

# PESTICIDE USAGE IN NORTHERN IRELAND

**Survey Report 299**

## **Northern Ireland Arable Crops 2020**

A National Statistics Publication



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# PESTICIDE USAGE SURVEY REPORT 299

## ARABLE CROPS IN NORTHERN IRELAND 2020

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*Department of Agriculture, Environment and Rural Affairs*

<https://www.daera-ni.gov.uk/articles/departmental-responsibilities-regarding-pesticides>

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**The County Regions of Northern Ireland**

## SUMMARY

This is the sixteenth survey of pesticide usage practices on arable crops in Northern Ireland. Information on all aspects of pesticide usage was collected from 90 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 ([Table 1](#)).

The total area of arable crops grown in Northern Ireland in 2020 was 36,074 hectares ([Table 2](#)). This represented an increase of 5% compared to that recorded in 2018 but a 42% reduction compared to that recorded in the first pesticide usage survey of the arable sector, in 1990. Approximately 50% of the arable cropping area in 2020 was in County Down, 18% in County Londonderry, 15% in County Antrim, 12% in County Armagh and 5% in County Tyrone. There was no significant area of arable cropping in County Fermanagh.

A total of 307 products, comprising 105 active substances were recorded in use on field crops in this survey compared with 344 products and 134 active substances used in 2018. No fallow, organic, undersown or cover crops were recorded during this survey period. Spring barley, winter barley and winter wheat collectively accounted for 87% of all arable crops grown in Northern Ireland in 2020. The total weight of pesticides applied to arable crops in 2020 decreased from 122 tonnes of active substances to 107 tonnes, representing a 12% decrease from both 2018 and 2016.

Spring barley represented 35% of the area of crops grown ([Table 3](#)) and accounted for 25% of the total area of arable crops treated ([Table 5](#)) and 18% of the weight of pesticides applied ([Table 6](#)). Since 2012, the area of spring wheat crops grown decreased by 36% whilst during the same period the area of winter barley crops grown increased by 46%. Winter wheat accounted for 24% of the area treated with fungicides and 15% of the weight of fungicides applied, whereas spring wheat accounted for <1% of both the fungicide treated area and weight of fungicides applied. Compared with 2018, fungicide applications decreased by 8%, 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. The usage of chlorothalonil on UK crops and EU member states was banned in 2019, with a use up period of May 2020, after which it was illegal to store and use CTL.

Herbicide and desiccant applications decreased by 10%. Glyphosate was the most frequently applied, accounting for 18% of all herbicide and desiccant applications and 42% of the weight applied.

Insecticide applications increased by 11% when compared with 2018 and the weight applied increased by 4%. The pyrethroid insecticides esfenvalerate and lambda-cyhalothrin were used extensively on spring barley, accounting for 38% and 54% of the area treated and 12% and 22% of the weight applied, respectively. Conversely, pymetrozine, which accounted for 4% of the insecticide treated-area represented 50% of the weight applied. Some minor use of chlorpyrifos has been recorded on winter barley crops for general insect control, though, it should be noted that, from 31<sup>st</sup> March 2016, all uses have been revoked except for treatment of brassica crops in peat blocks via gantry-mounted sprayers.

Molluscicide applications increased significantly since the previous reporting period, increasing from 2,002 spray hectares in 2018 to 5,518 spray hectares in 2020, mainly due to an increase of applications to maincrop potatoes. Molluscicide applications to these crops accounted for 67% of the area treated with this pesticide group, with 'Slugs' given as the only reason for use. Ferric phosphate was the only molluscicide recorded in 2020.

Growth regulator applications increased by 2% when compared to 2018. The principal growth regulators used 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 86% of both the area treated with these active substances and the weight applied.

Seed treatment applications increased by 18%, though the weight applied decreased by 85% when compared with 2018. This was primarily due to difficulties determining the weight of 'unknown seed treatments' which accounted for 35% of the seed-treated area. In 2018, the combined insecticide and fungicide seed dressing clothianidin/prothioconazole was the most frequently used seed treatment, though it was withdrawn from use in December 2018. In 2020, the phenylpyrrole fungicide seed treatment, fludioxonil, was the most frequently used fungicide, accounting for 45% of the seed-treated area and 38% of the weight of seed treatments applied.

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 10% of the area of arable crops grown in Northern Ireland in 2020, accounting for 23% of the total pesticide-treated area ([Tables 3 & 5](#)). However, the weight

of pesticides applied to potato crops represented 37% of the total weight of pesticides used on all arable crops ([Table 6](#)). The total area of potatoes grown comprised 2% early, 11% seed and 87% maincrop potatoes. Potato crops accounted for 34% of the area of arable crops treated with fungicides and received 57% of the total weight of fungicides applied. Furthermore, applications of herbicides and desiccants to potato crops represented 18% of both the area treated and the weight applied of this pesticide group, respectively. Potato crops received more pesticide treatments than any other arable crop ([Table 7](#)).

Unfortunately, owing to restrictions imposed by the Covid-19 pandemic, data collected for pesticide application to potatoes, particularly in County Londonderry, was unreliable and insufficient to determine overall estimate for pesticide usage on this crop at a national level. Consequently, latitude should be exercised during data interpretation. In previous years, data relating to post-harvest potato storage methods and quantities were collected. Again, due to restrictions imposed by the Covid-19 pandemic, it has not been possible to collect these data with any reliability and they have therefore been omitted from this report. Comparison data for potato storage from previous years is included in [Tables 36-38](#).

The full list of active substances recorded in 2020 are in [Tables 8 & 9](#). However, a comparison list of the active substances which were unique to both the 2018 and 2020 surveys are available in [Table 39](#) (active substances, both as individual actives or in new formulations, recorded in arable crops in Northern Ireland for the first time, are marked with \*).

## 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. 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, 2020 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. Please also note previous comments regarding limitations with collection and analysis of data on pesticide use on potato crops in 2020.
- 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.
- 'Burn-off' is a term used to describe the application of pre-harvest herbicides, also referred to as 'Desiccation'.
- 'Sealer' refers to pre-emergent herbicides which prevent weed seed germination.
- Log<sup>10</sup> 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://secure.fera.defra.gov.uk/pusstats/surveys/)

[\(https://www.sasa.gov.uk/pesticides/pesticide-usage/pesticide-usage-survey-reports\)](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), 2016 (Lavery *et al.*, 2017) and 2018 (Lavery *et al.*, 2019). 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 were 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 2019 (Anon., 2020) and also Basic Farm Payment Scheme data (unpublished). However, due to sampling procedures and the distribution of arable crops in Northern Ireland, no holdings were contacted in County Fermanagh. The arable crops surveyed comprised the following: barley; wheat; oats; oilseed rape; 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 90 holdings, which were contacted between March and June 2021.

The Covid-19 pandemic and resulting restrictions that commenced in early 2020 have severely impacted our capability to conduct the survey programme. In particular, we have been unable to complete personal interviews, relying on telephone or email correspondence, which is not always convenient to participants. This has resulted in incomplete or missing data making trends and comparisons over time difficult. However, we are pleased that despite these drawbacks, we are able to present the report in a timely manner.

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 2019 (Anon., 2020).

