

Pesticide Use and Pest Management Practices for Major Crops in North Dakota - 2000

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ACRES TREATED BY NORTH DAKOTA AGRICULTURAL STATISTICS DISTRICTS

North Dakota has nine agricultural statistics crop reporting districts (Appendix B). Summaries of pesticide usage by district are provided in Table 2. The greatest percentages of acreage planted to treated seed were the northeast and east central districts. These same two districts rank one and two for acres treated for all pesticide categories.

Summaries of pesticide usage per crop by district are provided in Table 3.

Herbicide usage on **wheat** ranged from 88% of the acreage in the central to 97% in the north central. Insecticide usage on wheat ranged from none reported in five of the districts to a high of 2.3% in the northeast. Fungicide usage on wheat ranged from none reported in the southwest and south central to highs of 13% in the north central and northeast and 15% in the east central. These regions have had the highest risk and incidence of fusarium head blight, also known as head scab.

Herbicide usage on **barley** ranged from 66% of the acreage in the southwest to 97% in the north central, northeast, and east central districts. Acres treated with herbicides were over 90% in five of the nine districts. Insecticide usage on barley was less than 1% in the west central district, the only district recording insecticide usage. Fungicide usage on barley ranged from none reported in western districts to a high of 5% in the central district.

Herbicide usage on **oat** was less than on wheat and barley in all districts. Usage ranged from 27% of the acreage in the west central to 79% in the east central district. Six of the nine districts had less than 50% of the oat acres treated with herbicides. No insecticide or fungicide treated oat acres were reported.

Herbicide usage on **flax** varied from 51% in the east central to 98% in the northeast district. No insecticide or fungicide treatments were reported.

Herbicide usage on **corn** ranged from 83 to 97% of the acreage in the three east districts where 76% of the North Dakota corn acres are located. In the remainder of the state, the range of herbicide treated acres was a low of 49% in the south central district to a high of 82% in both the north central and central districts. Insecticide usage on corn was reported from only four of the nine districts with a total estimated treated acres of only 1.9%. Most of the treated acres were located in the east central and southeast districts, representing 86% of the total insecticide treated acres. Fungicide use was reported from

only the east central district and was only 1.1%. Eighty-seven percent of the **sunflower** acres were planted in the central and eastern districts. Slightly more than 82% of the sunflower acres were treated with herbicides statewide. The nine districts averaged 84% of the acres treated with herbicide, ranging from 73% to 91%. Statewide, 10.2% of the sunflower acres were treated with insecticide. An average of 7.9% of the acres were treated by district, with a range of 0.9 to 20.3%. No fungicide treatments were reported.

More than 94% of the **soybean** acres were treated with herbicides in all districts that had a significant soybean acreage. Treated acres ranged from 73% in the south central to 98% in the central districts. Insecticide usage on soybean normally is a small percentage. Only 0.1% of the acres were treated with insecticide, all from the southeast district.

New, small acreage crops for North Dakota include **field pea and lentil** at 67,100 and 44,400 acres, respectively. District level estimates are not available for these crops. The only pesticide group reported was herbicide with an estimated 70% of the pea acres and 87% of the lentil acres treated statewide.

Dry edible bean acres were primarily in the northeast, east central, and central districts, representing 84% of the state acres. Eighty-eight percent of the dry bean acres were treated with herbicide in all districts that had a significant dry bean acreage. Insecticides were applied on only 0.3% of the acres statewide. Fungicides were used on 3.9% of the total dry bean acres, with 5.4% and 1.7% in the northeast and east central districts and 4.9% of all other districts combined.

The northern and central districts grew 88% of the **canola** acres. Eighty-nine percent of the canola acres were treated statewide with herbicides. The range of treatment was from 81% in the north central to 100% in the south central districts. Insecticides were applied to 2.3%, with the acres ranging from none reported from four districts to a high of 8.1% in the northwest district. Fungicides were used on 1.4% of the canola acres. This was the first year a registered fungicide was available, though it was issued too late for some producers. A significant amount of seed treatments was used in canola to manage diseases and insects. Treated seed was used on 81.6% of the canola acres.

