

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

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## PESTICIDE USE FOR CORN

Corn production has been increasing in North Dakota during the past five years. Acreage has expanded northward and westward from the traditional production areas in the southeastern counties.

Herbicides were applied to 86.4% of the North Dakota corn acres (Table 1). Because of multiple active ingredients applied to some acres, the equivalent of 141.7% (Table 15) of the corn acres were treated with herbicides. Nicosulfuron and Dicamba were both used on 43.6% of the corn acreage, either alone or as part of a premix (Table 15). Other notable herbicides used were acetochlor at 22.8%, diflufenzopyr at 19.8%, EPTC at 17.9%, atrazine at 12%, and glyphosate at 7.8%. The top five herbicides mentioned by respondents have experienced increased usage during the past 10 years (Figure 5). Most corn

herbicides were applied by the farm operator with ground equipment.

Only 1.9% of the corn acres in 2000 were estimated to have been treated with insecticides (Table 15). Five different insecticide actives were mentioned by survey respondents, but only tefluthrin, at 0.8%, was reported at a level allowing acreage estimates. Small populations of European corn borer, *Ostrinia nubilalis*, and grasshoppers kept treated acres low in number.

The fungicide chlorothalonil was reportedly used on corn but at a low level that did not allow acreage estimation.

TABLE 14. Production summary for CORN, North Dakota, 1996-2000 (NDASS, 2001)

Year	Acres		Yield		Marketing Year Avg. Price (\$/Bu.)	Value of Production (000 Dols.)	Value per harvested Acre (Dols.)	U.S. Production	
	Planted (000 Acres)	Harvested	Per Acre (Bu.)	Production (000 Bu.)				(%)	(Rank)
1996	750	600	91.0	54,600	2.43	132,678	221.13	1	19
1997	780	590	99.0	58,410	2.12	123,829	209.88	1	19
1998	970	825	107.0	88,275	1.71	150,950	182.97	1	32
1999	800	655	117.0	76,635	1.59	121,850	186.03	1	15
2000	1,080	930	112.0	104,160	1.65	171,864	184.80	1	16

TABLE 15. CORN: Herbicide, Insecticide, and Fungicide usage and application method. North Dakota, 2000

Herbicide <sup>1</sup>	Acres Treated <sup>2</sup> (1000)	Acres Treated (%)	Applications			Applicator		Method of Application	
			1 X (%)	2 X (%)	3 X (%)	Farm Operator (%)	Custom (%)	Aerial (%)	Ground (%)
2,4-D	23.8	2.2	100.0	---	---	82.9	17.1	12.0	88.0
Acetochlor + EPTC	174.1	16.1	100.0	---	---	70.5	29.5	---	100.0
Acetochlor + Safener	72.9	6.7	93.8	6.2	---	85.2	14.8	---	100.0
Alachlor	NS	NS	NS	NS	NS	NS	NS	NS	NS
Atrazine	129.7	12.0	100.0	---	---	65.9	34.1	4.0	96.0

Table 15. Continued

	Acres Treated <sup>2</sup>	Acres Treated	Applications			Applicator		Method of Application	
			1 X	2 X	3 X	Farm Operator	Custom Aerial	Ground	
	(1000)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Bentazon	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bromoxynil	30.6	2.8	100.0	---	---	78.3	21.7	5.3	94.7
Bromoxynil + MCPA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Clopyralid + 2,4-D	5.2	0.5	100.0	---	---	86.7	13.3	---	100.0
Clopyralid + Flumetsulam	NS	NS	NS	NS	NS	NS	NS	NS	NS
Cyanazine	6.7	0.6	100.0	---	---	24.4	75.6	4.7	95.3
Dicamba	257.1	23.8	100.0	---	---	82.1	17.9	1.6	98.4
Dicamba + Diflufenzopyr + Nicosulfuron	116.3	10.8	99.1	0.9	---	87.8	12.2	---	100.0
Dicamba + Primisulfuron	NS	NS	NS	NS	NS	NS	NS	NS	NS
Dicamba + Diflufenzopyr	97.1	9.0	100.0	---	---	71.8	28.2	---	100.0
Dimethenamid	NS	NS	NS	NS	NS	NS	NS	NS	NS
Diquat	NS	NS	NS	NS	NS	NS	NS	NS	NS
EPTC + Safener	19.2	1.8	100.0	---	---	54.2	45.8	---	100.0
Ethalfuralin	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fenoxaprop-P + Safener	NS	NS	NS	NS	NS	NS	NS	NS	NS
Glufosinate	41.0	3.8	94.6	5.4	---	75.3	24.7	---	100.0
Glyphosate	83.9	7.8	73.9	26.1	---	65.4	34.6	1.6	98.4
Halosulfuron	NS	NS	NS	NS	NS	NS	NS	NS	NS
Imazamethabenz	3.3	0.3	100.0	---	---	77.8	22.2	---	100.0
Imazethapyr + Glyphosate	NS	NS	NS	NS	NS	NS	NS	NS	NS
Imazethapyr + Imazapyr	16.8	1.6	100.0	---	---	90.1	9.9	9.9	90.1
Isoxaflutole	17.5	1.6	100.0	---	---	81.2	18.8	---	100.0
MCPA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Metolachlor	14.0	1.3	100.0	---	---	93.2	6.8	---	100.0
Metsulfuron + Chlorsulfuron	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nicosulfuron	283.5	26.3	99.9	0.1	---	77.3	22.7	3.2	96.8
Nicosulfuron + Rimsulfuron + Atrazine	4.7	0.4	100.0	---	---	39.4	60.6	---	100.0
Nicosulfuron + Rimsulfuron + Clopyralid + Flumetsulam	65.5	6.1	100.0	---	---	70.0	30.0	---	100.0
Oxyfluorfen	NS	NS	NS	NS	NS	NS	NS	NS	NS
Pendimethalin	NS	NS	NS	NS	NS	NS	NS	NS	NS
Rimsulfuron + Thifensulfuron	9.8	0.9	100.0	---	---	83.5	16.5	20.3	79.7
Sethoxydim	2.9	0.3	100.0	---	---	100.0	---	---	100.0
Tribenuron	NS	NS	NS	NS	NS	NS	NS	NS	NS
Trifluralin	NS	NS	NS	NS	NS	NS	NS	NS	NS
All Herbicides	1529.9	141.7	97.9	2.1	---	74.0	26.0	2.5	97.5

