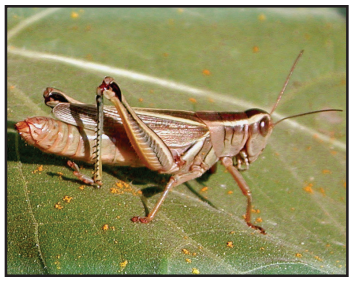
E-1477

2009 DRY BEAN Grower Survey

of Pest Problems and Pesticide Use

in Minnesota and North Dakota



J.J. Knodel, P.B. Beauzay, J.L. Luecke, D.W. Franzen, H.J. Kandel, S.G. Markell, J.M. Osorno and R.K. Zollinger

North Dakota State University

In cooperation with the Northharvest Bean Growers Association

NDSU Extension Service

North Dakota State University
Fargo, North Dakota 58105

April 2010

Table of Contents

Introduction 3

Production

Table 1. Number of Northarvest dry bean growers responding, acres planted by respondents and total acres planted in 2009 4

Table 2. Dry bean acres irrigated, on tile-drained ground, harvested and damaged by hail, frost and water in 2009 4

Table 3. Market classes of dry bean grown by respondents in 2009 4

Table 4. Dry bean varieties grown by respondents in 2009 5

Table 5. Worst dry bean production problem in 2009 reported by respondents 6

Table 6. Percent of total dry bean area harvested by direct combining in 2009 6

Agronomy

Table 7. Use of fertilizers on dry bean fields in 2009 7

Table 8. Use of soil test prior to fertilization of dry bean fields in 2009 7

Table 9. Use of Rhizobium inoculants on dry bean in 2009 7

Table 10. Desiccants used on dry bean fields in 2009 7

Table 11. Crop grown the year prior to dry bean in 2009 8

Table 12. Frequency of other crops in crop rotation program with dry bean 8

Table 13. Number of years dry bean is in crop rotation program 8

Table 14. Row spacing reported in dry bean in 2009 8

Table 15. Type II bean row spacing in 2009 9

Table 16. Seeding rate for type II dry bean in 2009 9

Insect Pests

Table 17. Worst insect problem on dry bean in 2009 9

Table 18. Insects ranked as one of the three worst in dry bean fields in 2009 10

Table 19. Use of insecticides on dry bean fields in 2009 10

Table 20. Use of insecticide seed treatment on dry bean in 2009 10

Plant Diseases

Table 21. Worst disease problem on dry bean in 2009 11

Table 22. Diseases ranked as one of the three worst on dry bean in 2009 11

Table 23. Fungicides applied to dry bean fields in 2009 12

Table 24. Use of fungicide seed treatment on dry bean in 2009 12

Weeds

Table 25. Worst weed problem in dry bean fields in 2009 13

Table 26. Weeds ranked as one of the three worst in dry bean fields in 2009 13

Table 27. Weed control practices used on dry bean fields in 2009 14

Table 28. Weed control practices by bean market class in 2009 15

Other responses 16

References 16

Appendix I. Copy of 2009 Dry Bean Grower Survey Form 17

Acknowledgements 20

Introduction

The 2009 dry bean grower survey is the 20th 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 were anonymous.

Results of previous surveys dated 1987-2000, 2002 and 2004-2008 have been published (1-18). 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 limited number 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, acres planted by respondents and total acres planted in 2009.

Growers	No. of respondents	Respondents' acres	Total acres[a]	Acres surveyed
				(% of total)
Minnesota	38	13,916	150,000	9.3
North Dakota	83	40,428	610,000	6.6
Northarvest	121	54,344	760,000	15.9

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

Table 2. Dry bean acres irrigated, on tile-drained ground, harvested and damaged by hail, frost and water in 2009.

	Minnesota	North Dakota	Northarvest
	% of respondents' acres		
Irrigated	31.9	1.2	9.0
Tile-drained	19.3	0.7	5.5
Harvested	98.2	94.7	95.6
Hail damaged	4.2	3.3	3.5
Frost damaged	7.3	13.4	11.9
Water damaged	12.4	19.6	17.7

Table 3. Market classes of dry bean grown by respondents in 2009.

Market class	Acres reported[a]	Acres reported[a]
	(no.)	(%)
Minnesota		
Kidney	5,567	40.0
Navy	3,459	24.9
Pinto	2,627	18.9
Pink	1,201	8.6
Black	558	4.0
Other	504	3.6
Total	**13,916**	**100.0**
North Dakota		
Pinto	28,984	71.7
Navy	5,965	14.8
Black	3,320	8.2
Other	1,414	3.5
Pink	600	1.5
Kidney	145	0.4
Total	**40,428**	**100.0**
Northarvest		
Pinto	31,611	58.2
Navy	9,424	17.3
Kidney	5,712	10.5
Black	3,878	7.1
Other	1,918	3.5
Pink	1,801	3.3
Total	**54,344**	**100.0**

[a] Respondents' acres only.

Table 4. Dry bean varieties grown by respondents in 2009.