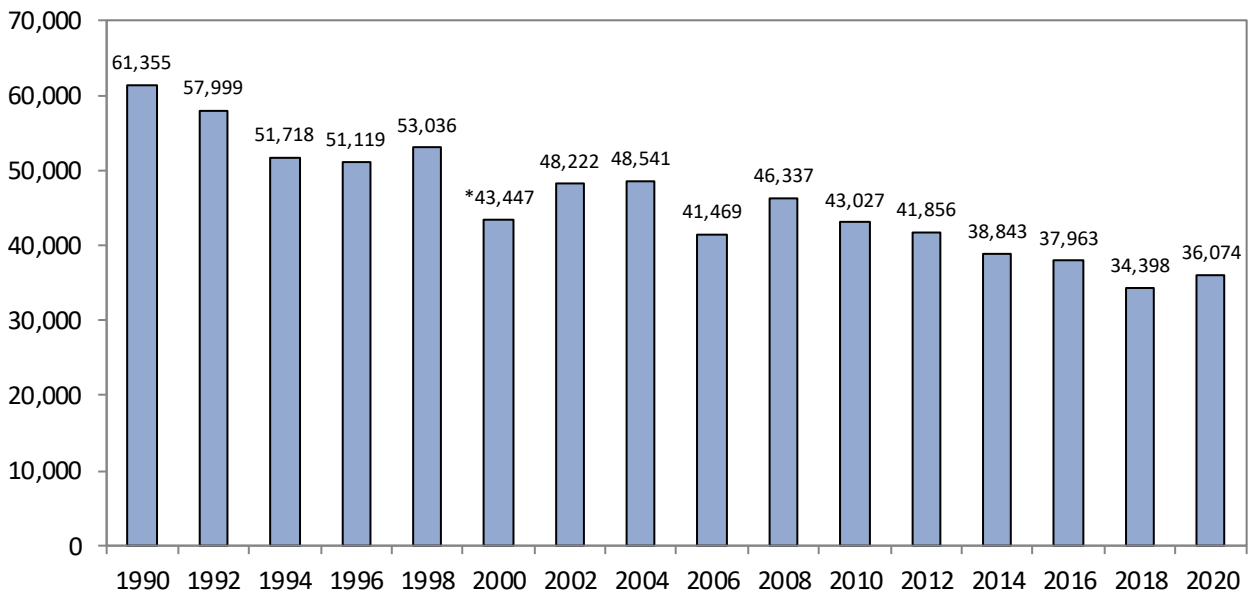
The total number of farms in each size group and the number of farms sampled are shown in [Table 1](#).

The collected data were entered using SQL, a relational database programme. Validated data were downloaded for analysis using IBM SPSS Statistics Version 25 software.

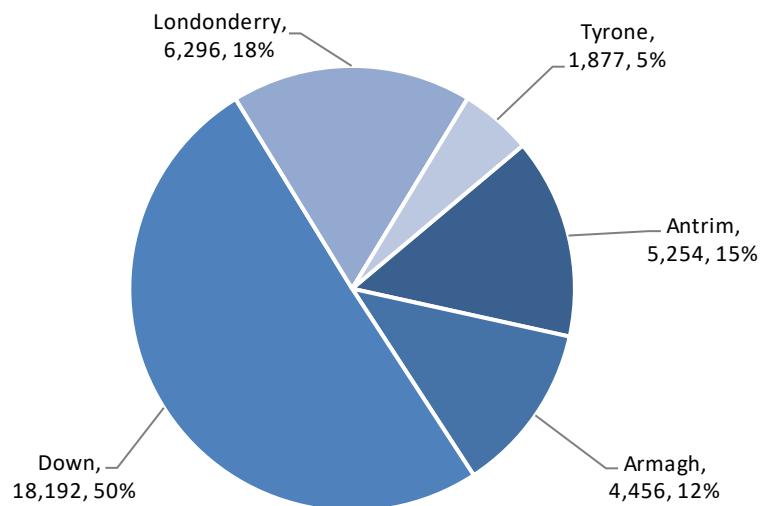


## Crops

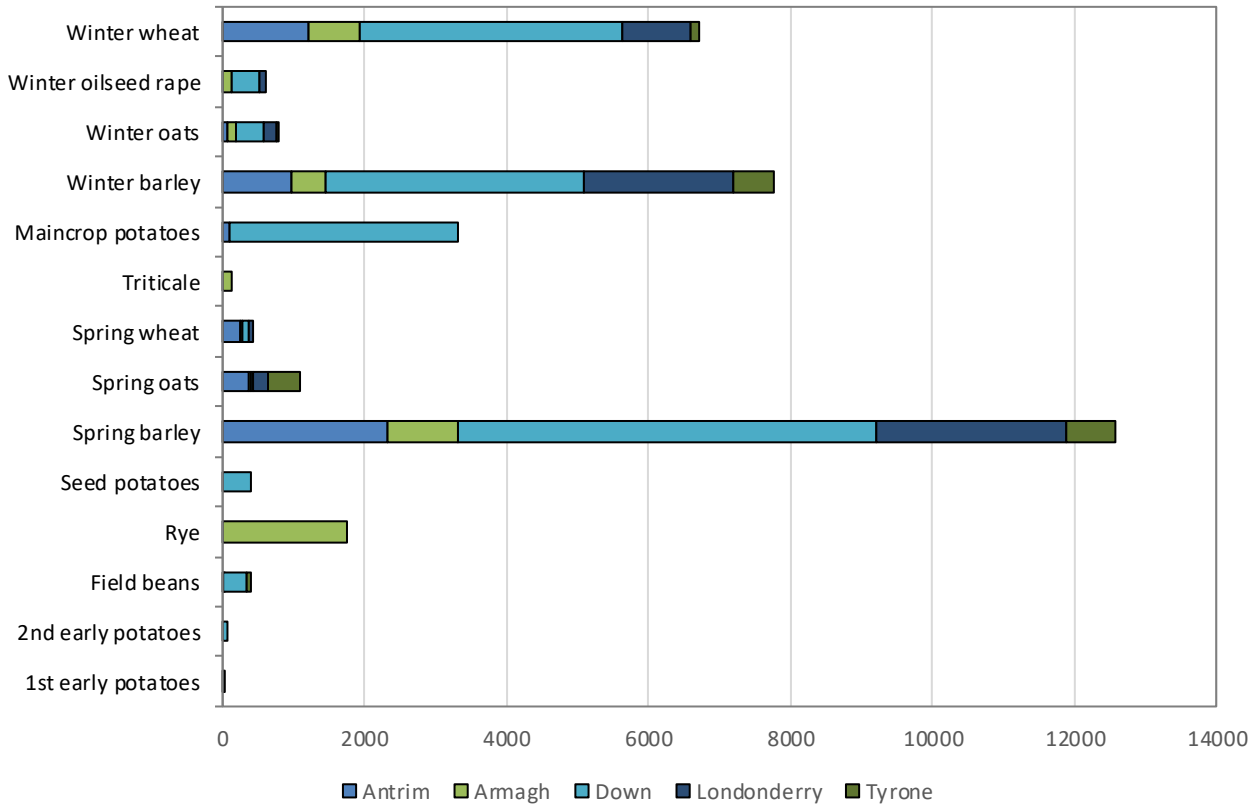
Information was collected on spring barley, winter barley, spring wheat, winter wheat, spring oats, winter oats, triticale, rye, winter oilseed rape, field beans, early potatoes, maincrop potatoes and seed potatoes ([Table 2](#)). Data on pesticide usage on these crops were collected from 326 crops surveyed on 90 holdings. This accounted for 31% of the total area of arable crops in Northern Ireland in 2020.



