E-1421 (Revised)

2008 DRY BEAN Grower Survey

of Pest Problems and Pesticide Use

in Minnesota and North Dakota



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Introduction

The 2008 dry bean grower survey is the 19th 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 form (Appendix I). The survey was mailed to all Northarvest bean growers. All participants' responses in the survey were anonymous.

Results of previous surveys dated 1987-2000, 2002 and 2004-2007 have been published (1-17). No surveys were conducted in 1993 and 2001. In 2003, the survey was completed by dry bean producers who attended the Northarvest Bean Day in Fargo during the winter. However, the lack of responses made processing and analyses of results unreliable, so no report was compiled. In some of the tables, total percentages do not always add up to 100 percent because not all of the respondents answered every question.

Throughout this report, trade names of chemicals often are presented as an aid for clearer communication. Mention of trade names does not constitute endorsement or recommendation by North Dakota State University or the Northarvest Bean Growers Association.

Production

Table 1. Number of Northarvest dry bean growers responding, total dry bean acres and dry bean acres planted by respondents in 2008.

Growers	No. of respondents	Respondents' acres	Total acres[a]	Acres surveyed
				(% of total)
Minnesota	69	26,298	150,000	17.5
North Dakota	111	60,752	660,000	9.2
Northarvest	180	87,050	810,000	10.7

[a] Total of dry bean acres planted for area (source: USDA National Agricultural Statistics Service).

Table 2. Dry bean acres irrigated, harvested and damaged by hail, frost and water in 2008.

	Minnesota	North Dakota	Northarvest
		% of respondents' acres	
Irrigated	28.7	1.2	9.5
Tile-drained	23.9	0.0	7.2
Harvested	95.6	95.2	95.3
Hail damaged	8.1	7.3	7.5
Frost damaged	1.1	1.8	1.6
Water damaged	5.3	8.9	7.9

Table 3. Market classes of dry beans grown by respondents in 2008.

Market class	Acres reported[a]	Acres reported[a]
	(no.)	(%)
Minnesota		
Pinto	2,251	8.6
Navy	7,456	28.4
Kidney	11,632	44.2
Black	1,665	6.3
Pink	3,294	12.5
Other	0	0.0
Total	**26,298**	**100.0**
North Dakota		
Pinto	43,337	71.3
Navy	8,130	13.4
Kidney	0	0.0
Black	7,969	13.1
Pink	280	0.5
Other	1,036	1.7
Total	**60,752**	**100.0**
Northarvest		
Pinto	45,588	52.4
Navy	15,586	17.9
Kidney	11,632	13.4
Black	9,634	11.1
Pink	3,574	4.1
Other	1,036	1.2
Total	**87,050**	**100.0**

[a] Respondents' acres only.

Table 4. Dry bean varieties grown in 2008 by respondents.

		Acres planted[a]					
Variety	**Class[b]**	**Minnesota**	**%**	**North Dakota**	**%**	**Northarvest**	**%**
Maverick	P	670	2.5	19,951	32.8	20,621	23.7
La Paz	P	425	1.6	11,673	19.2	12,098	13.9
Windbreaker	P	300	1.1	4,356	7.2	4,656	5.3
Buster	P	856	3.3	1,733	2.9	2,589	3.0
ND307	P	0	0	1,138	1.9	1,138	1.3
Lariat	P	0	0	710	1.2	710	0.8
GTS 900	P	0	0	335	0.6	335	0.4
Stampede	P	0	0	311	0.5	311	0.4
Winchester	P	0	0	135	0.2	135	0.2
Remington	P	0	0	90	0.1	90	0.1
Other pinto	P	0	0	2,905	4.8	2,905	3.3
Total pinto	**P**	**2,251**	**8.5**	**43,337**	**71.4**	**45,588**	**52.4**
T9905	N	710	2.7	2,272	3.7	2,982	3.4
Norstar	N	1,445	5.5	1,390	2.3	2,835	3.3
Navigator	N	821	3.1	1,948	3.2	2,769	3.2
Vista	N	2,037	7.7	165	0.3	2,202	2.5
Ensign	N	604	2.3	1,154	1.9	1,758	2.0
T9903	N	1,293	4.9	230	0.4	1,523	1.7
Mayflower	N	25	0.1	680	1.1	705	0.8
Other navy	N	521	2.0	291	0.5	812	0.9
Total navy	**N**	**7,456**	**28.3**	**8,130**	**13.4**	**15,586**	**17.8**
Montcalm	K	4,457	16.9	0	0	4,457	5.1
Red Hawk	K	3,182	12.1	0	0	3,182	3.7
Foxfire	K	755	2.9	0	0	755	0.9
Beluga	K	360	1.4	0	0	360	0.4
Celrk	K	140	0.5	0	0	140	0.2
Chinook2000	K	45	0.2	0	0	45	0.1
Other kidney	K	2,693	10.2	0	0	2,693	3.1
Total kidney	**K**	**11,632**	**44.0**	**0**	**0**	**11,632**	**14.0**
Jaguar	B	1,035	3.9	0	0	1,035	1.2
T-39	B	0	0	1,019	1.7	1,019	1.2
Eclipse	B	630	2.4	6,830	11.2	7,460	8.6
Other black	B	0	0	120	0.2	120	0.1
Total black	**B**	**1,665**	**6.0**	**7,969**	**13.0**	**9,634**	**11.0**
Sedona	PK	322	1.2	0	0	322	0.4
Floyd	PK	123	0.5	280	0.5	403	0.5
Other pink	PK	2,849	10.8	0	0	2,849	3.3
Total pink	**PK**	**3,294**	**12.5**	**280**	**0.5**	**3,574**	**4.2**
Other varieties		0	0	1,036	1.7	1,036	1.2
Total		**26,298**	**100.0**	**60,752**	**100.0**	**87,050**	**100.0**

[a] Respondents' acres only.