		Acres planted[a]					
Variety	**Class[b]**	**Minnesota**	**%**	**North Dakota**	**%**	**Northarvest**	**%**
La Paz	P	0	0	6,936	17.2	6,936	12.8
Maverick	P	868	6.2	5,072	12.5	5,940	10.9
Windbreaker	P	870	6.3	4,221	10.4	5,091	9.4
ND-307	P	135	1.0	3,568	8.8	3,703	6.8
Lariat	P	110	0.8	3,515	8.7	3,625	6.7
Stampede	P	0	0	1,802	4.5	1,802	3.3
Buster	P	254	1.8	1,165	2.9	1,419	2.6
Othello	P	0	0.0	950	2.3	950	1.7
Pintoba	P	200	1.4	0	0	200	0.4
GTS-900	P	0	0	150	0.4	150	0.3
Remington	P	40	0.3	0	0	40	0.1
Other pinto	P	150	1.1	1,605	4.0	1,755	3.2
Total pinto	**P**	**2,627**	**18.9**	**28,984**	**71.7**	**31,611**	**58.2**
Ensign	N	256	1.8	1,709	4.2	1,965	3.6
Vista	N	1,248	9.0	73	0.2	1,321	2.4
Navigator	N	200	1.4	1,054	2.6	1,254	2.3
Norstar	N	380	2.7	779	1.9	1,159	2.1
T9903	N	668	4.8	350	0.9	1,018	1.9
T9905	N	427	3.1	580	1.4	1,007	1.9
Voyager	N	80	0.6	0	0	80	0.1
Avalanche	N	0	0	40	0.1	40	0.1
Other navy	N	200	1.4	1,380	3.4	1,580	2.9
Total navy	**N**	**3,459**	**24.9**	**5,965**	**14.8**	**9,424**	**17.3**
Montcalm	K	2,232	16.0	0	0	2,232	4.1
Red Hawk	K	890	6.4	0	0	890	1.6
Foxfire	K	670	4.8	0	0	670	1.2
Chinook 2000	K	180	1.3	0	0	180	0.3
Beluga	K	100	0.7	0	0	100	0.2
Other kidney	K	1,495	10.7	145	0.4	1,640	3.0
Total kidney	**K**	**5,567**	**40.0**	**145**	**0.4**	**5,712**	**10.5**
Eclipse	B	128	0.9	3,270	8.1	3,398	6.3
Jaguar	B	300	2.2	0	0	300	0.6
Shiny Crow	B	130	0.9	0	0	130	0.2
Onyx	B	0	0	50	0.1	50	0.1
Total black	**B**	**558**	**4.0**	**3,320**	**8.2**	**3,878**	**7.1**
Sedona	PK	245	1.8	440	1.1	685	1.3
Floyd	PK	200	1.4	0	0	200	0.4
Other pink	PK	756	5.4	160	0.4	916	1.7
Total pink	**PK**	**1,201**	**8.6**	**600**	**1.5**	**1,801**	**3.3**
Other varieties		504	3.6	1,414	3.5	1,918	3.5
Total		**13,916**	**100.0**	**40,428**	**100.0**	**54,344**	**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 2009 reported by respondents.

Worst production problem	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Disease	14	40.0	6,212	65.3
Weather	3	8.6	988	10.4
Excess water	3	8.6	800	8.4
None	4	11.4	552	5.8
Weeds	4	11.4	510	5.4
Emergence/stand	2	5.7	165	1.7
Harvest	2	5.7	140	1.5
Herbicide injury	2	5.7	100	1.1
Insects	1	2.9	41	0.4
Drift injury	0	0	0	0
Delayed planting	0	0	0	0
Total	**35**	**100.0**	**9,508**	**100.0**
North Dakota				
Excess water	21	25.6	6,987	24.9
Disease	19	23.2	6,075	21.6
Delayed planting	8	9.8	4,640	16.5
Harvest	13	15.9	4,345	15.5
Weather	3	3.7	2,199	7.8
Weeds	7	8.5	1,818	6.5
None	4	4.9	1,125	4.0
Emergence/stand	4	4.9	570	2.0
Drift injury	2	2.4	212	0.8
Herbicide injury	1	1.2	130	0.5
Insects	0	0	0	0
Total	**82**	**100.0**	**28,101**	**100.0**
Northharvest				
Disease	33	28.2	12,287	32.7
Excess water	24	20.5	7,787	20.7
Delayed planting	8	6.8	4,640	12.3
Harvest	15	12.8	4,485	11.9
Weather	6	5.1	3,187	8.5
Weeds	11	9.4	2,328	6.2
None	8	6.8	1,677	4.5
Emergence/stand	6	5.1	735	2.0
Herbicide injury	3	2.6	230	0.6
Drift injury	2	1.7	212	0.6
Insects	1	0.9	41	0.1
Total	**117**	**100.0**	**37,609**	**100.0**

[a] Respondents' acres only.

Table 6. Percent of total dry bean area harvested by direct combining 2009.

Percent direct combined	Respondents	Respondents
	(no.)	(%)
Minnesota		
0%	10	45.5
1-25%	2	9.1
26-50%	1	4.5
51-75%	1	4.5
76-100%	8	36.4
Total	**22**	**100.0**
North Dakota		
0%	17	27.0
1-25%	13	20.6
26-50%	2	3.2
51-75%	4	6.3
76-100%	27	42.9
Total	**63**	**100.0**
Northharvest		
0%	27	31.8
1-25%	15	17.6
26-50%	3	3.5
51-75%	5	5.9
76-100%	35	41.2
Total	85	100.0

Table 7. Use of fertilizers on dry bean fields in 2009.

Fertilizer	Respondents	Respondents
	(no.)	(%)
Minnesota		
Nitrogen	37	97.4
Phosphate	32	84.2
Potash	28	73.7
Zinc	24	63.2
Other	6	15.8
North Dakota		
Nitrogen	60	72.3
Phosphate	53	63.9
Potash	11	13.3
Zinc	39	47.0
Other	1	1.2
Northarvest		
Nitrogen	97	80.2
Phosphate	85	70.2
Potash	39	32.2
Zinc	63	52.1
Other	7	5.8

Table 8. Use of soil test prior to fertilization of dry bean fields in 2009.

Soil test	Respondents	Respondents
	(no.)	(%)
Minnesota		
Soil test used	33	86.8
Soil test not used	5	13.2
Total	**38**	**100.0**
North Dakota		
Soil test used	56	80.0
Soil test not used	14	20.0
Total	**70**	**100.0**
Northarvest		
Soil test used	89	82.4
Soil test not used	19	17.6
Total	**108**	**100.0**

Table 9. Use of Rhizobium inoculants on dry bean in 2009.

