PESTICIDE USAGE IN NORTHERN IRELAND

Survey Report 194

Arable Crops 2002

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NORTHERN IRELAND
ARABLE CROPS

2002

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The County Regions Of Northern Ireland

SUMMARY

This is the seventh survey of pesticide usage practices conducted in the arable sector in Northern Ireland, providing comparative data to that obtained in the previous surveys in 1990, (Jess *et al.*, 1992), 1992 (Jess *et al.*, 1995), 1994 (Jess *et al.*, 1997), 1996 (Jess *et al.*, 2000), 1998 (Jess *et al.*, 2002) and 2000 (Withers *et al.*, 2004).

Information on all aspects of pesticide usage was collected from 315 holdings throughout the Province, representing 24% of the total area of arable crops grown. Quantitative data has been adjusted to provide estimates of total pesticide usage.

The total area of arable crops grown in Northern Ireland in 2002 was 48,222 hectares, representing a 9% decrease compared to that recorded in 1998. During this period, the area of crops treated with pesticides reduced by 7%, to 288,348 spray-hectares. The most notable increase was recorded in the use of molluscicides (72%). Application of methiocarb to early potatoes increased almost fourteen-fold while use on maincrop potatoes increased almost three-fold. The use of metaldehyde on seed and early potatoes was reported for the first time. The application of all other pesticides decreased, except for insecticide which remained approximately at the same level. Fungicide usage reduced by 10%, herbicides and desiccants by 5%, growth regulators by 8%, seed treatments by 4% and mixed formulations by 33%. The use of carbamate insecticides, principally pirimicarb, showed a 100% increase in use from 1998 while the use of organophospates, principally chlorpyrifos and dimethoate, decreased by 20%. Pyrethroid insecticides accounted for 91% of all insecticides used on arable crops, with lambda-cyhalothrin and esfenvalerate the principal active ingredients. The use of growth regulators on cereals remained unchanged when compared with 2000 but reduced by 9% when compared with 1998. The principal growth regulator used in 2002 was the active ingredient chlormequat which is consistent with both 1998 and 2000. The total quantity of pesticides applied to arable crops increased by 10% to 492 tonnes of active ingredients compared with 1998.

During 2002 regional pesticide usage was related to the area of arable crops grown in each county. Pesticides were applied to 94% of the total area of arable crops grown in Northern Ireland in 2002 with a range of 1.0 - 9.9 applications depending on pesticide group and crop type.

Fungicides were applied to 44% of the pesticide-treated area, accounting for 17% of the total quantity of pesticides used. Herbicides and desiccants were applied to 30% of the pesticide-treated area, representing 76% of the total quantity of pesticides used. Insecticides accounted for 7% of the pesticide-treated area of arable crops, representing less than 1% of the weight of pesticides used. Molluscicides and mixed activity pesticide treatments represented less than 1% of both area of application and quantity of pesticides used. Growth regulator usage accounted for 6% of the pesticide-treated area and 2% of the weight of active ingredients used. Seed treatments applied to arable crops grown in 2002 accounted for 12% of the pesticide-treated area, while representing less than 1% of the quantity of active ingredients applied.

Potato crops accounted for 52% of the area of arable crops treated with fungicides and received 82% of the total weight of fungicides applied. Furthermore, applications of herbicides and desiccants to potato crops represented 17% and 91% of the area treated and quantity of this

pesticide group applied, respectively. The most commonly recorded fungicide applied, as a single active ingredient, was fluazinam, used primarily in maincrop potatoes to control blight (*Phytophthora infestans*). Spring and winter barley crops accounted for 56% of the herbicide and desiccant-treated area, but only 6% of the weight of active ingredients applied. The most commonly applied herbicide, used almost exclusively on cereal crops, principally spring barley, was metsulfuron-methyl. Owing to the low application rate for this active ingredient, the quantity applied represented less than 1% of the total quantity of herbicides and desiccants used. This relative proportion was further diminished by the large quantities of sulphuric acid applied as a pre-harvest potato haulm desiccant, to a comparatively small area of potato crops.

This was the third survey where the cultivation of pea and bean crops was recorded.

A total of 232 products, comprising 108 active ingredients, was recorded in use on field crops in the survey.

In addition to information concerning field applications of pesticides to crops, data relating to post-harvest/storage treatments applied to farm stored potatoes were collected. It was estimated that 60,353 tonnes of potatoes were stored on-farm following the 2002 growing season. This represented a 63% decrease compared with 1998. Ware potatoes accounted for 73% of the total quantity of stored potatoes, with seed potatoes accounting for the remainder. County Londonderry accounted for 37% of all potatoes stored. County Down represented 34% of all potatoes receiving treatments in storage and 78% of the quantity of pesticides applied. Overall, 22% of stored potatoes received pesticide treatment. An estimated 488kg of pesticide active ingredients were applied to 13,053 tonnes of stored potatoes. Five active ingredient formulations were recorded in use on stored potatoes in Northern Ireland in 2002. Approximately 42% of all potatoes in 2002 were stored in refrigerated stores. Overall, 61% of potatoes were stored on-farm in boxes, while 20% were stored in bulk.

DEFINITIONS AND NOTES

- ‘Basic area’ refers to the actual planted area of crop, which was treated with a given pesticide.
- ‘Treated area’ refers to the total area treated with a pesticide, which includes all repeated applications to the basic area. This is measured in ‘spray-hectares’.
- ‘Reasons for use’ refers to the perceived reasons reported by the farmer for the use of a particular pesticide. These reasons may sometimes be inappropriate.
- ‘Rounding’; due to rounding of figures there may be slight differences in totals both within and between tables.
- ‘Comparison tables’; due to restrictions imposed by the foot and mouth outbreak in February 2001 and the inability to complete farm visits, the 2000 report sample size was reduced by over one third. Due to this reduced sample size, data collected on the use of pesticide on potatoes, both grown and stored, was unreliable and had to be omitted from the report. Therefore, when comparisons are made between this, 2002 report, and previous reports, no comparisons can be made with the 2000 report in relation to total treatment of arable crops and both field and storage treatments of early, seed and maincrop potatoes.

INTRODUCTION

As a participant of the UK Working Party on Pesticide Usage Surveys, the Department of Agriculture and Rural Development for Northern Ireland (DARD), conducts a cyclical programme of surveys to examine pesticide usage in all sectors of the agricultural and horticultural industries. Principally, the data collected provides information for consideration by the Advisory Committee on Pesticides. However, pesticide usage data may also be used by those involved in residue testing, for public information, provision of data for research and evaluation of trends in pesticide usage.

This is the seventh survey of pesticide usage on arable crops grown in Northern Ireland. Previous surveys reported on pesticide usage on arable crops grown in 1990 (Jess *et al.*, 1992), 1992 (Jess *et al.*, 1995), 1994 (Jess *et al.*, 1997), 1996 (Jess *et al.*, 2000), 1998 (Jess *et al.*, 2002) and 2000 (Withers *et al.*, 2004). Data from previous surveys are included in the report for comparative purposes.

A list of published Northern Ireland Pesticide Usage Survey reports is shown in Appendix 1.

METHODS

The sample of holdings to be surveyed was selected from each of the six counties, on the basis of the total area of arable crops grown, using data from the Northern Ireland Agricultural Census, June 2002 (Anon., 2003). However, due to sampling procedures and the distribution of arable crops in Northern Ireland, no holdings were visited in County Fermanagh. The areas of arable crops grown comprised the following; barley, wheat, oats, oilseed rape, peas and beans, triticale and potatoes.

The sample was stratified into six size groups, according to the total area of arable crops grown in each region. Holdings were selected at random within each of the size groups, the number of holdings being proportional to the total area of arable crops grown.

The purpose of the survey was explained to the occupiers of selected holdings in preliminary correspondence. A total of 315 holdings were visited during November 2002 to April 2003 and data collected by personal interview. The data collected included; the area of crops grown, area treated, target crop, pesticides used and number of treatments applied. The growers' perceived reasons for pesticide use were also included but may not always seem appropriate. Holdings selected in the original sample but which were unable to provide data were replaced with those from the same county and size group held on a reserve list. During analysis, the sample data were raised to the total population level using raising factors calculated from the ratio of the number of farms sampled to the number of farms in the population within each region and size group. A further adjustment factor corrected the data in accordance with the areas of arable crops published in the Northern Ireland Agricultural Census, June 2002 (Anon., 2003). The total number of farms in each size group and the number of farms sampled are shown in Table 1.

The collected data were entered using Oracle, a relational database programme. Validated data were downloaded for analysis using SPSS software.

RESULTS AND DISCUSSION

CROPS

The number and areas of arable crops surveyed, together with the proportion of the crop area surveyed, are shown in Table 2. Data from 315 farms provided information on 1,206 examples in 17 crop types. The total area of crops sampled in the survey represented 24% of the area of arable crops grown in Northern Ireland in 2002. Areas of arable crops grown in the six counties were estimated from survey data (Table 3, Figure 1) using raising factors discussed previously. Approximately 41% of the area of arable crops were grown in County Down, 25% in County Londonderry, 17% in County Antrim, 9% in County Tyrone, 8% in County Armagh. There was no significant area of arable cropping in County Fermanagh.

Barley crops, including spring barley (47%), undersown barley (4%) and winter barley (8%) were grown on 59% of the total arable area. Potato crops, comprising maincrop (10%), seed (3%) and early potatoes (2%) collectively accounted for 15% of the total arable crop area (Table 3, Figure 2). A further 15% of the arable area comprised spring and winter wheat crops, while minor crops, including oilseed rape accounted for the remaining 11% of the total arable area.

REGIONAL PESTICIDE USAGE

Overall, regional pesticide usage closely approximated to the areas of arable crops grown in each county (Table 4, Figure 3). County Down accounted for 41%, County Londonderry 27%, County Antrim 16%, County Armagh 9% and County Tyrone 8% of the total pesticide-treated area. The use of mixed formulations was confined to County Down. Counties Down and Londonderry accounted for 78% of total molluscicide usage and 70% of the total growth regulator usage. Pesticide usage in County Armagh exceeded that expected in relation to the contribution of this county to the total arable area grown.

PESTICIDE USAGE ON CROPS

The basic area of individual crops treated with pesticides approximated to the areas grown (Tables 3 & 5). Collectively, barley crops accounted for 44% of the total pesticide-treated area and 8% of the total quantity of pesticides applied (Tables 5 & 6). Barley crops also accounted for 56% of the insecticide treated area of arable crops and 71% of the total quantity of insecticide active ingredients applied. In addition, applications of herbicides and desiccants to barley crops, accounted for 58% of the herbicide and desiccant-treated area of arable crops but only 6% of the quantity of this pesticide group applied. Fungicide application to barley crops, represented 26% of the total area of arable crops treated with this pesticide group and 11% of the quantity of fungicide active ingredients applied. Application of growth regulators to barley crops accounted for 49% of the total area of arable crops treated with this pesticide group and 44% of the quantity of growth regulator active ingredients applied. Furthermore, barley crops accounted for 60% of the area of seed treatment applications and 29% of the quantity of seed treatment active ingredients applied.

Wheat crops accounted for 26% of arable crops treated with insecticides. Application of growth regulators to wheat crops accounted for 40% of the total area of arable crops treated with this pesticide group and 43% of the quantity of growth regulator active ingredients applied. These crops also represented 18% of the arable area treated with both fungicides and herbicides/desiccants.

Potato crops were grown on 15% of the total area of arable crops, representing 52% of the area of arable crops receiving fungicide application, comprising 82% of the quantity of fungicide active ingredients applied. The area of potato crops receiving herbicide and desiccant treatments was proportional to the area grown (17%). However, owing to the use of sulphuric acid as a haulm desiccant, the weight of herbicides and desiccants applied to potato crops was equivalent to 91% of the quantity of this pesticide group applied to arable crops. Application of molluscicide treatments to maincrop potatoes accounted for 58% of the total area of arable crops treated with this pesticide group and 53% of the quantity of molluscicide active ingredients. This was a significant increase from previous years' surveys.

PROPORTION OF CROPS TREATED

The proportional areas of crops treated with different pesticide groups, together with the number of spray applications are shown in Table 7. Pesticides were applied to 94% of the total area of arable crops grown, and all crop types received a minimum of one application from one of the pesticide groups. There were more than nine fungicide spray applications to maincrop potatoes.

Herbicides and desiccants were applied to 84% of arable crops grown. All crop types received herbicide and/or desiccant treatment, with 100% of oilseed rape and triticale being treated with this pesticide group.

Fungicides were applied to 66% of the area of arable crops grown in 2002, with 99% and 98% of seed and early potato crops being treated, respectively. Approximately 95% of winter wheat crops received fungicide treatment, whereas, 65% of spring wheat was treated with this pesticide group.

Pre-planting seed treatments were applied to 72% of all arable crops with 83% of all cereal crops sown receiving treatments. With regard to potatoes, 44% of maincrop, 66% of early and 41% of seed potatoes received seed treatments.

Insecticides and molluscicides were applied as single active ingredients, while other pesticide groups were generally applied in formulation. Overall, single insecticide treatments were applied to 32% of the area of arable crops grown. More than 50% of winter wheat and barley crops and 69% of winter oat crops were treated with this pesticide group. While 1% of seed potatoes were treated with insecticides, 17% of maincrop and 16% of early crops received insecticide treatments. Only 3% of the total area of arable crops grown received molluscicide treatment. Molluscicides were applied to 20% of early and 14% of maincrop potatoes.

Growth regulators were generally applied as single applications to 28% of the total area of arable crops. However, 87% of triticale received an application of this pesticide group. More than 84% of winter wheat crops and 68% of winter barley, received applications of growth regulators on at least one occasion. All cereal crop types received growth regulator treatments. Growth regulators were recorded for the first time in use on maincop potatoes. This was a single application by one farmer, which represented 1% of the area grown.

The only proprietary formulation comprising different pesticide groups was the fungicide and haulm desiccant fentin hydroxide/metoxuron applied as a single treatment to less than 2% of maincrop potatoes.

TOTAL PESTICIDE USAGE

Approximately 492 tonnes of pesticide active ingredients were applied to 288,348 spray-hectares.

Fungicides were applied to 44% of the pesticide-treated area accounting for 17% of the total quantity of pesticides used (Tables 8 & 9). Potato crops, including seed, early and maincrop varieties, received 82% of the quantity of fungicide active ingredients representing 52% of the area treated with fungicides. Fluazinam, which was used exclusively on potatoes, was the most extensively used fungicide applied as a single active ingredient, accounting for 10% of the fungicide treated area but only 2% of the weight of fungicide active ingredients applied. However, mancozeb, applied as a single active ingredient and in formulation with other compounds, represented 33% of the fungicide treated area and 66% of the quantity of fungicide active ingredients applied. Fentin hydroxide was exclusively used on potato crops, providing 8% of the fungicide-treated area and 9% of the quantity of fungicide active ingredients applied. These active ingredients were used on all potato crop types for the control of potato blight (*Phytophthora infestans*). Epoxiconazole, applied as single active ingredient and in formulation, was the most commonly used fungicide on spring barley and accounted for 11% of the fungicide treated area. Azoxystrobin, as a single active ingredient, was the most commonly used fungicide on winter wheat, representing 7% of the fungicide-treated area but less than 2% of the quantity of fungicide active ingredients applied.

Herbicides and desiccants were applied to 30% of the pesticide-treated area accounting for 80% of the total quantity of pesticides used. Sulphuric acid, used as a potato haulm desiccant, accounted for 89% of the weight of herbicide and desiccant active ingredients applied. However, owing to the high concentration of the acid in product formulation, the area treated with this active ingredient represented only 3% of the total herbicide-treated area. Cereals accounted for 81% of the area treated with herbicides and desiccants, while the weight of herbicide and desiccant active ingredients applied to cereal crops, represented 9% of the total quantity of herbicides and desiccants used. Treatments to spring barley crops accounted for 47% of the herbicide and desiccant treated area, representing 4% of the weight of herbicide and desiccant active ingredients applied. The sulfonylurea, metsulfuron-methyl, continued to be the most extensively used herbicide on cereal crops, particularly spring barley, accounting for 22% of the herbicide and desiccant treated area of cereal crops. Owing to the low

application rate of metsulfuron-methyl, the quantity of this active ingredient applied represented less than 1% of the total quantity of herbicides and desiccants used. Isoproturon, as a single active ingredient or in formulation with diflufenican, pendimethalin or trifluralin, was applied to 37% of the herbicide and desiccant-treated area of winter barley and winter wheat crops. Use of the non-selective herbicide glyphosate, particularly in spring barley, for general weed control and desiccation purposes, represented 15% of the total area of cereal crops treated with herbicide/desiccant active ingredients.

Insecticides accounted for 7% of the pesticide-treated area of arable crops, representing less than 1% of the weight of pesticides used. Pyrethroid active ingredients accounted for 91% the insecticide-treated area but only 24% of the quantity of insecticides used. Lambda-cyhalothrin was the most commonly used active ingredient, applied to most arable crops but primarily spring barley, winter barley and winter wheat, accounting for 45% of the insecticide-treated area.

Methiocarb and metaldehyde, were the only molluscicide active ingredients recorded and accounted for less than 1% in both area of application and quantity of pesticides applied. Methiocarb, applied principally to maincrop potatoes for slug control, accounted for 78% of both the molluscicide-treated area and quantity of molluscicides used.

Growth regulator usage, accounted for 6% of the pesticide-treated area and 2% of the weight of active ingredients used. Growth regulators were applied primarily to spring barley, winter barley and most frequently, to winter wheat. Chlormequat, was the most commonly used growth regulator active ingredient, accounting for 72% of the area treated with growth regulators and 90% of the weight of growth regulators applied. Formulations of 2-chloroethylphosphonic acid and mepiquat chloride and the single active ingredient trinexapac-ethyl, were also used on cereal crops. The use of growth regulators on potatoes was recorded for the first time in 2000. This was the single instance of the growth regulator maleic hydrazide, used on maincrop potatoes.

Seed treatments applied to arable crops, accounted for 12% of the pesticide-treated area, representing less than 1% of the quantity of active ingredients applied. Overall, 83% of cereal crops and 50% of potato crops received seed treatments. The formulation tebuconazole/triazoxide, was the most commonly used seed treatment on cereals while the single active ingredient imazalil was most frequently applied to potatoes.

The only pesticide with mixed activity recorded was a formulation of fentin hydroxide/metoxuron, applied solely to maincrop potatoes, accounting for less than 1% of both the total pesticide area treated and quantity of pesticides applied. Fentin hydroxide/metoxuron is a combined fungicide and haulm desiccant.

The areas of each crop treated with pesticide formulations, and the quantities of pesticide active ingredients applied to each crop type, are shown in Tables 8 and 9, respectively. The fifty most commonly used active ingredients, ordered by area treated and weight applied, are shown in Tables 10 and 11, respectively.

PESTICIDE USAGE ON CEREALS

Spring barley (Table 12)

Applications of herbicides and desiccants to spring barley accounted for 42% of the pesticide-treated area (60% of the weight of pesticides applied), fungicides 26% (26%), seed treatments 19% (2%), insecticides 9% (2%) and growth regulators 5% (9%). Molluscicides were used infrequently on spring barley crops during 2002 (Tables 5 & 6).

The fungicide single active ingredients epoxiconazole, fenpropimorph and trifloxystrobin along with the formulation carbendazim/flusilazole, accounted for 35% of the fungicide-treated area and were the most extensively used fungicide active ingredients. Azoxystrobin, applied as a single active ingredient, accounted for 8% of the fungicide-treated area of spring barley. More than 91% of fungicide applications were for general disease control, while 5% were specifically to control mildew (*Blumeria graminis f.sp hordei*).

The most extensively used herbicide was metsulfuron-methyl, applied generally as a single active ingredient, but also in formulations with thifensulfuron-methyl or tribenuron-methyl. This was used primarily for 'general weed control'. Because of its low application rate per hectare, the quantity of metsulfuron-methyl used represented less than 6% of the herbicide active ingredients applied to spring barley, while accounting for 43% of the herbicide-treated area. Metsulfuron-methyl continued to be the preferred sulfonylurea herbicide for spring barley crops in 2002. Glyphosate was commonly used for 'desiccation' and 'general weed control'.

The primary targets for insecticide application to spring barley were aphids, with more than 83% of applications of pyrethroid and organophosphate active ingredients directed at this pest group. The most commonly used pyrethroid active ingredients were, lambda-cyhalothrin and esfenvalerate, accounting for 70% of insecticide applications to this crop. The organophosphorus insecticide chlorpyrifos, was generally applied to control leatherjackets (*Tipula* spp.).

Approximately 18% of the area of spring barley grown was treated with growth regulators. Chlormequat, applied as a single active ingredient, accounted for 92% of the growth regulator treated area. The single active ingredients, trinexapac-ethyl and 2-chloroethylphosphonic acid or the formulation 2-chloroethylphosphonic acid with mepiquat chloride, were used on the remaining 8% of this treated area.

Approximately 80% of spring barley was treated with a single seed dressing. Almost 75% of this area was grown from seed treated with a formulation tebuconazole/triazoxide, representing 37% of the quantity of seed treatments used (Tables 8 & 9). Guazatine was used on a further 18% of the area of spring barley grown with treated seed and accounted for 55% of the weight of seed treatment active ingredients used.

Undersown barley (Table 13)

Herbicides and desiccants accounted for 38% of the pesticide-treated area of undersown barley (73% of the weight of pesticides applied), seed treatments 38% (2%) and fungicides 15% (20%). Insecticide usage on undersown barley represented 5% and less than 1% of the area of application and quantity of pesticides applied, respectively. Growth regulators represented 4% of the treated area and 5% of the quantity of pesticides applied. Molluscicides were not recorded as use on undersown barley crops in 2002 (Tables 5 & 6).

Epoxiconazole, was the most extensively used fungicide active ingredient on undersown barley crops representing 31% of the fungicide treated area but, due to low application rates, represented less than 2% of the quantity of fungicides applied. While representing over 34% of the quantity of fungicides applied, the formulation fenpropidin/tebuconazole accounted for only 3% of the area treated. General disease control was the main reason given for fungicide use.

Formulations comprising 2,4-DB and MCPA with either benazolin or linuron were the most frequently used herbicides. Collectively, these formulations accounted for 54% of the herbicide and desiccant-treated area and 70% of the quantity applied. The reason given for over 99% of herbicide applications was ‘general weed control’.

Pyrethroids, were the only insecticides used for the control of aphids with lambda-cyhalothrin accounting for 81% and esfenvalerate representing 14% of the insecticide-treated area. The only organophosphate recorded was chlopyrifos, used on 5% of the treated area of undersown barley, for the control of leatherjackets (*Tipula* spp.).

The single active ingredients chlormequat and 2-chloroethylphosphonic acid, along with the formulation 2-chlroroethylphosphonic acid and mepiquat chloride, were the only growth regulators recorded in use on undersown barley crops with 2-chloroethylphosphonic acid representing 64% of the growth regulator treated area.

A formulation of tebuconazole/triazoxide, represented over 93% of the area sown with treated seed, accounting for 68% of the weight of seed treatment active ingredients applied to undersown barley crops. The single active ingredients guazatine and imazalil were the only other seed treatments used (Tables 8 & 9).

Winter barley (Table 14)

Fungicides accounted for 32% of the area of winter barley treated with pesticides, herbicide and desiccants 31%, growth regulators 14%, seed treatments 13% and insecticides 10%. However, herbicides and desiccants accounted for 61% of the total weight of pesticide active ingredients applied, growth regulators 21%, fungicides 17%, seed treatments 1% and insecticides less than 1%. Molluscicides accounted for less than 1% in both area of application and quantity of pesticides applied (Tables 5 & 6).

Fenpropimorph, applied as a single active ingredient or in formulations with flusilazole, kresoxim-methyl, or quinoxyfen, accounted for 21% and 29% of the fungicide treated area and quantity of fungicide applied, respectively. Epoxiconazole, as a single active ingredient or in formulations, was also frequently used. 'General disease control' was the primary reason given for 92% of fungicide applications.

Isoproturon, as a single active ingredient or in formulations was the most commonly used herbicide, accounting for 43% of the herbicide and desiccant-treated area and 48% of the weight of herbicide and desiccant active ingredients applied. Glyphosate accounted for 21% of the area of application and 20% of quantity applied. 'General weed control' was the reason given for 86% of herbicide applications to winter barley crops.

Pyrethroid insecticide active ingredients collectively accounted for 99% of the insecticide treated area with lambda-cyhalothrin representing 56% of this. Chlorpyrifos was applied to 17 spray-hectares of winter barley. Aphid control was the main reason for the use of insecticides.

Methiocarb, used for slug control, was the only molluscicide recorded. It was used on less than 24 hectares of the area of winter barley grown in 2002.

Chlormequat, applied as a single active ingredient, accounted for 60% of the area treated with growth regulators. The growth regulator 2-chloroethylphosphonic acid, used as a single active ingredient or in formulation with mepiquat chloride, accounted for 26% of the area treated, with the remainder being treated by trinexapac-ethyl.