Herbicide use on **alfalfa** and **other hay** was very small, ranging from zero to 5.8% of the acreage across the districts and totaled only 1.2% statewide. Total insecticide treated alfalfa acres was only 0.2% of the 1.3 million acres. No insecticide treatments were reported on other hay acres. No fungicides were reported on either alfalfa or other hay.

Herbicides were used on 1 to 17% of the **CRP** acreage across districts. Greatest herbicide usage was reported by the north central, central, and east central districts, locations where perennial weed infestations were of greater concern. No insecticide or fungicide use was reported on CRP acreage.

Herbicides were applied to 19.4% of the statewide **summer fallow**. Acres treated ranged from 10% in the central district to 28% in the southwest district. No insecticide or fungicide use was reported on summer fallow.

Herbicide usage on **pasture** ranged from a low of 0.4% in the northwest and southwest districts to a high of 3.5% in the east central district. Statewide usage was only 1%. No acres of pasture were reported to have been treated with insecticide or fungicide.

Potato was included in the ARMS survey conducted for the 1999 production year ⁶. Forty-nine producers from North Dakota were interviewed. Herbicides were used on 83% of the potato acreage. Ninety-five percent of the potato acreage was estimated to have been treated with insecticide. Fungicide applications were estimated to have been applied to 99% of the acres.

Sugarbeet was included in the ARMS survey conducted for the 2000 production year ⁷. There were 152 producers from North Dakota interviewed. Herbicides were used on 100% of the sugarbeet acres. For the North Dakota sugarbeet acres, 81% were estimated to have been treated with insecticide. Fungicide treatments were estimated for 96% of the acres.

⁶ USDA, NASS. 2000. Agricultural Chemical Usage, 1999 Field Crops Summary. Ag Ch 1(00) a. May 2000.

⁷ USDA, NASS. 2001. Agricultural Chemical Usage, 2000 Field Crops Summary. Ag Ch 1(01) b. May 2001.

TABLE 2. Acreage planted, acreage treated, and percentage of planted acreage treated with pesticides for surveyed crops from crop reporting districts of North Dakota, 2000

District	Acres Planted ¹	Pesticide Treated Acres ²											
		Total		On-farm		Herbicide		Insecticide		Fungicide		Desiccants	
		Treated Seed	(%)	Treated Seed	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)
Northwest	4863.2	994.2	20.4	679.6	14.0	2660.9	54.7	47.7	1.0	53.5	1.1	1.9	0.0
North Central	3715.2	980.4	26.4	551.7	14.9	1917.0	51.6	27.8	0.7	135.7	3.7	0.0	0.0
Northeast	4564.9	1670.6	36.6	821.8	18.0	3401.9	74.5	76.8	1.7	291.2	6.4	4.0	0.1
West Central	4334.8	433.9	10.0	265.3	6.1	1235.1	28.5	3.8	0.1	7.4	0.2	---	---
Central	3925.5	778.9	19.8	317.7	8.1	1813.9	46.2	51.4	1.3	59.9	1.5	1.1	0.0
East Central	3184.8	1226.3	38.5	623.2	19.6	2490.2	78.2	41.4	1.3	157.3	4.9	4.9	0.2
Southwest	4846.9	564.9	11.7	394.4	8.1	1219.4	25.2	4.6	0.1	---	---	---	---
South Central	4577.9	316.2	6.9	61.9	1.4	979.8	21.4	8.1	0.2	---	---	---	---
Southeast	4195.2	852.5	20.3	243.1	5.8	2358.0	56.2	26.1	0.6	7.1	0.2	0.0	0.0
Total	38208.4	7817.8	20.5	3958.7	10.4	18076.3	47.3	287.7	0.8	712.2	1.9	12.0	0.0

¹ Preliminary estimates by the North Dakota Agricultural Statistics Service.

² Multiple applications to the same acreage were totaled as one application within a pesticide group.

