PESTICIDE USAGE IN NORTHERN IRELAND

Survey Report 288

Northern Ireland Arable Crops 2018

A National Statistics Publication

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Department of Agriculture, Environment and Rural Affairs

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PESTICIDE USAGE SURVEY REPORT 288

ARABLE CROPS IN NORTHERN IRELAND 2018

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SUMMARY

This is the fifteenth survey of pesticide usage practices on arable crops in Northern Ireland. Information on all aspects of pesticide usage was collected from 203 holdings throughout the Province, representing 31% 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 2018 was 34,398 hectares. This is the lowest cropping area recorded since pesticide usage records began in 1990. This represented a decrease of 9% compared to that recorded in 2016 and a 44% reduction compared to that recorded in the first pesticide usage survey of the arable sector, in 1990. Approximately 38% of the arable cropping area in 2018 was in County Down, 26% in County Londonderry, 16% in County Antrim, 12% in County Tyrone and 8% in County Armagh. This distribution is similar to that recorded during 2006 - 2014. There was no significant area of arable cropping in County Fermanagh.

A total of 344 products (including 1 adjuvant and 4 foliar feeds), comprising 121 active substances were recorded in use on field crops in this survey compared with 366 products and 134 active substances used in 2016. No fallow, organic or cover crops were recorded during this survey period. Undersown oats was the only arable crop not to receive any pesticide treatments. Spring barley, winter barley and winter wheat collectively accounted for 78% of all arable crops grown in Northern Ireland in 2018. The total weight of pesticides applied to arable crops in 2018 increased slightly to 122 tonnes of active substances, representing a 0.2% increase from 2016 compared with a 3%, 8% and 11% reduction when compared with 2014, 2012 and 2010, respectively.

Spring barley represented 43% of the area of crops grown (table 3) and accounted for 31% of the total area of arable crops treated (table 5) and 25% of the weight of pesticides applied (table 6). Since 2012, the area of spring wheat crops grown decreased by 47% whilst during the same period the area of winter barley crops grown increased by 9%. Winter wheat accounted for 25% of the area treated with fungicides and 16% of the weight of fungicides applied, whereas spring wheat accounted for both 1% of the fungicide treated area and weight of fungicides applied. Compared with 2016, fungicide applications decreased by 5%, with chlorothalonil, either applied as a single active substance or as a formulation, the most frequently applied to cereal crops, especially spring barley, winter barley and winter wheat.

Herbicide and desiccant applications decreased by 5%. Glyphosate was the most frequently applied, accounting for 21% of all herbicide and desiccant applications and 41% of the weight applied. The active substance ethametsulfuron-methyl, used for general weed control in winter oilseed rape crops, is not approved for use in the UK but does have approval in the Republic of Ireland.

Insecticide applications decreased by 19% when compared with 2016 and the weight applied decreased by 36%. The pyrethroid insecticides esfenvalerate and lambda-cyhalothrin were used extensively on spring barley, accounting for 51% and 46% of the area treated and 31% and 42% of the weight applied, respectively. Some minor use of chlorpyrifos has been recorded on spring barley crops though, it should be noted that, from 31st March 2016, all uses have been revoked except for treatment of brassica crops in peat blocks via gantry-mounted sprayers.

Molluscicide applications decreased by 26% since the previous reporting period. Primarily, molluscicide applications were to control slugs in maincrop potatoes accounting for 59% of the area treated with this pesticide group. Ferric phosphate and metaldehyde were the only mollucisicides recorded in 2018.

Growth regulator applications decreased by 7% when compared to 2016. The principal growth regulators used in 2018 were chlormequat and trinexapac-ethyl which is consistent with previous surveys conducted between 2006 and 2018. Growth regulators were applied primarily to spring barley, winter barley and winter wheat, collectively accounting for 92% of the area treated with these active substances and 93% of the weight applied.

Seed treatment applications decreased by 14% and the weight applied by 33% when compared with 2016. The combined insecticide and fungicide seed dressing clothianidin/prothioconazole was the most frequently used seed treatment, primarily on winter barley and winter wheat. The UK-authorised plant protection product containing these active substances has been withdrawn with a phased-withdrawal period of 19 September 2018 for sale and distribution and 19 December 2018 for storage, disposal and use.

Foliar feeds and adjuvants, although not classified as active substances, are included in this report due to their use in arable crop cultivation and production. It should be noted, however,

their use is relatively minor and does not constitute significant treated areas or quantities applied.

Potato crops comprised 11% of the area of arable crops grown in Northern Ireland in 2018, accounting for 22% of the total pesticide-treated area. However, the weight of pesticides applied to potato crops represented 36% of the total weight of pesticides used on all arable crops. The total area of potatoes grown comprised 3% early, 10% seed and 87% maincrop potatoes. Potato crops accounted for 35% of the area of arable crops treated with fungicides and received 52% of the total weight of fungicides applied. Furthermore, applications of herbicides and desiccants to potato crops represented 15% of the area treated and 26% of the weight applied of this pesticide group. Potato crops received more pesticide treatments than any other arable crop (Table 7).

In addition to information concerning field applications of pesticides to potatoes, data relating to post-harvest storage methods and quantities were collected. Since arable surveys began in 1990, the estimated total quantity of potatoes stored annually in Northern Ireland has decreased significantly, by 76% (Table 42). In addition, the proportion of stored potatoes receiving pesticide treatments has also declined from approximately 20%, by weight in 1996, to 4% in 2016.

As in 2014, there were no post-harvest/storage treatments applied to farm-stored potatoes during this survey. It was estimated that 46,161 tonnes of potatoes were stored on-farm, following the 2018 growing season which represented a 31% decrease compared with 2016. County Down accounted for 58% of all potatoes stored with Londonderry accounting for a further 25%. Ventilated barn stores and refrigerated cold stores were the most commonly used methods of storage.

There have been a number of new active substances and formulations recorded during this survey period. Chlorothalonil/fluxapyroxad was applied to winter barley for fungal control and cymoxanil/propamocarb hydrochloride and oxathiapiprolin were used on potatoes, primarily for potato late blight (*Phytophthora infestans*).

DEFINITIONS AND NOTES

- ‘Grown area’ refers to the actual planted area of crop.

- ‘Basic area treated’ refers to the grown area x the percentage area receiving a treatment.

- ‘Total area treated’ refers to the total area treated with a pesticide, which includes all repeated applications to the basic area treated. This is measured in ‘spray hectares’ (basic area treated x number of spray applications = spray hectares (spha).

- ‘Reasons for use’ refers to the reasons given by the farmer for the use of a particular pesticide and may not always seem appropriate. Some reasons are non-specific e.g. ‘general disease control’ and ‘general fungal control’ are effectively the same but are reported as given by the grower.

- ‘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 of any pesticide type to the treated areas.

- ‘Quantity applied’ refers to the weight of pesticides applied, including all repeated applications, and is referred to in either kilogrammes (kg) or tonnes (t).

- ‘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, 2018 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 seed and early/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.

- Where the term ‘Unknown’ is used it refers to active substances where only partial information was available i.e. treated area and/or quantity applied but the actual name of the product or active substance used could not be determined.

- ‘End rigs’ refers to the area at each end of a planted field for turning agricultural machinery, also referred to as ‘Headlands’.

- ‘Sealer’ refers to pre-emergent herbicides which prevent weed seed germination.

- Log^{10} scales have been used in Figures 14 and 15 to assist data visualization as the difference between measures is comparatively large.

INTRODUCTION

As a participant of the UK Working Party on Pesticide Usage Surveys, the Agri-Food and Biosciences Institute (AFBI), on behalf of the Department of Agriculture, Environment and Rural Affairs (DAERA), conducts a 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 UK Expert Committee on Pesticides. In addition, the information may be used by those involved in residue testing, environmental impact studies, public information and for the evaluation and regulation of trends in pesticide usage. Pesticide usage monitoring forms part of an obligation under the Food and Environment Act (1985) for post-registration monitoring of pesticides approved for use. The programme forms an integral part of the government's pesticide safety control arrangements, in providing quantitative and qualitative data on the usage of pesticides in agriculture, horticulture, food storage and associated industries. In addition, Regulation (EC) No. 1185/2009 also requires data delivery on agricultural use of pesticides.

This work is also undertaken in England and Wales by FERA Science Ltd (FERA) and in Scotland by Science and Advice for Scottish Agriculture (SASA). Pesticide usage reports from these regions may be obtained at the following sites:

(https://secure.fera.defra.gov.uk/pusstats/surveys/)
(https://www.sasa.gov.uk/pesticides/pesticide-usage/pesticide-usage-survey-reports)

This is the fifteenth 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), 2006 (Withers *et al.,* 2007), 2008 (Withers *et al*., 2009), 2010 (Withers *et al*., 2011), 2012 (Withers *et al*., 2013), 2014 (Withers *et al*., 2015) and 2016 (Lavery *et al*., 2017). 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 2017 (Anon., 2018) and also single farm payment data (unpublished). 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, potatoes, triticale and rye.

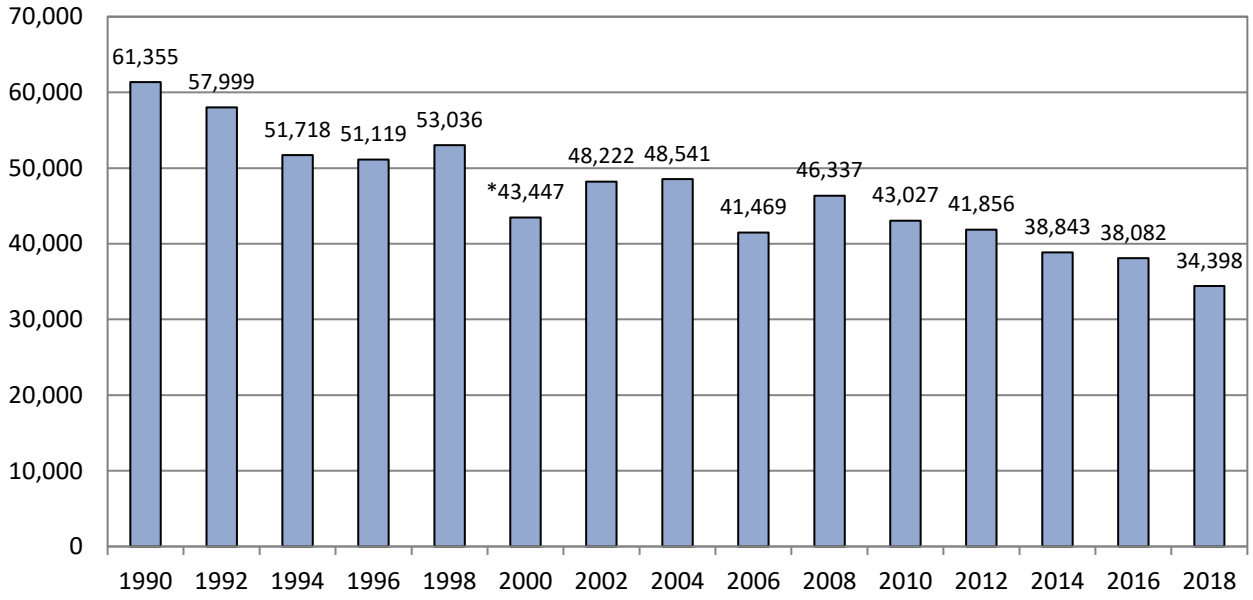
The sample was stratified into six size groups, according to the total area of cereal crops grown in each region. Holdings were selected at random within each of the size groups, the number of holdings being proportional to the total area of arable crops grown. In addition, ware and seed potato crops were selected from their own defined size groups province wide. The purpose of the survey was explained to the occupiers of selected holdings in preliminary correspondence. Data were collected from 203 holdings, which were contacted between November 2018 and March 2019. 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' reasons for pesticide use were also included, but may not always seem appropriate to the perceived treatment effects. 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 2017 (Anon., 2018). 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 SQL, a relational database programme. Validated data were downloaded for analysis using IBM SPSS Statistics Version 22 software.

Crops

Information was collected on spring barley, undersown barley, winter barley, spring wheat, winter wheat, spring oats, undersown oats, winter oats, spring oilseed rape, winter oilseed rape, peas and beans, early potatoes, maincrop potatoes, seed potatoes, triticale and rye. Data on pesticide usage on these crops were collected from 568 crops surveyed on 203 holdings. This accounted for 31% of the total area of arable crops in Northern Ireland in 2018 (Table 2).

Figure 1: Comparison of the areas of arable crops grown in Northern Ireland (ha), 1990 - 2018.



* Potatoes not included in 2000 data.

Figure 2: Regional distribution of arable crops grown in Northern Ireland (ha), 2018.

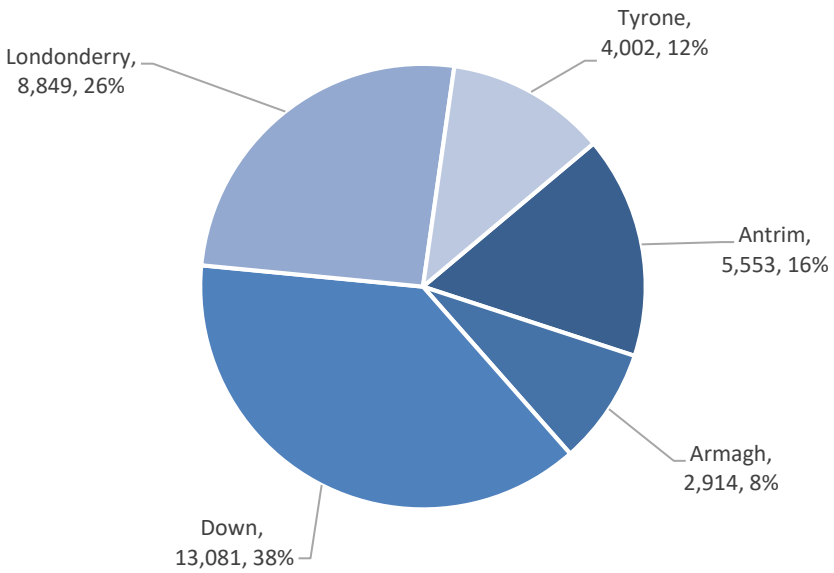


Figure 3: Regional distribution of individual arable crops grown in Northern Ireland (ha), 2018.

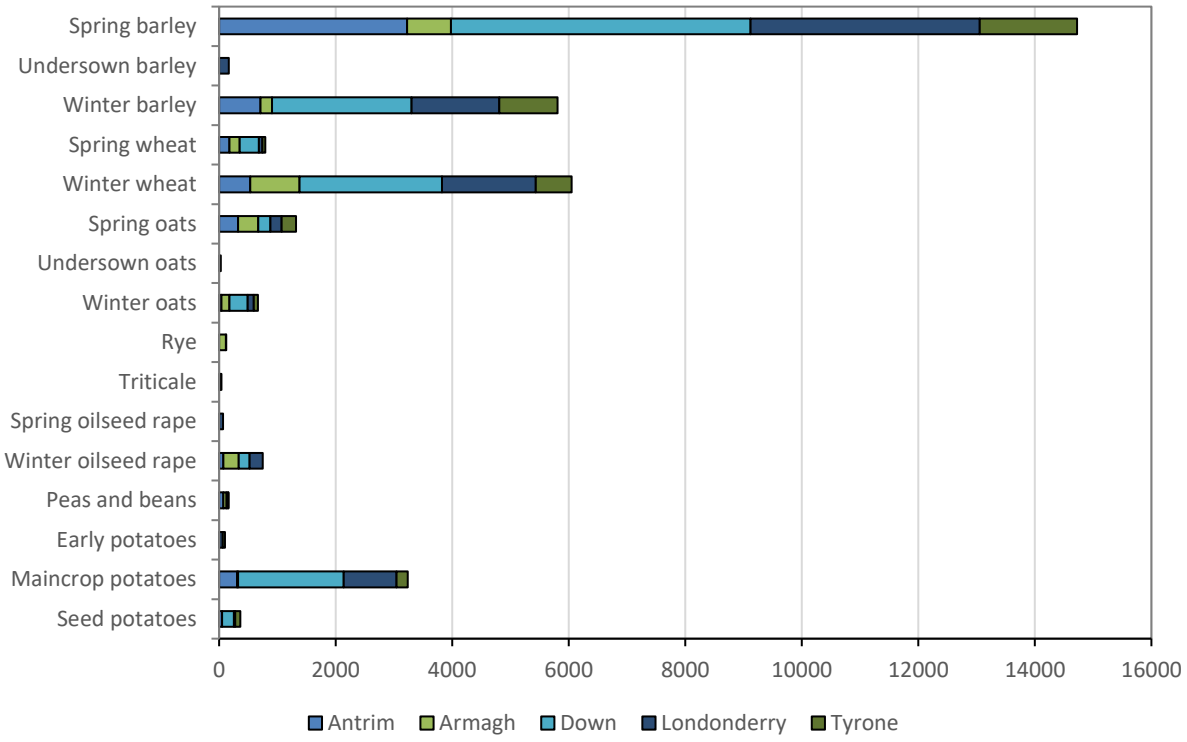


Figure 4: Areas of individual crops grown in Northern Ireland (ha), 2018.

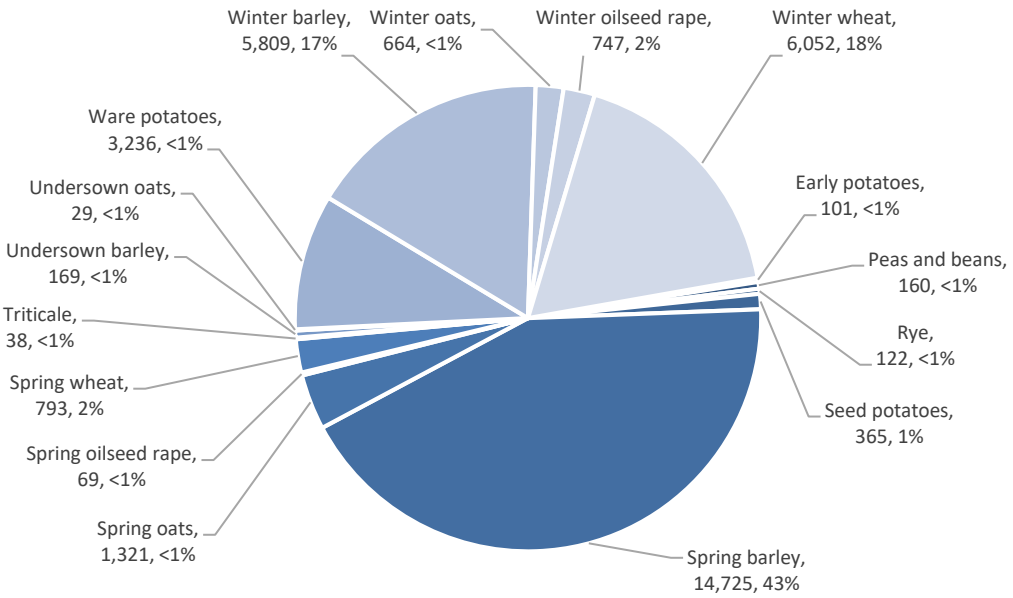


Figure 5: Comparison of the areas of cereal crops grown in Northern Ireland (ha), 1990 - 2018.

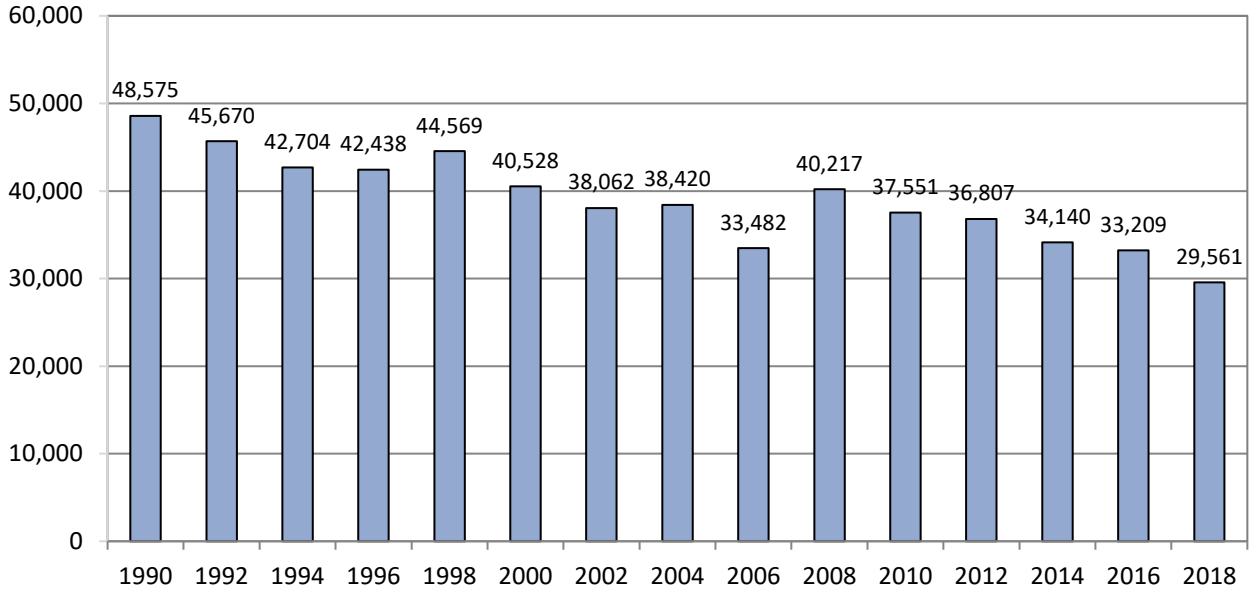


Figure 6: Regional distribution of cereal crops grown in Northern Ireland (ha), 1990 - 2018.

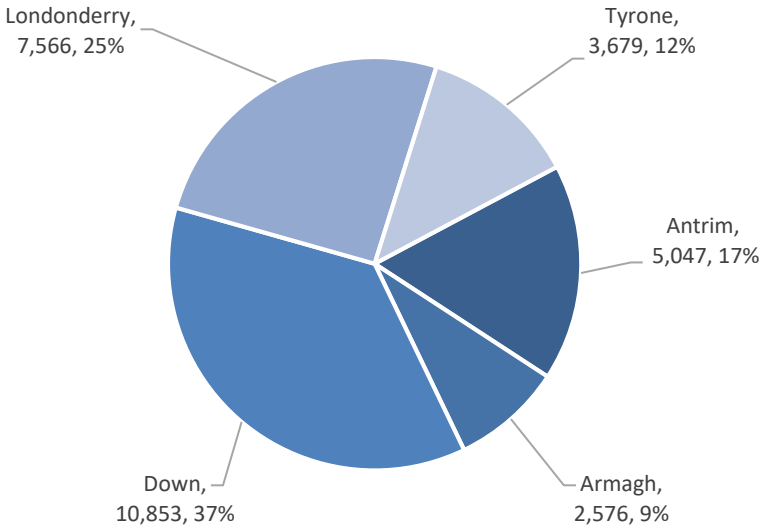
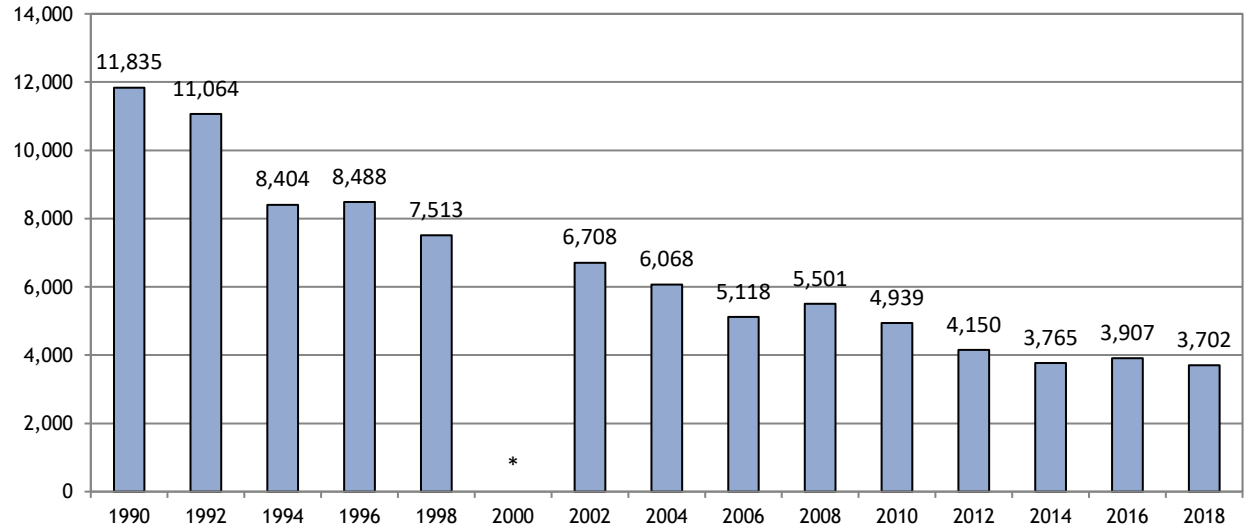


Figure 7: Comparison of the areas of potato crops grown in Northern Ireland (ha), 1990 - 2018.



* Potatoes not included in 2000 data

Figure 8: Regional distribution of potato crops grown in Northern Ireland (ha), 2018.

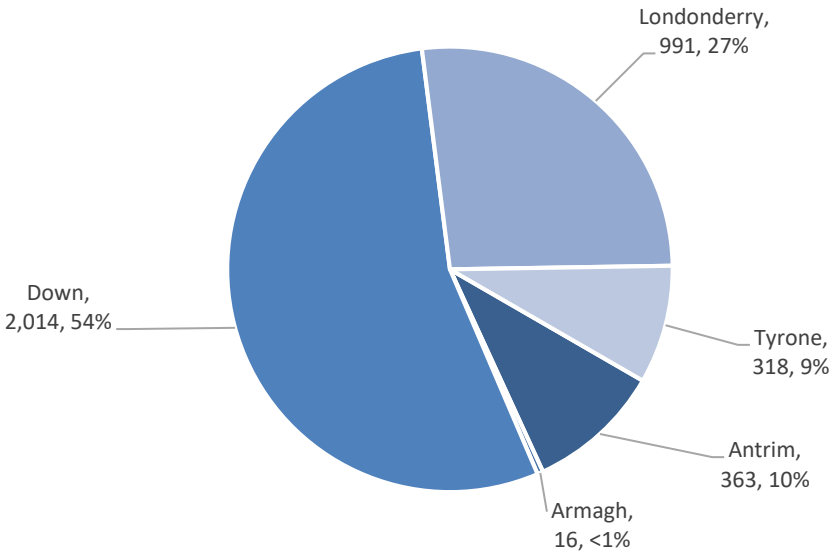
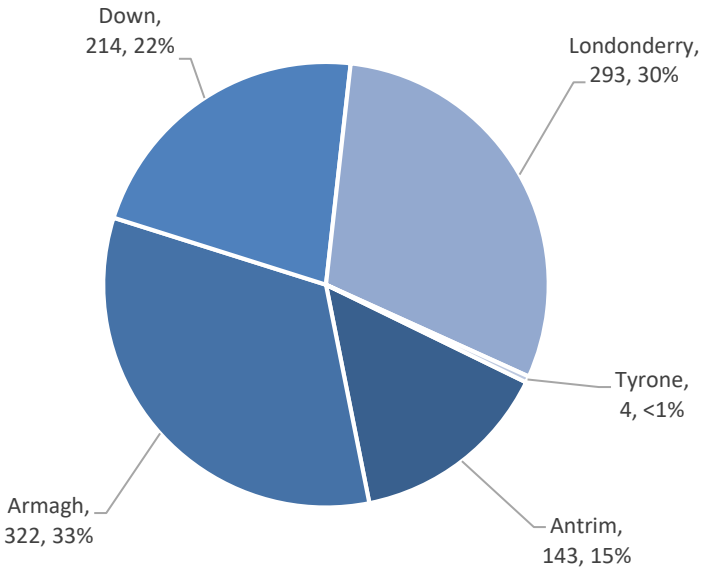
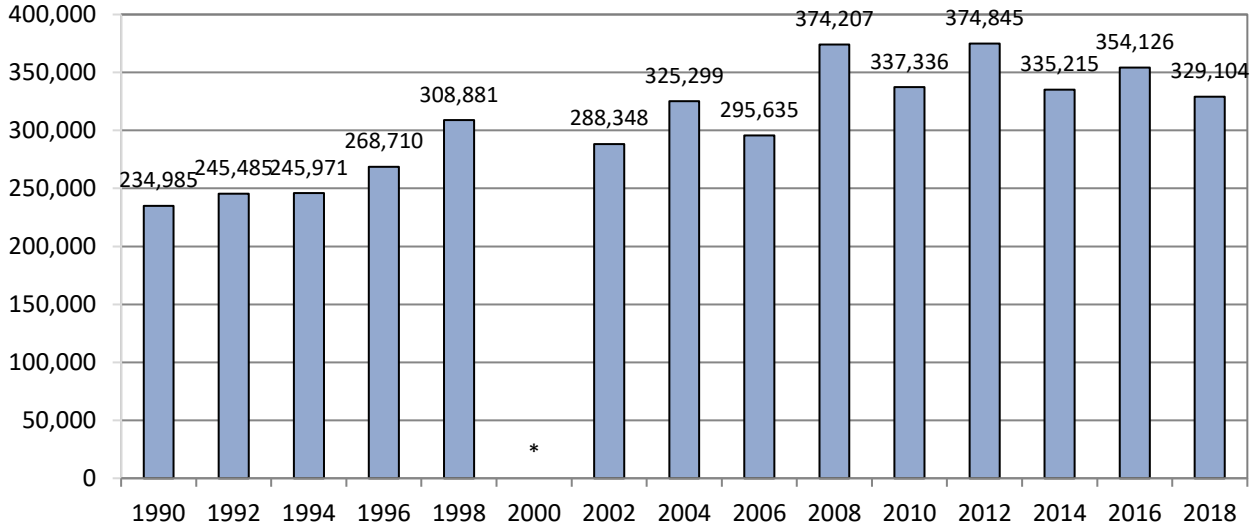


Figure 9: Regional distribution of other arable crops (oilseed rape, peas and beans) grown in Northern Ireland (ha), 2018.



Pesticide usage

Figure 10: Comparison of the areas of arable crops treated in Northern Ireland (spha), 1990 – 2018.



* Excluded as no data available for potato treated-area.

Figure 11: Pesticide usage (spha) on arable crops in Northern Ireland, 2018.

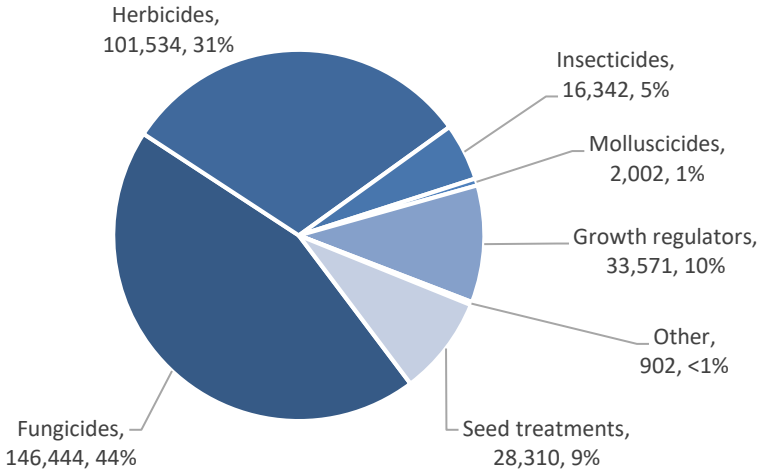
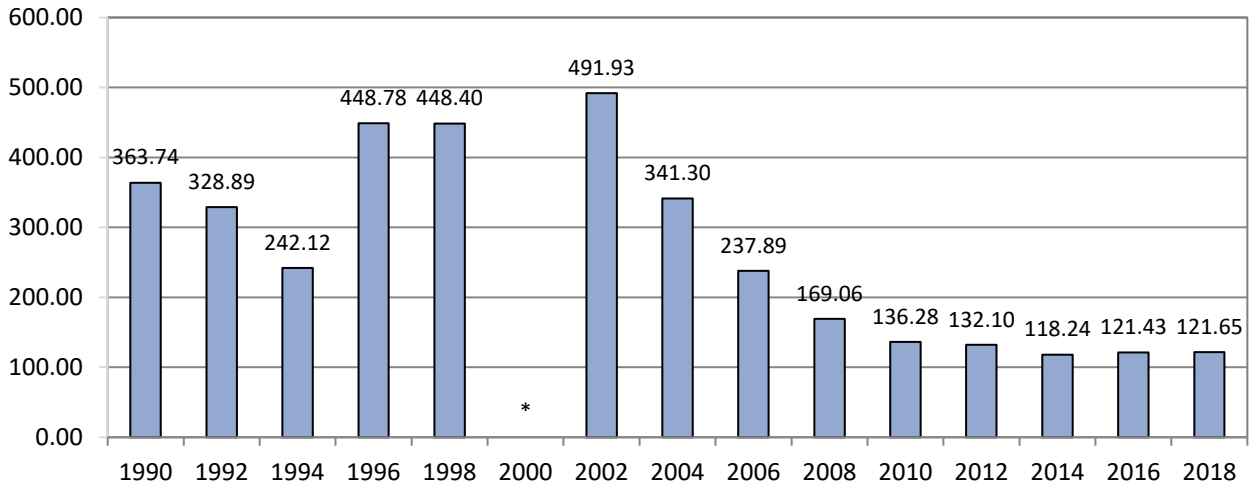


Figure 12: Comparison of the weight of pesticides applied (tonnes) to arable crops in Northern Ireland, 1990 - 2018.



* Excluded as no data available for pesticides applied to potatoes.

Figure 13: Weight of pesticides (kg) applied to arable crops in Northern Ireland, 2018.

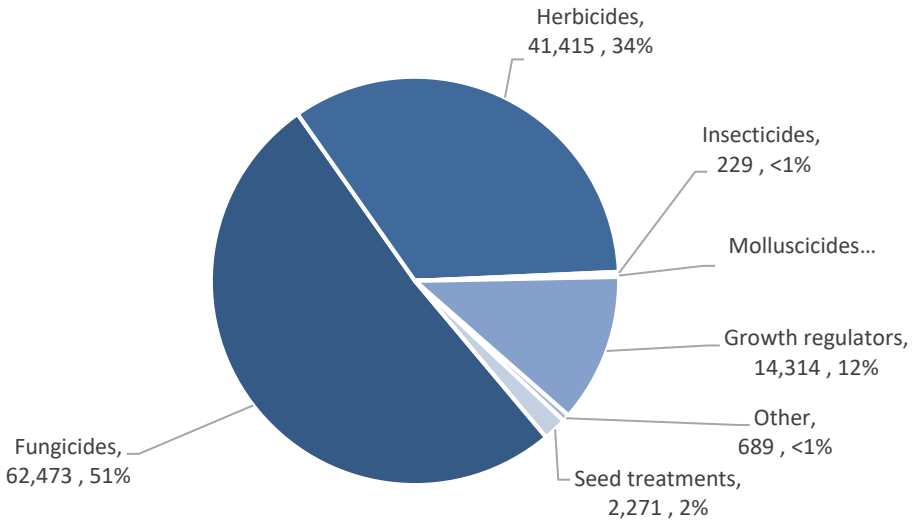


Figure 14: Area (spha (log^{10})) of arable crops treated with each pesticide type in Northern Ireland, 2018, by region.

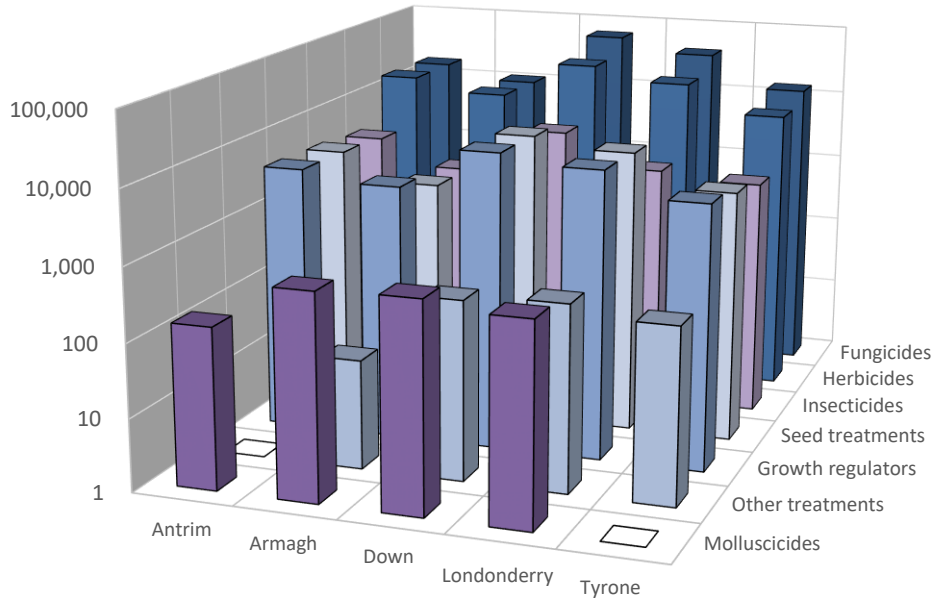


Figure 15: Weight (kg (log^{10})) of each pesticide type applied to arable crops in Northern Ireland, 2018, by region.

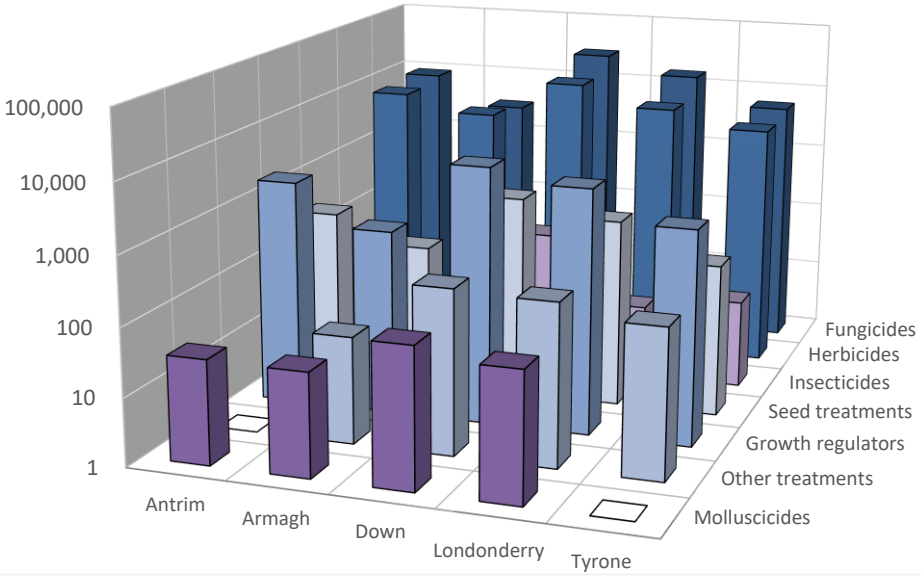


Figure 16: Comparison of the areas of cereal crops treated (spha) in Northern Ireland, 1990 - 2018.

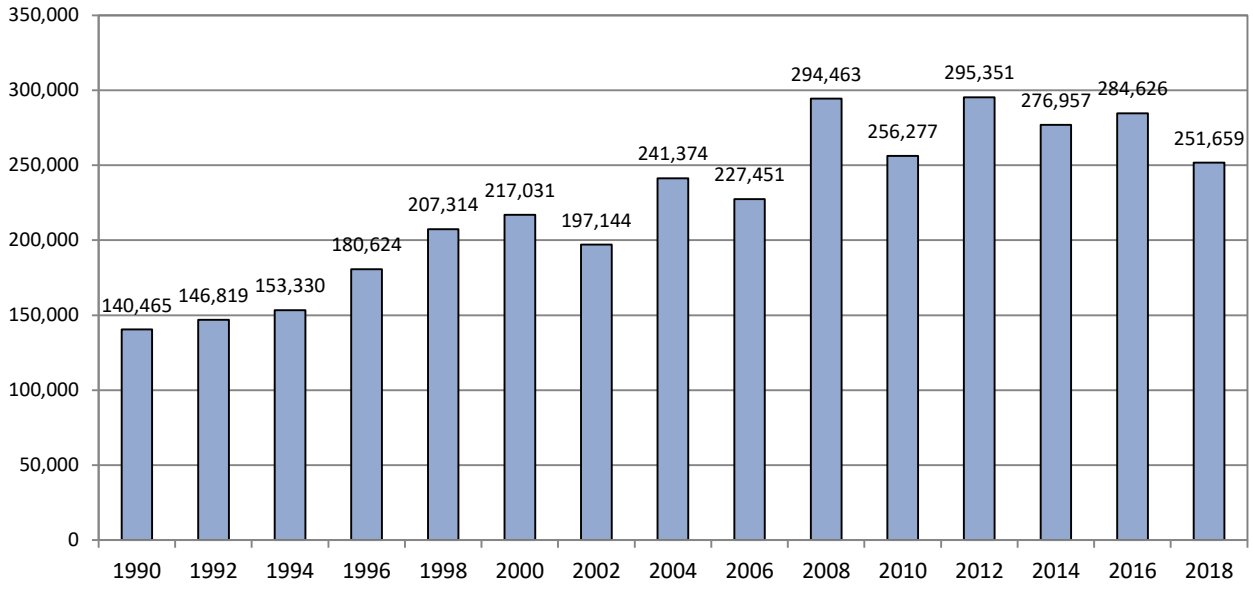


Figure 17: Pesticide usage (spha) on cereal crops in Northern Ireland, 2018.

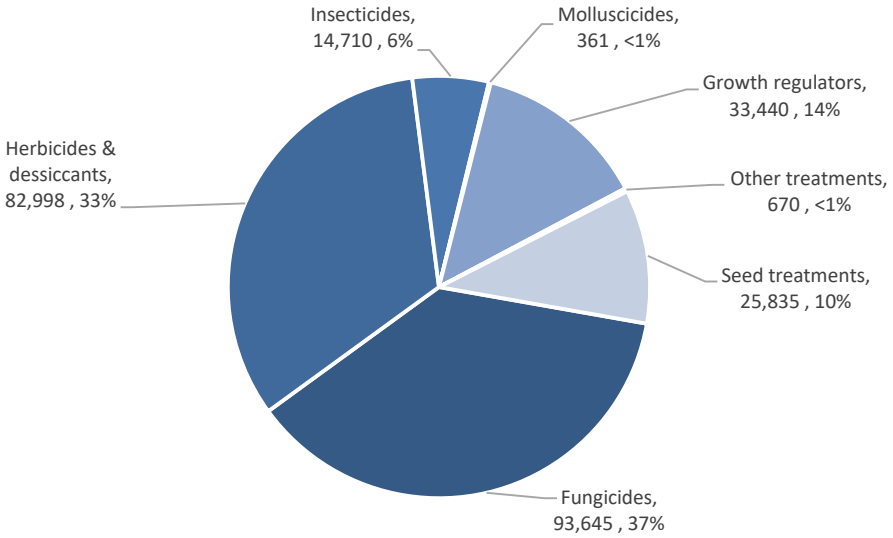


Figure 18: Comparison of the weight of pesticides (kg) applied to cereal crops in Northern Ireland, 1990 - 2018.

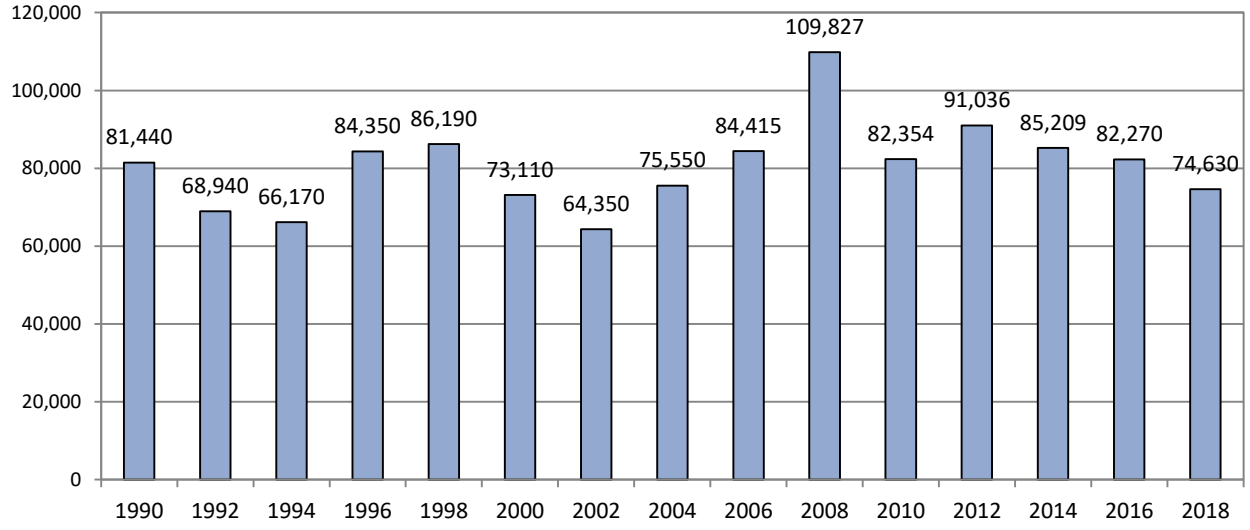


Figure 19: Weight of pesticides (kg) applied to cereal crops in Northern Ireland, 2018.

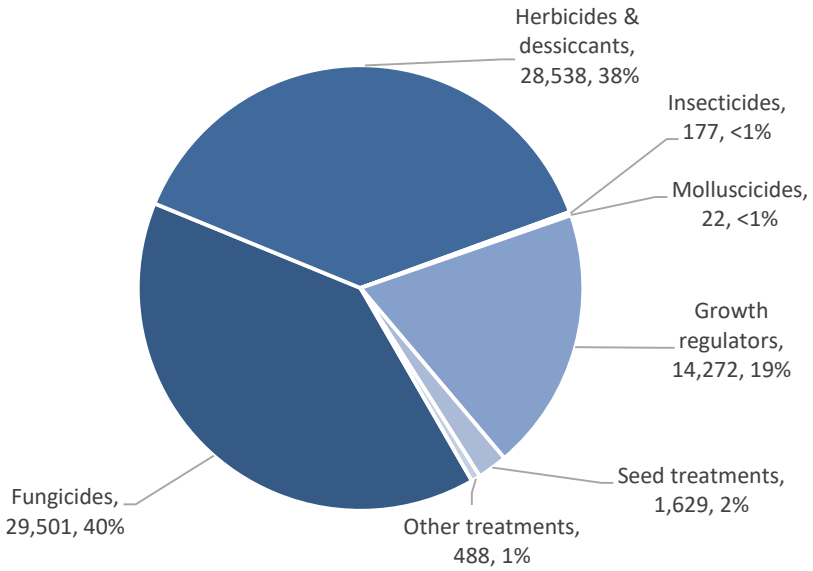


Figure 20: Pesticide usage (spha) on other arable crops in Northern Ireland, 2018.

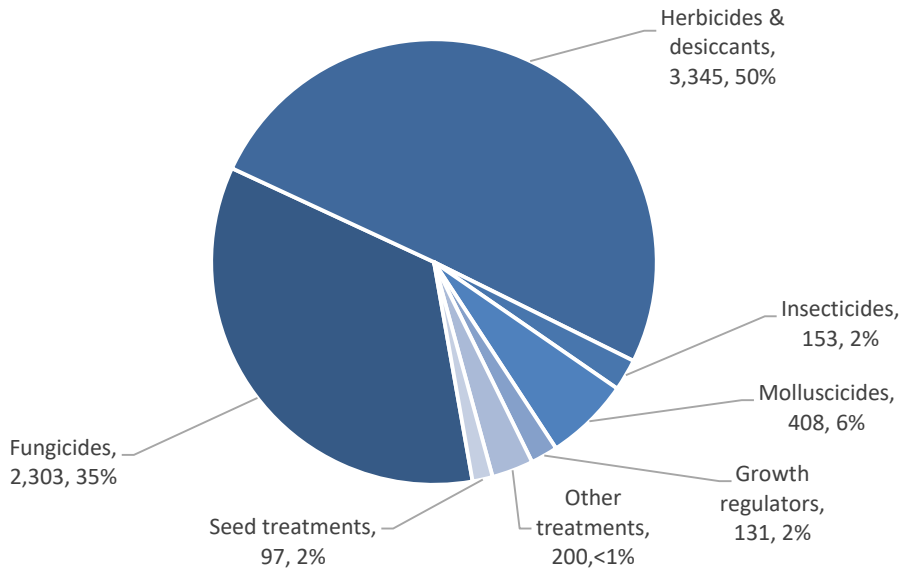


Figure 21: Weight of pesticides (kg) applied to other arable crops in Northern Ireland, 2018.

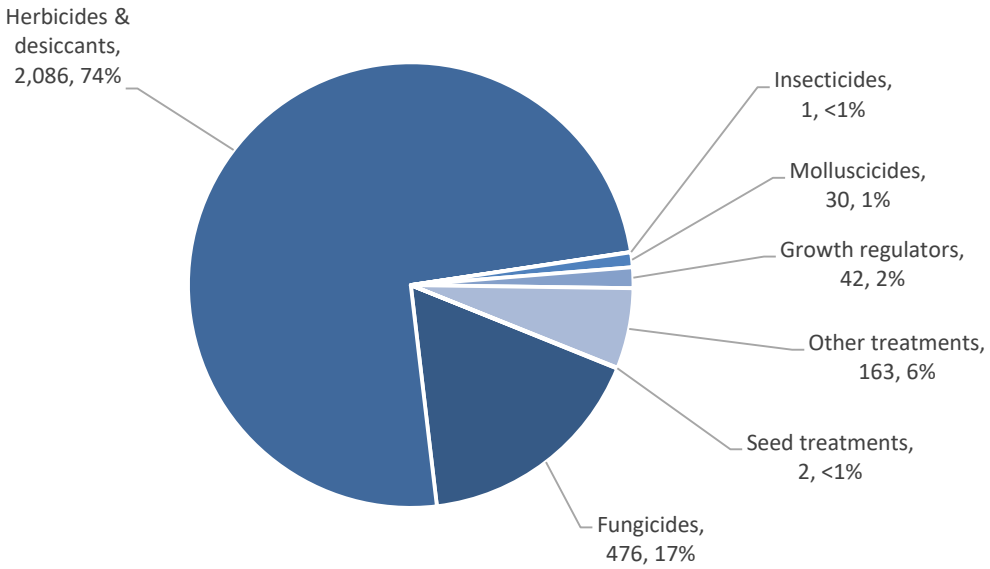
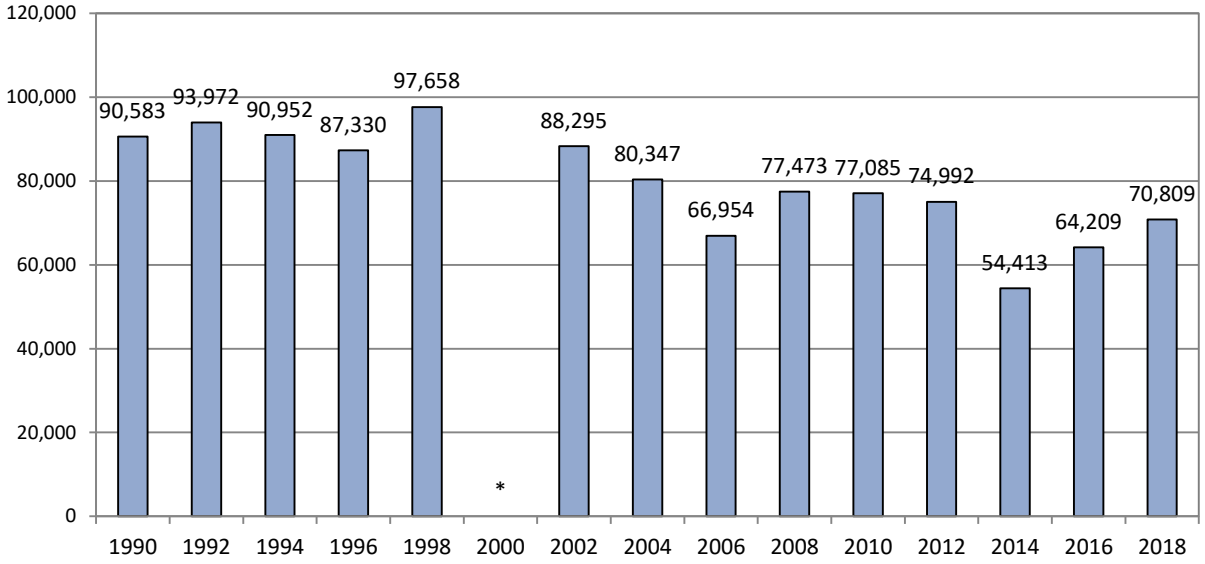


Figure 22: Comparison of the areas of potato crops treated (spha) in Northern Ireland, 1990 - 2018.



*No potato data for 2000.

Figure 23: Pesticide usage (spha) on potato crops in Northern Ireland, 2018.

