

PESTICIDE USE
IN BRITISH COLUMBIA FORESTRY

1986

by

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FOREWORD

"Pesticide Use in British Columbia Forestry, 1986" is the latest in a series of internal reports published since 1981. A cooperative survey project was initiated in that year by the B.C. Council of Forestry Industries, the B.C. Ministry of Forests (Protection Branch) and the B.C. Ministry of Environment (Pesticide Control Branch). Information used to generate these reports is now an annual requirement, by the Pesticide Control Branch, of all pesticide use permit holders. Data included represents all B.C. forest companies and B.C. Forest Service pesticide use permits that were active in 1986. Summarized in tables and illustrated graphically, information presented includes amounts (kg of active ingredient) of each pesticide used and areas (ha) treated; areas treated by control purpose and method of application; forest region and district summaries of pesticide use, as well as herbicide and insecticide use trends from 1976-1986.

INTRODUCTION

"Pesticide Use In British Columbia Forestry, 1986" is the latest report of its kind in a series which have been published since 1981.

These reports were initiated originally through a cooperative project by the B.C. Council of Forest Industries, the B.C. Ministry of Environment (Pesticide Control Branch) and the B.C. Ministry of Forests (Protection Branch) to establish annual records of actual pesticide applications to B.C. forest and range land.

Since 1983, the Pesticide Control Branch has required all pesticide use permit holders to submit follow-up reports each year. This report was generated from such data, which is summarized and illustrated in tables* and graphs, and includes the following information:

1. Numbers of 1986 forestry permit applications submitted; withdrawn; denied; cancelled and appealed.
2. Environmental Appeal Board decisions on all appealed permits.
3. Provincial summary of area (ha) treated and active ingredient (kg a.i.) used by individual pesticide.
4. Forest region and district summaries of area (ha) treated by pesticide, control purpose and method of application.

5. Provincial summaries of area (ha) treated by control purpose and method of application.
6. Area (ha) of forest land treated with herbicides and insecticides, 1976-1986.

The above mentioned information is further differentiated by the user (i.e., B.C. Forest Service or forestry industry).

*Note: Totals in ha may differ slightly from table to table (i.e. $\pm 1 - 2$ ha) because of rounding.

RESULTS OF THE 1986 PESTICIDE USE SURVEY

Pesticide Control Branch processed 576 pesticide use applications in 1986, of which 412 were forestry related. Of this 412, only 389 permits were actually issued - 223 to the B.C. Forest Service applicants and 166 to forestry industry applicants (Table 1).

Twenty permits were appealed in 1986. Environmental Appeal Board decisions on these permits were as follows: nine supported, six amended, one cancelled. Appeal Board decisions on four permits are still pending (Table II).

The herbicides glyphosate and 2,4-D continued to be those most utilized in B.C. forestry. Glyphosate was applied to 20 706 hectares (ha) of forest land, 82% of the total area treated with pesticides in 1986. 2,4-D was applied to 2 418 ha (10%), hexazinone to 879 ha (3%) and picloram to 854 ha (3%) (Table III, Figure 1).

In terms of the weight of active ingredient (kg. a.i.) applied, the three most commonly used pesticides were glyphosate (18 860 kg. a.i.) 2,4-D amine/ester (3 218 kg a.i.), and hexazinone (1 313 kg. a.i.), (Table III, Figure 2).

Summaries of pesticide use by individual forest regions and district are shown on pages 14 - 60.

Ninety-three percent of provincial forestry pesticide use was concentrated in the Prince George, Vancouver and Kamloops forest regions, with, respectively, 13 657 ha (54%), 7 126 ha (28%) and 2 744 ha (11%) treated (Table IV, Figure 3).

Stand tending operations to control unwanted vegetation and enhance crop tree survival and growth remained the most common purpose of pesticide treatments.

Herbicides were applied to 7 935 ha to prepare harvested sites for planting, to 7 848 ha to release established crop trees and to 6 150 ha to enhance crop seedling survival. Weed seed tree control and site rehabilitation operations were conducted on 1 278 ha. Other pesticide use projects included insect control (362 ha), right-of-way maintenance (143 ha) and nursery fungus and weed control (22 ha). (Tables V and VII, Figure 4.)

Most forestry pesticide treatments involved ground spray or tree injection methods. Tree injection methods, employing such equipment as brush saws, lance injectors and hypo hatchets were used to treat 14 076 ha (55%); backpack sprayers and truck mounted sprayers were used on 3 948 ha (15%). Helicopters and fixed wing aircraft were used to apply pesticides to 7 247 ha (28%), (Tables VI and VII, Figure 5).

A total of 25 283 ha of B.C. forest and range land were treated with pesticides in 1986. The B.C. Forest Service was responsible for 6 596 ha (26%) and forestry industry for 18 687 (74%).

TABLE I
THE FATE OF 1986 PESTICIDE USE PERMITS ISSUED
BY THE B.C. PESTICIDE CONTROL BRANCH, MINISTRY OF ENVIRONMENT AND PARKS

	B.C. FOREST SERVICE	FOREST INDUSTRY	TOTAL
APPLICATIONS SUBMITTED	235	177	412
APPLICATIONS WITH- DRAWN OR DENIED	12	11	23
PERMITS ISSUED (TOTAL)	223	166	389
PERMITS CANCELLED BY THE PESTICIDE CONTROL BRANCH	43	35	78

TABLE II
THE FATE OF APPEALED 1986 PESTICIDE USE PERMITS
AS DETERMINED BY THE B.C. ENVIRONMENTAL APPEAL BOARD

	B.C. FOREST SERVICE	FOREST INDUSTRY	TOTAL
PERMITS APPEALED	16	4	20
APPEALED PERMITS CANCELLED/REVOKED	1	0	1
APPEALED PERMITS AMENDED	5	1	6
APPEALED PERMITS SUPPORTED	9	0	9
APPEALS WITHDRAWN	0	0	0
DECISION PENDING	1	3	4

TABLE III PROVINCIAL SUMMARY OF AREA (ha)
TREATED AND ACTIVE INGREDIENT (kg a.i.) USED
BY PESTICIDE, 1986¹.

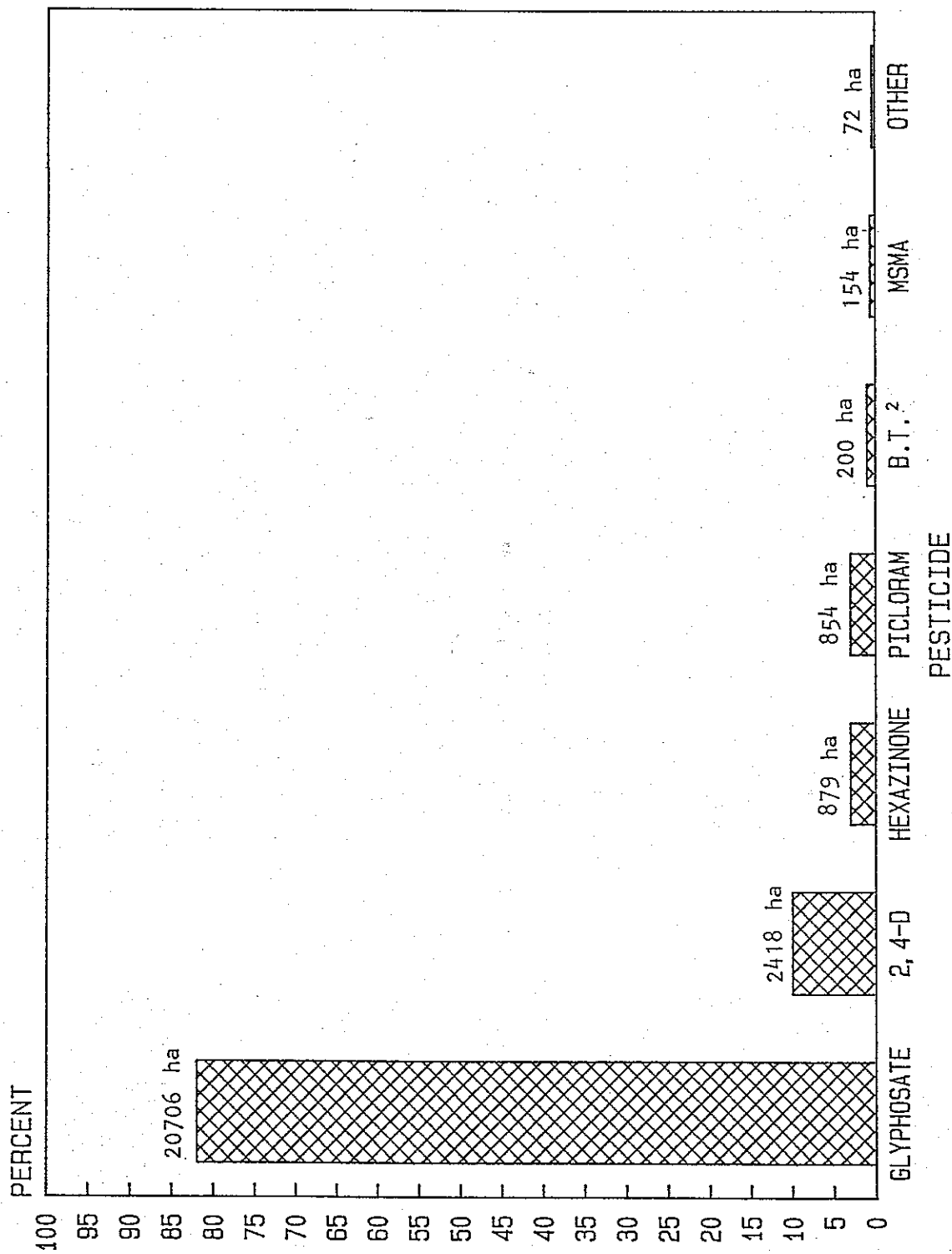
PESTICIDE	B. C. FOREST SERVICE		FORESTRY INDUSTRY	
	ha treated	kg a.i. applied	ha treated	kg a.i. applied
acephate	2.0	0.2		
asulam	22.0	30.0		
B.t. ²			200.0	40,000 BIU ³
carbaryl	2.0	9.0		
carbofuran ⁴	<0.1	<0.1		
chlorathalonil ⁴	<0.1	0.2		
cypermethrin	2.0	0.5		
dicamba			3.0	1.0
dimethoate ⁴	<0.1	0.2		
dodine ⁴	0.1	0.1		
fenvalerate	2.0	<0.1		
fosamine	30.0	450.0		
glyphosate	4846.0	6397.0	15860.0	10463.0
hexazinone	190.0	486.0	689.0	827.0
iprodione ⁴	<0.1	< 0.1		
MCPA ⁴	<0.1	1.0	3.0	2.0

