-683-5957 waltonag@drtel.net	Black, Pinto, Dark Red Kidney, Small Red

2009 Northarvest Resource Directory

Bean Researchers & Research Leaders

Name	Address	Phone/Fax	Web/Email
Dr. Rubella S. Goswami, Department of Plant Pathology, NDSU, 306 Walster Hall, FDept 7660, PO Box 6050, Fargo, ND 58108-6050 Ph: 701-231-7077, Fax: 701-231-7851, Rubella.Goswami@ndsu.edu			
Dr. Kenneth F. Grafton, Director ND Ag Experiment Station, Morrill Hall 315, P.O. Box 5435, Fargo, ND 58105-5435 Ph: 701.231.6693, Fax. 701.231.8520, k.grafton@ndsu.edu			
Dr. Marion O. Harris, Program Leader, Dept of Entomology, 269 Hultz Hall, NDSU Dept. 7650, PO Box 6050, Fargo, ND 58108-6050 Phone: 701-231-6445, FAX: 701-231-8557, marion.harris@ndsu.edu			
Duane Hauck, Director, NDSU Extension, 315 Morrill Hall, P.O. Box 6050, Fargo, ND 58108-6050 Ph: 701-231-8944, Fax: 701-231-8520, ndsu.extensiondirectorsoffice@ndsu.edu			
Dr. Carol Ishimaru, Head, Department of Plant Pathology, 495 Borlaug Hall, 1991 Upper Buford Circle, Univ. of Minnesota, St. Paul, MN 55108 Ph: 612-625-9736, Fax: 612-625-9728, cishimar@umn.edu			
Dr. Hans Kandel, Department of Plant Sciences, NDSU Dept. 7670, Loftsgard Hall 266H, Box 6050 , Fargo ND 58108-6050 Ph: 701-231-8135, Fax: 701-231-8474, hans.kandel@ndsu.edu			
Dr. Janet J. Knodel, Department of Entomology, NDSU Dept 7650, PO Box 6050, Fargo, ND 58108-6050 Ph: 701-231-7581, Fax: 701-231-8557, janet.knodel@ndsu.edu			
Dr. Sam Markell, Department of Plant Pathology, NDSU, 306 Walster Hall, Fargo ND 58108-6050 Ph: 701-231-8362, Fax: 701-231-7851, samuel.markell@ndsu.edu			
Dr. Berlin Nelson, Department of Plant Pathology, NDSU, 306 Walster Hall, FDept 7660, PO Box 6050, NDSU, Fargo, ND 58108-6050 Ph: 701-231-8362, Fax: 701-231-7851, berlin.nelson@ndsu.edu			
Dr. Juan Osorno, Dry Bean Breeding/Genetics, Dept. of Plant Sciences, NDSU, Loftsgard Hall 374-E, Fargo, ND 58105-5051 Ph: 701-231-8145, Fax: 701-231-8474, Juan.Osorno@ndsu.edu			
Dr. Richard K. Zollinger, Dept of Plant Sciences, Loftsgard Hall 470H, NDSU, Fargo, ND 58105-5051 Ph: 701-231-8157, Fax: 701-231-8474, r.zollinger@ndsu.edu			

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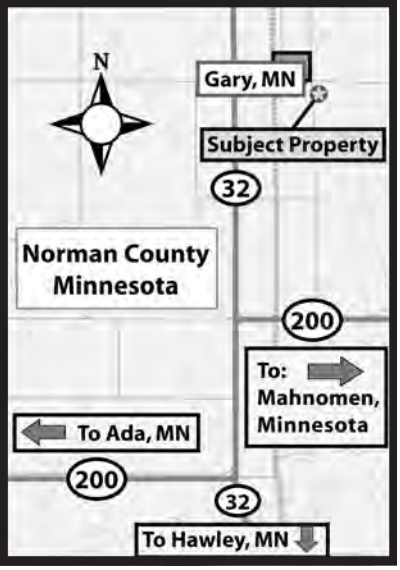

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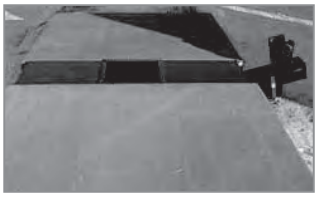

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Log in to www.multigrain.info and see why special crops dealers, brokers and buyers rely on it to stay current on prices. Check back often – prices are updated daily!

"I feel that the tool will give them (producers) access to more current information on prices for their product when negotiating with dealers to sell their crop, deal with their bankers on the value of their crop, justification for crop insurance, etc." - Dr. Howard Schwartz - Colorado State University, Colorado Extension, Publisher - Colorado Bean News

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FOB Price Report

including prices since 2009-01-16 as of Friday, January 30, 2009

		2009 Dealer Price (USD/cwt)			2009 Grower Price (USD/cwt)		
	Region	**Low**	**High**	**Avg**	**Low**	**High**	**Avg.**
Beans - Pinto							
#1 - Premium Color	AB/CO/KS/NE/UT/WY	35.00	35.00	35.00			
#1 - Premium Color	MB/MN/ND/SD/SK	30.00	33.00	31.33	25.00	26.00	25.33
#1 - Good Color	AB/CO/KS/NE/UT/WY	35.00	35.00	35.00			
#1 - Good Color	MB/MN/ND/SD/SK	30.00	34.00	31.50	25.00	25.00	25.00
#1 - Fair/Average Quality (FAQ)	AB/CO/KS/NE/UT/WY	35.00	35.00	35.00			
#1 - Fair/Average Quality (FAQ)	MB/MN/ND/SD/SK	30.00	35.00	32.00	23.00	25.00	24.33
		2008 Dealer Price (USD/cwt)			**2008 Grower Price (USD/cwt)**		
	Region	**Low**	**High**	**Avg**	**Low**	**High**	**Avg**
Beans - Pinto							
#1 - Premium Color	ID/MT/NM/OR/WA	43.00	47.00	45.50	35.00	35.00	35.00
#1 - Premium Color	AB/CO/KS/NE/UT/WY	39.00	44.00	40.86	30.00	35.00	31.67
#1 - Premium Color	MB/MN/ND/SD/SK	32.00	36.00	34.00	26.00	27.04	26.63
#1 - Good Color	ID/MT/NM/OR/WA	43.00	47.00	45.00	35.00	35.00	35.00
#1 - Good Color	AB/CO/KS/NE/UT/WY	39.00	41.00	40.00	28.00	30.00	29.33
#1 - Good Color	MB/MN/ND/SD/SK	31.00	34.00	33.06	25.00	27.00	26.33
#1 - Fair/Average Quality (FAQ)	ID/MT/NM/OR/WA	45.00	47.00	46.00			
#1 - Fair/Average Quality (FAQ)	AB/CO/KS/NE/UT/WY	39.00	40.00	39.67	28.00	30.00	29.33
#1 - Fair/Average Quality (FAQ)	MB/MN/ND/SD/SK	30.00	34.00	32.75	25.00	27.00	26.20
#2	AB/CO/KS/NE/UT/WY	39.00	39.00	39.00			
#2	MB/MN/ND/SD/SK	33.00	33.00	33.00	24.59	26.00	25.20
Splits	AB/CO/KS/NE/UT/WY	22.00	22.00	22.00			
Splits	MB/MN/ND/SD/SK	21.00	22.00	21.67			

Displayed prices in USD ~ Multigrain International LLC ~ Contact George A. Jibilian at 970.490.1878 or info@multigrain.com

Northarvest 2008 Dry Bean Research Update

A summary of research projects funded by growers through the Northarvest Bean Growers Association

2008 Dry Bean Improvement for the Northern Plains

Prepared by: Juan M. Osorno and Gonzalo Rojas-Cifuentes. Project Leader: Dr. Juan Manuel Osorno; Research Associate: Dr. Gonzalo A. Rojas-Cifuentes; Research Specialist: Albert J. Vander Wal

Objectives: The objective of the dry bean breeding program at North Dakota State University is to develop high yielding, high quality bean genotypes adapted to the Northern Great Plains. This involves many characteristics of dry beans and different disciplines of research (e.g. genetics, pathology, physiology, nutrition etc.). The main priority is to improve pinto, navy, and black market classes, but also great northern, kidney, red and pink market classes are important part of our breeding program. Crosses involve adapted cultivars grown in the Northern Plains, breeding lines developed at NDSU, and germplasm possessing desirable traits from other breeding programs. Unadapted germplasm lines from other sources are evaluated for desirable traits and introgressed into adapted material. Each year, the breeding program evaluates material from around the world as possible sources of resistance to white mold, rust, root rot, anthracnose, virus, and bacterial blights, among others.

2008 Season: The 2008 growing season started with a cool spring and ended with a very rainy fall, which caused a delayed harvest in most crops in the region. Despite the weather, we managed to have good trials with only one location (Prosper) that was not totally harvested due to wet conditions in the fall. Pod shattering and seed sprouting caused yield losses over 50% in some trials. However, we managed to harvest the variety trials and two thesis studies.

Locations and Trials: During 2008, 56 experiments plus early-generation breeding material were planted at 5 locations in ND, and 2 locations in MN. Total area in all these trials was around 34 acres, with a total of 8378 plots. In addition, several variety trials were planted at the ND Research and Extension Centers (REC) across the state. The new pintos (Lariat and Stampede) and navy (Avalanche) varieties were also included in the Cooperative Dry Bean Nursery planted at 12 locations across U.S.

North Dakota Locations and Trials:

Carrington (REC)

- Pinto Advanced Yield Trial (28 lines)
- Navy Advanced Yield Trial (12 lines)
- Black Advanced Yield Trial (20 lines)
- Great Northern Advanced Yield Trial (16 lines)
- Red Advanced Yield Trial (20 lines)
- Pinto Preliminary Yield Trial (260 lines)
- Navy Preliminary Yield Trial (600 lines)
- Black Preliminary Yield Trial (480 lines)
- Great Northern Preliminary Yield Trial (240 lines)
- Red Preliminary Yield Trial (190 lines)
- F_6 Plant Rows Pinto, Great Northern, Navy, Black and Kidney (264 rows)
- Direct Combining Study (9 lines)
- Row Spacing and Fertility (27 lines)

Johnstown (Jim Karley)

- Pinto Advanced Yield Trial (28 lines)
- Navy Advanced Yield Trial (12 lines)
- Black Advanced Yield Trial (20 lines)
- Great Northern Advanced Yield Trial (16 lines)
- Red Advanced Yield Trial (20 lines)

Forest River (Brian Shanilec)

- Pinto Variety Trial (26 lines)
- Navy Variety Trial (19 lines)

Hatton (2 sites: Glen & Tim Skjoiton and Mark Sletten)

- Pinto Variety Trial (34 lines)
- Navy Variety Trial (20 lines)
- Miscellaneous Variety Yield Trial (22 lines)
- Pinto Advanced Yield Trial (28 lines)
- Navy Advanced Yield Trial (12 lines)
- Black Advanced Yield Trial (20 lines)
- Great Northern Advanced Yield Trial (16 lines)
- Red Advanced Yield Trial (20 lines)
- Pinto Preliminary Yield Trial (260 lines)
- Navy Preliminary Yield Trial (600 lines)
- Black Preliminary Yield Trial (480 lines)
- Great Northern Preliminary Yield Trial (240 lines)
- Red Preliminary Yield Trial (190 lines)
- F_2 Spaced Plants (54 lines)
- F_6 Plant Rows Pinto, Great Northern, Navy, Black and Kidney (264 rows)
- Observation Rows (182 lines)

Prosper (REC)

- Pinto Variety Trial (22 lines)
- Navy Variety Trial (15 lines)
- Miscellaneous Variety Trial (10 lines)
- Pinto Advanced Yield Trial (28 lines)
- Navy Advanced Yield Trial (12 lines)
- Black Advanced Yield Trial (20 lines)
- Great Northern Advanced Yield Trial (16 lines)
- Red Advanced Yield Trial (20 lines)
- Pinto Preliminary Yield Trial (260 lines)
- Navy Preliminary Yield Trial (600 lines)
- Black Preliminary Yield Trial (480 lines)
- Great Northern Preliminary Yield Trial (240 lines)
- Red Preliminary Yield Trial (190 lines)
- Direct Combining Study (9 lines)
- Row Spacing and Fertility (27 lines)

Minnesota Locations and Trials:

Park Rapids (Paul Johannig)

- Miscellaneous Variety Trial (15 lines)
- Kidney Advanced Yield Trial (24 lines)

Perham (Mark Dombeck)

- Miscellaneous Variety Trial (9 lines)
- Kidney Advanced Yield Trial (24 lines)

Disease Testing: During 2008, screening for resistance to several important diseases (rust, BCMV, anthracnose, and common bacterial blight) is ongoing at NDSU greenhouse facilities and it is one of most important components of the program. In addition, advanced lines were tested for white mold in a field trial at Carrington REC. A very low segregation for rust resistance has been observed in the new navy Avalanche (less than 2%). Therefore, purification of the line for the rust resistance gene (*Ur-3*) was conducted during 2008 at NDSU greenhouses. Approximately 300 plants were inoculated last spring; seed from the resistant plants were harvested and planted in the greenhouse last fall. Plants were inoculated with rust, only fully resistant plants were kept and the seed will be bulked and increased in the field this coming season. A similar methodology is being used to purify Stampede for resistance to the necrotic strain of the common mosaic virus (BCMNV) is ongoing in the greenhouse.

There are indications of a possible new rust race as found in samples from fields in Northeastern ND this pass season. However, confirmation is underway since disease symptoms were observed at the end of the season. This new strain was characterized using a set of rust differentials (lines with known genes of resistance) in a greenhouse study conducted by Dr. Sam Markel from the Department of Plant Pathology. Similar findings are being reported in Michigan. In addition, greenhouse testing of the most commonly used varieties in the region showed that most of them are susceptible to this new race. The *Ur-3* gene, a wide-spectrum resistance gene found in many varieties is being overcome by the new race. Preliminary results are showing that two alternative genes are able to control the disease. Therefore, several crosses will be made with commercial lines in order to transfer the resistance. Field scouting will continue next year to detect the outbreak, or appearance of new diseases. Additionally, introgression of other resistance genes into commercial varieties is underway. Other research areas include white mold resistance, anthracnose, root rots (in collaboration with Dr. Rubella Goswami from Plant Pathology), and association mapping studies.