Rhizobium use	Respondents	Respondents
	(no.)	(%)
Minnesota		
Inoculant used	8	22.9
Inoculant not used	27	77.1
Total	**35**	**100.0**
North Dakota		
Inoculant used	17	27.0
Inoculant not used	46	73.0
Total	**63**	**100.0**
Northarvest		
Inoculant used	25	25.5
Inoculant not used	73	74.5
Total	**98**	**100.0**

Table 10. Desiccants used on dry bean fields in 2009.

Desiccant	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Sodium chlorate	4	10.5	1,335	9.6
Paraquat	3	7.9	450	3.2
Glyphosate	7	18.4	1,371	9.9
Valor	11	28.9	2,775	19.9
North Dakota				
Sodium chlorate	2	2.4	340	0.8
Paraquat	6	7.2	1,265	3.1
Glyphosate	17	20.5	6,618	16.4
Valor	28	33.7	9,390	23.2
Northarvest				
Sodium chlorate	6	5.0	1,675	3.1
Paraquat	9	7.4	1,715	3.2
Glyphosate	24	19.8	7,989	14.7
Valor	39	32.2	12,165	22.4

[a] Respondents' acres only.

Table 11. Crop grown the year prior to dry bean in 2009.

Previous crop	Respondents
	(%)
Minnesota	
Corn	45.3
Wheat	29.7
Sugarbeet	15.6
Potato	3.1
Barley	1.6
Oats	1.6
Soybean	1.6
Other	1.6
North Dakota	
Wheat	72.5
Corn	11.3
Sugarbeet	9.2
Barley	7.0
Northarvest	
Wheat	59.2
Corn	21.8
Sugarbeet	11.2
Barley	5.3
Potato	1.0
Oats	0.5
Soybean	0.5
Other	0.5

Table 12. Frequency of other crops in crop rotation program with dry bean.

Crop	Respondents
	(%)
Minnesota	
Corn	40.8
Wheat	21.2
Soybean	21.2
Sugarbeet	7.8
Potato	3.4
Alfalfa	1.7
Barley	0.6
Oats	0.6
Other	2.8
North Dakota	
Wheat	57.5
Corn	10.8
Soybean	8.7
Sugarbeet	8.4
Barley	6.0
Sunflower	2.4
Potato	2.4
Canola	2.1
Fallow	0.9
Other	0.6
Northharvest	
Wheat	44.8
Corn	21.3
Soybean	13.1
Sugarbeet	8.2
Barley	4.1
Potato	2.7
Sunflower	1.6
Canola	1.4
Fallow	0.6
Alfalfa	0.6
Oats	0.2
Other	1.4

Table 13. Number of years dry bean is in crop rotation program.

Number of years	Respondents
	(%)
Minnesota	
Once every 2 years	17.2
Once every 3 years	23.4
Once every 4 years	21.9
Once every 5 years	37.5
North Dakota	
Every year	2.1
Once every 2 years	32.4
Once every 3 years	22.1
Once every 4 years	22.1
Once every 5 years	21.4
Northarvest	
Every year	1.4
Once every 2 years	27.8
Once every 3 years	22.5
Once every 4 years	22.0
Once every 5 years	26.3

Table 14. Row spacing reported in dry bean in 2009.

Row spacing	Respondents	Respondents
	(no.)	(%)
Minnesota		
11 to 15 inches	3	7.9
16 to 20 inches	1	2.6
21 to 25 inches	13	34.2
26 to 30 inches	21	55.3
Total	**38**	**100.0**
North Dakota		
Less than 11 inches	3	3.7
11 to 15 inches	7	8.6
16 to 20 inches	1	1.2
21 to 25 inches	19	23.5
26 to 30 inches	50	61.7
More than 30 inches	1	1.2
Total	**81**	**100.0**
Northarvest		
Less than 11 inches	3	2.5
11 to 15 inches	10	8.4
16 to 20 inches	2	1.7
21 to 25 inches	32	26.9
26 to 30 inches	71	59.7
More than 30 inches	1	0.8
Total		**100.0**

Table 15. Type II bean row spacing in 2009.

Row spacing	Respondents	Respondents
	(no.)	(%)
Minnesota		
Less than 11 inches	0	0
11 to 15 inches	2	15.4
16 to 20 inches	1	7.7
21 to 25 inches	5	38.5
26 to 30 inches	5	38.5
Total	**13**	**100.0**
North Dakota		
Less than 11 inches	4	7.8
11 to 15 inches	7	13.7
16 to 20 inches	1	2.0
21 to 25 inches	5	9.8
26 to 30 inches	34	66.7
Total	**51**	**100.0**
Northarvest		
Less than 11 inches	4	6.3
11 to 15 inches	9	14.1
16 to 20 inches	2	3.1
21 to 25 inches	10	15.6
26 to 30 inches	39	60.9
Total	**64**	**100.0**

Table 16. Seeding rate for type II dry bean in 2009.

Seeding rate	Respondents	Respondents
	(no.)	(%)
Minnesota		
< 70,000 seeds/acre	1	7.7
70,000 to 79,000 seeds/acre	1	7.7
80,000 to 89,000 seeds/acre	1	7.7
90,000 to 99,000 seeds/acre	2	15.4
100,000 to 109,000 seeds/acre	2	15.4
110,000 to 119,000 seeds/acre	0	0
120,000 to 129,000 seeds/acre	5	38.5
>129,000 seeds/acre	1	7.7
Total	**13**	**100.0**
North Dakota		
< 70,000 seeds/acre	8	22.2
70,000 to 79,000 seeds/acre	13	36.1
80,000 to 89,000 seeds/acre	5	13.9
90,000 to 99,000 seeds/acre	5	13.9
100,000 to 109,000 seeds/acre	3	8.3
110,000 to 119,000 seeds/acre	1	2.8
120,000 to 129,000 seeds/acre	0	0
>129,000 seeds/acre	1	2.8
Total	**36**	**100.0**
Northarvest		
< 70,000 seeds/acre	9	18.4
70,000 to 79,000 seeds/acre	14	28.6
80,000 to 89,000 seeds/acre	6	12.2
90,000 to 99,000 seeds/acre	7	14.3
100,000 to 109,000 seeds/acre	5	10.2
110,000 to 119,000 seeds/acre	1	2.0
120,000 to 129,000 seeds/acre	5	10.2
>129,000 seeds/acre	2	4.1
Total	**49**	**100.0**

Insect Pests

Table 17. Worst insect problem on dry bean in 2009.

