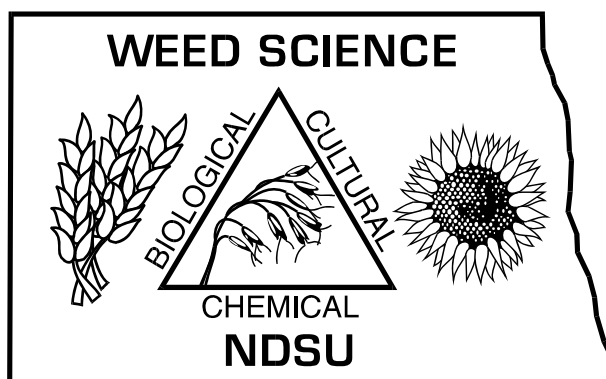


Pesticide Use and Pest Management Practices in North Dakota 2004



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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 seventh major account of pesticide usage in North Dakota and describes pesticide usage on agricultural land in 2004. The information is derived from a comprehensive survey of North Dakota farm operators. The first six comprehensive surveys to assess pesticide usage on major crops in North Dakota were conducted on 1978¹, 1984², 1989³, 1992⁴, 1996⁵, and 2000⁶ pesticide applications.

Total acres treated with herbicides, insecticides and fungicides 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, and 22,572,300 in 2004 (Table 1). Changes in pesticide-treated acres may be due to pest outbreaks, changes in pest populations, tillage practices, substitution of non-chemical for chemical methods, shifts in acreage of major crops, or new developments in pest control technology.

The survey of pesticide usage during 2004 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 non-chemical 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 2004 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 pre-survey letter was mailed to alert selected growers of the survey effort and content. Interviews were conducted from late February through March 2005.

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. 2000. 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.

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 2004 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 non-chemical 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 February to March 2005. A total of 3,232 usable surveys were obtained.

Of the producers surveyed for 2004, 40% grew wheat, 18% barley, 13% oat, 16% corn, 19% soybean, 3.7% dry bean, 3.8% field pea, 1% lentil, 8% sunflower, 0.5% safflower, 7% flax, 6.7% canola, 0% crambe, 0.5% mustard, 1.7% sugarbeet, 0.3% potato, 28% alfalfa, 23% other hay, 40% CRP, 39% pasture, and 14% fallow.

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 to 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 “.” represent zero, “(D)” withheld to avoid disclosing data for individual farms, and “(NA)” not available.

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 32 can exceed 100% of the planted acres. See list of tables.

Herbicides, insecticides, and fungicides were applied one or more times to 19.3, 0.9, and 2.1 million acres, respectively in 2004 (Table 1), compared with 18.1, 0.3, and 0.7 million acres (without sugarbeet and potato), respectively in 2000; 18.7, 1.3, and 0.6 million acres, respectively in 1996; 17.6, 0.9, and 0.6 million acres, respectively, in 1992; 17.4, 1.8, and 0.4 million acres, respectively, in 1989; and 17.5, 2.5, and 0.5 million acres, respectively, in 1984.

In 2004, herbicides were applied to approximately 48.6% of all crop, pasture, hay, CRP, and summer fallow land, insecticides to 2.4%, and fungicides to 5.4% (Table 1). In 2000, herbicides, insecticides, and fungicides were applied to 47.3%, 0.8%, and 1.9% of the land, respectively. In 1996, herbicides, insecticides, and fungicides were applied to 47.3%, 3.2%, and 1.6% of the land, respectively. In 1992, herbicides, insecticides, and fungicides were applied to 43.1%, 2.1%, and 1.4% of the land, respectively.

Of surveyed crops, acres planted to treated seed totaled 8.5 million, compared with 7.8 million in 2000, and 9.8 million in 1996 (Table 1).

Treated wheat seed totaled 35.0% 33.5%, 45.3% in 2004 (Table 1), 2000, 1996, respectively, followed by total treated barley seed at 42.1% 39.6%, 50.9%, total treated corn seed at 81.1% 73.4%, 79.4%, total treated soybean seed at 31.4, 17.9%, 9.5%, total treated dry bean seed at 84.8% 63.2%, 84.3%, total treated sunflower seed at 82.4% 78.9%, 76.5%, and total treated canola seed at 87.7% 81.6%, 76.2%, respectively.

Acres planted to on-farm treated seed totaled 3.5 million in 2004 (Table 1), compared with 3.9 million in 2000, indicating that a slight majority of planted treated seed is treated on the farm. On-farm treatment is most common for seed of potato, wheat

and barley. Seed of corn, sunflower, canola, and dry bean generally is purchased already treated.

Total acres of surveyed crops treated at least once with herbicides was 19,284,900 in 2004 (Table 1), compared with 18,076,000 in 2000 (without potato and sugarbeet or 18,434,430 including NASS-estimated treated acres for potato and sugarbeet), 18,765,000 in 1996, 17,573,200 in 1992, 17,368,600 in 1989, and 17,539,800 in 1984.

When multiple herbicide applications were totaled as multiple acres, herbicide-treated acres were 36,768,700 in 2004 (Table 29) compared with 30,112,300 in 2000 (without potato and sugarbeet or 31,480,330 including NASS-estimated treated acres for potato and sugarbeet), 24,819,300 in 1984, 27,674,700 in 1989, 28,777,400 in 1992, and 33,691,700 in 1996.

The percentage of acres treated at least once with herbicides in 2004 was more than 90% for wheat, barley, corn, soybean, dry bean, lentil, flax, canola, and sugarbeet; between 80% and 90% of dry pea, sunflower and safflower acres were treated at least once with herbicide (Table 1). Acres treated were less than 2% for alfalfa hay, other hay, and pasture. CRP herbicide-treated acres were 9.5%. Forty-four percent of summer fallow acres were treated, which is up from 19% in 2000.

Insecticides were used on 0.93 million acres of the surveyed crops in 2004 (Table 1). This is more than the 0.6 million acres in 2000 (with NASS-estimated potato and sugarbeet acres) but less than the 1.26 million acres treated in 1996. Most of the reduction was due to reduced treating of wheat for managing the wheat midge. Only 2.4% of the surveyed crop acres were treated with an insecticide. Sugarbeet (72.0%), potato (49.2%), and sunflower (33.2%) had the highest percentage of insecticide-treated crop.

Total acreage treated with fungicide, exclusive of seed treatment, increased to 5.4% of the surveyed acres treated in 2004 (Table 1) compared with 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 89.2 and 87, respectively. Wheat received the next highest percentage at 18.6%. In 2000, 99% of sugarbeet and 96% of potato acres received a fungicide application but only 6.2% of the wheat acres were treated.