Winter Nurseries: A total of 628 lines have been selected and planted in Puerto Rico (420 lines) and New Zealand (208 lines), with the objective of practicing more selection and advance generations faster. Most of the material is of early generation and most of it represents the first set of breeding populations created by the new breeder.

Crossing Block: During winter of 2008, a crossing block was established in NDSU greenhouse facilities. Approximately, 500 crosses (~2500 unique hybridizations) were made among several advanced breeding lines, commercial varieties and germplasm with traits of interest. For example, SDPI-1, a slow-darkening pinto line from the University of Idaho was used in the crossing block to introgress genes that avoid or delay seed discoloration, especially in pintos. Several other crosses with different priorities and objectives were also made.

Training & Education: Students are an important component of the project because it allows a relation of mutual benefit since they help in the routine activities and at the same time, they learn about the management and genetic principles involved in a breeding program. This is of key significance in order to guarantee the future generation of plant breeders. In 2008, one summer internship, Ronald Dorcinvil (from Haiti) was part of the project, as well as student from other NDSU departments whom helped in the daily activities of the project. In 2007, one graduate student joined our program. Fernando Eckert (from Brazil), is a masters student, with a research that is focused on plant architecture and yield losses due to direct harvesting, row spacing, and nitrogen levels. Then in 2008, two Ph.D. students initiated their programs during summer. Angela Linares (from Puerto Rico) will work on drought resistance and water use efficiency of dry beans for ND, and Bahadir Sezegen (from Turkey) will work in our molecular laboratory on marker assisted selection and association mapping.

Results - 2008 Milestones

- A new navy variety named Avalanche was released last spring. Besides its excellent yield across environments and good seed quality, Avalanche is resistant to bean common mosaic virus (BCMV), it is tolerant to soil zinc deficiency, and it is moderately resistant to rust. Canning tests made at Michigan State University showed that Avalanche was close to Vista in terms of visual appearance and quality.
- A total of 2156 test plots of advanced and preliminary yield trials were harvested. In advanced yield trials, 32 pinto, 14 navy, 10 black, and 10 great northern and red bean lines were tested. Selections were made in the preliminary yield trials in order to keep the best fitted lines for ND and MN environments.
- For the variety trials, 1008 test plots were harvested. Including pinto, navy, and miscellaneous trials. Information can be found in the A-654 Extension Bulletin.
- A total of 231 individual plant selections were made and harvested from F_2 spaced plants.
- A total of 185 individual plant selections were made and harvested from F_6 spaced plants.

Further Steps

- Advanced experimental lines will be screened for diseases at NDSU greenhouse facilities. Besides yield and agronomic performance, breeding for disease resistance will continue to be one of the main priorities in the program.
- Selection of early and advanced experimental lines will permit to reduce the size of the field trials to something more manageable given the personnel and resources available. Genetic material left by Dr. Ken Grafton is of high quality and will allow to release more cultivars in the near future, and also to keep a very good genetic base within the program.
- New varieties and more outcomes and impact are expected in the near future with the new research conducted by the grad students. Research will continue to be focused on disease resistance to white mold, rust, anthracnose, BCMV, and root rots

Acknowledgements: The support from Northarvest bean growers association, NDSU, and the North Dakota Dry Edible Bean Seed Growers Association (NDDEBSGA) has been key for the success of the dry bean breeding program at NDSU and the growers of the Northarvest region.

Root Rot Resistance and Disease Management of Dry Beans

Investigators: Rubella Goswami and Jack Rasmussen, Department of Plant Pathology, North Dakota State University.

Root rot of dry bean has been a yield-limiting disease problem for growers in the Northarvest area for several years. This disease is known to be caused by a complex of pathogens, including *Fusarium solani* f.sp. *phaseoli*, *Rhizoctonia solani* and *Pythium* species. In North Dakota and Minnesota *Fusarium solani* is the most common causal agent of root rot, followed by *Rhizoctonia solani*. North Harvest has funded root rot research at NDSU for the past couple of years. As a result of this, an efficient and easy laboratory and greenhouse based method of screening for root resistance has been developed and a reliable source of resistance to *Fusarium solani* identified in the variety Vax 3 which is currently being used in breeding programs. Efforts to develop root rot resistance markers from this variety are being continued. Concerns were raised from preliminary findings last year that several other *Fusarium* species not commonly associated with dry bean root rot had been found to be capable of causing significant disease on dry beans. Apart from this, a lack of knowledge about resistance to *Rhizoctonia solani*, was noted. Therefore, a study was conducted this year to ascertain the prevalence of these pathogens in the bean growing areas of North Dakota and Minnesota and also to evaluate current commercial varieties for resistance to these pathogens. Evaluation of efficacy of various seed treatments in reducing yield was also initiated.

Fig 1. Dry bean roots from field collections showing root rot symptoms.

Research progress and findings: A root rot disease survey was conducted in association with a foliar survey in August of 2008. Ten root samples were collected from each of the 39 fields surveyed in Pembina, Walsh, Grand Forks and Trail Counties, rated for disease and symptomatic roots plated out. Fungal species isolated from these roots were

Survey of Foliar Diseases of Dry Beans in North Dakota

Authors: Rubella S. Goswami and Samuel Markell, Deptment of Plant Pathology, North Dakota State University.

Research Objectives: The objective of this project was to conduct a survey of dry bean growing areas in North Dakota to ascertain diseases currently present and their prevalence in the state, to assess variation in the pathogen population and to develop a culture collection for use in varietal screening.

Research Progress: A dry bean foliar disease survey was conducted in the beginning of August when the plants were between flowering and pod -set. Scouting and sampling of 39 ND fields was done in Pembina, Walsh, Grand Forks and Trail Counties. Visual disease assessments were conducted at five locations in each field and disease incidence noted for 20 plants at each location. Samples representative of the prevalent diseases in each field were collected and brought to the laboratory. The diagnosis was verified and pathogens isolated from these samples. The identity of the pathogens was confirmed by morphological and molecular methods and they were added to a culture collection maintained at NDSU. In addition, race was determined for the common bean rust pathogen.

Impacts: The most significant impact resulting from this survey was the identification of a new and highly virulent race of the bean rust pathogen. Rust was initially detected in two fields in Trail County (Fig. 1.) during the survey. Following this finding, rust samples were collected from 15 other fields in Trail County, one field in Grand Forks County and one field in Mclean County. Isolates from seven of these fields were increased in the greenhouse, and genetic lines were obtained from the USDA in Washington, D.C. to determine the pathogen race. A new race that is capable of overcoming the resistance gene Ur3 (the most common resistance gene in all ND and MN grown beans) was found in every field tested. To determine how many lines commonly grown in our region were susceptible, four replications of the 20-30 most common Pinto, Navy, and Black beans were tested in the greenhouse (Fig. 2.). Every line tested was susceptible. As a direct result of this survey, NDSU plant pathologists will have the winter months to develop management recommendations and alter growers of this potential epidemic.

In addition to rust, the most prevalent foliar diseases were bacterial blights (including common blight, halo blight and brown spot) and white mold. Common blight caused by *Xanthomonas campestris pv. phaseoli* syn. *Xanthomonas axonopodis pv. phaseoli,* was present in almost all fields surveyed whereas halo blight and brown spot (Fig. 1.) caused by *Pseudomonas syringae pv. phaseolicola* and *Pseudomonas syringae pv. syringae* were found in 55% and 45% of the fields respectively. Apart from these, bacterial wilt caused by *Curtobacterium flaccumfaciens pv. flaccumfaciens* was detected in one field. The percentage of halo blight and brown spot, two economically important bacterial diseases, was higher this year than seen in previous years. White mold was the next most prevalent disease and was present in 38% of the fields.

Fig 2. Dry bean roots of Maverick (left) and Vax 3 (right) inoculated with Rhizoctonia solani AG 2-2 and AG-4 along with a healthy control .

identified morphologically. These are currently being confirmed by molecular methods. Initial species identification suggests that nearly 90% of fungi isolated from dry bean roots showing root rot lesions (Fig 1) were *Fusarium* species and only 10% were *Rhizoctonia solani*. Considering the fact that most commercial dry bean growers use treated seeds, this finding could be indicative of limited efficacy of seed treatments against *Fusarium* species. However, further evaluation of the isolates and confirmation of the frequency of various *Fusarium* species would be required to strengthen this hypothesis.

Screening for resistance to *Rhizoctonia solani* and *Fusarium graminearum* (the Fusarium head blight pathogen) were conducted in the greenhouse using the sand-cornmeal inoculum layer method previously found to give results similar to field evaluation. Two anastomosis groups of *R. solani* commonly found on dry beans and twelve commercial varieties representing different market classes were used for this study, namely, Red Hawk, Vax 3, Vista, Norstar, Eclipse, Othello, Maverick, Matterhorn, Rojo Chiquito, T-39 and Montcalm. Among all the genotypes, the small red bean genotype 'VAX 3' and the black bean genotypes 'T-39' and Eclipse had lower disease severity when inoculated with *F. graminearum*. In the case of *R. solani* also 'VAX 3' appeared to have lesser disease severity than the other varieties while using both AG 2-2 and AG-4 isolates (Fig 2). Thus results from these green-house screens suggest that common sources of resistance can potentially be effective in controlling root rots caused by more than one species of *Fusarium* and also other common root rot pathogens like those belonging to *Rhizoctonia* species.

Seed treatment trials were initiated at the NDSU Research Extension Center at Carrington using the most commonly used chemistries. However, herbicide damage in the early part of the season caused due to dry soil conditions led to the loss of the trial. Nonetheless, some information about the efficacy of various seed-treatments has been obtained from other trials conducted on station. This year's data suggests a general reduction in disease severity in treated plots but significant differences in yield between treatments were not observed, it needs to be mentioned that disease pressure was low in the trails. Apart from these, disease screening of F7 progeny from 60 lines generated from a cross between Red Hawk and Vax 3 targeted at increased root rot resistance is in progress. SCAR markers are currently being used for screening the parents and seed increase to obtain sufficient seeds from at least 100 F7 lines for further disease screenings are being done.

Overall the research conducted on this project resulted in the identification of *Fusarium* species as the most prevalent root rot pathogen affecting dry beans under the present cultural conditions, selection of varieties with potential for better resistance to *Fusarium solani*, *F. graminearum* and *Rhizoctonia solani*, initial evaluation of seed treatments for management of root diseases and progress towards identification of markers associated with root rot resistance in dry beans.

for Improved Management Decisions

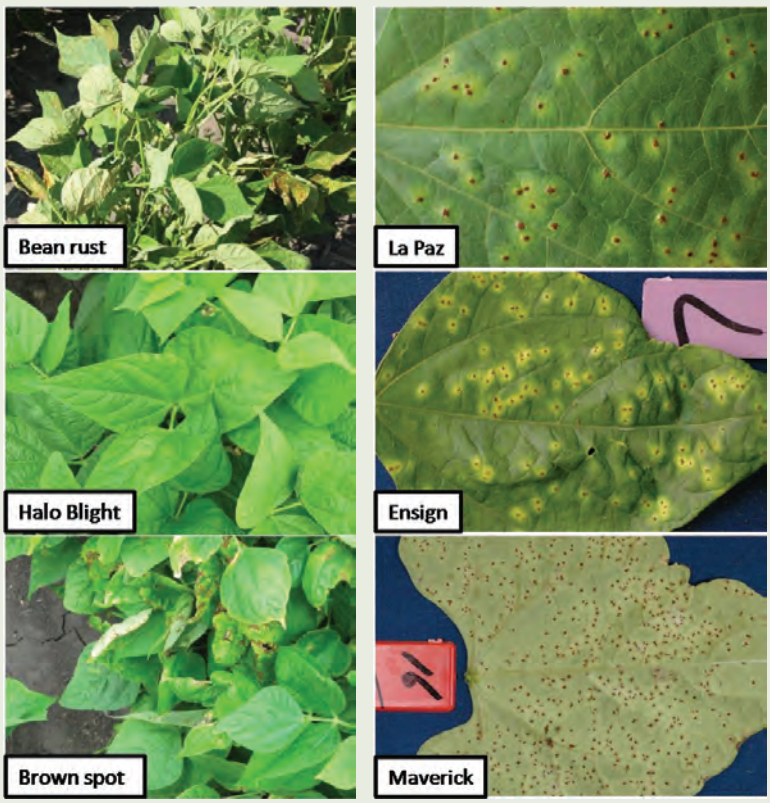

Fig 1 (left). Pictures from the field showing typical symptoms of bean rust and initial symptoms of the bacterial diseases halo blight and brown spot.

Fig 2 (right). The new race of rust infecting the varieties LaPaz, Ensign and Maverick.

Effect of Soybean Cyst Nematode on Growth of Dry Beans

Investigators: Berlin D. Nelson, Susilo Poromarto, and Rubella Goswami, Dept. Plant Pathology, NDSU

Objective: Determine the effect of soybean cyst nematode on growth of four classes of dry bean

Introduction: In 2008 we established two research sites, Ward in Richland Co., and Fargo, in Cass Co., North Dakota, to test the effect of soybean cyst nematode (SCN) on growth of dry bean. Pinto bean GTS900 and kidney bean Montcalm were grown at the Ward site while GTS900, Montcalm, Vista (navy bean) and T39 (black bean) were grown at the Fargo site. These experiments were established by growing dry beans in SCN infested soil in five gallon plastic pots that were placed in the field so plants could grow under natural conditions.

Soil (Wyndmere loam) was collected from an infested site, pasteurized to kill the SCN eggs and then placed in the plastic pots. Eggs were obtained from infected plants produced in the greenhouse and were added to the soil in pots at various rates. GTS900, Vista and T39 were tested at the following egg densities: 2,500, 5,000, and 10,000 eggs/100 cc soil, while Montcalm was tested at 1,000, 2,500, and 5,000 eggs/100 cc soil. Seed was then planted to establish one plant/pot and pots were buried in the soil (with the pot bottoms removed) at the two sites. There were four replications of each treatment. Plants were grown to maturity and plant height, pod number and weight, total number of seeds, weight of seeds, and total dry weight of plant were recorded for each infected plant. In addition, the total number of cysts and eggs produced in the soil of each pot was determined.

