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

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## PEST PROBLEMS REPORTED WITHOUT AN EFFECTIVE PESTICIDE

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

Responses for a pest problem were assigned to a predetermined category to facilitate response summaries. Weeds were categorized as annual broadleaf, annual grasses, perennial weeds, or other. Insects were categorized as grasshoppers, soil insects, caterpillars, plant bugs, beetles, aphids, or other. Plant diseases were categorized as leaf diseases, head diseases, seed diseases, root diseases, or other.

Table 44 summarizes the total survey respondents by crop and indicates the number who reported a pest problem where they felt effective pesticides were not available. Crops with the higher percentages of respondents reporting problems were most often the smaller acreage crops. These crops had fewer overall survey contacts.

TABLE 44.	Crops grown in 2000	where respondents reported a pest problem (Weed, Insect, Disease) where available
	pesticides (Herbicide	Insecticide, Fungicide) were inadequate to manage the problem

	Total Respondents	Respondents Reporting a Pest Problem without Adequate Pesticide		
Crop	by Crop	Number	%	
Wheat	1903	124	6.5	
Barley	931	22	2.4	
Oat	739	10	1.4	
Flax	282	10	3.6	
Corn	500	19	3.8	
Sunflower	512	51	10.0	
Soybean	403	30	7.4	
Dry Edible Bean	153	14	9.2	
Canola	408	24	5.9	
Pea	63	7	11.1	
Lentil	27	6	22.2	
Crambe	8	2	25.0	
Safflower	14	1	7.1	
Mustard	7	1	14.3	
Alfalfa	1468	17	1.2	
Other hay	1295	9	0.7	
CRP	1326	17	1.3	
Fallow	902	4	0.4	
Pasture	2107	22	1.0	
Sugarbeet	30	3	10.0	
Total	13,078	393	3.0	

Table 45 summarizes the percent of respondents, by crop, identifying a weed category where an adequate herbicide was not available. Nineteen of the 20 crops listed on the survey instrument were mentioned by respondents. The annual weed categories tended to have a higher response rate for the annual crops. The response rate for perennial weeds was higher for the perennial crops.

The intent of the survey question was to identify pest problems where an adequate pesticide was not available to manage a pest problem. In the weed/herbicide responses, respondents may have focused more on weed types that are difficult to control with currently available options, or where control was not as economical as desired. For example, wheat, barley, and oat have numerous broadleaf herbicides available, yet some respondents are indicating adequate products were not available. The perennial weed category for these crops would refer to Canada thistle which had clopyralid + 2,4-D available. A large number of respondents identified perennial weeds in CRP, fallow, and pasture as having inadequate herbicides available. However, clopyralid, picloram, glyphosate, 2,4-D, and dicamba all had registrations for application to these sites.

Therefore, it is difficult to thoroughly interpret the results obtained.

## TABLE 45. Percent of Respondents, by Crop, reporting a Weed Problem without an Adequate Herbicide to manage the problem

Crop	Annual Broadleaf	Annual Grass	Perennial Weeds	Other
Wheat	8.9	9.7	23.4	0.8
Barley	13.6	0	36.4	9.1
Oat	20.0	30.0	40.0	0
Flax	70.0	0	20.0	10.0
Corn	21.0	36.8	36.8	0.0
Sunflower	35.3	0	27.5	3.9
Soybean	66.7	0	30.0	3.3
Dry Edible Bean	50.0	0	28.6	0
Canola	37.5	8.3	29.2	0
Lentil	66.7	0	16.7	0
Crambe	50.0	0	0	0
Safflower	100.0	0	0	0
Mustard	100.0	0	0	0
Alfalfa	17.6	0	47.1	11.8
Other Hay	0	11.1	66.7	0
CRP	29.4	0	70.6	0
Fallow	0	0	100.0	0
Pasture	13.6	0	81.8	4.6
Sugarbeet	100.0	0	0	10.0

Table 46 summarizes the percent of respondents, by crop, identifying an insect category where an adequate insecticide was not available. Only five of the 20 crops listed on the survey instrument were mentioned by respondents.