TABLE III PROVINCIAL SUMMARY OF AREA (ha)
TREATED AND ACTIVE INGREDIENT (kg a.i.) USED
BY PESTICIDE, 1986¹.

PESTICIDE	B. C. FOREST SERVICE		FORESTRY INDUSTRY	
	ha treated	kg a.i. applied	ha treated	kg a.i. applied
mecoprop			3.0	4.0
metalaxyl			0.5	0.1
metsulfuron ⁴			0.1	< 0.1
MSMA	154.0	70.0		
oxyfluorfen ⁴	< 0.1	1.0		
picloram	854.0	430.0		
sulfometuron ⁴			< 0.1	< 0.1
triadimefon ⁴	< 0.1	< 0.1		
triclopyr	0.2	1.0	0.3	0.3
2,4-D	492.0	751.0	1926.0	2467.0

1. Data presented includes pesticides applied to rangeland administered by the B.C. Forest Service.
2. B.t. = Bacillus thuringiensis.
3. BIU - Billion International Units.
4. Area treated was less than 0.1 ha. and/or kg active ingredient applied were less than 0.1 kg.

FIGURE 1. PESTICIDE USE IN PERCENT (ha) TREATED, 1986¹

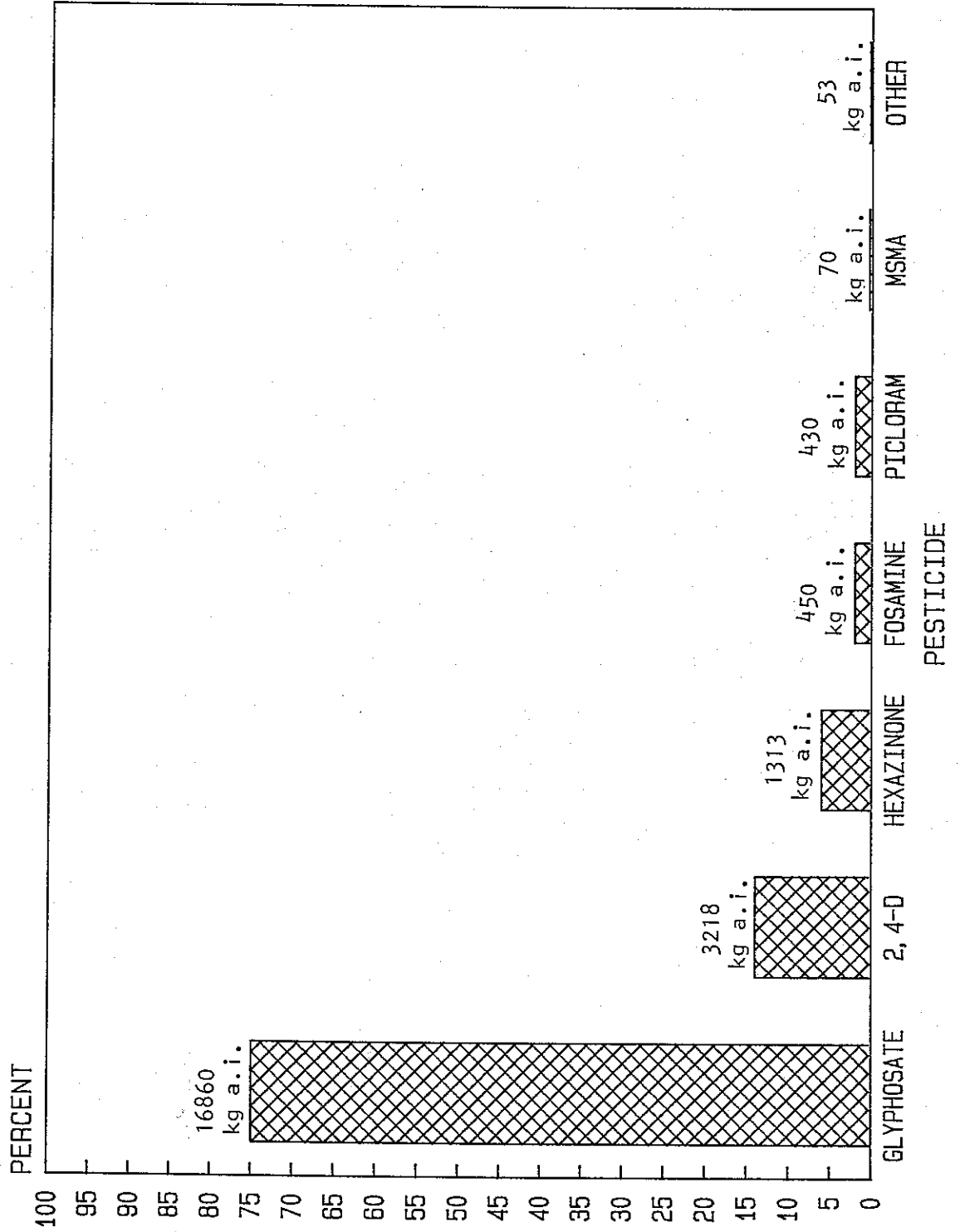


¹ B.C. FOREST SERVICE & B.C. FOREST INDUSTRY COMBINED.

² BACILLUS THURINGIENSIS

FIGURE 2. PESTICIDE USE IN PERCENT ACTIVE INGREDIENT, (kg a.i.) APPLIED

1986¹



¹ B.C. FOREST SERVICE & B.C. FOREST INDUSTRY COMBINED.

