E-1522

2010 DRY BEAN Grower Survey

of Pest Problems and Pesticide Use

in Minnesota and North Dakota



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Introduction

The 2010 dry bean grower survey is the 21st 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 in the survey were anonymous.

Results of previous surveys dated 1987-2000, 2002 and 2004-2009 have been published (1-19). 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.

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, acres planted by respondents and total state acres in 2010.

Growers	No. of respondents	Respondents' acres	Total acres[a]	Acres surveyed
				(% of total)
Minnesota	63	28,556	185,000	15.4
North Dakota	99	56,853	800,000	7.1
Northarvest	162	85,409	985,000	8.7

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

Table 2. Dry bean production by county in 2010.

Minnesota County	No. of Respon-dents[a]	Respon-dents' acres	North Dakota County	No. of Respon-dents[a]	Respon-dents' acres
Polk	9	3,845	Walsh	21	8,411
Otter Tail	9	3,367	Wells	10	7,497
Mahnomen	4	2,670	Ramsey	10	6,984
Hubbard	3	2,138	Pembina	13	6,322
Swift	6	1,858	Grand Forks	15	6,136
Kandiyohi	5	1,849	Nelson	6	3,477
Grant	3	1,746	Benson	5	2,719
Marshall	4	1,725	McLean	3	1,950
Norman	1	1,200	Steele	7	1,895
Pope	3	1,079	Cass	4	1,738
Renville	7	956	Traill	6	1,722
Red Lake	2	923	Barnes	3	1,535
Wadena	2	833	Cavalier	4	1,350
Stevens	3	702	Griggs	2	1,326
Traverse	2	436	Towner	1	927
Sherburne	2	380	Emmons	1	800
Crow Wing	1	365	Richland	2	458
Stearns	1	350	Ransom	2	415
Beltrami	1	310	Eddy	2	377
Big Stone	1	310	Stutsman	1	250
McLeod	3	277	Pierce	1	185
Chippewa	2	255	Kidder	1	145
Todd	1	210	Dickey	1	114
Douglas	1	182	Sargent	1	70
Morrison	1	165	LaMoure	1	50
Lac Qui Parle	1	150			
Clay	1	145	**Total**		**56,853**
Sibley	2	130			
Total		**28,556**			

[a] Some respondents had dry bean acreage in more than one county.

Table 3. Dry bean acres harvested, irrigated, on tile-drained ground, and damaged by hail, frost and water in 2010.

	Acres reported	Acres reported
	(no.)[a]	(%)[a]
Minnesota		
Harvested	28,052	98.2
Irrigated	9,031	31.6
Tile drained	7,933	27.8
Hail damaged	2,622	9.2
Frost damaged	0	0
Water damaged	6,534	22.9
North Dakota		
Harvested	53,802	94.6
Irrigated	585	1.0
Tile drained	948	1.7
Hail damaged	3,412	6.0
Frost damaged	80	0.1
Water damaged	14,849	26.1
Northarvest		
Harvested	81,854	95.8
Irrigated	9,616	11.3
Tile drained	8,881	10.4
Hail damaged	6,034	7.1
Frost damaged	80	0.1
Water damaged	21,383	25.0

[a] Respondents' acres only.

Table 4. Dry bean market classes grown in 2010.

Market class	Acres reported	Acres reported
	(no.)[a]	(%)[a]
Minnesota		
Kidney	13,352	46.8
Navy	8,093	28.3
Black	2,587	9.1
Pink	2,485	8.7
Pinto	1,939	6.8
Red	100	0.4
Great Northern	0	0
Total	**28,556**	**100.0**
North Dakota		
Pinto	39,736	69.9
Navy	8,521	15.0
Black	6,167	10.8
Pink	1,460	2.6
Great Northern	607	1.1
Red	362	0.6
Kidney	0	0
Total	**56,853**	**100.0**
Northarvest		
Pinto	41,675	48.8
Navy	16,614	19.5
Kidney	13,352	15.6
Black	8,754	10.2
Pink	3,945	4.6
Great Northern	607	0.7
Red	462	0.5
Total	**85,409**	**100.0**

[a]Respondents' acres only.

Table 5. Dry bean varieties grown in 2010.

		Acres planted[a]					
Variety	**Class[b]**	**Minnesota**	**%**	**North Dakota**	**%**	**Northarvest**	**%**
Eclipse	Black	1,165	4.1	4,605	8.1	5,770	6.8
Zorro	Black	353	1.2	716	1.3	1,069	1.3
Jaguar	Black	942	3.3	0	0	942	1.1
T39	Black	127	0.4	366	0.6	493	0.6
Not specified	Black	0	0	300	0.5	300	0.4
Condor	Black	0	0	180	0.3	180	0.2
Total Black	**Black**	**2,587**	**9.1**	**6,167**	**10.8**	**8,754**	**10.2**
Beryl	Great Northern	0	0	400	0.7	400	0.5
GN 118	Great Northern	0	0	207	0.4	207	0.2
Total Great Northern	**Great Northern**	**0**	**0**	**607**	**1.1**	**607**	**0.7**
Moncalm	Kidney	4,600	16.1	0	0	4,600	5.4
Red Hawk	Kidney	3,221	11.3	0	0	3,221	3.8
Pink Panther	Kidney	1,858	6.5	0	0	1,858	2.2
Foxfire	Kidney	1,071	3.8	0	0	1,071	1.3
Cabernet	Kidney	750	2.6	0	0	750	0.9
Red Rover	Kidney	692	2.4	0	0	692	0.8
Beluga	Kidney	445	1.6	0	0	445	0.5
CELRK	Kidney	200	0.7	0	0	200	0.2
Not specified	Kidney	200	0.7	0	0	200	0.2
Chinook 2000	Kidney	150	0.5	0	0	150	0.2
Drake	Kidney	105	0.4	0	0	105	0.1
W585	Kidney	60	0.2	0	0	60	0.1
Total Kidney	**Kidney**	**13,352**	**46.8**	**0**	**0**	**13,352**	**15.6**
Vista	Navy	3,449	12.1	261	0.5	3,710	4.3
T9905	Navy	1,613	5.6	1,435	2.5	3,048	3.6
HMS Medalist	Navy	897	3.1	1,759	3.1	2,656	3.1
Ensign	Navy	658	2.3	1,170	2.1	1,828	2.1
Norstar	Navy	226	0.8	1,484	2.6	1,710	2.0
T9903	Navy	1,030	3.6	632	1.1	1,662	1.9
Navigator	Navy	0	0	1,269	2.2	1,269	1.5
Envoy	Navy	0	0	220	0.4	220	0.3
Mayflower	Navy	75	0.3	90	0.2	165	0.2
Regent	Navy	145	0.5	0	0	145	0.2
Roger 331	Navy	0	0	118	0.2	118	0.1
GTS 544	Navy	0	0	50	0.1	50	0.1
ADM 557	Navy	0	0	33	0.1	33	0
Total Navy	**Navy**	**8,093**	**28.3**	**8,521**	**15.0**	**16,614**	**19.5**
UI 537	Pink	1,805	6.3	0	0	1,805	2.1
Floyd	Pink	100	0.4	960	1.7	1,060	1.2
Sedona	Pink	195	0.7	500	0.9	695	0.8
Not specified	Pink	200	0.7	0	0	200	0.2
ISB 473	Pink	155	0.5	0	0	155	0.2
Viva	Pink	30	0.1	0	0	30	0
Total Pink	**Pink**	**2,485**	**8.7**	**1,460**	**2.6**	**3,945**	**4.6**
La Paz	Pinto	79	0.3	10,023	17.6	10,102	11.8
Stampede	Pinto	518	1.8	6,301	11.1	6,819	8.0
Windbreaker	Pinto	0	0	6,262	11.0	6,262	7.3
Lariat	Pinto	790	2.8	5,462	9.6	6,252	7.3
Maverick	Pinto	125	0.4	5,468	9.6	5,593	6.5
ND307	Pinto	152	0.5	1,951	3.4	2,103	2.5
Buster	Pinto	70	0.2	1,773	3.1	1,843	2.2
Mariah	Pinto	0	0	700	1.2	700	0.8
ProVita 6203	Pinto	205	0.7	180	0.3	385	0.5
Sonora	Pinto	0	0	380	0.7	380	0.4
Medicine Hat	Pinto	0	0	325	0.6	325	0.4
Durango	Pinto	0	0	236	0.4	236	0.3
Topaz	Pinto	0	0	200	0.4	200	0.2
GTS 900	Pinto	0	0	150	0.3	150	0.2
Variety 6093	Pinto	0	0	100	0.2	100	0.1
Not specified	Pinto	0	0	100	0.2	100	0.1
Grand Mesa	Pinto	0	0	75	0.1	75	0.1
GTS 903	Pinto	0	0	50	0.1	50	0.1
Total Pinto	**Pinto**	**1,939**	**6.8**	**39,736**	**69.9**	**41,675**	**48.8**
Merlot	Red	100	0.4	282	0.5	382	0.4
Ryder	Red	0	0	80	0.1	80	0.1
Total Red	**Red**	**100**	**0.4**	**362**	**0.6**	**462**	**0.5**
Grand Total	**All classes**	**28,556**	**100.0**	**56,853**	**100.0**	**85,409**	**100.0**