Wheat midge was mentioned by 10% of the wheat respondents. There were two insecticides approved for use, chlorpyrifos and encapsulated methyl parathion. Grasshoppers were mentioned by 10% of the oat respondents. Five insecticides were available for their control in oat; all were organophosphate or carbamate insecticides. Grasshoppers were also mentioned by 11.8% of the alfalfa growers. Nine insecticides were available, seven organophosphates, one carbamate, and one pyrethroid. In these cases where insecticides were available, these responses would suggest grower's dissatisfaction with available alternatives, but does not indicate why they were dissatisfied.

Other hay was identified as having soil insect and beetle problems. In this case, insecticide alternatives were limited. The few insecticides approved for sites often cut for hay were limited to use against grasshoppers and often had haying restrictions.

TABLE 46.	Percent of Respondents, by Crop, reporting an Insect Problem without an Effective Insecticide to manage the
	problem

Crop	grasshopper	soil insects	caterpillars	plant bugs	beetles	aphids	other	wheat midge
Wheat	0	0	0	0	0	0	1.2	10.5
Oats	10.0	0	0	0	0	0	0	
Sunflower	0	0	0	2.0	2.0	0	5.9	
Alfalfa	11.8	5.9	0	0	5.9	0	0	
Other Hay	0	11.1	0	0	11.1	0	0	

Table 47 summarizes the percent of respondents, by crop, identifying a plant disease category where an adequate fungicide was not available. Eight of the 20 crops listed on the survey instrument were mentioned by respondents.

Head diseases in small grains was the most frequently mentioned problem overall in the survey. Fusarium head blight (FHB), or scab, a fungal disease, would have most likely been the problem. Two fungicides, propiconazole and tebuconazole were available as 24(c) and Section 18 labels, respectively, in 2000. These products were estimated to have been used on 6.1% of the wheat acres and 1.8% of the barley acres (Tables 8 and 9). Tebuconazole was the most frequently used of the two fungicides. This product was available as an emergency exemption. It could be inferred that full registration of this compound would be desirable by grain growers so a fungicide would be fully available, or that more effective fungicides are desired.

Head, or flower, disease for sunflower, canola, and crambe was mentioned by 23% of growers reporting a problem with these crops. The disease was likely sclerotinia which affects these and other broadleaf field crops in the region. No fungicide was registered for sclerotinia control in sunflower or crambe. Two fungicides, azoxystrobin (Section 3 label in 1999) and vinclozolin,(Section 3 label in 2000) were registered for use on canola in 2000. Both fungicides were reported in the survey but not on enough acres to make a statewide estimate for the individual products.

Seed diseases for lentil and dry edible bean were mentioned by a few growers. The two most serious diseases of lentil are anthracnose and ascochyta blight. Both can be seed-borne at low levels. No registered fungicide was effective for either of these disease fungi on the seed. Most dry bean seed is treated prior to sale, often with a combination of fungicide, insecticide and bactericide. The most serious seed-borne diseases of dry edible bean in North Dakota are bacterial blights and root rot. Bacterial blight is managed with a seed treatment containing streptomycin, an antibiotic which eliminates surface bacterial contaminants. Its use requires growers to use a granular, in-furrow inoculant rather than a seedapplied inoculant. The root rots include rhizoctonia and pythium, but Fusarium spp. has been the most troublesome. Seed treatment products for these diseases include one of the fungicides captan, carboxin, metalaxyl, mefenoxam or combinations.

Crop	leaf diseases	head diseases	seed diseases	root diseases	other
Wheat	4.8	37.1	0.8	1.6	0.8
Barley	4.6	31.8	4.5	0	0
Corn	0	5.3	0	0	0
Sunflower	0	21.6	2.0	0	0
Lentil	0	0	16.7	0	0
Dry Edible Bean	0	0	14.3	0	7.1
Canola	0	25.0	0	0	0
Crambe	0	50.0	0	0	0

 TABLE 47.
 Percent of Respondents, by Crop, reporting a Plant Disease Problem without an Effective Fungicide to manage the problem