TABLE 3. Acreage planted, acreage treated, and percentage of planted acreage treated with pesticides, by crop, from crop reporting districts of North Dakota, 2000

District	Acres Planted ¹	Pesticide Treated Acres ²											
		Total		On-farm		Herbicide		Insecticide		Fungicide		Desiccants	
		Treated Seed		Treated Seed									
	(1000)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)
Wheat													
Northwest	2054.0	610.2	29.7	574.4	28.0	1910.6	93.0	25.7	1.2	47.7	2.3	---	---
North Central	957.0	367.0	38.4	351.3	36.7	930.4	97.2	---	---	130.0	13.6	---	---
Northeast	1941.0	806.2	41.5	665.3	34.3	1864.3	96.0	44.0	2.3	254.7	13.1	---	---
West Central	939.0	230.9	24.6	216.0	23.0	853.5	90.9	2.0	0.2	4.9	0.5	---	---
Central	857.0	230.3	26.9	223.5	26.1	758.7	88.5	---	---	41.9	4.9	---	---
East Central	994.0	533.8	53.7	461.0	46.4	926.7	93.2	21.4	2.2	149.0	15.0	---	---
Southwest	1006.0	387.8	38.5	364.2	36.2	927.5	92.2	---	---	---	---	---	---
South Central	651.0	54.1	8.3	33.7	5.2	586.7	90.1	---	---	---	---	---	---
Southeast	771.0	189.4	24.6	176.1	22.8	738.1	95.7	---	---	5.3	0.7	---	---
TOTAL	10170.0	3409.7	33.5	3065.7	30.1	9496.6	93.4	93.0	0.9	633.5	6.2	---	---
Barley													
Northwest	255.0	113.0	44.3	103.8	40.7	239.2	93.8	---	---	3.4	1.3	---	---
North Central	345.0	166.5	48.3	163.5	47.4	334.4	96.9	---	---	1.9	0.5	---	---
Northeast	380.0	155.6	40.9	130.7	34.4	367.3	96.6	---	---	9.6	2.5	---	---
West Central	140.0	37.0	26.4	31.8	22.7	108.6	77.5	1.0	0.7	---	---	---	---
Central	280.0	68.1	24.3	64.9	23.2	246.2	87.9	---	---	14.5	5.2	---	---
East Central	215.0	130.2	60.6	109.4	50.9	209.5	97.4	---	---	3.6	1.7	---	---
Southwest	71.0	31.1	43.8	29.8	42.0	47.1	66.4	---	---	---	---	---	---
South Central	105.0	25.0	23.8	24.0	22.8	75.1	71.5	---	---	---	---	---	---
Southeast	109.0	25.2	23.1	24.3	22.2	99.2	91.0	---	---	---	---	---	---
TOTAL	1900.0	751.7	39.6	682.2	35.9	1726.6	90.9	1.0	0.1	33.0	1.7	---	---
Oat													
Northwest	41.0	0.7	1.8	0.4	1.0	20.2	49.4	---	---	---	---	---	---
North Central	50.0	0.6	1.3	0.6	1.3	18.0	36.0	---	---	---	---	---	---
Northeast	14.0	1.4	10.3	1.4	10.3	7.6	54.6	---	---	---	---	---	---
West Central	110.0	2.4	2.2	0.9	0.8	30.1	27.4	---	---	---	---	---	---
Central	62.0	0.8	1.4	---	---	24.8	40.0	---	---	---	---	---	---
East Central	9.0	2.0	21.9	2.0	21.9	7.1	79.1	---	---	---	---	---	---
Southwest	96.0	1.5	1.6	0.3	0.4	33.1	34.5	---	---	---	---	---	---
South Central	160.0	6.3	3.9	4.2	2.6	56.8	35.5	---	---	---	---	---	---
Southeast	58.0	---	---	---	---	29.9	51.6	---	---	---	---	---	---
TOTAL	600.0	15.9	2.6	9.9	1.7	227.8	38.0	---	---	---	---	---	---