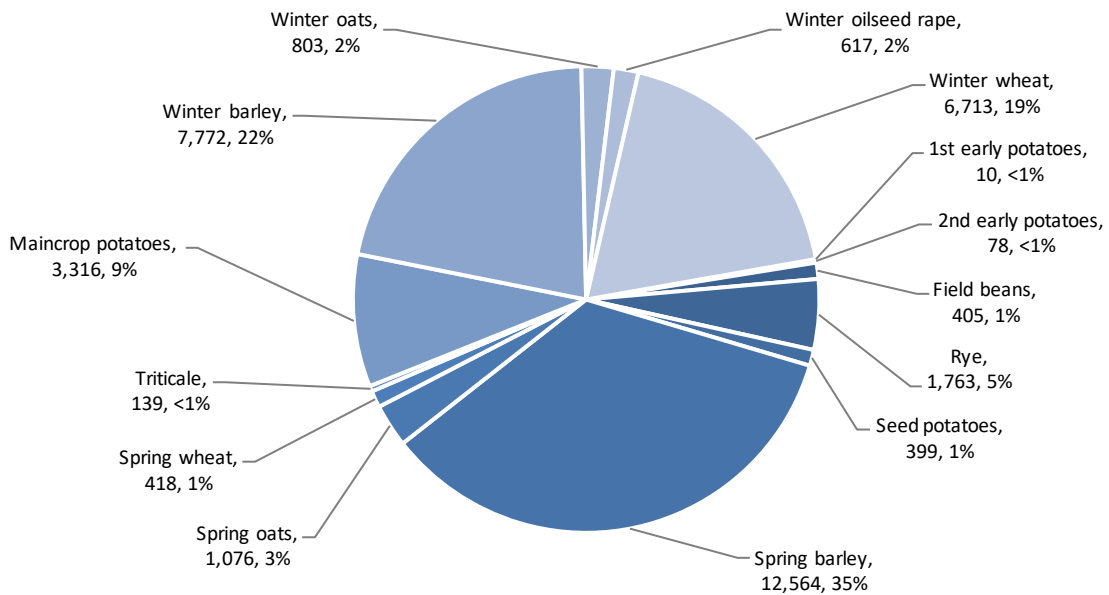
**Figure 1:** Total area (ha) of arable crops grown in Northern Ireland from 1990 - 2020. \*Potatoes not included in 2000 data.



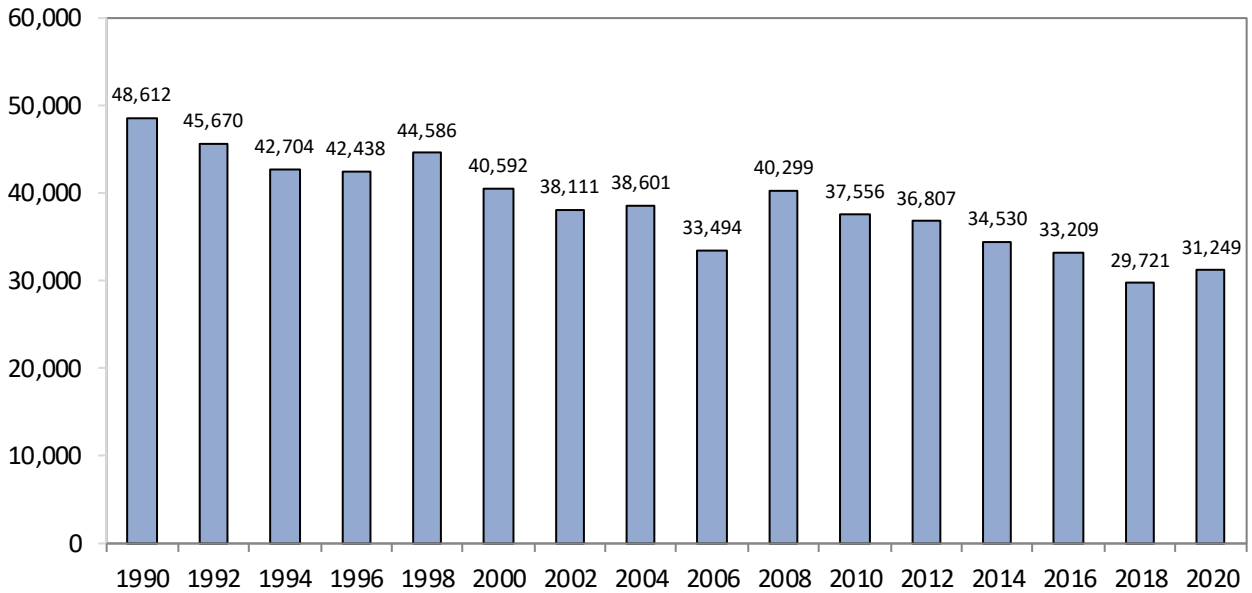
**Figure 2:** Regional distribution of arable crops grown in Northern Ireland (ha), 2020.



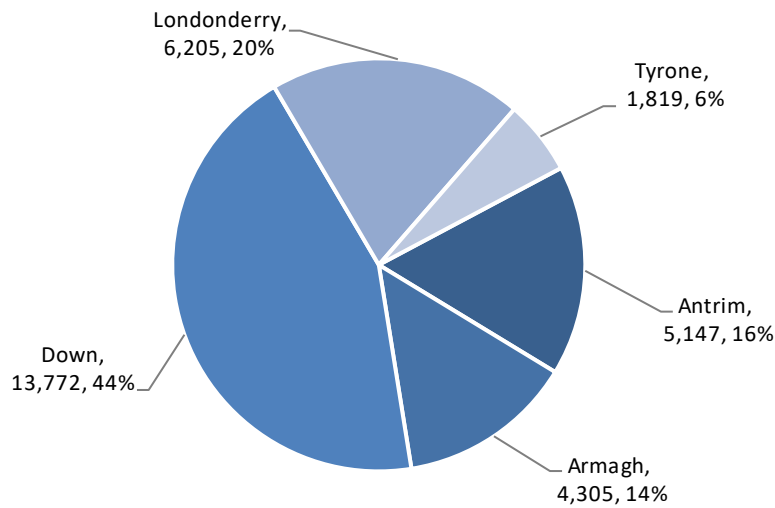
**Figure 3:** Regional distribution (ha) of individual arable crops grown in Northern Ireland, 2020.



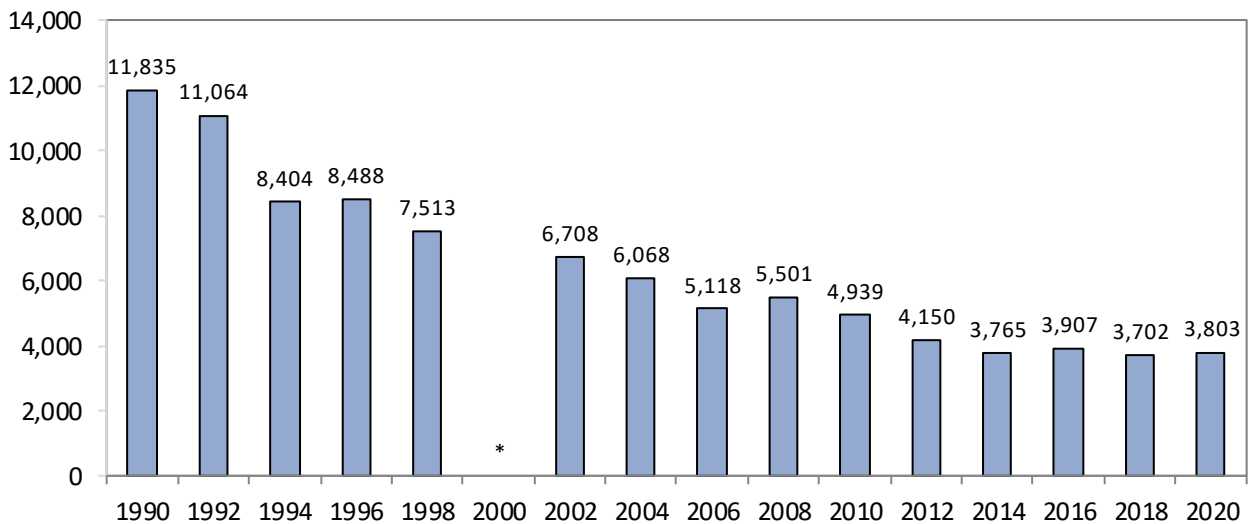
**Figure 4:** Areas (ha) of individual crops grown in Northern Ireland, 2020.



