

PESTICIDE USAGE IN SCOTLAND

***ARABLE CROPS 1996
(Revised 2009)***

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Reason for Report Revision

This report has been reissued to correct inaccuracies in active ingredient application area data that were overestimated in the original report.

This issue only affects a limited number of active ingredients in relation to active ingredient application area. All formulation data and active ingredient weight data are unaffected. The amended tables are:

- Table 51 – Cereal fungicide active ingredients
- Table 52 – Cereal herbicide and growth regulator active ingredients
- Table 54 – Oilseed rape fungicide active ingredients
- Table 56 – Potato insecticide active ingredients
- Table 57 – Potato fungicide active ingredients
- Table 59 – Principal active ingredients
- Tables 61-63 – Comparisons with previous years

Text relating to the data contained in these tables has also been revised.

	Page
Summary	1
Introduction	2
Definitions and notes	2
Method	3
Pesticide usage on winter barley	4
Pesticide usage on spring barley	5
.....	
Pesticide usage on winter wheat	6
Pesticide usage on spring wheat	7
Pesticide usage on winter oats	7
Pesticide usage on spring oats	8
Pesticide usage on winter oilseed rape	9
Pesticide usage on spring oilseed rape	10
Pesticide usage on seed potatoes	11
Pesticide usage on ware potatoes	12
.....	
Pesticide usage on peas for combining	13
Pesticide usage on minor crops	14
Pesticide usage on set aside land	15
Comparisons with previous surveys	16
Cereals	16
Oilseed rape	16
Potatoes	17
Acknowledgements	18
References	18
Figure 1 showing agricultural land-use regions	19
Figure 2 showing percentages of arable crop areas	20
Figure 3 showing estimated percentages of areas of set aside land	20
Figure 4 showing percentages of cereals treated with pesticides	21
Figure 5 showing percentages of oilseed rape and potatoes treated with pesticides	21
	Table
Regional distribution of arable crops in 1996	1
Number of holdings surveyed in each region and size group	2
.....	
Proportions of crops treated with pesticides	3
Pesticide usage on winter barley	4-6
Pesticide usage on spring barley	7-9
.....	
Pesticide usage on winter wheat	10-12
Pesticide usage on winter oats	13-15
Pesticide usage on spring oats	16-18
Pesticide usage on winter oilseed rape	19-21
Pesticide usage on spring oilseed rape	22-24
Pesticide usage on seed potatoes	25-27
Pesticide usage on ware potatoes	28-30
.....	
Pesticide usage on peas for combining	31-33
Pesticide usage on set aside land	34-38
Seed treatments	39-40
Summary of pesticide usage by spray area of formulations	41-49
Summary of pesticide usage by spray area of active ingredients and weights applied	50-58
Principal 50 active ingredients by spray area and weight	59-60
.....	
Comparisons with previous surveys	61-63

Areas of arable crops grown in sample	64
Areas of arable crops grown in Scotland	65
Raising and adjustment factors	66-68



This report presents information from a survey of pesticide usage on arable crops in Scotland during 1996. The data have been raised to give estimates of national pesticide usage.

The total area of arable crops increased by 7% compared with the previous survey in 1994 to over 530,000 hectares in 1996. Changes in cropping included increases in winter and spring barley and seed and ware potatoes, whilst there were decreases in wheat, oats and winter and spring oilseed rape.

Overall usage of insecticides, compared with fungicides and herbicides, remained low. Pyrethroids remained the dominant insecticide group with increased usage recorded on cereals and potatoes. Deltamethrin, mainly on potatoes, and cypermethrin, mainly on cereals and oilseed rape were the principal insecticide active ingredients recorded.

There was an increase in fungicide use, as measured by the spray area of active ingredients, due mainly to a relatively large increase on cereals. Fenpropimorph, used solely on cereals, remained the principal fungicide.

When the changes in areas grown are taken into account, there were increases in the use of herbicides on cereals and oilseed rape. The combined spray hectareage of mecoprop and mecoprop-P, used on cereals only, replaced metsulfuron-methyl as the most commonly used herbicide.

INTRODUCTION

This is the eighth survey of pesticide usage on arable crops in Scotland, the previous surveys being in 1974, 1977, 1982, 1988, 1990, 1992 and 1994 (References 1 to 8). The survey covered cereals, oilseeds, peas, beans, potatoes and set aside land.

DEFINITIONS AND NOTES

Basic area (or basic ha) is the planted area of crop which was treated with a given pesticide, irrespective of the number of times it was applied to that area.

Spray area (or spray hectare; sp ha) is the basic area of a crop treated with a given pesticide multiplied by the number of treatments that area received.

In this report the term 'formulation(s)' is used to describe the pesticide active ingredient or mixture of active ingredients in a product(s).

The reasons reported for the uses of pesticides are those given by growers and may sometimes be inappropriate.

When viewing the pesticide tables for the individual crops it should be borne in mind that some of the herbicides may not have been applied directly to the crop itself but as land preparation treatments prior to sowing/planting the crop.

Usage of sulphur on oilseed rape has been recorded as though it were a pesticide. However, the predominant reason for its use is as a nutrient rather than to control disease.

Difenzoquat was used on winter wheat both against mildew and for wild oat control. In the 'reasons for use' tables for wheat, difenzoquat appears in both the fungicide and herbicide tables, the split between the two being based on the reason given for its usage. However, in all other tables difenzoquat usage on wheat has been combined and placed under herbicides only.

Due to rounding, there may be slight differences in totals both within and between tables.

Data from the 1994 survey are provided for comparison purposes in some of the tables, although it should be borne in mind that there may be minor differences in the range of crops surveyed, together with changes in areas of each of the crops grown.



Using the June 1995 Agricultural Census (Reference 9) a sample was drawn representing the whole of Scotland and was selected from holdings growing any of the combinable crops and/or potatoes, but excluded set aside land.

As in previous surveys of this type, the country was divided into 11 land-use regions (Fig 1, Reference 10). Holdings were stratified by land-use region and by size group (based on the total area of arable crops grown). Sampling fractions within both regions and size groups were based on the areas of the relevant crops grown rather than number of holdings, so that smaller size groups would not dominate the sample.

The survey period was from the end of the 1995 harvest to the end of the 1996 harvest. As well as recording treatments applied directly to the crop, data were also collected on land preparation treatments prior to sowing/planting the crop.

With a few exceptions, each grower was visited by a surveyor, following an introductory letter and telephone call. A small number of growers in remote areas had to be interviewed by telephone, again by prior arrangement. When necessary, data were also collected from consultant agronomists, contractors and seed merchants. In all, information was obtained from 332 holdings. Details of the numbers of holdings visited and their distribution are given in Table 2 and the areas of crops surveyed are shown in Table 64.

For all crops, sample data were raised to give estimates of national pesticide usage using raising factors (Table 66). These were based on the areas growing arable crops in the 1996 Agricultural Census (Reference 11) within regions and size groups (Table 65). Land-use regions 1 and 2 were amalgamated, as were regions 10 and 11. Adjustments (Table 67) were made for each crop, including those grown on set aside land, within each region by applying the raising factors (Table 66) to the sample area of each crop grown and comparing this with the area from the 1996 Agricultural Census. A second adjustment was made for crops where no holdings were sampled in one or more regions (Table 68).

The area of winter barley increased by 38% from just under 46,000 hectares in 1994 to 63,566 hectares in 1996.

● *Insecticides and molluscicides (Tables 4, 50)*

The proportion of crop treated with insecticide increased from 12% in 1994 to 30% in the present survey, probably due to Barley Yellow Dwarf Virus control as a result of the mild autumn.

Aphid control was again the predominant reason for insecticide use. As in the previous survey, cypermethrin was the main insecticide, applied to 19% of the crop area.

Molluscicide usage remained low and was applied to only 1% of the crop area. Metaldehyde, as in 1994, was the most commonly used molluscicide.

● *Fungicides (Tables 5, 51)*

Fungicide usage on winter barley remained high, with 98% of the crop area receiving fungicide in 1996. As in previous surveys, mildew was the main specified reason for its use.

Fenpropimorph was the main fungicide, accounting for 21% of the total spray area of fungicide active ingredients. Carbendazim, which had been the most commonly used fungicide active ingredient in 1994, accounted for only 15% in the present survey.

● *Herbicides and growth regulators (Tables 6, 52)*

The proportion of winter barley treated with herbicide was 97%, similar to that recorded in the previous survey.

Annual broad-leaved weed control was again the most common reason specified for herbicide usage.

Isoproturon was the principal herbicide active ingredient, applied to almost 47,000 spray hectares and accounting for 29% of the total spray area of herbicide active ingredients. Its main usage was in the diflufenican/isoproturon formulation, applied to almost half the crop area. Use of metsulfuron-methyl, which had been the main herbicide recorded in the previous survey, was applied to only 15% of the crop in 1996.

Use of growth regulators increased from 71% of the crop area treated in 1994 to 81% in the present survey. Chlormequat and 2-chloroethylphosphonic acid were again the main chemicals, together accounting for almost 80% of the total spray area of active ingredients.

● *Seed treatments (Table 39)*

Ninety-six percent of the seed was treated. The formulations tebuconazole/triazoxide (on 23%), ethirimol/flutriafol/thiabendazole (on 20%) and guazatine/imazalil (on 17%) were the most commonly used seed treatments. The tebuconazole/triazoxide mixture had not been available in 1994.

The area of spring barley, the principal cereal crop in Scotland, increased by 21% compared with the previous survey to 260,726 hectares.

● ***Insecticides and molluscicides (Tables 7, 50)***

Only 2% of the crop was treated with insecticide, compared with 7% in 1994.

Leatherjacket control was by far the most common reason for insecticide use, and chlorpyrifos was the principal insecticide recorded. In 1994, dimethoate, for aphid control, had been the main insecticide used.

As in previous surveys, no molluscicides were recorded.

● ***Fungicides (Tables 8, 51)***

The proportion of crop treated with fungicide increased from 64% in the previous survey to 81% in 1996.

As in 1994, mildew was the main specified reason for fungicide use. Fenpropimorph remained the principal fungicide, accounting for 23% of the total spray area of fungicide active ingredients. Usage of flusilazole increased from 14% of the total spray area of fungicide active ingredients in the previous survey to 22% in 1996. Carbendazim, propiconazole and tridemorph, in various formulations, were also widely used.

● ***Herbicides and growth regulators (Tables 9, 52)***

As in the previous survey, nearly all (99%) of the crop received herbicide. Annual broad-leaved weed control was again the main specified reason for herbicide use.

As in 1994, metsulfuron-methyl was the principal herbicide, accounting for 21% of the total spray area of herbicide active ingredients, followed by the combined usage of mecoprop and mecoprop-P (21%). Usage of thifensulfuron-methyl, which is available in formulations with metsulfuron-methyl and tribenuron-methyl (not available in 1994) increased since the last survey.

Use of growth regulators was similar to that in 1994, applied to 10% of the crop area. As before, chlormequat and 2-chloroethylphosphonic acid were the most commonly used.

● ***Seed treatments (Table 39)***

Ninety-eight percent of the seed was treated.

The formulation containing tebuconazole/triazoxide, applied to 39% of the seed, was the principal seed treatment used, followed by guazatine/imazalil on 19%. The formulation carboxin/imazalil/thiabendazole, which had been the main treatment in the previous survey, was used on only 7% of the seed in 1996.

The area of winter wheat declined by 1% compared with the previous survey to 103,389 hectares in 1996.

● *Insecticides and molluscicides (Tables 10, 50)*

There was an increase in the proportion of crop treated with insecticide from 23% in 1994 to 31%. As in 1994, aphid control was the main specified reason for use of insecticides.

Cypermethrin, applied to 12% of the crop area, and deltamethrin to 10%, were the principal insecticides. In 1994, dimethoate had been the most commonly used.

Molluscicides were applied to 8% of the crop area, a slight fall from the 12% recorded in 1994. As before, metaldehyde was the main molluscicide employed.

● *Fungicides (Tables 11, 51)*

As in the previous survey, all the crop received fungicide. The main reason given for the use of fungicides was general disease precaution.

Fenpropidin was the principal fungicide, accounting for 13% of the total spray area of fungicide active ingredients, and was applied to 96,573 spray hectares, a 4-fold increase since 1994. Chlorothalonil, which had been the most popular fungicide in the previous survey, fenpropimorph, cyproconazole and carbendazim were also widely used active ingredients in 1996.

● *Herbicides and growth regulators (Tables 12, 52)*

As in 1994, nearly all the crop area received herbicide.

As before, the control of annual broad-leaved weeds was the main specified reason for herbicide use. Isoproturon, accounting for 19% of the total spray area of herbicide active ingredients, mecoprop and mecoprop-P, their combined usage 19%, was also a popular herbicide active ingredient. Isoproturon's main usage was in the diflufenican/isoproturon formulation, applied to 39% of the crop. The use of metsulfuron-methyl declined from 21% to 13% of the total spray area of active ingredients.

Use of growth regulators was similar to that recorded in the previous survey at around 92% of the crop treated. Chlormequat remained the principal growth regulator, accounting for 60% of the total spray area of active ingredients, a decline from 74% recorded in 1994.

● *Seed treatments (Table 39)*

As in the previous survey, 98% of the seed was treated.

As in 1994, the main formulations were guazatine (on 36%) and fuberidazole/triadimenol (on 23%). The formulation bitertanol/fuberidazole, which was applied to 20% of the seed, had not been available in 1994.

● ***SPRING WHEAT***

This crop is not recorded in the Agricultural Census, but it is estimated that 591 hectares were grown in 1996, compared with only 44 hectares in the previous survey. Because of the small numbers of holdings providing data, individual tables for this crop are not presented in the report. Estimates of pesticide usage are, however, presented in all the Summary Tables.

● ***WINTER OATS***

This is the first survey in which winter oats has been recorded separately in the Agricultural Census. In 1996 the area grown was 6,161 hectares, little difference from the estimated area of 5,924 hectares in 1994.

● ***Insecticides and molluscicides (Tables 13, 50)***

The only insecticide recorded was esfenvalerate, applied to 12% of the crop area, for aphid control. No insecticides were recorded in 1994.

As in the previous survey, no molluscicides were recorded.

● ***Fungicides (Tables 14, 51)***

The proportion of crop treated with fungicide increased from 78% in 1994 to 92% in the present survey. Mildew was the only specified reason for disease control.

As in 1994, fenpropimorph and tridemorph were the most commonly used fungicide active ingredients, accounting for 40% and 21% of the total spray area of fungicide active ingredients respectively.

● ***Herbicides and growth regulators (Tables 15, 52)***

There was a slight drop in the use of herbicides, from 93% of the crop area treated in the previous survey to 86% in 1996. As in the previous survey, mecoprop and mecoprop-P (combined usage) and metsulfuron-methyl were the principal herbicides, accounting for 27% and 24% of the total spray area of herbicide active ingredients respectively.

Seventy-four percent of the crop area was treated with a growth regulator, compared with 67% in 1994. Chlormequat remained the most commonly used growth regulator.

● ***Seed treatments (Table 39)***

Ninety-four percent of the seed was treated, compared with only 77% in 1994.

The principal seed treatment recorded was guazatine, on 36% of the seed, followed by fludioxonil (21%) and the mixture containing carboxin/imazalil/thiabendazole (15%).



The area of spring oats in 1996 was 13,789 hectares, a 36% decline from the estimated area of 21,672 hectares in the previous survey.

● *Insecticides and molluscicides (Tables 16, 50)*

Only 2% of the crop received insecticide, compared with 9% in 1994.

Deltamethrin, on 2% of the crop area against aphids, and chlorpyrifos on less than 0.5% were the only insecticides recorded.

As in previous surveys, no molluscicides were recorded.

● *Fungicides (Tables 17, 51)*

There was a slight increase in the area of crop receiving fungicide, from 41% in 1994 to 57% in the present survey.

As in the previous survey, mildew was the main specified reason for fungicide use.

Fenpropimorph remained the principal fungicide, accounting for 32% of the total spray area of fungicide active ingredients, followed by tridemorph (27%).

● *Herbicides and growth regulators (Tables 18, 52)*

The proportion of the crop receiving herbicide fell from 95% in 1994 to 83% in the present survey.

As before, nearly all herbicide was for the control of annual broad-leaved weeds.

Mecoprop and mecoprop-P (combined spray hectareage) and metsulfuron-methyl were the most commonly used herbicide active ingredients, each accounting for 25% of the total spray area of herbicide active ingredients, followed by MCPA (17%).

Growth regulators were applied to 44% of the crop, compared with 25% in 1994. As in the previous survey, chlormequat was the principal chemical used.

● *Seed treatments (Table 39)*

Seventy-five percent of the seed was treated, compared with 86% in the previous survey.

The mixture containing carboxin/imazalil/thiabendazole remained the principal treatment, applied to 24% of the seed.

The area of winter oilseed rape fell by 4% from 31,763 hectares in the previous survey to 30,521 hectares in 1996.

● ***Insecticides and molluscicides (Tables 19, 53)***

The proportion of crop treated with insecticide increased from 54% in 1994 to 67% in the present survey.

Pollen beetle control was again the main reason for insecticide use. As in 1994, cypermethrin, applied to 39% of the crop, and alpha-cypermethrin to 20%, were the main insecticides.

Molluscicide usage was fairly similar to that in the previous survey, at around 10% of the crop treated. Methiocarb replaced metaldehyde as the most commonly used molluscicide.

● ***Fungicides (Tables 20, 54)***

Fungicide usage remained fairly constant at around 97% of the crop treated.

The main reason for fungicide use was light leaf spot control. As in 1994, carbendazim, in a number of mixed formulations, applied to over 39,000 spray hectares and accounting for 28% of the total spray area of fungicide active ingredients, was the principal fungicide. Its main usage was in formulations with flusilazole and vinclozolin. Tebuconazole (16%) and sulphur (15%; generally used as a nutrient) were also widely used. The use of prochloraz, which had been the second most common fungicide in 1994, declined to only 8% in the present survey.

● ***Herbicides and growth regulators (Tables 21, 55)***

The usage of herbicides was similar to that recorded in the 1994 survey at around 95% of the crop area treated.

As before, the control of annual broad-leaved weeds was the main reason specified for herbicide use. In common with the previous two surveys, metazachlor was the principal herbicide, applied to 16,737 spray hectares or 55% of the crop area, followed by propyzamide (37%) and benazolin/clopyralid (29%). Herbicide usage for desiccation increased from 12% of the crop area treated in 1994 to 20% in the present survey.

Chlormequat, as in 1994, was the only growth regulator recorded, applied to 9% of the crop area.

● ***Seed treatments (Table 39)***

As in 1994, 98% of the seed was treated. The formulation containing fenpropimorph/gamma-HCH/ thiram remained the principal treatment and was applied to 49% of the seed. Iprodione, applied to 28% of the seed, was also widely used.



