

PESTICIDE USAGE IN NORTHERN IRELAND
SURVEY REPORT 230

**NORTHERN IRELAND
ARABLE CROPS
2008**



Agriculture, Fishing and Forestry

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PESTICIDE USAGE SURVEY REPORT 230

NORTHERN IRELAND ARABLE CROPS

2008

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ISBN 1-84807-135-3



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The County Regions of Northern Ireland



SUMMARY

This is the tenth survey of pesticide usage practices on arable crops 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), 2000 (Withers *et al.*, 2004), 2002 (Withers *et al.*, 2004), 2004 (Withers *et al.*, 2006) and 2006 (Withers *et al.*, 2007).

Information on all aspects of pesticide usage was collected from 274 holdings throughout the Province, representing 27% 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 2008 was 46,337 hectares. This represented a increase of 12% compared to that recorded in 2006 and a 24% reduction compared to that recorded in the first pesticide usage survey of the arable sector, in 1990. Approximately 43% of the arable cropping area in 2008 was in County Down, 25% in County Londonderry, 17% in County Antrim, 8% in County Tyrone and 7% in County Armagh. This distribution is similar to that recorded in 2006. There was no significant area of arable cropping in County Fermanagh.

A total of 274 products, comprising 105 active ingredients, was recorded in use on field crops in the survey.

During the period 2006 to 2008, the area of arable crops treated with pesticides increased by 27%, to 374,207 spray-hectares. The use of insecticides increased by 39%, however the weight of application decreased by 25%. This was partly due to decreased applications of the organophosphate, chlorpyrifos to cereal crops. Applications of fungicides (30%) and herbicides/desiccants (23%) increased since 2006. The weight of fungicides applied also increased by 15% but due to the withdrawal of sulphuric acid, the weight of herbicides and desiccants applied decreased by 53%. Molluscicide applications remained similar to levels recorded in 2006 and 1998. An estimated 35% of molluscicide applications were to control slugs on maincrop potatoes. Growth regulators were applied primarily to spring barley, winter barley and most frequently to winter wheat. The use of growth regulators on cereal crops increased by 14% when compared with 2006. The principal growth regulator used in 2008 was chlormequat which is consistent with previous surveys conducted in 1998-2006. The total weight of pesticides applied to arable crops in 2008 decreased to 169 tonnes of active ingredients, a reduction of 29% compared with 2006. The formulation prochloraz/triticonazole was the most commonly applied seed treatment to cereals in 2008. This contrasted with 2004 and 2006 where the single active ingredient fludioxonil was the most commonly applied. In common with 2004 and 2006, imazalil was the most commonly used seed treatment applied to potatoes.

During 2008, regional pesticide usage was related to the area of arable crops grown in each county. Pesticides were applied to 98% of the total area of arable crops grown in Northern Ireland in 2008 with a range of 1.0 - 9.7 applications per crop.

Fungicides were applied to 43% of the pesticide-treated area, accounting for 46% of the total weight of pesticides used. Herbicides and desiccants were applied to 31% of the pesticide-treated area, representing 42% of the total weight of pesticides used. Insecticides accounted for 10% of the pesticide-treated area of arable crops, representing less than 1% of the weight of pesticides used. Molluscicide treatments represented less than 1% of both area of application and weight of pesticides applied. Growth regulator usage accounted for 6% of the pesticide-treated area and 10% of the weight of active ingredients applied. Seed treatments were applied to 10% of the area of arable crops grown in 2008, representing 1% of the weight of active ingredients applied.

Potato crops comprised 12% of the area of arable crops grown in Northern Ireland in 2008, while accounting for 21% of the total pesticide-treated area. However, the weight of pesticides applied to potato crops represented 34% of the total weight of pesticides used on all arable crops. This was a reduction from previous years due to the withdrawal of sulphuric acid as a haulm desiccant. The total area of potatoes grown comprised 78% maincrop, 14% seed and 7% early potatoes. Potato crops accounted for 33% of the area of arable crops treated with fungicides and received 58% of the total weight of fungicides applied. Furthermore, applications of herbicides and desiccants to potato crops represented 17% of both the area treated and weight applied of this pesticide group. The most commonly recorded fungicide applied to potato crops was fluazinam, applied mainly as a single active ingredient but also in formulation with metalaxyl-M. Fluazinam was used on 12% of the fungicide-treated area and accounted for 4% of the weight of fungicide active ingredients applied. It was used primarily in maincrop potatoes to control blight (*Phytophthora infestans*) and for general disease control. Chlorothalonil, applied mainly as a single active ingredient but also in formulation, was the most frequently applied fungicide to cereal crops. Due to the inclement weather at harvest time, the most frequently applied herbicide and desiccant used on cereal crops, principally spring barley, was glyphosate. It accounted for 22% of the area of arable crops treated with herbicides and desiccants and 33% of the total weight of herbicides and desiccants applied.

This was the sixth survey in which the cultivation of pea and bean crops was recorded.

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 70,794 tonnes of potatoes were stored on-farm following the 2008 growing season. This represented a 40% decrease compared with 2006. Ware potatoes accounted for 85% of the total quantity of stored potatoes, with seed and early potatoes equally distributed in the remainder. County Down and County Londonderry accounted for 31% and 27% of all potatoes stored, respectively. All potatoes receiving

treatments in storage were in County Londonderry. Overall, approximately 7% of stored potatoes received pesticide treatment. The sprout suppressant chlorpropham was the only pesticide used with an estimated 173 kg applied to 4,680 tonnes of stored ware potatoes in Northern Ireland in 2008. Approximately 38% of all potatoes in 2008 were stored in 'ventilated' stores. Overall, 87% of potatoes were stored on-farm in boxes, while 12% 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 given 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.
- 'Spray applications' refers to the number of treatments by any pesticide type to the treated areas.
- '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, 2004 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.
- In 2008, the set-aside rate was reduced to zero and the requirement to set-aside land was abolished altogether with effect from 1 January 2009. However, producers may still voluntarily set land aside. For the purpose of this survey set-aside land is not recorded.

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 tenth 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), 2000 (Withers *et al.*, 2004), 2002 (Withers *et al.*, 2004), 2004 (Withers *et al.*, 2006) and 2006 (Withers *et al.*, 2007). 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 2007 (Anon., 2008). However, due to sampling procedures and the distribution of arable crops in Northern Ireland, no holdings were visited in County Fermanagh. The arable crops grown comprised the following; barley, wheat, oats, oilseed rape, peas and beans, triticale, hemp, spring linseed 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 274 holdings were visited during November 2008 to April 2009. A majority of data was collected by personal interview and the remainder by telephone 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 that 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 2008 (Anon., 2009). 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 area of arable crops surveyed, together with the proportion of the crop area surveyed, are shown in Table 2. Data from 274 farms provided information on 1,003 examples in 15 crop types. The total area of crops sampled in the survey represented 27% of the area of arable crops grown in Northern Ireland in 2008. Areas of arable crops grown in the six counties were estimated from survey data (Table 3, Figure 1) using raising factors discussed previously. Approximately 43% of the area of arable crops was grown in County Down, 25% in County Londonderry, 17% in County Antrim, 8% in County Tyrone and 7% in County Armagh. There was no significant area of arable cropping in County Fermanagh.

Barley crops, including spring barley (40%), winter barley (13%) and undersown barley (2%) were grown on 55% of the total arable area. Potato crops, comprising maincrop (9%), seed (2%) and early potatoes (1%) collectively accounted for 12% of the total arable crop area (Table 3, Figure 2). A further 26% of the arable area comprised spring and winter wheat crops, while minor crops, including winter and spring oats, oilseed rape etc. accounted for the remaining 7% 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 4a, Figure 3). County Down accounted for 44%, County Londonderry 27%, County Antrim 14%, County Tyrone 9% and County Armagh 6% of the total pesticide-treated area. County Down accounted for 63% of molluscicide usage.

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 42% of the total pesticide-treated area and 32% of the total weight of pesticides applied (Tables 5 & 6). Barley crops also accounted for 48% of the insecticide-treated area of arable crops and 57% of the total weight of insecticide active ingredients applied. In addition, applications of herbicides and desiccants to barley crops accounted for 51% of the total herbicide and desiccant-treated

area of arable crops and 46% of the weight applied of this pesticide group. Fungicide application to barley crops accounted for 31% of the total area of arable crops treated with this pesticide group and 19% of the weight of fungicide active ingredients applied. Application of growth regulators to barley crops accounted for 46% of the total area of arable crops treated with this pesticide group and 32% of the weight of growth regulator active ingredients applied. Furthermore, barley crops accounted for 53% of the area of seed treatment applications and 31% of the weight of seed treatment active ingredients applied.

Wheat crops accounted for 33% of the total pesticide-treated area and 30% of the total weight of pesticides applied. Wheat crops also accounted for 43% of the insecticide-treated area of arable crops and 26% of the total weight of insecticide active ingredients applied. Application of growth regulators to wheat crops accounted for 50% of the total area of arable crops treated with this pesticide group and 62% of the weight of growth regulator active ingredients applied. Wheat crops also represented 32% of the arable area treated with fungicides and 20% of the arable area treated with herbicides/desiccants. Applications of seed treatments to wheat crops accounted for 33% of the arable area treated with this pesticide group and 24% of the weight applied.

Potato crops were grown on 12% of the total area of arable crops, representing 33% of the area of arable crops receiving fungicide application, comprising 58% of the weight of fungicide active ingredients applied. Potato crops accounted for 17% of both the total herbicide/desiccant-treated area and weight applied of this pesticide group. Application of molluscicide treatments to maincrop potatoes accounted for 52% of the total area of arable crops treated with this pesticide group and 44% of the weight of molluscicide active ingredients applied.

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 98% 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 approximately five fungicide spray applications to early potatoes, eight to seed potatoes and ten to maincrop potatoes.

Herbicides and desiccants were applied to 86% of arable crops grown. With the exception of triticale all crop types received herbicide and/or desiccant treatment, with 100% of peas and beans, spring linseed and seed potatoes being treated with this pesticide group.

Fungicides were applied to 81% of the area of arable crops grown in 2008, with 97%, 95% and 86% of early, maincrop and seed potato crops being treated, respectively. Approximately 93% of winter wheat crops and 97% of winter barley crops received fungicide treatment. Fungicides were applied to 93% of all winter oat crops

Pre-planting seed treatments were applied to 76% of all arable crops. Approximately 92% of winter wheat, 86% of winter barley and 84% spring wheat crops were sown with treated seed. With regard to potatoes, 80% of early, 79% of seed and 46% of maincrop potatoes received seed treatments.

Molluscicides, which are only available as single active ingredients, were applied to 3% of arable crops. Oilseed rape (27%), seed potatoes (20%), early potatoes (14%), maincrop potatoes (10%), winter barley (3%), winter wheat (2%) and spring barley (1%) were the only arable crops to receive applications of this pesticide group.

Insecticide treatments were applied to 57% of the area of arable crops grown. Approximately 78% of winter barley and 77% of winter wheat crops were treated with insecticides. An estimated 66% of oilseed rape crops received an insecticide treatment. While 53% of seed potatoes were treated with insecticides, only 16% of maincrop and 5% of early crops received insecticide treatments.

Growth regulators were applied to 37% of the total area of arable crops. Approximately 72% of winter wheat crops and 61% of winter barley received applications of growth regulators on at least one occasion. The majority of cereal crop types received growth regulator treatments, the exception being undersown barley.

TOTAL PESTICIDE USAGE

Approximately 169 tonnes of pesticide active ingredients were applied to 374,207 spray-hectares in 2008.

Fungicides were applied to 43% of the pesticide-treated area, accounting for 46% of the total weight of pesticides used (Tables 8 & 9). Potato crops, including seed, early and maincrop varieties, received 58% of the weight of fungicide active ingredients, representing 33% of the area treated with fungicides. Cereal crops received 42% of the total weight of fungicide active ingredients accounting for 67% of the area treated with fungicides. Chlorothalonil, used exclusively on cereals and in particular winter wheat, winter barley and spring barley, was the most extensively used fungicide applied as a single active ingredient, representing 12% (18,506 sp ha) of the fungicide-treated area and 13% of the weight of fungicide active ingredients applied. Fluazinam, used as a single active ingredient, was the most commonly used fungicide on potatoes, accounting for 12% of the fungicide-treated area and 4% of the weight of fungicide active ingredients applied.

Herbicides and desiccants were applied to 31% of the pesticide-treated area accounting for 42% of the total weight of pesticides used. Glyphosate, accounted for 22% of the area treated with herbicide and desiccant active ingredients and 33% of the weight used. Cereals accounted for 82% of both the area treated with herbicides and desiccants and the weight of herbicide and desiccant active ingredients applied. Treatments to spring barley

crops accounted for 37% of the herbicide and desiccant-treated area, representing 28% of the weight of herbicide and desiccant active ingredients applied. The sulfonylurea herbicide metsulfuron-methyl, applied as a single active ingredient and in formulations with thifensulfuron-methyl, tribenuron-methyl and carfentrazone-ethyl, was the most extensively used herbicide on cereal crops, particularly spring barley, accounting for 21% of the herbicide and desiccant-treated area of cereal crops. Owing to the low application rate of metsulfuron-methyl, the weight of this active ingredient applied represented less than 1% of the total weight of herbicides and desiccants used. Isoproturon, applied as a single active ingredient or in formulation with diflufenican, pendimethalin or trifluralin, was applied to 34% of the herbicide and desiccant-treated area of winter barley and winter wheat crops.

Insecticides were used on 10% of the pesticide-treated area of arable crops, accounting for 1% of the weight of pesticides used. Pyrethroid active ingredients accounted for 95% the insecticide-treated area but only 25% of the weight of insecticides used. The pyrethroid esfenvalerate was the most commonly used active ingredient, applied primarily to winter wheat and spring barley and accounted for 45% of the insecticide-treated arable area. Lambda-cyhalothrin was applied to 32% of the insecticide-treated arable area.

Methiocarb and metaldehyde were the only molluscicide active ingredients recorded and accounted for less than 1% of pesticide use in both area of application and weight of pesticides applied. These active ingredients were applied to spring barley, winter barley, winter wheat, oilseed rape, seed potatoes, early potatoes and maincrop potatoes, solely for slug control.

Growth regulators were used on 6% of the pesticide-treated area and accounted for 10% of the weight of active ingredients used. Growth regulators were applied primarily to spring barley, winter barley and most frequently, winter wheat. Chlormequat was the most commonly used growth regulator active ingredient, accounting for 64% of the area treated with growth regulators and 89% of the weight of growth regulators when applied as a single active ingredient

Seed treatments applied to arable crops accounted for 10% of the pesticide-treated area, with the seed dressing accounting for less than 1% of the weight of active ingredients applied. On average, 79% of cereal crops and 68% of potato crops were grown from treated seed (Table 7). The formulation prochloraz/triticonazole, applied mainly to spring barley seed, was the most commonly used seed treatment, representing 44% of the arable area sown using treated seed.

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, ranked by area treated and weight applied, are shown in Tables 10 and 11, respectively.

PESTICIDE USAGE ON CEREALS

Spring barley (Table 12)

Overall, 98% of spring barley crops received pesticide treatments (Table 7). Applications of herbicides and desiccants to spring barley accounted for 41% of the pesticide-treated area (62% of the weight of pesticides applied), fungicides 29% (27%), seed treatments 13% (1%), insecticides 11% (2%), growth regulators 5% (7%) and molluscicides less than >1% (>1%) (Tables 5 & 6).

The fungicide single active ingredient chlorothalonil, primarily applied for general disease control, accounted for 15% of the fungicide-treated area and was the most extensively-used fungicide active ingredient. Epoxiconazole, applied as a single active ingredient and in various formulations with fenpropimorph, kresoxim-methyl, metrafenone or boscalid accounted for a further 13% of the fungicide-treated area of spring barley. More than 99% of fungicide applications were for general disease control, while the remainder were specifically to control mildew (*Blumeria graminis f.sp hordei*).

The most extensively used herbicide was glyphosate, accounting for 25% of herbicide-treated area and 46% of the weight of herbicides applied. Applications were almost exclusively for ground preparation or for pre-harvest desiccation. The formulation metsulfuron-methyl/tribenuron-methyl represented 24% of the herbicide-treated area but due to its low application rate per hectare, the weight used accounted for less than 1% of the herbicide active ingredients applied to spring barley. Mecoprop-P, commonly used for 'general weed control' but also to control 'fat hen' (*Chenopodium album* L.) and 'chickweed' (*Stellaria media* L.), represented 12% of the herbicide-treated area and 25% of the weight applied .

The primary targets for insecticide application to spring barley were 'aphids', with 93% of applications being used for this purpose along with 6% to control leatherjackets (*Tipula* spp.) and less than 1% to control slugs. Pyrethroids, primarily esfenvalerate and lambda-cyhalothrin, represented 81% of insecticide applications to spring barley crops and 7% of the weight applied. However, the organophosphate chlorpyrifos, primarily applied to control leatherjackets (*Tipula* spp.), accounted for 7% of the insecticide-treated area but 88% of the weight of insecticide active ingredients applied, reflecting its high rate of application.

The molluscicide methiocarb was applied to 126 hectares of spring barley.

Approximately 22% of the area of spring barley was treated with growth regulators (Table 7). Chlormequat, applied as a single active ingredient, accounted for 54% of the growth regulator-treated area and 89% of the weight of growth regulators applied. The single active ingredient trinexapac-ethyl represented 32% of the growth regulator treated area and 5% of the weight of growth regulators applied. 2-chloroethylphosphonic acid applied as

a single active ingredient or in formulation with mepiquat chloride, was used on the remaining 15% of this treated area.

Approximately 72% of spring barley was treated with a single seed dressing (Table 7). An estimated 62% of this area was grown from seed treated with the formulation prochloraz/triticonazole, representing 58% of the weight of seed treatments used (Tables 8 & 9).

Undersown barley (Table 13)

Approximately 100% (803 hectares) of undersown barley crops were treated with a pesticide (Table 7). Herbicides and desiccants accounted for 46% of the pesticide-treated area of undersown barley (83% of the weight of pesticides applied), fungicides 20% (16%), seed treatments 27% (1%) and insecticides 7% (>1%). Growth regulators and molluscicides were not recorded in use on undersown barley crops in 2008 (Tables 5 & 6).

The formulation 2,4-DB/linuron/MCPA was the most frequently used herbicide accounting for 69% of the herbicide and desiccant-treated area and 62% of the weight applied. 'General weed control' was the principal reason for the use of this formulation, although it was also used to control 'redshank' (*Polygonum persicaria* L.). Glyphosate, exclusively used for 'ground preparation', represented 27% of the herbicide and desiccant treated area and 33% of the weight applied. The reason given for over 66% of herbicide applications was 'general weed control' with 27% being attributed to 'ground preparation'.

Fungicides were used exclusively for 'general disease control'. The single active ingredient epoxiconazole, along with the formulation fenpropimorph/pyraclostrobin, accounted for 48% of all fungicide applications to undersown barley. Applications of chlorothalonil, both as a single active ingredient and also in formulation with flusilazole, accounted for 22% of fungicides applied.

The formulation prochloraz/triticonazole, used on 63% of the area sown with treated seed, accounted for 85% of the weight of seed treatment active ingredients applied to undersown barley crops (Tables 8 & 9).

Esfenvalerate and deltamethrin were the only insecticide active ingredients applied and were used exclusively to control aphids.

Winter barley (Table 14)

Fungicides were used on 36% of the area of winter barley treated with pesticides, herbicides and desiccants on 30%, growth regulators on 10%, insecticides on 13%, seed treatments on 11% and molluscicides on less than 1%. However, herbicides and desiccants accounted for 55% of the total weight of pesticide active ingredients applied, fungicides

28%, growth regulators 15% and seed treatments 1%. Insecticides and molluscicides accounted for less than 1% of the weight of pesticides applied (Tables 5 & 6).

Chlorothalonil, applied as a single active ingredient represented 14% of the fungicide-treated area and 20% of the weight of fungicides applied. 'General disease control' was the reason given for over 99% of fungicide applications.

Twenty-six herbicide/desiccant single active ingredients or formulations were applied to winter barley crops in 2008. Glyphosate accounted for 26% of the area of application and 29% of weight applied. Isoproturon, applied as a single active ingredient or in formulation with diflufenican or pendimethalin, accounted for 33% of the herbicide and desiccant-treated area and 47% of the weight of herbicide and desiccant active ingredients applied. 'General weed control' was the reason given for 64% of herbicide applications to winter barley crops.

Pyrethroid insecticide active ingredients collectively accounted for 99% of the insecticide-treated area with the single active ingredients lambda-cyhalothrin and esfenvalerate representing 82% of this. Chlorpyrifos was applied to 52 spray-hectares of winter barley, primarily for the control of 'leatherjackets' (*Tipula* spp.). 'Aphid control' continued to be the main reason for the use of insecticides.

Methiocarb was recorded as used for 'slug control' on 163 hectares of winter barley grown in 2008.

Chlormequat, applied as a single active ingredient, accounted for 48% of the area treated with growth regulators and 77% of the weight of growth regulators applied. The single active ingredient trinexapac-ethyl represented 35% of the area treated and 6% of the weight of growth regulators applied.

Approximately 86% of the area of winter barley was sown with treated seed (Table 7). The most extensively-used seed dressing was the formulation prochloraz/triticonazole, which accounted for 46% of the area of winter barley sown with treated seed and 54% of the weight of seed treatments used (Tables 8 & 9).

Spring wheat (Table 15)

Fungicides accounted for 39% of the pesticide-treated area and 32% of the weight applied, while herbicide and desiccant applications represented 27% of the treated area and 44% of the weight used. Insecticides were used on 13% of the pesticide-treated area and accounted for 4% of the weight of active ingredients applied. While seed treatments accounted for 12% of the pesticide-treated area of spring wheat, the weight of active ingredients represented only 1% of the pesticides applied to this crop. Growth regulators were used on 8% of the pesticide-treated area but accounted for almost 19% of the total weight of pesticides used (Tables 5 & 6).

'General disease control' was the only reason given for applying fungicides to spring wheat crops. Epoxiconazole, applied as a single active ingredient and also in formulation with boscalid, fenpropimorph or metrafenone was used on 40% of the fungicide-treated area and accounted for 36% of the weight of fungicide active ingredients applied. However, chlorothalonil, applied as a single active ingredient, accounted for 25% of the weight of fungicide active ingredients applied and 13% of the fungicide-treated area.

'General weed control' was the principal reason (71%) given for herbicide and desiccant usage. Glyphosate, used as a single active ingredient for 'desiccation' and 'ground preparation', accounted for 23% of the herbicide and desiccant-treated area and 51% of the weight applied to spring wheat crops. Metsulfuron-methyl, applied as a single active ingredient and also in formulation with thifensulfuron-methyl or tribenuron-methyl, represented 30% of the herbicide and desiccant-treated area and 1% of the weight applied.

Cypermethrin applications accounted for 40% of the area treated with insecticides and 10% of the weight of insecticides applied. However, chlorpyrifos, applied exclusively to control leatherjackets (*Tipula* spp.), represented 10% of the insecticide-treated area and 83% of the weight of insecticides applied. Approximately 79% of all insecticide applications to spring wheat were to control aphids.

The growth regulator chlormequat, applied as a single active ingredient, was used on 79% of the growth regulator-treated area and accounted for 77% of the weight of fungicide active ingredients applied.

Approximately 84% of spring wheat crops were sown with treated seed (Table 7). The single active ingredient fludioxonil was most frequently used, accounting for 67% of the area treated within this pesticide group (Tables 8 & 9).

No undersown spring wheat was recorded grown in 2008.

Winter wheat (Table 16)

A total of 10,553 hectares of winter wheat were grown in Northern Ireland in 2008, approximately 48% of which was grown in Co Down (Table 3). Fungicide usage accounted for 42% of the pesticide-treated area of winter wheat crops and 31% of the weight of pesticides used, while herbicides and desiccants represented 25% of the pesticide-treated area and 47% of the weight of pesticides applied. Growth regulators accounted for 9% of the pesticide-treated area and 21% of the weight applied. Seed treatments represented 10% of the pesticide-treated area and 1% of the weight of pesticides applied. Insecticide treatments accounted for 13% of the pesticide-treated area and less than 1% of the weight used. Molluscicides represented less than 1% in both area of application and weight of pesticides applied (Tables 5 & 6).

'General disease control' was the reason given for 99% of the fungicide applications to winter wheat. Chlorothalonil applied as single active ingredient and also in formulations with azoxystrobin, cyproconazole, propiconazole, flutriafol and picoxystrobin represented 28% and 55% of the fungicide-treated area and weight of fungicides applied, respectively. However, epoxiconazole, applied as a single active ingredient and also in formulation with boscalid, fenpropimorph, kresoxim-methyl or metrafenone was used on 40% of the fungicide-treated area and accounted for 36% of the weight of fungicide active ingredients applied.

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 36% of the winter wheat area treated with this pesticide group and 48% of the weight applied. However, glyphosate, applied exclusively for 'ground preparation' and pre-harvest 'desiccation', accounted for 22% and 26% of the herbicide and desiccant-treated area and the weight herbicide and desiccants applied, respectively. Approximately 68% of herbicide and desiccant applications were for 'general weed control'.

Approximately 99% of all insecticide applications were to control 'aphids'. The pyrethroid insecticides esfenvalerate, lambda-cyhalothrin and cypermethrin were used on a combined 94% of the insecticide-treated area of winter wheat crops, while accounting for 65% of the weight of insecticides applied.

The molluscicides metaldehyde and methiocarb were applied to 204 hectares of winter wheat to control 'slugs'.

The growth regulator chlormequat, primarily used as a single active ingredient but also in formulation with choline chloride, accounted for 78% of the growth regulator-treated area of winter wheat and 98% of the weight of growth regulators applied.

Approximately 89 hectares were treated with 14kg of Di-1-P-menthene to try to minimise seed shedding (Table 8).

The area of winter wheat planted with treated seed represented 92% of the total area grown. The formulation prochloraz/triticonazole was used on 38% of the area sown with treated seed, accounting for 29% of the weight of seed treatment active ingredients applied to winter wheat crops. However, the single active ingredient fludioxonil represented 35% and 9% of the area sown with treated seed and weight applied, respectively.

Spring oats (Table 17)

Herbicides and desiccants accounted for 42% of the pesticide-treated area of spring oats, and 63% of the weight applied. While fungicides accounted for 25% of the pesticide-treated area of spring oats, the weight applied represented 23% of the total weight of

pesticides used. The area sown with treated seed represented 18% of the pesticide-treated area and seed dressings accounted for 1% of the weight of pesticides applied. Growth regulators accounted for 3% and 6% of the pesticide-treated area and weight applied, respectively. Insecticides accounted for 12% and 7% of the pesticide-treated area and weight applied, respectively (Tables 5 & 6).

The principal reason given for fungicide usage was 'general disease control'. Fenpropimorph and epoxiconazole, applied either as a single active ingredients or in formulation with each other and kresoxim-methyl, metrafenone or pyraclostrobin, accounted for 79% of the fungicide-treated area and 90% of the weight of fungicides applied.

Metsulfuron-methyl, applied as a single active ingredient but also in formulation with tribenuron-methyl, was used on 35% of the herbicide-treated area of spring oats for, 'general weed control'. However, this represented less than 1% of the weight of herbicides applied. Applications of glyphosate, mainly for 'ground preparation', accounted for 55% of the weight applied and 31% of the herbicide-treated area.

Insecticide applications to spring oats, were generally made to control 'aphids'. The organophosphate insecticide chlorpyrifos was applied to 43 hectares to control leatherjackets (*Tipula* spp.).

The single active ingredient chlormequat was the only growth regulator applied. 8% of spring oats were treated (Table 7).

Approximately 64% of the area of spring oats was sown with treated seed (Table 7). Fludioxonil, applied as a single active ingredient or in formulation with flutriafol, represented 80% of the treated area (Table 8).