Approximately 84% of the area of winter barley was grown from treated seed (Table 7). The most extensively used seed dressing was the formulation of tebuconazole/triazoxide, which accounted for 74% of the area of winter barley sown with treated seed and 26% of the weight of seed treatments used. Guazatine, used as a single active ingredient represented 13% of the area sown with treated seed and 48% of the quantity applied (Tables 8 & 9).

Spring wheat (Table 15)

A total area of 1428 hectares of spring wheat were grown in Northern Ireland in 2002, approximately 42% of which was grown in County Antrim. This represented a 65% increase compared to 2000. Fungicides accounted for 29% of the pesticide treated area and 39% of the quantity applied, while herbicide and desiccant applications represented 32% of the treated area and 39% of the weight used. Growth regulators represented 10% of the pesticide-treated area and 15% of the quantity of active ingredients used. While seed treatments accounted for 19% of the pesticide-treated area of spring wheat, the weight of active ingredients represented 3% of the pesticides applied to this crop. Insecticide usage represented 10% of the pesticide-treated area and 1% of the total quantity of pesticides used (Tables 5 & 6).

'General disease control' was the only reason attributed to the fungicide-treated area of spring wheat crops. Epoxiconazole, applied as a single active ingredient but also in formulation with kresoxim-methyl and pyraclostrobin, accounted for 21% of the fungicide-treated area and less than 4% of the quantity of fungicide active ingredients applied to this crop. The single active

ingredient azoxystrobin, represented 19% of the fungicide-treated area and only 3% of the quantity of fungicide active ingredients applied. The formulation cyproconazole/ trifloxystrobin accounted for 66% of the quantity of fungicide active ingredients applied yet only 8% of the fungicide-treated area.

'General weed control' was the principal reason (92%) given for herbicide and desiccant usage. Metsulfuron-methyl, as a single active ingredient, accounted for 42% of the herbicide and desiccant treated area of spring wheat crops.

Deltamethrin accounted for 40% of the area treated with insecticides.

Chlormequat represented 70% of the growth regulator-treated area and 91% of the quantity of growth regulator active ingredients applied. Trinexapac-ethyl and 2-chloroethylphosphonic acid were also used. An unknown quantity of 2-chloroethylphosphonic acid was applied to 48 spray-hectares of spring wheat.

Approximately 96% of spring wheat crops were sown with treated seed. The single active ingredient fludioxonil was most frequently used, accounting for 65% of the area treated within this group.

No undersown spring wheat was recorded grown in 2002.

Winter wheat (Table 16)

While fungicides accounted for 42% of the pesticide-treated area of winter wheat crops and 22% of the quantity of pesticides used, herbicides and desiccants represented 26% of the pesticide treated area and 49% of the weight of pesticides applied. Growth regulators accounted for 12% of the pesticide treated area and 26% of the weight applied. Seed treatments represented 11% of the pesticide-treated area and only 3% of the quantity of pesticides applied. Insecticide treatments accounted for 9% of the pesticide-treated area and less than 1% of the weight used. Molluscicides represented less than 1% in both area of application and quantity of pesticides applied (Tables 5 & 6).

'General disease control' accounted for 94% of the fungicide-treated area of winter wheat. Epoxiconazole, used as a single active ingredient or in formulation with kresoxim-methyl and/or pyraclostrobin was the most extensively used fungicide active ingredient, accounting for 33% of the fungicide-treated area. Azoxystrobin used as single active ingredient was also frequently used.

The most extensively used herbicide and desiccant, applied as a single active ingredient or in formulation, was isoproturon. Applications of this active ingredient accounted for 39% of the winter wheat area treated with this pesticide group. Approximately 93% of herbicide and desiccant applications were for 'general weed control'.

Insecticides, principally to control aphids, were applied as single active ingredients. The pyrethroid insecticides, represented over 99% of the insecticide-treated area of winter wheat crops, while accounting for 76% of the weight of insecticides applied. Lambda-cyhalothrin,

was the most extensively used insecticide representing 47% of the insecticide-treated area and 24% of the quantity applied. Esfenvalerate was also frequently used. The only organophosphate insecticide used was chlorpyrifos, which represented less than 1% of the insecticide-treated area of winter wheat crops, while accounting for 24% of the weight of insecticides applied.

The molluscicides metaldehyde and methiocarb, were used on 122 hectares of winter wheat to control slugs.

The growth regulator chlormequat, primarily used as a single active ingredient but also in formulation with 2-chloroethylphosphonic acid, accounted for 74% of the growth regulator treated area of winter wheat.

Spring oats (Table 17)

Herbicides and desiccants accounted for 48% of the pesticide-treated area of spring oats, representing 30% of the quantity applied. While fungicides accounted for 20% of the pesticide-treated area of spring oats, the quantity applied represented 40% of the total quantity of pesticides used. The area sown with treated seed represented 20% of the pesticide-treated area and 9% of the weight applied. Growth regulators accounted for 9% and 21% of the pesticide-treated area and quantity applied, respectively. Insecticides represented 3% and less than 1% of the pesticide-treated area and quantity applied, respectively (Tables 5 & 6).

The only reasons given for fungicide usage was ‘general disease control’ or ‘prevention’. Azoxystrobin accounted for 38% of the fungicide-treated area.

Metsulfuron-methyl was used on 61% of the herbicide-treated area of spring oats for ‘general weed control’. This represented less than 6% of the weight of herbicides applied. Applications of dicamba, MCPA, mecoprop and mecoprop-P, used as single active ingredients or in formulation, collectively accounted for 86% of the quantity applied and yet only 39% of the herbicide-treated area.

Pyrethroid insecticide applications applied to spring oats, were used mainly to control aphids, with lambda-cyhalothrin accounting for 38% of the treated area. No organophosphates were used in 2002.

Chlormequat, as a single active ingredient, was applied to 61% of the area and accounted for 90% of the quantity of growth regulators applied. Trinexapac-ethyl, was the only other growth regulator applied to spring oats.

Approximately 50% of the area of spring oats were sown with treated seed. A formulation of tebuconazole/triazoxide and the single active ingredient fludioxonil, represented 95% of the treated area (Tables 8 & 9).

Undersown oats

In 2002, 20 hectares of undersown oats were grown. No pesticides were applied to this area.

Winter oats (Table 18)

Both fungicides and herbicides/desiccants accounted for 29% of the pesticide-treated area of winter oats and represented 22% and 32% of the quantity applied, respectively. Growth regulators and seed treatments, both accounted for 15% and 13% of the pesticide-treated area, representing 43% and 1% of the quantity applied, respectively. Insecticide usage represented 14% of the pesticide-treated area and 1% of the quantity of pesticides used (Tables 5 & 6).

Quinoxyfen as a single active ingredient, was the most extensively used fungicide, accounting for 35% of the fungicide-treated area and 15% of the quantity applied. The principal reason for the use of fungicides on winter oats was ‘general disease control’.

All herbicide and desiccant applications were for ‘general weed control’. Metsulfuron-methyl applied as a single active ingredient or in formulation with tribenuron-methyl, accounted for 31% of the herbicide-treated area but less than 1% of the quantityapplied. Mecoprop-P and glyphosate were also used as single active ingredients, and accounted for 19% and 16% of the herbicide-treated area, respectively.

All insecticides applied to winter oats were used to control aphids. The pyrethroid insecticide active ingredients accounted for 88% of the insecticide-treated area of this crop with no organophosphates being recorded. Lambda-cyhalothrin was the most extensively used insecticide active ingredient, accounting for 60% of the treated area. The carbamate, pirimicarb, was the only non-pyrethroid insecticide to be used.

Chlormequat, was the only growth regulator used on 983 hectares of winter oats.

Approximately 91% of the area of winter oats grown in Northern Ireland in 2002, were sown with treated seed. The formulations carboxin/thiram and bitertanol/fuberidazole were the most extensively used seed dressings, accounting for 76% of the treated area and 83% of the quantity used.

PESTICIDE USAGE ON POTATOES

Potato crops represented 15% of the area of arable crops grown in Northern Ireland in 2002, while accounting for 30% of the total pesticide treated area. However, the quantity of pesticides applied to potato crops represented 87% of the total weight of pesticides used. The total area of potatoes grown comprised 71% maincrop, 18% seed and 11% early potatoes. Maincrop potatoes accounted for 77% of the total area of potatoes treated with pesticides, and 58% of the total quantity of pesticides applied. Seed potatoes accounted for 14% of the area treated and 33% of the quantity applied. Early potatoes represented 9% of both the total pesticide-treated area and the total quantity of pesticides applied to potato crops.

Seed potatoes (Table 19)

Fungicides accounted for 76% of the area of seed potatoes treated with pesticides, while representing 7% of the quantity of pesticides applied. Conversely, herbicides and desiccants represented 22% of the pesticide treated area and 93% of the weight applied. Approximately 41% of the area of seed potatoes grown were planted with treated seed. This area represented 4% of the treated area of this crop and less than 1% of the quantity applied. Insecticides accounted for less than 1% of both the treated area and quantity of pesticides applied to seed potato crops (Tables 5 & 6). Molluscicides represented 2% of the treated area and less than 1% of the quantity of pesticide applied.

Mancozeb, used as a single active ingredient or in formulation, continued to be the fungicide active ingredient most extensively used, accounting for 83% of the quantity of fungicides applied. Fluazinam and fentin hydroxide, as single active ingredients, were also frequently used. More than 93% of fungicide applications were for blight (*Phytophthora infestans*) control.

Paraquat, used for 'general weed control', accounted for 30% of the area of seed potatoes treated with herbicides and desiccants. Applications of sulphuric acid represented 27% of the herbicide and desiccant treated area, but accounted for 99% of the weight of active ingredients used from this pesticide group. Approximately 54% of this group of pesticides were used for 'general weed control' with 46% being applied for desiccation.

Deltamethrin, used for 'pest control', was the only insecticide applied.

The molluscicides, metaldehyde and methiocarb, were appled to control slugs. Metaldehyde accounted for 93% of the molluscicide-treated area and 90% of the quantity applied.

Imazalil, as a single active ingredient or in formulation with pencycuron or thiabendazole, accounted for 98% and 35% of the area planted with treated seed and the quantity of seed treatments used, respectively. Thiabendazole, as a single active ingredient, was also used and represented 65% of the quantity of seed treatments applied.

Early potatoes (Table 20)

Early potato varieties accounted for approximately 11% of the area of potatoes grown and 9% of the pesticide treated area (9% of the quantity applied). Fungicides accounted for 70% of the pesticide-treated area (representing 14% of the quantity of pesticides applied), herbicides and desiccants 19% (85%) and seed treatments 6% (1%). Insecticides and molluscicides both accounted for 3% of the pesticide-treated area and less than 1% in terms of the quantity applied (Tables 5 & 6).

The dithiocarbamate fungicide mancozeb, applied as a single active ingredient or in formulations accounted for 78% of the quantity of fungicide used. Fluazinam, applied as a single active ingredient, represented 23% of the fungicide-treated area for early potatoes.

Paraquat was the principal herbicide used on 36% of early potato crops for ‘general weed control’. Diquat was the most commonly used desiccant. Sulphuric acid was also applied as a haulm desiccant and 74% of herbicides applied to the treated area were for broad-spectrum weed control.

The pyrethroid, lambda-cyhalothrin, was the main insecticide used, accounting for 82% of the area treated and represented less than 6% of the quantity of insecticide applied. The organophosphate dimethoate, represented 90% of the quantity of insecticides applied. Applications were solely for the control of aphids.

The molluscicides, methiocarb and metaldehyde, were recorded in use on this crop to control slugs.

The area of early varieties of potatoes planted with treated seed represented 66% of the total area of early potatoes grown. Imazalil applied as a single active ingredient or in formulations with pencycuron or thiabendazole, accounted for 96% of the quantity of seed treated within this group.

Maincrop potatoes (Table 21)

Fungicides accounted for 77% of the area of maincrop potatoes treated with pesticides (22% of the quantity of pesticides applied), herbicides and desiccants 16% (77%) and seed treatments 3% (less than 1%). Insecticides accounted for 2% of the pesticide-treated area and less than 1% in terms of weight applied. Molluscicides represented less than 2% of pesticide-treated area and less than 1% of quantity applied. Growth regulators and mixed formulations accounted for less than 1% of both area treated and quantity applied (Tables 5 & 6).

An estimated 90% of the area of maincrop potatoes received a fungicide application. Applications of mancozeb, as a single active ingredient and in formulation, accounted for 61% of the fungicide treated area and 79% of the quantity applied. Approximately 95% of fungicide applications to maincrop potatoes were for the control of blight (*P. infestans*).

‘General weed control’ accounted for 60% of all herbicide and desiccant applications with haulm desiccation as the perceived reason for the remainder. Paraquat and diquat, applied as single active ingredients and in formulation together, were the most extensively used herbicide and desiccants, comprising 61% of the area treated. Because of the high concentration and rate of application, sulphuric acid, represented only 12% of the herbicide and desiccant treated area while accounting for 97% of the weight of active ingredients used from this pesticide group. Metribuzin was also frequently used.

The insecticide lambda-cyhalothrin, accounted for 49% of the treated area, with pyrethroids being used on 72% of the total area treated with insecticides. Organophosphates represented 6% of the treated area. The single active ingredient phorate, used only for the control of wireworms, accounted for 3% of the insecticide-treated area. The carbamate primicarb, represented 77% of the quantity of insecticide applied to maincrop potatoes.

Methiocarb, applied for ‘slug control’, was the only molluscicide recorded in use on maincrop potatoes.

Fentin hydroxide/metoxuron, applied to 86 spray-hectares of maincrop potatoes, was the only formulation of active ingredients from different pesticide groups recorded in use on maincrop potatoes.

The use of growth regulators on maincrop potatoes was recorded for the first time. The pyridazinone, maleic hydrazide, was recorded as used, on one occasion, on approximately 72 hectares.

Seed treatments were applied to approximately 44% of the area planted with maincrop potatoes. Imazalil, applied as a single active ingredient or in formulations with pencycuron or thiabendazole, accounted for 84% of the quantity of seed treated within this group. The single active ingredients thiabendazole and chlorpropham were also used (Tables 8 & 9).

PESTICIDE USAGE ON MINOR CROPS:

Oilseed rape (Table 22)

Herbicides and desiccants were applied to 43% of the pesticide-treated area of oilseed rape (accounting for 73% of the quantity of pesticides applied), fungicides 16% (9%), seed treatments 22% (10%), molluscicides 9% (8%) and insecticides 11% (less than 1%) (Tables 5 & 6).

Tebuconazole was the main single active ingredient used, accounting for 65% of the treated area. The formulation fluquinconazole/prochloraz, was applied to the remaining area. All fungicides were applied for ‘general disease control’.

Trifluralin was applied to 27% of the herbicide and desiccant-treated area. The only desiccant used was diquat and was used solely for this purpose. All ten herbicides and desiccants were applied as single active ingredients.

The only insecticide recorded was the pyrethroid lambda-cyhalothrin which was applied to control aphids.

An estimated 12% of the area of oilseed rape grown was treated with molluscicides. Methiocarb, accounted for 67% of the treated area 55% of the quantity applied. Metaldehyde was the only other molluscicide recorded as used on this crop.

Approximately 88% of the area of oilseed rape crops grown were sown with treated seed. Iprodione, as a single active ingredient, and the formulation beta-cyfluthrin/imidacloprid, were the only known seed treatments recorded.

Peas & Beans (Table 23)

Peas and beans have been recorded since 1998. Approximately 134kg of pesticides were used on a total of 197 hectares in 2002, 47% of which were grown in County Down.

Herbicides and desiccants accounted for 30%, fungicides 38%, insecticides 15% and seed treatments 18% of the pesticide-treated area.

Chlorothalonil was the main fungicide active ingredient used. ‘General disease control’ was the only reason for application recorded.

Pendimethalin, as a single active ingredient, accounted for 34% of the herbicide and desiccant-treated area and 64% of the quantity applied. It was exclusively used for ‘general weed control’. Glyphosate was principally used for ‘general weed control’, but was also applied as a desiccant on 2% of the treated area.

The carbamate pirimicarb, and the pyrethroid lambda-cyhalothrin, were the only insecticides applied and ‘aphid control’ was the only reason given for their use.

No molluscicides were applied.

Triticale (Table 24)

An estimated 49 hectares of triticale were grown in Northern Ireland in 2002 with 88% being grown in County Down.

Epoxiconazole and tebuconazole were the only fungicide active ingredients used.

Three herbicide and desiccant active ingredients, fluroxypyr, metsulfuron-methyl and tribenuron-methyl were used. Tribenuron-methyl accounted for 55% of the herbicide and desiccant treated area with metsulfuron-methyl representing 99% of the quantity of active ingredients applied.

Chlormequat was the only growth regulator applied.

There were no insecticides or molluscicides applied to this crop.

Flax and Linseed (Table 25)

Of the 14 hectares of flax and linseed grown in Northern Ireland in 2002, 13 hectares were grown in County Armagh.

The only pesticide applied was the herbicide amidosulfuron for ‘general weed control’.

Lupins (Table 26)

Lupins were recorded for the first time in 2002 and the area grown was approximately 67 hectares.

Herbicides were the only pesticides applied to this crop. The formulation terbutryn/terbuthylazine represented 36% of the treated area and 53% of the quantity applied.

PESTICIDE USAGE ON SET-ASIDE (Table 27)

Set-aside was recorded for the second time in 2002, at an estimated 3,013 hectares.

There were seven herbicides used on this crop area. The single active ingredient glyphosate, accounted for 72% of the herbicide-treated area, representing 87% of the quantity of active ingredients applied. The only reason for use recorded was ‘general weed control’.

COMPARISON WITH PREVIOUS SURVEYS OF PESTICIDE USAGE ON THE AREAS OF ARABLE CROPS GROWN. (Table 28)

The total area of arable crops grown in Northern Ireland in 2002 decreased by approximately 9% from that recorded in the 1998 survey, representing a 21% reduction in the area of arable crops grown when compared to that recorded in 1990.

Overall, the area of cereal production declined by 6% from that recorded in 2000. However, the area of winter and spring wheat crops showed increases of 41% and 65%, respectively.

The area of potato crops planted in 2002 was 11% lower than that recorded in 1998 and 43% lower than the area in 1990. The area of seed potato crops has reduced by 65% since 1990. A similar trend is applicable to maincrop potatoes, with the area grown in 2002 reduced by 14% compared with 1998. The area of early potato crops increased by 86% compared with 1998 and was equal to the area grown in 1996.

The area of oilseed rape has decreased and is now at it lowest recorded level of production.

Triticale crops, which were first recorded in 1990, were again recorded. Having recurred in 1998, the crop area has decreased by 28% from 2000.

The area of peas and beans has returned to the level grown in 1998 having shown a 28% decrease from 2000.

Lupins were recorded for the first time in 2002.

TRENDS IN PESTICIDE USAGE
Comparisons with previous surveys

ARABLE (Tables 29 & 30)

Overall, a 9% decrease in the area of arable crops grown was recorded between 1998 and 2002.

During this period the quantity of pesticides applied to arable crops has increased by 10%. However, the total area of pesticide application decreased by 7%.

There was a 72% increase in the area treated with molluscicides compared with 1998 with the quantity of insecticide active ingredients increasing by 95%.

The area treated with insecticides has remained the same during the period 1998 to 2002 whilst the quantity applied reduced by 22%. The quantity of organophosphates used reduced by 34%, the area treated with pyrethroids increased 6% and the quantity applied by 7%. The area treated with carbamates doubled and the quantity applied increased by 123%.

The area of fungicide application decreased by 10% and the quantity applied represented a 6% reduction.

The area of application and quantity of growth regulators used, decreased from 1998 levels.

The area of arable crops sown or planted with treated seed in 2002 has decreased, while the quantity of seed treatment applied decreased by 24% in comparison with the 1998 survey.

CEREALS (Tables 31& 32)

The quantity of pesticides applied to cereal crops decreased by 12% with the total pesticide application area decreasing by 9% when compared with 2000.

There was a 6% decrease in the area treated with fungicides compared with 2000. However, the quantity of fungicide applied increased by 14%. The quantity of fungicides applied in 2002 was virtually the same as that applied in 1990 with the area to which this quantity has been applied too, increasing by almost 80%.

The quantity of insecticides applied to cereal crops significantly reduced by 72%, compared with 2000 and there was also a decrease of 39% in the treated area during this period.

A reduction in both quantity (54%) and area treated of cereals (63%) with molluscicides was recorded when compared to 2000.

The quantity and area of herbicides and desiccants application to cereals has reduced, with the quantity applied at its lowest level since surveys began.

The use of growth regulators has remained, approximately, at the same level as in 2000 although the quantity applied reduced by 10%. Since 1990, the area treated more than doubled with the quantity applied increasing by 10%, although the area of cereals grown increased by only 40%.

OILSEED RAPE (Tables 33& 34)

There has been a decrease (39%) in the area of oilseed rape grown compared with 2000, which is reflected in decreases in fungicide, herbicide and desiccant usage.

Insecticides, molluscicides and seed treatments were applied in 2002 not having been applied in 2000.

Growth regulators were not applied to oilseed rape in 2002.

PEAS AND BEANS (Tables 35 & 36)

The area grown of peas and beans decreased by 28% since 2000 and has now returned to the level when this crop was first recorded in 1998.

The area treated increased by 74%, mainly due to the increased usage of insecticides and fungicides. The total quantity of pesticide applied is only 3% above the level recorded in 2000.

SET-ASIDE (Tables 37& 38)

The area of set-aside increased since 2000 by 23% to 3,013 hectares with herbicides being the only pesticide type applied. The area treated and quantity applied have increased by 53% and 23%, respectively.

POTATOES (Tables 39-46)

The total area of potatoes grown in 2002 decreased by 11% (7,513 hectares) when compared with 1998. This is the smallest area of potatoes grown since surveys began. However, the area of early potatoes grown increased by 86% to 728 hectares, which was a similar area to that grown in 1996.

The overall usage of pesticides on potato crops, measured by application area of active ingredients, decreased by 10% compared with 1998. This was a reflection of the reduced area grown. However, the weight of pesticides applied increased by 18% over the same survey period.

There was a decrease of 35% in fungicide application to seed potatoes compared with 1998, with a three-fold increase in fungicide-treated area for early potatoes. The quantity of fungicides applied to maincrop potatoes increased by 8% to a similar level to that recorded in 1998 while the area treated reduced by 13%.

Overall, in 2002 herbicide and desiccant application to potatoes decreased by 11%, with quantity applied increasing by 22%. This increase can be partially attributed to an increased application rate for sulphuric acid.

The insecticide-treated area of potato crops in 2002, increased by almost four-fold when compared with 1998. This was mainly due to the increased treated area of maincrop potatoes. However, the amount of insecticide applied reduced by 42% due to reductions in the amounts applied to seed and early potato crops.

Molluscicide application has increased three-fold since 1998 with applications to seed, early and maincrop potatoes all contributing to this increase.

PESTICIDE USAGE ON POTATOES IN STORAGE (Tables 47-54)

In addition to information concerning field applications of pesticides to potato crops, data was collected relating to post-harvest/storage treatments applied to farm-stored potatoes. Data collected included; quantity of potatoes stored, the quantity treated, pesticides used, crop type and type of storage. Of the 315 holdings visited, 71 grew potato crops of which 31 holdings stored potatoes on-farm. The data were raised to a province-wide level using raising factors discussed earlier.

An estimated 60,353 tonnes of potatoes were stored in Northern Ireland in 2002, of which, 13,053 tonnes were treated.

County Down accounted for 38% of the potatoes grown and 21% of potatoes stored, while County Londonderry represented 27% of the potatoes grown and 37% potatoes stored. Counties Antrim and Armagh represented 25% and 17% of all potatoes stored, respectively. No potato storage was recorded in Counties Tyrone and Fermanagh.

The total quantity of potatoes stored in Northern Ireland was represented by 73% ware potatoes and 23% seed potatoes with all four counties storing both types.

Approximately 22% of all potatoes stored received a pesticide treatment. County Down represented 34% of the total treated tonnes and County Armagh 31%. County Londonderry and County Antrim accounted for 18% and 17%, respectively.

County Down represented 79% (383kg) of the quantity of pesticide active ingredients applied. Counties Antrim and Armagh both accounted for 8% and Londonderry 6%. Approximately 90% of the quantity of pesticide active ingredients were applied to ware potato crops with the remaining 10% applied to seed potato crops.

The fungicide imazalil, as a single active ingredient and also in formulations with pencycuron and thiabendazole, was the most frequently used active ingredient applied treating 12,030 tonnes (94%) of all treated potatoes in storage. Thiram, having a high molecular weight, represented 66% of the quantity of pesticide active ingredients applied, yet only approximately, 4% of tonnes of potatoes treated.

Potato stores were classified into five types; ‘barn store’, ‘modified barn’, ‘ventilated store’, ‘refrigerated store’ and ‘unspecified’. Approximately 42% of potatoes held on-farm in 2002 were stored in refrigerated stores, 30% in ventilated stores, 13% in modified barn stores, 11% in barn stores and remainder being unspecified. Approximately 61% of all stored potatoes were boxed, 20% bulked and 7% held in stores with both boxes and bulk areas. For 12% of potatoes the type of storage method was unknown.