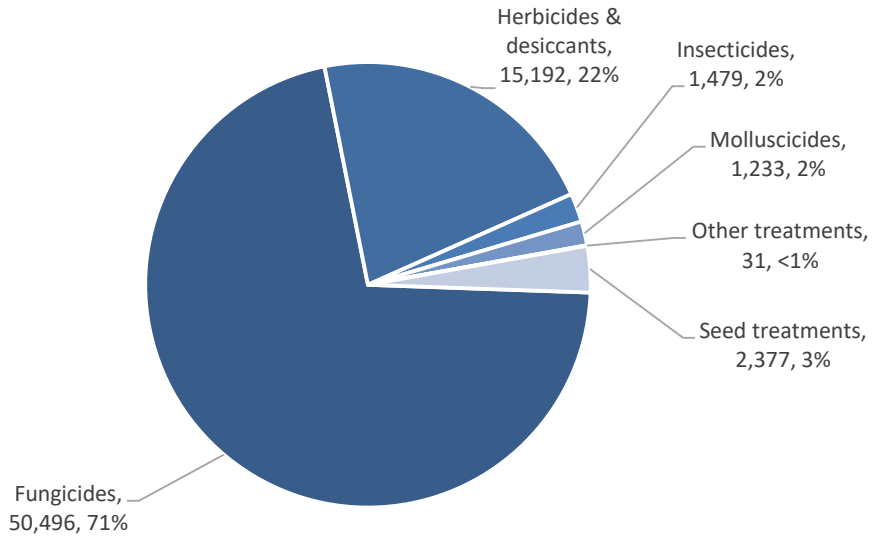
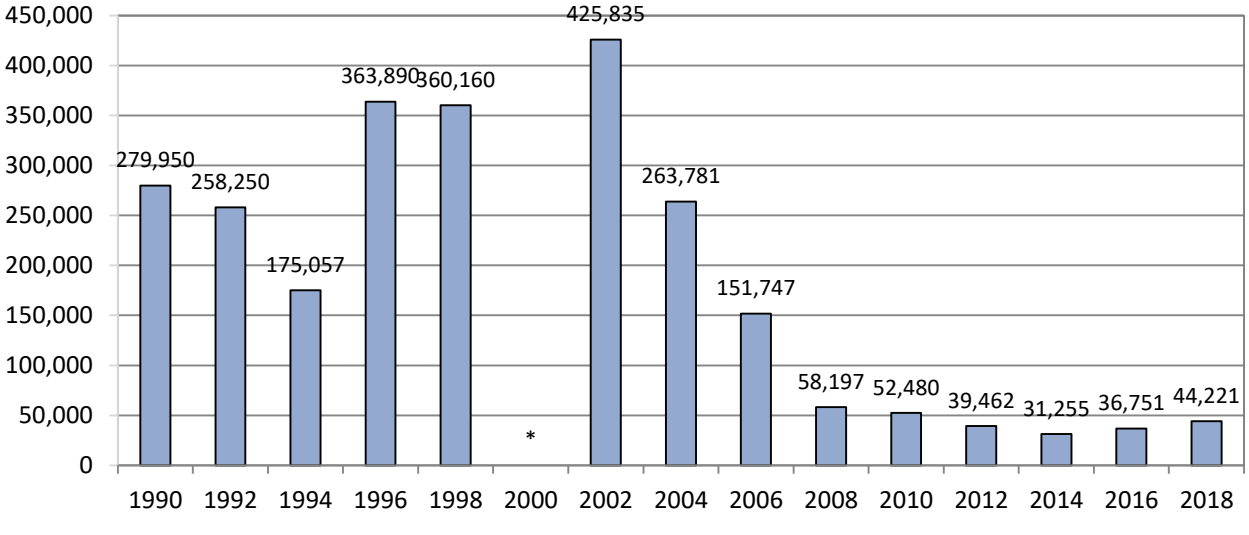
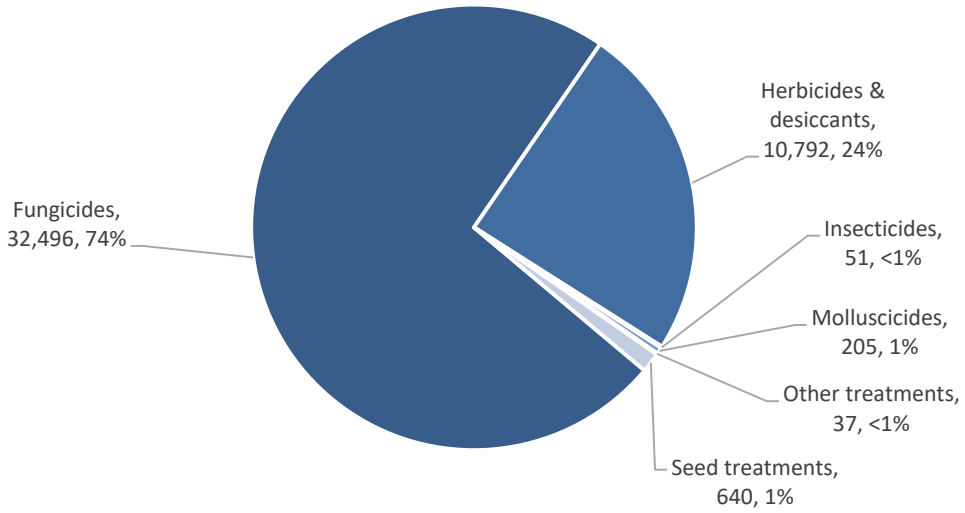


Figure 24: Comparison of the weight of pesticides (kg) applied to potato crops in Northern Ireland, 1990 - 2018.



*No potato data for 2000.

Figure 25: Weight of pesticides (tonnes) applied to potato crops in Northern Ireland, 2018.



Pesticide usage on spring barley (Tables 3, 5, 6, 7, 8, 9 & 12):

- 14,725 hectares of spring barley grown in Northern Ireland
- 102,348 treated hectares
- 29,970 kilogrammes applied
- 99% of the area of spring barley crops grown received a pesticide treatment.
- Spring barley received on average 2 fungicide, 3 herbicide, 1 insecticide, 1 growth regulator, 1 other treatment and 1 seed treatment applications.

Figure 26: Comparison of the areas of spring barley crops grown in Northern Ireland (ha), 1990 - 2018.

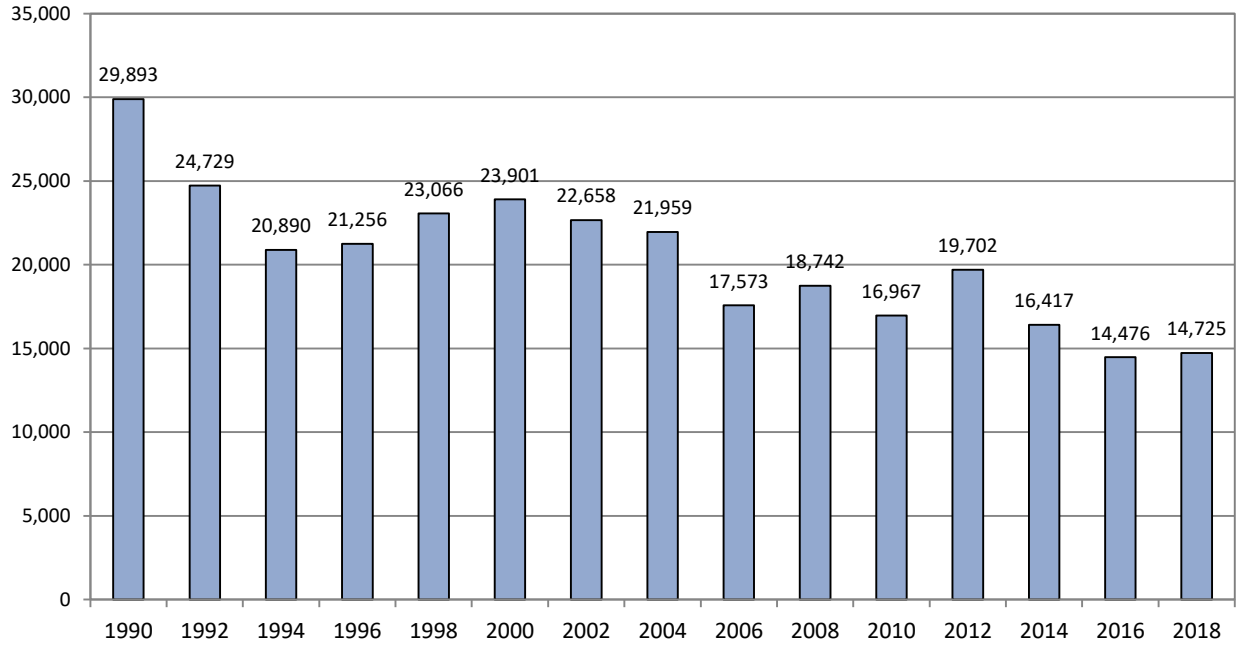


Figure 27: Regional distribution of spring barley crops grown in Northern Ireland (ha), 2018.

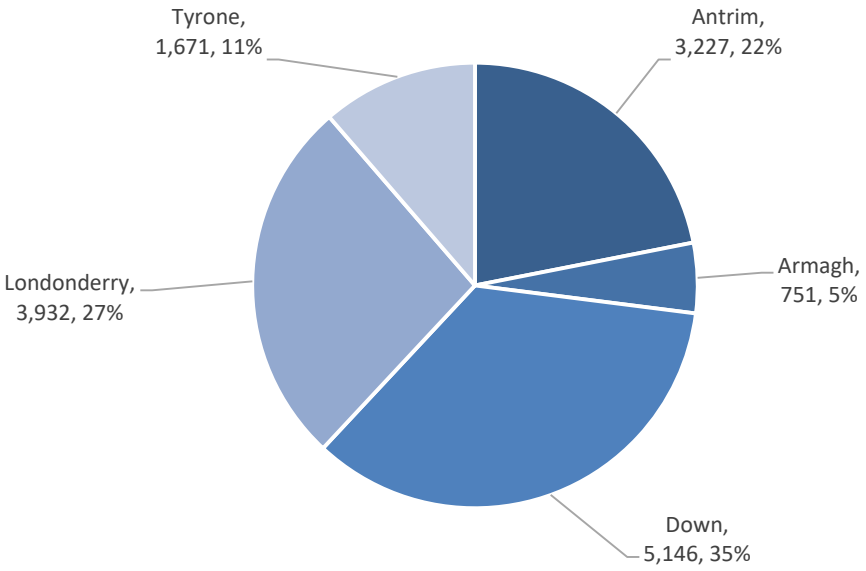


Figure 28: Pesticide usage (spha) on spring barley crops in Northern Ireland, 2018.

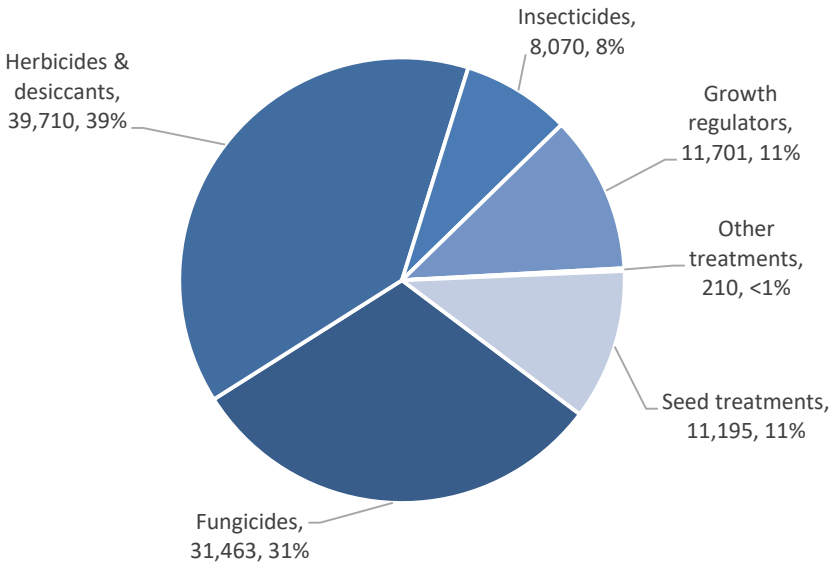


Figure 29: Weight of pesticides (kg) applied to spring barley crops in Northern Ireland, 2018.

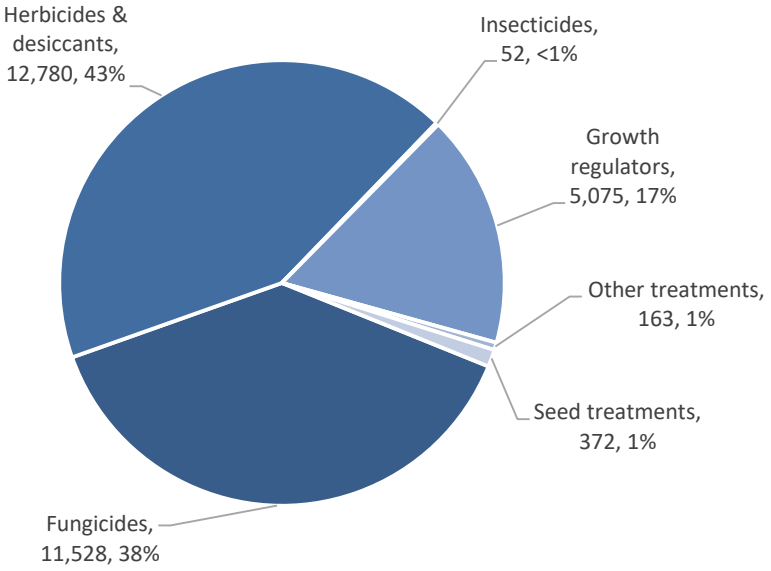
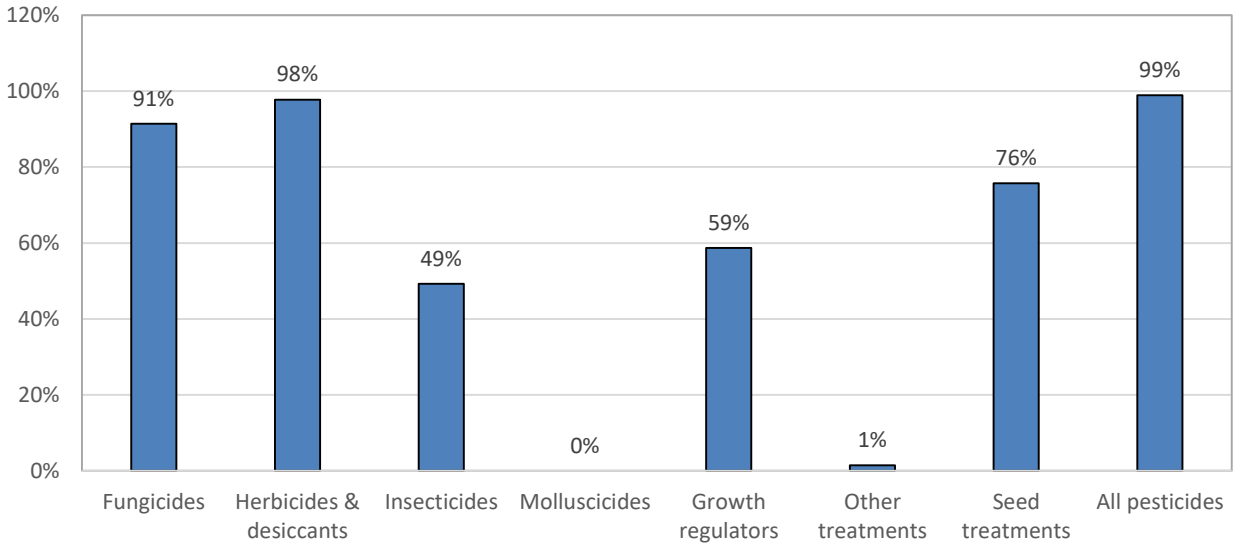


Figure 30: Proportional area (%) of spring barley crops treated with each pesticide type in Northern Ireland, 2018.

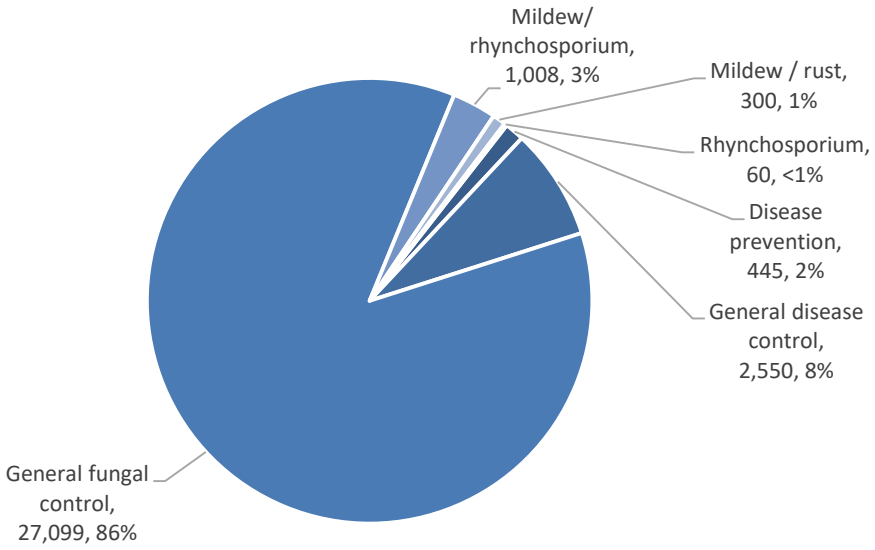


Fungicides - spring barley

- Basic area treated: 13,456 hectares
- Total area treated: 31,463 spray hectares
- Weight of active substances applied: 11,528 kilogrammes
- 91% of the area grown treated with fungicides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Chlorothalonil	8,955	7,231	5,051	28
Prothioconazole	2,996	2,713	309	10
Prothioconazole/trifloxystrobin	2,652	2,515	466	8
Epoxiconazole/fenpropimorph/kresoxim-methyl	1,843	1,479	669	6
Fluoxastrobin/prothioconazole	1,739	1,417	312	6

Figure 31: Spring barley: reasons for fungicide use (spha), 2018.

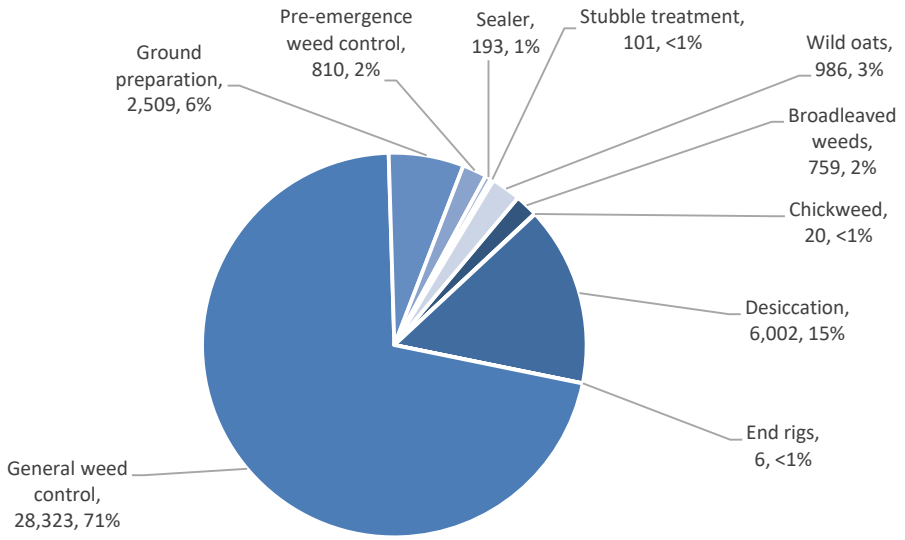


Herbicides & desiccants - spring barley

- Basic area treated: 14,396 hectares
- Total area treated: 39,710 spray hectares
- Weight of active substances applied: 12,780 kilogrammes
- 98% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	8,411	7,096	6,873	21
Fluroxypyr	6,018	5,755	903	15
Metsulfuron-methyl/tribenuron-methyl	5,730	5,647	57	14
Metsulfuron-methyl	2,818	2,818	14	7
Dicamba/mecoprop-p	2,196	2,196	1,510	6

Figure 32: Spring barley: reasons for herbicide & desiccant use (spha), 2018.

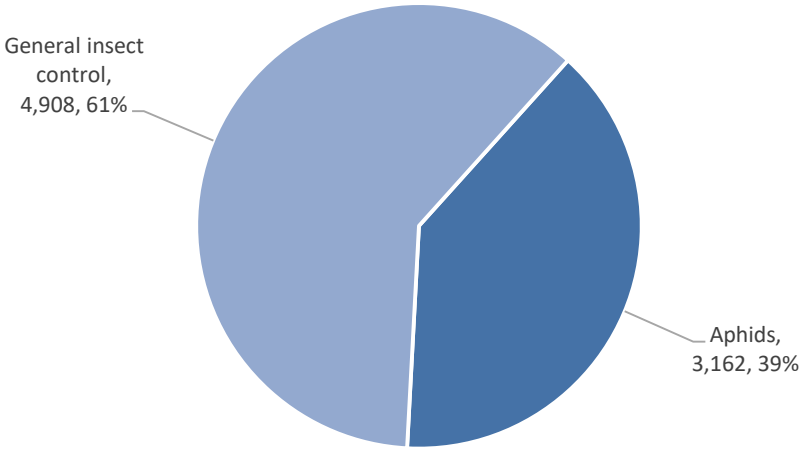


Insecticides - spring barley

- Basic area treated: 7,250 hectares
- Total area treated: 8,070 spray hectares
- Weight of active substances applied: 52 kilogrammes
- 49% of the area grown treated with insecticides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Esfenvalerate	4,094	3,547	16	51
Lambda-cyhalothrin	3,732	3,511	22	46
Cypermethrin	113	113	1	1
Chlorpyrifos	72	72	13	1
Deltamethrin	59	59	<1	1

Figure 33: Spring barley: reasons for insecticide use (spha), 2018.



Growth regulators - spring barley

- Basic area treated: 8,664 hectares
- Total area treated: 11,701 spray hectares
- Weight of active substances applied: 5,075 kilogrammes
- 59% of the area grown treated with growth regulators
- Growth regulation was the only reason given for use
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Chlormequat	5,921	5,509	4,571	51
Trinexapac-ethyl	4,447	4,256	255	38
2-chloroethylphosphonic acid	494	494	84	4
Mepiquat chloride/prohexadione-calcium	457	457	153	4
Prohexadione-calcium/trinexapac-ethyl	381	381	12	3

Other treatments - spring barley

- Basic area treated: 210 hectares
- Total area treated: 210 spray hectares
- Weight of active substances applied: 163 kilogrammes
- 1% of the area grown treated with other treatments
- The reason for use was given exclusively as foliar feed
- The following substances were applied:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total other treatments-treated area
Nitrogen/phosphate/potassium	159	159	143	76
Manganese	51	51	20	24

Seed treatments - spring barley

- Basic area treated: 11,153 hectares
- Total area treated: 11,195 spray hectares
- Weight of active substances applied: 372 kilogrammes
- 76% of the area grown was sown with treated seed
- All reasons for use were given as seed treatment
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Fludioxonil	5,793	5,793	53	52
Clothianidin/prothioconazole	1,755	1,755	192	16
Prothioconazole	1,535	1,535	29	14
Unknown seed treatment	879	879	.	8
Fluopyram/prothioconazole/tebuconazole	422	422	7	4

Pesticide usage on undersown barley (Tables 3, 5, 6, 7, 8, 9 & 13):

- 169 hectares of undersown barley crops grown in Northern Ireland
- 614 treated hectares
- 111 kilogrammes applied
- 100% of the area of undersown barley crops grown received a pesticide treatment
- Undersown barley received on average 2 fungicide, 2 herbicide, 2 insecticide and 1 seed treatment applications

Figure 34: Comparison of the areas of undersown barley crops grown in Northern Ireland (ha), 1990 - 2018.

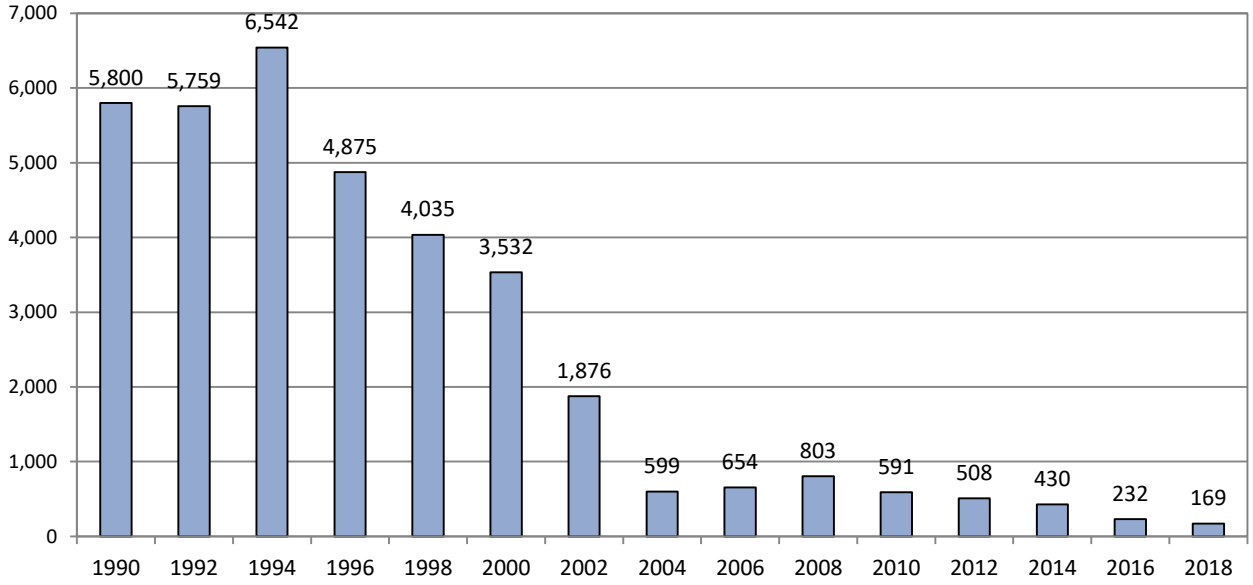


Figure 35: Pesticide usage (spha) on undersown barley crops in Northern Ireland, 2018.

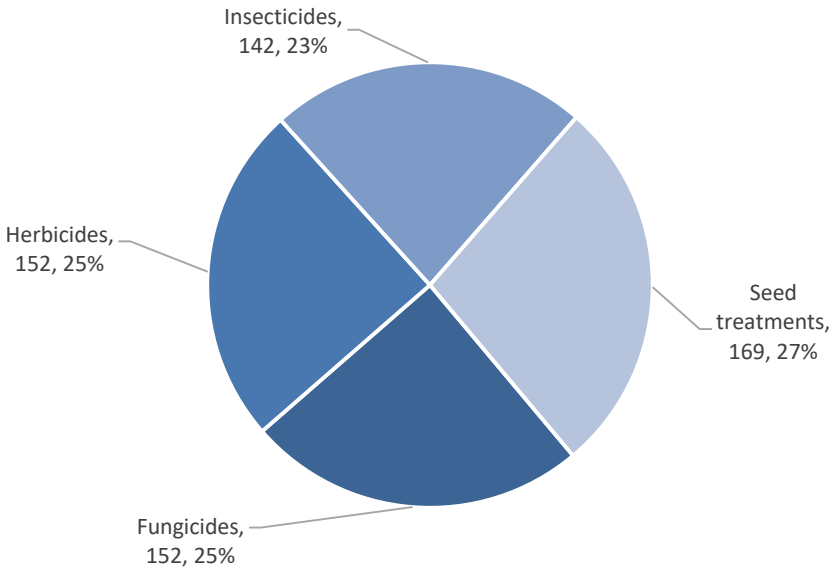


Figure 36: Weight of pesticides (kg) applied to undersown barley crops in Northern Ireland, 2018.

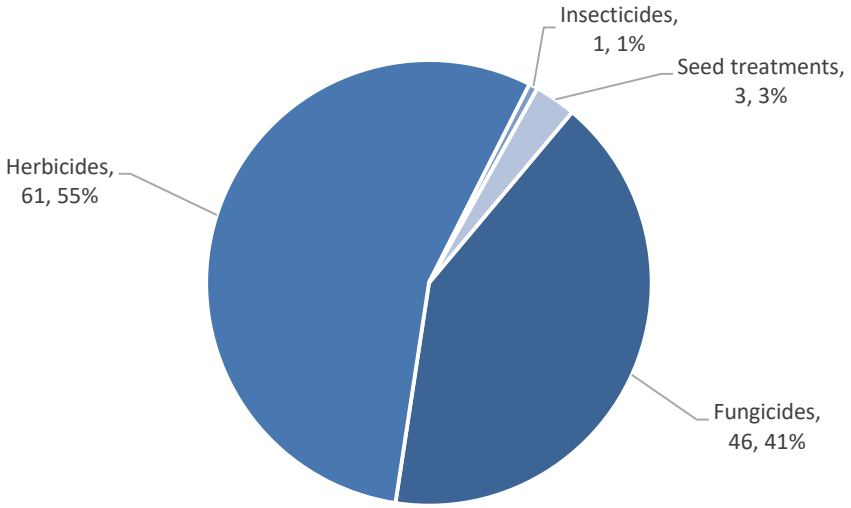
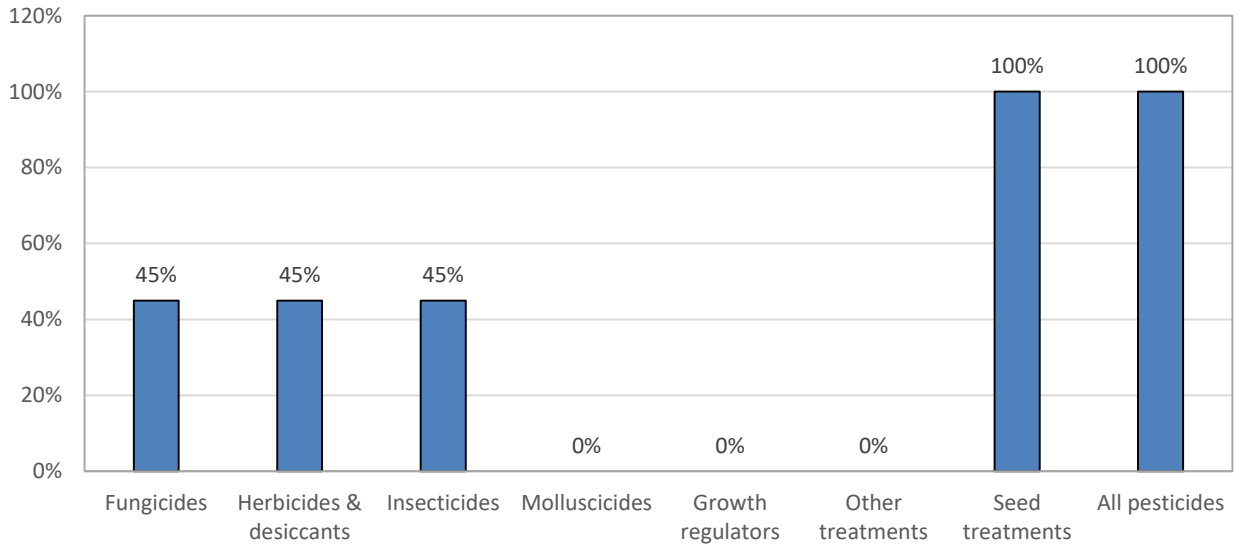


Figure 37: Proportional area (%) of undersown barley crops treated with each pesticide type in Northern Ireland, 2018.



Fungicides - undersown barley

- Basic area treated: 76 hectares
- Total area treated: 152 spray hectares
- Weight of active substances applied: 46 kilogrammes
- 45% of the area grown treated with fungicides
- The two active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Chlorothalonil	76	76	38	50
Prothioconazole	76	76	8	50

Herbicides & desiccants - undersown barley

- Basic area treated: 76 hectares
- Total area treated: 152 spray hectares
- Weight of active substances applied: 61 kilogrammes
- 45% of the area grown treated with herbicides & desiccants
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
2,4-DB	76	76	61	50
Tribenuron-methyl	76	76	<1	50

Insecticides - undersown barley

- Basic area treated: 76 hectares
- Total area treated: 142 spray hectares
- Weight of active substances applied: 1 kilogramme
- 45% of the area grown treated with insecticides
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Deltamethrin	132	66	1	93
Lambda-cyhalothrin	10	10	<1	7

Seed treatments - undersown barley

- Basic area treated: 169 hectares
- Total area treated: 169 spray hectares
- Weight of active substances applied: 3 kilogrammes
- 100% of the area grown was sown with treated seed
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Prothioconazole	102	102	2	61
Prothioconazole/tebuconazole	66	66	1	39

Pesticide usage on winter barley (Tables 3, 5, 6, 7, 8, 9 & 14):

- 5,809 hectares of winter barley grown in Northern Ireland
- 54,651 treated hectares
- 17,843 kilogrammes applied
- 100% of the area of winter barley crops grown received a pesticide treatment.
- Winter barley received on average 3 fungicide, 3 herbicide, 1 insecticide, 2 growth regulator, 1 other treatment and 1 seed treatment applications

Figure 38: Comparison of the areas of winter barley crops grown in Northern Ireland (ha), 1990 – 2018.

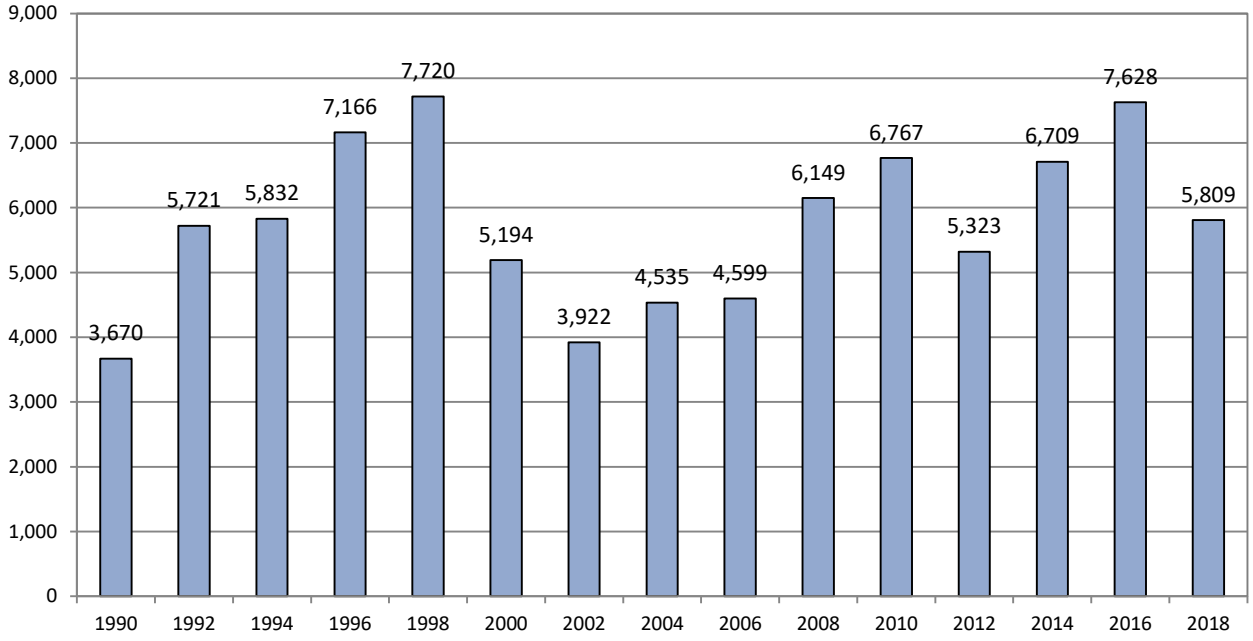


Figure 39: Regional distribution of winter barley crops grown in Northern Ireland (ha), 2018.

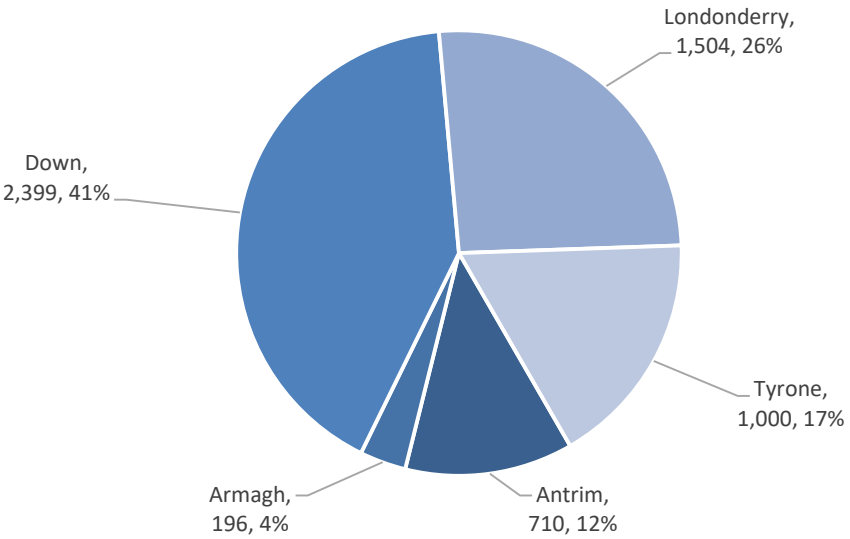


Figure 40: Pesticide usage (spha) on winter barley crops in Northern Ireland, 2018.

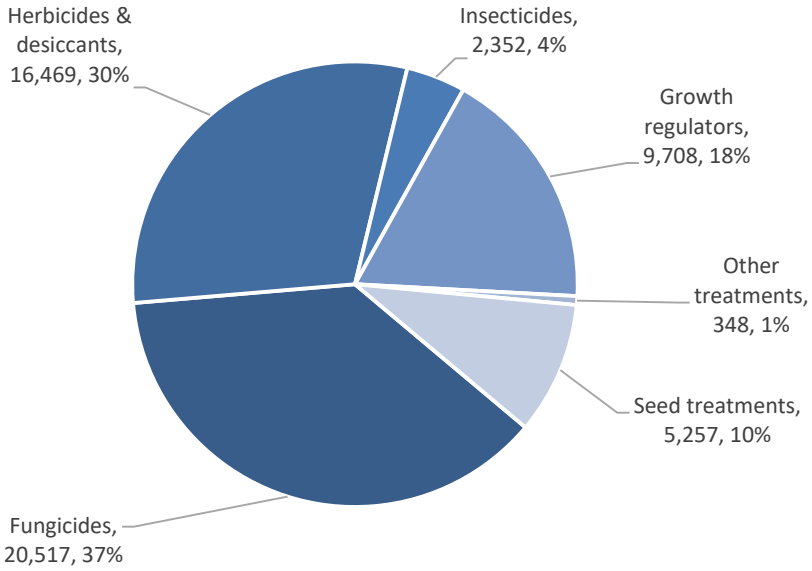


Figure 41: Weight of pesticides (kg) applied to winter barley crops in Northern Ireland, 2018.

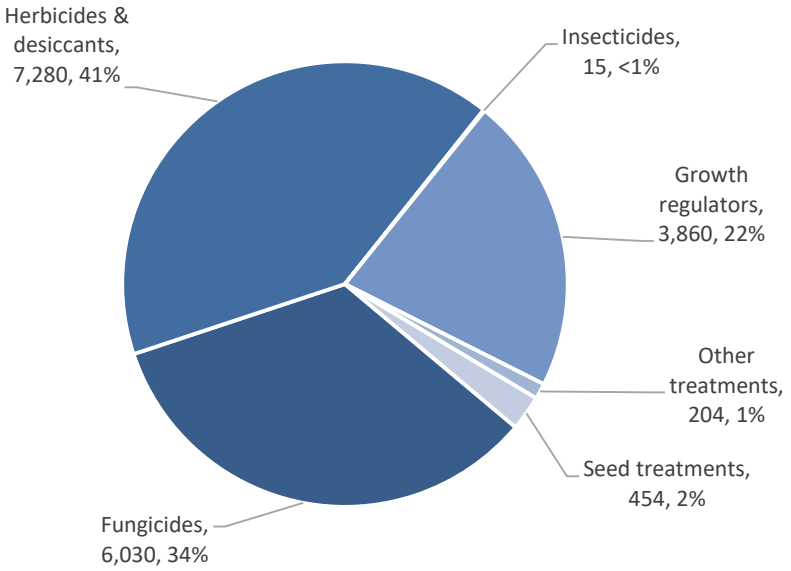
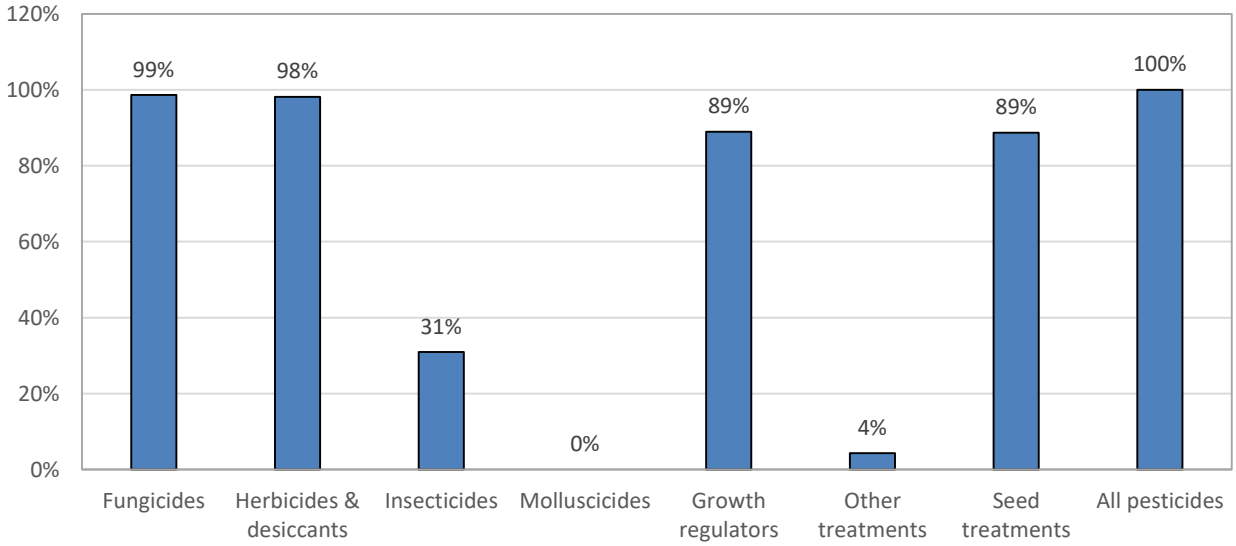


Figure 42: Proportional area (%) of winter barley crops treated with each pesticide type in Northern Ireland, 2018.

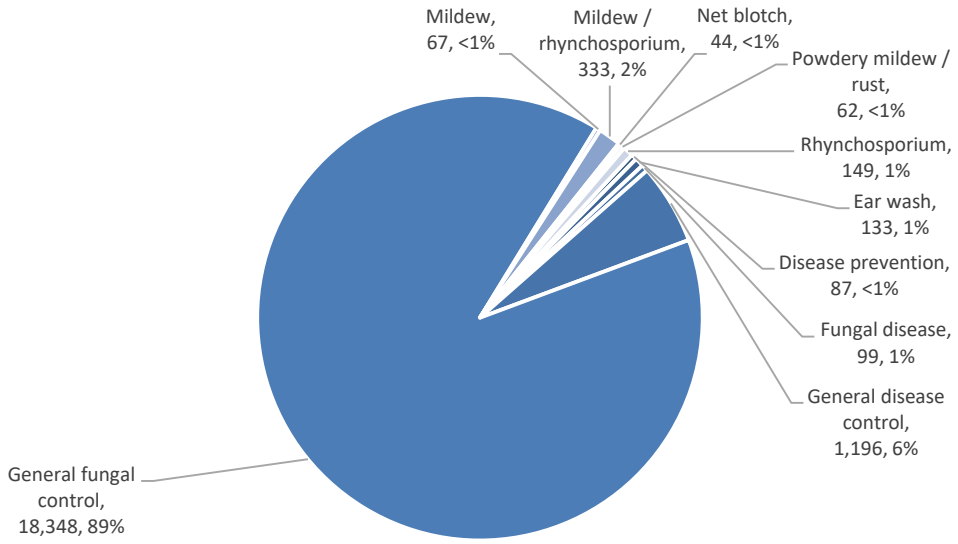


Fungicides - winter barley

- Basic area treated: 5,732 hectares
- Total area treated: 20,517 spray hectares
- Weight of active substances applied: 6,030 kilogrammes
- 99% of the area grown treated with fungicides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Chlorothalonil	6,380	4,445	3,130	31
Bixafen/prothioconazole	1,727	1,274	268	8
Prothioconazole	1,663	1,356	193	8
Epoxiconazole	1,558	840	147	8
Penthiopyrad	1,382	829	234	7

Figure 43: Winter barley: reasons for fungicide use (spha), 2018.

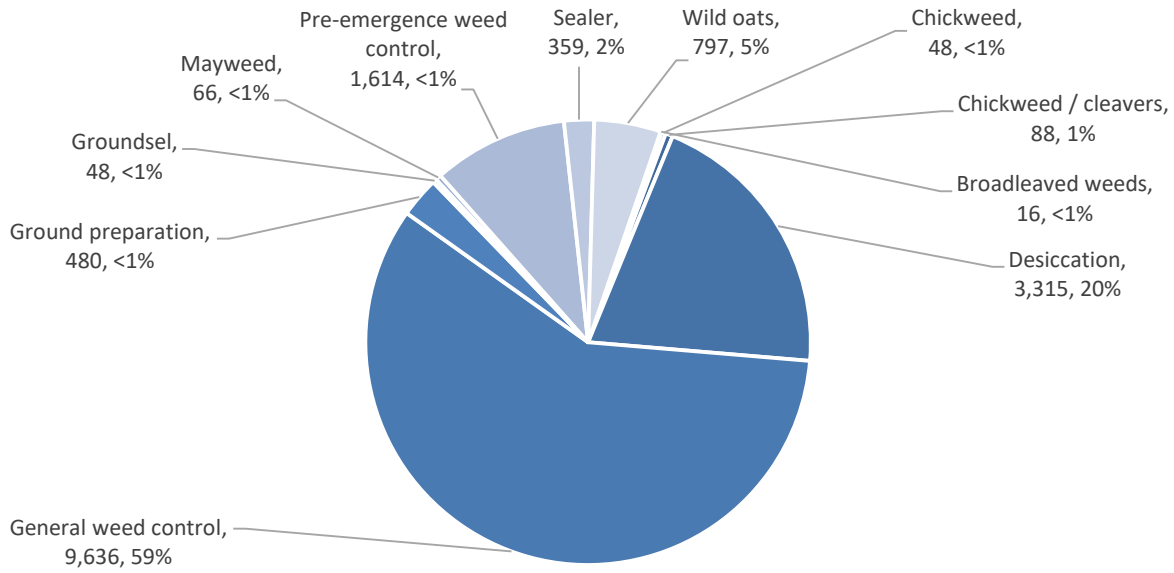


Herbicides & desiccants - winter barley

- Basic area treated: 5,703 hectares
- Total area treated: 16,469 spray hectares
- Weight of active substances applied: 7,280 kilogrammes
- 98% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	4,071	3,693	3,073	25
Flufenacet/pendimethalin	1,925	1,898	2,071	12
Diflufenican/flufenacet	1,562	1,387	339	9
Fluroxypyr	1,419	1,391	192	9
Diflufenican	1,419	1,419	107	9

Figure 44: Winter barley: reasons for herbicide & desiccant use (spha), 2018.

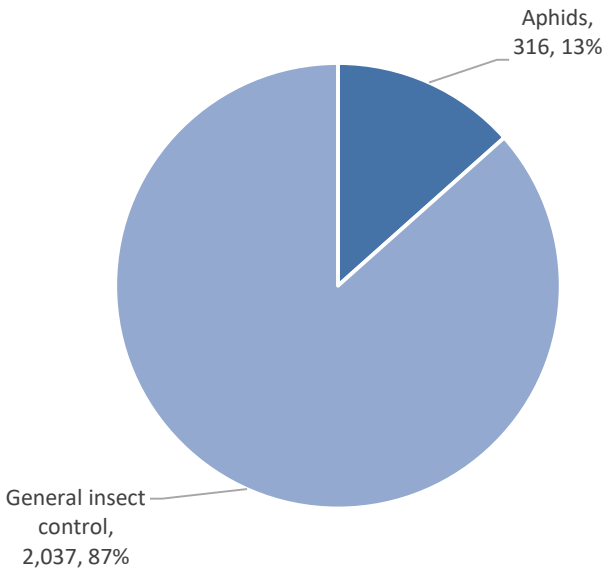


Insecticides - winter barley

- Basic area treated: 1,796 hectares
- Total area treated: 2,352 spray hectares
- Weight of active substances applied: 15 kilogrammes
- 31% of the area grown treated with insecticides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Esfenvalerate	1,358	802	6	58
Lambda-cyhalothrin	994	994	10	42

Figure 45: Winter barley: reasons for insecticide use (spha), 2018.



Growth regulators - winter barley

- Basic area treated: 5,168 hectares
- Total area treated: 9,708 spray hectares
- Weight of active substances applied: 3,860 kilogrammes
- 89% of the area grown treated with growth regulators
- All reasons for use were given as growth regulation
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regualtor-treated area (spha)
Chlormequat	4,353	3,608	3,413	45
Trinexapac-ethyl	3,682	3,241	223	38
2-chloroethylphosphonic acid	907	907	180	9
Prohexadione-calcium/trinexapac-ethyl	661	631	26	7
Mepiquat chloride/prohexadione-calcium	104	104	17	1

Other treatments - winter barley

- Basic area treated: 251 hectares
- Total area treated: 348 spray hectares
- Weight of active substances applied: 204 kilogrammes
- 4% of the area grown treated with other substances
- The reason for use was given exclusively as foliar feed
- The following substances were applied:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total other treatment-treated area (spha)
Manganese	318	251	181	91
Nitrogen/phosphate/potassium	31	31	23	9

Seed treatments - winter barley

- Basic area treated: 5,155 hectares
- Total area treated: 5,257 spray hectares
- Weight of active substances applied: 454 kilogrammes
- 89% of the area grown was sown with treated seed
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Clothianidin/prothioconazole	3,920	3,920	418	75
Silthiofam	278	278	14	5
Fludioxonil	267	267	3	5
Unknown seed treatment	226	226	.	4
Fluopyram/prothioconazole/tebuconazole	196	196	3	4

Pesticide usage on spring wheat (Tables 3, 5, 6, 7, 8, 9 & 15):

- 793 hectares of spring wheat grown in Northern Ireland
- 5,012 treated hectares
- 1,563 kilogrammes applied
- 96% of the area of spring wheat crops grown received a pesticide treatment
- Spring wheat received on average 2 fungicide, 3 herbicide, 1 insecticide, 1 growth regulator and 1 seed treatment applications

Figure 46: Comparison of the areas of spring wheat crops grown in Northern Ireland (ha), 1990 - 2018.

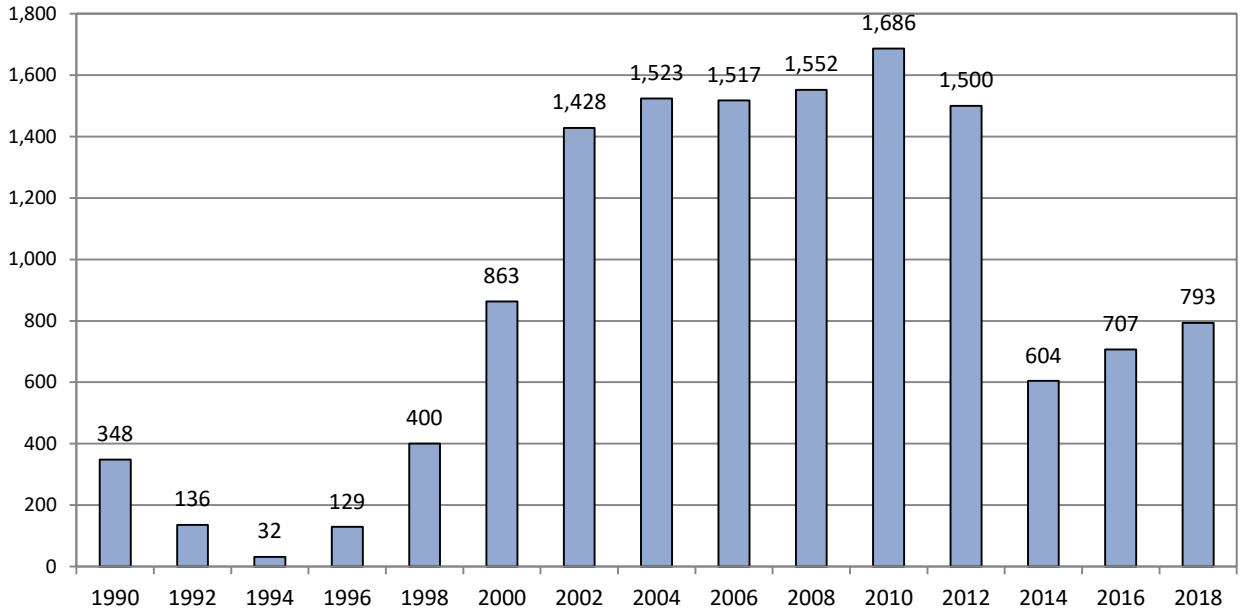


Figure 47: Regional distribution of spring wheat crops grown in Northern Ireland (ha), 2016.

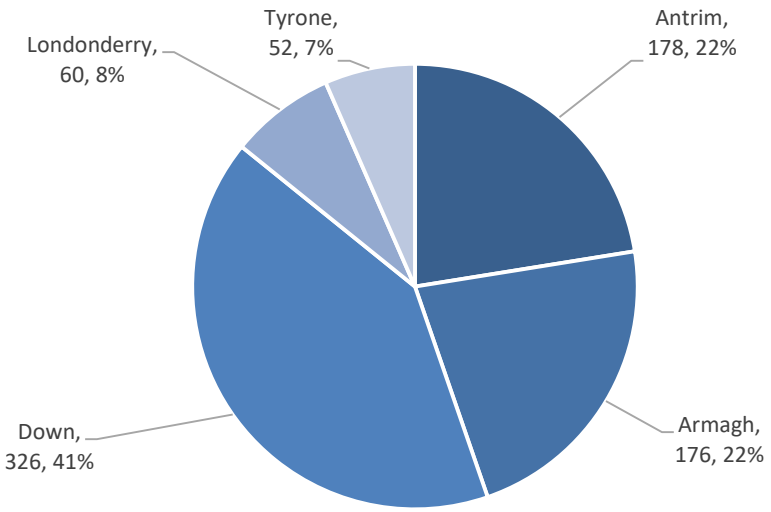


Figure 48: Pesticide usage (spha) on spring wheat crops in Northern Ireland, 2018.