Insect[a]	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Leafhoppers	13	61.9	3,732	55.0
Aphids	3	14.3	1,352	19.9
None	2	9.5	1,175	17.3
Grasshoppers	2	9.5	428	6.3
Seed corn maggot	1	4.8	93	1.4
Total	**21**	**100.0**	**6,780**	**100.0**
North Dakota				
None	16	42.1	7,471	42.4
Aphids	3	7.9	2,180	12.4
Leafhoppers	6	15.8	2,100	11.9
Other	1	2.6	1,500	8.5
Cutworms	4	10.5	1,474	8.4
Grasshoppers	4	10.5	1,370	7.8
Bean leaf beetle	2	5.3	1,070	6.1
Seed corn maggot	1	2.6	340	1.9
Spider mites	1	2.6	118	0.7
Total	**38**	**100.0**	**17,623**	**100.0**
Northarvest				
None	18	30.5	8,646	35.4
Leafhoppers	19	32.2	5,832	23.9
Aphids	6	10.2	3,532	14.5
Grasshoppers	6	10.2	1,798	7.4
Other	1	1.7	1,500	6.1
Cutworms	4	6.8	1,474	6.0
Bean leaf beetle	2	3.4	1,070	4.4
Seed corn maggot	2	3.4	433	1.8
Spider mites	1	1.7	118	0.5
Total	**59**	**100.0**	**24,403**	**100.0**

[a] Respondents' acres only.

Table 18. Insects ranked as one of the three worst in dry bean fields in 2009.

Insect[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
Leafhoppers	14	36.8	4,462	32.1
Aphids	7	18.4	1,899	13.6
Spider mites	4	10.5	1,329	9.6
None	2	5.3	1,175	8.4
Bean leaf beetle	2	5.3	952	6.8
Grasshoppers	4	10.5	582	4.2
Seed corn maggot	2	5.3	393	2.8
Cutworms	1	2.6	168	1.2
North Dakota				
None	16	19.3	7,471	18.5
Cutworms	10	12.0	5,434	13.4
Grasshoppers	8	9.6	3,311	8.2
Seed corn maggot	4	4.8	2,990	7.4
Bean leaf beetle	6	7.2	2,909	7.2
Aphids	6	7.2	2,879	7.1
Leafhoppers	8	9.6	2,288	5.7
Spider mites	6	7.2	2,258	5.6
Other	1	1.2	1,500	3.7
Caterpillars	1	1.2	279	0.7
Northarvest				
None	18	14.9	8,646	15.9
Leafhoppers	22	18.2	6,750	12.4
Cutworms	11	9.1	5,602	10.3
Aphids	13	10.7	4,778	8.8
Grasshoppers	12	9.9	3,893	7.2
Bean leaf beetle	8	6.6	3,861	7.1
Spider mites	10	8.3	3,587	6.6
Seed corn maggot	6	5.0	3,383	6.2
Other	1	0.8	1,500	2.8
Caterpillars	1	0.8	279	0.5

[a] Ranked as No. 1, 2 or 3 insect problem by respondents.
[b] Respondents' acres only.

Table 19. Use of insecticides on dry bean fields in 2009.

Insecticide	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Asana XL	6	15.8	1,398	10.0
Tombstone	1	2.6	400	2.9
Warrior	1	2.6	400	2.9
Hero	1	2.6	330	2.4
Dimethoate	1	2.6	200	1.4
North Dakota				
Asana XL	4	4.8	1,990	4.9
Warrior	1	1.2	910	2.3
Northarvest				
Asana XL	10	8.3	3,388	6.2
Warrior	2	1.7	1,310	2.4
Tombstone	1	0.8	400	0.7
Hero	1	0.8	330	0.6
Dimethoate	1	0.8	200	0.4

[a] Respondents' acres only.

Table 20. Use of insecticide seed treatment on dry bean in 2009.

Treatment	Respondents	Respondents	Acres reported[a]	Acres reported[a]
	(no.)	(%)	(no.)	(%)
Minnesota				
Lorsban	16	42.1	5,011	36.0
Cruiser	5	13.2	781	5.6
Gaucho	1	2.6	128	0.9
North Dakota				
Lorsban	19	22.9	10,310	25.5
Cruiser	15	18.1	5,455	13.5
Gaucho	7	8.4	2,780	6.9
Northarvest				
Lorsban	35	28.9	15,321	28.2
Cruiser	20	16.5	6,236	11.5
Gaucho	8	6.6	2,908	5.4

[a] Respondents' acres only.

Plant Diseases

Table 21. Worst disease problem on dry bean in 2009.

Disease[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
White mold	26	72.2	9,971	73.4
Root rot	4	11.1	2,714	20.0
None	4	11.1	540	4.0
Bacterial blight	1	2.8	200	1.5
Mosaic virus	1	2.8	168	1.2
Total	**36**	**100.0**	**13,593**	**100.0**
North Dakota				
White mold	54	79.4	27,619	80.0
Root rot	5	7.4	4,060	11.8
Bacterial blight	6	8.8	2,245	6.5
None	3	4.4	610	1.8
Total	**68**	**100.0**	**34,534**	**100.0**
Northarvest				
White mold	80	76.9	37,590	78.1
Root rot	9	8.7	6,774	14.1
Bacterial blight	7	6.7	2,445	5.1
None	7	6.7	1,150	2.4
Mosaic virus	1	1.0	168	0.3
Total	**104**	**100.0**	**48,127**	**100.0**

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

[b] Respondents' acres only.