[b] P = pinto; N = navy; K = kidney; B = black; PK = pink

Table 5. Worst dry bean production problem in 2008 reported by respondents.

Worst production problem	Respon-dents	Respon-dents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Harvest	7	10.4	5,349	22.1
Weather	12	17.9	4,670	19.3
Emergence/stand	7	10.4	4,033	16.7
Weeds	11	16.4	3,747	15.5
None	8	11.9	1,810	7.5
Delayed planting	6	9.0	1,760	7.3
Excess water	5	7.5	1,325	5.5
Diseases	5	7.5	888	3.7
Herbicide injury	2	3.0	207	0.9
Spray drift injury	1	1.5	170	0.7
Insects	1	1.5	100	0.4
Other	2	3.0	98	0.4
Total	**67**	**100.0**	**24,157**	**100.0**
North Dakota				
Weeds	23	20.9	13,338	22.0
Excess water	21	19.1	11,798	19.5
Harvest	12	10.9	9,229	15.2
Emergence/stand	14	12.7	8,690	14.4
Diseases	11	10.0	7,106	11.7
Weather	18	16.4	7,090	11.7
None	6	5.5	1,424	2.4
Delayed planting	2	1.8	1,296	2.1
Herbicide injury	1	0.9	261	0.4
Other	2	1.8	320	0.5
Total	**110**	**100.0**	**60,552**	**100.0**
Northarvest				
Weeds	34	19.2	17,085	20.2
Harvest	19	10.7	14,578	17.2
Excess water	26	14.7	13,123	15.5
Emergence/stand	21	11.9	12,723	15.0
Weather	30	16.9	11,760	13.9
Diseases	16	9.0	7,994	9.4
None	14	7.9	3,234	3.8
Delayed planting	8	4.5	3,056	3.6
Herbicide injury	3	1.7	468	0.6
Spray drift injury	1	0.6	170	0.2
Insects	1	0.6	100	0.1
Other	4	2.3	418	0.5
Total	**177**	**100.0**	**84,709**	**100.0**

[a] Respondents' acres only.

Table 6. Percent of total dry bean area harvested by direct combining in 2008.

Percent direct combined	Respondents	Respondents
	(no.)	(%)
Minnesota		
0%	40	59.7
1-25%	3	4.5
26-50%	1	1.5
51-75%	0	0.0
76-100%	23	34.3
Total	**67**	**100.0**
North Dakota		
0%	46	43.8
1-25%	13	12.4
26-50%	4	3.8
51-75%	7	6.7
76-100%	35	33.3
Total	**105**	**100.0**
Northarvest		
0%	86	50.0
1-25%	16	9.3
26-50%	5	2.9
51-75%	7	4.1
76-100%	58	33.7
Total	**172**	**100.0**

Table 7. Estimated pounds/acre of beans left in field due to direct combining in 2008.

Pounds/acre	Respondents	Respondents
	(no.)	(%)
Minnesota		
Less than 50	4	14.8
50-100	7	25.9
100-200	13	48.2
More than 200	3	11.1
Total	**27**	**100.0**
North Dakota		
Less than 50	1	1.8
50-100	11	20.0
100-200	25	45.5
More than 200	18	32.7
Total	**55**	**100.0**
Northarvest		
Less than 50	5	6.1
50-100	18	22.0
100-200	38	46.3
More than 200	21	25.6
Total	**82**	**100.0**

Table 8. Cost of direct combining compared with conventional two-pass method in 2008.

Cost of direct combining	Respondents	Respondents
	(no.)	(%)
Minnesota		
Less than 25%	4	9.8
Less than 50%	13	31.7
Less than 75%	3	7.3
Equal or more	3	7.3
Don't know	18	43.9
Total	**41**	**100.0**
North Dakota		
Less than 25%	12	14.6
Less than 50%	17	20.7
Less than 75%	15	18.3
Equal or more	10	12.2
Don't know	28	34.1
Total	**82**	**100.0**
Northarvest		
Less than 25%	16	13.0
Less than 50%	30	24.4
Less than 75%	18	14.6
Equal or more	13	10.6
Don't know	46	37.4
Total	**123**	**100.0**

Table 9. Will type II bean yield better than type III bean?

Answer	Respondents	Respondents
	(no.)	(%)
Minnesota		
Yes	20	57.1
No	15	42.9
Total	**35**	**100.0**
North Dakota		
Yes	34	45.3
No	41	54.7
Total	**75**	**100.0**
Northarvest		
Yes	54	49.1
No	56	50.1
Total	**110**	**100.0**

Agronomy

Table 10. Use of fertilizers on dry bean fields in 2008.

Fertilizer	Respondents	Respondents
	(no.)	(%)
Minnesota		
Nitrogen	67	97.1
Phosphate	55	79.7
Potash	51	73.9
Zinc	42	60.9
Other	9	13.0
North Dakota		
Nitrogen	85	76.6
Phosphate	82	73.9
Potash	19	17.1
Zinc	63	56.8
Other	6	5.4
Northarvest		
Nitrogen	152	84.4
Phosphate	137	76.1
Potash	70	38.9
Zinc	105	58.3
Other	15	8.3

Table 11. Use of soil test prior to fertilization of dry bean fields in 2008.

Soil test	Respondents	Respondents
	(no.)	(%)
Minnesota		
Soil test used	57	85.1
Soil test not used	10	14.9
Total	**67**	**100.0**
North Dakota		
Soil test used	78	78.0
Soil test not used	22	22.0
Total	**100**	**100.0**
Northarvest		
Soil test used	135	80.8
Soil test not used	32	19.2
Total	**157**	**100.0**

Table 12. Use of Rhizobium inoculants on dry beans in 2008.