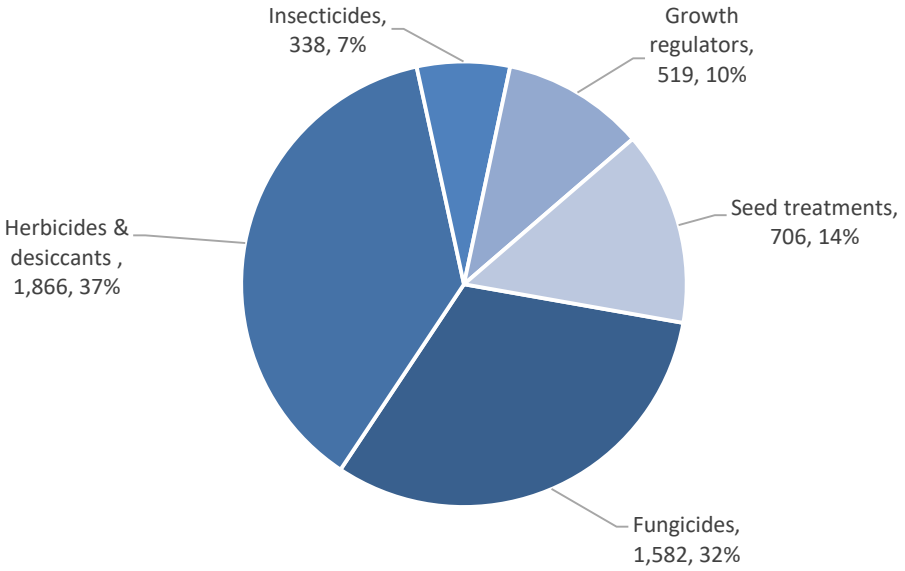


Figure 49: Weight of pesticides (kg) applied to spring wheat crops in Northern Ireland, 2018.

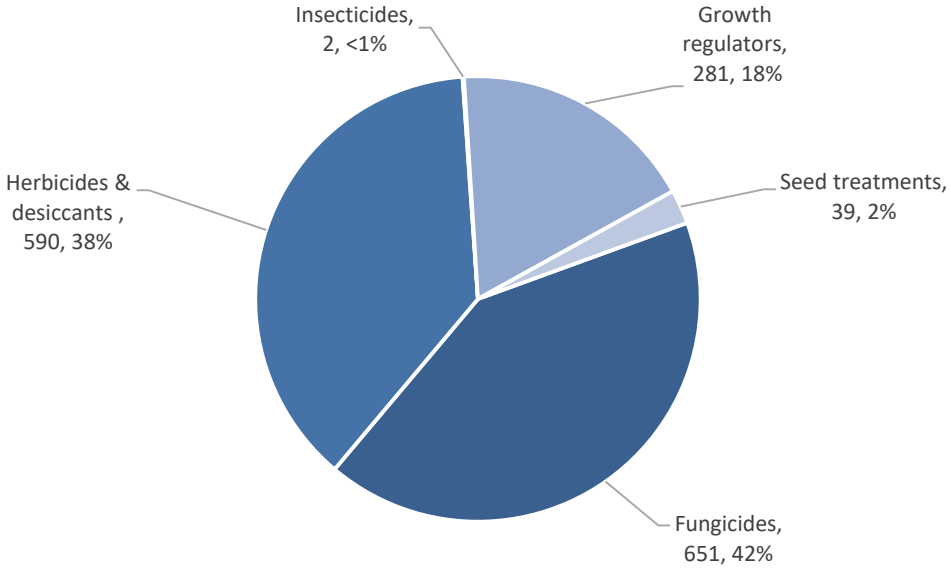
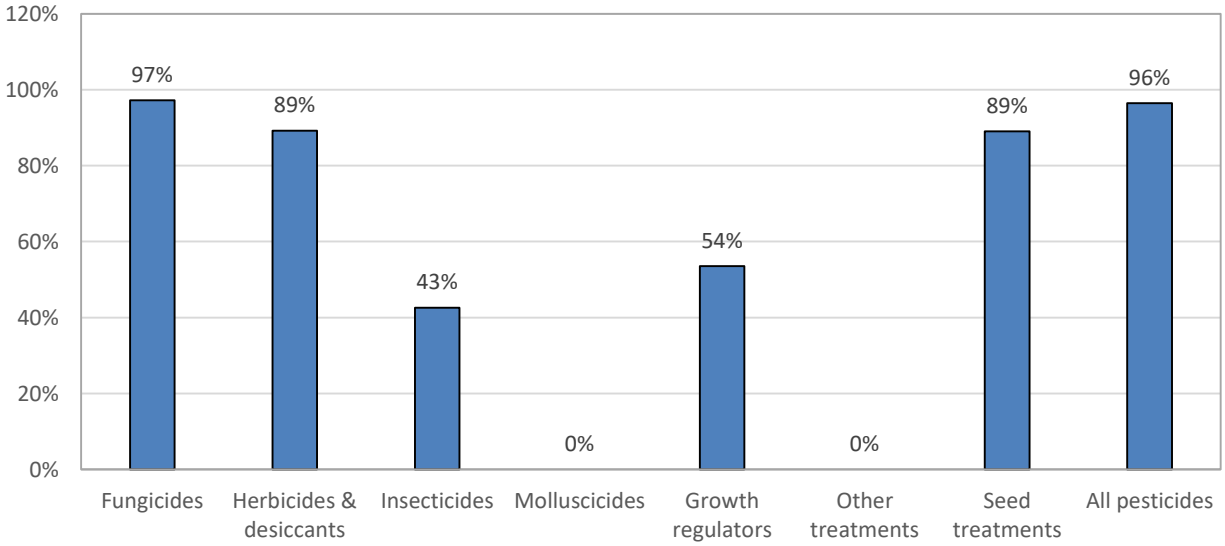


Figure 50: Proportional area (%) of spring wheat crops treated with each pesticide type in Northern Ireland, 2018.

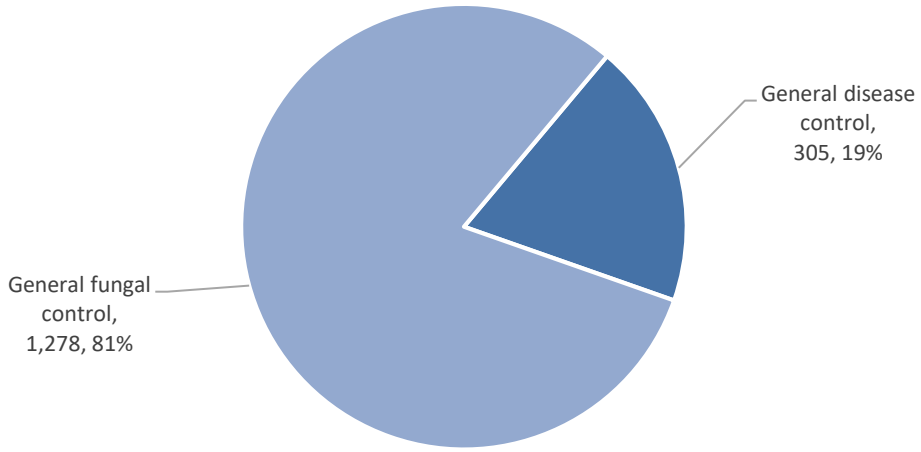


Fungicides - spring wheat

- Basic area treated: 771 hectares
- Total area treated: 1,582 spray hectares
- Weight of active substances applied: 651 kilogrammes
- 97% of the area grown treated with fungicides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Epoxiconazole/fenpropimorph/metrafenone	423	297	215	27
Chlorothalonil	307	237	176	19
Bixafen/prothioconazole/spiroxamine	166	166	99	10
Epoxiconazole/fenpropimorph/kresoxim-methyl	166	166	50	10
Bixafen/prothioconazole	145	145	20	9

Figure 51: Spring wheat: reasons for fungicide use (spha), 2018.

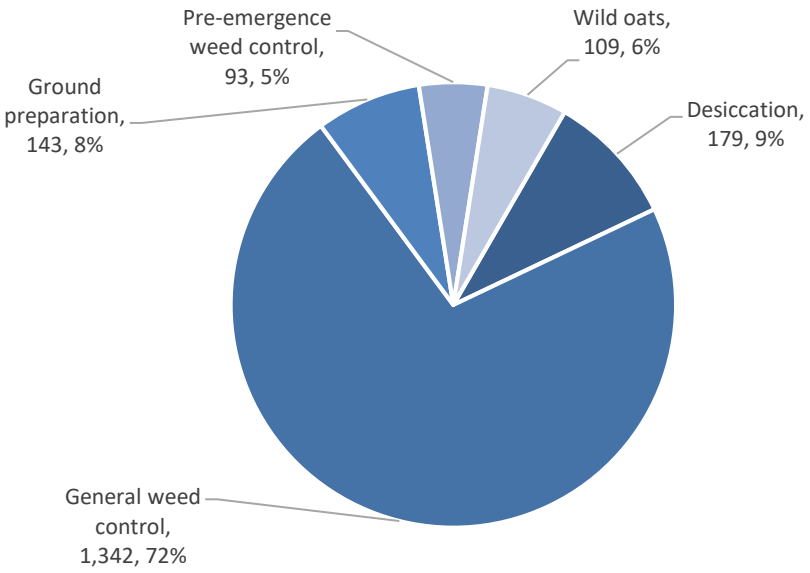


Herbicides & desiccants - spring wheat

- Basic area treated: 707 hectares
- Total area treated: 1,866 spray hectares
- Weight of active substances applied: 590 kilogrammes
- 89% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Fluroxypyr	365	365	53	20
Glyphosate	346	346	311	19
Metsulfuron-methyl/tribenuron-methyl	245	245	3	13
Dicamba/mecoprop-p	204	204	138	11
Metsulfuron-methyl	140	140	1	7

Figure 52: Spring wheat: reasons for herbicide & desiccant use (spha), 2018.

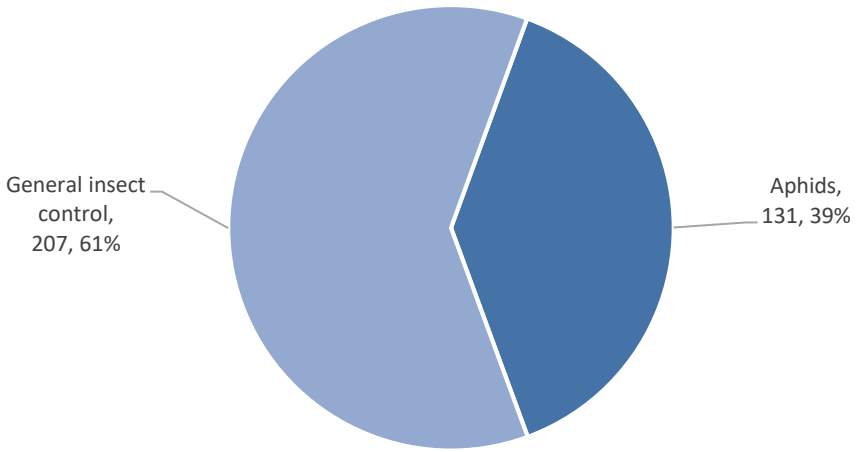


Insecticides - spring wheat

- Basic area treated: 338 hectares
- Total area treated: 338 spray hectares
- Weight of active substances applied: 2 kilogrammes
- 43% of the area grown treated with insecticides.
- The active substances applied were:

Active substance	**Total treated area (spha)**	**Basic treated area (ha)**	**Quantity applied (kgs)**	**% of the total insecticide-treated area (spha)**
Lambda-cyhalothrin	248	248	1	73
Esfenvalerate	90	90	<1	27

Figure 53: Spring wheat: reasons for insecticide use (spha), 2018.



Growth regulators - spring wheat

- Basic area treated: 424 hectares
- Total area treated: 519 spray hectares
- Weight of active substances applied: 281 kilogrammes
- 54% of the area grown treated with growth regulators
- All reasons for use were given as growth regulation
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Chlormequat	324	324	273	62
Trinexapac-ethyl	143	143	6	28
Prohexadione-calcium/trinexapac-ethyl	52	52	2	10

Seed treatments - spring wheat

- Basic area treated: 706 hectares
- Total area treated: 706 spray hectares
- Weight of active substances applied: 39 kilogrammes
- 89% of the area grown was sown with treated seed
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Fludioxonil	526	526	5	74
Carboxin/thiram	95	95	23	13
Clothianidin/prothioconazole	85	85	10	12
Unknown seed treatment	Trace	Trace	Trace	.

Pesticide usage on winter wheat (Tables 3, 5, 6, 7, 8, 9 & 16):

- 6,052 hectares of winter wheat grown in Northern Ireland
- 76,347 treated hectares
- 21,706 kilogrammes applied
- 100% of the area of winter wheat crops grown received a pesticide treatment
- Winter wheat received on average 6 fungicide, 3 herbicide, 1 insecticide, 1 molluscicide, 2 growth regulator, 1 other treatment and 1 seed treatment applications

Figure 54: Comparison of the areas of winter wheat crops grown in Northern Ireland (ha), 1990 - 2018.

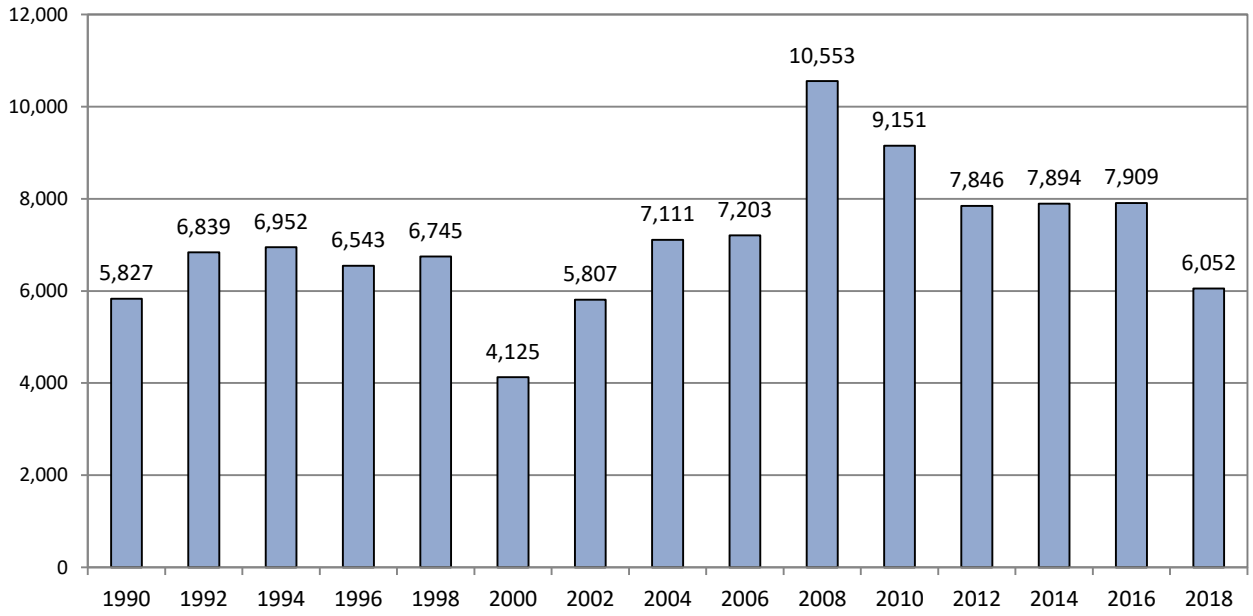


Figure 55: Regional distribution of winter wheat crops grown in Northern Ireland (ha), 2018.

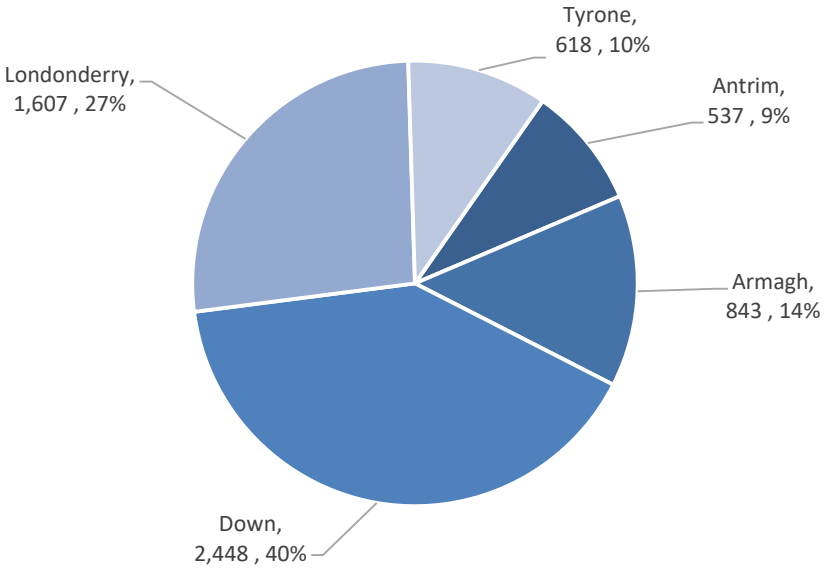


Figure 56: Pesticide usage (spha) on winter wheat crops in Northern Ireland, 2018.

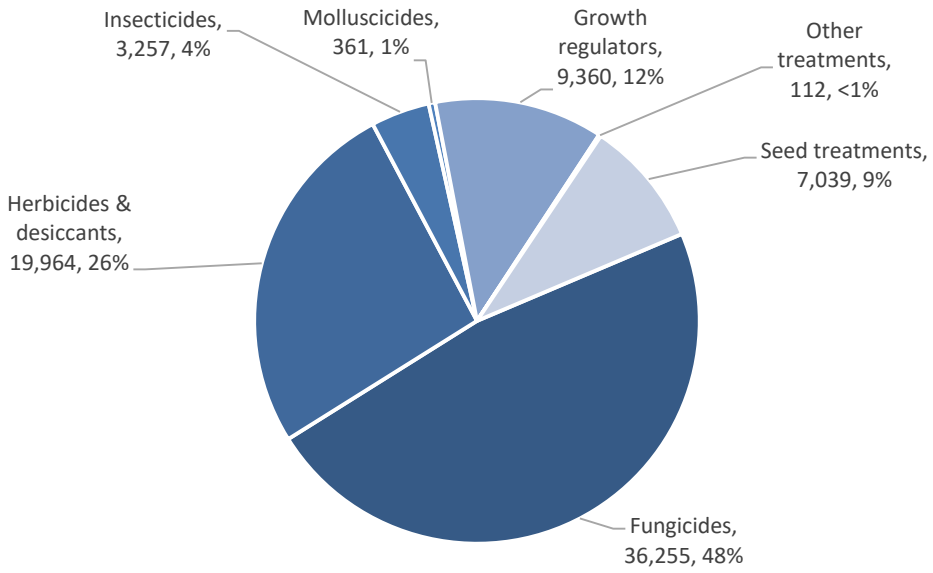


Figure 57: Weight of pesticides (kg) applied to winter wheat crops in Northern Ireland, 2018.

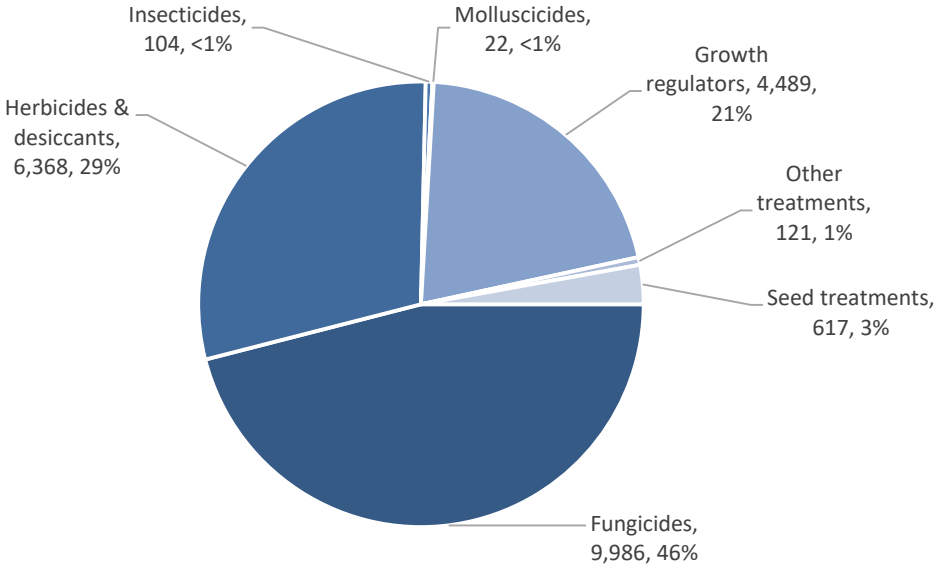
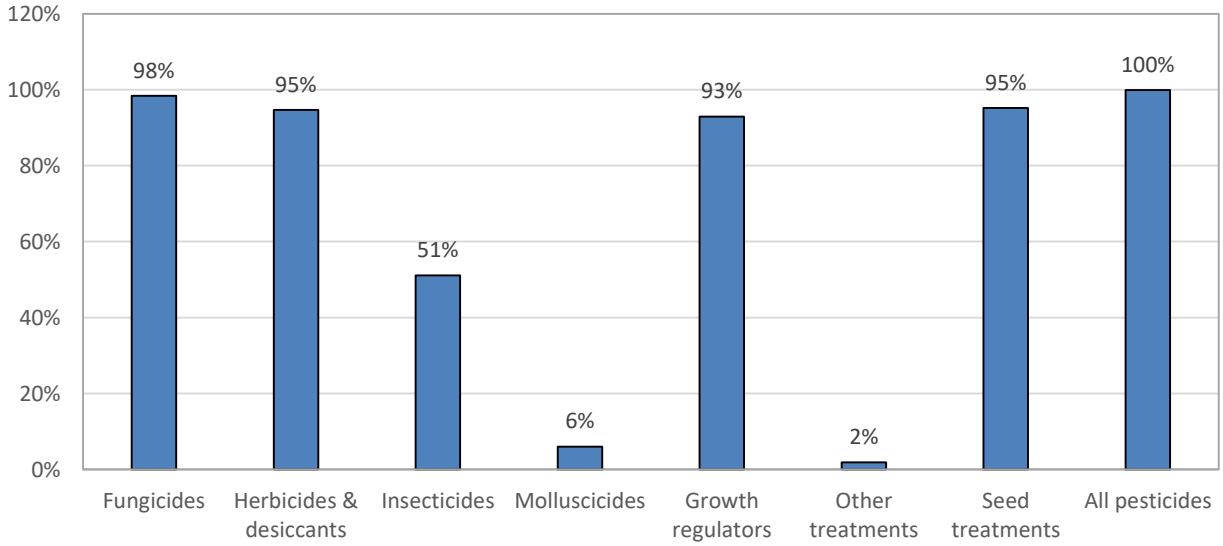


Figure 58: Proportional area (%) of winter wheat crops treated with each pesticide type in Northern Ireland, 2018.

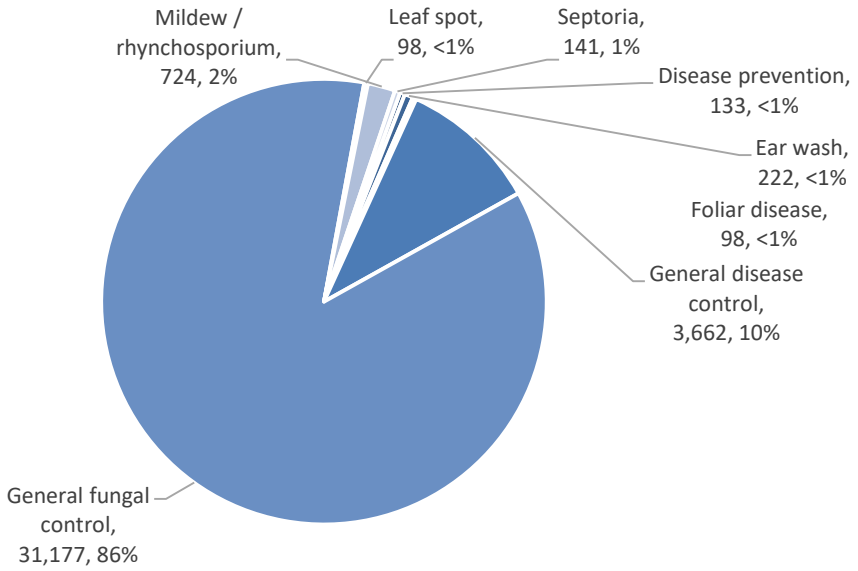


Fungicides - winter wheat

- Basic area treated: 5,954 hectares
- Total area treated: 36,255 spray hectares
- Weight of active substances applied: 9,986 kilogrammes
- 98% of the area grown treated with fungicides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Chlorothalonil	7,686	4,705	3,484	21
Epoxiconazole	3,193	2,447	347	9
Prothioconazole/tebuconazole	2,744	2,515	564	8
Tebuconazole	2,041	1,858	338	6
Prothioconazole	1,978	1,758	269	5

Figure 59: Winter wheat: reasons for fungicide use (spha), 2018.

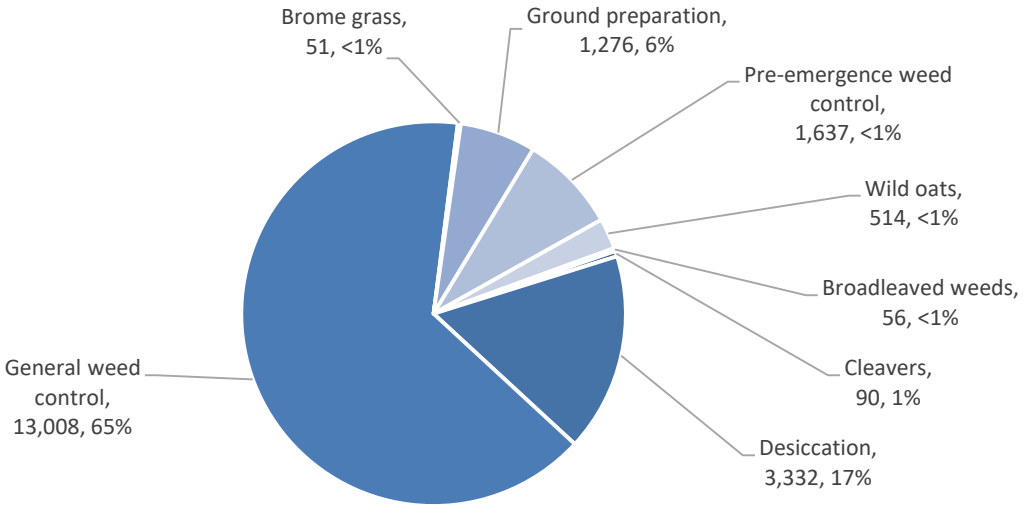


Herbicides & desiccants - winter wheat

- Basic area treated: 5,731 hectares
- Total area treated: 19,964 spray hectares
- Weight of active substances applied: 6,368 kilogrammes
- 95% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	4521	3718	3137	23
Diflufenican/iodosulfron-methyl-sodium/mesosulfuron-methyl	2923	2923	166	15
Fluroxypyr/halauxifen-methyl	1473	1388	146	7
Mecoprop-P	1276	1276	869	6
Fluroxypyr	1265	1265	137	6

Figure 60: Winter wheat: reasons for herbicide & desiccant use (spha), 2018.

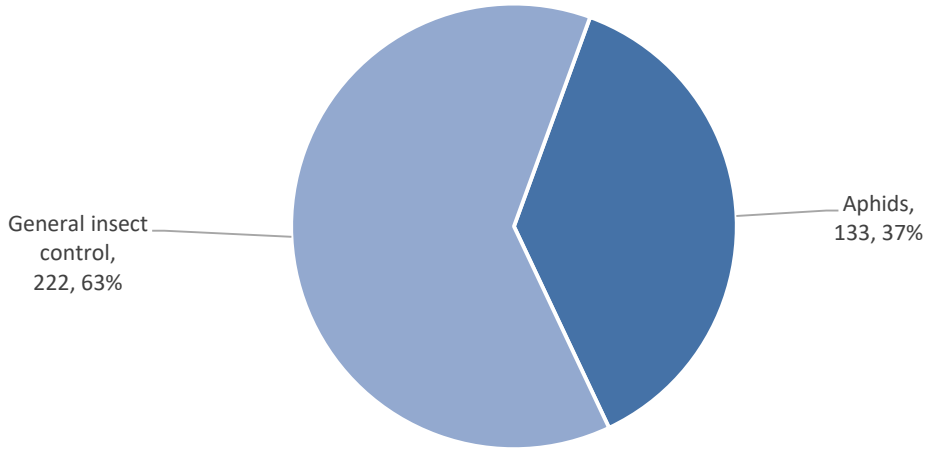


Insecticides - winter wheat

- Basic area treated: 3,094 hectares
- Total area treated: 3,257 spray hectares
- Weight of active substances applied: 104 kilogrammes
- 51% of the area grown treated with insecticides.
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Lambda-cyhalothrin	2,150	2,052	11	66
Esfenvalerate	722	658	3	22
Dimethoate	384	384	90	12

Figure 61: Winter wheat: reasons for insecticide use (spha), 2018.



Molluscicides – winter wheat

- Basic area treated: 361 hectares
- Total area treated: 361 spray hectares
- Weight of active substances applied: 22 kilogrammes
- 6% of the area grown treated with molluscicides
- All applications were to control slugs
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total molluscicide-treated area (spha)
Metaldehyde	361	361	22	100

Growth regulators - winter wheat

- Basic area treated: 5,623 hectares
- Total area treated: 9,360 spray hectares
- Weight of active substances applied: 4,489 kilogrammes
- 93% of the area grown treated with growth regulators
- All reasons for use were given as growth regulation
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Chlormequat	5,280	4,576	4,160	56
Trinexapac-ethyl	3,011	2,908	146	32
Prohexadione-calcium/trinexapac-ethyl	532	399	21	6
2-chloroethylphosphonic acid	422	422	78	5
Chlormequat/imazaquin	115	115	84	1

Other treatments - winter wheat

- Basic area treated: 112 hectares
- Total area treated: 112 spray hectares
- Weight of active substances applied: 121 kilogrammes
- 2% of the area grown treated with other substances
- The reason for use was given exclusively as foliar feed
- The following substances were applied:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total other treatment-treated area (spha)
Magnesium sulphate	66	66	53	60
Nitrogen/phosphate/potassium oxide	45	45	68	40

Seed treatments - winter wheat

- Basic area treated: 5,762 hectares
- Total area treated: 7,039 spray hectares
- Weight of active substances applied: 617 kilogrammes
- 95% of the area grown was sown with treated seed
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Clothianidin/prothioconazole	4,848	4,848	522	69
Silthiofam	1,404	1,404	61	20
Prothioconazole	407	407	8	6
Fludioxonil	182	182	2	3
Fluquinconazole/prochloraz	92	92	10	1

Pesticide usage on spring oats (Tables 3, 5, 6, 7, 8, 9 & 17):

- 1,321 hectares of spring oats grown in Northern Ireland
- 7,064 treated hectares
- 1,927 kilogrammes applied
- 96% of the area of spring oat crops grown received a pesticide treatment
- Spring oats received on average 2 fungicide, 2 herbicide, 1 insecticide, 1 growth regulator and 1 seed treatment applications

Figure 62: Comparison of the areas of spring oat crops grown in Northern Ireland (ha), 1990 - 2018.

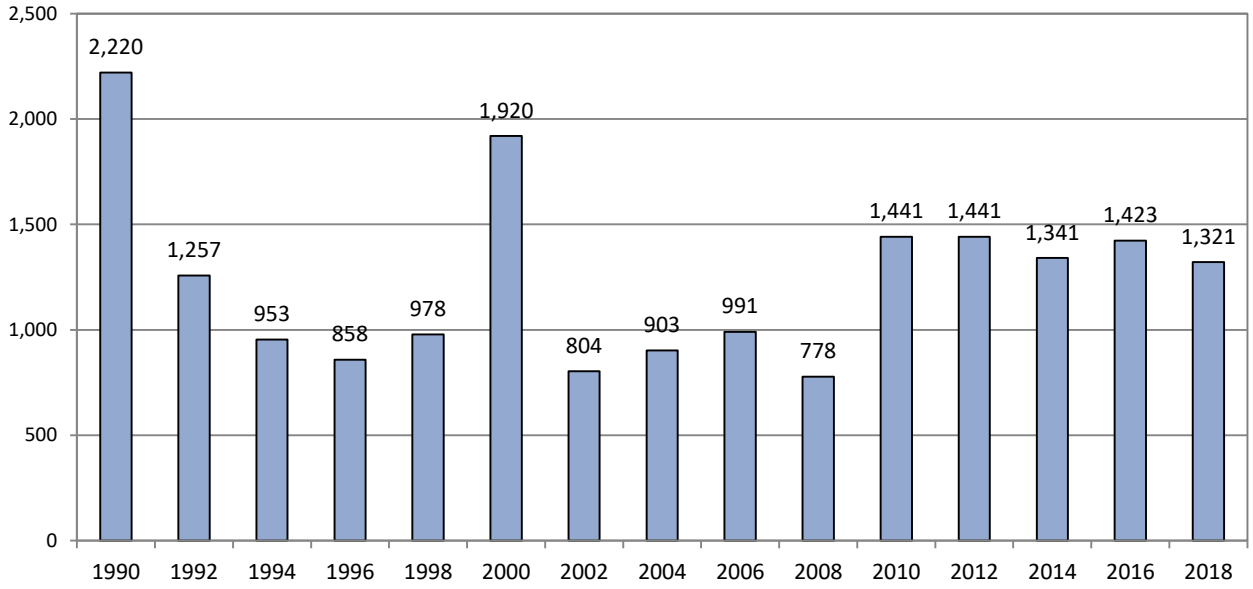


Figure 63: Regional distribution of spring oat crops grown in Northern Ireland (ha), 2018.

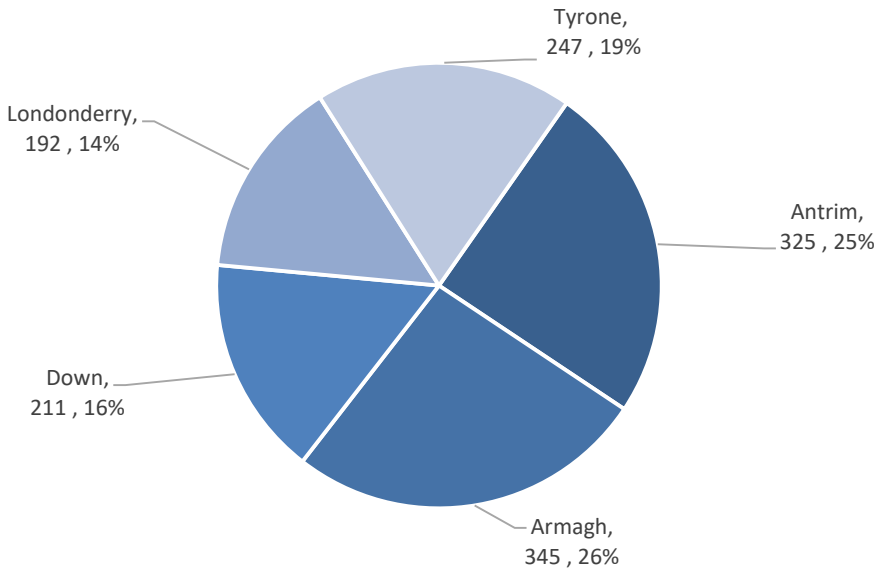


Figure 64: Pesticide usage (spha) on spring oat crops in Northern Ireland, 2018.

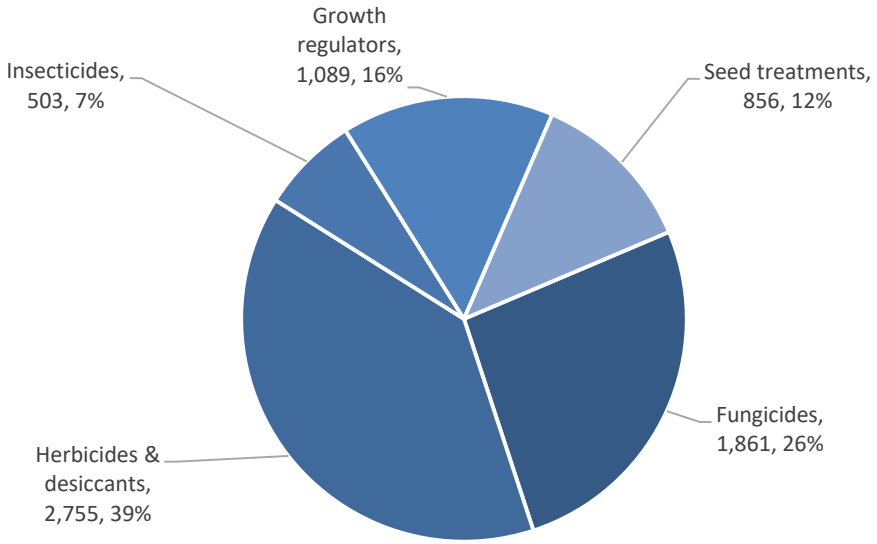


Figure 65: Weight of pesticides (kg) applied to spring oat crops in Northern Ireland, 2018.

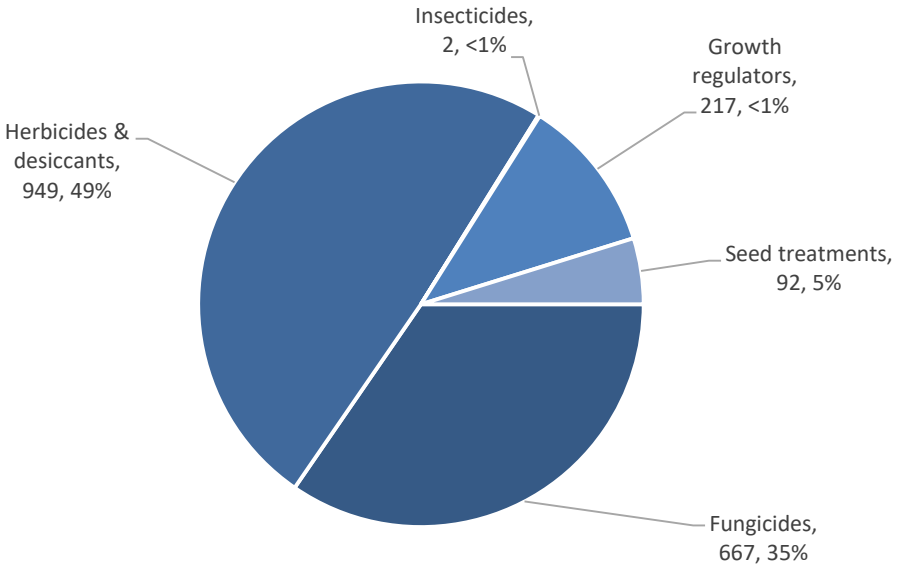
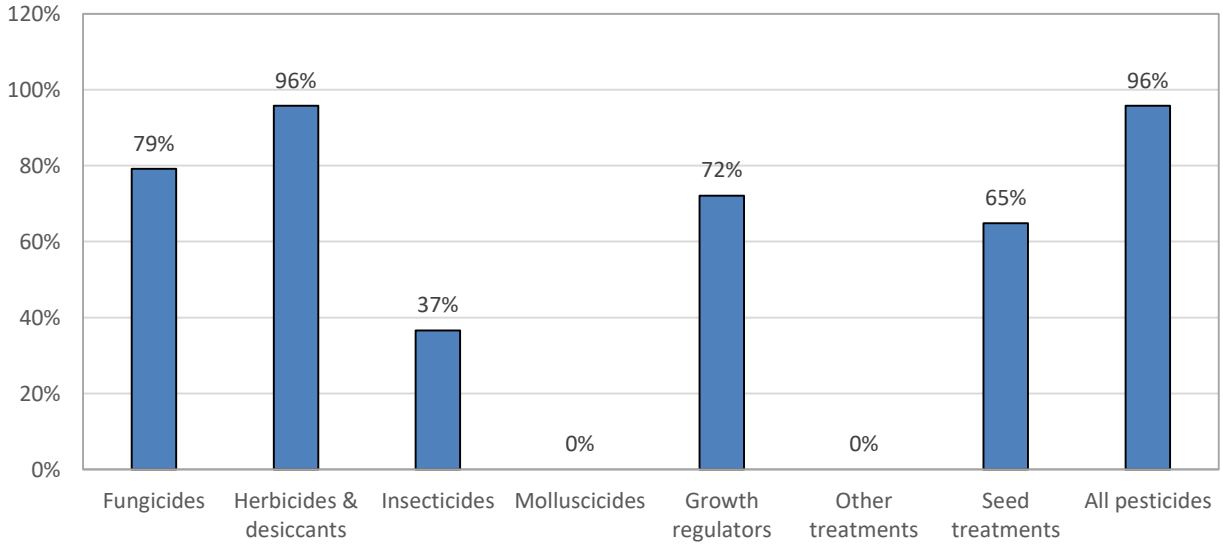


Figure 66: Proportional area (%) of spring oat crops treated with each pesticide type in Northern Ireland, 2018.

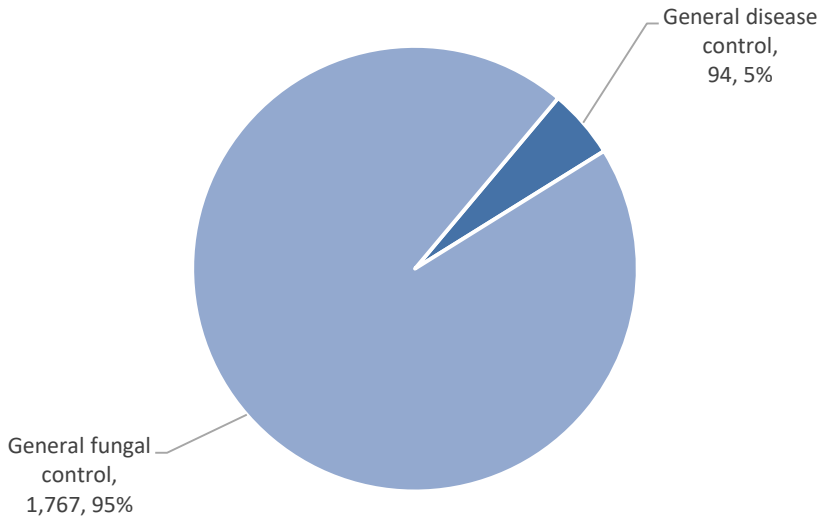


Fungicides – spring oats

- Basic area treated: 1,045 hectares
- Total area treated: 1,861 spray hectares
- Weight of active substances applied: 667 kilogrammes
- 79% of the area grown treated with fungicides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Epoxiconazole/fenpropimorph/metrafenone	463	408	202	25
Epoxiconazole/pyraclostrobin	302	302	76	16
Fenpropimorph	224	224	81	12
Chlorothalonil	201	181	106	11
Epoxiconazole/fenpropimorph	180	180	72	10

Figure 67: Spring oats: reasons for fungicide use (spha), 2018.

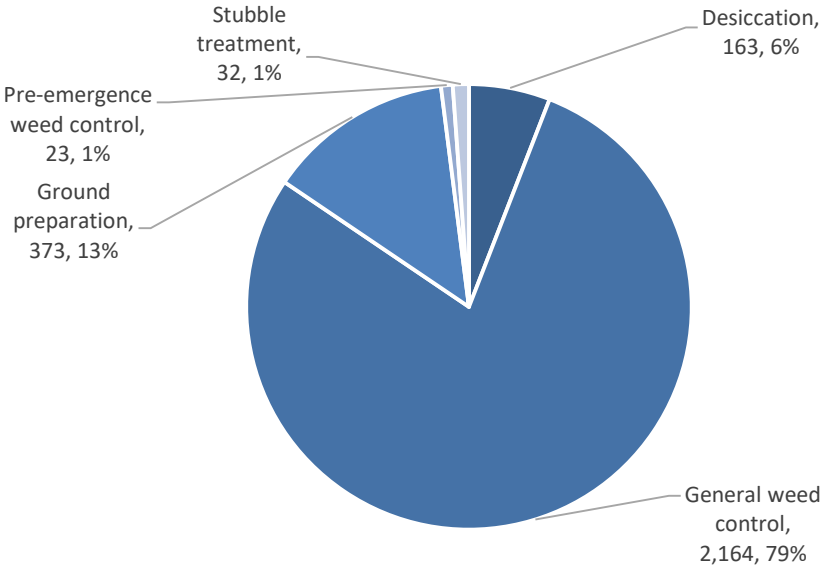


Herbicides & desiccants – spring oats

- Basic area treated: 1,265 hectares
- Total area treated: 2,755 spray hectares
- Weight of active substances applied: 949 kilogrammes
- 96% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	591	459	567	21
Metsulfuron-methyl	522	502	3	19
Fluroxypyr	438	438	65	16
Metsulfuron-methyl/tribenuron-methyl	390	390	3	14
Dicamba/mecoprop-p	165	165	140	6

Figure 68: Spring oats: reasons for herbicide & desiccant use (spha), 2018.

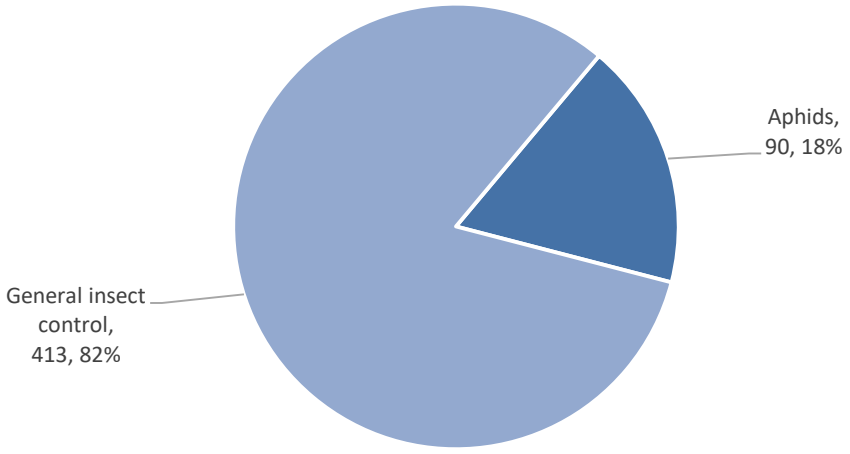


Insecticides – spring oats

- Basic area treated: 483 hectares
- Total area treated: 503 spray hectares
- Weight of active substances applied: 2 kilogrammes
- 37% of the area grown treated with insecticides.
- The active substances applied were:

Active substance	**Total treated area (spha)**	**Basic treated area (ha)**	**Quantity applied (kgs)**	**% of the total insecticide-treated area (spha)**
Lambda-cyhalothrin	275	275	1	55
Esfenvalerate	208	208	<1	41
Cypermethrin	20	20	<1	4

Figure 69: Spring oats: reasons for insecticide use (spha), 2018.



Growth regulators – spring oats

- Basic area treated: 953 hectares
- Total area treated: 1,089 spray hectares
- Weight of active substances applied: 217 kilogrammes
- 72% of the area grown treated with growth regulators
- All reasons for use were given as growth regulation
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Prohexadione-calcium/trinexapac-ethyl	561	561	24	52
Trinexapac-ethyl	299	299	17	27
Chlormequat	198	198	165	18
Mepiquat chloride/prohexadione-calcium	31	31	11	3

Seed treatments – spring oats

- Basic area treated: 856 hectares
- Total area treated: 856 spray hectares
- Weight of active substances applied: 92 kilogrammes
- 65% of the area grown was sown with treated seed
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Carboxin/thiram	335	335	76	39
Fludioxonil	254	254	2	30
Clothianidin/prothioconazole	130	130	13	15
Unknown seed treatment	103	103	.	12
Prothioconazole	36	36	1	4

Pesticide usage on winter oats (Tables 3, 5, 6, 7, 8, 9 & 18):

- 664 hectares of winter oats grown in Northern Ireland
- 4,785 treated hectares
- 1,128 kilogrammes applied
- 100% of the area of winter oat crops grown received a pesticide treatment
- Winter oats received on average 3 fungicide, 2 herbicide, 1 insecticide, 1 growth regulator and 1 seed treatment applications

Figure 70: Comparison of the areas of winter oat crops grown in Northern Ireland (ha), 1990 - 2018.

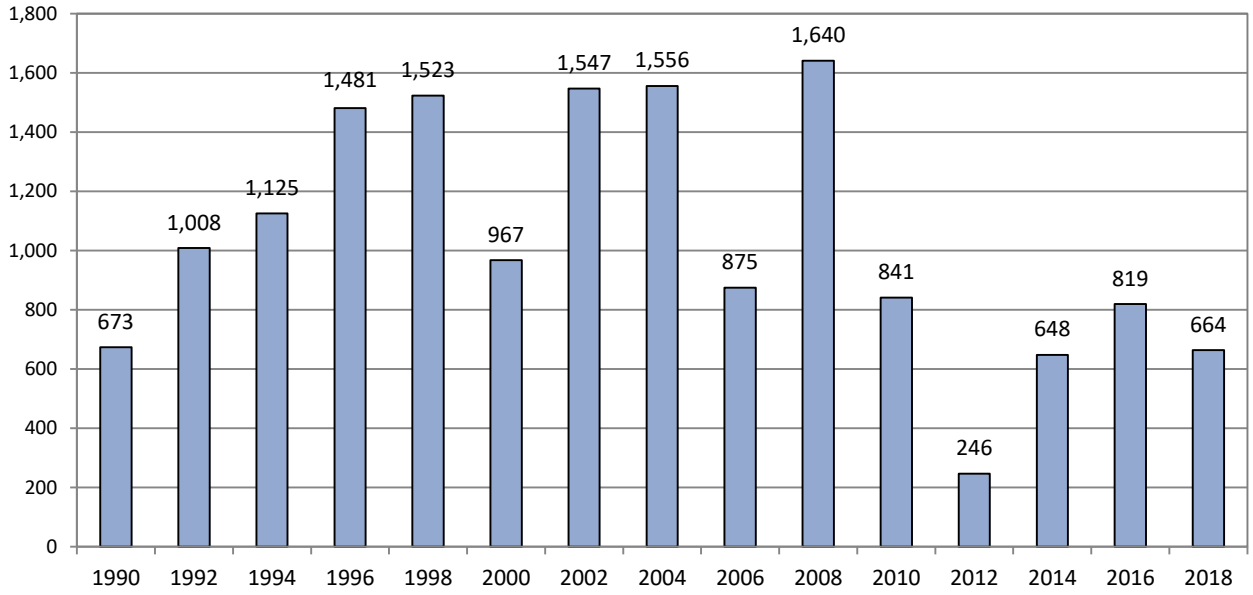


Figure 71: Regional distribution of winter oat crops grown in Northern Ireland (ha), 2018.

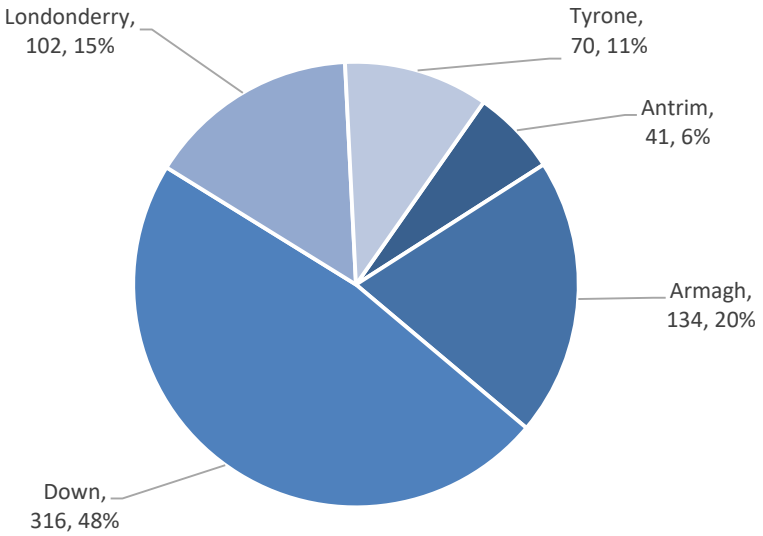


Figure 72: Pesticide usage (spha) on winter oat crops in Northern Ireland, 2018.

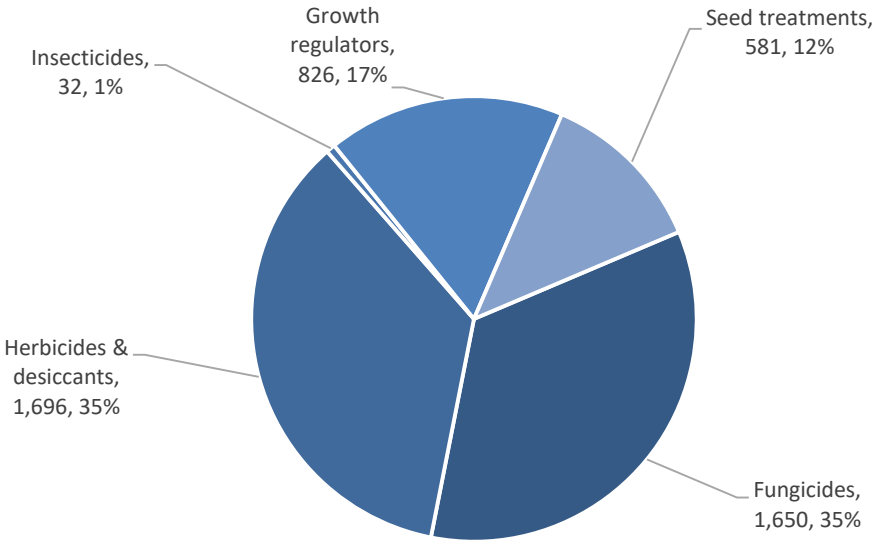


Figure 73: Weight of pesticides (kg) applied to winter oat crops in Northern Ireland, 2018.