[a]Respondents' acres only.

Table 6. Worst dry bean production problem reported in 2010.

Worst production problem	Respondents	Respondents	Acres reported	Acres reported
	(no.)	(%)	(no.)[a]	(%)[a]
Minnesota				
Excess water	28	45.2	11,142	62.1
Disease	17	27.4	11,087	60.2
None	2	3.2	1,819	9.9
Harvest	2	3.2	1,610	8.7
Weeds	7	11.3	1,111	6.0
Insects	1	1.6	700	3.8
Hail	1	1.6	365	2.0
Micronutrient deficiency	1	1.6	300	1.6
Delayed planting	1	1.6	150	0.8
Emergence/stand	1	1.6	102	0.6
Herbicide drift injury	1	1.6	20	0.1
Total	**62**	**100.0**	**28,686**	**100.0**
North Dakota				
Excess water	46	46.9	9,734	36.2
Disease	22	22.4	8,812	32.8
Weeds	10	10.2	3,605	13.4
Harvest	3	3.1	1,477	5.5
Drought	2	2.0	980	3.6
None	5	5.1	700	2.6
Delayed planting	2	2.0	460	1.7
Applied herbicide injury (Raptor)	2	2.0	332	1.2
Emergence/stand	2	2.0	250	0.9
Hail	1	1.0	205	0.8
Pod set	1	1.0	185	0.7
Insects	2	2.0	129	0.5
Total	**98**	**100.0**	**26,869**	**100.0**
Northharvest				
Excess water	74	46.3	21,156	46.7
Disease	39	24.4	19,899	44.0
Weeds	17	10.6	4,716	10.4
Harvest	5	3.1	3,087	6.8
None	7	4.4	2,519	5.6
Drought	2	1.3	980	2.2
Insects	3	1.9	829	1.8
Delayed planting	3	1.9	610	1.3
Hail	2	1.3	570	1.3
Emergence/stand	3	1.9	352	0.8
Applied herbicide injury (Raptor)	2	1.3	332	0.7
Micronutrient deficiency	1	0.6	300	0.7
Pod set	1	0.6	185	0.4
Herbicide drift injury	1	0.6	20	0
Total	**160**	**100.0**	**55,555**	**100.0**

[a]Respondents' acres only.

Table 7. Row spacing by dry bean market class in 2010.

Row spacing	Black		Great Northern		Kidney		Navy		Pink		Pinto		Red	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Minnesota														
< 11 inches	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 to 15 inches	4	36.4	0	0	0	0	5	16.7	0	0	0	0	0	0
16 to 20 inches	0	0	0	0	0	0	3	10.0	0	0	0	0	0	0
21 to 25 inches	6	54.5	0	0	6	23.1	17	56.7	3	37.5	3	50.0	1	100.0
26 to 30 inches	1	9.1	0	0	19	73.1	4	13.3	4	50.0	2	33.3	0	0
> 30 inches	0	0	0	0	1	3.8	1	3.3	1	12.5	1	16.7	0	0
Total	**11**	**100.0**	**0**	**0**	**26**	**100.0**	**30**	**100.0**	**8**	**100.0**	**6**	**100.0**	**1**	**100.0**
North Dakota														
< 11 inches	1	5.3	0	0	0	0	1	3.7	0	0	1	1.4	0	0
11 to 15 inches	1	5.3	0	0	0	0	2	7.4	0	0	6	8.1	0	0
16 to 20 inches	1	5.3	0	0	0	0	0	0	0	0	4	5.4	0	0
21 to 25 inches	7	36.8	0	0	0	0	13	48.1	2	50.0	16	21.6	1	100.0
26 to 30 inches	8	42.1	2	100.0	0	0	11	40.7	2	50.0	47	63.5	0	0
> 30 inches	1	5.3	0	0	0	0	0	0	0	0	0	0	0	0
Total	**19**	**100.0**	**2**	**100.0**	**0**	**0**	**27**	**100.0**	**4**	**100.0**	**74**	**100.0**	**1**	**100.0**
Northarvest														
< 11 inches	1	3.3	0	0	0	0	1	1.8	0	0	1	1.3	0	0
11 to 15 inches	5	16.7	0	0	0	0	7	12.3	0	0	6	7.5	0	0
16 to 20 inches	1	3.3	0	0	0	0	3	5.3	0	0	4	5.0	0	0
21 to 25 inches	13	43.3	0	0	6	23.1	30	52.6	5	41.7	19	23.8	2	100.0
26 to 30 inches	9	30.0	2	100.0	19	73.1	15	26.3	6	50.0	49	61.3	0	0
> 30 inches	1	3.3	0	0	1	3.8	1	1.8	1	8.3	1	1.3	0	0
Total	**30**	**100.0**	**2**	**100.0**	**26**	**100.0**	**57**	**100.0**	**12**	**100.0**	**80**	**100.0**	**2**	**100.0**

Table 8. Seeding rate by dry bean market class in 2010.