Rhizobium use	Respondents	Respondents
	(no.)	(%)
Minnesota		
Inoculant used	13	21.3
Inoculant not used	48	78.7
Total	**61**	**100.0**
North Dakota		
Inoculant used	15	16.1
Inoculant not used	78	83.9
Total	**93**	**100.0**
Northarvest		
Inoculant used	28	18.2
Inoculant not used	126	81.8
Total	**154**	**100.0**

Table 13. Desiccants used on dry bean fields in 2008.

Desiccant	Respon-dents	Respon-dents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Sodium chlorate	7	10.1	1430	5.4
Gramoxone Extra	4	5.8	811	3.1
Glyphosate	9	13.0	1655	6.3
Valor	17	24.6	4882	18.6
North Dakota				
Sodium chlorate	3	2.7	587	1.0
Gramoxone Extra	13	11.7	5813	9.6
Glyphosate	22	19.8	7943	13.1
Valor	29	26.1	13457	22.2
Northarvest				
Sodium chlorate	10	5.6	2017	2.3
Gramoxone Extra	17	9.4	6624	7.6
Glyphosate	31	17.2	9598	11.0
Valor	46	25.6	18339	21.1

[a] Respondents' acres only.

Table 14. Crop grown the year prior to dry beans in 2008.

Previous crop	Respondents
	(%)
Minnesota	
Corn	53.4
Wheat	28.0
Sugar beets	13.6
Potatoes	1.7
Oats	0.9
Soybeans	0.9
Sunflowers	0.9
Other	0.9
North Dakota	
Wheat	68.7
Corn	16.4
Barley	7.5
Sugar beets	6.5
Potatoes	1.0
Northarvest	
Wheat	53.6
Corn	30.1
Sugar beets	9.1
Barley	4.7
Potatoes	1.3
Oats	0.3
Soybeans	0.3
Sunflowers	0.3
Other	0.3

Table 15. Frequency of other crops in dry bean rotation in 2008.

Crop	Respondents
	(%)
Minnesota	
Corn	43.11
Wheat	21.3
Soybeans	18.9
Sugar beets	9.0
Potatoes	3.6
Alfalfa	1.5
Oats	0.9
Barley	0.6
Sunflowers	0.6
Other	0.6
North Dakota	
Wheat	53.8
Corn	13.6
Soybeans	13.1
Barley	6.1
Sugar beets	5.9
Sunflowers	1.9
Canola	1.7
Potatoes	1.7
Flax	0.6
Fallow	0.4
Other	1.1
Northharvest	
Wheat	40.3
Corn	25.8
Soybeans	15.5
Sugar beets	7.2
Barley	3.9
Potatoes	2.5
Sunflowers	1.4
Canola	1.0
Alfalfa	0.6
Flax	0.4
Oats	0.4
Fallow	0.3
Other	0.9

Table 16. Number of years in dry bean rotation in 2008.

Number of years	Respondents
	(%)
Minnesota	
2	17.8
3	18.6
4	28.0
5	35.6
North Dakota	
2	29.9
3	28.4
4	20.4
5	21.4
Northarvest	
2	25.4
3	24.8
4	23.2
5	26.7

Table 17. Row spacing reported in dry beans in 2008.

Row spacing	Respondents	Respondents
	(no.)	(%)
Minnesota		
Under 11 inches	2	2.9
11 to 15 inches	3	4.3
16 to 20 inches	1	1.4
21 to 25 inches	30	43.5
26 to 30 inches	32	46.4
More than 30 inches	1	1.4
Total	**69**	**100.0**
North Dakota		
Under 11 inches	4	3.6
11 to 15 inches	7	6.3
16 to 20 inches	3	2.7
21 to 25 inches	23	20.7
26 to 30 inches	69	62.2
More than 30 inches	5	4.5
Total	**111**	**100.0**
Northarvest		
Under 11 inches	6	3.3
11 to 15 inches	10	5.6
16 to 20 inches	4	2.2
21 to 25 inches	53	29.4
26 to 30 inches	101	56.1
More than 30 inches	6	3.3
Total	**180**	**100.0**

Insect Pests

Table 18. Worst insect problem on dry beans in 2008.

Insect[a]	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Leafhopper	32	66.7	11,297	63.0
None	5	10.4	3,687	20.5
Aphids	3	6.3	1,455	8.1
Seed corn maggot	3	6.3	666	3.7
Grasshopper	4	8.3	605	3.4
Other	1	2.1	234	1.3
Total	**48**	**100.0**	**17,944**	**100.0**
North Dakota				
None	16	31.4	7,880	25.1
Grasshopper	11	21.6	7,312	23.3
Leafhopper	9	17.6	5,450	17.4
Cutworms	5	9.8	3,723	11.9
Seed corn maggot	4	7.8	3,690	11.8
Aphids	2	3.9	1,800	5.7
Bean leaf beetle	2	3.9	775	2.5
Spider mite	1	2.0	140	0.4
Other	1	2.0	618	2.0
Total	**51**	**100.0**	**31,388**	**100.0**
Northarvest				
Leafhopper	41	41.4	16,747	36.1
None	21	21.2	11,567	25.0
Grasshopper	15	15.2	7,917	17.1
Cutworms	5	5.1	3,723	8.0
Aphids	5	5.1	3,255	7.0
Seed corn maggot	7	7.1	1,356	2.9
Bean leaf beetle	2	2.0	775	1.7
Spider mite	1	1.0	140	0.3
Other	2	2.0	852	1.8
Total	**99**	**100.0**	**46,332**	**100.0**

[a] Respondents' acres only.