SPRING OILSEED RAPE

The area of spring oilseed rape halved compared with 1994 to 18,769 hectares, similar to the area grown in 1992.

● ***Insecticides and molluscicides (Tables 22, 53)***

Insecticide usage increased from 65% of the crop area treated in the previous survey to 83% in 1996.

As before, pollen beetle control was the main reason for insecticide use. Alpha-cypermethrin, applied to 44% of the crop area, was the most commonly used insecticide in 1996 replacing cypermethrin, which was applied to 25% of the crop area.

Usage of molluscicides was minimal. Metaldehyde, applied to 1% of the crop area, was the only molluscicide recorded.

● ***Fungicides (Tables 23, 54)***

Use of fungicide fell from 43% of the crop treated in the previous survey to 21% in 1996.

As in 1994, sulphur, applied to 20% of the crop area as a foliar feed, was the principal fungicide.

Carbendazim was the main fungicide active ingredient for disease control in 1996. Its main usage was in the carbendazim/vinclozolin formulation.

● ***Herbicides and growth regulators (Tables 24, 55)***

The proportion of crop receiving herbicide increased from 49% in 1994 to 59% in the present survey.

Desiccation of the crop remained the main reason for herbicide use. Glyphosate was the main active ingredient used, applied to 30% of the crop area, essentially as a desiccant. As in 1994, trifluralin, applied to 4,200 hectares or 22% of the crop area, was the main herbicide used for weed control.

As in 1994, chlormequat, applied to 1% of the crop area, was the only growth regulator recorded.

● ***Seed treatments (Table 39)***

All the seed was treated. Iprodione, applied to 41% of the seed, replaced the formulation containing fenpropimorph/gamma-HCH/thiram (applied to 26%) as the most commonly used seed treatment.

The area of seed potatoes increased by 8% from 14,505 hectares in 1994 to 15,718 hectares in 1996.

● ***Insecticides and molluscicides (Tables 25, 56)***

As in the previous survey, nearly all (99%) of the crop area was treated with insecticide.

All insecticide use was for aphid control, except for aldicarb on 1% of the crop area against nematodes.

Deltamethrin, in formulation with pirimicarb (unavailable in 1994) and with heptenophos was the principal insecticide active ingredient recorded on seed potatoes, accounting for 32% of the total spray area of insecticide active ingredients.

Molluscicide usage increased from 4% of the crop area treated in 1994 to 8% in 1996. Methiocarb was used on 6% of the crop area and metaldehyde on 2%.

● ***Fungicides (Tables 26, 57)***

Ninety-seven percent of the crop area was treated with fungicide, compared with 100% in 1994.

As in the previous two surveys, the most popular formulation recorded was cymoxanil/mancozeb, applied to 45% of the crop area, followed by fluazinam to 40%. In terms of active ingredients, mancozeb and cymoxanil were again the principal fungicides, accounting for 42% and 18% of the total spray area of fungicide active ingredients respectively.

● ***Herbicides and growth regulators (Tables 27, 58)***

All the crop received herbicide in 1996 compared with 97% in the previous survey.

Paraquat, alone and in formulation with diquat, was again the main herbicide for weed control, applied to 87% of the crop area, followed by linuron to 65%.

All the crop was desiccated, 97% with sulphuric acid and 3% with diquat.

● ***Seed treatments (Table 39)***

Eighty-one percent of the seed was treated with a pre-planting fungicide, slightly higher than the 77% recorded in 1994.

As in the previous survey, imazalil was the most commonly used treatment, applied to 44% of the seed. Iprodione was also widely used, applied to 23% of the seed.



WARE POTATOES

The area of potatoes grown mainly for ware increased by 14% from 11,906 hectares in the previous survey to 13,579 hectares in 1996.

● ***Insecticides and molluscicides (Tables 28, 56)***

The proportion of crop receiving insecticide increased from 52% in 1994 to 75% in 1996.

Deltamethrin and pirimicarb were the principal insecticide active ingredients, used for aphid control, accounting for 25% and 24% of the total spray area of insecticide active ingredients respectively. Dimethoate, which had been the main insecticide in 1994, was used on fewer than 800 spray hectares in the present survey.

Molluscicide usage was similar to that in 1994, at around 11% of the crop treated. Methiocarb and metaldehyde were the only molluscicides recorded.

● ***Fungicides (Tables 29, 57)***

The proportion of crop treated with fungicide fell from 97% in the previous survey to 89% in 1996. The principal formulations were fluazinam and cymoxanil/mancozeb/oxadixyl, applied to 42% and 41% of the crop respectively. In terms of individual active ingredients, mancozeb was the main one, accounting for 35% of the total spray area of fungicide active ingredients, in line with its use in previous surveys.

● ***Herbicides and growth regulators (Tables 30, 58)***

Herbicide usage was similar to that recorded in 1994, at around 98% of the crop treated.

Paraquat, alone and in formulation with diquat, remained the principal herbicide, accounting for 28% of the total spray area of herbicide active ingredients. Linuron was also widely used.

Sulphuric acid was the most widely used desiccant, applied to 70% of the crop area.

No growth regulators were recorded in 1996. Maleic hydrazide had been used on small areas in the previous two surveys.

● ***Seed treatments (Table 39)***

Seventy-four percent of the seed was treated with a pre-planting fungicide, compared with just over half in 1994.

The formulation containing imazalil/pencycuron (applied to 28% of the seed) and imazalil alone (to 26%) were the most commonly used treatments.

The area of peas grown in Scotland continued to fall. Between 1994 and 1996 there was a further decline of 39% to only 1,458 hectares.

● ***Insecticides and molluscicides (Table 31)***

Insecticide usage fell from 65% of the crop area treated in 1994 to only 26% in the present survey. As in 1994, the only specified reason for insecticide use was for aphid control. Deltamethrin, applied to 17% of the crop, and cypermethrin, to 10%, were the only insecticides recorded. In 1994, deltamethrin had not been recorded.

● ***Fungicides (Table 32)***

Usage of fungicides fell from 91% of the crop treated in 1994 to 75% in 1996.

Carbendazim and chlorothalonil were the principal fungicides, accounting for 34% and 23% of the total spray area of fungicide active ingredients respectively. The formulation iprodione/thiophanate-methyl, which had been applied to 83% of the crop in 1994, was not recorded in the present survey.

● ***Herbicides and growth regulators (Table 33)***

As in the previous survey, all the crop was treated with herbicide. Again, the formulation terbuthylazine/terbutryn was the principal herbicide for weed control, applied to 46% of the crop area, followed by cyanazine to 24%.

All crops were desiccated, compared with only 35% in 1994. Glyphosate, applied to 47% of the crop area, and sulphuric acid, applied to 24% of the crop area, were the most commonly used chemicals. Diquat, which had been the only desiccant recorded in 1994, was applied to only 17% of the crop area in the present survey.

● ***Seed treatments (Table 39)***

Eighty-six percent of the seed was treated compared with 100% in 1994.

Thiram, the only specified seed treatment, was applied to 58% of the seed.

MINOR CROPS

● *Field beans*

The area remained similar to that grown in 1994, at around 350 hectares. Because only a few crops were encountered in the survey, no attempt has been made to raise the data. Pesticides recorded were as follows:

Insecticides : cypermethrin.
Fungicides : iprodione.
Herbicides : bentazone, diquat, glyphosate, simazine, terbutylazine/terbutryn.

● *Linseed*

The area of this crop fell from 307 hectares in 1994 to only 229 hectares in 1996. No attempt has been made to raise the data which was recorded on a small number of holdings only. Pesticides recorded were as follows:

Fungicides : carbendazim, chlorothalonil.
Herbicides : glyphosate, linuron, metsulfuron-methyl/thifensulfuron-methyl, trifluralin.

● *Mixed grains*

The area grown in 1996 was 441 hectares, compared with 340 hectares in 1994. No attempt has been made to raise the data which was recorded on a small number of holdings only. Pesticides recorded were as follows:

Fungicides : fenpropidin.
Herbicides : 2,4-DB/bentazone/cyanazine.

● *Triticale*

The area increased from 803 hectares in the previous survey to 1,082 hectares in 1996. Only a few crops were sampled in the survey, the data have been raised to national level and are included in the comparison tables. Pesticides recorded were as follows:

Herbicides : mecoprop-P, thifensulfuron-methyl/tribenuron-methyl.

● *Winter rye*

This crop is not listed specifically in the Agricultural Census. Only one crop was encountered in the survey and no attempt has been made to raise the data. Pesticides recorded were as follows:

Insecticides : cypermethrin.
Fungicides : fenpropimorph/prochloraz.
Herbicides : diflufenican/trifluralin, flamprop-M-isopropyl.
Growth regulators : 2-chloroethylphosphonic acid/chlormequat, chlormequat.

The area of set aside land fell by 25% from 93,162 hectares in 1994 to 69,443 hectares in 1996. Areas of the individual categories of set aside land have been estimated from the farm holdings visited during the survey.

● ***Natural regeneration (Table 34)***

As in 1994, this was the largest category of set aside land, and was an estimated 39,544 hectares.

Herbicide usage was similar to that recorded in 1994. About half the area was treated with herbicide, mainly against general weeds and couch. Glyphosate was by far the most common herbicide, applied to 47% of the land.

● ***Grass (Table 35)***

There was a relative increase in this category of land, estimated at over 25,000 hectares. The proportion of the area treated with herbicide, 11%, was similar to that recorded in 1994. MCPA, alone and in formulations, was the most popular herbicide used and accounted for 36% of the total spray area of herbicide active ingredients.

● ***Industrial oilseed rape (Tables 36 - 38)***

An estimated 3,721 hectares was grown in 1996, less than half the area in 1994. Although details are not available, there was a marked increase in the proportion of winter sown varieties. This is reflected in the increased use of pesticides, particularly of fungicides and herbicides.

Insecticides were applied to 83% of the crop, mainly for the control of pollen beetle. Lambda-cyhalothrin and alpha-cypermethrin were the most common insecticides recorded, applied to 31% and 30% of the crop respectively. Cypermethrin, which had been the principal insecticide in 1994, was used on only 18% of the crop area in the present survey.

The proportion of crop receiving fungicide more than doubled compared with 1994 to 54%. Carbendazim, in various formulations, was the principal fungicide active ingredient, accounting for 30% of the total spray area of fungicide active ingredients. Sulphur, which had been the most widely used in 1994, was applied to only 17% of the crop area in the present survey.

Nearly all (97%) of the crop received herbicide in 1996, compared with 77% in 1994. Metazachlor, applied to 73% of the crop, was the principal herbicide used.

● ***Other crops***

These crops, totalling a little over 1,000 hectares, included game cover crops and woodland. No pesticides were recorded on these crops.

COMPARISONS WITH PREVIOUS SURVEYS

● *Cereals (Table 61)*

Compared with 1994, the area of cereal crops grown in Scotland increased by over 54,000 hectares or 14% to almost 450,000 hectares, similar to the area grown in 1992.

Overall, pesticide usage on cereals, when measured by the total spray area of all active ingredients, increased by 30% compared with 1994, more than double the increase in area grown. This was due mainly to a 52% increase in the spray area of fungicide active ingredients.

There was a relative increase in insecticide use, the spray area of active ingredients up by 26% compared with 1994. Use of pyrethroids increased more than 3-fold, with a corresponding halving of the use of organophosphates. Cypermethrin, used solely on winter cereals, replaced dimethoate as the principal insecticide recorded. The overall weight of insecticide applied fell by 25%, reflecting the increased use of pyrethroids which are applied at relatively lower dosage rates. Use of molluscicides almost halved compared with 1994.

There was a large increase (52%) in the spray area of fungicide active ingredients, higher than the 14% rise in area grown. This was due mainly to the increased usage on spring barley, the major cereal crop grown in Scotland. As in the three previous surveys, fenpropimorph was the principal fungicide active ingredient. There was a relative increase in the use of flusilazole and carbendazim.

Herbicide usage increased by 25%, as measured by the spray area of active ingredients. The usage of mecoprop and mecoprop-P (combined) was greater than that of metsulfuron-methyl, which had been the principal herbicide in 1994. There was an increased usage of isoproturon, applied mainly as the diflufenican/isoproturon formulation to winter cereals.

● *Oilseed rape (Table 62)*

The total area of oilseed rape fell by 29%, due mainly to the decline of the spring sown varieties.

When measured by the spray area of active ingredients, the total usage of pesticides fell by 18%, a relative increase when the fall in area grown is taken into account.

There was a 9% fall in the spray area of insecticide active ingredients compared with 1994. Cypermethrin and alpha-cypermethrin were again the main insecticides used. The large reduction in the total weight of insecticide applied was due to the fact that no organophosphates were recorded together with a reduction in use of organochlorines, and these groups are applied at relatively high dose rates. There was a 31% decline in the use of molluscicides.

Total usage of fungicides remained similar to that recorded in 1994, representing a relative increase when the fall in area grown is taken into account. Carbendazim, alone and in formulations with other active ingredients remained the principal fungicide.

Usage of herbicides and desiccants declined by 8% compared with 1994, representing a relative increase when the fall in area grown is taken into account. Metazachlor, used predominately on the winter crop, remained the principal herbicide.

● *Potatoes (Table 63)*

The area of potatoes grown in 1996 increased by 11% compared with 1994.

Overall usage of pesticides, as measured by the spray area of active ingredients, increased by 6%, slightly less than the increase in area grown.

There was a 15% increase in the total spray area of insecticide active ingredients compared with 1994, representing little change when the increase in area grown is taken into account. Pyrethroid usage increased by 24% and there was a relative decline in organophosphates. This is reflected in the weight of insecticides recorded, down 9% compared with 1994, due to the fact that pyrethroids are applied at relatively lower dosage rates. Deltamethrin, applied in formulation with heptenophos and pirimicarb, remained the principal insecticide active ingredient. Use of carbamates (mainly pirimicarb) increased 3-fold. Molluscicide usage, although relatively low compared with other pesticide groups, increased by 75%.

Fungicide usage was lower than in 1994: the spray area of formulations was up by only 2% (lower than the 11% increase in area grown) and the spray area of active ingredients declined by 3%. This reflects a greater use of formulations containing single active ingredients such as fluazinam and mancozeb.

Herbicide and desiccant use increased in line with the increase in area grown. Paraquat, followed by linuron, remained the principal herbicides.

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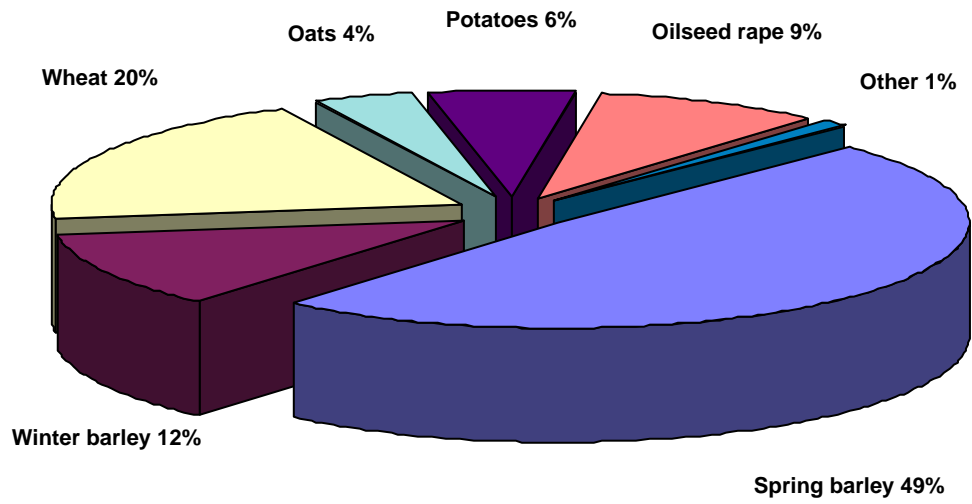
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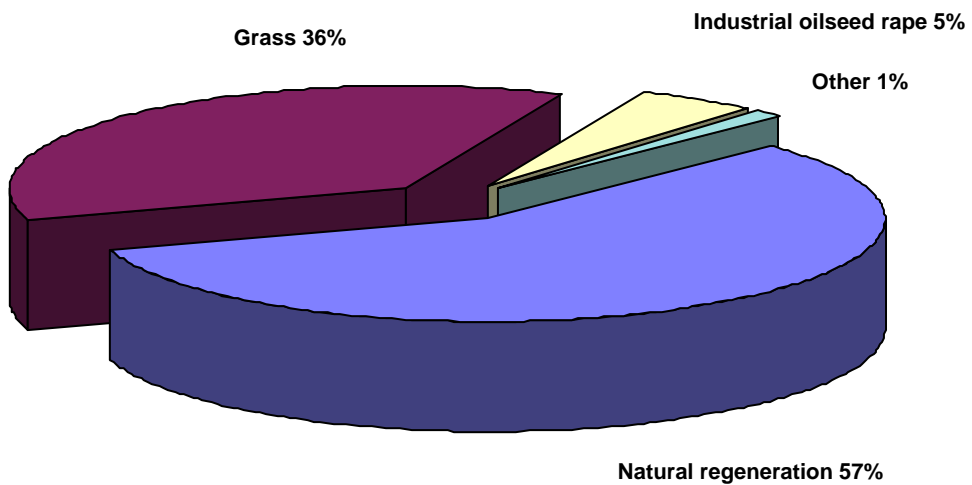
● **Figure 1 Land-Use Regions of Scotland**



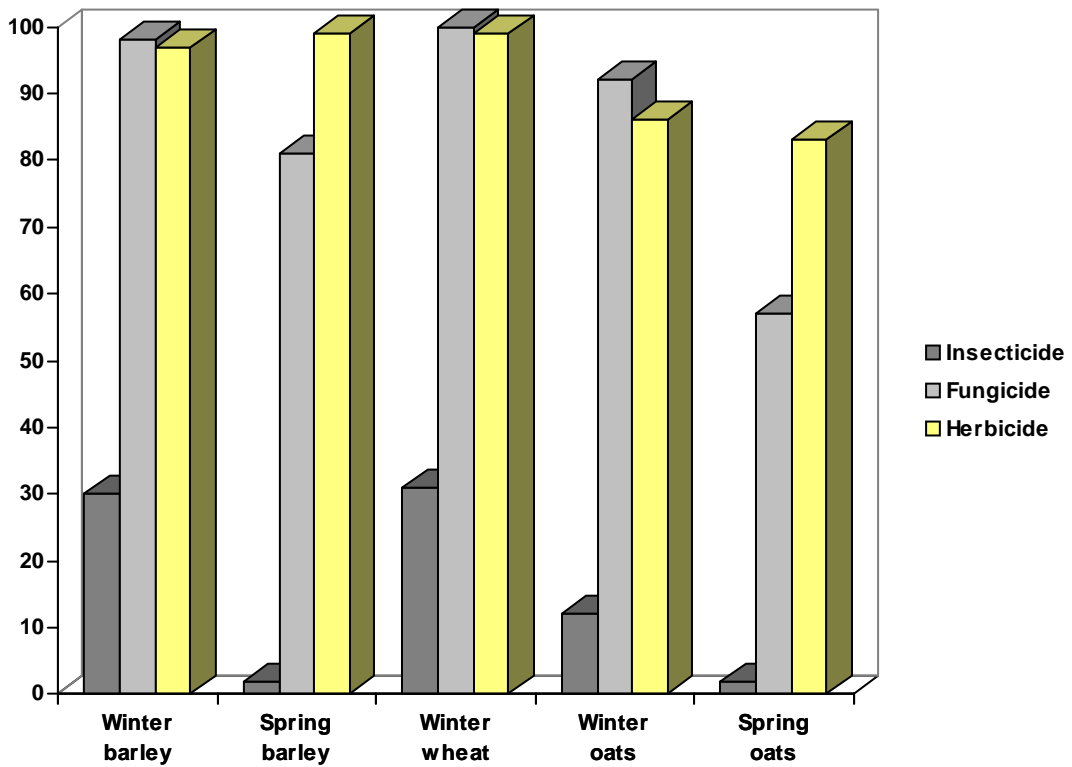
● *Figure 2 Percentages of arable crop areas*