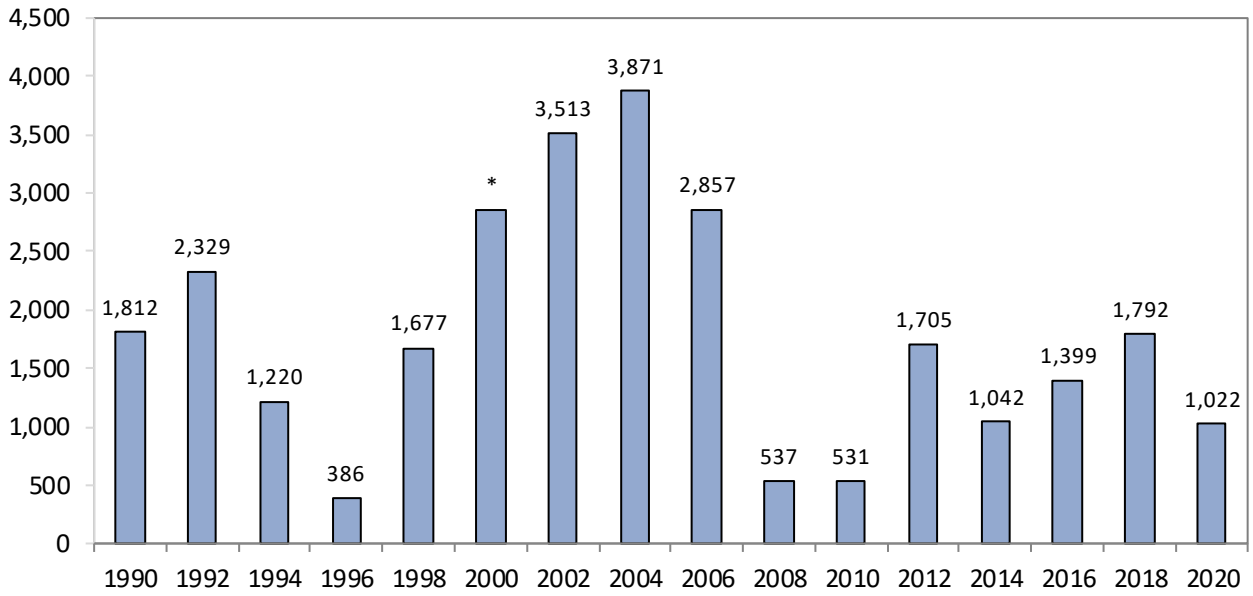
**Figure 5:** Total area (ha) of cereal crops grown in Northern Ireland from 1990 - 2020.



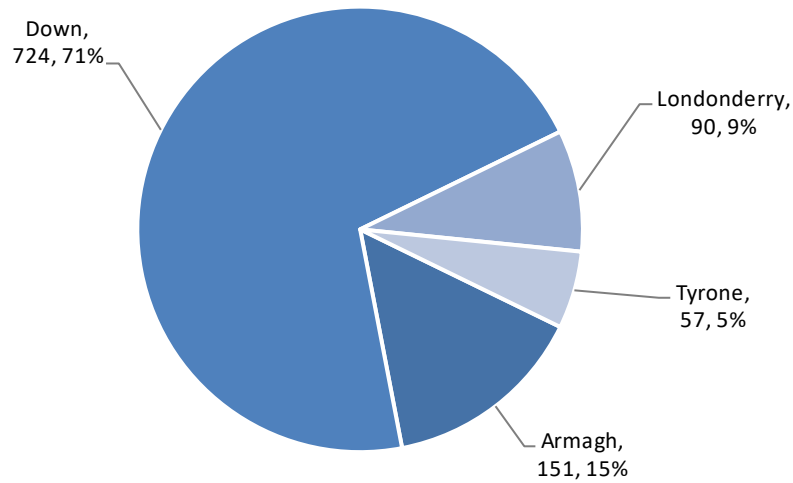
**Figure 6:** Regional distribution (ha) of cereal crops grown in Northern Ireland, 2020.