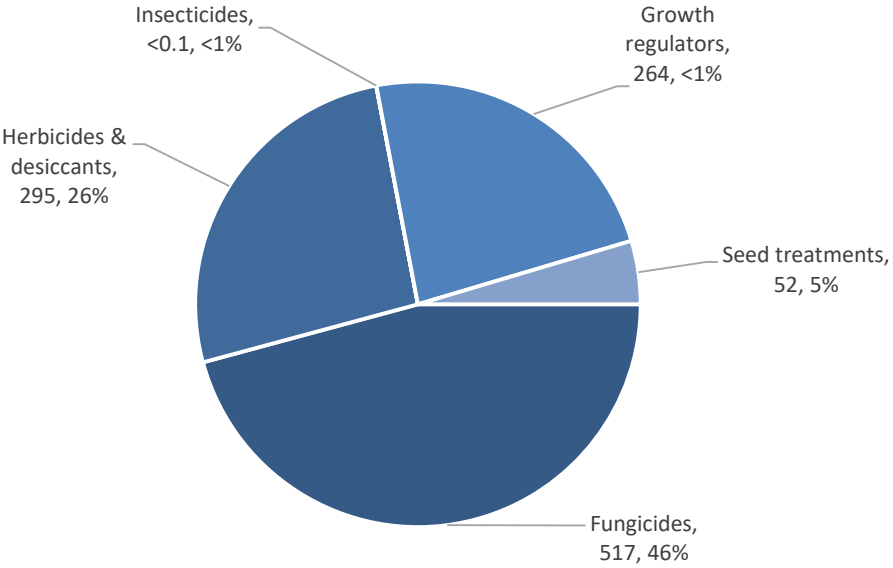
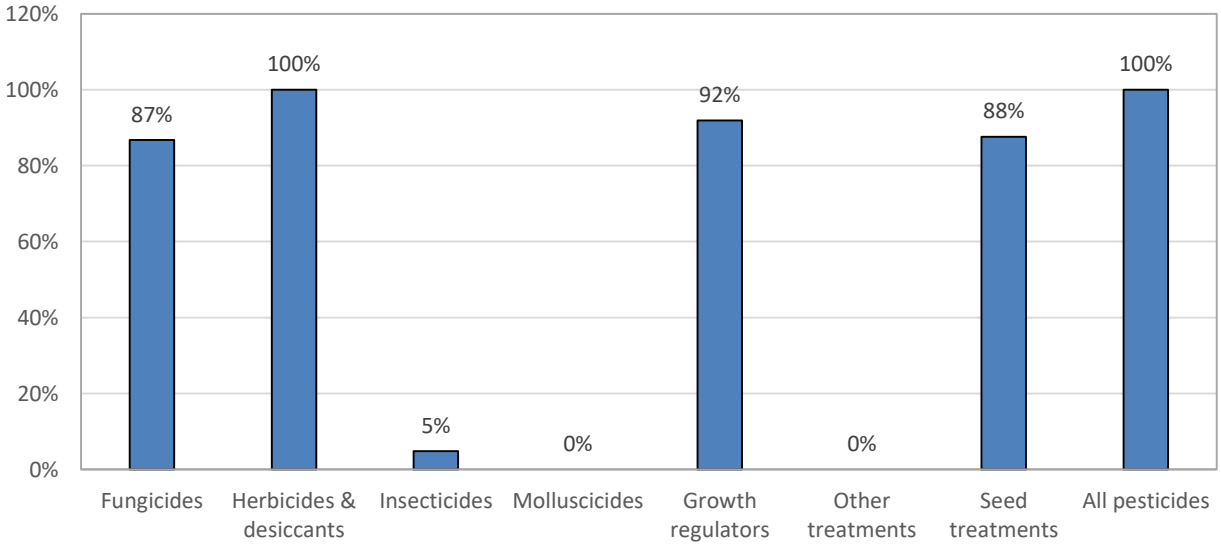


Figure 74: Proportional area (%) of winter oat crops treated with each pesticide type in Northern Ireland, 2018.

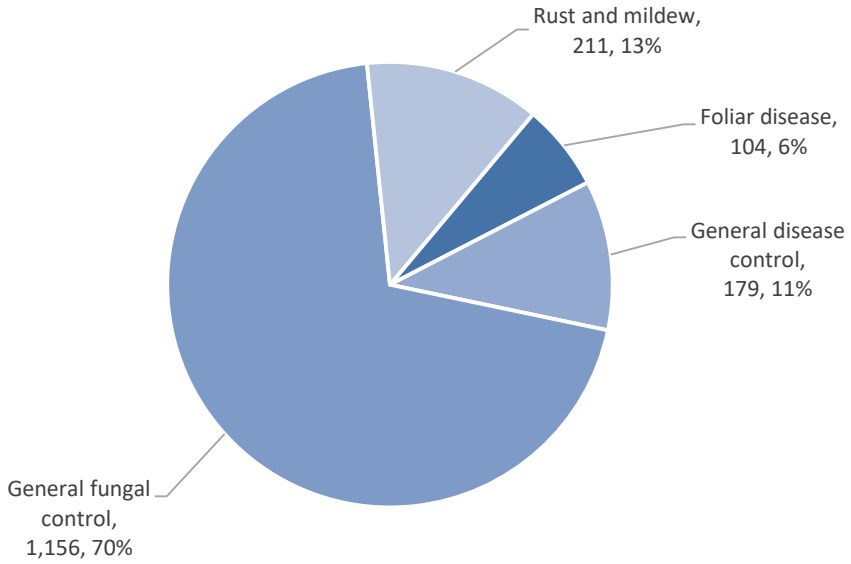


Fungicides – winter oats

- Basic area treated: 576 hectares
- Total area treated: 1,650 spray hectares
- Weight of active substances applied: 517 kilogrammes
- 87% of the area grown treated with fungicides
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Epoxiconazole/fenpropimorph/metrafenone	308	273	138	19
Azoxystrobin	219	124	30	13
Pyraclostrobin	204	204	24	12
Tebuconazole	203	162	36	12
Fenpropimorph	157	96	74	10

Figure 75: Winter oats: reasons for fungicide use (spha), 2018.

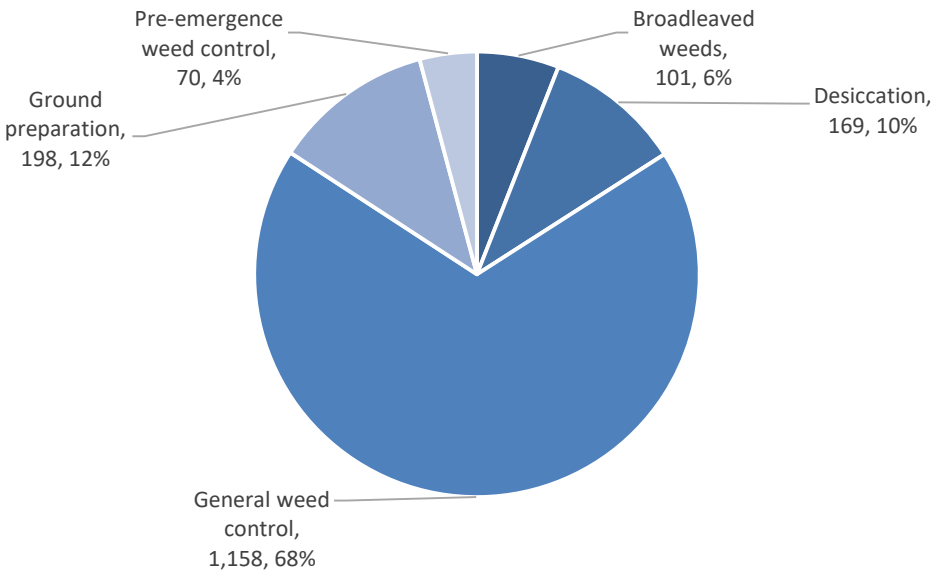


Herbicides & desiccants – winter oats

- Basic area treated: 664 hectares
- Total area treated: 1,696 spray hectares
- Weight of active substances applied: 295 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	332	198	142	20
Fluroxypyr	284	284	35	17
Metsulfuron-methyl/thifensulfuron-methy	197	197	5	12
Metsulfuron-methyl	183	183	1	11
Metsulfuron-methyl/tribenuron-methyl	182	182	2	11

Figure 76: Winter oats: reasons for herbicide & desiccant use (spha), 2018.



Insecticides – winter oats

- Basic area treated: 32 hectares
- Total area treated: 32 spray hectares
- Weight of active substances applied: <1 kilogramme
- 5% of the area grown treated with insecticides
- Reason for use given as general insect control
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Lambda-cyhalothrin	32	32	<1	100

Growth regulators – winter oats

- Basic area treated: 610 hectares
- Total area treated: 826 spray hectares
- Weight of active substances applied: 264 kilogrammes
- 92% of the area grown treated with growth regulators
- All reasons for use were given as growth regulation
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Prohexadione-calcium/trinexapac-ethyl	400	305	23	48
Chlormequat	232	232	231	28
Trinexapac-ethyl	194	177	10	23

Seed treatments – winter oats

- Basic area treated: 581 hectares
- Total area treated: 581 spray hectares
- Weight of active substances applied: 52 kilogrammes
- 88% of the area grown was sown with treated seed
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Clothianidin/prothioconazole	505	505	51	87
Prothioconazole	48	48	1	8
Fludioxonil	28	28	<1	5

Pesticide usage on rye (Tables 3, 5, 6, 7, 8, 9 & 19):

- 122 hectares of rye grown in Northern Ireland
- 638 treated hectares
- 327 kilogrammes applied
- 89% of the area of rye crops grown received a pesticide treatment
- Rye received on average 1 fungicide, 2 herbicide, 2 growth regulator and 1 seed treatment applications
- This is the first time rye has been recorded during the arable crops survey

Figure 77: Pesticide usage (spha) on rye crops in Northern Ireland, 2018.

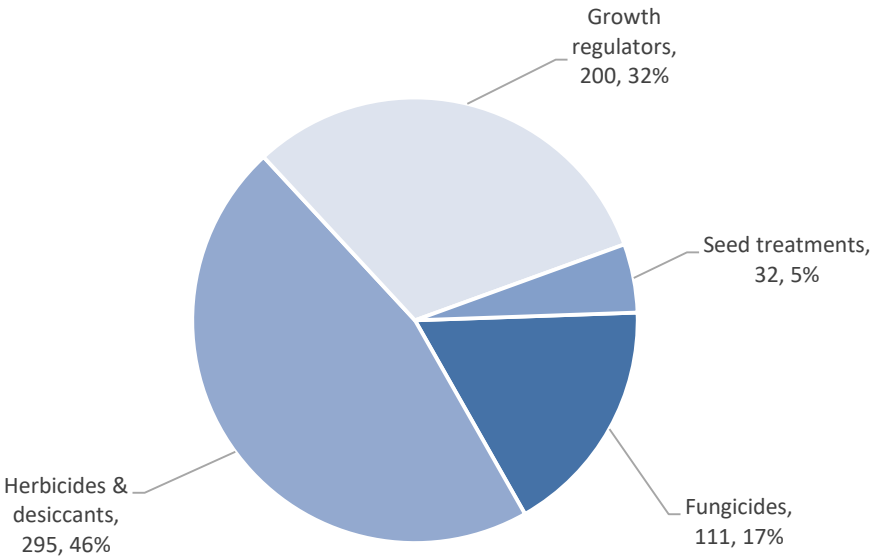


Figure 78: Weight of pesticides (kg) applied to rye crops in Northern Ireland, 2018.

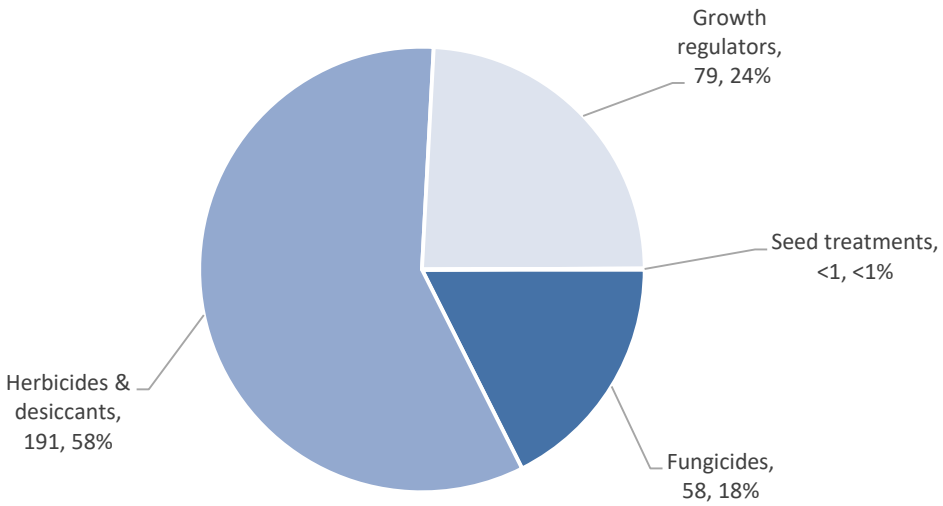
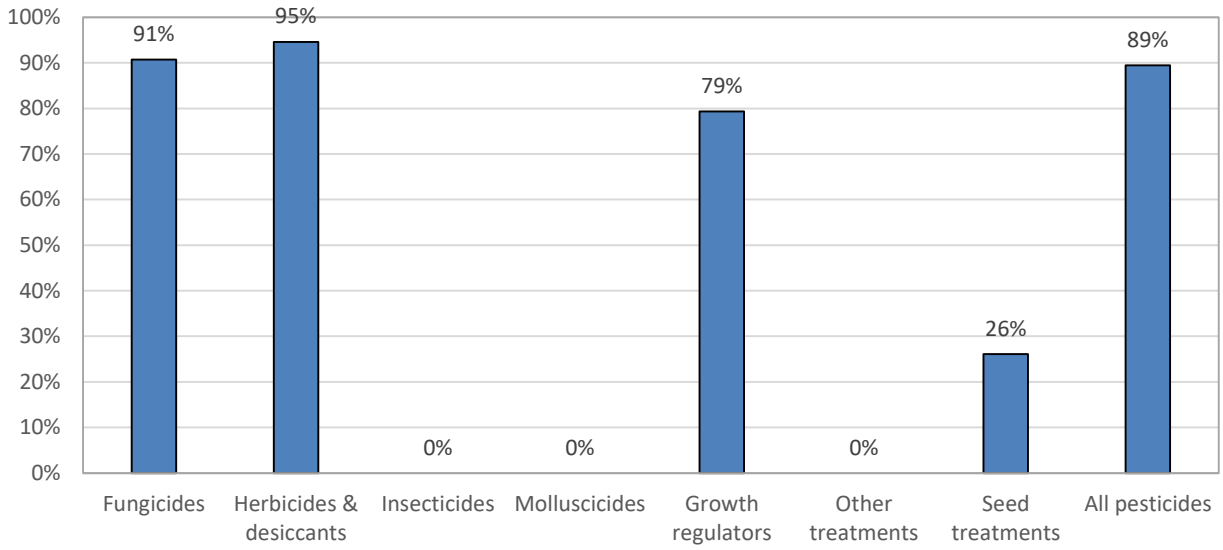


Figure 79: Proportional area (%) of rye crops treated with each pesticide type in Northern Ireland, 2018.



Fungicides – rye

- Basic area treated: 111 hectares
- Total area treated: 111 spray hectares
- Weight of active substances applied: 58 kilogrammes
- 91% of the area grown treated with fungicides
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Epoxiconazole/fenpropimorph/metrafenone	104	104	55	94
Epoxiconazole/fenpropimorph/kresoxim-methyl	7	7	3	6

Herbicides – rye

- Basic area treated: 115 hectares
- Total area treated: 295 spray hectares
- Weight of active substances applied: 191 kilogrammes
- 95% of the area grown treated with herbicides
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Diflufenican/flufenacet	115	115	16	39
Glyphosate	90	90	114	30
Pendimethalin	90	90	61	30

Growth regulators – rye

- Basic area treated: 97 hectares
- Total area treated: 200 spray hectares
- Weight of active substances applied: 79 kilogrammes
- 79% of the area grown treated with growth regulators
- All reasons for use were given as growth regulation
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Chlormequat	97	97	74	48
Prohexadione-calcium/trinexapac-ethyl	97	97	4	48
2-chloroethylphosphonic acid	7	7	2	3

Seed treatments – rye

- Basic area treated: 32 hectares
- Total area treated: 32 spray hectares
- Weight of active substances applied: <1 kilogramme
- 26% of the area grown was sown with treated seed
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Prothioconazole	32	32	<1	100
Unknown seed treatment	Trace	Trace	Trace	.

Pesticide usage on triticale (Tables 3, 5, 6, 7, 8, 9 & 20):

- 38 hectares of triticale grown in Northern Ireland
- 199 treated hectares
- 51 kilogrammes applied
- 95% of the area of triticale crops grown received a pesticide treatment
- Triticale received on average 2 fungicide, 3 herbicide, 1 insecticide, 1 growth regulator and 1 seed treatment applications

Figure 80: Comparison of the areas of triticale crops grown in Northern Ireland (ha), 1990 - 2018.

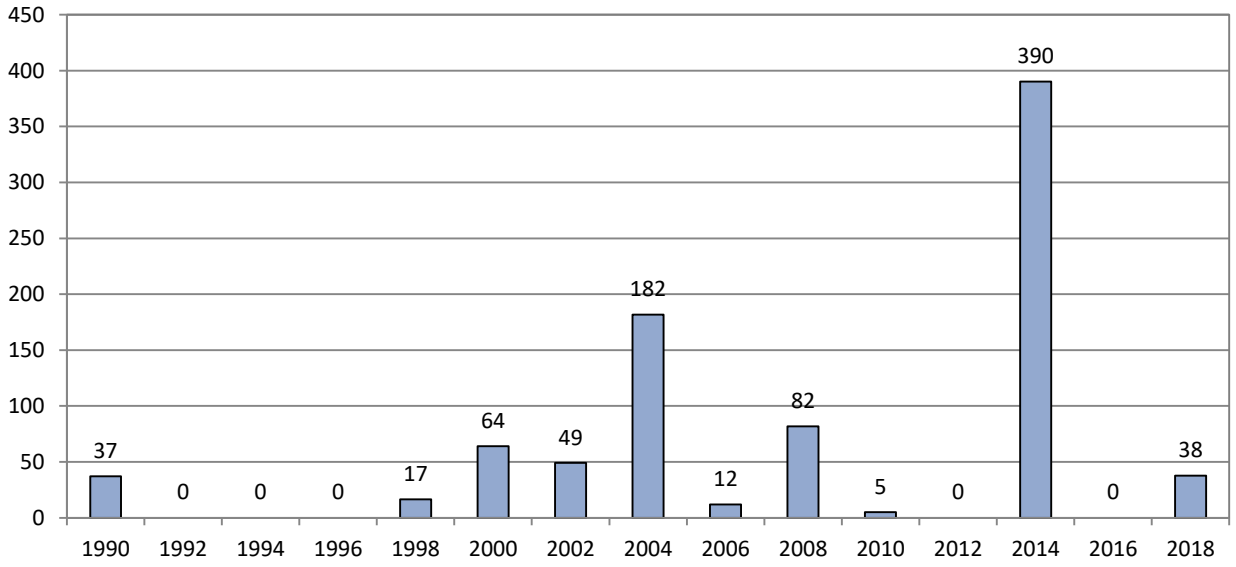


Figure 81: Pesticide usage (spha) on triticale crops in Northern Ireland, 2018.

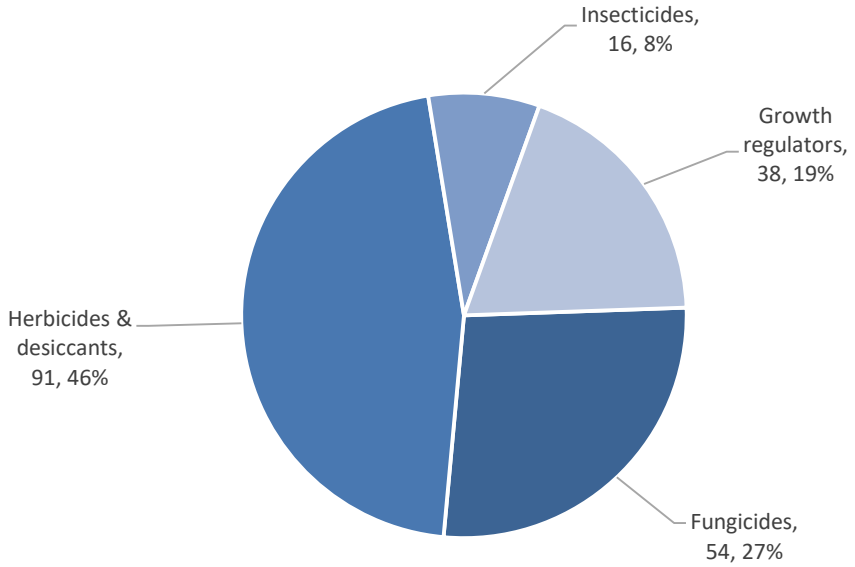


Figure 82: Weight of pesticides (kg) applied to triticale crops in Northern Ireland, 2018.

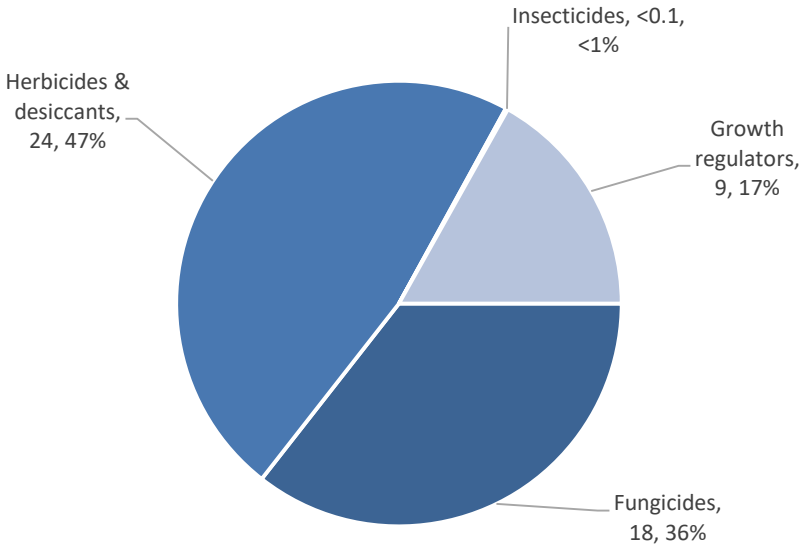
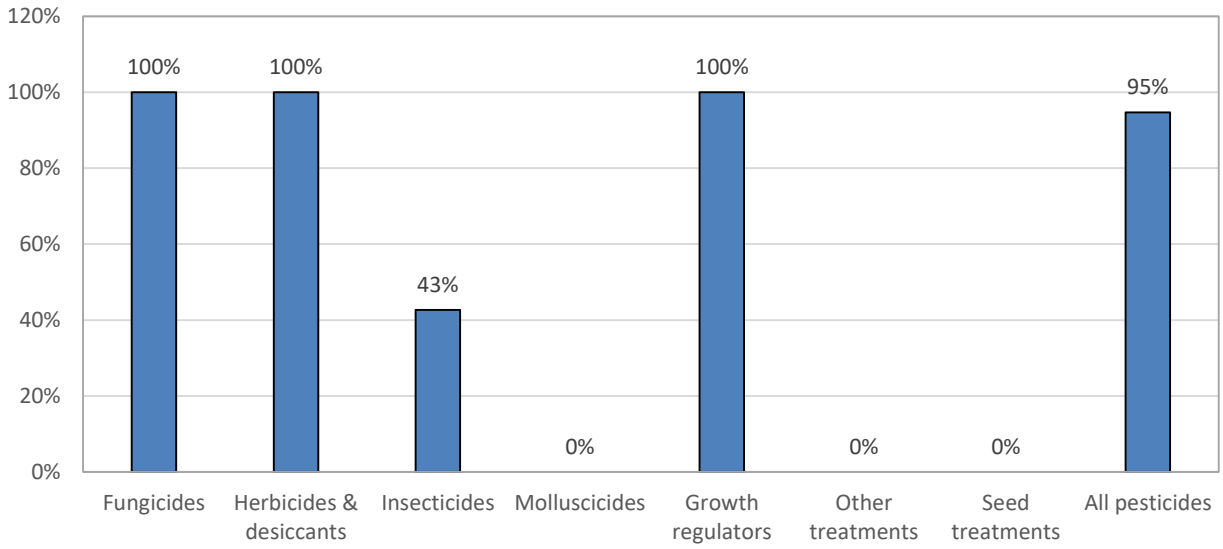


Figure 83: Proportional area (%) of triticale crops treated with each pesticide type in Northern Ireland, 2018.



Fungicides – triticale

- Basic area treated: 38 hectares
- Total area treated: 54 spray hectares
- Weight of active substances applied: 18 kilogrammes
- 100% of the area grown treated with fungicides
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Epoxiconazole/fenpropimorph/kresoxim-methyl	22	22	9	40
Epoxiconazole/fenpropimorph/metrafenone	16	16	8	30
Quinoxyfen	16	16	1	30

Herbicides – triticale

- Basic area treated: 38 hectares
- Total area treated: 91 spray hectares
- Weight of active substances applied: 24 kilogrammes
- 100% of the area grown treated with herbicides
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Metsulfuron-methyl	38	38	<1	41
Diflufenican/flufenacet	22	22	2	24
Fluroxypyr	16	16	2	18
Glyphosate	16	16	20	18

Insecticides – triticale

- Basic area treated: 16 hectares
- Total area treated: 16 spray hectares
- Weight of active substances applied: <1 kilogramme
- 43% of the area grown treated with insecticides
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Lambda-cyhalothrin	16	16	<1	100

Growth regulators – triticale

- Basic area treated: 38 hectares
- Total area treated: 38 spray hectares
- Weight of active substances applied: 9 kilogrammes
- 100% of the area grown treated with growth regulators
- All reasons for use were given as growth regulation
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Chlormequat	22	22	8	57
Trinexapac-ethyl	16	16	<1	43

Pesticide usage on spring oilseed rape (Tables 3, 5, 6, 7, 8, 9 & 21):

- 69 hectares of spring oilseed rape grown in Northern Ireland
- 277 treated hectares
- 72 kilogrammes applied
- 100% of the area of spring oilseed rape crops grown received a pesticide treatment
- Spring oilseed rape crops received on average 2 fungicide and 2 herbicide applications

Figure 84: Comparison of the areas of winter oilseed rape crops grown in Northern Ireland (ha), 1990 - 2018.

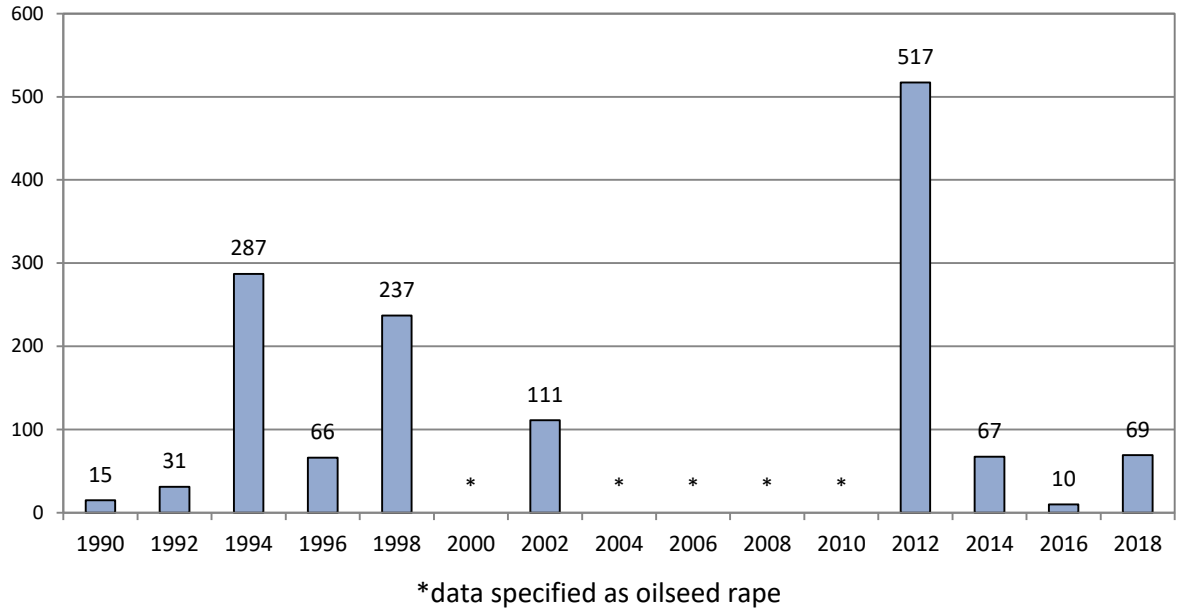


Figure 85: Pesticide usage (spha) on spring oilseed rape crops in Northern Ireland, 2018.

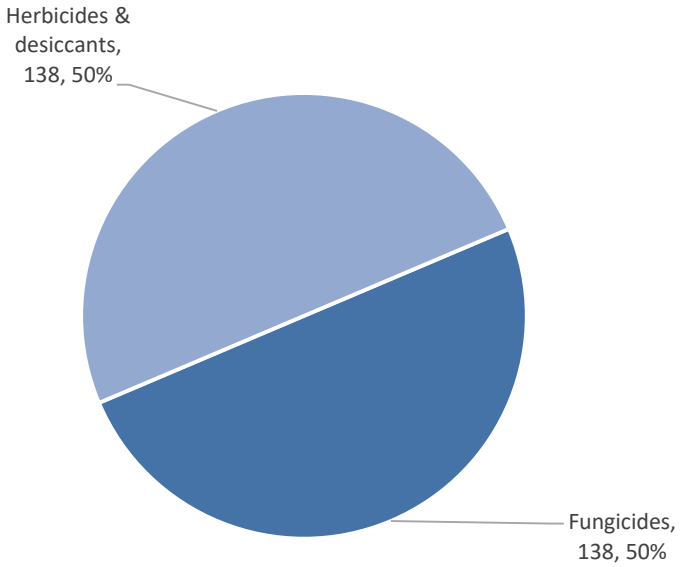


Figure 86: Weight of pesticides (kg) applied to spring oilseed rape crops in Northern Ireland, 2018.

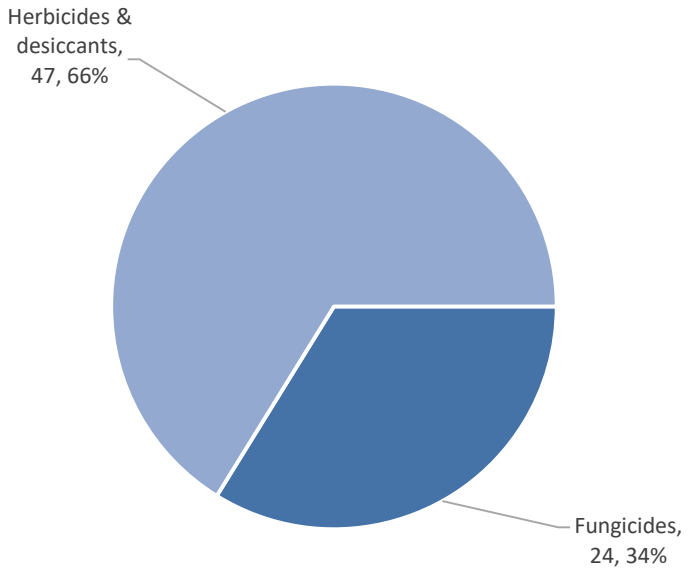
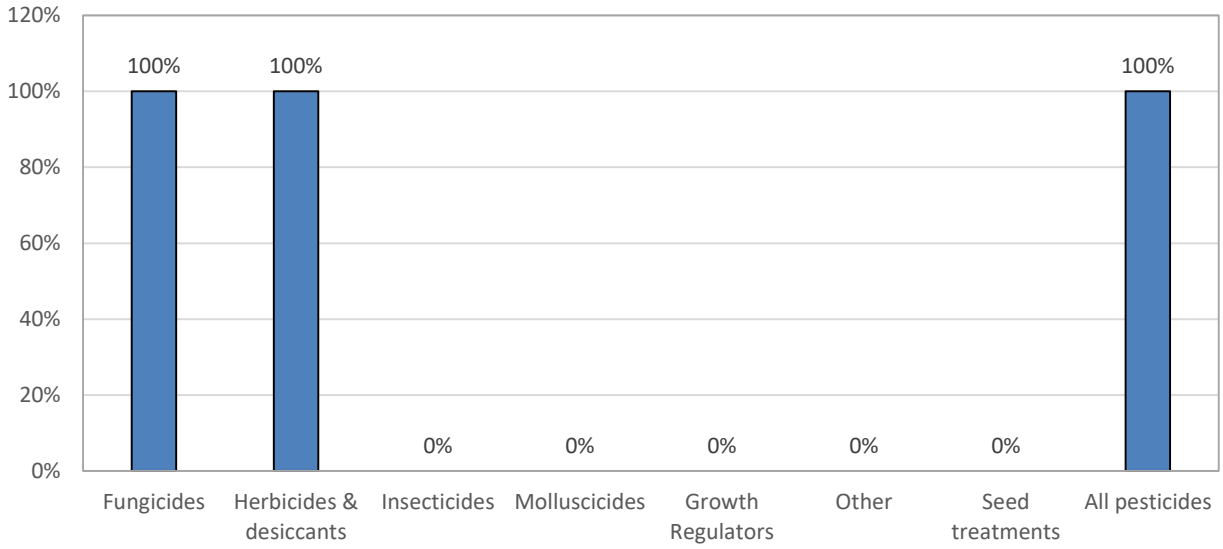


Figure 87: Proportional area (%) of spring oilseed rape crops treated with each pesticide type in Northern Ireland, 2018.



Fungicides – spring oilseed rape

- Basic area treated: 69 hectares
- Total area treated: 138 spray hectares
- Weight of active substances applied: 24 kilogrammes
- 100% of the area grown treated with fungicides
- All fungicide applications were for general fungal control
- The two active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Prothioconazole	69	69	7	50
Tebuconazole	69	69	17	50

Herbicides & desiccants – spring oilseed rape

- Basic area treated: 69 hectares
- Total area treated: 138 spray hectares
- Weight of active substances applied: 47 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Metazachlor/quinmerac	69	69	43	50
Propaquizafop	69	69	4	50

Pesticide usage on winter oilseed rape (Tables 3, 5, 6, 7, 8, 9 & 22):

- 747 hectares of winter oilseed rape grown in Northern Ireland
- 5,719 treated hectares
- 2,286 kilogrammes applied
- 100% of the area of winter oilseed rape crops grown received a pesticide treatment
- Winter oilseed rape crops received on average 3 fungicide, 4 herbicide, 1 insecticide, 1 molluscicide, 1 growth regulator, 1 other treatment and 1 seed treatment applications

Figure 88: Comparison of the areas of winter oilseed rape crops grown in Northern Ireland (ha), 1990 - 2018.

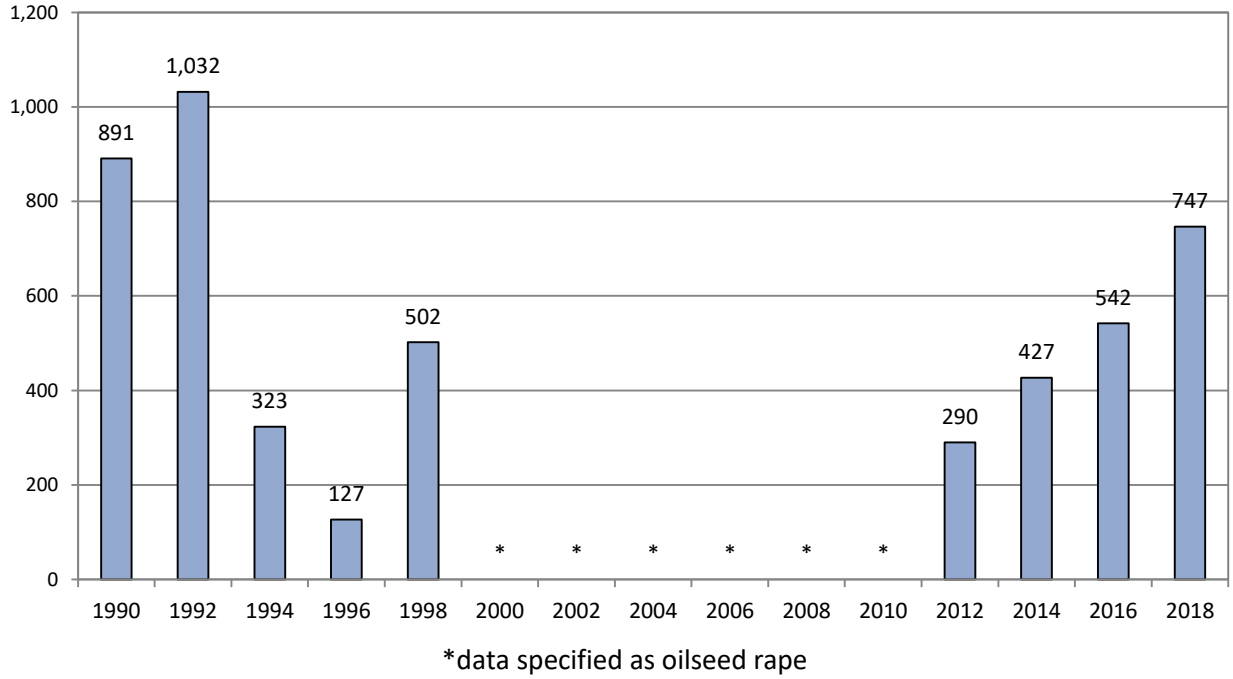


Figure 89: Regional distribution of winter oilseed rape crops grown in Northern Ireland (ha), 2018.

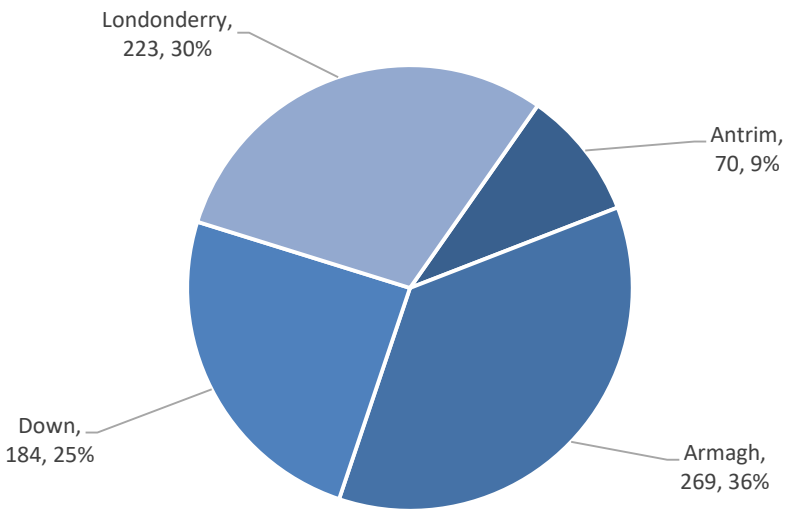


Figure 90: Pesticide usage (spha) on winter oilseed rape crops in Northern Ireland, 2018.

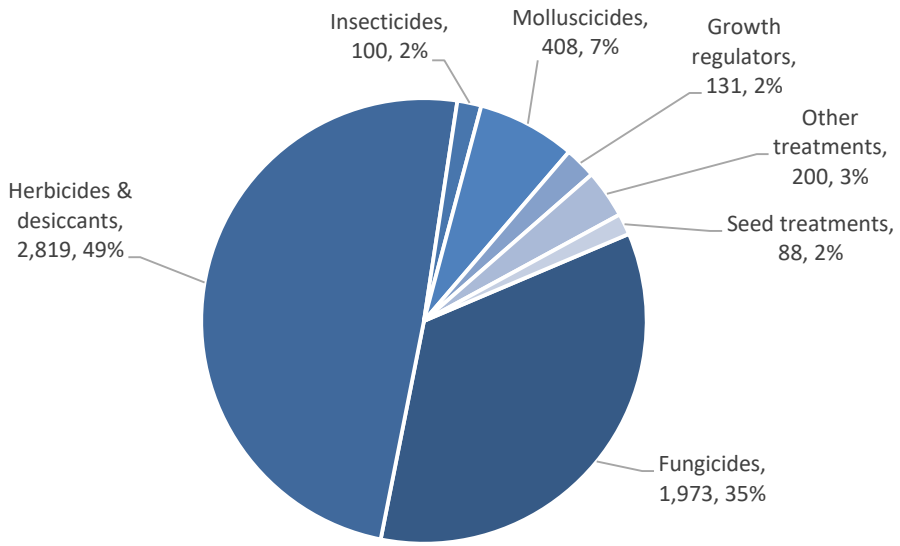


Figure 91: Weight of pesticides (kg) applied to winter oilseed rape crops in Northern Ireland, 2018.

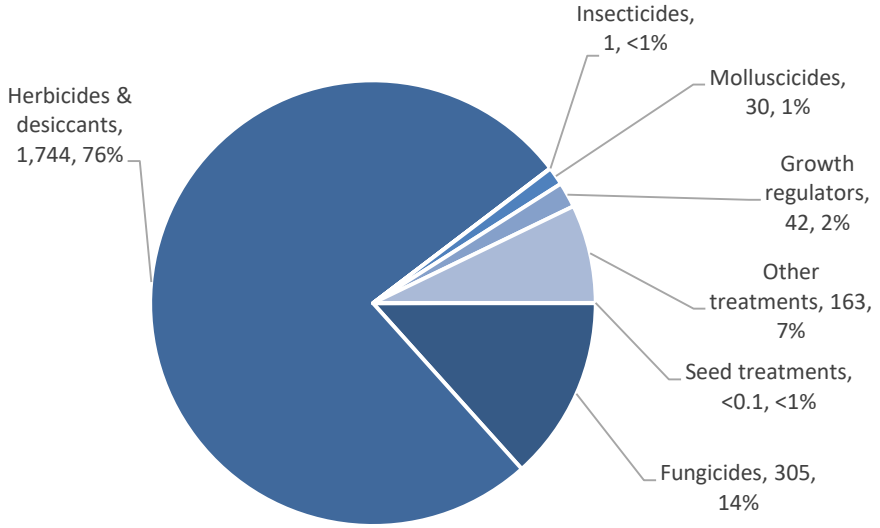
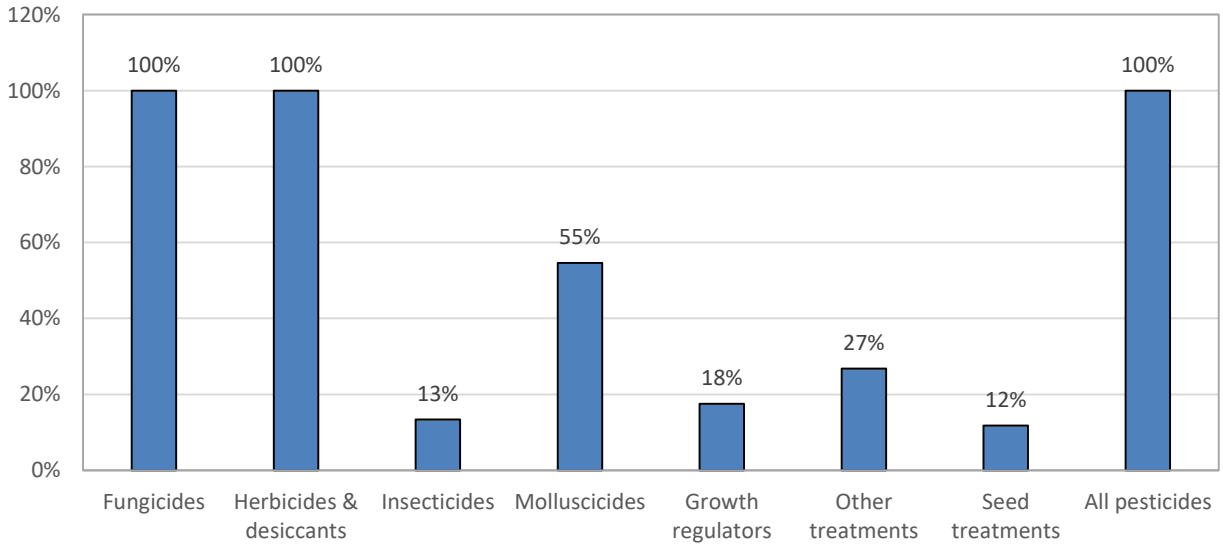


Figure 92: Proportional area (%) of winter oilseed rape crops treated with each pesticide type in Northern Ireland, 2018.

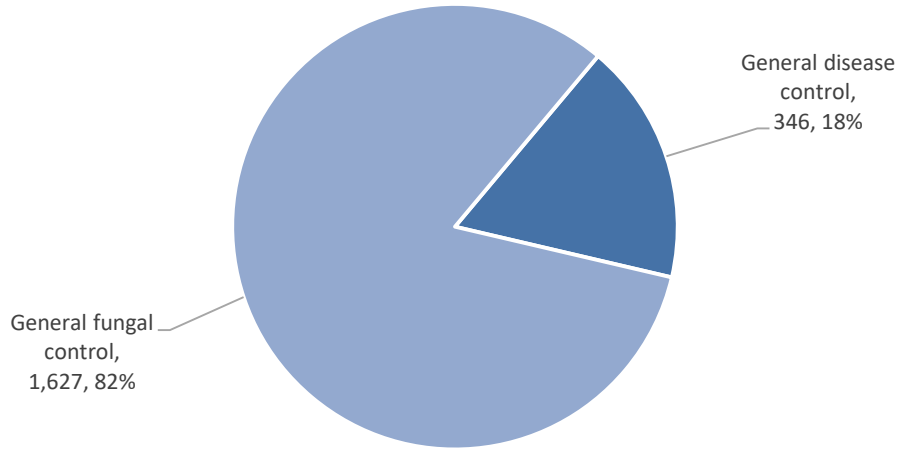


Fungicides – winter oilseed rape

- Basic area treated: 747 hectares
- Total area treated: 1,973 spray hectares
- Weight of active substances applied: 305 kilogrammes
- 100% of the area grown treated with fungicides
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Prothioconazole	678	606	90	34
Fluopyram/prothioconazole	362	362	89	18
Azoxystrobin	342	342	53	17
Tebuconazole	310	293	43	16
Metconazole	91	91	6	5

Figure 93: Winter oilseed rape: reasons for fungicide use (spha), 2018.

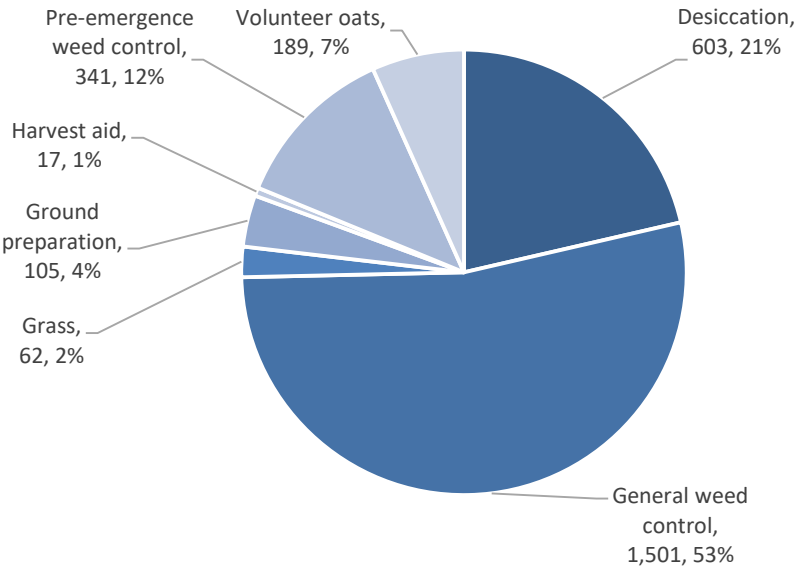


Herbicides & desiccants – winter oilseed rape

- Basic area treated: 747 hectares
- Total area treated: 2,819 spray hectares
- Weight of active substances applied: 1,744 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	947	721	823	34
Propaquizafop	448	448	34	16
Dimethenamid-P/metazachlor/quinmerac	373	373	484	13
Clopyralid/picloram	364	364	27	13
Propyzamide	246	246	165	9

Figure 94: Winter oilseed rape: reasons for herbicide & desiccant use (spha), 2018.

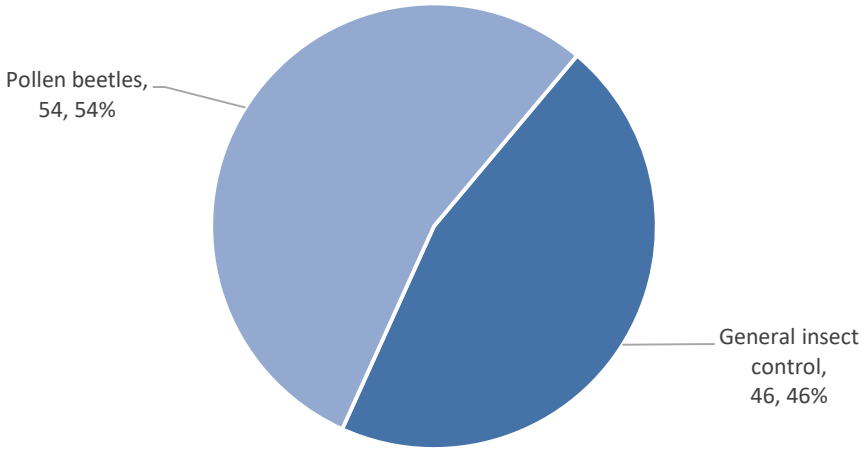


Insecticides – winter oilseed rape

- Basic area treated: 100 hectares
- Total area treated: 100 spray hectares
- Weight of active substances applied: 1 kilogramme
- 13% of the area grown treated with insecticides
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Lambda-cyhalothrin	54	54	<1	54
Deltamethrin	46	46	<1	46

Figure 95: Winter oilseed rape: reasons for insecticide use (spha), 2018.



Molluscicides – winter oilseed rape

- Basic area treated: 408 hectares
- Total area treated: 408 spray hectares
- Weight of active substances applied: 30 kilogrammes
- 55% of the area grown treated with molluscicides
- The two active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total molluscicide-treated area (spha)
Metaldehyde	300	300	15	74
Ferric phosphate	108	108	15	26

Growth regulators – winter oilseed rape

- Basic area treated: 131 hectares
- Total area treated: 131 spray hectares
- Weight of active substances applied: 42 kilogrammes
- 18% of the area grown treated with growth regulators
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Mepiquat chloride/metconazole	131	131	42	100

Other treatment – winter oilseed rape

- Basic area treated: 200 hectares
- Total area treated: 200 spray hectares
- Weight of active substances applied: 163 kilogrammes
- 27% of the area grown treated with other treatments
- The reason for use was given as adjuvant
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total other treatment-treated area (spha)
Synthetic latex	200	200	163	100

Seed treatments – winter oilseed rape

- Basic area treated: 88 hectares
- Total area treated: 88 spray hectares
- Weight of active substances applied: <1 kilogramme
- 12% of the area grown was sown with treated seed
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Thiram	57	57	<1	65
Unknown seed treatment	31	31	.	35

Pesticide usage on peas and beans (Tables 3, 5, 6, 7, 8, 9 & 23):

- 160 hectares of field beans grown in Northern Ireland
- 640 treated hectares
- 443 kilogrammes applied
- 100% of the area of field bean crops grown received a pesticide treatment
- Pea and bean crops received on average 2 fungicide, 2 herbicide, 1 insecticide and 1 seed treatment applications

Figure 96: Comparison of the areas of pea and bean crops grown in Northern Ireland (ha), 1990 - 2018.

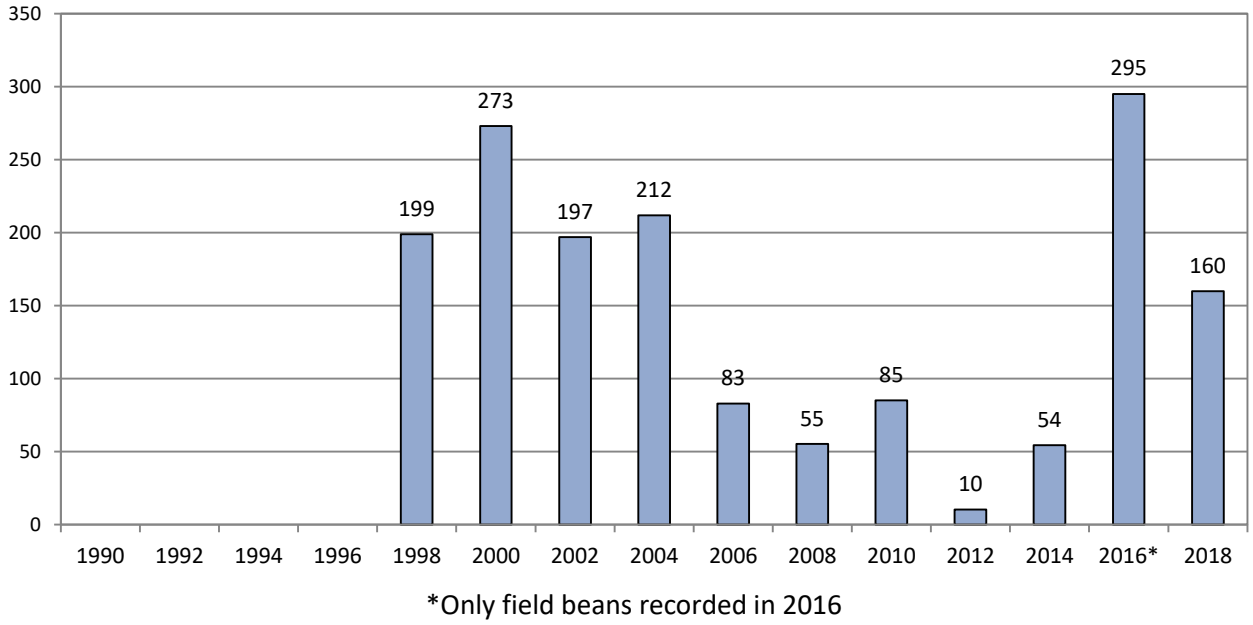


Figure 97: Regional distribution of pea and bean crops grown in Northern Ireland (ha), 2018.

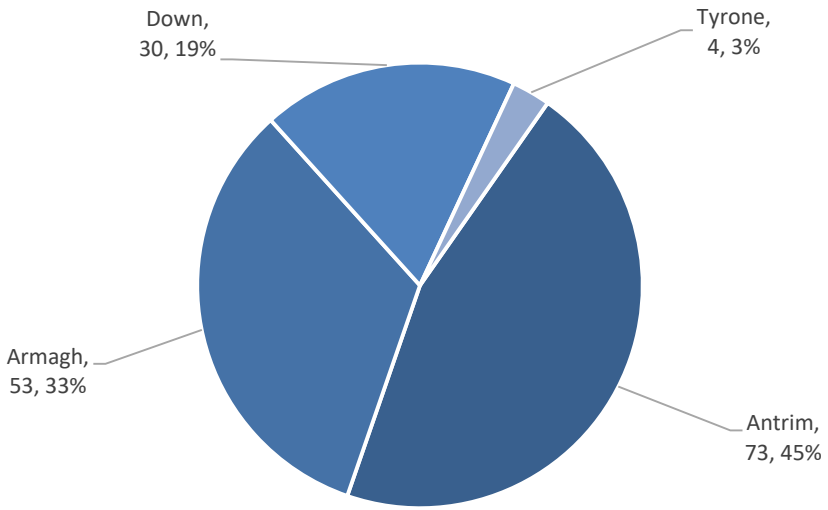


Figure 98: Pesticide usage (spha) on pea and bean crops in Northern Ireland, 2018.