Seed Potatoes:

Seed potatoes accounted for 27% (16,032 tonnes) of the total quantity stored. There were 4,029 treated tonnes stored regionally with 48kg of pesticide active ingredients being applied. Imazalil, applied as a single active ingredient, was the only pesticide applied to stored seed potatoes.

An estimated 89% of all seed potatoes were stored in boxes with the remaining 11% being stored in bulk. On-farm refrigerated stores, accounted for 47% of all types of storage buildings used, ventilated stores 27%, modified barn stores 23% and barn stores 1%.

Ware Potatoes:

Approximately 44,322 tonnes of ware potatoes were stored in 2002, accounting for 73% of total quantity of potatoes stored. It was estimated 20% were treated, with 439kg of pesticide being applied. Imazalil, applied as a single active ingredient and in formulations with pencycuron and thiabendazole, was used on 91% of ware potatoes.

An estimated 51% of ware potatoes were stored, solely, in boxes, with 17,156 tonnes (39%) being kept in refrigerated stores and 13,842 tonnes (31%) in ventilated stores.

COMPARISON OF PESTICIDE USAGE ON POTATOES IN STORAGE (Tables 55-58)

In comparison with 1998, the quantity of potatoes stored decreased by an estimated 102,255 tonnes (63%). However, 22% (13,053 tonnes) of potatoes stored were treated, when compared with 9% (14,051 tonnes) in 1998. This represented a 7% reduction in quantity treated between years.

Reductions of 84% since 1992, 74% since 1994, 70% since 1996 and 61% since 1998 were recorded in the quantity of pesticide active ingredients applied.

Although the quantity of stored seed potatoes in 2002, which were treated, remained similar to those recorded in 1998, the quantity of pesticides applied reduced by more than half. This may be due, in part, to the non-use of the active ingredient 2-aminobutane, which has a high application rate, and consequently, the increased use of imazalil, in 2002. In common with 1998, imazalil was the most extensively used active ingredient.

In both 1996 and 1998 the most popular type of storage building was the 'barn store' with 'bulk' storage being the most common method. Of those farms surveyed in 2002, the 'barn store' was the least popular with 'refrigerated' storage buildings and 'boxed' being the most extensively used.

The storage of 'reserved seed' was not recorded in 2002.

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Figure 1 The regional distribution of arable crops grown in Northern Ireland in 2002

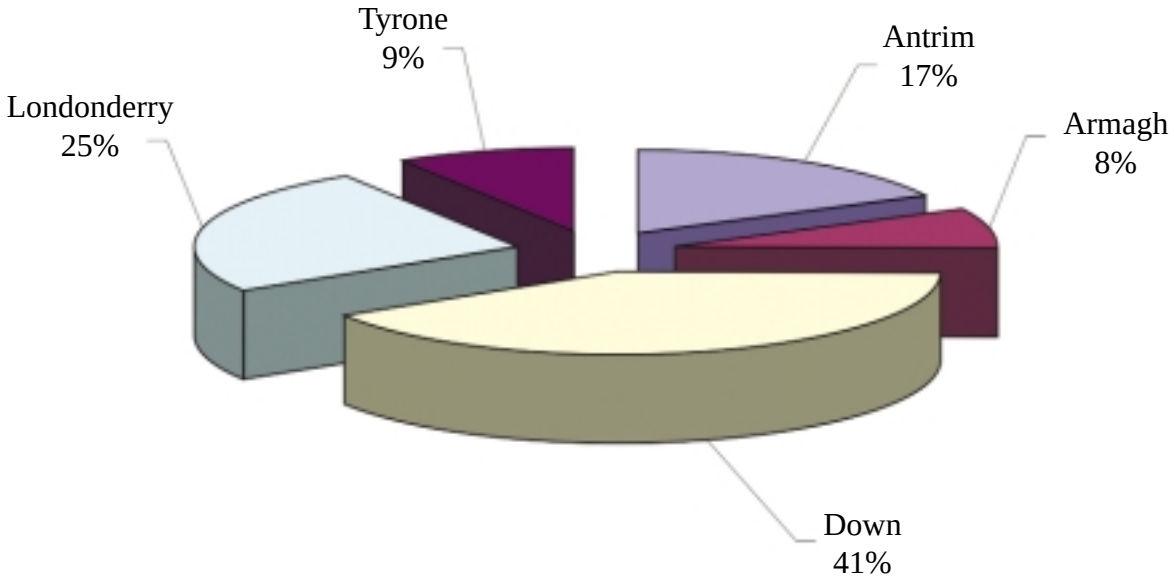

Figure 2 Utilization of arable land in Northern Ireland in 2002

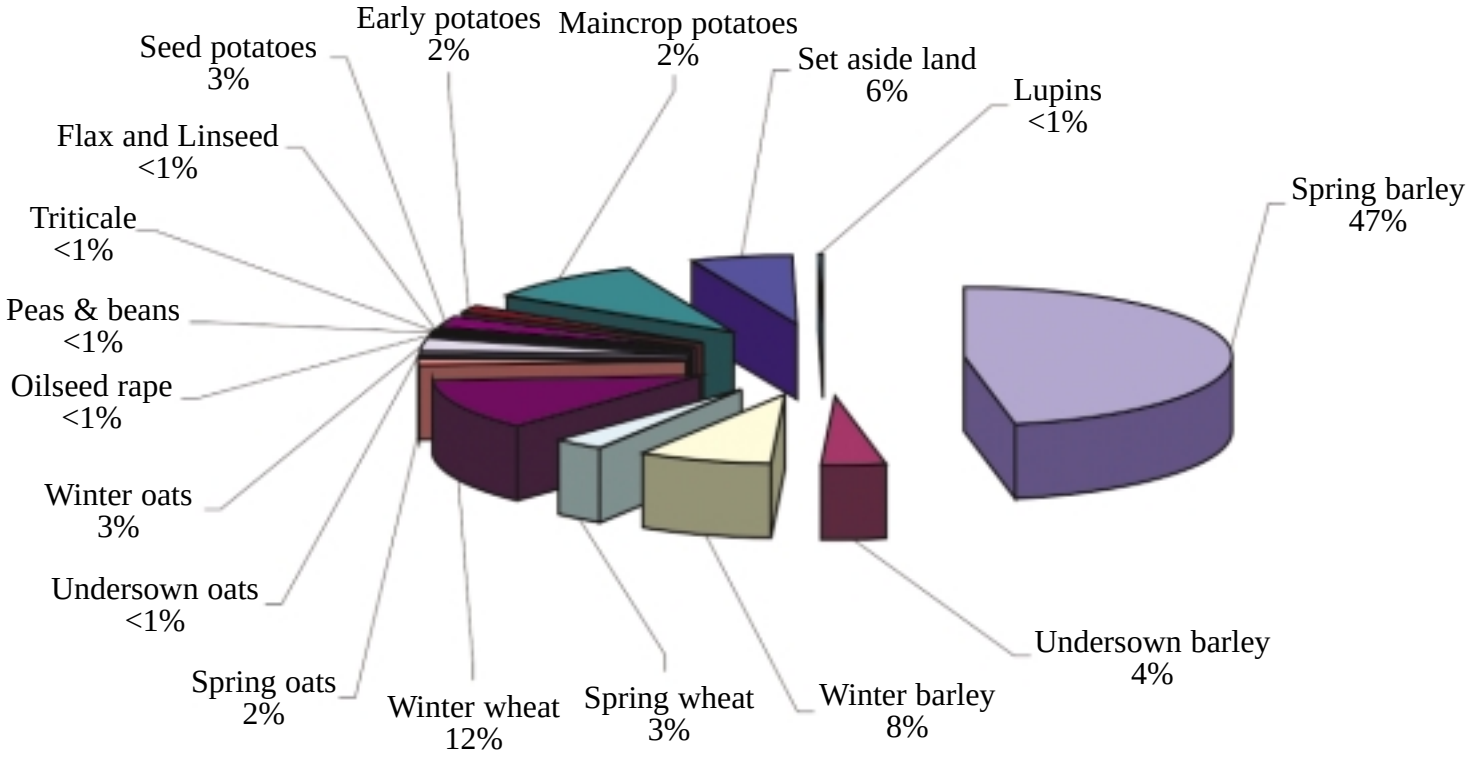

Figure 3 The areas of arable crops treated (spray hectares) with each pesticide type in the county regions of Northern Ireland in 2002

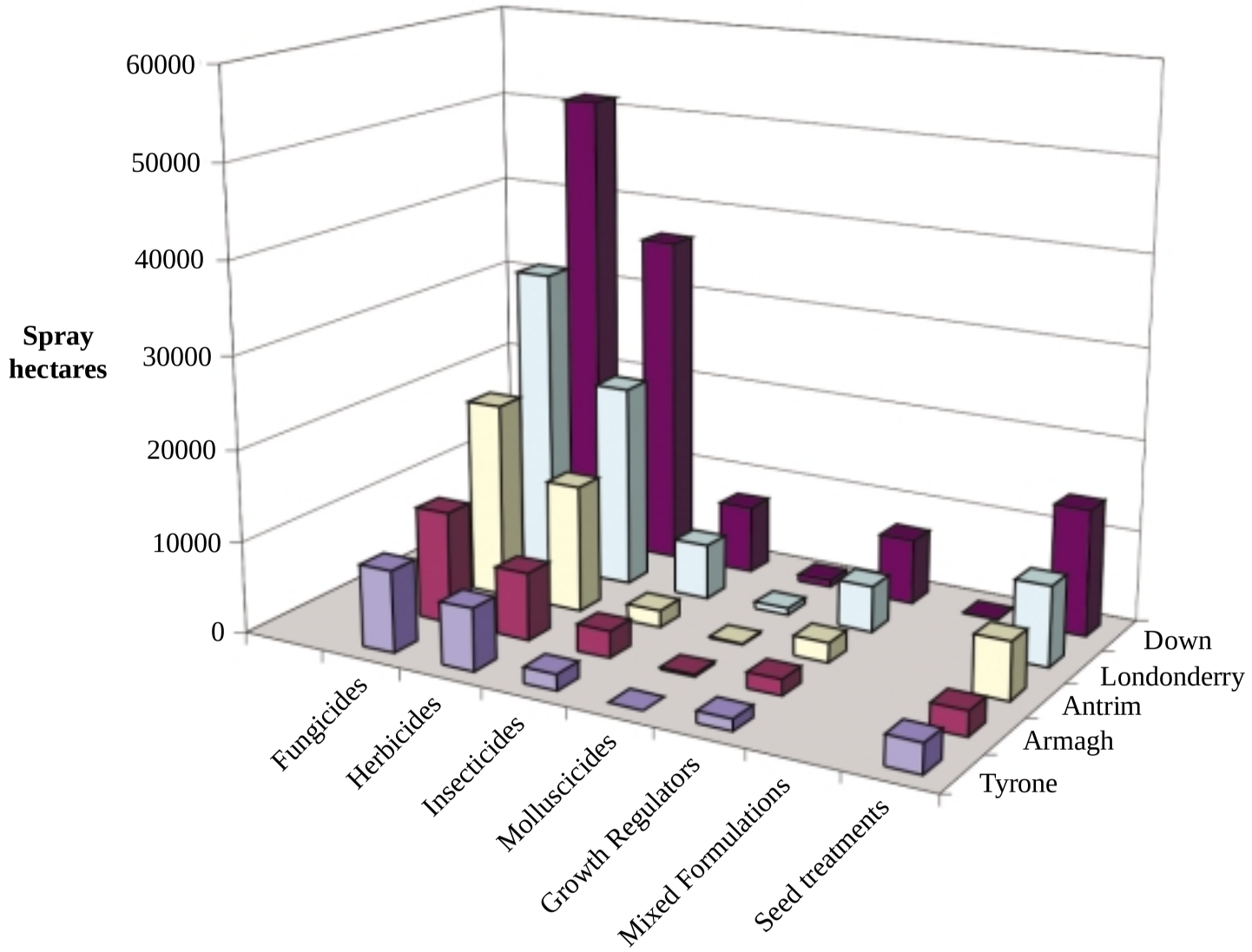

Figure 4 The proportion of potato crop types stored in Northern Ireland in 2002

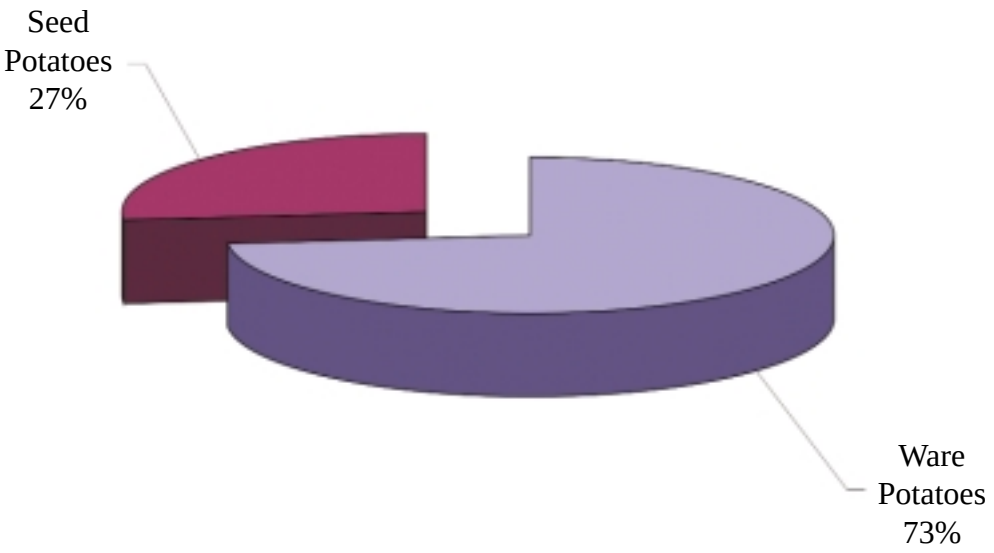

Figure 5 Regional distribution (%) of potato storage and treatments applied to potatoes in Northern Ireland in 2002.

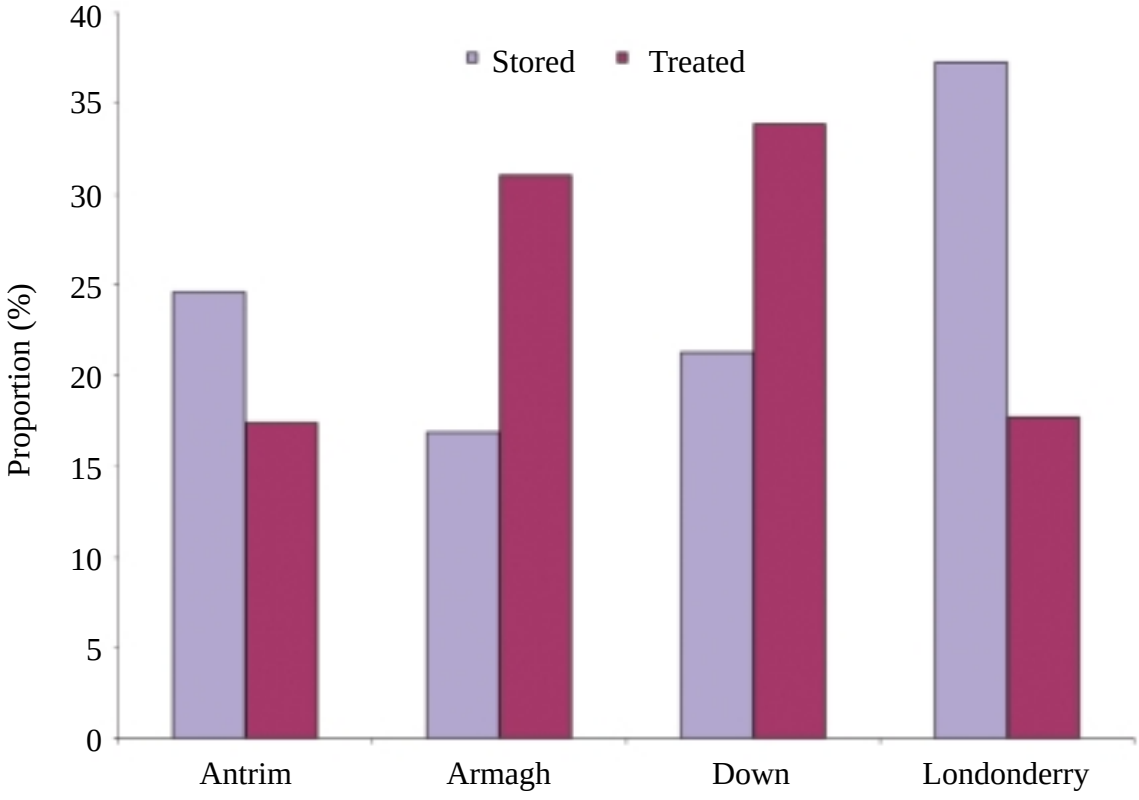

Table 1 **Number of farms in each size class with arable crops in the Northern Ireland June 2002 census and the number of samples from each class.**

	Size group (hectares)													
	< 2		2 < 5		5 <10		10 < 20		20 < 40		40+		Total	
County	Holdings in strata	Holdings sampled	Holdings in strata	Holdings sampled	Holdings in strata	Holdings sampled	Holdings in strata	Holdings sampled	Holdings in strata	Holdings sampled	Holdings in strata	Holdings sampled	Holdings in strata	Holdings sampled
Antrim	147	3	286	9	194	6	160	15	55	13	32	15	874	61
Armagh	46	1	71	2	74	3	57	5	14	2	13	4	275	17
Down	202	5	332	9	324	19	301	28	119	25	109	45	1,387	131
Fermanagh	12	0	5	0	2	0	3	0	0	0	0	0	22	0
Londonderry	115	7	272	4	213	12	177	16	53	12	67	30	897	81
Tyrone	82	2	146	4	111	3	74	7	23	3	14	6	450	25
Northern Ireland	**604**	**18**	**1,112**	**28**	**918**	**43**	**772**	**71**	**264**	**55**	**235**	**100**	**3,905**	**315**

Table 2 **The total number and area (hectares) of crops sampled, and the proportion (%) of the total area of arable crops surveyed in Northern Ireland, 2002.**

CROP	Number of crops surveyed	Survey area (ha)	Proportion of crops surveyed (%)
Spring barley	402	4,842	21
Undersown barley	42	183	10
Winter barley	111	1,354	35
Spring wheat	29	290	20
Winter wheat	146	1,881	32
Spring oats	23	260	32
Undersown oats	1	1	3
Winter oats	29	411	27
Oilseed rape	5	53	47
Peas & beans	10	73	37
Triticale	3	21	42
Flax & linseed	2	4	31
Seed potatoes	38	281	23
Early potatoes	61	177	24
Maincrop potatoes	199	956	20
Set-aside land	98	636	21
Lupins	6	26	39
Total	**1,206**	**11,451**	**24**

Table 3 **Estimated area (hectares) of arable crops grown regionally in Northern Ireland 2002.**

CROP	County					Northern Ireland
	Antrim	Armagh	Down	Londonderry	Tyrone	
Spring barley	3,842	1,176	8,707	6,563	2,370	22,658
Undersown barley	580	14	624	295	363	1,876
Winter barley	568	57	1,809	1,068	419	3,922
Spring wheat	660		202	275	291	1,428
Winter wheat	585	627	3,158	1,064	373	5,807
Spring oats	91	237	303	156	17	804
Undersown oats	20	.	.	.	.	20
Winter oats	102	732	443	156	115	1,547
Oilseed rape	36	.	50	24	.	111
Peas & beans	.	39	92	38	28	197
Triticale	.	.	43	6	.	49
Flax & linseed	.	13	1	.	.	14
Seed potatoes	365	172	274	429	.	1,239
Early potatoes	154	81	444	49	.	728
Maincrop potatoes	993	346	1,844	1,325	232	4,741
Set-aside land	382	315	1,603	617	97	3,013
Lupins	17	.	50	.	.	67
Total	**8,395**	**3,808**	**19,649**	**12,066**	**4,305**	**48,222**

Table 4 **Estimated area (spray-hectares) of arable crops treated regionally with each pesticide type in Northern Ireland 2002.**

Pesticide type	County					Northern Ireland
	Antrim	Armagh	Down	Londonderry	Tyrone	
Fungicides	21,356	12,197	51,293	33,652	8,938	127,435
Herbicides	13,871	7,348	36,435	22,170	6,773	86,682
Insecticides	1,861	2,918	7,424	6,059	1,760	20,023
Molluscicides	146	243	778	727	32	1,926
Growth regulators	2,217	1,767	7,112	5,076	1,273	17,445
Mixed formulations	.	.	86	.	.	86
Seed treatments	6,263	2,685	13,881	8,809	3,199	34,836
Total	**45,714**	**27,157**	**117,009**	**76,494**	**21,975**	**288,348**

Table 5 **The total area (spray-hectares) and the basic area (hectares), (in parentheses), of arable crops treated, in Northern Ireland 2002, with each pesticide type.**

CROP	Pesticide type															
	Fungicides		Herbicides & desiccants		Insecticides		Molluscicides		Growth regulators		Mixed formulations		Seed treatments		All pesticides	
	Sp ha	(ha)	Sp ha	(ha)	Sp ha	(ha)	Sp ha	(ha)	Sp ha	(ha)	Sp ha	(ha)	Sp ha	(ha)	Sp ha	(ha)
Spring barley	24,654	(13,755)	40,437	(20,079)	8,373	(7,143)	160	(160)	4,545	(4,101)	.	.	18,093	(18,093)	96,262	(22,241)
Undersown barley	628	(481)	1,639	(1,180)	234	(234)	.	.	192	(179)	.	.	1,629	(1,629)	4,323	(1,748)
Winter barley	8,303	(3,408)	8,160	(3,606)	2,651	(2,218)	23	(23)	3,780	(2,649)	.	.	3,303	(3,303)	26,221	(3,866)
Spring wheat	2,015	(935)	2,253	(1,287)	710	(492)	.	.	722	(657)	.	.	1,369	(1,369)	7,069	(1,428)
Winter wheat	21,127	(5,489)	13,130	(5,191)	4,483	(3,210)	122	(122)	6,263	(4,875)	.	.	5,292	(5,292)	50,416	(5,722)
Spring oats	403	(307)	948	(667)	54	(43)	.	.	181	(181)	.	.	405	(405)	1,992	(667)
Winter oats	3,099	(1,317)	3,185	(1,309)	1,525	(1,073)	.	.	1,648	(983)	.	.	1,403	(1,403)	10,861	(1,469)
Oilseed rape	70	(46)	194	(111)	49	(24)	39	(13)	.	.	.	.	98	(98)	450	(111)
Peas & beans	303	(88)	241	(151)	120	(66)	.	.	.	.	.	.	138	(138)	802	(178)
Triticale	22	(22)	49	(49)	.	.	.		43	(43)	.	.	16	(16)	130	(49)
Flax & linseed	.	.	13	(13)	.	.	.	.	.	.	.	.	.	.	13	(13)
Seed potatoes	9,219	(1,231)	2,650	(1,090)	16	(8)	267	(144)	.	.	.	.	512	(512)	12,664	(1,239)
Early potatoes	5,561	(716)	1,520	(707)	197	(116)	206	(147)	.	.	.	.	481	(481)	7,966	(728)
Maincrop potatoes	52,030	(4,264)	10,682	(3,932)	1,609	(823)	1,108	(680)	72	(56)	86	(86)	2,078	(2,078)	67,664	(4,629)
Set-aside land	.	.	1,395	(1,035)	.	.	.	.	.	.	.	.	.	.	1,395	(1,035)
Lupins	.	.	100	(41)	.	.	.	.	.	.	.	.	20	(20)	120	(66)
Total	**127,435**	**(32,058)**	**86,596**	**(40,449)**	**20,023**	**(15,453)**	**1,926**	**(1,289)**	**17,445**	**(13,724)**	**86**	**(86)**	**34,836**	**(34,836)**	**288,348**	**(45,197)**

Table 6 **Total quantity (kilograms) of each pesticide type used on arable crops in Northern Ireland 2002.**

CROP	Fungicides	Herbicides & desiccants	Insecticides	Molluscicides	Growth regulators	Mixed formulations	Seed treatments	Total
Spring barley	7,407	16,771	559	27	2,516	.	699	27,980
Undersown barley	283	1,043	6	.	71	.	29	1,432
Winter barley	1,855	6,789	38	5	2,396	.	86	11,170
Spring wheat	984	984	100	.	363	.	71	2,502
Winter wheat	3,797	8,612	37	32	4,616	.	539	17,633
Spring oats	174	132	<1	.	89	.	39	433
Winter oats	683	1,003	36	.	1,358	.	101	3,182
Oilseed rape	12	98	<1	10	.	.	14	134
Peas & beans	105	255	3	.	.	.	15	378
Triticale	3	67	.	.	28	.	2	100
Flax & linseed	.	<1	.	.	.	.	.	<1
Seed potatoes	9,133	129,724	<1	45	.	.	77	138,979
Early potatoes	5,482	32,562	9	38	.	.	114	38,205
Maincrop potatoes	55,341	191,803	66	180	172	127	1,029	248,718
Set-aside land	.	1,037	.	.	.	.	.	1,037
Lupins	.	96	.	.	.	.	3	98
Total	**85,258**	**390,976**	**854**	**338**	**11,609**	**127**	**2,818**	**491,981**