**Figure 7:** Total area (ha) of potato crops grown in Northern Ireland from 1990 - 2020. \*No data available for 2000.

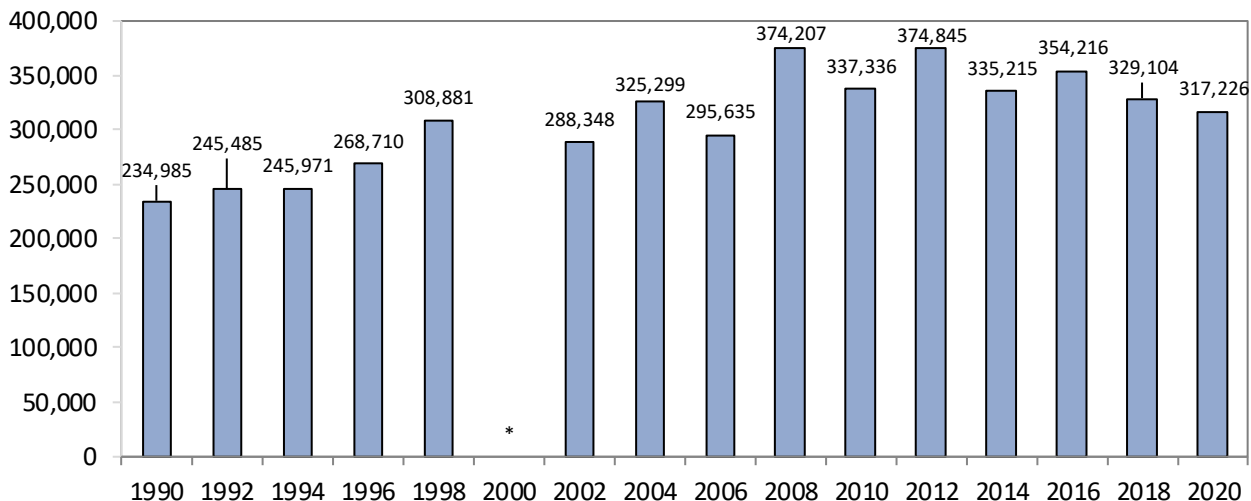


**Figure 8:** Total area (ha) of other arable crops grown in Northern Ireland from 1990-2020.

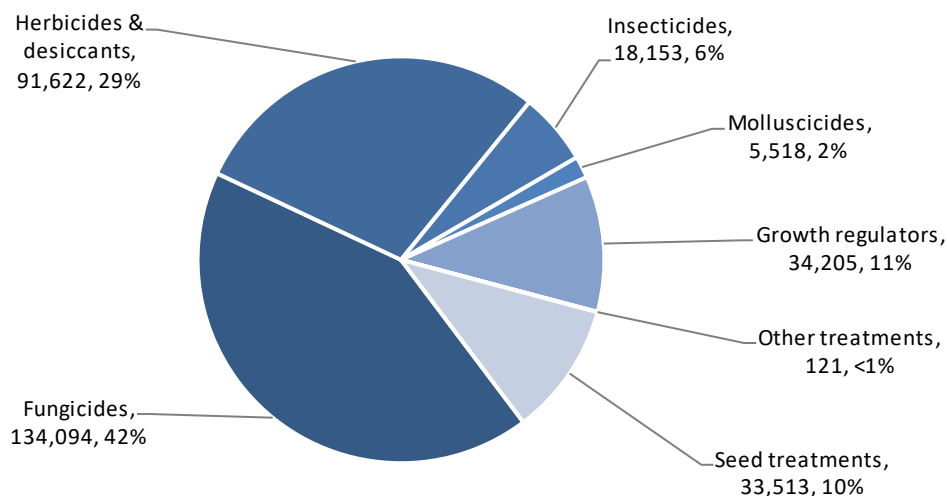


**Figure 9:** Regional distribution (ha) of other arable crops (beans, oilseed rape) grown in Northern Ireland, 2020.

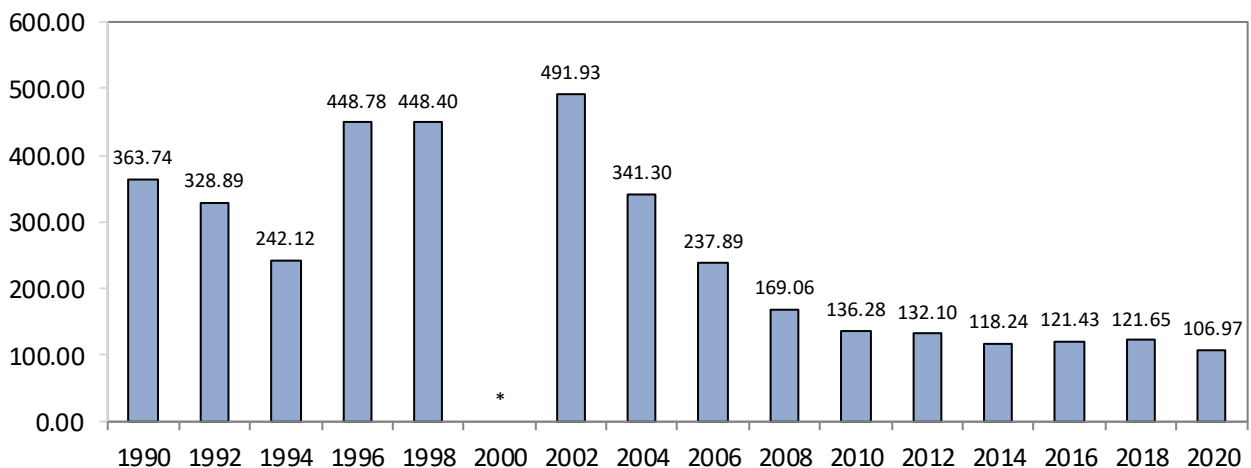
## Pesticide usage on crops



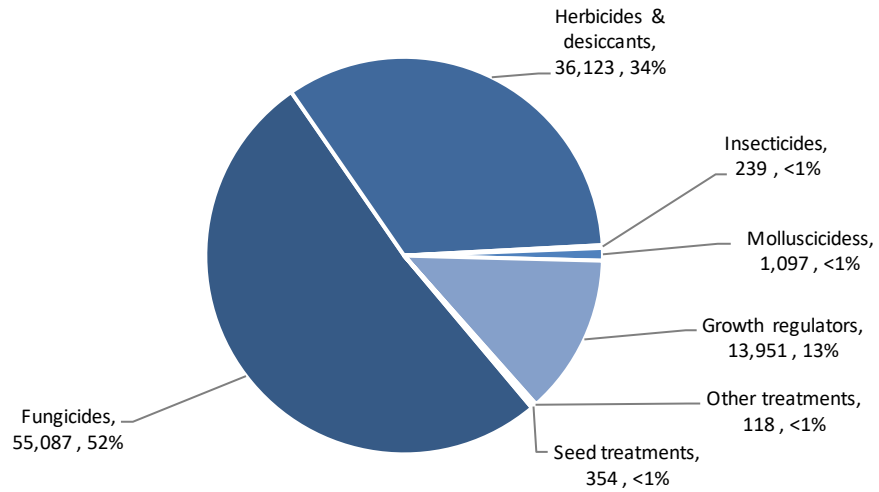
**Figure 10:** Total areas (spha) of arable crops treated in Northern Ireland from 1990-2020. \*Excluded as no data for potato treated-area.



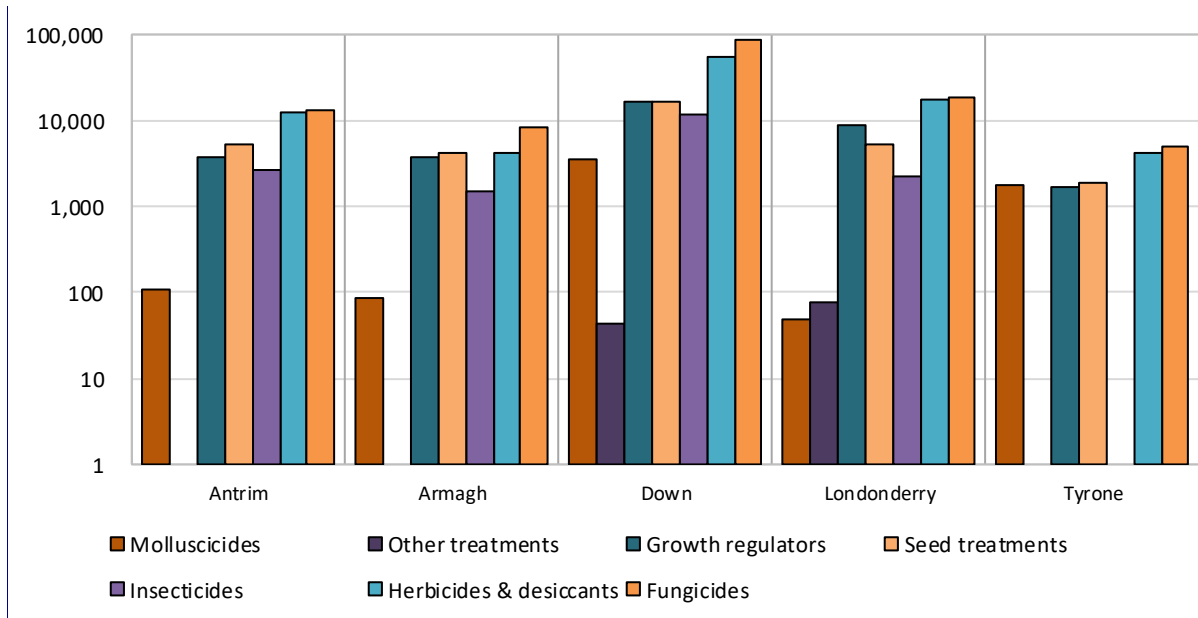
**Figure 11:** Pesticide usage (spha) on arable crops in Northern Ireland, 2020.