Table 22. Diseases ranked as one of the three worst on dry bean in 2009.

Disease[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
White mold	30	78.9	12,169	87.4
Root rot	15	39.5	7,687	55.2
Bacterial blight	12	31.6	7,155	51.4
Rust	3	7.9	1,450	10.4
None	4	10.5	540	3.9
Other viruses	1	2.6	360	2.6
Anthracnose	2	5.3	208	1.5
Mosaic virus	1	2.6	168	1.2
North Dakota				
White mold	64	77.1	32,912	81.4
Bacterial blight	26	31.3	14,110	34.9
Root rot	20	24.1	12,665	31.3
Rust	13	15.7	4,473	11.1
Anthracnose	3	3.6	705	1.7
Alternaria	2	2.4	630	1.6
Other viruses	1	1.2	640	1.6
None	3	3.6	610	1.5
Northarvest				
White mold	94	77.7	45,081	83.0
Bacterial blight	38	31.4	21,265	39.1
Root rot	35	28.9	20,352	37.5
Rust	16	13.2	5,923	10.9
None	7	5.8	1,150	2.1
Other viruses	2	1.7	1,000	1.8
Anthracnose	5	4.1	913	1.7
Alternaria	2	1.7	630	1.2
Mosaic virus	1	0.8	168	0.3

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

[b] Respondents' acres only.

Table 23. Fungicides applied to dry bean fields in 2009.

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						
Proline	4,125	29.6	2,538	18.2	1,387	10.0
None	2,834	20.4	0	0	0	0
Topsin (broadcast)	754	5.4	89	0.6	665	4.8
Other	435	3.1	0	0	435	3.1
Headline	40	0.3	40	0.3	0	0
Total	**8,188**	**58.8**	**2,667**	**19.2**	**2,487**	**17.9**
North Dakota						
None	15,277	37.8	0	0	0	0
Proline	9,461	23.4	60	0.1	6,401	15.8
Topsin (broadcast)	2,040	5.0	0	0	1,990	4.9
Headline	1,508	3.7	230	0.6	1,278	3.2
Topsin (banded)	1,513	3.7	0	0	1,513	3.7
Other	1,200	3.0	0	0	1,200	3.0
Endura	180	0.4	0	0	50	0.1
Folicur	50	0.1	0	0	50	0.1
Total	**31,229**	**77.2**	**290**	**0.7**	**12,482**	**30.9**
Northarvest						
None	18,111	33.3	0	0	0	0
Proline	13,586	25.0	2,598	4.8	10,788	19.9
Topsin (broadcast)	2,794	5.1	89	0.2	2,655	4.9
Other	1,635	3.0	0	0	1,635	3.0
Headline	1,548	2.8	270	0.5	1,278	2.4
Topsin (banded)	1,513	2.8	0	0	1,513	2.8
Endura	180	0.3	0	0	50	0.1
Folicur	50	0.1	0	0	50	0.1
Total	**39,417**	**72.5**	**2,957**	**5.4**	**17,969**	**33.1**

[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 24. Use of fungicide seed treatment on dry bean in 2009.

	Respondents	Respondents
	(no.)	(%)
Minnesota		
Treatment not used	20	71.4
Treatment used, product not listed	5	17.9
Apron/Maxim	2	7.1
Maneb	1	3.6
Total	**28**	**100.0**
North Dakota		
Treatment not used	27	55.1
Treatment used, product not listed	11	22.5
Apron/Maxim	6	12.2
Other	5	10.2
Total	**49**	**100.0**
Northarvest		
Treatment not used	47	61.0
Treatment used, product not listed	16	20.8
Apron/Maxim	8	10.4
Other	5	6.5
Maneb	1	1.3
Total	**77**	**100.0**

Weeds

Table 25. Worst weed problem in dry bean fields in 2009.

Weed[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
Lambsquarters	12	33.3	5,652	41.3
Kochia	3	8.3	2,140	15.6
Ragweed	7	19.4	2,051	15.0
Nightshade	3	8.3	1,374	10.0
Biennial wormwood	2	5.6	1,060	7.8
Redroot pigweed	2	5.6	340	2.5
Foxtail	2	5.6	315	2.3
Volunteer grain	1	2.8	255	1.9
Wild mustard	1	2.8	202	1.5
None	1	2.8	195	1.4
Canada thistle	1	2.8	58	0.4
Cocklebur	1	2.8	34	0.2
Total	**36**	**100.0**	**13,676**	**100.0**
North Dakota				
Biennial wormwood	9	12.0	6,960	18.5
Canada thistle	13	17.3	6,386	17.0
Nightshade	10	13.3	4,729	12.6
Kochia	8	10.7	4,675	12.4
Lambsquarters	7	9.3	3,408	9.1
Cocklebur	4	5.3	2,775	7.4
Ragweed	9	12.0	2,683	7.1
Redroot pigweed	5	6.7	2,238	5.9
Wild buckwheat	2	2.7	1,250	3.3
Wild oat	2	2.7	858	2.3
Volunteer grain	2	2.7	766	2.0
Wild mustard	2	2.7	700	1.9
None	1	1.3	140	0.4
Foxtail	1	1.3	50	0.1
Total	**75**	**100.0**	**37,618**	**100.0**
Northarvest				
Lambsquarters	19	17.1	9,060	17.7
Biennial wormwood	11	9.9	8,020	15.6
Kochia	11	9.9	6,815	13.3
Canada thistle	14	12.6	6,444	12.6
Nightshade	13	11.7	6,103	11.9
Ragweed	16	14.4	4,734	9.2
Cocklebur	5	4.5	2,809	5.5
Redroot pigweed	7	6.3	2,578	5.0
Wild buckwheat	2	1.8	1,250	2.4
Volunteer grain	3	2.7	1,021	2.0
Wild mustard	3	2.7	902	1.8
Wild oat	2	1.8	858	1.7
None	2	1.8	335	0.7
Foxtail	3	2.7	365	0.7
Total	**111**	**100.0**	**51,294**	**100.0**

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

[b] Respondents' acres only.