Table 7 **The proportional area (%) of each crop treated with pesticides and the number of spray applications (in parentheses) in Northern Ireland, 2002.**

CROP	Fungicides		Herbicides & desiccants		Insecticides		Molluscicides		Growth regulators		Mixed formulations		Seed treatments	All pesticides	
	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	%	sp apps
Spring barley	61	(1.5)	89	(1.6)	32	(1.1)	1	(1.0)	18	(1.0)	.	.	80	98	(1.5)
Undersown barley	26	(1.3)	63	(1.4)	12	(1.0)	.	.	10	(1.1)	.	.	87	93	(1.3)
Winter barley	87	(2.3)	92	(1.8)	57	(1.1)	1	(1.0)	68	(1.3)	.	.	84	99	(1.7)
Spring wheat	65	(2.3)	90	(1.5)	34	(1.1)	.	.	46	(1.0)	.	.	96	100	(1.6)
Winter wheat	95	(3.2)	89	(2.1)	55	(1.2)	2	(1.0)	84	(1.2)	.	.	91	99	(2.1)
Spring oats	38	(1.3)	83	(1.2)	5	(1.3)	.	.	22	(1.0)	.	.	50	83	(1.2)
Winter oats	85	(2.0)	85	(1.8)	69	(1.2)	.	.	64	(1.2)	.	.	91	95	(1.6)
Oilseed rape	41	(1.5)	100	(1.7)	22	(2.0)	12	(3.0)	.	.	.	.	88	100	(1.8)
Peas & beans	44	(2.8)	76	(1.8)	33	(1.8)	.	.	.	.	.	.	70	90	(2.1)
Triticale	45	(1.0)	100	(1.0)	.	.	.	.	87	(1.0)	.	.	32	100	(1.0)
Flax & linseed	.	.	95	(1.0)	.	.	.	.	.	.	.	.	.	95	(1.0)
Seed potatoes	99	(7.8)	88	(1.8)	1	(2.0)	12	(1.6)					41	100	(4.6)
Early potatoes	98	(7.6)	97	(1.6)	16	(1.1)	20	(1.8)					66	100	(4.1)
Maincrop potatoes	90	(9.9)	85	(1.9)	17	(1.4)	14	(1.2)	1	(1.0)	1.8	(1.0)	44	98	(5.6)
Set aside land	.	.	34	(1.2)	.	.	.	.	.	.	.	.	.	34	(1.2)
Lupins	.	.	61	(1.2)	.	.	.	.	.	.	.	.	29	99	(1.2)
Total	**66**	**(4.7)**	**84**	**(1.7)**	**32**	**(1.1)**	**3**	**(1.3)**	**28**	**(1.2)**	**1.8**	**(1.0)**	**72**	**94**	**(2.5)**

Table 8 **Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Fungicides																	
Azoxystrobin	1,987	13	840	378	4,371	154	638	.	71	.	.	.	.	.	.	.	8,451
Bromuconazole	1,162	43	274	35	759	.	.	.	.	.	.	.	.	.	.	.	2,273
Carbendazim	118	.	34	.	.	.	.	.	.	.	.	.	.	.	.	.	152
Carbendazim/chlorothalonil	.	.	.	.	58	.	.	.	.	.	.	.	.	.	.	.	58
Carbendazim/flusilazole	2,199	.	487	62	89	64	48	.	.	.	.	.	.	.	.	.	2,948
Chlorothalonil	162	.	.	.	323	.	.	.	149	.	.	.	.	90	.	.	723
Chlorothalonil/flutriafol	.	.	.	.	59	.	.	.	.	.	.	.	.	.	.	.	59
Chlorothalonil/ propamocarb hydrochloride	.	.	.	.	.	.	.	.	.	.	.	78	269	1,814	.	.	2,161
Cymoxanil/mancozeb	168	.	.	.	375	.	39	.	.	.	.	1,252	695	7,896	.	.	10,424
Cymoxanil/mancozeb/oxadixyl	.	.	.	.	.	.	.	.	.	.	.	779	723	3,182	.	.	4,684
Cyproconazole	58	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	58
Cyproconazole/cyprodinil	294	.	122	.	.	.	.	.	.	.	.	.	.	.	.	.	416
Cyproconazole/prochloraz	81	13	83	.	.	.	.	.	.	.	.	.	.	.	.	.	177
Cyproconazole/propiconazole	592	6	83	.	211	.	.	.	.	.	.	.	.	.	.	.	893
Cyproconazole/trifloxystrobin	1,568	45	347	167	488	15	.	.	.	.	.	.	.	.	.	.	2,629
Cyprodinil	1,543	13	905	.	243	.	.	.	.	.	.	.	.	.	.	.	2,704
Difenoconazole	.	.	.	.	17	.	.	.	.	.	.	.	.	.	.	.	17
Dimethomorph	.	.	.	.	.	.	.	.	.	.	.	.	3	178	.	.	181
Dimethomorph/mancozeb	.	.	.	.	.	.	.	.	.	.	.	2,109	989	9,728	.	.	12,826
Epoxiconazole	2,447	188	769	335	3,193	.	.	.	.	6	.	.	.	.	.	.	6,938
Epoxiconazole/fenpropimorph	280	.	75	.	.	.	.	.	.	.	.	.	.	.	.	.	355
Epoxiconazole/ fenpropimorph/kresoxim-methyl	41	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	41
Epoxiconazole/kresoxim-methyl	1,641	41	833	46	1,228	6	144	.	.	.	.	.	.	.	.	.	3,938
Epoxiconazole/kresoxim-methyl/ pyraclostrobin	.	.	10	.	140	.	.	.	.	.	.	.	.	.	.	.	151
Epoxiconazole/pyraclostrobin	257	22	5	32	2,350	.	.	.	.	.	.	.	.	.	.	.	2,665
Fenbuconazole	162	.	.	.	111	.	.	.	.	.	.	.	.	.	.	.	272
Fenpropidin	621	43	139	104	195	.	.	.	.	.	.	.	.	.	.	.	1,103
Fenpropidin/tebuconazole	276	20	.	16	.	.	.	.	.	.	.	.	.	.	.	.	312
Fenpropimorph	2,022	13	1,241	.	472	63	781	.	.	.	.	.	.	.	.	.	4,592
Fenpropimorph/flusilazole	741	12	173	.	102	.	.	.	.	.	.	.	.	.	.	.	1,028
Fenpropimorph/kresoxim-methyl	.	.	103	.	.	.	.	.	.	.	.	.	.	.	.	.	103
Fenpropimorph/propiconazole	32	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	32
Fenpropimorph/quinoxyfen	310	.	192	154	1,022	.	46	.	.	.	.	.	.	.	.	.	1,724

Table 8 (cont.) **Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Fungicides (cont.)																	
Fentin acetate/maneb	.	.	.	.	.	.	.	.	.	.	.	.	.	341	.	.	341
Fentin hydroxide	.	.	.	.	.	.	.	.	.	.	.	1,277	679	7,937	.	.	9,893
Fluazinam	.	.	.	.	.	.	.	.	.	.	.	1,784	1,286	9,727	.	.	12,797
Fluquinconazole	.	.	.	19	621	.	.	.	.	.	.	.	.	.	.	.	639
Fluquinconazole/prochloraz	106	.	24	47	1,219	.	.	24	.	.	.	.	.	.	.	.	1,420
Flusilazole	975	.	759	.	316	.	.	.	.	.	.	.	.	.	.	.	2,050
Imazalil/pencycuron	.	.	.	.	.	.	.	.	.	.	.	111	.	.	.	.	111
Mancozeb	.	.	103	.	.	.	.	.	.	.	.	1,058	553	8,514	.	.	10,229
Mancozeb/metalaxyl-m	.	.	.	.	.	.	.	.	.	.	.	619	234	1,083	.	.	1,937
Mancozeb/ propamocarb hydrochloride	.	.	.	.	.	.	.	.	.	.	.	153	130	1,460	.	.	1,743
Mancozeb/zoxamide	.	.	.	.	.	.	.	.	.	.	.	.	.	80	.	.	80
Propiconazole	1,443	19	137	91	106	9	.	.	.	.	.	.	.	.	.	.	1,804
Propiconazole/tridemorph	.	.	.	31	.	.	.	.	.	.	.	.	.	.	.	.	31
Pyraclostrobin	.	.	.	74	.	11	.	.	.	.	.	.	.	.	.	.	85
Quinoxyfen	.	.	.	.	.	40	1,074	.	.	.	.	.	.	.	.	.	1,114
Spiroxamine/tebuconazole	.	.	.	.	61	.	.	.	.	.	.	.	.	.	.	.	61
Sulphur	143	.	12	.	.	9	10	.	.	.	.	.	.	.	.	.	174
Tebuconazole	100	12	79	140	1,308	.	110	46	78	16	.	.	.	.	.	.	1,888
Tebuconazole/triadimenol	297	25	.	129	188	.	94	.	5	.	.	.	.	.	.	.	737
Tridemorph	62	.	.	.	.	5	.	.	.	.	.	.	.	.	.	.	67
Trifloxystrobin	2,050	.	437	157	1,340	.	105	.	.	.	.	.	.	.	.	.	4,089
Vinclozolin	210	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	210
Unknown fungicide	510	99	37	.	163	28	11	.	.	.	.	.	.	.	.	.	849
All fungicides	**24,654**	**629**	**8,303**	**2,015**	**21,127**	**403**	**3,099**	**70**	**303**	**22**	**.**	**9,219**	**5,561**	**52,030**	**.**	**.**	**127,435**
Herbicides & desiccants																	
Amidosulfuron	159	.	131	.	468	118	492	.	.	.	13	.	.	.	50	.	1,431
Atrazine	.	.	.	.	117	.	.	.	.	.	.	.	.	.	.	12	129
Benazolin/Bromoxynil/ioxynil	234	.	.	.	79	.	.	.	.	.	.	.	.	.	.	.	313
Benazolin/2,4-DB/MCPA	55	545	.	8	.	15	.	.	.	.	.	.	.	.	55	.	678
Bentazone	.	.	.	.	.	.	.	.	39	.	.	.	.	.	.	.	39
Bentazone/MCPB	.	.	.	.	.	.	.	.	8	.	.	.	.	.	.	.	8
Bifenox/isoproturon	47	.	309	.	334	.	.	.	.	.	.	.	.	.	.	.	690
Bromoxynil/diflufenican/ioxynil	.	.	20	.	136	.	.	.	.	.	.	.	.	.	.	.	157

Table 8 (cont.) **Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Herbicides & desiccants (cont.)																	
Bromoxynil/ioxynil	1,047	.	401	37	389	7	.	.	.	.	.	.	.	.	.	.	1,880
Carfentrazone-ethyl/ flupyrsulfuron-methyl	.	.	.	.	.	.	296	.	.	.	.	.	.	.	.	.	296
Chlorothalonil/cyproconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	6
Clodinafop-Propargyl	.	.	.	.	36	.	.	.	.	.	.	.	.	.	.	.	36
Clopyralid	71	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	71
Clopyralid/fluroxypyr/triclopyr	14	.	8	.	.	.	.	.	.	.	.	.	.	.	.	.	22
Cyanazine/pendimethalin	.	.	.	.	.	.	.	.	5	.	.	.	.	.	.	.	5
Cycloxydim	.	.	.	.	.	.	.	24	39	.	.	.	.	.	.	.	63
2,4-D	364	.	9	.	7	.	.	.	.	.	.	.	.	.	.	.	380
2,4-D/dicamba/triclopyr	51	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	51
2,4-DB/linuron/MCPA	281	338	.	76	.	.	.	.	.	.	.	.	.	.	.	.	696
2,4-DB/MCPA	15	32	.	.	.	.	.	.	.	.	.	.	.	.	.	.	47
Dicamba/MCPA/mecoprop-P	1,941	13	.	.	97	62	.	.	.	.	.	.	.	.	.	.	2,113
Dicamba/mecoprop	90	.	54	55	34	.	.	.	.	.	.	.	.	.	.	.	233
Dicamba/mecoprop/2,4,5-T	139	.	.	55	.	.	.	.	.	.	.	.	.	.	.	.	194
Dicamba/mecoprop-P	442	84	.	.	.	.	.	.	.	.	.	.	.	.	.	.	526
Diclofop-methyl/fenoxaprop-P-ethyl	170	.	11	.	.	.	.	.	.	.	.	.	.	.	.	.	181
Diflufenican/Isoproturon	100	.	881	.	1,247	.	.	.	.	.	.	.	.	.	.	.	2,227
Diflufenican/terbuthylazine	.	.	57	.	72	.	.	.	.	.	.	.	.	.	.	.	129
Diquat	106	.	.	.	.	.	.	22	.	.	.	506	234	3,157	.	.	4,024
Diquat/paraquat	.	.	.	.	.	.	.	.	.	.	.	.	.	380	.	.	380
Ethofumesate	.	.	.	16	83	.	.	.	.	.	.	.	.	.	.	.	99
Fenoxaprop-P-ethyl	.	.	.	.	80	.	.	.	.	.	.	.	.	.	.	.	80
Flamprop-M-isopropyl	123	.	8	.	.	.	.	.	.	.	.	.	.	.	.	.	131
Florasulam	.	.	104	.	166	.	57	.	.	.	.	.	.	.	.	.	328
Flufenacet/pendimethalin	.	.	76	.	62	.	.	.	.	.	.	.	.	.	.	.	138
Fluoroglycofen-ethyl/isoproturon	.	.	25	.	.	.	.	.	.	.	.	.	.	.	.	.	25
Fluroxypyr	1,149	9	50	16	1,001	.	36	37	.	6	.	.	.	.	.	.	2,305
Fluroxypyr/triclopyr	455	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	455
Glyphosate	6,610	81	1,725	226	1,585	12	500	24	68	.	.	68	24	468	1,004	.	12,396
Isoproturon	182	13	1,437	155	2,706	.	.	.	.	.	.	.	.	.	.	.	4,493
Isoproturon/pendimethalin	.	.	447	114	521	.	.	.	.	.	.	.	.	.	.	.	1,082
Isoproturon/trifluralin	.	.	399	.	315	.	.	.	.	.	.	.	.	.	.	.	713
Linuron	.	.	.	.	.	.	.	.	.	.	.	.	.	449	.	.	449
MCPA	1,513	81	.	111	414	87	.	.	.	.	.	.	.	.	25	.	2,230
MCPA/MCPB	.	18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	18

Table 8 (cont.) **Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Herbicides & desiccants (cont.)																	
Mecoprop	2,889	19	53	62	333	21	171	.	.	.	.	.	.	.	.	17	3,565
Mecoprop-P	3,698	32	749	206	918	53	591	.	.	.	.	.	.	.	142	.	6,390
Metribuzin	162	.	.	.	.	.	.	.	.	.	.	417	216	1,382	.	.	2,177
Metsulfuron-methyl	14,911	222	400	949	1,101	575	863	.	.	16	.	.	.	.	50	.	19,086
Metsulfuron-methyl/ thifensulfuron-methyl	1,413	120	.	87	134	.	.	.	.	.	.	.	.	.	.	.	1,754
Metsulfuron-methyl/tribenuron-methyl	881	.	35	15	117	.	115	.	.	.	.	.	.	.	.	.	1,162
Paraquat	.	.	.	.	21	.	.	.	.	.	.	801	544	3,050	63	.	4,479
Pendimethalin	.	.	186	.	37	.	.	.	82	.	.	.	.	.	.	.	305
Propaquizafop	.	.	.	.	.	.	.	13	.	.	.	.	.	17	.	.	30
Propyzamide	.	.	.	.	.	.	.	22	.	.	.	.	.	.	.	.	22
Rimsulfuron	.	.	.	.	.	.	.	.	.	.	.	132	85	216	.	.	433
Sethoxydim	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	29	29
Sulphuric acid	.	.	.	65	.	.	.	.	.	.	.	719	157	1,237	.	.	2,177
Terbuthylazine/terbutryn	.	.	.	.	.	.	.	.	.	.	.	8	260	288	.	36	592
Terbutryn	.	.	.	.	.	.	64	.	.	.	.	.	.	.	.	.	64
Thifensulfuron-methyl/ tribenuron-methyl	462	6	.	.	55	.	.	.	.	.	.	.	.	.	.	.	523
Tralkoxydim	76	.	48	.	115	.	.	.	.	.	.	.	.	.	.	.	238
Tribenuron-methyl	440	12	98	.	17	.	.	.	.	27	.	.	.	.	.	.	595
Trifluralin	.	.	363	.	333	.	.	52	.	.	.	.	.	.	.	.	748
Unknown herbicide	149	14	79	.	.	.	.	.	.	.	.	.	.	39	5	.	286
All herbicides & desiccants	**40,437**	**1,639**	**8,160**	**2,253**	**13,130**	**948**	**3,185**	**194**	**241**	**50**	**13**	**2,650**	**1,520**	**10,682**	**1,395**	**100**	**86,597**
Insecticides																	
Chlorpyrifos	859	12	17	239	13	.	.	.	.	.	.	.	.	.	.	.	1,140
Cypermethrin	676	.	161	.	277	.	157	.	.	.	.	.	.	147	.	.	1,418
Deltamethrin	352	.	214	283	701	22	54	.	.	.	.	16	11	221	.	.	1,873
Dimethoate	.	.	.	.	.	.	.	.	.	.	.	.	24	55	.	.	79
Esfenvalerate	2,858	32	592	61	1,376	12	139	.	.	.	.	.	.	.	.	.	5,070
Lambda-cyhalothrin	3,029	190	1,490	127	2,116	21	922	49	66	.	.	.	162	783	.	.	8,955
Permethrin	599	.	178	.	.	.	72	.	.	.	.	.	.	.	.	.	848
Phorate	.	.	.	.	.	.	.	.	.	.	.	.	.	46	.	.	46
Pirimicarb	.	.	.	.	.	.	182	.	54	.	.	.	.	357	.	.	594
All insecticides	**8,373**	**234**	**2,651**	**710**	**4,483**	**54**	**1,525**	**49**	**120**	**.**	**.**	**16**	**197**	**1,609**	**.**	**.**	**20,023**

Table 8 (cont.) **Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Molluscicides																	
Metaldehyde	32	.	.	.	35	.	.	13	.	.	.	248	96	.	.	.	424
Methiocarb	128	.	24	.	87	.	.	26	.	.	.	20	110	1,108	.	.	1,503
All molluscicides	**161**	**.**	**24**	**.**	**122**	**.**	**.**	**39**	**.**	**.**	**.**	**267**	**206**	**1,108**	**.**	**.**	**1,926**
Growth regulators																	
Chlormequat	3,421	56	2,282	504	4,551	110	1,648	.	.	43	.	.	.	.	.	.	12,616
Chlormequat/ 2-chloroethylphosphonic acid	.	.	.	.	77	.	.	.	.	.	.	.	.	.	.	.	77
2-chloroethylphosphonic acid	446	123	900	113	652	.	.	.	.	.	.	.	.	.	.	.	2,232
2-chloroethylphosphonic acid/ mepiquat chloride	17	13	68	.	26	.	.	.	.	.	.	.	.	.	.	.	124
Maleic hydrazide	.	.	.	.	.	.	.	.	.	.	.	.	.	72	.	.	72
Trinexapac-ethyl	662	.	530	105	957	70	.	.	.	.	.	.	.	.	.	.	2,324
All growth regulators	**4,545**	**192**	**3,780**	**722**	**6,263**	**181**	**1,648**	**.**	**.**	**43**	**.**	**.**	**.**	**72**	**.**	**.**	**17,445**
Mixed formulations																	
Fentin hydroxide/metoxuron	.	.	.	.	.	.	.	.	.	.	.	.	.	86	.	.	86
All Mixed formulations	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**86**	**.**	**.**	**86**
Seed treatments																	
Beta-cyfluthrin/imidacloprid	.	.	.	.	.	.	.	39	.	.	.	.	.	.	.	.	39
Bitertanol/fuberidazole	.	.	57	256	1,606	.	517	.	.	16	.	.	.	.	.	.	2,452
Carboxin/thiabendazole/imazalil	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Carboxin/thiram	50	.	11	65	700	.	548	.	.	.	.	.	.	.	.	.	1,374
Fludioxonil	417	.	236	893	176	168	98	.	.	.	.	.	.	.	.	.	1,988
Fluquinconazole/prochloraz	.	.	.	.	1,487	.	.	.	.	.	.	.	.	.	.	.	1,487
Fuberidazole/triadimenol	164	.	49	.	217	.	49	.	.	.	.	.	.	.	.	.	479
Guazatine	3,198	93	420	71	649	21	192	.	.	.	.	.	.	.	.	.	4,644
Guazatine/triticonazole	.	.	.	.	26	.	.	.	.	.	.	.	.	.	.	.	26
Imazalil	523	12	26	.	.	.	.	.	.	.	.	486	178	741	.	.	1,965
Imazalil/pencycuron	.	.	.	.	.	.	.	.	.	.	.	8	166	905	.	.	1,080
Thiabendazole/imazalil	.	.	.	.	.	.	.	.	.	.	.	7	25	90	.	.	122
Iprodione	.	.	.	.	.	.	.	22	.	.	.		.	.	.	.	22

Table 8 (cont.) **Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Seed treatments (cont.)																	
Silthiofam	.	.	33	.	119	.	.	.	.	.	.	.	.	.	.	.	152
Tebuconazole/triazoxide	13,514	1,525	2,433	83	265	216	.	.	.	.	.	.	.	.	.	.	18,036
Thiabendazole	.	.	.	.	.	.	.	.	.	.	.	11	.	147	.	.	158
Thiram	.	.	.	.	.	.	.	.	138	.	.	.	.	.	.	20	158
Triticonazole	43	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	43
Chlorpropham	.	.	.	.	.	.	.	.	.	.	.	.	113	183	.	.	296
Unknown seed treatments	172	.	38	.	47	.	.	37	.	.	.	.	.	12	.	.	306
All seed treatments	**18,093**	**1,629**	**3,303**	**1,369**	**5,292**	**405**	**1,403**	**98**	**138**	**16**	**.**	**512**	**481**	**2,078**	**.**	**20**	**34,836**
All pesticides	**96,262**	**4,324**	**26,221**	**7,069**	**50,416**	**1,992**	**10,861**	**450**	**802**	**130**	**13**	**12,665**	**7,966**	**67,664**	**1,395**	**120**	**288,348**

Table 9 **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Fungicides																	
Azoxystrobin	572	2	136	25	591	19	67	.	4	.	.	.	.	.	.	.	1,415
Bromuconazole	386	7	42	6	108	.	.	.	.	.	.	.	.	.	.	.	549
Carbendazim	29	.	9	.	.	.	.	.	.	.	.	.	.	.	.	.	38
Carbendazim/chlorothalonil	.	.	.	.	64	.	.	.	.	.	.	.	.	.	.	.	64
Carbendazim/flusilazole	446	.	67	7	11	10	5	.	.	.	.	.	.	.	.	.	545
Chlorothalonil	121	.	.	.	154	.	.	.	89	.	.	.	.	67	.	.	431
Chlorothalonil/flutriafol	.	.	.	.	31	.	.	.	.	.	.	.	.	.	.	.	31
Chlorothalonil/ propamocarb hydrochloride	.	.	.	.	.	.	.	.	.	.	.	121	530	3,317	.	.	3,967
Cymoxanil/mancozeb	122	.	.	.	326	.	28	.	.	.	.	1,574	664	8,466	.	.	11,180
Cymoxanil/mancozeb/oxadixyl	.	.	.	.	.	.	.	.	.	.	.	1,225	1,218	5,138	.	.	7,581
Cyproconazole	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Cyproconazole/cyprodinil	63	.	41	.	.	.	.	.	.	.	.	.	.	.	.	.	104
Cyproconazole/prochloraz	22	2	24	.	.	.	.	.	.	.	.	.	.	.	.	.	49
Cyproconazole/propiconazole	108	1	12	.	24	.	.	.	.	.	.	.	.	.	.	.	145
Cyproconazole/trifloxystrobin	302	9	59	646	109	3	.	.	.	.	.	.	.	.	.	.	1,129
Cyprodinil	532	5	278	.	69	.	.	.	.	.	.	.	.	.	.	.	884
Difenoconazole	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1
Dimethomorph	.	.	.	.	.	.	.	.	.	.	.	.	<1	9	.	.	9
Dimethomorph/mancozeb	.	.	.	.	.	.	.	.	.	.	.	2,621	1,315	13,903	.	.	17,840
Epoxiconazole	145	5	37	24	165	.	.	.	.	<1	.	.	.	.	.	.	375
Epoxiconazole/fenpropimorph	102	.	34	.	.	.	.	.	.	.	.	.	.	.	.	.	136
Epoxiconazole/ fenpropimorph/kresoxim-methyl	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2
Epoxiconazole/kresoxim-methyl	329	9	134	6	205	1	27	.	.	.	.	.	.	.	.	.	712
Epoxiconazole/kresoxim-methyl/ pyraclostrobin	.	.	7	.	97	.	.	.	.	.	.	.	.	.	.	.	105
Epoxiconazole/pyraclostrobin	53	6	1	6	411	.	.	.	.	.	.	.	.	.	.	.	477
Fenbuconazole	8	.	.	.	6	.	.	.	.	.	.	.	.	.	.	.	14
Fenpropidin	344	16	74	50	22	.	.	.	.	.	.	.	.	.	.	.	507
Fenpropidin/tebuconazole	787	98	.	34	.	.	.	.	.	.	.	.	.	.	.	.	919
Fenpropimorph	796	5	381	.	199	23	307	.	.	.	.	.	.	.	.	.	1,711
Fenpropimorph/flusilazole	268	2	90	.	55	.	.	.	.	.	.	.	.	.	.	.	415
Fenpropimorph/kresoxim-methyl	.	.	11	.	.	.	.	.	.	.	.	.	.	.	.	.	11
Fenpropimorph/propiconazole	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14
Fenpropimorph/quinoxyfen	67	.	56	69	195	.	16	.	.	.	.	.	.	.	.	.	402

