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

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## PESTICIDE USE FOR BARLEY

North Dakota ranks first in the United States for barley production, producing 31% of the total United States barley crop in 2000 (Table 8). Barley is grown in all 53 counties of North Dakota. Approximately 23% of the state's barley crop is grown in the northeastern area of the state. Though barley acres are largely seeded to malting types, only 33% of the North Dakota crop is used for malt annually.

The most frequently applied herbicides were 2,4-D and MCPA, applied to 40.6% and 39.7% of the barley acres, respectively, either alone or in a premix (Table 9). 2,4-D usage continued the downward trend from 45% in 1996 and 50% in 1992 (Figure 2). The largest increase in

percent acres treated was for fenoxaprop-p, applied to 21.5% of the acres, alone or as a premix. Sulfonylurea herbicides were applied to 18% of the barley acreage. The farm operator with ground equipment applied over 95% of herbicides on barley.

Insecticide usage on barley was not sufficient to estimate.

Fungicides were used on only 2% of the barley acres. The most frequently used product was tebuconazole, applied to 1.3% of the acres. Tebuconazole was made available through the Section 18 Emergency Exemption process for the management of fusarium head blight, or head scab.

## TABLE 8. Production summary for BARLEY, North Dakota, 1996-2000 (NDASS, 2001)

	A	cres	Yield		Marketing	<b>X</b> 7 <b>1 6</b>	Value per		IG
Year	Planted	Harvested	Per Acre	Production	Year Avg. Price	Value of Production	harvested Acre	U.S. Production	
	(000 Acres)		(Bu.)	(000 Bu.)	(\$/Bu.)	(000 Dols.)	(Dols.)	(%)	(Rank)
1996	2,650	2,600	55.0	143,000	2.42	346,060	133.10	1	36
1997	2,400	2,250	45.0	101,250	1.96	198,450	88.20	1	27
1998	2,000	1,930	55.0	106,150	1.67	177,271	91.85	1	30
1999	1,350	1,240	48.0	59,520	1.91	113,683	91.68	1	21
2000	1,900	1,770	55.0	97,350	1.63	158,681	89.65	1	31

TABLE 9. BARLEY: Herbicide, Insecticide, and Fungicide usage and application method. North Dakota, 2000

	Acres Treated <sup>2</sup>	Acres Treated	Applications			Applicator		Method of Application	
			1 X	2 X	3 X	Farm Operator	Custom	Aerial	Ground
	(1000)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Herbicide <sup>1</sup>									
2,4-D	694.1	36.5	98.9	1.1		88.1	11.9	4.6	95.4
Acetochlor + Safener + Atrazine	NS	NS	NS	NS	NS	NS	NS	NS	NS
Atrazine	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bromoxynil	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bromoxynil + MCPA	324.4	17.1	100.0			93.6	6.4	1.8	98.2
Bromoxynil + MCPA + Fenoxaprop-p	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bronate+agsco 400	NS	NS	NS	NS	NS	NS	NS	NS	NS

## Table 9. Continued

	Acres	Acres	Applications			Applicator		Method of Application	
						Farm			
	Treated <sup>2</sup>	Treated	1 X	2 X	3 X	Operator	Custom	Aerial	Ground
	(1000)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Herbicide <sup>1</sup>									
Clodinafop	NS	NS	NS	NS	NS	NS	NS	NS	NS
Clopyralid + 2,4-D	43.7	2.3	100.0			68.8	31.2	19.4	80.6
Clopyralid + MCPA	8.3	0.4	100.0			54.9	45.1		100.0
Dicamba	99.1	5.2	100.0			92.5	7.5	5.4	94.6
Diclofop	NS	NS	NS	NS	NS	NS	NS	NS	NS
Difenzoquat	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fenoxaprop $+ 2,4-D + MCPA$	34.4	1.8	100.0			84.6	15.4	2.6	97.4
Fenoxaprop + MCPA	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fenoxaprop+MCPA+ Thifensulfuron+Tribenuron	5.2	0.3	100.0				100.0		100.0
Fenoxaprop-P + Safener	366.3	19.3	100.0			88.0	12.0	6.2	93.8
Fluroxypyr	40.1	2.1	100.0			81.0	19.0	7.0	93.0
Glyphosate	34.5	1.8	93.6	6.4		95.1	4.9		100.0
Imazamethabenz	40.1	2.1	100.0			92.8	7.2		100.0
Imazethapyr	NS	NS	NS	NS	NS	NS	NS	NS	NS
МСРА	381.0	20.1	99.4	0.6		90.5	9.5	5.0	95.0
Metsulfuron	5.7	0.3	100.0			100.0			100.0
Nicosulfuron	NS	NS	NS	NS	NS	NS	NS	NS	NS
Picloram	34.1	1.8	100.0			84.1	15.9	12.9	87.1
Sethoxydim	NS	NS	NS	NS	NS	NS	NS	NS	NS
Thifensulfuron	39.8	2.1	100.0			84.8	15.2	9.3	90.7
Thifensulfuron + Tribenuron	54.3	2.9	100.0			89.3	10.7	6.3	93.7
Tralkoxydim	27.0	1.4	100.0			75.8	24.2	3.4	96.6
Triallate	12.2	0.6	100.0			69.4	30.6		100.0
Triallate + Trifluralin	28.6	1.5	100.0			77.8	22.2		100.0
Triasulfuron	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tribenuron	239.5	12.6	100.0			90.7	9.3	2.0	98.0
Trifluralin	75.3	4.0	100.0			92.4	7.6		100.0
All Herbicides	2626.0	138.2	99.5	0.5		88.3	11.7	4.5	95.5
Insecticide									
Dimethoate	NS	NS	NS	NS	NS	NS	NS	NS	NS
All Insecticides	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fungicide									
Mancozeb	NS	NS	NS	NS	NS	NS	NS	NS	NS
Propiconazole	9.7	0.5	100.0			83.0	17.0	17.0	83.0
Tebuconazole	24.9	1.3	100.0			58.1	41.9	41.9	58.1
All Fungicides	38.2	2.0	100.0			58.9	41.1	41.1	58.9

<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 2. Percent of North Dakota barley acres treated with the top five active ingredients from the herbicide, insecticide, and fungicide pesticide groups reported in the 1992, 1996, and 2000 statewide pesticide use surveys.