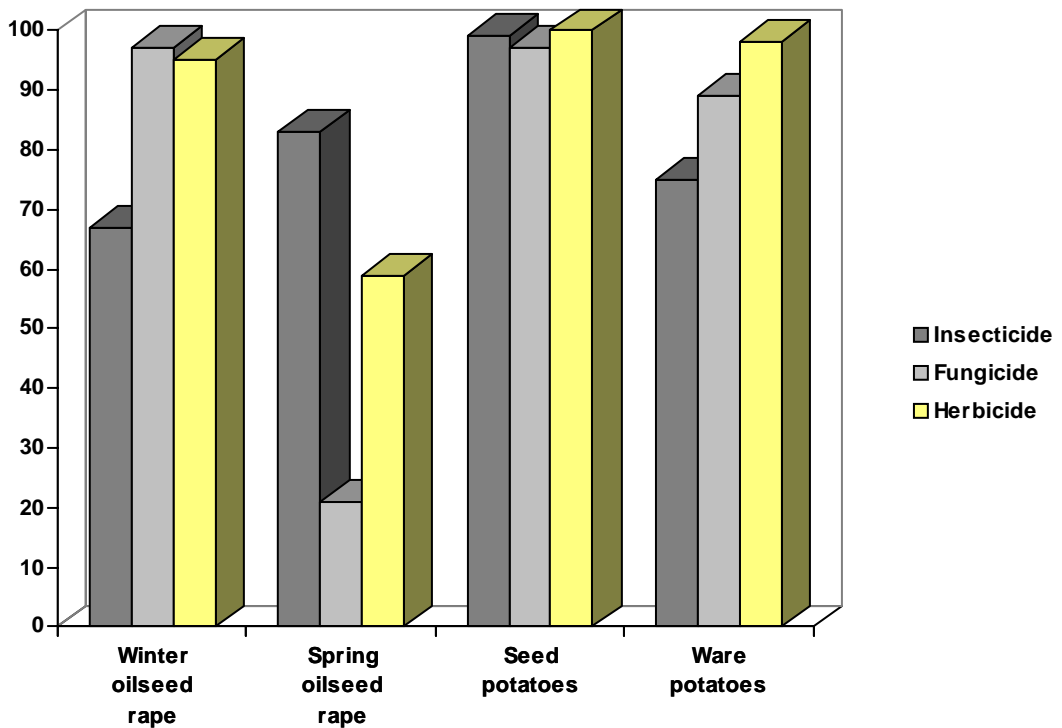
● *Figure 3 Estimated percentages of areas of set aside land*



● *Figure 4 Percentages of cereals treated with pesticides*



● *Figure 5 Percentages of oilseed rape and potatoes treated with pesticides*



● **TABLE 1 Regional distribution of arable crops in 1996 (hectares)**

<i>Crop/Region</i>	<i>Highlands & Islands and Caithness & Orkney</i>	<i>Moray Firth</i>	<i>Aberdeen</i>	<i>Angus</i>	<i>East Fife</i>	<i>Lothian</i>	<i>Central Lowlands</i>	<i>Tweed Valley</i>	<i>S Uplands & Solway</i>	<i>Scotland 1996</i>	<i>Scotland 1994</i>	<i>% change</i>
Winter barley	544	2,210	13,254	12,175	7,088	5,334	8,183	9,176	5,603	63,566	45,987	38
Spring barley	13,757	37,018	73,648	42,821	13,252	14,358	32,159	19,077	14,637	260,726	215,624	21
Wheat	206	6,140	10,078	20,510	14,507	17,745	10,756	21,226	2,807	103,974	105,275	-1
Oats	2,551	2,904	3,656	2,518	940	656	3,067	2,536	1,123	19,950	27,597	-28
Triticale	*	242	35	225	51	*	115	71	285	1,082	803	35
Winter oilseed rape	67	1,030	7,300	8,398	3,884	3,082	1,959	4,624	178	30,521	31,763	-4
Spring oilseed rape	570	2,296	7,205	2,990	1,201	520	2,832	1,004	151	18,769	37,856	-50
Seed potatoes	319	1,547	2,898	7,260	949	251	1,474	828	192	15,718	14,505	8
Ware potatoes	389	592	938	4,288	1,833	1,940	1,924	1,443	234	13,579	11,906	14
Combine peas	NA	**110	26	307	75	467	103	370	NA	1,458	2,407	-39
Field beans	*	*	NA	100	51	*	*	*	*	343	369	-7
Linseed	*	*	43	*	*	*	*	*	*	229	307	-25
Mixed grains	204	54	*	NA	*	*	50	*	70	441	340	30
Set aside	1,513	8,586	15,868	12,480	5,754	5,926	9,050	8,013	2,253	69,443	93,162	-25

To prevent disclosure of information about individual holdings, entries relating to less than 5 holdings have been replaced by an *. For combine peas in Highlands & Islands and Caithness & Orkney this was not possible as the entry could be disclosed by deduction, the entry has therefore been merged with Moray Firth (denoted by **).

● **TABLE 2** *Distribution of sample*

<i>Size (ha)</i>	<i>Highlands & Islands and Caithness & Orkney</i>	<i>Moray Firth</i>	<i>Aberdeen</i>	<i>Angus</i>	<i>East Fife</i>	<i>Lothian</i>	<i>Central Lowlands</i>	<i>Tweed Valley</i>	<i>S Uplands & Solway</i>	<i>Scotland</i>
1 - 19.9	11	5	9	3	0	1	7	1	4	41
20 - 49.9	4	6	14	9	4	3	12	4	6	62
50 - 99.9	3	6	27	18	10	5	8	5	5	87
100 - 149.9	0	7	10	9	5	7	6	8	1	53
150+	1	7	14	23	8	12	4	18	2	89
All sizes	19	31	74	62	27	28	37	36	18	332

● **TABLE 3** *Proportion (%) of each crop treated with pesticides*

	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>Seed potatoes</i>	<i>Ware potatoes</i>	<i>Combine peas</i>
Insecticides	30	2	31	0	12	2	0	67	83	99	75	26
Molluscicides	1	0	8	0	0	0	0	10	1	8	11	0
Fungicides	98	81	100	100	92	57	0	97	21	97	89	75
Herbicides/desiccants	97	99	99	100	86	83	57	95	59	100	98	100
Growth regulators	81	10	92	0	74	44	0	9	1	0	0	0
Any pesticide	100	99	100	100	100	83	57	100	93	100	98	100

● **TABLE 4 Winter barley**

Insecticides and molluscicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Aphids</i>	<i>Leather-jackets</i>	<i>No reason given</i>	<i>Slugs</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Bifenthrin	791	0	243	0	1,034	2
Chlorpyrifos	0	322	64	0	386	1
Cypermethrin	12,577	0	184	0	12,760	19
Deltamethrin	1,150	0	0	0	1,150	2
Demeton-S-methyl	368	0	0	0	368	1
Dimethoate	1,186	0	0	0	1,186	2
Esfenvalerate	2,534	0	0	0	2,534	4
Unspecified insecticide	427	0	0	0	427	1
<i>All insecticides</i>	19,033	322	491	0	19,845	30
<i>Molluscicides</i>						
Metaldehyde	0	0	0	220	220	+
Thiodicarb	0	0	0	112	112	+
<i>All molluscicides</i>	0	0	0	332	332	1
Area planted (ha)						63,566

*+ = < 0.5%

● **TABLE 5 Winter barley**

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

Fungicides	Mildew	Rhyncho- sporium	Mildew & rhyncho - sporium	Net blotch	Head spray	Mixed diseases	Disease precaution	Foliar feed	Foliar feed & mildew	No reason given	Total spray area	% of crop treated
Carbendazim	410	581	479	0	0	422	1,821	0	0	1,997	5,710	9
Carbendazim/chlorothalonil	0	36	0	0	1,024	0	1,610	0	0	0	2,670	3
Carbendazim/flusilazole	1,441	1,345	3,268	677	0	1,175	9,786	0	0	6,369	24,061	28
Carbendazim/flutriafol	616	0	0	0	0	0	0	0	0	1,470	2,086	3
Carbendazim/maneb	0	0	0	0	0	0	294	0	0	416	710	1
Carbendazim/maneb/tridemorph	0	0	0	0	0	0	532	0	0	117	649	1
Carbendazim/prochloraz	0	0	0	0	0	0	505	0	0	1,587	2,092	3
Carbendazim/propiconazole	1,593	3,788	851	2,609	1,503	1,189	7,287	0	0	2,362	21,182	16
Chlorothalonil	0	0	0	0	0	0	1,099	0	0	1,302	2,401	4
Chlorothalonil/fenpropimorph	0	0	0	0	0	0	350	0	0	0	350	1
Chlorothalonil/propiconazole	0	0	0	0	0	0	557	0	0	0	557	1
Cyproconazole	0	0	0	0	0	0	112	0	0	0	112	+
Cyproconazole/prochloraz	494	809	0	0	0	240	2,463	0	0	884	4,890	7
Epoxiconazole	347	0	422	0	0	0	2,202	0	0	0	2,971	5
Epoxiconazole/fenpropimorph	0	0	346	0	0	0	815	0	0	0	1,161	2
Fenpropidin	675	0	0	0	0	0	1,198	0	0	2,690	4,563	5
Fenpropidin/fenpropimorph	1,283	0	0	0	0	0	0	0	0	0	1,283	1
Fenpropidin/propiconazole	709	0	0	0	252	0	471	0	0	1,147	2,580	4

cont....

TABLE 5 Winter barley (continued)*Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated*

<i>Fungicides</i>	<i>Mildew</i>	<i>Rhyncho- sporium</i>	<i>Mildew & rhyncho - sporium</i>	<i>Net blotch</i>	<i>Head spray</i>	<i>Mixed diseases</i>	<i>Disease precaution</i>	<i>Foliar feed</i>	<i>Foliar feed & mildew</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Fenpropimorph	11,902	540	6,337	0	0	1,058	20,707	0	0	9,440	49,984	52
Fenpropimorph/flusilazole	0	0	0	0	0	0	691	0	0	0	691	1
Fenpropimorph/flusilazole/tridemorph	112	0	296	0	0	0	3,740	0	0	273	4,421	5
Fenpropimorph/prochloraz	0	101	1,132	0	0	0	1,256	0	0	1,447	3,936	6
Fenpropimorph/propiconazole	0	724	0	0	0	0	2,629	0	0	849	4,202	7
Fenpropimorph/tridemorph	1,761	854	633	0	0	0	10,324	0	0	1,780	15,350	16
Flusilazole	347	609	3,245	391	1,024	1,933	11,051	0	0	5,345	23,945	23
Flusilazole/tridemorph	0	0	793	0	0	0	901	0	0	0	1,694	1
Flutriafol	90	0	0	0	0	0	0	0	0	791	882	1
Mancozeb	0	0	0	0	164	0	254	0	0	0	418	1
Maneb	240	0	0	0	1,503	0	2,791	0	0	0	4,535	5
Nuarimol	0	0	1,260	0	0	0	0	0	0	427	1,687	3
Prochloraz	0	463	517	0	0	0	893	0	0	1,666	3,538	6
Propiconazole	640	3,471	0	0	0	0	6,579	0	0	2,614	13,304	17
Propiconazole/tridemorph	0	793	365	0	0	402	4,503	0	0	0	6,063	9
Sulphur	0	0	0	0	0	0	0	4,703	2,609	2,622	9,935	13
Tebuconazole/triadimenol	0	0	1,260	0	93	0	690	0	0	1,183	3,227	5
Triadimefon	0	0	0	0	0	0	153	0	0	419	572	1
Triadimenol	0	0	0	0	0	0	632	0	0	49	680	1
Triadimenol/tridemorph	3,731	1,416	3,269	0	393	0	7,162	0	0	1,969	17,939	19
Tridemorph	2,290	0	0	0	0	0	2,537	0	0	1,377	6,205	10
Unspecified fungicide	0	420	0	0	0	0	0	0	0	0	420	1
All fungicides	28,680	15,949	24,472	3,677	5,957	6,419	108,596	4,703	2,609	52,593	253,655	98
Area planted (ha)												63,566

‘+’ = < 0.5%

TABLE 6 Winter barley

Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides</i>	<i>Annual bl weeds</i>	<i>Annual grass weeds</i>	<i>Annual bl weeds & annual grass weeds</i>	<i>Couch</i>	<i>Couch & desiccation</i>	<i>Wild oats</i>	<i>Pasture-kill</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Bromoxynil/diflufenican/ioxynil	793	0	169	0	0	0	0	218	250	0	1,429	2
Bromoxynil/ioxynil	752	0	0	0	0	0	0	0	316	0	1,068	2
Bromoxynil/ioxynil/mecoprop	1,622	0	0	0	0	0	0	0	243	0	1,865	3
Cyanazine/terbuthylazine	203	0	0	0	0	0	0	0	1,063	0	1,266	2
Dicamba/mecoprop	1,260	0	0	0	0	0	0	0	0	0	1,260	2
Diclofop-methyl/fenoxaprop-P-ethyl	0	0	0	0	0	369	0	0	283	0	652	1
Difenzoquat	0	0	0	0	0	216	0	0	453	0	669	1
Diflufenican/isoproturon	3,221	0	9,344	0	0	254	0	10,781	7,623	0	31,223	49
Diflufenican/trifluralin	155	0	587	0	0	0	0	0	1,127	0	1,869	3
Flamprop-M-isopropyl	0	0	0	0	0	99	0	0	0	0	99	+
Fluoroglycofen-ethyl/isoproturon	0	0	321	0	0	0	0	738	269	0	1,329	2
Fluroxypyr	1,141	0	0	0	0	0	0	76	0	0	1,217	2
Glyphosate	0	0	0	3,210	496	0	1,366	0	0	0	5,072	8
Isoproturon	1,593	1,436	8,678	0	0	0	0	4,417	4,285	0	20,409	32
Isoproturon/pendimethalin	1,658	0	2,121	0	0	0	0	705	1,277	0	5,760	9
Isoproturon/trifluralin	0	0	703	0	0	0	0	171	0	0	874	1
MCPA	148	0	0	0	0	0	0	0	70	0	218	+
Mecoprop	1,866	0	0	0	0	0	0	1,198	1,103	0	4,168	7
Mecoprop-P	6,990	0	0	0	0	0	0	3,455	2,613	0	13,058	19

cont....

TABLE 6 Winter barley (continued)*Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated*

Herbicides	Annual bl weeds	Annual grass weeds	Annual bl weeds & annual grass weeds	Couch	Couch & desiccation	Wild oats	Pasture-kill	General weed control	No reason given	Growth regulation	Total spray area	% of crop treated
Metsulfuron-methyl	6,999	0	0	0	0	0	0	929	97	0	8,025	12
Metsulfuron-methyl/ thifensulfuron-methyl	1,061	0	0	0	0	0	0	529	0	0	1,589	3
Pendimethalin	756	0	2,996	0	0	431	0	3,217	171	0	7,570	12
Pendimethalin/simazine	565	0	924	0	0	0	0	0	0	0	1,489	2
Thifensulfuron-methyl/ tribenuron-methyl	0	0	0	0	0	0	0	0	226	0	226	+
Tralkoxydim	0	0	0	0	0	807	0	0	0	0	807	1
Triasulfuron	1,962	0	0	0	0	0	0	0	0	0	1,962	3
Tribenuron-methyl	965	0	0	0	0	0	0	0	0	0	965	2
Trifluralin	727	0	1,039	0	0	0	0	2,454	858	0	5,078	8
All herbicides	34,438	1,436	26,882	3,210	496	2,176	1,366	28,888	22,326	0	121,217	97
Growth regulators												
2-chloroethylphosphonic acid	0	0	0	0	0	0	0	0	0	15,994	15,994	23
2-chloroethylphosphonic acid/ chlormequat	0	0	0	0	0	0	0	0	0	7,977	7,977	12
2-chloroethylphosphonic acid/ mepiquat chloride	0	0	0	0	0	0	0	0	0	14,273	14,273	21
Chlormequat	0	0	0	0	0	0	0	0	0	36,949	36,949	52
Chlormequat/choline chloride	0	0	0	0	0	0	0	0	0	9,377	9,377	14
Trinexapac-ethyl	0	0	0	0	0	0	0	0	0	2,164	2,164	3
All growth regulators	0	0	0	0	0	0	0	0	0	86,735	86,735	81
Area planted (ha)												63,566

‘+’ = < 0.5%

● **TABLE 7 Spring barley**

Insecticides and molluscicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Leather-jackets</i>	<i>Aphids</i>	<i>Wheat bulb fly</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Chlorpyrifos	4,918	0	26	85	5,029	2
Dimethoate	0	475	0	0	475	+
Lambda-cyhalothrin	0	621	0	0	621	+
Quinalphos	55	0		0	55	+
<i>All insecticides</i>	4,973	1,096	26	85	6,179	2
Area planted (ha)						260,726
<i>Molluscicides</i>						
None recorded						

'+' = < 0.5%

● **TABLE 8 Spring barley**

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

Fungicides	Mildew	Rhyncho- sporium	Mildew & rhyncho- sporium	Net blotch	Head spray	Disease precaution	Foliar feed	Foliar feed & mildew	No reason given	Total spray area	% of crop treated
Carbendazim	44	5,022	949	0	971	9,666	0	0	2,103	18,755	7
Carbendazim/chlorothalonil	0	0	0	0	0	2,715	0	0	450	3,165	1
Carbendazim/flusilazole	4,453	6,258	3,684	0	0	17,030	0	0	5,871	37,296	13
Carbendazim/prochloraz	0	0	197	0	0	0	0	0	0	197	+
Carbendazim/propiconazole	5,563	2,870	409	0	0	9,303	0	0	762	18,907	6
Chlorothalonil	0	0	0	0	0	289	0	0	0	289	+
Chlorothalonil/fenpropimorph	0	0	0	0	0	292	0	0	712	1,003	+
Copper oxychloride	0	0	0	0	0	0	2,033	0	0	2,033	1
Cyproconazole	183	0	600	0	0	0	0	0	600	1,383	+
Cyproconazole/prochloraz	0	0	0	0	0	0	0	0	246	246	+
Epoxiconazole	0	0	0	0	0	2,194	0	0	0	2,194	1
Epoxiconazole/fenpropimorph	0	0	0	0	0	1,503	0	0	0	1,503	1
Fenpropidin	8,615	0	0	0	0	4,011	0	0	161	12,787	5
Fenpropidin/fenpropimorph	0	0	0	0	0	1,923	0	0	0	1,923	1
Fenpropidin/prochloraz	0	0	0	0	0	332	0	0	0	332	+
Fenpropidin/propiconazole	1,282	146	0	0	0	1,499	0	0	2,396	5,324	2
Fenpropimorph	37,366	0	6,655	0	0	30,183	0	0	6,850	81,053	25
Fenpropimorph/flusilazole	0	0	0	0	0	459	0	0	0	459	+
Fenpropimorph/prochloraz	1,121	1,508	1,039	0	0	374	0	0	1,432	5,474	2
Fenpropimorph/propiconazole	2,518	2,877	0	0	0	361	0	0	0	5,756	2
Fenpropimorph/tridemorph	6,067	0	2,449	0	0	18,012	0	0	1,558	28,085	8

cont....