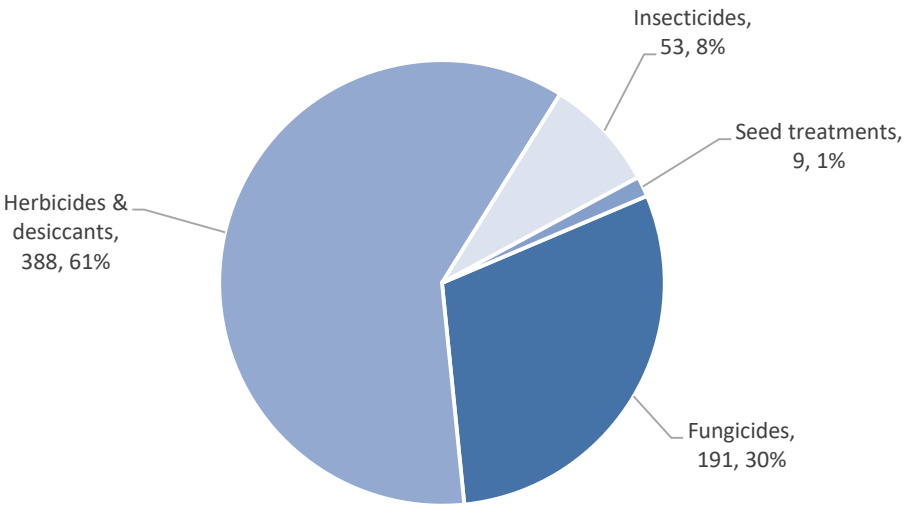


Figure 99: Weight of pesticides (kg) applied to pea and bean crops in Northern Ireland, 2018.

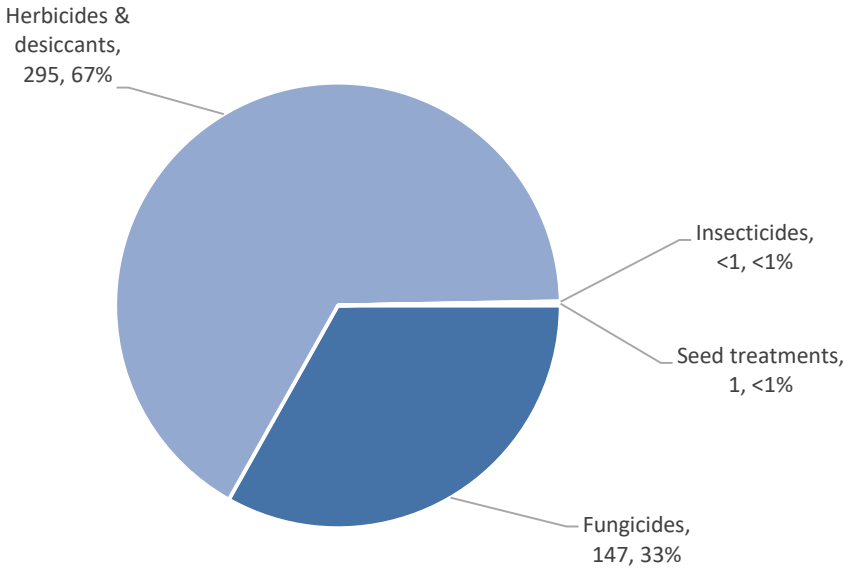
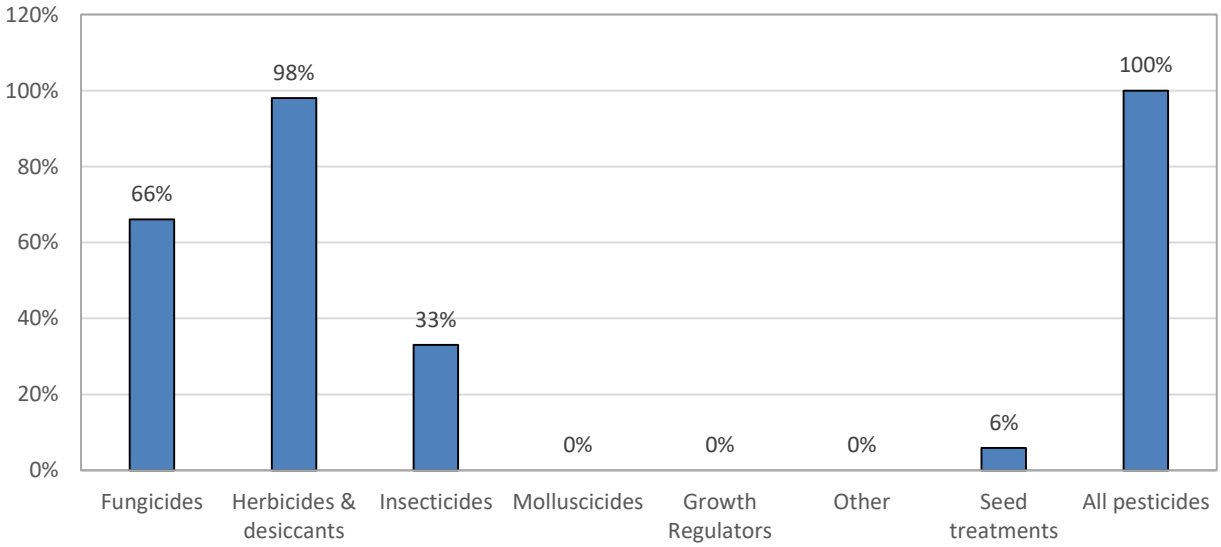


Figure 100: Proportional area (%) of pea and bean crops treated with each pesticide type in Northern Ireland, 2018.



Fungicides – peas and beans

- Basic area treated: 106 hectares
- Total area treated: 191 spray hectares
- Weight of active substances applied: 147 kilogrammes
- 66% of the area grown treated with fungicides
- All applications were for general fungal control
- The active substances applied were:

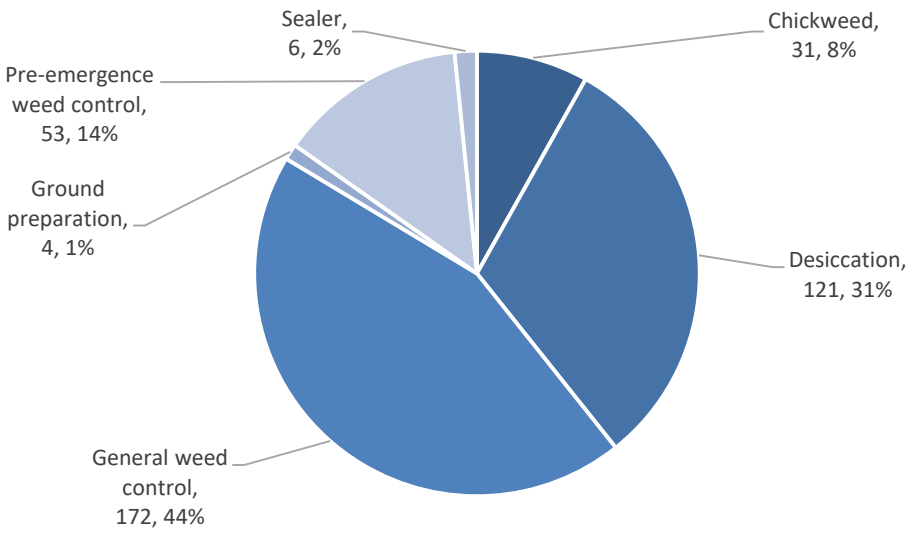
Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Chlorothalonil/cyproconazole	138	79	113	73
Chlorothalonil	26	26	27	14
Boscalid/pyraclostrobin	22	22	6	11
Tebuconazole	4	4	1	2

Herbicides & desiccants – peas and beans

- Basic area treated: 157 hectares
- Total area treated: 388 spray hectares
- Weight of active substances applied: 295 kilogrammes
- 98% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	110	57	53	28
Bentazone	84	84	90	22
Imazamox/pendimethalin	84	84	85	22
Diquat	64	64	36	16
Propyzamide	22	22	18	6

Figure 101: Peas and beans: reasons for herbicide & desiccant use (spha), 2018.



Insecticides – peas and beans

- Basic area treated: 53 hectares
- Total area treated: 53 spray hectares
- Weight of active substances applied: <1 kilogramme
- 33% of the area grown treated with insecticides
- All applications were for general insect control
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Lambda-cyhalothrin	53	53	<1	100

Seed treatments – peas and beans

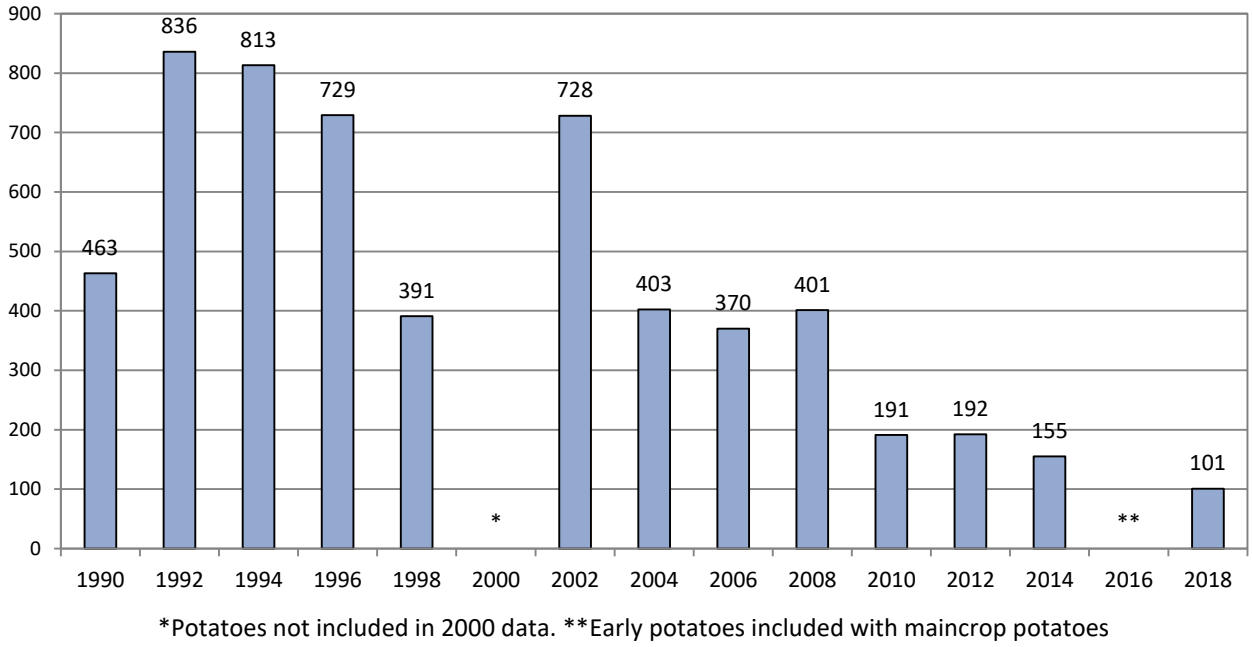
- Basic area treated: 9 hectares
- Total area treated: 9 spray hectares
- Weight of active substances applied: 1 kilogramme
- 6% of the area grown treated with seed treatments
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Thiram	9	9	1	100

Pesticide usage on early potatoes (Tables 3, 5, 6, 7, 8, 9 & 24):

- 101 hectares of early potatoes grown in Northern Ireland
- 1,457 treated hectares
- 805 kilogrammes applied
- 100% of the area of early potato crops grown received a pesticide treatment
- Early potato crops received on average 12 fungicide, 4 herbicide and 1 seed treatment applications

Figure 102: Comparison of the areas of early potato crops grown in Northern Ireland (ha), 1990 - 2018.



*Potatoes not included in 2000 data. **Early potatoes included with maincrop potatoes

Figure 102: Regional distribution of seed potato crops grown in Northern Ireland (ha), 2016.

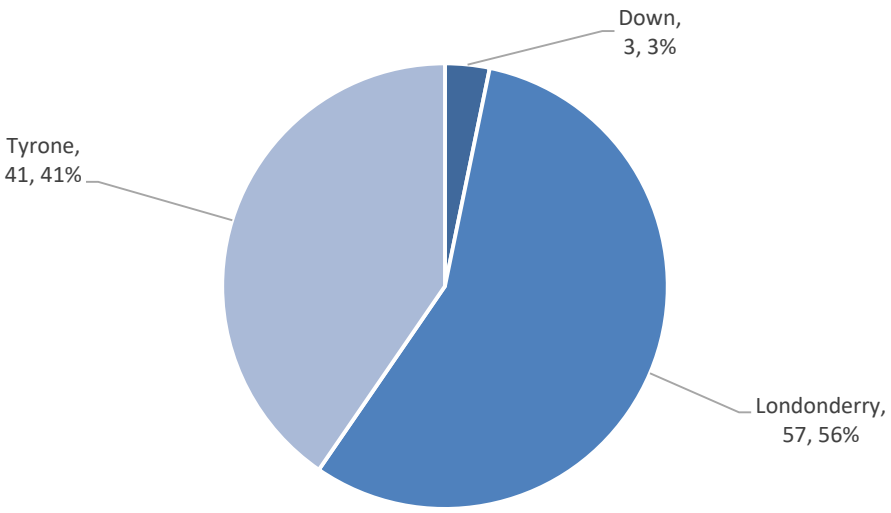


Figure 103: Pesticide usage (spha) on early potato crops in Northern Ireland, 2018.

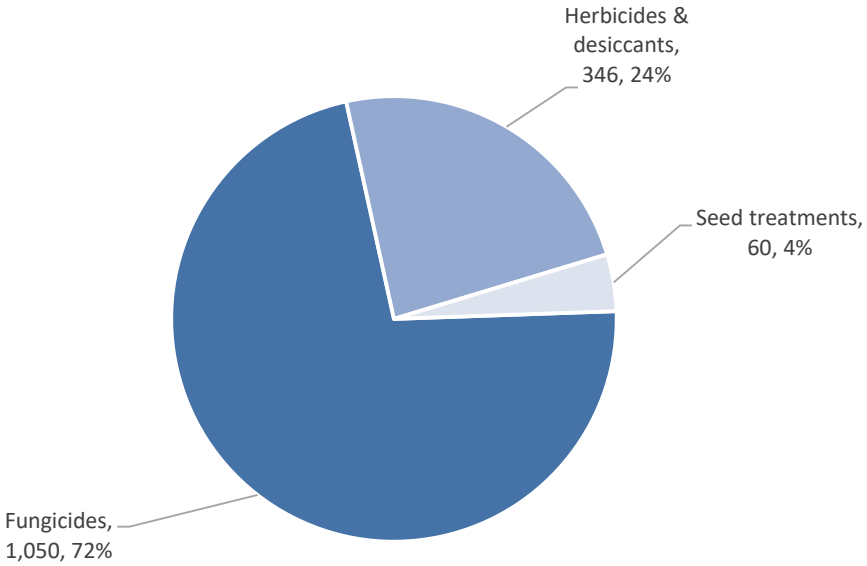


Figure 104: Weight of pesticides (kg) applied to early potato crops in Northern Ireland, 2018.

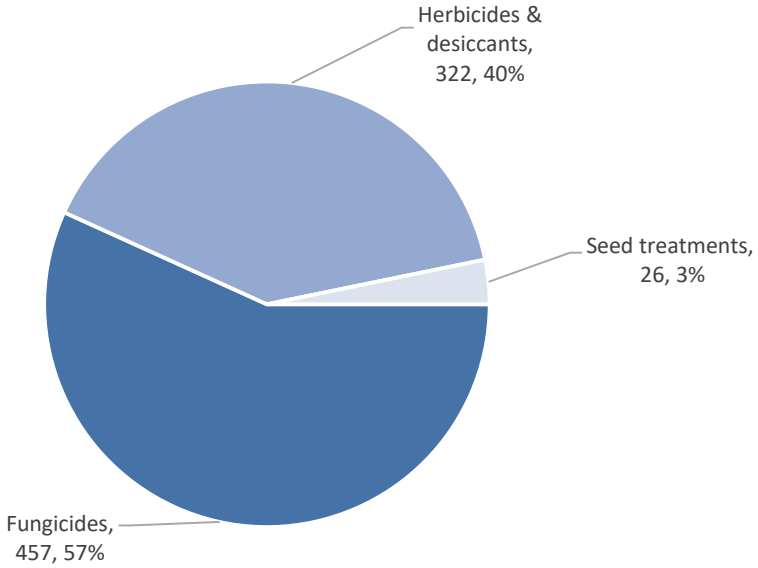
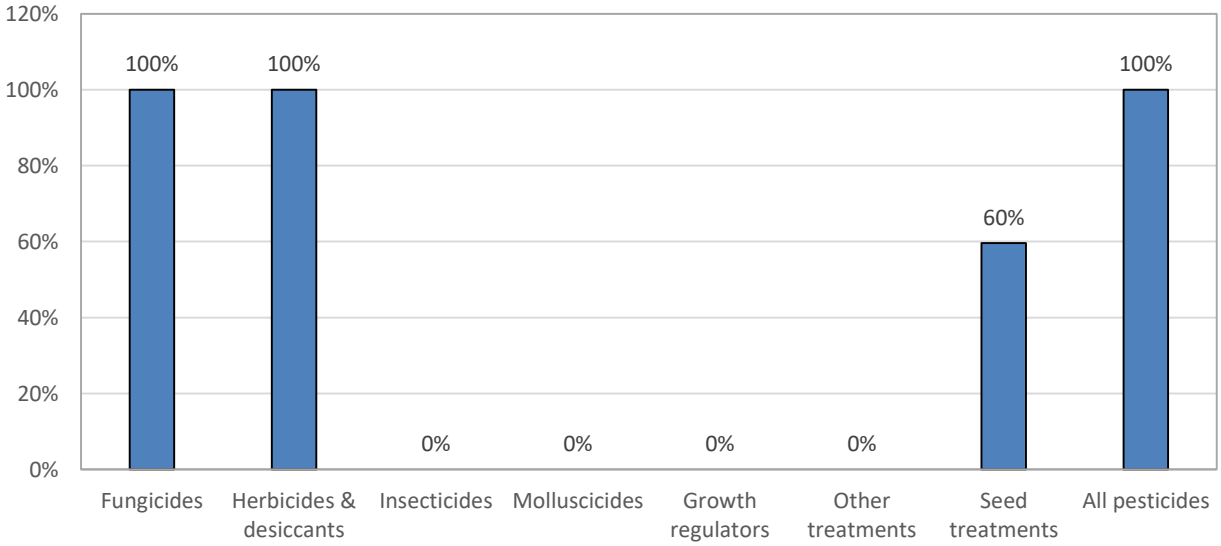


Figure 105: Proportional area (%) of early potato crops treated with each pesticide type in Northern Ireland, 2018.



Fungicides – early potatoes

- Basic area treated: 101 hectares
- Total area treated: 1,050 spray hectares
- Weight of active substances applied: 457 kilogrammes
- 100% of the area grown treated with fungicides.
- All fungicide applications were to control blight
- The most commonly applied active substances were:

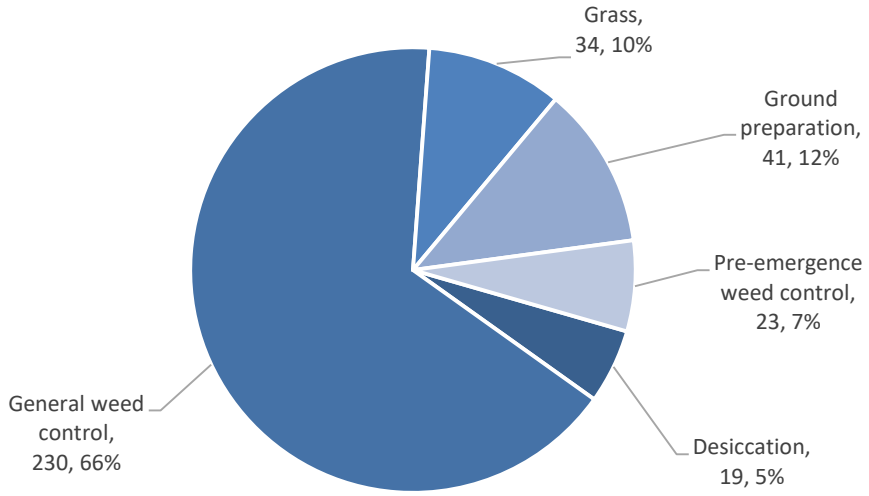
Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Fluazinam	345	98	48	33
Mandipropamid	259	60	39	25
Fluopicolide/propamocarb hydrochloride	223	85	237	21
Fenamidone/propamocarb hydrochloride	122	41	110	12
Cyazofamid	75	38	6	7

Herbicides & desiccants – early potatoes

- Basic area treated: 101 hectares
- Total area treated: 346 spray hectares
- Weight of active substances applied: 322 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The five active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Metribuzin	132	91	88	38
Diquat	120	67	84	35
Glyphosate	82	82	123	24
Prosulfocarb	10	10	23	3
Linuron	3	3	4	1

Figure 106: Early potatoes: reasons for herbicide & desiccant use (spha), 2018.



Seed treatments – early potatoes

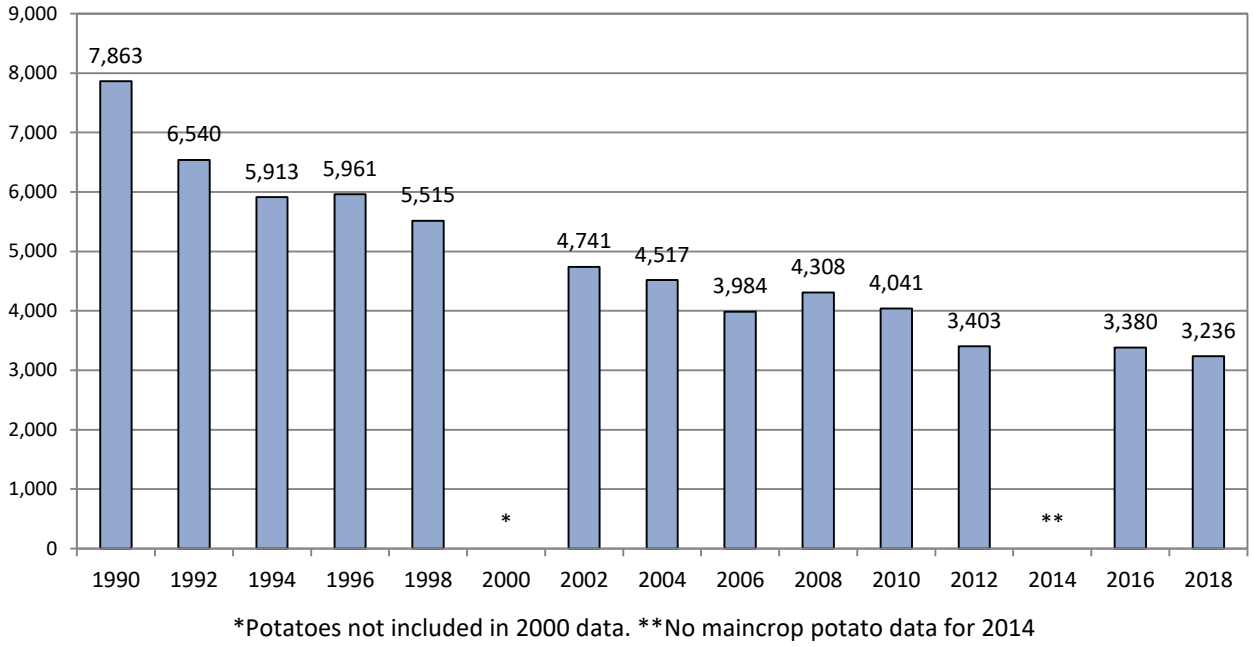
- Basic area treated: 60 hectares
- Total area treated: 60 spray hectares
- Weight of active substances applied: 26 kilogrammes
- 60% of the area grown was sown with treated seed
- The active substances applied were:

Active substance	**Total treated area (spha)**	**Basic treated area (ha)**	**Quantity applied (kgs)**	**% of the total seed treatment-treated area (spha)**
Pencycuron	41	41	25	68
Imazalil	19	19	1	32

Pesticide usage on maincrop potatoes (Tables 3, 5, 6, 7, 8, 9 & 25):

- 3,236 hectares of maincrop potatoes grown in Northern Ireland
- 62,556 treated hectares
- 38,786 kilogrammes applied
- 100% of the area of maincrop potato crops grown received a pesticide treatment
- Maincrop potato crops received on average 12 fungicide, 4 herbicide, 2 insecticide, 1 molluscicide, 2 other treatment and 1 seed treatment applications

Figure 107: Comparison of the areas of maincrop potato crops grown in Northern Ireland (ha), 1990 - 2018.



*Potatoes not included in 2000 data. **No maincrop potato data for 2014

Figure 108: Regional distribution of maincrop potato crops grown in Northern Ireland (ha), 2018.

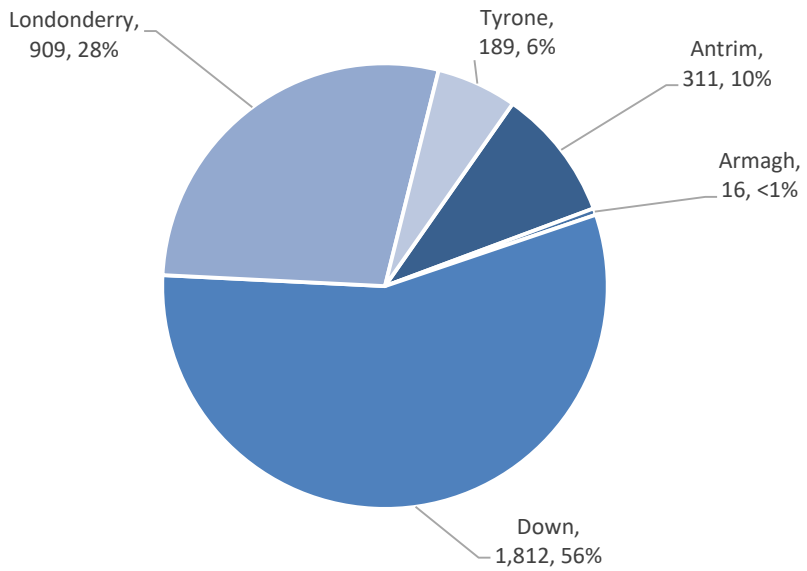


Figure 109: Pesticide usage (spha) on maincrop potato crops in Northern Ireland, 2018.

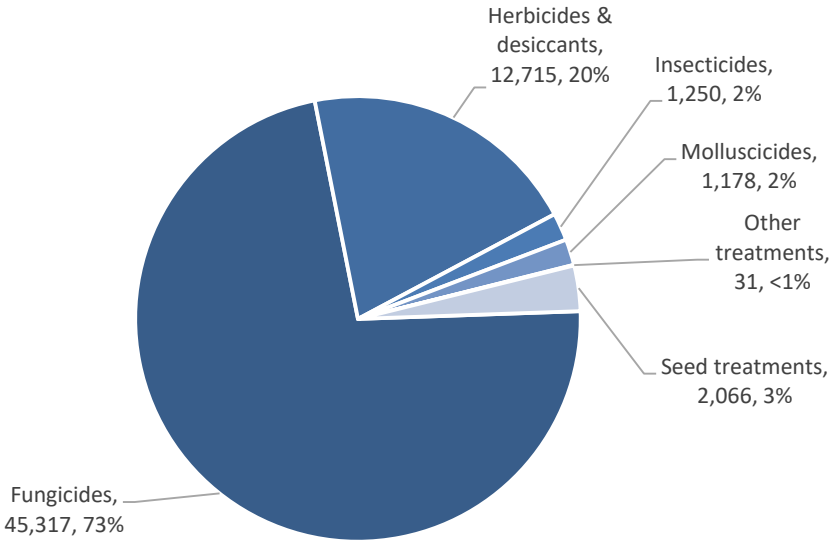


Figure 110 Weight of pesticides (kg) applied to maincrop potato crops in Northern Ireland, 2018.

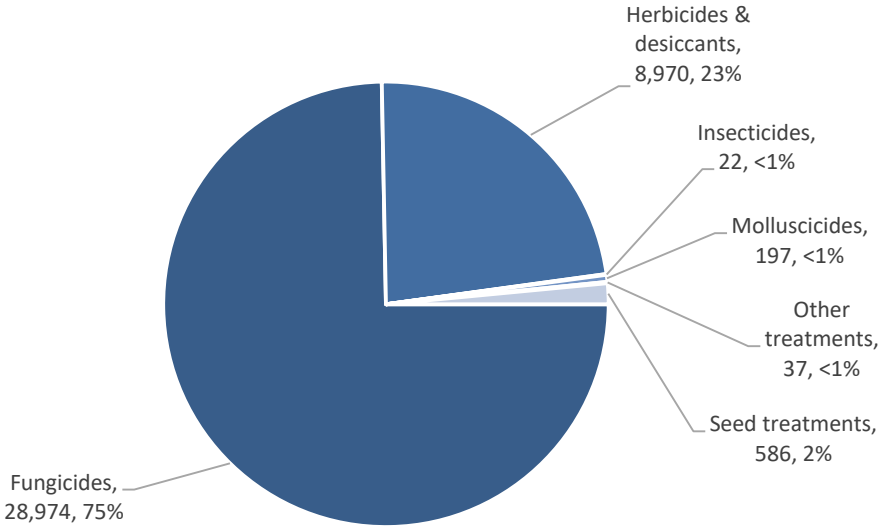
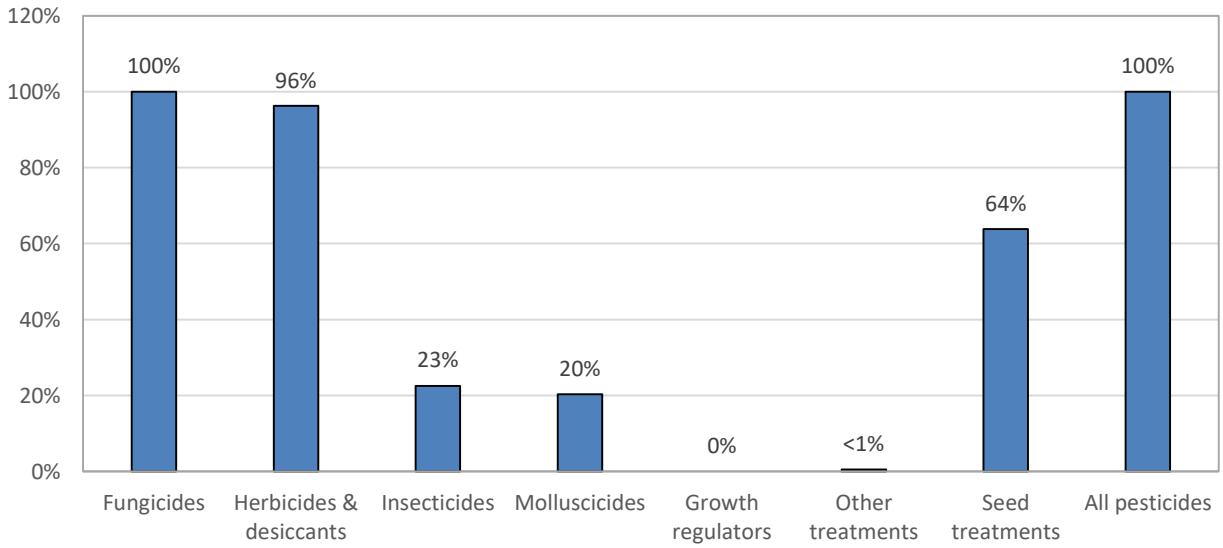


Figure 111: Proportional area (%) of maincrop potato crops treated with each pesticide type in Northern Ireland, 2018.

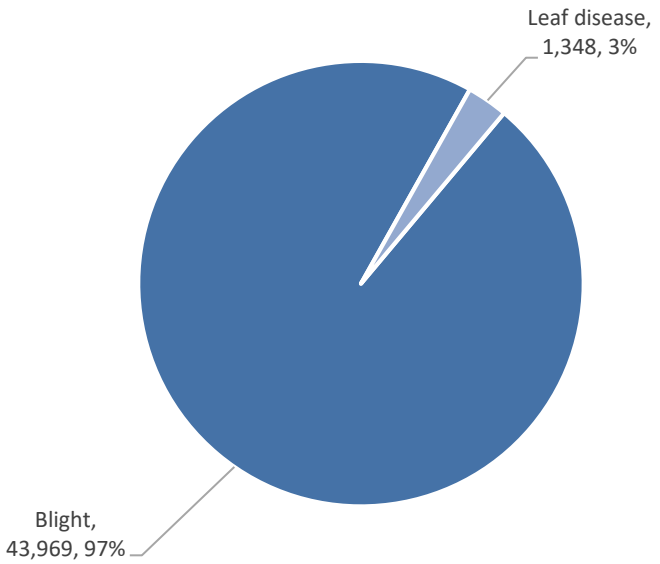


Fungicides – maincrop potatoes

- Basic area treated: 3,236 hectares
- Total area treated: 45,317 spray hectares
- Weight of active substances applied: 28,974 kilogrammes
- 100% of the area grown treated with fungicides
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Fluazinam	8,808	2,081	2,655	19
Mandipropamid	5,317	1,958	812	12
Cyazofamid	4,965	1,614	382	11
Fluopicolide/propamocarb hydrochloride	4,783	2,152	5,702	11
Dimethomorph/mancozeb	4,440	940	8,064	10

Figure 112: Maincrop potatoes: reasons for fungicide use (spha), 2018.

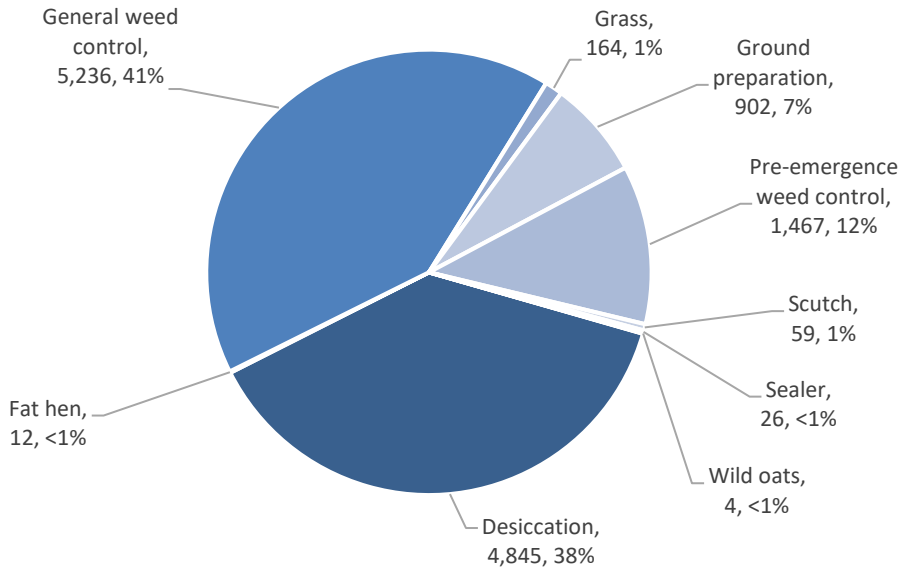


Herbicides & desiccants – maincrop potatoes

- Basic area treated: 3,115 hectares
- Total area treated: 12,715 spray hectares
- Weight of active substances applied: 8,970 kilogrammes
- 96% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Diquat	6450	3115	2856	51
Metribuzin	2390	2390	1387	19
Glyphosate	1459	1310	1559	11
Prosulfocarb	1325	1325	2634	10
Carfentrazone-ethyl	354	354	17	3

Figure 113: Maincrop potatoes: reasons for herbicide & desiccant use (spha), 2018.

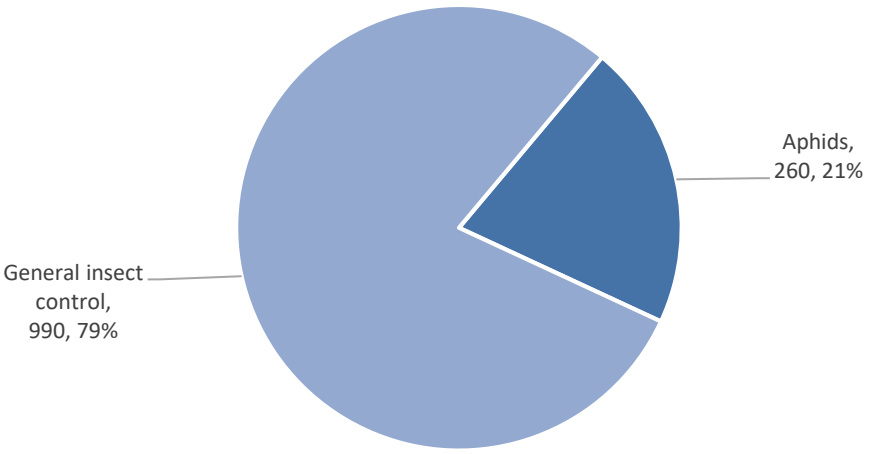


Insecticides – maincrop potatoes

- Basic area treated: 730 hectares
- Total area treated: 1,250 spray hectares
- Weight of active substances applied: 22 kilogrammes
- 23% of the area grown treated with insecticides
- The three active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Lambda-cyhalothrin	1,118	598	15	89
Flonicamid	89	89	7	7
Esfenvalerate	43	43	<1	3

Figure 114: Maincrop potatoes: reasons for insecticide use (spha), 2016.



Molluscicides – maincrop potatoes

- Basic area treated: 658 hectares
- Total area treated: 1,178 spray hectares
- Weight of active substances applied: 197 kilogrammes
- 20% of the area grown treated with molluscicides
- The two active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total molluscicide-treated area (spha)
Metaldehyde	862	547	158	73
Ferric phosphate	316	214	38	27

Other treatments – maincrop potatoes

- Basic area treated: 16 hectares
- Total area treated: 31 spray hectares
- Weight of active substances applied: 37 kilogrammes
- <1% of the area grown treated with other treatments
- The only active substance applied was:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total other treatment-treated area (spha)
Nitrogen/phosphate/potassium oxide	31	16	37	100

Seed treatments – maincrop potatoes

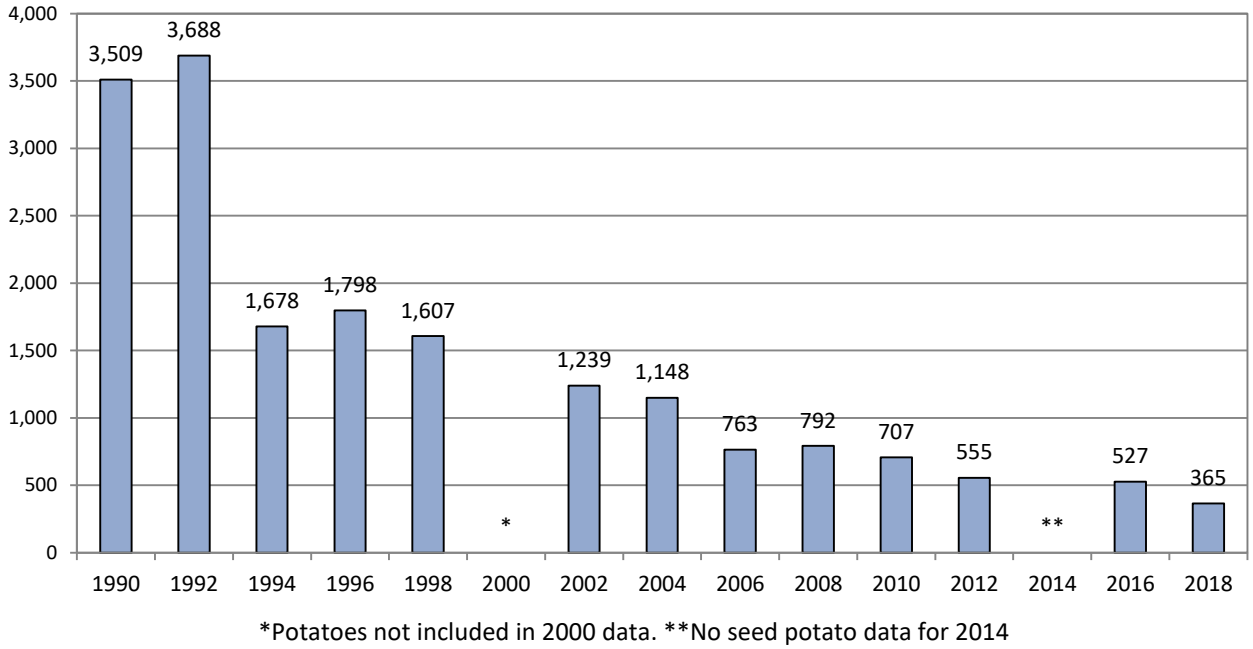
- Basic area treated: 2,066 hectares
- Total area treated: 2,066 spray hectares
- Weight of active substances applied: 586 kilogrammes
- 64% of the area grown planted with treated seed
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Imazalil	843	843	26	41
Pencycuron	782	782	468	38
Flutolanil	372	372	92	18
Unknown seed treatment	68	68	.	3

Pesticide usage on seed potatoes (Tables 3, 5, 6, 7, 8, 9 & 26):

- 365 hectares of seed potatoes grown in Northern Ireland
- 6,796 treated hectares
- 4,630 kilogrammes applied
- 100% of the area of seed potato crops grown received a pesticide treatment
- Seed potato crops received on average 10 fungicide, 5 herbicide, 1 insecticide, 4 molluscicide and 1 seed treatment applications

Figure 115: Comparison of the areas of seed potato crops grown in Northern Ireland (ha), 1990 - 2018.



*Potatoes not included in 2000 data. **No seed potato data for 2014

Figure 116: Regional distribution of seed potato crops grown in Northern Ireland (ha), 2018.

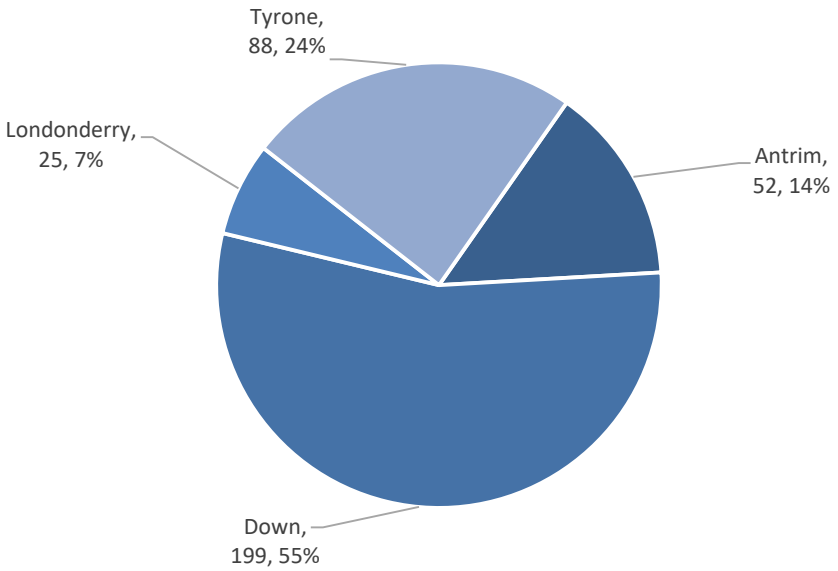


Figure 117: Pesticide usage (spha) on seed potato crops in Northern Ireland, 2018.

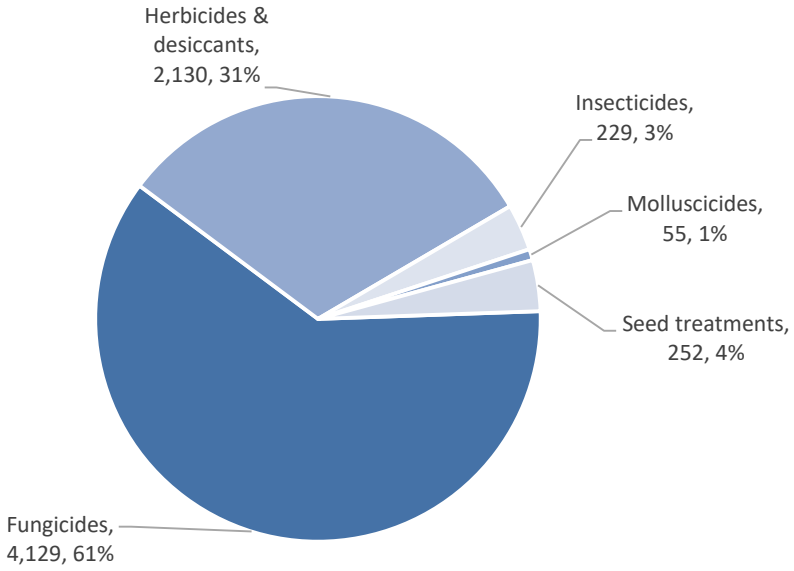


Figure 118: Weight of pesticides (kg) applied to seed potato crops in Northern Ireland, 2018.

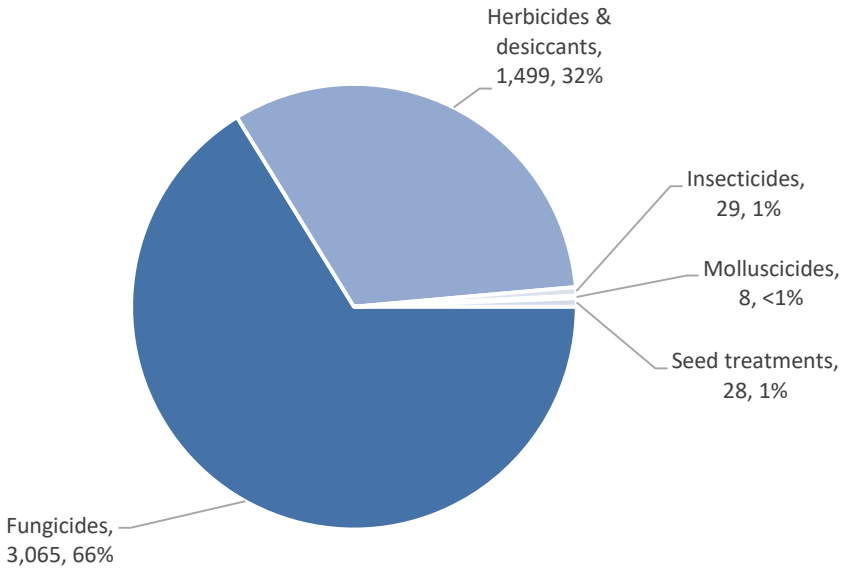
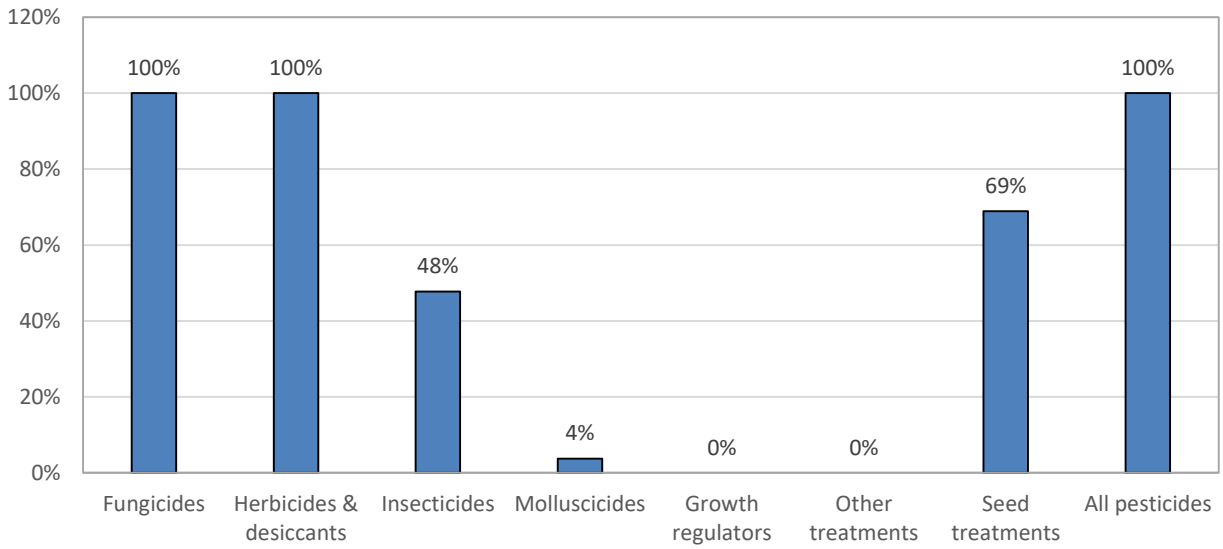


Figure 119: Proportional area (%) of seed potato crops treated with each pesticide type in Northern Ireland, 2018.

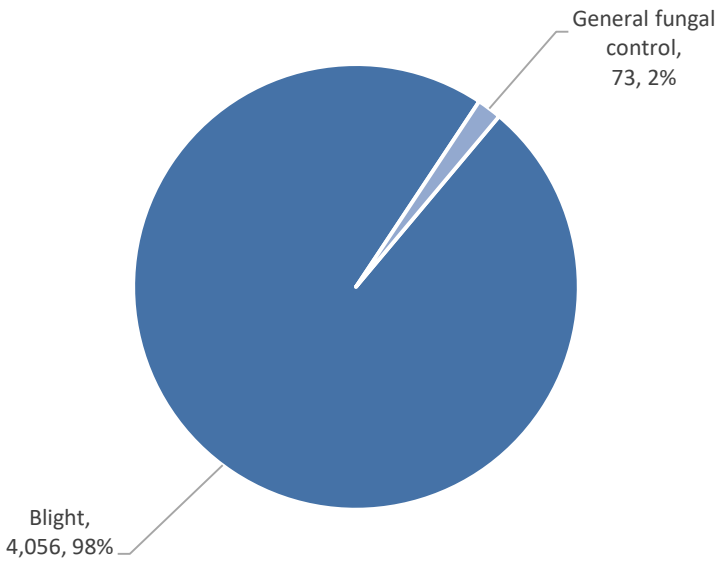


Fungicides – seed potatoes

- Basic area treated: 365 hectares
- Total area treated: 4,129 spray hectares
- Weight of active substances applied: 3,065 kilogrammes
- 100% of the area grown treated with fungicides.
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Fluopicolide/propamocarb hydrochloride	754	213	822	18
Cyazofamid	670	188	53	16
Fluazinam	633	312	115	15
Dimethomorph/mancozeb	522	78	955	13
Mancozeb	454	127	665	11

Figure 120: Seed potatoes: reasons for fungicide use (spha), 2018.

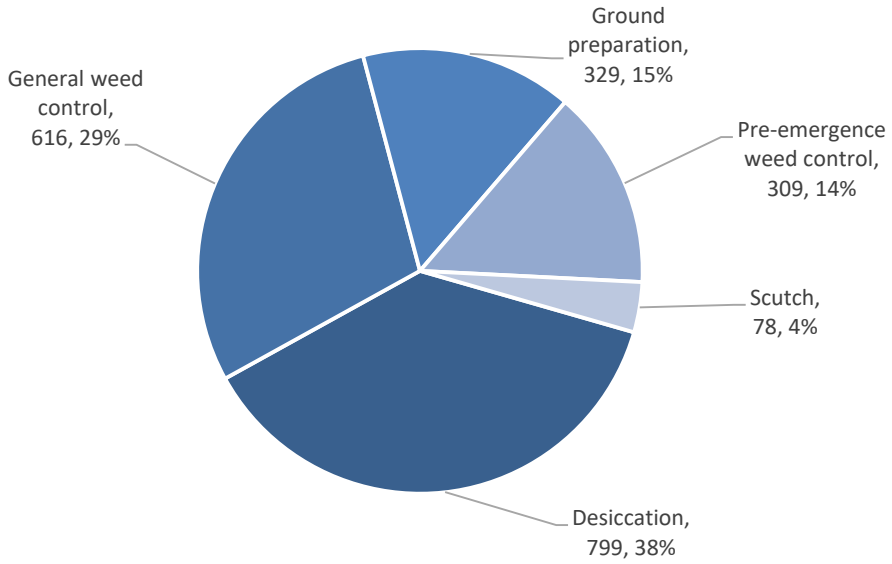


Herbicides & desiccants – seed potatoes

- Basic area treated: 365 hectares
- Total area treated: 2,130 spray hectares
- Weight of active substances applied: 1,499 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Diquat	1021	365	356	48
Metribuzin	365	365	200	17
Glyphosate	329	329	321	15
Prosulfocarb	227	227	549	11
Carfentrazone-ethyl	101	101	6	5

Figure 121: Seed potatoes: reasons for herbicide & desiccant use (spha), 2018.



Insecticides – seed potatoes

- Basic area treated: 174 hectares
- Total area treated: 229 spray hectares
- Weight of active substances applied: 29 kilogrammes
- 48% of the area grown treated with insecticides
- All insecticide applications were for aphids
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total insecticide-treated area (spha)
Flonicamid	202	174	26	88
Thiacloprid	28	28	3	12

Molluscicides – seed potatoes

- Basic area treated: 14 hectares
- Total area treated: 55 spray hectares
- Weight of active substances applied: 8 kilogrammes
- 4% of the area grown treated with molluscicides
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total molluscicide-treated area (spha)
Ferric phosphate	28	14	4	50
Metaldehyde	28	14	4	50

Seed treatments – seed potatoes

- Basic area treated: 252 hectares
- Total area treated: 252 spray hectares
- Weight of active substances applied: 28 kilogrammes
- 53% of the area grown received a seed treatment
- The three active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Fludioxonil	147	147	16	58
Imazalil	77	77	4	31
Flutolanil	28	28	8	11

Potato storage:

- 46,161 tonnes of potatoes stored
- The majority are stored in Counties Antrim, Down and Londonderry
- Stored potatoes received no additional storage treatments
- Only maincrop and seed potatoes were stored

Figure 122: Comparison of the quantities (t) of potatoes stored in Northern Ireland, 1990 - 2018.