We also attempted to established greenhouse experiments to determine the effect of SCN on dry bean growth using the same bean varieties as in the field experiments. Plants were grown in a sandy soil in pots at various levels of SCN infestation: 0, 1,000, 5,000, 10,000 eggs/100 cc of soil. The eggs were collected from plants inoculated in the greenhouse. There were six replications.

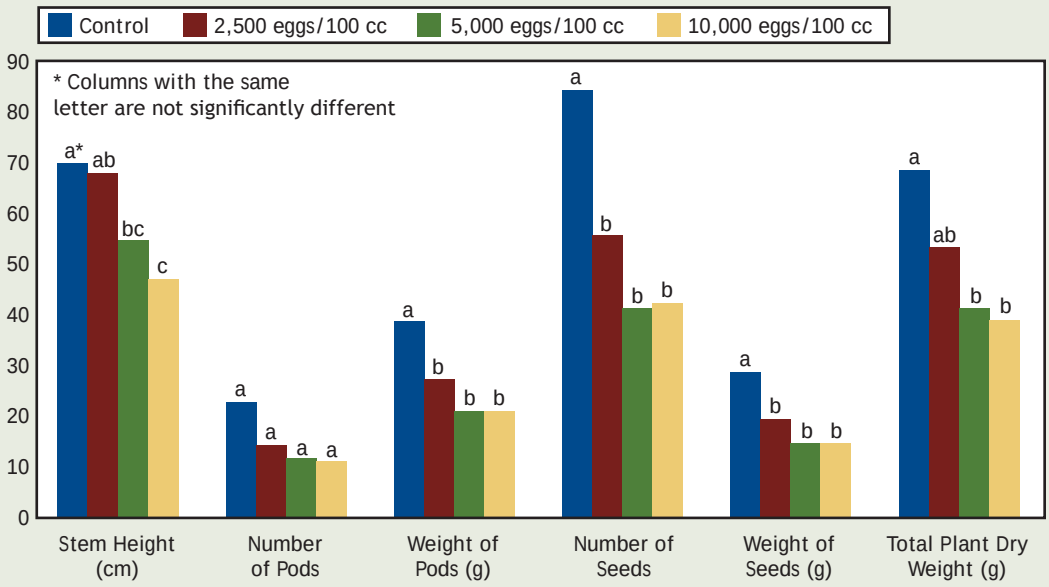

Figure 1. Effect of SCN on growth of pinto bean GTS900 at various egg densities at planting at the Ward site in 2008.

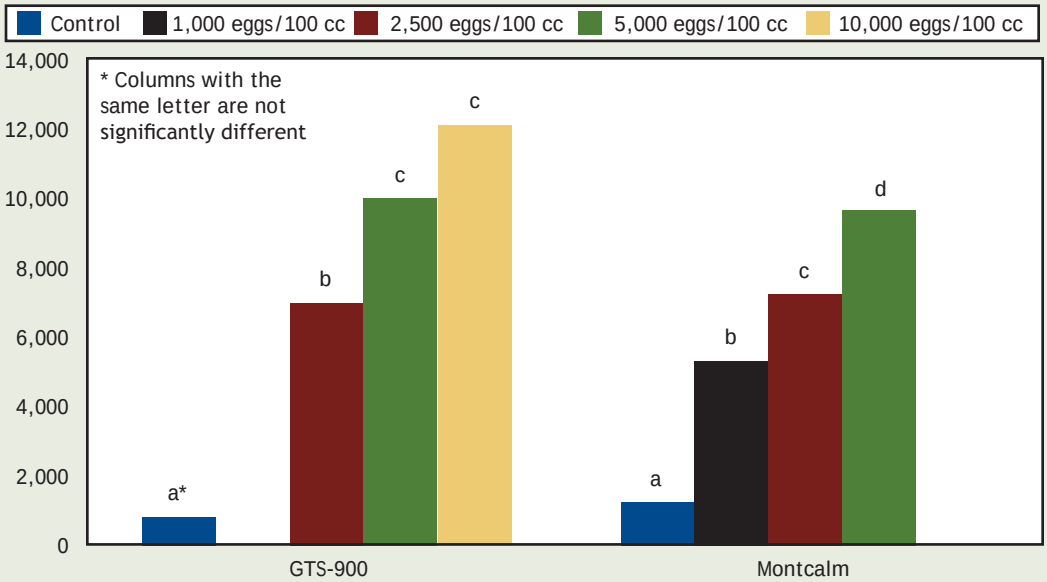

Figure 2. Number of SCN eggs/100 cc soil produced on the roots of GTS900 and Montcalm at various egg densities at planting at the Ward site in 2008

Results: At the Ward site SCN had a significant effect on growth of GTS900. All measurements of plant growth, except number of pods, were reduced by SCN (Figure 1). At 2,500 eggs/100 cc soil there was a reduction in number and weight of seeds similar to the high egg densities. Cysts developed on the roots of GTS900 and greater numbers formed at the 5,000 and 10,000 eggs/100 cc soil than

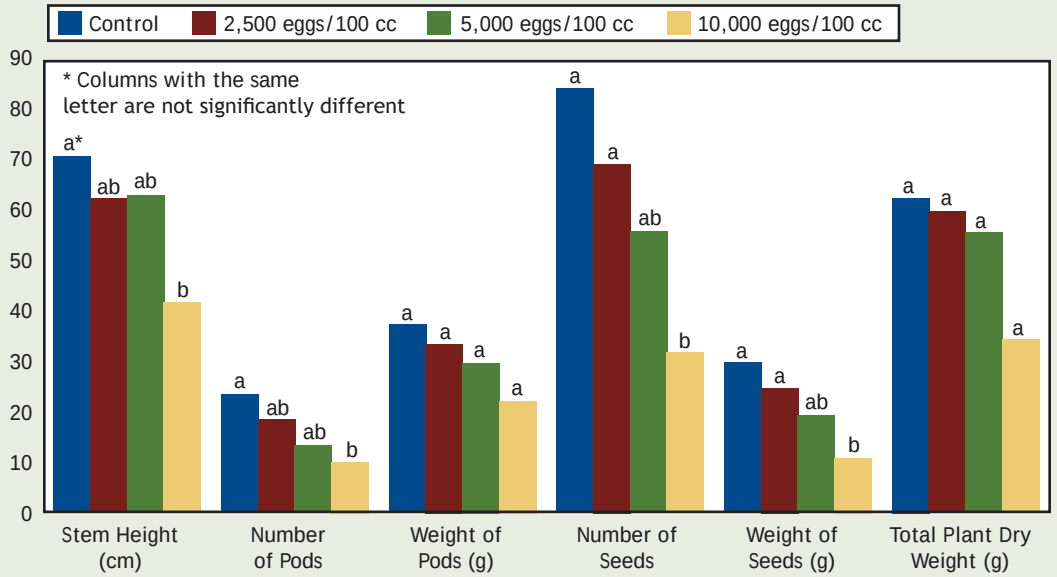

Figure 3. Effect of SCN on growth of GTS900 at various egg densities at planting at the Fargo site in 2008.

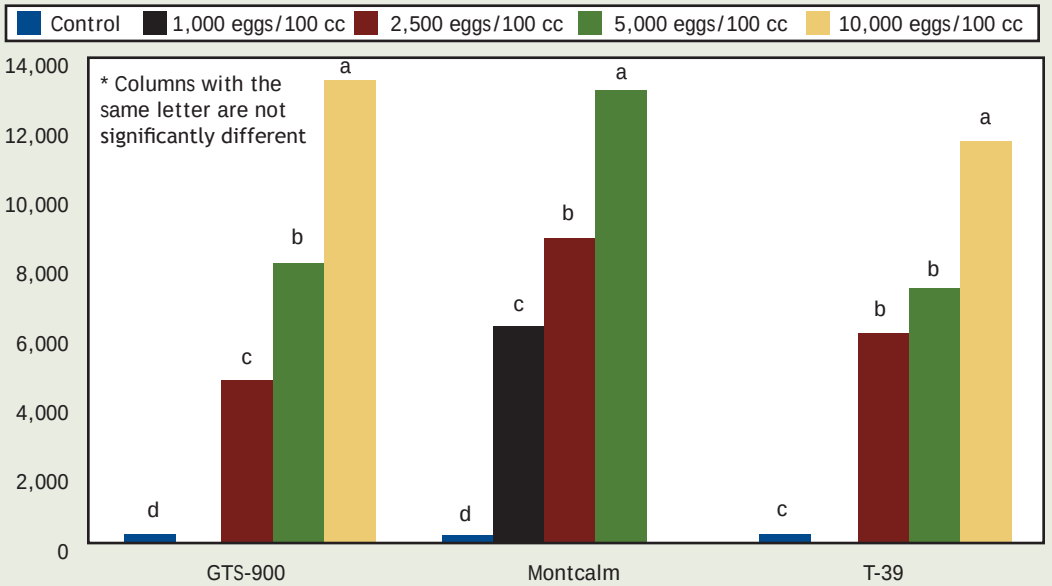

Figure 4. Number of SCN eggs/100 cc soil produced on the roots of GTS900, Montcalm, and T39 at various egg densities at planting at the Fargo site in 2008

at the 2,500 eggs/100 cc soil. At harvest, the egg levels produced by cysts formed on the roots of GTS900 in the two high egg density treatments were between 10,000 to 12,000 eggs/100 cc soil (Figure 2). In contrast, SCN did not significantly reduce the growth of Montcalm even though SCN reproduced on the roots at all three egg densities and the cysts produced eggs. At the 5,000 eggs/100 cc soil treatment, the egg count from cysts formed on the roots of Montcalm was over 9,000 egg/100 cc soil (Figure 2).

At the Fargo site, SCN significantly reduced stem height and the number and weight of pods and seeds of GTS900, but only at the highest egg density (Figure 3). There was no significant effect of SCN on growth of Montcalm or T39 at the Fargo site. All the Vista plants died early (mid- summer) from unknown causes, thus no data was obtained from Vista. SCN reproduced to high levels on all three cultivars at the Fargo site (Figure 4). Egg numbers/100 cc soil (i.e., eggs produced by cysts formed on the plant) at harvest ranged from 11,550 to 13,322 for the three cultivars at the highest egg density treatment.

There was no stress from lack of water at the Fargo site. The site was flooded in the spring and remained wet throughout the growing season. From May until harvest there was 19 inches of rain at this site. The fact that it was a very wet year might have been a factor in these results. Stress from lack of water generally favors disease development by SCN.

Results with Montcalm at the two sites were unexpected since under controlled conditions this cultivar supports high reproduction of SCN on the roots. We expected SCN to reduce the yield of this cultivar. Montcalm may have the ability to tolerate SCN and still yield well, but additional studies will be needed to determine that. The results with yield of T39 were expected since this cultivar shows some resistance to SCN in greenhouse tests. However, the high production of SCN eggs on this cultivar (Figure 4) in all treatments was unexpected.

Greenhouse experiments to find the threshold egg levels for the four types of bean were unsuccessful. We attempted numerous long term experiments in the greenhouse and all experiments either had limited disease development or were damaged by other diseases. We believe these experiments must be conducted in the field under normal field growing conditions.

Dry Edible Bean Desiccation

Investigators: Richard K. Zollinger and Jerry L. Ries, Department of Plant Sciences, North Dakota State University.

Research: An experiment was conducted near Hatton, ND to evaluate dry edible bean desiccation treatments. 'Norstar' navy bean was planted on June 2, 2008. The study was maintained weed free throughout the growing season from two applications of Rezult Copack at 1.6pt/A and hand weeding. Desiccation treatments were applied on September 5 at 9:55 am, with 57 F air, 56 F soil surface, 100% relative humidity, 100% clouds, 1 to 3 mph N wind, wet soil surface, wet subsoil,

Dry edible bean desiccation, 2008 (Zollinger and Ries).