Table 26. Weeds ranked as one of the three worst in dry bean fields in 2009.

Weed[a]	Respondents	Respondents	Acres reported[b]	Acres reported[b]
	(no.)	(%)	(no.)	(%)
Minnesota				
Lambsquarters	26	68.4	9,706	69.7
Ragweed	22	57.9	8,797	63.2
Redroot pigweed	11	28.9	5,155	37.0
Kochia	7	18.4	4,820	34.6
Biennial wormwood	7	18.4	3,574	25.7
Nightshade	7	18.4	2,265	16.3
Canada thistle	6	15.8	1,802	12.9
Foxtail	7	18.4	1,634	11.7
Volunteer grain	3	7.9	1,355	9.7
Other	1	2.6	265	1.9
Waterhemp	1	2.6	255	1.8
Wild oat	1	2.6	222	1.6
Wild mustard	1	2.6	202	1.5
None	1	2.6	195	1.4
Cocklebur	1	2.6	34	0.2
North Dakota				
Canada thistle	28	33.7	14,940	37.0
Biennial wormwood	23	27.7	14,909	36.9
Kochia	29	34.9	14,134	35.0
Lambsquarters	24	28.9	13,565	33.6
Nightshade	24	28.9	10,856	26.9
Redroot pigweed	20	24.1	8,594	21.3
Volunteer grain	15	18.1	6,881	17.0
Cocklebur	13	15.7	5,892	14.6
Ragweed	15	18.1	5,743	14.2
Foxtail	5	6.0	3,380	8.4
Other	4	4.8	3,055	7.6
Wild oat	5	6.0	2,752	6.8
Wild mustard	6	7.2	2,763	6.8
Wild buckwheat	2	2.4	1,250	3.1
None	1	1.2	140	0.3
Northarvest				
Lambsquarters	50	41.3	23,271	42.8
Kochia	36	29.8	18,954	34.9
Biennial wormwood	30	24.8	18,483	34.0
Canada thistle	34	28.1	16,742	30.8
Ragweed	37	30.6	14,540	26.8
Redroot pigweed	31	25.6	13,749	25.3
Nightshade	31	25.6	13,121	24.1
Volunteer grain	18	14.9	8,236	15.2
Cocklebur	14	11.6	5,926	10.9
Foxtail	12	9.9	5,014	9.2
Other	5	4.1	3,320	6.1
Wild oat	6	5.0	2,974	5.5
Wild mustard	7	5.8	2,965	5.5
Wild buckwheat	2	1.7	1,250	2.3
None	2	1.7	335	0.6
Waterhemp	1	0.8	255	0.5

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

[b] Respondents' acres only.

Table 27. Weed control practices used on dry bean fields in 2009.

Herbicide or other practice*	Acres reported[a]	Acres reported[a]
	(no.)	(%)
Minnesota		
Raptor	9,403	67.6
Cultivation	7,234	52.0
Reflex	4,920	35.4
Rezult	4,875	35.0
Sonolan (spring)	4,699	33.8
Basagran	4,460	32.0
Treflan (spring)	3,283	23.6
Prowl	1,922	13.8
Permit	1,583	11.4
Pursuit	1,400	10.1
Eptam (spring)	1,380	9.9
Dual	1,255	9.0
Lasso	1,020	7.3
Pursuit Plus	850	6.1
Select	663	4.8
Assure II	466	3.3
Treflan (fall)	366	2.6
Outlook	315	2.3
Poast	120	0.9
Rotary hoe	130	0.9
Other	68	0.5
Sonolan (fall)	41	0.3
North Dakota		
Rezult	31,116	77.0
Raptor	25,856	64.0
Sonolan (spring)	18,930	46.8
Cultivation	13,516	33.4
Reflex	12,876	31.8
Prowl	6,698	16.6
Basagran	5,290	13.1
Select	4,830	11.9
Treflan (spring)	4,445	11.0
Pursuit	2,878	7.1
Roundup (preharvest)	2,610	6.5
Rotary hoe	1,938	4.8
Assure II	1,800	4.5
Poast	1,400	3.5
Eptam (spring)	1,100	2.7
Lasso	1,100	2.7
Spartan	880	2.2
Glyphosate (preharvest)	650	1.6
Permit	552	1.4
Pursuit Plus	535	1.3
Sonolan (fall)	394	1.0
Outlook	223	0.6
Other	150	0.4
Northarvest		
Rezult	35,991	66.2
Raptor	35,259	64.9
Sonolan (spring)	23,629	43.5
Cultivation	20,750	38.2
Reflex	17,796	32.7
Basagran	9,750	17.9
Prowl	8,620	15.9
Treflan (spring)	7,728	14.2
Select	5,493	10.1
Pursuit	4,278	7.9
Roundup (preharvest)	2,610	4.8
Eptam (spring)	2,480	4.6
Assure II	2,266	4.2
Lasso	2,120	3.9
Permit	2,135	3.9
Rotary hoe	2,068	3.8
Poast	1,520	2.8
Pursuit Plus	1,385	2.5
Dual	1,255	2.3
Spartan	880	1.6
Glyphosate (preharvest)	650	1.2
Outlook	538	1.0
Sonolan (fall)	435	0.8
Treflan (fall)	366	0.7
Other	218	0.4

[a] Respondents' acres only.

Table 28. Weed control practices by bean market class in 2009.