TABLE 8 Spring barley (continued)

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Fungicides</i>	<i>Mildew</i>	<i>Rhyncho- sporium</i>	<i>Mildew & rhyncho- sporium</i>	<i>Net blotch</i>	<i>Head spray</i>	<i>Disease precaution</i>	<i>Foliar feed</i>	<i>Foliar feed & mildew</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Flusilazole	10,143	13,846	10,891	421	0	27,835	0	0	10,620	73,756	23
Flusilazole/tridemorph	375	424	2,910	0	0	3,677	0	0	0	7,387	2
Flutriafol	0	0	0	0	0	553	0	0	0	553	+
Mancozeb	0	0	0	0	0	0	0	0	1,217	1,217	+
Maneb	0	138	971	0	971	2,610	0	0	0	4,690	1
Nuarimol	0	0	251	0	0	0	0	0	0	251	+
Prochloraz	222	0	0	0	0	1,702	0	0	794	2,718	1
Propiconazole	8,325	5,353	2,871	0	0	19,103	0	0	5,694	41,346	14
Propiconazole/tridemorph	1,215	0	0	0	0	0	0	0	899	2,114	1
Sulphur	2,143	0	0	0	0	0	12,697	34	6,677	21,551	7
Tebuconazole	98	0	0	0	0	0	0	0	133	231	+
Tebuconazole/triadimenol	86	444	0	0	0	0	0	0	0	530	+
Triadimenol	1,973	0	210	0	0	562	0	0	1,291	4,036	1
Triadimenol/tridemorph	1,236	0	5,327	0	0	6,369	0	0	483	13,414	5
Tridemorph	8,806	0	0	0	0	1,554	0	0	1,384	11,744	4
Unspecified fungicide	0	289	0	0	0	0	0	0	0	289	+
All fungicides	102,996	39,176	39,413	421	1,941	167,959	14,729	34	52,333	419,003	81
Area planted (ha)											260,726

‘+’ = < 0.5%

TABLE 9 Spring barley*Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated*

Herbicides	Annual bl weeds	Annual grass weeds	Couch	Wild oats	Volunteer rape	Desicc- ation	Pasture- kill	General weed control	No reason given	Growth regulation	Total spray area	% of crop treated
2,4-DB/benazolin/MCPA	4,039	0	0	0	0	0	0	476	717	0	5,232	2
2,4-DB/bentazone/cyanazine	1,196	0	0	0	136	0	0	0	63	0	1,394	1
2,4-DB/linuron/MCPA	6,072	0	0	0	0	0	0	0	37	0	6,110	2
Benazolin/bromoxynil/ioxynil	2,297	0	0	0	0	0	0	0	2,288	0	4,585	2
Bentazone/MCPA/MCPB	2,444	0	0	0	0	0	0	365	323	0	3,132	1
Bromoxynil/fluroxypyr	2,513	0	0	0	0	0	0	0	0	0	2,513	1
Bromoxynil/fluroxypyr/ioxynil	1,007	0	0	0	0	0	0	0	0	0	1,007	+
Bromoxynil/ioxynil	29,405	0	0	0	0	0	0	0	2,379	0	31,784	12
Bromoxynil/ioxynil/mecoprop	12,207	0	0	0	0	0	0	0	3,154	0	15,361	6
Bromoxynil/ioxynil/triasulfuron	7,782	0	0	0	0	0	0	703	1,783	0	10,267	4
Cyanazine	227	0	0	0	0	0	0	0	0	0	227	+
Dicamba/MCPA/mecoprop	4,958	0	0	0	0	0	0	0	774	0	5,732	2
Dicamba/mecoprop	2,038	0	0	0	0	0	0	0	0	0	2,038	1
Dicamba/mecoprop-P	9,983	0	0	0	0	0	0	647	15,318	0	25,948	10
Dicamba/triasulfuron	1,777	0	0	0	0	0	0	0	533	0	2,310	1
Dichlorprop/MCPA	0	0	0	0	0	0	0	0	136	0	136	+
Diclofop-methyl/fenoxaprop-P-ethyl	0	0	0	1,703	0	0	0	0	0	0	1,703	1
Difenzoquat	0	0	0	1,075	0	0	0	0	0	0	1,075	+
Flamprop-M-isopropyl	0	0	0	4,075	0	0	0	0	0	0	4,075	2
Fluroxypyr	2,163	0	0	0	0	0	0	0	186	0	2,349	1
Glyphosate	0	0	17,398	0	0	1,009	138	302	329	0	19,175	7
Isoproturon	0	358	0	0	0	0	0	0	0	0	358	+
MCPA	39,677	0	0	0	0	0	0	982	4,257	0	44,916	17
MCPA/MCPB	1,438	0	0	0	0	0	0	0	499	0	1,938	1

cont....

TABLE 9 Spring barley (continued)

Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides</i>	<i>Annual bl weeds</i>	<i>Annual grass weeds</i>	<i>Couch</i>	<i>Wild oats</i>	<i>Volunteer rape</i>	<i>Desiccation</i>	<i>Pasture-kill</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Mecoprop	19,271	0	0	0	1,085	0	0	1,034	1,489	0	22,879	9
Mecoprop-P	69,169	0	0	0	1,950	0	0	4,403	10,010	0	85,532	33
Mecoprop-P/triasulfuron	294	0	0	0	0	0	0	0	0	0	294	+
Metsulfuron-methyl	91,948	0	0	0	0	0	0	1,961	3,745	0	97,655	37
Metsulfuron-methyl/ thifensulfuron-methyl	57,758	0	0	0	0	0	0	1,847	1,856	0	61,461	24
Thifensulfuron-methyl/ tribenuron-methyl	14,434	0	0	0	0	0	0	0	6,773	0	21,207	8
Tralkoxydim	0	0	0	11,787	0	0	0	0	73	0	11,860	5
Triasulfuron	5,039	0	0	0	0	0	0	0	0	0	5,039	2
Tribenuron-methyl	8,999	0	0	0	0	0	0	0	0	0	8,999	3
Unspecified herbicide	62	0	0	0	0	536	0	0	0	0	599	+
All herbicides	398,200	358	17,398	18,640	3,171	1,545	138	12,719	56,722	0	508,891	99
Growth regulators												
2-chloroethylphosphonic acid	0	0	0	0	0	0	0	0	0	3,625	3,625	1
2-chloroethylphosphonic acid/ chlormequat	0	0	0	0	0	0	0	0	0	2,292	2,292	1
2-chloroethylphosphonic acid/ mepiquat chloride	0	0	0	0	0	0	0	0	0	5,707	5,707	2
Chlormequat	0	0	0	0	0	0	0	0	0	17,371	17,371	7
Chlormequat/choline chloride	0	0	0	0	0	0	0	0	0	397	397	+
Trinexapac-ethyl	0	0	0	0	0	0	0	0	0	712	712	+
All growth regulators	0	0	0	0	0	0	0	0	0	30,103	30,103	10
Area planted (ha)												260,726

‘+’ = < 0.5%

TABLE 11 Winter wheat

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Fungicides</i>	<i>Mildew</i>	<i>Septoria</i>	<i>Mildew & septoria</i>	<i>Head spray</i>	<i>Mixed diseases</i>	<i>Disease precaution</i>	<i>Foliar feed</i>	<i>Foliar feed & mildew</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Anilazine	0	0	0	298	0	368	0	0	0	666	1
Carbendazim	375	1,074	0	3,578	0	14,792	0	0	5,684	25,502	24
Carbendazim/cyproconazole	0	442	0	0	0	0	0	0	0	442	+
Carbendazim/flusilazole	813	167	0	0	1,205	8,502	0	0	2,948	13,635	13
Carbendazim/flutriafol	0	1,258	0	0	0	216	0	0	2,733	4,207	4
Carbendazim/mancozeb	0	0	118	0	0	0	0	0	1,066	1,185	1
Carbendazim/maneb	340	0	0	1,367	0	550	0	0	0	2,256	2
Carbendazim/propiconazole	1,797	825	0	1,175	0	4,025	0	0	0	7,822	6
Chlorothalonil	253	8,500	389	2,773	2,077	35,618	0	0	10,949	60,559	43
Chlorothalonil/cyproconazole	0	0	0	0	0	840	0	0	0	840	1
Chlorothalonil/fenpropimorph	0	0	867	0	0	5,705	0	0	0	6,572	3
Chlorothalonil/flutriafol	1,086	0	0	1,418	771	13,084	0	0	7,611	23,969	21
Chlorothalonil/propiconazole	0	0	0	0	0	606	0	0	721	1,327	1
Copper oxychloride	0	0	0	0	0	0	250	0	0	250	+
Cyproconazole	0	0	0	0	0	16,504	0	0	3,109	19,612	16
Cyproconazole/prochloraz	1,644	937	1,101	426	5,007	17,476	0	0	9,204	35,796	29
Difenoconazole	0	340	0	8,433	0	14,418	0	0	2,809	25,999	25
Difenoquat	1,038	0	0	0	0	0	0	0	0	1,038	1
Epoxiconazole	674	962	1,118	1,082	694	18,969	0	0	3,312	26,811	25
Epoxiconazole/fenpropimorph	0	0	0	0	0	2,358	0	0	1,657	4,015	4
Epoxiconazole/tridemorph	0	0	0	380	0	1,913	0	0	0	2,293	2
Fenbuconazole/prochloraz	0	0	0	0	0	333	0	0	0	333	+
Fenbuconazole/propiconazole	0	0	302	0	0	0	0	0	1,644	1,946	2

cont....

TABLE 11 Winter wheat (continued)*Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated*

<i>Fungicides</i>	<i>Mildew</i>	<i>Septoria</i>	<i>Mildew & septoria</i>	<i>Head spray</i>	<i>Mixed diseases</i>	<i>Disease precaution</i>	<i>Foliar feed</i>	<i>Foliar feed & mildew</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Fenpropidin	15,673	320	1,690	2,422	2,206	39,948	0	0	17,025	79,284	50
Fenpropidin/fenpropimorph	253	0	0	249	0	5,683	0	0	1,017	7,202	6
Fenpropidin/prochloraz	412	0	0	0	744	5,645	0	0	674	7,475	7
Fenpropidin/propiconazole	0	84	0	1,367	0	1,477	0	0	0	2,928	2
Fenpropidin/tebuconazole	0	0	0	0	0	422	0	0	0	422	+
Fenpropimorph	3,098	0	0	3,038	314	14,004	0	0	9,031	29,486	22
Fenpropimorph/flusilazole	0	0	340	0	0	0	0	0	0	340	+
Fenpropimorph/flusilazole/tridemorph	0	431	0	0	0	4,260	0	0	0	4,691	4
Fenpropimorph/prochloraz	359	0	0	359	563	554	0	0	1,504	3,340	2
Fenpropimorph/propiconazole	670	0	0	0	0	0	0	0	0	670	1
Fenpropimorph/tridemorph	2,386	0	0	741	0	4,915	0	0	1,029	9,071	7
Flusilazole	314	944	1,403	0	1,038	7,191	0	0	2,420	13,311	12
Flutriafol	0	0	750	674	0	7,402	0	0	5,690	14,515	9
Flutriafol/iprodione	0	0	0	0	0	2,718	0	0	0	2,718	1
Mancozeb	0	670	0	1,405	0	6,287	0	0	4,672	13,034	12
Maneb	0	825	0	2,054	563	10,564	0	0	1,613	15,619	11
Nuarimol	0	408	539	0	0	1,117	0	0	1,272	3,335	3
Prochloraz	0	0	0	0	0	1,576	0	0	998	2,575	2
Propiconazole	0	0	0	0	0	979	0	0	332	1,312	1
Propiconazole/tebuconazole	0	0	0	0	0	761	0	0	0	761	1
Sulphur	0	0	0	0	0	772	12,447	3,717	4,399	21,334	17

cont....

TABLE 11 Winter wheat (continued)

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Fungicides</i>	<i>Mildew</i>	<i>Septoria</i>	<i>Mildew & septoria</i>	<i>Head spray</i>	<i>Mixed diseases</i>	<i>Disease precaution</i>	<i>Foliar feed</i>	<i>Foliar feed & mildew</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Tebuconazole	1,119	1,034	991	1,524	1,038	10,071	0	0	3,712	19,490	16
Tebuconazole/triadimenol	389	431	2,382	5,652	0	10,565	0	0	4,460	23,879	21
Triadimenol	0	0	0	0	302	1,788	0	0	713	2,803	2
Triadimenol/tridemorph	3,117	0	0	298	0	3,711	0	0	0	7,126	6
Tridemorph	0	0	0	1,958	0	395	0	0	0	2,353	2
Unspecified fungicide	0	0	0	0	0	0	0	0	208	208	+
All fungicides	35,810	19,652	11,989	42,670	16,524	299,080	12,697	3,717	114,218	556,356	100
Area planted (ha)											103,389

'+' = < 0.5%

TABLE 12 Winter wheat*Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated*

Herbicides	Annual bl weeds	Annual grass weeds	Annual bl weeds & annual grass weeds	Wild oats	Couch	Pasture-kill	General weed control	No reason given	Growth regulation	Total spray area	% of crop treated
Amidosulfuron	359	0	0	0	0	0	0	0	0	359	+
Bromoxynil/diflufenican/ioxynil	0	0	0	0	0	0	187	741	0	929	1
Bromoxynil/fluroxypyr	1,439	0	0	0	0	0	0	0	0	1,439	1
Bromoxynil/fluroxypyr/ioxynil	288	0	0	0	0	0	0	0	0	288	+
Bromoxynil/ioxynil	2,320	0	0	0	0	0	649	415	0	3,385	3
Bromoxynil/ioxynil/mecoprop	4,637	0	0	0	0	0	0	416	0	5,053	5
Bromoxynil/ioxynil/triasulfuron	1,404	0	0	0	0	0	368	1,657	0	3,430	3
Cyanazine/terbuthylazine	216	0	0	0	0	0	1,334	582	0	2,133	2
Dicamba/mecoprop	539	0	0	0	0	0	0	0	0	539	1
Dicamba/mecoprop-P	830	0	0	0	0	0	0	480	0	1,310	1
Dicamba/triasulfuron	695	0	0	0	0	0	0	0	0	695	1
Difenzoquat	0	0	0	1,136	0	0	0	1,591	0	2,727	2
Diflufenican/isoproturon	3,940	0	13,532	151	0	0	12,270	10,140	0	40,033	39
Diflufenican/trifluralin	1,697	0	538	0	0	0	0	446	0	2,682	3
Fenoxaprop-ethyl	0	0	0	1,181	0	0	0	0	0	1,181	1
Fenoxaprop-P-ethyl	0	0	0	3,832	0	0	0	0	0	3,832	4
Flamprop-M-isopropyl	0	0	0	232	0	0	0	0	0	232	+
Fluoroglycofen-ethyl/isoproturon	0	0	0	0	0	0	426	0	0	426	+
Fluroxypyr	2,832	0	0	0	0	0	91	201	0	3,123	3
Glyphosate	0	0	0	0	2,411	311	0	0	0	2,722	3
Imazamethabenz-methyl	0	0	0	67	0	0	0	0	0	67	+

cont....

TABLE 12 Winter wheat (continued)

Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides</i>	<i>Annual bl weeds</i>	<i>Annual grass weeds</i>	<i>Annual bl weeds & annual grass weeds</i>	<i>Wild oats</i>	<i>Couch</i>	<i>Pasture-kill</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Isoproturon	2,170	1,327	7,780	0	0	0	9,593	5,286	0	26,156	25
Isoproturon/pendimethalin	2,982	0	1,268	0	0	0	295	2,012	0	6,556	6
Isoproturon/trifluralin	0	0	971	0	0	0	606	0	0	1,577	2
MCPA	109	0	0	0	0	0	0	87	0	197	+
Mecoprop	8,531	0	0	0	0	0	4,692	4,361	0	17,583	17
Mecoprop-P	21,196	0	0	0	0	0	9,367	5,176	0	35,740	32
Metsulfuron-methyl	19,680	0	0	0	0	0	2,182	1,316	0	23,178	22
Metsulfuron-methyl/ thifensulfuron-methyl	12,823	0	0	0	0	0	2,819	1,463	0	17,105	17
Pendimethalin	340	0	1,815	118	0	0	3,029	1,188	0	6,491	6
Pendimethalin/simazine	376	0	412	0	0	0	0	0	0	788	1
Thifensulfuron-methyl/ tribenuron-methyl	777	0	0	0	0	0	0	620	0	1,397	1
Tralkoxydim	0	0	0	1,086	0	0	0	0	0	1,086	1
Triasulfuron	1,282	0	0	0	0	0	0	0	0	1,282	1
Tribenuron-methyl	2,543	0	0	0	0	0	0	0	0	2,543	2
Trifluralin	655	242	1,123	0	0	0	5,074	406	0	7,499	7
Unspecified herbicide	0	0	0	0	0	0	0	42	0	42	+
All herbicides	94,661	1,569	27,439	7,801	2,411	311	52,982	38,629	0	225,803	99

cont....

