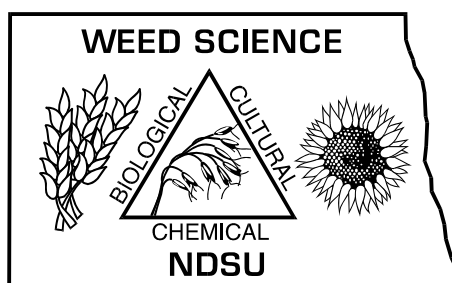


Pesticide Use and Pest Management Practices in North Dakota 2008



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NOTE: This report summarizes the information on pesticide use as reported by the farmers/operators surveyed. The data do not imply endorsement of any particular product or practice. Also, some responses may have misreported use of pesticides due to similar-sounding chemical or trade names. In some cases, pesticides are approved for use before planting or after harvest, but not to a crop. The mention of an unregistered pesticide applied to a crop does not imply applications are legal or advocated by the authors. It is of the utmost importance that pesticide users read, understand and follow all label directions and precautions.

INTRODUCTION

This is the eighth major account of pesticide usage in North Dakota and describes pesticide usage on agricultural land in 2008. The information is derived from a comprehensive survey of North Dakota farm operators. The first seven comprehensive surveys to assess pesticide usage on major crops in North Dakota were conducted on 1978¹, 1984², 1989³, 1992⁴, 1996⁵, 2000⁶ and 2004⁷ pesticide applications.

Total acres treated with herbicides, insecticides, fungicides, and desiccants were 16,081,700 in 1978¹, 20,600,300 in 1984², 19,527,400 in 1989³, 19,034,200 in 1992⁴, 20,668,100 in 1996⁵, 19,087,900 in 2000⁶, 22,572,300 in 2004⁷ and 32,608,400 in 2008 (Table 1). Increase in soybean aphids and wheat diseases (leaf rust, tan spot and scab) may contribute to the increase in acres treated. Changes in pesticide-treated acres also may be due to pest outbreaks, changes in pest populations, tillage practices, substitution of nonchemical for chemical methods, shifts in acreage of major crops or new developments in pest control technology.

The survey of pesticide usage during 2008 in North Dakota was conducted because regular assessment of pesticide usage is an important indicator of changes in farming practices and farmer attitudes toward pesticides, as well as an indicator of the relative severity of various pests in the state.

The specific objectives of the survey were:

1. identify acreage of crops treated with each pesticide group, and identify specific pesticides used.
2. determine pesticide usage by state districts.
3. determine the percentage of pesticides applied by farm operator or custom applicator by air or ground equipment.
4. determine extent of use of several nonchemical pest control methods.

METHODOLOGY

North Dakota State University; USDA, National Agricultural Statistics Service, North Dakota Field Office (NASS); and the North Dakota Department of Agriculture designed the survey instrument. As in previous surveys, pesticide use data for wheat, barley, oat, corn, soybean, dry edible beans, dry pea, lentil, sunflower, safflower, flax, canola, mustard, sugarbeet, potato, alfalfa hay, other hay, CRP, fallow and pasture were requested for the 2008 crop year.

NASS was responsible for implementing the survey. The survey was conducted as a phone survey. NASS selected a sample population of 7,000 farm operators to represent each crop at the district level. The target for useable surveys was 3,500 responses, stratified across NASS's reporting districts. After selection of the sample population, a presurvey letter was mailed to alert selected growers of the survey effort and content. Interviews were conducted from late January through March 2009.

The Questionnaire

The questionnaire was designed to collect pesticide data for major and minor crops, summer fallow, CRP and pasture in North Dakota for the 2008 crop year. The questionnaire was similar to those used previously. Information on individual crop total acres seeded, acres seeded with any treated seed and acres seeded with farm-treated seed was obtained. Acres treated by crop were determined for the general pesticide categories of herbicides, insecticides, fungicides and desiccants.

Pesticide usage data included the active ingredient used, acres treated, number of applications, type of applicator and method of application for each major crop or land use identified by respondents in Section 1 of the questionnaire. The type of applicator meant the chemical was self-applied by the farm operator or custom applied. The method of application referred to aerial or ground applications.