Table 3. Continued

District	Acres Planted ¹	Pesticide Treated Acres ²											
		Total		On-farm		Herbicide		Insecticide		Fungicide		Desiccants	
		Treated Seed	(%)	Treated Seed	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)
Flax													
Northwest	87.0	1.0	1.1	---	---	78.8	90.6	---	---	---	---	---	---
North Central	70.0	---	---	---	---	60.4	86.3	---	---	---	---	---	---
Northeast	105.0	2.7	2.6	1.1	1.0	103.2	98.3	---	---	---	---	---	---
West Central	30.0	4.2	14.1	4.0	13.2	21.2	70.7	---	---	---	---	---	---
Central	95.0	2.0	2.1	---	---	78.7	82.8	---	---	---	---	---	---
East Central	14.0	3.3	23.4	---	---	7.2	51.5	---	---	---	---	---	---
Southwest	27.0	---	---	---	---	23.5	87.1	---	---	---	---	---	---
South Central	20.0	---	---	---	---	11.8	59.2	---	---	---	---	---	---
Southeast	42.0	---	---	---	---	7.9	90.2	---	---	---	---	---	---
TOTAL	490.0	13.1	2.7	5.0	1.0	422.6	86.2	---	---	---	---	---	---
Corn													
Northwest	5.5	2.3	41.1	---	---	4.2	76.1	---	---	---	---	---	---
North Central	33.5	27.8	83.0	4.8	14.3	27.5	82.1	1.3	4.0	---	---	---	---
Northeast	93.0	82.6	88.8	---	---	77.5	83.4	---	---	---	---	---	---
West Central	31.0	19.9	64.3	---	---	19.5	63.0	---	---	---	---	---	---
Central	65.5	47.8	73.0	2.4	3.7	54.0	82.4	---	---	---	---	---	---
East Central	216.0	177.1	82.0	---	---	209.7	97.1	13.5	6.3	2.3	1.1	---	---
Southwest	39.5	32.8	83.2	---	---	26.0	65.8	---	---	---	---	---	---
South Central	86.0	65.7	76.3	---	---	42.2	49.1	1.5	1.8	---	---	---	---
Southeast	510.0	337.0	66.1	16.5	3.2	472.7	92.7	4.6	0.9	---	---	---	---
TOTAL	1080.0	793.1	73.4	23.7	2.2	933.4	86.4	21.0	1.9	2.3	0.2	---	---
Sunflower													
Northwest	78.6	62.1	79.0	0.9	1.1	68.4	87.0	0.9	1.2	---	---	---	---
North Central	218.0	173.1	79.4	29.4	13.5	164.5	75.4	17.4	8.0	---	---	---	---
Northeast	162.0	126.6	78.1	11.8	7.3	136.2	84.0	32.8	20.3	---	---	---	---
West Central	42.5	39.5	92.8	4.3	10.2	38.8	91.2	0.4	0.9	---	---	---	---
Central	305.0	242.8	79.6	5.8	1.9	258.5	84.7	51.4	16.9	---	---	1.1	0.4
East Central	132.0	97.8	74.1	4.1	3.1	96.4	73.0	4.3	3.3	---	---	---	---
Southwest	53.4	47.6	89.2	---	---	47.7	89.3	3.5	6.5	---	---	---	---
South Central	170.0	139.3	82.0	---	---	134.3	79.0	6.5	3.8	---	---	---	---
Southeast	178.5	128.8	72.1	---	---	161.0	90.2	19.0	10.7	---	---	---	---
TOTAL	1340.0	1057.6	78.9	56.3	4.2	1105.6	82.5	136.3	10.2	---	---	1.1	0.1