TABLE 12 Winter wheat (continued)

Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Growth regulators</i>	<i>Annual bl weeds</i>	<i>Annual grass weeds</i>	<i>Annual bl weeds & annual grass weeds</i>	<i>Wild oats</i>	<i>Couch</i>	<i>Pasture- kill</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
2-chloroethylphosphonic acid	0	0	0	0	0	0	0	0	13,118	13,118	13
2-chloroethylphosphonic acid/ chlormequat	0	0	0	0	0	0	0	0	9,284	9,284	9
2-chloroethylphosphonic acid/ mepiquat chloride	0	0	0	0	0	0	0	0	8,727	8,727	8
Chlormequat	0	0	0	0	0	0	0	0	86,055	86,055	64
Chlormequat/choline chloride	0	0	0	0	0	0	0	0	22,842	22,842	18
Chlormequat/choline chloride/ imazaquin	0	0	0	0	0	0	0	0	10,614	10,614	9
Trinexapac-ethyl	0	0	0	0	0	0	0	0	1,319	1,319	1
Unspecified growth regulator	0	0	0	0	0	0	0	0	738	738	1
<i>All growth regulators</i>	0	0	0	0	0	0	0	0	152,697	152,697	92
Area planted (ha)											103,389

'+' = < 0.5%

● **TABLE 13 Winter oats**
Insecticides and molluscicides, the reasons for their use
(spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Aphids</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Esfenvalerate	727	727	12
<i>All insecticides</i>	727	727	12
Area planted (ha)			6,161
<i>Molluscicides</i>			
None recorded			

TABLE 14 Winter oats
Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Fungicides</i>	<i>Mildew</i>	<i>Foliar feed</i>	<i>Disease precaution</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Carbendazim/flusilazole	114	0	200	314	5
Cyproconazole	0	0	965	965	16
Fenpropidin	1,092	0	175	1,267	21
Fenpropimorph	3,256	0	2,544	5,800	64
Fenpropimorph/tridemorph	0	0	582	582	6
Flusilazole	0	0	175	175	3
Propiconazole	848	0	0	848	14
Propiconazole/tridemorph	0	0	428	428	7
Sulphur	0	200	0	200	3
Triadimenol	0	0	418	418	7
Triadimenol/tridemorph	502	0	965	1,468	20
Tridemorph	1,078	0	0	1,078	9
All fungicides	6,891	200	6,452	13,543	92
Area planted (ha)					6,161

TABLE 15 Winter oats

Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides</i>	<i>Annual bl weeds</i>	<i>Annual bl weeds & annual grass weeds</i>	<i>General weed control</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Bromoxynil/ioxynil	841	0	0	0	841	14
Bromoxynil/ioxynil/mecoprop	1,002	0	0	0	1,002	16
Diflufenican/isoproturon	0	333	0	0	333	5
Diflufenican/terbuthylazine	0	251	0	0	251	4
Fluroxypyr	36	0	0	0	36	1
Mecoprop	251	0	41	0	292	5
Mecoprop-P	2,011	0	358	0	2,369	36
Methabenzthiazuron	0	415	0	0	415	7
Metsulfuron-methyl	2,785	0	399	0	3,184	40
Terbutryn	795	0	0	0	795	13
Triasulfuron	415	0	0	0	415	7
All herbicides	8,136	999	797	0	9,933	86
Growth regulators						
2-chloroethylphosphonic acid/mepiquat chloride	0	0	0	841	841	14
Chlormequat	0	0	0	4,502	4,502	59
Chlormequat/choline chloride	0	0	0	1,219	1,219	20
All growth regulators	0	0	0	6,786	6,786	74
Area planted (ha)						6,161

● **TABLE 16 Spring oats**
Insecticides and molluscicides, the reasons for their use
(spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Aphids</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Chlorpyrifos	0	59	59	+
Deltamethrin	226	0	226	2
<i>All insecticides</i>	226	59	285	2
Area planted (ha)				13,789
<i>Molluscicides</i>				
None recorded				

'+' = < 0.5%

TABLE 17 Spring oats

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Fungicides</i>	<i>Mildew</i>	<i>Mildew & rust</i>	<i>Disease precaution</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Carbendazim/propiconazole	0	0	258	0	258	2
Fenpropidin/propiconazole	0	0	143	0	143	1
Fenpropimorph	2,403	0	2,534	0	4,937	26
Propiconazole	399	715	0	0	1,114	8
Sulphur	339	0	0	0	339	2
Tebuconazole	264	0	0	0	264	2
Triadimenol	0	0	0	275	275	1
Triadimenol/tridemorph	992	0	467	226	1,685	11
Tridemorph	2,053	0	258	137	2,448	18
Unspecified fungicide	1,785	0	0	0	1,785	13
<i>All fungicides</i>	8,235	715	3,660	638	13,248	57
Area planted (ha)						13,789

● **TABLE 18 Spring oats**

Herbicides and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides</i>	<i>Annual bl weeds</i>	<i>Couch</i>	<i>No reason given</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
2,4-DB/benazolin/MCPA	1,263	0	36	0	1,299	9
2,4-DB/linuron/MCPA	447	0	0	0	447	3
2,4-DB/MCPA	233	0	0	0	233	2
Bromoxynil/ioxynil	933	0	56	0	990	7
Bromoxynil/ioxynil/mecoprop	501	0	50	0	551	4
Dicamba/MCPA/mecoprop	538	0	0	0	538	4
Dicamba/mecoprop-P	1,113	0	101	0	1,215	9
Glyphosate	0	35	0	0	35	+
MCPA	3,419	0	85	0	3,505	25
MCPA/MCPB	396	0	0	0	396	3
Mecoprop	2,840	0	0	0	2,840	21
Mecoprop-P	1,670	0	34	0	1,704	12
Metsulfuron-methyl	6,600	0	90	0	6,690	49
Metsulfuron-methyl/ thifensulfuron-methyl	167	0	0	0	167	1
Triasulfuron	258	0	0	0	258	2
<i>All herbicides</i>	20,378	35	452	0	20,864	83
<i>Growth regulators</i>						
2-chloroethylphosphonic acid	0	0	0	44	44	+
Chlormequat	0	0	0	4,220	4,220	30
Chlormequat/choline chloride	0	0	0	1,906	1,906	14
<i>All growth regulators</i>	0	0	0	6,170	6,170	44
Area planted (ha)						13,789

‘+’ = < 0.5%

● **TABLE 19 Winter oilseed rape**

Insecticides and molluscicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Pollen beetle</i>	<i>Seed weevil</i>	<i>Pollen beetle & seed weevil</i>	<i>Aphids</i>	<i>Aphids & pollen beetle</i>	<i>Flea beetle</i>	<i>No reason given</i>	<i>Slugs</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Alpha-cypermethrin	4,387	1,009	0	0	0	163	692	0	6,250	20
Cypermethrin	6,099	1,410	524	1,288	194	564	2,999	0	13,079	39
Deltamethrin	174	0	0	0	0	0	0	0	174	1
Gamma-HCH	108	0	0	0	0	0	0	0	108	+
Lambda-cyhalothrin	1,878	0	0	0	0	0	0	0	1,878	6
Pirimicarb	560	0	0	0	0	0	0	0	560	2
<i>All insecticides</i>	13,205	2,419	524	1,288	194	727	3,690	0	22,048	67
<i>Molluscicides</i>										
Metaldehyde	0	0	0	0	0	0	0	1,141	1,141	4
Methiocarb	0	0	0	0	0	0	0	1,864	1,864	5
Unspecified molluscicide	0	0	0	0	0	0	0	231	231	1
<i>All molluscicides</i>	0	0	0	0	0	0	0	3,235	3,235	10
Area planted (ha)										30,521

‘+’ = < 0.5%

TABLE 21 Winter oilseed rape

Herbicides, desiccants and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides/desiccants</i>	<i>Annual bl weeds</i>	<i>Annual grass weeds</i>	<i>Annual bl weeds & annual grass weeds</i>	<i>Volunteer cereals</i>	<i>Volunteer cereals & wild oats</i>	<i>Desiccation</i>	<i>Couch & desiccation</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Benazolin/clopyralid	6,022	0	0	0	0	0	0	1,870	809	0	8,700	29
Carbetamide	0	330	122	0	0	0	0	0	0	0	452	1
Clopyralid	100	0	0	0	0	0	0	0	444	0	544	2
Cyanazine	228	0	0	0	0	0	0	0	215	0	442	1
Cycloxydim	0	785	0	1,057	128	0	0	0	188	0	2,158	7
Diquat	0	0	0	0	0	1,795	0	0	0	0	1,795	6
Fluazifop-P-butyl	0	0	0	261	0	0	0	0	785	0	1,046	3
Glufosinate-ammonium	0	0	0	0	0	1,427	0	0	0	0	1,427	5
Glyphosate	0	0	0	0	0	2,422	433	0	0	0	2,855	9
Metazachlor	4,255	0	872	0	0	0	0	7,004	4,606	0	16,737	55
Propaquizafop	0	1,445	0	1,333	0	0	0	0	173	0	2,952	10
Propyzamide	897	971	1,855	0	888	0	0	3,970	2,799	0	11,380	37
Quizalofop-ethyl	0	0	0	604	0	0	0	0	88	0	692	2
Trifluralin	324	0	0	0	0	0	0	99	101	0	524	2
All herbicides/desiccants	11,825	3,531	2,849	3,256	1,017	5,644	433	12,943	10,206	0	51,703	95
Growth regulators												
Chlormequat	0	0	0	0	0	0	0	0	0	304	304	1
Chlormequat/choline chloride	0	0	0	0	0	0	0	0	0	2,384	2,384	8
All growth regulators	0	0	0	0	0	0	0	0	0	2,687	2,687	9
Area planted (ha)												30,521

● **TABLE 23 Spring oilseed rape**

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Fungicides</i>	<i>Alternaria & Sclerotinia</i>	<i>Light leaf spot</i>	<i>Sclerotinia</i>	<i>Disease precaution</i>	<i>Foliar feed</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Carbendazim	0	0	97	0	0	0	97	1
Carbendazim/iprodione	0	0	0	396	0	0	396	2
Carbendazim/vinclozolin	828	0	0	0	0	0	828	4
Prochloraz	0	250	0	0	0	0	250	1
Sulphur	0	0	0	0	4,224	373	4,597	20
Vinclozolin	0	0	97	0	0	0	97	1
<i>All fungicides</i>	828	250	194	396	4,224	373	6,264	21
Area planted (ha)								18,769

● **TABLE 25** *Seed potatoes*

Insecticides and molluscicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Aphids</i>	<i>Nematodes</i>	<i>Slugs</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Aldicarb	0	169	0	169	1
Alpha-cypermethrin	263	0	0	263	2
Cypermethrin	7,802	0	0	7,802	27
Deltamethrin/heptenophos	14,631	0	0	14,631	39
Deltamethrin/pirimicarb	20,836	0	0	20,836	53
Demeton-S-methyl	7,610	0	0	7,610	23
Dimethoate	1,785	0	0	1,785	11
Lambda-cyhalothrin	10,556	0	0	10,556	29
Oxydemeton-methyl	1,089	0	0	1,089	2
Pirimicarb	9,765	0	0	9,765	29
<i>All insecticides</i>	74,337	169	0	74,506	99
<i>Molluscicides</i>					
Metaldehyde	0	0	368	368	2
Methiocarb	0	0	1,147	1,147	6
<i>All molluscicides</i>	0	0	1,515	1,515	8
Area planted (ha)					15,718

TABLE 26 Seed potatoes
Fungicides, the reasons for their use (spray hectares of formulations)
and the percentage of crop treated

<i>Fungicides</i>	<i>Blight</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Benalaxyl/mancozeb	3,368	3,368	19
Chlorothalonil/cymoxanil	763	763	2
Chlorothalonil/propamocarb hydrochloride	106	106	1
Cymoxanil/mancozeb	14,266	14,266	45
Cymoxanil/mancozeb/oxadixyl	9,355	9,355	37
Dimethomorph/mancozeb	3,058	3,058	13
Fentin acetate/maneb	1,265	1,265	6
Fentin hydroxide	6,309	6,309	17
Fluazinam	10,062	10,062	40
Mancozeb	13,082	13,082	33
Mancozeb/metalaxyl	5,970	5,970	25
Mancozeb/oxadixyl	3,997	3,997	9
Mancozeb/propamocarb hydrochloride	3,030	3,030	10
Maneb	2,823	2,823	13
Manganese zinc ethylene-bisdithiocarbamate/ofurace	545	545	2
All fungicides	78,000	78,000	97
Area planted (ha)			15,718

TABLE 27 Seed potatoes

Herbicides and desiccants, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides/desiccants</i>	<i>Annual bl weeds</i>	<i>Annual bl weeds & annual grass weeds</i>	<i>Annual bl weeds & volunteer rape</i>	<i>General weed control</i>	<i>Desiccation</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Diquat	0	0	0	0	415	0	415	3
Diquat/paraquat	388	0	237	1,152	0	0	1,777	11
Linuron	5,718	100	0	3,723	0	743	10,284	65
Metribuzin	572	428	237	2,618	0	1,471	5,325	34
Paraquat	5,901	100	0	4,821	0	1,088	11,910	76
Sulphuric acid	0	0	0	0	26,781	0	26,781	97
All herbicides/desiccants	12,580	627	474	12,314	27,196	3,302	56,492	100
Area planted (ha)								15,718

TABLE 28 Ware potatoes
*Insecticides and molluscicides, the reasons for their use (spray hectares of formulations)
 and the percentage of crop treated*

<i>Insecticides</i>	<i>Aphids</i>	<i>Nematodes</i>	<i>No reason given</i>	<i>Slugs</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Aldicarb	0	133	378	0	511	4
Cypermethrin	4,988	0	0	0	4,988	24
Deltamethrin/heptenophos	7,416	0	0	0	7,416	27
Deltamethrin/pirimicarb	2,196	0	0	0	2,196	14
Demeton-S-methyl	1,922	0	0	0	1,922	9
Dimethoate	798	0	0	0	798	4
Lambda-cyhalothrin	3,665	0	0	0	3,665	18
Pirimicarb	6,911	0	0	0	6,911	24
<i>All insecticides</i>	27,896	133	378	0	28,407	75
<i>Molluscicides</i>						
Metaldehyde	0	0	0	1,466	1,466	8
Methiocarb	0	0	0	1,863	1,863	7
<i>All molluscicides</i>	0	0	0	3,329	3,329	11
Area planted (ha)						13,579

TABLE 29 Ware potatoes
Fungicides, the reasons for their use (spray hectares of formulations)
and the percentage of crop treated

<i>Fungicides</i>	<i>Blight</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Benalaxyl/mancozeb	1,496	1,496	8
Chlorothalonil	283	283	1
Chlorothalonil/cymoxanil	318	318	2
Cymoxanil/mancozeb	9,126	9,126	36
Cymoxanil/mancozeb/oxadixyl	10,485	10,485	41
Dimethomorph/mancozeb	2,157	2,157	11
Fentin acetate/maneb	2,235	2,235	11
Fentin hydroxide	4,685	4,685	24
Fluazinam	12,412	12,412	42
Mancozeb	9,399	9,399	25
Mancozeb/metalaxyl	4,436	4,436	20
Mancozeb/oxadixyl	1,111	1,111	1
Mancozeb/propamocarb hydrochloride	1,853	1,853	6
Maneb	9,746	9,746	20
Manganese zinc ethylene-bisdithiocarbamate/ofurace	619	619	3
Unspecified fungicide	106	106	1
All fungicides	70,468	70,468	89
Area planted (ha)			13,579

TABLE 31 Combine Peas

Insecticides and molluscicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Aphids</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Cypermethrin	142	0	142	10
Deltamethrin	0	245	245	17
<i>All insecticides</i>	142	245	386	26
Area planted (ha)				1,458
<i>Molluscicides</i>				
None recorded				

TABLE 32 Combine peas

Fungicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Fungicides</i>	<i>Botrytis</i>	<i>Botrytis & myco-sphaerella</i>	<i>Downy mildew</i>	<i>Disease precaution</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Carbendazim	46	214	0	119	142	521	28
Carbendazim/iprodione	0	0	0	0	245	245	17
Carbendazim/vinclozolin	0	0	0	130	0	130	9
Chlorothalonil	254	214	0	0	142	609	34
Maneb	0	0	214	0	0	214	7
Sulphur	0	0	0	0	107	107	7
Vinclozolin	208	0	0	119	103	430	30
<i>All fungicides</i>	508	427	214	369	738	2,256	75
Area planted (ha)							1,458

TABLE 34 Set aside natural regeneration

Herbicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides</i>	<i>Couch</i>	<i>Couch & general weed control</i>	<i>Thistles</i>	<i>Docks & thistles</i>	<i>Volunteer rape</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Glufosinate-ammonium	0	0	0	0	0	1,160	0	1,160	3
Glyphosate	4,513	1,155	86	85	403	11,397	849	18,487	47
MCPA	0	0	398	0	0	314	0	712	2
Metsulfuron-methyl	0	0	48	0	0	0	0	48	+
Paraquat	0	0	0	0	0	71	0	71	+
Unspecified herbicide	0	0	0	0	0	175	0	175	+
All herbicides	4,513	1,155	532	85	403	13,117	849	20,653	51
Area planted (ha)									39,544

'+' = < 0.5%

TABLE 35 *Set aside grass*
Herbicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides</i>	<i>Annual bl weeds</i>	<i>Couch</i>	<i>Docks & thistles</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Total spray area</i>	<i>% of crop treated</i>
2,4-DB/benazolin/MCPA	306	0	0	247	94	647	3
2,4-DB/linuron/MCPA	261	0	0	0	0	261	1
Bentazone/MCPA/MCPB	0	0	0	473	84	557	2
Dicamba/MCPA/mecoprop	0	0	19	0	0	19	+
Dicamba/mecoprop-P	0	0	0	56	0	56	+
Glyphosate	0	35	0	0	0	35	+
MCPA	987	0	0	564	178	1,729	7
MCPA/MCPB	0	0	0	211	0	211	1
Mecoprop	942	0	0	132	0	1,075	4
Mecoprop-P	147	0	0	0	0	147	1
All herbicides	2,643	35	19	1,684	357	4,738	11
Area planted (ha)							25,152

‘+’ = < 0.5%

TABLE 36 *Set aside oilseed rape*

Insecticides and molluscicides, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Insecticides</i>	<i>Pollen beetle</i>	<i>Seed weevil</i>	<i>Aphids</i>	<i>Flea beetle</i>	<i>No reason given</i>	<i>Slugs</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Alpha-cypermethrin	890	213	0	0	0	0	1,103	30
Cypermethrin	286	33	193	0	183	0	695	18
Deltamethrin	239	0	0	0	0	0	239	6
Gamma-HCH	123	0	0	169	0	0	293	8
Lambda-cyhalothrin	1,166	0	0	0	0	0	1,166	31
All insecticides	2,705	246	193	169	183	0	3,496	83
Molluscicides								
Metaldehyde	0	0	0	0	0	104	104	3
All molluscicides	0	0	0	0	0	104	104	3
Area planted (ha)								3,721

TABLE 38 Set aside oilseed rape

Herbicides, desiccants and growth regulators, the reasons for their use (spray hectares of formulations) and the percentage of crop treated