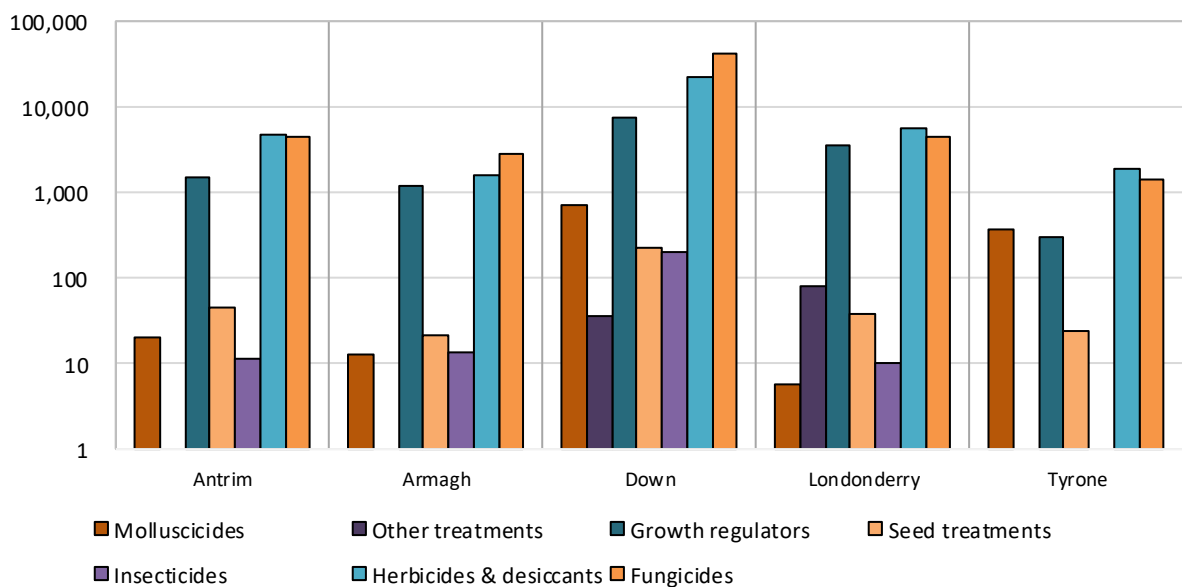
**Figure 12:** Total weight (t) of pesticides applied to arable crops in Northern Ireland from 1990-2020. \*Excluded as no data available for pesticides applied to potatoes.



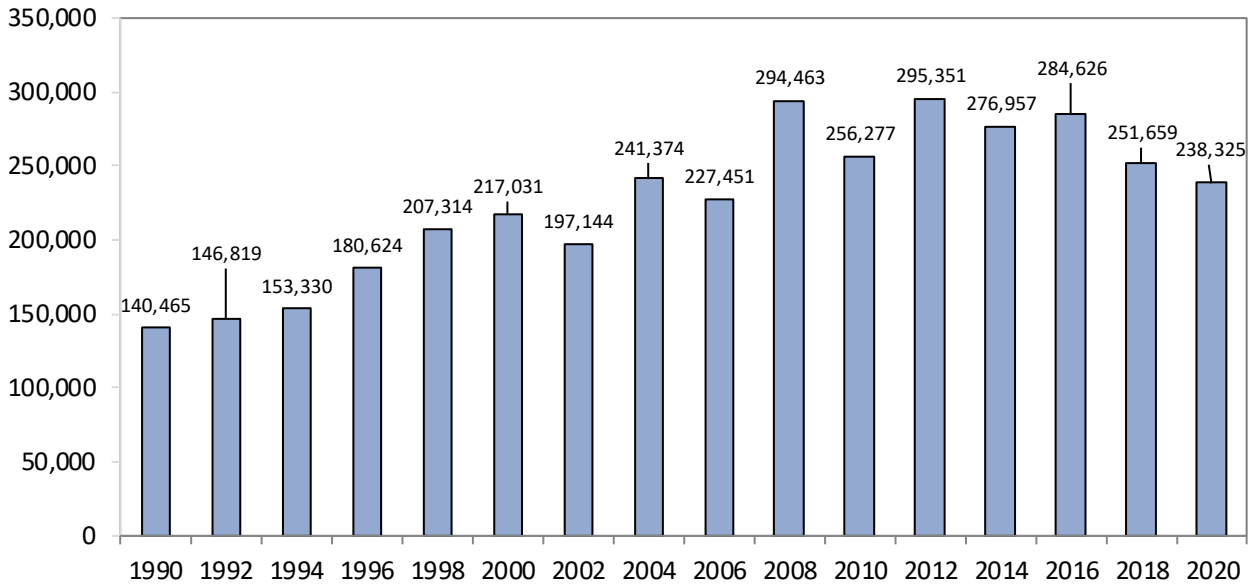
**Figure 13:** Weight (kg) of pesticides applied to arable crops in Northern Ireland, 2020.



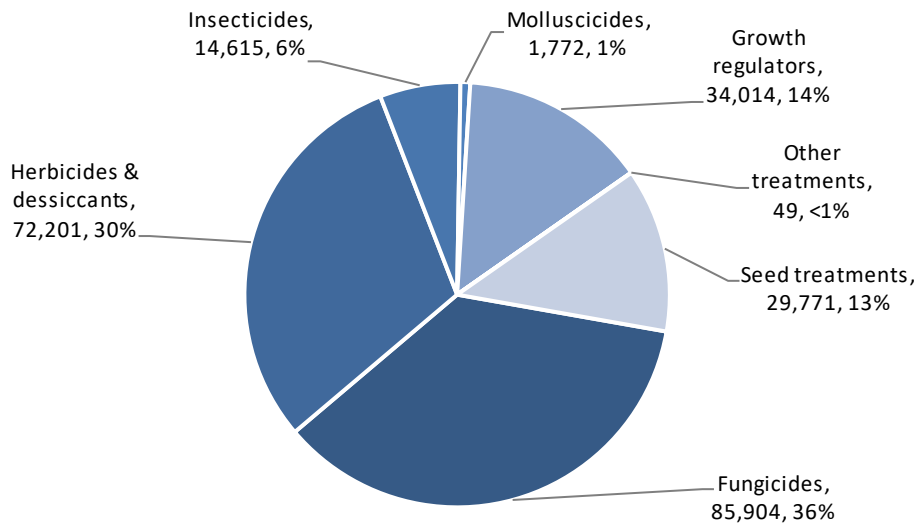
**Figure 14:** Area (spha ( $\log^{10}$ )) of arable crops treated with each pesticide type in Northern Ireland, 2020, by region.



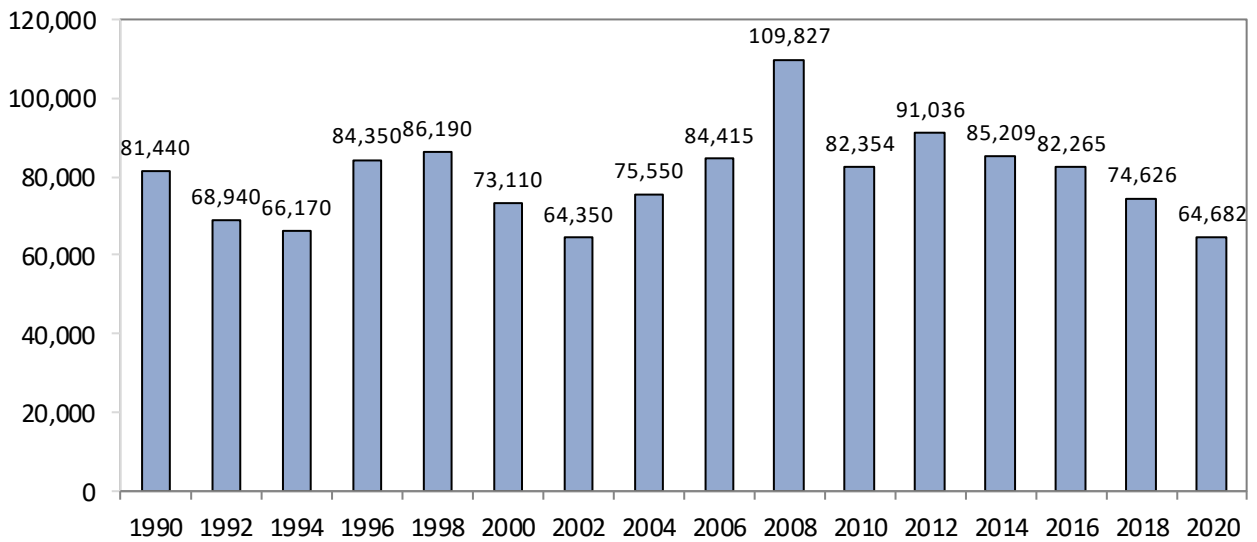
**Figure 15:** Weight (kg ( $\log^{10}$ )) of each pesticide type applied to arable crops in Northern Ireland, 2020, by region.