Row spacing	Black		Great Northern		Kidney		Navy		Pink		Pinto		Red	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Minnesota														
< 70,000	0	0	0	0	3	13.0	0	0	1	20.0	2	33.3	0	0
70 to 79,000	1	9.1	0	0	8	34.8	0	0	3	60.0	4	66.7	0	0
80 to 89,000	0	0	0	0	9	39.1	0	0.0	1	20.0	0	0.0	0	0.0
90 to 99,000	0	0.0	0	0.0	3	13.0	2	6.9	0	0.0	0	0.0	0	0.0
100 to 109,000	3	27.3	0	0.0	0	0.0	6	20.7	0	0.0	0	0.0	0	0.0
110 to 119,000	4	36.4	0	0.0	0	0.0	12	41.4	0	0.0	0	0.0	1	100.0
120 to 129,000	2	18.2	0	0.0	0	0.0	6	20.7	0	0.0	0	0.0	0	0.0
> 129,000	1	9.1	0	0.0	0	0.0	3	10.3	0	0.0	0	0.0	0	0.0
Total	**11**	**100.0**	**0**		**23**	**100.0**	**29**	**100.0**	**5**	**100.0**	**6**	**100.0**	**1**	**100.0**
North Dakota														
< 70,000	0	0	0	0	0	0	0	0.0	2	50.0	23	33.8	0	0
70 to 79,000	3	17.6	0	0	0	0	1	4.2	1	25.0	33	48.5	0	0
80 to 89,000	1	5.9	1	100.0	0	0	1	4.2	1	25.0	7	10.3	1	100.0
90 to 99,000	4	23.5	0	0	0	0	7	29.2	0	0	3	4.4	0	0
100 to 109,000	6	35.3	0	0	0	0	7	29.2	0	0	0	0	0	0
110 to 119,000	3	17.6	0	0	0	0	4	16.7	0	0	0	0	0	0
120 to 129,000	0	0	0	0	0	0	2	8.3	0	0	2	2.9	0	0
> 129,000	0	0	0	0	0	0	2	8.3	0	0	0	0.0	0	0
Total	**17**	**100.0**	**1**	**100.0**	**0**	**0**	**24**	**100.0**	**4**	**100.0**	**68**	**100.0**	**1**	**100.0**
Northarvest														
< 70,000	0	0	0	0	3	13.0	0	0	3	33.3	25	33.8	0	0
70 to 79,000	4	14.3	0	0	8	34.8	1	1.9	4	44.4	37	50.0	0	0
80 to 89,000	1	3.6	1	100.0	9	39.1	1	1.9	2	22.2	7	9.5	1	50.0
90 to 99,000	4	14.3	0	0	3	13.0	9	17.0	0	0	3	4.1	0	0
100 to 109,000	9	32.1	0	0	0	0	13	24.5	0	0	0	0	0	0
110 to 119,000	7	25.0	0	0	0	0	16	30.2	0	0	0	0	1	50.0
120 to 129,000	2	7.1	0	0	0	0	8	15.1	0	0	2	2.7	0	0
> 129,000	1	3.6	0	0	0	0	5	9.4	0	0	0	0	0	0
Total	**28**	**100.0**	**1**	**100.0**	**23**	**100.0**	**53**	**100.0**	**9**	**100.0**	**74**	**100.0**	**2**	**100.0**

Table 9. Percent of total dry bean acres harvested by direct combining in 2010.

Percent direct combined	Respondents	Respondents
	(no.)	(%)
Minnesota		
0%	3	9.1
1-25%	1	3.0
26-50%	3	9.1
51-75%	2	6.1
76-100%	24	72.7
Total	**33**	**100.0**
North Dakota		
0%	13	18.1
1-25%	6	8.3
26-50%	9	12.5
51-75%	8	11.1
76-100%	36	50.0
Total	**72**	**100.0**
Northarvest		
0%	16	15.2
1-25%	7	6.7
26-50%	12	11.4
51-75%	10	9.5
76-100%	60	57.1
Total	**105**	**100.0**

Table 10. Estimated yield loss in direct-harvested dry bean in 2010.

Estimated yield loss	Respondents	Respondents
	(no.)	(%)
Minnesota		
1-5%	17	56.7
6-10%	10	33.3
11-15%	2	6.7
16-20%	1	3.3
21-25%	0	0
25-30%	0	0
Total	**30**	**100.0**
North Dakota		
1-5%	17	29.8
6-10%	23	40.4
11-15%	8	14.0
16-20%	5	8.8
21-25%	3	5.3
25-30%	1	1.8
Total	**57**	**100.0**
Northarvest		
1-5%	34	39.1
6-10%	33	37.9
11-15%	10	11.5
16-20%	6	6.9
21-25%	3	3.4
25-30%	1	1.1
Total	**87**	**100.0**

Table 11. Estimated yield loss in conventionally harvested dry bean in 2010.

Estimated yield loss	Respondents	Respondents
	(no.)	(%)
Minnesota		
1-5%	6	20.0
6-10%	4	13.3
11-15%	2	6.7
16-20%	0	0
21-25%	0	0
No conventional harvest	18	60.0
Total	**30**	**100.0**
North Dakota		
1-5%	23	40.4
6-10%	10	17.5
11-15%	1	1.8
16-20%	0	0
21-25%	1	1.8
No conventional harvest	22	38.6
Total	**57**	**100.0**
Northarvest		
1-5%	29	33.3
6-10%	14	16.1
11-15%	3	3.4
16-20%	0	0
21-25%	1	1.1
No conventional harvest	40	46.0
Total	**87**	**100.0**

Table 12. Type II dry bean row spacing by market class in 2010.

Row spacing	Black		Navy		Pinto	
	Respondents	Respondents	Respondents	Respondents	Respondents	Respondents
	(no.)	(%)	(no.)	(%)	(no.)	(%)
Minnesota						
< 11 inches	0	0	0	0	0	0
11 to 15 inches	4	44.4	5	20.0	0	0
16 to 20 inches	0	0	3	12.0	0	0
21 to 25 inches	4	44.4	13	52.0	2	50.0
26 to 30 inches	1	11.1	4	16.0	2	50.0
> 30 inches	0	0	0	0	0	0
Total	**9**	**100.0**	**25**	**100.0**	**4**	**100.0**
North Dakota						
< 11 inches	1	6.3	1	6.3	1	1.9
11 to 15 inches	1	6.3	2	12.5	7	13.0
16 to 20 inches	1	6.3	1	6.3	4	7.4
21 to 25 inches	6	37.5	4	25.0	6	11.1
26 to 30 inches	6	37.5	8	50.0	36	66.7
> 30 inches	1	6.3	0	0	0	0
Total	**16**	**100.0**	**16**	**100.0**	**54**	**100.0**
Northarvest						
< 11 inches	1	4.0	1	2.4	1	1.7
11 to 15 inches	5	20.0	7	17.1	7	12.1
16 to 20 inches	1	4.0	4	9.8	4	6.9
21 to 25 inches	10	40.0	17	41.5	8	13.8
26 to 30 inches	7	28.0	12	29.3	38	65.5
> 30 inches	1	4.0	0	0	0	0
Total	**25**	**100.0**	**41**	**100.0**	**58**	**100.0**

Table 13. Type II dry bean seeding rate by market class in 2010.

Seeding rate	Black		Navy		Pinto	
	Respondents	Respondents	Respondents	Respondents	Respondents	Respondents
(seeds/acre)	(no.)	(%)	(no.)	(%)	(no.)	(%)
Minnesota						
< 70,000	0	0	0	0	1	25.0
70 to 79,000	1	9.1	0	0	3	75.0
80 to 89,000	0	0	0	0	0	0
90 to 99,000	0	0	1	4.2	0	0
100 to 109,000	3	27.3	5	20.8	0	0
110 to 119,000	4	36.4	10	41.7	0	0
120 to 129,000	2	18.2	5	20.8	0	0
> 129,000	1	9.1	3	12.5	0	0
Total	**11**	**100.0**	**24**	**100.0**	**4**	**100.0**
North Dakota						
< 70,000	0	0	0	0	17	32.7
70 to 79,000	3	20.0	0	0	24	46.2
80 to 89,000	1	6.7	1	6.3	6	11.5
90 to 99,000	3	20.0	4	25.0	3	5.8
100 to 109,000	7	46.7	5	31.3	0	0
110 to 119,000	1	6.7	2	12.5	0	0
120 to 129,000	0	0	2	12.5	2	3.8
> 129,000	0	0	2	12.5	0	0
Total	**15**	**100.0**	**16**	**100.0**	**52**	**100.0**
Northarvest						
< 70,000	0	0	0	0	18	32.1
70 to 79,000	4	15.4	0	0	27	48.2
80 to 89,000	1	3.8	1	2.5	6	10.7
90 to 99,000	3	11.5	5	12.5	3	5.4
100 to 109,000	10	38.5	10	25.0	0	0
110 to 119,000	5	19.2	12	30.0	0	0
120 to 129,000	2	7.7	7	17.5	2	3.6
> 129,000	1	3.8	5	12.5	0	0
Total	**26**	**100.0**	**40**	**100.0**	**56**	**100.0**

Table 14. Use of fertilizers on dry bean fields in 2010.