Winter oats (Table 18)

Fungicides accounted for 42% and 36% of the pesticide-treated area of winter oats and the weight of pesticide applied, respectively. Herbicide and desiccant applications accounted for 28% of the pesticide-treated area and 36% of the weight of pesticides applied. While seed treatments accounted for 12% of the pesticide-treated area, the weight of active ingredients represented only 2% of the pesticides applied to this crop. Insecticide treatments accounted for 11% of the pesticide-treated area and less than 1% of the weight of pesticides used. Growth regulator usage represented 8% of the pesticide-treated area and 25% of the weight of pesticides used (Tables 5 & 6).

Fenpropimorph, applied as a single active ingredient and in formulation with pyraclostrobin, was the most extensively used fungicide, accounting for 25% of the fungicide-treated area and 35% of the weight applied. Prothioconazole was also frequently applied. The principal reason for the use of fungicides on winter oats



was 'general disease control'.

Metsulfuron-methyl, applied as a single active ingredient but also in formulation with tribenuron-methyl, was used on 19% of the herbicide-treated area of winter oats for 'general weed control'. However, this represented less than 1% of the weight of herbicides applied. The formulation carfentrazone-ethyl/flupyr-sulfuron-methyl accounted for 16% of the herbicide-treated area and 1% of the weight of herbicides applied. However, glyphosate, applied for 'desiccation' and 'ground preparation' represented 20% of the herbicide-treated area and 38% of the weight of herbicides applied.

Lambda-cyhalothrin applications accounted for 36% of the insecticide treated area and 10% of the weight of insecticides applied.

The single active ingredients chlormequat and trinexapac-ethyl were the only growth regulators used on winter oats and were applied to 860 hectares.

Approximately 76% of the area of winter oats grown in Northern Ireland in 2006, was sown with treated seed (Table 7). The single active ingredient fludioxonil, was the most extensively-used seed dressing, accounting for 36% of the treated area and 5% of the weight applied (Tables 8 & 9).

PESTICIDE USAGE ON POTATOES

Potato crops represented 12% of the area of arable crops grown in Northern Ireland in 2008, while accounting for 21% of the total pesticide-treated area. However, the weight of pesticides applied to potato crops represented 34% of the total weight of pesticides used on all arable crops. The total area of potatoes grown comprised 78% maincrop, 14% seed and 7% early potatoes. Maincrop potatoes accounted for 82% of the total area of potatoes treated with pesticides and 84% of the total weight of pesticides applied. Seed potatoes accounted for 13% of the area treated and 11% of the weight applied. Early potatoes represented 5% of both the area treated and the weight applied. (Tables 3, 5 & 6).

Seed potatoes (Table 19)

Fungicides accounted for 54% of the area of seed potatoes treated with pesticides while representing 50% of the weight of pesticides applied. Herbicides and desiccants were used on 31% of the pesticide-treated area and comprised 46% of the weight applied. Approximately 79% of the area of seed potatoes grown was planted with treated seed. This area represented 6% of the treated area of this crop and 3% of the weight of pesticides applied. Insecticides accounted for 7% of the treated area and less than 1% of the weight of pesticides applied to seed potato crops. Molluscicides were used on 2% of the



area treated, accounting for less than 1% of the weight of all pesticides applied to seed potato crops in Northern Ireland in 2008 (Tables 5, 6 & 7).

Fluazinam, mainly applied as a single active ingredient but occasionally in formulation with metalaxyl-m, was the fungicide active ingredient most extensively used, accounting for 52% of the fungicide-treated area. However, the formulation fluopicolide/propamocarb hydrochloride accounted for 40% of the weight of fungicides applied. The reasons for foliar fungicide applications was specifically stated to be for 'blight control' (*Phytophthora infestans*) in approximately 73% of cases.

All seed potato crops received a herbicide or desiccant treatment (Table 7). Diquat, applied most often as a single active ingredient but occasionally with paraquat, accounted for 60% of the area of seed potatoes treated with herbicides and desiccants. Prosulfocarb, applied for general weed control, represented 46% of the weight of herbicides and desiccants used. Approximately 43% of this group of pesticides were used for 'desiccation'.

An estimated 53% of seed potatoes were treated with insecticides in 2008. Fonicamid, lambda-cyhalothrin and pirimicarb were all applied. Insecticide applications were entirely for 'aphid control'.

The molluscicide, methiocarb, was applied to 18 spray hectares of seed potatoes for 'slug control'.

Imazalil, applied as a single active ingredient or in formulation with pencycuron or thiabendazole, was the principal seed treatment applied.

Early potatoes (Table 20)

Fungicides accounted for 56% of the pesticide-treated area of early potatoes (69% of the weight applied), herbicides and desiccants 33% (27%), insecticides less than 1% (<1%), seed treatments 9% (4%) and molluscicides 2% (<1%) (Tables 5 & 6).

The dinitroaniline fungicide fluazinam, applied mainly as a single active ingredient or occasionally in formulation with metalaxyl-m, accounted for 29% of the fungicide-treated area and 7% of the weight of fungicides used. The formulation chlorothalonil/propamocarb hydrochloride comprised 27% of the weight of fungicides applied.

Diquat, applied mainly as a single active ingredient but occasionally in formulation with paraquat was the principal herbicide and was used on 39% of early potato crops for both 'desiccation' and 'general weed control'. Approximately 54% of herbicides applied to the treated area were for 'general weed control'.

Lambda-cyhalothrin was the only insecticide used and was applied to 22 hectares of early potatoes to control 'aphids'.

The molluscicide methiocarb was used on 58 hectares to control 'slugs'.

80% of the total area of early potatoes was grown from treated seed. Imazalil, applied as a single active ingredient or in formulation with pencycuron or thiabendazole, along with the single active ingredient flutolanil, were the only seed treatments applied (Tables 8 & 9).

Maincrop potatoes (Table 21)

Fungicides accounted for 70% of the area of maincrop potatoes treated with pesticides (81% of the weight of pesticides applied), herbicides and desiccants 24% (17%) and insecticides 1% (less than 1%). Seed treatments accounted for 4% of the pesticide-treated area and less than 1% of pesticides in terms of weight applied. Molluscicides and growth regulators represented less than 1% of both the pesticide-treated area and the weight applied. (Tables 5 & 6).

An estimated 95% of the area of maincrop potatoes received a fungicide application (Table 7). Fluazinam, applied as a single active ingredient, accounted for 34% of the fungicide-treated area and 7% of the weight applied. However, mancozeb, applied as a single active ingredient or in formulation with benthiavalicarb-isopropyl, cymoxanil, metalaxyl-m or propamocarb hydrochloride represented 29% of the fungicide-treated area and 52% of the weight applied. Approximately 89% of fungicide applications to maincrop potatoes were for 'general fungal control'.

'General weed control' and 'desiccation' accounted for 87% of all herbicide and desiccant applications. Paraquat and diquat, applied as single active ingredients and in formulation together, were the most extensively used herbicides and desiccants, comprising 59% of the area treated and 43% of the weight applied. Linuron was also frequently used.

The insecticide lambda-cyhalothrin, applied as a single active ingredient, accounted for 67% of the insecticide-treated area. All insecticide applications to maincrop potatoes were to control 'aphids'.

The molluscicide methiocarb was used on 446 hectares of maincrop potatoes to control 'slugs'.

The growth regulator maleic hydrazide was applied to 23 hectares as a sprout suppressant.

Seed treatments were applied to approximately 46% of the area planted with maincrop potatoes (Table 7). Imazalil, applied as a single active ingredient or in formulation with pencycuron or thiabendazole along with the single active ingredient flutolanil, were the only seed treatments applied (Tables 8 & 9).

PESTICIDE USAGE ON MINOR CROPS:

Oilseed rape (Table 22)

Approximately 439 hectares of oilseed rape were grown in Northern Ireland in 2008 (Table 3). Herbicides and desiccants were applied to 45% of the pesticide-treated area (accounting for 84% of the weight of pesticides applied), fungicides 34% (12%), insecticides 15% (1%), molluscicides 6% (3%) and seed treatments 1% (<1%) (Tables 5 & 6).

All fungicides were applied for 'general disease control'. Azoxystrobin and prothioconazole were the main single active ingredients applied, accounting for 66% of the treated area and 57% of the weight of fungicides used. Tebuconazole was also frequently applied.

An estimated 53% of herbicide applications were for 'general weed control' and 40% for 'desiccation'. Glyphosate was applied to 49% of the herbicide and desiccant-treated area and represented 61% of the weight of herbicides and desiccants applied.

The only insecticides recorded were the pyrethroids bifenthrin and cypermethrin, applied mainly to control 'aphids'.

The molluscicides, methiocarb or metaldehyde were applied to 120 hectares of oilseed rape to control slugs.

Approximately 5% (22 hectares) of the area of oilseed rape was grown from treated seed (Table 7). The formulation beta-cyfluthrin/imidacloprid and the single active ingredient thiram were the only seed treatments applied (Tables 8 & 9).

Peas & Beans (Table 23)

Peas and beans have been recorded in Northern Ireland since 1998. Approximately 73kg of pesticides were used on a total of 55 hectares in 2008, all of which were in County Down (Table 3 & 6).

Herbicides and desiccants accounted for 72% of the area treated with pesticides (84% of the weight of pesticides applied), fungicides 9% (8%), seed treatments 9% (7%) and insecticides 9% (<1%) (Tables 5 & 6).

The formulation azoxystrobin/chlorothalonil was the only fungicide used.

Glyphosate and MCPA were the only herbicides and desiccants applied.

The pyrethroid lambda-cyhalothrin was the only insecticide applied and was used to control 'aphids'.

No molluscicides were applied.

Hemp (Table 24)

This was the first time that hemp had been recorded as grown in Northern Ireland. The herbicide glyphosate was applied to 14.6 hectares during 'ground preparation'.

Spring linseed (Table 25)

Glyphosate was applied to 1.6 hectares of spring linseed for 'ground preparation'.

Triticale

Approximately 82 hectares of triticale were grown in Northern Ireland during 2008 none of which was treated with pesticides.

COMPARISON OF PESTICIDE USAGE ON THE AREAS OF ARABLE CROPS GROWN WITH PREVIOUS SURVEYS. (Table 26)

The total area of arable crops grown in Northern Ireland in 2008 increased by approximately 12% when compared to that recorded in the 2006 survey. However, this represented a 24% and 20% reduction in the area of arable crops grown when compared to that recorded in 1990 and 1992, respectively.

Overall, the area of cereal production increased by 20% when compared to 2006 returning to a level recorded in 2000. The area grown of winter oats increased by 88%, winter barley by 34%, winter wheat 47%, undersown barley by 23% and spring barley by 7%. However, the area of spring oats decreased by 21% while the area of spring wheat remained constant.

The area of potato crops planted in 2008 was 7% higher than that recorded in 2006. This was the first increase in potato area since surveys began. The area of seed potato crops has reduced by 79% since 1992. Maincrop and early potatoes both increased by 8% when compared to 2006.

The area of oilseed rape grown decreased by 7% when compared to 2006.

Triticale crops were first recorded in 1990 recurred in 1998 and have been subsequently recorded in each survey. The crop area increased almost seven-fold between 2006 and 2008.

The area of peas and beans has reduced by 33% when compared to 2006.

Hemp was recorded for the first time with 40 hectares being grown in County Down.

Approximately 2 hectares of spring linseed was grown. The last time this crop was recorded was in 2002.

TRENDS IN PESTICIDE USAGE

- Comparison with previous surveys

ARABLE (Tables 27 & 28)

Overall, a 12% increase in the area of arable crops grown was recorded between 2006 and 2008.

During this period the total area of pesticide application increased by 27% but the weight of pesticides applied decreased by 29%.

The area of fungicide application and weight applied increased by 30% and 15%, respectively.

The area treated with herbicides and desiccants in 2008 increased by 23% but the weight applied, reduced by 53% when compared to 2006. The reduction in weight applied is almost totally due to the withdrawal of sulphuric acid applications to potato crops.

Molluscicide applications increased by 3% when compared to 2006 but the weight applied has reduced by 41%.

The area treated with insecticides increased by 39% between 2006 and 2008. However, due to reduced applications of organophosphates and increased use of pyrethroids, which are used at lower rates, the weight of insecticides applied decreased by 25% over the same period.

The area of application of growth regulators in 2008 increased by 14% and the weight applied also increased by 35% when compared to 2006.

The area of arable crops sown or planted with treated seed in 2008 increased by 21%. However, the weight of seed treatment applied decreased by 55% in comparison with the 2006 survey. This was due to the elimination of the use of mancozeb and zinc oxide as a preplanting treatment on maincrop potatoes.

CEREALS (Tables 29 & 30)

The total area of cereal crops to which pesticides were applied in 2008 increased by 29%, with the weight of pesticides applied increasing by 30% when compared with 2006. This was most likely due to the increased area being grown as a result of markedly improved cereal prices.

There was a 37% increase in the area treated with fungicides compared with 2006 and an increase of 59% in the weight of fungicides applied. The weight of fungicides applied was similar to the level recorded in 1992 but the area of fungicide application has doubled since then.

Problems with resistance of blotch (*Septoria tritici*) to strobilurins is reflected in a reduction of application of these fungicides to winter wheat as a single ingredients, although they became slightly more important as components in mixtures. There also tended to be a reduction in the use of triazoles as single ingredients and in mixtures with other triazoles, but there was an increase in mixtures with non-triazoles, particularly in winter wheat. However, it is unlikely that this was due to changes in sensitivity by blotch (*Septoria tritici*) to the triazoles. The use of chlorothalonil increased substantially in both spring barley and winter wheat, probably due to a new formulation of the ingredient.

The area of cereal crops treated with insecticides increased by 43% when compared with 2006. This is partly due to the increased area of cereals grown. Conversely, because of lower application rates of organophosphates, primarily chlorpyrifos, and increased use of pyrethroids, the weight of insecticides applied decreased by 21%.

An increase of molluscicide application in both weight (60%) and area (61%) to cereals was recorded when compared to 2006.

In comparison with 2006, the area treated with herbicides and desiccants and the weight applied increased by 23% and 20%, respectively. This is, in part, due to increased application of isoproturon, both as a single active ingredient or in formulation, and also increased applications of glyphosate to spring barley and winter wheat.

The area treated with growth regulators increased by 14% compared to 2006 and the weight applied also increased, by 34%.

OILSEED RAPE (Tables 31 & 32)

The area of oilseed rape grown decreased by 7% when compared with 2006. However, the total area of pesticide application increased by 3% and the weight of pesticides applied increased by 9%. Insecticide applications doubled and seed treatments reduced by 92%.

Although the area of herbicide and desiccant applications remained the same the weight applied increased by 7%.

Growth regulators were not applied to oilseed rape in 2008.

PEAS AND BEANS (Tables 33 & 34)

The area of peas and beans grown has decreased by 34% since 2006. This produced decreases in area treated (42%) and weight of pesticides applied (32%).

SET-ASIDE (Tables 35 & 36)

Set-aside was not recorded during 2008 (see definitions and notes).

POTATOES (Tables 37-44)

The total area of potatoes grown in 2008 increased by 7% (5,501 hectares) when compared with 2006. This is the first time the area of potatoes has increased since surveys have been conducted. Maincrop and early potatoes each showed an increase in area grown of 8%, while the area of seed potatoes grown increased by 4% to 792 hectares.

The overall usage of pesticides on potato crops, measured by application area of active ingredients, increased by 16% compared with 2006. However, the weight of pesticides applied decreased by 62% over the same survey period. This was mainly attributed to the elimination of the use of sulphuric acid as a haulm desiccant.

There was an increase in area of 15% in fungicide application to potatoes compared with 2006, which was due to the increased area grown of maincrop potatoes. However, there was a reduction of 4% in the weight of fungicides applied to potatoes.

Overall in 2008 herbicide and desiccant application to potatoes increased by 24%, with the weight applied decreasing by 88%. This decrease can be mainly attributed to the elimination of sulphuric acid applications.

The insecticide-treated area of potato crops decreased by 16% and the weight of insecticide applied decreased by 57% in 2008 when compared with 2006. In 2006, though organophosphate applications had reduced (85%) from 365 spray hectares to 55 spray hectares, the weight of organophosphates increased by 32% due to applications of fosphiazate to early and maincrop potatoes for wireworm (*Agriotes spp.*) control. However, during 2008 no organophosphates were applied to potato crops. Insecticides from the carbamates and pyrethroids, along with the feeding blocker aphicide, flonicamid, were the only insecticides applied.

Both the area treated with molluscicides and weight applied have decreased in 2008 by 29% and 68%, respectively, when compared to 2006.

PESTICIDE USAGE ON POTATOES IN STORAGE (Tables 45-52)

In addition to information concerning field applications of pesticides to potato crops, data were 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 storage method. Of the 274 holdings visited, 57 grew potato crops, 50 of which stored potatoes on-farm. The data were raised to a province-wide level using raising factors discussed earlier.

An estimated 70,794 tonnes of potatoes were stored in Northern Ireland in 2008, of which 4680 tonnes were treated with pesticides.

County Down accounted for 31% of potatoes stored (39% of the potatoes grown), County Antrim 16% (17%), County Londonderry 27% (23%), County Tyrone 11% (14%) and Armagh 15% (7%). No potato storage was recorded in County Fermanagh.

The total quantity of potatoes stored in Northern Ireland consisted of 86% of ware potatoes and 7% of both seed and early potatoes combined (Figure 4). All counties stored both ware and seed potatoes. However, County Down also stored early potatoes.

Approximately 4680 tonnes of ware potatoes were treated in County Londonderry. This accounted for all of the treated potatoes stored in Northern Ireland and represented less than 7% of all potatoes stored.

An estimated 173 kg of the sprout suppressant chlorpropham were applied.

Potato stores were classified into five types; 'barn store', 'modified barn', 'ventilated store', 'refrigerated store' and 'unspecified'. Approximately 38% of potatoes held on-farm in 2008 were stored in ventilated stores, 31% in barn stores, 28% in refrigerated stores and 2% in modified barn stores, with the remainder being unspecified. Approximately 87% of all stored potatoes were boxed, 12% bulked and 1% held in stores where storage method was unknown.

Seed Potatoes

Seed potatoes accounted for 7% (5,138 tonnes) of the total quantity stored. Approximately 55% of seed potatoes were stored in County Down. However, no treatments were applied.

An estimated 86% of all seed potatoes were stored in boxes with 12% being stored in bulk and the remaining 2% unknown. On-farm ventilated stores accounted for 49% of all types of storage buildings used, refrigerated stores 21%, barn stores 30% and less than 1% were modified barn store.

Early Potatoes

This was the first year that early potatoes were recorded as stored. An estimated 4,800 tonnes were boxed and stored under refrigeration in County Down.

Ware Potatoes

Approximately 60,855 tonnes of ware potatoes were stored in 2008, accounting for 86% of the total quantity of potatoes stored. It was estimated that 30% were stored in Londonderry, 24% in County Down, 18% County Armagh, 16% in County Antrim and 12% in Tyrone. Approximately 4,680 tonnes were treated with 173kg of chlorpropham to suppress sprouting.

An estimated 87% of ware potatoes were stored in boxes, 12% in bulk and 1% unspecified. Approximately 24,640 tonnes (40%) were stored in ventilated stores, 20,628 tonnes (34%) in barn stores, 14,078 tonnes (23%) in refrigerated stores and 1,508 tonnes (2%) in modified barn stores.

COMPARISON OF PESTICIDE USAGE ON POTATOES IN STORAGE (Tables 53-56)

In 2002 potato storage levels decreased due to lower potato yields and extremely high rainfall which interrupted harvesting during the months of October and November, the main potato harvesting period in Northern Ireland. During 2004 the quantity of potatoes

stored increased by an estimated 78,026 tonnes when compared with 2002, returning to levels similar to 1998. During 2006, 117,554 tonnes were stored which was similar to 1994. In 2008, the quantity of potatoes stored reduced by 35% to 70,794 tonnes. An estimated 7% (4680 tonnes) of potatoes stored were treated in 2008 compared with 1% (76 tonnes) in 2006, 2% (3,772 tonnes) in 2004, 22% (13,053 tonnes) in 2002 and 9% (14,051 tonnes) in 1998.

The trend of reduced application of pesticides to stored potatoes ended in 2008 with 173 kg being applied which was slightly higher than that applied in 2004.

Imazalil was the most extensively applied pesticide in 2002 and 1998, being used on 12,030 and 4,820 tonnes of potatoes, respectively. In 2004 the most extensively-used pesticide was tecnazene, used exclusively on 2,937 tonnes of ware potatoes. During 2006 imazalil was the only pesticide applied, which was used exclusively on 76 tonnes of seed potatoes in County Down. In 2008 173 kg of the sprout suppressant chlorpropham was applied to 4,680 tonnes of ware potatoes in County Londonderry.

In 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. Our survey in 2004 showed the most popular type of storage building was the 'barn store' with 'boxed' being the most extensively used storage method. However, in 2008 and in common with 2006, the most popular storage building was the 'ventilated' store and 'boxed' was the most common storage method.

The storage of 'reserved seed' was not recorded in 2008.

ACKNOWLEDGEMENTS

We, the authors, wish to thank all of the growers who participated in this survey without whose co-operation completion of this report would not have been possible. We are also grateful for the invaluable assistance of Mr David Williams, Mr Michael McAllister and also the staff at the Scottish Agricultural Science Agency, Scottish Agricultural Statistics Service, Edinburgh and Central Science Laboratories, York. In addition, thanks are given to Mrs Carol Hall (AFBINI) for information regarding the growing practices and storage of potatoes and Dr Peter Mercer (AFBINI) for advice on the application of fungicides to cereal crops in Northern Ireland.

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Figure 1: The regional distribution of arable crops grown in Northern Ireland in 2008.

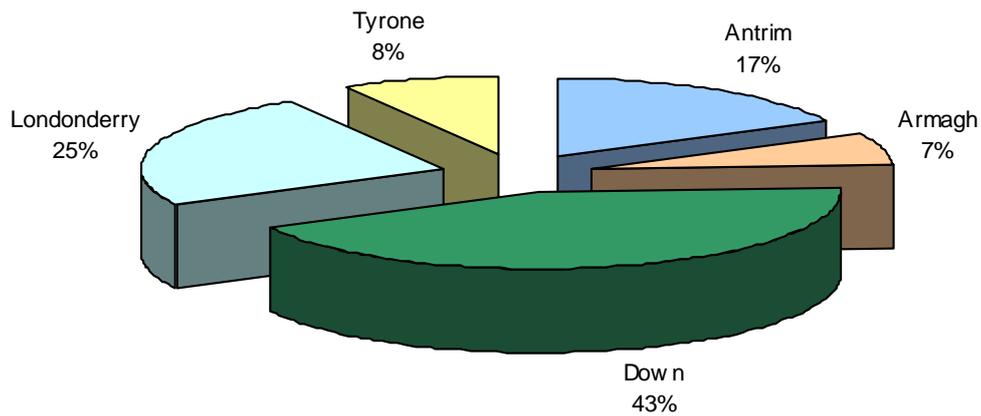


Figure 2: Utilisation of arable land in Northern Ireland in 2008

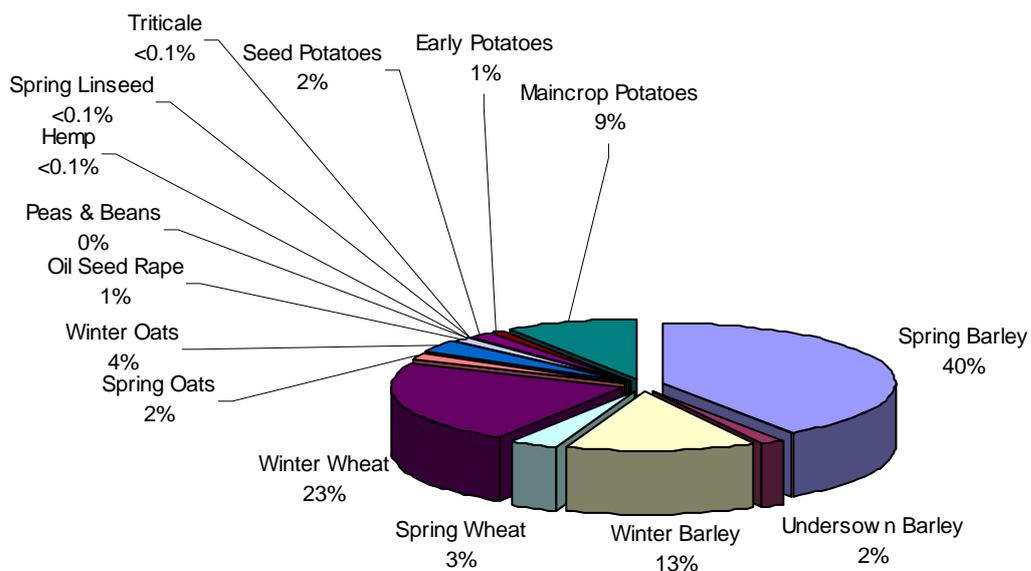


Figure 3: The estimated total area of arable crops treated (spray hectares) with each pesticide type in the county regions of Northern Ireland in 2008.

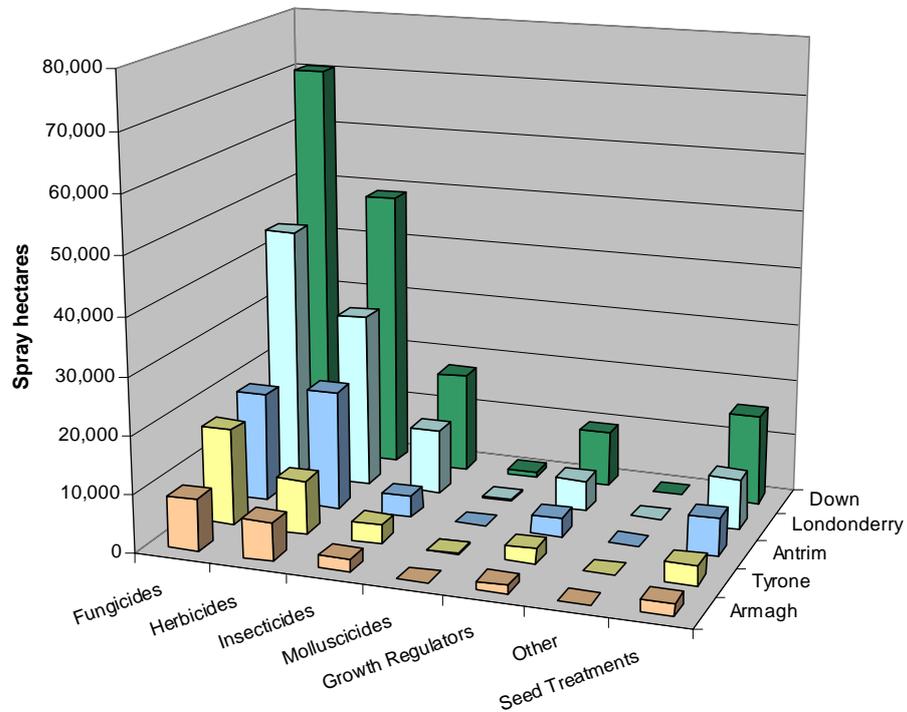


Figure 4: The estimated total weight of each pesticide type used on arable crops in the county regions of Northern Ireland in 2008.

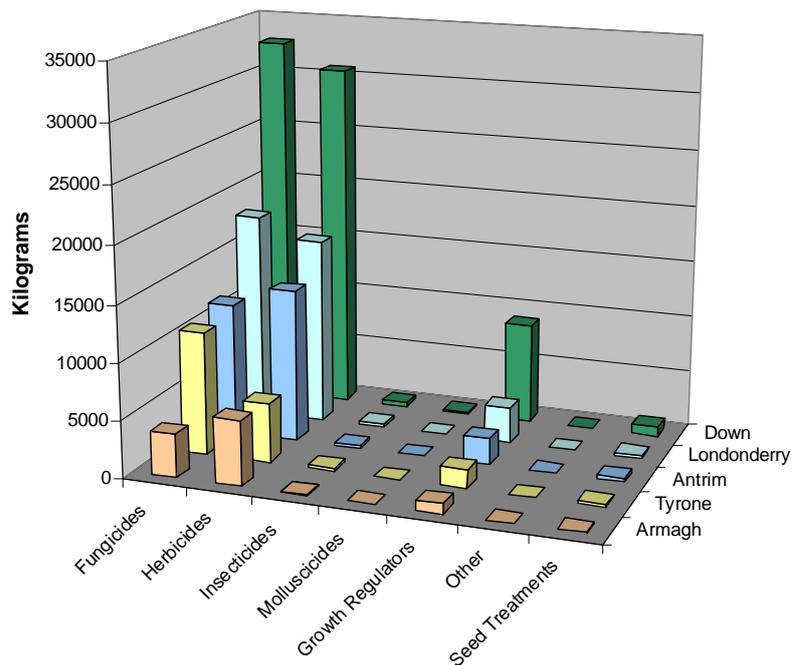


Figure 5: Estimated total application (Spray Hectares) of each pesticide type on main arable crops, Northern Ireland 2008.