Treatment[1]	Rate	leaf[2]	vine[3]	green[4]	yellow[5]	leather[6]	leaf	vine	green	yellow	leather
	(product/A)	% Control					% Control				
		3 DAT					7 DAT				
Valor+Scoil	1.5 oz+1qt	67	17	13	53	33	89	53	7	20	73
Valor+Scoil	2oz+1qt	80	17	12	47	42	92	73	4	7	89
Gramoxone Inteon+R-11	1.5pt+0.5% v/v	82	20	20	42	38	91	68	8	17	75
Gramoxone Inteon+R-11	2pt+0.5% v/v	87	27	15	42	43	93	78	3	8	90
Aim+Herbimax	2oz+1qt	75	15	18	50	32	87	61	12	25	63
Valor+N-Tense	1.5oz+0.5% v/v	79	17	17	47	37	83	60	10	23	67
Valor+Linkage	1.5oz+1% v/v	78	15	20	35	45	82	55	12	20	68
BAS 800 04 H+Scoil+AMS	0.75fl oz+1% v/v +17lb/100gal	81	27	12	43	45	89	67	4	13	83
BAS 800 04 H+Scoil+AMS	1fl oz+1% v/v +17lb/100gal	89	30	6	31	63	96	83	2	5	93
BAS 800 04 H+Scoil+AMS	2fl oz+1% v/v +17lb/100gal	85	20	12	37	52	94	78	4	4	92
BAS 800 01 H+Scoil+AMS	1oz+1% v/v +17lb/100gal	83	18	12	43	45	93	86	0	5	95
BAS 800 04 H+Roundup PowerMax+Scoil+AMS	1fl oz+22fl oz +1% v/v+17lb/100gal	83	18	12	38	50	93	68	5	8	87
Cadet+Scoil	2fl oz+1qt	70	13	18	45	37	78	40	10	25	65
Roundup PowerMax+Valor+R-11	22fl oz+1.5oz +0.5% v/v	81	15	10	39	51	91	69	6	13	81
Roundup PowerMax+Valor+Scoil	22fl oz +1.5oz+1qt	80	18	13	40	47	89	73	5	5	90
Roundup PowerMax+Valor+Destiny HC	22fl oz +1.5oz+1pt	78	18	13	43	43	90	63	7	7	87
Roundup PowerMax+Aim+Destiny HC	22fl oz +2oz+1pt	77	12	15	48	37	82	48	12	22	67
Roundup PowerMax+Gramoxone Inteon+Destiny HC	22fl oz +1.5pt+1pt	83	12	27	48	25	91	50	17	22	62
Valor+Aim+Destiny HC	1.5oz+2oz+1pt	77	15	18	46	36	85	46	13	25	62
Valor+Gramoxone Inteon+Scoil	1.5oz+1.5pt+1qt	89	20	14	44	42	93	75	2	9	88
LSD (0.05)		7	6	7	9	13	5	12	6	8	12
		10 DAT					14 DAT				
+Scoil	1.5 oz+1qt	97	80	3	8	88	99	98	0	2	98
Valor+Scoil	2oz+1qt	99	88	1	4	95	99	99	0	0	99
Gramoxone Inteon+R-11	1.5pt+0.5% v/v	98	85	4	8	88	99	98	0	0	99
Gramoxone Inteon+R-11	2pt+0.5% v/v	99	96	0	5	95	99	99	0	0	99
Aim+Herbimax	2oz+1qt	93	73	8	10	82	99	91	0	7	93
Valor+N-Tense	1.5oz+0.5% v/v	92	72	4	14	80	99	95	0	3	97
Valor+Linkage	1.5oz+1% v/v	92	67	4	9	88	98	90	0	3	97
BAS 800 04 H+Scoil+AMS	0.75fl oz+1% v/v+17lb/100gal	95	77	3	7	89	99	96	0	2	98
BAS 800 04 H+Scoil+AMS	1fl oz+1% v/v+17lb/100gal	99	92	0	4	96	99	98	0	0	99
BAS 800 04 H+Scoil+AMS	2fl oz+1% v/v+17lb/100gal	99	97	0	1	98	99	98	0	0	99
BAS 800 01 H+Scoil+AMS	1oz+1% v/v+17lb/100gal	99	96	0	2	98	99	98	0	0	99
BAS 800 04 H+Roundup PowerMax+Scoil+AMS	1fl oz+22fl oz+1% v/v+17lb/100gal	99	95	0	3	97	99	98	0	0	99
Cadet+Scoil	2fl oz+1qt	90	62	5	13	82	99	87	1	5	94
Roundup PowerMax+Valor+R-11	22fl oz+1.5oz+0.5% v/v	95	85	3	4	96	99	99	0	0	99
Roundup PowerMax+Valor+Scoil	22fl oz+1.5oz+1qt	98	95	1	2	97	99	99	0	0	99
Roundup PowerMax+Valor+Destiny HC	22fl oz+1.5oz+1pt	98	84	1	4	95	99	99	0	0	99
Roundup PowerMax+Aim+Destiny HC	22fl oz+2oz+1pt	90	65	7	12	82	99	92	0	3	97
Roundup PowerMax+Gramoxone Inteon+Destiny HC	22fl oz+1.5pt+1pt	95	75	3	8	88	99	90	0	4	96
Valor+Aim+Destiny HC	1.5oz+2oz+1pt	95	75	5	12	83	99	92	0	3	97
Valor+Gramoxone Inteon+Scoil	1.5oz+1.5pt+1qt	99	91	1	4	95	99	99	0	0	99
LSD (0.05)		3	7	3	4	5	1	6	1	3	3

[1]BAS = proprietary products from BASF. [2]Leaf = % dry leaf and leaf drop. [3]Vine = % vine desiccation.
[4]Green = % green pods. [5]Yellow = % yellow pods. [6]Leather = % brown/dry pods.

and no dew present to naturally senescent dry bean. Dry bean senescence at application was quantified in the following manner: 30 to 50% green pods, 40 to 70% yellow pods, 5 to 15% leather pods, 50 to 80% leaf drop, and 0 to 15% natural vine desiccation. Treatments were applied to the center 6.7 feet vo the 10 by 30 foot plots with a backpack-type plot sprayer delivering 17 gpa at 40 psi through 11002 Turbo nozzles. The experiment had a randomized complete block design with three replicates per treatment.

Before desiccation treatments were applied, the previous 10 to 12 days were in the upper 80's to lower 90's, very high humidity, very sunny, and 25 to 35 mph winds. These conditions took off a lot of the leaves and sped up the natural desiccation of the dry bean plants. The weather then turned very cool and cloudy, lows in the 40's and highs in the upper 50's, four to five days before applications. After applications weather was very variable. 3 DAT was very cool and cloudy. 6 DAT 0.35 inches of rain fell. On 7 DAT, more sunny weather and 48 low and 75 high. 8 DAT 0.30 inches of rain fell. 8 to 14 DAT lows were between 45 and 55 F and highs of 70 to 80 F, and no rain. Treatments were applied before dry bean senescence to create treatment separation. Valor and Gramoxone Inteon generally increased the rate of desiccation when compared to Aim treatments. Some Aim treatments were comparable to Valor and Gramoxone, but tended to take longer to reach similar activity. Previous research has shown that Valor plus a methylated seed oil increased desiccation when compared to other treatments. Gramoxone Inteon has also shown to be an effective dry bean desiccant the last several years, probably due to favorable conditions of sunlight and moderate temperatures after application. BAS, Valor, Gramoxone, and Aim were tank-mixed with glyohosate to see if there was any type of dry bean response. BAS treatments worked very well this year and show a new potential for dry bean desiccation. No untreated treatment was used due to adding treatments. Although, all treatments increased desiccation in the untreated portion of each plot compared to the treated portion. (Dept. of Plant Sciences, North Dakota State University, Fargo).

Row Spacing and Nitrogen Fertilization Effects on the New Pinto Varieties Lariat and Stampede

Investigators: H.J. Kandel, J.M. Osorno, B.L. Johnson, G.A. Rojas-Cifuentes, F.R. Eckert, J. VanderWal, and C. Deplazes,

Research: The NDSU dry bean breeding program released two new relatively upright pinto varieties 'Lariat' and 'Stampede' in 2007. Currently there is limited research out on the response of pinto beans to row spacing. One report from Canada indicated that the yield of CDC Camino increased as row spacing was reduced from 32 to 8 inches, and researchers concluded that the optimum seeding rate and row spacing will depend on variety and growing conditions. Previous research conducted by Dr. K.Grafton concluded that based on genotype and row spacing interactions, new genotypes (like Lariat and Stampede) need to be tested for their potential production at specific row spacings. With the increased interest in opportunities for direct combining pinto beans, it is important to know how the new released pinto varieties respond to row spacing as well as nitrogen application. Nitrogen promotes plant growth, which in turn may stimulate biomass production, disrupting the upright growth characteristics, and in more severe cases, causing stem breakage and lodging. Producers need to know what plant response to expect with row spacings and nitrogen availability with more upright pinto bean varieties such as Lariat and Stampede.

The objective of this pinto bean study was to evaluate yield performance and yield loss due to direct harvesting, of Lariat and Stampede, compared with the well known viney pinto bean variety Maverick. This study was conducted at two locations, Carrington and Prosper both in North Dakota, during the 2008 growing season. The research had three row spacing; narrow, medium and wide rows (12, 18, and 30 inch row spacing, respectively), three Pinto varieties (Lariat, Stampede, and Maverick as a control), and two nitrogen availability levels, 50 lb N / acre (based on soil test) and 100 lb N/ acre (based on soil test + fertilizer = 100 lb N). Characteristics evaluated included plant stand, flowering date, plant height, lodging, lowest pod height, pod distribution, seed yield, harvest loss, and seed weight. This article will only address the yield, yield loss, and adjusted yield results of this research. The varieties were planted in research plots, 25 feet long at recommended seeding rates. Due to poorer than expected germination of Maverick the stands were thinned so all plots in each location had similar plant populations (45,500 plants/acre in Carrington and 78,750 plants/acre in Prosper). Fertilizer was hand applied to plots based on the soil tests. Management practices were applied to achieve optimum yield under the 2008 environmental conditions. A small plot combine was used to direct harvest the pinto beans. Harvest losses were estimated with a metal hoop tossed behind the combine several times and counting the number of seeds and pods with seeds on the ground. Based on the seed weight, the yield loss was calculated and expressed as lb per acre seed loss. The yield column in the tables is the actual har-

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Lariat seeded in 18 inch rows with 50 lb total N available, Carrington, ND.

Lariat seeded in 18 inch rows with 100 lb total N available, Carrington, ND.

Stampede seeded in 12 inch rows with 50 lb total N available, Carrington, ND.

Stampede seeded in 30 inch rows with 100 lb total N available, Carrington, ND.

vested amount. The adjusted yield is the combination of the harvested yield plus the measured bean loss per acre and represents the yield potential without loss.

Yield of each of the three pinto varieties appears in Table 1. Lariat had the highest yield in both Carrington and Prosper. The bean loss of Lariat was the lowest in both locations. Lariat is the most upright pinto variety in this trial and the pods were slightly higher on the plant which resulted in less yield loss. The genetic potential of Lariat and Stampede (the adjusted yield column) was similar and significantly higher than Maverick.

At Carrington plants at the 12 inch row spacing were significantly lower yielding than plants at the 18 inch row spacing. Similar yield was produced from the pinto beans at 12 and 30 inch row spacing. Yields between the 18 inch and 30 inch were not significantly different. However at Prosper the yields significantly increased going from 30 inch to 18 inch and from 18 inch to 12 inch row spacing.

Averaged over all pinto varieties and row spacings, the addition of 50 extra pounds of N did not increase yield, change the bean loss, or affected the adjusted yield.

In Table 2 the interaction of the three pinto varieties with the addition of N fertilizer is provided. In Carrington yield of Lariat was significantly higher than Maverick or Stampede with or without the additional 50 lb of N applied (100 lb/N total). The bean yield loss of Lariat was the least at 100 lb total N. At Prosper the addition of N did not significantly increase the yield of any of the three pinto varieties.

Table 1. 2008 Pinto bean yield, loss after direct combining, and yield + loss (as adjusted yield), Carrington and Prosper, ND.

Variety	Carrington			Prosper		
	Yield (lb/a)	Bean loss (lb/a)	Adjusted yield (lb/a)	Yield (lb/a)	Bean loss (lb/a)	Adjusted yield (lb/a)
Lariat	1560a[1]	396b	1956a	2740a	307b	3047a
Maverick	1013c	512a	1525b	1583c	440a	2023b
Stampede	1289b	528a	1817a	2489b	434a	2923a
Row Spacing						
12 inch	1226b	553a	1779a	2665a	381a	3046a
18 inch	1367a	464b	1831a	2326b	371a	2697b
30 inch	1270ab	418b	1688a	1822c	430a	2252c
Fertilizer soil and applied N						
50 lb/a	1253a	468a	1721a	2251a	403a	2654a
100 lb/a	1321a	489a	1810a	2291a	385a	2676a

[1]Yields should be compared within the column and within variety, row spacing and fertilizer sub grouping only.
Numbers with similar letter are not significantly different.

Table 2. 2008 Lariat, Stampede and Maverick pinto bean yield, loss after direct combining, and yield + loss (as adjusted yield), Carrington and Prosper, ND.

Variety + Fertilizer soil and applied N	Carrington			Prosper		
	Yield (lb/a)	Bean loss (lb/a)	Adjusted yield (lb/a)	Yield (lb/a)	Bean loss (lb/a)	Adjusted yield (lb/a)
Lariat 50 lb N	1507a[1]	476ab	1983a	2816a	362bc	3176a
Lariat 100 lb N	1613a	316c	1929a	2665ab	252c	2917ab
Maverick 50 lb N	948d	438b	1386c	1513c	376abc	1985c
Maverick 100 lb N	1078cd	586a	1664b	1653c	493a	2062c
Stampede 50 lb N	1305b	491ab	1796ab	2424b	376abc	2799b
Stampede 100 lb N	1273bc	564ab	1837ab	2554ab	493a	3048ab

[1]Yields should be compared within the column.
Numbers with similar letter are not significantly different.

Preliminary Conclusions

- Lariat resulted in the highest yield and lowest seed loss when direct combined compared with Stampede and Maverick.
- Yield potential (adjusted yield) for Lariat and Stampede was similar.
- No significant differences overall between 50 and 100 lb N.
- Yield increased with narrower rows in Prosper.

These results reflect one year of data only and the authors would like to continue this research in 2009 to obtain information under different growing conditions. The authors acknowledge the generous support from the Northarvest Bean Growers Association to conduct this research.

The research projects reviewed in this report were funded by the Northarvest Bean Growers Association.

Northarvest Bean Growers
50072 E. Lake Seven Road, Frazee, MN 56544

Dry Bean Grower Survey of Pest Problems and Pesticide Use

Investigators: J.J. Knodel, J.L. Luecke, P.B. Beauzay, D.W. Franzen, H.J. Kandel, S.G. Markell, J. M. Osorno and R. K. Zollinger, North Dakota State University, 2001 and 2003

Introduction: The 2007 dry bean grower survey is the 18th annual survey of varieties grown, pest problems, pesticide use and grower practices of the Northarvest Bean Growers Association, an association of dry edible bean growers in Minnesota and North Dakota. Research and Extension faculty at North Dakota State University and the directors of the Northarvest Bean Growers Association developed the survey. The survey was mailed to all Northarvest bean growers. All participants in the survey were anonymous.