Fertilizer	Respondents	Respondents
	(no.)	(%)
Minnesota		
Nitrogen	53	96.4
Phosphate	48	87.3
Potash	42	76.4
Zinc	33	60.0
Sulfur	10	18.2
North Dakota		
Nitrogen	81	95.3
Phosphate	73	85.9
Potash	15	17.6
Zinc	59	69.4
Sulfur	7	8.2
Northarvest		
Nitrogen	134	95.7
Phosphate	121	86.4
Potash	57	40.7
Zinc	92	65.7
Sulfur	17	12.1

Table 15. Use of soil test prior to fertilization of dry bean fields in 2010.

Soil test	Respondents	Respondents
	(no.)	(%)
Minnesota		
Soil test used	52	88.1
Soil test not used	7	11.9
Total	**59**	**100.0**
North Dakota		
Soil test used	69	75.0
Soil test not used	23	25.0
Total	**92**	**100.0**
Northarvest		
Soil test used	121	80.1
Soil test not used	30	19.9
Total	**151**	**100.0**

Table 16. Use of Rhizobium inoculants on dry bean fields in 2010.

Rhizobium use	Respondents	Respondents
	(no.)	(%)
Minnesota		
Inoculant used	11	20.8
Inoculant not used	42	79.2
Total	**53**	**100.0**
North Dakota		
Inoculant used	15	19.2
Inoculant not used	63	80.8
Total	**78**	**100.0**
Northarvest		
Inoculant used	26	19.8
Inoculant not used	105	80.2
Total	**131**	**100.0**

Table 17. Desiccants used on dry bean acres in 2010.

Desiccant	Respon-dents	Respon-dents	Acres reported	Acres reported
	(no.)	(%)	(no.)[a]	(%)[a]
Minnesota				
Sodium chlorate	2	3.6	146	0.8
Paraquat	5	8.9	1,540	7.9
Aim	0	0	0	0
Glyphosate	10	17.9	2,554	13.2
Valor	33	58.9	10,265	52.9
Did not dessicate	13	23.2	4,912	25.3
North Dakota				
Sodium chlorate	4	4.7	1,070	2.1
Paraquat	11	12.9	5,507	10.6
Aim	1	1.2	65	0.1
Glyphosate	34	40.0	16,227	31.2
Valor	44	51.8	21,473	41.3
Did not dessicate	14	16.5	7,608	14.6
Northarvest				
Sodium chlorate	6	4.3	1,216	1.7
Paraquat	16	11.3	7,047	9.9
Aim	1	0.7	65	0.1
Glyphosate	44	31.2	18,781	26.3
Valor	77	54.6	31,738	44.5
Did not dessicate	27	19.1	12,520	17.5

[a] Respondents' acres only.

Table 18. Frequency of crops in dry bean crop rotation program, 2006-2009.

Crop	2009 Respondents	2008 Respondents	2007 Respondents	2006 Respondents	Average Respondents
	(%)	(%)	(%)	(%)	(%)
Minnesota					
Corn	61.9	28.6	44.4	23.8	39.7
Wheat (spring)	31.7	17.5	25.4	14.3	22.2
Soybean	0	46.0	14.3	27.0	21.8
Dry bean	0	12.7	28.6	30.2	17.9
Sugar beet	14.3	11.1	3.2	9.5	9.5
Potato	9.5	7.9	1.6	0	4.8
Alfalfa/forage	3.2	4.8	4.8	4.8	4.4
Hay	1.6	1.6	1.6	1.6	1.6
Barley	1.6	1.6	1.6	0	1.2
Perennial rye	3.2	0	1.6	0	1.2
Field pea	0	1.6	0	1.6	0.8
Oats	1.6	0	0	0	0.4
Sunflower	1.6	0	0	0	0.4
North Dakota					
Wheat (spring)	75.8	32.3	52.5	25.3	46.5
Dry bean	1.0	38.4	25.3	49.5	28.5
Corn	21.2	6.1	22.2	9.1	14.6
Soybean	1.0	22.2	9.1	17.2	12.4
Sugar beet	18.2	9.1	3.0	7.1	9.3
Barley	8.1	5.1	3.0	3.0	4.8
Potato	2.0	4.0	1.0	2.0	2.3
Sunflower	0	5.1	0	2.0	1.8
Canola/rape	0	3.0	0	0	0.8
Flax	0	0	2.0	1.0	0.8
Wheat (winter)	1.0	0	1.0	1.0	0.8
Hay	2.0	0	0	0	0.5
Chickpea	0	0	1.0	0	0.3
Field pea	0	1.0	0	0	0.3
Northarvest					
Wheat (spring)	58.6	26.5	42.0	21.0	37.0
Corn	37.0	14.8	30.9	14.8	24.4
Dry bean	0.6	28.4	26.5	42.0	24.4
Soybean	0.6	31.5	11.1	21.0	16.0
Sugar beet	16.7	9.9	3.1	8.0	9.4
Barley	5.6	3.7	2.5	1.9	3.4
Potato	4.9	5.6	1.2	1.2	3.2
Alfalfa/forage	1.2	1.9	1.9	1.9	1.7
Sunflower	0.6	3.1	0	1.2	1.2
Hay	1.9	0.6	0.6	0.6	0.9
Canola/rape	0	1.9	0	0	0.5
Field pea	0	1.2	0	0.6	0.5
Flax	0	0	1.2	0.6	0.5
Perennial rye	1.2	0	0.6	0	0.5
Wheat (winter)	0.6	0	0.6	0.6	0.5
Chickpea	0	0	0.6	0	0.2
Oats	0.6	0	0	0	0.2

Table 19. Number of years dry bean is grown in dry bean crop rotation program.

Number of years	Respondents
	(%)
Minnesota	
Once every 2 years	12.7
Once every 3 years	25.4
Once every 4 years	14.3
Once every 5 years	47.6
North Dakota	
Once every 2 years	36.4
Once every 3 years	19.2
Once every 4 years	16.2
Once every 5 years	28.3
Northarvest	
Once every 2 years	27.2
Once every 3 years	21.6
Once every 4 years	15.4
Once every 5 years	35.8

Insect Pests and Insecticide Use

Table 20. Worst insect problem in dry bean in 2010.

Insect[a]	Respondents	Respondents	Acres reported	Acres reported
	(no.)	(%)	(no.)[b]	(%)[b]
Minnesota				
Leafhoppers	29	63.0	14,481	66.1
Aphids	4	8.7	1,912	8.7
Cutworms	2	4.3	1,600	7.3
None	2	4.3	1,265	5.8
Bean leaf beetle	4	8.7	1,060	4.8
Seed corn maggot	3	6.5	1,049	4.8
Foliage caterpillars	1	2.2	410	1.9
Grasshoppers	1	2.2	136	0.6
Total	**46**	**100.0**	**21,913**	**100.0**
North Dakota				
None	20	40.8	9,984	40.2
Leafhoppers	7	14.3	4,500	18.1
Grasshoppers	8	16.3	3,834	15.4
Cutworms	7	14.3	2,833	11.4
Aphids	2	4.1	1,300	5.2
Seed corn maggot	1	2.0	1,119	4.5
Wireworms	1	2.0	656	2.6
Foliage caterpillars	1	2.0	360	1.4
Bean leaf beetle	2	4.1	255	1.0
Total	**49**	**100.0**	**24,841**	**100.0**
Northarvest				
Leafhoppers	36	37.9	18,981	40.6
None	22	23.2	11,249	24.1
Cutworms	9	9.5	4,433	9.5
Grasshoppers	9	9.5	3,970	8.5
Aphids	6	6.3	3,212	6.9
Seed corn maggot	4	4.2	2,168	4.6
Bean leaf beetle	6	6.3	1,315	2.8
Foliage caterpillars	2	2.1	770	1.6
Wireworms	1	1.1	656	1.4
Total	**95**	**100.0**	**46,754**	**100.0**

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

[b] Respondents' acres only.