Table 19. Insects ranked as one of the three worst in dry bean fields in 2008.

Insect[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
Spider mite	39	56.5	13,590	51.7
Aphids	12	17.4	4,446	16.9
None	5	7.2	3,687	14.0
Grasshopper	8	11.6	2,545	9.7
Leafhopper	11	15.9	2,223	8.5
Bean leaf beetle	7	10.1	2,168	8.2
Seed corn maggot	1	1.4	966	3.7
Other	7	10.1	2,711	10.3
North Dakota				
Grasshopper	19	17.1	13,612	22.4
Seed corn maggot	11	9.9	8,741	14.4
Cutworms	10	9.0	8,248	13.6
Leafhopper	13	11.7	8,208	13.5
None	16	14.4	7,880	13.0
Bean leaf beetle	9	8.1	6,580	10.8
Aphids	7	6.3	4,385	7.2
Spider mite	2	1.8	205	0.3
Other	2	1.8	1,941	3.2
Northarvest				
Leafhopper	52	28.9	21,798	25.0
Grasshopper	30	16.7	15,835	18.2
None	21	11.7	11,567	13.3
Seed corn maggot	18	10.0	11,452	13.2
Cutworms	17	9.4	10,416	12.0
Bean leaf beetle	17	9.4	9,125	10.5
Aphids	19	10.6	8,831	10.1
Spider mite	3	1.7	1,171	1.3
Other	3	1.7	2,175	2.5

[a] Ranked as No. 1, 2 or 3 insect problem by respondents.

[b] Respondents' acres only.

Table 20. Use of insecticides on dry bean fields in 2008.

Insecticide	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Asana XL	14	20.3	5,828	22.2
Dimethoate	4	5.8	1,781	6.8
Mustang	2	2.9	450	1.7
Warrior	1	1.4	100	0.4
Carbaryl	1	1.4	45	0.2
North Dakota				
Asana XL	3	2.7	2,475	4.1
Warrior	2	1.8	525	0.9
Carbaryl	1	0.9	280	0.5
Dimethoate	1	0.9	240	0.4
Other	2	1.8	825	1.4
Northarvest				
Asana XL	17	9.4	8,303	9.5
Dimethoate	5	2.8	2,021	2.3
Warrior	3	1.7	625	0.7
Mustang	2	1.1	450	0.5
Carbaryl	2	1.1	325	0.4
Other	2	1.1	825	0.9

[a] Respondents' acres only.

Table 21. Use of insecticide seed treatment on dry beans in 2008.

Treatment	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Lorsban	24	34.8	8,440	32.1
Cruiser	8	11.6	1,360	5.2
North Dakota				
Lorsban	16	14.4	8,693	14.3
Cruiser	7	6.3	2,120	3.5
Gaucho	2	1.8	495	0.8
Northarvest				
Lorsban	40	22.2	17,123	19.7
Cruiser	15	8.3	3,480	4.0
Gaucho	2	1.1	495	0.6

[a] Respondents' acres only.

Plant Diseases

Table 22. Worst disease problem on dry beans in 2008.

Disease[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
White mold	25	44.6	9,713	58.7
Bacterial blight	6	10.7	3,824	23.1
None	7	12.5	1,915	11.6
Root rot	17	30.4	1,038	6.3
Rust	1	1.8	60	0.4
Total	**56**	**100.0**	**16,550**	**100.0**
North Dakota				
Bacterial blight	18	22.2	17,446	35.7
White mold	37	45.7	17,224	35.3
None	17	21.0	8,264	16.9
Rust	3	3.7	3,155	6.5
Root rot	6	7.4	2,715	5.6
Total	**81**	**100.0**	**48,804**	**100.0**
Northarvest				
White mold	62	45.3	26,937	37.8
Bacterial blight	24	17.5	21,270	29.8
None	24	17.5	10,179	14.3
Root rot	23	16.8	9,753	13.7
Rust	4	2.9	3,215	4.5
Total	**137**	**100.0**	**71,354**	**100.0**

[a] Ranked as No. 1 disease problem by respondents.

[b] Respondents' acres only.

Table 23. Diseases ranked as one of the three worst on dry beans in 2008.

Disease[a]	Respon-dents	Respon-dents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
White mold	42	60.9	17,827	67.8
Root rot	28	40.6	13,913	52.9
Bacterial blight	24	34.8	12,327	46.9
Rust	9	13.0	6,059	23.0
None	7	10.1	1,915	7.3
Viruses	1	1.4	200	0.8
Alternaria	1	1.4	45	0.2
North Dakota				
Bacterial blight	38	34.2	28,312	46.6
White mold	50	45.0	27,437	45.2
Root rot	23	20.7	17,487	28.8
Rust	17	15.3	8,757	14.4
None	17	15.3	8,264	13.6
Mosaic virus	3	2.7	2,818	4.6
Viruses	3	2.7	2,540	4.2
Anthracnose	2	1.8	1,556	2.6
Northarvest				
White mold	92	51.1	45,264	52.0
Bacterial blight	62	34.4	40,639	46.7
Root rot	51	28.3	31,400	36.1
Rust	26	14.4	14,816	17.0
None	24	13.3	10,179	11.7
Mosaic virus	3	1.7	2,818	3.2
Viruses	4	2.2	2,740	3.1
Anthracnose	2	1.1	1,556	1.8
Alternaria	1	0.6	45	0.1

[a] Ranked as No. 1, 2 or 3 disease problem by respondents.

[b] Respondents' acres only.