Results of previous surveys dated 1987-2000, 2002, 2004-2005 and 2006 have been

Continued on Next Page

Dry bean varieties grown in 2007 by respondents

		Acres Planted[a]					
Variety	**Class[b]**	**MN**	**%**	**ND**	**%**	**Northarvest**	**%**
Maverick	P	1,192	4.6	31,023	45.6	32,215	34.2
Buster	P	990	3.8	3,503	5.1	4,493	4.8
La Paz	P	300	1.1	8,319	12.2	8,619	9.1
Other Pinto	P	145	0.6	3,153	4.6	3,298	3.5
Topaz	P	0	0	700	1.0	700	0.7
GTS 900	P	0	0	1,486	2.2	1,486	1.6
Winchester	P	0	0	375	0.6	375	0.4
Pintoba	P	186	0.7	300	0.5	486	0.5
Remington	P	0	0	60	0.1	60	.01
Total Pinto	**P**	**2,813**	**10.8**	**48,919**	**71.9**	**51,732**	**54.9**
Norstar	N	355	1.3	2,372	3.5	2,727	2.9
Navigator	N	753	2.9	1,878	2.8	2,631	2.8
Other Navy	N	506	1.9	2,544	3.7	3,050	3.2
Ensign	N	905	3.5	2,470	3.6	3,375	3.6
Vista	N	3,142	12.0	811	1.2	3,953	4.2
Voyager	N	280	1.1	0	0	280	0.3
Mayflower	N	0	0	330	0.5	330	0.4
T9903	N	2,395	9.1	0	0	2,395	2.5
Total Navy	**N**	**8,336**	**31.8**	**10,405**	**15.3**	**18,741**	**19.9**
Montcalm	K	4,670	17.8	0	0	4,670	5.0
Red Hawk	K	1,666	6.4	0	0	1,666	1.8
Other Kidney	K	3,643	13.9	200	0.3	3,843	4.1
Total Kidney	**K**	**9,979**	**38.1**	**200**	**0.3**	**10,179**	**10.8**
Eclipse	B	1,257	4.8	4,119	6.1	5,376	5.7
T-39	B	76	0.3	100	0.1	176	0.2
Other Black	B	359	1.4	325	0.5	684	0.7
Jaguar	B	330	1.2	100	0.1	430	0.5
Total Black	**B**	**2,022**	**7.7**	**4,644**	**6.8**	**6,666**	**7.1**
Any Pink	PK	2,819	10.8	650	1.0	3,469	3.7
Total Pink	**PK**	**2,819**	**10.8**	**650**	**1.0**	**3,469**	**3.7**
Other Variety		212	0.8	3,213	4.7	3,155	3.3
No Variety Listed		0	0	270	0.4	270	0.3
Total		**26,181**	**100**	**68,031**	**100**	**94,212**	**100**

[a]Respondents' acres only
[b]P = pinto; N = navy; K = kidney; B = black; PK = pink

published. No surveys were conducted in 1993, 2001 and 2003. In the tables, the total percentages do not always add up to 100 percent because not all of the respondents answered every question.

Some examples of the type of information compiled by the dry bean grower survey are shown in the tables on pages 23-24. Additional information on fertility, pest problems (weeds, insects, diseases), pesticides usage, and other agronomic issues is also collected. The complete survey is available on the NDSU Extension website: www.ag.ndsu.edu/pubs/plantsci/rowcrops/pp1392.pdf.

Number of Northarvest dry bean growers responding, total acres and acres planted by respondents in 2007.

Growers	# of respondents	Respondents' Acres	Total Acres *	Acres Surveyed (% of total)
MN	77	26,181	145,000	18.1
ND	138	68,031	670,000	10.2
Northarvest	215	94,212	815,000	11.6

* Total of dry bean acres planted for area.
Source: USDA National Agricultural Statistics Service

Dry bean acres irrigated, harvested and damaged by hail, frost and water in 2007.

	% of respondents' acres		
	Minnesota	North Dakota	Northarvest
Irrigated	30.5	1.5	9.8
Harvested	96.3	94.3	94.8
Hail damaged	14.8	10.8	11.9
Frost damaged	5.6	3.8	4.3
Water damaged	13.4	9.6	10.7

Sources of dry edible bean seed used for planting by respondents in 2007.

	% of respondents' acres		
Seed Source	Minnesota	North Dakota	Northarvest
Bin run	0	9.7	7.0
Canada	1.8	0	0.5
Northarvest	16.0	30.0	26.1
Western	80.8	58.0	64.4

Market classes of dry bean grown by respondents in 2007.

	% of respondents' acres		
Market class	Minnesota	North Dakota	Northarvest
Black	7.7	6.8	7.1
Kidney	38.1	0.3	10.8
Navy	31.8	15.3	19.9
Pink	10.8	1.0	3.7
Pinto	10.7	71.9	54.9
Other	0.8	4.7	3.6

2008 Dry Bean Performance Testing Results

Compiled by Hans Kandel, Extension Agronomist NDSU Department of Plant Sciences

Dry edible beans have become a significant crop in eastern and east-central North Dakota during the past decade. Acreage for the past 14 years is shown in Table 1, with production by classes in Table 2. Data were obtained from the North Dakota Agricultural Statistics Service. The 660,000 dry bean acres planted in 2008 reflect a slight decrease from 2007.

North Dakota Dry Edible Bean Production

North Dakota -- Dry edible bean production in North Dakota is forecast at 10.05 million hundredweight (cwt) for 2008, down 5 percent from 2007, according to the USDA, National Agricultural Statistics Service, North Dakota Field Office.

The projected statewide average yield for 2008 is 1,570 pounds per harvested acre, slightly lower than the 2007 yield of 1,590 pounds per acre. In 2008, pintos account for about 66 percent of the total dry bean production, and navy beans account for 21 percent of total production in ND.

United States -- Dry edible bean production in the U.S. is forecast at 25.7 million cwt for 2008, about 1.3 percent above the 2007 production. Harvested acreage is forecast at 1.45 million acres. The average U.S. yield is forecast at 1,775 pounds per acre. If realized, this will be the highest yield on record for the U.S. Production increased from a year ago for all classes except pinto, large chickpeas, blackeye peas, and small limas. Production remained unchanged for small white.

TABLE 1. North Dakota Dry Edible Bean Planted Acreage, 1995-2008

Year	Acreage
1995	600,000
1996	580,000
1997	600,000
1998	750,000
1999	630,000
2000	610,000
2001	440,000
2002	790,000
2003	540,000
2004	560,000
2005	620,000
2006	670,000
2007	690,000
2008	660,000

Source: ND Agricultural Statistics Service -- USDA.

TABLE 2. North Dakota Dry Edible Bean Production by Commercial Class, 1995 to 2008

Year	Pinto (cwt)	Navy (cwt)
1995	4,704,000	2,086,000
1996	5,138,000	1,929,000
1997	4,480,000	1,878,000
1998	6,800,000	1,770,000
1999	4,860,000	2,555,000
2000	5,294,000	1,620,000
2001	4,050,000	1,327,000
2002	7,184,000	2,340,000
2003	5,864,000	1,164,000
2004	3,573,000	650,000
2005	6,584,000	1,343,000
2006	4,988,000	1,585,000
2007	7,606,000	1,611,000
2008	6,660,000	2,087,000

Source: ND Agricultural Statistics Service -- USDA.

2008 Dry Bean Performance Trials

Information about dry bean variety performance can be accessed on the Web from the site with all variety trial data from all NDSU Research Extension Centers for all crops, which can be found at www.ag.ndsu.edu/variety/index.htm. The agronomic data presented in this booklet are from replicated research plots using experimental designs that enable the use of statistical analysis. The LSD (Least Significant Difference) numbers beneath the columns in tables are derived from the statistical analyses and only apply to the numbers in the column in which they appear. If the difference between two varieties exceeds the LSD value, it means that with 95% probability the higher-yielding variety has a significant yield advantage. If the difference between two varieties is less than the LSD value, then the variety yields are considered similar. The abbreviation 'NS' is used to indicate that there is no significant difference for that trait between any of the varieties. The CV is a measure of variability in the trial. The CV stands for coefficient of variation and is expressed as a percentage. Large CVs mean that there was a large amount of variation that could not be attributed to differences in the varieties. In the tables the "mean" indicates the average of the observations in the column. Only compare values within the table and look for trends for the desired trait between different experimental sites and years. In the tables the dry bean varieties are arranged in alphabetical order. Most of the tables have footnotes explaining in more detail information in the table under which they appear. Characteristics to evaluate for selecting a dry bean variety include marketing class, yield potential in your area, test weight, reaction to important diseases and maturity date.

When selecting a high-yielding and good quality variety, use data that summarizes several years and locations. Choose the variety that, on average, performs the best at multiple locations near you during several years. Presentation of data for the entries tested does not imply approval or endorsement by the authors or agencies conducting the test.

Acknowledgements

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Authors

Juan Osorno -- Dry bean breeder, Plant Sciences Department, North Dakota State University, Fargo N.D.

Gonzalo Rojas-Cifuentes -- Research associate, Plant Sciences Department, North Dakota State University, Fargo N.D.

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Dry Bean Variety Selection Spreadsheet Online

Access a full copy of all the data from the tables included in this issue of Northarvest Bean Growers, along with data that is not included, by visiting www.northarvestbean.org/2008DryBeanTables.xls. This file is a Microsoft Excel spreadsheet.

2008 Dry Bean Variety Trials

Jody VanderWal -- Research specialist, Plant Sciences Department, North Dakota State University, Fargo, N.D.

Eric Eriksmoen -- Agronomist, Hettinger Research Extension Center.

Bryan Hanson -- Agronomist, Langdon Research Extension Center.

Blaine Schatz -- Director and agronomist, Carrington Research Extension Center.

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Jim Karley -- Johnstown, N.D.

Paul Johannig -- Park Rapids, Minn.

Mark Dombeck -- Perham, Minn.

Presentation of data for the entries tested does not imply approval or endorsement by the authors or agencies conducting the test. North Dakota State University approves the reproduction of any table in this publication only if no portion is deleted, appropriate footnotes are given, the order of the data is not rearranged and NDSU is given credit for conducting these trials.

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TABLE 3. Dry Edible Beans Acreage and Production

	Acres Planted		Acres Harvested		Yield Per Acre		Production	
	2007	2008	2007	2008	2007	2008	2007	2008
Market Class	1,000s		1,000s		Pounds		1,000 Cwt.	
North Dakota								
Navy	96.0	123.0	89.0	118.0	1,810	1,770	1,611	2,087
Great Northern	8.0	6.7	7.7	6.5	1,470	1,690	113	110
Pinto	502.0	446.0	487.0	433.0	1,560	1,540	7,606	6,660
Dark Red Kidney	1.5	1.4	1.4	1.3	1,790	1,540	25	20
Pink	13.0	12.5	12.5	12.4	1,870	1,700	234	211
Small Red	5.5	6.0	5.3	5.9	1,400	1,440	74	85
Black	45.0	53.5	43.5	53.0	1,460	1,380	635	731
Chickpeas, All (Garbanzo)	17.0	9.3	16.8	8.4	1,470	1,420	247	119
- Small	4.5	4.0	4.4	3.3	1,390	1,330	61	44
- Large	12.5	5.3	12.4	5.1	1,500	1,470	186	75
Other	2.0	1.6	1.8	1.5	1,610	1,670	29	25
Total	**690.0**	**660.0**	**665.0**	**640.0**	**1,590**	**1,570**	**10,574**	**10,048**
United States								
Navy	221.9	255.1	211.2	246.4	1,806	1,867	3,815	4,601
Great Northern	59.5	76.2	57.0	71.2	2,081	2,287	1,186	1,628
Pinto	694.1	629.2	674.6	605.3	1,724	1,711	11,631	10,354
Dark Red Kidney	40.2	46.6	39.1	45.2	1,691	1,892	661	855
Pink	30.8	30.8	29.9	30.3	1,933	2,003	578	607
Small Red	30.6	41.8	29.7	40.9	1,801	1,951	535	798
Black	175.7	171.8	171.6	168.7	1,616	1,740	2,773	2,935
Chickpeas, All (Garbanzo)	125.5	86.9	121.6	85.5	1,243	1,248	1,511	1,067
- Small	11.1	12.8	10.8	12.0	1,185	1,125	128	135
- Large	114.4	74.1	110.8	73.5	1,248	1,268	1,383	932
Other	148.6	161.4	144.0	154.5	1,862	1,849	2,681	2,856
Total	**1,526.9**	**1,499.8**	**1,478.7**	**1,448.0**	**1,716**	**1,775**	**25,371**	**25,701**

Source: North Dakota Agricultural Statistics Service -- USDA.

2008 Growing Season Weather Summary for North Dakota

By Adnan Akyüz and Barbara A. Mullins
Department of Soil Science

The 2008 growing season (the period from April through September) for North Dakota can simply be characterized as "cooler" and "wetter" than normal compared to the 30-year average from 1971 to 2000. The state average temperature during the growing season was 57.6 °F which was the 46th coolest growing season among the past 114 years. Likewise, the state average precipitation during the 2008 growing season was 14.29" which was the 46th wettest growing season among the past 114 years. Precipitation-wise, there was an apparent gradient from east to west with the eastern part of the state being wetter than normal and western third of the state being drier than normal. Table 4 shows the ranking of temperature and precipitation for six select cities in North Dakota. Table 5 shows the length and ranking of the growing season based on the number of consecutive days between the last and first day of frost.

TABLE 4. April-September 2008 Average Temperature and Precipitation Rankings for Selected North Dakota Locations

City	Temperature Ranking	Precipitation Ranking
Bowman	39nd Coolest (Since 1915)	43rd Driest (Since 1915)
Bismarck	67th Warmest (Since 1874)	67th Wettest (Since 1874)
Fargo	62nd Coolest (Since 1881)	9th Wettest (Since 1881)
Minot Research/ Extension Center	31st Coolest (Since 1905)	6th Driest (Since 1905)
Cavalier	11nd Coolest (Since 1934)	41st Wettest (Since 1927)
Williston Research/ Extension Center	15th Warmest (Since 1953)	12th Driest (Since 1956)
North Dakota Average	**46th Coolest (Since 1895)**	**46st Wettest (Since 1895)**

TABLE 5. Length and the Ranking of the 2008 Growing Season Based on Number of Consecutive Days Between the Last and First Day of Frost.