Table 21. Insects ranked as one of the three worst in dry bean in 2010.

Insect[a]	Respondents	Respondents	Acres reported	Acres reported
	(no.)	(%)	(no.)[b]	(%)[b]
Minnesota				
Leafhoppers	36	78.3	17,552	80.1
Aphids	15	32.6	5,820	26.6
Cutworms	8	17.4	5,685	25.9
Seed corn maggot	8	17.4	5,635	25.7
Bean leaf beetle	14	30.4	4,257	19.4
Spider mites	7	15.2	2,817	12.9
Grasshoppers	6	13.0	1,718	7.8
None	2	4.3	1,265	5.8
Foliage caterpillars	2	4.3	546	2.5
Wireworms	0	0	0	0
North Dakota				
None	20	40.8	9,984	40.2
Cutworms	14	28.6	7,414	29.8
Grasshoppers	16	32.7	7,397	29.8
Leafhoppers	11	22.4	6,523	26.3
Aphids	5	10.2	3,060	12.3
Seed corn maggot	4	8.2	2,453	9.9
Spider mites	3	6.1	2,175	8.8
Wireworms	1	2.0	656	2.6
Foliage caterpillars	2	4.1	618	2.5
Bean leaf beetle	4	8.2	613	2.5
Northarvest				
Leafhoppers	47	49.5	24,075	51.5
Cutworms	22	23.2	13,099	28.0
None	22	23.2	11,249	24.1
Grasshoppers	22	23.2	9,115	19.5
Aphids	20	21.1	8,880	19.0
Seed corn maggot	12	12.6	8,088	17.3
Spider mites	10	10.5	4,992	10.7
Bean leaf beetle	18	18.9	4,870	10.4
Foliage caterpillars	4	4.2	1,164	2.5
Wireworms	1	1.1	656	1.4

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

[b] Respondents' acres only.

Table 22. Foliar insecticide use in dry bean in 2010.

Insecticide	Respondents	Respondents	Acres reported	Acres reported
	(no.)	(%)	(no.)[a]	(%)[a]
Minnesota				
Hero	2	4.0	2,775	13.6
Asana XL	11	22.0	2,680	13.1
Dimethoate	4	8.0	1,444	7.1
Warrior	3	6.0	890	4.4
Baythroid	1	2.0	700	3.4
Tombstone	2	4.0	600	2.9
Mustang Max	2	4.0	279	1.4
No insecticide used	25	50.0	11,056	54.1
Insecticide total acres	25	50.0	9,368	45.9
Grand total	**50**	**100.0**	**20,424**	**100.0**
North Dakota				
Asana XL	3	4.9	1,825	5.3
Warrior	1	1.6	1,791	5.2
No insecticide used	57	93.4	30,762	89.5
Insecticide total acres	4	6.6	3,616	10.5
Grand total	**61**	**100.0**	**34,378**	**100.0**
Northarvest				
Asana XL	14	12.6	4,505	8.2
Hero	2	1.8	2,775	5.1
Warrior	4	3.6	2,681	4.9
Dimethoate	4	3.6	1,444	2.6
Baythroid	1	0.9	700	1.3
Tombstone	2	1.8	600	1.1
Mustang Max	2	1.8	279	0.5
No insecticide used	82	73.9	41,818	76.3
Insecticide total acres	29	26.1	12,984	23.7
Grand total	**111**	**100.0**	**54,802**	**100.0**

[a] Respondents' acres only.

Table 23. Insecticide seed treatment use in dry bean in 2010.

Seed Treatment	Respondents	Respondents	Acres reported	Acres reported
	(no.)	(%)	(no.)[a]	(%)[a]
Minnesota				
Lorsban	30	46.9	14,670	52.7
Cruiser 5FS	16	25.0	6,237	22.4
CruiserMaxx	3	4.7	824	3.0
Gaucho	3	4.7	435	1.6
No seed treatment used	12	18.8	5,692	20.4
Seed treatment total acres	52	81.3	22,166	79.6
Total	**64**	**100.0**	**27,858**	**100.0**
North Dakota				
Lorsban	24	30.0	11,226	28.8
Cruiser 5FS	14	17.5	7,384	18.9
CruiserMaxx	3	3.8	1,618	4.1
Gaucho	2	2.5	787	2.0
Senator	1	1.3	253	0.6
Attendant	1	1.3	65	0.2
No seed treatment used	35	43.8	17,667	45.3
Seed treatment total acres	45	56.3	21,333	54.7
Total	**80**	**100.0**	**39,000**	**100.0**
Northarvest				
Lorsban	54	37.5	25,896	38.7
Cruiser 5FS	30	20.8	13,621	20.4
CruiserMaxx	6	4.2	2,442	3.7
Gaucho	5	3.5	1,222	1.8
Senator	1	0.7	253	0.4
Attendant	1	0.7	65	0.1
No seed treatment used	47	32.6	23,359	34.9
Seed treatment total acres	97	67.4	43,499	65.1
Total	**144**	**100.0**	**66,858**	**100.0**

[a] Respondents' acres only.

Plant Diseases and Fungicide Use

Table 24. Worst disease problem in dry bean in 2010.

Disease[a]	Respon-dents	Respon-dents	Acres reported	Acres reported
	(no.)	(%)	(no.)[b]	(%)[b]
Minnesota				
White mold	40	71.4	19,041	71.5
Bacterial blight	5	8.9	3,539	13.3
Root rot	9	16.1	2,878	10.8
Rust	1	1.8	900	3.4
None	1	1.8	270	1.0
Total	**56**	**100.0**	**26,628**	**100.0**
North Dakota				
White mold	67	77.9	41,874	81.5
Root rot	8	9.3	4,674	9.1
Bacterial blight	5	5.8	2,200	4.3
None	4	4.7	1,756	3.4
Anthracnose	1	1.2	750	1.5
Rust	1	1.2	145	0.3
Total	**86**	**100.0**	**51,399**	**100.0**
Northarvest				
White mold	107	75.4	60,915	78.1
Root rot	17	12.0	7,552	9.7
Bacterial blight	10	7.0	5,739	7.4
None	5	3.5	2,026	2.6
Rust	2	1.4	1,045	1.3
Anthracnose	1	0.7	750	1.0
Total	**142**	**100.0**	**78,027**	**100.0**

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

[b] Respondents' acres only.

Table 25. Diseases ranked as one of the three worst in dry bean in 2010.

Disease[a]	Respon-dents	Respon-dents	Acres reported	Acres reported
	(no.)	(%)	(no.)[b]	(%)[b]
Minnesota				
White mold	52	92.9	24,883	93.4
Root rot	30	53.6	16,481	61.9
Bacterial blight	22	39.3	14,986	56.3
Rust	6	10.7	2,502	9.4
Anthracnose	2	3.6	1,400	5.3
None	1	1.8	270	1.0
Viruses (general)	1	1.8	136	0.5
North Dakota				
White mold	78	90.7	46,843	91.1
Bacterial blight	37	43.0	23,281	45.3
Rust	21	24.4	12,987	25.3
Root rot	21	24.4	12,907	25.1
Anthracnose	7	8.1	4,394	8.5
None	4	4.7	1,756	3.4
Alternaria	2	2.3	1,500	2.9
Viruses (general)	3	3.5	1,067	2.1
Bean common mosaic virus	1	1.2	258	0.5
Northarvest				
White mold	107	75.4	60,915	78.1
Root rot	17	12.0	7,552	9.7
Bacterial blight	10	7.0	5,739	7.4
None	5	3.5	2,026	2.6
Rust	2	1.4	1,045	1.3
Anthracnose	1	0.7	750	1.0
Alternaria	0	0	0	0
Bean common mosaic virus	0	0	0	0
Viruses (general)	0	0	0	0

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

[b] Respondents' acres only.