TABLE IV REGIONAL SUMMARY OF AREA (ha) TREATED
BY PESTICIDE, 1986

BCFS AND FOREST INDUSTRY

FOREST REGION	glyphosate	2,4-D	hexazione	picloram	Other	Total	%
VANCOUVER	5236.0	1826.0	0.3		64.0	7126.0	28.0
PR. RUPERT	903.0	2.0	29.0		0.2	934.0	4.0
PR. GEORGE	12096.0	537.0	839.0	64.0	121.0	13657.0	54.0
KAMLOOPS	1864.0		1.0	640.0	239.0	2744.0	11.0
NELSON	448.0	52.0	0.2	149.0		649.0	2.0
CARIBOO	162.0		9.0		2.0	173.0	1.0
TOTALS	20709.0	2417.0	878.0	853.0	426.0	25283.0	100.0
(%)	82.0	10.0	3.4	3.0	1.6	100.0	

TABLE V REGIONAL SUMMARY OF AREA (ha) TREATED
BY CONTROL PURPOSE, 1986

BCFS AND FOREST INDUSTRY

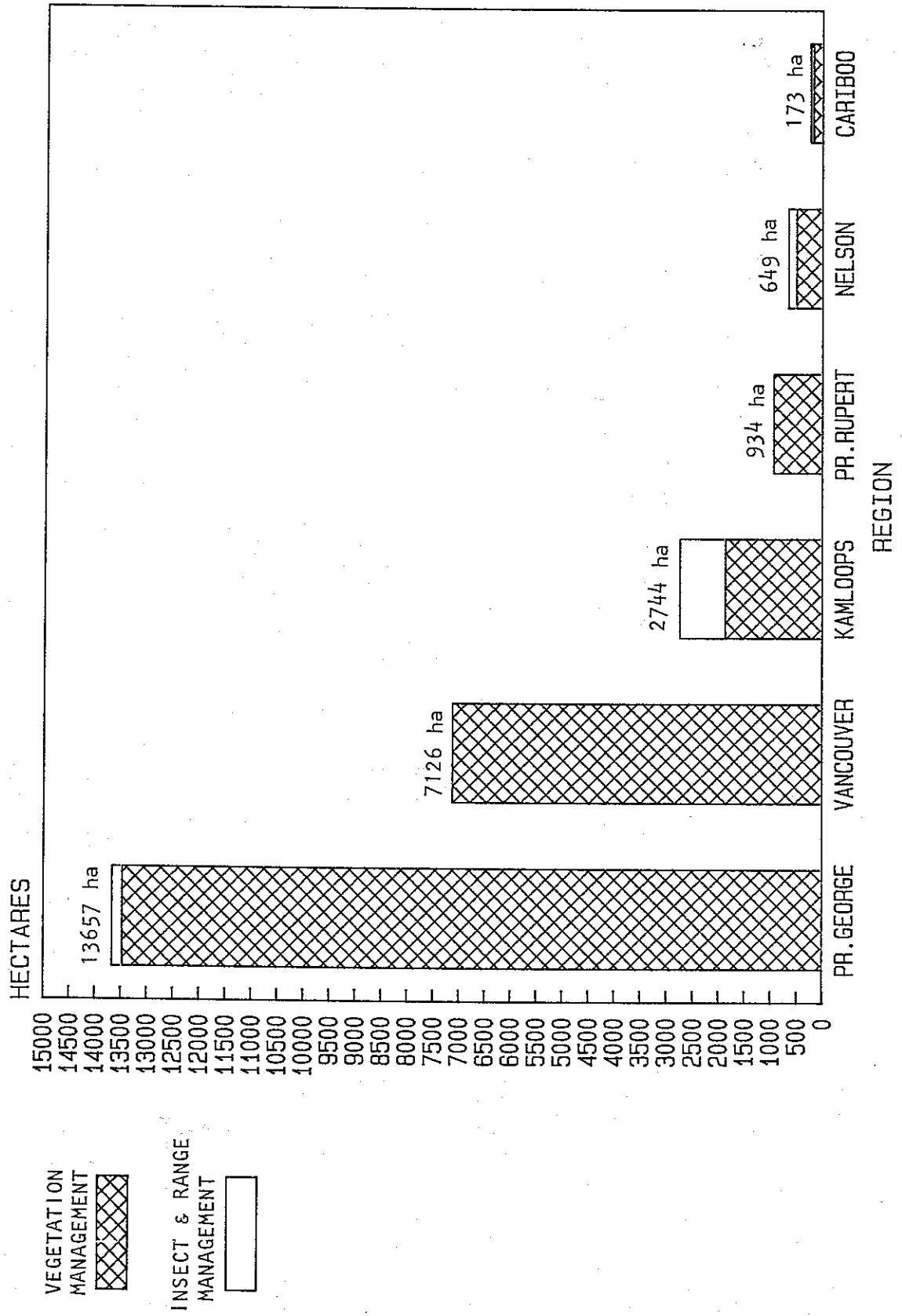
FOREST REGION	VEGETATION MANAGEMENT	INSECT MANAGEMENT	RANGE MANAGEMENT	OTHERS	TOTALS
VANCOUVER	7126.0	<0.1		0.2	7126.0
PR. RUPERT	934.0	0.2			934.0
PR. GEORGE	13472.0	121.0	64.0		13657.0
KAMLOOPS	1865.0	239.0	640.0	<0.1	2744.0
NELSON	500.0		149.0		649.0
CARIBOO	169.0	2.0	2.0		173.0
TOTALS	24066.0	362.0	855.0	0.2	25283.2
(%)	96.0	1.0	3.0		100.0

TABLE VI REGIONAL SUMMARY OF AREA (ha)
TREATED BY METHOD OF APPLICATION, 1986

BCFS AND FOREST INDUSTRY

FOREST REGION	AERIAL SPRAY	GROUND APPLICATION	STEM INJECTION	TOTALS
VANCOUVER	2916.0	1175.0	3035.0	7126.0
PR. RUPERT	740.0	94.0	100.0	934.0
PR. GEORGE	2632.0	1479.0	9546.0	13657.0
KAMLOOPS	594.0	1138.0	1012.0	2744.0
NELSON	363.0	150.0	136.0	649.0
CARIBOO		172.0	1.0	173.0
TOTALS	7245.0	4208.0	13830.0	25283.0
(%)	29.0	16.0	55.0	100.0

FIGURE 3. PROVINCIAL SUMMARY OF AREA (ha) TREATED WITH PESTICIDES
BY FOREST REGION, 1986¹



¹ B.C. FOREST SERVICE & B.C. FOREST INDUSTRY COMBINED.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1)

FOREST DISTRICT: REGIONAL TOTAL

TREATMENT	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	350.5	asulam glyphosate triclopyr	218.0	22.0 110.0 0.5	
Conifer Release	844.0	glyphosate 2,4-D	201.0	20.0	134.0 489.0
Right-Of-Way	30.0	fosamine		30.0	
Site Preparation	481.0	glyphosate	363.0	118.0	
Site Rehabilitation	50.5	glyphosate	50.0	0.5	
Weed Seed Tree	10.0	glyphosate	10.0		
Nursery Weed	<0.1	MCPA ¹ oxyfluorfen ¹		< 0.1 < 0.1	
Nursery Fungus	<0.1	dodine ¹		< 0.1	
Nursery Insect	<0.1	carbofuran ¹		< 0.1	
Subtotals	1766.0		842.0	301.0	623.0

1 Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1)

FOREST DISTRICT: REGIONAL TOTAL

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Brushing	1027.0	dicamba		3.0	
		glyphosate	335.0	172.0	361.0
		hexazinone		0.3	
		mecoprop		3.0	
		MCPA		3.0	
		triclopyr		0.3	
		2,4-D		3.0	146.0
Conifer Release	3790.0	asulam		2.0	
		glyphosate	1616.0	366.0	758.0
		2,4-D	16.0	150.0	882.0
Right-Of-Way	113.0	glyphosate		70.0	
		2,4-D		43.0	
Site Preparation	141.0	glyphosate	103.0	38.0	
Weed Seed Tree	288.0	glyphosate	4.0	19.0	168.0
		2,4-D			97.0
Fungus	0.2	glyphosate			0.2
Subtotals	5359.0		2074.0	873.0	2412.0
Totals	7125.0		2940.0	1174.0	3035.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1) FOREST DISTRICT: Chilliwack

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	52.0	glyphosate	52.0		
Conifer Release	209.0	glyphosate 2,4-D	192.0		17.0
Right-Of-Way	30.0	fosamine		30.0	
Site Preparation	302.0	glyphosate	302.0		
Site Rehabilitation	32.0	glyphosate	32.0		
Nursery Weed	< 0.1	MCPA ¹ oxyfluorfen ¹		< 0.1 < 0.1	
Subtotals	625.0		578.0	30.01	17.0
<u>FOREST INDUSTRY:</u>					
Brushing	77.0	glyphosate dicamba mecoprop MCPA 2,4-D		65.0 3.0 3.0 3.0 3.0	
Conifer Release	182.0	glyphosate	182.0		
Site Preparation	83.0	glyphosate	79.0	4.0	
Right-Of-Way	0.3	glyphosate		0.3	
Subtotals	342.3		261.0	81.3	
Totals	967.3		839.0	111.3	17.0