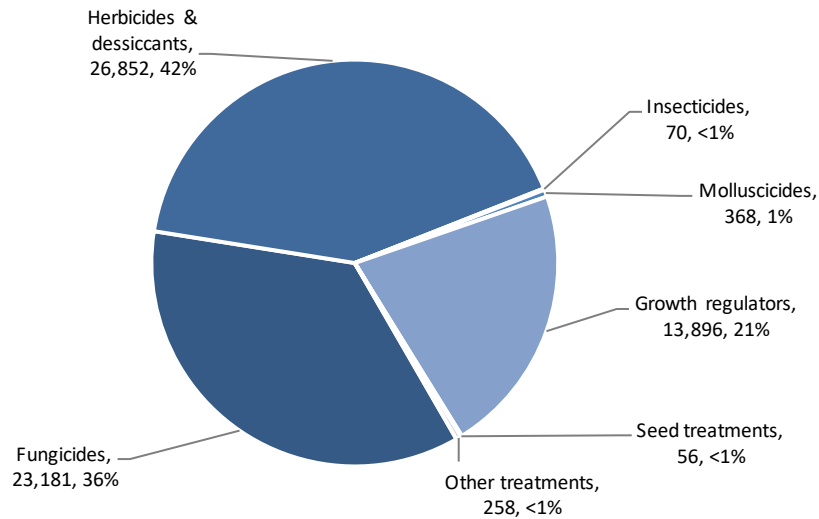
**Figure 16:** Total area (spha) of cereal crops treated in Northern Ireland from 1990-2020.



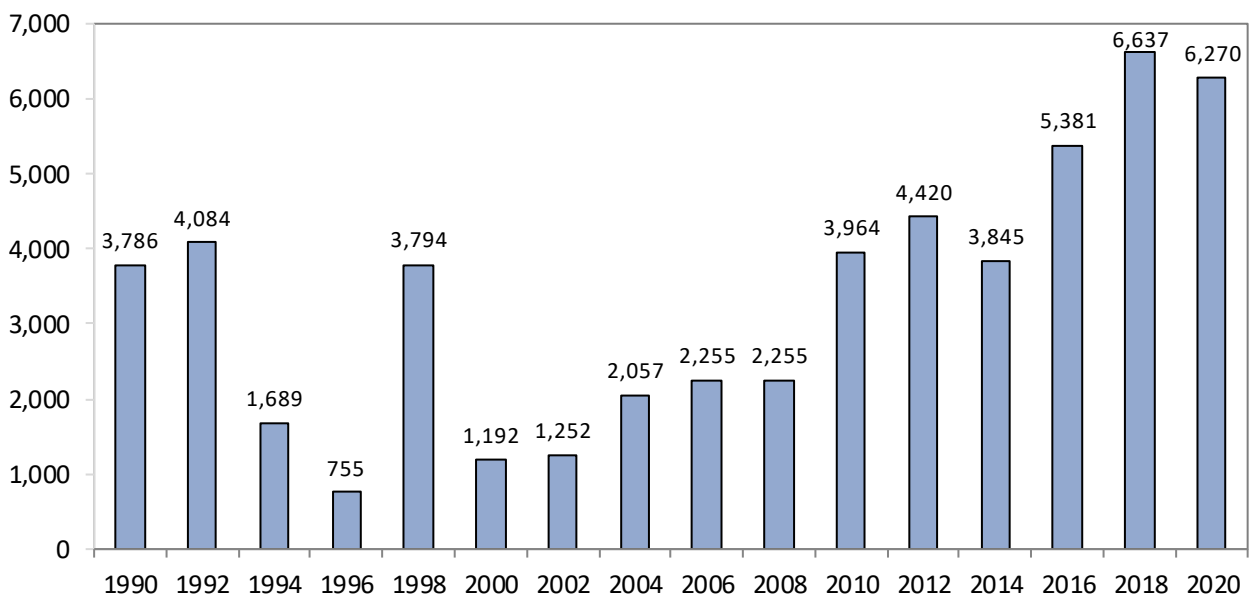
**Figure 17:** Pesticide usage (spha) on cereal crops in Northern Ireland, 2020.



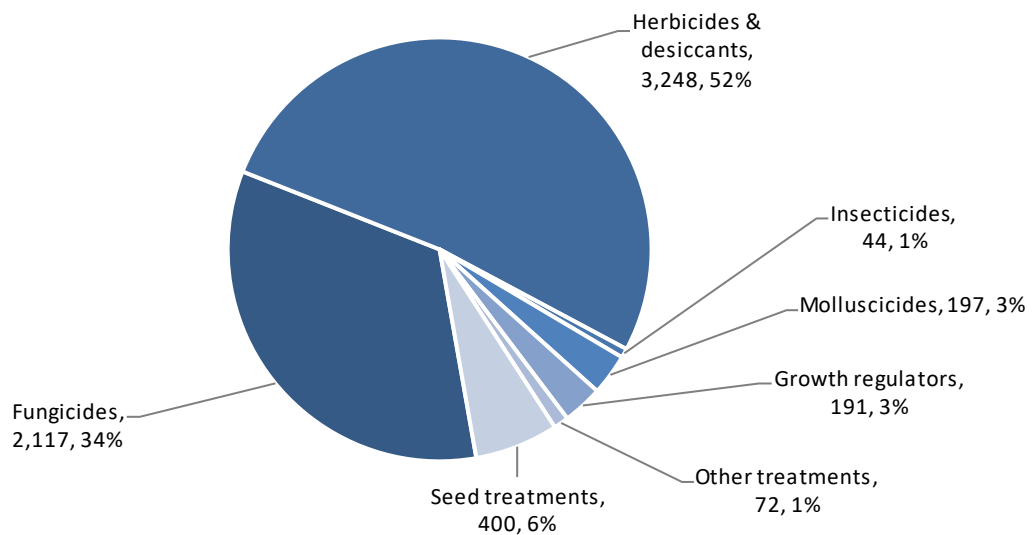
**Figure 18:** Total weight (kg) of pesticides applied to cereal crops in Northern Ireland from 1990-2020.