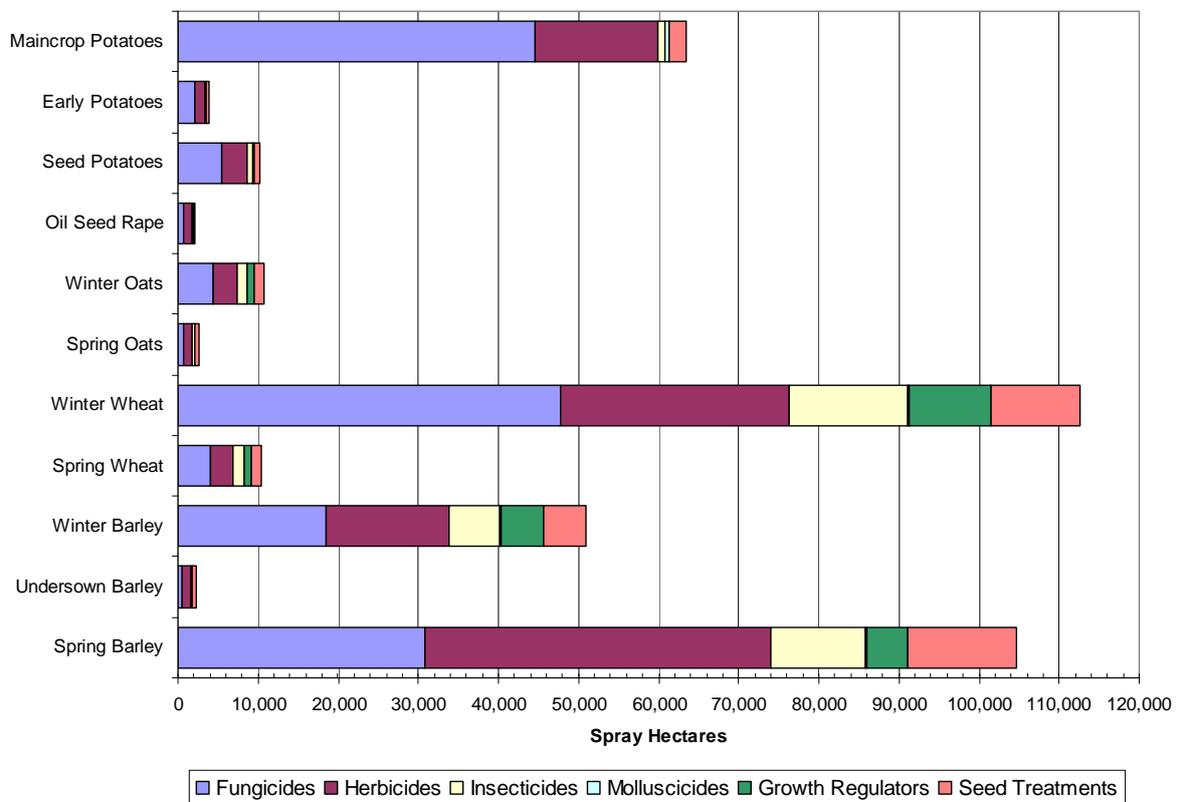


Figure 6: Estimated total quantity (kg) of each pesticide type used on Main Arable Crops, Northern Ireland 2008.

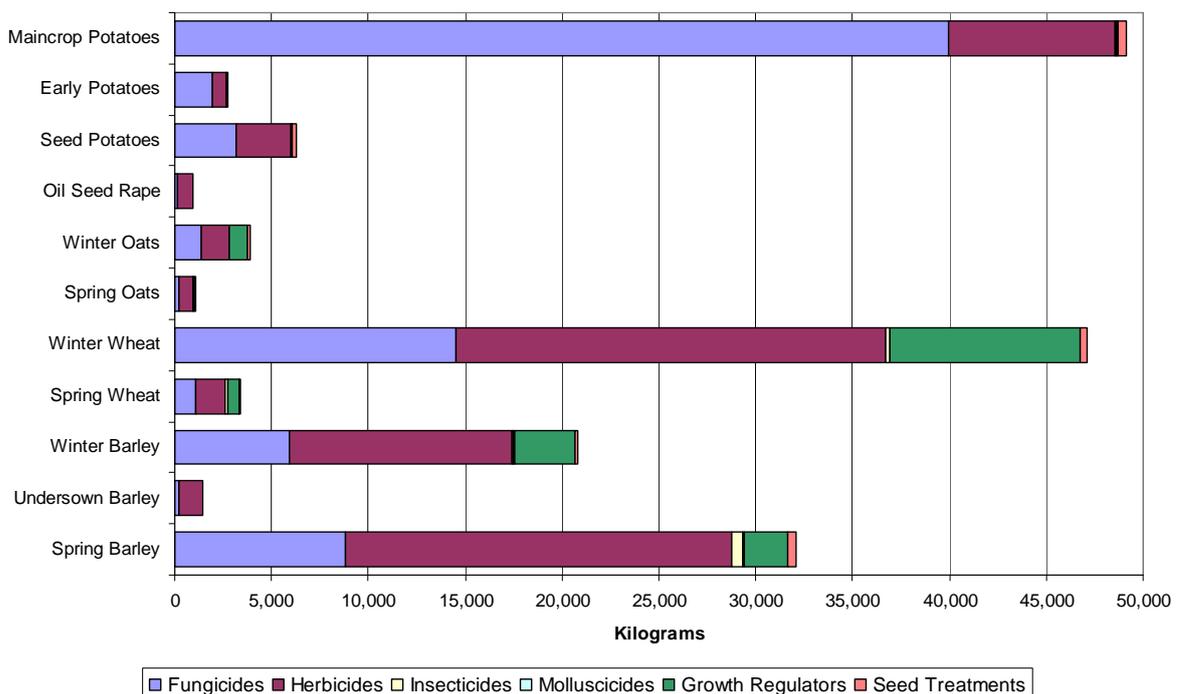


Figure 7: Trend in ratio of total spray applications to basic crop area of arable crops in Northern Ireland 1990 - 2008.

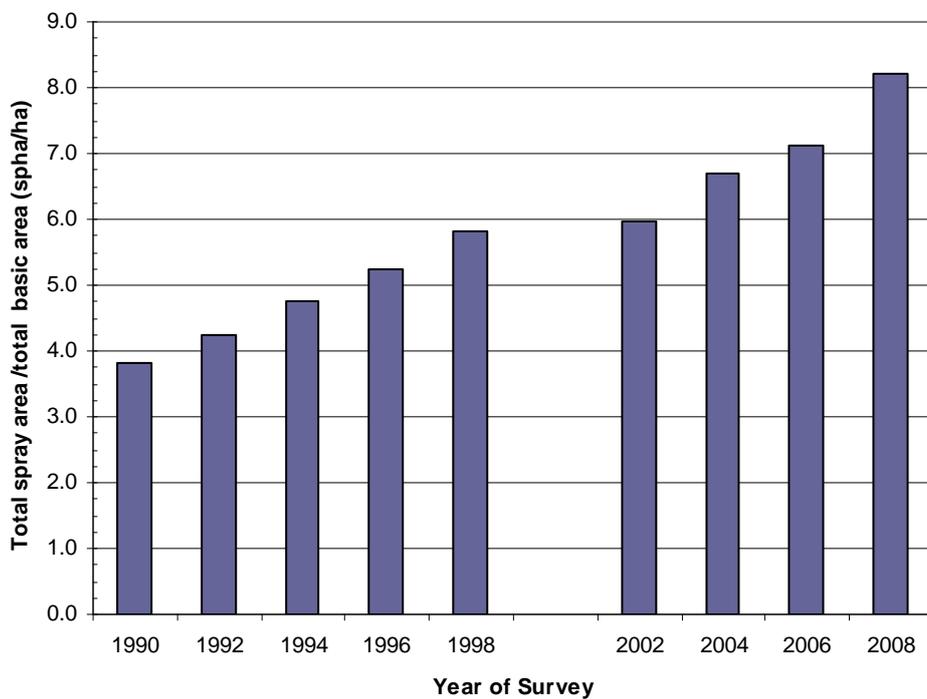


Figure 8: Trend in ratio of total spray application to basic crop area of fungicides, herbicides and growth regulators on arable crops in Northern Ireland 1990 - 2008.

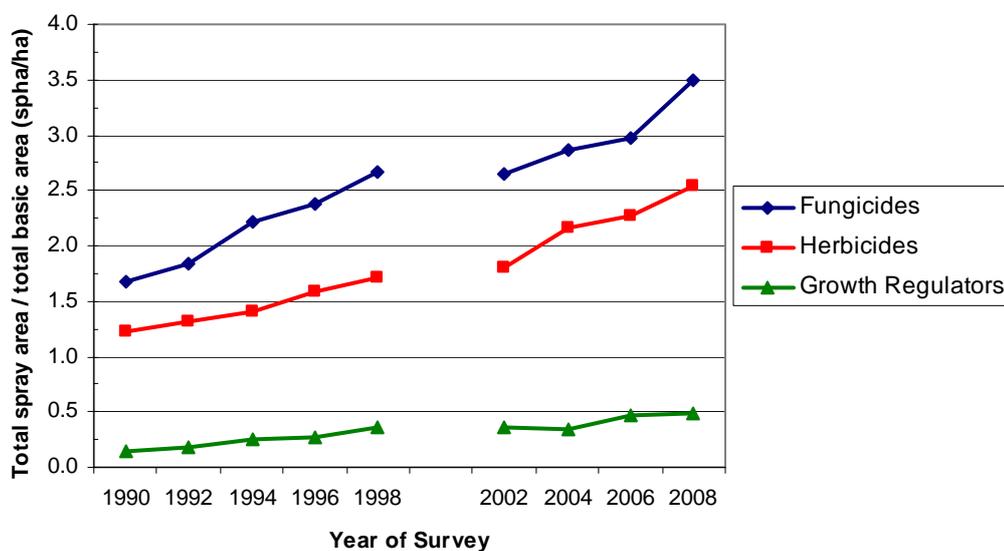


Figure 9: Trend in ratio of total spray application to basic crop area of insecticides, molluscicides and seed treatments on arable crops in Northern Ireland 1990 - 2008.

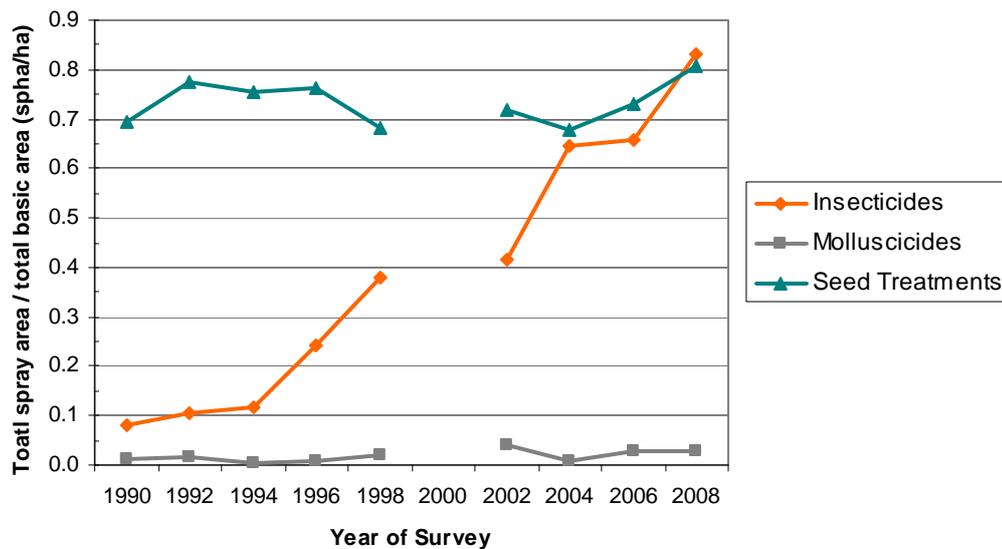


Figure 10: Trend in total quantity of pesticide applied to basic area of arable crops in Northern Ireland 1990 - 2008.

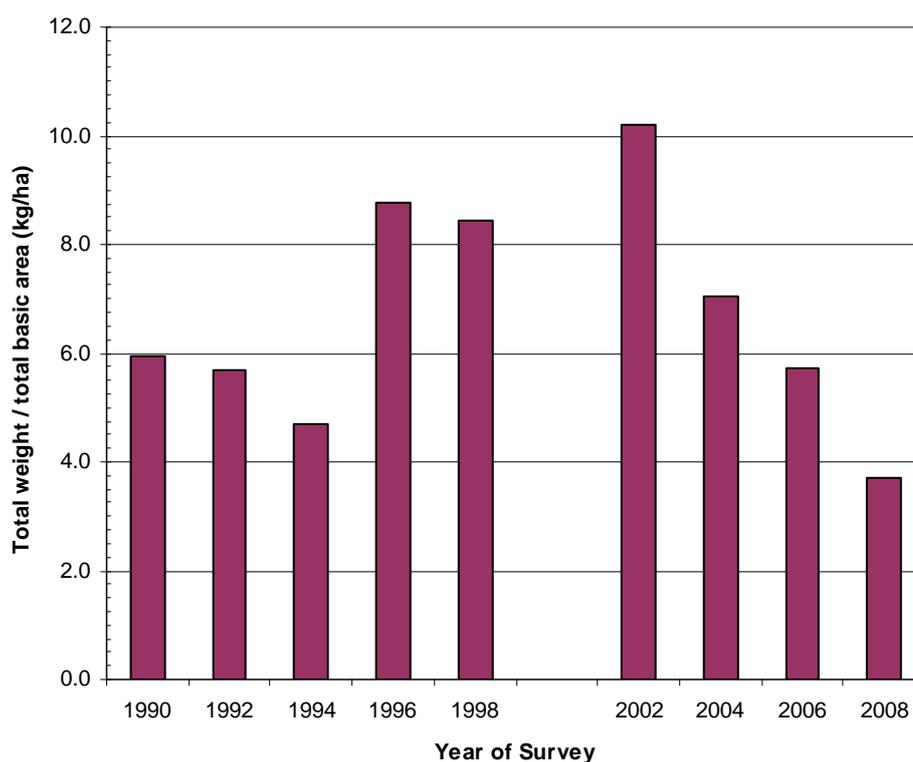


Figure 11: Trend in total quantity of fungicides, herbicides and growth regulators applied to basic area of arable crops in Northern Ireland 1990 - 2008.

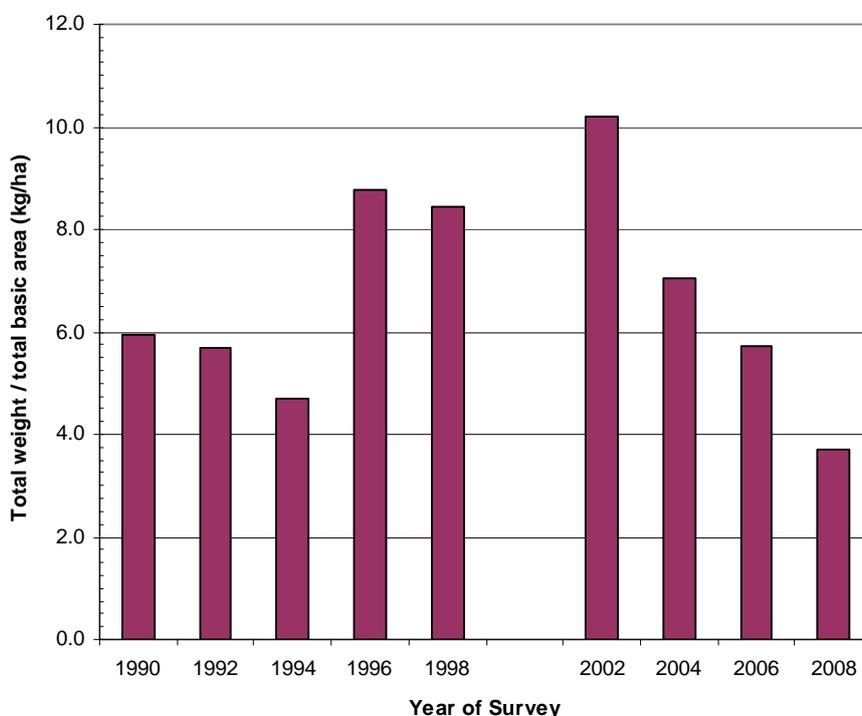


Figure 12: Trend in total quantity of insecticides, molluscicides and seed treatments applied to basic area of arable crops in Northern Ireland 1990 - 2008.

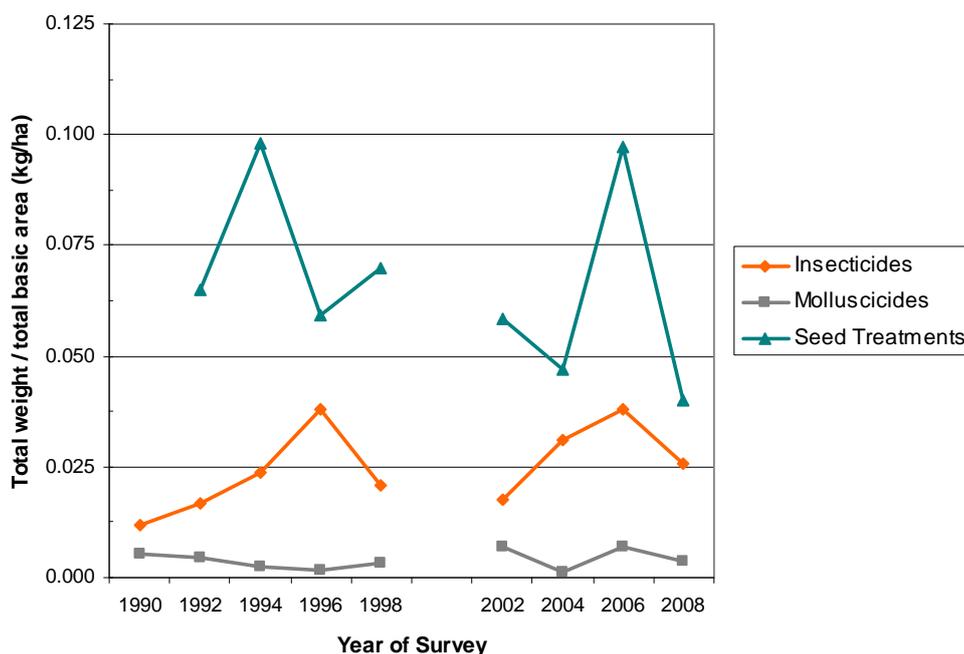


Table 1: Number of farms in each size class with arable crops in the Northern Ireland June 2008 census and the number of samples from each class.

County	Size group (hectares)												Total	
	< 2		2 < 5		5 < 10		10 < 20		20 < 40		40 +			
	Holdings in size group	Holdings sampled												
Antrim	115	2	213	3	161	3	112	9	75	12	32	17	708	51
Armagh	37	1	68	4	68	4	69	4	20	3	12	6	274	21
Down	125	4	321	12	285	12	236	21	134	15	111	55	1212	115
Fermanagh	18	.	5	.	5	.	4	.	4	.	1	.	37	.
Londonderry	83	2	242	7	178	7	128	8	69	10	65	34	765	64
Tyrone	80	1	128	0	108	0	74	4	21	5	17	9	428	23
<i>Northern Ireland</i>	<i>458</i>	<i>10</i>	<i>977</i>	<i>26</i>	<i>805</i>	<i>26</i>	<i>623</i>	<i>46</i>	<i>323</i>	<i>45</i>	<i>238</i>	<i>121</i>	<i>3,424</i>	<i>274</i>

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, 2008.

Crop	Number of crops surveyed	Survey area (ha)	Proportion of crops surveyed (%)
Spring barley	315	4,641	25
Undersown barley	17	64	8
Winter barley	152	2,150	35
Spring wheat	18	290	19
Winter wheat	188	3,272	31
Spring oats	18	116	15
Winter oats	39	521	32
Oilseed rape	16	199	45
Peas & beans	3	9	17
Hemp	1	40	100
Spring Linseed	1	2	100
Triticale	1	7	9
Seed potatoes	20	96	12
Early potatoes	47	130	32
Maincrop potatoes	167	1,180	27
Total =	1,003	12,718	Mean = 27

Table 3: Estimated area (hectares) of arable crops grown regionally in Northern Ireland 2008.

Crop	County					Northern Ireland
	Antrim	Armagh	Down	Londonderry	Tyrone	
Spring barley	3,311	1,161	7,937	5,442	892	18,742
Undersown barley	309	.	293	139	63	803
Winter barley	956	471	2,682	1,535	504	6,149
Spring wheat	41	322	413	74	702	1,552
Winter wheat	2,092	510	5,088	2,068	795	10,553
Spring oats	96	21	430	194	37	778
Winter oats	134	180	602	593	131	1,640
Oilseed rape	78	148	142	43	29	439
Peas & beans	.	.	55	.	.	55
Hemp	.	.	40	.	.	40
Spring Linseed	.	.	2	.	.	2
Triticale	.	.	82	.	.	82
Seed potatoes	267	.	357	168	.	792
Early potatoes	105	8	234	46	8	401
Maincrop potatoes	681	307	1,608	1,056	656	4,308
Total	8,069	3,127	19,966	11,358	3,817	46,337

Table 4a: Estimated area (spray-hectares) of arable crops treated regionally with each pesticide type in Northern Ireland 2008.

Pesticide type	County					Northern Ireland
	Antrim	Armagh	Down	Londonderry	Tyrone	
Fungicides	18,921	9,027	70,577	44,524	16,690	159,738
Herbicides	20,718	6,744	48,766	30,471	9,329	116,029
Insecticides	3,710	2,205	17,382	11,358	3,256	37,910
Molluscicides	185	.	808	235	49	1,277
Growth Regulators	3,240	1,430	9,790	5,287	2,660	22,408
Other	.	.	.	89	.	89
Seed treatments	6,617	2,160	15,799	8,747	3,432	36,756
Total	53,390	21,567	163,122	100,711	35,416	374,207

Table 4b: Estimated weight (kg) applied to arable crops regionally with each pesticide type in Northern Ireland 2008.

Pesticide type	County					Northern Ireland
	Antrim	Armagh	Down	Londonderry	Tyrone	
Fungicides	11,694	3,794	32,815	18,136	10,877	77,316
Herbicides	13,486	5,701	30,669	16,427	5,298	71,582
Insecticides	217	38	381	298	242	1,176
Molluscicides	15	.	118	20	15	169
Growth Regulators	2,327	895	8,942	3,184	1,653	17,001
Other	.	.	.	14	.	14
Seed treatments	324	94	906	259	233	1,817
Total	28,063	10,523	73,832	38,338	18,318	169,075

Table 5: The total area (spray-hectares) and the basic area (hectares), (in parentheses), of arable crops treated with each pesticide type in Northern Ireland 2008.

Crop	Pesticide type															
	Fungicides		Herbicides & desiccants		Insecticides		Molluscicides		Growth Regulators		Other		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	30,865	(12,649)	43,209	(16,012)	11,822	(10,047)	126	(126)	5,133	(4,198)	.	.	13,510	(13,425)	104,664	(18,277)
Undersown barley	472	(260)	1,080	(776)	160	(140)	.	.	.	.	.	.	618	(618)	2,331	(803)
Winter barley	18,446	(5,957)	15,382	(5,041)	6,396	(4,777)	163	(163)	5,170	(3,735)	.	.	5,380	(5,315)	50,936	(6,149)
Spring wheat	4,028	(1,284)	2,844	(1,309)	1,375	(871)	.	.	871	(767)	.	.	1,297	(1,297)	10,415	(1,328)
Winter wheat	47,834	(9,819)	28,486	(9,035)	14,781	(8,147)	204	(204)	10,276	(7,549)	89	(89)	11,013	(9,693)	112,683	(10,642)
Spring oats	687	(434)	1,125	(615)	312	(233)	.	.	76	(61)	.	.	499	(499)	2,699	(652)
Winter oats	4,473	(1,520)	3,007	(1,417)	1,145	(792)	.	.	860	(820)	.	.	1,250	(1,250)	10,735	(1,640)
Oilseed rape	737	(320)	972	(394)	316	(291)	120	(120)	.	.	.	.	22	(22)	2,167	(426)
Peas & beans	8	(8)	63	(55)	8	(8)	.	.	.	.	.	.	8	(8)	88	(55)
Hemp	.	.	15	(7)	.	.	.	.	.	.	.	.	.	.	15	(7)
Spring Linseed	.	.	2	(2)	.	.	.	.	.	.	.	.	.	.	2	(2)
Triticale	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	(0)
Seed potatoes	5,530	(684)	3,170	(792)	671	(419)	160	(160)	.	.	.	.	622	(622)	10,153	(792)
Early potatoes	2,154	(388)	1,280	(375)	22	(19)	58	(58)	.	.	.	.	327	(320)	3,842	(388)
Maincrop potatoes	44,505	(4,076)	15,393	(3,910)	902	(677)	446	(446)	23	(23)	.	.	2,209	(1,995)	63,478	(4,308)
Total	159,738	(37,399)	116,029	(39,739)	37,910	(26,422)	1,277	(1,277)	22,408	(17,153)	89	(89)	36,756	(35,065)	374,207	(45,469)

Table 6: Total quantity (kilograms) of each pesticide type used on arable crops in Northern Ireland 2008.

Crop	Fungicides	Herbicides & desiccants	Insecticides	Molluscicides	Growth Regulators	Other	Seed treatments	Total
Spring barley	8,799	19,979	588	16	2,299	.	419	32,100
Undersown barley	234	1,190	1	.	.	.	14	1,439
Winter barley	5,918	11,512	84	15	3,134	.	123	20,787
Spring wheat	1,076	1,490	145	.	644	.	40	3,394
Winter wheat	14,496	22,235	164	38	9,814	14	397	47,156
Spring oats	247	686	74	.	66	.	10	1,084
Winter oats	1,403	1,383	21	.	977	.	83	3,867
Oilseed rape	116	810	11	27	.	.	1	964
Peas & beans	6	62	0	.	.	.	5	73
Hemp	.	13	.	.	.	.	.	13
Spring Linseed	.	1	.	.	.	.	.	1
Seed potatoes	3,144	2,880	57	13	.	.	173	6,267
Early potatoes	1,915	738	0	4	.	.	110	2,768
Maincrop potatoes	39,960	8,603	30	57	69	.	443	49,162
<i>Total</i>	<i>77,316</i>	<i>71,582</i>	<i>1,176</i>	<i>169</i>	<i>17,001</i>	<i>14</i>	<i>1,817</i>	<i>169,075</i>

Table 7: The proportional area (%) of each crop treated with pesticides and the mean number of spray applications (in parentheses) in Northern Ireland, 2008.