¹ Area treated was less than 0.1 ha

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1)

FOREST DISTRICT: Maple Ridge (2)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Site Preparation	21.0	glyphosate	21.0		
Site Rehabilitation	18.0	glyphosate	18.0		
Nursery Fungus	< 0.1	dodine ¹		< 0.1	
Nursery Insect	< 0.1	carbofuran ¹		< 0.1	
Totals	39.0		39.0	< 0.1	

¹ Area treated was less than 0.1 ha

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1) FOREST DISTRICT: Squamish (3)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	62.0	glyphosate	62.0		
Conifer Release	15.0	glyphosate		15.0	
Site Preparation	40.0	glyphosate	40.0		
Subtotals	117.0		102.0	15.0	
<u>FOREST INDUSTRY:</u>					
Conifer Release	7.0	glyphosate		7.0	
Subtotals	7.0			7.0	
Totals	124.0		102.0	22.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1)

FOREST DISTRICT: Sechelt (4)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	126.0	glyphosate	104.0	22.0	
Conifer Release	7.0	glyphosate			7.0
Subtotals	133.0		104.0	22.0	7.0
<u>FORESTRY INDUSTRY:</u>					
Conifer Release	73.0	glyphosate	57.0		
		2,4-D	16.0		
Site Preparation	34.0	glyphosate		34.0	
Subtotals	107.0		73.0	34.0	
Totals	240.0		177.0	56.0	7.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1)

FOREST DISTRICT: Powell River (5)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Conifer Release	308.0	glyphosate	308.0		
Site Preparation	24.0	glyphosate	24.0		
Totals	332.0		332.0		

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1) FOREST DISTRICT: Duncan (6)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	11.0	glyphosate		11.0	
Nursery Fungus	< 0.1	dodine ¹		< 0.1	
Subtotals	11.0			11.0	
<u>FOREST INDUSTRY:</u>					
Brushing	265.0	glyphosate 2,4-D		107.0	80.0 78.0
Conifer Release	114.0	glyphosate 2,4-D asulam		14.0 2.0	98.0
Weed Seed Tree	19.0	glyphosate		19.0	
Right-Of-Way	33.0	2,4-D		33.0	
Fungus	0.2	glyphosate ²			0.2
Subtotals	431.2			175.0	256.2
Totals	442.2			186.0	256.2

1 Area treated was less than 0.1 ha.

2 Laminated root rot (Phellinus weirii) control trial.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1) FOREST DISTRICT: Port Alberni (7)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	66.1	asulam		22.0	
		glyphosate		44.0	
		triclopyr		0.1	
Conifer Release	18.0	glyphosate		4.0	
		2,4-D			14.0
Site Preparation	118.0	glyphosate		118.0	
Site Rehabilitation	0.5	glyphosate		0.5	
Subtotals	202.6			188.6	14.0
<u>FOREST INDUSTRY:</u>					
Brushing	117.0	glyphosate			55.0
		2,4-D			62.0
Conifer Release	210.0	2,4-D			210.0
Weed Seed Tree	4.0	glyphosate	4.0		
Right-Of-Way	70.0	glyphosate		70.0	
Subtotals	401.0		4.0	70.0	327.0
Totals	603.6		4.0	258.6	341.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1) FOREST DISTRICT: Campbell River (8)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	33.9	glyphosate triclopyr		33.5 .4	
Conifer Release	518.0	glyphosate 2,4-D	9.0	1.0	50.0 458.0
Weed Seed Tree	10.0	glyphosate	10.0		
Subtotals	561.9		19.0	34.9	508.0
<u>FOREST INDUSTRY:</u>					
Brushing	6.0	glyphosate ¹ 2,4-D ¹		< 0.1 < 0.1	6.0
Conifer Release	1386.0	glyphosate 2,4-D	217.0	210.0 150.0	371.0 438.0
Weed Seed Tree	265.0	glyphosate 2,4-D			168.0 97.0
Subtotals	1657.0		217.0	360.0	1080.0
Totals	2218.9		236.0	394.9	1588.0

1 Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1) FOREST DISTRICT: Port McNeill (9)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Conifer Release	77.0	glyphosate			77.0
Subtotals	77.0				77.0
<u>FOREST INDUSTRY:</u>					
Brushing	561.9	glyphosate hexazinone triclopyr	335.0	0.3 0.3 0.3	226.0
Conifer Release	1088.0	glyphosate	599.0	103.0	386.0
Right-Of-Way	10.0	2,4-D		10.0	
Subtotals	1659.9		934.0	113.9	612.0
Totals	1736.9		934.0	113.9	689.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1)

FOREST DISTRICT: Mid Coast (110)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Conifer Release	273.0	glyphosate	253.0	20.0	
Totals	273.0		253.0	20.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: VANCOUVER (1)

FOREST DISTRICT: Queen Charlotte
Islands (111)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Conifer Release	149.0	glyphosate 2,4-D		12.0	1.0 136.0
Totals	149.0			12.0	137.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE RUPERT (2) FOREST DISTRICT: REGIONAL TOTAL

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	618.0	glyphosate	561.0		57.0
Site Preparation	50.0	glyphosate hexazinone	50.0	0.2	
Conifer Release	65.0	glyphosate 2,4-D		63.0 2.0	
Nursery Insect	0.2 ²	acephate ¹ cypermethrin ¹ fenvalerate ¹		< 0.1 < 0.1 < 0.1	
Subtotals	733.2		611.0	65.0	57.0
<u>FOREST INDUSTRY:</u>					
Brushing	43.0	glyphosate			43.0
Conifer Release	158.0	glyphosate hexazinone	129.0	29.0	
Subtotals	201.0		129.0	29.0	43.0
Totals	934.2		740.0	94.0	100.0

1 Area treated was less than 0.1 ha.

2 Actual area treated for each insecticide was 0.06 (0.06 x 3 = 0.2 approx.).

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE RUPERT (2) FOREST DISTRICT: Lakes (1)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Site Preparation	0.2	hexazinone		0.2	
Subtotals	0.2			0.2	
<u>FOREST INDUSTRY:</u>					
Pre-Harvest Brushing	43.0	glyphosate			43.0
Subtotals	43.0				43.0
Totals	43.2			0.2	43.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE RUPERT (2) FOREST DISTRICT: Morice (2)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Conifer Release	29.0	hexazinone		29.0	
Totals	29.0			29.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE RUPERT (2) FOREST DISTRICT: Bulkley (3)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	561.0	glyphosate	561.0		
Site Preparation	50.0	glyphosate	50.0		
Nursery Insect ²	0.2	acephate ¹		< 0.1	
		cypermethrin ¹		< 0.1	
		fenvalerate ¹		< 0.1	
Totals	611.2		611.0	0.2	

1 Area treated for each insecticide was less than 0.1 ha.

2 Actual area treated for each insecticide used was 0.06 (0.06 X 3 = 0.2 approx.).

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE RUPERT (2) FOREST DISTRICT: North Coast (6)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	57.0	glyphosate			57.0
Conifer Release	65.0	glyphosate 2,4-D		63.0 2.0	
Subtotals	122.0			65.0	57.0
<u>FOREST INDUSTRY:</u>					
Conifer Release	129.0	glyphosate	129.0		
Subtotals	129.0		129.0		
Totals	251.0		129.0	65.0	57.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: REGIONAL TOTAL

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	632.0	glyphosate hexazinone	140.0	125.0 190.0	177.0
Conifer Release	418.0	glyphosate	234.0	184.0	
Site Preparation	381.0	glyphosate	207.0	6.0	168.0
Range Management	64.0	picloram		64.0	
Nursery Insect	6.0	acephate cypermethrin fenvalerate		2.0 2.0 2.0	
Insect	115.0	MSMA			115.0
Subtotals	1616.0		581.0	575.0	460.0
<u>FOREST INDUSTRY:</u>					
Brushing	4559.0	glyphosate hexazinone sulfometuron ¹ 2,4-D	1621.0	75.0 241.0 <0.1 537.0	1723.0 362.0
Conifer Release	577.0	glyphosate hexazinone	218.0	5.0 18.0	336.0
Site Preparation	6629.0	glyphosate hexazinone metsulfuron	212.0	27.0 0.1	6390.0
Weed Seed Tree	275.0	glyphosate			275.0
Subtotals	12040.0		2051.0	903.0	9086.0
Totals	13656.0		2632.0	1478.0	9546.0