City	Length of the 2008 Growing Season	Ranking of the 2008 Growing Season
Bowman	148 Days (May 11- Oct 7)	18th Longest (Since 1914)
Bismarck	153 Days (May 14-Oct 14)	6th Longest (Since 1875)
Fargo	140 Days (May 27-Oct 14)	43rd Longest (Since 1881)
Minot Research/ Extension Center	135 Days (May27-Oct 10)	31st Longest (Since 1905)
Cavalier	145 Days (May 11-Oct 4)	13th Longest (Since 1934)
Williston Research/ Extension Center	109 Days (May 27- Sep 14)	14th Shortest (Since 1894)

2008 Dry Bean Variety Trials

2008 Pinto Variety Trial, NDSU					
Variety	Days to Flowering	Plant Height	Days to Maturity	Yield	100 Seed Weight
	(days)	(inch)	(days)	(lb/a)	(gram)
FOREST RIVER (Walsh County)					
Baja	59	18.9	95	2,560	35.9
Buster	61	18.9	96	2,620	36.2
Durango	60	19.7	98	2,850	39.5
Floyd (Pink)	59	18.1	98	2,170	31.5
GTS-900	61	17.7	101	2,300	34.2
GTS-903	62	20.1	107	2,580	31.6
GTS-904	62	20.1	106	2,620	35.7
Lariat	61	22	103	2,750	37.7
Mariah	61	19.3	96	2,830	34
Maverick[1]	61	17.7	102	2,060	34.3
Medicine Hat	60	18.5	95	2,380	37.1
ND-307	61	21.3	103	2,690	39
Othello	59	16.9	95	2,570	40.8
Sonora	60	22.4	97	2,920	31.9
Stampede	61	22.8	102	3,090	36.9
Topaz R	59	16.5	92	2,050	37.5
Windbreaker	61	20.5	100	3,060	40.1
Mean	**60**	**19.7**	**99**	**2,594**	**36**
CV %	**2**	**11**	**3**	**10**	**5.2**
LSD 0.05	**1**	**3.1**	**4**	**390**	**2.6**
HATTON (Traill County)					
Baja	55	19.7	98	2,520	38.1
Buster	56	19.3	102	2,760	36.7
Croissant	59	20.5	109	1,840	32.8
Durango	56	17.3	103	2,430	35.4
GTS-900	58	20.1	110	2,330	34.9
GTS-903	58	22.4	112	2,350	29.5
GTS-904	58	24.4	112	2,200	32.6
Kimberly	58	17.3	107	2,350	32.1
Lariat	59	21.3	106	2,540	34.6
Mariah	56	19.7	95	2,410	31.9
Maverick[1]	56	18.1	115	1,980	32.6
Medicine Hat	56	20.1	97	2,470	35
ND-307	57	20.1	106	2,160	35.2
Othello	55	15.7	98	2,040	37.2
Quincy	55	16.9	103	2,190	41.7
Santa Fe	56	20.9	102	2,510	38.1
Shoshone	54	18.9	108	2,580	35.6
Sonora	57	22	103	2,380	29
Stampede	57	23.2	102	2,530	32.1
Topaz R	54	15	95	2,230	37.9
Windbreaker	57	21.3	105	3,020	38.8
Mean	**57**	**20.5**	**104**	**2,372**	**35**
CV %	**2**	**11**	**2**	**9**	**6.7**
LSD 0.05	**1**	**3.1**	**3**	**290**	**3.2**

2008 Pinto Variety Trial, NDSU					
Variety	Days to Flowering	Plant Height	Days to Maturity	Yield	100 Seed Weight
	(days)	(inch)	(days)	(lb/a)	(gram)
PROSPER (Cass County)					
Baja	61	17.7	110	2,030	35.8
Buster	63	16.5	117	2,339	36.8
Durango	61	16.9	110	2,419	37.1
GTS-900	64	18.9	117	2,508	34.8
GTS-903	65	21.3	120	2,351	31.5
GTS-904	65	20.1	119	2,587	35
Lariat	64	21.7	124	2,679	38.2
Maverick[1]	64	16.9	118	2,136	33.2
ND-307	64	20.1	118	2,587	37.6
Othello	61	16.1	111	2,014	36.5
Sonora	63	20.9	117	2,715	29.6
Stampede	63	21.7	115	2,426	33
Topaz R	61	16.1	105	1,383	37.4
Mean	**63**	**18.9**	**115**	**2,321**	**35.1**
CV %	**1**	**9**	**4**	**14**	**4.8**
LSD 0.05	**1**	**2.4**	**6**	**462**	**2.3**

[1]Germination was lower than expected which resulted in lower plant densities.
Previous Crop: Forest River spring wheat, Hatton sugarbeet, Prosper spring wheat

2008 Dry Bean Variety Trials

2008 Navy Variety Trial, NDSU					
Variety	Days to Flowering	Plant Height	Days to Maturity	Yield	100 Seed Weight
	(days)	(inch)	(days)	(lb/a)	(gram)
FOREST RIVER (Walsh County)					
Avalanche	60	24.4	100	2,610	19.4
Ensign	61	20.1	102	2,730	21.7
GTS-544	62	21.7	107	2,650	18
HMS Medalist	62	23.6	102	2,950	19.2
Loreto (Black)	61	22	105	2,700	21.2
Mayflower	62	24	103	2,530	18.5
Navigator	62	24.4	101	2,670	18.1
Norstar	60	20.5	102	2,410	18.1
ROG 331	61	23.2	107	2,830	16.8
Seahawk	61	20.9	103	2,060	20.9
T9903	59	21.3	100	2,710	22
T9905	62	23.2	104	2,980	18.1
Vista	62	23.2	106	2,730	17.5
Mean	**61**	**22.4**	**103**	**2,658**	**19.2**
CV %	**2**	**7**	**2**	**10**	**6.5**
LSD 0.05	**2**	**2.4**	**3**	**380**	**1.7**

2008 Navy Variety Trial, NDSU					
Variety	Days to Flowering	Plant Height	Days to Maturity	Yield	100 Seed Weight
	(days)	(inch)	(days)	(lb/a)	(gram)
HATTON (Traill County)					
Avalanche	59	21.7	110	2,225	18
Ensign	57	19.7	110	2,443	19.3
GTS-544	60	18.9	115	1,958	18.7
HMS Medalist	58	20.1	109	2,683	17.3
Lightning	55	22	109	2,435	19.4
Mayflower	59	23.2	113	2,310	17.4
Navigator	59	23.2	108	2,428	16.9
Norstar	57	16.9	110	2,328	16.5
ROG 331	59	20.5	111	2,275	15.8
Seabiskit	58	19.7	115	2,113	15.8
Seahawk	57	19.3	113	2,205	21.4
T9903	57	19.3	109	2,443	21
T9905	59	23.2	112	2,565	20.2
Vista	60	20.1	115	2,178	17.6
Mean	**58**	**20.5**	**111**	**2,328**	**18.2**
CV %	**2**	**9**	**2**	**10.7**	**4.2**
LSD 0.05	**1**	**2.8**	**3**	**345**	**1.1**
PROSPER (Cass County)					
Avalanche	64	19.3	116	2,440	19
Ensign	64	19.7	118	2,520	19.4
GTS-544	66	19.7	121	2,210	18
HMS Medalist	64	20.5	119	2,280	17.6
Mayflower	65	20.1	123	2,210	17.9
Navigator	64	19.3	117	2,150	17.6
Norstar	62	15.7	112	1,790	17.1
ROG 331	65	18.5	117	2,280	15.7
Seahawk	65	15.7	129	1,290	17.5
Vista	67	17.7	137	1,330	15.2
Mean	**65**	**18.5**	**121**	**2,050**	**17.5**
CV %	**1**	**10**	**3**	**15.3**	**4.5**
LSD 0.05	**1**	**2.8**	**5**	**420**	**1.1**

Previous Crop: Forest River spring wheat, Hatton sugarbeet, Prosper spring wheat

2008 Miscellaneous Dry Bean Variety Trial, NDSU						
Variety	Market Class	Days to Flowering (days)	Plant Height (inch)	Days to Maturity (days)	Yield (lb/a)	100 Seed Weight (gram)
HATTON (Traill County)						
CDC Jet	Black	59	20.1	113	2,460	18.4
Condor	Black	59	20.9	113	2,290	17.7
Eclipse	Black	59	22	105	2,410	16.8
Floyd	Pink	55	14.6	102	2,500	32.3
Gemini	Great Northern	55	14.6	101	2,400	35.1
Hime	Otebo	57	16.9	114	1,790	24.6
Hungerford	Great Northern	56	18.5	111	2,460	40.6
Jaguar	Black	59	21.7	111	2,110	16.9
Jet Black	Black	61	21.3	114	2,210	18.5
Loreto	Black	60	20.9	116	2,220	18.5
Matterhorn	Great Northern	58	20.5	108	2,370	29.2
Merlot	Small Red	58	21.7	115	2,260	31.2
Orion	Great Northern	56	18.5	107	2,340	29.9
Sawtooth	Great Northern	56	17.3	117	2,340	37.6
Sedona	Pink	58	20.1	111	2,260	34.5
T-39	Black	60	18.5	116	1,980	19
Zorro	Black	59	22.8	112	2,210	17.7
Mean		**58**	**19.3**	**111**	**2,271**	**25.8**
CV %		**2**	**10**	**3**	**11.1**	**5.1**
LSD 0.05		**2**	**2.8**	**4**	**360**	**1.9**
PROSPER (Cass County)						
CDC Jet	Black	64	16.5	120	1,998	18.9
Condor	Black	66	17.7	124	2,265	18.2
Eclipse	Black	64	20.1	120	2,475	18.8
Floyd	Pink	60	15.4	121	1,920	32.4
Jaguar	Black	65	19.7	122	1,845	16.6
Matterhorn	Great Northern	63	17.7	120	2,033	31.5
Merlot	Small Red	64	20.9	121	2,398	36.8
T-39	Black	66	17.3	122	2,318	18
Mean		**64**	**18.1**	**121**	**2,157**	**23.9**
CV %		**1**	**10**	**2**	**13.4**	**5.5**
LSD 0.05		**1**	**2.4**	**NS**	**NS**	**1.8**
PARK RAPIDS (Hubbard County)						
Blush	Light Red Kidney	53	18.5	122	3,220	66.8
Capri	Cranberry	53	17.3	120	3,370	64.1
Celrk	Light Red Kidney	52	13.4	120	2,380	60.8
Chinook 2000	Light Red Kidney	53	15.4	123	2,520	56.7
Foxfire	Light Red Kidney	52	15.7	117	3,230	59.3
Montcalm	Dark Red Kidney	52	16.5	123	2,360	56.8
OAC Lyrik	Light Red Kidney	53	14.6	116	2,080	64.3
Redhawk	Dark Red Kidney	52	16.9	121	2,670	54.9
Mean		**53**	**16.1**	**120**	**2,729**	**60**
CV %		**2**	**15**	**2**	**19.3**	**6.2**
LSD 0.05		**NS**	**NS**	**4**	**740**	**5.1**
PERHAM (Otter Tail County)						
Celrk	Light Red Kidney	51	13.8	92	1,653	58.3
Chinook 2000	Light Red Kidney	52	18.1	112	2,595	55.3
Foxfire	Light Red Kidney	51	17.3	98	2,660	55.8
Hime	Otebo	54	17.3	103	2,840	27.5
Montcalm	Dark Red Kidney	51	19.3	112	2,420	54.5
Redhawk	Dark Red Kidney	51	16.5	104	2,443	54.2
Mean		**52**	**16.9**	**104**	**2,435**	**51**
CV %		**2**	**10**	**3**	**23**	**4.4**
LSD 0.05		**1**	**2.4**	**4**	**NS**	**3.3**

Previous Crop: Hatton sugarbeet, Prosper spring wheat, Park Rapids corn, Perham corn

2008 Dry Bean Variety Trials

2008 Dry Bean Variety Trial, Dryland, Carrington

Variety[1]	Market Class[1]	Days to Flower	Days to PM	Plant Height	Direct Harvest[2]	Growth Habit[3]	Stem Break[4]	Seeds/ Pound	100 Seed Weight	Test Weight	Seed Yield	
											2008	3-yr Avg.
		(days)	(days)	(inch)	(%)	(1-9)	(%)	(seeds)	(gram)	(lb/bu)	(lb/a)	
Avalanche	Navy	63.7	101	21.9	70	5.7	0	2,697	16.8	65.1	1,529	--
Buster	Pinto	62.8	99	23	51.3	3	3	1,329	34.2	60.9	1,935	1,967
Eclipse	Black	66.3	100.8	18.1	63.8	4.5	0	2,867	15.9	63.3	1,658	1,930
Ensign	Navy	66.5	102.3	20.5	61.3	4.8	2	2,732	16.6	65.2	1,770	--
GTS 900	Pinto	65	103.3	24.8	62.5	3.8	9	1,509	30.3	62.3	1,649	1,866
Jaguar	Black	66	101.5	15.9	63.8	4.8	0	3,335	13.6	64.6	1,382	--
La Paz	Pinto	69.3	104.8	24.4	78.8	6	2	1,719	26.4	63.2	1,782	--
Lariat	Pinto	62.8	99	25.2	85	6.8	0	1,369	33.2	61.4	1,781	2,045
Matterhorn	GN	63.3	100.5	21.1	46.3	3.3	2	1,543	29.4	60	1,729	--
Merlot	S. Red	63.8	101.3	19.5	58.8	4.5	3	1,450	31.4	61.9	1,685	--
ND307	Pinto	63.5	99	21.1	57.5	4	0	1,322	34.4	58.5	1,963	2,282
Navigator	Navy	65.8	100.8	21.7	66.3	5.5	0	3,261	13.9	63.9	1,507	--
Norstar	Navy	64	100.5	22.4	55	4.3	2	3,224	14.1	65.7	1,598	1,519
Otebo	Hime	65.5	108	16.9	50	3.3	1	1,927	23.6	65.5	1,039	--
Othello	Pinto	58.8	93.3	23.4	22.5	2	0	1,300	34.9	61.9	1,852	2,153
Seahawk	Navy	65.3	104.5	19.9	55	3.5	2	2,766	16.4	64.8	1,235	1,688
Sedona	Pink	63.8	98.5	22	65	4.8	23	1,566	29	60.3	1,415	--
Stampede	Pinto	64	100	23.4	66.3	5	2	1,498	30.4	60	1,718	1,979
T-39	Black	68.5	102.5	21.5	67.5	5	1	3,040	14.9	64.3	1,404	1,856
T9903	Navy	64.8	101.3	21.3	57.5	4.3	2	2,383	19.1	65	1,378	--
T9905	Navy	65.5	102.8	20.7	66.3	4	0	2,713	16.8	64.7	1,740	--
Topaz R	Pinto	60.3	92.8	23.2	30	2.3	1	1,326	34.2	58.2	1,532	1,764
Vista	Navy	67	102.8	22.6	70	6	2	3,453	13.2	64.7	1,461	1,702
Mean		**64.5**	**100.8**	**21.5**	**60.1**	**4.4**	**2.4**	**2,188**	**23.6**	**62.6**	**1,597**	**1,896**
CV %		**1.4**	**1.5**	**11.7**	**10.6**	**17.5**	**165**	**4.2**	**5.1**	**0.7**	**14**	**--**
LSD 0.05		**1.3**	**2.1**	**3.6**	**9**	**1.1**	**5.5**	**126**	**1.8**	**0.6**	**321**	**--**

Planted May 21. Previous crop: spring wheat.
[1]The variety Maverick was evaluated in the trial. Due to poor seed quality, data are not reported. GN=Great Northern, S.=Small
[2]Direct Harvest: a relative score to estimate % beans that would be successfully harvested in a direct/straight harvest system.
[3]Growth Habit: 1=a vining plant type, pods low to ground, short stature; 9=very upright plant structure, pods held off ground.
[4]Stem Break: estimation of the percentage of the plant stand where bean stems were broke at the basal stem.