For the pest management decisions and practices, questions were developed to query whether respondents scouted for pests, information they used to make treatment decisions, whether they used nonchemical methods of pest control, their intended GM crop usage and Internet use as an information resource.

The Sample

A sample of 7,000 farm operators was selected at random from the USDA National Agricultural Statistics Service (NASS) list of farm operators.

Data Collection and Editing

Telephone interviews were conducted from late January through March 2009. A total of 3,510 usable surveys was obtained.

Of the producers surveyed for 2008, 41% grew wheat, 17% barley, 9% oat, 20% corn, 19% soybean, 4% dry bean, 5% field pea, 1% lentil, 9% sunflower, 0.3% safflower, 5% flax, 7% canola, 0% crambe, 0.3% mustard, 2% sugarbeet, 0.2% potato, 29% alfalfa, 25% other hay, 38% CRP, 38% pasture and 3% fallow. These values are similar to the 2004 survey except fallow was used by 14% of the producers surveyed in 2004 as compared with 3% in 2008.

The data review process looked at completeness and reasonableness of data within each section of the questionnaire and across sections. For example, the acreage treated with herbicides reported in the first section of the questionnaire was compared with the total herbicide-treated acreage reported in Section III for each crop.

The Summary

All percentages at the state level shown in the summary tables are weighted averages of the districts. Data were summarized by obtaining a percent of total acres treated for the general pesticide category, as well as for specific chemicals, by crop, and by crop reporting districts. These percentages of total acres treated were multiplied by the NASS estimate of total acres planted to each crop in the district. State acres were obtained by the addition of these data with state percentages derived to obtain the weighted figures.

All results from the questionnaire were included in the summary tables. Items designated as “.” represent no data reported.

¹ Nalewaja, J.D., A.G. Dexter, J. Buchli, W. Hamlin, and G. Kimmet. 1980. Pesticide Usage in Major North Dakota Crops. North Dakota State University in cooperation with North Dakota Crop and Livestock Reporting Service, Agronomy Report 1. 33p.

² McMullen, M.P., A.G. Dexter, J.D. Nalewaja, W. Hamlin, and K. Davison. 1985. Pesticide Use on Major Crops in North Dakota, 1984. North Dakota State University in cooperation with North Dakota Crop and Livestock Reporting Service, Agronomy Report 3. 31p.

³ McMullen, M.P., A.G. Dexter, J.D. Nalewaja, and G. Dahl. 1989. Pesticide Use on Major Crops in North Dakota, 1989. North Dakota State University in cooperation with North Dakota Crop and Livestock Reporting Service, Extension Report 1. 50p.

⁴ Zollinger, R.K., M.P. McMullen, G. Dahl, A.G. Dexter, J.D. Nalewaja, W.G. Hamlin, and D.G. Becker. 1992. Pesticide Use and Pest Management Practices for Major Crops in North Dakota, 1992. North Dakota State University in cooperation with North Dakota Agricultural Statistics Service, Extension Report 15. 67p.

⁵ Zollinger, R.K., G. Dahl, M.P. McMullen, P. Glogoza, A.G. Dexter, S.C. Fitterer, G.E. Waldhaus, and K. Ignaszewski. 1998. Pesticide Use and Pest Management Practices for Major Crops in North Dakota, 1996. North Dakota State University in cooperation with North Dakota Agricultural Statistics Service, Extension Report 43. 79p.

⁶ Glogoza, P, M.P. McMullen, R.K. Zollinger, A. Thostenson, T. DeJong, W. Meyer, N. Schauer, and J. Olson. 2002. Pesticide Use and Pest Management Practices for Major Crops in North Dakota, 2000. North Dakota State University in cooperation with North Dakota Agricultural Statistics Service, Extension Report 79. 90p.

⁷ Zollinger, R.K., P. Glogoza, P, M.P. McMullen, C.A. Bradley, A.G. Dexter, D. Knopf, E. Wilson, T. DeJong, and W. Meyer. 2006. Pesticide Use and Pest Management Practices for Major Crops in North Dakota, 2004. North Dakota State University in cooperation with North Dakota Agricultural Statistics Service, Extension Publication W-1308. 39p.