Table 26. Foliar and banded fungicide use in dry bean in 2010.

Fungicide	Resp. (no.)	Resp. (%)[b]	Total acres treated (no.)[a]	Total acres treated (%)[a,b]	Acres treated by air (no.)[a]	Acres treated by air (%)[a,b]	Acres treated by ground (no.)[a]	Acres treated by ground (%)[a,b]
Minnesota								
Topsin broadcast	26	44.8	15,538	58.0	9,278	34.7	6,260	23.4
Proline	26	44.8	11,542	43.1	8,871	33.1	2,671	10.0
Headline	10	17.2	6,022	22.5	5,482	20.5	540	2.0
Omega	4	6.9	1,738	6.5	1,738	6.5	0	0
Topsin banded	2	3.4	672	2.5	672	2.5	0	0
Folicur	2	3.4	448	1.7	448	1.7	0	0
Endura	1	1.7	200	0.7	200	0.7	0	0
Kocide	0	0	0	0	0	0	0	0
Maneb	0	0	0	0	0	0	0	0
No fungicide used	7	12.1	2,159	8.1	0	0	0	0
Fungicide total acres			**36,160**		**26,689**		**9,471**	
North Dakota								
Topsin broadcast	28	35.9	19,665	45.5	19,582	45.3	83	0.2
Proline	23	29.5	11,200	25.9	10,272	23.8	928	2.1
Headline	13	16.7	4,926	11.4	4,551	10.5	375	0.9
Omega	7	9.0	3,978	9.2	3,978	9.2	0	0
Endura	3	3.8	1,700	3.9	1,300	3.0	400	0.9
Maneb	1	1.3	800	1.9	800	1.9	0	0
Topsin banded	2	2.6	470	1.1	470	1.1	0	0
Kocide	1	1.3	400	0.9	0	0	400	0.9
Folicur	2	2.6	317	0.7	242	0.6	75	0.2
No fungicide used	22	28.2	10,715	24.8	0	0	0	0
Fungicide total acres			**43,456**		**41,195**		**2,261**	
Northarvest								
Topsin broadcast	54	39.7	35,203	50.3	28,860	41.2	6,343	9.1
Proline	49	36.0	22,742	32.5	19,143	27.3	3,599	5.1
Headline	23	16.9	10,948	15.6	10,033	14.3	915	1.3
Omega	11	8.1	5,716	8.2	5,716	8.2	0	0
Endura	4	2.9	1,900	2.7	1,500	2.1	400	0.6
Topsin banded	4	2.9	1,142	1.6	1,142	1.6	0	0
Maneb	1	0.7	800	1.1	800	1.1	0	0
Folicur	4	2.9	765	1.1	690	1.0	75	0.1
Kocide	1	0.7	400	0.6	0	0	400	0.6
No fungicide used	29	21.3	12,874	18.4	0	0	0	0
Fungicide total acres			**79,616**	**113.7**	**67,884**	**97.0**	**11,732**	**16.8**

[a] Respondents' acres only. Includes acreage treated more than once with the same product.

[b] Percentages do not total 100 percent because some respondents treated more than once with the same product and/or treated the same acreage with more than one product.

Table 27. Fungicide seed treatment use in dry bean in 2010.

Seed treatment	Respondents	Respondents	Total acres treated	Total acres treated
	(no.)	(%)[b]	(no.)[a]	(%)[a,b]
Minnesota				
Maxim	7	13.7	5,529	23.0
Apron	6	11.8	5,397	22.5
Not listed	9	17.6	4,020	16.8
Kodiak	2	3.9	490	2.0
Seed treatment not used	33	64.7	14,578	60.8
Seed treatment total acres			**15,436**	
North Dakota				
Not listed	19	24.7	11,898	28.0
Apron	14	18.2	8,615	20.3
Maxim	10	13.0	5,115	12.0
Streptomycin	1	1.3	656	1.5
Kodiak	0	0	0	0
Seed treatment not used	44	57.1	22,020	51.8
Seed treatment total acres			**26,284**	
Northarvest				
Not listed	28	21.9	15,918	23.9
Apron	20	15.6	14,012	21.1
Maxim	17	13.3	10,644	16.0
Streptomycin	1	0.8	656	1.0
Kodiak	2	1.6	490	0.7
Seed treatment not used	77	60.2	36,598	55.0
Seed treatment total acres			**41,720**	**62.7**

[a] Respondents' acres only.

[b] Percentages do not total 100 percent because some respondents treated the same acreage with more than one product.

Weeds

Table 28. Worst weed problem in dry bean in 2010.

Weed[a]	Respondents	Respondents	Acres reported	Acres reported
	(no.)	(%)	(no.)[b]	(%)[b]
Minnesota				
Lambsquarters	24	40.0	12,586	45.1
Nightshade	12	20.0	6,276	22.5
Ragweed	6	10.0	2,599	9.3
Kochia	6	10.0	2,425	8.7
Redroot pigweed	3	5.0	1,173	4.2
Waterhemp	4	6.7	1,037	3.7
Biennial wormwood	2	3.3	805	2.9
Foxtail	2	3.3	530	1.9
Smartweed	1	1.7	475	1.7
Total	**60**	**100.0**	**27,906**	**100.0**
North Dakota				
Kochia	20	20.8	11,618	20.8
Biennial wormwood	17	17.7	11,565	20.7
Volunteer grain	14	14.6	8,566	15.3
Ragweed	5	5.2	4,300	7.7
Nightshade	8	8.3	4,110	7.3
Cocklebur	5	5.2	3,581	6.4
Canada thistle	8	8.3	3,439	6.1
Lambsquarters	7	7.3	3,420	6.1
Redroot pigweed	7	7.3	2,624	4.7
Field bindweed	1	1.0	1,200	2.1
Foxtail	1	1.0	984	1.8
Wild oat	1	1.0	350	0.6
Wild mustard	1	1.0	160	0.3
None	1	1.0	50	0.1
Total	**96**	**100.0**	**55,967**	**100.0**
Northharvest				
Lambsquarters	31	19.9	16,006	19.1
Kochia	26	16.7	14,043	16.7
Biennial wormwood	19	12.2	12,370	14.7
Nightshade	20	12.8	10,386	12.4
Volunteer grain	14	9.0	8,566	10.2
Ragweed	11	7.1	6,899	8.2
Redroot pigweed	10	6.4	3,797	4.5
Cocklebur	5	3.2	3,581	4.3
Canada thistle	8	5.1	3,439	4.1
Foxtail	3	1.9	1,514	1.8
Field bindweed	1	0.6	1,200	1.4
Waterhemp	4	2.6	1,037	1.2
Smartweed	1	0.6	475	0.6
Wild oat	1	0.6	350	0.4
Wild mustard	1	0.6	160	0.2
None	1	0.6	50	0.1
Total	**156**	**100.0**	**83,873**	**100.0**

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

[b] Respondents' acres only.

Table 29. Weeds ranked as one of the three worst in dry bean in 2010.

