



PESTICIDE USE IN ALBERTA (1998)

Introduction

Information presented in this fact sheet documents pesticide use in Alberta relative to other jurisdictions, and pesticide use within Alberta by sector.

Pesticide use statistics help government agencies develop and evaluate pesticide risk reduction initiatives, which form the basis for federal and provincial pesticide legislation and regulatory programs. Canadian and international data included in this fact sheet were obtained from sources listed on page 4. Specific reference sources are also noted throughout the text. Alberta pesticide data were obtained using pesticide sales data collected by Alberta Environment for the 1998 calendar year (January – December, 1998).

The pesticide data presented here include only traditional pesticides (insecticides, herbicides, fungicides, rodenticides) and exclude antimicrobial pesticides (disinfectants and wood preservatives), which are regulated differently than traditional pesticides. All pesticide use is reported based on pesticide active ingredients (ai) rather than formulated products.

International Pesticide Use Comparisons

The agricultural sector is the largest user of traditional pesticides in all developed countries. Table 1 compares agricultural pesticide use of eight countries. Use intensity is determined by dividing total use of pesticide active ingredients by agricultural land area.

Table 1. Agricultural Pesticide Use Comparisons Among Countries (1988¹ and 1995³)

Country	1988 Total Use (tonnes ai)	Use Intensity (kg ai/ha)	1995 Total Use (tonnes ai)	Use Intensity (kg ai/ha)
Canada	41,684 ¹	0.9	N/A	--
US	341,669 ¹	1.8	349,266 (1997) ²	2.8
Germany	31,487 (West Germany) ¹	4.2	25,551 ³	2.2
France	85,386 ¹	4.4	84,006 ³	4.6
UK	40,774 ¹	5.8	20,627 ³	3.4
Netherlands	N/A	--	10,923 ³	4.6
Italy	N/A	--	48,490 ³	5.4
Japan	82,553 ¹	17.7	N/A	--

Pesticide use intensity in the U.S. appears to have increased over the period 1988 to 1997, but this likely is due to a different land area statistics used for the calculations.

Germany’s use intensity decreased following reunification, but use has increased slightly in recent years. Although volumes of pesticides used in France decreased slightly, use intensity has gone up, likely related to a decrease in land being cultivated. In the UK, the decrease in pesticide use is attributed to substantial declines in herbicide use – the use of other products has remained level. Canada uses less pesticide per hectare than most developed countries partly because of a shorter growing season (one crop per year), the type of crops grown, and generally less intensive agricultural practices.

Pesticide use within the agricultural sector is highly crop-dependent because the frequency of insect or disease problems varies substantially from one crop to another. For example, cereal crops such as wheat, barley and oats usually require less pesticide than fruits or vegetables. Information about pesticide use for specific crops is unavailable in most jurisdictions, however California compiles statistics that provide some basis for pesticide use comparisons among crop types. Data from 1996 ⁵ show pesticide use for wheat crops in California was 1.2 kg ai/ha, compared to a range of 18 - 100 kg ai/ha for vegetables and 35 - 322 kg ai/ha for fruit crops. Sulfur was the pesticide most heavily used in California, counting for 36% of all active ingredient used. Sulfur is a natural fungicide used by both conventional and “organic” growers.

Table 2. International Pesticide Use by Product Type (Percentages are based on kilograms of active ingredient)

	Herbicides	Insecticides	Fungicides	Other
World (1997) ²	40%	26%	9%	25%
U.S. (1997) ²	46%	10%	7%	37%
Canada (1990) ⁴	78%	8%	7%	7%

Canada uses a high proportion of herbicides relative to insecticides and fungicides. Other countries tend to use a higher proportion of insecticides and fungicides than Canada. The lower relative use of insecticides and fungicides in Canada is related to its colder climate and the nature of crop production (mainly annual crops with relatively extensive versus intensive management).

Alberta Pesticide Use Comparisons

Tables 3 through 5 compare pesticide use for three Alberta sectors: Agriculture/Commercial (based on 1998 pesticide sales); Home & Garden (based on 1998 pesticide sales for products labelled DOMESTIC and intended for use by householders); and City of Edmonton Parks and City of Calgary Parks (based on 1998 pesticide application records excluding mosquito control). Mosquito control was excluded to provide a more consistent basis for comparisons among different use sectors. Most provincial mosquito control programs are conducted exclusively by municipal governments rather than other pesticide use sectors.