Crop	Fungicides		Herbicides & desiccants		Insecticides		Molluscicides		Growth Regulators		Other		Seed treatments	All pesticides	
	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	
Spring barley Undersown	67	(1.81)	85	(2.07)	54	(1.10)	1	(1.00)	22	(1.12)	.	.	72	98	(1.74)
barley	32	(1.75)	97	(1.37)	17	(1.11)	.	.	.	.	.	.	77	100	(1.40)
Winter barley	97	(2.49)	82	(2.05)	78	(1.32)	3	(1.00)	61	(1.22)	.	.	86	100	(1.88)
Spring wheat	83	(3.00)	84	(2.04)	56	(1.53)	.	.	49	(1.05)	.	.	84	86	(2.07)
Winter wheat	93	(3.64)	86	(2.33)	77	(1.79)	2	(1.00)	72	(1.25)	1	(1.00)	92	100	(2.39)
Spring oats	56	(1.26)	79	(1.47)	30	(1.13)	.	.	8	(1.00)	.	.	64	84	(1.34)
Winter oats	93	(2.68)	86	(2.01)	48	(1.48)	.	.	50	(1.08)	.	.	76	100	(1.95)
Oilseed rape	73	(2.00)	90	(2.10)	66	(1.08)	27	(1.00)	.	.	.	.	5	97	(1.73)
Peas & beans	15	(1.00)	100	(1.10)	15	(1.00)	.	.	.	.	.	.	15	100	(1.08)
Hemp	.	.	18	(2.00)	.	.	.	.	.	.	.	.	.	18	(2.00)
Spring Linseed	.	.	100	(1.00)	.	.	.	.	.	.	.	.	.	100	(1.00)
Triticale	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed potatoes	86	(7.96)	100	(3.90)	53	(1.83)	20	(1.00)	.	.	.	.	79	100	(4.92)
Early potatoes	97	(4.63)	93	(2.59)	5	(1.26)	14	(1.00)	.	.	.	.	80	97	(3.49)
Maincrop potatoes	95	(9.74)	91	(2.86)	16	(1.38)	10	(1.00)	1	(1.00)	.	.	46	100	(5.80)
Total	81	(4.13)	86	(2.22)	57	(1.35)	3	(1.00)	37	(1.19)	1	(1.00)	76	98	(2.54)

Table 8: Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides</i>															
Azoxystrobin	1,253	.	303	157	1,781	54	386	257	.	.	.	49	8	317	4,565
Azoxystrobin/chlorothalonil	572	.	832	.	2,496	.	84	.	8	.	.	.	.	.	3,993
Azoxystrobin/cyproconazole	704	.	395	.	1,433	10	21	.	.	.	.	.	.	.	2,562
Azoxystrobin/fenpropimorph	221	.	229	267	.	.	.	.	.	.	.	.	.	.	716
Benthiavalicarb-isopropyl/Mancozeb	.	.	.	.	.	.	.	.	.	.	.	.	17	368	385
Boscalid/epoxiconazole	137	.	10	281	1,593	.	.	.	.	.	.	.	.	.	2,021
Carbendazim/flusilazole	684	.	1,445	39	423	.	.	47	.	.	.	.	.	.	2,638
Chlorothalonil	4,764	49	2,519	503	9,807	.	520	.	.	.	.	.	.	343	18,506
Chlorothalonil/cyproconazole/propiconazole	494	.	242	9	964	.	.	.	.	.	.	.	.	.	1,709
Chlorothalonil/flusilazole	1,462	54	125	.	.	.	.	.	.	.	.	.	.	.	1,641
Chlorothalonil/flutriafol	.	.	.	.	27	.	.	.	.	.	.	.	.	.	27
Chlorothalonil/picoxystrobin	325	.	504	.	26	.	.	.	.	.	.	.	.	.	855
Chlorothalonil/propamocarbhydrochloride	.	.	.	.	.	.	.	.	.	.	.	148	310	4,980	5,438
Copper oxychloride	.	.	.	.	.	.	.	.	.	.	.	.	.	40	40
Cyazofamid	.	.	.	.	.	.	.	.	.	.	.	.	58	2,031	2,089
Cymoxanil	.	.	.	.	.	.	.	.	.	.	.	.	140	700	841
Cymoxanil/famoxadone	.	.	.	.	.	.	.	.	.	.	.	.	3	16	19
Cymoxanil/mancozeb	.	.	.	.	.	.	.	.	.	.	.	368	146	8,368	8,881
Cymoxanil/propamocarb hydrochloride	87	.	.	.	.	.	.	.	.	.	.	252	.	106	445
Cyproconazole/propiconazole	761	.	775	.	582	.	28	.	.	.	.	.	.	.	2,146
Cyproconazole/trifloxystrobin	36	.	46	.	.	.	.	.	.	.	.	.	.	.	83
Cyprodinil	679	.	276	10	.	.	.	.	.	.	.	.	.	.	965
Cyprodinil/picoxystrobin	101	.	16	.	9	.	.	.	.	.	.	.	.	.	126
Difenoconazole	.	.	40	.	911	.	.	.	.	.	.	.	.	.	951
Epoxiconazole	1,883	112	1,031	858	5,012	85	344	.	.	.	.	.	.	.	9,326
Epoxiconazole/fenpropimorph	530	.	555	82	2,115	43	.	.	.	.	.	.	.	.	3,325
Epoxiconazole/fenpropimorph/kresoxim-methyl	1,041	.	516	.	1,069	120	61	.	.	.	.	.	.	.	2,806
Epoxiconazole/fenpropimorph/metrafenone	414	.	.	380	61	21	753	.	.	.	.	.	.	.	1,629
Epoxiconazole/kresoxim-methyl	113	.	63	.	.	.	82	.	.	.	.	.	.	.	258
Fenamidone/propamocarbhydrochloride	.	.	.	.	.	.	.	.	.	.	.	252	123	229	604
Fenpropidin	394	40	25	.	589	.	.	.	.	.	.	.	.	.	1,048

Table 8 (contd.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides (cont.)</i>															
Fenpropimorph	1,640	.	1,275	364	724	251	915	.	.	.	.	.	.	.	5,169
Fenpropimorph/flusilazole	948	.	191	.	207	.	.	.	.	.	.	.	.	.	1,346
Fenpropimorph/pyraclostrobin	56	112	13	.	45	21	210	.	.	.	.	.	.	.	457
Fenpropimorph/quinoxifen	.	.	.	.	154	.	.	.	.	.	.	.	.	.	154
Fluazinam	.	.	.	.	.	.	.	.	.	.	.	2,821	529	15,265	18,615
Fluazinam/metalaxyl-m	.	.	.	.	.	.	.	.	.	.	.	47	89	809	946
Fluopicolide/ propamocarbhydrochloride	.	.	.	.	.	.	.	.	.	.	.	1,228	459	5,601	7,288
Fluoxastrobin/prothioconazole	1,878	24	1,724	253	1,679	.	.	.	.	.	.	.	.	.	5,559
Fluquinconazole/prochloraz	.	.	.	.	1,876	.	.	.	.	.	.	.	.	.	1,876
Flusilazole	814	.	568	.	14	.	.	.	.	.	.	.	.	.	1,396
Mancozeb	104	.	.	.	119	.	.	.	.	.	.	34	161	3,487	3,905
Mancozeb/metalaxyl-m	.	.	.	.	.	.	.	.	.	.	.	.	3	79	82
Mancozeb/propamocarb hydrochloride	.	.	143	.	.	.	.	.	.	.	.	13	28	462	645
Mancozeb/zoxamide	.	.	.	.	.	.	.	.	.	.	.	.	58	130	188
Mandipropamid	.	.	.	.	.	.	.	.	.	.	.	319	13	834	1,166
Metconazole	.	.	.	.	.	.	.	4	.	.	.	.	.	.	4
Metrafenone	.	.	.	.	44	.	84	.	.	.	.	.	.	.	128
Picoxystrobin	1,998	.	578	.	.	.	67	.	.	.	.	.	.	.	2,643
Propamocarb hydrochloride	.	.	.	.	.	.	.	.	.	.	.	.	.	339	339
Propiconazole/tebuconazole	1,556	.	1,084	91	863	17	89	.	.	.	.	.	.	.	3,701
Proquinazid	190	.	400	.	790	.	97	.	.	.	.	.	.	.	1,477
Prothioconazole	2,663	40	1,089	388	4,249	17	375	241	.	.	.	.	.	.	9,062
Prothioconazole/tebuconazole	.	.	.	82	2,203	.	.	.	.	.	.	.	.	.	2,284
Prothioconazole/trifloxystrobin	1,256	.	922	.	908	39	.	.	.	.	.	.	.	.	3,125
Pyraclostrobin	466	.	245	194	1,804	.	54	.	.	.	.	.	.	.	2,763
Quinoxifen	10	.	47	.	.	10	63	.	.	.	.	.	.	.	130
Tebuconazole	383	40	71	73	3,237	.	239	188	.	.	.	.	.	.	4,231
Trifloxystrobin	246	.	148	.	21	.	.	.	.	.	.	.	.	.	415
Unknown fungicide	.	.	.	.	.	.	.	.	.	.	.	.	8	.	8
All fungicides	30,865	472	18,446	4,028	47,834	687	4,473	737	8	.	.	5,530	2,154	44,505	159,738

Table 8 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides & desiccants</i>															
Amidosulfuron	.	.	40	.	148	.	268	.	.	.	.	.	.	.	457
Amidosulfuron/iodosulfuron-methyl-sodium	571	.	.	86	215	.	.	.	.	.	.	.	.	.	872
Bromoxynil/diflufenican/ioxynil	.	.	12	.	.	.	.	.	.	.	.	.	.	.	12
Bromoxynil/ioxynil	547	.	.	.	27	98	118	.	.	.	.	.	.	.	790
Bromoxynil/ioxynil/mecoprop-P	82	.	.	.	.	.	.	.	.	.	.	.	.	.	82
Carfentrazone-ethyl	.	.	.	.	.	.	.	.	.	.	.	49	145	841	1,036
Carfentrazone-ethyl/flupyr-sulfuron-methyl	.	.	.	.	.	.	490	.	.	.	.	.	.	.	490
Carfentrazone-ethyl/metsulfuron-methyl	171	.	.	.	.	.	.	.	.	.	.	.	.	.	171
Chlorotoluron	.	.	102	.	507	.	.	.	.	.	.	.	.	.	609
Clopyralid/fluroxypyr/triclopyr	63	.	.	.	.	.	.	.	.	.	.	.	.	.	63
Clopyralid/picloram	.	.	.	.	.	.	.	44	.	.	.	.	.	.	44
Cycloxydim	.	.	.	.	.	.	.	.	.	.	.	.	.	25	25
2,4-D	139	.	.	.	.	.	.	.	.	.	.	.	.	.	139
2,4-DB/linuron/MCPA	.	741	.	.	.	.	.	.	.	.	.	.	.	.	741
2,4-DB/MCPA	63	16	.	.	.	.	.	.	.	.	.	.	.	.	79
Dicamba/MCPA/mecoprop-P	680	.	.	82	32	43	42	.	.	.	.	.	.	.	878
Dicamba/mecoprop	130	.	.	.	59	.	32	4	.	.	.	.	.	.	226
Dicamba/mecoprop-P	170	.	212	.	158	.	18	.	.	.	.	.	.	.	558
Dichlorprop-P	121	.	.	.	.	.	.	.	.	.	.	.	.	.	121
Dichlorprop-P/MCPA/mecoprop-P	.	.	.	10	.	2	.	.	.	.	.	.	.	.	12
Diclofop-methyl/fenoxaprop-P-ethyl	49	.	.	.	.	.	.	.	.	.	.	.	.	.	49
Diflufenican	.	.	104	.	217	.	.	.	.	.	.	.	.	.	321
Diflufenican/flufenacet	.	.	644	.	976	.	.	.	.	.	.	.	.	.	1,620
Diflufenican/Isoproturon	.	.	1,017	.	2,380	.	.	.	.	.	.	.	.	.	3,397
Dimethenamid-P/metazachlor/quinmerac	.	.	.	.	.	.	.	29	.	.	.	.	.	.	29
Diquat	17	.	.	.	.	.	.	19	.	.	.	1,643	469	8,287	10,434
Diquat/paraquat	.	.	.	.	.	.	.	.	.	.	.	259	28	335	622
Florasulam/fluroxypyr	1,369	.	521	.	1,049	98	50	.	.	.	.	.	.	.	3,087
Flufenacet/pendimethalin	.	.	49	.	115	.	.	.	.	.	.	.	.	.	163

Table 8 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides & desiccants (cont.)</i>															
Fluroxypyr	2,908	.	638	346	1,081	16	92	.	.	.	.	.	.	.	5,080
Glyphosate	10,674	293	3,961	666	6,346	346	599	480	55	15	2	301	224	1,957	25,919
Iodosulfuron-methyl-sodium	1,199	.	30	142	622	.	.	.	.	.	.	.	.	.	1,993
Iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	17	.	.	.	.	.	.	.	.	.	17
Isoproturon	230	.	3,396	.	6,518	.	.	.	.	.	.	.	.	.	10,144
Isoproturon/pendimethalin	.	.	630	.	1,005	.	.	.	.	.	.	.	.	.	1,636
Isoproturon/trifluralin	.	.	.	.	32	.	.	.	.	.	.	.	.	.	32
Linuron	.	.	.	.	.	.	.	.	.	.	.	173	84	465	723
Linuron/trifluralin	.	.	.	.	.	.	89	.	.	.	.	.	.	.	89
MCPA	935	.	.	.	12	59	.	.	8	.	.	.	.	.	1,014
Mecoprop	2,629	30	323	290	540	38	369	.	.	.	.	.	.	.	4,219
Mecoprop-P	5,252	.	104	347	1,605	32	210	.	.	.	.	.	.	.	7,549
Metazachlor/quinmerac	.	.	.	.	.	.	.	50	.	.	.	.	.	.	50
Metribuzin	.	.	.	.	.	.	.	.	.	.	.	318	211	2,372	2,900
Metsulfuron-methyl	1,611	.	300	388	347	95	235	.	.	.	.	.	.	.	2,976
Metsulfuron-methyl/thifensulfuron-methyl	2,101	.	202	402	705	.	.	.	.	.	.	.	.	.	3,410
Metsulfuron-methyl/tribenuron-methyl	10,319	.	1,023	61	1,229	300	347	.	.	.	.	.	.	.	13,278
Paraquat	.	.	.	.	.	.	.	.	.	.	.	.	38	493	531
Pendimethalin	.	.	414	.	616	.	50	.	.	.	.	.	46	62	1,188
Pendimethalin/picolinafen	.	.	252	.	.	.	.	.	.	.	.	.	.	.	252
Pinoxaden	559	.	599	24	1,065	.	.	.	.	.	.	.	.	.	2,248
Propaquizafop	.	.	.	.	36	.	.	23	.	.	.	.	.	137	196
Propyzamide	.	.	.	.	.	.	.	323	.	.	.	.	.	.	323
Prosulfocarb	.	.	414	.	125	.	.	.	.	.	.	427	.	233	1,199
Rimsulfuron	60	.	.	.	.	.	.	.	.	.	.	.	31	186	278

Table 8 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides & desiccants (cont.)</i>															
Terbuthylazine/terbutryn	.	.	.	.	.	.	.	.	.	.	.	.	5	.	5
Thifensulfuron-methyl/ tribenuron-methyl	456	.	70	.	332	.	.	.	.	.	.	.	.	.	858
Tralkoxydim	88	.	22	.	79	.	.	.	.	.	.	.	.	.	189
Trifluralin	15	.	302	.	290	.	.	.	.	.	.	.	.	.	607
All herbicides & desiccants	43,209	1,080	15,382	2,844	28,486	1,125	3,007	972	63	15	2	3,170	1,280	15,393	116,029
<i>Insecticide</i>															
Alpha-cypermethrin	.	.	.	.	69	.	.	.	.	.	.	.	.	.	69
Bifenthrin	52	.	97	.	265	.	91	25	.	.	.	.	.	.	529
Chlorpyrifos	788	.	52	166	57	101	.	.	.	.	.	.	.	.	1,164
Cypermethrin	1,041	.	867	551	2,117	43	348	.	.	.	.	.	.	.	4,966
Deltamethrin	330	20	152	166	401	.	.	.	.	.	.	.	.	.	1,069
Esfenvalerate	5,972	140	2,711	297	7,363	89	226	.	.	.	.	.	.	121	16,919
Fonicamid	.	.	.	.	.	.	.	.	.	.	.	252	.	.	252
Lambda-cyhalothrin	3,561	.	2,518	173	4,449	62	413	291	8	.	.	168	22	602	12,266
Pirimicarb	.	.	.	.	60	.	67	.	.	.	.	252	.	179	558
Zeta-cypermethrin	78	.	.	22	.	17	.	.	.	.	.	.	.	.	118
All insecticides	11,822	160	6,396	1,375	14,781	312	1,145	316	8	.	.	671	22	902	37,910

Table 8 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Molluscicides</i>															
Metaldehyde	.	.	.	.	46	.	.	33	.	.	.	.	.	.	79
Methiocarb	126	.	163	.	158	.	.	87	.	.	.	160	58	446	1,198
All molluscicides	126	.	163	.	204	.	.	120	.	.	.	160	58	446	1,277
<i>Growth regulators</i>															
Chlormequat	2,758	.	2,477	692	7,595	76	754	.	.	.	.	.	.	.	14,352
Chlormequat with choline chloride	.	.	251	87	379	.	.	.	.	.	.	.	.	.	717
2-chloroethylphosphonic acid	668	.	612	82	1,026	.	.	.	.	.	.	.	.	.	2,388
2-chloroethylphosphonicacid/ mepiquat chloride	94	.	29	.	.	.	.	.	.	.	.	.	.	.	123
Maleic hydrazide	.	.	.	.	.	.	.	.	.	.	.	.	.	23	23
Trinexapac-ethyl	1,612	.	1,801	10	1,276	.	106	.	.	.	.	.	.	.	4,806
All growth regulators	5,133	.	5,170	871	10,276	76	860	.	.	.	.	.	.	23	22,408
<i>Other</i>															
Di-1-P-menthene	.	.	.	.	89	.	.	.	.	.	.	.	.	.	89
Other	.	.	.	.	89	.	.	.	.	.	.	.	.	.	89
<i>Seed treatments</i>															
Beta-cyfluthrin/imidacloprid	.	.	.	.	.	.	.	12	.	.	.	.	.	.	12
Bitertanol/fuberidazole/imidacloprid	.	.	.	.	28	.	.	.	.	.	.	.	.	.	28
Carboxin/thiram	214	.	66	87	178	31	332	.	.	.	.	.	.	.	908
Clothianidin/prothioconazole	255	.	124	.	384	.	117	.	.	.	.	.	.	.	881
Fludioxonil	1,955	147	1,557	868	3,880	207	458	.	.	.	.	.	.	.	9,074
Fludioxonil/flutriafol	1,358	57	628	.	.	194	120	.	.	.	.	.	.	.	2,356

Table 8 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Seed treatments (cont.)</i>															
Fluquinconazole/prochloraz	.	.	.	.	640	.	.	.	.	.	.	.	.	.	640
Flutolanil	.	.	.	.	.	.	.	.	.	.	.	.	87	377	464
Guazatine/imazalil	479	.	12	.	77	.	.	.	.	.	.	.	.	.	568
Imazalil	.	.	.	.	.	.	.	.	.	.	.	287	126	1,130	1,543
Imazalil/pencycuron	.	.	.	.	.	.	.	.	.	.	.	286	12	354	652
Imazalil/thiabendazole	.	.	.	.	.	.	.	.	.	.	.	49	56	270	376
Imazalil/triticonazole	185	24	145	.	8	.	.	.	.	.	.	.	.	.	362
Imidacloprid/tebuconazole/triazoxide	134	.	133	.	156	.	.	.	.	.	.	.	.	.	423
Prochloraz/triticonazole	8,404	390	2,485	342	4,132	68	223	.	.	.	.	.	.	.	16,043
Prothioconazole/tebuconazole/triazoxide	223	.	.	.	.	.	.	.	.	.	.	.	.	.	223
Silthiofam	.	.	65	.	1,529	.	.	.	.	.	.	.	.	.	1,593
Tebuconazole/triazoxide	303	.	165	.	.	.	.	.	.	.	.	.	.	.	468
Thiabendazole	.	.	.	.	.	.	.	.	.	.	.	.	46	78	124
Thiram	.	.	.	.	.	.	.	10	8	.	.	.	.	.	18
<i>All seed treatments</i>	<i>13,510</i>	<i>618</i>	<i>5,380</i>	<i>1,297</i>	<i>11,013</i>	<i>499</i>	<i>1,250</i>	<i>22</i>	<i>8</i>	<i>.</i>	<i>.</i>	<i>622</i>	<i>327</i>	<i>2,209</i>	<i>36,756</i>
<i>All pesticides</i>	<i>104,664</i>	<i>2,331</i>	<i>50,936</i>	<i>10,415</i>	<i>112,683</i>	<i>2,699</i>	<i>10,735</i>	<i>2,167</i>	<i>88</i>	<i>15</i>	<i>2</i>	<i>10,153</i>	<i>3,842</i>	<i>63,478</i>	<i>374,207</i>

Table 9: Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides</i>															
Azoxystrobin	177	.	64	29	312	10	54	39	.	.	.	37	2	100	824
Azoxystrobin/chlorothalonil	487	.	662	.	2,068	.	59	.	6	.	.	.	.	.	3,282
Azoxystrobin/cyproconazole	160	.	107	.	278	3	6	.	.	.	.	.	.	.	553
Azoxystrobin/fenpropimorph	131	.	111	127	.	.	.	.	.	.	.	.	.	.	368
Benthiavalicarb-isopropyl/Mancozeb	.	.	.	.	.	.	.	.	.	.	.	.	48	1,045	1,093
Boscalid/epoxiconazole	44	.	4	55	553	.	.	.	.	.	.	.	.	.	655
Carbendazim/flusilazole	145	.	347	9	127	.	.	7	.	.	.	.	.	.	636
Chlorothalonil	2,332	49	1,210	270	5,252	.	254	.	.	.	.	.	.	207	9,573
Chlorothalonil/cyproconazole/propiconazole	208	.	164	7	574	.	.	.	.	.	.	.	.	.	953
Chlorothalonil/flusilazole	655	23	41	.	.	.	.	.	.	.	.	.	.	.	719
Chlorothalonil/flutriafol	.	.	.	.	14	.	.	.	.	.	.	.	.	.	14
Chlorothalonil/picoxystrobin	216	.	352	.	15	.	.	.	.	.	.	.	.	.	582
Chlorothalonil/propamocarbhydrochloride	.	.	.	.	.	.	.	.	.	.	.	272	516	9,120	9,907
Copper oxychloride	.	.	.	.	.	.	.	.	.	.	.	.	.	99	99
Cyazofamid	.	.	.	.	.	.	.	.	.	.	.	.	5	174	178
Cymoxanil	.	.	.	.	.	.	.	.	.	.	.	.	13	65	78
Cymoxanil/famoxadone	.	.	.	.	.	.	.	.	.	.	.	.	1	6	7
Cymoxanil/mancozeb	.	.	.	.	.	.	.	.	.	.	.	455	208	12,136	12,799
Cymoxanil/propamocarb hydrochloride	39	.	.	.	.	.	.	.	.	.	.	227	.	96	361
Cyproconazole/propiconazole	136	.	161	.	99	.	5	.	.	.	.	.	.	.	401
Cyproconazole/trifloxystrobin	5	.	8	.	.	.	.	.	.	.	.	.	.	.	13
Cyprodinil	142	.	57	2	.	.	.	.	.	.	.	.	.	.	201
Cyprodinil/picoxystrobin	38	.	6	.	3	.	.	.	.	.	.	.	.	.	48
Difenoconazole	.	.	2	.	48	.	.	.	.	.	.	.	.	.	50
Epoxiconazole	206	28	144	115	692	10	28	.	.	.	.	.	.	.	1,224
Epoxiconazole/fenpropimorph	213	.	180	22	522	12	.	.	.	.	.	.	.	.	948

Table 9 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides (cont)</i>															
Epoxiconazole/ fenpropimorph/kresoxim-methyl	240	.	166	.	295	38	17	.	.	.	.	.	.	.	756
Epoxiconazole/fenpropimorph/ metrafenone	145	.	.	198	25	3	354	.	.	.	.	.	.	.	724
Epoxiconazole/kresoxim-methyl	18	.	10	.	.	.	10	.	.	.	.	.	.	.	39
Fenamidon/ propamocarbhydrochloride	.	.	.	.	.	.	.	.	.	.	.	227	111	206	543
Fenpropidin	118	11	6	.	93	.	.	.	.	.	.	.	.	.	227
Fenpropimorph	319	.	446	110	299	147	313	.	.	.	.	.	.	.	1,634
Fenpropimorph/flusilazole	422	.	84	.	55	.	.	.	.	.	.	.	.	.	561
Fenpropimorph/pyraclostrobin	53	106	9	.	27	12	175	.	.	.	.	.	.	.	383
Fenpropimorph/quinoxifen	.	.	.	.	24	.	.	.	.	.	.	.	.	.	24
Fluazinam	.	.	.	.	.	.	.	.	.	.	.	515	100	2,814	3,429
Fluazinam/metalaxyl-m	.	.	.	.	.	.	.	.	.	.	.	11	24	220	255
Fluopicolide/ propamocarbhydrochloride	.	.	.	.	.	.	.	.	.	.	.	1,271	466	5,577	7,314
Fluoxastrobin/prothioconazole	282	6	359	42	383	.	.	.	.	.	.	.	.	.	1,071
Fluquinconazole/prochloraz	.	.	.	.	563	.	.	.	.	.	.	.	.	.	563
Flusilazole	143	.	93	.	3	.	.	.	.	.	.	.	.	.	239
Mancozeb	412	.	.	.	195	.	.	.	.	.	.	55	257	6,332	7,252
Mancozeb/metalaxyl-m	.	.	.	.	.	.	.	.	.	.	.	.	4	104	108
Mancozeb/propamocarb hydrochloride	.	.	314	.	.	.	.	.	.	.	.	28	61	1,006	1,410
Mancozeb/zoxamide	.	.	.	.	.	.	.	.	.	.	.	.	78	186	264
Mandipropamid	.	.	.	.	.	.	.	.	.	.	.	48	2	125	175
Metconazole	.	.	.	.	.	.	.	<1	.	.	.	.	.	.	<1
Metrafenone	.	.	.	.	3	.	5	.	.	.	.	.	.	.	7
Picoxystrobin	181	.	52	.	.	.	8	.	.	.	.	.	.	.	241
Propamocarb hydrochloride	.	.	.	.	.	.	.	.	.	.	.	.	.	342	342
Propiconazole/tebuconazole	515	.	336	22	169	4	18	.	.	.	.	.	.	.	1,064
Proquinazid	7	.	14	.	27	.	4	.	.	.	.	.	.	.	52

Table 9 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides (cont)</i>															
Prothioconazole	238	2	131	27	571	1	48	28	.	.	.	.	.	.	1,045
Prothioconazole/tebuconazole	.	.	.	20	441	.	.	.	.	.	.	.	.	.	461
Prothioconazole/trifloxystrobin	201	.	217	.	197	6	.	.	.	.	.	.	.	.	622
Pyraclostrobin	67	.	27	15	215	.	4	.	.	.	.	.	.	.	328
Quinoxifen	1	.	3	.	.	1	6	.	.	.	.	.	.	.	12
Tebuconazole	72	10	18	8	354	.	35	42	.	.	.	.	.	.	539
Trifloxystrobin	32	.	13	.	<1	.	.	.	.	.	.	.	.	.	45
Unknown fungicide	.	.	.	.	.	.	.	.	.	.	.	.	20	.	20
All fungicides	8,799	234	5,918	1,076	14,496	247	1,403	116	6	.	.	3,144	1,915	39,960	77,316
<i>Herbicides & desiccants</i>															
Amidosulfuron	.	.	<1	.	2	.	10	.	.	.	.	.	.	.	12
Amidosulfuron/iodosulfuron-methyl-sodium	7	.	.	1	4	.	.	.	.	.	.	.	.	.	12
Bromoxynil/diflufenican/ioxynil	.	.	6	.	.	.	.	.	.	.	.	.	.	.	6
Bromoxynil/ioxynil	319	.	.	.	11	44	48	.	.	.	.	.	.	.	422
Bromoxynil/ioxynil/mecoprop-P	86	.	.	.	.	.	.	.	.	.	.	.	.	.	86
Carfentrazone-ethyl	.	.	.	.	.	.	.	.	.	.	.	1	5	20	26
Carfentrazone-ethyl/flupyr-sulfuron-methyl	.	.	.	.	.	.	13	.	.	.	.	.	.	.	13
Carfentrazone-ethyl/metsulfuron-methyl	3	.	.	.	.	.	.	.	.	.	.	.	.	.	3
Chlorotoluron	.	.	307	.	1,599	.	.	.	.	.	.	.	.	.	1,906
Clopyralid/fluroxypyr/triclopyr	26	.	.	.	.	.	.	.	.	.	.	.	.	.	26
Clopyralid/picloram	.	.	.	.	.	.	.	5	.	.	.	.	.	.	5
Cycloxydim	.	.	.	.	.	.	.	.	.	.	.	.	.	12	12
2,4-D	49	.	.	.	.	.	.	.	.	.	.	.	.	.	49
2,4-DB/linuron/MCPA	.	742	.	.	.	.	.	.	.	.	.	.	.	.	742
2,4-DB/MCPA	126	33	.	.	.	.	.	.	.	.	.	.	.	.	159
Dicamba/MCPA/mecoprop-P	1,092	.	.	100	31	97	52	.	.	.	.	.	.	.	1,372