Table 9 (cont.) **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Fungicides (cont.)																	
Fentin acetate/maneb	.	.	.	.	.	.	.	.	.	.	.	.	.	48	.	.	48
Fentin hydroxide	.	.	.	.	.	.	.	.	.	.	.	771	495	6,559	.	.	7,825
Fluazinam	.	.	.	.	.	.	.	.	.	.	.	332	178	1,469	.	.	1,978
Fluquinconazole	.	.	.	1	103	.	.	.	.	.	.	.	.	.	.	.	104
Fluquinconazole/prochloraz	29	.	6	10	240	.	.	5	.	.	.	.	.	.	.	.	291
Flusilazole	124	.	89	.	65	.	.	.	.	.	.	.	.	.	.	.	277
Imazalil/pencycuron	.	.	.	.	.	.	.	.	.	.	.	22	.	.	.	.	22
Mancozeb	.	.	102	.	.	.	.	.	.	.	.	1,444	618	11,917	.	.	14,080
Mancozeb/metalaxyl-m	.	.	.	.	.	.	.	.	.	.	.	710	251	1,339	.	.	2,299
Mancozeb/ propamocarb hydrochloride	.	.	.	.	.	.	.	.	.	.	.	258	214	3,002	.	.	3,475
Mancozeb/zoxamide	.	.	.	.	.	.	.	.	.	.	.	.	.	107	.	.	107
Propiconazole	258	5	30	14	20	2	.	.	.	.	.	.	.	.	.	.	328
Propiconazole/tridemorph	.	.	.	11	.	.	.	.	.	.	.	.	.	.	.	.	11
Pyraclostrobin	.	.	.	23	.	2	.	.	.	.	.	.	.	.	.	.	25
Quinoxyfen	.	.	.	.	.	5	103	.	.	.	.	.	.	.	.	.	108
Spiroxamine/tebuconazole	.	.	.	.	29	.	.	.	.	.	.	.	.	.	.	.	29
Sulphur	458	.	66	.	.	77	82	.	.	.	.	.	.	.	.	.	683
Tebuconazole	13	2	8	13	176	.	10	7	11	3	.	.	.	.	.	.	242
Tebuconazole/triadimenol	70	10	.	25	36	.	25	.	2	.	.	.	.	.	.	.	166
Tridemorph	23	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	27
Trifloxystrobin	184	.	46	16	131	.	8	.	.	.	.	.	.	.	.	.	384
Vinclozolin	105	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	105
Unknown fungicide	523	99	17	.	155	28	5	.	.	.	.	.	.	.	.	.	828
All fungicides	**7,407**	**283**	**1,855**	**984**	**3,797**	**174**	**683**	**12**	**106**	**3**	**.**	**9,079**	**5,482**	**55,341**	**.**	**.**	**85,205**
Herbicides & desiccants																	
Amidosulfuron	3	.	617	.	10	4	10	.	.	.	<1	.	.	.	3	.	647
Atrazine	.	.	.	.	29	.	.	.	.	.	.	.	.	.	.	26	55
Benazolin/Bromoxynil/ioxynil	47	.	.	.	37	.	.	.	.	.	.	.	.	.	.	.	83
Benazolin/2,4-DB/MCPA	55	632	.	14	.	32	.	.	.	.	.	.	.	.	53	.	787
Bentazone	.	.	.	.	.	.	.	.	15	.	.	.	.	.	.	.	15
Bentazone/MCPB	.	.	.	.	.	.	.	.	6	.	.	.	.	.	.	.	6
Bifenox/isoproturon	5	.	354	.	735	.	.	.	.	.	.	.	.	.	.	.	1,094
Bromoxynil/diflufenican/ioxynil	.	.	11	.	55	.	.	.	.	.	.	.	.	.	.	.	67

Table 9 (cont.) **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Herbicides & desiccants (cont.)																	
Bromoxynil/ioxynil	481	.	195	18	167	1	.	.	.	.	.	.	.	.	.	.	862
Carfentrazone-ethyl/flupyrsulfuron-methyl	.	.	.	.	.	.	7	.	.	.	.	.	.	.	.	.	7
Chlorothalonil/cyproconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	4
Clodinafop-Propargyl	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	2
Clopyralid	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3
Clopyralid/fluroxypyr/triclopyr	6	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	10
Cyanazine/pendimethalin	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	.	2
Cycloxydim	.	.	.	.	.	.	.	11	4	.	.	.	.	.	.	.	15
2,4-D	188	.	4	.	3	.	.	.	.	.	.	.	.	.	.	.	195
2,4-D/dicamba/triclopyr	22	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	22
2,4-DB/linuron/MCPA	83	95	.	21	.	.	.	.	.	.	.	.	.	.	.	.	199
2,4-DB/MCPA	15	62	.	.	.	.	.	.	.	.	.	.	.	.	.	.	77
Dicamba/MCPA/mecoprop-P	1,892	6	.	.	8	29	.	.	.	.	.	.	.	.	.	.	1,934
Dicamba/mecoprop	6	.	18	8	18	.	.	.	.	.	.	.	.	.	.	.	51
Dicamba/mecoprop/2,4,5-T	258	.	.	122	.	.	.	.	.	.	.	.	.	.	.	.	380
Dicamba/mecoprop-P	386	66	.	.	.	.	.	.	.	.	.	.	.	.	.	.	453
Diclofop-methyl/fenoxaprop-P-ethyl	83	.	5	.	.	.	.	.	.	.	.	.	.	.	.	.	88
Diflufenican/Isoproturon	60	.	631	.	872	.	.	.	.	.	.	.	.	.	.	.	1,563
Diflufenican/terbuthylazine	.	.	16	.	16	.	.	.	.	.	.	.	.	.	.	.	32
Diquat	58	.	.	.	.	.	.	13	.	.	.	409	129	1,831	.	.	2,440
Diquat/paraquat	.	.	.	.	.	.	.	.	.	.	.	.	.	228	.	.	228
Ethofumesate	.	.	.	5	77	.	.	.	.	.	.	.	.	.	.	.	82
Fenoxaprop-P-ethyl	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	3
Flamprop-M-isopropyl	43	.	3	.	.	.	.	.	.	.	.	.	.	.	.	.	46
Florasulam	.	.	1	.	1	.	<1	.	.	.	.	.	.	.	.	.	1
Flufenacet/pendimethalin	.	.	74	.	49	.	.	.	.	.	.	.	.	.	.	.	123
Fluoroglycofen-ethyl/isoproturon	.	.	15	.	.	.	.	.	.	.	.	.	.	.	.	.	15
Fluroxypyr	143	1	4	2	125	.	4	6	.	1	.	.	.	.	.	.	285
Fluroxypyr/triclopyr	197	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	197
Glyphosate	6,188	76	1,375	176	1,209	6	294	9	64	.	.	66	19	396	904	.	10,781
Isoproturon	209	13	1,513	291	2,970	.	.	.	.	.	.	.	.	.	.	.	4,995
Isoproturon/pendimethalin	.	.	375	87	666	.	.	.	.	.	.	.	.	.	.	.	1,128
Isoproturon/trifluralin	.	.	365	.	152	.	.	.	.	.	.	.	.	.	.	.	517
Linuron	.	.	.	.	.	.	.	.	.	.	.	.	.	439	.	.	439
MCPA	773	41	.	29	141	10	.	.	.	.	.	.	.	.	4	.	997
MCPA/MCPB	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1

Table 9 (cont.) **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Herbicides & desiccants (cont.)																	
Mecoprop	1,717	11	29	27	105	15	107	.	.	.	.	.	.	.	.	5	2,015
Mecoprop-P	2,454	21	652	135	769	27	522	.	.	.	.	.	.	.	35	.	4,615
Metribuzin	113	.	.	.	.	.	.	.	.	.	.	331	196	1,040	.	.	1,680
Metsulfuron-methyl	884	1	56	27	4	7	5	.	.	66	.	.	.	.	<1	.	1,050
Metsulfuron-methyl/thifensulfuron-methyl	65	3	.	1	6	.	.	.	.	.	.	.	.	.	.	.	75
Metsulfuron-methyl/tribenuron-methyl	37	.	1	<1	46	.	1	.	.	.	.	.	.	.	.	.	85
Paraquat	.	.	.	.	17	.	.	.	.	.	.	406	255	1,416	33	.	2,127
Pendimethalin	.	.	166	.	36	.	.	.	164	.	.	.	.	.	.	.	366
Propaquizafop	.	.	.	.	.	.	.	1	.	.	.	.	.	2	.	.	3
Propyzamide	.	.	.	.	.	.	.	15	.	.	.	.	.	.	.	.	15
Rimsulfuron	.	.	.	.	.	.	.	.	.	.	.	1	1	2	.	.	3
Sethoxydim	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10	10
Sulphuric acid	.	.	.	20	.	.	.	.	.	.	.	128,485	31,567	185,964	.	.	346,036
Terbuthylazine/terbutryn	.	.	.	.	.	.	.	.	.	.	.	15	396	475	.	51	936
Terbutryn	.	.	.	.	.	.	54	.	.	.	.	.	.	.	.	.	54
Thifensulfuron-methyl/tribenuron-methyl	112	<1	.	.	2	.	.	.	.	.	.	.	.	.	.	.	114
Tralkoxydim	48	.	9	.	28	.	.	.	.	.	.	.	.	.	.	.	84
Tribenuron-methyl	4	<1	1	.	<1	.	.	.	.	<1	.	.	.	.	.	.	6
Trifluralin	.	.	274	.	257	.	.	44	.	.	.	.	.	.	.	.	574
Unknown herbicide	149	14	25	.	.	.	.	.	.	.	.	.	.	12	5	.	204
All herbicides & desiccants	**16,786**	**1,043**	**6,790**	**984**	**8,612**	**132**	**1,003**	**98**	**255**	**67**	**<1**	**129,713**	**32,562**	**191,803**	**1,037**	**96**	**390,979**
Insecticides																	
Chlorpyrifos	438	5	7	97	9	.	.	.	.	.	.	.	.	.	.	.	556
Cypermethrin	26	.	4	.	7	.	3	.	.	.	.	.	.	4	.	.	44
Deltamethrin	2	.	1	1	5	<1	<1	.	.	.	.	<1	<1	1	.	.	11
Dimethoate	.	.	.	.	.	.	.	.	.	.	.	.	8	3	.	.	11
Esfenvalerate	21	<1	6	<1	7	<1	1	.	.	.	.	.	.	.	.	.	35
Lambda-cyhalothrin	12	1	10	1	9	<1	2	<1	<1	.	.	.	1	3	.	.	38
Permethrin	60	.	10	.	.	.	4	.	.	.	.	.	.	.	.	.	75
Phorate	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.	5
Pirimicarb	.	.	.	.	.	.	26	.	3	.	.	.	.	51	.	.	79
All insecticides	**559**	**6**	**39**	**100**	**37**	**<1**	**36**	**<1**	**3**	**.**	**.**	**<1**	**9**	**66**	**.**	**.**	**854**

Table 9 (cont.) **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under-sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Molluscicides																	
Metaldehyde	2	.	.	.	13	.	.	5	.	.	.	40	15	.	.	.	75
Methiocarb	25	.	5	.	19	.	.	6	.	.	.	4	23	181	.	.	262
All molluscicides	**27**	**.**	**5**	**.**	**32**	**.**	**.**	**10**	**.**	**.**	**.**	**44**	**38**	**181**	**.**	**.**	**338**
Growth regulators																	
Chlormequat	2,326	38	2,034	330	4,240	80	1,358	.	.	28	.	.	.	.	.	.	10,434
Chlormequat/ 2-chloroethylphosphonic acid	.	.	.	.	84	.	.	.	.	.	.	.	.	.	.	.	84
2-chloroethylphosphonic acid	119	30	312	16	155	.	.	.	.	.	.	.	.	.	.	.	631
2-chloroethylphosphonic acid/ mepiquat chloride	8	3	23	.	10	.	.	.	.	.	.	.	.	.	.	.	44
Maleic hydrazide	.	.	.	.	.	.	.	.	.	.	.	.	.	172	.	.	172
Trinexapac-ethyl	63	.	27	18	129	9	.	.	.	.	.	.	.	.	.	.	245
All growth regulators	**2,516**	**71**	**2,396**	**363**	**4,616**	**89**	**1,358**	**.**	**.**	**28**	**.**	**.**	**.**	**172**	**.**	**.**	**11,609**
Mixed formulations																	
Fentin hydroxide/metoxuron	.	.	.	.	.	.	.	.	.	.	.	.	.	127	.	.	127
All mixed formulations	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**127**	**.**	**.**	**127**
Seed treatments																	
Beta-cyfluthrin/imidacloprid	.	.	.	.	.	.	.	<1	.	.	.	.	.	.	.	.	<1
Bitertanol/fuberidazole	.	.	6	36	155	.	30	.	.	2	.	.	.	.	.	.	229
Carboxin/imazalil/thiabendazole	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Carboxin/thiram	9	.	2	15	100	.	54	.	.	.	.	.	.	.	.	.	180
Fludioxonil	3	.	2	7	1	34	1	.	.	.	.	.	.	.	.	.	47
Fluquinconazole/prochloraz	.	.	.	.	194	.	.	.	.	.	.	.	.	.	.	.	194
Fuberidazole/triadimenol	13	.	4	.	16	.	3	.	.	.	.	.	.	.	.	.	36
Guazatine	384	9	41	13	53	4	13	.	.	.	.	.	.	.	.	.	517
Guazatine/triticonazole	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.	.	2
Imazalil	1	<1	<1	.	.	.	.	.	.	.	.	23	8	31	.	.	62
Imazalil/pencycuron	.	.	.	.	.	.	.	.	.	.	.	3	99	489	.	.	591
Imazalil/thiabendazole	.	.	.	.	.	.	.	.	.	.	.	1	3	11	.	.	15
Iprodione	.	.	.	.	.	.	.	<1	.	.	.	.	.	.	.	.	<1

Table 9 (cont.) **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2002.**

Pesticide type and formulation	Spring barley	Under -sown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Triticale	Flax & linseed	Seed potatoes	Early potatoes	Maincrop potatoes	Set-aside	Lupins	All crops
Seed treatments (cont.)																	
Silthiofam	.	.	1	.	4	.	.	.	.	.	.	.	.	.	.	.	5
Tebuconazole/triazoxide	259	20	23	1	2	2	.	.	.	.	.	.	.	.	.	.	306
Thiabendazole	.	.	.	.	.	.	.	.	.	.	.	50	.	439	.	.	489
Thiram	.	.	.	.	.	.	.	.	15	.	.	.	.	.	.	3	18
Triticonazole	<1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	<1
Chlorpropham	.	.	.	.	.	.	.	.	.	.	.	.	5	13	.	.	17
Unknown seed treatments	33	.	8	.	12	.	.	14	.	.	.	.	.	47	.	.	112
All seed treatments	**702**	**29**	**86**	**71**	**539**	**39**	**101**	**14**	**15**	**2**	**.**	**77**	**114**	**1,029**	**.**	**3**	**2,820**
All pesticides	**27,997**	**1,432**	**11,171**	**2,502**	**17,633**	**433**	**3,182**	**134**	**378**	**100**	**<1**	**138,912**	**38,205**	**248,718**	**1,037**	**98**	**491,932**

Table 10 **The fifty active ingredients most extensively used on arable crops in Northern Ireland in 2002, prioritised by area treated (spray-hectares).**

	Active ingredient	Treated area (sp ha)
1	Mancozeb	41,921
2	Metsulfuron-methyl	22,002
3	Cymoxanil	15,108
4	Epoxiconazole	14,088
5	Dimethomorph	13,006
6	Fluazinam	12,797
7	Chlormequat	12,693
8	Glyphosate	12,396
9	Fentin hydroxide	9,979
10	Isoproturon	9,230
11	Mecoprop-P	9,028
12	Lambda-cyhalothrin	8,955
13	Azoxystrobin	8,451
14	Fenpropimorph	7,875
15	Trifloxystrobin	6,718
16	Flusilazole	6,026
17	MCPA	5,781
18	Esfenvalerate	5,070
19	Paraquat	4,859
20	Oxadixyl	4,684
21	Diquat	4,404
22	Kresoxim-methyl	4,233
23	Cyproconazole	4,178
24	Mecoprop	3,991
25	Propamocarb hydrochloride	3,904
26	Carbendazim	3,158
27	Cyprodinil	3,120
28	Dicamba	3,116
29	Chlorothalonil	3,007
30	Tebuconazole	2,999
31	Pyraclostrobin	2,901
32	Quinoxyfen	2,838
33	Fluroxypyr	2,781
34	Propiconazole	2,760
35	Diflufenican	2,513
36	2-chloroethylphosphonic acid	2,434
37	Bromoxynil	2,350
38	Ioxynil	2,350
39	Trinexapac-ethyl	2,324
40	Tribenuron-methyl	2,280
41	Thifensulfuron-methyl	2,276
42	Bromuconazole	2,273
43	Metribuzin	2,177
44	Sulphuric acid	2,177
45	Fluquinconazole	2,059
46	Metalaxyl-m	1,937
47	Deltamethrin	1,873
48	Prochloraz	1,596
49	Pendimethalin	1,529
50	Methiocarb	1,503

Table 11 **The fifty active ingredients most extensively used on arable crops in Northern Ireland in 2002, prioritised by weight (kilograms).**

	Active ingredient	Quantity (kg)
1	Sulphuric acid	346,036
2	Mancozeb	50,928
3	Glyphosate	10,781
4	Chlormequat	10,489
5	Isoproturon	7,858
6	Fentin hydroxide	7,837
7	2-chloroethylphosphonic acid	5,883
8	Mecoprop-P	5,292
9	Propamocarb hydrochloride	3,563
10	MCPA	2,676
11	Diquat	2,531
12	Chlorothalonil	2,497
13	Fenpropimorph	2,440
14	Mecoprop	2,268
15	Paraquat	2,264
16	Fluazinam	1,978
17	Dimethomorph	1,912
18	Metribuzin	1,680
19	Azoxystrobin	1,416
20	Pendimethalin	1,213
21	Trifloxystrobin	1,175
22	Cymoxanil	1,099
23	Metsulfuron-methyl	1,085
24	Fenpropidin	1,058
25	Cyprodinil	975
26	Epoxiconazole	970
27	Oxadixyl	905
28	2,4-DB	832
29	Trifluralin	781
30	Flusilazole	759
31	Tebuconazole	729
32	Terbutryn	709
33	Sulphur	683
34	Amidosulfuron	647
35	Chlorpyrifos	556
36	Bromuconazole	549
37	Bromoxynil	512
38	Ioxynil	476
39	Linuron	460
40	Propiconazole	424
41	Cyproconazole	417
42	Pyraclostrobin	391
43	Fluroxypyr	387
44	Kresoxim-methyl	370
45	Bifenox	312
46	Terbuthylazine	302
47	Prochloraz	264
48	Methiocarb	262
49	Dicamba	256
50	Trinexapac-ethyl	245

Table 12 **Spring barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Mildew	General disease control	Rhyncho -sporium	Mildew/ rhyncho -sporium	Septoria/ mildew	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides								
Azoxystrobin	144	1,843	.	.	.	1,987	1,692	572
Bromuconazole	103	1,058	.	.	.	1,162	959	386
Carbendazim	.	118	.	.	.	118	118	29
Carbendazim/flusilazole	97	2,102	.	.	.	2,199	2,070	446
Chlorothalonil	.	162	.	.	.	162	162	121
Cymoxanil/mancozeb	.	168	.	.	.	168	168	122
Cyproconazole	.	58	.	.	.	58	58	4
Cyproconazole/cyprodinil	.	151	144	.	.	294	294	63
Cyproconazole/prochloraz	.	81	.	.	.	81	81	22
Cyproconazole/propiconazole	101	491	.	.	.	592	592	108
Cyproconazole/trifloxystrobin	.	1,568	.	.	.	1,568	1,057	302
Cyprodinil	57	1,416	70	.	.	1,543	1,437	532
Epoxiconazole	.	2,369	.	.	78	2,447	2,330	145
Epoxiconazole/fenpropimorph	.	280	.	.	.	280	280	102
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	41	.	.	.	41	41	2
Epoxiconazole/kresoxim-methyl	226	1,024	210	181	.	1,641	1,625	329
Epoxiconazole/pyraclostrobin	.	257	.	.	.	257	257	53
Fenbuconazole	.	162	.	.	.	162	162	8
Fenpropidin	140	482	.	.	.	621	604	344
Fenpropidin/tebuconazole	12	264	.	.	.	276	221	787
Fenpropimorph	.	1,938	28	56	.	2,022	1,440	796
Fenpropimorph/flusilazole	157	584	.	.	.	741	741	268
Fenpropimorph/propiconazole	.	32	.	.	.	32	32	14
Fenpropimorph/quinoxyfen	.	310	.	.	.	310	310	67
Fluquinconazole/prochloraz	.	106	.	.	.	106	106	29
Flusilazole	.	975	.	.	.	975	700	124
Propiconazole	.	1,443	.	.	.	1,443	1,245	258
Sulphur	.	143	.	.	.	143	143	458
Tebuconazole	.	100	.	.	.	100	100	13
Tebuconazole/triadimenol	.	297	.	.	.	297	297	70
Tridemorph	.	62	.	.	.	62	62	23
Trifloxystrobin	.	2,050	.	.	.	2,050	1,541	184
Vinclozolin	210	.	.	.	.	210	210	105
Unknown fungicide	91	419	.	.	.	510	510	523
All fungicides	**1,338**	**22,550**	**451**	**237**	**78**	**24,654**	**21,643**	**7,407**

Table 12 (cont.) **Spring barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	Cleavers	Harvest aid	Desiccation	Stubble treatment	Docks	Wild oats	Ground preparation	Chickweed	Thistles and nettles	Redshank	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants														
Amidosulfuron	159	.	.	.	.	.	.	.	.	.	.	159	159	3
Benazolin/Bromoxynil/ioxynil	234	.	.	.	.	.	.	.	.	.	.	234	234	47
Benazolin/2,4-DB/MCPA	55	.	.	.	.	.	.	.	.	.	.	55	55	55
Bifenox/isoproturon	47	.	.	.	.	.	.	.	.	.	.	47	47	5
Bromoxynil/ioxynil	1,047	.	.	.	.	.	.	.	.	.	.	1,047	1,047	481
Clopyralid	71	.	.	.	.	.	.	.	.	.	.	71	71	3
Clopyralid/fluroxypyr/triclopyr	.	.	.	.	.	.	.	.	.	14	.	14	14	6
2,4-D	364	.	.	.	.	.	.	.	.	.	.	364	364	188
2,4-D/dicamba/triclopyr	51	.	.	.	.	.	.	.	.	.	.	51	51	22
2,4-DB/linuron/MCPA	281	.	.	.	.	.	.	.	.	.	.	281	281	83
2,4-DB/MCPA	15	.	.	.	.	.	.	.	.	.	.	15	15	15
Dicamba/MCPA/mecoprop-P	1,577	.	.	.	.	.	.	.	169	.	195	1,941	1,765	1,892
Dicamba/mecoprop	90	.	.	.	.	.	.	.	.	.	.	90	90	6
Dicamba/mecoprop/2,4,5-T	.	.	.	.	.	139	.	.	.	.	.	139	139	258
Dicamba/mecoprop-P	333	.	.	.	.	109	.	.	.	.	.	442	442	386
Diclofop-methyl/fenoxaprop-P-ethyl	170	.	.	.	.	.	.	.	.	.	.	170	170	83
Diflufenican/Isoproturon	100	.	.	.	.	.	.	.	.	.	.	100	100	60
Diquat	106	.	.	.	.	.	.	.	.	.	.	106	106	58
Flamprop-M-isopropyl	118	.	.	.	.	.	5	.	.	.	.	123	123	43
Fluroxypyr	969	16	.	152	.	.	.	.	12	.	.	1,149	1,149	143
Fluroxypyr/triclopyr	.	.	.	.	.	455	.	.	.	.	.	455	152	197
Glyphosate	3,213	.	125	2,844	63	.	.	364	.	.	.	6,610	6,208	6,188
Isoproturon	182	.	.	.	.	.	.	.	.	.	.	182	182	209
MCPA	1,513	.	.	.	.	.	.	.	.	.	.	1,513	1,513	773
Mecoprop	2,612	.	.	.	.	.	.	.	277	.	.	2,889	2,860	1,717
Mecoprop-P	3,698	.	.	.	.	.	.	.	.	.	.	3,698	3,661	2,454
Metribuzin	162	.	.	.	.	.	.	.	.	.	.	162	162	113
Metsulfuron-methyl	14,911	.	.	.	.	.	.	.	.	.	.	14,911	14,682	884
Metsulfuron-methyl/ thifensulfuron-methyl	1,413	.	.	.	.	.	.	.	.	.	.	1,413	1,402	65
Metsulfuron-methyl/tribenuron-methyl	881	.	.	.	.	.	.	.	.	.	.	881	881	37
Thifensulfuron-methyl/ tribenuron-methyl	462	.	.	.	.	.	.	.	.	.	.	462	355	112
Tralkoxydim	61	.	.	.	.	.	14	.	.	.	.	76	76	48
Tribenuron-methyl	440	.	.	.	.	.	.	.	.	.	.	440	440	4
Unknown herbicide	149	.	.	.	.	.	.	.	.	.	.	149	149	149
All herbicides & desiccants	**35,482**	**16**	**125**	**2,996**	**63**	**704**	**20**	**364**	**458**	**14**	**195**	**40,437**	**39,141**	**16,786**