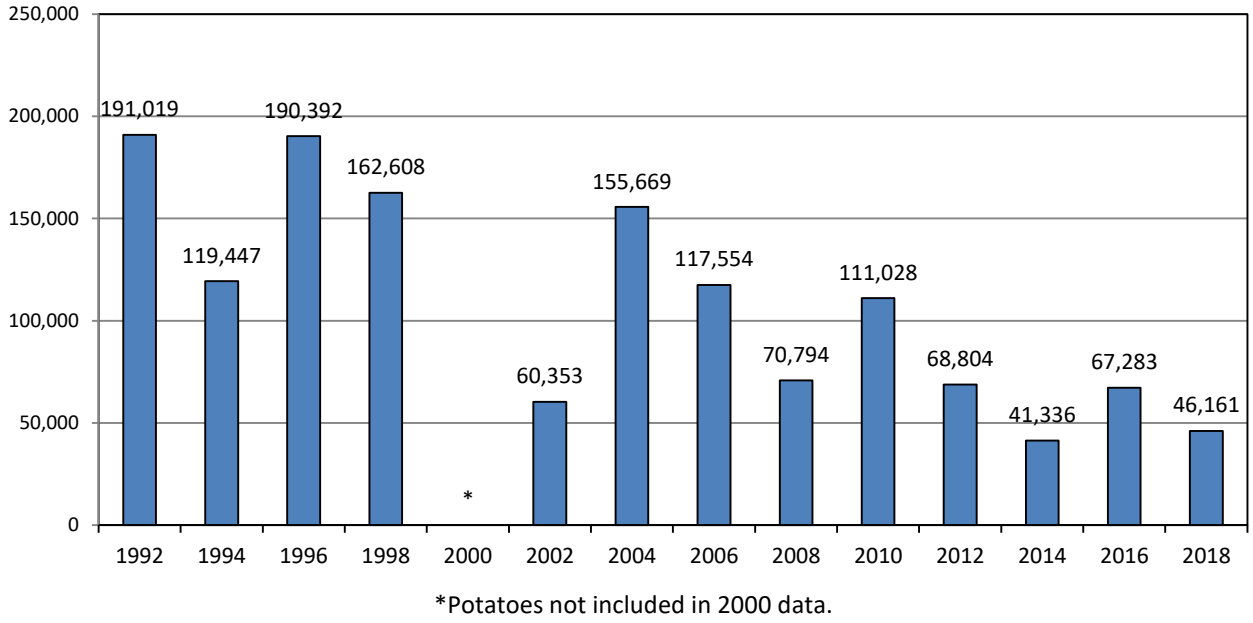


Figure 123: Potato storage: estimated quantity (tonnes) of potatoes stored in each region in Northern Ireland, 2018.

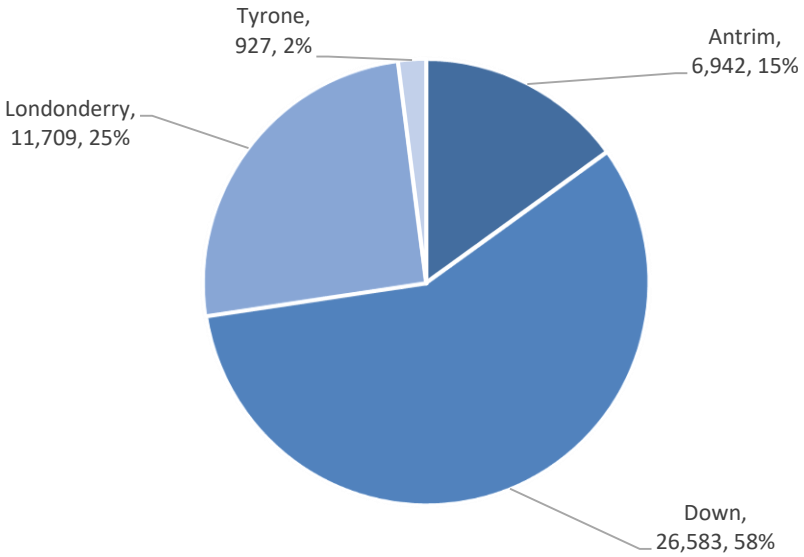


Figure 124: Potato storage: estimated quantity (tonnes) of maincrop potatoes stored in each region in Northern Ireland, 2018.

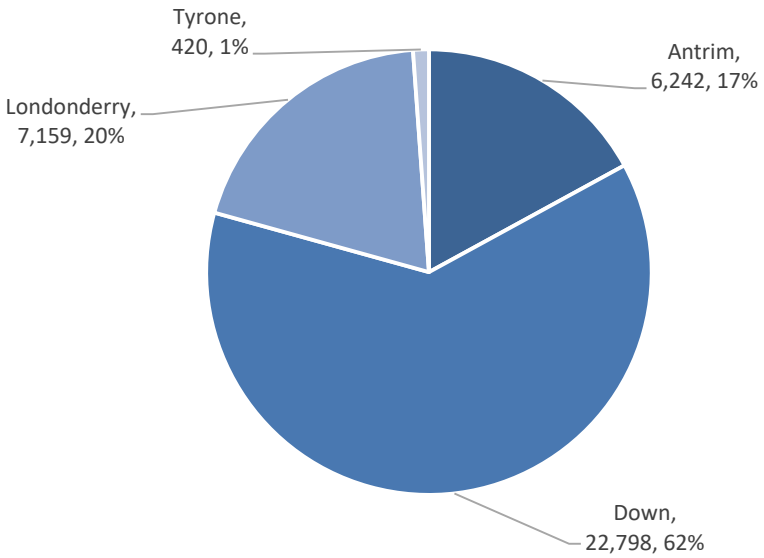


Figure 125: Potato storage: estimated quantity (tonnes) of seed potatoes stored in each region in Northern Ireland, 2018.

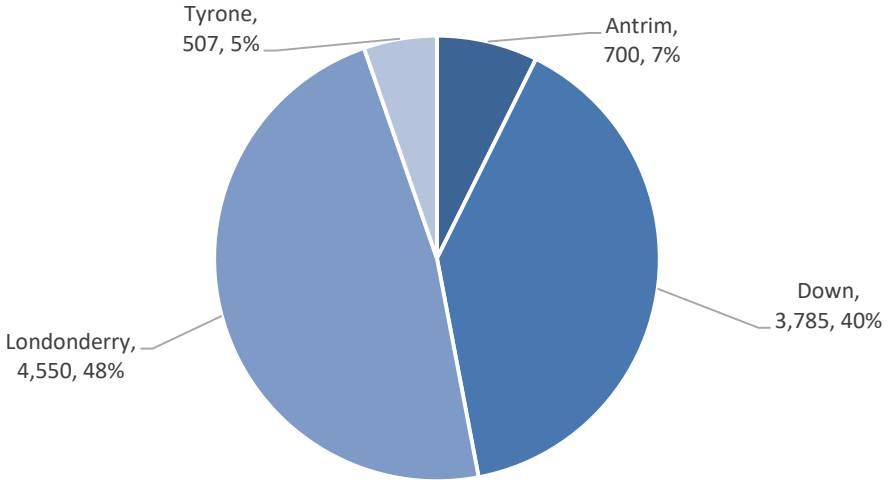


Figure 126: Potato storage: type of storage building used and quantities (tonnes) of potatoes stored in Northern Ireland, 2018.

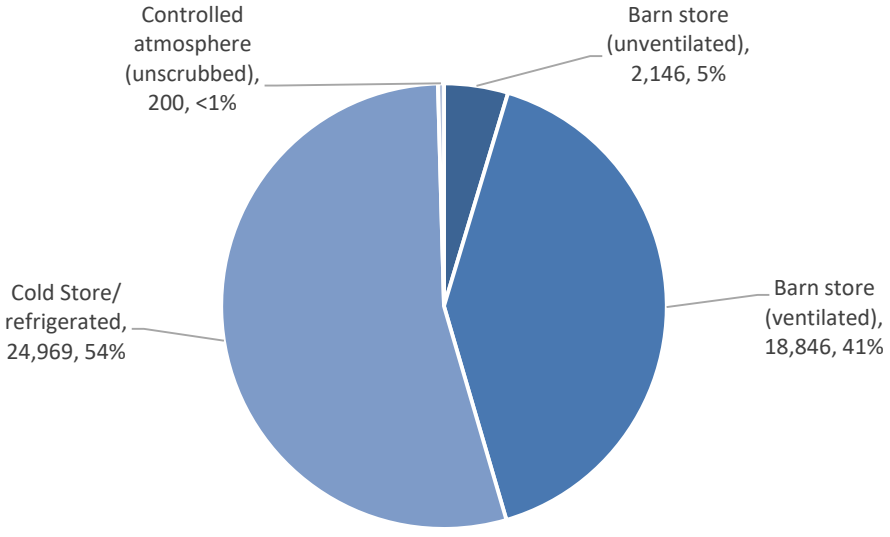


Table 1: **Number of farms in each size class with arable crops in the Northern Ireland June 2018 census and the number of samples from each class.**

	Size group (hectares)													
	< 5		5< 10		10 < 20		20 < 50		50 < 100		100+		Total	
County	Holdings in size group	Holdings sampled	Holdings in size group	Holdings sampled	Holdings in size group	Holdings sampled	Holdings in size group	Holdings sampled	Holdings in size group	Holdings sampled	Holdings in size group	Holdings sampled	Holdings in size group	Holdings sampled
Antrim	225	3	137	3	72	10	71	8	22	8	<5	<5	530	34
Armagh	71	Nil	62	1	45	5	22	4	8	3	<5	<5	211	15
Down	405	6	248	3	177	10	164	22	84	25	12	10	1090	76
Londonderry	216	5	142	3	118	11	82	15	27	7	15	12	600	53
Tyrone	115	5	61	5	62	5	19	3	9	6	<5	<5	267	25
Northern Ireland	**1,032**	19	**650**	15	**474**	41	**358**	52	**150**	49	**34**	27	**2,698**	203

Table 2: **Total grown area (ha), total surveyed area (ha), number of crops surveyed and percentage of crops surveyed in Northern Ireland, 2018 .**

Crop	Total grown area (ha)	Surveyed area (ha)	Number of crops surveyed	Percentage of crops surveyed
Spring barley	14,725	3,730	186	25%
Undersown barley	169	12	3	7%
Winter barley	5,809	2,179	121	38%
Spring wheat	793	259	17	33%
Winter wheat	6,052	2,171	100	36%
Spring oats	1,321	304	23	23%
Undersown oats	29	4	1	14%
Winter oats	664	252	13	38%
Rye	122	61	4	50%
Triticale	38	17	2	45%
Spring oilseed rape	69	45	1	64%
Winter oilseed rape	747	320	15	43%
Peas and beans	160	72	9	45%
Early potatoes	101	10	8	10%
Maincrop potatoes	3,236	1,062	57	33%
Seed potatoes	365	44	8	12%
All crops	**34,398**	**10,540**	**568**	**31%**

Table 3: **Estimated area (hectares) of arable crops grown regionally in Northern Ireland, 2018 .**

	County					
Crop	**Antrim**	**Armagh**	**Down**	**Londonderry**	**Tyrone**	**Northern Ireland**
Spring barley	3,227	751	5,146	3,932	1,671	14,725
Undersown barley	.	.	.	169	.	169
Winter barley	710	196	2,399	1,504	1,000	5,809
Spring wheat	178	176	326	60	52	793
Winter wheat	537	843	2,448	1,607	618	6,052
Spring oats	325	345	211	192	247	1,321
Undersown oats	29	.	.	.	.	29
Winter oats	41	134	316	102	70	664
Rye	.	115	7	.	.	122
Triticale	.	16	.	.	22	38
Spring oilseed rape	.	.	.	69	.	69
Winter oilseed rape	70	269	184	223	.	747
Peas and beans	73	53	30	.	4	160
Early potatoes	.	.	3	57	41	101
Maincrop potatoes	311	16	1,812	909	189	3,236
Seed potatoes	52	.	199	25	88	365
All crops	**5,553**	**2,914**	**13,081**	**8,849**	**4,002**	**34,398**

Table 4a: **Estimated area (spray hectares) of arable crops treated regionally with each pesticide type in Northern Ireland, 2018 .**

	County					
Pesticide type	**Antrim**	**Armagh**	**Down**	**Londonderry**	**Tyrone**	**Northern Ireland**
Fungicides	17,104	10,694	64,173	40,600	13,872	146,444
Herbicides & desiccants	17,579	11,563	38,051	24,451	9,889	101,534
Insecticides	3,624	1,571	6,822	2,397	1,928	16,342
Molluscicides	158	631	686	527	.	2,002
Growth regulators	4,556	3,331	12,288	9,166	4,229	33,571
Other treatments	.	31	281	344	246	902
Seed treatments	4,256	1,784	11,177	8,185	2,908	28,310
All active ingredients	**47,277**	**29,606**	**133,479**	**85,671**	**33,071**	**329,104**

Table 4b: **Estimated weight (kilograms) of active ingredients applied to arable crops regionally with each pesticide type in Northern Ireland, 2018 .**

	County					
Pesticide type	**Antrim**	**Armagh**	**Down**	**Londonderry**	**Tyrone**	**Northern Ireland**
Fungicides	9,089	3,145	28,941	15,570	5,728	62,473
Herbicides & desiccants	7,700	4,345	16,558	8,164	4,649	41,415
Insecticides	62	7	126	12	20	229
Molluscicides	34	33	112	77	.	257
Growth regulators	2,174	536	6,209	3,995	1,399	14,314
Other treatments	.	37	262	238	152	689
Seed treatments	338	134	1,011	610	178	2,271
All active ingredients	**19,399**	**8,237**	**53,218**	**28,666**	**12,127**	**121,647**

Table 5: **The total treated area (spray hectares) and the basic treated area (hectares) of arable crops treated with each pesticide type in Northern Ireland, 2018.**

	Pesticide type															
	Fungicides		Herbicides & dessicants		Insecticides		Molluscicides		Growth regulators		Other		Seed treatments		All pesticides	
Crop	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	31,463	13,456	39,710	14,396	8,070	7,250	.	.	11,701	8,644	210	210	11,195	11,153	102,348	14,567
Undersown barley	152	76	152	76	142	76	.	.	.	.	.	.	169	169	614	169
Winter barley	20,517	5,732	16,469	5,703	2,352	1,796	.	.	9,708	5,168	348	251	5,257	5,155	54,651	5,809
Spring wheat	1,582	771	1,866	707	338	338	.	.	519	424	.	.	706	706	5,012	765
Winter wheat	36,255	5,954	19,964	5,731	3,257	3,094	361	361	9,360	5,623	112	112	7,039	5,762	76,347	6,048
Spring oats	1,861	1,045	2,755	1,265	503	483	.	.	1,089	953	.	.	856	856	7,064	1,265
Winter oats	1,650	576	1,696	664	32	32	.	.	826	610	.	.	581	581	4,785	664
Rye	111	111	295	115	.	.	.	.	200	97	.	.	32	32	638	109
Triticale	54	38	91	38	16	16	.	.	38	38	.	.	.	.	199	36
Spring oilseed rape	138	69	138	69	.	.	.	.	.	.	.	.	.	.	277	69
Winter oilseed rape	1,973	747	2,819	747	100	100	408	408	131	131	200	200	88	88	5,719	747
Peas and beans	191	106	388	157	53	53	.	.	.	.	.	.	9	9	640	160
Early potatoes	1,050	101	346	101	.	.	.	.	.	.	.	.	60	60	1,457	101
Maincrop potatoes	45,317	3,236	12,715	3,115	1,250	730	1,178	658	.	.	31	16	2,066	2,066	62,556	3,236
Seed potatoes	4,129	365	2,130	365	229	174	55	14	.	.	.	.	252	252	6,796	365
Total	**146,444**	**32,382**	**101,534**	**33,248**	**16,342**	**14,142**	**2,002**	**1,441**	**33,571**	**21,687**	**902**	**788**	**28,310**	**26,888**	**329,104**	**34,108**

Table 6: **Total quantities (kilograms) of each pesticide type used on arable crops in Northern Ireland, 2018.**

	Pesticide type							
Pesticide type	**Fungicides**	**Herbicides & desiccants**	**Insecticides**	**Molluscicides**	**Growth regulators**	**Other**	**Seed treatments**	**All pesticides**
Spring barley	11,528	12,780	52	.	5,075	163	372	29,970
Undersown barley	46	61	1	.	.	.	3	111
Winter barley	6,030	7,280	15	.	3,860	204	454	17,843
Spring wheat	651	590	2	.	281	.	39	1,563
Winter wheat	9,986	6,368	104	22	4,489	121	617	21,706
Spring oats	667	949	2	.	217	.	92	1,927
Winter oats	517	295	<1	.	264	.	52	1,128
Rye	58	191	.	.	79	.	.	327
Triticale	18	24	<1	.	9	.	.	51
Spring oilseed rape	24	47	.	.	.	.	.	72
Winter oilseed rape	305	1,744	1	30	42	163	.	2,286
Peas and beans	147	295	.	.	.	.	1	443
Early potatoes	457	322	.	.	.	.	26	805
Maincrop potatoes	28,974	8,970	22	197	.	37	586	38,786
Seed potatoes	3,065	1,499	29	8	.	.	28	4,630
Total	**62,473**	**41,415**	**229**	**257**	**14,314**	**689**	**2,271**	**121,647**

Table 7: **The propotional area (%) of each crop treated with pesticides and the mean number of spray applications (spp apps) applied to each crop in Northern Ireland, 2018.**

	Pesticide type															
	Fungicides		Herbicides & desiccants		Insecticides		Molluscicides		Growth regulators		Other		Seed treatments		All pesticides	
Crop	(%)	sp apps	(%)	sp apps	(%)	sp apps	(%)	sp apps	(%)	sp apps	(%)	sp apps	(%)	sp apps	(%)	sp apps
Spring barley	91%	2.1	98%	2.5	49%	1.1	.	.	59%	1.3	1%	1.0	76%	1.0	99%	1.7
Undersown barley	45%	2.0	45%	2.0	45%	1.7	.	.	.	.	.	.	100%	1.0	100%	1.4
Winter barley	99%	3.3	98%	2.8	31%	1.4	.	.	89%	1.8	4%	1.2	89%	1.0	100%	2.2
Spring wheat	97%	2.1	89%	2.8	43%	1.0	.	.	54%	1.1	.	.	89%	1.0	96%	1.7
Winter wheat	98%	5.6	95%	3.0	51%	1.1	6%	1.0	93%	1.6	2%	1.0	95%	1.1	100%	2.7
Spring oats	79%	1.5	96%	1.8	37%	1.1	.	.	72%	1.1	.	.	65%	1.0	96%	1.4
Winter oats	87%	2.7	100%	2.2	5%	1.0	.	.	92%	1.4	.	.	88%	1.0	100%	1.8
Rye	91%	1.0	95%	1.8	.	.	.	.	79%	2.4	.	.	26%	1.0	89%	1.5
Triticale	100%	1.5	100%	2.5	43%	1.0	.	.	100%	1.0	.	.	Trace	1.0	95%	1.5
Spring oilseed rape	100%	2.0	100%	2.0	.	.	.	.	.	.	.	.	.	.	100%	2.0
Winter oilseed rape	100%	2.6	100%	3.8	13%	1.0	55%	1.0	18%	1.0	27%	1.0	12%	1.0	100%	2.3
Peas and beans	66%	1.5	98%	2.1	33%	1.0	.	.	.	.	.	.	6%	1.0	100%	1.8
Early potatoes	100%	11.8	100%	3.7	.	.	.	.	.	.	.	.	60%	1.0	100%	6.3
Maincrop potatoes	100%	12.5	96%	4.0	23%	1.6	20%	1.4	.	.	<1%	2.0	64%	1.0	100%	6.4
Seed potatoes	100%	9.6	100%	5.3	48%	1.2	4%	4.0	.	.	.	.	69%	1.0	100%	5.8
Total	**94%**	**4.4**	**97%**	**2.8**	**41%**	**1.2**	**4%**	**1.3**	**63%**	**1.5**	**2%**	**1.2**	**78%**	**1.0**	**99%**	**2.5**

Table 8: **Estimated area (spray hectares) of arable crops treated with pesticide formulations in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring oilseed rape**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Fungicides																
Ametoctradin/dimethomorph	7	1,696	.	.	349	.	.	.	.	.	.	.	.	.	.	2,052
Azoxystrobin	.	51	.	.	.	111	.	.	28	.	.	25	219	342	1,713	2,489
Azoxystrobin/chlorothalonil	.	.	.	.	.	.	.	.	.	.	.	.	.	.	60	60
Azoxystrobin/fluazinam	.	111	.	.	.	.	.	.	.	.	.	.	.	.	.	111
Benthiavalicarb-isopropyl/mancozeb	.	982	.	.	41	.	.	.	.	.	.	.	.	.	.	1,023
Benzovindiflupyr	.	.	.	.	.	451	.	.	.	.	.	61	.	.	255	767
Benzovindiflupyr/prothioconazole	.	.	.	.	.	387	.	.	.	.	.	358	.	.	726	1,470
Bixafen/fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	530	530
Bixafen/fluoxastrobin/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	114	114
Bixafen/prothioconazole	.	.	.	.	.	1,548	.	.	145	.	.	1,727	.	31	1,140	4,590
Bixafen/prothioconazole/spiroxamine	.	.	.	.	.	.	.	.	166	.	.	.	.	.	126	292
Boscalid/pyraclostrobin	.	.	22	.	.	.	.	.	.	.	.	.	.	.	.	22
Chlorothalonil	.	485	26	.	.	8,955	201		307	.	76	6,380	.	.	7,686	24,116
Chlorothalonil/cyproconazole	.	.	138	.	.	1,337	.	.		.	.	270	.	.	403	2,148
Chlorothalonil/cyproconazole/propiconazole	.	.	.	.	.	909	.	.	32	.	.	94	.	.	627	1,663
Chlorothalonil/fluxapyroxad	.	.	.	.	.	.	.	.		.	.	35	.	.	660	695
Chlorothalonil/penthiopyrad	.	.	.	.	.	1,221	.	.	17	.	.	246	.	.	1,747	3,232
Chlorothalonil/proquinazid	.	.	.	.	.	40	.	.	.	.	.	.	.	.	.	40
Cyazofamid	75	4,965	.	.	670	.	.	.	.	.	.	.	.	.	.	5,710
Cymoxanil	.	3,780	.	.	138	.	.	.	.	.	.	.	.	.	.	3,918
Cymoxanil/fluazinam	.	48	.	.	.	.	.	.	.	.	.	.	.	.	.	48
Cymoxanil/mancozeb	7	3,064	.	.	138	.	.	.	.	.	.	.	.	.	.	3,208
Cymoxanil/propamocarb hydrochloride	7	2,361	.	.	55	.	.	.	.	.	.	.	.	.	.	2,423
Cymoxanil/zoxamide	.	137	.	.	28	.	.	.	.	.	.	.	.	.	.	164
Cyprodinil	.	.	.	.	.	1,126	17	.	.	.	.	102	.	.		1,245
Cyprodinil/isopyrazam	.	.	.	.	.	998	161	.	.	.	.	866	.	.	98	2,123
Dimethomorph/mancozeb	.	4,440	.	.	522	.	.	.	.	.	.		.	.	.	4,962
Epoxiconazole	.	.	.	.	.	1,401	.	.	37	.	.	1,558	.	72	3,193	6,262
Epoxiconazole/fenpropimorph	.	.	.	.	.	896	180	.	66	.	.	727	108	.	724	2,700
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	7	.	1,843	95	.	166	22	.	853	120	.	49	3,154
Epoxiconazole/fenpropimorph/metrafenone	.	.	.	104	.	.	463	.	423	16	.	.	308	.	98	1,411
Epoxiconazole/fenpropimorph/pyraclostrobin	.	.	.	.	.	250	.	.	.	.	.	.	.	.	.	250
Epoxiconazole/fluxapyroxad	.	.	.	.	.	.	36	.	60	.	.	.	.	.	1,133	1,229
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	.	.	.	181	.	.	.	.	.	614	.	.	735	1,529
Epoxiconazole/isopyrazam	.	.	.	.	.	.	.	.	.	.	.	.	.	.	152	152
Epoxiconazole/metconazole	.	.	.	.	.	140	.	.	.	.	.	.	.	.	1,246	1,385
Epoxiconazole/pyraclostrobin	.	.	.	.	.	.	302	.	.	.	.	.	41	.	98	441

Table 8 contd: **Estimated area (spray hectares) of arable crops treated with pesticide formulations in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring oilseed rape**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Fungicides																
Fenamidone/propamocarb hydrochloride	122	1,028	.	.	28	.	.	.	.	.	.	.	.	.	.	1,178
Fenpropimorph	.		.	.	.	814	224	.	.	.	.	31	157	.	675	1,901
Fenpropimorph/pyraclostrobin	.		.	.	.	.	.	.	.	.	.	.	.	.	32	32
Fluazinam	345	8,808	.	.	633	.	.	.	.	.	.	.	.	.	.	9,786
Fluopicolide/propamocarb hydrochloride	223	4,783	.	.	754	.	.	.	.	.	.	.	.	.	.	5,760
Fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	362	.	362
Fluoxastrobin/prothioconazole	.	.	.	.	.	1,739	42	.	.	.	.	817	.	.	174	2,772
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	.	.	.	34	.	.	.	.	.	64	.	.	40	138
Fluxapyroxad	.	.	.	.	.	409	.	.	.	.	.	834	.	.	68	1,310
Fluxapyroxad/metconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	283	283
Fluxapyroxad/pyraclostrobin	.	.	.	.	.	.	.	.	.	.	.	.	.	.	510	510
Mancozeb	.	959	.	.	454	.	.	.	.	.	.	.	.	.	106	1,520
Mandipropamid	259	5,317	.	.	210	.	.	.	.	.	.	.	.	.	.	5,786
Metconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	91	830	921
Oxathiapiprolin	7	2,301	.	.	110	.	.	.	.	.	.	.	.	.	.	2,417
Penthiopyrad	.	.	.	.	.	304	.	.	20	.	.	1,382	.	.	1,771	3,477
Prochloraz/proquinazid/tebuconazole	.	.	.	.	.	57	.	.	.	.	.	.	.	.	.	57
Proquinazid	.	.	.	.	.		36	.	.	.	.	33	32	.	297	398
Prothioconazole	.	.	.	.	.	2,996	36	69	57	.	76	1,663	140	678	1,978	7,692
Prothioconazole/spiroxamine	.	.	.	.	.	28	.	.	.	.	.	843	48	.	56	975
Prothioconazole/tebuconazole	.	.	.	.	.	368	.	.	60	.	.	28	.	87	2,744	3,288
Prothioconazole/trifloxystrobin	.	.	.	.	.	2,652	.	.	.	.	.	904	.	.	136	3,693
Pyraclostrobin	.	.	.	.	.	.	.	.	.	.	.	.	204	.	1,089	1,293
Quinoxyfen	.	.	.	.	.	.	35	.	.	16	.	.	.	.	.	51
Tebuconazole	.	.	4	.	.	210	36	69	.	.	.	.	203	310	2,041	2,873
Trifloxystrobin	.	.	.	.	.	57	.	.	.	.	.	.	.	.	.	57
Unknown fungicide	.	.	.	.	.	.	.	.	.	.	.	.	70	.	115	185
All fungicides	**1,050**	**45,317**	**191**	**111**	**4,129**	**31,463**	**1,861**	**138**	**1,582**	**54**	**152**	**20,517**	**1,650**	**1,973**	**36,255**	**146,444**

Table 8 contd: **Estimated area (spray hectares) of arable crops treated with pesticide formulations in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring oilseed rape**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Herbicides & desiccants																
2,4-DB	.	.	.	.	.	213	.	.	.	.	76	.	.	.	.	288
Amidosulfuron/iodosulfron-methyl-sodium	.	.	.	.	.	86	.	.	.	.	.	.	.	.	.	86
Aminopyralid/propyzamide	.	.	.	.	.	.	.	.	.	.	.	.	.	57	.	57
Bentazone	.	.	84	.	.	.	.	.	.	.	.	.	.	.	.	84
Bromoxynil	.	.	.	.	.	.	.	.	.	.	.	33	.	.	.	33
Carfentrazone-ethyl	.	354	.	.	101	121	.	.	.	.	.	.	.	.	41	618
Chlorotoluron/diflufenican/pendimethalin	.	.	.	.	.	57	.	.	.	.	.	364	.	.	87	509
Clethodim	.	.	15	.	.	.	.	.	.	.	.	.	.	46	.	61
Clopyralid	.	.	.	.	.	22	.	.	.	.	.	.	.	.	.	22
Clopyralid/florasulam/fluroxypyr	.	.	.	.	.	85	.	.	.	.	.	43	.	.	.	127
Clopyralid/picloram	.	.	.	.	.	.	.	.	.	.	.	.	.	364	.	364
Dicamba/MCPA/mecoprop-p	.	.	.	.	88	641	140	.	.	.	.	.	.	.	.	869
Dicamba/mecoprop-p	.	.	.	.	.	2,196	165	.	204	.	.	276	70	.	.	2,911
Diflufenican	.	.	.	.	.	316	.	.	.	.	.	1,419	.	.	545	2,279
Diflufenican/flufenacet	.	.	.	115	.	1,109	.	.	60	22	.	1,562	169	.	372	3,410
Diflufenican/flufenacet/flurtamone	.	.	.	.	.	.	.	.	.	.	.	716	.	.	851	1,567
Diflufenican/flupyrsulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	70	.	.	70
Diflufenican/iodosulfron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	40	.	.	2,923	2,963
Diflufenican/metsulfuron-methyl	.	.	.	.	.	91	.	.	.	.	.	.	.	.	.	91
Diflufenican/prosulfocarb	.	.	.	.	.	.	.	.	.	.	.	.	.	.	115	115
Dimethenamid-P/metazachlor/quinmerac	.	.	.	.	.	.	.	.	.	.	.	.	.	373	.	373
Diquat	120	6,450	64	.	1,021	121	.	.	.	.	.	.	.	.	41	7,817
Ethametsulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	.	195	.	195
Fenoxaprop-P-ethyl	.	.	.	.	.	.	.	.	.	.	.	.	.	.	46	46
Florasulam	.	.	.	.	.	446	137	.	17	.	.	.	.	.	5	604
Florasulam/fluroxypyr	.	.	.	.	.	638	161	.	32	.	.	124	129	.	7	1,091
Florasulam/halauxifen-methyl	.	.	.	.	.	1,717	.	.	93	.	.	303	.	.	406	2,520
Florasulam/pyroxsulam	.	.	.	.	.	.	.	.	28	.	.	.	.	.	243	272
Flufenacet	.	.	.	.	.	.	.	.	.	.	.	36	.	.	.	36
Flufenacet/metribuzin	.	149	.	.	.	.	.	.	.	.	.	.	.	.	.	149
Flufenacet/pendimethalin	.	.	.	.	.	129	.	.	.	.	.	1,925	.	.	1,093	3,147
Flupyrsulfron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	.	.	361	361
Fluroxypyr	.	.	.	.	.	6,018	438	.	365	16	.	1,419	284	.	1,265	9,805
Fluroxypyr/halauxifen-methyl	.	.	.	.	.	2,168	71	.	20	.	.	601	.	.	1,473	4,334
Fluroxypyr/metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	227	.	.	.	227

Table 8 contd: **Estimated area (spray hectares) of arable crops treated with pesticide formulations in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring oilseed rape**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Herbicides & desiccants																
Glyphosate	82	1,459	110	90	329	8,411	591	.	346	16	.	4,071	332	947	4,521	21,304
Imazamox/pendimethalin	.	.	84	.	.	.	.	.	.	.	.	.	.	.	.	84
Iodosulfron-methyl-sodium	.	.	.	.	.	173	.	.	.	.	.	.	.	.	.	173
Iodosulfron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	.	.	718	718
Linuron	3	81	4	.	.	.	.	.	.	.	.	.	.	.	.	89
MCPA	.	.	.	.	.	438	.	.	.	.	.	226	.	.	98	762
Mecoprop-P	.	.	.	.	.	736	36	.	80	.	.	79	32	.	1,276	2,239
Mesosulfuron-methyl/propoxycarbazone-sodium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	182	182
Metazachlor/quinmerac	.	.	.	.	.	.	.	69	.	.	.	.	.	98	.	167
Metribuzin	132	2,390	.	.	365	186	.	.	.	.	.	.	.	.	.	3,072
Metsulfuron-methyl	.	.	.	.	.	2,818	522	.	140	38	.	927	183	.	586	5,213
Metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	.	1,504	.	.	67	.	.	141	197	.	909	2,818
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	.	5,730	390	.	245	.	.	311	182	.	243	7,101
Pendimethalin	.	226	4	90	.	.	.	.	.	.	.	29	.	.	.	350
Pendimethalin/picolinafen	.	.	.	.	.	378	.	.	.	.	.	256	.	.	32	666
Pinoxaden	.	.	.	.	.	986	8	.	109	.	.	819	.	.	762	2,685
Propaquizafop	.	31	.	.	.	.	.	69	.	.	.	.	.	448	.	548
Propyzamide	.	.	22	.	.	.	.	.	.	.	.	.	.	246	.	268
Prosulfocarb	10	1,325	.	.	227	161	.	.	.	.	.	87	.	.	130	1,940
Rimsulfuron	.	189	.	.	.	.	.	.	.	.	.	.	.	.	.	189
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	.	2,008	95	.	60	.	.	405	48	.	373	2,990
Tri-allate	.	.	.	.	.	.	.	.	.	.	.	29	.	.	.	29
Tribenuron-methyl	.	.	.	.	.	.	.	.	.	.	76	.	.	.	173	249
Unknown herbicide	.	60	.	.	.	8	.	.	.	.	.	.	.	46	85	199
All fungicides	**346**	**12,715**	**388**	**295**	**2,130**	**39,710**	**2,755**	**138**	**1,866**	**91**	**152**	**16,469**	**1,696**	**2,819**	**19,964**	**101,534**

Table 8 contd: **Estimated area (spray hectares) of arable crops treated with pesticide formulations in Northern Ireland, 2018.**

	Crop type												
Pesticide group & active substance	**Maincrop Potatoes**	**Peas and beans**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Insecticides													
Chlorpyrifos	.	.	.	72	.	.	.	.	.	.	.	.	72
Cypermethrin	.	.	.	113	20	.	.	.	.	.	.	.	132
Deltamethrin	.	.	.	59	.	.	.	132	.	.	46	.	237
Dimethoate	.	.	.	0	.	.	.	.	.	.	.	384	384
Esfenvalerate	43	.	.	4,094	208	90	.	.	1,358	.	.	722	6,515
Flonicamid	89	.	202	0	.	.	.	.	.	.	.	.	291
Lambda-cyhalothrin	1,118	53	.	3,732	275	248	16	10	994	32	54	2,150	8,682
Thiacloprid	.	.	28	0	.	.	.	.	.	.	.	.	28
All insecticides	**1,250**	**53**	**229**	**8,070**	**503**	**338**	**16**	**142**	**2,352**	**32**	**100**	**3,257**	**16,342**
Molluscicides													
Ferric phosphate	316	.	28	.	.	.	.	.	.	.	108	.	451
Metaldehyde	862	.	28	.	.	.	.	.	.	.	300	361	1,551
All molluscicides	**1,178**	**.**	**55**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**408**	**361**	**2,002**

Table 8 contd: **Estimated area (spray hectares) of arable crops treated with pesticide formulations in Northern Ireland, 2018.**

	Crop type										
Pesticide group & active substance	**Maincrop potatoes**	**Rye**	**Spring barley**	**Spring oats**	**Spring wheat**	**Triticale**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter Wheat**	**All crops**
Growth regulators											
2-chloroethylphosphonic acid	.	7	494	.	.	.	907	.	.	422	1,830
Chlormequat	.	97	5,921	198	324	22	4,353	232	.	5,280	16,427
Chlormequat/imazaquin	.	.	.	.	.	.	.	.	.	115	115
Mepiquat chloride/metconazole	.	.	.	.	.	.	.	.	131	.	131
Mepiquat chloride/prohexadione-calcium	.	.	457	31	.	.	104	.	.	.	592
Prohexadione-calcium/trinexapac-ethyl	.	97	381	561	52	.	661	400	.	532	2,685
Trinexapac-ethyl	.	.	4,447	299	143	16	3,682	194	.	3,011	11,792
All growth regulators	**.**	**200**	**11,701**	**1,089**	**519**	**38**	**9,708**	**826**	**131**	**9,360**	**33,571**
Other active substances											
Magnesium sulphate	.	.	.	.	.	.	.	.	.	66	66
Manganese	.	.	51	.	.	.	318	.	.	.	369
Nitrogen/phosphate/potassium	.	.	159	.	.	.	31	.	.	.	190
Nitrogen/phosphate/potassium oxide	31	.	.	.	.	.	.	.	.	45	76
Synthetic latex	.	.	.	.	.	.	.	.	200	.	200
All other active substances	**31**	**.**	**210**	**.**	**.**	**.**	**348**	**.**	**200**	**112**	**902**

Table 8 contd: **Estimated area (spray hectares) of arable crops treated with pesticide formulations in Northern Ireland, 2018.**

	Crop type														
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Seed treatments															
Carboxin/thiram	.	.	.	.	.	368	335	95	.	.	43	.	.	46	887
Clothianidin/prothioconazole	.	.	.	.	.	1,755	130	85	.	.	3,920	505	.	4,848	11,242
Fludioxonil	.	.	.	.	147	5,793	254	526	.	.	267	28	.	182	7,196
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	.	422	.	.	.	.	196	.	.	.	617
Fluquinconazole/prochloraz	.	.	.	.	.	.	.	.	.	.	.	.	.	92	92
Flutolanil	.	372	.	.	28	.	.	.	.	.	.	.	.	.	399
Imazalil	19	843	.	.	77	.	.	.	.	.	.	.	.	.	940
Pencycuron	41	782	.	.	.	.	.	.	.	.	.	.	.	.	823
SProchloraz/triticonazole	.	.	.	.	.	196	.	.	.	.	.	.	.	.	196
Prothioconazole	.	.	.	32	.	1,535	36	.	.	102	177	48	.	407	2,337
Prothioconazole/tebuconazole	.	.	.	.	.	247	.	.	.	66	151	.	.	60	524
Silthiofam	.	.	.	.	.	.	.	.	.	.	278	.	.	1,404	1,681
Thiram	.	.	9	.	.	.	.	.	.	.	.	.	57	.	66
Unknown seed treatment	.	68	.	Trace	.	879	103	Trace	Trace	.	226	.	31	.	1,307
All seed treatments	**60**	**2,066**	**9**	**32**	**252**	**11,195**	**856**	**706**	**Trace**	**169**	**5,257**	**581**	**88**	**7,039**	**28,310**

Table 9: **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	Early potatoes	Maincrop potatoes	Peas and beans	Rye	Seed potatoes	Spring barley	Spring oats	Spring oilseed rape	Spring wheat	Triticale	Undersown barley	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	All crops
Fungicides																
Ametoctradin/dimethomorph	3	709	.	.	108	.	.	.	.	.	.	.	.	.	.	820
Azoxystrobin	.	32	.	.	.	28	.	.	4	.	.	3	30	53	250	400
Azoxystrobin/chlorothalonil	.	.	.	.	.	.	.	.	.	.	.	.	.	.	36	36
Azoxystrobin/fluazinam	.	29	.	.	.	.	.	.	.	.	.	.	.	.	.	29
Benthiavalicarb-isopropyl/mancozeb	.	1,127	.	.	47	.	.	.	.	.	.	.	.	.	.	1,175
Benzovindiflupyr	.	.	.	.	.	21	.	.	.	.	.	3	.	.	18	42
Benzovindiflupyr/prothioconazole	.	.	.	.	.	53	.	.	.	.	.	65	.	.	124	243
Bixafen/fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	87	87
Bixafen/fluoxastrobin/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	11
Bixafen/prothioconazole	.	.	.	.	.	171	.	.	20	.	.	268	.	8	238	705
Bixafen/prothioconazole/spiroxamine	.	.	.	.	.	.	.	.	99	.	.	.	.	.	59	159
Boscalid/pyraclostrobin	.	.	6	.	.	.	.	.	.	.	.	.	.	.	.	6
Chlorothalonil	.	485	27	.	.	5,051	106	.	176	.	38	3,130	.	.	3,484	12,498
Chlorothalonil/cyproconazole	.	.	113	.	.	896	.	.	.	.	.	118	.	.	205	1,332
Chlorothalonil/cyproconazole/propiconazole	.	.	.	.	.	879	.	.	31	.	.	80	.	.	445	1,436
Chlorothalonil/fluxapyroxad	.	.	.	.	.	.	.	.	.	.	.	32	.	.	520	552
Chlorothalonil/penthiopyrad	.	.	.	.	.	547	.	.	7	.	.	95	.	.	1,019	1,668
Chlorothalonil/proquinazid	.	.	.	.	.	16	.	.	.	.	.	.	.	.	.	16
Cyazofamid	6	382	.	.	53	.	.	.	.	.	.	.	.	.	.	441
Cymoxanil	.	347	.	.	13	.	.	.	.	.	.	.	.	.	.	360
Cymoxanil/fluazinam	.	12	.	.	.	.	.	.	.	.	.	.	.	.	.	12
Cymoxanil/mancozeb	7	3,652	.	.	158	.	.	.	.	.	.	.	.	.	.	3,817
Cymoxanil/propamocarb hydrochloride	7	2,633	.	.	61	.	.	.	.	.	.	.	.	.	.	2,702
Cymoxanil/zoxamide	.	40	.	.	8	.	.	.	.	.	.	.	.	.	.	48
Cyprodinil	.	.	.	.	.	306	4	.	.	.	.	14	.	.	.	323
Cyprodinil/isopyrazam	.	.	.	.	.	314	56	.	.	.	.	290	.	.	33	693
Dimethomorph/mancozeb	.	8,064	.	.	955	.	.	.	.	.	.	.	.	.	.	9,019
Epoxiconazole	.	.	.	.	.	147	.	.	4	.	.	147	.	2	347	647
Epoxiconazole/fenpropimorph	.	.	.	.	.	334	72	.	24	.	.	277	18	.	124	850
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	3	.	669	30	.	50	9	.	274	71	.	17	1,122
Epoxiconazole/fenpropimorph/metrafenone	.	.	.	55	.	.	202	.	215	8	.	.	138	.	20	639
Epoxiconazole/fenpropimorph/pyraclostrobin	.	.	.	.	.	459	.	.	.	.	.	.	.	.	.	459
Epoxiconazole/fluxapyroxad	.	.	.	.	.	.	9	.	2	.	.	.	.	.	194	204
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	.	.	.	43	.	.	.	.	.	154	.	.	238	435
Epoxiconazole/isopyrazam	.	.	.	.	.	.	.	.	.	.	.	.	.	.	29	29
Epoxiconazole/metconazole	.	.	.	.	.	11	.	.	.	.	.	.	.	.	155	166
Epoxiconazole/pyraclostrobin	.	.	.	.	.	.	76	.	.	.	.	.	12	.	9	97

Table 9 contd: **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring oilseed rape**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Fungicides																
Fenamidone/propamocarb hydrochloride	110	926	.	.	25	.	.	.	.	.	.	.	.	.	.	1,060
Fenpropimorph	.	.	.	.	.	289	81	.	.	.	.	17	74	.	83	543
Fenpropimorph/pyraclostrobin	.	.	.	.	.	.	.	.	.	.	.	.	.	.	9	9
Fluazinam	48	2,655	.	.	115	.	.	.	.	.	.	.	.	.	.	2,818
Fluopicolide/propamocarb hydrochloride	237	5,702	.	.	822	.	.	.	.	.	.	.	.	.	.	6,761
Fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	89	.	89
Fluoxastrobin/prothioconazole	.	.	.	.	.	312	9	.	.	.	.	159	.	.	33	513
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	.	.	.	10	.	.	.	.	.	8	.	.	9	27
Fluxapyroxad	.	.	.	.	.	12	.	.	.	.	.	35	.	.	5	52
Fluxapyroxad/metconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	.	30	30
Fluxapyroxad/pyraclostrobin	.	.	.	.	.	.	.	.	.	.	.	.	.	.	61	61
Mancozeb	.	1,332	.	.	665	.	.	.	.	.	.	.	.	.	136	2,134
Mandipropamid	39	812	.	.	32	.	.	.	.	.	.	.	.	.	.	882
Metconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	6	43	49
Oxathiapiprolin	<1	34	.	.	2	.	.	.	.	.	.	.	.	.	.	36
Penthiopyrad	.	.	.	.	.	43	.	.	3	.	.	234	.	.	361	642
Prochloraz/proquinazid/tebuconazole	.	.	.	.	.	30	.	.	.	.	.	.	.	.	.	30
Proquinazid	.	.	.	.	.	.	2	.	.	.	.	1	2	.	9	13
Prothioconazole	.	.	.	.	.	309	7	7	4	.	8	193	21	90	269	908
Prothioconazole/spiroxamine	.	.	.	.	.	16	.	.	.	.	.	288	22	.	32	358
Prothioconazole/tebuconazole	.	.	.	.	.	45	.	.	12	.	.	2	.	14	564	637
Prothioconazole/trifloxystrobin	.	.	.	.	.	466	.	.	.	.	.	142	.	.	29	636
Pyraclostrobin	.	.	.	.	.	.	.	.	.	.	.	.	24	.	84	108
Quinoxyfen	.	.	.	.	.	.	3	.	.	1	.	.	.	.	.	4
Tebuconazole	.	.	1	.	.	36	9	17	.	.	.	.	36	43	338	480
Trifloxystrobin	.	.	.	.	.	14	.	.	.	.	.	.	.	.	.	14
Unknown fungicide	.	.	.	.	.	.	.	.	.	.	.	.	70	.	230	300
All fungicides	**457**	**28,974**	**147**	**58**	**3,065**	**11,528**	**667**	**24**	**651**	**18**	**46**	**6,030**	**517**	**305**	**9,986**	**62,473**

Table 9 contd: **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring oilseed rape**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Herbicides & desiccants																
2,4-DB	.	.	.	.	.	122	.	.	.	.	61	.	.	.	.	182
Amidosulfuron/iodosulfron-methyl-sodium	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	3
Aminopyralid/propyzamide	.	.	.	.	.	.	.	.	.	.	.	.	.	49	.	49
Bentazone	.	.	90	.	.	.	.	.	.	.	.	.	.	.	.	90
Bromoxynil	.	.	.	.	.	.	.	.	.	.	.	15	.	.	.	15
Carfentrazone-ethyl	.	17	.	.	6	7	.	.	.	.	.	.	.	.	2	33
Chlorotoluron/diflufenican/pendimethalin	.	.	.	.	.	67	.	.	.	.	.	412	.	.	95	574
Clethodim	.	.	3	.	.	.	.	.	.	.	.	.	.	7	.	10
Clopyralid	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Clopyralid/florasulam/fluroxypyr	.	.	.	.	.	19	.	.	.	.	.	12	.	.	.	31
Clopyralid/picloram	.	.	.	.	.	.	.	.	.	.	.	.	.	27	.	27
Dicamba/MCPA/mecoprop-p	.	.	.	.	68	949	101	.	.	.	.	.	.	.	.	1,118
Dicamba/mecoprop-p	.	.	.	.	.	1,510	140	.	138	.	.	232	40	.	.	2,060
Diflufenican	.	.	.	.	.	20	.	.	.	.	.	107	.	.	38	165
Diflufenican/flufenacet	.	.	.	16	.	157	.	.	9	2	.	339	14	.	56	594
Diflufenican/flufenacet/flurtamone	.	.	.	.	.	.	.	.	.	.	.	154	.	.	246	400
Diflufenican/flupyrsulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	6	.	.	6
Diflufenican/iodosulfron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	2	.	.	166	169
Diflufenican/metsulfuron-methyl	.	.	.	.	.	4	.	.	.	.	.	.	.	.	.	4
Diflufenican/prosulfocarb	.	.	.	.	.	.	.	.	.	.	.	.	.	.	27	27
Dimethenamid-P/metazachlor/quinmerac	.	.	.	.	.	.	.	.	.	.	.	.	.	484	.	484
Diquat	84	2,856	36	.	356	24	.	.	.	.	.	.	.	.	8	3,364
Ethametsulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	.	3	.	3
Fenoxaprop-P-ethyl	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3	3
Florasulam	.	.	.	.	.	5	1	.	<1	.	.	.	.	.	<1	6
Florasulam/fluroxypyr	.	.	.	.	.	71	12	.	5	.	.	11	12	.	1	110
Florasulam/halauxifen-methyl	.	.	.	.	.	15	.	.	1	.	.	2	.	.	4	22
Florasulam/pyroxsulam	.	.	.	.	.	.	.	.	<1	.	.	.	.	.	5	6
Flufenacet	.	.	.	.	.	.	.	.	.	.	.	4	.	.	.	4
Flufenacet/metribuzin	.	124	.	.	.	.	.	.	.	.	.	.	.	.	.	124
Flufenacet/pendimethalin	.	.	.	.	.	93	.	.	.	.	.	2,071	.	.	1,124	3,288
Flupyrsulfron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	.	.	<1	<1
Fluroxypyr	.	.	.	.	.	903	65	.	53	2	.	192	35	.	137	1,387
Fluroxypyr/halauxifen-methyl	.	.	.	.	.	236	10	.	2	.	.	67	.	.	146	462
Fluroxypyr/metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	28	.	.	.	28

Table 9 contd: **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland, 2018.**

	Crop type															
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring oilseed rape**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**oilseed rape**	**Winter wheat**	**All crops**
Herbicides & desiccants																
Glyphosate	123	1,559	53	114	321	6,873	567	.	311	20	.	3,073	142	823	3,137	17,115
Imazamox/pendimethalin	.	.	85	.	.	.	.	.	.	.	.	.	.	.	.	85
Iodosulfron-methyl-sodium	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	1
Iodosulfron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6	6
Linuron	4	43	5	.	.	.	.	.	.	.	.	.	.	.	.	53
MCPA	.	.	.	.	.	325	.	.	.	.	.	158	.	.	30	514
Mecoprop-P	.	.	.	.	.	601	44	.	59	.	.	57	38	.	869	1,668
Mesosulfuron-methyl/propoxycarbazone-sodium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	7	7
Metazachlor/quinmerac	.	.	.	.	.	.	.	43	.	.	.	.	.	106	.	150
Metribuzin	88	1,387	.	.	200	97	.	.	.	.	.	.	.	.	.	1,772
Metsulfuron-methyl	.	.	.	.	.	14	3	.	1	<1	.	4	1	.	2	25
Metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	.	55	.	.	4	.	.	3	5	.	13	80
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	.	57	3	.	3	.	.	3	2	.	2	70
Pendimethalin	.	280	6	61	.	.	.	.	.	.	.	21	.	.	.	369
Pendimethalin/picolinafen	.	.	.	.	.	334	.	.	.	.	.	174	.	.	22	529
Pinoxaden	.	.	.	.	.	37	<1	.	3	.	.	25	.	.	24	88
Propaquizafop	.	7	.	.	.	.	.	4	.	.	.	.	.	34	.	45
Propyzamide	.	.	18	.	.	.	.	.	.	.	.	.	.	165	.	184
Prosulfocarb	23	2,634	.	.	549	126	.	.	.	.	.	105	.	.	160	3,598
Rimsulfuron	.	2	.	.	.	.	.	.	.	.	.	.	.	.	.	2
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	.	49	3	.	1	.	.	7	1	.	5	65
Tri-allate	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	1
Tribenuron-methyl	.	.	.	.	.	.	.	.	.	.	<1	.	.	.	3	3
Unknown herbicide	.	60	.	.	.	2	.	.	.	.	.	.	.	46	28	136
All herbicides	**322**	**8,970**	**295**	**191**	**1,499**	**12,780**	**949**	**47**	**589**	**24**	**61**	**7,280**	**295**	**1,744**	**6,368**	**41,415**

Table 9 contd: **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland, 2018.**

	Crop type												
Pesticide group & active substance	**Maincrop potatoes**	**Peas and beans**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Insecticides													
Chlorpyrifos	.	.	.	13	.	.	.	.	.	.	.	.	13
Cypermethrin	.	.	.	1	<1	.	.	.	.	.	.	.	1
Deltamethrin	.	.	.	0	.	.	.	1	.	.	<1	.	1
Dimethoate	.	.	.	0	.	.	.	.	.	.	.	90	90
Esfenvalerate	<1	.	.	16	<1	<1	.	.	6	.	.	3	26
Flonicamid	7	.	26	0	.	.	.	.	.	.	.	.	33
Lambda-cyhalothrin	15	<1	.	22	1	1	<1	<1	10	<1	<1	11	61
Thiacloprid	.	.	3	0	.	.	.	.	.	.	.	.	3
All insecticides	**22**	**<1**	**29**	**52**	**2**	**2**	**<1**	**1**	**15**	**<1**	**1**	**104**	**229**
Molluscicides													
Ferric phosphate	38	.	4	.	.	.	.	.	.	.	15	.	57
Metaldehyde	158	.	4	.	.	.	.	.	.	.	15	22	199
All molluscicides	**197**	**.**	**8**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**30**	**22**	**257**

Table 9 contd: **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland, 2018.**

	Crop type										
Pesticide group & active substance	**Maincrop potatoes**	**Rye**	**Spring barley**	**Spring oats**	**Spring wheat**	**Triticale**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Growth regulators											
2-chloroethylphosphonic acid	.	2	84	.	.	.	180	.	.	78	343
Chlormequat	.	74	4,571	165	273	8	3,413	231	.	4,160	12,895
Chlormequat/imazaquin	.	.	.	.	.	.	.	.	.	84	84
Mepiquat chloride/metconazole	.	.	.	.	.	.	.	.	42	.	42
Mepiquat chloride/prohexadione-calcium	.	.	153	11	.	.	17	.	.	.	181
Prohexadione-calcium/trinexapac-ethyl	.	4	12	24	2	.	26	23	.	21	111
Trinexapac-ethyl	.	.	255	17	6	<1	223	10	.	146	657
All growth regulators	**.**	**79**	**5,075**	**217**	**281**	**9**	**3,860**	**264**	**42**	**4,489**	**14,314**
Other active substances											
Magnesium sulphate	.	.	.	.	.	.	.	.	.	53	53
Manganese	.	.	20	.	.	.	181	.	.	.	202
Nitrogen/phosphate/potassium	.	.	143	.	.	.	23	.	.	.	166
Nitrogen/phosphate/potassium oxide	37	.	.	.	.	.	.	.	.	68	105
Synthetic latex	.	.	.	.	.	.	.	.	163	.	163
All other active substances	**37**	**.**	**163**	**.**	**.**	**.**	**204**	**.**	**163**	**121**	**689**

Table 9 contd: **Estimated quantities (kilograms) of pesticide formulations used on arable crops in Northern Ireland, 2018.**