Table 9 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides & desiccants (cont)</i>															
Dicamba/mecoprop	70	.	.	.	25	.	14	2	.	.	.	.	.	.	111
Dicamba/mecoprop-P	73	.	327	.	174	.	15	.	.	.	.	.	.	.	589
Dichlorprop-P	112	.	.	.	.	.	.	.	.	.	.	.	.	.	112
Dichlorprop-P/MCPA/mecoprop-P	.	.	.	12	.	2	.	.	.	.	.	.	.	.	14
Diclofop-methyl/fenoxaprop-P-ethyl	26	.	.	.	.	.	.	.	.	.	.	.	.	.	26
Diflufenican	.	.	35	.	90	.	.	.	.	.	.	.	.	.	125
Diflufenican/flufenacet	.	.	134	.	180	.	.	.	.	.	.	.	.	.	315
Diflufenican/Isoproturon	.	.	938	.	1,576	.	.	.	.	.	.	.	.	.	2,514
Dimethenamid-P/metazachlor/quinmerac	.	.	.	.	.	.	.	36	.	.	.	.	.	.	36
Diquat	3	.	.	.	.	.	.	12	.	.	.	759	174	3,357	4,305
Diquat/paraquat	.	.	.	.	.	.	.	.	.	.	.	104	14	183	300
Florasulam/fluroxypyr	148	.	44	.	103	11	3	.	.	.	.	.	.	.	309
Flufenacet/pendimethalin	.	.	69	.	137	.	.	.	.	.	.	.	.	.	207
Fluroxypyr	327	.	81	53	188	2	9	.	.	.	.	.	.	.	660
Glyphosate	9,173	397	3,317	766	5,802	377	524	492	53	13	1	383	242	1,843	23,384
Iodosulfuron-methyl-sodium	9	.	0	1	5	.	.	.	.	.	.	.	.	.	15
Iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	0	.	.	.	.	.	.	.	.	.	0
Isoproturon	339	.	3,556	.	7,726	.	.	.	.	.	.	.	.	.	11,620
Isoproturon/pendimethalin	.	.	933	.	1,331	.	.	.	.	.	.	.	.	.	2,264
Isoproturon/trifluralin	.	.	.	.	81	.	.	.	.	.	.	.	.	.	81
Linuron	.	.	.	.	.	.	.	.	.	.	.	100	74	267	440
Linuron/trifluralin	.	.	.	.	.	.	97	.	.	.	.	.	.	.	97
MCPA	1,043	.	.	.	12	103	.	.	9	.	.	.	.	.	1,167
Mecoprop	1,665	17	206	239	322	11	365	.	.	.	.	.	.	.	2,825
Mecoprop-P	5,004	.	105	297	1,713	36	177	.	.	.	.	.	.	.	7,332
Metazachlor/quinmerac	.	.	.	.	.	.	.	50	.	.	.	.	.	.	50
Metribuzin	.	.	.	.	.	.	.	.	.	.	.	211	145	1,855	2,211
Metsulfuron-methyl	9	.	2	2	2	<1	2	.	.	.	.	.	.	.	16

Table 9 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides & desiccants (cont)</i>															
Metsulfuron-methyl/thifensulfuron-methyl	60	.	6	17	26	.	.	.	.	.	.	.	.	.	109
Metsulfuron-methyl/tribenuron-methyl	123	.	11	1	12	3	6	.	.	.	.	.	.	.	155
Paraquat	.	.	.	.	.	.	.	.	.	.	.	.	15	178	193
Pendimethalin	.	.	261	.	524	.	49	.	.	.	.	.	60	82	977
Pendimethalin/picolinafen	.	.	170	.	.	.	.	.	.	.	.	.	.	.	170
pinoxaden	25	.	24	1	40	.	.	.	.	.	.	.	.	.	90
Propaquizafop	.	.	.	.	1	.	.	2	.	.	.	.	.	17	20
Propyzamide	.	.	.	.	.	.	.	211	.	.	.	.	.	.	211
Prosulfocarb	.	.	696	.	187	.	.	.	.	.	.	1,323	.	787	2,993
Rimsulfuron	1	.	.	.	.	.	.	.	.	.	.	.	<1	2	3
Terbuthylazine/terbutryn	.	.	.	.	.	.	.	.	.	.	.	.	8	.	8
Thifensulfuron-methyl/ tribenuron-methyl	14	.	2	.	7	.	.	.	.	.	.	.	.	.	23
Tralkoxydim	33	.	6	.	30	.	.	.	.	.	.	.	.	.	68
Trifluralin	15	.	278	.	294	.	.	.	.	.	.	.	.	.	587
<i>All herbicides & desiccants</i>	<i>19,979</i>	<i>1,190</i>	<i>11,512</i>	<i>1,490</i>	<i>22,235</i>	<i>686</i>	<i>1,383</i>	<i>810</i>	<i>62</i>	<i>13</i>	<i>1</i>	<i>2,880</i>	<i>738</i>	<i>8,603</i>	<i>71,582</i>
<i>Insecticides</i>															
Alpha-cypermethrin	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Bifenthrin	<1	.	<1	.	7	.	<1	<1	.	.	.	.	.	.	9
Chlorpyrifos	515	.	38	119	41	72	.	.	.	.	.	.	.	.	786
Cypermethrin	26	.	21	14	52	1	9	.	.	.	.	.	.	.	123
Deltamethrin	2	<1	1	1	2	.	.	.	.	.	.	.	.	.	5
Esfenvalerate	26	1	11	1	31	<1	1	.	.	.	.	.	.	<1	72
Flonicamid	.	.	.	.	.	.	.	.	.	.	.	20	.	.	20
Lambda-cyhalothrin	18	.	13	9	24	<1	2	11	<1	.	.	2	<1	5	83
Pirimicarb	.	.	.	.	6	.	8	.	.	.	.	35	.	25	75
Zeta-cypermethrin	1	.	.	<1	.	<1	.	.	.	.	.	.	.	.	2
<i>All insecticides</i>	<i>588</i>	<i>1</i>	<i>84</i>	<i>145</i>	<i>164</i>	<i>74</i>	<i>21</i>	<i>11</i>	<i><1</i>	<i>.</i>	<i>.</i>	<i>57</i>	<i>0</i>	<i>30</i>	<i>1,176</i>

Table 9 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Molluscicides</i>															
Metaldehyde	.	.	.	.	14	.	.	16	.	.	.	.	.	.	31
Methiocarb	16	.	15	.	23	.	.	11	.	.	.	13	4	57	138
<i>All molluscicides</i>	<i>16</i>	<i>.</i>	<i>15</i>	<i>.</i>	<i>38</i>	<i>.</i>	<i>.</i>	<i>27</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>13</i>	<i>4</i>	<i>57</i>	<i>169</i>
<i>Growth Regulators</i>															
Chloromequat	2,042	.	2,405	497	9,095	66	972	.	.	.	.	.	.	.	15,076
Chloromequat with choline chloride	.	.	374	139	481	.	.	.	.	.	.	.	.	.	994
2-chloroethylphosphonic acid	85	.	139	8	166	.	.	.	.	.	.	.	.	.	398
2-chloroethylphosphonicacid/ mepiquat chloride	65	.	18	.	.	.	.	.	.	.	.	.	.	.	83
Maleic hydrazide	.	.	.	.	.	.	.	.	.	.	.	.	.	69	69
Trinexapac-ethyl	107	.	198	0	71	.	4	.	.	.	.	.	.	.	381
<i>All growth regulators</i>	<i>2,299</i>	<i>.</i>	<i>3,134</i>	<i>644</i>	<i>9,814</i>	<i>66</i>	<i>977</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>69</i>	<i>17,001</i>
<i>Other</i>															
Di-1-P-menthene	.	.	.	.	14	.	.	.	.	.	.	.	.	.	14
<i>Other</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>14</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>14</i>
<i>Seed treatments</i>															
Beta-cyfluthrin/imidacloprid	.	.	.	.	.	.	.	<1	.	.	.	.	.	.	<1
Bitertanol/fuberidazole/imidacloprid	.	.	.	.	3	.	.	.	.	.	.	.	.	.	3
Carboxin/thiram	46	.	14	21	34	6	62	.	.	.	.	.	.	.	183
Clothianidin/prothioconazole	28	.	12	.	36	.	11	.	.	.	.	.	.	.	87
Fludioxonil	18	1	13	8	34	2	4	.	.	.	.	.	.	.	80
Fludioxonil/flutriafol	2	<1	1	.	.	<1	<1	.	.	.	.	.	.	.	4
Fluquinconazole/prochloraz	.	.	.	.	96	.	.	.	.	.	.	.	.	.	96

Table 9 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland in 2008.

Pesticide type & formulation	Spring barley	Undersown barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Hemp	Spring Linseed	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Seed treatments (contd.)</i>															
Flutolanil	.	.	.	.	.	.	.	.	.	.	.	.	60	96	155
Guazatine/imazalil	59	.	2	.	9	.	.	.	.	.	.	.	.	.	70
Imazalil	.	.	.	.	.	.	.	.	.	.	.	12	4	54	71
Imazalil/pencycuron	.	.	.	.	.	.	.	.	.	.	.	152	8	202	363
Imazalil/thiabendazole	.	.	.	.	.	.	.	.	.	.	.	8	6	39	54
Imazalil/triticonazole	3	<1	2	.	0	.	.	.	.	.	.	.	.	.	6
Imidacloprid/tebuconazole/triazoxide	10	.	8	.	7	.	.	.	.	.	.	.	.	.	26
Prochloraz/triticonazole	245	12	67	10	116	2	5	.	.	.	.	.	.	.	457
Prothioconazole/tebuconazole/ triazoxide	5	.	.	.	.	.	.	.	.	.	.	.	.	.	5
Silthiofam	.	.	3	.	61	.	.	.	.	.	.	.	.	.	64
Tebuconazole/triazoxide	3	.	1	.	.	.	.	.	.	.	.	.	.	.	5
Thiabendazole	.	.	.	.	.	.	.	.	.	.	.	.	31	52	83
Thiram	.	.	.	.	.	.	.	<1	5	.	.	.	.	.	6
<i>All seed treatments</i>	<i>419</i>	<i>14</i>	<i>123</i>	<i>40</i>	<i>397</i>	<i>10</i>	<i>83</i>	<i><1</i>	<i>5</i>	<i>.</i>	<i>.</i>	<i>173</i>	<i>110</i>	<i>443</i>	<i>1,817</i>
<i>All pesticides</i>	<i>32,100</i>	<i>1,439</i>	<i>20,787</i>	<i>3,394</i>	<i>47,156</i>	<i>1,084</i>	<i>3,867</i>	<i>964</i>	<i>73</i>	<i>13</i>	<i>1</i>	<i>6,267</i>	<i>2,768</i>	<i>49,162</i>	<i>169,075</i>

Table 10: The fifty active ingredients most extensively used on arable crops in Northern Ireland in 2008, ranked by area treated (spray-hectares).

	Active ingredient	Treated area (sp ha)
1	Chlorothalonil	32,169.8
2	Glyphosate	25,919.2
3	Prothioconazole	20,030.5
4	Metsulfuron-methyl	19,835.5
5	Fluazinam	19,560.5
6	Epoxiconazole	19,364.0
7	Esfenvalerate	16,918.8
8	Fenpropimorph	15,600.3
9	Isoproturon	15,208.5
1	Propamocarb hydrochloride	14,758.5
0		
1	Chlormequat	14,351.7
1		
1	Tribenuron-methyl	14,135.8
2		
1	Mancozeb	14,087.0
3		
1	Lambda-cyhalothrin	12,265.8
4		
1	Azoxystrobin	11,835.8
5		
1	Diquat	11,055.8
6		
1	Tebuconazole	10,216.9
7		
1	Cymoxanil	10,186.3
8		
1	Mecoprop-P	9,078.5
9		
2	Fluroxypyr	8,230.2
0		
2	Propiconazole	7,556.5
1		
2	Fluopicolide	7,287.6
2		
2	Flusilazole	7,020.6
3		
2	Cyproconazole	6,500.1
4		
2	Fluoxastrobin	5,558.9
5		
2	Diflufenican	5,349.5
6		
2	Cypermethrin	4,966.5
7		
2	Trinexapac-ethyl	4,806.0
8		
2	Mecoprop	4,444.5
9		
3	Thifensulfuron-methyl	4,268.0
0		
3	Picoxystrobin	3,624.0
1		

3	Trifloxystrobin	3,622.7
2		
3	Pendimethalin	3,239.0
3		
3	Pyraclostrobin	3,219.8
4		
3	Florasulam	3,086.8
5		
3	Kresoxim-methyl	3,063.5
6		
3	Metribuzin	2,899.7
7		
3	Iodosulfon-methyl-Sodium	2,882.3
8		
3	MCPA	2,725.2
9		
4	Carbendazim	2,637.6
0		
4	2-chloroethylphosphonic acid	2,510.9
1		
4	Pinoxaden	2,247.7
2		
4	Cyazofamid	2,088.8
3		
4	Boscalid	2,021.0
4		
4	Fluquinconazole	1,876.1
5		
4	Prochloraz	1,876.1
6		
4	Flufenacet	1,783.6
7		
4	Metrafenone	1,756.4
8		
4	Carfentrazone-ethyl	1,697.3
9		
5	Dicamba	1,661.8
0		

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Table 11: The fifty active ingredients most extensively used on arable crops in Northern Ireland in 2008, ranked by weight (kilograms).

	Active ingredient	Quantity (kg)
1	Glyphosate	23,384.4
2	Mancozeb	21,422.7
3	Chlorothalonil	18,997.9
4	Chlormequat	15,076.3
5	Isoproturon	14,644.8
6	Propamocarb hydrochloride	13,354.4
7	Mecoprop-P	8,107.1
8	Diquat	4,425.3
9	Fenpropimorph	4,042.0
10	Fluazinam	3,598.7
11	Prosulfocarb	2,992.7
12	Mecoprop	2,928.9
13	Pendimethalin	2,819.9
14	MCPA	2,376.2
15	Metribuzin	2,211.2
16	Prothioconazole	2,169.3
17	Epoxiconazole	1,998.9
18	Chlorotoluron	1,905.6
19	Azoxystrobin	1,863.2
20	Tebuconazole	1,301.6
21	Flusilazole	1,035.5
22	Chlormequat with choline chloride	994.3
23	Fluroxypyr	970.2
24	Cymoxanil	925.7
25	Propiconazole	903.2
26	Chlorpyrifos	785.8
27	2,4-DB	718.5
28	Trifluralin	684.1
29	Fluopicolide	664.9
30	Linuron	552.0
31	Fluoxastrobin	535.7
32	Diflufenican	520.1
33	Boscalid	508.8
34	Prochloraz	429.7
35	2-chloroethylphosphonic acid	425.7
36	Cyproconazole	419.7
37	Pyraclostrobin	408.7
38	Trinexapac-ethyl	381.0
39	Paraquat	372.7
40	Picoxystrobin	348.3
41	Trifloxystrobin	317.1
42	Kresoxim-methyl	255.7
43	Flufenacet	246.9
44	Cyprodinil	239.1
45	Bromoxynil	228.4
46	loxynil	227.4
47	Fenpropidin	227.2
48	Carbendazim	211.8
49	Propyzamide	210.8
50	Cyazofamid	178.3

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

Pesticide type & formulation	Mildew	General Disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>					
Azoxystrobin	.	1253	1253	1151	177
Azoxystrobin/chlorothalonil	.	572	572	572	487
Azoxystrobin/cyproconazole	.	704	704	704	160
Azoxystrobin/fenpropimorph	.	221	221	151	131
Boscalid/epoxiconazole	.	137	137	137	44
Carbendazim/flusilazole	.	684	684	554	145
Chlorothalonil	.	4764	4764	3903	2332
Chlorothalonil/cyproconazole/propiconazole	.	494	494	494	208
Chlorothalonil/flusilazole	.	1462	1462	1431	655
Chlorothalonil/picoxystrobin	.	325	325	325	216
Cymoxanil/propamocarb hydrochloride	.	87	87	87	39
Cyproconazole/propiconazole	.	761	761	761	136
Cyproconazole/trifloxystrobin	.	36	36	36	5
Cyprodinil	.	679	679	636	143
Cyprodinil/picoxystrobin	.	101	101	101	38
Epoxiconazole	.	1883	1883	1795	206
Epoxiconazole/fenpropimorph	.	530	530	448	213
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	1041	1041	978	240
Epoxiconazole/fenpropimorph/metrafenone	.	414	414	414	145
Epoxiconazole/kresoxim-methyl	.	113	113	113	18
Fenpropidin	90	304	394	290	118
Fenpropimorph	.	1640	1640	1247	319
Fenpropimorph/flusilazole	.	948	948	948	422
Fenpropimorph/pyraclostrobin	.	56	56	56	53
Fluoxastrobin/prothioconazole	.	1878	1878	1398	282
Flusilazole	.	814	814	814	143
Mancozeb	.	104	104	104	412
Picoxystrobin	.	1998	1998	1036	181
Propiconazole/tebuconazole	.	1556	1556	1356	515
Proquinazid	.	190	190	190	7

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

Pesticide type & formulation	Mildew	General Disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides (contd.)</i>					
Prothioconazole	.	2663	2663	1654	238
Prothioconazole/trifloxystrobin	.	1256	1256	1053	201
Pyraclostrobin	.	466	466	466	67
Quinoxifen	.	11	11	11	1
Tebuconazole	.	383	383	252	72
Trifloxystrobin	.	246	246	218	32
<i>All fungicides</i>	<i>89.9</i>	<i>30774.7</i>	<i>30,864.60</i>	<i>25,881.60</i>	<i>8,799.50</i>

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

Pesticide type & formulation	General Weed control	Cleavers	Desiccation	Fat hen	Ground preparation	Chick-weed	Corn marigold	Volunteer potatoes	Wild oats	Nettles	General disease control	Fumitory	Red Dead nettle	Volunteer oil seed rape	May weed	Head-lands	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>																			
Amidosulfuron/iodosulfuron-methyl-sodium	571	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	571	526	7
Bromoxynil/ioxynil	498	.	.	.	.	.	.	.	.	.	.	.	49	.	.	.	547	547	319
Bromoxynil/ioxynil/mecoprop-P	70	.	.	.	.	.	.	.	.	12	.	.	.	.	.	.	82	82	86
Carfentrazone-ethyl/metsulfuron-methyl	171	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	171	171	3
Clopyralid/fluroxypyr/triclopyr	63	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	63	63	26
2,4-D	140	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	140	140	49
2,4-DB/MCPA	63	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	63	63	126
Dicamba/MCPA/mecoprop-P	617	.	.	.	63	.	.	.	.	.	.	.	.	.	.	.	680	680	1092
Dicamba/mecoprop	130	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	130	130	70
Dicamba/mecoprop-P	170	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	170	170	73
Dichlorprop-P	32	.	.	.	.	.	.	.	.	.	.	90	.	.	.	.	121	121	112
Diclofop-methyl/fenoxaprop-P-ethyl	.	.	.	.	.	.	.	.	49	.	.	.	.	.	.	.	49	49	26
Diquat	.	.	17	.	.	.	.	.	.	.	.	.	.	.	.	.	17	17	3
Florasulam/fluroxypyr	866	80	.	.	.	384	.	.	.	.	.	.	.	.	.	40	1369	1369	148
Fluroxypyr	1813	383	.	.	52	516	3	20	.	.	.	.	121	.	.	.	2908	2708	327
Glyphosate	110	.	5035	.	5524	.	.	.	.	.	.	.	.	.	.	6	10674	9311	9173
Iodosulfuron-methyl-sodium	1124	.	.	.	.	.	.	.	75	.	.	.	.	.	.	.	1199	1170	9
Isoproturon	215	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.	230	181	339
MCPA	935	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	935	914	1043
Mecoprop	2235	84	.	.	.	152	.	.	.	.	.	158	.	.	.	.	2629	2540	1665
Mecoprop-P	4860	.	.	81	.	311	.	.	.	.	.	.	.	.	.	.	5252	5076	5004
Metsulfuron-methyl	1611	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1319	1319	7
Metsulfuron-methyl/thifensulfuron-methyl	1968	.	.	.	.	.	87	11	.	.	.	.	.	.	.	.	2065	2050	58
Metsulfuron-methyl/thifensulfuron-methyl	36	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	36	36	2

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

Pesticide type & formulation	General weed	Cleavers	Desic-cation	Fat hen	Ground	Chick-weed	Corn	Volunteer potatoes	Wild oats	Nettles	General disease control	Fumi-tory	Red dead nettle	Volunteer oil seed rape	May-weed	Head-lands	All reasons	Basic area (ha) of treatment	Quantity (kgs)
	control				Prepar-ation		Mari-gold												
Metsulfuron-methyl/tribenuron-methyl	10319	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10319	9904	123
Pinoxaden	164	.	.	.	.	.	.	.	396	.	.	.	.	.	.	.	559	559	25
Rimsulfuron	.	.	.	.	.	.	.	.	.	.	52	.	.	8	.	.	60	60	1
Thifensulfuron-methyl/tribenuron-methyl	456	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	456	456	14
Tralkoxydim	.	.	.	.	.	.	.	.	88	.	.	.	.	.	.	.	88	88	33
Trifluralin	.	.	.	.	15	.	.	.	.	.	.	.	.	.	.	.	15	15	15
<i>All Herbicides & desiccants</i>	<i>29235.5</i>	<i>546.8</i>	<i>5,051.0</i>	<i>80.8</i>	<i>5,669.40</i>	<i>1,363.0</i>	<i>90.1</i>	<i>30</i>	<i>607.4</i>	<i>11.9</i>	<i>52.4</i>	<i>247.4</i>	<i>169.8</i>	<i>7.8</i>	<i>39.5</i>	<i>6.2</i>	<i>43,208.8</i>	<i>40,806.0</i>	<i>19,979.4</i>

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

Pesticide type & formulation	Aphids	Leatherjackets	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>						
Bifenthrin	52	.	.	52	52	0.3
Chlorpyrifos	16	724	49	788	755	516
Cypermethrin	1041	.	.	1041	911	26
Deltamethrin	330	.	.	330	330	1.5
Esfenvalerate	5972	.	.	5972	5631	26
Lambda-cyhalothrin	3561	.	.	3561	3213	18
Zeta-cypermethrin	78	.	.	78	78	1.2
<i>All insecticides</i>	<i>11049.6</i>	<i>723.7</i>	<i>49</i>	<i>11,822.30</i>	<i>10,970.70</i>	<i>588.3</i>
Pesticide type & formulation		Slugs		All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Molluscicides</i>						
Methiocarb		126		126	126	15.7
<i>All molluscicides</i>		<i>126</i>		<i>126</i>	<i>126</i>	<i>15.7</i>

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

Pesticide type & formulation	Growth regulation	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Growth regulators</i>					
Chlormequat	2,758.50	.	2,758.50	2,675.70	2,041.60
2-chloroethylphosphonic acid	668	.	668	668	84.7
2-chloroethylphosphonic acid/mepiquat chloride	94	.	94	94	64.9
Trinexapac-ethyl	1,534.00	78.4	1,612.40	1,534.00	107.3
<i>All growth regulators</i>	<i>5,054.50</i>	<i>78.4</i>	<i>5,132.90</i>	<i>4,971.80</i>	<i>2,298.50</i>

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

Pesticide type & formulation	General weed control	Aphids	Ground preparation	Redshank	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>								
Chlorothalonil	.	.	.	.	48.8	48.8	48.8	48.8
Chlorothalonil/flusilazole	.	.	.	.	54.4	54.4	54.4	22.8
Epoxiconazole	.	.	.	.	111.7	111.7	111.7	27.9
Fenpropidin	.	.	.	.	40.4	40.4	20.2	10.6
Fenpropimorph/pyraclostrobin	.	.	.	.	111.7	111.7	111.7	106.1
Fluoxastrobin/prothioconazole	.	.	.	.	24.5	24.5	24.5	6.1
Prothioconazole	.	.	.	.	40.4	40.4	20.2	2
Tebuconazole	.	.	.	.	40.4	40.4	20.2	10.1
<i>All fungicides</i>	.	.	.	.	<i>472.3</i>	<i>472.3</i>	<i>411.6</i>	<i>234.5</i>
<i>Herbicides & desiccants</i>								
2,4-DB/linuron/MCPA	663.7	.	.	77.7	.	741.4	741.4	742.5
2,4-DB/MCPA	16.4	.	.	.	.	16.4	16.4	33.1
Glyphosate	.	.	292.8	.	.	292.8	292.8	397.3
Mecoprop	29.9	.	.	.	.	29.9	29.9	16.7
<i>All herbicides & desiccants</i>	<i>710</i>	.	<i>292.8</i>	<i>77.7</i>	.	<i>1,080.50</i>	<i>1,080.50</i>	<i>1,189.70</i>
<i>Insecticides</i>								
Deltamethrin	.	20.2	.	.	.	20.2	20.2	0
Esfenvalerate	.	139.8	.	.	.	139.8	139.8	0.6
<i>All insecticides</i>	.	<i>160</i>	.	.	.	<i>160</i>	<i>160</i>	<i>0.7</i>

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

Pesticide type & formulation	Mildew	Net blotch	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>						
Azoxystrobin	.	.	302.7	302.7	302.7	64.4
Azoxystrobin/chlorothalonil	.	.	832.5	832.5	534.1	662.3
Azoxystrobin/cyproconazole	.	.	394.7	394.7	332.5	106.8
Azoxystrobin/fenpropimorph	.	.	228.6	228.6	138.9	111
Boscalid/epoxiconazole	.	.	10	10	10	3.7
Carbendazim/flusilazole	.	.	1,444.80	1,444.80	1,252.70	347.4
Chlorothalonil	.	.	2,519.00	2,519.00	1,877.50	1,209.90
Chlorothalonil/cyproconazole/propiconazole	.	.	242.2	242.2	242.2	163.6
Chlorothalonil/flusilazole	.	.	124.5	124.5	124.5	41
Chlorothalonil/picoxystrobin	.	.	504.4	504.4	268.8	351.6
Cyproconazole/propiconazole	.	.	774.9	774.9	678.2	160.8
Cyproconazole/trifloxystrobin	.	.	46.4	46.4	32.5	8
Cyprodinil	.	.	276	276	263.6	57.2
Cyprodinil/picoxystrobin	.	.	15.8	15.8	15.8	6
Difenoconazole	.	.	39.5	39.5	39.5	2
Epoxiconazole	.	.	1,031.40	1,031.40	907.1	144.4
Epoxiconazole/fenpropimorph	.	.	555.2	555.2	523.3	180
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	515.7	515.7	485.7	166
Epoxiconazole/kresoxim-methyl	.	.	63.4	63.4	63.4	10.3
Fenpropidin	.	.	25	25	12.5	6.1
Fenpropimorph	20	.	1,255.50	1,275.50	1,096.60	445.9
Fenpropimorph/flusilazole	.	.	191.4	191.4	161.4	84.1
Fenpropimorph/pyraclostrobin	.	13.3	.	13.3	13.3	9.5
Fluoxastrobin/prothioconazole	.	.	1,723.90	1,723.90	1,198.90	358.5
Flusilazole	.	.	568.4	568.4	568.4	93
Mancozeb/propamocarb hydrochloride	.	.	142.7	142.7	142.7	313.7
Picoxystrobin	.	.	578	578	397.2	52