¹ Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: Prince George West (1)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Conifer Release	234.0	glyphosate	234.0		
Pre-Harvest Brushing	177.0	glyphosate			177.0
Subtotals	411.0		234.0		177.0
<u>FOREST INDUSTRY:</u>					
Brushing	601.0	glyphosate 2,4-D		64.0 537.0	
Conifer Release	18.0	hexazinone		18.0	
Weed Seed Tree	275.0	glyphosate			275.0
Subtotals	894.0			619.0	275.0
Totals	1305.0		234.0	619.0	452.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: Prince George East (2)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	124.0	glyphosate	124.0		
Conifer Release	40.0	glyphosate		40.0	
Site Preparation	298.0	glyphosate	124.0	6.0	168.0
Range Management	27.0	picloram		27.0	
Nursery Insect	6.0	acephate		2.0	
		cypermethrin		2.0	
		fenvalerate		2.0	
Subtotals	495.0		248.0	79.0	168.0
<u>FOREST INDUSTRY:</u>					
Brushing	1156.0	glyphosate	1156.0		
Conifer Release	96.0	glyphosate	91.0	5.0	
Site Preparation	239.1	glyphosate	212.0		
		hexazinone		27.0	
		metsulfuron		0.1	
Subtotals	1491.1		1459.0	32.1	
Totals	1986.1		1707.0	111.1	168.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: McBride (3)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	16.0	glyphosate	16.0		
Site Preparation	83.0	glyphosate	83.0		
Totals	99.0		99.0		

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: Vanderhoof (4)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Pre-Harvest Brushing	962.0	glyphosate			962.0
Site Preparation	151.5	glyphosate hexazinone		0.5	151.0
Totals	1113.5			0.5	1113.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: Fort St. James (5)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	315.0	glyphosate		125.0	
		hexazinone		190.0	
Conifer Release	144.0	glyphosate		144.0	
Subtotals	459.0			459.0	
<u>FOREST INDUSTRY:</u>					
Brushing	569.0	glyphosate		5.0	202.0
		hexazinone			362.0
Pre-Harvest Brushing	515.0	glyphosate			515.0
Subtotals	1084.0			5.0	1079.0
Totals	1543.0			464.0	1079.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: McKenzie (6)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Insect	115.0	MSMA			115.0
Subtotals	115.0				115.0
<u>FOREST INDUSTRY:</u>					
Brushing	314.0	glyphosate hexazinone sulfometuron ¹	23.0	6.0 241.0 <0.1	44.0
Conifer Release	463.0	glyphosate	127.0		336.0
Site Preparation	6183.0	glyphosate			6183.0
Subtotals	6960.0		150.0	247.0	6563.0
Totals	7075.0		150.0	247.0	6678.0

¹ Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: Dawson Creek (7)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Range Management	37.0	picloram		37.0	
Subtotals	37.0			37.0	
<u>FOREST INDUSTRY:</u>					
Brushing	442.0	glyphosate	442.0		
Subtotals	442.0		442.0		
Totals	449.0		442.0	37.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: PRINCE GEORGE (3) FOREST DISTRICT: Fort St. John (8)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Conifer Release	0.3	hexazinone		0.3	
Site Preparation	56.0	glyphosate			56.0
Totals	56.3			0.3	56.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: REGIONAL TOTAL

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	377.0	glyphosate	150.0	207.0	20.0
Conifer Release	180.0	glyphosate	102.0	67.0	11.0
Site Preparation	84.0	glyphosate		84.0	
Range	640.0	picloram		640.0	
Weed Seed Tree	471.0				471.0
Seed and Cone	< 0.1	chlorothalonil ¹ triadimefon ¹		< 0.1 < 0.1	
Insect	39.0	acephate ¹ carbaryl MSMA		< 0.1 1.0	38.0
Subtotals	1791.0		252.0	999.0	540.0
<u>FOREST INDUSTRY:</u>					
Brushing	2.0	glyphosate hexazinone		1.0 1.0	
Conifer Release	751.0	glyphosate	244.0		507.0
Seed and Cone	< 0.1	triadimefon ¹		< 0.1	
Insect	200.0	B.t. ²	200.0		
Subtotals	953.0		444.0	2.0	507.0
Totals	2744.0		696.0	1001.0	1047.0

1 Area treated was less than 0.1 ha.

2 B.t. = Bacillus thuringiensis.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: Clearwater (1)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Conifer Release	67.0	glyphosate		67.0	
Site Preparation	2.0	glyphosate		2.0	
Range Management	83.0	picloram		83.0	
Totals	152.0			152.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: Kamloops (2)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	56.0	glyphosate		36.0	20.0
Conifer Release	113.0	glyphosate		102.0	11.0
Site Preparation	20.0	glyphosate		20.0	
Weed Seed Tree	83.0	glyphosate			83.0
Range Management	83.0	picloram		83.0	
Subtotals	355.0			241.0	114.0
<u>FOREST INDUSTRY:</u>					
Brushing	1.6	glyphosate hexazinone		0.6 1.0	
Insect	200.0	B.t. ¹	200.0		
Subtotals	201.6		200.0	1.6	
Totals	556.6		200.0	242.6	114.0

1 B.t. - Bacillus thuringiensis

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: Salmon Arm (3)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Range Management	83.0	picloram		83.0	
Insect	<0.1	acephate ¹		< 0.1	
Seed and Cone	<0.1	chlorothalonil ¹ triadimefon ¹		< 0.1 < 0.1	
Subtotals	83.0			83.0	
<u>FOREST INDUSTRY:</u>					
Brushing	0.5	glyphosate		0.5	
Seed and Cone	<0.1	triadimefon ¹		<0.1	
Subtotals	0.5			0.5	
Totals	83.5			83.5	

1 Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: Vernon (4)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	142.0	glyphosate		142.0	
Site Preparation	62.0	glyphosate		62.0	
Weed Seed Tree	388.0	glyphosate			388.0
Insect	3.0	MSMA			3.0
Range Management	83.0	picloram		83.0	
Totals	678.0			287.0	391.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: Penticton (5)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	29.0	glyphosate		29.0	
Range Management	142.0	picloram		142.0	
Subtotals	171.0			171.0	
<u>FOREST INDUSTRY:</u>					
Conifer Release	751.0	glyphosate	244.0		507.0
Subtotals	751.0		244.0		507.0
Totals	922.0		244.0	171.0	507.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: Merritt (6)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Insect	36.0	carbaryl MSMA		1.0 35.0	
Range Management	83.0	picloram		83.0	
Totals	119.0			119.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: KAMLOOPS (4)

FOREST DISTRICT: Lillooet (7)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	150.0	glyphosate	150.0		
Range Management	83.0	picloram		83.0	
Totals	233.0		150.0	83.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: REGIONAL TOTAL

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	24.0	glyphosate	23.0	0.5	
Conifer Release	0.2	glyphosate ¹ hexazinone		<0.1 0.2	
Site Preparation	191.0	glyphosate	190.0	0.6	
Site Rehabilitation	150.0	glyphosate	150.0		
Weed Seed Tree	32.0	glyphosate			32.0
Range	149.0	picloram		149.0	
Subtotals	546.0		363.0	150.0	32.0
<u>FOREST INDUSTRY:</u>					
Brushing	104.0	glyphosate 2,4-D			52.0 52.0
Subtotals	104.0				104.0
Totals	650.0		363.0	150.0	136.0

1 Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: Cranbrook (1)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Range Management	29.0	picloram		29.0	
Totals	29.0			29.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: Invermere (2)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Range Management	9.0	picloram		9.0	
Totals	9.0			9.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: Golden (3)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>FOREST INDUSTRY:</u>					
Brushing	104.0	glyphosate 2,4-D			52.0 52.0
Totals	104.0				104.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: Revelstoke (4)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	23.0	glyphosate	23.0		
Site Preparation	190.0	glyphosate	190.0		
Site Rehabilitation	150.0	glyphosate	150.0		
Weed Seed Tree	32.0	glyphosate			32.0
Totals	395.0		363.0		32.0

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: Arrow (5)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Range	3.3	picloram		3.3	
Totals	3.3			3.3	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: Boundary (6)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	0.5	glyphosate		0.5	
Site Preparation	0.6	glyphosate		0.6	
Range Management	103.9	picloram		103.9	
Totals	105.0			105.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: NELSON (5)

FOREST DISTRICT: Kootenay Lake (7)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Conifer Release	.2	glyphosate ¹ hexazinone		<0.1 .2	
Range Management	3.6	picloram		3.6	
Totals	3.8			3.8	