Weed[a]	Respondents	Respondents	Acres reported	Acres reported
	(no.)	(%)	(no.)[b]	(%)[b]
Minnesota				
Lambsquarters	43	71.7	20,376	73.0
Ragweed	28	46.7	16,453	59.0
Nightshade	30	50.0	14,256	51.1
Redroot pigweed	21	35.0	10,918	39.1
Kochia	10	16.7	5,093	18.3
Cocklebur	7	11.7	3,804	13.6
Biennial wormwood	7	11.7	3,460	12.4
Waterhemp	7	11.7	2,205	7.9
Canada thistle	9	15.0	2,066	7.4
Foxtail	6	10.0	1,400	5.0
Volunteer grain	4	6.7	1,095	3.9
Wild oat	2	3.3	485	1.7
Smartweed	1	1.7	475	1.7
North Dakota				
Kochia	44	45.8	26,697	47.7
Biennial wormwood	32	33.3	22,810	40.8
Lambsquarters	33	34.4	18,798	33.6
Nightshade	29	30.2	18,451	33.0
Volunteer grain	31	32.3	18,082	32.3
Redroot pigweed	30	31.3	15,687	28.0
Canada thistle	24	25.0	13,092	23.4
Cocklebur	20	20.8	11,542	20.6
Ragweed	17	17.7	8,934	16.0
Wild oat	5	5.2	2,961	5.3
Field bindweed	2	2.1	2,500	4.5
Foxtail	4	4.2	2,271	4.1
Wild mustard	2	2.1	710	1.3
None	1	1.0	50	0.1
Northarvest				
Lambsquarters	76	48.7	39,174	46.7
Nightshade	59	37.8	32,707	39.0
Kochia	54	34.6	31,790	37.9
Redroot pigweed	51	32.7	26,605	31.7
Biennial wormwood	39	25.0	26,270	31.3
Ragweed	45	28.8	25,387	30.3
Volunteer grain	35	22.4	19,177	22.9
Cocklebur	27	17.3	15,346	18.3
Canada thistle	33	21.2	15,158	18.1
Foxtail	10	6.4	3,671	4.4
Wild oat	7	4.5	3,446	4.1
Field bindweed	2	1.3	2,500	3.0
Waterhemp	7	4.5	2,205	2.6
Wild mustard	2	1.3	710	0.8
Smartweed	1	0.6	475	0.6
None	1	0.6	50	0.1

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

[b] Respondents' acres only.

Table 30. Weed control practices used in dry bean in 2010.

Herbicide or other practice	Acres reported (no.)[a]	Acres reported (%)[b]
Minnesota		
Raptor	28,665	100.4
Basagran/generics	17,620	61.7
Cultivation	15,520	54.3
Rezult	15,490	54.2
Reflex	10,808	37.8
Prowl	10,615	37.2
Select/generics	9,194	32.2
Poast	8,617	30.2
Outlook	6,787	23.8
Sonalan (spring)	6,668	23.4
Trifluralin (spring)	4,655	16.3
Dual/generics	4,525	15.8
Rotary hoe	2,018	7.1
Eptam (spring)	1,589	5.6
Eptam (fall)	1,300	4.6
Pursuit Plus	1,000	3.5
Permit	982	3.4
Spartan	665	2.3
Trifluralin (fall)	373	1.3
Manual labor	350	1.2
Pursuit	325	1.1
Intrro/generics	298	1.0
Glyphosate (preplant)	160	0.6
Assure II	70	0.2
Herbicide total[c]	**130,406**	
North Dakota		
Rezult	52,404	92.2
Raptor	36,817	64.8
Cultivation	30,080	52.9
Sonalan (spring)	21,269	37.4
Reflex	20,026	35.2
Basagran/generics	12,124	21.3
Select/generics	11,490	20.2
Prowl	9,551	16.8
Trifluralin (spring)	8,264	14.5
Pursuit	6,104	10.7
Spartan	5,625	9.9
Glyphosate (preplant)	3,815	6.7
Outlook	3,446	6.1
Rotary hoe	3,121	5.5
Assure II	1,983	3.5
Poast	1,975	3.5
Glyphosate (preharvest)	1,850	3.3
Permit	1,600	2.8
Dual/generics	1,140	2.0
Sonalan (fall)	770	1.4
Pursuit Plus	435	0.8
Eptam (spring)	400	0.7
Not specified	225	0.4
Herbicide total[c]	**201,313**	
Northarvest		
Rezult	67,894	79.5
Raptor	65,482	76.7
Cultivation	45,600	53.4
Reflex	30,834	36.1
Basagran/generics	29,744	34.8
Sonalan (spring)	27,937	32.7
Select/generics	20,684	24.2
Prowl	20,166	23.6
Trifluralin (spring)	12,919	15.1
Poast	10,592	12.4
Outlook	10,233	12.0
Pursuit	6,429	7.5
Spartan	6,290	7.4
Dual/generics	5,665	6.6
Rotary hoe	5,139	6.0
Glyphosate (preplant)	3,975	4.7
Permit	2,582	3.0
Assure II	2,053	2.4
Eptam (spring)	1,989	2.3
Glyphosate (preharvest)	1,850	2.2
Pursuit Plus	1,435	1.7
Eptam (fall)	1,300	1.5
Sonalan (fall)	770	0.9
Trifluralin (fall)	373	0.4
Manual labor	350	0.4
Intrro/generics	298	0.3
Not specified	225	0.3
Herbicide total[c]	**340,719**	

[a] Respondents' acres only. Includes acreage treated more than once with the same product.

[b] Percentages do not total 100 percent because some respondents treated more than once with the same product and/or treated the same acreage with more than one product.

[c] Herbicide total does not include cultivation, rotary hoe or manual labor.

Table 31. Weed control practices used by dry bean market class in 2010.

Herbicide or other practice	Black	Great Northern	Kidney	Navy	Pink	Pinto	Red
	% Acres Treated[a,b]						
Minnesota							
Assure II	0	0	0	0	2.8	0	0
Basagran/generics	9.2	0	60.5	51.9	149.7	71.3	0
Dual/generics	21.3	0	21.6	9.8	12.1	0	0
Eptam (fall)	0	0	9.7	0	0	0	0
Eptam (spring)	0	0	0	10.7	18.1	14.0	0
Glyphosate (preplant)	0	0	0	0	0	8.3	0
Intrro/generics	0	0	2.2	0	0	0	0
Outlook	0	0	36.7	5.0	54.5	6.7	0
Permit	0	0	4.5	4.7	0	0	0
Poast	0	0	22.3	34.7	108.7	6.4	0
Prowl	32.7	0	48.4	25.8	49.5	0	0
Pursuit	0	0	0	4.0	0	0	0
Raptor	123.0	0	96.7	95.7	132.2	79.3	0
Pursuit Plus	0	0	5.6	3.1	0	0	0
Reflex	51.5	0	37.0	31.4	51.1	37.1	0
Rezult	94.4	0	47.0	67.6	16.7	35.7	200.0
Select/generics	64.8	0	20.2	38.9	48.3	24.2	0
Sonalan (spring)	23.6	0	17.7	34.1	13.7	25.5	100.0
Spartan	4.1	0	0	3.5	0	14.0	0
Trifluralin (fall)	0	0	0	4.6	0	0	0
Trifluralin (spring)	37.7	0	7.6	19.4	15.3	37.1	0
Cultivation	0	0	62.0	41.5	81.3	86.2	200.0
Rotary hoe	9.7	0	0	18.6	0	8.3	100.0
Manual labor	3.9	0	0	3.1	0	0	0
North Dakota							
Assure II	0	0	0	4.1	0	4.1	0
Basagran/generics	2.8	0	0	16.5	75.3	23.8	0
Dual/generics	0	0	0	5.2	0	1.8	0
Eptam (fall)	0	0	0	0	0	0	0
Eptam (spring)	0	0	0	0	0	1.0	0
Fusilade DX	0	0	0	0	0	0	0
Glyphosate (preplant)	11.4	0	0	0	0	7.8	0
Glyphosate (preharvest)	0	0	0	0.6	0	4.5	0
Intrro/generics	0	0	0	0	0	0	0
Outlook	0	0	0	0	0	8.7	0
Permit	0	0	0	6.0	0	2.7	0
Poast	0	0	0	0	34.2	3.7	0
Prowl	17.0	0	0	18.1	24.7	16.6	0
Pursuit	13.0	0	0	6.2	0	12.0	0
Raptor	51.5	100.0	0	69.1	47.9	66.5	0
Pursuit Plus	0	0	0	0	0	1.1	0
Reflex	41.8	0	0	56.7	111.0	26.8	100.0
Rezult	96.5	100.0	0	89.2	63.0	92.1	200.0
Select/generics	29.1	0	0	26.0	0	18.8	0
Sonalan (fall)	0	0	0	0	0	1.9	0
Sonalan (spring)	22.4	100.0	0	53.9	27.4	35.0	100.0
Spartan	13.0	0	0	0	11.0	11.7	0
Trifluralin (fall)	0	0	0	0	0	0	0
Trifluralin (spring)	34.4	0	0	6.1	0	14.1	0
None	0	0	0	0	0	0	0
Cultivation	36.3	0	0	87.8	97.3	46.8	100.0
Rotary hoe	13.8	0	0	19.8	0	1.5	0
Manual labor	0	0	0	0	0	0	0
Not specified	0	0	0	0	0	0.6	0