Table 15. Continued

	Acres Treated <sup>2</sup> (1000)	Acres Treated (%)	Applications			Applicator		Method of Application		
			1 X	2 X	3 X	Farm Operator	Custom	Aerial	Ground	
			(%)	(%)	(%)					(%)
<b>Insecticide</b>										
Diazinon	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fipronil	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lambda-cyhalothrin	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Permethrin	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tefluthrin	9.1	0.8	100.0	---	---	100.0	---	---	---	100.0
All Insecticides	21.0	1.9	100.0	---	---	50.6	49.4	49.4	50.6	
<b>Fungicide</b>										
Chlorothalonil	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
All Fungicides	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

<sup>1</sup> Herbicides applied as a tank mixture were considered separately unless a commercial premix was used.

<sup>2</sup> Multiple applications to the same acre were reported as separate values. Acres treated can exceed 100% of the planted acres. NS - not sufficient to estimate district or state projections.

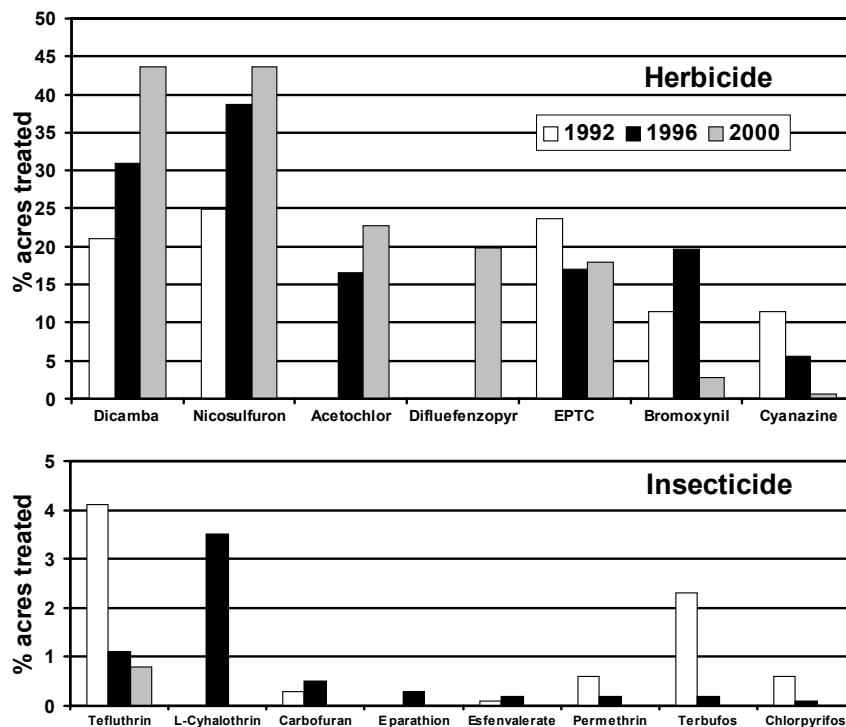


Figure 5. Percent of North Dakota corn acres treated with the top five active ingredients from the herbicide and insecticide pesticide groups reported in the 1992, 1996, and 2000 statewide pesticide use surveys.