	Crop type														
Pesticide group & active substance	**Early potatoes**	**Maincrop potatoes**	**Peas and beans**	**Rye**	**Seed potatoes**	**Spring barley**	**Spring oats**	**Spring wheat**	**Triticale**	**Undersown barley**	**Winter barley**	**Winter oats**	**Winter oilseed rape**	**Winter wheat**	**All crops**
Seed treatments															
Carboxin/thiram	.	.	.	.	.	79	76	23	.	.	10	.	.	10	199
Clothianidin/prothioconazole	.	.	.	.	.	192	13	10	.	.	418	51	.	522	1,207
Fludioxonil	.	.	.	.	16	53	2	5	.	.	3	<1	.	2	82
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	.	7	.	.	.	.	3	.	.	.	10
Fluquinconazole/prochloraz	.	.	.	.	.	.	.	.	.	.	.	.	.	10	10
Flutolanil	.	92	.	.	8	.	.	.	.	.	.	.	.	.	100
Imazalil	1	26	.	.	4	.	.	.	.	.	.	.	.	.	31
Pencycuron	25	468	.	.	.	.	.	.	.	.	.	.	.	.	493
Prochloraz/triticonazole	.	.	.	.	.	6	.	.	.	.	.	.	.	.	6
Prothioconazole	.	.	.	<1	.	29	1	.	.	2	3	1	.	8	43
Prothioconazole/tebuconazole	.	.	.	.	.	6	.	.	.	1	3	.	.	3	13
Silthiofam	.	.	.	.	.	.	.	.	.	.	14	.	.	61	75
Thiram	.	.	1	.	.	.	.	.	.	.	.	.	<1	.	2
Unknown seed treatment	.	.	.	.	.	.	.	.	Trace	.	.	.	.	.	Trace
All seed treatments	**26**	**586**	**1**	**<1**	**28**	**372**	**92**	**39**	**Trace**	**3**	**454**	**52**	**<1**	**617**	**2,271**

Table 10: **The fifty active substances most extensively used on arable crops in Northern Ireland, 2018, ranked by area treated (spray hectares).**

	Active substance	*Treated area (sp ha)*
1	Chlorothalonil	31,954
2	Prothioconazole	25,917
3	Glyphosate	22,093
4	Epoxiconazole	18,513
5	Chlormequat	16,542
6	Fluroxypyr	15,585
7	Metsulfuron-methyl	15,450
8	Diflufenican	11,004
9	Mancozeb	10,714
10	Fluazinam	9,945
11	Cymoxanil	9,761
12	Fenpropimorph	9,448
13	Propamocarb hydrochloride	9,361
14	Lambda-cyhalothrin	8,682
15	Flufenacet	8,308
16	Diquat	7,817
17	Dimethomorph	7,014
18	Halauxifen-methyl	6,854
19	Penthiopyrad	6,708
20	Esfenvalerate	6,515
21	Mecoprop-P	6,020
22	Mandipropamid	5,786
23	Fluopicolide	5,760
24	Cyazofamid	5,710
25	Fluxapyroxad	5,556
26	Bixafen	5,526
27	Pendimethalin	4,755
28	Florasulam	4,614
29	Pyraclostrobin	4,077
30	Iodosulfron-methyl-sodium	3,940
31	Mesosulfuron-methyl	3,863
32	Cyproconazole	3,811
33	Dicamba	3,781
34	Cyprodinil	3,367
35	Prohexadione-calcium	3,277
36	Metribuzin	3,221
37	Kresoxim-methyl	3,154
38	Fluoxastrobin	3,025
39	Pinoxaden	2,685
40	Azoxystrobin	2,661
41	Metconazole	2,590
42	Oxathiapiprolin	2,417
43	Isopyrazam	2,275
44	Benzovindiflupyr	2,237
45	Prosulfocarb	2,054
46	Ametoctradin	2,052
47	2-chloroethylphosphonic acid	1,830
48	Propiconazole	1,663
49	MCPA	1,631
50	Flurtamone	1,567

Table 11: **The fifty active substances most extensively used on arable crops in Northern Ireland, 2018, ranked by weight (kilograms).**

	Active substance	*Quantity (kg)*
1	Glyphosate	17,574
2	Chlorothalonil	16,546
3	Chlormequat	12,979
4	Diquat	3,364
5	Fluazinam	2,846
6	Fenpropimorph	2,251
7	Fluroxypyr	1,976
8	Epoxiconazole	1,757
9	Flufenacet	1,297
10	Dimethomorph	1,263
11	Clothianidin	1,006
12	Cymoxanil	926
13	Cyprodinil	831
14	Fluopicolide	615
15	Diflufenican	569
16	Ametoctradin	469
17	Cyazofamid	441
18	Azoxystrobin	414
19	Fluxapyroxad	363
20	2-chloroethylphosphonic acid	343
21	Dicamba	321
22	Cyproconazole	276
23	Fluoxastrobin	266
24	Chlorotoluron	243
25	Bixafen	212
26	2,4-DB	182
27	Fenamidone	177
28	Benzovindiflupyr	123
29	Flurtamone	107
30	Dimethenamid-P	101
31	Flutolanil	100
32	Carboxin	99
33	Dimethoate	90
34	Bentazone	90
35	Fludioxonil	82
36	Ferric phosphate	57
37	Fluopyram	49
38	Clopyralid	36
39	Flonicamid	33
40	Carfentrazone-ethyl	33
41	Benthiavalicarb-isopropyl	31
42	Esfenvalerate	31
43	Florasulam	29
44	Bromoxynil	26
45	Chlorpyrifos	20
46	Clethodim	15
47	Fluquinconazole	13
48	Fluazinam	10
49	Cymoxanil	9
50	Boscalid	5

Table 12: **Spring barley: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment								
Pesticide group and active substance	**Disease prevention**	**General disease control**	**General fungal control**	**Mildew/ rhynchosporium**	**Mildew/ rust**	**Rhynchosporium**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides									
Azoxystrobin	.	49	63	.	.	.	111	111	28
Benzovindiflupyr	.	.	451	.	.	.	451	451	21
Benzovindiflupyr/prothioconazole	.	.	387	.	.	.	387	387	53
Bixafen/prothioconazole	.	169	1,378	.	.	.	1,548	1,334	171
Chlorothalonil	78	684	7,672	461	.	60	8,955	7,231	5,051
Chlorothalonil/cyproconazole	.	306	731	.	300	.	1,337	1,180	896
Chlorothalonil/cyproconazole/propiconazole	.	.	909	.	.	.	909	779	879
Chlorothalonil/penthiopyrad	60	304	857	.	.	.	1,221	1,060	547
Chlorothalonil/proquinazid	.	40	.	.	.	.	40	40	16
Cyprodinil	.	77	1,049	.	.	.	1,126	1,062	306
Cyprodinil/isopyrazam	.	291	707	.	.	.	998	871	314
Epoxiconazole	228	152	1,021	.	.	.	1,401	1,343	147
Epoxiconazole/fenpropimorph	.	79	817	.	.	.	896	831	334
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	101	1,367	375	.	.	1,843	1,479	669
Epoxiconazole/fenpropimorph/pyraclostrobin	.	.	250	.	.	.	250	250	459
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	181	.	.	.	181	181	43
Epoxiconazole/metconazole	.	.	140	.	.	.	140	140	11
Fenpropimorph	.	.	814	.	.	.	814	680	289
Fluoxastrobin/prothioconazole	.	49	1,690	.	.	.	1,739	1,417	312
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	34	.	.	.	34	34	10
Fluxapyroxad	.	.	323	86	.	.	409	409	12
Penthiopyrad	.	16	287	.	.	.	304	304	43
Prochloraz/proquinazid/tebuconazole	.	.	57	.	.	.	57	57	30
Prothioconazole	.	56	2,854	86	.	.	2,996	2,713	309
Prothioconazole/spiroxamine	.	.	28	.	.	.	28	28	16
Prothioconazole/tebuconazole	78	.	290	.	.	.	368	368	45
Prothioconazole/trifloxystrobin	.	176	2,477	.	.	.	2,652	2,515	466
Tebuconazole	.	.	210	.	.	.	210	182	36
Trifloxystrobin	.	.	57	.	.	.	57	57	14
All fungicides	**445**	**2,550**	**27,099**	**1,008**	**300**	**60**	**31,463**	**.**	**11,528**

Table 12 contd: **Spring barley: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment												
Pesticide group and active substance	**Broadleaved weeds**	**Chickweed**	**Desiccation**	**End rigs**	**General weed control**	**Ground preparation**	**Pre-emergence weed control**	**Sealer**	**Stubble treatment**	**Wild oats**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants													
2,4-DB	.	.	.	.	213	.	.	.	.	.	213	213	122
Amidosulfuron/iodosulfron-methyl-sodium	.	.	.	.	86	.	.	.	.	.	86	86	3
Carfentrazone-ethyl	.	.	121	.	.	.	.	.	.	.	121	121	7
Chlorotoluron/diflufenican/pendimethalin	.	.	.	.	.	57	.	.	.	.	57	57	67
Clopyralid	.	.	.	.	22	.	.	.	.	.	22	22	1
Clopyralid/florasulam/fluroxypyr	.	.	.	.	85	.	.	.	.	.	85	85	19
Dicamba/MCPA/mecoprop-p	.	.	.	.	641	.	.	.	.	.	641	530	949
Dicamba/mecoprop-p	168	.	.	.	1,968	.	60	.	.	.	2,196	2,196	1,510
Diflufenican	.	.	.	.	316	.	.	.	.	.	316	316	20
Diflufenican/flufenacet	.	.	.	.	577	36	399	97	.	.	1,109	1,065	157
Diflufenican/metsulfuron-methyl	.	.	.	.	91	.	.	.	.	.	91	91	4
Diquat	.	.	121	.	.	.	.	.	.	.	121	121	24
Florasulam	168	.	.	.	217	.	60	.	.	.	446	446	5
Florasulam/fluroxypyr	.	.	.	.	638	.	.	.	.	.	638	638	71
Florasulam/halauxifen-methyl	.	.	.	.	1,717	.	.	.	.	.	1,717	1,717	15
Flufenacet/pendimethalin	.	.	.	.	95	.	34	.	.	.	129	129	93
Fluroxypyr	168	.	.	.	5,745	.	105	.	.	.	6,018	5,755	903
Fluroxypyr/halauxifen-methyl	127	.	.	.	2,041	.	.	.	.	.	2,168	2,069	236
Glyphosate	.	.	5,759	6	186	2,358	.	.	101	.	8,411	7,096	6,873
Iodosulfron-methyl-sodium	.	.	.	.	173	.	.	.	.	.	173	173	1
MCPA	.	.	.	.	438	.	.	.	.	.	438	438	325
Mecoprop-P	.	.	.	.	736	.	.	.	.	.	736	736	601
Metribuzin	.	.	.	.	186	.	.	.	.	.	186	186	97
Metsulfuron-methyl	.	.	.	.	2,818	.	.	.	.	.	2,818	2,818	14
Metsulfuron-methyl/thifensulfuron-methyl	127	20	.	.	1,357	.	.	.	.	.	1,504	1,405	55
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	5,645	.	85	.	.	.	5,730	5,647	57
Pendimethalin/picolinafen	.	.	.	.	318	57	2	.	.	.	378	378	334
Pinoxaden	.	.	.	.	.	.	.	.	.	986	986	986	37
Prosulfocarb	.	.	.	.	.	.	64	97	.	.	161	161	126
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	2,008	.	.	.	.	.	2,008	2,008	49
Unknown herbicide	.	.	.	.	8	.	.	.	.	.	8	8	2
All herbicides and desiccants	**759**	**20**	**6,002**	**6**	**28,323**	**2,509**	**810**	**193**	**101**	**986**	**39,710**	**.**	**12,780**

Table 12 contd: **Spring barley: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment							
Pesticide group and active substance	**Aphids**	**Cereal aphids**	**Foliar feed**	**Growth regulation**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Insecticides								
Chlorpyrifos	.	72	.	.	.	72	72	13
Cypermethrin	.	113	.	.	.	113	113	1
Deltamethrin	.	59	.	.	.	59	59	0
Esfenvalerate	1,797	2,297	.	.	.	4,094	3,547	16
Lambda-cyhalothrin	1,365	2,367	.	.	.	3,732	3,511	22
All insecticides	**3,162**	**4,908**	**.**	**.**	**.**	**8,070**	**.**	**52**
Growth Regulators								
2-chloroethylphosphonic acid	.	.	.	494	.	494	494	84
Chlormequat	.	.	.	5,921	.	5,921	5,509	4,571
Mepiquat chloride/prohexadione-calcium	.	.	.	457	.	457	457	153
Prohexadione-calcium/trinexapac-ethyl	.	.	.	381	.	381	381	12
Trinexapac-ethyl	.	.	.	4,447	.	4,447	4,256	255
All growth regulators	**.**	**.**	**.**	**11,701**	**.**	**11,701**	**.**	**5,075**
Other active substances								
Manganese	.	.	51	.	.	51	51	20
Nitrogen/phosphate/potassium	.	.	159	.	.	159	159	143
All other active substances	**.**	**.**	**210**	**.**	**.**	**210**	**.**	**163**
Seed treatments								
Carboxin/thiram	.	.	.	.	368	368	368	79
Clothianidin/prothioconazole	.	.	.	.	1,755	1,755	1,755	192
Fludioxonil	.	.	.	.	5,793	5,793	5,793	53
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	422	422	422	7
Prochloraz/triticonazole	.	.	.	.	196	196	196	6
Prothioconazole	.	.	.	.	1,535	1,535	1,535	29
Prothioconazole/tebuconazole	.	.	.	.	247	247	247	6
Unknown seed treatment	.	.	.	.	879	879	879	.
All seed treatments	**.**	**.**	**.**	**.**	**11,195**	**11,195**	**.**	**372**

Table 13: **Undersown barley: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment									
Pesticide group and active substance	**Aphids**	**Broadleaved weeds**	**General fungal control**	**General insect control**	**General weed control**	**Rhynchosporium**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides										
Chlorothalonil	.	.	66	.	.	10	.	76	76	38
Prothioconazole	.	.	66	.	.	10	.	76	76	8
All fungicides	**.**	**.**	**132**	**.**	**.**	**19**	**.**	**152**	**.**	**46**
Herbicides and desiccants										
2,4-DB	.	10	.	.	66	.	.	76	76	61
Tribenuron-methyl	.	10	.	.	66	.	.	76	76	<1
All herbicides and desiccants	**.**	**19**	**.**	**.**	**132**	**.**	**.**	**152**	**.**	**61**
Insecticides										
Deltamethrin	.	.	.	132	.	.	.	132	66	1
Lambda-cyhalothrin	10	.	.	.	.	.	.	10	10	<1
All insecticides	**10**	**.**	**.**	**132**	**.**	**.**	**.**	**142**	**.**	**1**
Seed treatments										
Prothioconazole	.	.	.	.	.	.	102	102	102	2
Prothioconazole/tebuconazole	.	.	.	.	.	.	66	66	66	1
All seed treatments	**.**	**.**	**.**	**.**	**.**	**.**	**169**	**169**	**.**	**3**

Table 14: **Winter barley: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment												
Pesticide group and active substance	**Disease prevention**	**Ear wash**	**Fungal disease**	**General disease control**	**General fungal control**	**Mildew**	**Mildew/ rhynchosporium**	**Net blotch**	**Powdery mildew & rust**	**Rhynchosporium**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides													
Azoxystrobin	.	.	.	.	25	.	.	.	.	.	25	25	3
Benzovindiflupyr	.	.	.	.	61	.	.	.	.	.	61	61	3
Benzovindiflupyr/prothioconazole	.	.	.	.	358	.	.	.	.	.	358	358	65
Bixafen/prothioconazole	.	.	.	52	1,601	.	73	.	.	.	1,727	1,274	268
Chlorothalonil	.	133	63	321	5,721	.	36	.	62	44	6,380	4,445	3,130
Chlorothalonil/cyproconazole	.	.	.	.	270	.	.	.	.	.	270	270	118
Chlorothalonil/cyproconazole/propiconazole	.	.	.	.	94	.	.	.	.	.	94	79	80
Chlorothalonil/fluxapyroxad	.	.	35	.	.	.	.	.	.	.	35	35	32
Chlorothalonil/penthiopyrad	44	.	.	.	202	.	.	.	.	.	246	188	95
Cyprodinil	.	.	.	.	102	.	.	.	.	.	102	102	14
Cyprodinil/isopyrazam	.	.	.	144	678	.	.	.	.	44	866	734	290
Epoxiconazole	.	.	.	82	1,432	.	.	44	.	.	1,558	840	147
Epoxiconazole/fenpropimorph	.	.	.	33	694	.	.	.	.	.	727	727	277
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	.	853	.	.	.	.	.	853	756	274
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	.	94	520	.	.	.	.	.	614	614	154
Fenpropimorph	.	.	.	.	31	.	.	.	.	.	31	31	17
Fluoxastrobin/prothioconazole	.	.	.	89	729	.	.	.	.	.	817	581	159
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	.	.	64	.	.	.	.	.	64	64	8
Fluxapyroxad	.	.	.	.	722	.	112	.	.	.	834	737	35
Penthiopyrad	.	.	.	205	1,177	.	.	.	.	.	1,382	829	234
Proquinazid	.	.	.	.	.	33	.	.	.	.	33	33	1
Prothioconazole	44	.	.	123	1,497	.	.	.	.	.	1,663	1,356	193
Prothioconazole/spiroxamine	.	.	.	.	731	.	112	.	.	.	843	804	288
Prothioconazole/tebuconazole	.	.	.	.	28	.	.	.	.	.	28	28	2
Prothioconazole/trifloxystrobin	.	.	.	52	757	33	.	.	.	62	904	904	142
All fungicides	**87**	**133**	**99**	**1,196**	**18,348**	**67**	**333**	**44**	**62**	**149**	**20,517**	**.**	**6,030**

Table 14 contd: **Winter barley: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment												
Pesticide group and active substance	**Broadleaved weeds**	**Chickweed and cleavers**	**Desiccation**	**General weed control**	**Ground preparation**	**Groundsel**	**Mayweed**	**Pre-emergence weed control**	**Sealer**	**Wild oats**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants													
Bromoxynil	.	.	.	33	.	.	.	.	.	.	33	33	15
Chlorotoluron/diflufenican/pendimethalin	.	44	.	215	.	.	.	105	.	.	364	364	412
Clopyralid/florasulam/fluroxypyr	.	.	.	43	.	.	.	.	.	.	43	43	12
Dicamba/mecoprop-p	.	.	.	276	.	.	.	.	.	.	276	276	232
Diflufenican	.	.	.	1,033	.	.	.	385	.	.	1,419	1,419	107
Diflufenican/flufenacet	.	.	.	1,165	.	.	.	310	87	.	1,562	1,387	339
Diflufenican/flufenacet/flurtamone	.	.	.	230	.	.	.	357	130	.	716	716	154
Diflufenican/iodosulfron-methyl-sodium/mesosulfuron-methyl	.	.	.	40	.	.	.	.	.	.	40	40	2
Florasulam/fluroxypyr	.	.	.	124	.	.	.	.	.	.	124	124	11
Florasulam/halauxifen-methyl	.	48	.	255	.	.	.	.	.	.	303	303	2
Flufenacet	.	.	.	36	.	.	.	.	.	.	36	36	4
Flufenacet/pendimethalin	.	.	.	1,596	6	.	.	285	38	.	1,925	1,898	2,071
Fluroxypyr	.	.	.	1,353	.	.	.	66	.	.	1,419	1,391	192
Fluroxypyr/halauxifen-methyl	.	.	.	601	.	.	.	.	.	.	601	601	67
Fluroxypyr/metsulfuron-methyl/thifensulfuron-methyl	.	.	.	227	.	.	.	.	.	.	227	227	28
Glyphosate	.	.	3,280	317	474	.	.	.	.	.	4,071	3,693	3,073
MCPA	.	.	.	226	.	.	.	.	.	.	226	226	158
Mecoprop-P	16	.	.	62	.	.	.	.	.	.	79	79	57
Metsulfuron-methyl	.	.	.	860	.	.	66	.	.	.	927	927	4
Metsulfuron-methyl/thifensulfuron-methyl	.	.	.	141	.	.	.	.	.	.	141	141	3
Metsulfuron-methyl/tribenuron-methyl	.	.	35	228	.	48	.	.	.	.	311	311	3
Pendimethalin	.	.	.	29	.	.	.	.	.	.	29	29	21
Pendimethalin/picolinafen	.	44	.	90	.	.	.	105	17	.	256	256	174
Pinoxaden	.	.	.	22	.	.	.	.	.	797	819	819	25
Prosulfocarb	.	.	.	.	.	.	.	.	87	.	87	87	105
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	405	.	.	.	.	.	.	405	405	7
Tri-allate	.	.	.	29	.	.	.	.	.	.	29	29	1
All herbicides and desiccants	**16**	**136**	**3,315**	**9,636**	**480**	**48**	**66**	**1,614**	**359**	**797**	**16,469**	**.**	**7,280**

Table 14 contd: **Winter barley: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment								
Pesticide group and active substance	Aphids	Foliar feed	General insect control	Growth regulation	Seed treatment	Trace element	Total area treated (spha)	Basic area treated	Quantity applied (kg)
Growth Regulators									
2-chloroethylphosphonic acid	.	.	.	907	.	.	907	907	180
Chlormequat	.	.	.	4,353	.	.	4,353	3,608	3,413
Mepiquat chloride/prohexadione-calcium	.	.	.	104	.	.	104	104	17
Prohexadione-calcium/trinexapac-ethyl	.	.	.	661	.	.	661	631	26
Trinexapac-ethyl	.	.	.	3,682	.	.	3,682	3,241	223
All growth regulators	**.**	**.**	**.**	**9,708**	**.**	**.**	**9,708**	**.**	**3,860**
Insecticides									
Esfenvalerate	153	.	1,205	.	.	.	1,358	802	6
Lambda-cyhalothrin	163	.	831	.	.	.	994	994	10
All insecticides	**316**	**.**	**2,037**	**.**	**.**	**.**	**2,352**	**.**	**15**
Other active substances									
Manganese	.	287	.	.	.	31	318	251	181
Nitrogen/phosphate/potassium	.	31	.	.	.	.	31	31	23
All other active substances	**.**	**318**	**.**	**.**	**.**	**31**	**348**	**.**	**204**
Seed treatments									
Carboxin/thiram	.	.	.	.	43	.	43	43	10
Clothianidin/prothioconazole	.	.	.	.	3,920	.	3,920	3,920	418
Fludioxonil	.	.	.	.	267	.	267	267	3
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	196	.	196	196	3
Prothioconazole	.	.	.	.	177	.	177	177	3
Prothioconazole/tebuconazole	.	.	.	.	151	.	151	151	3
Silthiofam	.	.	.	.	278	.	278	278	14
Unknown seed treatment	.	.	.	.	226	.	226	226	.
All seed treatments	**.**	**.**	**.**	**.**	**5,257**	**.**	**5,257**	**.**	**454**

Table 15: **Spring wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment				
Pesticide group and active substance	**General disease control**	**General fungal control**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides					
Azoxystrobin	.	28	28	28	4
Bixafen/prothioconazole	.	145	145	145	20
Bixafen/prothioconazole/spiroxamine	.	166	166	166	99
Chlorothalonil	102	204	307	237	176
Chlorothalonil/cyproconazole/propiconazole	.	32	32	32	31
Chlorothalonil/penthiopyrad	17	.	17	17	7
Epoxiconazole	17	20	37	37	4
Epoxiconazole/fenpropimorph	66	.	66	66	24
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	166	166	166	50
Epoxiconazole/fenpropimorph/metrafenone	102	320	423	297	215
Epoxiconazole/fluxapyroxad	.	60	60	60	2
Penthiopyrad	.	20	20	20	3
Prothioconazole	.	57	57	28	4
Prothioconazole/tebuconazole	.	60	60	60	12
All fungicides	**305**	**1,278**	**1,582**	**.**	**651**

Table 15 contd: **Spring wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment							
Pesticide group and active substance	**Desiccation**	**General weed control**	**Ground preparation**	**Pre-emergence weed control**	**Wild oats**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants								
Dicamba/mecoprop-p	.	204	.	.	.	204	204	138
Diflufenican/flufenacet	.	.	.	60	.	60	60	9
Florasulam	.	17	.	.	.	17	17	<1
Florasulam/fluroxypyr	.	32	.	.	.	32	32	5
Florasulam/halauxifen-methyl	.	93	.	.	.	93	93	1
Florasulam/pyroxsulam	.	28	.	.	.	28	28	<1
Fluroxypyr	.	333	.	32	.	365	365	53
Fluroxypyr/halauxifen-methyl	.	20	.	.	.	20	20	2
Glyphosate	179	24	143	.	.	346	346	311
Mecoprop-P	.	80	.	.	.	80	80	59
Metsulfuron-methyl	.	140	.	.	.	140	140	1
Metsulfuron-methyl/thifensulfuron-methyl	.	67	.	.	.	67	67	4
Metsulfuron-methyl/tribenuron-methyl	.	245	.	.	.	245	245	3
Pinoxaden	.	.	.	.	109	109	109	3
Thifensulfuron-methyl/tribenuron-methyl	.	60	.	.	.	60	60	1
All herbicides and desiccants	**179**	**1,342**	**143**	**93**	**109**	**1,866**	**.**	**590**

Table 15 contd: **Spring wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment						
Pesticide group and active substance	**Aphids**	**General insect control**	**Growth regulation**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Growth Regulators							
Chlormequat	.	.	324	.	324	324	273
Prohexadione-calcium/trinexapac-ethyl	.	.	52	.	52	52	2
Trinexapac-ethyl	.	.	143	.	143	143	6
All growth regulators	**.**	**.**	**519**	**.**	**519**	**.**	**281**
Insecticides							
Esfenvalerate	66	24	.	.	90	90	<1
Lambda-cyhalothrin	65	183	.	.	248	248	1
All insecticides	**131**	**207**	**.**	**.**	**338**	**.**	**2**
Seed treatments							
Carboxin/thiram	.	.	.	95	95	95	23
Clothianidin/prothioconazole	.	.	.	85	85	85	10
Fludioxonil	.	.	.	526	526	526	5
Unknown seed treatment	.	.	.	Trace	Trace	Trace	.
All seed treatments	**.**	**.**	**.**	**706**	**706**	**.**	**39**

Table 16: **Winter wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment										
Pesticide group and active substance	Disease prevention	Ear wash	Foliar disease	General disease control	General fungal control	Leaf spot	Mildew/ rhynchosporium	Septoria	Total area treated (spha)	Basic area treated (ha)	Quantity applied (kg)
Fungicides											
Azoxystrobin	.	.	.	324	1,389	.	.	.	1,713	1,713	250
Azoxystrobin/chlorothalonil	.	.	.	60	.	.	.	.	60	60	36
Benzovindiflupyr	.	.	.	.	255	.	.	.	255	255	18
Benzovindiflupyr/prothioconazole	.	.	.	73	652	.	.	.	726	726	124
Bixafen/fluopyram/prothioconazole	.	.	.	.	530	.	.	.	530	445	87
Bixafen/fluoxastrobin/prothioconazole	.	.	.	50	64	.	.	.	114	82	11
Bixafen/prothioconazole	.	.	.	.	984	.	121	35	1,140	957	238
Bixafen/prothioconazole/spiroxamine	.	.	.	.	126	.	.	.	126	126	59
Chlorothalonil	66	118	.	923	6,303	.	241	35	7,686	4,705	3,484
Chlorothalonil/cyproconazole	.	.	.	.	403	.	.	.	403	311	205
Chlorothalonil/cyproconazole/propiconazole	.	.	.	60	567	.	.	.	627	596	445
Chlorothalonil/fluxapyroxad	.	.	.	.	660	.	.	.	660	660	520
Chlorothalonil/penthiopyrad	.	.	.	112	1,600	.	.	35	1,747	1,501	1,019
Cyprodinil/isopyrazam	.	.	.	.	98	.	.	.	98	64	33
Epoxiconazole	.	.	.	668	2,490	.	.	35	3,193	2,447	347
Epoxiconazole/fenpropimorph	.	.	.	.	724	.	.	.	724	724	124
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	.	49	.	.	.	49	49	17
Epoxiconazole/fenpropimorph/metrafenone	.	.	.	.	98	.	.	.	98	98	20
Epoxiconazole/fluxapyroxad	.	.	.	.	1,013	.	121	.	1,133	1,088	194
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	.	.	614	.	121	.	735	735	238
Epoxiconazole/isopyrazam	.	.	.	120	32	.	.	.	152	92	29
Epoxiconazole/metconazole	.	.	98	.	1,148	.	.	.	1,246	1,089	155
Epoxiconazole/pyraclostrobin	.	.	.	.	98	.	.	.	98	98	9
Fenpropimorph	.	.	.	.	554	.	121	.	675	675	83
Fenpropimorph/pyraclostrobin	.	.	.	.	32	.	.	.	32	32	9
Fluoxastrobin/prothioconazole	.	.	.	.	174	.	.	.	174	174	33
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	.	.	40	.	.	.	40	40	9
Fluxapyroxad	.	.	.	.	68	.	.	.	68	68	5
Fluxapyroxad/metconazole	.	.	.	50	233	.	.	.	283	283	30
Fluxapyroxad/pyraclostrobin	.	.	.	.	510	.	.	.	510	510	61

Table 16 contd: **Winter wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment										
Pesticide group and active substance	**Disease prevention**	**Ear wash**	**Foliar disease**	**General disease control**	**General fungal control**	**Leaf spot**	**Mildew/ rhynchosporium**	**Septoria**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides											
Mancozeb	.	.	.	.	106	.	.	.	106	106	136
Metconazole	.	.	.	93	737	.	.	.	830	830	43
Penthiopyrad	.	.	.	649	1,122	.	.	.	1,771	1,087	361
Proquinazid	.	.	.	.	297	.	.	.	297	297	9
Prothioconazole	.	.	.	.	1,880	98	.	.	1,978	1,758	269
Prothioconazole/spiroxamine	.	.	.	.	56	.	.	.	56	56	32
Prothioconazole/tebuconazole	66	104	.	154	2,420	.	.	.	2,744	2,515	564
Prothioconazole/trifloxystrobin	.	.	.	.	136	.	.	.	136	136	29
Pyraclostrobin	.	.	.	.	1,089	.	.	.	1,089	1,089	84
Tebuconazole	.	.	.	324	1,716	.	.	.	2,041	1,858	338
Unknown fungicide	.	.	.	.	115	.	.	.	115	115	230
All fungicides	**133**	**222**	**98**	**3,662**	**31,177**	**98**	**724**	**141**	**36,255**	**.**	**9,986**

Table 16 contd: **Winter wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment									
Pesticide group and active substance	**Broadleaved weeds**	**Desiccation**	**General weed control**	**Brome grass**	**Ground preparation**	**Groundsel**	**Headlands**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants										
Carfentrazone-ethyl	.	41	.	.	.	.	.	41	41	2
Chlorotoluron/diflufenican/pendimethalin	.	.	87	.	.	.	.	87	87	95
Diflufenican	.	.	283	.	.	262	.	545	545	38
Diflufenican/flufenacet	.	.	212	.	.	160	.	372	372	56
Diflufenican/flufenacet/flurtamone	.	.	164	.	98	589	.	851	851	246
Diflufenican/iodosulfron-methyl-sodium/mesosulfuron-methyl	.	.	2,923	.	.	.	.	2,923	2,923	166
Diflufenican/prosulfocarb	.	.	115	.	.	.	.	115	115	27
Diquat	.	41	.	.	.	.	.	41	41	8
Fenoxaprop-P-ethyl	.	.	46	.	.	.	.	46	46	3
Florasulam	.	5	.	.	.	.	.	5	5	<1
Florasulam/fluroxypyr	.	.	7	.	.	.	.	7	7	1
Florasulam/halauxifen-methyl	.	.	406	.	.	.	.	406	406	4
Florasulam/pyroxsulam	.	.	193	51	.	.	.	243	243	5
Flufenacet/pendimethalin	.	.	457	.	42	594	.	1,093	1,093	1,124
Flupyrsulfron-methyl	.	.	361	.	.	.	.	361	361	<1
Fluroxypyr	.	.	1,265	.	.	.	.	1,265	1,265	137
Fluroxypyr/halauxifen-methyl	.	.	1,473	.	.	.	.	1,473	1,388	146
Glyphosate	.	3,334	148	.	1,038	.	.	4,521	3,718	3,137
Iodosulfron-methyl-sodium/mesosulfuron-methyl	.	.	718	.	.	.	.	718	718	6
MCPA	.	.	98	.	.	.	.	98	98	30
Mecoprop-P	56	.	1,220	.	.	.	.	1,276	1,276	869
Mesosulfuron-methyl/propoxycarbazone-sodium	.	.	182	.	.	.	.	182	182	7
Metsulfuron-methyl	.	.	586	.	.	.	.	586	586	2
Metsulfuron-methyl/thifensulfuron-methyl	.	.	909	.	.	.	.	909	909	13
Metsulfuron-methyl/tribenuron-methyl	.	.	243	.	.	.	.	243	243	2
Pendimethalin/picolinafen	.	.	32	.	.	.	.	32	32	22
Pinoxaden	.	.	248	.	.	.	514	762	762	24

Table 16 contd: **Winter wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment									
Pesticide group and active substance	**Broadleaved weeds**	**Desiccation**	**General weed control**	**Brome grass**	**Ground preparation**	**Groundsel**	**Headlands**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants										
Prosulfocarb	.	.	.	.	98	32	.	130	130	160
Thifensulfuron-methyl/tribenuron-methyl	.	.	373	.	.	.	.	373	373	5
Tribenuron-methyl	.	.	173	.	.	.	.	173	173	3
Unknown herbicide	.	.	85	.	.	.	.	85	85	28
All herbicides and desiccants	**56**	**3,422**	**13,008**	**51**	**1,276**	**1,637**	**514**	**19,964**	**.**	**6,368**

Table 16 contd: **Winter wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment						
Pesticide group and active substance	**Aphids**	**General insect control**	**Growth regulation**	**Slugs**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Growth Regulators							
2-chloroethylphosphonic acid	.	.	422	.	422	422	78
Chlormequat	.	.	5,280	.	5,280	4,576	4,160
Chlormequat/imazaquin	.	.	115	.	115	115	84
Prohexadione-calcium/trinexapac-ethyl	.	.	532	.	532	399	21
Trinexapac-ethyl	.	.	3,011	.	3,011	2,908	146
All growth regulators	**.**	**.**	**9,360**	**.**	**9,360**	**.**	**4,489**
Insecticides							
Dimethoate	.	384	.	.	384	384	90
Esfenvalerate	351	372	.	.	722	658	3
Lambda-cyhalothrin	298	1,852	.	.	2,150	2,052	11
All insecticides	**649**	**2,608**	**.**	**.**	**3,257**	**.**	**104**
Molluscicides							
Metaldehyde	.	.	.	361	361	361	22
All molluscicides	**.**	**.**	**.**	**361**	**361**	**.**	**22**

Table 16 contd: **Winter wheat: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment				
Pesticide group and active substance	**Foliar feed**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Other active substances					
Magnesium sulphate	66	.	66	66	53
Nitrogen/phosphate/potassium oxide	45	.	45	45	68
All other active substances	**112**	**.**	**112**	**.**	**121**
Seed treatments					
Carboxin/thiram	.	46	46	46	10
Clothianidin/prothioconazole	.	4,848	4,848	4,848	522
Fludioxonil	.	182	182	182	2
Fluquinconazole/prochloraz	.	92	92	92	10
Prothioconazole	.	407	407	407	8
Prothioconazole/tebuconazole	.	60	60	60	3
Silthiofam	.	1,404	1,404	1,404	61
All seed treatments	**.**	**7,039**	**7,039**	**.**	**617**

Table 17: **Spring oats: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment				
Pesticide group and active substance	**General disease control**	**General fungal control**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides					
Chlorothalonil	.	201	201	181	106
Cyprodinil	.	17	17	17	4
Cyprodinil/isopyrazam	.	161	161	161	56
Epoxiconazole/fenpropimorph	.	180	180	180	72
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	95	95	63	30
Epoxiconazole/fenpropimorph/metrafenone	59	404	463	408	202
Epoxiconazole/fluxapyroxad	.	36	36	36	9
Epoxiconazole/pyraclostrobin	.	302	302	302	76
Fenpropimorph	.	224	224	224	81
Fluoxastrobin/prothioconazole	.	42	42	42	9
Proquinazid	.	36	36	36	2
Prothioconazole	.	36	36	36	7
Quinoxyfen	35	.	35	35	3
Tebuconazole	.	36	36	36	9
All fungicides	**94**	**1,767**	**1,861**	**.**	**667**

Table 17 contd: **Spring oats: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment							
Pesticide group and active substance	**Desiccation**	**General weed control**	**Ground preparation**	**Pre-emergence weed control**	**Stubble treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants								
Dicamba/MCPA/mecoprop-p	.	140	.	.	.	140	140	101
Dicamba/mecoprop-p	.	165	.	.	.	165	165	140
Florasulam	.	137	.	.	.	137	137	1
Florasulam/fluroxypyr	.	161	.	.	.	161	161	12
Fluroxypyr	.	438	.	.	.	438	438	65
Fluroxypyr/halauxifen-methyl	.	71	.	.	.	71	71	10
Glyphosate	163	.	373	23	32	591	459	567
Mecoprop-P	.	36	.	.	.	36	36	44
Metsulfuron-methyl	.	522	.	.	.	522	502	3
Metsulfuron-methyl/tribenuron-methyl	.	390	.	.	.	390	390	3
Pinoxaden	.	8	.	.	.	8	8	<1
Thifensulfuron-methyl/tribenuron-methyl	.	95	.	.	.	95	95	3
All herbicides	**163**	**2,164**	**373**	**23**	**32**	**2,755**	**.**	**949**

Table 17 contd: **Spring oats: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment						
Pesticide group and active substance	**Aphids**	**General insect control**	**Growth regulation**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Growth Regulators							
Chlormequat	.	.	198	.	198	198	165
Mepiquat chloride/prohexadione-calcium	.	.	31	.	31	31	11
Prohexadione-calcium/trinexapac-ethyl	.	.	561	.	561	561	24
Trinexapac-ethyl	.	.	299	.	299	299	17
All growth regulators	**.**	**.**	**1,089**	**.**	**1,089**	**.**	**217**
Insecticides							
Cypermethrin	.	20	.	.	20	20	<1
Esfenvalerate	.	208	.	.	208	208	<1
Lambda-cyhalothrin	90	185	.	.	275	275	1
All insecticides	**90**	**413**	**.**	**.**	**503**	**.**	**2**
Seed treatments							
Carboxin/thiram	.	.	.	335	335	335	76
Clothianidin/prothioconazole	.	.	.	130	130	130	13
Fludioxonil	.	.	.	254	254	254	2
Prothioconazole	.	.	.	36	36	36	1
Unknown seed treatment	.	.	.	103	103	103	.
All seed treatments	**.**	**.**	**.**	**856**	**856**	**.**	**92**

Table 18: **Winter oats: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment						
Pesticide group and active substance	**Foliar Disease**	**General Disease Control**	**General Fungal Control**	**Rust and Mildew**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides							
Azoxystrobin	.	.	219	.	219	124	30
Epoxiconazole/fenpropimorph	.	.	108	.	108	54	18
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	120	.	.	120	60	71
Epoxiconazole/fenpropimorph/metrafenone	69	.	239	.	308	273	138
Epoxiconazole/pyraclostrobin	.	.	41	.	41	41	12
Fenpropimorph	.	.	157	.	157	96	74
Proquinazid	.	.	32	.	32	32	2
Prothioconazole	.	.	.	140	140	70	21
Prothioconazole/spiroxamine	.	.	48	.	48	48	22
Pyraclostrobin	35	.	169	.	204	204	24
Tebuconazole	.	60	143	.	203	162	36
Unknown fungicide	.	.	.	70	70	70	70
All fungicides	**104**	**179**	**1,156**	**211**	**1,650**	**.**	**517**

Table 18 contd: **Winter oats: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment							
Pesticide group and active substance	**Broadleaved weeds**	**Desiccation**	**General weed control**	**Ground preparation**	**Pre-emergence weed control**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants								
Dicamba/mecoprop-p	.	.	70	.	.	70	70	40
Diflufenican/flufenacet	.	.	134	35	.	169	169	14
Diflufenican/flupyrsulfuron-methyl	.	.	.	.	70	70	70	6
Florasulam/fluroxypyr	.	.	129	.	.	129	129	12
Fluroxypyr	35	.	249	.	.	284	284	35
Glyphosate	.	169	.	162	.	332	198	142
Mecoprop-P	32	.	.	.	.	32	32	38
Metsulfuron-methyl	.	.	183	.	.	183	183	1
Metsulfuron-methyl/thifensulfuron-methyl	35	.	162	.	.	197	197	5
Metsulfuron-methyl/tribenuron-methyl	.	.	182	.	.	182	182	2
Thifensulfuron-methyl/tribenuron-methyl	.	.	48	.	.	48	48	1
All herbicides and desiccants	**101**	**169**	**1,158**	**198**	**70**	**1,696**	**.**	**295**

Table 18 contd: **Winter oats: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment					
Pesticide group and active substance	**Growth Regulation**	**General Insect Control**	**Seed Treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Growth Regulators						
Chlormequat	232	.	.	232	232	231
Prohexadione-calcium/trinexapac-ethyl	400	.	.	400	305	23
Trinexapac-ethyl	194	.	.	194	177	10
All growth regulators	**826**	**.**	**.**	**826**	**.**	**264**
Insecticides						
Lambda-cyhalothrin	.	32	.	32	32	<1
All insecticides	**.**	**32**	**.**	**32**	**.**	**<1**
Seed treatments						
Clothianidin/prothioconazole	.	.	505	505	505	51
Fludioxonil	.	.	28	28	28	<1
Prothioconazole	.	.	48	48	48	1
All seed treatments	**.**	**.**	**581**	**581**	**.**	**52**

Table 19: **Rye: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment								
Pesticide group and active substance	**General disease control**	**General fungal control**	**Growth regulation**	**General weed control**	**Ground preparation**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides									
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	7	.	.	.	.	7	7	3
Epoxiconazole/fenpropimorph/metrafenone	90	14	.	.	.	.	104	104	55
All fungicides	**90**	**20**	**.**	**.**	**.**	**.**	**111**	**.**	**58**
Herbicides									
Diflufenican/flufenacet	.	.	.	115	.	.	115	115	16
Glyphosate	.	.	.	.	90	.	90	90	114
Pendimethalin	.	.	.	90	.	.	90	90	61
All herbicides	**.**	**.**	**.**	**205**	**90**	**.**	**295**	**.**	**191**
Growth Regulators									
2-chloroethylphosphonic acid	.	.	7	.	.	.	7	7	2
Chlormequat	.	.	97	.	.	.	97	97	74
Prohexadione-calcium/trinexapac-ethyl	.	.	97	.	.	.	97	97	4
All growth regulators	**.**	**.**	**200**	**.**	**.**	**.**	**200**	**.**	**79**
Seed treatments									
Prothioconazole	.	.	.	.	.	32	32	32	<1
Unknown seed treatment	.	.	.	.	.	Trace	Trace	Trace	.
All seed treatments	**.**	**.**	**.**	**.**	**.**	**32**	**32**	**.**	**<1**

Table 20: **Triticale: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment						
Pesticide group and active substance	**General disease control**	**General fungal control**	**General weed control**	**Ground preparation**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides							
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	22	.	.	22	22	9
Epoxiconazole/fenpropimorph/metrafenone	16	.	.	.	16	16	8
Quinoxyfen	16	.	.	.	16	16	1
All fungicides	**32**	**22**	**.**	**.**	**54**	**.**	**18**
Herbicides and desiccants							
Diflufenican/flufenacet	.	.	22	.	22	22	2
Fluroxypyr	.	.	16	.	16	16	2
Glyphosate	.	.	.	16	16	16	20
Metsulfuron-methyl	.	.	38	.	38	38	<1
All herbicides and desiccants	**.**	**.**	**75**	**16**	**91**	**.**	**24**

Table 20 contd: **Triticale: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment					
Pesticide group and active substance	**Growth regulation**	**General insect control**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Growth Regulators						
Chlormequat	22	.	.	22	22	8
Trinexapac-ethyl	16	.	.	16	16	<1
All growth regulators	**38**	**.**	**.**	**38**	**.**	**9**
Insecticides						
Lambda-cyhalothrin	.	16	.	16	16	<1
All insecticides	**.**	**16**	**.**	**16**	**.**	**<1**
Seed treatments						
Unknown seed treatment	.	.	Trace	Trace	Trace	.
All seed treatments	**.**	**.**	**Trace**	**Trace**	**Trace**	**.**

Table 21: **Spring oilseed rape: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment				
Pesticide group and active substance	**General fungal control**	**Pre-emergence weed control**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides					
Prothioconazole	69	.	69	69	7
Tebuconazole	69	.	69	69	17
All fungicides	**138**	**.**	**138**	**.**	**24**
Herbicides & desiccants					
Metazachlor/quinmerac	.	69	69	69	43
Propaquizafop	.	69	69	69	4
All herbicides & desiccants	**.**	**138**	**138**	**.**	**47**

Table 22: **Winter oilseed rape: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment				
Pesticide group and active substance	**General disease control**	**General fungal control**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides					
Azoxystrobin	.	342	342	342	53
Bixafen/prothioconazole	.	31	31	31	8
Epoxiconazole	.	72	72	72	2
Fluopyram/prothioconazole	62	300	362	362	89
Metconazole	.	91	91	91	6
Prothioconazole	188	490	678	606	90
Prothioconazole/tebuconazole	.	87	87	62	14
Tebuconazole	96	214	310	293	43
All fungicides	**346**	**1,627**	**1,973**	**.**	**305**

Table 22: **Winter oilseed rape: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment									
Pesticide group and active substance	**Desiccation**	**General weed control**	**Grass**	**Ground preparation**	**Harvest aid**	**Pre-emergence weed control**	**Volunteer oats**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants										
Aminopyralid/propyzamide	.	57	.	.	.	.	.	57	57	49
Clethodim	.	46	.	.	.	.	.	46	46	7
Clopyralid/picloram	.	364	.	.	.	.	.	364	364	27
Dimethenamid-P/metazachlor/quinmerac	.	342	.	.	.	31	.	373	373	484
Ethametsulfuron-methyl	.	195	.	.	.	.	.	195	195	3
Glyphosate	603	27	.	105	17	195	.	947	721	823
Metazachlor/quinmerac	.	.	.	.	.	98	.	98	98	106
Propaquizafop	.	313	.	.	.	.	135	448	448	34
Propyzamide	.	112	62	.	.	18	54	246	246	165
Unknown herbicide	.	46	.	.	.	.	.	46	46	46
All herbicides and desiccants	**603**	**1,501**	**62**	**105**	**17**	**341**	**189**	**2,819**	**.**	**1,744**

Table 22 contd: **Winter oilseed rape: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment								
Pesticide group and active substance	**Adjuvant**	**General insect control**	**Growth regulation**	**Pollen beetles**	**Seed treatment**	**Slugs**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Insecticides									
Deltamethrin	.	46	.	.	.	.	46	46	<1
Lambda-cyhalothrin	.	.	.	54	.	.	54	54	<1
All insecticides	**.**	**46**	**.**	**54**	**.**	**.**	**100**	**.**	**1**
Growth Regulators									
Mepiquat chloride/metconazole	.	.	131	.	.	.	131	131	42
All growth regulators	**.**	**.**	**131**	**.**	**.**	**.**	**131**	**.**	**42**
Molluscicides									
Ferric phosphate	.	.	.	.	.	108	108	108	15
Metaldehyde	.	.	.	.	.	300	300	300	15
All molluscicides	**.**	**.**	**.**	**.**	**.**	**408**	**408**	**.**	**30**
Other active substances									
Synthetic latex	200	.	.	.	.	.	200	200	163
All other active substances	**200**	**.**	**.**	**.**	**.**	**.**	**200**	**.**	**163**
Seed treatments									
Thiram	.	.	.	.	57	.	57	57	<1
Unknown seed treatment	.	.	.	.	31	.	31	31	.
All seed treatments	**.**	**.**	**.**	**.**	**88**	**.**	**88**	**.**	**<1**

Table 23: **Peas and beans: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment											
Pesticide group and active substance	**Chickweed**	**Desiccation**	**General fungal control**	**General insect control**	**General weed control**	**Ground preparation**	**Pre-emergence weed control**	**Sealer**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides												
Boscalid/pyraclostrobin	.	.	22	.	.	.	.	.	.	22	22	6
Chlorothalonil	.	.	26	.	.	.	.	.	.	26	26	27
Chlorothalonil/cyproconazole	.	.	138	.	.	.	.	.	.	138	79	113
Tebuconazole	.	.	4	.	.	.	.	.	.	4	4	1
All fungicides	**.**	**.**	**191**	**.**	**.**	**.**	**.**	**.**	**.**	**191**	**.**	**147**
Herbicides & desiccants												
Bentazone	31	.	.	.	53	.	.	.	.	84	84	90
Clethodim	.	.	.	.	15	.	.	.	.	15	15	3
Diquat	.	64	.	.	.	.	.	.	.	64	64	36
Glyphosate	.	57	.	.	.	.	53	.	.	110	57	53
Imazamox/pendimethalin	.	.	.	.	78	.	.	6	.	84	84	85
Linuron	.	.	.	.	.	4	.	.	.	4	4	5
Pendimethalin	.	.	.	.	4	.	.	.	.	4	4	6
Propyzamide	.	.	.	.	22	.	.	.	.	22	22	18
All herbicides & desiccants	**31**	**121**	**.**	**.**	**172**	**4**	**53**	**6**	**.**	**388**	**.**	**295**
Insecticides												
Lambda-cyhalothrin	.	.	.	53	.	.	.	.	.	53	53	<1
All insecticides	**.**	**.**	**.**	**53**	**.**	**.**	**.**	**.**	**.**	**53**	**.**	**<1**
Seed treatments												
Thiram	.	.	.	.	.	.	.	.	9	9	9	1
All seed treatments	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**9**	**9**	**.**	**1**

Table 24: **Early potatoes: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment									
Pesticide group and active substance	**Blight**	**Desiccation**	**General weed control**	**Grass**	**Ground preparation**	**Pre-emergence weed control**	**Seed treatment**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides										
Ametoctradin/dimethomorph	7	.	.	.	.	.	.	7	3	3
Cyazofamid	75	.	.	.	.	.	.	75	38	6
Cymoxanil/mancozeb	7	.	.	.	.	.	.	7	3	7
Cymoxanil/propamocarb hydrochloride	7	.	.	.	.	.	.	7	3	7
Fenamidone/propamocarb hydrochloride	122	.	.	.	.	.	.	122	41	110
Fluazinam	345	.	.	.	.	.	.	345	98	48
Fluopicolide/propamocarb hydrochloride	223	.	.	.	.	.	.	223	85	237
Mandipropamid	259	.	.	.	.	.	.	259	60	39
Oxathiapiprolin	7	.	.	.	.	.	.	7	3	<1
All fungicides	**1,050**	**.**	**.**	**.**	**.**	**.**	**.**	**1,050**	**.**	**457**
Herbicides and desiccants										
Diquat	.	19	98	.	.	3	.	120	67	84
Glyphosate	.	.	.	34	41	7	.	82	82	123
Linuron	.	.	.	.	.	3	.	3	3	4
Metribuzin	.	.	132	.	.	.	.	132	91	88
Prosulfocarb	.	.	.	.	.	10	.	10	10	23
All herbicides and desiccants	**.**	**19**	**230**	**34**	**41**	**23**	**.**	**346**	**.**	**322**
Seed treatments										
Imazalil	.	.	.	.	.	.	19	19	19	1
Pencycuron	.	.	.	.	.	.	41	41	41	25
All seed treatments	**.**	**.**	**.**	**.**	**.**	**.**	**60**	**60**	**.**	**26**

Table 25: **Maincrop potatoes: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment				
Pesticide group and active substance	**Blight**	**Leaf disease**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides					
Ametoctradin/dimethomorph	1,696	.	1,696	862	709
Azoxystrobin	51	.	51	51	32
Azoxystrobin/fluazinam	111	.	111	111	29
Benthiavalicarb-isopropyl/mancozeb	982	.	982	291	1,127
Chlorothalonil	485	.	485	195	485
Cyazofamid	4,965	.	4,965	1,614	382
Cymoxanil	3,780	.	3,780	832	347
Cymoxanil/fluazinam	48	.	48	48	12
Cymoxanil/mancozeb	3,064	.	3,064	1,219	3,652
Cymoxanil/propamocarb hydrochloride	2,361	.	2,361	977	2,633
Cymoxanil/zoxamide	137	.	137	137	40
Dimethomorph/mancozeb	4,440	.	4,440	940	8,064
Fenamidone/propamocarb hydrochloride	1,028	.	1,028	417	926
Fluazinam	8,808	.	8,808	2,081	2,655
Fluopicolide/propamocarb hydrochloride	4,244	539	4,783	2,152	5,702
Mancozeb	959	.	959	410	1,332
Mandipropamid	5,317	.	5,317	1,958	812
Oxathiapiprolin	1,492	809	2,301	720	34
All fungicides	**43,969**	**1,348**	**45,317**	**.**	**28,974**

Table 25 contd: **Maincrop potatoes: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment											
Pesticide group and active substance	**Desiccation**	**Fat hen**	**General weed control**	**Grass**	**Ground preparation**	**Pre-emergence weed control**	**Scutch**	**Sealer**	**Wild oats**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Herbicides & desiccants												
Carfentrazone-ethyl	354	.	.	.	.	.	.	.	.	354	354	17
Diquat	4,491	.	1,512	.	.	429	10	9	.	6,450	3,115	2,856
Flufenacet/metribuzin	.	.	149	.	.	.	.	.	.	149	149	124
Glyphosate	.	.	238	164	902	155	.	.	.	1,459	1,310	1,559
Linuron	.	.	73	.	.	.	.	9	.	81	81	43
Metribuzin	.	.	1,841	.	.	499	49	.	.	2,390	2,390	1,387
Pendimethalin	.	.	102	.	.	125	.	.	.	226	226	280
Propaquizafop	.	.	27	.	.	.	.	.	4	31	31	7
Prosulfocarb	.	.	1,057	.	.	259	.	9	.	1,325	1,325	2,634
Rimsulfuron	.	12	176	.	.	.	.	.	.	189	189	2
Unknown herbicide	.	.	60	.	.	.	.	.	.	60	60	60
All herbicides	**4,845**	**12**	**5,236**	**164**	**902**	**1,467**	**59**	**26**	**4**	**12,715**	**.**	**8,970**