¹ Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: CARIBOO (6)

FOREST DISTRICT: REGIONAL TOTAL

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	110.0	glyphosate		110.0	
Conifer Release	31.0	glyphosate		31.0	
Range	2.0	glyphosate		2.0	
Insect	2.0	carbaryl		1.0	
		dimethoate ¹			< 0.1
		glyphosate ¹			< 0.1
		MSMA			1.0
Subtotals	145.0			144.0	1.0
<u>FOREST INDUSTRY:</u>					
Conifer Release	28.0	glyphosate		19.0	
		hexazinone		9.0	
Subtotals	28.0			28.0	
Totals	173.0			172.0	1.0

1 Area treated was less than 0.1 ha.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: CARIBOO (6)

FOREST DISTRICT: Quesnel (1)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Conifer Release	30.0	glyphosate		30.0	
Insect	1.0	carbaryl		1.0	
Range Management	2.0	glyphosate		2.0	
Subtotal	33.0			33.0	
<u>FOREST INDUSTRY:</u>					
Conifer Release	28.0	glyphosate		19.0	
		hexazinone		9.0	
Subtotals	28.0			28.0	
Totals	61.0			61.0	

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: CARIBOO (6)

FOREST DISTRICT: Williams Lake (2)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Brushing	110.0	glyphosate		110.0	
Insect	1.0	dimethoate ¹			< 0.1
		glyphosate ^{1, 2}		< 0.1	
		MSMA		1.0	
Totals	111.0			110.0	1.0

1 Area treated was less than 0.1 ha.

2 Mountain pine beetle trap tree trial.

SUMMARIES OF PESTICIDE USE BY FOREST REGION AND DISTRICT, 1986
BCFS AND FOREST INDUSTRY

FOREST REGION: CARIBOO (6)

FOREST DISTRICT: Horsefly (3)

TREATMENT PURPOSE	TREATMENT AREA (ha)	PESTICIDES	AREA (ha) BREAKDOWN BY TREATMENT METHODS		
			AERIAL SPRAY	GROUND APPLIC.	STEM INJECTION
<u>BCFS:</u>					
Conifer Release	1.0	glyphosate		1.0	
Totals	1.0			1.0	

TABLE VII PROVINCIAL SUMMARY OF AREA (ha)
TREATED BY CONTROL PURPOSE, 1986

PURPOSE	PESTICIDES	B.C. FOREST SERVICE ha treated	FOREST INDUSTRY ha treated
BRUSHING ¹	asulam	22.0	
	dicamba		3.0
	glyphosate	1899.0	4384.0
	hexazinone	190.0	605.0
	MCPA		3.0
	mecoprop		3.0
	sulfometuron ²		<0.1
	triciopyr	0.2	0.3
	2,4-D		738.0
CONIFER RELEASE	asulam		2.0
	glyphosate	1045.0	4198.0
	hexazinone	0.2	56.0
	2,4-D	491.0	1048.0
NURSERY WEED CONTROL	glyphosate	22.0	
	MCPA ²	< 0.1	
	oxyfluorfen ²	< 0.1	
RANGE WEED CONTROL	glyphosate	2.0	
	picloram	854.0	
RIGHT-OF-WAY MAINTENANCE	fosamine	30.0	
	glyphosate		70.0
	2,4-D		43.0
SITE PREPARATION	glyphosate	1164.0	6743.0
	hexazinone		28.0
	metsulfuron		0.1
SITE REHABILITATION	glyphosate	201.0	
WEED SEED	glyphosate	513.0	466.0
TREE CONTROL	2,4-D	1.0	97.0

TABLE VII PROVINCIAL SUMMARY OF AREA (ha)
TREATED BY CONTROL PURPOSE, 1986

PURPOSE	PESTICIDES	B.C. FOREST SERVICE ha treated	FOREST INDUSTRY ha treated
FUNGUS CONTROL ³	chlorothalonil ²	< 0.1	
	dodine ²	< 0.1	
	glyphosate		0.2
	triadimefon ²	< 0.1	
INSECT CONTROL ³	acephate	2.0	
	B.t. ⁴		200.0
	Carbaryl	2.0	
	carbofuran ²	< 0.1	
	cypermethrin	2.0	
	dimethoate ²	< 0.1	
	fenvalerate	2.0	
	MSMA	154.0	

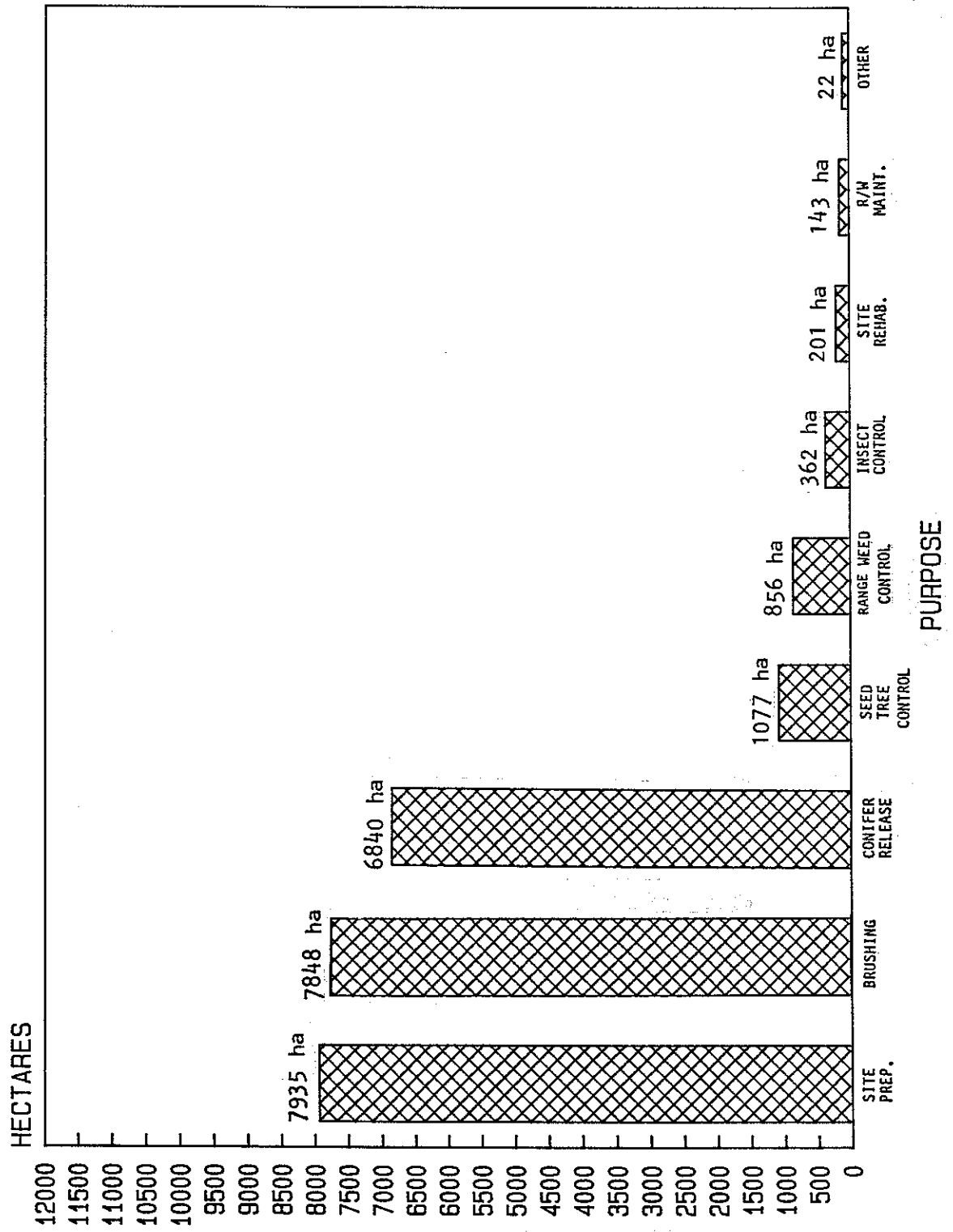
1 Includes both pre-harvest and post-harvest treatments.

2 Area treated was less than 0.1 ha.

3 Includes both forest nursery and forest treatments.

4 B.t. - Bacillus thuringiensis

FIGURE 4. PROVINCIAL SUMMARY OF AREA (ha) TREATED WITH PESTICIDES
BY CONTROL PURPOSE, 1986¹



¹ B.C. FOREST SERVICE & B.C. FOREST INDUSTRY COMBINED.