Herbicide or other practice*	Black	Kidney[b]	Navy	Pinto	Pink	Other
	% acres treated[a]					
Minnesota						
Assure II	0	0	7.0	8.6	0	0
Basagran	23.3	42.8	32.6	10.3	45.5	0
Dual	0	14.0	0	0	39.6	0
Eptam (spring)	0	9.9	15.3	0	25.0	0
Lasso	0	18.3	0	0	0	0
Outlook	0	3.1	0	4.6	0	5.0
Permit	0	9.4	30.6	0	0	0
Poast	0	0	3.5	0	0	0
Prowl	53.8	8.3	22.0	15.2	0	0
Pursuit	0	0	0	53.3	0	0
Raptor	100.0	61.6	69.1	67.7	93.3	25.6
Pursuit Plus	0	15.3	0	0	0	0
Reflex	46.2	27.2	20.8	58.9	31.2	100.0
Roundup (preharvest)	0	0	0	0	0	0
Rezult	100.0	21.4	35.8	33.8	50.0	25.6
Select	0	7.1	0	10.3	0	0
Sonolan (fall)	0	0	1.2	0	0	0
Sonolan (spring)	23.3	39.5	45.0	13.7	37.9	0
Spartan	0	0	0	0	0	0
Treflan (fall)	0	0	3.5	0	20.5	0
Treflan (spring)	22.9	11.3	8.7	62.8	14.6	79.4
Cultivation	53.8	60.3	47.1	48.7	55.4	0
Other	0	1.2	0	0	0	0
North Dakota						
Assure II	0	0	0	6.2	0	0
Basagran	0	0	39.4	10.1	0	0
Eptam (spring)	0	0	0	3.8	0	0
Glyphosate (preharvest)	0	0	0	2.2	0	0
Lasso	0	0	0	3.8	0	0
Outlook	0	0	0	0.8	0	0
Permit	0	0	0	0.7	0	0
Poast	0	0	0	4.8	0	0
Prowl	56.0	75.9	8.0	14.7	0	0
Pursuit	13.6	0	0	8.4	0	0
Raptor	72.6	41.4	60.0	64.1	100.0	45.2
Pursuit Plus	0	0	0.8	1.7	0	0
Reflex	33.1	0	53.6	25.3	100.0	45.2
Roundup (preharvest)	24.7	0	0	6.2	0	0
Rezult	80.7	41.4	69.0	79.2	10.0	87.6
Select	34.6	75.9	1.5	12.0	0	0
Sonolan (fall)	0	0	6.6	0	0	0
Sonolan (spring)	33.4	0	60.1	43.6	0	100.0
Spartan	19.0	0	0	0.9	0	0
Treflan (spring)	2.4	0	6.5	13.7	0	0
Cultivation	0	41.4	44.6	35.2	100.0	0
Rotary hoe	0	0	25.1	1.5	0	0
Other	0	0	0	0.5	0	0
Northarvest						
Assure II	0	0	2.6	6.4	0	0
Basagran	3.4	41.8	36.9	10.2	30.3	0
Dual	0	13.7	0	0	26.4	0
Eptam (spring)	0	9.6	5.6	3.5	16.7	0
Glyphosate (preharvest)	0	0	0	2.1	0	0
Lasso	0	17.9	0	3.5	0	0
Outlook	0	3.0	0	1.1	0	1.3
Permit	0	9.2	14.9	0.6	0	0
Poast	0	0	1.3	4.4	0	0
Prowl	55.7	10.0	13.1	14.7	0	0
Pursuit	11.7	0	0	12.1	0	0
Raptor	76.5	61.1	63.3	64.4	95.6	40.0
Pursuit Plus	0	14.9	0.5	1.5	0	0
Reflex	35.0	26.5	41.6	28.1	54.1	59.6
Roundup (preharvest)	21.1	0	0	5.7	0	0
Rezult	90.5	21.9	56.9	75.4	36.6	71.3
Select	29.6	8.8	1.0	11.9	0	0
Sonolan (fall)	0	0	4.6	0	0	0
Sonolan (spring)	32.0	38.4	54.6	41.1	25.2	82.8
Spartan	16.2	0	0	0.8	0	0
Treflan (fall)	0	0	1.3	0	13.7	0
Treflan (spring)	5.4	11.0	7.3	17.8	9.7	20.9
Cultivation	7.7	59.9	45.5	36.3	70.2	0
Rotary hoe	3.3	0	15.9	1.4	0	0
Other	0	1.2	0	0.5	0	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:
Small Red (5),
Great Northern (2), Early Red (1)

Navy cultivar:
Roger 331 (2), 1054 (1), Envoy (1), Medalist (1), Regent (1)

Pinto cultivar:
Sonora (2), 99195 (1), 99217 (1), Apache (1), Kimberly (1), Topaz (1), Unknown Experimental (1)

Kidney cultivar:
Pink Panther (3), Drake (2), Unknown Light Red Kidney (2), California Early (1), Sacramento (1), Unknown Dark Red Kidney (1), W585 (1)

Pink cultivar:
537 (3), 473 (2)

Worst weed:
Canola, curly dock, mallow, smartweed

Worst insect/mite:
Wireworms (1)

Fertilizer:
Sulfur (4), boron (1)

Fungicides:
Calcium (1), T-methyl (1)

Seed treatments:
Maxim (2), Captan/ApronMax (1), Captan/streptomycin (1), Kodiak/Captan (1), Maneb/Thiram/Lindane (1)

Herbicides:
Hand weeding (3)

Insecticides:
Capture LFR (1),

Rotation crops:
Peas (3), hay (1)