<i>Herbicides/desiccants</i>	<i>Annual bl weeds</i>	<i>Annual grass weeds</i>	<i>Annual bl weeds & annual grass weeds</i>	<i>Wild oats</i>	<i>Couch</i>	<i>Volunteer cereals</i>	<i>Desiccation</i>	<i>General weed control</i>	<i>No reason given</i>	<i>Growth regulation</i>	<i>Total spray area</i>	<i>% of crop treated</i>
Benazolin/clopyralid	213	0	0	0	0	0	0	0	204	0	417	11
Clopyralid	118	0	0	0	0	0	0	0	0	0	118	3
Cycloxydim	0	193	0	0	0	0	0	0	0	0	193	5
Glufosinate-ammonium	0	0	0	0	0	0	561	0	0	0	561	15
Glyphosate	0	0	0	0	169	0	466	0	0	0	635	17
Metazachlor	123	0	1,192	0	0	0	0	745	669	0	2,729	73
Propaquizafop	0	378	0	372	0	104	0	0	0	0	854	23
Propyzamide	0	0	81	0	0	0	0	316	204	0	601	16
Trifluralin	183	0	0	0	0	0	0	0	0	0	183	5
All herbicides/desiccants	637	571	1,273	372	169	104	1,027	1,061	1,076	0	6,290	97
Growth regulators												
Chlormequat/choline chloride	0	0	0	0	0	0	0	0	0	378	378	10
All growth regulators	0	0	0	0	0	0	0	0	0	378	378	10
Area planted (ha)												3,721

TABLE 39 Seed treatments*Areas (ha) and percentages of arable crop areas treated*

	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>*Seed potatoes</i>	<i>*Ware potatoes</i>	<i>Combine peas</i>	<i>All crops</i>
Bitertanol/fuberidazole	0	0	20,252 (20)	0	0	936 (7)	0	0	0	0	0	0	21,188
Captan/gamma-HCH	0	0	0	0	0	0	0	291 (1)	1,315 (7)	0	0	0	1,606
Carboxin/gamma-HCH/thiram	0	0	0	0	0	0	0	384 (1)	1,204 (6)	0	0	0	1,588
Carboxin/imazalil/ thiabendazole	5,046 (8)	18,708 (7)	0	0	910 (15)	3,246 (24)	0	0	0	0	0	0	27,910
Carboxin/thiabendazole	0	0	5,667 (5)	0	0	0	0	0	0	0	0	0	5,667
Carboxin/thiram	0	398 (+)	1,573 (2)	0	0	0	0	0	0	0	0	0	1,970
Chlorfenvinphos	0	0	312 (+)	0	0	0	0	0	0	0	0	0	312
Ethirimol/flutriafol/ thiabendazole	12,597 (20)	31,599 (12)	0	0	0	264 (2)	0	0	0	0	0	0	44,461
Fenpiclonil	143 (+)	4,632 (2)	3,591 (3)	0	418 (7)	0	0	0	0	0	0	0	8,784
Fenpiclonil/imazalil	1,695 (3)	0	489 (+)	0	0	0	0	0	0	0	0	0	2,184
Fenpropimorph/gamma-HCH/ thiram	0	0	0	0	0	0	0	15,065 (49)	4,793 (26)	0	0	0	19,859
Fludioxonil	4,064 (6)	9,490 (4)	6,197 (6)	0	1,289 (21)	1,713 (12)	0	0	0	0	0	0	22,753
Fuberidazole/triadimenol	2,589 (4)	12,923 (5)	23,591 (23)	0	699 (11)	637 (5)	0	0	0	0	0	0	40,440
Gamma-HCH	0	864 (+)	834 (1)	0	0	0	0	0	0	0	0	0	1,698
Gamma-HCH/thiabendazole/ thiram	0	0	0	0	0	0	0	765 (3)	421 (2)	0	0	0	1,186
Gamma-HCH/thiram	0	0	0	0	0	0	0	1,219 (4)	3,765 (20)	0	0	0	4,984
Guazatine	4,447 (7)	14,520 (6)	36,719 (36)	591 (100)	2,229 (36)	537 (4)	0	0	0	0	0	0	59,044
Guazatine/imazalil	10,960 (17)	49,771 (19)	0	0	218 (4)	1,947 (14)	0	0	0	0	0	0	62,896

cont....

TABLE 39 Seed treatments (continued)
Areas (ha) and percentages of arable crop areas treated

	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>*Seed potatoes</i>	<i>*Ware potatoes</i>	<i>Combine peas</i>	<i>All crops</i>
Imazalil	0	0	0	0	0	0	0	0	0	6,993 (44)	3,518 (26)	0	10,511
Imazalil/pencycuron	0	0	0	0	0	0	0	0	0	259 (2)	3,769 (28)	0	4,028
Imazalil/thiabendazole	0	0	0	0	0	0	0	0	0	0	573 (4)	0	573
Iprodione	0	0	0	0	0	0	0	8,535 (28)	7,714 (41)	3,662 (23)	887 (7)	0	20,797
Maneb/zinc oxide	0	0	0	0	0	0	0	0	0	0	58 (+)	0	58
Metalaxyl	0	0	0	0	0	0	0	186 (1)	0	0	0	0	186
Pencycuron	0	0	0	0	0	0	0	0	0	1,134 (7)	1,852 (14)	0	2,986
Tebuconazole/triazoxide	14,809 (23)	100,454 (39)	0	0	0	219 (2)	0	0	0	0	0	0	115,481
Thiram	0	0	0	0	0	0	0	0	0	0	0	850 (58)	850
Tolclofos-methyl	0	0	0	0	0	0	0	0	0	2,501 (16)	1,482 (11)	0	3,983
Zinc oxide	0	0	0	0	0	0	0	0	0	193 (1)	0	0	193
Unspecified seed treatment	2,756 (4)	8,904 (3)	2,906 (3)	0	0	739 (5)	0	3,724 (12)	2,141 (11)	139 (1)	211 (2)	400 (27)	21,921
No information about seed treatment	2,056 (3)	3,119 (1)	162 (+)	0	0	137 (1)	0	1,286 (4)	1,182 (6)	0	72 (1)	0	8,016
No seed treatment	2,402 (4)	6,212 (2)	2,242 (2)	0	399 (6)	3,416 (25)	1,083 (100)	477 (2)	0	2,931 (19)	3,596 (26)	208 (14)	22,965

*+ = < 0.5%

* Seed treatments on potatoes refer to pre-planting fungicides only and excludes storage chemicals applied following the 1995 harvest.

TABLE 40 Seed treatments*Quantities (kg) of active ingredients used*

	Winter barley	Spring barley	Winter wheat	Spring wheat	Winter oats	Spring oats	Triticale	Winter oilseed rape	Spring oilseed rape	*Seed potatoes	*Ware potatoes	Combine peas	All crops
Bitertanol	0	0	2,649	0	0	130	0	0	0	0	0	0	2,779
Captan	0	0	0	0	0	0	0	6	22	0	0	0	29
Carboxin	702	2,429	1,532	0	126	487	0	3	8	0	0	0	5,286
Chlorfenvinphos	0	0	76	0	0	0	0	0	0	0	0	0	76
Ethirimol	4,811	11,552	0	0	0	132	0	0	0	0	0	0	16,496
Fenpiclonil	81	191	193	0	17	0	0	0	0	0	0	0	483
Fenpropimorph	0	0	0	0	0	0	0	86	34	0	0	0	120
Fludioxonil	47	101	74	0	14	21	0	0	0	0	0	0	257
Flutriafol	361	866	0	0	0	10	0	0	0	0	0	0	1,237
Fuberidazole	27	111	401	0	8	14	0	0	0	0	0	0	561
Gamma-HCH	0	39	17	0	0	0	0	1,288	910	0	0	0	2,254
Guazatine	2,365	9,070	5,231	89	483	457	0	0	0	0	0	0	17,695
Imazalil	203	745	4	0	13	65	0	0	0	287	229	0	1,545
Iprodione	0	0	0	0	0	0	0	129	118	1,539	243	0	2,029
Maneb	0	0	0	0	0	0	0	0	0	0	219	0	219
Metalaxyl	0	0	0	0	0	0	0	1	0	0	0	0	1
Pencycuron	0	0	0	0	0	0	0	0	0	1,269	3,456	0	4,725
Tebuconazole	104	663	0	0	0	2	0	0	0	0	0	0	768
Thiabendazole	179	487	81	0	10	44	0	13	6	0	34	0	855
Thiram	0	50	207	0	0	0	0	191	148	0	0	265	862
Tolclofos-methyl	0	0	0	0	0	0	0	0	0	2,369	849	0	3,218
Triadimenol	229	922	1,990	0	66	46	0	0	0	0	0	0	3,253
Triazoxide	104	663	0	0	0	2	0	0	0	0	0	0	768
Zinc oxide	0	0	0	0	0	0	0	0	0	85	7	0	92

* Seed treatments on potatoes refer to pre-planting fungicides only and excludes storage chemicals applied following the 1995 harvest.

● **TABLE 41 Cereals**

Usage of insecticides and molluscicides (spray hectares of formulations)

<i>Insecticides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Bifenthrin	1,034	0	0	0	0	0	0	1,034	0
Chlorpyrifos	386	5,029	1,282	0	0	59	0	6,757	4,844
Cypermethrin	12,760	0	13,270	0	0	0	0	26,031	8,642
Deltamethrin	1,150	0	11,342	0	0	226	0	12,718	4,398
Demeton-S-methyl	368	0	0	0	0	0	0	368	0
Dimethoate	1,186	475	6,815	0	0	0	0	8,476	26,170
Esfenvalerate	2,534	0	1,002	0	727	0	0	4,263	1,315
Lambda-cyhalothrin	0	621	1,789	0	0	0	0	2,410	0
Pirimicarb	0	0	1,962	0	0	0	0	1,962	4,192
Quinalphos	0	55	0	0	0	0	0	55	55
Unspecified insecticide	427	0	0	0	0	0	0	427	0
<i>All insecticides</i>	19,845	6,179	37,464	0	727	285	0	64,501	0
<i>Molluscicides</i>									
Metaldehyde	220	0	3,963	0	0	0	0	4,183	8,917
Methiocarb	0	0	2,410	0	0	0	0	2,410	6,263
Thiodicarb	112	0	2,136	0	0	0	0	2,248	1,845
<i>All molluscicides</i>	332	0	8,509	0	0	0	0	8,841	0

TABLE 42 Cereals
Usage of fungicides (spray hectares of formulations)

<i>Fungicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Anilazine	0	0	666	0	0	0	0	666	0
Carbendazim	5,710	18,755	25,502	0	0	0	0	49,967	50,235
Carbendazim/chlorothalonil	2,670	3,165	0	0	0	0	0	5,834	0
Carbendazim/cyproconazole	0	0	442	0	0	0	0	442	1,803
Carbendazim/flusilazole	24,061	37,296	13,635	0	314	0	0	75,306	57,854
Carbendazim/flutriafol	2,086	0	4,207	0	0	0	0	6,293	15,230
Carbendazim/mancozeb	0	0	1,185	0	0	0	0	1,185	2,811
Carbendazim/maneb	710	0	2,256	0	0	0	0	2,966	352
Carbendazim/maneb/tridemorph	649	0	0	0	0	0	0	649	1,436
Carbendazim/prochloraz	2,092	197	0	0	0	0	0	2,289	1,772
Carbendazim/propiconazole	21,182	18,907	7,822	0	0	258	0	48,168	14,531
Chlorothalonil	2,401	289	60,559	0	0	0	0	63,248	65,214
Chlorothalonil/cyproconazole	0	0	840	0	0	0	0	840	1,937
Chlorothalonil/fenpropimorph	350	1,003	6,572	0	0	0	0	7,925	4,887
Chlorothalonil/flutriafol	0	0	23,969	0	0	0	0	23,969	25,979
Chlorothalonil/propiconazole	557	0	1,327	0	0	0	0	1,884	2,757
Copper oxychloride	0	2,033	250	0	0	0	0	2,283	0
Cyproconazole	112	1,383	19,612	0	965	0	0	22,073	17,560
Cyproconazole/prochloraz	4,890	246	35,796	290	0	0	0	41,223	27,812
Difenoconazole	0	0	25,999	0	0	0	0	25,999	0
Epoxiconazole	2,971	2,194	26,811	301	0	0	0	32,277	0
Epoxiconazole/fenpropimorph	1,160	1,503	4,015	0	0	0	0	6,678	0
Epoxiconazole/tridemorph	0	0	2,293	0	0	0	0	2,293	0
Fenbuconazole/prochloraz	0	0	333	0	0	0	0	333	0
Fenbuconazole/propiconazole	0	0	1,946	0	0	0	0	1,946	0

cont....

TABLE 42 Cereals (continued)
Usage of fungicides (spray hectares of formulations)

<i>Fungicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Fenpropidin	4,563	12,787	79,284	0	1,267	0	0	97,902	49,627
Fenpropidin/fenpropimorph	1,283	1,923	7,202	0	0	0	0	10,407	0
Fenpropidin/prochloraz	0	332	7,475	0	0	0	0	7,807	0
Fenpropidin/propiconazole	2,580	5,324	2,928	0	0	143	0	10,975	14,569
Fenpropidin/tebuconazole	0	0	422	0	0	0	0	422	0
Fenpropimorph	49,984	81,053	29,486	0	5,800	4,937	0	171,261	120,597
Fenpropimorph/flusilazole	691	459	340	0	0	0	0	1,490	0
Fenpropimorph/flusilazole/tridemorph	4,421	5,011	4,691	0	0	0	0	14,124	0
Fenpropimorph/prochloraz	3,936	5,474	3,340	0	0	0	0	12,750	11,606
Fenpropimorph/propiconazole	4,202	5,756	670	0	0	0	0	10,627	6,632
Fenpropimorph/tridemorph	15,350	28,085	9,071	0	582	0	0	53,088	34,096
Flusilazole	23,945	73,756	13,311	0	175	0	0	111,186	55,287
Flusilazole/tridemorph	1,694	7,387	0	0	0	0	0	9,081	4,627
Flutriafol	882	553	14,515	290	0	0	0	16,240	16,303
Flutriafol/iprodione	0	0	2,718	0	0	0	0	2,718	0
Mancozeb	418	1,217	13,034	0	0	0	0	14,669	6,706
Maneb	4,535	4,690	15,619	0	0	0	0	24,844	21,663
Nuarimol	1,687	251	3,335	0	0	0	0	5,273	2,035
Prochloraz	3,538	2,718	2,575	0	0	0	0	8,831	10,811
Propiconazole	13,304	41,346	1,312	0	848	1,114	0	57,924	38,616
Propiconazole/tebuconazole	0	0	761	0	0	0	0	761	0
Propiconazole/tridemorph	6,063	2,114	0	0	428	0	0	8,605	3,967
Sulphur	9,935	21,551	21,334	0	200	339	0	53,359	37,042

cont....

TABLE 42 Cereals (continued)
Usage of fungicides (spray hectares of formulations)

<i>Fungicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Tebuconazole	0	231	19,490	0	0	264	0	19,985	18,110
Tebuconazole/triadimenol	3,227	530	23,879	0	0	0	0	27,636	0
Triadimefon	572	0	0	0	0	0	0	572	1,870
Triadimenol	680	4,036	2,803	0	418	275	0	8,210	35,379
Triadimenol/tridemorph	17,939	13,414	7,126	0	1,468	1,685	0	41,632	20,124
Tridemorph	6,205	11,744	2,353	0	1,078	2,448	0	23,828	19,737
Unspecified fungicide	420	289	208	0	0	1,785	0	2,702	0
<i>All fungicides</i>	253,655	419,003	555,318	881	13,543	13,248	0	1,255,647	0

TABLE 43 Cereals

Usage of herbicides and growth regulators (spray hectares of formulations)

<i>Herbicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
2,4-DB/benazolin/MCPA	0	5,232	0	0	0	1,299	0	6,530	13,057
2,4-DB/bentazone/cyanazine	0	1,394	0	0	0	0	0	1,394	4,087
2,4-DB/linuron/MCPA	0	6,110	0	0	0	447	0	6,556	1,412
2,4-DB/MCPA	0	0	0	0	0	233	0	233	0
Amidosulfuron	0	0	359	0	0	0	0	359	1,320
Benazolin/bromoxynil/ioxynil	0	4,585	0	0	0	0	0	4,585	15,475
Bentazone/MCPA/MCPB	0	3,132	0	0	0	0	0	3,132	4,185
Bromoxynil/diflufenican/ioxynil	1,429	0	929	0	0	0	0	2,358	3,021
Bromoxynil/fluroxypyr	0	2,513	1,439	0	0	0	0	3,953	1,471
Bromoxynil/fluroxypyr/ioxynil	0	1,007	288	0	0	0	0	1,295	1,392
Bromoxynil/ioxynil	1,068	31,784	3,385	0	841	990	0	38,067	32,315
Bromoxynil/ioxynil/mecoprop	1,865	15,361	5,053	0	1,002	551	0	23,831	19,622
Bromoxynil/ioxynil/triasulfuron	0	10,267	3,430	0	0	0	0	13,697	4,005
Cyanazine	0	227	0	0	0	0	0	227	226
Cyanazine/terbuthylazine	1,266	0	2,133	0	0	0	0	3,398	0
Dicamba/MCPA/mecoprop	0	5,732	0	290	0	538	0	6,560	12,066
Dicamba/mecoprop	1,260	2,038	539	0	0	0	0	3,837	6,643
Dicamba/mecoprop-P	0	25,948	1,310	0	0	1,215	0	28,473	0
Dicamba/triasulfuron	0	2,310	695	0	0	0	0	3,005	0
Dichlorprop/MCPA	0	136	0	0	0	0	0	136	1,886
Diclofop-methyl/fenoxaprop-P-ethyl	652	1,703	0	0	0	0	0	2,355	1,428
Difenzoquat	669	1,075	3,766	0	0	0	0	5,509	196
Diflufenican/isoproturon	31,223	0	40,033	0	333	0	0	71,588	36,291
Diflufenican/terbuthylazine	0	0	0	0	251	0	0	251	0
Diflufenican/trifluralin	1,869	0	2,682	0	0	0	0	4,551	2,581

cont....