TABLE VIII PROVINCIAL SUMMARY OF AREA (ha)
TREATED BY METHOD OF APPLICATION, 1986

METHOD OF APPLICATION	PESTICIDES USED	B.C. FOREST SERVICE ha treated	FOREST INDUSTRY ha treated
AERIAL SPRAY HELICOPTER	B.t. ¹ glyphosate 2,4-D	2548.0	200.0 3049.0 16.0
AERIAL SPRAY FIXED WING	glyphosate		1434.0
BACKPACK AND HAND HELD SPRAY EQUIPMENT ²	asulam carbaryl carbofuran ³ fosamine glyphosate hexazinone MCPA ³ metsulfuron MSMA oxyfluorfen ³ picloram sulfometuron ³ triclopyr 2,4-D	 2.0 < 0.1 30.0 420.0 190.0 < 0.1 35.0 < 0.1 2.0 0.2 2.0	2.0 571.0 327.0 0.1 < 0.1 0.3 687.0
TREE INJECTION/ CUT SURFACE TREATMENTS ⁴	dimethoate ³ glyphosate hexazinone MSMA 2,4-D	< 0.1 1317.0 119.0 489.0	 10612.0 362.0 1177.0

TABLE VIII PROVINCIAL SUMMARY OF AREA (ha)
BY METHOD OF APPLICATION, 1986

METHOD OF APPLICATION	PESTICIDES USED	B.C. FOREST SERVICE ha treated	FOREST INDUSTRY ha treated
VEHICLE MOUNTED SPRAY BOOMS ⁵	acephate	2.0	
	cypermethrin	2.0	
	dicamba		3.0
	dodine ³	< 0.1	
	fenvalerate	2.0	
	glyphosate	3.0	87.0
	MCPA		3.0
	mecoprop		3.0
	picloram 2,4-D	790.0	3.0
VEHICLE MOUNTED SPRAY NOZZLES ⁶	acephate ³	< 0.1	
	asulam	22.0	
	chlorothalonil ³	< 0.1	
	glyphosate	559.0	108.0
	picloram	49.0	
	triadimefon ³ 2,4-D	< 0.1	43.0
OTHER	acephate ³	< 0.1	
	cypermethrin ³	< 0.1	
	fenvalerate ³	< 0.1	
	picloram	14.0	

1 B.t. = *Bacillus thuringiensis*

2 Includes mistblowers, ultra low volume sprayers, spot guns and granule spreaders.

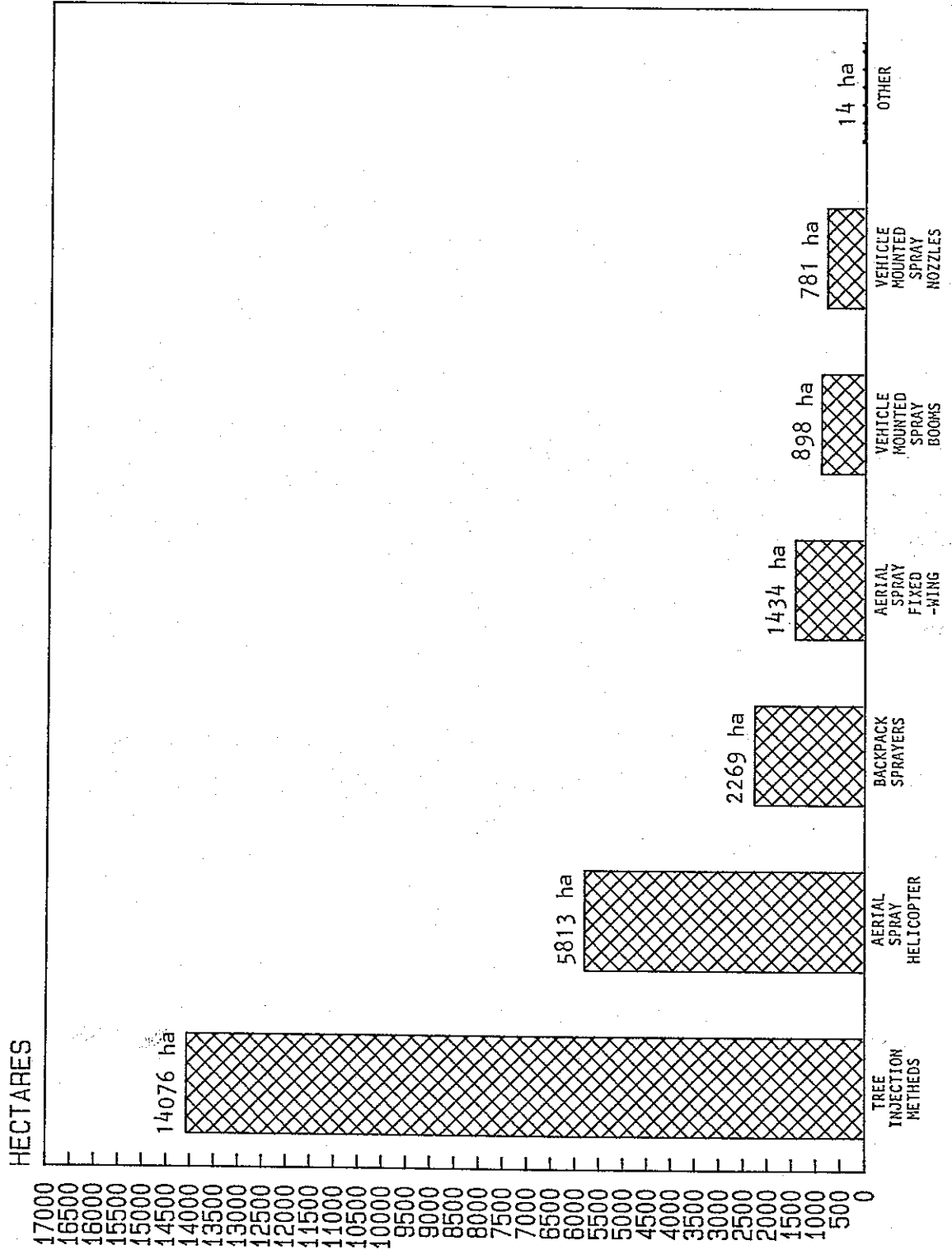
3 Area treated was less than 0.1 ha.

4 Involves hack and squirt, frill and squirt and cut stump treatments. Includes brush saws, lance injectors, and hypo hatchets.

5 Any fixed system which involves a boom with one or more nozzles attached to create a continuous broadcast spray. (Source: Ministry of Environment and Parks, Pesticide Control Branch).

6 Any system which involves tank, hose and nozzle. Nozzle is hand held and can be selectively directed. (Source: Ministry of Environment and Parks, Pesticide Control Branch).

FIGURE 5. PROVINCIAL SUMMARY OF AREA (ha) TREATED WITH PESTICIDES
BY METHOD OF APPLICATION, 1986¹



¹ B.C. FOREST SERVICE & B.C. FOREST INDUSTRY COMBINED.

TABLE IX TOTAL AREA (ha) TREATED WITH HERBICIDES AND INSECTICIDES
FOR FORESTRY PURPOSES, 1976 - 1986

YEAR	B.C. FOREST SERVICE		FOREST INDUSTRY		TOTALS	
	HERB.	INSECT.	HERB.	INSECT.	HERB.	INSECT.
1976	343.0	20.0	3 381.0	0.0	3 724.0	20.0
1977	798.0	0.0	4 899.0	0.0	5 697.0	0.0
1978	1 347.0	223.0	3 065.0	0.0	4 412.0	223.0
1879	2 256.0	64.0	1 840.0	0.0	4 096.0	64.0
1980	1 614.0	1.0	3 412.0	70.0	5 026.0	71.0
1981	2361	134.0	4 232.0	0.4	6 593.0	134.0
1982	2 630.0	786.0	1 636.0	<0.1 ¹	4 266.0	786.0
1983	2 586.0	807.0	3 595.0	5.0	6 181.0	812.0
1984	6 184.0	199.0	7 709.0	33.0	13 893.0	232.0
1985	8 018.0	612.0	19 133.0	26.0	27 151.0	638.0
1986	6 434.0	162.0	18 487.0	200.0	24 921.0	362.0

1 Area treated was less than 0.1 ha.

FIGURE 6. AREA (ha) TREATED WITH HERBICIDES FOR FORESTRY PURPOSES.