Table 3. Continued

District	Acres Planted ¹	Pesticide Treated Acres ²											
		Total		On-farm		Herbicide		Insecticide		Fungicide		Desiccants	
		Treated Seed		Treated Seed									
	(1000)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)
Soybean													
North Central	7.7	2.9	38.0	---	---	6.7	87.3	---	---	---	---	---	---
Northeast	200.0	34.7	17.3	11.4	5.7	183.8	91.9	---	---	---	---	---	---
Central	100.0	6.3	6.3	---	---	97.6	97.6	---	---	---	---	---	---
East Central	850.0	143.1	16.8	43.7	5.1	809.5	95.2	---	---	---	---	0.6	0.1
South Central	20.0	10.7	53.4	---	---	14.5	72.6	---	---	---	---	---	---
Southeast	715.0	142.4	19.9	26.2	3.7	673.7	94.2	2.4	0.3	1.9	0.3	---	---
Other	7.3	0.7	9.9	---	---	5.5	76.0	---	---	---	---	---	---
TOTAL	1900.0	340.8	17.9	81.3	4.3	1791.3	94.3	2.4	0.1	1.9	0.1	0.6	0.0
Field pea													
TOTAL	67.1	6.3	9.4	---	---	47.1	70.2	---	---	---	---	1.0	1.5
Lentil													
TOTAL	44.4	4.0	8.9	---	---	38.8	87.3	---	---	---	---	0.9	2.0
Dry Edible Bean													
Northeast	303.0	161.7	53.4	---	---	267.5	88.3	---	---	16.2	5.4	4.0	1.3
Central	71.0	53.5	75.3	21.1	29.8	48.2	67.8	---	---	---	---	---	---
East Central	136.0	111.5	82.0	3.0	2.2	131.9	96.9	1.7	1.2	2.4	1.7	4.3	3.1
Others	100.0	58.5	58.5	7.2	7.2	90.0	90.0	---	---	4.9	4.9	---	---
TOTAL	610.0	385.2	63.2	31.3	5.1	537.6	88.1	1.7	0.3	23.5	3.9	8.3	1.4
Canola													
Northwest	232.0	201.1	86.7	---	---	219.6	94.7	18.7	8.1	---	---	---	---
North Central	275.0	228.8	83.2	2.1	0.8	223.8	81.4	9.0	3.3	3.8	1.4	---	---
Northeast	367.0	298.8	81.4	---	---	320.4	87.3	---	---	10.7	2.9	---	---
West Central	103.0	77.4	75.2	1.1	1.1	93.4	90.7	---	---	---	---	---	---
Central	145.0	126.0	86.9	---	---	130.3	89.9	---	---	3.6	2.5	---	---
East Central	32.0	27.5	86.0	---	---	28.0	87.4	0.5	1.6	---	---	---	---
Southwest	72.0	52.5	72.9	---	---	68.7	95.5	1.1	1.5	---	---	---	---
South Central	27.0	14.4	53.3	---	---	27.0	100.0	---	---	---	---	---	---
Southeast	17.0	9.9	58.5	---	---	16.0	94.4	0.1	0.8	---	---	---	---
TOTAL	1270.0	1036.3	81.6	3.2	0.3	1127.3	88.8	29.5	2.3	18.1	1.4	---	---