Table 24. Fungicides applied to dry bean fields in 2008.

Fungicide	Total acres treated[a]	Total acres treated[a]	Acres treated by air[a]	Acres treated by air[a]	Acres treated by ground[a]	Acres treated by ground[a]
	(no.)	(%)	(no.)	(%)	(no.)	(%)
Minnesota						
None	4,901	18.6	0	0.0	0	0.0
Endura	180	0.7	180	0.7	0	0.0
Headline	7,849	29.8	1,211	4.6	6,138	23.3
Proline	2,703	10.3	300	1.1	2,203	8.4
Topsin (broadcast)	7,752	29.5	2,654	10.1	5,098	19.4
Topsin (banded)	100	0.4	0	0.0	100	0.4
Other	2,238	8.5	0	0.0	2,238	8.5
Total	**25,723**	**97.8**	**4,345**	**16.5**	**15,777**	**60.0**
North Dakota						
None	17,004	28.0	0	0.0	0	0.0
Folicur	550	0.9	0	0.0	550	0.9
Headline	11,452	18.9	377	0.6	10,435	17.2
Proline	11,260	18.5	1,510	2.5	9,200	15.1
Tilt	200	0.3	155	0.3	200	0.3
Topsin (broadcast)	4,671	7.7	0	0.0	4,516	7.4
Topsin (banded)	420	0.7	0	0.0	420	0.7
Other	400	0.7	0	0.0	400	0.7
Total	**45,957**	**75.6**	**2,042**	**3.4**	**25,721**	**42.3**
Northarvest						
None	21,905	25.2	0	0.0	0	0.0
Endura	180	0.2	180	0.2	0	0.0
Folicur	550	0.6	0	0.0	550	0.6
Headline	19,301	22.2	1,588	1.8	16,573	19.0
Proline	13,963	16.0	1,810	2.1	11,403	13.1
Tilt	200	0.2	0	0.0	200	0.2
Topsin (broadcast)	12,423	14.3	2,809	3.2	9,614	11.0
Topsin (banded)	520	0.6	0	0.0	520	0.6
Other	2,638	3.0	0	0.0	2,638	3.0
Total	**71,680**	**82.3**	**6,387**	**7.3**	**41,498**	**47.7**

[a] Respondents' acres only. Some respondents did not indicate application method; therefore, ground-applied acres and air-applied acres may not always equal total acres treated.

Table 25. Use of fungicide seed treatment on dry beans in 2008.

	Respondents	Respondents
	(no.)	(%)
Minnesota		
Treatment used	19	37.3
Treatment not used	32	62.7
Total	**51**	**100.0**
North Dakota		
Treatment used	38	48.7
Treatment not used	40	51.3
Total	**78**	**100.0**
Northarvest		
Treatment used	57	44.2
Treatment not used	72	55.8
Total	**129**	**100.0**

Weeds

Table 26. Worst weed problem in dry bean fields in 2008.

Weed[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
Lambsquarters	25	36.2	9,261	35.2
Kochia	10	14.5	6,859	26.1
Ragweed	10	14.5	2,676	10.2
Redroot pigweed	4	5.8	1,520	5.8
Nightshade	6	8.7	1,286	4.9
Biennial wormwood	2	2.9	1,238	4.7
Waterhemp	3	4.3	1,155	4.4
Canada thistle	2	2.9	1,005	3.8
Volunteer grain	1	1.4	115	0.4
Cocklebur	1	1.4	45	0.2
Other	5	7.2	1138	4.3
Total	**69**	**100.0**	**26,298**	**100.0**
North Dakota				
Kochia	32	28.8	2,2064	36.3
Canada thistle	16	14.4	8,953	14.7
Ragweed	9	8.1	6,635	10.9
Lambsquarters	9	8.1	6,585	10.8
Redroot pigweed	10	9.0	3,395	5.6
Nightshade	8	7.2	2,788	4.6
Wild buckwheat	5	4.5	2,650	4.4
Biennial wormood	6	5.4	2,570	4.2
Wild mustard	4	3.6	1,840	3.0
Wild oat	4	3.6	1,395	2.3
Cocklebur	3	2.7	871	1.4
Volunteer grain	1	0.9	146	0.2
Other	4	3.6	860	1.4
Total	**111**	**100.0**	**60,752**	**100.0**
Northarvest				
Kochia	42	23.3	28,923.0	33.2
Lambsquarters	34	18.9	15,846.0	18.2
Canada thistle	18	10.0	9,958.0	11.4
Ragweed	19	10.6	9,311.0	10.7
Redroot pigweed	14	7.8	4,915.0	5.6
Nightshade	14	7.8	4,074.0	4.7
Biennial wormood	8	4.4	3,808.0	4.4
Wild buckwheat	5	2.8	2,650.0	3.0
Wild mustard	4	2.2	1,840.0	2.1
Wild oat	4	2.2	1,395.0	1.6
Waterhemp	3	1.7	1,155.0	1.3
Cocklebur	4	2.2	916.0	1.1
Volunteer grain	2	1.1	261.0	0.3
Other	9	5.0	1,998.0	2.3
Total	**180**	**100.0**	**87,050**	**100.0**

[a] Ranked as No. 1 weed problem on more than 0.5% of respondents' acres.

[b] Respondents' acres only.

Table 27. Weeds ranked as one of the three worst in dry bean fields in 2008.