References

1. Bradley, C.A., and Luecke, J.L. 2004. 2002 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. PP-1265.
2. Knodel, J.J., Luecke, J.L., Beauzay, P.B., Franzen, D.W., Kandel, H.J., Markell, S.G., Osorno, J.M., and Zollinger, R.K. 2009. 2008 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. E-1421 (revised).
3. Knodel, J.J., Luecke, J.L., Beauzay, P.B., Franzen, D.W., Kandel, H.J., Markell, S.G., Osorno, J.M., and Zollinger, R.K. 2008. 2007 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. PP-1392.
4. Knodel, J.J., Luecke, J.L., Beauzay, P.B., Franzen, D.W., Kandel, H.J., Markell, S.G., Osorno, J.M., and Zollinger, R.K. 2008. 2006 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. PP-1265 (revised).
5. Knodel, J.J., Bradley, C.A., Luecke, J.L., and Mars, G.A. 2008. 2004 and 2005 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. PP-1265 (revised).
6. Lamey, H.A., Berglund, D.R., McMullen, M.P., Luecke, J.L., Venette, J.R., McBride, D.K., Zollinger, R.K., and Grafton, K.F. 1993. 1991 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 13.
7. Lamey, H.A., Berglund, D.R., McMullen, M.P., Luecke, J.L., Zollinger, R.K., Glogoza, P.A., Venette, J.R., McBride, D.K., and Grafton, K.F. 1994. 1992 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 19.
8. Lamey, H.A., Berglund, D.R., McMullen, M.P., Zollinger, R.K., Venette, J.R., McBride, D.K., Venette, S.J., and Venette, R.C. 1992. 1990 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 10.
9. Lamey, H.A., Dexter, A.G., McBride, D.K., Venette, R.C., and Venette, J.R. 1990. Problems and Practices of Northarvest Dry Bean Growers in 1988. N.D. Farm Res. 48(20):6-11, 14.
10. Lamey, H.A., McMullen, M.P., Glogoza, P.A., Zollinger, R.K., Luecke, J.L., Berglund, D.R., Venette, J.R., and Grafton, K.F. 1998. 1996 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 44.
11. Lamey, H.A., Zollinger, R.K., Luecke, J.L., Berglund, D.R., Glogoza, P.A., and Grafton, K.F. 2001. 2000 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 72.
12. Lamey, H.A., Zollinger, R.K., McBride, D.K., Venette, R.C., and Venette, J.R. 1991. Production Problems and Practices of Northarvest Dry Bean Growers in 1989. N.D. Farm Res. 29(2):17-24.
13. Lamey, H.A., Zollinger, R.K., McMullen, M.P., Luecke, J.L., Grafton, K.F., Berglund, D.R., Venette, J.R., and Glogoza, P.A. 1996. 1994 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 28.
14. Lamey, H.A., Zollinger, R.K., Venette, J.R., Berglund, D.R., Luecke, J.L., Grafton, K.F., and Glogoza, P.A. 1997. 1995 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 33.
15. Lamey, H.A., Zollinger, R.K., Venette, J.R., McMullen, M.P., Luecke, J.L., Glogoza, P.A., Grafton, K.F., and Berglund, D.R. 1999. 1997 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 47.
16. Lamey, H.A., Zollinger, R.K., McMullen, M.P., Luecke, J.L., Venette, J.R., Berglund, D.R., Grafton, K.F., and Glogoza, P.A. 1999. 1998 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 58.
17. Lamey, H.A., Zollinger, R.K., McMullen, M.P., Luecke, J.L., Venette, J.R., Berglund, D.R., Grafton, K.F., and Glogoza, P.A. 2000. 1999 Dry Bean Grower Survey of Pest Problems and Pesticide Use in Minnesota and North Dakota. NDSU Extension Rpt. 64.
18. Venette, J.R., Lamey, H.A., Peterson, D.E., and Venette, R.C. 1989. Problems and Practices of Dry Edible Bean Production in North Dakota and Minnesota, 1987. N.D. Farm Res. 46(5):25-31.

Appendix I.

Please circle or fill in the requested information on pest problems and pesticide used on your 2009 dry bean crop.

Total dry bean acres planted in 2009
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 2009) (write in crops grown in previous years)		
	Field 1 - dry beans '09	**Field 2 - dry beans '09**
2008		
2007		
2006		
2005		

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? If yes, please answer questions below.
Yes No

How many acres were planted using Cruiser 5FS or Cruiser MAXX Beans Seed Treatment?

Acreage =

How many acres were planted using Lorsban Seed Treatment?

Acreage =

How many acres were planted using Gaucho 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/Targo
2. Basagran/generics
3. Dual/generics
4. Eptam (fall)
5. Eptam (spring)
6. Glyphosate (preharvest)
7. Lasso/generics
8. Outlook
9. Permit
10. Poast
11. Prowl
12. Pursuit
13. Raptor
14. Pursuit Plus
15. Reflex
16. Glyphosate/generics
17. Rezult
18. Select/generics
19. Sonalan (fall)
20. Sonalan (spring)
21. Spartan
22. Trifluralin (fall)
23. Trifluralin (spring)
24. Trifluralin + Eptam (spring)
25. No Herbicide
26. Cultivation
27. Rotary hoe
28. 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/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?YesNo

If so, what product(s)?

General Fertilizer Program for Dry Beans - pounds per acre applied				
Nitrogen	Phosphate	Potash	Zinc	Other
Inoculate with rhizobium bacteria? YesNo				
Soil test prior to fertilization?YesNo				

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%

Acknowledgments

A grant from the Northarvest Bean Growers Association funded the survey.

Photos by the NDSU Extension Service

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

This publication may be copied for noncommercial, educational purposes in its entirety with no changes.
Requests to use any portion of the document (including text, graphics or photos) should be sent to NDSU.permission@ndsu.edu.
Include exactly what is requested for use and how it will be used.

North Dakota State University does not discriminate on the basis of race, color, national origin, religion, sex, gender identity, disability, age, status as a U.S. veteran, sexual orientation, marital status, or public assistance status. Direct inquiries to the Vice President for Equity, Diversity and Global Outreach, 205 Old Main, (701) 231-7708.

County Commissions, NDSU and U.S. Department of Agriculture Cooperating.
This publication will be made available in alternative formats for people with disabilities upon request, (701) 231-7881.

1M-2-08; 600-12-08; 600-6-09; 400-4-10