[a] Respondents' acres only. Includes acreage treated more than once with the same product.

[b] Percentages do not total 100 percent because some respondents treated more than once with the same product and/or treated the same acreage with more than one product.

Table 31 continues on page 20

Herbicide or other practice	Black	Great Northern	Kidney	Navy	Pink	Pinto	Red
	% Acres Treated[a,b]						
Northarvest							
Assure II	0	0	0	2.1	1.8	3.9	0
Basagran/generics	4.7	0	60.5	33.7	122.2	26.0	0
Dual/generics	6.3	0	21.6	7.4	7.6	1.7	0
Eptam (fall)	0	0	9.7	0	0	0	0
Eptam (spring)	0	0	0	5.2	11.4	1.6	0
Fusilade DX	0	0	0	0	0	0	0
Glyphosate (preplant)	8.0	0	0	0	0	7.9	0
Glyphosate (preharvest)	0	0	0	0.3	0	4.3	0
Intrro/generics	0	0	2.2	0	0	0	0
Outlook	0	0	36.7	2.4	34.3	8.6	0
Permit	0	0	4.5	5.4	0	2.6	0
Poast	0	0	22.3	16.9	81.1	3.8	0
Prowl	21.6	0	48.4	21.8	40.3	15.8	0
Pursuit	9.1	0	0	5.1	0	11.5	0
Raptor	72.6	100.0	96.7	82.1	101.0	67.1	0
Pursuit Plus	0	0	5.6	1.5	0	1.0	0
Reflex	44.7	0	37.0	44.4	73.3	27.2	78.4
Rezult	95.9	100.0	47.0	78.7	33.8	89.5	200.0
Select/generics	39.6	0	20.2	32.3	30.4	19.1	0
Sonalan (fall)	0	0	0	0	0	1.8	0
Sonalan (spring)	22.8	100.0	17.7	44.3	18.8	34.6	100.0
Spartan	10.4	0	0	1.7	4.1	11.8	0
Trifluralin (fall)	0	0	0	2.2	0	0	0
Trifluralin (spring)	35.4	0	7.6	12.6	9.6	15.2	0
None	0	0	0	0	0	0	0
Cultivation	25.6	0	62.0	65.2	87.2	48.6	121.6
Rotary hoe	12.6	0	0	19.2	0	1.8	21.6
Manual labor	1.1	0	0	1.5	0	0	0
Not specified	0	0	0	0	0	0.5	0

[a] Respondents' acres only. Includes acreage treated more than once with the same product.

[b] Percentages do not total 100 percent because some respondents treated more than once with the same product and/or treated the same acreage with more than one product.

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Appendix I.

Please circle or fill in the requested information on pest problems and pesticide used on your 2010 dry bean crop.

Total dry bean acres planted in 2010
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. Mariah	
	5. Medicine Hat	
	6. Santa Fe	
	7. LaPaz	
	8. Windbreaker	
	9. Lariat	
	10. Stampede	
	11. ND-307	
	12. Other pinto (specify)	
Navy	21. HMS Medalist	
	22. Mayflower	
	23. Navigator	
	24. Norstar	
	25. Vista	
	26. Ensign	
	27. T9903	
	28. T9905	
	29. Avalanche	
	30. Other navy (specify)	
Kidney	41. Montcalm (DRK)	
	42. Red Hawk	
	43. CELRK	
	44. Chinook 2000	
	45. Foxfire	
	46. Pink Panther	
	47. Red Rover	
	48. Closeau	
	49. Other kidney (specify)	
Black	61. Zorro	
	62. Jaguar	
	63. T-39	
	64. Eclipse	
	65. Loreto	
	66. Bandit	
	67. Condor	
	68. Shania	
	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 2010) (write in crops grown in previous years)		
	Field 1 - dry beans '10	**Field 2 - dry beans '10**
2009		
2008		
2007		
2006		

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. Brigade
5. Capture
6. Carbaryl (Sevin)
7. Dimethoate
8. Dipel
9. Di-Syston G
10. Fanfare 2EC
11. GrizzlyZ
12.. Hero
13. Kasio
11. Lannate LV
12. Malathion
13. Mustang Max
14. Penncap-M
15. Spintor
16. Proaxis
17. Respect
18. Nuprid
19. Silencer
20. Sniper
21. Thimet 20G
22. Tombstone
23. Warrior
24. Other

Was insecticide-treated seed used? If yes, please answer questions below.

Yes No

How many acres were planted using the following insecticide seed treatments (ST)?

Cruiser 5FS or Cruiser MAXX Beans ST Acreage =

Lorsban Seed treatment Acreage =

Gaucho Seed Treatment Acreage =

Attendant 600 Seed Treatment Acreage =

Senator 600 Seed Treatment Acreage =

How many acres were planted using some other insecticide seed treatment? Please write acreage and product used.

Acreage = Product =

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/Targa
2. Basagran/generics
3. Dual/generics
4. Eptam (fall)
5. Eptam (spring)
6. Fusilade DX
7. Glyphosate (preharvest)
8. Intrro/generics
9. Outlook
10. Permit
11. Poast
12. Prowl
13. Pursuit
14. Raptor
15. Pursuit Plus
16. Reflex
17. Glyphosate/generics
18. Rezult
19. Select/generics
20. Sonalan (fall)
21. Sonalan (spring)
22. Spartan
23. Trifluralin (fall)
24. Trifluralin (spring)
25. Trifluralin + Eptam (spring)
26. No Herbicide
27. Cultivation
28. Rotary hoe
29. 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)						
Paraquat						
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

Dry Bean Fungicides

1. Bravo/Echo/generics
2. Champion/Champ
3. Endura
4. Folicur/generics
5. Headline
6. Intercept
7. Kocide
8. Proline
9. Maneb
10. Rorval
11. Serenade
12. Switch
13. Thiolux
14. Tilt
15. Topsin/generics (broadcast)
16. Topsin/generics (banded)
17. Quadris/Amistar
18. Quadris Opti
19. Other
20. 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 is an upright bean with a short vine that is commonly used for direct harvest. If you used a type II bean, please answer the two questions below.**
	1) What was your row spacing in inches that you used for type II beans? _____
	2) What was your seeding rate for type II beans in live seeds per acre? _____
	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%
	What is your estimated yield loss in your direct harvested field (percentage)? _____%
	What is your estimated yield loss in your conventionally harvested field (percentage)? _____%

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