1976-1986

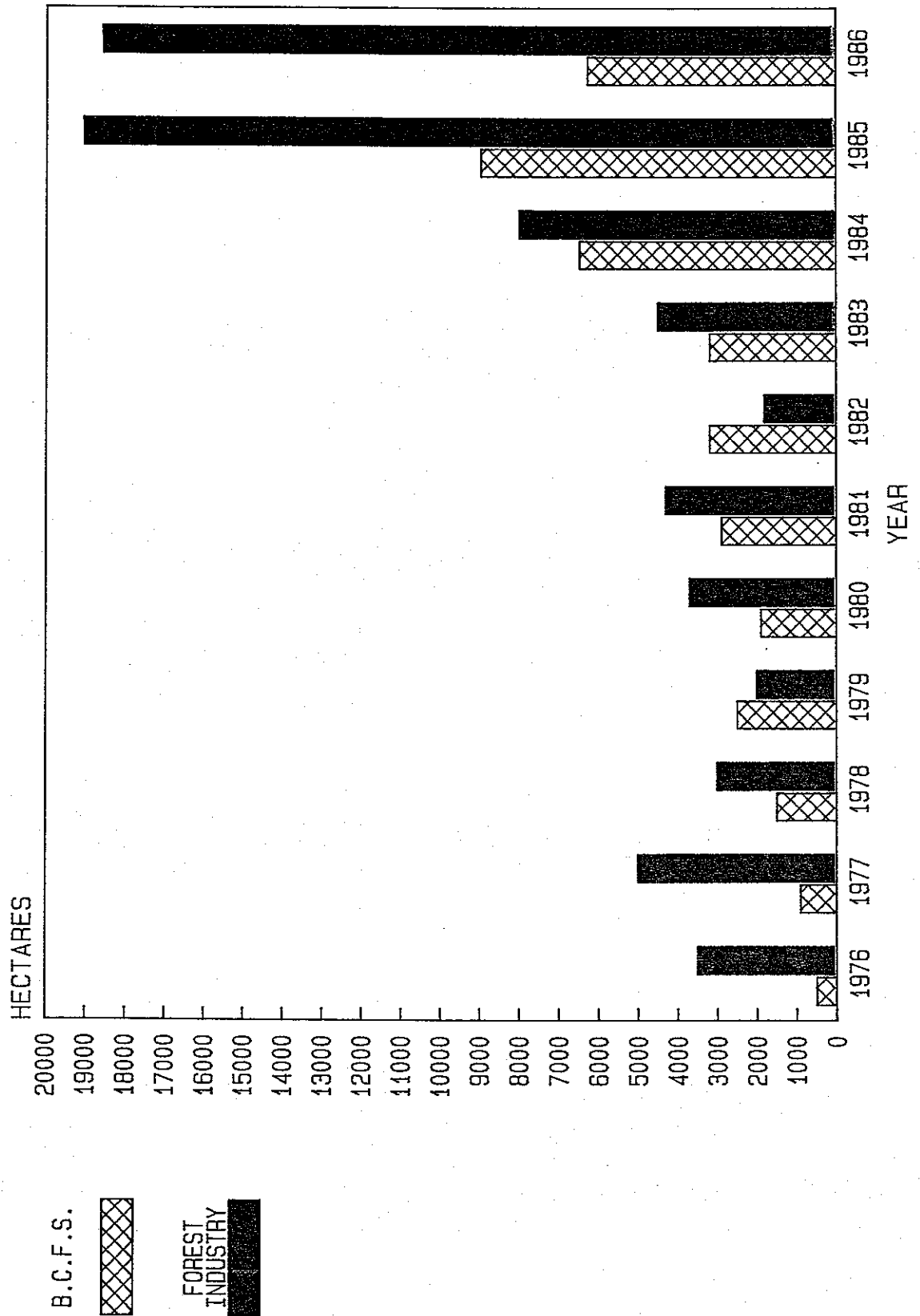
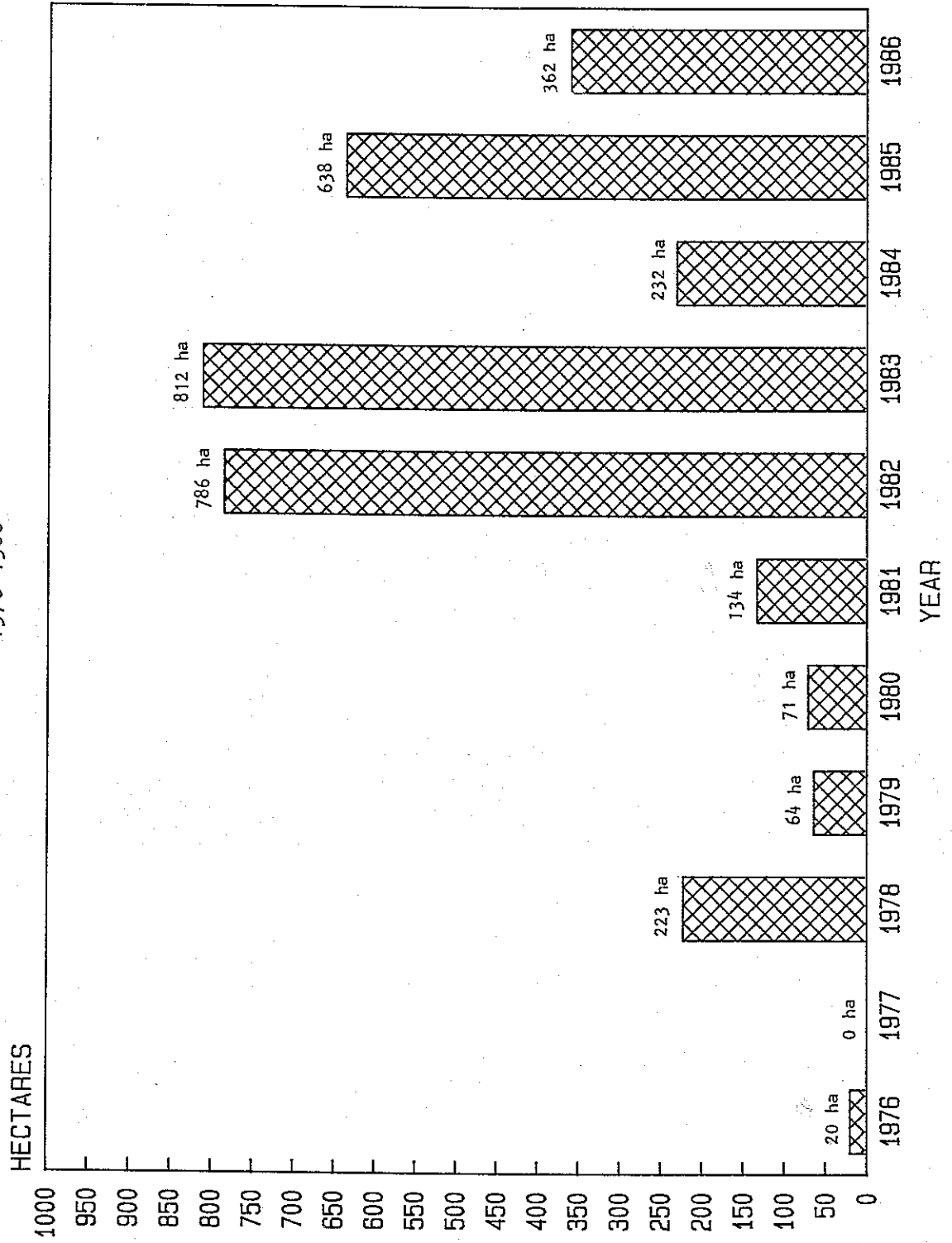


FIGURE 7. AREA (ha) TREATED WITH INSECTICIDES FOR FORESTRY PURPOSES.
1976-1986¹



¹ B.C. FOREST SERVICE & B.C. FOREST INDUSTRY COMBINED.

DISCUSSIONS AND CONCLUSIONS

Forestry pesticide use activities leveled off in 1986, following the large increases reported in 1984 and 1985. Overall area treated was only slightly lower than 1985 (i.e., 25 283 ha treated in 1986 versus 27 789 ha treated in 1985).

The three major herbicide use activities - conifer release, site preparation and brushing were at approximately equal levels in 1986, as compared to 1985 when these activities differed by 4 000 - 6 000 ha.

As herbicide use activities still only represent a fraction of the estimated 49 000 ha of forest land added each year to the inventory of brush sites following harvesting, one might expect an increase in site rehabilitation projects in the future.

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