

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

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**NOTE:** *This report summarizes the information on pesticide use as reported by the farmers 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 sixth major account of pesticide usage in North Dakota and describes pesticide usage on agricultural land in 2000. The information is derived from a comprehensive survey of North Dakota farm operators. The first five comprehensive surveys to assess pesticide usage on major crops in North Dakota were conducted on 1978<sup>1</sup>, 1984<sup>2</sup>, 1989<sup>3</sup>, 1992<sup>4</sup>, and 1996<sup>5</sup> pesticide applications.

Total acres treated with herbicides, insecticides and fungicides were 16,081,700 in 1978, 20,600,300 in 1984, 19,527,400 in 1989, 19,034,200 in 1992, 20,668,100 in 1996, and 19,087,900 in 2000. 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 2000 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; and
4. determine extent of use of several non-chemical pest control methods.

## METHODOLOGY

North Dakota State University, North Dakota Agricultural Statistics Service (NDASS), and the North Dakota Department of Agriculture designed the survey instrument. As in previous surveys, pesticide use data for wheat, barley, oat, flax, corn, sunflower, soybean, dry bean, canola, potato, sugarbeet, alfalfa hay, other hay, pasture, summer-fallow, and CRP was requested for the 2000 crop year. Crops added to the survey included crambe, safflower, dry mustard, and field pea.

NDASS was responsible for implementing the survey. The survey was conducted as a phone survey. NDASS 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 NDASS'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 2001.

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<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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.

### 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 2000 crop year. The questionnaire was similar to the one used for the 1992 and 1996 surveys. Modifications included the addition of questions regarding the use of genetically modified (GM) crops, revised questions querying pest management practices, and questions regarding pesticide drift issues.

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.

Farmers were asked about their use of the GM crops of corn, soybean, canola and potato. They were asked the number of acres planted using this technology in one section; later they were asked if they plan to increase or decrease the use of GM crops.

Respondents were asked to identify crop and pest problems that did not have a pesticide available to adequately manage the problem. This was a new section added to the survey with the objective of identifying possible pesticide priorities.

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. Finally, a series of questions about spray drift incidence and management was included to establish some baseline information regarding this pesticide issue.

### The Sample

A sample of 7,000 farm operators was selected at random from the North Dakota Agricultural Statistics Service (NDASS) list of farm operators. Samples were not adjusted to increase representation for the regional crops of sugarbeet and potato. Potato and sugarbeet have been included in previous statewide pesticide surveys. Due to NASS Agricultural Resource Management Surveys (ARMS) implemented on these crops in 1999 and 2000, the additional respondents needed to adequately address these crops at the district level were not selected out of concern for respondent fatigue. The ARMS surveys are extensive interviews that obtain significant amounts of information at the field and enterprise level. To document pesticide use on these crops in this comprehensive effort, survey results from the NASS surveys pertaining to pesticides are being cited.

### Data Collection and Editing

Telephone interviews were conducted from February to March 2001. A total of 3,580 usable surveys were obtained.

Of the producers surveyed for 2000, 53% grew wheat, 26% barley, 21% oat, 8% flax, 14% corn, 14% sunflower, 11% soybean, 1.8% field pea, 0.8% lentil, 4.3% dry bean, 11% canola, 0.2% crambe, 0.4% safflower, 0.2% mustard, and 0.8% sugarbeet. Forty-one percent reported having alfalfa hay, 36% other hay, 37% CRP, 25% reported having summer fallow, and 59% pastureland.

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 state level percentages 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 percentage of total acres treated were multiplied by the NDASS 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 "NS" were not sufficient to estimate district or state level projections. Where responses represented one respondent, "NS" was used to maintain confidentiality.