Weed[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
Lambsquarters	52	75.4	19,931	75.8
Kochia	20	29.0	11,662	44.3
Ragweed	27	39.1	11,627	44.2
Redroot pigweed	20	29.0	8,719	33.2
Nightshade	26	37.7	6,713	25.5
Canada thistle	10	14.5	4,035	15.3
Waterhemp	10	14.5	3,958	15.1
Volunteer grain	10	14.5	2,420	9.2
Foxtail	6	8.7	2,218	8.4
Biennial wormwood	5	7.2	2,154	8.2
Cocklebur	6	8.7	1,623	6.2
Wild buckwheat	2	2.9	739	2.8
Other	7	10.1	1,967	7.5
North Dakota				
Kochia	69	62.2	42,804	70.5
Biennial wormwood	26	23.4	20,615	33.9
Canada thistle	44	39.6	19,227	31.6
Lambsquarters	27	24.3	17,200	28.3
Nightshade	30	27.0	15,784	26.0
Redroot pigweed	33	29.7	13,323	21.9
Ragweed	18	16.2	11,130	18.3
Cocklebur	17	15.3	9,386	15.4
Volunteer grain	14	12.6	5,482	9.0
Wild oat	11	9.9	5,386	8.9
Wild buckwheat	5	4.5	2,650	4.4
Foxtail	5	4.5	2,536	4.2
Wild mustard	6	5.4	2,520	4.1
Other	8	7.2	5,245	8.6
Northarvest				
Kochia	89	49.4	54,466	62.6
Lambsquarters	79	43.9	37,131	42.7
Canada thistle	54	30.0	23,262	26.7
Biennial wormwood	31	17.2	22,769	26.2
Ragweed	45	25.0	22,757	26.1
Nightshade	56	31.1	22,497	25.8
Redroot pigweed	53	29.4	22,042	25.3
Cocklebur	23	12.8	11,009	12.6
Volunteer grain	24	13.3	7,902	9.1
Wild oat	11	6.1	5,386	6.2
Foxtail	11	6.1	4,754	5.5
Waterhemp	10	5.6	3,958	4.5
Wild buckwheat	7	3.9	3,389	3.9
Wild mustard	6	3.3	2,520	2.9
Other	15	8.3	7,212	8.3

[a] Ranked as No. 1, 2 or 3 weed problem on more than 10% of respondents' acres.

[b] Respondents' acres only.

Table 28. Weed control practices used on dry bean fields in 2008.

Herbicide or other practice*	Acres reported[a]	Acres reported[a]
	(no.)	(%)
Minnesota		
Rezult	16,443	62.5
Raptor	15,349	58.4
Reflex	10,134	38.5
Prowl	7,779	29.6
Cultivation	7,284	27.7
Outlook	7,015	26.7
Basagran	5,884	22.4
Sonalan (spring)	5,559	21.1
Glyphosate (pre-harvest)	4,064	15.5
Select	3,107	11.8
Treflan (spring)	2,403	9.1
Assure II	2,275	8.7
Permit	2,146	8.2
Pursuit	1,778	6.8
Eptam (spring)	1,590	6.0
Lasso	745	2.8
Treflan (fall)	563	2.1
Rotary Hoe	538	2.0
Sonalan (fall)	355	1.3
Dual	325	1.2
Poast	170	0.6
Spartan	100	0.4
Other	836	3.2
North Dakota		
Rezult	46,764	77.0
Raptor	38,812	63.9
Sonalan (spring)	25,171	41.4
Cultivation	24,813	40.8
Reflex	24,290	40.0
Select	14,588	24.0
Basagran	13,962	23.0
Prowl	9,431	15.5
Glyphosate (pre-harvest)	9,374	15.4
Treflan (spring)	5,156	8.5
Pursuit	4,727	7.8
Rotary Hoe	4,128	6.8
Assure II	3,145	5.2
Spartan	2,683	4.4
Sonalan (fall)	1,509	2.5
Poast	1,500	2.5
Eptam (spring)	1,315	2.2
Outlook	1,255	2.1
Permit	1,168	1.9
Lasso	640	1.1
Eptam (fall)	220	0.4
Northarvest		
Rezult	63,207	72.6
Raptor	54,161	62.2
Reflex	34,424	39.5
Cultivation	32,097	36.9
Sonalan (spring)	30,730	35.3
Basagran	19,846	22.8
Select	17,695	20.3
Prowl	17,210	19.8
Glyphosate (pre-harvest)	13,438	15.4
Outlook	8,270	9.5
Treflan (spring)	7,559	8.7
Pursuit	6,505	7.5
Assure II	5,420	6.2
Rotary Hoe	4,666	5.4
Permit	3,314	3.8
Eptam (spring)	2,905	3.3
Spartan	2,783	3.2
Sonalan (fall)	1,864	2.1
Poast	1,670	1.9
Lasso	1,385	1.6
Treflan (fall)	563	0.6
Dual	325	0.4
Eptam (fall)	220	0.3
Other	836	1.0

[a] Respondents' acres only.

Table 29. Weed control practices used, by bean market class, in 2008.