Table 12 (cont.) **Spring barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Aphids	Growth regulation	Leatherjackets	Pest control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Insecticides							
Chlorpyrifos	97	.	745	18	859	859	438
Cypermethrin	676	.	.	.	676	676	26
Deltamethrin	66	263	.	23	352	340	2
Esfenvalerate	2,858	.	.	.	2,858	2,739	21
Lambda-cyhalothrin	3,029	.	.	.	3,029	2,588	12
Permethrin	234	.	365	.	599	433	60
All insecticides	**6,959**	**263**	**1,110**	**41**	**8,373**	**7,635**	**559**

Pesticide type & formulation	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Molluscicides				
Metaldehyde	32	32	32	2
Methiocarb	128	128	128	25
All molluscicides	**161**	**161**	**161**	**27**

Pesticide type & formulation	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Growth regulators				
Chlormequat	3,421	3,421	3,259	2,326
2-chloroethylphosphonic acid	446	446	383	119
2-chloroethylphosphonic acid/mepiquat chloride	17	17	17	8
Trinexapac-ethyl	662	662	662	63
All growth regulators	**4,545**	**4,545**	**4,320**	**2,516**

Table 13 **Undersown barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	General disease control	Cleavers	Rhyncho-sporium	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides							
Azoxystrobin	.	13	.	.	13	13	2
Bromuconazole	.	43	.	.	43	43	7
Cyproconazole/prochloraz	.	13	.	.	13	13	2
Cyproconazole/propiconazole	.	6	.	.	6	6	1
Cyproconazole/trifloxystrobin	.	45	.	.	45	45	9
Cyprodinil	.	.	.	13	13	13	5
Epoxiconazole	.	188	.	.	188	188	5
Epoxiconazole/kresoxim-methyl	.	41	.	.	41	41	9
Epoxiconazole/pyraclostrobin	.	22	.	.	22	22	6
Fenpropidin	.	43	.	.	43	43	16
Fenpropidin/tebuconazole	.	20	.	.	20	10	98
Fenpropimorph	.	13	.	.	13	13	5
Fenpropimorph/flusilazole	.	12	.	.	12	12	2
Propiconazole	.	19	.	.	19	19	5
Tebuconazole	.	12	.	.	12	12	2
Tebuconazole/triadimenol	.	25	.	.	25	25	10
Unknown fungicide	.	99	.	.	99	99	99
All fungicides	**.**	**615**	**.**	**13**	**629**	**619**	**283**
Herbicides & desiccants							
Benazolin/2,4-DB/MCPA	545	.	.	.	545	545	632
2,4-DB/linuron/MCPA	338	.	.	.	338	338	95
2,4-DB/MCPA	32	.	.	.	32	32	62
Dicamba/MCPA/mecoprop-P	13	.	.	.	13	13	6
Dicamba/mecoprop-P	84	.	.	.	84	84	66
Fluroxypyr	.	.	9	.	9	9	1
Glyphosate	81	.	.	.	81	81	76
Isoproturon	13	.	.	.	13	13	13
MCPA	81	.	.	.	81	63	41
MCPA/MCPB	18	.	.	.	18	18	1
Mecoprop	19	.	.	.	19	19	11
Mecoprop-P	32	.	.	.	32	22	21
Metsulfuron-methyl	222	.	.	.	222	190	1

Table 13 (cont.) **Undersown barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	Aphids	Cleavers	Growth regulation	Leatherjackets	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants (cont.)								
Metsulfuron-methyl/ thifensulfuron-methyl	120	.	.	.	.	120	120	3
Thifensulfuron-methyl/ tribenuron-methyl	6	.	.	.	.	6	6	<1
Tribenuron-methyl	12	.	.	.	.	12	12	<1
Unknown herbicide	14	.	.	.	.	14	14	14
All herbicides & desiccants	**1,630**	**.**	**9**	**.**	**.**	**1,639**	**1,580**	**1,043**
Insecticides								
Chlorpyrifos	.	.	.	.	12	12	12	5
Esfenvalerate	.	32	.	.	.	32	32	<1
Lambda-cyhalothrin	.	190	.	.	.	190	190	1
All insecticides	**.**	**222**	**.**	**.**	**12**	**234**	**234**	**6**
Growth regulators								
Chlormequat	.	.	.	56	.	56	56	38
2-chloroethylphosphonic acid	.	.	.	123	.	123	123	30
2-chloroethylphosphonic acid/ mepiquat chloride	.	.	.	13	.	13	13	3
All growth regulators	**.**	**.**	**.**	**192**	**.**	**192**	**192**	**71**

Table 14 **Winter barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type and formulation	Mildew	General weed control	General disease control	Cleavers	Rhyncho-sporium	Rust	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides									
Azoxystrobin	.	.	840	.	.	.	840	785	136
Bromuconazole	.	.	177	.	.	97	274	274	42
Carbendazim	.	.	34	.	.	.	34	34	9
Carbendazim/flusilazole	.	.	386	.	101	.	487	357	67
Cyproconazole/cyprodinil	.	.	122	.	.	.	122	61	41
Cyproconazole/prochloraz	.	.	83	.	.	.	83	83	24
Cyproconazole/propiconazole	.	.	83	.	.	.	83	42	12
Cyproconazole/trifloxystrobin	.	.	347	.	.	.	347	194	59
Cyprodinil	29	.	732	.	144	.	905	905	278
Epoxiconazole	27	.	743	.	.	.	769	542	37
Epoxiconazole/fenpropimorph	.	.	75	.	.	.	75	75	34
Epoxiconazole/kresoxim-methyl	144	.	689	.	.	.	833	526	134
Epoxiconazole/kresoxim-methyl/ pyraclostrobin	.	.	10	.	.	.	10	10	7
Epoxiconazole/pyraclostrobin	.	.	5	.	.	.	5	5	1
Fenpropidin	.	.	139	.	.	.	139	139	74
Fenpropimorph	112	.	1,129	.	.	.	1,241	968	381
Fenpropimorph/flusilazole	.	.	173	.	.	.	173	139	90
Fenpropimorph/kresoxim-methyl	.	.	103	.	.	.	103	103	11
Fenpropimorph/quinoxyfen	.	.	192	.	.	.	192	192	56
Fluquinconazole/prochloraz	.	.	24	.	.	.	24	24	6
Flusilazole	.	.	759	.	.	.	759	584	89
Mancozeb	.	.	103	.	.	.	103	103	102
Propiconazole	.	.	137	.	.	.	137	99	30
Sulphur	.	.	12	.	.	.	12	12	66
Tebuconazole	.	.	79	.	.	.	79	79	8
Trifloxystrobin	.	.	437	.	.	.	437	397	46
Unknown fungicide	.	.	37	.	.	.	37	37	17
All fungicides	**312**	**.**	**7,649**	**.**	**245**	**97**	**8,303**	**6,767**	**1,855**
Herbicides & desiccants									
Amidosulfuron	.	131	.	.	.	.	131	131	617
Bifenox/isoproturon	.	284	.	25	.	.	309	309	354
Bromoxynil/diflufenican/ioxynil	.	20	.	.	.	.	20	20	11
Bromoxynil/ioxynil	.	401	.	.	.	.	401	401	195

Table 14 (cont.) **Winter barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type and formulation	General weed control	Aphids	Cleavers	Harvest aid	Growth regulation	Desiccation	Stubble treatment	Wild oats	Ground preparation	Thistles and nettles	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants (cont.)													
Clopyralid/fluroxypyr/triclopyr	.	.	.	.	.	.	.	.	.	8	8	8	3
2,4-D	9	.	.	.	.	.	.	.	.	.	9	9	4
Dicamba/mecoprop	54	.	.	.	.	.	.	.	.	.	54	54	18
Diclofop-methyl/fenoxaprop-P-ethyl	11	.	.	.	.	.	.	.	.	.	11	11	5
Diflufenican/Isoproturon	881	.	.	.	.	.	.	.	.	.	881	881	631
Diflufenican/terbuthylazine	57	.	.	.	.	.	.	.	.	.	57	57	16
Flamprop-M-isopropyl	.	.	.	.	.	.	.	8	.	.	8	8	3
Florasulam	54	.	51	.	.	.	.	.	.	.	104	104	1
Flufenacet/pendimethalin	76	.	.	.	.	.	.	.	.	.	76	76	74
Fluoroglycofen-ethyl/isoproturon	25	.	.	.	.	.	.	.	.	.	25	25	15
Fluroxypyr	50	.	.	.	.	.	.	.	.	.	50	50	4
Glyphosate	697	.	.	34	.	846	36	.	113	.	1,725	1,480	1,375
Isoproturon	1,437	.	.	.	.	.	.	.	.	.	1,437	1,423	1,513
Isoproturon/pendimethalin	447	.	.	.	.	.	.	.	.	.	447	447	375
Isoproturon/trifluralin	399	.	.	.	.	.	.	.	.	.	399	399	365
Mecoprop	53	.	.	.	.	.	.	.	.	.	53	53	29
Mecoprop-P	749	.	.	.	.	.	.	.	.	.	749	749	652
Metsulfuron-methyl	400	.	.	.	.	.	.	.	.	.	400	400	56
Metsulfuron-methyl/tribenuron-methyl	35	.	.	.	.	.	.	.	.	.	35	35	1
Pendimethalin	186	.	.	.	.	.	.	.	.	.	186	186	166
Tralkoxydim	48	.	.	.	.	.	.	.	.	.	48	48	9
Tribenuron-methyl	98	.	.	.	.	.	.	.	.	.	98	98	1
Trifluralin	363	.	.	.	.	.	.	.	.	.	363	363	274
Unknown herbicide	79	.	.	.	.	.	.	.	.	.	79	79	25
All herbicides & desiccants	**7,042**	**.**	**76**	**34**	**.**	**846**	**36**	**8**	**113**	**8**	**8,160**	**7,902**	**6,789**
Insecticides													
Chlorpyrifos	.	17	.	.	.	.	.	.	.	.	17	17	7
Cypermethrin	.	161	.	.	.	.	.	.	.	.	161	161	4
Deltamethrin	.	52	.	.	161	.	.	.	.	.	214	214	1
Esfenvalerate	.	592	.	.	.	.	.	.	.	.	592	592	6
Lambda-cyhalothrin	.	1,490	.	.	.	.	.	.	.	.	1,490	1,143	10
Permethrin	.	178	.	.	.	.	.	.	.	.	178	178	10
All insecticides	**.**	**2,490**	**.**	**.**	**161**	**.**	**.**	**.**	**.**	**.**	**2,651**	**2,304**	**39**

Table 14 (cont.) **Winter barley: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type and formulation	Growth regulation	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Molluscicides					
Methiocarb	.	24	24	24	5
All molluscicides	**.**	**24**	**24**	**24**	**5**
Growth regulators					
Chlormequat	2,282	.	2,282	1,870	2,034
2-chloroethylphosphonic acid	900	.	900	876	312
2-chloroethylphosphonic acid/ mepiquat chloride	68	.	68	68	23
Trinexapac-ethyl	530	.	530	340	27
All growth regulators	**3,780**	**.**	**3,780**	**3,154**	**2,396**

Table 15 **Spring wheat: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	General disease control	Desiccation	Docks	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides							
Azoxystrobin	.	378	.	.	378	378	25
Bromuconazole	.	35	.	.	35	35	6
Carbendazim/flusilazole	.	62	.	.	62	62	7
Cyproconazole/trifloxystrobin	.	167	.	.	167	142	646
Epoxiconazole	.	335	.	.	335	271	24
Epoxiconazole/kresoxim-methyl	.	46	.	.	46	28	6
Epoxiconazole/pyraclostrobin	.	32	.	.	32	23	6
Fenpropidin	.	104	.	.	104	104	50
Fenpropidin/tebuconazole	.	16	.	.	16	16	34
Fenpropimorph/quinoxyfen	.	154	.	.	154	154	69
Fluquinconazole	.	19	.	.	19	19	1
Fluquinconazole/prochloraz	.	47	.	.	47	31	10
Propiconazole	.	91	.	.	91	91	14
Propiconazole/tridemorph	.	31	.	.	31	31	11
Pyraclostrobin	.	74	.	.	74	74	23
Tebuconazole	.	140	.	.	140	75	13
Tebuconazole/triadimenol	.	129	.	.	129	65	25
Trifloxystrobin	.	157	.	.	157	138	16
All fungicides	**.**	**2,015**	**.**	**.**	**2,015**	**1,735**	**984**
Herbicides & desiccants							
Benazolin/2,4-DB/MCPA	8	.	.	.	8	8	14
Bromoxynil/ioxynil	37	.	.	.	37	37	18
2,4-DB/linuron/MCPA	76	.	.	.	76	76	21
Dicamba/mecoprop	55	.	.	.	55	55	8
Dicamba/mecoprop/2,4,5-T	.	.	.	55	55	55	122
Ethofumesate	16	.	.	.	16	16	5
Fluroxypyr	16	.	.	.	16	16	2
Glyphosate	105	.	121	.	226	226	176
Isoproturon	155	.	.	.	155	155	291
Isoproturon/pendimethalin	114	.	.	.	114	114	87
MCPA	111	.	.	.	111	111	29
Mecoprop	62	.	.	.	62	62	27
Mecoprop-P	206	.	.	.	206	206	135
Metsulfuron-methyl	949	.	.	.	949	949	27

Table 15 (cont.) **Spring wheat: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	Aphids	Growth regulation	Desiccation	Docks	Pest Control	Wireworm	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants (cont.)										
Metsulfuron-methyl/ thifensulfuron-methyl	87	.	.	.	.	.	.	87	87	1
Metsulfuron-methyl/ tribenuron-methyl	15	.	.	.	.	.	.	15	15	<1
Sulphuric acid	65	.	.	.	.	.	.	65	65	20
All herbicides & desiccants	**2,077**	**.**	**.**	**121**	**55**	**.**	**.**	**2,253**	**2,253**	**984**
Insecticides										
Chlorpyrifos	.	182	.	.	.	.	57	239	239	97
Deltamethrin	.	61	.	.	.	222	.	283	135	1
Esfenvalerate	.	61	.	.	.	.	.	61	61	<1
Lambda-cyhalothrin	.	127	.	.	.	.	.	127	118	1
All insecticides	**.**	**432**	**.**	**.**	**.**	**222**	**57**	**710**	**554**	**100**
Growth regulators										
Chlormequat	.	.	504	.	.	.	.	504	488	330
2-chloroethylphosphonic acid	.	.	113	.	.	.	.	113	113	16
Trinexapac-ethyl	.	.	105	.	.	.	.	105	105	18
All growth regulators	**.**	**.**	**722**	**.**	**.**	**.**	**.**	**722**	**706**	**363**

Table 16 **Winter wheat: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Mildew	General disease control	Septoria	Mildew/ rhyncho-sporium	Ear wash	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides								
Azoxystrobin	.	4,238	.	132	.	4,371	3,129	591
Bromuconazole	.	759	.	.	.	759	468	108
Carbendazim/chlorothalonil	.	.	58	.	.	58	58	64
Carbendazim/flusilazole	.	89	.	.	.	89	89	11
Chlorothalonil	.	323	.	.	.	323	268	154
Chlorothalonil/flutriafol	.	59	.	.	.	59	59	31
Cymoxanil/mancozeb	.	375	.	.	.	375	375	326
Cyproconazole/propiconazole	.	211	.	.	.	211	106	24
Cyproconazole/trifloxystrobin	.	488	.	.	.	488	277	109
Cyprodinil	.	243	.	.	.	243	243	69
Difenoconazole	.	17	.	.	.	17	17	1
Epoxiconazole	224	2,837	132	.	.	3,193	2,204	165
Epoxiconazole/kresoxim-methyl	.	1,201	.	.	27	1,228	987	205
Epoxiconazole/kresoxim-methyl/ pyraclostrobin	.	140	.	.	.	140	140	97
Epoxiconazole/pyraclostrobin	159	2,191	.	.	.	2,350	1,427	411
Fenbuconazole	.	111	.	.	.	111	111	6
Fenpropidin	.	195	.	.	.	195	179	22
Fenpropimorph	.	472	.	.	.	472	436	199
Fenpropimorph/flusilazole	.	102	.	.	.	102	102	55
Fenpropimorph/quinoxyfen	.	1,022	.	.	.	1,022	707	195
Fluquinconazole	.	488	132	.	.	621	562	103
Fluquinconazole/prochloraz	.	1,135	83	.	.	1,219	1,147	240
Flusilazole	.	316	.	.	.	316	211	65
Propiconazole	.	106	.	.	.	106	53	20
Spiroxamine/tebuconazole	.	61	.	.	.	61	61	29
Tebuconazole	.	1,308	.	.	.	1,308	1,308	176
Tebuconazole/triadimenol	.	188	.	.	.	188	141	36
Trifloxystrobin	.	1,075	265	.	.	1,340	1,053	131
Unknown fungicide	.	163	.	.	.	163	163	155
All fungicides	**383**	**19,914**	**670**	**132**	**27**	**21,127**	**16,080**	**3,797**

Table 16 (cont.) **Winter wheat: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	Cleavers	Desiccation	Stubble treatment	Wild oats	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants								
Amidosulfuron	450	18	.	.	.	468	468	10
Atrazine	117	.	.	.	.	117	117	29
Benazolin/Bromoxynil/ioxynil	79	.	.	.	.	79	79	37
Bifenox/isoproturon	334	.	.	.	.	334	334	735
Bromoxynil/diflufenican/ioxynil	136	.	.	.	.	136	136	55
Bromoxynil/ioxynil	389	.	.	.	.	389	389	167
Clodinafop-Propargyl	36	.	.	.	.	36	36	2
2,4-D	7	.	.	.	.	7	7	3
Dicamba/MCPA/mecoprop-P	97	.	.	.	.	97	97	8
Dicamba/mecoprop	34	.	.	.	.	34	34	18
Diflufenican/Isoproturon	1,247	.	.	.	.	1,247	1,247	872
Diflufenican/terbuthylazine	72	.	.	.	.	72	72	16
Ethofumesate	83	.	.	.	.	83	83	77
Fenoxaprop-P-ethyl	80	.	.	.	.	80	80	3
Florasulam	166	.	.	.	.	166	166	1
Flufenacet/pendimethalin	62	.	.	.	.	62	62	49
Fluroxypyr	980	21	.	.	.	1,001	1,001	125
Glyphosate	721	.	830	34	.	1,585	1,571	1,209
Isoproturon	2,706	.	.	.	.	2,706	2,706	2,970
Isoproturon/pendimethalin	521	.	.	.	.	521	521	666
Isoproturon/trifluralin	315	.	.	.	.	315	315	152
MCPA	414	.	.	.	.	414	271	141
Mecoprop	333	.	.	.	.	333	246	105
Mecoprop-P	918	.	.	.	.	918	918	769
Metsulfuron-methyl	1,101	.	.	.	.	1,101	1,014	4
Metsulfuron-methyl/ thifensulfuron-methyl	134	.	.	.	.	134	134	6
Metsulfuron-methyl/ tribenuron-methyl	117	.	.	.	.	117	117	46
Paraquat	21	.	.	.	.	21	21	17
Pendimethalin	37	.	.	.	.	37	37	36
Thifensulfuron-methyl/ tribenuron-methyl	55	.	.	.	.	55	55	2
Tralkoxydim	103	.	.	.	12	115	115	28
Tribenuron-methyl	17	.	.	.	.	17	17	<1
Trifluralin	333	.	.	.	.	333	333	257
All herbicides & desiccants	**12,215**	**39**	**830**	**34**	**12**	**13,130**	**12,800**	**8,612**

Table 16 (cont.) **Winter wheat: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Aphids	Growth regulation	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Insecticides						
Chlorpyrifos	13	.	.	13	13	9
Cypermethrin	277	.	.	277	277	7
Deltamethrin	254	447	.	701	626	5
Esfenvalerate	1,376	.	.	1,376	1,318	7
Lambda-cyhalothrin	2,116	.	.	2,116	1,557	9
All insecticides	**4,036**	**447**	**.**	**4,483**	**3,791**	**37**
Molluscicides						
Metaldehyde	.	.	35	35	35	13
Methiocarb	.	.	87	87	87	19
All molluscicides	**.**	**.**	**122**	**122**	**122**	**32**
Growth regulators						
Chlormequat	.	4,551	.	4,551	4,051	4,240
Chlormequat/ 2-chloroethylphosphonic acid	.	77	.	77	77	84
2-chloroethylphosphonic acid	.	652	.	652	652	155
2-chloroethylphosphonic acid/ mepiquat chloride	.	26	.	26	26	10
Trinexapac-ethyl	.	957	.	957	939	129
All growth regulators	**.**	**6,263**	**.**	**263**	**5,744**	**4,616**

Table 17 **Spring oats: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	General disease control	Desiccation	Disease prevention	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides							
Azoxystrobin	.	154	.	.	154	154	19
Carbendazim/flusilazole	.	64	.	.	64	64	10
Cyproconazole/trifloxystrobin	.	15	.	.	15	15	3
Epoxiconazole/kresoxim-methyl	.	6	.	.	6	6	1
Fenpropimorph	.	63	.	.	63	52	23
Propiconazole	.	.	.	9	9	9	2
Pyraclostrobin	.	11	.	.	11	11	2
Quinoxyfen	.	40	.	.	40	40	5
Sulphur	.	9	.	.	9	9	77
Tridemorph	.	5	.	.	5	5	4
Unknown fungicide	.	28	.	.	28	28	28
All fungicides	**.**	**395**	**.**	**9**	**403**	**392**	**174**
Herbicides & desiccants							
Amidosulfuron	118	.	.	.	118	118	4
Benazolin/2,4-DB/MCPA	15	.	.	.	15	15	32
Bromoxynil/ioxynil	7	.	.	.	7	7	1
Dicamba/MCPA/mecoprop-P	62	.	.	.	62	62	29
Glyphosate	.	.	12	.	12	12	6
MCPA	87	.	.	.	87	87	10
Mecoprop	21	.	.	.	21	21	15
Mecoprop-P	53	.	.	.	53	53	27
Metsulfuron-methyl	575	.	.	.	575	575	7
All herbicides & desiccants	**937**	**.**	**12**	**.**	**948**	**948**	**132**

Table 17 (cont.) **Spring oats: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Aphids	Growth regulation	Pest Control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Insecticides						
Deltamethrin	.	.	22	22	11	<1
Esfenvalerate	12	.	.	12	12	<1
Lambda-cyhalothrin	21	.	.	21	21	<1
All insecticides	**32**	**.**	**22**	**54**	**43**	**<1**
Growth regulators						
Chlormequat	.	110	.	110	110	80
Trinexapac-ethyl	.	70	.	70	70	9
All growth regulators	**.**	**181**	**.**	**181**	**181**	**89**

Table 18 **Winter oats: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Mildew	General weed control	General disease control	Desiccation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides							
Azoxystrobin	.	.	638	.	638	638	67
Carbendazim/flusilazole	.	.	48	.	48	48	5
Cymoxanil/mancozeb	.	.	39	.	39	39	28
Epoxiconazole/kresoxim-methyl	.	.	144	.	144	144	27
Fenpropimorph	15	.	766	.	781	727	307
Fenpropimorph/quinoxyfen	.	.	46	.	46	46	16
Quinoxyfen	.	.	1,074	.	1,074	918	103
Sulphur	.	.	10	.	10	10	82
Tebuconazole	.	.	110	.	110	110	10
Tebuconazole/triadimenol	.	.	94	.	94	94	25
Trifloxystrobin	.	.	105	.	105	105	8
Unknown fungicide	11	.	.	.	11	11	5
All fungicides	**26**	**.**	**3,073**	**.**	**3,099**	**2,890**	**683**
Herbicides & desiccants							
Amidosulfuron	.	492	.	.	492	492	10
Carfentrazone-ethyl/flupyrsulfuron-methyl	.	296	.	.	296	296	7
Florasulam	.	57	.	.	57	57	<1
Fluroxypyr	.	36	.	.	36	36	4
Glyphosate	.	452	.	48	500	500	294
Mecoprop	.	171	.	.	171	171	107
Mecoprop-P	.	591	.	.	591	591	522
Metsulfuron-methyl	.	863	.	.	863	863	5
Metsulfuron-methyl/tribenuron-methyl	.	115	.	.	115	75	1
Terbutryn	.	64	.	.	64	64	54
All herbicides & desiccants	**.**	**3,137**	**.**	**48**	**3,185**	**3,146**	**1,003**