Table 3. Continued

District	Acres Planted ¹	Pesticide Treated Acres ²											
		Total		On-farm		Herbicide		Insecticide		Fungicide		Desiccants	
		Treated Seed		Treated Seed									
	(1000)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)
Alfalfa													
Northwest	116.0	0.5	0.4	---	---	1.0	0.8	2.4	2.0	---	---	---	---
North Central	135.0	0.1	0.0	---	---	4.0	2.9	0.0	0.0	---	---	---	---
Northeast	39.0	---	---	---	---	1.5	3.9	---	---	---	---	---	---
West Central	197.0	0.6	0.3	---	---	0.6	0.3	0.5	0.2	---	---	---	---
Central	173.0	0.5	0.3	---	---	0.1	0.1	---	---	---	---	---	---
East Central	35.0	---	---	---	---	0.9	2.5	---	---	---	---	---	---
Southwest	228.0	---	---	---	---	0.4	0.2	0.0	0.0	---	---	---	---
South Central	297.0	0.2	0.1	---	---	1.3	0.4	---	---	---	---	---	---
Southeast	130.0	0.9	0.7	---	---	2.5	1.9	---	---	---	---	---	---
TOTAL	1350.0	2.8	0.2	---	---	12.2	0.9	2.9	0.2	---	---	---	---
Other Hay													
Northwest	102.0	---	---	---	---	0.4	0.4	---	---	---	---	---	---
North Central	221.0	---	---	---	---	4.6	2.1	---	---	---	---	---	---
Northeast	35.0	---	---	---	---	0.3	0.7	---	---	---	---	---	---
West Central	151.0	0.0	0.0	---	---	1.5	1.0	---	---	---	---	---	---
Central	136.0	---	---	---	---	1.7	1.3	---	---	---	---	---	---
East Central	24.0	---	---	---	---	0.2	0.7	---	---	---	---	---	---
Southwest	141.0	---	---	---	---	0.5	0.4	---	---	---	---	---	---
South Central	183.0	---	---	---	---	1.9	1.0	---	---	---	---	---	---
Southeast	107.0	0.4	0.4	---	---	5.8	5.4	---	---	---	---	---	---
TOTAL	1100.0	0.5	0.0	---	---	16.9	1.5	---	---	---	---	---	---
CRP													
Northwest	273.2	0.1	0.0	---	---	5.6	2.1	---	---	---	---	---	---
North Central	419.1	---	---	---	---	69.7	16.6	---	---	---	---	---	---
Northeast	532.1	0.3	0.1	---	---	28.2	5.3	---	---	---	---	---	---
West Central	134.2	---	---	---	---	8.2	6.1	---	---	---	---	---	---
Central	513.3	0.4	0.1	---	---	72.8	14.2	---	---	---	---	---	---
East Central	232.0	---	---	---	---	37.9	16.3	---	---	---	---	---	---
Southwest	409.6	---	---	---	---	5.8	1.4	---	---	---	---	---	---
South Central	265.0	---	---	---	---	2.6	1.0	---	---	---	---	---	---
Southeast	396.2	---	---	---	---	20.4	5.1	---	---	---	---	---	---
TOTAL	3174.7	0.8	0.0	---	---	251.3	7.9	---	---	---	---	---	---

Table 3. Continued

District	Acres Planted ¹	Pesticide Treated Acres ²											
		Total Treated Seed		On-farm Treated Seed		Herbicide		Insecticide		Fungicide		Desiccants	
		(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)	(1000)	(%)
Fallow													
Northwest	302.5	---	---	---	---	57.7	19.1	---	---	---	---	---	---
North Central	130.8	---	---	---	---	34.1	26.0	---	---	---	---	---	---
Northeast	137.4	---	---	---	---	33.4	24.3	---	---	---	---	---	---
West Central	39.3	---	---	---	---	7.4	18.8	---	---	---	---	---	---
Central	154.7	---	---	---	---	15.0	9.7	---	---	---	---	---	---
East Central	94.0	---	---	---	---	16.5	17.5	---	---	---	---	---	---
Southwest	51.9	---	---	---	---	14.5	27.9	---	---	---	---	---	---
South Central	29.2	---	---	---	---	6.4	21.9	---	---	---	---	---	---
Southeast	225.2	---	---	---	---	40.8	18.1	---	---	---	---	---	---
TOTAL	1165.0	---	---	---	---	225.8	19.4	---	---	---	---	---	---
Pasture													
Northwest	1254.4	---	---	---	---	4.5	0.4	---	---	---	---	---	---
North Central	832.9	---	---	---	---	22.8	2.7	---	---	---	---	---	---
Northeast	251.1	---	---	---	---	5.9	2.3	---	---	---	---	---	---
West Central	2371.9	---	---	---	---	11.1	0.5	---	---	---	---	---	---
Central	959.7	---	---	---	---	20.7	2.2	---	---	---	---	---	---
East Central	198.3	---	---	---	---	6.9	3.5	---	---	---	---	---	---
Southwest	2633.6	---	---	---	---	9.4	0.4	---	---	---	---	---	---
South Central	2555.0	---	---	---	---	16.2	0.6	---	---	---	---	---	---
Southeast	890.3	---	---	---	---	18.1	2.0	---	---	---	---	---	---
TOTAL	11947.2	---	---	---	---	115.6	1.0	---	---	---	---	---	---
Potato	(USDA, NASS. 2000)												
TOTAL	121.0	---	---	---	---	100.4	83.0	114.9	95.0	119.8	99.0	---	---
Sugarbeet	(USDA, NASS, 2001)												
TOTAL	258.0	---	---	---	---	258.0	100.0	209.0	81.0	247.7	96.0	---	---