	% acres treated[a]			
Herbicide or other practice*	Black	Kidney[b]	Navy	Pinto
Minnesota				
Assure II	28.2	10.9	0	19.3
Basagran	19.5	38.9	13.8	0
Dual	19.5	0	0	0
Eptam (spring)	14.4	9.0	4.0	0
Lasso	0	6.4	0	0
Outlook	15.0	25.4	13.2	0
Permit	0.9	6.8	12.1	19.3
Poast	10.2	0	0	0
Prowl	31.8	40.1	24.6	33.5
Pursuit	7.2	9.5	2.1	17.8
Raptor	53.5	49.6	62.0	51.0
Reflex	29.4	32.8	35.6	45.8
Glyphosate (pre-harvest)	0	2.6	1.0	24.4
Rezult	100.0	33.3	70.4	100.0
Select	7.2	5.4	22.9	29.2
Sonalan (fall)	0	0	4.8	0
Sonalan (spring)	2.4	21.7	28.4	39.0
Spartan	0	0	0	4.4
Treflan (fall)	0	0	7.6	0
Treflan (spring)	19.5	2.6	16.8	8.9
Cultivation	0	42.5	15.0	39.0
Rotary Hoe	0	0	0	23.9
Other	0	5.3	3.0	0
North Dakota				
Assure II	12.9	0	8.8	3.2
Basagran	3.1	0	61.5	18.1
Eptam (fall)	0	0	0	0.5
Eptam (spring)	0	0	0	3.0
Glyphosate (pre-harvest)	27.3	0	3.4	16.0
Lasso	0	0	0	1.5
Outlook	4.9	0	0	2.0
Permit	5.6	0	0.4	1.6
Poast	0	0	0	2.9
Prowl	32.1	0	16.7	12.3
Pursuit	16.4	0	1.0	7.7
Raptor	58.5	0	66.7	63.2
Reflex	36.3	0	67.4	35.9
Rezult	97.5	0	72.3	75.8
Select	30.7	0	6.2	26.8
Sonalan (fall)	0	0	0	3.5
Sonalan (spring)	12.5	0	58.2	43.7
Spartan	0	0	0	5.0
Treflan (spring)	5.6	0	1.8	10.2
Cultivation	25.2	0	19.6	44.7
Rotary Hoe	12.0	0	16.2	4.3
Northarvest				
Assure II	15.6	10.9	4.6	4.0
Basagran	6.0	38.9	38.7	17.2
Dual	3.4	0	0	0
Eptam (fall)	0	0	0	0.5
Eptam (spring)	2.5	9.0	1.9	2.9
Glyphosate (pre-harvest)	22.5	2.6	2.3	16.4
Lasso	0	6.4	0	1.4
Outlook	6.6	25.4	6.3	1.9
Permit	4.8	6.8	6.0	2.5
Poast	1.8	0	0	2.8
Prowl	32.1	40.1	20.5	13.4
Pursuit	14.8	9.5	1.5	8.2
Raptor	57.7	49.6	64.4	62.6
Reflex	35.1	32.8	52.2	36.4
Rezult	100.0	33.3	71.4	77.4
Select	26.7	5.4	14.2	27.0
Sonalan (fall)	0	0	2.3	3.3
Sonalan (spring)	10.8	21.7	44.0	43.4
Spartan	0	0	0	5.0
Treflan (fall)	0	0	3.6	0
Treflan (spring)	8.0	2.6	9.0	10.1
Cultivation	20.9	42.5	17.4	44.4
Rotary Hoe	9.9	0	8.5	5.2
Other	0	5.3	1.4	0

[a] % of respondents' acres for that class; includes practices used on more than 10% of respondents' acres for one or more classes.
[b] Only 200 acres of kidney bean were surveyed in North Dakota. Data are not included.

Other Responses

The following "other" responses were recorded; the number of responses are in parentheses next to the response.

Dry bean class:
Great Northern (2),
Enola Yellow (1), Small Red (1)

Navy cultivar:
Sailor (2), Cirrus (1), GT544 (1),
Regent (1), 1054 (1), not listed (1)

Pinto cultivar:
Sonora (8), Baja (2), Rally (1), 49230 (1)

Black cultivar:
Lorreto (1), Midnight (1), Shadow (1)

Kidney cultivar:
Drake (5), Pink Panther (2),
Sacramento (2), California Early (1),
LRK (1), Red Rover (1), 95 (1)

Pink cultivar:
312 (1), 537 (1), 573 (1)

Worst weed:
Bindweed (1), common mallow (1),
curly dock (2), marshelder (1),
quackgrass (1), shepherd's purse (1),
smartweed (3), velvetleaf (1), wild
sunflower (3)

Worst insect/mite:
Dipterans (1), wireworms (1)

Fertilizer:
Sulfur (12), boron (1), calcium (1),
micronutrient package (1)

Fungicides:
Calcium (2), Contans (2), T-methyl (2)

Seed treatments:
Cruiser Maxx (4),
Apron/streptomycin (1), Captan (1),
Captan/streptomycin (1), Kodiak (1)

Herbicides:
Hand weeding (1)

Insecticides:
Silencer (1)

Rotation crops:
Peas (4), CRP (1), hay (1)

Production problem:
Deer (2), drought (1), salinity (1)

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Appendix I.

Please circle or fill in the requested information on pest problems and pesticide used on your 2008 dry bean crop.

Total dry bean acres planted in 2008
Total irrigated acres
Total dry bean acres on tile-drained ground
Total dry bean acres harvested
Dry bean acres with hail damage
Dry bean acres with frost damage
Dry bean acres with water damage

State	County	Acres
Minnesota		
North Dakota		
South Dakota		

Dry Beans Grown		
Class	**Variety**	**Acres**
Pinto	1. Buster	
	2. GTS 900	
	3. Maverick	
	4. AC Pintoba	
	5. Remington	
	6. Winchester	
	7. LaPaz	
	8. Othello	
	9. Windbreaker	
	10. Lariat	
	11. Stampede	
	12. ND-307	
	13. Other pinto (specify)	
Navy	21. Arthur	
	22. Mayflower	
	23. Navigator	
	24. Norstar	
	25. Vista	
	26. Voyager	
	27. Ensign	
	28. T9903	
	29. T9905	
	30. Avalanche	
	31. Other navy (specify)	
Kidney	41. Montcalm (DRK)	
	42. Red Hawk	
	43. CELRK	
	44. Chinook 2000	
	45. Foxfire	
	46. Beluga	
	47. Other kidney (specify)	
Black	61. Onyx	
	62. Jaguar	
	63. T-39	
	64. Eclipse	
	65. Expresso	
	66. Domino	
	67. Condor	
	68. Shiny Crow	
	69. Other black (specify)	
Pink	81. Sedona	
	82. Floyd	
	83. Viva	
	84. Other pink (specify)	
Other	91. (specify class and variety)	

Crop Rotation (field with dry beans in 2008) (write in crops grown in previous years)		
	Field 1 - dry beans '08	**Field 2 - dry beans '08**
2007		
2006		
2005		
2004		

Agronomy	
What is your row spacing in inches?	
What is your plant population (plants per acre)?	