Table 3. 1998 Pesticide Use in Alberta by Product Type (Percentages are based on kilograms of active ingredient) ⁵

	Herbicides	Insecticides	Fungicides	Other
Agriculture	90%	6%	4%	<1%
Home & Garden	61%	32%	5%	2%
Edmonton Parks	97%	3%	0%	<1%
Calgary Parks	98%	2%	0%	0%

Insecticides represent only a small proportion of total pesticide use except in the **Home and Garden** sector (32%).

Table 4. Pesticide Use in Alberta by Sector ⁵

Sector	Total Use (tonnes ai)	Estimated Area (hectares)	Use Intensity (kg ai/ha)
Agriculture/Commercial	7,589	9,546,886	0.8
Home & Garden	72	23,000	3.1
Edmonton Parks	4.0	8,601	0.5
Calgary Parks	3.6	7,397	0.5

While **Agriculture/Commercial** is clearly the Alberta sector with the greatest total pesticide use, **Home and Garden** is the Alberta sector with the highest intensity of pesticide use.

Table 5. 1998 Urban Pesticide Use Intensity Comparisons (kg ai/ha) ⁵

Pesticide Type	CALGARY		EDMONTON	
	Home & Garden 5,494 ha	City Parks 7,397 ha	Home & Garden 3,814 ha	City Parks 8,601 ha
Turf Herbicides ^a	1.68 kg/ha	0.40 kg/ha	1.91 kg/ha	0.34 kg/ha
Insecticides ^b	0.29 kg/ha	< 0.01 kg/ha	0.28 kg/ha	<.01 kg/ha
Non-Selective Herbicides ^c	0.36 kg/ha	0.03 kg/ha	0.38 kg/ha	0.10 kg/ha
All Pesticides Combined	2.94 kg/ha	0.49 kg/ha	3.42 kg/ha	0.46 kg/a

a 2,4-D, mecoprop, and dicamba (individually or in combination)

b organochlorine, organophosphate and carbamate insecticides

c glyphosate, atrazine, bromacil, and other non-selectives

Home & Garden use intensity for lawn herbicides in Calgary and Edmonton is four times that of **City Parks**. Insecticide use by householders is much more intensive than by city parks, which use almost no insecticides for landscape maintenance. Fertilizer/herbicide combination products intended for home and garden use account for approximately 70 per cent of lawn herbicide use in Calgary and Edmonton (based on kg ai sold)⁶.

Table 6. Agricultural Product Sales

Pesticide Type	Active Ingredient Sold (kg ai)
Herbicide	6,858,057
Insecticide	422,589
Fungicide	308,266
Other	1,017
Total Without Adjuvant	7,589,929
Adjuvant	1,324,052
Total Including Adjuvant	8,913,981

Adjuvants are products added to many herbicides to improve the delivery and uptake of the herbicide by target weeds. If included as part of total pesticide product sales, adjuvants comprised almost 15% of total pesticide sales in 1998 (greater than all types other than herbicides combined).

Table 7. Most Widely Used Pesticide Active Ingredients in Alberta (1998)

Active Ingredient	Kg ai Sold (1998)	Use Patterns
Glyphosate	2,682,656	Herbicide: Primarily agricultural use with landscape, forestry, and industrial uses
MCPA	885,179	Herbicide: Primarily agricultural use
2,4-D	765,806	Herbicide: Agricultural and landscape use
Triallate	693,178	Herbicide: Agricultural use
Ethalfuralin	452,294	Herbicide: Agricultural use
Bromoxynil	268,105	Herbicide: Agricultural use
Trifluralin	230,028	Herbicide: Agricultural use
Chlorpyrifos	217,398	Insecticide: Agricultural use in insect outbreak years only – use in most years is low
Imazamethabenz	173,679	Herbicide: Agricultural use
Dicamba	138,278	Herbicide: Primarily agricultural use with some landscape and industrial uses

Glyphosate is by far the most widely used pesticide in Alberta. The widespread use of glyphosate is attributable to the development of herbicide tolerant canola varieties and its registered uses from pre-plant through to post-harvest application. The phenoxy herbicides 2,4-D and MCPA are still very widely used in Alberta as are the pre-emergent wild oat herbicides (triallate, ethalfuralin, trifluralin).

REFERENCES

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