Table 25 contd: **Maincrop potatoes: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment							
Pesticide group and active substance	**Aphids**	**Foliar Feed**	**General Insect Control**	**Seed Treatment**	**Slugs**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Insecticides								
Esfenvalerate	43	.	.	.	.	43	43	<1
Flonicamid	.	.	89	.	.	89	89	7
Lambda-cyhalothrin	217	.	901	.	.	1,118	598	15
All insecticides	**260**	**.**	**990**	**.**	**.**	**1,250**	**.**	**22**
Molluscicides								
Ferric phosphate	.	.	.	.	316	316	214	38
Metaldehyde	.	.	.	.	862	862	547	158
All molluscicides	**.**	**.**	**.**	**.**	**1,178**	**1,178**	**.**	**197**
Other active substances								
Nitrogen/phosphate/potassium oxide	.	31	.	.	.	31	16	37
All other active substances	**.**	**31**	**.**	**.**	**.**	**31**	**.**	**37**
Seed treatments								
Flutolanil	.	.	.	372	.	372	372	92
Imazalil	.	.	.	843	.	843	843	26
Pencycuron	.	.	.	782	.	782	782	468
Unknown seed treatment	.	.	.	68	.	68	68	.
All seed treatments	**.**	**.**	**.**	**2,066**	**.**	**2,066**	**.**	**586**

Table 26: **Seed potatoes: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment									
Pesticide group and active substance	**Blight**	**Desiccation**	**General fungal control**	**General weed control**	**Ground preparation**	**Pre-emergence weed control**	**Scutch**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Fungicides										
Ametoctradin/dimethomorph	349	.	.	.	.	.	.	349	174	108
Benthiavalicarb-isopropyl/mancozeb	41	.	.	.	.	.	.	41	14	47
Cyazofamid	670	.	.	.	.	.	.	670	188	53
Cymoxanil	138	.	.	.	.	.	.	138	41	13
Cymoxanil/mancozeb	138	.	.	.	.	.	.	138	41	158
Cymoxanil/propamocarb hydrochloride	55	.	.	.	.	.	.	55	28	61
Cymoxanil/zoxamide	28	.	.	.	.	.	.	28	28	8
Dimethomorph/mancozeb	522	.	.	.	.	.	.	522	78	955
Fenamidone/propamocarb hydrochloride	28	.	.	.	.	.	.	28	14	25
Fluazinam	633	.	.	.	.	.	.	633	312	115
Fluopicolide/propamocarb hydrochloride	681	.	73	.	.	.	.	754	213	822
Mancozeb	454	.	.	.	.	.	.	454	127	665
Mandipropamid	210	.	.	.	.	.	.	210	172	32
Oxathiapiprolin	110	.	.	.	.	.	.	110	28	2
All fungicides	**4,056**	**.**	**73**	**.**	**.**	**.**	**.**	**4,129**	**.**	**3,065**
Herbicides & desiccants										
Carfentrazone-ethyl	.	101	.	.	.	.	.	101	101	6
Dicamba/MCPA/mecoprop-p	.	88	.	.	.	.	.	88	88	68
Diquat	.	610	.	231	.	154	25	1,021	365	356
Glyphosate	.	.	.	.	329	.	.	329	329	321
Metribuzin	.	.	.	211	.	102	52	365	365	200
Prosulfocarb	.	.	.	174	.	52	.	227	227	549
All herbicides and desiccants	**.**	**799**	**.**	**616**	**329**	**309**	**78**	**2,130**	**.**	**1,499**

Table 26: **Seed potatoes: total area treated (spha), basic area treated (ha), quantity applied (kg) and reasons for treatment.**

	Reasons for treatment					
Pesticide group and active substance	**Aphids**	**Seed treatment**	**Slugs**	**Total area treated (spha)**	**Basic area treated (ha)**	**Quantity applied (kg)**
Insecticides						
Flonicamid	202	.	.	202	174	26
Thiacloprid	28	.	.	28	28	3
All insecticides	**229**	**.**	**.**	**229**	**.**	**29**
Molluscicides						
Ferric phosphate	.	.	28	28	14	4
Metaldehyde	.	.	28	28	14	4
All molluscicides	**.**	**.**	**55**	**55**	**.**	**8**
Seed treatments						
Fludioxonil	.	147	.	147	147	16
Flutolanil	.	28	.	28	28	8
Imazalil	.	77	.	77	77	4
All seed treatments	**.**	**252**	**.**	**252**	**.**	**28**

Table 27: **Comparison of the area of arable crops grown (ha) in Northern Ireland, 1990-2018.**

	Survey year														
Crop	**1990**	**1992**	**1994**	**1996**	**1998**	**2000****	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018**
Cereals															
Spring barley	29,893	24,729	20,890	21,256	23,066	23,901	22,658	21,959	17,573	18,742	16,967	19,702	16,417	14,476	14,725
Undersown barley	5,800	5,759	6,542	4,875	4,035	3,532	1,876	599	654	803	591	508	430	232	169
Winter barley	3,670	5,721	5,832	7,166	7,720	5,194	3,922	4,535	4,599	6,149	6,767	5,323	6,709	7,628	5,809
Spring wheat	348	136	32	129	400	863	1,428	1,523	1,517	1,552	1,686	1,500	604	707	793
Undersown wheat	27	.	42	.	.	.	.	.	.	.	58	48	.	.	.
Winter wheat	5,827	6,839	6,952	6,543	6,745	4,125	5,807	7,111	7,203	10,553	9,151	7,846	7,894	7,909	6,052
Spring oats	2,220	1,257	953	858	978	1,920	804	903	991	778	1,441	1,441	1,341	1,423	1,321
Undersown oats	117	221	337	130	102	25	20	234	71	.	49	193	98	15	29
Winter oats	673	1,008	1,125	1,481	1,523	967	1,547	1,556	875	1,640	841	246	648	819	664
All cereals	**48,575**	**45,670**	**42,704**	**42,438**	**44,569**	**40,528**	**38,062**	**38,420**	**33,482**	**40,217**	**37,551**	**36,807**	**34,140**	**33,209**	**29,561**
Other arable crops															
Spring oilseed rape	15	31	287	66	237	.	111	.	.	.	.	517	67	10	69
Winter oilseed rape	891	1,032	323	127	502	.	.	.	.	.	.	290	427	542	747
All oilseed rape *	906	1,063	610	193	739	131	111	255	471	439	446	807	494	552	816
Hemp	.	.	.	.	.	.	.	.	.	40	.	.	.	.	.
Linseed	.	158	.	.	.	.	14	.	.	2	.	.	.	.	.
Maize	.	45	.	.	.	.	.	.	.	.	.	.	.	.	.
Peas & beans	.	.	.	.	199	273	197	212	83	55	85	10	54	295***	160
Rye	.	.	.	.	.	.	.	.	.	.	.	.	.	.	122
Triticale	37	.	.	.	17	64	49	182	12	82	5	.	390	.	38
Lupins	.	.	.	.	.	.	67	10	19	.	.	.	.	.	.
Camelina	.	.	.	.	.	.	.	.	.	.	.	81	.	.	.
Set-aside	.	.	.	.	.	2,451	3,013	3,394	2,284	.	.	.	.	.	.
All other arable crops	**943**	**1,266**	**610**	**193**	**954**	**2,919**	**3,451**	**4,053**	**2,869**	**619**	**536**	**898**	**938**	**847**	**1,135**
Potatoes															
Early potatoes	463	836	813	729	391	.	728	403	370	401	191	192	155	.	101
Maincrop potatoes	7,863	6,540	5,913	5,961	5,515	.	4,741	4,517	3,984	4,308	4,041	3,403	.	3,380	3,236
Seed potatoes	3,509	3,688	1,678	1,798	1,607	.	1,239	1,148	763	792	707	555	.	527	365
Maincrop & seed potatoes	11,372	10,228	7,591	7,759	7,122	.	5,980	5,665	4,748	5,100	4,748	3,958	3,610	3,907	3,601
All potatoes	**11,835**	**11,064**	**8,404**	**8,488**	**7,513**	**.**	**6,708**	**6,068**	**5,118**	**5,501**	**4,939**	**4,150**	**3,765**	**3,907**	**3,702**
All crops	**61,353**	**58,000**	**51,718**	**51,119**	**53,036**	**43,447**	**48,221**	**48,541**	**41,469**	**46,337**	**43,026**	**41,856**	**38,843**	**37,963**	**34,398**

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

Table 27 contd: **Comparison of the area of arable crops grown (ha) in Northern Ireland, 1990-2018.**

	Differences between:													
Crop	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018- 16**
Cereals														
Spring barley	-51%	-40%	-30%	-31%	-36%	-38%	-35%	-33%	-16%	-21%	-13%	-25%	-10%	2%
Undersown barley	-97%	-97%	-97%	-97%	-96%	-95%	-91%	-72%	-74%	-79%	-71%	-67%	-61%	-27%
Winter barley	58%	2%	0%	-19%	-25%	12%	48%	28%	26%	-6%	-14%	9%	-13%	-24%
Spring wheat	128%	483%	2379%	514%	98%	-8%	-44%	-48%	-48%	-49%	-53%	-47%	31%	12%
Undersown wheat	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Winter wheat	4%	-12%	-13%	-8%	-10%	47%	4%	-15%	-16%	-43%	-34%	-23%	-23%	-23%
Spring oats	-41%	5%	39%	54%	35%	-31%	64%	46%	33%	70%	-8%	-8%	-1%	-7%
Undersown oats	-76%	-87%	-92%	-78%	-72%	12%	43%	-88%	-60%	#VALUE!	-42%	-85%	-71%	90%
Winter oats	-1%	-34%	-41%	-55%	-56%	-31%	-57%	-57%	-24%	-60%	-21%	170%	2%	-19%
All cereals	-39%	-35%	-31%	-30%	-34%	-27%	-22%	-23%	-12%	-26%	-21%	-20%	-13%	-22%
Other arable crops														
Spring oilseed rape	362%	123%	-76%	5%	-71%	.	-38%	.	.	.	.	-87%	3%	592%
Winter oilseed rape	-16%	-28%	131%	488%	49%	.	.	.	.	.	.	158%	75%	38%
All oilseed rape *	-10%	-23%	34%	323%	10%	523%	635%	220%	73%	86%	83%	1%	65%	48%
Hemp	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Linseed	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Maize	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Peas & beans	.	.	.	.	-20%	-41%	-19%	-25%	93%	190%	88%	1443%	194%	-46%
Rye														.
Triticale	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lupins	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Camelina	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Set-aside	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All other arable crops	20%	-10%	86%	488%	19%	-61%	-67%	-72%	-60%	84%	112%	26%	21%	34%
	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Potatoes														
Seed potatoes	-97%	-97%	-94%	-94%	-94%	.	-92%	-91%	-87%	-87%	-86%	-82%	.	-81%
Early potatoes	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Maincrop potatoes	-95%	-94%	-94%	-94%	-93%	.	-92%	-92%	-91%	-92%	-91%	-89%	.	-89%
Maincrop & seed potatoes	-68%	-65%	-53%	-54%	-49%	.	-40%	-36%	-24%	-29%	-24%	-9%	0%	-8%
All potatoes	-69%	-67%	-56%	-56%	-51%	.	-45%	-39%	-28%	-33%	-25%	-11%	-2%	-5%
All crops	-44%	-41%	-33%	-33%	-35%	-21%	-29%	-29%	-17%	-26%	-20%	-18%	-11%	-20%

Table 28: **The area (spha) of arable crops treated with pesticides in Northern Ireland, 1990-2018.**

	Survey year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018**
Fungicides	102,594	106,290	114,972	121,833	141,099	.	127,435	139,474	123,125	159,738	147,957	157,255	140,704	154,623	146,444
Herbicides & desiccants	75,130	76,444	72,725	81,027	91,193	.	86,597	104,539	94,148	116,029	102,211	113,487	105,371	107,240	101,534
Insecticides															
Carbamates	.	*111*	*167*	*520*	*297*	.	*594*	*592*	*30*	*558*	*59*	*112*	*140*	*221*	.
Organochlorines	.	*79*	*255*	*222*	.	.	.	.	.	.	.	.	.		.
Organophosphates	*1,472*	*2,454*	*2,124*	*3,085*	*1,587*	.	*1,265*	*2,423*	*1,818*	*1,164*	*1,163*	*2,405*	*2,736*	*622*	*457*
Pyrethroids	*2,895*	*2,800*	*3,267*	*7,706*	*17,084*	.	*18,164*	*26,973*	*25,055*	*35,936*	*26,467*	*26,827*	*20,711*	*18,525*	*15,594*
Azomethine	.	.	.	.	.	.	.	*673*	*71*	.	.	*272*	.		.
Neonicotinoid	.	.	.	.	.	.	.	.	*96*	.	*78*	*274*	.	*609*	*291*
Feeding blocker	.	.	.	.	.	.	.	.	.	*252*	*77*	*66*	*101*		.
Mixed Formulations	.	.	.	.	.	.	.	*581*	*96*	.	*129*	.	.		.
Unknown insecticides	*465*	*694*	*207*	*815*	*1,238*	.	.	*180*	*89*	.	.	*74*	.	*80*	.
All insecticides	4,831	6,138	6,020	12,348	20,206	.	20,023	31,421	27,255	37,910	27,974	30,030	23,689	20,058	16,342
Molluscicides	834	871	243	434	1,123	.	1,926	337	1,237	1,277	816	3,642	1,387	2,712	2,002
Growth regulators	8,681	10,594	12,836	13,953	19,049	.	17,445	16,559	19,572	22,408	23,983	31,670	31,265	36,271	33,571
Other	.	.	.	.	.	.	.	.	.	89	210	664	633	315	902
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	34,184	38,098	32,167	32,997	28,310
All pesticides	**234,985**	**245,485**	**245,971**	**268,710**	**308,881**	**.**	**288,348**	**325,299**	**295,635**	**374,207**	**337,336**	**374,845**	**335,215**	**354,216**	**329,104**
Area grown (ha)	61,355	57,999	51,718	51,119	53,036	43,447	48,222	48,541	37,114	41,627	43,027	41,856	38,843	37,963	34,398

Table 28 contd: **Comparison of the area (spha) of arable crops treated in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides	43%	38%	27%	20%	4%	.	15%	5%	19%	-8%	-1%	-7%	4%	-5%
Herbicides & desiccants	35%	33%	40%	25%	11%	.	17%	-3%	8%	-12%	-1%	-11%	-4%	-5%
Insecticides														
Carbamates	.	99%	32%	-57%	-26%	.	-63%	-63%	638%	-60%	275%	98%	58%	-100%
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	-58%	-75%	-71%	-80%	-61%	.	-51%	-74%	-66%	-47%	-46%	-74%	-77%	-27%
Pyrethroids	540%	562%	467%	140%	8%	.	2%	-31%	-26%	-48%	-30%	-31%	-11%	-16%
Azomethine	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Neonicotinoid	.	.	.	.	.	.	.	.	.	.	.	.	.	-52%
Feeding blocker	.	.	.	.	.	.	.	.	.	-100%	-100%	-100%	-100%	.
Mixed Formulations	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Unknown insecticides	.	.	.	.	.	.	.	.	.	.	.	.	.	-100%
All insecticides	238%	166%	171%	32%	-19%	.	-18%	-48%	-40%	-57%	-42%	-46%	-31%	-19%
Molluscicides	140%	130%	724%	361%	78%	.	4%	494%	62%	57%	145%	-45%	44%	-26%
Growth regulators	287%	217%	162%	141%	76%	.	92%	103%	72%	50%	40%	6%	7%	-7%
Other	.	.	.	.	.	.	.	.	.	913%	329%	36%	43%	186%
Mixed formulations	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	-34%	-37%	-27%	-27%	-22%	.	-18%	-14%	-7%	-23%	-17%	-26%	-12%	-14%
All pesticides	51%	44%	44%	32%	15%	.	23%	9%	20%	-5%	5%	-6%	6%	-7%
Area grown (ha)	-38%	-35%	-27%	-26%	-28%	-13%	-21%	-22%	2%	-9%	-12%	-9%	-2%	-9%

Table 29: **The quantity (tonnes) of pesticides applied to arable crops in Northern Ireland, 1990-2018.**

	Survey year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000***	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018**
Fungicides	97.57	101.76	90.99	94.22	91.06	.	85.20	71.13	67.26	77.32	67.88	58.70	53.19	56.58	62.47
Herbicides & desiccants	253.62	212.36	133.57	336.33	337.65	.	390.98	254.62	152.13	71.58	50.75	52.12	45.69	42.28	41.42
Insecticides															
Carbamates	.	*0.02*	*0.02*	*0.07*	*0.04*	.	*0.08*	*0.08*	*0.004*	*0.075*	*0.008*	*0.01571*	*0.01823*	*0.03*	.
Organochlorines	.	*0.09*	*0.29*	*0.23*	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*0.68*	*0.80*	*0.85*	*1.51*	*0.87*	.	*0.57*	*1.07*	*1.373*	*0.786*	*0.733*	*1.29359*	*1.92897*	*0.17*	*0.10*
Pyrethroids	*0.05*	*0.05*	*0.07*	*0.15*	*0.19*	.	*0.20*	*0.20*	*0.163*	*0.295*	*0.163*	*0.19192*	*0.1029*	*0.09*	*0.09*
Azomethine	.	.	.	.	.	.	.	*0.10*	*0.005*	.	.	*0.0433*	.	.	.
Neonicotinoid	.	.	.	.	.	.	.	.	*0.009*	.	*0.006*	*0.02114*	.	*0.05*	*0.03*
Feeding blocker	.	.	.	.	.	.	.	.	.	*0.02*	*0.006*	*0.00528*	*0.00811*	.	.
Mixed Formulations	.	.	.	.	.	.	.	*0.05*	*0.016*	.	*0.01*	.	.	.	.
Unknown insecticides	.	.	.	.	.	.	.	*0.01*	.	.	.	*0.06*	.	*0.01*	.
All insecticides	0.72	0.96	1.23	1.95	1.10	.	0.85	1.51	1.57	1.18	0.93	1.63	2.09	0.36	0.23
Molluscicides	0.33	0.27	0.12	0.09	0.17	.	0.34	0.06	0.28	0.17	0.12	0.30	0.13	0.36	0.26
Growth regulators	10.60	9.35	10.86	12.84	14.43	.	11.61	11.70	12.63	17.00	14.33	16.59	14.76	18.23	14.31
Other	.	.	.	.	.	.	.	.	.	0.014	0.180	0.244	0.351	0.22	0.69
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	2.09	2.52	2.02	3.41	2.27
All pesticides	***363.74***	***328.89***	***242.12***	***448.78***	***448.40***	***.***	***491.93***	***341.30***	***237.89***	***169.06***	***136.28***	***132.10***	***118.24***	***121.43***	***121.65***
Area grown (ha)	61,355	57,999	51,718	51,119	53,036	43,447	48,222	48,541	37,114	41,627	43,027	41,856	38,843	37,963	34,398

* Seed treatments on potatoes not recorded

Table 29 contd: **Comparison of quantity (tonnes) of pesticides applied to arable crops in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides	-36%	-39%	-31%	-34%	-31%	.	-27%	-12%	-7%	-19%	-8%	6%	17%	10%
Herbicides & desiccants	-84%	-80%	-69%	-88%	-88%	.	-89%	-84%	-73%	-42%	-18%	-21%	-9%	-2%
Insecticides														
Carbamates	.	-100%	-100%	-100%	-100%	.	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%
Organochlorines													.	.
Organophosphates	-85%	-87%	-88%	-93%	-88%	.	-82%	-90%	-92%	-87%	-86%	-92%	-95%	-41%
Pyrethroids	84%	84%	33%	-39%	-52%	.	-55%	-54%	-44%	-69%	-44%	-52%	-11%	-3%
Azomethine	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Neonicotinoid	.	.	.	.	.	.	.	.	270%	.	455%	58%	.	-28%
Feeding blocker	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mixed Formulations	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Unknown insecticides	.	.	.	.	.	.	.	.	.	.	.	.	.	-100%
All insecticides	-68%	-76%	-81%	-88%	-79%	.	-73%	-85%	-85%	-81%	-75%	-86%	-89%	-36%
Molluscicides	-22%	-5%	117%	187%	48%	.	-24%	328%	-10%	52%	114%	-14%	92%	-30%
Growth regulators	35%	53%	32%	11%	-1%	.	23%	22%	13%	-16%	0%	-14%	-3%	-21%
Other	.	.	.	.	.	.	.	.	.	4822%	283%	182%	96%	207%
Mixed formulations	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	.	-40%	-55%	-25%	-39%	.	-19%	0%	-44%	25%	9%	-10%	13%	-33%
All pesticides	***-67%***	***-63%***	***-50%***	***-73%***	***-73%***	***.***	***-75%***	***-64%***	***-49%***	***-28%***	***-11%***	***-8%***	***3%***	***0%***
Area grown (ha)	-44%	-41%	-33%	-33%	-35%	-21%	-29%	-29%	-7%	-17%	-20%	-18%	-11%	-9%

Table 30: **The area (spha) of cereal crops treated with pesticides in Northern Ireland, 1990-2018.**

	Survey year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018***
Fungicides	33,741	37,584	42,517	56,880	64,171	63,739	60,230	86,173	77,686	106,805	91,054	105,304	101,785	108,172	93,645
Herbicides & desiccants	52,342	52,872	56,201	63,072	72,911	71,281	69,752	82,884	77,378	95,133	83,268	94,335	90,806	90,299	82,998
Insecticides															
Carbamates	.	*88*	*167*	*493*	*249*	.	*182*	*120*	.	*127*	*59*	.	*140*	*30*	.
Organochlorines	.	*79*	*255*	*222*	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*1,164*	*2,359*	*1,857*	*2,447*	*1,440*	*3,773*	*1,140*	*2,058*	*1,751*	*1,164*	*1,164*	*2,405*	*2,483*	*622*	*457*
Pyrethroids	*2,381*	*2,670*	*3,267*	*7,047*	*16,481*	*23,617*	*16,709*	*24,258*	*23,328*	*34,701*	*24,909*	*26,036*	*19,500*	*17,597*	*14,253*
Unknown insecticides	*465*	*694*	*207*	*816*	*1,207*	*2,290*	.	*114*	*89*	.	.	*74*	.	.	.
All insecticides	4,010	5,890	5,754	11,028	19,377	29,681	18,031	26,550	25,168	35,991	26,132	28,515	22,123	18,249	14,710
Molluscicides	24	.	27	168	129	833	305	223	307	493	324	466	442	714	361
Growth regulators	8,607	10,509	12,836	13,953	18,998	17,237	17,330	16,476	19,559	22,386	23,927	31,660	31,172	36,015	33,440
Other	.	.	.	.	.	.	.	.	.	89	.	425	162	.	670
Seed treatments	41,739	39,958	35,995	35,525	31,728	34,260	31,494	29,069	27,353	33,567	31,572	34,646	30,468	31,176	25,835
All pesticides	***140,465***	***146,819***	***153,330***	***180,624***	***207,314***	***217,031***	***197,144***	***241,374***	***227,451***	***294,463***	***256,277***	***295,351***	***276,957***	***284,626***	***251,659***
Area grown (ha)	48,575	45,670	42,703	42,438	44,570	40,528	38,062	38,420	33,482	40,217	37,551	36,807	34,140	33,327	29,721

**** Includes rye and triticale***

Table 30 contd: **Comparison of the area (spha) of cereal crops treated in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides	178%	149%	120%	65%	46%	47%	55%	9%	21%	-12%	3%	-11%	-8%	-13%
Herbicides & desiccants	59%	57%	48%	32%	14%	16%	19%	0%	7%	-13%	0%	-12%	-9%	-8%
Insecticides														
Carbamates	.	-100%	-100%	-100%	-100%	.	-100%	-100%	.	-100%	-100%	.	-100%	-100%
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	-61%	-81%	-75%	-81%	-68%	-88%	-60%	-78%	-74%	-61%	-61%	-81%	-82%	-27%
Pyrethroids	499%	434%	336%	102%	-14%	-40%	-15%	-41%	-39%	-59%	-43%	-45%	-27%	-19%
Unknown insecticides	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	267%	150%	156%	33%	-24%	-50%	-18%	-45%	-42%	-59%	-44%	-48%	-34%	-19%
Molluscicides	1406%	.	1239%	115%	180%	-57%	19%	62%	18%	-27%	12%	-22%	-18%	-49%
Growth regulators	289%	218%	161%	140%	76%	94%	93%	103%	71%	49%	40%	6%	7%	-7%
Other	.	.	.	.	.	.	.	.	.	653%	.	58%	315%	.
Seed treatments	-38%	-35%	-28%	-27%	-19%	-25%	-18%	-11%	-6%	-23%	-18%	-25%	-15%	-17%
All pesticides	***79%***	***71%***	***64%***	***39%***	***21%***	***16%***	***28%***	***4%***	***11%***	***-15%***	***-2%***	***-15%***	***-9%***	***-12%***
Area grown (ha)	-39%	-35%	-30%	-30%	-33%	-27%	-22%	-23%	-11%	-26%	-21%	-19%	-13%	-11%

Table 31: **The quantity (tonnes) of pesticides applied to cereal crops in Northern Ireland, 1990-2018.**

	Survey year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018***
Fungicides	14.97	18.43	14.96	24.52	22.82	13.32	15.18	19.15	20.21	32.17	27.62	31.11	30.84	28.81	29.50
Herbicides & desiccants	55.07	39.43	35.67	42.87	46.26	41.68	35.35	42.21	48.77	58.48	38.28	40.34	36.70	33.36	28.54
Insecticides															
Carbamates	.	*0.01*	*0.02*	*0.07*	0.03	.	0.03	*0.012*	.	0.014	0.008	.	0.018	0.004	.
Organochlorines	.	*0.09*	*0.29*	*0.23*	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*0.51*	*0.68*	*0.49*	1.24	0.74	2.51	0.56	*0.948*	*1.200*	*0.785*	*0.733*	*1.294*	*1.731*	*0.174*	*0.103*
Pyrethroids	*0.04*	*0.04*	*0.07*	*0.13*	*0.19*	*0.26*	*0.19*	*0.178*	*0.157*	*0.275*	*0.148*	*0.187*	*0.096*	*0.082*	*0.073*
Unknown insecticides	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	0.55	0.83	0.88	1.66	0.96	2.75	0.78	1.14	1.36	1.08	0.89	1.54	1.85	0.26	0.18
Molluscicides	0.01	.	0.01	0.04	0.02	0.14	0.06	0.04	0.04	0.07	0.03	0.04	0.05	0.06	0.02
Growth regulators	10.51	9.32	10.86	12.84	14.41	12.87	11.61	11.64	12.62	16.93	14.16	16.55	14.48	18.17	14.27
Other	.	.	.	.	.	.	.	.	.	0.01	.	0.04	0.004	.	0.49
Seed treatments	0.33	0.94	3.80	2.41	1.72	2.34	1.57	1.35	1.42	1.09	1.37	1.40	12.81	1.60	1.63
All pesticides	***81.44***	***68.94***	***66.17***	***84.35***	***86.19***	***73.11***	***64.35***	***75.55***	***84.41***	***109.83***	***82.35***	***91.04***	***85.21***	***82.27***	***74.63***
Area grown (ha)	48,575	45,670	42,703	42,438	44,570	40,528	38,062	38,420	33,482	40,217	37,551	36,807	34,140	33,327	29,721

**** Includes rye and triticale***

Table 31 contd: **Comparison of quantity (tonnes) of pesticides applied to cereal crops in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides	97%	60%	97%	20%	29%	121%	94%	54%	46%	-8%	7%	-5%	-4%	2%
Herbicides & desiccants	-48%	-28%	-20%	-33%	-38%	-32%	-19%	-32%	-41%	-51%	-25%	-29%	-22%	-14%
Insecticides														
Carbamates	.	-100%	-100%	-100%	-100%	.	-100%	-100%	.	-100%	-100%	.	-100%	-100%
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	-80%	-85%	-79%	-92%	-86%	-96%	-81%	-89%	-91%	-87%	-86%	-92%	-94%	-41%
Pyrethroids	83%	83%	6%	-44%	-62%	-72%	-62%	-59%	-53%	-73%	-51%	-61%	-24%	-10%
Unknown insecticides	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	-68%	-79%	-80%	-89%	-82%	-94%	-77%	-85%	-87%	-84%	-80%	-89%	-90%	-32%
Molluscicides	117%	.	239%	-46%	30%	-85%	-66%	-46%	-50%	-69%	-23%	-42%	-57%	-65%
Growth regulators	36%	53%	31%	11%	-1%	11%	23%	23%	13%	-16%	1%	-14%	-1%	-21%
Other	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	394%	73%	-57%	-32%	-5%	-30%	4%	21%	15%	50%	19%	16%	-87%	2%
All pesticides	***-8%***	***8%***	***13%***	***-12%***	***-13%***	***2%***	***16%***	***-1%***	***-12%***	***-32%***	***-9%***	***-18%***	***-12%***	***-9%***
Area grown (ha)	-39%	-35%	-30%	-30%	-33%	-27%	-22%	-23%	-11%	-26%	-21%	-19%	-13%	-11%

Table 32: **The area (spha) of oilseed rape crops treated with pesticides in Northern Ireland, 1990-2018.**

	Survey year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018**
Fungicides	467	525	86	226	664	244	70	238	646	737	1,337	1,265	1,245	1,618	2,112
Herbicides & desiccants	1,603	1,343	597	292	1,171	366	194	448	970	972	1,054	1,694	1,227	1,620	2,957
Insecticides															
Carbamates	.	.	.	.	*28.6*	.	.	.	.	.	.	*13*	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	*67*	*180*	*25*	*5.4*	.	.	.	.	.	.	.	.	.	.
Pyrethroids	.	*131*	.	.	*190*	.	*49*	*55*	*149*	*316*	*361*	*132*	*93*	*154*	*100*
Azomethine	.	.	.	.	*10*	.	.	.	.	.	.	.	.	.	.
All insecticides	.	198	180	25	234	.	49	55	149	316	361	146	93	154	100
Molluscicides	810	871	216	72	522	.	39	.	68	120	.	270	467	.	408
Growth regulators	.	84	.	.	.	.	.	.	.	.	.	.	.	256	131
Other	.	.	.	.	.	.	.	.	.	.	210	239	471	315	200
Seed treatments	906	1,063	610	140	339	123	98	106	271	22	423	786	66	.	88
All pesticides	***3,786***	***4,084***	***1,689***	***755***	***2,931***	***732***	***450***	***846***	***2,104***	***2,167***	***3,360***	***4,400***	***3,569***	***3,962***	***5,996***
Area grown (ha)	906	1,062	610	193	739	131	111	255	471	439	446	807	494	552	816

Table 32 contd: **Comparison of the area (spha) of oilseed rape crops treated in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides	352%	302%	2370%	834%	218%	766%	2900%	789%	227%	187%	58%	67%	70%	31%
Herbicides & desiccants	84%	120%	395%	913%	153%	709%	1426%	560%	205%	204%	181%	75%	141%	83%
Insecticides														
Carbamates	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pyrethroids	.	-24%	.	.	-47%	.	105%	82%	-33%	-68%	-72%	-24%	8%	-35%
Azomethine	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	.	-50%	-45%	300%	-57%	.	105%	82%	-33%	-68%	-72%	-31%	8%	-35%
Molluscicides	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Growth regulators	.	56%	.	.	.	.	.	.	.	.	.	.	.	-49%
Other	.	.	.	.	.	.	.	.	.	.	-5%	-16%	-57%	-36%
Seed treatments	.	.	.	.	.	.	.	.	.	.	.	.	.	.
All pesticides	***58%***	***47%***	***255%***	***694%***	***105%***	***719%***	***1233%***	***609%***	***185%***	***177%***	***78%***	***36%***	***68%***	***51%***
Area grown (ha)	-10%	-23%	34%	323%	10%	523%	635%	220%	73%	86%	83%	1%	65%	48%

Table 33: **The quantity (tonnes) of pesticides applied to oilseed rape crops in Northern Ireland, 1990-2018.**

	Survey year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018**
Fungicides	0.53	0.06	0.03	0.30	0.60	0.64	0.01	0.03	0.10	0.12	0.27	0.18	0.15	0.23	0.33
Herbicides & desiccants	1.31	0.98	0.62	0.20	0.74	0.16	0.10	0.25	0.76	0.81	0.65	1.14	1.13	1.09	1.79
Insecticides															
Carbamates	.	.	.	.	*0.004*	.	.	.	.	.	.	*0.00195*	.	.	.
Organochlorines	.	.	.	.	*<0.001*	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	*0.02*	*0.08*	*0.01*	*0.004*	.	.	.	.	.	.	.	.	.	.
Pyrethroids	.	*0.01*	.	.	*0.001*	.	*0.0001*	*0.0003*	*0.001*	*0.011*	*0.002*	*0.0008*	0.0007	0.0009	0.0007
Azomethine														.	.
All insecticides	.	0.03	0.08	0.01	0.009	.	0.0001	0.0003	0.001	0.011	0.003	0.0027	0.0007	0.0009	0.0007
Molluscicides	0.32	0.27	0.11	0.01	0.06	.	0.01	.	0.01	0.03	.	0.0224	0.0445	.	0.0300
Growth regulators	.	0.04	.	.	.	.	.	.	.	.	.	.		0.06	0.04
Other	.	.	.	.	.	.	.	.	.	.	.	.	0.35	0.22	0.16
Seed treatments	0.05	0.11	0.06	0.02	0.005	.	0.01	0.002	0.005	0.001	0.007	0.0105	0.0008	.	0.0005
All pesticides	***2.21***	***1.49***	***0.90***	***0.54***	***1.41***	***0.81***	***0.13***	***0.28***	***0.88***	***0.96***	***1.11***	***1.55***	***1.67***	***1.60***	***2.36***
Area grown (ha)	906	1,062	610	193	739	131	111	255	471	439	446	807	494	552	816

Table 33 contd: **Comparison of quantity (tonnes) of pesticides applied to oilseed rape crops in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides	-38%	449%	895%	10%	-45%	-49%	2669%	998%	220%	184%	22%	82%	125%	45%
Herbicides & desiccants	37%	83%	191%	796%	143%	1019%	1730%	616%	136%	121%	176%	58%	58%	64%
Insecticides														
Carbamates	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pyrethroids	.	-93%	.	.	-36%	.	600%	133%	-42%	-94%	-65%	-9%	2%	-26%
Azomethine													.	.
All insecticides	.	-98%	-99%	-93%	-93%	.	567%	147%	-44%	-94%	-78%	-75%	-3%	-29%
Molluscicides	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Growth regulators	.	5%	.	.	.	.	.	.	.	.	.	.	.	-26%
Other	.	.	.	.	.	.	.	.	.	.	.	.	-53%	-27%
Seed treatments	-99%	-100%	-99%	-98%	-89%	.	-96%	-77%	-90%	-52%	-93%	-95%	-37%	.
All pesticides	***7%***	***58%***	***163%***	***337%***	***67%***	***191%***	***1658%***	***742%***	***167%***	***145%***	***113%***	***52%***	***41%***	***47%***
Area grown (ha)	-10%	-23%	34%	323%	10%	523%	635%	220%	73%	86%	83%	1%	65%	48%

Table 34: **The area (spha) of pea and bean* crops treated with pesticides in Northern Ireland, 1998-2018.**

	Survey Year										
Pesticide type	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016***	**2018**
Fungicides	314	138	302.7	676.7	19.0	8.0	296.0	.	133.2	425.7	190.8
Herbicides & desiccants	444	199	241.1	321.5	120.0	63.0	137.0	20.7	98.7	822.0	387.5
Insecticides											
Carbamates	*19*	*18.3*	*54.2*	.	.	.	.	.		.	.
Organochlorines	.	.	.	.	.	.	.	.		.	.
Organophosphates	*22*	.	.	.	.	.	.	.		.	.
Pyrethroids	*64*	.	*66.1*	*197.20*	*12.00*	*8.00*	*99.00*	.	44.4	146.5	52.8
All insecticides	105	18.3	120.3	197.2	12.00	8.00	99.00	.	44.4	146.5	52.8
Seed treatments	.	105	137.9	15.1	.	8	72	.	.	24.6	9.4
All pesticides	***863***	***459.9***	***802***	***1,210.5***	***151.0***	***88.0***	***604.0***	***20.7***	***276.3***	***1,418.8***	***640.5***
Area grown (ha)	199	273	197	212	763	55	85	10	54	295	160

Only beans recorded in 2016

Table 34 contd: **Comparison of the area (spha) of pea and bean* crops treated in Northern Ireland, 1998-2018.**

	Differences between:									
Pesticide type	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides	-39%	38%	-37%	-72%	904%	2285%	-36%	.	43%	-55%
Herbicides & desiccants	-13%	95%	61%	21%	223%	515%	183%	1770%	293%	-53%
Insecticides										
Carbamates	.	.	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	.	.	.	.	.	.	.	.	.
Pyrethroids	-18%	.	-20%	-73%	340%	560%	-47%	.	19%	-64%
All insecticides	-50%	188%	-56%	-73%	340%	560%	-47%	.	19%	-64%
Seed treatments	.	-0.91039	-0.9319	-0.3781	.	0.173844	-0.86957	.	.	-0.61827
All pesticides	***-26%***	***39%***	***-20%***	***-47%***	***324%***	***628%***	***6%***	***2991%***	***132%***	***-55%***
Area grown (ha)	-20%	-41%	-19%	-25%	-79%	191%	88%	1499%	196%	-46%

Table 35: **The quantity (tonnes) of pesticides applied to pea and bean* crops in Northern Ireland, 1998-2018.**

	Survey Year										
Pesticide type	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016***	**2018**
Fungicides	0.20	0.05	0.1055	0.540	0.009	0.006	0.180	.	0.025	0.237	0.147
Herbicides & desiccants	0.41	0.20	0.2545	0.197	0.098	0.062	0.132	0.018	0.078	0.572	0.295
Insecticides											
Carbamates	*0.003*	*0.005*	*0.003*	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*0.002*	.	.	.	.	.	.	.	.	.	.
Pyrethroids	*0.001*	.	*0.0002*	*0.001*	*0.0001*	*<0.0001*	*<0.0001*	.	0.0003	0.0008	0.0002
All insecticides	0.006	0.005	0.0032	0.001	0.0001	<0.0001	<0.0001	.	0.0003	0.0010	0.0002
Seed treatments	.	0.112	0.015	0.002	.	0.005	0.018	.	.	0.006	0.001
All pesticides	***0.614***	***0.367***	***0.3782***	***0.740***	***0.107***	***0.073***	***0.334***	***0.018***	***0.103***	***0.816***	***0.443***
Area grown (ha)	199	273	197	212	83	55	85	10	54	295	160

Only beans recorded in 2016

Table 35 contd: **Comparison of quantity (tonnes) of pesticides applied to pea and bean* crops in Northern Ireland, 1998-2018.**

	Differences between:									
Pesticide type	**2016- 98**	**2016- 00**	**2016- 02**	**2016- 04**	**2016- 06**	**2016- 08**	**2016- 10**	**2016- 12**	**2016- 14**	**2016- 15**
Fungicides	-26%	174%	39%	-73%	1533%	2350%	-18%	.	490%	-38%
Herbicides & desiccants	-28%	50%	16%	50%	201%	376%	123%	1536%	278%	-48%
Insecticides										
Carbamates	.	.	.	.	.	.	.	.	.	.
Organochlorines	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	.	.	.	.	.	.	.	.	.
Pyrethroids	-80%	.	0%	-80%	100%	.	.	.	-39%	-76%
All insecticides	-98%	-98%	-97%	-90%	0%	.	.	.	-70%	-90%
Seed treatments	.	-99%	-93%	-56%	.	-80%	-94%	.	.	-83%
All pesticides	***-28%***	***21%***	***17%***	***-40%***	***314%***	***507%***	***33%***	***2357%***	***329%***	***-46%***
Area grown (ha)	-20%	-41%	-19%	-24%	93%	191%	88%	1500%	196%	-46%

Table 36: **The area (spha) of potato crops treated with pesticides in Northern Ireland, 1990-2018.**

	Survey Year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018**
Fungicides	68,384	68,178	72,369	64,727	75,933	.	66,810	52,149	45,397	52,189	55,289	50,685	37,541	44,407	50,496
Herbicides & desiccants	21,146	21,819	15,927	17,663	16,616	.	14,852	19,839	15,971	19,843	17,753	17,356	13,239	14,499	15,192
Insecticides															
Carbamates	.	*23*	.	*28*	.	.	*357*	*473*	*30*	*431*	.	98		*191*	.
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	253	.	.
Organophosphates	*308*	*28*	*88*	*612*	*123*	.	*125*	*365*	*55*	.	.	.		.	.
Pyrethroids	*512*	.	.	*656*	*353*	.	*1,340*	*2,408*	*1,553*	*913*	*1,094*	*438*	*1,074*	*628*	*1,188*
Azomethine	.	.	.	.	.	.	.	*673*	*71*	.	.	*272*		.	.
Neonicotinoid	.	.	.	.	.	.	.	.	*96*	.	*78*	*274*		*609*	*291*
Feeding blocker	.	.	.	.	.	.	.	.	.	*252*	*77*	*66*	*101*	.	.
Mixed Formulations	.	.	.	.	.	.	.	*581*	*96*	.	*129*	.		.	.
Unknown insecticides	.	.	*14*	.	*20*	.	.	*66*	.	.	.	.		*80*	.
All insecticides	820	51	102	1,295	492	.	1,823	4,565	1,900	1,595	1,379	1,369	1,428	1,508	1,479
Molluscicides	.	.	.	195	472	.	1,581	114	930	664	491	2,906	479	1,998	1,233
Growth regulators	233	186	134	137	128	.	86	.	.	.	.	.	.	.	.
Mixed formulations	.	.	.	.	.	.	72	.	.	23	56	10	93	.	31
Seed treatments	*	3,738	2,420	3,314	4,017	.	3,071	3,679	2,756	3,158	2,117	2,666	1,632	1,797	2,377
All pesticides	***90,583***	***93,972***	***90,952***	***87,330***	***97,658***	***.***	***88,295***	***80,347***	***66,954***	***77,473***	***77,085***	***74,992***	***54,413***	***64,209***	***70,809***
Area grown (ha)	11,835	11,064	8,404	8,488	7,513	.	6,708	6,068	5,118	5,501	4,940	4,150	3,765	3,908	3,702

**** Seed treatments not recorded***

Table 36 contd: **Comparison of the area (spha) of potato crops treated in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides		-26%	-30%	-22%	-33%	.	-24%	-3%	11%	-3%	-9%	0%	35%	14%
Herbicides & desiccants	-28%	-30%	-5%	-14%	-9%	.	2%	-23%	-5%	-23%	-14%	-12%	15%	5%
Insecticides														
Carbamates	.	-100%	.	-100%	.	.	-100%	-100%	-100%	-100%	.	-100%	.	-100%
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pyrethroids	132%	.	.	81%	237%	.	-11%	-51%	-24%	30%	9%	171%	11%	89%
Azomethine	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Neonicotinoid	.	.	.	.	.	.	.	.	203%	.	273%	6%	.	-52%
Feeding blocker	.	.	.	.	.	.	.	.	.	.	.	-100%	.	.
Mixed Formulations						.						.	.	.
Unknown insecticides						.						.	.	-100%
All insecticides	74%	2701%	1307%	10%	190%	.	-22%	-69%	-25%	-10%	4%	6%	0%	2%
Molluscicides	.	.	.	925%	324%	.	26%	1653%	115%	201%	-31%	317%	0%	62%
Growth regulators	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mixed formulations	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Seed treatments	.	-36%	-2%	-28%	-41%	.	-23%	-35%	-14%	-25%	12%	-11%	46%	32%
All pesticides	***-22%***	***-25%***	***-22%***	***-19%***	***-27%***	***.***	***-20%***	***-12%***	***6%***	***-9%***	***-8%***	***-6%***	***30%***	***10%***
Area grown (ha)	-69%	-67%	-56%	-56%	-51%	.	-45%	-39%	-28%	-33%	-25%	-11%	-2%	-5%

Table 37: **The quantity (tonnes) of pesticides applied to potato crops in Northern Ireland, 1990-2018.**

	Survey year														
Pesticide type	**1990**	**1992**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**2014**	**2016**	**2018**
Fungicides	82.07	83.28	76.00	69.41	67.43	.	69.90	51.33	46.93	45.02	39.80	27.40	22.18	27.30	32.50
Herbicides & desiccants	197.20	171.75	97.28	293.26	290.23	.	354.01	211.18	101.78	12.22	11.70	10.59	7.78	7.26	10.79
Insecticides															
Carbamates	.	*<0.01*	.	*<0.01*	.	.	0.05	*0.07*	*0.004*	*0.060*	.	*0.01376*		*0.02672*	*0.00000*
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	*0.22763*	.	.
Organophosphates	*0.17*	*0.10*	*0.28*	*0.26*	0.12	.	0.02	*0.12*	*0.164*	.	.	.		.	.
Pyrethroids	*0.01*	.	.	*0.02*	*<0.01*	.	*0.01*	*0.01*	*0.006*	*0.007*	*0.010*	*0.004*	*0.006*	*0.01157*	*0.01790*
Azomethine	.	.	.	.	.	.	.	*0.102*	*0.005*	.	.	*0.043*	.	.	.
Neonicotinoid	.	.	.	.	.	.	.	.	*0.010*	.	*0.006*	*0.021*	.	*0.04611*	*0.03330*
Feeding blocker	.	.	.	.	.	.	.	.	.	*0.020*	*0.006*	*0.005*	*0.008*	.	.
Mixed Formulations	.	.	.	.	.	.	.	*0.051*	*0.015*	.	*0.014*	.	.	.	.
Unknown insecticides	.	.	.	.	.	.	.	*0.003*	.	.	.	.	.	0.01204	0.00000
All insecticides	0.17	0.10	0.28	0.28	0.13	.	0.08	0.36	0.20	0.087	0.04	0.09	0.24	0.10	0.05
Molluscicides	.	.	.	0.04	0.10	.	0.26	0.02	0.23	0.07	0.09	0.24	0.04	0.30	0.21
Growth regulators	0.51	0.41	0.29	0.30	0.28	.	0.13	.	.	.	.	.		.	.
Mixed formulations	.	.	.	.	.	.	*0.17*	.	.	0.07	0.17	0.03	0.28	.	0.04
Seed treatments	*	2.71	1.20	0.61	*1.99*	.	*1.22*	0.90	2.60	0.73	0.70	1.11	0.74	1.80	0.64
All pesticides	***279.95***	***258.25***	***175.06***	***363.89***	***360.16***	***.***	***425.84***	***263.78***	***151.75***	***58.20***	***52.48***	***39.46***	***31.25***	***36.75***	***44.22***
Area grown (ha)	11,835	11,064	8,404	8,488	7,513	.	6,708	6,068	5,118	5,501	4,940	4,150	3,765	3,908	3,702

**** Seed treatments not recorded***

Table 37 contd: **Comparison of quantity (tonnes) of pesticides applied to potato crops in Northern Ireland, 1990-2018.**

	Differences between:													
Pesticide type	**2018- 90**	**2018- 92**	**2018- 94**	**2018- 96**	**2018- 98**	**2018- 00**	**2018- 02**	**2018- 04**	**2018- 06**	**2018- 08**	**2018- 10**	**2018- 12**	**2018- 14**	**2018-16**
Fungicides		-61%	-57%	-53%	-52%	.	-54%	-37%	-31%	-28%	-18%	19%	47%	19%
Herbicides & desiccants	-95%	-94%	-89%	-96%	-96%	.	-97%	-95%	-89%	-12%	-8%	2%	39%	49%
Insecticides														
Carbamates	.	.	.	.	.	.	-100%	-100%	-100%	-100%	.	-100%	.	-100%
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.	-100%	.
Organophosphates	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pyrethroids	79%	.	.	-11%	.	.	116%	79%	198%	156%	79%	327%	186%	55%
Azomethine	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Neonicotinoid	.	.	.	.	.	.	.	.	233%	.	455%	58%	.	-28%
Feeding blocker	.	.	.	.	.	.	.	.	.	.	.	.	-100%	.
Mixed Formulations	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Unknown insecticides	.	.	.	.	.	.	.	-100%	.	.	.	.	.	-100%
All insecticides	-70%	-49%	-82%	-82%	-61%	.	-32%	-86%	-75%	-41%	42%	-42%	-79%	-47%
Molluscicides	.	.	.	413%	110%	.	-22%	1181%	-10%	177%	128%	-14%	435%	-32%
Growth regulators	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mixed formulations	.	.	.	.	.	.	.	.	.	.	.	-100%	.	.
Seed treatments	.	-76%	-47%	5%	-68%	.	-47%	-29%	-75%	-12%	-8%	-42%	-13%	-64%
All pesticides	***-84%***	***-83%***	***-75%***	***-88%***	***-88%***	***.***	***-90%***	***-83%***	***-71%***	***-24%***	***-16%***	***12%***	***41%***	***20%***
Area grown (ha)	-69%	-67%	-56%	-56%	-51%	.	-45%	-39%	-28%	-33%	-25%	-11%	-2%	-5%

Table 38: **Estimated quantity (tonnes) of potato crops stored regionally in Northern Ireland, 2018.**

Location of holding	Maincrop	Seed	Total
Antrim	6,242	700	6,942
Down	22,798	3,785	26,583
Londonderry	7,159	4,550	11,709
Tyrone	420	507	927
Northern Ireland	***36,619***	***9,542***	***46,161***

Table 39: **Type of storage building and quanity (tonnes) of potatoes stored in Northern Ireland, 2018.**

Type of storage building	Ware	Seed	Total
Barn store (unventilated)	2,146	.	2,146
Barn store (ventilated)	16,588	2258	18,846
Cold Store/Refrigerated	17,685	7284	24,969
Controlled atmosphere (unscrubbed)	200	.	200
All barn stores	***36,619***	***9,542***	***46,161***

Table 40: Comparison of ware potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2018.

	Ware (early and maincrop) potatoes												
	1992	1994	1996	1998	2002	2004	2006	2008	2010	2012	2014	2016	2018
Quantity stored (t)	139,570	84,868	135,933	112,675	44,322	122,348	92,914	60,855	94,771	56,073	.	60,512	36,619
Quantity treated (tt)	16,289	11,630	19,022	5,899	9,024	3,099	.	4680	9644	3,183	.	609	.
Quantity of pesticides (kg)	1,998	1,001	750	227	439	148	.	173	203	78	.	17	.
Quantity untreated (t)	123,281	73,238	116,910	106,777	35,298	119,249	92,914	56,175	85,127	52,889	.	59,903	36,619

Table 41: Comparison of seed potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2018.

	Seed potatoes												
	1992	1994	1996	1998	2002	2004	2006	2008	2010	2012	2014	2016	2018
Quantity stored (t)	33,420	24,238	39,290	39,809	16,032	33,321	24,640	5,138	16,256	12,732	.	6,711	9,542
Quantity treated (tt)	7,536	14,950	12,915	5,628	4,029	673	76	.	.	4,951	.	2,043	.
Quantity of pesticides (kg)	1,052	851	480	896	48	5	0.76	.	.	139	.	20	.
Quantity untreated (t)	27,033	9,288	26,652	34,181	12,003	32,648	24,564	.	.	7,781	.	4,668	9,542

Table 42: Comparison of all potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2018.

	All potatoes												
	1992	1994	1996	1998	2002	2004	2006	2008	2010	2012	2014	2016	2018
Quantity stored (t)	191,019	119,447	190,392	162,608	60,353	155,669	117,554	70,794	111,028	68,804	41,336	67,283	46,161
Quantity treated (tt)	23,825	26,580	38,624	14,051	13,053	3,772	76	4,680	9,644	8,134	.	2,652	.
Quantity of pesticides (kg)	3,050	1,852	1,605	1,245	488	154	1	173	203	218	.	37	.
Quantity untreated (t)	168,344	92,868	152,027	148,557	47,300	151,897	117,478	66,114	101,384	60,670	41,336	64,631	46,161

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Northern Ireland Pesticide Usage Survey Published Reports Appendix 1

Report No.	Report title	ISBN
99	Grassland & Fodder Crops 1989	1-855 27 079 X
105	Arable Crops 1990	1-855 27 130 3
106	Soft Fruit Crops 1990	1-855 27 149 4
109	Vegetable Crops 1991	1-855 27 137 0
110	Protected Crops 1991 (edible & ornamental)	1-855 27 283 0
111	Mushroom Crops 1991	1-855 27 150 8
117	Arable Crops 1992	1-855 27 193 1
118	Top Fruit Crops 1992	1-855 27 194 X
124	Grassland & Fodder crops 1993	1-855 27 221 0
131	Forestry 1993	1-855 27 282 2
132	Arable Crops 1994	1-855 27 314 4
139	Vegetable Crops 1995	1-855 27 346 2
140	Mushroom Crops 1995	1-855 27 347 0
146	Arable Crops 1996	1-855 27 469 8
147	Top fruit 1996	1-855 27 470 1
156	Grassland & Fodder Crops 1997	1-855 27 506 6
157	Sheep Treatments 1997	1-855 27 425 6
167	Soft Fruit 1998	1-855 27 540 6
168	Arable Crops 1998	1-855 27 536 8
169	Vegetable Crops 1999	1-855 27 561 9
170	Mushroom Crops 1999	1-855 27 549 X
177	Arable Crops 2000	1-855 27 670 4
178	Top Fruit Crops 2002	1-855 27 618 6
194	Arable Crops 2002	1-855 27 674 7
198	Grassland & Fodder Crops 2003	1-855 27 797 2
199	Hardy Nursery Stock Crops 2003	1-855 27 789 1
201	Protected Ornamental Crops 2003	1-855 27 739 5
206	Arable Crops 2004	1-855 27 833 2
207	Vegetable crops 2004	1-855 27 869 3

Report No.	Report title	ISBN
208	Grassland & Fodder Crops 2005	1-855 27 998 8
209	Sheep Treatments 2005	1-855 27 999 5
216	Arable Crops 2006	1-848 07 035 6
217	Top Fruit Crops 2006	1-848 07 019 6
218	Soft Fruit Crops 2006	1-848 07 036 3
222	Vegetable Crops 2007	1-848 07 062 2
223	Mushroom Crops 2007	1 848 07 061 5
230	Arable Crops 2008	1 848 07 135 3
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249	Top Fruit Crops 2012	1-848 07 403 3
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