TABLE 43 Cereals (continued)
Usage of herbicides and growth regulators (spray hectares of formulations)

<i>Herbicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Fenoxaprop-ethyl	0	0	1,181	0	0	0	0	1,181	1,314
Fenoxaprop-P-ethyl	0	0	3,832	0	0	0	0	3,832	2,613
Flamprop-M-isopropyl	99	4,075	232	0	0	0	0	4,406	10,025
Fluoroglycofen-ethyl/isoproturon	1,329	0	426	0	0	0	0	1,754	0
Fluroxypyr	1,217	2,349	3,123	0	36	0	0	6,726	7,949
Glyphosate	5,072	19,175	2,722	0	0	35	0	27,004	14,362
Imazamethabenz-methyl	0	0	67	0	0	0	0	67	0
Isoproturon	20,409	358	26,156	0	0	0	0	46,923	13,683
Isoproturon/pendimethalin	5,760	0	6,556	0	0	0	0	12,316	4,255
Isoproturon/trifluralin	874	0	1,577	0	0	0	0	2,452	259
MCPA	218	44,916	197	290	0	3,505	0	49,125	53,746
MCPA/MCPB	0	1,938	0	0	0	396	0	2,333	670
Mecoprop	4,168	22,879	17,583	0	292	2,840	0	47,762	74,277
Mecoprop-P	13,058	85,532	35,740	0	2,369	1,704	619	139,021	99,412
Mecoprop-P/triasulfuron	0	294	0	301	0	0	0	594	256
Methabenzthiazuron	0	0	0	0	415	0	0	415	0
Metsulfuron-methyl	8,025	97,655	23,178	0	3,184	6,690	0	138,732	159,709
Metsulfuron-methyl/thifensulfuron-methyl	1,589	61,461	17,105	0	0	167	0	80,323	69,047
Pendimethalin	7,570	0	6,491	0	0	0	0	14,061	1,756
Pendimethalin/simazine	1,489	0	788	0	0	0	0	2,277	2,016
Terbutryn	0	0	0	0	795	0	0	795	644
Thifensulfuron-methyl/tribenuron-methyl	226	21,207	1,397	0	0	0	619	23,449	0
Tralkoxydim	807	11,860	1,086	0	0	0	0	13,753	475

cont....

TABLE 43 Cereals (continued)
Usage of herbicides and growth regulators (spray hectares of formulations)

<i>Herbicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Triasulfuron	1,962	5,039	1,282	0	415	258	0	8,956	20,755
Tribenuron-methyl	965	8,999	2,543	0	0	0	0	12,507	6,391
Trifluralin	5,078		7,499	0	0	0	0	12,577	4,461
Unspecified herbicide		599	42	0	0	0	0	641	0
All herbicides	121,217	508,891	226,841	881	9,933	20,864	1,238	889,865	
Growth regulators									
2-chloroethylphosphonic acid	15,994	3,625	13,118	0	0	44	0	32,780	12,978
2-chloroethylphosphonic acid/ chlormequat	7,977	2,292	9,284	0	224	0	0	19,776	9,029
2-chloroethylphosphonic acid/ mepiquat chloride	14,273	5,707	8,727	0	841	0	0	29,549	27,864
Chlormequat	36,949	17,371	86,055	0	4,502	4,220	0	149,097	180,056
Chlormequat/choline chloride	9,377	397	22,842	0	1,219	1,906	0	35,741	1,287
Chlormequat/choline chloride/imazaquin			10,614	0	0	0	0	10,614	8,613
Trinexapac-ethyl	2,164	712	1,319	0	0	0	0	4,195	0
Unspecified growth regulator			738	0	0	0	0	738	0
All growth regulators	86,735	30,103	152,697	0	6,786	6,170	0	282,491	

● **TABLE 44 Oilseed rape**
Usage of insecticides and molluscicides (spray hectares of formulations)

<i>Insecticides</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Alpha-cypermethrin	6,250	8,353	14,603	13,764
Cypermethrin	13,079	4,665	17,744	20,581
Deltamethrin	174	341	514	2,709
Gamma-HCH	108	828	936	2,547
Lambda-cyhalothrin	1,878	1,665	3,542	0
Pirimicarb	560	0	560	341
Unspecified insecticide	0	582	582	0
<i>All insecticides</i>	22,048	16,433	38,481	
<i>Molluscicides</i>				
Metaldehyde	1,141	177	1,318	1,885
Methiocarb	1,864	0	1,864	2,715
Unspecified molluscicide	231	0	231	0
<i>All molluscicides</i>	3,235	177	3,412	

TABLE 45 Oilseed rape
Usage of fungicides (spray hectares of formulations)

<i>Fungicides</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Carbendazim	7,585	97	7,682	19,430
Carbendazim/flusilazole	14,194	0	14,194	9,637
Carbendazim/iprodione	789	396	1,185	0
Carbendazim/maneb	334	0	334	0
Carbendazim/prochloraz	5,151	0	5,151	6,389
Carbendazim/vinclozolin	12,298	828	13,126	0
Flusilazole	5,100	0	5,100	1,395
Iprodione/thiophanate-methyl	3,664	0	3,664	6,412
Mancozeb	721	0	721	460
Maneb	562	0	562	773
Prochloraz	6,619	250	6,869	14,523
Sulphur	21,664	4,597	26,261	31,242
Tebuconazole	22,190	0	22,190	16,921
Vinclozolin	4,904	97	5,001	17,426
Unspecified fungicide	531	0	531	0
All fungicides	106,307	6,264	112,571	

TABLE 46 Oilseed rape
Usage of herbicides, desiccants and growth regulators (spray hectares of formulations)

<i>Herbicides/desiccants</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Benazolin/clopyralid	8,700	795	9,495	12,068
Carbetamide	452	0	452	544
Clopyralid	544	0	544	1,416
Cyanazine	442	0	442	1,151
Cycloxydim	2,158	0	2,158	1,318
Diquat	1,795	735	2,530	9,106
Fluazifop-P-butyl	1,046	0	1,046	1,443
Glufosinate-ammonium	1,427	99	1,526	1,414
Glyphosate	2,855	5,723	8,578	6,726
Metazachlor	16,737	1,670	18,406	17,533
Propaquizafop	2,952	858	3,809	195
Propyzamide	11,380	0	11,380	9,388
Quizalofop-ethyl	692	0	692	1,634
Trifluralin	524	4,200	4,723	5,170
All herbicides/desiccants	51,703	14,079	65,782	
Growth regulators				
Chlormequat	304	215	519	3,578
Chlormequat/choline chloride	2,384	0	2,384	0
All growth regulators	2,687	215	2,902	

TABLE 47 Potatoes
Usage of insecticides and molluscicides (spray hectares of formulations)

<i>Insecticides</i>	<i>Seed potatoes</i>	<i>Ware potatoes</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Aldicarb	169	511	680	41
Alpha-cypermethrin	263	0	263	4,583
Cypermethrin	7,802	4,988	12,790	24,350
Deltamethrin/heptenophos	14,631	7,416	22,048	27,482
Deltamethrin/pirimicarb	20,836	2,196	23,032	
Demeton-S-methyl	7,610	1,922	9,532	1,513
Dimethoate	1,785	798	2,583	27,957
Lambda-cyhalothrin	10,556	3,665	14,220	0
Oxydemeton-methyl	1,089	0	1,089	0
Pirimicarb	9,765	6,911	16,676	13,099
<i>All insecticides</i>	74,506	28,407	102,913	
<i>Molluscicides</i>				
Metaldehyde	368	1,466	1,834	263
Methiocarb	1,147	1,863	3,010	2,225
<i>All molluscicides</i>	1,515	3,329	4,844	

TABLE 48 Potatoes
Usage of fungicides (spray hectares of formulations)

<i>Fungicides</i>	<i>Seed potatoes</i>	<i>Ware potatoes</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Benalaxyl/mancozeb	3,368	1,496	4,864	3,024
Chlorothalonil	0	283	283	0
Chlorothalonil/cymoxanil	763	318	1,081	3,932
Chlorothalonil/propamocarb hydrochloride	106	0	106	0
Cymoxanil/mancozeb	14,266	9,126	23,392	36,780
Cymoxanil/mancozeb/oxadixyl	9,355	10,485	19,841	13,276
Dimethomorph/mancozeb	3,058	2,157	5,215	3,052
Fentin acetate/maneb	1,265	2,235	3,500	9,743
Fentin hydroxide	6,309	4,685	10,994	11,944
Fluazinam	10,062	12,412	22,474	15,190
Mancozeb	13,082	9,399	22,481	9,021
Mancozeb/metalaxyl	5,970	4,436	10,407	11,945
Mancozeb/oxadixyl	3,997	1,111	5,108	8,800
Mancozeb/propamocarb hydrochloride	3,030	1,853	4,883	5,347
Maneb	2,823	9,746	12,569	13,047
Manganese zinc ethylenebisdithiocarbamate/ofurace	545	619	1,164	423
Unspecified fungicide	0	106	106	0
All fungicides	78,000	70,468	148,469	

TABLE 49 Potatoes
Usage of herbicides and desiccants (spray hectares of formulations)

<i>Herbicides/desiccants</i>	<i>Seed potatoes</i>	<i>Ware potatoes</i>	<i>Total spray area</i>	<i>Spray area 1994</i>
Cycloxydim	0	168	168	111
Diquat	415	1,004	1,419	1,535
Diquat/paraquat	1,777	3,538	5,315	3,849
Glufosinate-ammonium	0	117	117	55
Linuron	10,284	7,757	18,041	14,788
Metribuzin	5,325	3,032	8,357	5,370
Paraquat	11,910	9,738	21,648	20,421
Sodium chlorate	0	274	274	212
Sulphuric acid	26,781	14,747	41,528	37,041
Terbutylazine/terbutryn	0	829	829	1,976
Terbutryn/trietazine	0	953	953	1,334
All herbicides/desiccants	56,492	42,155	98,647	

TABLE 50 Cereals

Usage of insecticides and molluscicides (spray hectares of active ingredients) and total weights applied (kg)

<i>Insecticides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Total kg</i>
<i>Pyrethroids</i>									
Bifenthrin	1,034	0	0	0	0	0	0	1,034	7
Cypermethrin	12,760	0	13,270	0	0	0	0	26,031	608
Deltamethrin	1,150	0	11,342	0	0	226	0	12,718	66
Esfenvalerate	2,534	0	1,002	0	727	0	0	4,263	13
Lambda-cyhalothrin	0	621	1,789	0	0	0	0	2,410	10
<i>Carbamates</i>									
Pirimicarb	0	0	1,962	0	0	0	0	1,962	142
<i>Organophosphates</i>									
Chlorpyrifos	386	5,029	1,282	0	0	59	0	6,757	4,549
Demeton-S-methyl	368	0	0	0	0	0	0	368	53
Dimethoate	1,186	475	6,815	0	0	0	0	8,476	1,856
Quinalphos	0	55	0	0	0	0	0	55	27
<i>Unspecified</i>									
Unspecified insecticide	427	0	0	0	0	0	0	427	
<i>All insecticides</i>	19,845	6,179	37,464	0	727	285	0	64,501	7,330
<i>Molluscicides</i>									
Metaldehyde	220	0	3,963	0	0	0	0	4,183	1,326
Methiocarb	0	0	2,410	0	0	0	0	2,410	297
Thiodicarb	112	0	2,136	0	0	0	0	2,248	443
<i>All molluscicides</i>	332	0	8,509	0	0	0	0	8,841	2,066

TABLE 51 Cereals*Usage of fungicides (spray hectares of active ingredients) and total weights applied (kg)*

<i>Fungicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Total kg</i>
Anilazine	0	0	666	0	0	0	0	666	497
Carbendazim	58,449	76,343	53,839	0	314	258	0	189,203	16,459
Chlorothalonil	5,977	4,457	93,027	0	0	0	0	103,460	36,482
Copper oxychloride	0	2,033	250	0	0	0	0	2,283	651
Cyproconazole	5,003	1,630	56,690	290	965	0	0	64,578	2,533
Difenoconazole	0	0	25,999	0	0	0	0	25,999	1,210
Epoxiconazole	4,131	3,697	33,120	301	0	0	0	41,248	2,341
Fenbuconazole	0	0	2,279	0	0	0	0	2,279	99
Fenpropidin	8,426	20,366	96,573	0	1,267	143	0	126,776	32,588
Fenpropimorph	80,270	127,362	64,809	0	6,382	4,937	0	283,760	72,492
Flusilazole	54,813	123,909	31,976	0	489	0	0	211,187	16,744
Flutriafol	2,967	553	45,410	290	0	0	0	49,220	3,174
Iprodione	0	0	2,718	0	0	0	0	2,718	299
Mancozeb	418	1,217	14,219	0	0	0	0	15,853	11,224
Maneb	5,894	4,690	17,875	0	0	0	0	28,459	24,351
Nuarimol	1,687	251	3,335	0	0	0	0	5,273	186
Prochloraz	14,356	8,721	48,781	290	0	0	0	72,148	16,036
Propiconazole	47,889	73,047	16,765	0	1,276	1,515	0	140,491	9,250
Sulphur	9,935	21,551	21,334	0	200	339	0	53,359	205,223
Tebuconazole	3,227	761	44,551	0	0	264	0	48,803	5,069
Triadimefon	572	0	0	0	0	0	0	572	45
Triadimenol	21,846	17,980	33,061	0	1,885	1,959	0	76,732	4,589
Tridemorph	52,210	67,578	25,534	0	3,332	4,133	0	152,786	21,582
Unspecified fungicide	420	289	208	0	0	1,785	0	2,702	
All fungicides	378,488	556,434	733,021	1,171	16,111	15,334	0	1,700,558	483,125

TABLE 52 Cereals

Usage of herbicides and growth regulators (spray hectares of active ingredients) and total weights applied (kg)

<i>Herbicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Total kg</i>
2,4-DB	0	12,735	0	0	0	1,978	0	14,714	15,975
Amidosulfuron	0	0	359	0	0	0	0	359	11
Benazolin	0	9,817	0	0	0	1,299	0	11,116	1,335
Bentazone	0	4,527	0	0	0	0	0	4,527	3,872
Bromoxynil	4,362	65,107	14,523	0	1,842	1,540	0	87,374	10,237
Cyanazine	1,266	1,622	2,133	0	0	0	0	5,020	1,352
Dicamba	1,260	36,028	2,544	290	0	1,752	0	41,874	1,758
Dichlorprop	0	136	0	0	0	0	0	136	33
Diclofop-methyl	652	1,703	0	0	0	0	0	2,355	1,488
Difenzoquat	669	1,075	3,766	0	0	0	0	5,509	1,734
Diflufenican	34,521	0	43,358	0	584	0	0	78,463	5,029
Fenoxaprop-ethyl	0	0	1,181	0	0	0	0	1,181	67
Fenoxaprop-P-ethyl	652	1,703	3,832	0	0	0	0	6,186	394
Flamprop-M-isopropyl	99	4,075	232	0	0	0	0	4,406	1,800
Fluoroglycofen-ethyl	1,329	0	426	0	0	0	0	1,754	25
Fluroxypyr	1,217	5,870	4,850	0	36	0	0	11,974	1,528
Glyphosate	5,072	19,175	2,722	0	0	35	0	27,004	24,410
Imazamethabenz-methyl	0	0	67	0	0	0	0	67	30
Ioxynil	4,362	62,593	13,084	0	1,842	1,540	0	83,422	8,936
Isoproturon	46,913	358	58,178	0	333	0	0	105,781	85,192
Linuron	0	6,110	0	0	0	447	0	6,556	645
MCPA	218	53,020	197	290	0	4,818	0	58,543	52,491
MCPB	0	5,070	0	0	0	396	0	5,466	5,883
Mecoprop	7,292	46,010	23,175	290	1,294	3,928	0	81,989	64,580
Mecoprop-P	13,058	111,774	37,050	301	2,369	2,918	619	168,089	86,377

cont....

TABLE 52 Cereals (continued)

Usage of herbicides and growth regulators (spray hectares of active ingredients) and total weights applied (kg)

<i>Herbicides</i>	<i>Winter barley</i>	<i>Spring barley</i>	<i>Winter wheat</i>	<i>Spring wheat</i>	<i>Winter oats</i>	<i>Spring oats</i>	<i>Triticale</i>	<i>Total spray area</i>	<i>Total kg</i>
Methabenzthiazuron	0	0	0	0	415	0	0	415	652
Metsulfuron-methyl	9,614	159,116	40,284	0	3,184	6,857	0	219,055	680
Pendimethalin	14,819	0	13,835	0	0	0	0	28,655	19,474
Simazine	1,489	0	788	0	0	0	0	2,277	371
Terbuthylazine	1,266	0	2,133	0	251	0	0	3,649	973
Terbutryn	0	0	0	0	795	0	0	795	1,193
Thifensulfuron-methyl	1,815	82,668	18,502	0	0	167	619	103,771	2,355
Tralkoxydim	807	11,860	1,086	0	0	0	0	13,753	2,560
Triasulfuron	1,962	17,498	5,407	301	415	258	0	25,841	142
Tribenuron-methyl	1,191	30,206	3,940	0	0	0	619	35,956	268
Trifluralin	7,452	0	11,588	0	0	0	0	19,040	14,613
Unspecified herbicide	0	599	42	0	0	0	0	641	
All herbicides	163,359	750,454	309,278	1,472	13,361	27,933	1,857	1,267,714	418,465
Growth regulators									
2-chloroethylphosphonic acid	38,245	11,623	31,129	0	1,065	44	0	82,105	14,589
Chlormequat	54,304	20,060	128,795	0	5,945	6,126	0	215,230	189,409
Choline chloride	9,377	397	33,456	0	1,219	1,906	0	46,356	3,083
Imazaquin	0	0	10,614	0	0	0	0	10,614	13
Mepiquat chloride	14,273	5,707	8,727	0	841	0	0	29,549	8,845
Trinexapac-ethyl	2,164	712	1,319	0	0	0	0	4,195	252
Unspecified growth regulator	0	0	738	0	0	0	0	738	
All growth regulators	118,363	38,499	214,779	0	9,069	8,076	0	388,787	216,191

● **TABLE 53 Oilseed rape**

Usage of insecticides and molluscicides (spray hectares of active ingredients) and total weights applied (kg)

<i>Insecticides</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>Total spray area</i>	<i>Total kg</i>
<i>Pyrethroids</i>				
Alpha-cypermethrin	6,250	8,353	14,603	198
Cypermethrin	13,079	4,665	17,744	438
Deltamethrin	174	341	514	4
Lambda-cyhalothrin	1,878	1,665	3,542	21
<i>Carbamates</i>				
Pirimicarb	560	0	560	56
<i>Organochlorines</i>				
Gamma-HCH	108	828	936	262
<i>Unspecified</i>				
Unspecified insecticide	0	582	582	
<i>All insecticides</i>	22,048	16,433	38,481	980
<i>Molluscicides</i>				
Metaldehyde	1,141	177	1,318	563
Methiocarb	1,864	0	1,864	272
Unspecified molluscicide	231	0	231	
<i>All molluscicides</i>	3,235	177	3,412	834

● **TABLE 54 Oilseed rape**

Usage of fungicides (spray hectares of active ingredients) and total weights applied (kg)