Table 18 (cont.) **Winter oats: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Aphids	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Insecticides					
Cypermethrin	157	.	157	157	3
Deltamethrin	10	44	54	54	<1
Esfenvalerate	139	.	139	139	1
Lambda-cyhalothrin	922	.	922	470	2
Permethrin	72	.	72	72	4
Pirimicarb	182	.	182	182	26
All insecticides	**1,482**	**44**	**1,525**	**1,073**	**36**
Growth regulators					
Chlormequat	.	1,648	1,648	983	1,358
All growth regulators	**.**	**1,648**	**1,648**	**983**	**1,358**

Table 19 **Seed potatoes: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	General disease control	Blight	Desiccation	Slugs	Pest control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides									
Chlorothalonil/ propamocarb hydrochloride	.	.	78	.	.	.	78	41	121
Cymoxanil/mancozeb	.	.	1,252	.	.	.	1,252	447	1,574
Cymoxanil/mancozeb/oxadixyl	.	.	779	.	.	.	779	472	1,225
Dimethomorph/mancozeb	.	166	1,942	.	.	.	2,109	1,157	2,621
Fentin hydroxide	.	.	1,277	.	.	.	1,277	402	771
Fluazinam	.	.	1,784	.	.	.	1,784	605	332
Imazalil/pencycuron	.	111	.	.	.	.	111	111	22
Mancozeb	.	.	1,058	.	.	.	1,058	364	1,444
Mancozeb/metalaxyl-m	.	333	287	.	.	.	619	342	710
Mancozeb/propamocarb hydrochloride	.	.	153	.	.	.	153	153	258
All fungicides	**.**	**610**	**8,609**	**.**	**.**	**.**	**9,219**	**4,092**	**9,079**
Herbicides & desiccants									
Diquat	.	.	.	506	.	.	506	481	409
Glyphosate	68	.	.	.	.	.	68	34	66
Metribuzin	417	.	.	.	.	.	417	417	331
Paraquat	801	.	.	.	.	.	801	801	406
Rimsulfuron	132	.	.	.	.	.	132	132	1
Sulphuric acid	.	.	.	719	.	.	719	719	128,485
Terbuthylazine/terbutryn	8	.	.	.	.	.	8	8	15
All herbicides & desiccants	**1,426**	**.**	**.**	**1,224**	**.**	**.**	**2,650**	**2,592**	**129,713**
Insecticides									
Deltamethrin	.	.	.	.	.	16	16	8	<1
All insecticides	**.**	**.**	**.**	**.**	**.**	**16**	**16**	**8**	**<1**
Molluscicides									
Metaldehyde	.	.	.	.	248	.	248	124	40
Methiocarb	.	.	.	.	20	.	20	20	4
All molluscicides	**.**	**.**	**.**	**.**	**267**	**.**	**267**	**144**	**44**

Table 20 **Early potatoes: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	Aphids	General disease control	Blight	Desiccation	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides									
Chlorothalonil/ propamocarb hydrochloride	.	.	8	262	.	.	269	180	530
Cymoxanil/mancozeb	.	.	.	695	.	.	695	292	664
Cymoxanil/mancozeb/oxadixyl	.	.	.	723	.	.	723	396	1,218
Dimethomorph	.	.	.	3	.	.	3	3	<1
Dimethomorph/mancozeb	.	.	.	989	.	.	989	395	1,315
Fentin hydroxide	.	.	.	679	.	.	679	342	495
Fluazinam	.	.	.	1,286	.	.	1,286	383	178
Mancozeb	.	.	.	553	.	.	553	189	618
Mancozeb/metalaxyl-m	.	.	.	234	.	.	234	140	251
Mancozeb/propamocarb hydrochloride	.	.	.	130	.	.	130	71	214
All fungicides	**.**	**.**	**8**	**5,554**	**.**	**.**	**5,561**	**2,391**	**5,482**
Herbicides & desiccants									
Diquat	.	.	.	.	234	.	234	186	129
Glyphosate	24	.	.	.	.	.	24	24	19
Metribuzin	216	.	.	.	.	.	216	216	196
Paraquat	544	.	.	.	.	.	544	544	255
Rimsulfuron	85	.	.	.	.	.	85	85	1
Sulphuric acid	.	.	.	.	157	.	157	157	31,567
Terbutryn/terbuthylazine	260	.	.	.	.	.	260	260	396
All herbicides & desiccants	**1,129**	**.**	**.**	**.**	**391**	**.**	**1,520**	**1,472**	**32,562**
Insecticides									
Deltamethrin	.	11	.	.	.	.	11	11	<1
Dimethoate	.	24	.	.	.	.	24	24	8
Lambda-cyhalothrin	.	162	.	.	.	.	162	81	1
All insecticides	**.**	**197**	**.**	**.**	**.**	**.**	**197**	**116**	**9**
Molluscicides									
Metaldehyde	.	.	.	.	.	96	96	48	15
Methiocarb	.	.	.	.	.	110	110	99	23
All molluscicides	**.**	**.**	**.**	**.**	**.**	**206**	**206**	**147**	**38**

Table 21 **Maincrop potatoes: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	General disease control	Harvest aid	Blight	Desiccation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides								
Chlorothalonil	.	90	.	.	.	90	30	67
Chlorothalonil/ propamocarb hydrochloride	.	121	.	1,694	.	1,814	1,043	3,317
Cymoxanil/mancozeb	.	77	.	7,819	.	7,896	2,410	8,466
Cymoxanil/mancozeb/oxadixyl	.	14	.	3,167	.	3,182	1,539	5,138
Dimethomorph	.	.	.	178	.	178	30	9
Dimethomorph/mancozeb	.	873	.	8,855	.	9,728	2,944	13,903
Fentin acetate/maneb	.	341	.	.	.	341	144	48
Fentin hydroxide	.	174	.	7,763	.	7,937	3,579	6,559
Fluazinam	.	.	.	9,727	.	9,727	2,861	1,469
Mancozeb	.	.	.	8,514	.	8,514	2,377	11,917
Mancozeb/metalaxyl-m	.	.	.	1,083	.	1,083	653	1,339
Mancozeb/propamocarb hydrochloride	.	1,107	.	353	.	1,460	597	3,002
Mancozeb/zoxamide	.	.	.	80	.	80	74	107
All fungicides	**.**	**2,796**	**.**	**49,234**	**.**	**52,030**	**18,282**	**55,341**
Herbicides & desiccants								
Diquat	123	.	170	.	2,865	3,157	2,714	1,831
Diquat/paraquat	380	.	.	.	.	380	365	228
Glyphosate	468	.	.	.	.	468	391	396
Linuron	449	.	.	.	.	449	397	439
Metribuzin	1,382	.	.	.	.	1,382	1,382	1,040
Paraquat	3,050	.	.	.	.	3,050	3,017	1,416
Propaquizafop	17	.	.	.	.	17	17	2
Rimsulfuron	216	.	.	.	.	216	216	2
Sulphuric acid	.	.	.	.	1,237	1,237	960	185,964
Terbutryn/terbuthylazine	288	.	.	.	.	288	288	475
Unknown herbicide	39	.	.	.	.	39	39	12
All herbicides & desiccants	**6,411**	**.**	**170**	**.**	**4,101**	**10,682**	**9,785**	**191,803**

Table 21 (cont.) **Maincrop potatoes: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	Aphids	Growth regulation	Desiccation	Slugs	Pest control	Wireworm	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Insecticides									
Cypermethrin	147	.	.	.	.	.	147	73	4
Deltamethrin	.	.	.	.	221	.	221	110	1
Dimethoate	55	.	.	.	.	.	55	55	3
Lambda-cyhalothrin	783	.	.	.	.	.	783	551	3
Phorate	.	.	.	.	.	46	46	46	5
Pirimicarb	357	.	.	.	.	.	357	329	51
All insecticides	**1,342**	**.**	**.**	**.**	**221**	**46**	**1,609**	**1,164**	**66**
Molluscicides									
Methiocarb	.	.	.	1,108	.	.	1,108	717	181
All molluscicides	**.**	**.**	**.**	**1,108**	**.**	**.**	**1,108**	**717**	**181**
Growth regulators									
Maleic hydrazide	.	72	.	.	.	.	72	72	172
All growth regulators	**.**	**72**	**.**	**.**	**.**	**.**	**72**	**72**	**172**
Mixed formulations									
Fentin hydroxide/metoxuron	.	.	86	.	.	.	86	86	127
All mixed formulations	**.**	**.**	**86**	**.**	**.**	**.**	**86**	**86**	**127**

Table 22 **Oilseed rape: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	Aphids	General disease control	Desiccation	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides								
Fluquinconazole/prochloraz	.	.	24	.	.	24	24	5
Tebuconazole	.	.	46	.	.	46	46	7
All fungicides	**.**	**.**	**70**	**.**	**.**	**70**	**70**	**12**
Herbicides & desiccants								
Cycloxydim	24	.	.	.	.	24	24	11
Diquat	.	.	.	22	.	22	22	13
Fluroxypyr	37	.	.	.	.	37	37	6
Glyphosate	24	.	.	.	.	24	24	9
Propaquizafop	13	.	.	.	.	13	13	1
Propyzamide	22	.	.	.	.	22	22	15
Trifluralin	52	.	.	.	.	52	52	44
All herbicides & desiccants	**172**	**.**	**.**	**22**	**.**	**194**	**194**	**98**
Insecticides								
Lambda-cyhalothrin	.	49	.	.	.	49	24	<1
All insecticides	**.**	**49**	**.**	**.**	**.**	**49**	**24**	**<1**
Molluscicides								
Metaldehyde	.	.	.	.	13	13	13	5
Methiocarb	.	.	.	.	26	26	13	6
All molluscicides	**.**	**.**	**.**	**.**	**39**	**39**	**26**	**10**

Table 23 **Peas and beans: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	Aphids	General disease control	Desiccation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides							
Azoxystrobin	.	.	71	.	71	44	4
Chlorothalonil	.	.	149	.	149	83	89
Tebuconazole	.	.	78	.	78	39	11
Tebuconazole/triadimenol	.	.	5	.	5	5	2
All fungicides	**.**	**.**	**303**	**.**	**303**	**171**	**106**
Herbicides & desiccants							
Bentazone	39	.	.	.	39	39	15
Bentazone/MCPB	8	.	.	.	8	8	6
Cyanazine/pendimethalin	5	.	.	.	5	5	2
Cycloxydim	39	.	.	.	39	39	4
Glyphosate	63	.	.	5	68	68	64
Pendimethalin	82	.	.	.	82	82	164
All herbicides & desiccants	**236**	**.**	**.**	**5**	**241**	**241**	**255**
Insecticides							
Lambda-cyhalothrin	.	66	.	.	66	66	<1
Pirimicarb	.	54	.	.	54	27	3
All insecticides	**.**	**120**	**.**	**.**	**120**	**93**	**3**

Table 24 **Triticale: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	General disease control	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Fungicides						
Epoxiconazole	.	6	.	6	6	<1
Tebuconazole	.	16	.	16	16	3
All fungicides	**.**	**22**	**.**	**22**	**22**	**3**
Herbicides & desiccants						
Fluroxypyr	6	.	.	6	6	1
Metsulfuron-methyl	16	.	.	16	16	66
Tribenuron-methyl	27	.	.	27	27	<1
All herbicides & desiccants	**50**	**.**	**.**	**50**	**50**	**67**
Growth regulators						
Chlormequat	.	.	43	43	43	28
All growth regulators	**.**	**.**	**43**	**43**	**43**	**28**

Table 25 **Flax and linseed: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants				
Amidosulfuron	13	13	13	<1
All herbicides & desiccants	**13**	**13**	**13**	**<1**

Table 26 **Lupins: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants				
Atrazine	12	12	12	26
Chlorothalonil/cyproconazole	6	6	6	4
Mecoprop-P	17	17	17	5
Sethoxydim	29	29	29	10
Terbutryn/terbuthylazine	36	36	36	51
All herbicides & desiccants	**100**	**100**	**100**	**96**

Table 27 **Set-aside: pesticide-treated area (spray-hectares), quantities of pesticides applied (kilograms) and reason for use.**

Pesticide type & formulation	General weed control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
Herbicides & desiccants				
Amidosulfuron	50	50	45	3
Benazolin/2,4-DB/MCPA	55	55	55	53
Glyphosate	1004	1004	912	904
MCPA	25	25	25	4
Mecoprop-P	142	142	142	35
Metsulfuron-methyl	50	50	45	<1
Paraquat	63	63	63	33
Unknown herbicide	5	5	5	5
All herbicides & desiccants	**1395**	**1395**	**1292**	**1037**

Table 28 **Comparison of the area of arable crops grown (hectares) in Northern Ireland, 1990-2002.**

	Survey Year							Differences between:					
Crop	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2002-90**	**2002-92**	**2002-94**	**2002-96**	**2002-98**	**2002-00**
Cereals													
Spring barley	29,893	24,729	20,890	21,256	23,066	23901	22,658	-24%	-8%	8%	7%	-2%	-5%
Undersown barley	5,800	5,759	6,542	4,875	4,035	3532	1,876	-68%	-67%	-71%	-62%	-54%	-47%
Winter barley	3,670	5,721	5,832	7,166	7,720	5194	3,922	7%	-31%	-33%	-45%	-49%	-24%
Spring wheat	348	136	32	129	400	863	1,428	310%	950%	4363%	1005%	257%	65%
Undersown wheat	27	.	42	.	.	.	.	.	.	.	.	.	.
Winter wheat	5,827	6,839	6,952	6,543	6,745	4125	5,807	0%	-15%	-16%	-11%	-14%	41%
Spring oats	2,220	1,257	953	858	978	1920	804	-64%	-36%	-16%	-6%	-18%	-58%
Undersown oats	117	221	337	130	102	25	20	-83%	-91%	-94%	-85%	-80%	-21%
Winter oats	673	1,008	1,125	1,481	1,523	967	1,547	130%	53%	38%	4%	2%	60%
All cereals	***48,575***	***45,670***	***42,704***	***42,438***	***44,569***	***40528***	***38062***	**-22%**	**-17%**	**-11%**	**-10%**	**-15%**	**-6%**
Spring oilseed rape	15	31	287	66	237	.	111	640%	258%	-61%	68%	-53%	.
Winter oilseed rape	891	1,032	323	127	502	.	.	.	.	.	.	.	.
All oilseed rape *	906	1,063	610	193	739	131	111	-88%	-90%	-82%	-42%	-85%	-15%
Linseed	.	158	.	.	.	.	14	.	-91%	.	.	.	.
Maize	.	45	.	.	.	.	.	.	.	.	.	.	.
Peas & beans	.	.	.	.	199	273	197	.	.	.	.	-1%	-28%
Triticale	37	.	.	.	17	64	49	32%	.	.	.	195%	-23%
Lupins	.	.	.	.	.	.	67	.	.	.	.	.	.
Set-aside	.	.	.	.	.	2,451	3,013	.	.	.	.	.	23%
Potatoes													
Seed potatoes	3,509	3,688	1,678	1,798	1,607	.	1,239	-65%	-66%	-26%	-31%	-23%	.
Early potatoes	463	836	813	729	391	.	728	57%	-13%	-10%	<1%	86%	.
Maincrop potatoes	7,863	6,540	5,913	5,961	5,515	.	4,741	-40%	-28%	-20%	-20%	-14%	.
All potatoes	***11,835***	***11,064***	***8,404***	***8,488***	***7,513***	**.**	***6,708***	**-43%**	**-39%**	**-20%**	**-21%**	**-11%**	**.**
All crops	**61,355**	**57,999**	**51,718**	**51,119**	**53,036**	****43447**	**48,222**	**-21%**	**-17%**	**-7%**	**-6%**	**-9%**	**.**

*** both winter & spring oilseed rape **excluding potatoes**

Table 29 **The area (spray-hectares) of arable crops treated with pesticides in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	102,594	106,290	114,972	121,833	141,099	.	127,435	24%	20%	11%	5%	-10%	.
Herbicides & desiccants	75,130	76,444	72,725	81,027	91,193	.	86,597	15%	13%	19%	7%	-5%	.
Insecticides													
Carbamates	.	*111*	*167*	*520*	*297*	.	*594*	.	*435%*	*256%*	*14%*	*100%*	.
Organochlorines	.	*79*	*255*	*222*	.	.	.	.	.	.	.	.	.
Organophosphates	*1,472*	*2,454*	*2,124*	*3,085*	*1,587*	.	*1,265*	*-14%*	*-48%*	*-40%*	*-59%*	*-20%*	.
Pyrethroids	*2,895*	*2,800*	*3,267*	*7,706*	*17,084*	.	*18,164*	*527%*	*549%*	*456%*	*136%*	*6%*	.
Unknown insecticides	*465*	*694*	*207*	*815*	*1,238*	.	.	.	.	.	.	.	.
All insecticides	4,831	6,138	6,020	12,348	20,206	.	20,023	314%	226%	233%	62%	-1%	.
Molluscicides	834	871	243	434	1,123	.	1,926	131%	121%	693%	343%	72%	.
Growth regulators	8,681	10,594	12,836	13,953	19,049	.	17,445	101%	65%	36%	25%	-8%	.
Mixed formulations	233	186	134	137	128	.	86	-63%	-54%	-36%	-37%	-33%	.
Seed treatments	42,683	44,961	39,026	38,979	36,083	.	34,636	-19%	-23%	-11%	-11%	-4%	.
All pesticides	**234,985**	**245,485**	**245,971**	**268,710**	**308,881**	**.**	**288,348**	**23%**	**17%**	**17%**	**7%**	**-7%**	**.**
Area grown (ha)	61,355	57,999	51,718	51,119	53,036	.	48,222	-21%	-17%	-7%	-6%	-9%	.

Table 30 **The quantity (tonnes) of pesticides applied to arable crops in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes						
Fungicides	97.57	101.76	90.99	94.22	91.06	.	85.20	-13%	-16%	-6%	-10%	-6%	.
Herbicides & desiccants	253.62	212.36	133.57	336.33	337.65	.	390.98	54%	84%	193%	16%	16%	.
Insecticides													
Carbamates	.	*0.02*	*0.02*	*0.07*	*0.04*	.	*0.08*		*297%*	*278%*	*13%*	*123%*	.
Organochlorines	.	*0.09*	*0.29*	*0.23*	.	.	.	.	.	.	.	.	.
Organophosphates	*0.68*	*0.80*	*0.85*	*1.51*	*0.87*	.	*0.57*	*-16%*	*-29%*	*-33%*	*-62%*	*-34%*	.
Pyrethroids	*0.05*	*0.05*	*0.07*	*0.15*	*0.19*	.	*0.20*	*306%*	*306%*	*194%*	*35%*	*7%*	.
All insecticides	0.72	0.96	1.23	1.95	1.10	.	0.85	19%	-11%	-31%	-56%	-22%	.
Molluscicides	0.33	0.27	0.12	0.09	0.17	.	0.34	2%	25%	186%	277%	95%	.
Growth regulators	10.60	9.35	10.86	12.84	14.43	.	11.61	10%	24%	7%	-10%	-20%	.
Mixed formulations	0.51	0.41	0.29	0.30	0.28	.	0.13	-75%	-69%	-57%	-58%	-55%	.
Seed treatments	0.38*	3.77	5.06	3.03	3.71	.	2.82	642%	-25%	-44%	-7%	-24%	.
All pesticides	**363.74**	**328.89**	**242.12**	**448.78**	**448.40**	**.**	**491.93**	**35%**	**50%**	**103%**	**10%**	**10%**	**.**
Area grown (ha)	61,355	57,999	51,718	51,119	53,036	.	48,222	-21%	-17%	-7%	-6%	-9%	.

*** Seed treatments on potatoes not recorded**

Table 31 **The area (spray-hectares) of cereal crops treated with pesticides in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	33,741	37,584	42,517	56,880	64,171	63,739	60,230	79%	60%	42%	6%	-6%	-6%
Herbicides & desiccants	52,342	52,872	56,201	63,072	72,911	71,281	69,752	33%	32%	24%	11%	-4%	-2%
Insecticides													
Carbamates	.	*88*	*167*	*493*	*249*	.	*182*	.	*107%*	*9%*	*-63%*	*-27%*	.
Organochlorines	.	*79*	*255*	*222*		.	.	.	.	.	.	.	.
Organophosphates	*1,164*	*2,359*	*1,857*	*2,447*	*1440*	*3773*	*1140*	*-2%*	*-52%*	*-39%*	*-53%*	*-21%*	*-70%*
Pyrethroids	*2,381*	*2,670*	*3,267*	*7,047*	*16,481*	*23,617*	*16709*	*602%*	*526%*	*411%*	*137%*	*1%*	*-29%*
Unknown insecticides	*465*	*694*	*207*	*816*	*1,207*	*2,290*	.	.	.	.	.	.	.
All insecticides	4,010	5,890	5,754	11,028	19,377	29,681	18,031	350%	206%	213%	64%	-7%	-39%
Molluscicides	24	.	27	168	129	833	305	1171%	.	1030%	82%	136%	-63%
Growth regulators	8,607	10,509	12,836	13,953	18,998	17,237	17,330	101%	65%	35%	24%	-9%	1%
Seed treatments	41,739	39,958	35,995	35,525	31,728	34,260	31,494	-25%	-21%	-13%	-11%	-1%	-8%
All pesticides	**140,465**	**146,819**	**153,330**	**180,624**	**207,314**	**217,031**	**197,144**	**40%**	**34%**	**29%**	**9%**	**-5%**	**-9%**
Area grown (ha)	48,575	45,670	42,703	42,438	44,570	40,528	38,062	-22%	-17%	-11%	-10%	-15%	-6%

Table 32 **The quantity (tonnes) of pesticides applied to cereal crops in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**
Fungicides	14.97	18.43	14.96	24.52	22.82	13.32	15.18	1%	-18%	1%	-38%	-33%	14%
Herbicides & desiccants	55.07	39.43	35.67	42.87	46.26	41.68	35.35	-36%	-10%	-1%	-18%	-24%	-15%
Insecticides													
Carbamates	.	*0.01*	*0.02*	*0.07*	*0.03*	.	*0.03*	.	*155%*	*21%*	*-64%*	*-11%*	.
Organochlorines	.	*0.09*	*0.29*	*0.23*	.	.	.	.	.	.	.	.	.
Organophosphates	*0.51*	*0.68*	*0.49*	*1.24*	*0.74*	*2.51*	*0.56*	*9%*	*-18%*	*13%*	*-55%*	*-25%*	*-78%*
Pyrethroids	*0.04*	*0.04*	*0.07*	*0.13*	*0.19*	*0.26*	*0.19*	*386%*	*386%*	*182%*	*50%*	*1%*	*-25%*
All insecticides	0.55	0.83	0.88	1.66	0.96	2.75	0.78	41%	-7%	-11%	-53%	-19%	-72%
Molluscicides	0.01	.	0.01	0.04	0.02	0.14	0.06	547%	.	911%	62%	289%	-54%
Growth regulators	10.51	9.32	10.86	12.84	14.41	12.87	11.61	10%	25%	7%	-10%	-19%	-10%
Seed treatments	0.33	0.94	3.80	2.41	1.72	2.34	1.57	375%	67%	-59%	-35%	-9%	-33%
All pesticides	**81.44**	**68.94**	**66.17**	**84.35**	**86.19**	**73.11**	**64.35**	**-21%**	**-7%**	**-3%**	**-24%**	**-25%**	**-12%**
Area grown (ha)	48,575	45,670	42,703	42,438	44,570	40,528	38,062	-22%	-17%	-11%	-10%	-15%	-6%

Table 33 **The area (spray-hectares) of oilseed rape treated with pesticides in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**	**sp ha**
Fungicides	467	525	86	226	664	244	70	-85%	-87%	-18%	-69%	-89%	-71%
Herbicides & desiccants	1,603	1,343	597	292	1,171	366	194	-88%	-86%	-68%	-34%	-83%	-47%
Insecticides													
Carbamates	.	.	.	.	*28.6*	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.		.	.	.	.	.	.	.	.
Organophosphates	.	*67*	*180*	*25*	*5.4*	.	.	.	.	.	.	.	.
Pyrethroids	.	*131*	.	.	*190*	.	*49*	.	*-63%*	.	.	*-74%*	.
Unknown insecticides	.	.	.	.	*10*	.	.	.	.	.	.	.	.
All insecticides	.	198	180	25	234	.	49	.	-75%	-73%	95%	-79%	.
Molluscicides	810	871	216	72	522	.	39	-95%	-96%	-82%	-46%	-93%	.
Growth regulators	.	84	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	906	1,063	610	140	339	123	98	-89%	-91%	-84%	-30%	-71%	-20%
All pesticides	**3,786**	**4,084**	**1,689**	**755**	**2,931**	**732**	**450**	**-88%**	**-89%**	**-73%**	**-40%**	**-85%**	**-39%**
Area grown (ha)	906	1,062	610	193	739	131	111	-88%	-90%	-82%	-42%	-85%	-15%