Biggest Production Problem in Dry Beans (circle one and complete table)		
	Acres Affected	Bean Class
1. Applied-herbicide injury*		
2. *List herbicide in No. 1		
3. Herbicide drift injury		
4. Delayed planting		
5. Emergence/stand		
6. Harvest		
7. Disease		
8. Insects		
9. Micronutrient deficiency		
10. Weeds		
11. Excess water		
12. Other (specify)		
13. None		

Insecticides Used on Dry Beans		
Insecticide (write in name or number)	**No. Acres Treated**	**No. of Sprays**
Dry Bean Insecticides	1. Acephate (Orthene, Address) 2. Asana XL 3. Baythroid XL 4. Capture 5. Carbaryl (Sevin) 6. Dimethoate 7. Dipel 8. Di-Syston G 9. Hero 10. Lannate LV	11. Malathion 12. Mustang Max 13. Penncap-M 14. Spintor 15. Proaxis 16. Nuprid 17. Thimet 20G 18. Tombstone 19. Warrior 20. Other
Was insecticide-treated seed used? Yes No		
If so, what product(s)?		
Acres planted Cruiser 5FS or Cruiser MAXX Beans Seed Treatment		
Acres planted Lorsban Seed Treatment		
Acres planted Gaucho Seed Treatment		

Worst Insect/Mite Problem (Rank 1-3; 1 = worst) mark ONLY 3	
Aphids	
Cutworms	
Bean leaf beetle	
Caterpillars	
Grasshoppers	
Leafhoppers	
Spider mites	
Seedcorn maggot	

Worst Weed Problems in Dry Beans (Rank 1-3; 1 = worst) mark ONLY 3			
Biennial wormwood		Nightshade	
Canada thistle		Ragweed	
Cocklebur		Redroot pigweed	
Foxtail		Volunteer grain	
Kochia		Wild oat	
Lambsquarters		Other	

Weed Control Practices Used on Dry Beans
Mark weed control used and indicate areas treated for each item. Count double application, double cultivation, etc., as double acres.

Weed Control Used (write in name or number)	Class of Bean	Acres Treated	Class of Bean (if additional)	Acres Treated	Class of Bean (if additional)	Acres Treated

Dry Bean Herbicide

1. Assure II
2. Basagran/generics
3. Dual
4. Eptam (fall)
5. Eptam (spring)
6. Glyphosate (pre harvest)
7. Lasso/generics
8. Outlook
9. Permit
10. Poast
11. Prowl
12. Pursuit
13. Raptor
14. Reflex
15. Roundup Ultra (preplant)
16. Rezult
17. Select
18. Sonalan (fall)
19. Sonalan (spring)
20. Spartan
21. Trifluralin (fall)
22. Triflurallin (spring)
23. Trifluralin + Eptam (spring)
24. No Herbicide
25. Cultivation
26. Rotary hoe
27. Other

Desiccants	Class of Bean	Acres Treated	Class of Bean (if additional)	Acres Treated	Class of Bean (if additional)	Acres Treated
Sodium Chlorate (Leafex, Defol)						
Gramoxone Extra						
Aim						
Glyphosate						
Valor						

Worst Disease Problems (Rank 1-3; 1 = worst) mark ONLY 3	Alternaria	Anthracnose	Bacterial Blight	Root Rot	Rust	White Mold	None
	Viruses - General	Bean Common Mosaic Virus					

Fungicides Used on Dry Beans

Fungicide Used (write in name or number)	No. Acres Treated	No. of Sprays	Application Method (circle one)	
			air	ground
			air	ground
			air	ground
			air	ground
			air	ground
			air	ground
			air	ground
			air	ground

Dry Bean Fungicides

1. Bravo/ generics
2. Champion/Champ
3. Endura
4. Folicur
5. Headline
6. Intercept
7. Kocide
8. Proline
9. Maneb
10. Thiolux
11. Tilt
12. Topsin/generics (broadcast)
13. Topsin/generics (banded)
14. Quadris/Amistar
15. Other
16. Any tank mixes? List combination

Was fungicide-treated seed used? Yes No

If so, what product(s)?

General Fertilizer Program for Dry Beans - pounds per acre applied				
Nitrogen	Phosphate	Potash	Zinc	Other
Inoculate with rhizobium bacteria? Yes No				
Soil test prior to fertilization? Yes No				

Direct Harvest	**A type II bean (upright with short vine bean) will yield better than a type III bean (prostrate or more lying-down vine bean)?** Yes No
	On your farm, what percentage of your total dry bean area is being harvested using direct combining? (circle one) 0% 1 - 25% 26 - 50% 51 - 75% 76 -100%
	If direct combining is a common practice on your farm, do you have an estimate of how many pounds per acre you are leaving in the field due to this practice? (circle one) Less than 50 50-100 100-200 200 or more I don't know
	The cost of direct combining, compared with the conventional method (two passes), is? (circle one) Less than 25% Less than 50% Less than 75% Equal or more I don't know

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Photos by the NDSU Extension Service

For more information on this and other topics, see: www.ag.ndsu.edu

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