<i>Fungicides</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>Total spray area</i>	<i>Total kg</i>
Carbendazim	39,350	1,321	40,671	5,992
Flusilazole	19,294	0	19,294	1,549
Iprodione	4,453	396	4,849	1,611
Mancozeb	721	0	721	1,730
Maneb	896	0	896	735
Prochloraz	11,770	250	12,020	2,898
Sulphur	21,664	4,597	26,261	129,665
Tebuconazole	22,190	0	22,190	2,115
Thiophanate-methyl	3,664	0	3,664	1,164
Vinclozolin	17,202	925	18,127	6,321
Unspecified fungicide	531	0	531	
<i>All fungicides</i>	141,737	7,488	149,224	153,780

● **TABLE 55 Oilseed rape**

*Usage of herbicides, desiccants and growth regulators
(spray hectares of active ingredients) and total weights applied (kg)*

<i>Herbicides/desiccants</i>	<i>Winter oilseed rape</i>	<i>Spring oilseed rape</i>	<i>Total spray area</i>	<i>Total kg</i>
Benazolin	8,700	795	9,495	2,086
Carbetamide	452	0	452	700
Clopyralid	9,244	795	10,039	390
Cyanazine	442	0	442	193
Cycloxydim	2,158	0	2,158	256
Diquat	1,795	735	2,530	1,398
Fluazifop-P-butyl	1,046	0	1,046	101
Glufosinate-ammonium	1,427	99	1,526	674
Glyphosate	2,855	5,723	8,578	7,636
Metazachlor	16,737	1,670	18,406	11,474
Propaquizafop	2,952	858	3,809	190
Propyzamide	11,380	0	11,380	5,760
Quizalofop-ethyl	692	0	692	33
Trifluralin	524	4,200	4,723	4,710
<i>All herbicides/desiccants</i>	60,403	14,874	75,277	35,601
<i>Growth regulators</i>				
Chlormequat	2,687	215	2,902	3,523
Choline chloride	2,384	0	2,384	140
<i>All growth regulators</i>	5,071	215	5,286	3,663

TABLE 56 Potatoes

Usage of insecticides and molluscicides (spray hectares of active ingredients) and total weights applied (kg)

<i>Insecticides</i>	<i>Seed potatoes</i>	<i>Ware potatoes</i>	<i>Total spray area</i>	<i>Total kg</i>
<i>Pyrethroids</i>				
Alpha-cypermethrin	263	0	263	3
Cypermethrin	7,802	4,988	12,790	292
Deltamethrin	35,467	9,298	44,765	311
Lambda-cyhalothrin	10,556	3,665	14,220	74
<i>Carbamates</i>				
Aldicarb	169	511	680	707
Pirimicarb	30,601	9,108	39,708	3,986
<i>Organophosphates</i>				
Demeton-S-methyl	7,610	1,922	9,532	2,085
Dimethoate	1,785	798	2,583	761
Heptenophos	14,631	7,416	22,048	2,474
Oxydemeton-methyl	1,089	0	1,089	199
<i>All insecticides</i>	109,973	37,705	147,678	10,893
<i>Molluscicides</i>				
Metaldehyde	368	1,466	1,834	537
Methiocarb	1,147	1,863	3,010	430
<i>All molluscicides</i>	1,515	3,329	4,844	967

TABLE 57 Potatoes
Usage of fungicides (spray hectares of active ingredients) and total weights applied (kg)

<i>Fungicides</i>	<i>Seed potatoes</i>	<i>Ware potatoes</i>	<i>Total spray area</i>	<i>Total kg</i>
Benalaxyl	3,368	1,496	4,864	761
Chlorothalonil	869	601	1,470	1,231
Cymoxanil	24,385	19,930	44,314	3,586
Dimethomorph	3,058	2,157	5,215	571
Fentin acetate	1,265	2,235	3,500	1,238
Fentin hydroxide	6,309	4,685	10,994	2,689
Fluazinam	10,062	12,412	22,474	3,022
Mancozeb	55,048	39,933	94,981	114,606
Maneb	4,088	11,981	16,069	16,624
Manganese zinc ethylenebisdithiocarbamate	545	619	1,164	1,268
Metalaxyl	5,970	4,436	10,407	1,488
Ofurace	545	619	1,164	110
Oxadixyl	13,352	11,596	24,949	4,614
Propamocarb hydrochloride	3,136	1,853	4,989	3,827
Unspecified fungicide	0	106	106	
All fungicides	132,000	114,660	246,660	155,634

● **TABLE 58 Potatoes**

Usage of herbicides and desiccants (spray hectares of active ingredients) and total weights applied (kg)

<i>Herbicides/desiccants</i>	<i>Seed potatoes</i>	<i>Ware potatoes</i>	<i>Total spray area</i>	<i>Total kg</i>
Cycloxydim	0	168	168	16
Diquat	2,192	4,542	6,734	2,111
Glufosinate-ammonium	0	117	117	53
Linuron	10,284	7,757	18,041	19,503
Metribuzin	5,325	3,032	8,357	4,977
Paraquat	13,687	13,276	26,963	12,113
Sodium chlorate	0	274	274	4,604
Sulphuric acid	26,781	14,747	41,528	6,037,887
Terbuthylazine	0	829	829	287
Terbutryn	0	1,782	1,782	1,560
Trietazine	0	953	953	890
<i>All herbicides/desiccants</i>	58,269	47,475	105,745	6,084,000

TABLE 59 Principal active ingredients

Area (spray hectares x 1000) treated with the 50 most used active ingredients, including seed treatments, on all crops surveyed

		1996	1994
1	Fenpropimorph	304	219
2	Carbendazim	231	189
3	Flusilazole	230	129
4	Metsulfuron-methyl	219	229
5	Chlormequat	218	203
6	Tebuconazole	186	35
7	Mecoprop-P	168	99
8	Tridemorph	153	84
9	Propiconazole	140	81
10	Fenpropidin	127	64
11	Guazatine	122	117
12	Triadimenol	117	115
13	Triazoxide	115	-
14	Mancozeb	112	101
15	Imazalil	108	177
16	Isoproturon	106	47
17	Chlorothalonil	106	107
18	Thifensulfuron-methyl	104	69
19	Flutriafol	94	112
20	Bromoxynil	87	77
21	Prochloraz	84	73
22	Ioxynil	83	76
23	2-chloroethylphosphonic acid	82	50
24	Mecoprop	82	112
25	Thiabendazole	80	187
26	Sulphur	80	68
27	Diflufenican	78	42
28	Cyproconazole	65	49
29	Fuberidazole	62	53
30	MCPA	59	72
31	Deltamethrin	58	37
32	Cypermethrin	57	54
33	Choline chloride	49	10
34	Maneb	46	49
35	Ethirimol	44	54
36	Cymoxanil	44	54
37	Pirimicarb	42	18
38	Sulphuric acid	42	37
39	Dicamba	42	19
40	Epoxiconazole	41	-
41	Carboxin	37	136
42	Glyphosate	36	22
43	Tribenuron-methyl	36	6
44	Gamma-HCH	32	59
45	Thiram	30	57
46	Mepiquat chloride	30	28
47	Pendimethalin	29	9
48	Iprodione	29	23
49	Paraquat	27	25
50	Difenoconazole	26	-

TABLE 60 Principal active ingredients

Quantity (tonnes) of the 50 most used active ingredients, including seed treatments, on all crops surveyed

		1996	1994
1	Sulphuric acid	6,083	5,356
2	Sulphur	335	285
3	Chlormequat	193	178
4	Mancozeb	128	121
5	Mecoprop-P	86	61
6	Isoproturon	85	34
7	Fenpropimorph	73	51
8	Mecoprop	65	103
9	MCPA	53	71
10	Maneb	42	44
11	Chlorothalonil	38	41
12	Glyphosate	33	19
13	Fenpropidin	33	17
14	Carbendazim	23	24
15	Tridemorph	22	14
16	Linuron	20	19
17	Pendimethalin	20	6
18	Trifluralin	20	13
19	Prochloraz	19	17
20	Flusilazole	18	11
21	Guazatine	18	55
22	Ethirimol	16	23
23	2,4-DB	16	21
24	2-chloroethylphosphonic acid	15	9
25	Paraquat	12	10
26	Metazachlor	11	11
27	Bromoxynil	10	10
28	Propiconazole	9	6
29	Ioxynil	9	9
30	Mepiquat chloride	9	9
31	Tebuconazole	8	4
32	Triadimenol	8	8
33	Vinclozolin	7	6
34	MCPB	6	7
35	Propyzamide	6	5
36	Carboxin	5	21
37	Diflufenican	5	3
38	Metribuzin	5	4
39	Pencycuron	5	3
40	Oxadixyl	5	4
41	Sodium chlorate	5	2
42	Chlorpyrifos	5	4
43	Flutriafol	4	6
44	Pirimicarb	4	2
45	Iprodione	4	5
46	Bentazone	4	7
47	Propamocarb hydrochloride	4	5
48	Diquat	4	8
49	Cymoxanil	4	5
50	Terbutryn	3	6

TABLE 61 Cereals

Comparison of pesticide usage in 1992, 1994 and 1996, spray hectares of formulations, spray hectares of active ingredients and quantities (kg of a.i.'s) used

	1992			1994			1996		
	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>
<i>Insecticides</i>									
Pyrethroids	31,106	31,106	572	14,671	15,210	242	46,456	46,456	704
Organophosphates	25,148	25,148	6,631	31,069	31,608	9,296	15,656	15,656	6,485
Organochlorines	399	399	54	0	0	0	0	0	0
Carbamates	2,818	2,818	203	4,192	4,192	223	1,962	1,962	142
Unspecified or mixed formulation	0	0	0	539	NA	NA	427	427	NA
<i>All insecticides</i>	59,471	59,471	7,460	50,471	51,010	9,761	64,501	64,501	7,330
<i>Molluscicides</i>	16,148	16,067	3,524	17,025	17,025	4,890	8,841	8,841	2,066
<i>Fungicides</i>	1,192,849	1,515,153	514,801	834,948	1,115,883	339,074	1,255,647	1,700,558	483,125
<i>Herbicides</i>	753,928	1,025,931	397,995	717,607	1,011,474	373,400	889,865	1,267,714	418,465
<i>Growth regulators</i>	333,678	415,719	269,683	239,827	295,233	193,445	282,491	388,787	216,191
<i>Seed treatments</i>	443,504	755,942	60,217	381,686	779,010	112,472	435,566	830,133	51,793
<i>All pesticides</i>	2,799,578	3,788,284	1,253,680	2,241,564	3,269,635	1,033,042	2,936,911	4,260,534	1,178,970
Area planted (ha)	459,149			395,286			449,298		

'NA' not applicable

ABLE 62 Oilseed rape Comparison of pesticide usage in 1992, 1994 and 1996, spray hectares of formulations, spray hectares of active ingredients and quantities (kg of a.i.'s) used

	1992			1994			1996		
	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>
<i>Insecticides</i>									
Pyrethroids	22,206	22,321	411	37,085	37,085	711	36,403	36,403	661
Organophosphates	104	219	54	2,069	2,069	1,074	0	0	0
Organochlorines	566	566	159	2,547	2,547	742	936	936	262
Carbamates	0	0	0	341	341	72	560	560	56
Unspecified or mixed formulation	837	722	NA	183	183	NA	582	582	NA
<i>All insecticides</i>	23,713	23,828	624	42,225	42,225	2,599	38,481	38,481	980
<i>Molluscicides</i>	7,413	7,413	1,509	4,955	4,955	1,089	3,412	3,412	834
<i>Fungicides</i>	134,297	147,290	125,510	127,666	150,073	183,213	112,571	149,224	153,780
<i>Herbicides/desiccants</i>	75,298	90,513	46,761	69,733	81,842	38,846	65,782	75,277	35,601
<i>Growth regulators</i>	3,360	4,579	4,892	3,578	3,578	3,801	2,902	5,286	3,663
<i>Seed treatments</i>	55,664	112,548	3,383	73,945	178,967	17,777	53,991	105,847	2,963
<i>All pesticides</i>	299,745	386,172	182,679	322,102	461,640	247,325	277,139	377,527	197,821
Area planted (ha)	56,855			69,619			49,290		

'NA' not applicable

TABLE 63 Potatoes

Comparison of pesticide usage in 1992, 1994 and 1996, spray hectares of formulations, spray hectares of active ingredients and quantities (kg of a.i.'s) used

	1992			1994			1996		
	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>	<i>sp. ha. of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>	<i>sp. ha of formulations</i>	<i>sp. ha. of a.i.'s</i>	<i>kg</i>
<i>Insecticides</i>									
Pyrethroids	14,521	50,555	570	30,796	58,278	892	27,273	72,037	680
Organophosphates	23,796	59,831	10,070	29,470	56,953	9,459	13,204	35,252	5,519
Carbamates	10,703	10,703	1,621	13,140	13,140	1,592	17,356	40,388	4,693
Unspecified or mixed formulation	36,035	NA	NA	27,482	NA	NA	45,080	NA	NA
<i>All insecticides</i>	85,055	121,089	12,261	100,888	128,371	11,943	102,913	147,678	10,893
<i>Molluscicides</i>	9,527	9,527	1,835	2,764	2,764	460	4,844	4,844	967
<i>Fungicides</i>	129,171	226,869	144,267	145,958	254,259	156,888	148,469	246,660	155,634
<i>Soil sterilants</i>	0	0	0	231	231	56,872	0	0	0
<i>Herbicides/desiccants</i>	77,480	84,433	3,636,998	88,372	96,269	5,406,592	98,647	105,745	6,084,000
<i>Growth regulators</i>	535	535	2,139	427	427	1,707	0	0	0
<i>Seed treatments</i>	14,505	15,162	10,930	22,885	24,599	10,417	27,303	31,962	10,586
<i>All pesticides</i>	316,273	457,615	3,808,430	361,525	506,920	5,644,879	382,176	536,889	6,262,080
Area planted (ha)	27,236			26,411			29,297		

'NA' not applicable

TABLE 64 Sampled areas
Area (ha) of arable crops grown in sample

<i>Size (ha)</i>	<i>Highlands & Islands and Caithness & Orkney</i>	<i>Moray Firth</i>	<i>Aberdeen</i>	<i>Angus</i>	<i>East Fife</i>	<i>Lothian</i>	<i>Central Lowlands</i>	<i>Tweed Valley</i>	<i>S Uplands & Solway</i>	<i>Scotland</i>
1 - 19.9	45	65	86	38	0	6	74	6	49	369
20 - 49.9	120	202	482	322	156	102	459	133	168	2,144
50 - 99.9	229	452	1,890	1,274	714	368	495	346	426	6,195
100 - 149.9	0	766	1,167	1,036	675	804	712	1,038	111	6,310
150+	164	1,252	3,687	5,244	1,742	2,746	1,091	4,558	507	20,991
<i>All sizes</i>	558	2,737	7,312	7,914	3,286	4,027	2,832	6,081	1,262	36,008

TABLE 65 Census areas
Area (ha) of arable crops grown in Scotland

<i>Size (ha)</i>	<i>Highlands & Islands and Caithness & Orkney</i>	<i>Moray Firth</i>	<i>Aberdeen</i>	<i>Angus</i>	<i>East Fife</i>	<i>Lothian</i>	<i>Central Lowlands</i>	<i>Tweed Valley</i>	<i>S Uplands & Solway</i>	<i>Scotland</i>
1 - 19.9	8,990	5,705	13,735	3,916	1,160	1,244	10,504	1,513	7,006	53,773
20 - 49.9	4,734	11,181	29,890	14,774	5,163	3,233	17,094	4,564	8,719	99,352
50 - 99.9	3,212	14,031	35,601	29,339	14,883	9,398	18,793	12,679	5,635	143,571
100 - 149.9	0	**10,814	17,949	19,481	10,410	12,243	7,448	14,776	1,993	95,113
150+	1,222	12,931	21,921	34,100	12,261	18,356	8,800	26,919	2,037	138,546
<i>All sizes</i>	18,158	54,662	119,096	101,610	43,877	44,474	62,639	60,451	25,389	530,356

To prevent disclosure of information about individual holdings, the entry for Highlands & Islands and Caithness & Orkney (size: 100 - 149.9ha) which relates to less than 5 holdings, has been merged with Moray Firth (denoted by **).

● **TABLE 66 Raising factors**

<i>Size (ha)</i>	<i>Highlands & Islands and Caithness & Orkney</i>	<i>Moray Firth</i>	<i>Aberdeen</i>	<i>Angus</i>	<i>East Fife</i>	<i>Lothian</i>	<i>Central Lowlands</i>	<i>Tweed Valley</i>	<i>S Uplands & Solway</i>
1 - 19.9	199.9	87.8	160.5	102.8	NA	204.9	141.7	248.1	142.4
20 - 49.9	39.4	55.3	62.0	45.9	33.1	31.8	37.2	34.4	51.8
50 - 99.9	14.0	31.1	18.8	23.0	20.8	25.5	37.9	36.7	13.2
100 - 149.9	NA	13.5	15.4	18.8	15.4	15.2	10.5	14.2	17.9
150+	7.4	10.3	5.9	6.5	7.0	6.7	8.1	5.9	4.0

'NA' not applicable

● **TABLE 67 First adjustment factors**

<i>Crop</i>	<i>Highlands & Islands and Caithness & Orkney</i>	<i>Moray Firth</i>	<i>Aberdeen</i>	<i>Angus</i>	<i>East Fife</i>	<i>Lothian</i>	<i>Central Lowlands</i>	<i>Tweed Valley</i>	<i>S Uplands & Solway</i>
Winter barley	NA	1.40	1.13	1.01	0.84	0.86	1.04	1.21	1.14
Spring barley	0.99	0.99	1.05	0.87	1.18	0.96	0.95	0.83	0.94
Wheat	0.92	0.91	1.09	1.13	0.95	1.09	1.38	1.06	0.88
Winter oats	NA	1.46	1.33	1.87	2.82	2.24	1.02	1.70	2.73
Spring oats	1.26	1.04	1.14	1.16	0.80	1.59	0.47	3.49	1.19
Winter oilseed rape	NA	0.48	0.95	0.97	0.93	0.85	1.52	0.89	NA
Spring oilseed rape	0.46	1.14	0.70	1.42	1.08	0.43	0.72	2.33	0.26
Seed potatoes	NA	1.56	0.47	1.96	1.35	3.07	0.64	0.52	NA
Ware potatoes	2.78	3.05	1.76	0.77	1.62	1.78	2.13	4.74	NA
Combine peas	NA	0.31	NA	NA	NA	0.62	NA	0.58	NA
Triticale	NA	8.28	NA	NA	NA	NA	NA	NA	NA
Set aside	1.74	1.13	1.12	1.13	1.12	1.28	1.00	1.13	0.92

'NA' not applicable

● **TABLE 68** *Second adjustment factors*

<i>Crop</i>	
Winter barley	1.01
Spring barley	1.00
Wheat	1.00
Winter oats	1.02
Spring oats	1.00
Winter oilseed rape	1.01
Spring oilseed rape	1.00
Seed potatoes	1.03
Ware potatoes	1.02
Combine peas	1.56
Triticale	4.47
Set aside	1.00