Table 34 **The quantity (tonnes) of pesticides applied to oilseed rape in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**
Fungicides	0.53	0.06	0.03	0.30	0.60	0.64	0.01	-98%	-80%	-64%	-96%	-98%	-98%
Herbicides & desiccants	1.31	0.98	0.62	0.20	0.74	0.16	0.10	-93%	-90%	-84%	-51%	-87%	-39%
Insecticides													
Carbamates	.	.	.	.	*0.004*	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	*<0.001*	.	.	.	.	.	.	.	.
Organophosphates	.	*0.02*	*0.08*	*0.01*	*0.004*	.	.	.	.	.	.	.	.
Pyrethroids	.	*0.01*	.	.	*0.001*	.	*0.0001*	.	*-99%*	.	.	*-91%*	.
All insecticides	.	0.03	0.08	0.01	0.009	.	0.0001	.	-100%	-100%	-99%	-99%	.
Molluscicides	0.32	0.27	0.11	0.01	0.06	.	0.01	-97%	-96%	-91%	4%	-83%	.
Growth regulators	.	0.04	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	0.05	0.11	0.06	0.02	0.005	.	0.01	-73%	-88%	-77%	-32%	204%	.
All pesticides	**2.21**	**1.49**	**0.90**	**0.54**	**1.41**	**0.81**	**0.13**	**-94%**	**-91%**	**-85%**	**-75%**	**-91%**	**-83%**
Area grown (ha)	906	1,062	610	193	739	131	111	-88%	-90%	-82%	-42%	-85%	-15%

Table 35 **The area (spray-hectares) of peas and beans treated with pesticides in Northern Ireland 1998-2002.**

Pesticide type	Survey Year 1998 sp ha	2000 sp ha	2002 sp ha	Differences between: 2000-1998 sp ha	2002-2000 sp ha
Fungicides	314	138	302.7	-4%	119%
Herbicides & desiccants	444	199	241.1	-46%	21%
Insecticides					
Carbamates	*19*	*18.3*	*54.2*	*185%*	*196%*
Organochlorines	.	.	.	.	.
Organophosphates	*22*	.	.	.	.
Pyrethroids	*64*	.	*66.1*	*3%*	.
Unknown insecticides	.	.	.	.	.
All insecticides	105	18.3	120.3	15%	557%
Molluscicides	.	.	.	.	.
Growth regulators	.	.	.	.	.
Seed treatments	.	105	137.9	.	32%
All pesticides	**863**	**459.9**	**802**	**-7%**	**74%**
Area grown (ha)	199	273	197	-1%	-28%

Table 36 **The quantity (tonnes) of pesticides applied to peas and beans in Northern Ireland 1998-2002.**

Pesticide type	Survey Year 1998 tonnes	2000 tonnes	2002 tonnes	Differences between: 2000-1998 tonnes	2002-2000 tonnes
Fungicides	0.20	0.05	0.1055	-47%	97%
Herbicides & desiccants	0.41	0.20	0.2545	-38%	30%
Insecticides	.	.	.	.	.
Carbamates	*0.003*	*0.005*	*0.003*	*<1%*	*-40%*
Organochlorines	.	.	.	.	.
Organophosphates	*0.002*	.	.	.	.
Pyrethroids	*<.001*	.	*<.001*	*<1%*	*<1%*
All insecticides	0.006	0.005	0.0032	-47%	-36%
Molluscicides	.	.	.	.	.
Growth regulators	.	.	.	.	.
Seed treatments	.	0.112	0.015	.	.
All pesticides	**0.614**	**0.367**	**0.3782**	**-38%**	**3%**
Area grown (ha)	199	273	197	-1%	-28%

Table 37 **The area (spray-hectares) of set-aside treated with pesticides in Northern Ireland 2000-2002.**

Pesticide type	Survey Year 2000 sp ha	Survey Year 2002 sp ha	Differences between: 2002-2000 sp ha
Fungicides			
Herbicides & desiccants	912	1395	53%
Insecticides			
Carbamates	.	.	.
Organochlorines	.	.	.
Organophosphates	.	.	.
Pyrethroids	.	.	.
All insecticides	.	.	.
Molluscicides	.	.	.
Growth regulators	.	.	.
Seed treatments	.	.	.
All pesticides	**912**	**1395**	**53%**
Area grown (ha)	2451	3013	23%

Table 38 **The quantity (tonnes) of pesticides applied to set-aside in Northern Ireland 2000-2002.**

Pesticide type	Survey Year 2000 tonnes	Survey Year 2002 tonnes	Differences between: 2002-2000 tonnes
Fungicides	.	.	.
Herbicides & desiccants	0.866	1.037	20%
Insecticides			
Carbamates	.	.	.
Organochlorines	.	.	.
Organophosphates	.	.	.
Pyrethroids	.	.	.
All insecticides	.	.	.
Molluscicides	.	.	.
Growth regulators	.	.	.
Seed treatments	.	.	.
All pesticides	**0.866**	**1.037**	**20%**
Area grown (ha)	2451	3013	23%

Table 39 **The area (spray-hectares) of potato crops treated with pesticides in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	68,384	68,178	72,369	64,727	75,933	.	66,810	-2%	-2%	-8%	3%	-12%	.
Herbicides & desiccants	21,146	21,819	15,927	17,663	16,616	.	14,852	-30%	-32%	-7%	-16%	-11%	.
Insecticides													
Carbamates	.	*23*	.	*28*	.	.	*357*	.	*1454%*	.	*1176%*	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*308*	*28*	*88*	*612*	*123*	.	*125*	*-59%*	*348%*	*42%*	*-80%*	*2%*	.
Pyrethroids	*512*	.	.	*656*	*353*	.	*1,340*	*162%*			*104%*	*280%*	.
Unknown insecticides	.	.	*14*	.	*20*	.	.	.	.	.	.	.	.
All insecticides	820	51	102	1,295	492	.	1,823	122%	3474%	1696%	41%	271%	.
Molluscicides	.	.	.	195	472	.	1,581	.	.	.	711%	235%	.
Mixed formulations	233	186	134	137	128	.	86	-63%	-54%	-36%	-37%	-33%	.
Growth regulators	.	.	.	.	.	.	72	.	.	.	.	.	.
Seed treatments	*	3,738	2,420	3,314	4,017	.	3,071	.	-18%	27%	-7%	-24%	.
All pesticides	**90,583**	**93,972**	**90,952**	**87,330**	**97,658**	**.**	**88,295**	**-3%**	**-6%**	**-3%**	**1%**	**-10%**	**.**
Area grown (ha)	11,835	11,064	8,404	8,488	7,513	.	6,708	-43%	-39%	-20%	-21%	-11%	.

Table 40 **The quantity (tonnes) of pesticides applied to potato crops in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**
Fungicides	82.07	83.28	76.00	69.41	67.43	.	69.90	-15%	-16%	-8%	1%	4%	.
Herbicides & desiccants	197.20	171.75	97.28	293.26	290.23	.	354.01	80%	106%	264%	21%	22%	.
Insecticides													
Carbamates	.	*<0.01*	.	*<0.01*	.	.	*0.05*	.	*>408%*	.	*>408%*	.	.
Organochlorines	.	.	.	.	.	.		.	.	.	.	.	.
Organophosphates	*0.17*	*0.10*	*0.28*	*0.26*	*0.12*	.	*0.02*	*-91%*	*-84%*	*-94%*	*-94%*	*-87%*	.
Pyrethroids	*0.01*	.	.	*0.02*	*<0.01*	.	*0.01*	*-17%*	.	.	*-59%*	*approx-17%*	.
All insecticides	0.17	0.10	0.28	0.28	0.13	.	0.08	-56%	-25%	-73%	-73%	-42%	.
Molluscicides	.	.	.	0.04	0.10	.	0.26	.	.	.	556%	169%	.
Mixed formulations	0.51	0.41	0.29	0.30	0.28	.	0.13	-75%	-69%	-57%	-58%	-55%	.
Growth regulators	.	.	.	.	.	.	*0.17*	.	.	.	.	.	.
Seed treatments	*	2.71	1.20	0.61	*1.99*	.	*1.22*	.	-55%	1%	100%	-39%	.
All pesticides	**279.95**	**258.25**	**175.06**	**363.89**	**360.16**	**.**	**425.84**	**52%**	**65%**	**143%**	**17%**	**18%**	**.**
Area grown (ha)	11,835	11,064	8,404	8,488	7,513	.	6,708	-43%	-39%	-20%	-21%	-11%	.

*** Seed treatments not recorded**

Table 41 **The area (spray-hectares) of seed potatoes treated with pesticides in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	18,326	18,603	16,465	13,462	14,242	.	9,219	-50%	-50%	-44%	-32%	-35%	.
Herbicides & desiccants	6,535	8,118	3,784	4,035	3,363	.	2,650	-59%	-67%	-30%	-34%	-21%	.
Insecticides													
Carbamates	.	*23*	.	.	.	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	*18*	.	.	*26*	.	.	.	.	.	.	.	.
Pyrethroids	*501*	.	.	*586*	*205*	.	*16*	*-97%*			*-97%*	*-92%*	.
All insecticides	501	41	8	586	230	.	16	-97%	-60%	109%	-97%	-93%	.
Molluscicides	.	.	.	.	66	.	*267*	.	.	.	.	306%	.
Mixed formulations	8	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	*	2,039	744	1,065	882	.	512		-75%	-31%	-52%	-42%	.
All pesticides	**25,370**	**28,801**	**21,000**	**19,148**	**18,783**	**.**	**12,665**	**-50%**	**-56%**	**-40%**	**-34%**	**-33%**	**.**
Area grown (ha)	3,509	3,688	1,678	1,798	1,607	.	1,239	-65%	-66%	-26%	-31%	-23%	.

*** Seed treatments not recorded**

Table 42 **The quantity (tonnes) of pesticides applied to seed potatoes in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Fungicides	22.92	24.82	15.24	13.45	14.29	.	9.08	-60%	-63%	-40%	-33%	-36%	.
Herbicides & desiccants	127.42	100.45	41.73	146.03	148.63	.	129.71	2%	29%	211%	-11%	-13%	.
Insecticides													
Carbamates	.	*<0.01*	.	.	.	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	*0.06*	.	.	*<0.01*	.	.	.	.	.	.	.	.
Pyrethroids	*0.01*	.	.	*0.02*	*<0.01*	.	*<0.01*	.	.	.	*>100%*	*<1%*	.
All insecticides	0.01	0.06	0.03	0.02	0.01	.	*<0.01*	-99%	-100%	-100%	-100%	-99%	.
Molluscicides	.	.	.	.	0.01	.	0.04	.	.	.	.	203%	.
Mixed formulations	0.02	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	*	1.97	0.30	0.21	0.74	.	0.08	.	-96%	-74%	-63%	-90%	.
All pesticides	**150.37**	**127.30**	**57.30**	**159.70**	**163.68**	**.**	**138.91**	**-8%**	**9%**	**142%**	**-13%**	**-15%**	**.**
Area grown (ha)	3,509	3,688	1,678	1,798	1,607	.	1,239	-65%	-66%	-26%	-31%	-23%	.

*** Seed treatments not recorded**

Table 43 **The area (spray-hectares) of early potatoes treated with pesticides in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	2,037	3,250	3,706	3,089	1,693	.	5,561	173%	71%	50%	80%	228%	.
Herbicides & desiccants	849	1,304	835	1,312	618	.	1,520	79%	17%	82%	16%	146%	.
Insecticides													
Carbamates	.	.	.	*28*	.	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.		.	.	.	.	.	.	.	.
Organophosphates	.	.	.	*63*	*66*	.	*24*	.	.	.	*-61%*	*-63%*	.
Pyrethroids	.	.	.	.	*39*	.	*173*	.	.	.	.	*348%*	.
Unknown insecticide	.	.	.	.	*2.2*	.	.	.	.	.	.	.	.
All insecticides	.	.	.	90	107	.	197	.	.	.	119%	85%	.
Molluscicides	.	.	.	.	10	.	206	.	.	.	.	1911%	.
Seed treatments	*	360	130	303	154	.	481	.	34%	270%	59%	212%	.
All pesticides	**2,886**	**4,914**	**4,672**	**4,794**	**2,582**	**.**	**7,966**	**176%**	**62%**	**71%**	**66%**	**208%**	**.**
Area grown (ha)	463	836	813	729	391	.	728	57%	-13%	-10%	<1%	86%	.

*** Seed treatments not recorded**

Table 44 **The quantity (tonnes) of pesticides applied to early potatoes in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Fungicides	2.54	4.11	4.46	3.85	2.07	.	5.48	116%	33%	23%	42%	165%	.
Herbicides & desiccants	0.51	3.09	0.55	4.05	1.73	.	32.56	6285%	954%	5855%	704%	1778%	.
Insecticides													
Carbamates	.	.	.	*< 0.1*	.	.	*<.01*	.	.	.	*<1%*	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	
Organophosphates	.	.	.	*0.02*	*0.08*	.	*0.01*	.	.	.	*-59%*	*-90%*	.
Pyrethroids	.	.	.	.	*<0.1*	.	.	.	.	.	.	.	.
All insecticides	.	.	.	0.02	0.08	.	0.01	.	.	.	-55%	-89%	.
Molluscicides	.	.	.	.	0.002	.	0.038	.	.	.	.	2063%	.
Seed treatments	*	0.20	0.04	0.05	0.03	.	0.11	.	-43%	177%	128%	278%	.
All pesticides	**3.05**	**7.40**	**5.05**	**7.96**	**3.92**	**.**	**38.21**	**1153%**	**416%**	**656%**	**380%**	**875%**	**.**
Area grown (ha)	463	836	813	729	391	.	728	57%	-13%	-10%	0%	86%	.

*** Seed treatments not recorded**

Table 45 **The area (spray-hectares) of maincrop potatoes treated with pesticides in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	48,021	46,325	52,198	48,176	59,998	.	52,030	8%	12%	<1%	8%	-13%	.
Herbicides & desiccants	13,762	12,397	11,309	12,316	12,635	.	10,682	-22%	-14%	-6%	-13%	-15%	.
Insecticides													
Carbamates	.	.	.	.	.	.	*357.4*	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*308*	*10*	.	*549*	*32*	.	*101*	*-67%*	*909%*	.	*-82%*	*219%*	.
Pyrethroids	*11*	.	.	*70*	*110*	.	*1151*	*10361%*	.	.	*1544%*	*948%*	.
Unkown insecticide	.	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	319	10	94	619	155	.	1609	404%	15989%	1617%	160%	938%	.
Molluscicides	.	.	.	195	396	.	1,108	.	.	.	468%	180%	.
Growth regulators	.	.	.	.	.	.	72	.	.	.	.	.	.
Mixed formulations	225	186	134	137	128	.	86	-62%	-54%	-36%	-37%	-33%	.
Seed treatments	*	1,339	1,546	1,945	2,980	.	2,078	.	55%	34%	7%	-30%	.
All pesticides	**62,328**	**60,257**	**65,280**	**63,388**	**76,292**	**.**	**67,664**	**9%**	**12%**	**4%**	**7%**	**-11%**	**.**
Area grown (ha)	7,863	6,540	5,913	5,961	5,515	.	4,741	-40%	-28%	-20%	-20%	-14%	.

*** Seed treatments not recorded**

(Note: Insecticide Active ingredient areas are spray areas of active ingredients)

Table 46 **The quantity (tonnes) of pesticides applied to maincrop potatoes in Northern Ireland 1990-2002.**

	Survey Year							Differences between:					
	1990	1992	1994	1996	1998	2000	2002	2002-90	2002-92	2002-94	2002-96	2002-98	2002-00
Pesticide type	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**	**tonnes**
Fungicides	56.61	54.36	56.29	52.11	51.07	.	55.34	-2%	2%	-2%	6%	8%	.
Herbicides & desiccants	69.27	68.21	55.01	143.18	139.86	.	191.80	177%	181%	249%	34%	37%	.
Insecticides													
Carbamates	.	.	.	.	.	.	*0.05*	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*0.17*	*0.03*	.	*0.24*	*0.03*	.	*0.01*	*-95%*	*-74%*	.	*-97%*	*-77%*	.
Pyrethroids	*< 0.01*	.	.	*< 0.01*	*<0.01*	.	*<0.01*	.	.	.	.	.	.
All insecticides	0.17	0.03	0.25	0.24	0.04	.	0.07	-61%	120%	-74%	-73%	81%	.
Molluscicides	.	.	.	0.04	0.08	.	0.18	.	.	.	351%	122%	.
Growth regulators	.	.	.	.	.	.	0.1721	.	.	.	.	.	.
Mixed formulations	0.50	0.41	0.29	0.30	0.28	.	0.13	-75%	-69%	-57%	-58%	-55%	.
Seed treatments	*	0.54	0.86	0.36	1.22	.	.	.	.	.	.	.	.
All pesticides	**126.55**	**123.55**	**112.71**	**196.23**	**192.56**	**.**	**248.72**	**97%**	**101%**	**121%**	**27%**	**29%**	**.**
Area grown (ha)	7,863	6,540	5,913	5,961	5,515	.	4,741	-40%	-28%	-20%	-20%	-14%	.

*** Seed treatments not recorded**

Table 47 **Estimated quantity (tonnes) of potato crops stored regionally in Northern Ireland 2002.**

Location of holding	Ware potatoes	Seed potatoes	All potatoes
Antrim	8,303	6,544	14,847
Armagh	8,413	1,758	10,172
Down	10,956	1,877	12,833
Londonderry	16,649	5,853	22,502
Northern Ireland	**44,322**	**16,032**	**60,353**

Table 48 **Estimated quantity (treated tonnes) of potatoes stored regionally in Northern Ireland 2002.**

Location of holding	Ware potatoes	Seed potatoes	Total quantity treated (tt)
Antrim	79	2,194	2,273
Armagh	4,051	.	4,051
Down	2,584	1,835	4,419
Londonderry	2,310	.	2,310
Northern Ireland	**9,024**	**4,029**	**13,053**

Table 49 **The quantities of pesticides (kilograms) applied regionally to potatoes stored in Northern Ireland, 2002.**

Location of holding	Ware potatoes	Seed potatoes	Total quantity (kg)
Antrim	10	26	37
Armagh	41	.	41
Down	361	22	383
Londonderry	27	.	27
Northern Ireland	**439**	**48**	**488**

Table 50 **Estimated quantity (treated tonnes) of potatoes in storage receiving pesticide treatment in Northern Ireland 2002.**

Formulation of a.i's	Ware potatoes	Seed potatoes	Total quantity treated (tt)
Imazalil	8,002	4,029	12,030
Imazalil/pencycuron	79	.	79
Tecnazene	268	.	268
Thiabendazole/imazalil	139	.	139
Thiram	536	.	536
Total all pesticides	**9,024**	**4,029**	**13,053**

Table 51 **Quantity (kg) of active ingredients used (weighted).**

Formulation of a.i's	Ware potatoes	Seed potatoes	Total
Imazalil	84	48	132
Imazalil/pencycuron	10	.	10
Tecnazene	18	.	18
Thiabendazole/imazalil	6	.	6
Thiram	322	.	322
Total all pesticides	**439**	**48**	**488**

Table 52 **The active ingredients applied to stored potatoes in Northern Ireland in 2002, prioritised by weight (kilograms).**

	Active ingredient	Quantity used (kg)
1	Thiram	322
2	Imazalil	134
3	Tecnazene	18
4	Pencycuron	10
5	Thiabendazole	4

Table 53 **Type of storage building, storage method, potato type and quantity (tonnes) of potatoes stored in Northern Ireland, 2002**

Type of storage building	Ware potatoes	Seed potatoes	Total
Barn Store			
Boxed	1,295	99	1,394
Boxed & bulked	1,029	.	1,029
Bulk	3,592	.	3,592
Unknown	453	.	453
All barn stores	***6,369***	***99***	***6,468***
Modified Barn			
Boxed	630	1,816	2,446
Bulk	3,405	1,835	5,240
All modified barn stores	***4,035***	***3,651***	***7,686***
Ventilated Store			
Boxed	6,430	4,350	10,780
Boxed & bulked	3,191	.	3,191
Bulk	346	.	346
Unknown	3,875	.	3,875
All ventilated stores	***13,842***	***4,350***	***18,192***
Refrigerated store			
Boxed	14,428	7,932	22,360
Bulk	2,728	.	2,728
All refrigerated stores	***17,156***	***7,932***	***25,088***
Unspecified			
Unknown	2,920	.	2,920
All unspecified stores	***2,920***	***.***	***2,920***
Total	**44,322**	**16,032**	**60,353**

Table 54 **Type of storage method, potato type and total quantity (tonnes) of potatoes stored in Northern Ireland, 2002**

	Ware potatoes	Seed potatoes	Total
Boxed	22,783	14,196	36,979
Boxed & bulked	4,220	.	4,220
Bulk	10,070	1,835	11,906
Unknown	7,248	.	7,248
Total	**44,322**	**16,032**	**60,353**

Table 55 **Comparison of ware potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2002.**

Ware potatoes	1992	1994	1996	1998	2002	1992-2002	1994-2002	1996-2002	1998-2002
Quantity stored (t)	139,570	84,868	135,933	112,675	44,322	-68%	-48%	-67%	-61%
Quantity treated (tt)	16,289	11,630	19,022	5,899	9,024	-45%	-22%	-53%	53%
Quantity of pesticides (kg)	1,998	1,001	750	227	439	-78%	-56%	-41%	93%
Quantity untreated (t)	123,281	73,238	116,910	106,777	35,298	-71%	-52%	-70%	-67%

Table 56 **Comparison of seed potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2002.**

Seed potatoes	1992	1994	1996	1998	2002	1992-2002	1994-2002	1996-2002	1998-2002
Quantity stored (t)	33,420	24,238	39,290	39,809	16,032	-52%	-34%	-59%	-60%
Quantity treated (tt)	7,536	14,950	12,915	5,628	4,029	-47%	-73%	-69%	-28%
Quantity of pesticides (kg)	1,052	851	480	896	48	-95%	-94%	-90%	-95%
Quantity untreated (t)	27,033	9,288	26,652	34,181	12,003	-56%	29%	-55%	-65%

Table 57 **Comparison of reserved potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2002.**

Reserved potatoes	1992	1994	1996	1998	2002	1992-2002	1994-2002	1996-2002	1998-2002
Quantity stored (t)	.	.	15,169	10,123	.	.	.	.	.
Quantity treated (tt)	.	.	6,705	2,524	.	.	.	.	.
Quantity of pesticides (kg)	.	.	375	121	.	.	.	.	.
Quantity untreated (t)	.	.	8,464	7,599	.	.	.	.	.

Table 58 **Comparison of all potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2002.**

All potatoes	1992	1994	1996	1998	2002	1992-2002	1994-2002	1996-2002	1998-2002
Quantity stored (t)	191,019	119,447	190,392	162,608	60,353	-68%	-49%	-68%	-63%
Quantity treated (tt)	23,825	26,580	38,624	14,051	13,053	-45%	-51%	-66%	-7%
Quantity of pesticides (kg)	3,050	1,852	1,605	1,245	488	-84%	-74%	-70%	-61%
Quantity untreated (t)	168,344	92,868	152,027	148,557	47,300	-72%	-49%	-69%	-68%

Northern Ireland Pesticide Usage Survey Published Reports — Appendix 1

Report No.	Report title	ISBN
99	Grassland & Fodder Crops 1989	1-855 27 079 X
105	Arable Crops 1990	1-855 27 130 3
106	Soft Fruit Crops 1990	1-855 27 149 4
109	Vegetable Crops 1991	1-855 27 137 0
110	Protected Crops 1991 (edible & ornamental)	1-855 27 283 0
111	Mushroom Crops 1991	1-855 27 150 8
117	Arable Crops 1992	1-855 27 193 1
118	Fruit Crops 1992	1-855 27 194 X
124	Grassland & Fodder crops 1993	1-855 27 221 0
131	Forestry 1993	1-855 27 282 2
132	Arable Crops 1994	1-855 27 314 4
139	Vegetable Crops 1995	1-855 27 346 2
140	Mushroom Crops 1995	1-855 27 347 0
146	Arable Crops 1996	1-855.27.469.8
147	Top fruit 1996	1-855.27.470.1
156	Grassland and Fodder Crops 1997	1-855.27.506.6
157	Sheep Treatments 1997	1-855.27.425.6
167	Soft Fruit 1998	1-85527.540.6
168	Arable Crops 1998	1-85527.536.8
169	Vegetable Crops 1999	1-85527.561.9
170	Mushroom Crops 1999	1-85527.549.X
177	Arable Crops 2000	1-85527.670.4
178	Top Fruit Crops 2002	1-855.27.618.6

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