2008 Dry Bean Variety Trials

2008 Dry Bean Variety Trial, Irrigated, Carrington

Variety[1]	Market Class[1]	Days to Flower	Days to PM	Plant Height	Direct Harvest[2]	Growth Habit[3]	Stem Break[4]	Seeds/ Pound	100 Seed Weight	Test Weight	Seed Yield	
											2008	3-yr Avg.
		(days)	(days)	(inch)	(%)	(1-9)	(%)	(seeds)	(gram)	(lb/bu)	(lb/a)	
Avalanche	Navy	66	104	24	71.3	6	4	2,479	18.4	66.1	1,907	--
Buster	Pinto	62.5	99.5	26.2	47.5	2.3	5	1,313	34.6	62.6	2,870	3,086
Eclipse	Black	67.8	100.8	21.1	70	7	1	2,698	16.8	64.6	2,137	2,689
Ensign	Navy	68	103.3	22.2	60	3.5	5	2,408	18.9	65.6	2,847	--
GTS 900	Pinto	64.5	103.5	28.1	61.3	3.3	3	1,460	31.1	63	2,626	2,858
Jaguar	Black	66.8	101	20.9	71.3	5.8	0	2,798	16.4	65.3	2,075	--
La Paz	Pinto	67.5	105.5	29.9	70	6.5	5	1,535	29.6	64	2,716	--
Lariat	Pinto	62	101	32.5	70	5	2	1,212	37.5	63.1	3,188	3,379
Matterhorn	GN	63.5	102.8	22.8	60	4.3	3	1,473	30.9	61.2	2,544	--
Merlot	S. Red	61.8	100.8	21.9	60	3.5	11	1,269	35.8	63	2,555	--
ND307	Pinto	63.3	101	24.6	65	4.3	3	1,192	38.1	60.3	2,824	3,017
Navigator	Navy	67.8	105.8	25	80	7.5	0	2,853	15.9	64.8	2,274	--
Norstar	Navy	65	105.5	24.6	61.3	4.8	3	2,756	16.5	66.2	2,253	2,286
Otebo	Hime	64	101.5	19.5	61.3	3.5	0	1,804	25.2	66.3	2,254	--
Othello	Pinto	56.3	95	22.4	32.5	2.3	0	1,205	37.7	61.9	2,560	2,273
Seahawk	Navy	67.5	107.3	25.7	65	4	1	2,370	19.2	65.6	2,136	2,517
Sedona	Pink	62	98.3	24.2	55	3	19	1,304	34.8	61.8	2,373	--
Stampede	Pinto	63.3	100.5	25	65	5.3	8	1,267	35.9	61.7	2,802	3,106
T-39	Black	69.8	104.8	25.2	61.3	4	5	2,577	17.6	65.2	2,108	2,426
T9903	Navy	63.3	103.5	24	68.8	5.3	2	2,316	19.6	66.2	2,563	--
T9905	Navy	66.3	105.3	24.6	78.8	6.5	0	2,465	18.4	65.5	2,592	--
Topaz R	Pinto	57	94	24.4	42.5	3.3	0	1,272	35.7	59.5	2,192	2,358
Vista	Navy	66.3	109	28.5	75	6.5	0	2,859	15.9	65.7	2,427	2,590
Mean		**64.3**	**102.1**	**24.7**	**63.3**	**4.7**	**3.4**	**1,903**	**26.7**	**63.7**	**2,504**	**--**
CV %		**2.7**	**2**	**11.4**	**7.4**	**14.4**	**85.5**	**4.8**	**3.9**	**0.6**	**9.3**	**--**
LSD 0.05		**2.5**	**2.9**	**4**	**6.6**	**1**	**4.1**	**129**	**1.5**	**0.5**	**329**	**--**

Planted May 21. Previous crop: spring wheat.
[1]The variety Maverick was evaluated in the trial. Due to poor seed quality, data are not reported. GN=Great Northern, S.=Small
[2]Direct Harvest: a relative score to estimate % beans that would be successfully harvested in a direct/straight harvest system.
[3]Growth Habit: 1=a vining plant type, pods low to ground, short stature; 9=very upright plant structure, pods held off ground.
[4]Stem Break: estimation of the percentage of the plant stand where bean stems were broke at the basal stem.

2008 Dry Bean Variety Trial, Cavalier (Pembina County), Langdon REC.

Variety	Market Class	100 Seed Wt.	Days to Maturity	Seed Yield				
				2006	2007	2008	2-yr Avg.	3-yr. Avg.
		(gram)	(days)	(lb/a)				
Baja	Pinto	33	113	--	--	2,647	--	--
Buster	Pinto	36	113	3,322	3,752	3,262	3,507	3,445
Durango	Pinto	35.2	113	--	--	2,770	--	--
GTS 900	Pinto	34	116	3,018	3,305	2,730	3,018	3,018
La Paz	Pinto	30.6	117	--	--	3,082	--	--
Lariat	Pinto	34.2	116	--	3,561	2,738	3,150	--
Maverick[1]	Pinto	36	114	2,523	3,373	2,043	2,708	2,646
Othello	Pinto	34	112	2,678	2,839	2,403	2,621	2,640
Sonora	Pinto	27.8	113	--	--	3,002	--	--
Stampede	Pinto	32.2	114	--	3,418	2,723	3,070	--
Topaz R	Pinto	34.2	111	2,510	2,737	2,159	2,448	2,469
Avalanche	Navy	17.9	115	--	--	2,647	--	--
Ensign	Navy	18.9	116	--	--	2,818	--	--
Navigator	Navy	15.7	115	--	--	2,471	--	--
Norstar	Navy	15.8	114	2,007	2,895	2,319	2,607	2,407
Seahawk	Navy	20	116	3,182	2,760	2,003	2,382	2,648
T9903	Navy	20.5	116	--	--	2,603	--	--
Vista	Navy	16.6	117	3,226	2,982	2,746	2,864	2,985
Eclipse	Black	16.9	114	2,786	3,316	2,627	2,971	2,910
Jaguar	Black	16.2	114	--	2,940	2,343	2,642	--
T-39	Black	18.2	118	2,850	2,888	2,415	2,652	2,718
Matterhorn	Great Northern	31.7	115	--	--	2,858	--	--
Merlot	Small Red	32.6	113	--	--	2,607	--	--
Sedona	Pink	34.6	112	--	2,918	2,379	2,649	--
Mean			**114**	**2,810**	**3,120**	**2,600**	**2,806**	**2,789**
CV %			**1.2**	**16.9**	**5.9**	**6.2**	**--**	**--**
LSD 0.05			**2.3**	**767**	**308**	**266**	**--**	**--**

Planted May 22. Harvested September 30.
[1]Germination was lower than expected which resulted in lower plant densities.

2008 Dry Bean Variety Trials

2008 Dry Bean Variety Trial, Dryland, Hettinger.

Variety	Market Class	Seed Yield
		(lb/a)
Avalanche	Navy	447
Buster	Pinto	515
Eclipse	Black	449
Ensign	Navy	504
GTS 900	Pinto	539
Jaguar	Black	377
La paz	Pinto	628
Lariat	Pinto	568
Matterhorn	Great Northern	548
Maverick[1]	Pinto	552
Merlot	Small Red	525
Navigator	Navy	428
Norstar	Navy	544
Othello	Pinto	696
Seahawk	Navy	453
Sedona	Pink	391
Stampede	Pinto	626
T-39	Black	391
Topaz R	Pinto	595
Vista	Navy	544
Mean		**516**
CV %		**22.7**
LSD 0.05		**165**

[1]Germination was lower than expected which resulted in lower plant densities.
Planted June 9. Harvested September 30. Previous crop: spring wheat. The trial sustained severe heat stress. Irrigation is recommended for this region.

2008 Navy Bean Variety Trial, Irrigated, Oakes, Carrington REC.

Variety	Mature Date	100 Seed Wt.	Seed Yield	
			2008	2-yr. Avg.
	(date)	(gram)	(lb/a)	
Avalanche	29-Aug	21	2,973	--
Ensign	31-Aug	22.7	3,112	--
Navigator	31-Aug	19.9	2,034	--
Norstar	26-Aug	18.8	2,363	2,147
Seahawk	27-Aug	22.6	1,934	2,257
T9903	31-Aug	22.3	2,826	--
Vista	1-Sep	19.5	2,560	2,590
Mean	**30-Aug**	**21**	**2,543**	**2,331**
CV %		**3.4**	**8.5**	**--**
LSD 0.05		**1**	**320**	**--**

Planted May 28. Harvested September 8. Previous crop: corn.

2008 Pinto Bean Variety Trial, Irrigated, Oakes, Carrington REC.

Variety	Mature Date	100 Seed Wt.	Seed Yield	
			2008	2-yr. Avg.
		(gram)	(lb/a)	
Baja	20-Aug	31.9	2,071	--
Buster	24-Aug	40	3,461	2,951
Durango	24-Aug	39.9	2,898	--
GTS 900	29-Aug	41.8	3,181	2,811
La Paz	2-Sep	34.9	2,876	--
Lariat	30-Aug	40.1	3,087	--
Maverick[1]	25-Aug	37	2,738	2,559
Othello	23-Aug	38.9	3,233	3,087
Sonora	26-Aug	32.6	3,041	--
Stampede	28-Aug	38.4	3,079	--
Topaz R	23-Aug	35.1	2,095	--
Mean	**26-Aug**	**37.3**	**2,887**	**2,823**
CV %		**4.3**	**8.7**	**--**
LSD 0.05		**2.3**	**362**	**--**

Planted May 29. Harvested September 1. Previous crop: corn.
[1]Germination was lower than expected which resulted in lower plant densities.

2008 Dry Bean Variety Trial, Langdon.

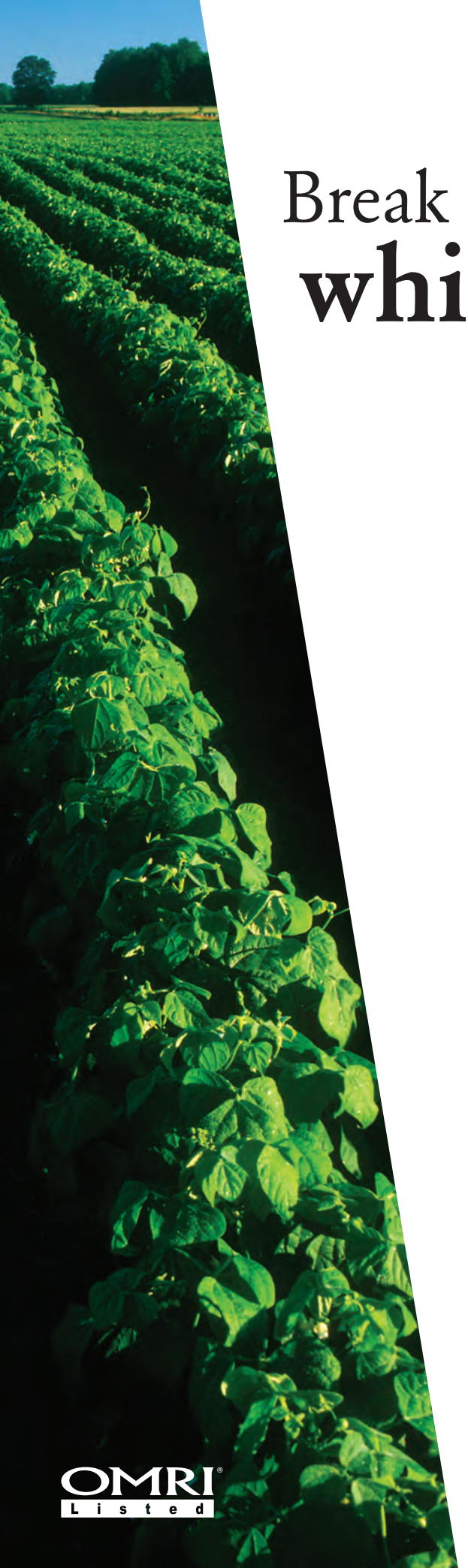
Variety	Market Class	100 Seed Wt.	Days to Maturity	Seed Yield				
				2006	2007	2008	2-yr Avg.	3-yr Avg.
		(gram)	(days)	(lb/a)				
Baja	Pinto	39.6	106	--	--	2,638	--	--
Buster	Pinto	40.6	109	3,758	3,895	2,714	3,305	3,456
Durango	Pinto	40.8	107	--	--	2,419	--	--
GTS 900	Pinto	36.8	114	3,610	3,643	3,018	3,331	3,424
La Paz	Pinto	34	119	--	--	2,874	--	--
Lariat	Pinto	42.4	112	4,250	3,933	3,162	3,548	3,782
Maverick[1]	Pinto	40.8	111	3,706	3,843	1,857	2,850	3,135
Othello	Pinto	43.2	105	3,698	3,200	2,379	2,790	3,092
Sonora	Pinto	33.6	107	--	--	2,970	--	--
Stampede	Pinto	40	111	4,190	3,846	2,658	3,252	3,565
Topaz R	Pinto	42	103	3,210	3,113	2,275	2,694	2,866
Avalanche	Navy	20.8	109	--	--	2,363	--	--
Ensign	Navy	20.4	111	--	--	2,539	--	--
Navigator	Navy	18.4	111	--	--	2,275	--	--
Norstar	Navy	18	110	3,103	3,384	2,447	2,916	2,978
Seahawk	Navy	23.2	109	3,343	3,696	1,771	2,734	2,937
T9903	Navy	22.8	110	--	--	2,579	--	--
Vista	Navy	19.2	113	3,817	3,531	2,179	2,855	3,176
Eclipse	Black	20.4	111	3,610	3,428	2,511	2,969	3,183
Jaguar	Black	18.8	110	--	3,429	2,183	2,806	--
T-39	Black	20.8	118	3,094	3,174	2,259	2,717	2,842
Matterhorn	Great Northern	36.8	110	--	4,012	2,383	3,197	--
Merlot	Small Red	38	111	--	3,527	2,459	2,993	--
Sedona	Pink	36	108	--	3,275	2,187	2,731	--
Mean			**110**	**3,530**	**3,558**	**2,463**	**2,980**	**3,203**
CV %			**1.8**	**10.5**	**9.1**	**12.4**	**--**	**--**
LSD 0.05			**3.2**	**613**	**535**	**504**	**--**	**--**

Planted May 23. Harvested October 1.
[1]Germination was lower than expected which resulted in lower plant densities.