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

Pesticide type & formulation	Mildew	Net blotch	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides (contd.)</i>						
Propiconazole/tebuconazole	.	.	1,084.20	1,084.20	682.3	336.4
Proquinazid	.	.	399.9	399.9	399.9	14.4
Prothioconazole	.	.	1,089.00	1,089.00	657.9	130.6
Prothioconazole/trifloxystrobin	.	.	921.9	921.9	921.9	216.8
Pyraclostrobin	.	.	245.3	245.3	234.4	27.1
Quinoxifen	.	.	46.6	46.6	46.6	3.3
Tebuconazole	.	.	70.8	70.8	70.8	17.7
Trifloxystrobin	.	.	148.2	148.2	102.1	12.8
<i>All fungicides</i>	<i>20</i>	<i>13.3</i>	<i>18412.6</i>	<i>18,445.90</i>	<i>14,800.00</i>	<i>5,918.30</i>

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

Pesticide type & formulation	General weed control	Cleavers	Desiccation	Ground preparation	Chickweed	Corn marigold	Wild oats	Headlands	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>											
Amidosulfuron	40.4	.	.	.	.	.	.	.	40.4	40.4	0.3
Bromoxynil/diflufenican/ioxynil	12	.	.	.	.	.	.	.	12	12	5.6
Chlorotoluron	102.2	.	.	.	.	.	.	.	102.2	102.2	306.7
Dicamba/mecoprop-P	212.4	.	.	.	.	.	.	.	212.4	212.4	326.9
Diflufenican	88.4	15.5	.	.	.	.	.	.	104	104	34.7
Diflufenican/flufenacet	623.2	.	.	.	.	.	.	.	623.2	623.2	131.3
Diflufenican/flufenacet	12.5	.	.	8.2	.	.	.	.	20.7	20.7	3.1
Diflufenican/Isoproturon	1,008.60	.	.	8.2	.	.	.	.	1,016.80	1,016.80	938.1
Florasulam/fluroxypyr	114	276.9	.	.	.	129.9	.	.	520.9	440.3	43.9
Flufenacet/pendimethalin	48.8	.	.	.	.	.	.	.	48.8	48.8	69.3
Fluroxypyr	295.6	273.9	.	.	68.4	.	.	.	637.8	637.8	81
Glyphosate	8.2	.	2249.5	1,649.90	.	.	.	53.5	3,961.10	3,310.00	3,316.80
Iodosulfuron-methyl-sodium	30	.	.	.	.	.	.	.	30	30	0.2
Isoproturon	3,239.10	.	.	157.3	.	.	.	.	3,396.40	3,281.90	3,555.80
Isoproturon/pendimethalin	577.7	.	.	52.5	.	.	.	.	630.2	630.2	932.7
Mecoprop	323.2	.	.	.	.	.	.	.	323.2	323.2	205.6
Mecoprop-P	104.2	.	.	.	.	.	.	.	104.2	104.2	105.3
Metsulfuron-methyl	299.8	.	.	.	.	.	.	.	299.8	299.8	1.7
Metsulfuron-methyl/thifensulfuron-methyl	202.2	.	.	.	.	.	.	.	202.2	202.2	6.3
Metsulfuron-methyl/tribenuron-methyl	1,022.60	.	.	.	.	.	.	.	1,022.60	1,017.80	10.5
Pendimethalin	414.1	.	.	.	.	.	.	.	414.1	414.1	261.3
Pendimethalin/picolinafen	252.3	.	.	.	.	.	.	.	252.3	252.3	169.5
Pinoxaden	25.4	.	.	.	.	.	573.3	.	598.7	598.7	24.2
Prosulfocarb	414	.	.	.	.	.	.	.	414	394	695.6

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

Pesticide type & formulation	General weed control	Cleavers	Desiccation	Ground preparation	Chickweed	Corn marigold	Wild oats	Headlands	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants (contd.)</i>											
Thifensulfuron-methyl/tribenuron-methyl	69.7	.	.	.	.	.	.	.	69.7	69.7	2.1
Tralkoxydim	.	.	.	.	.	.	22.2	.	22.2	22.2	5.5
Trifluralin	253.5	.	.	48	.	.	.	.	301.5	257.9	278.3
<i>All herbicides & desiccants</i>	<i>9,794.3</i>	<i>566.3</i>	<i>2249.5</i>	<i>1,924.20</i>	<i>68.4</i>	<i>129.9</i>	<i>595.5</i>	<i>53.5</i>	<i>15,381.6</i>	<i>14,467.00</i>	<i>11,512.3</i>

Pesticide type & formulation	Aphids	Leatherjackets	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>					
Bifenthrin	96.5	.	96.5	96.5	0.5
Chlorpyrifos	.	52.2	52.2	52.2	37.6
Cypermethrin	867.4	.	867.4	483.3	21.2
Deltamethrin	151.6	.	151.6	80.8	0.8
Esfenvalerate	2,710.80	.	2,710.80	2,333.30	11.1
Lambda-cyhalothrin	2,517.90	.	2,517.90	1,922.30	13.3
<i>All insecticides</i>	<i>6,344.20</i>	<i>52.2</i>	<i>6,396.40</i>	<i>4,968.40</i>	<i>84.5</i>

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

		All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Molluscicides</i>	Slugs			
Methiocarb	162.7	162.7	162.7	14.8
<i>All molluscicides</i>	162.7	162.7	162.7	14.8
	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Growth regulators</i>				
Chlormequat	2,476.60	2,476.60	2,279.40	2,404.80
Chlormequat with choline chloride	250.9	250.9	250.9	374.1
2-chloroethylphosphonic acid	611.8	611.8	611.8	139.4
2-chloroethylphosphonic acid/mepiquat chloride	29.1	29.1	14.5	17.9
Trinexapac-ethyl	1,801.40	1,801.40	1,791.40	197.9
<i>All growth regulators</i>	5,169.80	5,169.80	4,948.10	3,134.20

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

Pesticide type & formulation	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>				
Azoxystrobin	157.2	157.2	111.9	29.1
Azoxystrobin/fenpropimorph	266.5	266.5	133.3	126.6
Boscalid/epoxiconazole	281.1	281.1	281.1	54.9
Carbendazim/flusilazole	38.6	38.6	38.6	8.9
Chlorothalonil	503	503	251.5	269.7
Chlorothalonil/cyproconazole/propiconazole	8.6	8.6	8.6	6.7
Cyprodinil	10.4	10.4	10.4	1.7
Epoxiconazole	858.3	858.3	712.8	115.3
Epoxiconazole/fenpropimorph	81.5	81.5	81.5	21.8
Epoxiconazole/fenpropimorph/metrafenone	380.2	380.2	293.9	197.7
Fenpropimorph	363.5	363.5	363.5	110
Fluoxastrobin/prothioconazole	252.8	252.8	252.8	42.1
Propiconazole/tebuconazole	90.6	90.6	45.3	22.4
Prothioconazole	388.1	388.1	194	26.7
Prothioconazole/tebuconazole	81.5	81.5	81.5	20.4
Pyraclostrobin	194	194	194	14.6
Tebuconazole	72.5	72.5	72.5	8
<i>All fungicides</i>	<i>4,028.50</i>	<i>4,028.50</i>	<i>3,127.30</i>	<i>1,076.50</i>

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

	General weed control	Cleavers	Desiccation	Ground preparation	Volunteer potatoes	Wild oats	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>									
Amidosulfuron/iodosulfuron-methyl-sodium	86.3	.	.	.	.	.	86.3	86.3	1.1
Dicamba/MCPA/mecoprop-P	81.5	.	.	.	.	.	81.5	81.5	100.4
Dichlorprop-P/MCPA/mecoprop-P	10.4	.	.	.	.	.	10.4	10.4	11.8
Fluroxypyr	248.6	.	.	.	97	.	345.6	345.6	53.1
Glyphosate	.	.	300.4	365.5	.	.	665.9	665.9	766.2
Iodosulfuron-methyl-sodium	142.3	.	.	.	.	.	142.3	142.3	0.9
Mecoprop	251.5	38.6	.	.	.	.	290.1	290.1	239.4
Mecoprop-P	347.3	.	.	.	.	.	347.3	347.3	297.1
Metsulfuron-methyl	387.9	.	.	.	.	.	387.9	387.9	1.7
Metsulfuron-methyl/thifensulfuron-methyl	401.6	.	.	.	.	.	401.6	401.6	17.1
Metsulfuron-methyl/tribenuron-methyl	61.1	.	.	.	.	.	61.1	61.1	0.6
Pinoxaden	8.6	.	.	.	.	15.4	24.1	24.1	0.7
<i>All herbicides & desiccants</i>	<i>2,027.20</i>	<i>38.6</i>	<i>300.4</i>	<i>365.5</i>	<i>97</i>	<i>15.4</i>	<i>2,844.00</i>	<i>2,844.00</i>	<i>1,490.10</i>

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

Pesticide type & formulation	Aphids	Leatherjackets	General insect control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>						
Chlorpyrifos	.	165.7	.	165.7	165.7	119.3
Cypermethrin	431.4	.	119.8	551.2	311.8	14.2
Deltamethrin	165.7	.	.	165.7	165.7	1
Esfenvalerate	296.8	.	.	296.8	296.8	1.2
Lambda-cyhalothrin	172.6	.	.	172.6	86.3	8.5
Zeta-cypermethrin	22.4	.	.	22.4	11.2	0.3
<i>All insecticides</i>	<i>1,089.00</i>	<i>165.7</i>	<i>119.8</i>	<i>1,374.50</i>	<i>1,037.70</i>	<i>144.6</i>
	Growth regulation		All reasons		Basic area (ha) of treatment	Quantity (kgs)
<i>Growth regulators</i>						
Chloromequat	691.7		691.7		680.4	496.6
Chloromequat with choline chloride	87.1		87.1		87.1	138.8
2-chloroethylphosphonic acid	81.5		81.5		81.5	7.8
Trinexapac-ethyl	10.4		10.4		10.4	0.3
<i>All growth regulators</i>	<i>870.7</i>		<i>870.7</i>		<i>859.4</i>	<i>643.5</i>

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

Pesticide type & formulation	Mildew	General weed control	Ear wash	General disease control	Headwash	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>								
Azoxystrobin	.	.	.	1,780.50	.	1,780.50	1,316.20	312.1
Azoxystrobin/chlorothalonil	.	.	.	2,495.70	.	2,495.70	1,645.00	2,068.30
Azoxystrobin/cyproconazole	.	.	.	1,433.00	.	1,433.00	871.5	277.6
Boscalid/epoxiconazole	.	.	.	1,592.70	.	1,592.70	1,575.80	552.8
Carbendazim/flusilazole	.	.	.	423.3	.	423.3	403	127.4
Chlorothalonil	.	.	.	9,807.40	.	9,807.40	5,494.40	5,251.90
Chlorothalonil/cyproconazole/propiconazole	.	.	.	964.3	.	964.3	584	574.4
Chlorothalonil/flutriafol	.	.	.	27.2	.	27.2	27.2	14.2
Chlorothalonil/picoxystrobin	.	.	.	26	.	26	26	14.9
Cyproconazole/propiconazole	.	.	.	581.7	.	581.7	465.8	99.3
Cyprodinil/picoxystrobin	.	.	.	9.1	.	9.1	9.1	3.4
Difenoconazole	.	.	.	875	36.1	911.1	911.1	47.8
Epoxiconazole	.	227.5	.	4,784.90	.	5,012.40	3,134.80	692.1
Epoxiconazole/fenpropimorph	.	.	.	2,114.70	.	2,114.70	1,274.70	522.1
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	894.5	174.2	1,068.70	743.9	294.5
Epoxiconazole/fenpropimorph/metrafenone	.	.	.	60.9	.	60.9	48.6	24.5
Fenpropidin	.	.	.	588.8	.	588.8	490.5	92.9
Fenpropimorph	.	.	.	723.7	.	723.7	529	299.4
Fenpropimorph/flusilazole	.	.	.	207.2	.	207.2	207.2	55.4
Fenpropimorph/pyraclostrobin	.	.	.	44.6	.	44.6	44.6	26.8
Fenpropimorph/quinoxifen	.	.	.	153.8	.	153.8	153.8	24.1
Fluoxastrobin/prothioconazole	.	.	.	1,679.50	.	1,679.50	1,471.10	382.7
Fluquinconazole/prochloraz	.	.	.	1,876.10	.	1,876.10	1,768.20	563.1
Flusilazole	.	.	.	13.8	.	13.8	13.8	2.8
Mancozeb	.	.	57.8	61	.	118.7	118.7	195.2
Metrafenone	.	.	.	43.6	.	43.6	43.6	2.6

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

Pesticide type & formulation	Mildew	General weed control	Ear wash	General disease control	Headwash	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides (contd.)</i>								
Propiconazole/tebuconazole	.	.	.	863.3	.	863.3	466.9	168.6
Proquinazid	12.9	.	.	777.2	.	790.1	790.1	26.7
Prothioconazole	.	.	.	4,248.70	.	4,248.70	2,756.30	570.7
Prothioconazole/tebuconazole	.	.	.	2,202.70	.	2,202.70	1,891.90	440.7
Prothioconazole/trifloxystrobin	.	.	.	908.2	.	908.2	908.2	197.5
Pyraclostrobin	.	.	.	1,803.50	.	1,803.50	1,420.50	214.8
Tebuconazole	.	.	.	3,035.40	202.1	3,237.50	3,159.00	354.1
Trifloxystrobin	.	.	.	20.9	.	20.9	20.9	0.2
All fungicides	12.9	227.5	57.8	47122.9	412.4	47,833.5	34,785.40	14,495.5

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

Pesticide type & formulation	General weed control	Cleavers	Desiccation	Ground preparation	Chickweed	Corn marigold	Volunteer potatoes	Wild oats	Fumitory	Volunteer oil seed rape	Headlands	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>														
Dicamba/mecoprop	59.3	.	.	.	.	.	.	.	.	.	.	59.3	59.3	25.2
Dicamba/mecoprop-P	157.6	.	.	.	.	.	.	.	.	.	.	157.6	157.6	174.3
Diflufenican	216.8	.	.	.	.	.	.	.	.	.	.	216.8	199.3	90.3
Diflufenican/flufenacet	781.1	.	.	78.8	.	.	.	.	.	.	.	859.9	859.9	162.7
Diflufenican/flufenacet	116.4	.	.	.	.	.	.	.	.	.	.	116.4	116.4	17.5
Diflufenican/Isoproturon	1,846.70	.	.	533	.	.	.	.	.	.	.	2,379.70	2,379.70	1,575.80
Florasulam/fluroxypyr	752.6	207.2	.	.	.	80.6	9.1	.	.	.	.	1,049.40	1,049.40	103
Flufenacet/pendimethalin	114.5	.	.	.	.	.	.	.	.	.	.	114.5	114.5	137.5
Fluroxypyr	564.8	498.4	.	.	.	.	18.2	.	.	.	.	1,081.40	1,052.20	187.7
Glyphosate	228.2	.	3233.5	2,879.80	.	.	.	.	.	.	4.4	6,345.70	5,508.90	5,802.40
Iodosulfuron-methyl-sodium	621.9	.	.	.	.	.	.	.	.	.	.	621.9	621.9	4.8
Iodosulfuron-methyl-sodium/mesosulfuron-methyl	17.4	.	.	.	.	.	.	.	.	.	.	17.4	17.4	0.3
Isoproturon	5,971.10	.	.	546.5	.	.	.	.	.	.	.	6,517.60	6,441.80	7,725.70
Isoproturon/pendimethalin	1,005.30	.	.	.	.	.	.	.	.	.	.	1,005.30	1,005.30	1,331.00
Isoproturon/trifluralin	32.5	.	.	.	.	.	.	.	.	.	.	32.5	32.5	81.2
MCPA	.	.	.	.	.	.	.	.	.	12.2	.	12.2	12.2	12.2
Mecoprop	497.4	.	.	.	42.8	.	.	.	.	.	.	540.2	516.9	322.3
Mecoprop-P	1,562.60	.	.	.	31.6	.	.	.	10.5	.	.	1,604.60	1,458.20	1,712.90
Metsulfuron-methyl	346.7	.	.	.	.	.	.	.	.	.	.	346.7	346.7	1.8
Metsulfuron-methyl/thifensulfuron-methyl	589.4	35.5	.	.	.	80.6	.	.	.	.	.	705.4	705.4	26.2
Metsulfuron-methyl/tribenuron-methyl	1,229.00	.	.	.	.	.	.	.	.	.	.	1,229.00	1,194.10	11.7
Pendimethalin	602.5	.	.	13.5	.	.	.	.	.	.	.	616	616	524
Pinoxaden	177.5	.	.	.	.	.	.	888	.	.	.	1,065.50	1,065.50	40.2
Propaquizafop	35.7	.	.	.	.	.	.	.	.	.	.	35.7	35.7	1.1
Prosulfocarb	124.7	.	.	.	.	.	.	.	.	.	.	124.7	124.7	186.6
Thifensulfuron-methyl/tribenuron-methyl	332.4	.	.	.	.	.	.	.	.	.	.	332.4	332.4	7.1
Tralkoxydim	78.9	.	.	.	.	.	.	.	.	.	.	78.9	78.9	29.6
Trifluralin	289.9	.	.	.	.	.	.	.	.	.	.	289.9	269.7	293.7
<i>All herbicides & desiccants</i>	<i>19250.1</i>	<i>741.1</i>	<i>3233.5</i>	<i>4,084.10</i>	<i>74.4</i>	<i>161.1</i>	<i>27.2</i>	<i>888</i>	<i>10.5</i>	<i>12.2</i>	<i>4.4</i>	<i>28,486.50</i>	<i>27,302.30</i>	<i>22,234.60</i>

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

Pesticide type & formulation	Aphids	Leatherjackets	Headwash	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>						
Alpha-cypermethrin	69.3	.	.	69.3	69.3	1.3
Bifenthrin	265	.	.	265	265	7.2
Chlorpyrifos	.	57	.	57	57	41
Cypermethrin	2,116.60	.	.	2,116.60	1,299.20	51.7
Deltamethrin	401	.	.	401	325	1.9
Esfenvalerate	7,363.20	.	.	7,363.20	4,677.20	30.9
Lambda-cyhalothrin	4,421.00	.	27.9	4,448.90	2,511.60	23.5
Pirimicarb	60.1	.	.	60.1	60.1	6.5
<i>All insecticides</i>	<i>14696.2</i>	<i>57</i>	<i>27.9</i>	<i>14,781.10</i>	<i>9,264.30</i>	<i>163.9</i>
<i>Molluscicides</i>						
		Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)	
Metaldehyde		45.7	45.7	45.7	14.4	
Methiocarb		158.5	158.5	158.5	23.1	
<i>All molluscicides</i>		<i>204.1</i>	<i>204.1</i>	<i>204.1</i>	<i>37.6</i>	

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

	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Growth regulators</i>				
Chloromequat	7,595.20	7,595.20	6,929.30	9,095.40
Chloromequat with choline chloride	378.6	378.6	378.6	481.3
2-chloroethylphosphonic acid	1,026.40	1,026.40	1,026.40	165.9
Trinexapac-ethyl	1,275.70	1,275.70	1,167.20	71
<i>All growth regulators</i>	<i>10,275.90</i>	<i>10,275.90</i>	<i>9,501.50</i>	<i>9,813.60</i>

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

Pesticide type & formulation	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>				
Azoxystrobin	53.9	53.9	53.9	10.4
Azoxystrobin/cyproconazole	10	10	10	2.8
Epoxiconazole	85.1	85.1	85.1	10.4
Epoxiconazole/fenpropimorph	42.7	42.7	42.7	11.7
Epoxiconazole/fenpropimorph/kresoxim-methyl	119.6	119.6	119.6	38.1
Epoxiconazole/fenpropimorph/metrafenone	20.8	20.8	20.8	3
Fenpropimorph	251	251	251	147
Fenpropimorph/pyraclostrobin	20.8	20.8	20.8	12.2
Propiconazole/tebuconazole	17.4	17.4	17.4	3.8
Prothioconazole	16.6	16.6	16.6	0.5
Prothioconazole/trifloxystrobin	38.8	38.8	38.8	6.2
Quinoxifen	10	10	10	1
<i>All fungicides</i>	<i>686.6</i>	<i>686.6</i>	<i>686.6</i>	<i>247.1</i>

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

	General weed control	Desiccation	Ground preparation	Chickweed	Volunteer potatoes	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>								
Bromoxynil/ioxynil	97.7	.	.	.	.	97.7	97.7	44
Dicamba/MCPA/mecoprop-P	42.7	.	.	.	.	42.7	42.7	96.7
Dichlorprop-P/MCPA/mecoprop-P	1.7	.	.	.	.	1.7	1.7	2.1
Florasulam/fluroxypyr	.	.	.	.	97.7	97.7	97.7	11.3
Fluroxypyr	15.6	.	.	.	.	15.6	15.6	2.2
Glyphosate	.	20.8	325.6	.	.	346.3	346.3	376.9
MCPA	58.6	.	.	.	.	58.6	58.6	102.6
Mecoprop	38	.	.	.	.	38	38	10.6
Mecoprop-P	9.6	.	.	21.9	.	31.6	31.6	36.3
Metsulfuron-methyl	95.3	.	.	.	.	95.3	95.3	0.3
Metsulfuron-methyl/tribenuron-methyl	299.6	.	.	.	.	299.6	272.2	3.2
<i>All herbicides & desiccants</i>	<i>659</i>	<i>20.8</i>	<i>325.6</i>	<i>21.9</i>	<i>97.7</i>	<i>1,125.0</i> <i>0</i>	<i>1,097.60</i>	<i>686.1</i>
Pesticide type & formulation				Aphids	Leatherjackets	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>								
Chlorpyrifos				.	100.6	100.6	100.6	72.4
Cypermethrin				42.7	.	42.7	42.7	1.1
Esfenvalerate				88.9	.	88.9	88.9	0.4
Lambda-cyhalothrin				62.3	.	62.3	43.6	0.3
Zeta-cypermethrin				17.4	.	17.4	8.7	0.3
<i>All insecticides</i>				<i>211.3</i>	<i>100.6</i>	<i>311.9</i>	<i>284.5</i>	<i>74.5</i>

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

	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Growth regulators</i>				
Chlormequat	76.2	76.2	67.5	65.6
<i>All growth regulators</i>	76.2	76.2	67.5	65.6

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

Pesticide type & formulation	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>				
Azoxystrobin	386	386	250	53.9
Azoxystrobin/chlorothalonil	84.2	84.2	28.1	58.9
Azoxystrobin/cyproconazole	20.8	20.8	20.8	5.8
Chlorothalonil	520.4	520.4	331.2	254.3
Cyproconazole/propiconazole	28.1	28.1	28.1	4.6
Epoxiconazole	344.5	344.5	330.4	27.7
Epoxiconazole/fenpropimorph/kresoxim-methyl	60.5	60.5	60.5	17.5
Epoxiconazole/fenpropimorph/metrafenone	753.2	753.2	574.9	353.9
Epoxiconazole/kresoxim-methyl	81.5	81.5	81.5	10.2
Fenpropimorph	914.8	914.8	742.7	312.6
Fenpropimorph/pyraclostrobin	210.4	210.4	210.4	175
Metrafenone	84.2	84.2	84.2	4.7
Picoxystrobin	66.6	66.6	66.6	8.3
Propiconazole/tebuconazole	89.4	89.4	89.4	17.9
Proquinazid	97.4	97.4	32.5	4.2
Prothioconazole	375.2	375.2	194.9	48
Pyraclostrobin	54	54	54	4.3
Quinoxifen	63.2	63.2	47.8	6.3
Tebuconazole	238.6	238.6	206.1	35.4
<i>All fungicides</i>	<i>4,472.80</i>	<i>4,472.80</i>	<i>3,434.00</i>	<i>1,403.40</i>

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

Pesticide type & formulation	General weed control	Cleavers	Desiccation	Ground preparation	Chickweed	Groundsel	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>									
Amidosulfuron	178.5	89.4	.	.	.	.	267.9	267.9	9.8
Bromoxynil/ioxynil	28.4	.	.	.	.	89.4	117.9	117.9	47.7
Carfentrazone-ethyl/flupyr-sulfuron-methyl	444.3	.	.	45.5	.	.	489.8	489.8	12.8
Dicamba/MCPA/mecoprop-P	41.7	.	.	.	.	.	41.7	41.7	52.1
Dicamba/mecoprop	32.5	.	.	.	.	.	32.5	32.5	13.8
Dicamba/mecoprop-P	17.5	.	.	.	.	.	17.5	17.5	15
Florasulam/fluroxypyr	49.9	.	.	.	.	.	49.9	49.9	2.6
Fluroxypyr	82	9.6	.	.	.	.	91.7	91.7	9.2
Glyphosate	.	.	312.5	286.5	.	.	599	599	524.4
Linuron/trifluralin	89.4	.	.	.	.	.	89.4	89.4	96.6
Mecoprop	194.8	.	.	.	173.8	.	368.6	368.6	365.3
Mecoprop-P	209.5	.	.	.	.	.	209.5	209.5	176.5
Metsulfuron-methyl	235.2	0	0	0	0	0	235.2	235.2	1.7
Metsulfuron-methyl/tribenuron-methyl	346.7	.	.	.	.	.	346.7	346.7	6
Pendimethalin	49.9	.	.	.	.	.	49.9	49.9	49.4
<i>All herbicides & desiccants</i>	<i>2,000.3</i>	<i>99.1</i>	<i>312.5</i>	<i>332</i>	<i>173.8</i>	<i>89.4</i>	<i>3,007.2</i>	<i>3,007.2</i>	<i>1,382.8</i>

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

Pesticide type & formulation	Aphids	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>				
Bifenthrin	91.3	91.3	91.3	0.5
Cypermethrin	348	348	348	9.3
Esfenvalerate	225.9	225.9	205.1	0.9
Lambda-cyhalothrin	413	413	347.8	2.2
Pirimicarb	66.6	66.6	66.6	8.3
<i>All insecticides</i>	<i>1,144.80</i>	<i>1,144.80</i>	<i>1,058.80</i>	<i>21.2</i>
	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Growth regulators</i>				
Chlormequat	753.6	753.6	746.2	972.2
Trinexapac-ethyl	106.2	106.2	106.2	4.4
<i>All growth regulators</i>	<i>859.8</i>	<i>859.8</i>	<i>852.4</i>	<i>976.6</i>

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

Pesticide type & formulation	Blight	General disease control		All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>						
Azoxystrobin	.	5.7		5.7	5.7	4.2
Chlorothalonil/propamocarb hydrochloride	.	16.9		16.9	10.4	31.1
Cymoxanil/mancozeb	28.8	13.3		42.1	34.2	52.1
Cymoxanil/propamocarb hydrochloride	28.8	.		28.8	28.8	25.9
Fenamidone/propamocarb hydrochloride	28.8	.		28.8	28.8	25.9
Fluazinam	254.2	68.8		323	60.1	59
Fluazinam/metalaxyl-m	.	5.4		5.4	5.4	1.2
Fluopicolide/propamocarb hydrochloride	120.5	20		140.6	58.6	145.5
Mancozeb	.	3.9		3.9	3.9	6.3
Mancozeb/propamocarb hydrochloride	.	1.5		1.5	1.5	3.3
Mandipropamid	.	36.5		36.5	18.2	5.5
<i>All fungicides</i>	<i>461.2</i>	<i>172</i>		<i>633.1</i>	<i>255.7</i>	<i>360</i>
	General weed control	Desiccation	Ground preparation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>						
Carfentrazone-ethyl	5.7	.	.	5.7	5.7	0.1
Diquat	33.1	155	.	188.1	90.6	86.9
Diquat/paraquat	29.7	.	.	29.7	29.7	11.9
Glyphosate	.	.	34.5	34.5	34.5	43.8
Linuron	19.8	.	.	19.8	19.8	11.4
Metribuzin	36.4	.	.	36.4	36.4	24.1
Prosulfocarb	48.9	.	.	48.9	48.9	151.5
<i>All herbicides & desiccants</i>	<i>173.4</i>	<i>155</i>	<i>34.5</i>	<i>362.9</i>	<i>265.5</i>	<i>329.8</i>