Statewide Pesticide Usage for North Dakota

The reported pesticide-treated acres in Tables 1, 2 and 3 indicate acres that received one or more applications of a pesticide. The treated acres in pesticide usage Tables 4 through 32 include multiple applications to the same acreage as separate values in the total, and pesticides applied as a tank mixture were totaled separately unless a commercial premix was used. Thus, acres treated in pesticide Tables 4 through 34 can exceed 100% of the planted acres. See list of tables.

Herbicides, insecticides and fungicides applied one or more times (Table 1).

	Herbicide	Insecticides	Fungicides
	million acres		
2008	21.4	4.0	5.9
2004	19.3	0.9	2.1
2000 ¹	18.1	0.3	0.7
1996	18.7	1.3	0.6
1992	17.6	0.9	0.6
1989	17.4	1.8	0.4
1984	17.5	2.5	0.5

¹without sugarbeet and potato

Pesticides applied to approximately 54.9% of all combined crop, pasture, hay, CRP and summer fallow land (Table 1).

	Herbicides	Insecticides	Fungicides
	% of land		
2008	54.9	10.3	15.1
2004	48.6	2.4	5.4
2000	47.3	0.8	1.9
1996	47.3	3.2	1.6
1992	43.1	2.1	0.4

Total acres planted to treated seed (Table 1):

2008	12.1 million
2004	8.5 million
2000	7.8 million
1996	9.8 million

Total treated seed (Table 1).

	2008	2004	2000	1996
	%			
Wheat	43.6	35.0	33.5	45.3
Barley	49.2	42.1	39.6	50.9
Corn	92.8	81.1	73.4	79.4
Soybean	55.9	31.4	17.9	9.5
Dry bean	90.9	84.8	63.2	84.3
Sunflower	92.1	82.4	78.9	76.5
Canola	80.0	87.7	81.6	76.2

Total acres planted to on-farm treated seed (Table 1):

2008	4.6 million
2004	3.5 million
2000	3.9 million

On-farm treatment is most common for seed of potato, wheat and barley. Seed of corn, sunflower, canola and dry bean generally is purchased treated.

Total acres applied at least once (Table 1) or multiple times (Table 31) with herbicides.

	Herbicide	
	Treated at least once	Treated multiple times
	acres	
2008	21,364,800	41,106,800
2004	19,284,900	36,768,700
2000	18,434,430	31,480,330
1996	18,765,000	33,691,700
1992	17,573,200	28,777,400
1989	17,368,600	27,674,700
1984	17,539,800	24,819,300

Percentage of acres treated at least once with herbicides in 2008 (Table 1):

>90% wheat, barley, corn, soybean, dry bean, field pea, sunflower, flax, canola and sugarbeet

<3% alfalfa hay, other hay, and pasture.

Treated summer fallow acres was 36%, which was down from 44% in 2004.

Insecticides were used on 4 million acres of the surveyed crops in 2008 (Table 1). This is more than the 0.93 million in 2004, but less than the 6 million acres in 2000 (with NASS-estimated potato and sugarbeet acres), but more than the 1.26 million acres treated in 1996. More than 10% of the surveyed crop acres were treated with an insecticide. Potato (70.5%), sunflower (60.5%), soybean (57.9%), sugarbeet (44.3%) and lentil (24.7%) had the highest percentage of insecticide-treated crop.

Total acreage treated with fungicide, exclusive of seed treatment, increased to 15.1% of the surveyed acres treated in 2004 (Table 1) compared with 5.4% in 2004, 1.9% (without sugarbeet and potato) in 2000, 1.6% in 1996 and 1.4% in 1992 of total cropland treated at least once. The most frequently treated surveyed crops were sugarbeet and potato at 83.3% and 79%, of acres respectively. Wheat, barley, and dry bean showed a significant increase at 40.8%, 32.7%, and 39.9%, respectively. In 2000, 99% of sugarbeet and 96% of potato acres received a fungicide application but only 6.2% of the wheat acres were treated.