2008 Miscellaneous Bean Variety Trial, Irrigated, Oakes, Carrington REC.

Variety	Market Class	Mature Date	100 Seed Weight	Seed Yield		
				2006	2008	2-yr. Avg.
		(date)	(gram)		(lb/a)	
Eclipse	Black	29-Aug	21.1	2,001	2,525	2,263
Jaguar	Black	30-Aug	21.8	--	2,978	--
Matterhorn	Great Northern	24-Aug	32.9	--	2,575	--
Merlot	Small Red	31-Aug	40.4	--	2,952	--
Sedona	Pink	23-Aug	39.5	--	3,192	--
T-39	Black	31-Aug	20.8	2,300	2,734	2,517
Mean		**28-Aug**	**29.4**	**2,151**	**2,826**	**2,390**
CV %			**5.2**		**8.3**	
LSD 0.05			**2.3**		**355**	

Planted May 28. Harvested September 5. Previous crop: corn.



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2008 Dry Bean Variety Trials

2008 Irrigated Dry Bean Variety Trial, Nesson Valley, Williston REC.

Cultivar	Market Class	Plant Height (inch)	Test Weight (lb/bu)	1000 KWT (gram)	Seeds/Pound (seeds)	Seed Yield (lb/a)
Avalanche	Navy	20	65.3	203	2,234	2,662
Buster	Pinto	20	60.9	391	1,161	3,311
Eclipse	Black	20	65.2	200	2,271	2,820
Ensign	Navy	21	66.3	210	2,160	3,293
GTS 900	Pinto	20	60.7	378	1,200	2,454
Jaguar	Black	20	66	199	2,280	2,319
La Paz	Pinto	20	62.5	332	1,365	3,384
Lariat	Pinto	20	62.5	409	1,108	3,593
Matterhorn	Great Northern	20	62.4	361	1,257	2,782
Maverick[1]	Pinto	20	60.3	391	1,160	1,924
Merlot	Small Red	20	63.7	390	1,162	2,590
Navigator	Navy	20	64.4	191	2,370	2,345
Norstar	Navy	20	65.5	189	2,403	2,052
Othello	Pinto	20	62.3	400	1,135	2,140
Seahawk	Navy	20	65.5	225	2,018	2,700
Sedona	Pink	20	61.4	382	1,190	2,245
Stampede	Pinto	20	60.4	410	1,108	2,755
T-39	Black	20	65.1	198	2,297	2,988
Topaz R	Pinto	19	58.7	395	1,149	2,427
Vista	Navy	20	65.6	176	2,574	3,007
Mean		**20**	**63.2**	**302**	**1,680**	**2,690**
CV %		**1**	**0.7**	**2**	**2**	**16**
LSD 0.05		**NS**	**0.9**	**14**	**62**	**594**

Planted May 16. Harvested October 1. Previous crop: safflower.
[1]Germination was lower than expected which resulted in lower plant densities.

2008 Dry Bean Variety Trials

Variety Descriptions										
				Blight		BCMV				
Class and Cultivar	Origin	Mat[1]	Plant Type[2]	Common	Halo[3]	Type	NY15[4]	Fusarium Root Rot	White Mold	Rust
PINTO										
Baja	Provita	E	V	-	-	-	-	-	-	-
Bill-Z	CSU	M	V	-	T	R	R	-	S	MR
Buster	Seminis	ME	UV	S	T	R	R	-	S	R
Croissant	CSU	L	V	-	-	-	-	-	-	-
Durango	Provita	E	V	-	-	-	-	-	-	-
GTS 900	GenTec	L	UV	S	T		-	-	A	S
GTS 903	GenTec	L	UV	-	-	-	-	-	-	-
GTS 904	GenTec	L	UV	-	-	-	-	-	-	-
Kimberly	U. Idaho	M	V	-	-	-	-	-	-	-
La Paz	Rogers	L	USV	-	-	-	-	-	-	-
Lariat	NDSU	L	USV	-	-	R	R	-	A	R
Mariah	Seminis	ME	UV	-	-	-	-	-	-	-
Maverick	NDSU	ME	V	S	T	S	S	-	A	R
Medicine Hat	Seminis	ME	UV	-	-	-	-	-	-	
Montrose	CSU	E	V	-	T	R	R	-	S	R
ND 307	NDSU	M	UV	-	-	R	R	-	-	R
Othello	USDA-Prosser	E	V	S	T	R	R	-	S	S
Pinata	Idaho Seed Bean	VE	V	-	-	R	R	-	A	-
Quincy	WSU/USDA	M	V	-	-	-	-	-	-	
Rally	GenTec	L	UV	-	-	-	-	-	A	R
Remington	Rogers	ME	UV	S	T	-	-	-	A	R
Santa Fe	MSU	M	USV	-	-	-	-	-	A	-
Shoshone	U. Idaho	ML	V	S	-	-	-	-	S	-
Sonora	Provita	E	V	S	-	-	-	-	S	-
Stampede	NDSU	M	USV	-	-	R	R	-	A	R
Topaz	Rogers	E	V	S	T	R	R	-	S	S-MS
Topaz R	Rogers	E	V	S	-	-	-	-	S	-
Winchester	Rogers	ME	UV	VS	-	-	-	-	A	R
Windbreaker	Seminis	M	UV	-	-	-	-	-	-	-
NAVY										
Avalanche	NDSU	ME	USV	-	-	R	R	-	A	MR
CDC Whitecap	U. Sask	M	USV	S	-	-	-	-	S	R
Cirrus	Hyland	ME	USV	-	-	-	-	-	S	-
Envoy	GenTec	M	B	-	-	R	R	-	S	R
Ensign	Roger	M	USV	-	-	R	R	-	-	R
GTS-544	GenTec	M	USV	-	-	-	-	-	-	-
HMS Medalist	Provita	M	UV	-	-	-	-	-	-	-
Lightning	U. of Guelph	M	UV	-	-	-	-	-	-	-
Mayflower	MSU	ML	USV	-	T	R	R	T	T	R
Navigator	Rogers	M	USV	-	-	R	R	-	T	R
Norstar	NDSU	ME	USV	S	T	R	R	-	T	R
Premiere	Ag. Can.	M	UV	S	-	R	R	-	-	R

Variety Descriptions										
				Blight		BCMV				
Class and Cultivar	Origin	Mat[1]	Plant Type[2]	Common	Halo[3]	Type	NY15[4]	Fusarium Root Rot	White Mold	Rust
NAVY										
Regent	Ag. Can.	ME	UV	S	-	R	R	-	-	R
ROG 331	Rogers	M	UV	S	-	R	R	-	A	R
Schooner	Rogers	ML	USV	-	-	R	R	-	S	R
Seabiskit	ADM	ME	USV	-	-	-	-	-	-	-
SeaHawk	MSU	ML	USV	S	-	R	R	-	T	S
T9903	Hyland Seed	ME	USV	-	-	-	-	-	-	-
T9905	Hyland Seed	ME	USV	-	-	-	-	-	-	-
Vista	Ag. Can.	ML	USV	-	-	R	R	-	T	R
Avalanche	NDSU	ME	USV	-	-	R	R	-	A	MR
CRANBERRY										
Capri	MSU/ARS	M	B	S	-	R	-	S	S	MR
Cran-09	GenTec	M	B	-	-	R	R	S	S	R
Hooter	Seminis	M	B	VS	S	R	R	MR	S	R
Taylor Hort.	Unknown	E	B	-	-	-	-	S	S	R
UI-50	U. Idaho	M	B	-	-	R	R	-	-	-
UI-686	U. Idaho	M	V	-	-	R	R	-	-	R
SMALL RED										
AC Earlired	Ag. Can	E	V	S	-	-	-	-	S	S
AC Scarlet	Ag. Can	ME	USV	S	S	-	-	S	S	S
Cajun	Rogers	E	UV	-	-	-	-	-	-	MR
Carman	Idaho Seed Bean	E	V	-	-	R	-	-	S	-
Garnet	Rogers	M	V	-	-	R	R	-	S	S
Merlot	MSU	ME	USV	S	S	R	R	T	S	R
Ryder	Rogers	M	USV	-	-	MR	-	-	-	-
UI-259	U. Idaho	M	V	-	-	-	-	-	S	S
BLACK										
Black Magic	GenTec	L	USV	S	T	R	R	T	T	R
Blackhawk	MSU	L	USV	S	T	R	R	T	T	R
Black Jack	GenTec	ML	USV	-	-	R	R	-	-	R
CDC Jet	U. Sask.	ME	USV	R	-	-	-	T	T	R
Condor	MSU	ML	USV	S	S	-	R	R	T	R
Domino	MSU	L	USV	S	T	R	R	T	T	R
Eclipse	NDSU	M	USV	-	-	R	R	T	T	R
Jaguar	MSU	M	USV	-	-	R	R	-	T	R
Jet Black	-	L	USV	-	-	-	-	-	-	-
Loreto	Provita	M	USV	-	-	-	-	-	-	-
T-39	U. Calif.	M	USV	S	T	R	R	T	T	R
Zorro	MSU	L	USV	-	-	-	-	-	-	-

2008 Dry Bean Variety Trials

Variety Descriptions										
			Plant	Blight		BCMV		Fusarium	White	
Class and Cultivar	Origin	Mat[1]	Type[2]	Common	Halo[3]	Type	NY15[4]	Root Rot	Mold	Rust
PINK										
Alberta Pink	U. Alberta	E	V	S	-	S	S	-	S	S
Flamingo	Idaho Seed Bean	E	V	-	-	-	-	-	S	S
Floyd	Rogers	ML	V	-	-	-	-	-	S	R
ROG 922	Rogers	M	V	-	-	R	R	-	S	S
Rosalee	U. Sask.	E	V	S	-	-	-	-	S	S
Sedona	MSU/ARS	M	USV	S	-	R	-	R	A	MR
UI-537	U. Idaho	E	V	-	-	R	R	-	S	S
Viva	USDA-Prosser	M	V	-	-	-	-	R	S	S
LIGHT RED KIDNEY										
Blush	WSU/USDA	ML	B	-	-	-	-	-	-	-
California Early (Celrk)	U. Calif.	E	B	S	S	R	R	S	S	S
Chinook 2000	MSU	M	B	-	T	R	R	S	-	R
Foxfire	Rogers	ME	B	T	R	R	R	T	T	R
OAC Lyrik	U. of Guelph	ME	B	-	-	-	-	-	-	-
Sacramento	Agri-Sales	E	B	S	S	S	S	S	S	S
Blush	WSU/USDA	ML	B	-	-	-	-	-	-	-
DARK RED KIDNEY										
Cabernet	Rogers	ML	B	VS	S	R	R	MR	S	R
Drake	Seminis	M	B	S	S	R	R	S	T	R
Montcalm	MSU	ML	B	TV	TV	R	R	S	T	R
Redhawk	MSU	M	B	S	T	R	R	-	T	R
WHITE KIDNEY										
Beluga	MSU	M	B	S	T	R	R	S	S	R
Lassen	Agri-Sales	E	B	S	S	R	R	S	S	R
GREAT NORTHERN										
Beryl	Rogers	M	V	S	S	-	-	-	S	-
Gemini	Provita	E	-	-	-	-	-	-	-	-
Hungerford	U. Idaho	M	V	-	-	-	-	-	-	-
Matterhorn	MSU	ME	USV	S	T	R	R	-	A	R
Orion	Provita	E	V	-	-	-	-	-	-	-
Sawtooth	U. Idaho	L	V	-	-	-	-	-	-	-
UI 465	U. Idaho	M	V	S	-	R	R	T	S	R
OTEBO										
Hime	-	ME	V	-	-	-	-	-	-	-

[1]RM=Relative Maturity; E=Early; ME=Medium Early; M=Medium; ML=Medium Lake; L=Late.
[2]V=Vine; B=Bush; UV=Upright Vine; USV=Upright Short Vine.
[3]Disease reactions based upon field observations in North Dakota. A=Avoidance; S=Susceptible; T=Tolerant; R=Resistant; MS=Moderately Susceptible; MR=Moderately Resistant.
[4]BCMV =Bean Common Mosaic Virus reaction with two strains (Type and NY15).

Medicine Hat

Mariah

Windbreaker

Red Rover

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Medicine Hat (XP 08550813) pinto bean is an early maturing, short-vine variety that has an upright plant. It has good seed weathering and less breakage for better canned quality. In Red River Valley trials, **Medicine Hat** has shown good adaptation and yield potential. It is well suited for narrow rows and direct harvest.

Mariah (XP 08540800) is a full season pinto bean with an erect, short vine. **Mariah** has less breakage for better canned quality. **Mariah** has shown good adaptation and high yields, not to mention superior seed weathering in comparison to other standard pinto varieties grown in the Red River Valley. **Mariah** is well suited for narrow rows and direct harvest.

Windbreaker is an upright, short-vine pinto bean that has produced consistently good yields, especially for the Red River Valley production area. **Windbreaker** ripens quickly and uniformly with reduced seed weathering. Try **Windbreaker** in narrow rows for direct harvest.

Red Rover (EX 08520700) is a main season, dark-red kidney variety that offers resistance to common root rot. This resistance makes **Red Rover** a perfect fit for growers in Michigan, Minnesota and Wisconsin who produce in light, sandy, irrigated soil. It produces an erect, determinate bush plant. **Red Rover** has good canned quality.

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Seeding the Pinto Bean Trial at Carrington with 30 Inch Row Spacing (Photo: Hans Kandel)
Review the results from the 2008 Dry Bean Variety Trials beginning on page 25. Also, read about the results of research funded by Northarvest in the 2008 Northarvest Dry Bean Research Update beginning on page13.