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

Pesticide type formulation	Aphids	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>				
Flonicamid	28.8	28.8	28.8	2.3
Lambda-cyhalothrin	19.2	19.2	19.2	0.2
Pirimicarb	28.8	28.8	28.8	4
<i>All insecticides</i>	<i>76.8</i>	<i>76.8</i>	<i>76.8</i>	<i>6.5</i>
	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Molluscicides</i>				
Methiocarb	18.3	18.3	18.3	1.5
<i>All molluscicides</i>	<i>18.3</i>	<i>18.3</i>	<i>18.3</i>	<i>1.5</i>

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

Pesticide type & formulation	General weed control	Aphids	Blight	Desiccation	Slugs	Ground preparation	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>										
Azoxystrobin	8.1	8.1	8.1	2
Benthiavalicarb-isopropyl/Mancozeb	17	17	8.5	48.2
Chlorothalonil/propamocarb hydrochloride	.	.	8.2	.	.	.	302.2	310.3	194.1	515.7
Cyazofamid	58	58	58	4.6
Cymoxanil	.	.	24.4	.	.	.	116	140.4	74.2	12.6
Cymoxanil/famoxadone	3.1	3.1	3.1	1.1
Cymoxanil/mancozeb	.	.	53.4	.	.	.	92.5	145.9	83	207.7
Fenamidone/propamocarb hydrochloride	123.3	123.3	63.3	111
Fluazinam	.	.	71.5	.	.	.	457.7	529.2	193.7	99.6
Fluazinam/metalaxyl-m	.	.	53.4	.	.	.	36	89.5	62.8	24.1
Fluopicolide/propamocarb hydrochloride	.	.	24.3	.	.	.	434.3	458.6	165	466
Mancozeb	.	.	65	.	.	.	95.6	160.5	85.2	256.9
Mancozeb/metalaxyl-m	3.3	3.3	3.3	4.2
Mancozeb/propamocarb hydrochloride	27.8	27.8	22.9	61
Mancozeb/zoxamide	58	58	58	78.3
Mandipropamid	13.4	13.4	6.7	2
Unknown fungicide	.	.	8.1	.	.	.	.	8.1	8.1	20.2
<i>All fungicides</i>	.	.	308.2	.	.	.	1,846.2	2,154.5	1,097.9	1,915.4

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

Pesticide type formulation	General weed control	Aphids	Blight	Desiccation	Slugs	Ground preparation	General disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>										
Carfentrazone-ethyl	87.4	.	.	58	.	.	.	145.3	145.3	4.8
Diquat	157.4	.	.	311.3	.	.	.	468.7	267.7	174
Diquat/paraquat	27.7	.	.	.	.	.	.	27.7	27.7	13.5
Glyphosate	.	.	.	.	.	224.4	.	224.4	224.4	242.4
Linuron	84.1	.	.	.	.	.	.	84.1	84.1	73.8
Metribuzin	210.5	.	.	.	.	.	.	210.5	210.5	145.3
Paraquat	38.1	.	.	.	.	.	.	38.1	38.1	15.2
Pendimethalin	45.5	.	.	.	.	.	.	45.5	45.5	60.1
Rimsulfuron	31.2	.	.	.	.	.	.	31.2	31.2	0.4
Terbutylazine/terbutryn	4.9	.	.	.	.	.	.	4.9	4.9	8.3
<i>All herbicides & desiccants</i>	<i>686.9</i>	<i>.</i>	<i>.</i>	<i>369.3</i>	<i>.</i>	<i>224.4</i>	<i>.</i>	<i>1,280.5</i>	<i>1,079.5</i>	<i>738</i>
<i>Insecticides</i>										
Lambda-cyhalothrin	.	22	.	.	.	.	.	22	18.7	0.1
<i>All insecticides</i>	<i>.</i>	<i>22</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>22</i>	<i>18.7</i>	<i>0.1</i>
<i>Molluscicides</i>										
Methiocarb	.	.	.	.	58	.	.	58	58	4.3
<i>All molluscicides</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>.</i>	<i>58</i>	<i>.</i>	<i>.</i>	<i>58</i>	<i>58</i>	<i>4.3</i>

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

Pesticide type & formulation	Blight	Desiccation	Rust	General Disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>							
Azoxystrobin	.	.	.	317.3	317.3	317.3	100
Benthiavalicarb-isopropyl/Mancozeb	.	.	.	368.4	368.4	92.1	1,045.10
Chlorothalonil	.	.	.	343.2	343.2	171.6	206.8
Chlorothalonil/propamocarb hydrochloride	288.8	.	.	4,691.40	4,980.20	2,338.00	9,119.90
Copper oxychloride	.	.	.	39.8	39.8	39.8	99.4
Cyazofamid	193.1	.	.	1,837.70	2,030.80	1,089.70	173.7
Cymoxanil	280.3	.	.	420.1	700.4	520.5	65
Cymoxanil/famoxadone	.	.	.	16	16	16	5.6
Cymoxanil/mancozeb	615.7	.	.	7,752.40	8,368.10	2,239.00	12,136.00
Cymoxanil/propamocarb hydrochloride	.	.	.	106.2	106.2	106.2	95.6
Fenamidone/propamocarb hydrochloride	.	.	.	229	229	114.5	205.5
Fluazinam	1,656.10	179.2	.	13429.6	15,264.90	3,460.20	2,813.90
Fluazinam/metalaxyl-m	406.9	.	.	402.1	809	481.2	220.5
Fluopicolide/propamocarb hydrochloride	988.6	.	151.5	4,461.10	5,601.20	2,285.60	5,577.00
Mancozeb	.	.	.	3,486.70	3,486.70	1,004.80	6,332.20
Mancozeb/metalaxyl-m	.	.	.	78.9	78.9	78.9	104.2
Mancozeb/propamocarb hydrochloride	70.8	.	.	390.9	461.7	251.8	1,006.40
Mancozeb/zoxamide	.	.	.	130.4	130.4	65.2	185.8
Mandipropamid	193.1	.	.	640.8	833.9	433.7	125.1
Propamocarb hydrochloride	.	.	.	338.6	338.6	122	342.2
<i>All fungicides</i>	<i>4,693.5</i>	<i>179.2</i>	<i>151.5</i>	<i>39480.5</i>	<i>44,504.7</i>	<i>15,227.9</i>	<i>39,960.0</i>

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

Pesticide type & formulation	General weed control	Desiccation	Ground preparation	Scutch	Broomgrass	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>								
Carfentrazone-ethyl	705.4	135.9	.	.	.	841.3	841.3	20.1
Cycloxydim	.	.	.	.	24.8	24.8	24.8	12.3
Diquat	1,640.90	6,646.20	.	.	.	8,287.20	4,151.80	3,356.70
Diquat/paraquat	335.2	.	.	.	.	335.2	335.2	182.6
Glyphosate	.	.	1,957.00	.	.	1,957.00	1,957.00	1,843.40
Linuron	465.4	.	.	.	.	465.4	465.4	266.9
Metribuzin	2,371.60	.	.	.	.	2,371.60	2,359.60	1,855.10
Paraquat	470.8	.	21.8	.	.	492.6	492.6	177.6
Pendimethalin	62.3	.	.	.	.	62.3	62.3	82.2
Propaquizafop	76.2	.	.	60.5	.	136.7	136.7	16.7
Prosulfocarb	233.1	.	.	.	.	233.1	233.1	787.1
Rimsulfuron	186.2	.	.	.	.	186.2	186.2	2.1
<i>All herbicides & desiccants</i>	<i>6,547.2</i>	<i>6,782.1</i>	<i>1,978.8</i>	<i>60.5</i>	<i>24.8</i>	<i>15,393.50</i>	<i>11,246.0</i>	<i>8,602.80</i>

Pesticide type & formulation	Aphids	All reasons	Basic area (ha) of treatment	Basic Quantity (kgs)
<i>Insecticides</i>				
Esfenvalerate	121.3	121.3	121.3	0.5
Lambda-cyhalothrin	601.8	601.8	556	4.7
Pirimicarb	179.2	179.2	179.2	25.1
<i>All insecticides</i>	<i>902.4</i>	<i>902.4</i>	<i>856.5</i>	<i>30.3</i>

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

Pesticide type & formulation	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Molluscicides</i>				
Methiocarb	445.5	445.5	445.5	56.8
<i>All molluscicides</i>	445.5	445.5	445.5	56.8
	Growth regulation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Growth regulators</i>				
Maleic hydrazide	22.9	22.9	22.9	68.6
<i>All growth regulators</i>	22.9	22.9	22.9	68.6

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

Pesticide Type & Formulation	General disease control		All reasons	Basic area (ha) of treatment	Quantity (kgs)	
<i>Fungicides</i>						
Azoxystrobin	256.7		256.7	256.7	38.6	
Carbendazim/ flusilazole	46.6		46.6	23.3	7	
Metconazole	3.7		3.7	3.7	0.2	
Prothioconazole	241.5		241.5	227.1	27.8	
Tebuconazole	188.4		188.4	184.7	42.1	
<i>All fungicides</i>	<i>737</i>		<i>737</i>	<i>695.6</i>	<i>115.7</i>	
	General weed control	Desiccation	Ground preparation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & Dessicants</i>						
Clopyralid/picloram	44	.	.	44	44	5.1
Dicamba/mecoprop	3.7	.	.	3.7	3.7	1.8
Dimethenamid-P/metazachlor/quinmerac	28.7	.	.	28.7	14.4	35.9
Diquat	.	18.6	.	18.6	18.6	12
Glyphosate	37.1	374.3	68.9	480.3	374.3	492.1
Metazachlor/quinmerac	50	.	.	50	50	50
Propaquizafop	23.3	.	.	23.3	23.3	2.3
Propyzamide	323.2	.	.	323.2	323.2	210.8
<i>All herbicides & dessicants</i>	<i>510.1</i>	<i>392.9</i>	<i>68.9</i>	<i>971.9</i>	<i>851.5</i>	<i>810</i>

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

Pesticide Type & Formulation	Aphids	General insect control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Insecticides</i>					
Bifenthrin	24.9	.	24.9	24.9	0.2
Lambda-cyhalothrin	276.3	14.6	290.9	290.9	11
<i>All insecticides</i>	<i>301.2</i>	<i>14.6</i>	<i>315.8</i>	<i>315.8</i>	<i>11.2</i>
<i>Molluscicides</i>					
	Slugs	All reasons	Basic area (ha) of treatment	Quantity (kgs)	
Metaldehyde	33	33	33	16.3	
Methiocarb	87.1	87.1	87.1	10.5	
<i>All molluscicides</i>	<i>120.1</i>	<i>120.1</i>	<i>120.1</i>	<i>26.8</i>	

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

Pesticide type & formulation	General weed control	Aphids	Desiccation	General Disease control	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Fungicides</i>							
Azoxystrobin/chlorothalonil	.	.	.	8.2	8.2	8.2	6.1
<i>All fungicides</i>	.	.	.	8.2	8.2	8.2	6.1
<i>Herbicides & desiccants</i>							
Glyphosate	.	.	55.2	.	55.2	55.2	52.8
MCPA	8.2	.	.	.	8.2	8.2	9
<i>All herbicides & desiccants</i>	8.2	.	55.2	.	63.3	63.3	61.8
<i>Insecticides</i>							
Lambda-cyhalothrin	.	8.2	.	.	8.2	8.2	0.1
<i>All insecticides</i>	.	8.2	.	.	8.2	8.2	0.1

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

Pesticide type & formulation	Ground preparation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>				
Glyphosate	14.6	14.6	7.3	13
<i>All herbicides & desiccants</i>	<i>14.6</i>	<i>14.6</i>	<i>7.3</i>	<i>13</i>

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

Pesticide type & formulation	Ground preparation	All reasons	Basic area (ha) of treatment	Quantity (kgs)
<i>Herbicides & desiccants</i>				
Glyphosate	1.6	1.6	1.6	1.4
<i>All herbicides & desiccants</i>	<i>1.6</i>	<i>1.6</i>	<i>1.6</i>	<i>1.4</i>

Table 26: Comparison of the area of arable crops grown (hectares) in Northern Ireland, 1990-2008.

Crop	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
<i>Cereals</i>																			
Spring barley	29,893	24,729	20,890	21,256	23,066	23,901	22,658	21,959	17,573	18,742	-37%	-24%	-10%	-12%	-19%	-22%	-17%	-15%	7%
Undersown barley	5,800	5,759	6,542	4,875	4,035	3,532	1,876	599	654	803	-86%	-86%	-88%	-84%	-80%	-77%	-57%	34%	23%
Winter barley	3,670	5,721	5,832	7,166	7,720	5,194	3,922	4,535	4,599	6,149	68%	7%	5%	-14%	-20%	18%	57%	36%	34%
Spring wheat	348	136	32	129	400	863	1,428	1,523	1,517	1,552	346%	1041%	4749%	1101%	288%	80%	9%	2%	2%
Undersown wheat	27	.	42	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Winter wheat	5,827	6,839	6,952	6,543	6,745	4,125	5,807	7,111	7,203	10,553	81%	54%	52%	61%	56%	156%	82%	48%	47%
Spring oats	2,220	1,257	953	858	978	1,920	804	903	991	778	-65%	-38%	-18%	-9%	-20%	-59%	-3%	-14%	-21%
Undersown oats	117	221	337	130	102	25	20	234	71	.	.	.	.	.	.	.	.	.	.
Winter oats	673	1,008	1,125	1,481	1,523	967	1,547	1,556	875	1,640	144%	63%	46%	11%	8%	70%	6%	5%	88%
All cereals	48,575	45,670	42,704	42,438	44,569	40,528	38,062	38,420	33,482	40,217	-17%	-12%	-6%	-5%	-10%	-1%	6%	5%	20%
Spring oilseed rape	15	31	287	66	237	.	111	.	.	.	.	.	.	.	.	.	.	.	.
Winter oilseed rape	891	1,032	323	127	502	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All oilseed rape *	906	1,063	610	193	739	131	111	255	471	439	-52%	-59%	-28%	128%	-41%	235%	296%	72%	-7%
Hemp	.	.	.	.	.	.	.	.	.	40	.	.	.	.	.	.	.	.	.
Linseed	.	158	.	.	.	.	14	.	.	2	.	-99%	.	.	.	-88%	.	.	
Maize	.	45	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Peas & beans	.	.	.	.	199	273	197	212	83	55	.	.	.	.	-72%	-80%	-72%	-74%	-33%
Triticale	37	.	.	.	17	64	49	182	12	82	121%	.	.	.	393%	28%	67%	-55%	594%
Lupins	.	.	.	.	.	.	67	10	19	.	.	.	.	.	.	.	.	.
Set-aside	.	.	.	.	.	.	2,451	3,013	3,394	2,284	.	.	.	.	.	.	.	.
<i>Potatoes</i>																			
Seed potatoes	3,509	3,688	1,678	1,798	1,607	.	1,239	1,148	763	792	-77%	-79%	-53%	-56%	-51%	-36%	-31%	4%	.
Early potatoes	463	836	813	729	391	.	728	403	370	401	-13%	-52%	-51%	-45%	3%	-45%	0%	8%	.
Maincrop potatoes	7,863	6,540	5,913	5,961	5,515	.	4,741	4,517	3,984	4,308	-45%	-34%	-27%	-28%	-22%	-9%	-5%	8%	.
All potatoes	11,835	11,064	8,404	8,488	7,513	.	6,708	6,068	5,118	5,501	-54%	-50%	-35%	-35%	-27%	.	-18%	-9%	7%
All crops	61,355	57,999	51,718	51,119	53,036	**43,447	48,222	48,541	41,469	46,337	-24%	-20%	-10%	-9%	-13%	.	-4%	-5%	12%

* both winter & spring oilseed rape **excluding potatoes

Table 27: The area (spray-hectares) of arable crops treated with pesticides in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
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	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	139,474	123,125	159,738	56%	50%	39%	31%	13%	.	25%	15%	30%
Herbicides & desiccants	75,130	76,444	72,725	81,027	91,193	.	86,597	104,539	94,148	116,029	54%	52%	60%	43%	27%	.	34%	11%	23%
Insecticides																			
<i>Carbamates</i>	.	111	167	520	297	.	594	592	30	558	.	403%	234%	7%	88%	.	-6%	-6%	1760%
<i>Organochlorines</i>	.	79	255	222	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	1,472	2,454	2,124	3,085	1,587	.	1,265	2,423	1,818	1,164	-21%	-53%	-45%	-62%	-27%	.	-8%	-52%	-36%
<i>Pyrethroids</i>	2,895	2,800	3,267	7,706	17,084	.	18,164	26,973	25,055	35,936	1141%	1183%	1000%	366%	110%	.	98%	33%	43%
<i>Azomethine</i>	.	.	.	.	.	.	.	673	71	.	.	.	.	.	.	.	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	96	.	.	.	.	.	.	.	.	.	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	252	.	.	.	.	.	.	.	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	581	96	.	.	.	.	.	.	.	.	.	.
<i>Unknown insecticides</i>	465	694	207	815	1,238	.	.	180	89	.	.	.	.	.	.	.	.	.	.
All insecticides	4,831	6,138	6,020	12,348	20,206	.	20,023	31,421	27,255	37,910	685%	518%	530%	207%	88%	.	89%	21%	39%
Molluscicides	834	871	243	434	1,123	.	1,926	337	1,237	1,277	53%	47%	425%	194%	14%	.	-34%	279%	3%
Growth regulators	8,681	10,594	12,836	13,953	19,049	.	17,445	16,559	19,572	22,408	158%	112%	75%	61%	18%	.	28%	35%	14%
Other	.	.	.	.	.	.	.	.	.	89	.	.	.	.	.	.	.	.	.
Mixed formulations	233	186	134	137	128	.	86	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	42,683	44,961	39,026	38,979	36,083	.	34,636	32,968	30,298	36,756	-14%	-18%	-6%	-6%	2%	.	6%	11%	21%
All pesticides	234,985	245,485	245,971	268,710	308,881	.	288,348	325,299	295,635	374,207	59%	52%	52%	39%	21%	.	30%	15%	27%
Area grown (ha)	61,355	57,999	51,718	51,119	53,036	.	48,222	48,541	41,469	46,337	-24%	-20%	-10%	-9%	-13%	.	-4%	-5%	12%

Table 28: The quantity (tonnes) of pesticides applied to arable crops in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Fungicides	97.57	101.76	90.99	94.22	91.06	.	85.20	71.13	67.26	77.32	-21%	-24%	-15%	-18%	-15%	.	-9%	9%	15%
Herbicides & desiccants	253.62	212.36	133.57	336.33	337.65	.	390.98	254.62	152.13	71.58	-72%	-66%	-46%	-79%	-79%	.	-82%	-72%	-53%
Insecticides																			
<i>Carbamates</i>	.	0.02	0.02	0.07	0.04	.	0.08	0.08	0.004	0.075	.	275%	257%	7%	111%	.	-5%	-5%	1775%
<i>Organochlorines</i>	.	0.09	0.29	0.23	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	0.68	0.80	0.85	1.51	0.87	.	0.57	1.07	1.373	0.786	16%	-2%	-8%	-48%	-10%	.	38%	-27%	-43%
<i>Pyrethroids</i>	0.05	0.05	0.07	0.15	0.19	.	0.20	0.20	0.163	0.295	490%	490%	328%	97%	55%	.	45%	49%	81%
<i>Azomethine</i>	.	.	.	.	.	.	.	0.10	0.005	.	.	.	.	.	.	.	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	0.009	.	.	.	.	.	.	.	.	.	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	0.02	.	.	.	.	.	.	.	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	0.05	0.016	.	.	.	.	.	.	.	.	.	.
<i>Unknown Insecticide</i>	.	.	.	.	.	.	.	0.01	.	.	.	.	.	.	.	.	.	.	.
All insecticides	0.72	0.96	1.23	1.95	1.10	.	0.85	1.51	1.57	1.18	63%	23%	-4%	-40%	7%	.	38%	-22%	-25%
Molluscicides	0.33	0.27	0.12	0.09	0.17	.	0.34	0.06	0.28	0.17	-49%	-37%	43%	89%	-2%	.	-50%	181%	-41%
Growth regulators	10.60	9.35	10.86	12.84	14.43	.	11.61	11.70	12.63	17	60%	82%	57%	32%	18%	.	46%	45%	35%
Other	.	.	.	.	.	.	.	.	.	0.014	.	.	.	.	.	.	.	.	.
Mixed formulations	0.51	0.41	0.29	0.30	0.28	.	0.13	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	0.38*	3.77	5.06	3.03	3.71	.	2.82	2.28	4.03	1.82	.	-52%	-64%	-40%	-51%	.	-36%	-20%	-55%
All pesticides	363.74	328.89	242.12	448.78	448.40	.	491.93	341.30	237.89	169.06	-54%	-49%	-30%	-62%	-62%	.	-66%	-50%	-29%
Area grown (ha)	61,355	57,999	51,718	51,119	53,036	.	48,222	48,541	41,469	46,337	-24%	-20%	-10%	-9%	-13%	.	-4%	-5%	12%

Table 29: The area (spray-hectares) of cereal crops treated with pesticides in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
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	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	86,173	77,686	106,805	217%	184%	151%	88%	66%	68%	77%	24%	37%
Herbicides & desiccants	52,342	52,872	56,201	63,072	72,911	71,281	69,752	82,884	77,378	95,133	82%	80%	69%	51%	30%	33%	36%	15%	23%
Insecticides																			
<i>Carbamates</i>	.	88	167	493	249	.	182	120	.	127	.	44%	-24%	-74%	-49%	.	-30%	6%	.
<i>Organochlorines</i>	.	79	255	222	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	1,164	2,359	1,857	2,447	1,440	3,773	1,140	2,058	1,751	1,164	0%	-51%	-37%	-52%	-19%	-69%	2%	-43%	-34%
<i>Pyrethroids</i>	2,381	2,670	3,267	7,047	16,481	23,617	16,709	24,258	23,328	34,701	1357%	1200%	962%	392%	111%	47%	108%	43%	49%
<i>Unknown insecticides</i>	465	694	207	816	1,207	2,290	.	114	89	.	.	.	.	.	.	.	.	.	.
All insecticides	4,010	5,890	5,754	11,028	19,377	29,681	18,031	26,550	25,168	35,991	798%	511%	525%	226%	86%	21%	100%	36%	43%
Molluscicides	24	.	27	168	129	833	305	223	307	493	1954%	.	1726%	193%	282%	-41%	62%	121%	61%
Growth regulators	8,607	10,509	12,836	13,953	18,998	17,237	17,330	16,476	19,559	22,386	160%	113%	74%	60%	18%	30%	29%	36%	14%
Other	.	.	.	.	.	.	.	.	.	89	.	.	.	.	.	.	.	.	.
Seed treatments	41,739	39,958	35,995	35,525	31,728	34,260	31,494	29,069	27,353	33,567	-20%	-16%	-7%	-6%	6%	-2%	7%	15%	23%
All pesticides	140,465	146,819	153,330	180,624	207,314	217,031	197,144	241,374	227,451	294,463	110%	101%	92%	63%	42%	36%	49%	22%	29%
Area grown (ha)	48,575	45,670	42,703	42,438	44,570	40,528	38,062	38,420	33,482	40,217	-17%	-12%	-6%	-5%	-10%	-1%	6%	5%	20%

Table 30: The quantity (tonnes) of pesticides applied to cereal crops in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	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	19.15	20.21	32.17	115%	75%	115%	31%	41%	142%	112%	68%	59%
Herbicides & desiccants	55.07	39.43	35.67	42.87	46.26	41.68	35.35	42.21	48.77	58.48	6%	48%	64%	36%	26%	40%	65%	39%	20%
Insecticides																			
<i>Carbamates</i>	.	0.01	0.02	0.07	0.03	.	0.03	0.012	.	0.014	.	40%	-33%	-80%	-51%	.	-45%	17%	.
<i>Organochlorines</i>	.	0.09	0.29	0.23	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	0.51	0.68	0.49	1.24	0.74	2.51	0.56	0.948	1.200	0.785	54%	15%	60%	-37%	6%	-69%	41%	-17%	-35%
<i>Pyrethroids</i>	0.04	0.04	0.07	0.13	0.19	0.26	0.19	0.178	0.157	0.275	588%	588%	299%	112%	43%	6%	41%	54%	76%
<i>Azomethine</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	0.55	0.83	0.88	1.66	0.96	2.75	0.78	1.14	1.36	1.08	96%	30%	23%	-35%	12%	-61%	39%	-6%	-21%
Molluscicides	0.01	.	0.01	0.04	0.02	0.14	0.06	0.04	0.04	0.07	590%	.	978%	73%	314%	-51%	7%	73%	60%
Growth regulators	10.51	9.32	10.86	12.84	14.41	12.87	11.61	11.64	12.62	16.93	61%	82%	56%	32%	18%	32%	46%	45%	34%
Other	.	.	.	.	.	.	.	.	.	0.01	.	.	.	.	.	.	.	.	.
Seed treatments	0.33	0.94	3.80	2.41	1.72	2.34	1.57	1.35	1.42	1.09	229%	16%	-71%	-55%	-37%	-54%	-31%	-20%	-23%
All pesticides	81.44	68.94	66.17	84.35	86.19	73.11	64.35	75.55	84.41	109.83	35%	59%	66%	30%	27%	50%	71%	45%	30%
Area grown (ha)	48,575	45,670	42,703	42,438	44,570	40,528	38,062	38,420	33,482	40,217	-17%	-12%	-6%	-5%	-10%	-1%	6%	5%	20%

Table 31: The area (spray-hectares) of oilseed rape treated with pesticides in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
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	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	467	525	86	226	664	244	70	238	646	737	58%	40%	762%	226%	11%	202%	947%	210%	14%
Herbicides & desiccants	1,603	1,343	597	292	1,171	366	194	448	970	972	-39%	-28%	63%	233%	-17%	166%	402%	117%	0%
Insecticides																			
<i>Carbamates</i>	.	.	.	.	28.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	67	180	25	5.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	.	131	.	.	190	.	49	55	149	316	.	141%	.	.	66%	.	548%	475%	112%
<i>Unknown insecticides</i>	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	.	198	180	25	234	.	49	55	149	316	.	60%	75%	1164%	35%	.	548%	477%	112%
Molluscicides	810	871	216	72	522	.	39	.	68	120	-85%	-86%	-44%	67%	-77%	.	207%	.	76%
Growth regulators	.	84	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	906	1,063	610	140	339	123	98	106	271	22	-98%	-98%	-96%	-84%	-94%	-82%	-78%	-79%	-92%
All pesticides	3,786	4,084	1,689	755	2,931	732	450	846	2,104	2,167	-43%	-47%	28%	187%	-26%	196%	382%	156%	3%
Area grown (ha)	906	1,062	610	193	739	131	111	255	471	439	-52%	-59%	-28%	128%	-41%	235%	296%	72%	-7%

Table 32: The quantity (tonnes) of pesticides applied to oilseed rape in Northern Ireland, 1990-2008.

	Survey Year										Differences between									
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06	
Pesticide type	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	0.03	0.10	0.12	-78%	93%	250%	-61%	-81%	-82%	875%	287%	13%	
Herbicides & desiccants	1.31	0.98	0.62	0.20	0.74	0.16	0.10	0.25	0.76	0.81	-38%	-17%	32%	305%	10%	406%	727%	224%	7%	
Insecticides																				
<i>Carbamates</i>	0.004
<i>Organochlorines</i>	<0.001
<i>Organophosphates</i>	.	0.02	0.08	0.01	0.004
<i>Pyrethroids</i>	.	0.01	.	.	0.001	.	0.0001	0.0003	0.001	0.011	.	10%	.	.	900%	.	10900%	3567%	817%	
All insecticides	.	0.03	0.08	0.01	0.009	.	0.0001	0.0003	0.001	0.011	.	-63%	-85%	10%	22%	.	10900%	3974%	817%	
Molluscicides	0.32	0.27	0.11	0.01	0.06	.	0.01	.	0.01	0.03	-92%	-90%	-76%	170%	-55%	.	160%	.	93%	
Growth regulators	.	0.04
Seed treatments	0.05	0.11	0.06	0.02	0.005	.	0.01	0.002	0.005	0.001	-98%	-99%	-98%	-95%	-78%	.	-93%	-51%	-80%	
All pesticides	2.21	1.49	0.90	0.54	1.41	0.81	0.13	0.28	0.88	0.96	-56%	-35%	8%	79%	-32%	19%	619%	244%	9%	
Area grown (ha)	906	1,062	610	193	739	131	111	255	471	439	-52%	-59%	-28%	128%	-41%	235%	296%	72%	-7%	

Table 33: The area (spray-hectares) of peas and beans treated with pesticides in Northern Ireland, 1998-2008.

	Survey Year						Differences between				
	1998	2000	2002	2004	2006	2008	2008-98	2008-00	2008-02	2008-04	2008-06
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	314	138	302.7	676.7	19.0	8.0	-97%	-94%	-97%	-99%	-58%
Herbicides & desiccants	444	199	241.1	321.5	120.0	63.0	-86%	-68%	-74%	-80%	-48%
Insecticides											
<i>Carbamates</i>	19	18.3	54.2	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	22	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	64	.	66.1	197.20	12.00	8.00	-88%	.	-88%	-96%	-33%
Unknown insecticides	.	.	.	.	.	.	.	.	.	.	.
All insecticides	105	18.3	120.3	197.2	12.00	8.00	-92%	-56%	-93%	-96%	-33%
Molluscicides	.	.	.	.	.	.	.	.	.	.	.
Growth regulators	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	.	105	137.9	15.1	.	8	.	-92%	-94%	-47%	
All pesticides	863	459.9	802	1,210.5	151.0	88.0	-90%	-81%	-89%	-93%	-42%
Area grown (ha)	199	273	197	212	83	55	-72%	-80%	-72%	-74%	-34%

Table 34: The quantity (tonnes) of pesticides applied to peas and beans in Northern Ireland, 1998-2008.

Pesticide type	Survey Year						Differences between				
	1998	2000	2002	2004	2006	2008	2008-98	2008-00	2008-02	2008-04	2008-06
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Fungicides	0.20	0.05	0.1055	0.540	0.009	0.006	-97%	-89%	-94%	-99%	-33%
Herbicides & desiccants	0.41	0.20	0.2545	0.197	0.098	0.062	-85%	-68%	-76%	-68%	-37%
Insecticides	.	.	.	.	.	.	.	.	.	.	.
<i>Carbamates</i>	<i>0.003</i>	<i>0.005</i>	<i>0.003</i>	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	<i>0.002</i>	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	<i>0.001</i>	.	<i>0.0002</i>	<i>0.001</i>	<i>0.0001</i>	<i><0.0001</i>	.	.	.	.	.
All insecticides	0.006	0.005	0.0032	0.001	0.0001	<i><0.0001</i>	.	.	.	.	.
Molluscicides	.	.	.	.	.	.	.	.	.	.	.
Growth regulators	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	.	0.112	0.015	0.002	.	0.005	.	-96%	-67%	119%	.
All pesticides	0.614	0.367	0.3782	0.740	0.107	0.073	-88%	-80%	-81%	-90%	-32%
Area grown (ha)	199	273	197	212	83	55	-72%	-80%	-72%	-74%	-34%

Table 35: The area (spray-hectares) of set-aside treated with pesticides in Northern Ireland, 2000-2008.

	Survey Year				Differences between		
	2000	2002	2004	2006	2006-00	2006-02	2006-04
Pesticide type	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha	sp ha
Fungicides	.	.	.	.	.	.	.
Herbicides & desiccants	912	1,395	657	650	-29%	-53%	-1%
Insecticides							
<i>Carbamates</i>	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	.	.	12	.	.	.
<i>Pyrethroids</i>	.	.	.	13	.	.	.
All insecticides	.	.	.	25	.	.	.
Molluscicides	.	.	.	.	.	.	.
Growth regulators	.	.	.	.	.	.	.
Seed treatments	.	.	.	189	.	.	.
All pesticides	912	1,395	657	864	-5%	-38%	31%
Area grown (ha)	2,451	3,013	3,394	2,284	-7%	-24%	-33%

Table 36: The quantity (tonnes) of pesticides applied to set-aside in Northern Ireland, 2000-2008.

Pesticide type	Survey Year				Differences between		
	2000	2002	2004	2006	2006-00	2006-02	2006-04
	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
Fungicides	.	.	.	.	.	.	.
Herbicides & desiccants	0.866	1.037	0.551	0.677	-22%	-35%	23%
Insecticides							
<i>Carbamates</i>	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	.	.	0.009	.	.	.
<i>Pyrethroids</i>	.	.	.	0.0004	.	.	.
All insecticides	.	.	.	0.0094	.	.	.
Molluscicides	.	.	.	.	.	.	.
Growth regulators	.	.	.	.	.	.	.
Seed treatments	.	.	.	0.003	.	.	.
All pesticides	0.866	1.037	0.551	0.6894	-20%	-34%	25%
Area grown (ha)	2,451	3,013	3,394	2,284	-7%	-24%	-33%

Table 37: The area (spray-hectares) of potato crops treated with pesticides in Northern Ireland, 1990-2008.

Pesticide type	Survey Year										Differences between:								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
Fungicides	68,384	68,178	72,369	64,727	75,933	.	66,810	52,149	45,397	52,189	-24%	-23%	-28%	-19%	-31%	.	-22%	0%	15%
Herbicides & desiccants	21,146	21,819	15,927	17,663	16,616	.	14,852	19,839	15,971	19,843	-6%	-9%	25%	12%	19%	.	34%	0%	24%
Insecticides																			
<i>Carbamates</i>	.	23	.	28	.	.	357	473	30	431	.	1774%	.	1439%	.	.	21%	-9%	1337%
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	308	28	88	612	123	.	125	365	55	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	512	.	.	656	353	.	1,340	2,408	1,553	913	78%	.	.	39%	159%	.	-32%	-62%	-41%
<i>Azomethine</i>	.	.	.	.	.	.	.	673	71	.	.	.	.	.	.	.	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	96	.	.	.	.	.	.	.	.	.	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	252	.	.	.	.	.	.	.	.	.
<i>Mixed Formulation</i>	.	.	.	.	.	.	.	581	96	.	.	.	.	.	.	.	.	.	.
<i>Unknown insecticides</i>	.	.	14	.	20	.	.	66	.	.	.	.	.	.	.	.	.	.	.
All insecticides	820	51	102	1,295	492	.	1,823	4,565	1,900	1,595	95%	3027%	1471%	23%	224%	.	-12%	-65%	-16%
Molluscicides	.	.	.	195	472	.	1,581	114	930	664	.	.	.	241%	41%	.	-58%	482%	-29%
Mixed formulations	233	186	134	137	128	.	86	.	.	.	.	.	.	.	.	.	.	.	.
Growth regulators	.	.	.	.	.	.	72	.	.	23	.	.	.	.	.	.	-68%	.	.
Seed treatments	*	3,738	2,420	3,314	4,017	.	3,071	3,679	2,756	3,158	.	-16%	30%	-5%	-21%	.	3%	-14%	15%
All pesticides	90,583	93,972	90,952	87,330	97,658	.	88,295	80,347	66,954	77,473	-14%	-18%	-15%	-11%	-21%	.	-12%	-4%	16%
Area grown (ha)	11,835	11,064	8,404	8,488	7,513	.	6,708	6,068	5,118	5,501	-54%	-50%	-35%	-35%	-27%	.	-18%	-9%	7%

Table 38: The quantity (tonnes) of pesticides applied to potato crops in Northern Ireland, 1990-2008.

	Survey Year										Differences between:									
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06	
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	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	51.33	46.93	45.02	-45%	-46%	-41%	-35%	-33%	.	-36%	-12%	-4%	
Herbicides & desiccants	197.20	171.75	97.28	293.26	290.23	.	354.01	211.18	101.78	12.22	-94%	-93%	-87%	-96%	-96%	.	-97%	-94%	-88%	
Insecticides																				
<i>Carbamates</i>	.	<0.01	.	<0.01	.	.	0.05	0.07	0.004	0.060	.	.	.	.	.	.	18%	-9%	1400%
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	0.17	0.10	0.28	0.26	0.12	.	0.02	0.12	0.164		.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	0.01	.	.	0.02	<0.01	.	0.01	0.01	0.006	0.007	-30%	.	.	-65%	.	.	-16%	-30%	17%	
<i>Azomethine</i>	.	.	.	.	.	.	.	0.102	0.005		.	.	.	.	.	.	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	0.010		.	.	.	.	.	.	.	.	.
<i>Feeding blocker</i>										0.020	.	.	.	.	.	.	.	.	.
<i>Mixed Formulation</i>	.	.	.	.	.	.	.	0.051	0.015		.	.	.	.	.	.	.	.	.
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	0.003	.		.	.	.	.	.	.	.	.	.
All insecticides	0.17	0.10	0.28	0.28	0.13	.	0.08	0.36	0.20	0.087	-49%	-13%	-69%	-69%	-33%	.	16%	-76%	-57%	
Molluscicides	.	.	.	0.04	0.10	.	0.26	0.02	0.23	0.07	.	.	.	85%	-24%	.	-72%	363%	-68%	
Mixed formulations	0.51	0.41	0.29	0.30	0.28	.	0.13	.	.		.	.	.	.	.	.	.	.	.
Growth regulators	.	.	.	.	.	.	0.17	.	.	0.07	.	.	.	.	.	.	-60%	.	.
Seed treatments	*	2.71	1.20	0.61	1.99	.	1.22	0.90	2.60	0.73	.	-73%	-40%	19%	-63%	.	-40%	-19%	-72%	
All pesticides	279.95	258.25	175.06	363.89	360.16	.	425.84	263.78	151.75	58.20	-79%	-77%	-67%	-84%	-84%	.	-86%	-78%	-62%	
Area grown (ha)	11,835	11,064	8,404	8,488	7,513	.	6,708	6,068	5,118	5,501	-54%	-50%	-35%	-35%	-27%	.	-18%	-9%	7%	

* Seed treatments not recorded

Table 39: The area (spray-hectares) of seed potatoes treated with pesticides in Northern Ireland, 1990-2008.

	Survey Year										Differences between:									
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06	
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	sp ha	sp ha					
Fungicides	18,326	18,603	16,465	13,462	14,242	.	9,219	10,226	5,618	5,530	-70%	-70%	-66%	-59%	-61%	.	-40%	-46%	-2%	
Herbicides & desiccants	6,535	8,118	3,784	4,035	3,363	.	2,650	4,917	2,285	3,170	-51%	-61%	-16%	-21%	-6%	.	20%	-36%	39%	
Insecticides																				
<i>Carbamates</i>	.	23	.	.	.	.	.	365	.	252	.	996%	.	.	.	.	.	-31%	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	18	.	.	26	.	.	365	.	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	501	.	.	586	205	.	16	406	931	168	-66%	.	.	-71%	-18%	.	931%	-59%	-82%	
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	39	.	.	.	.	.	.	.	.	.	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	252	.	.	.	.	.	.	.	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	453	39	.	.	.	.	.	.	.	.	.	.
All insecticides	501	41	8	586	230	.	16	1,589	1,008	671	34%	1537%	8503%	15%	191%	.	4017%	-58%	-33%	
Molluscicides	.	.	.	.	66	.	267	.	77	160	.	.	.	.	143%	.	-40%	.	108%
Mixed formulations	8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	*	2,039	744	1,065	882	.	512	1,224	303	622	.	-69%	-16%	-42%	-29%	.	22%	-49%	105%	
All pesticides	25,370	28,801	21,000	19,148	18,783	.	12,665	17,956	9,291	10,153	-60%	-65%	-52%	-47%	-46%	.	-20%	-43%	9%	
Area grown (ha)	3,509	3,688	1,678	1,798	1,607	.	1,239	1,148	763	792	-77%	-79%	-53%	-56%	-51%	.	-36%	-31%	4%	

* Seed treatments not recorded

Table 40: The quantity (tonnes) of pesticides applied to seed potatoes in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	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	8.79	6.16	3.14	-86%	-87%	-79%	-77%	-78%	.	-65%	-64%	-49%
Herbicides & desiccants	127.42	100.45	41.73	146.03	148.63	.	129.71	31.62	7.38	2.88	-98%	-97%	-93%	-98%	-98%	.	-98%	-91%	-61%
Insecticides																			
<i>Carbamates</i>	.	<0.01	.	.	.	.	.	0.051	.	0.035	.	.	.	.	.	.	.	-31%	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	0.06	.	.	<0.01	.	.	0.124	.	.	.	-100%	.	.	.	.	.	-100%	.
<i>Pyrethroids</i>	0.01	.	.	0.02	<0.01	.	<0.01	0.002	0.004	0.002	-80%	.	.	-90%	.	.	.	0%	-50%
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	0.004	.	.	.	.	.	.	.	.	.	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	0.02	.	.	.	.	.	.	.	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	0.04	0.006	.	.	.	.	.	.	.	.	.	.
All insecticides	0.01	0.06	0.03	0.02	0.01	.	<0.01	0.22	0.014	0.057	470%	-5%	116%	185%	466%	.	.	-73%	307%
Molluscicides	.	.	.	.	0.01	.	0.04	.	0.02	0.01	.	.	.	.	-10%	.	-70%	.	-24%
Mixed formulations	0.02	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	*	1.97	0.30	0.21	0.74	.	0.08	0.41	0.11	0.17	.	-91%	-42%	-18%	-76%	.	126%	-58%	65%
All pesticides	150.37	127.30	57.30	159.70	163.68	.	138.91	41.04	13.67	6.27	-96%	-95%	-89%	-96%	-96%	.	-95%	-85%	-54%
Area grown (ha)	3,509	3,688	1,678	1,798	1,607	.	1,239	1,148	763	792	-77%	-79%	-53%	-56%	-51%	.	-36%	-31%	4%

* Seed treatments not recorded

Table 41: The area (spray-hectares) of early potatoes treated with pesticides in Northern Ireland, 1990-2008.

	Survey Year										Differences between									
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06	
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	sp ha	sp ha					
Fungicides	2,037	3,250	3,706	3,089	1,693	.	5,561	2,116	2,080	2,154	6%	-34%	-42%	-30%	27%	.	-61%	2%	4%	
Herbicides & desiccants	849	1,304	835	1,312	618	.	1,520	841	1,124	1,280	51%	-2%	53%	-2%	107%	.	-16%	52%	14%	
Insecticides																				
<i>Carbamates</i>	.	.	.	28	.	.	.	87	.	.	.	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	.	.	63	66	.	24	.	25	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	.	.	.	.	39	.	173	150	.	22	.	.	.	.	-43%	.	-87%	-85%	.
<i>Unknown insecticide</i>	.	.	.	.	2.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Azomethine</i>	.	.	.	.	.	.	.	30	.	.	.	.	.	.	.	.	.	.	.
All insecticides	.	.	.	90	107	.	197	267	25	22	.	.	.	-76%	-79%	.	-89%	-92%	-12%	
Molluscicides	.	.	.	.	10	.	206	.	.	58	.	.	.	.	466%	.	-72%	.	.
Seed treatments	*	360	130	303	154	.	481	212	147	327	.	-9%	151%	8%	112%	.	-32%	55%	122%	
All pesticides	2,886	4,914	4,672	4,794	2,582	.	7,966	3,436	3,376	3,842	33%	-22%	-18%	-20%	49%	.	-52%	12%	14%	
Area grown (ha)	463	836	813	729	391	.	728	403	370	401	-13%	-52%	-51%	-45%	3%		-45%	0%	8%	

* Seed treatments not recorded

Table 42: The quantity (tonnes) of pesticides applied to early potatoes in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	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	2.43	1.99	1.92	-25%	-53%	-57%	-50%	-7%	.	-65%	-21%	-4%
Herbicides & desiccants	0.51	3.09	0.55	4.05	1.73	.	32.56	24.26	1.70	0.74	45%	-76%	35%	-82%	-57%	.	-98%	-97%	-57%
Insecticides																			
<i>Carbamates</i>	.	.	.	< 0.1	.	.	<.01	0.012	.	.	.	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	.	.	0.02	0.08	.	0.01	.	0.074	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	.	.	.	.	.	.	.	0.001	.	<0.0001	.	.	.	.	.	.	.	.	.
<i>Azomethine</i>	.	.	.	.	.	.	.	0.005	.	.	.	.	.	.	.	.	.	.	.
All insecticides	.	.	.	0.02	0.08	.	0.01	0.02	0.074	<0.0001	.	.	.	.	.	.	.	.	.
Molluscicides	.	.	.	.	0.002	.	0.038	.	.	0.004	.	.	.	.	127%	.	-90%	.	.
Seed treatments	*	0.20	0.04	0.05	0.03	.	0.11	0.02	0.01	0.11	.	-45%	167%	120%	264%	.	-4%	633%	817%
All pesticides	3.05	7.40	5.05	7.96	3.92	.	38.21	26.72	3.78	2.77	-9%	-63%	-45%	-65%	-29%	.	-93%	-90%	-27%
Area grown (ha)	463	836	813	729	391	.	728	403	370	401	-13%	-52%	-51%	-45%	3%	.	-45%	0%	8%

Table 43: The area (spray-hectares) of maincrop potatoes treated with pesticides in Northern Ireland, 1990-2008.

	Survey Year										Differences between								
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06
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	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	39,807	37,699	44,505	-7%	-4%	-15%	-8%	-26%	.	-14%	12%	18%
Herbicides & desiccants	13,762	12,397	11,309	12,316	12,635	.	10,682	14,081	12,562	15,393	12%	24%	36%	25%	22%	.	44%	9%	23%
Insecticides																			
<i>Carbamates</i>	.	.	.	.	.	.	357.4	20	30	179	.	.	.	.	.	.	-50%	795%	497%
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	308	10	.	549	32	.	101	.	30	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	11	.	.	70	110	.	1151	1852	622	723	6473%	.	.	933%	558%	.	-37%	-61%	16%
<i>Azomethine</i>	.	.	.	.	.	.	.	642	71	.	.	.	.	.	.	.	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	57	.	.	.	.	.	.	.	.	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	128	57	.	.	.	.	.	.	.	.	.	.
<i>Unkown insecticide</i>	.	.	.	.	.	.	.	66	.	.	.	.	.	.	.	.	.	.	.
All insecticides	319	10	94	619	155	.	1609	2,709	867	902	183%	8920%	863%	46%	482%	.	-44%	-67%	4%
Molluscicides	.	.	.	195	396	.	1,108	114	853	446	.	.	.	129%	13%	.	-60%	291%	-48%
Growth regulators	.	.	.	.	.	.	72	.	.	23	.	.	.	.	.	.	-68%	.	.
Mixed formulations	225	186	134	137	128	.	86	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	*	1,339	1,546	1,945	2,980	.	2,078	2,243	2,306	2,209	.	65%	43%	14%	-26%	.	6%	-2%	-4%
All pesticides	62,328	60,257	65,280	63,388	76,292	.	67,664	58,955	54,287	63,478	2%	5%	-3%	0%	-17%	.	-6%	8%	17%
Area grown (ha)	7,863	6,540	5,913	5,961	5,515	.	4,741	4,517	3,984	4,308	-45%	-34%	-27%	-28%	-22%	.	-9%	-5%	8%

Table 44: The quantity (tonnes) of pesticides applied to maincrop potatoes in Northern Ireland, 1990-2008.

	Survey Year										Differences between									
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2008-90	2008-92	2008-94	2008-96	2008-98	2008-00	2008-02	2008-04	2008-06	
Pesticide type	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	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	40.10	38.78	39.96	-29%	-26%	-29%	-23%	-22%	.	-28%	0%	3%	
Herbicides & desiccants	69.27	68.21	55.01	143.18	139.86	.	191.80	155.30	92.70	8.60	-88%	-87%	-84%	-94%	-94%	.	-96%	-94%	-91%	
Insecticides																				
<i>Carbamates</i>	.	.	.	.	.	.	0.05	0.003	0.004	0.025	.	.	.	.	.	.	-51%	733%	525%
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	0.17	0.03	.	0.24	0.03	.	0.01	.	0.09	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	< 0.01	.	.	< 0.01	< 0.01	.	< 0.01	0.01	0.002	0.005	.	.	.	.	.	.	.	-58%	150%
<i>Azomethines</i>	.	.	.	.	.	.	.	0.097	0.005	.	.	.	.	.	.	.	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	0.006	.	.	.	.	.	.	.	.	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	0.014	0.009	.	.	.	.	.	.	.	.	.	.
<i>Unknown Insecticide</i>	.	.	.	.	.	.	.	0.003	.	.	.	.	.	.	.	.	.	.	.
All insecticides	0.17	0.03	0.25	0.24	0.04	.	0.07	0.13	0.116	0.030	-82%	0%	-88%	-88%	-18%	.	-55%	-77%	-74%	
Molluscicides	.	.	.	0.04	0.08	.	0.18	0.02	0.21	0.06	.	.	.	43%	-30%	.	-68%	256%	-73%	
Growth regulators	.	.	.	.	.	.	0.1721	.	.	0.069	.	.	.	.	.	.	.	.	.
Mixed formulations	0.50	0.41	0.29	0.30	0.28	.	0.13	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	*	0.54	0.86	0.36	1.22	.	.	0.48	2.49	0.44	.	-18%	-49%	23%	-64%	.	.	-7%	-82%	
All pesticides	126.55	123.55	112.71	196.23	192.56	.	248.72	196.03	134.30	49.16	.	-61%	-60%	-56%	-75%	-74%	.	-80%	-75%	
Area grown (ha)	7,863	6,540	5,913	5,961	5,515	.	4,741	4,517	3,984	4,308	-45%	-34%	-27%	-28%	-22%	.	-9%	-5%	8%	

* Seed treatments not recorded

Table 45: Estimated quantity (tonnes) of potato crops stored regionally in Northern Ireland, 2008.

Location of holding	Early	Ware	Seed	Total
Antrim	.	9,703	1,481	11,184
Armagh	.	10,813	.	10,813
Down	4,800	14,357	2,831	21,987
Londonderry	.	18,542	656	19,198
Tyrone	.	7,441	171	7,611
<i>Northern Ireland</i>	<i>4,800</i>	<i>60,855</i>	<i>5,138</i>	<i>70,794</i>

Table 46: Estimated quantity (treated tonnes) of potatoes stored regionally in Northern Ireland, 2008.

Location of holding	Ware potatoes	Total quantity treated (tt)
Londonderry	4,680	4,680
<i>Northern Ireland</i>	<i>4,680</i>	<i>4,680</i>

Table 47: The weight of pesticides (kilograms) applied regionally to potatoes stored in Northern Ireland, 2008.

Location of holding	Ware potatoes	Total quantity (kg)
Londonderry	173.16	173.16
<i>Northern Ireland</i>	<i>173.16</i>	<i>173.16</i>

Table 48: Estimated quantity (treated tonnes) of potatoes in storage receiving pesticide treatment in Northern Ireland, 2008.

Active ingredients	Ware potatoes	Total quantity treated (tt)
Chlorpropham	4,680	4,680
<i>All pesticides</i>	<i>4,680</i>	<i>4,680</i>

Table 49: Weight (kg) of active ingredients applied to stored potatoes in Northern Ireland, 2008 (weighted).

Active ingredients	Ware	Total
Chlorpropham	173.16	173.16
<i>All pesticides</i>	<i>173.16</i>	<i>173.16</i>

Table 50: The active ingredients applied to stored potatoes in Northern Ireland in 2008, prioritised by weight (kilograms).

	Active ingredients	Quantity used (kg)
1	Chlorpropham	173.16

Table 51: Type of storage building, storage method, potato type and quantity (tonnes) of potatoes stored in Northern Ireland, 2008.

Type of storage building	Early	Ware	Seed	Total
Barn store				
Boxed	.	16,714	919	17,633
Bulk	.	3,434	596	4,030
Unknown	.	480	.	480
<i>All barn stores</i>	<i>.</i>	<i>20,628</i>	<i>1,515</i>	<i>22,143</i>

Table 51 (contd.): Type of storage building, storage method, potato type and quantity (tonnes) of potatoes stored in Northern Ireland, 2008.

Type of storage building	Early	Ware	Seed	Total
Modified Barn				
Boxed	.	1,508	24	1,532
<i>All modified barns</i>	.	<i>1,508</i>	<i>24</i>	<i>1,532</i>
Purpose built ventilated store				
Boxed	.	20,385	2,466	22,850
Bulk	.	4,256	.	4,256
Unknown	.	.	36	36
<i>All purpose built ventilated stores</i>	.	<i>24,641</i>	<i>2,502</i>	<i>27,142</i>
Refrigerated store				
Boxed	4,800	14,078	1,021	19,899
Unknown	.	.	77	77
<i>All refrigerated stores</i>	<i>4,800</i>	<i>14,078</i>	<i>1,098</i>	<i>19,976</i>
Total	<i>4,800</i>	<i>60,855</i>	<i>5,138</i>	<i>70,794</i>

Table 52: Type of storage method, potato type and total quantity (tonnes) of potatoes stored in Northern Ireland, 2008.

Type of storage method	Early	Ware	Seed	Total
Boxed	4,800	52,685	4,430	61,915
Bulk		7,690	596	8,286
Unknown		480	113	593
<i>Total</i>	<i>4,800</i>	<i>60,855</i>	<i>5,138</i>	<i>70,794</i>

Table 53: Comparison of ware potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2006.

	Ware potatoes								Difference between						
	1992	1994	1996	1998	2002	2004	2006	2008	2008-92	2008-94	2008-96	2008-98	2008-02	2008-04	2008-06
Quantity stored (t)	139,570	84,868	135,933	112,675	44,322	122,348	92,914	60,855	-56%	-28%	-55%	-46%	37%	-50%	-35%
Quantity treated (tt)	16,289	11,630	19,022	5,899	9,024	3,099	.	4680	-71%	-60%	-75%	-21%	-48%	51%	.
Quantity of pesticides (kg)	1,998	1,001	750	227	439	148	.	173	-91%	-83%	-77%	-24%	-61%	17%	.
Quantity untreated (t)	123,281	73,238	116,910	106,777	35,298	119,249	92,914	56,175	-54%	-23%	-52%	-47%	59%	-53%	-40%

Table 54: Comparison of seed potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2006.

	Seed potatoes								Difference between						
	1992	1994	1996	1998	2002	2004	2006	2008	2008-92	2008-94	2008-96	2008-98	2008-02	2008-04	2008-06
Quantity stored (t)	33,420	24,238	39,290	39,809	16,032	33,321	24,640	5,138	-85%	-79%	-87%	-87%	-68%	-85%	-79%
Quantity treated (tt)	7,536	14,950	12,915	5,628	4,029	673	76	.	.	.	.	.	.	.	.
Quantity of pesticides (kg)	1,052	851	480	896	48	5	0.76	.	.	.	.	.	.	.	.
Quantity untreated (t)	27,033	9,288	26,652	34,181	12,003	32,648	24,564	.	.	.	.	.	.	.	.

Table 55: Comparison of reserved potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2006.

	Reserved potatoes								Difference between						
	1992	1994	1996	1998	2002	2004	2006	2008	2008-92	2008-94	2008-96	2008-98	2008-02	2008-04	2008-06
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 56: Comparison of all potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2006.

	All potatoes								Difference between						
	1992	1994	1996	1998	2002	2004	2006	2008	2008-92	2008-94	2008-96	2008-98	2008-02	2008-04	2008-06
Quantity stored (t)	191,019	119,447	190,392	162,608	60,353	155,669	117,554	70,794	-63%	-41%	-63%	-56%	17%	-55%	-40%
Quantity treated (tt)	23,825	26,580	38,624	14,051	13,053	3,772	76	4680	-80%	-82%	-88%	-67%	-64%	24%	6048%
Quantity of pesticides (kg)	3,050	1,852	1,605	1,245	488	154	0.76	173.00	-94%	-91%	-89%	-86%	-65%	12%	22627%
Quantity untreated (t)	168,344	92,868	152,027	148,557	47,300	151,897	117,478	66,114	-61%	-29%	-57%	-55%	40%	-56%	-44%

Report No.	Report title	ISBN
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106	Soft Fruit Crops 1990	1-855 27 149 4
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12/09



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