**Figure 19:** Weight (kg) of pesticides applied to cereal crops in Northern Ireland, 2020.

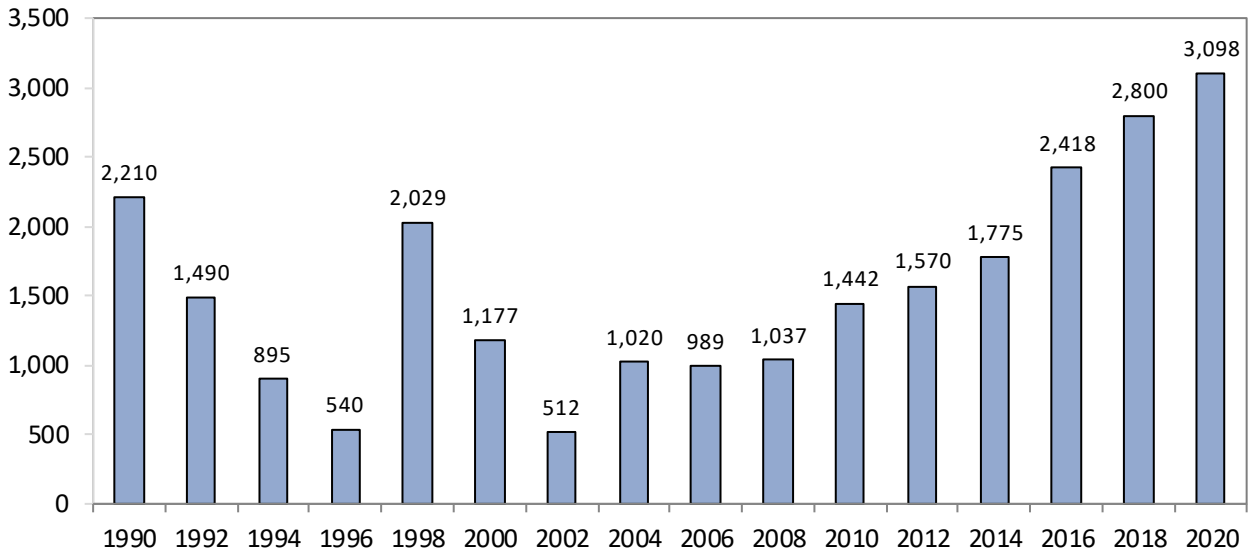


**Figure 20:** Total area (spha) of other arable crops treated in Northern Ireland from 1990-2020.

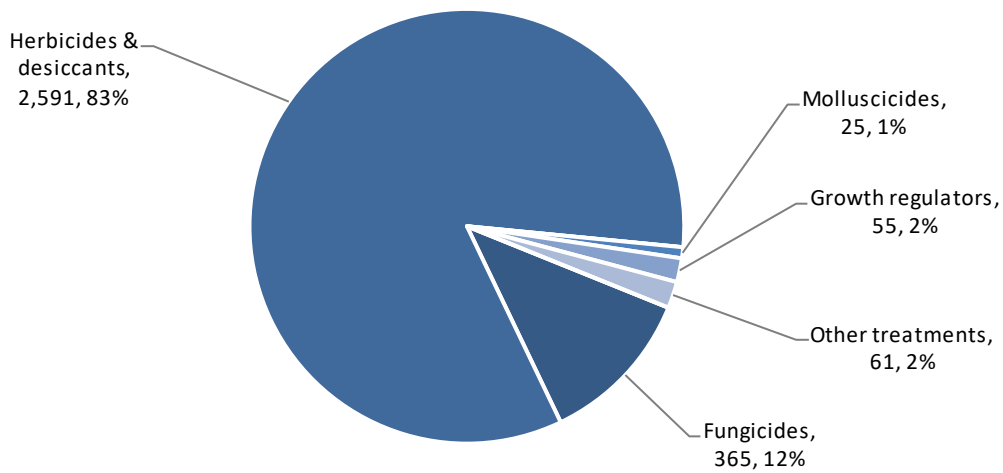


**Figure 21:** Pesticide usage (spha) on other arable crops in Northern Ireland, 2020.

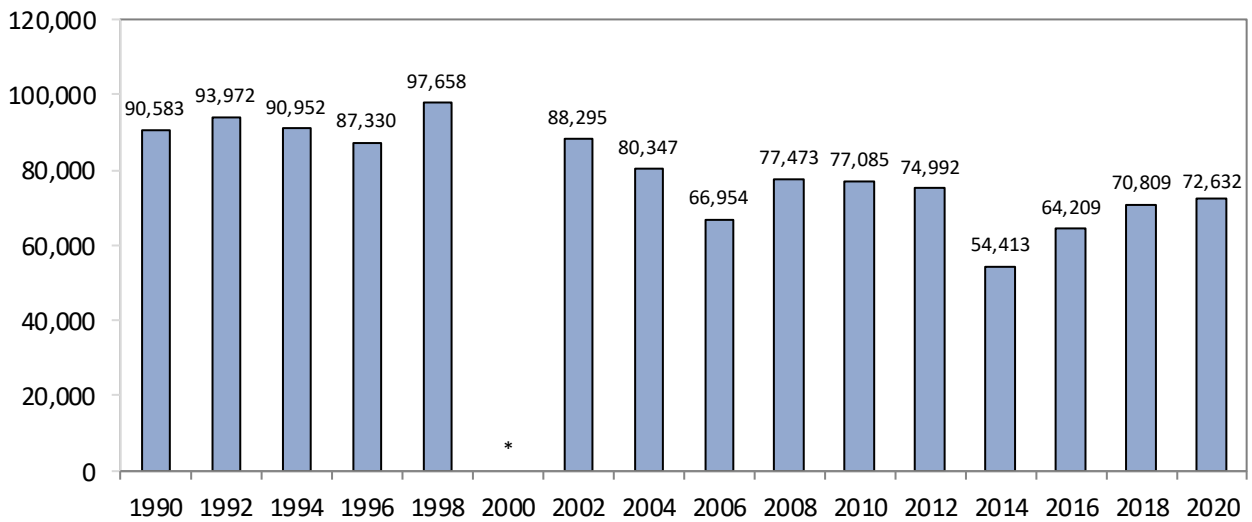




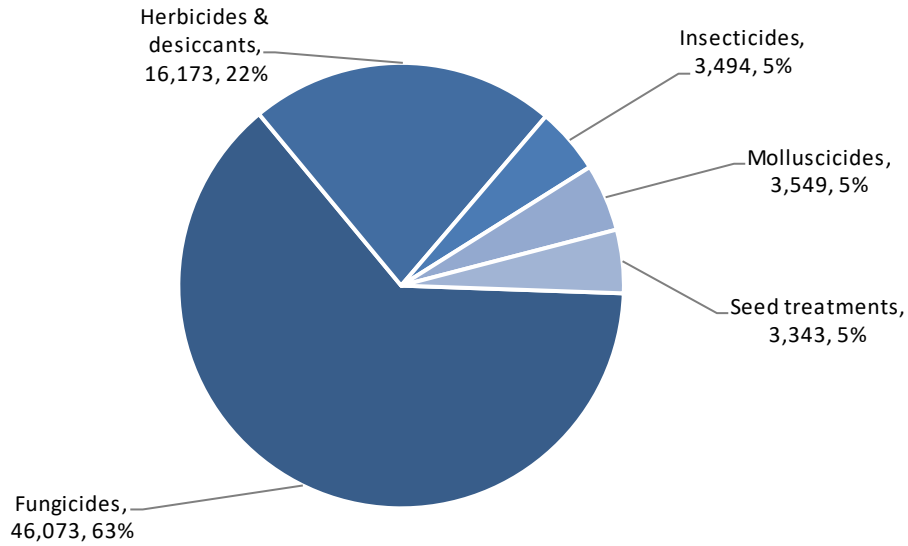
**Figure 22:** Total weight (kg) of pesticides applied to other arable crops in Northern Ireland from 1990-2020.



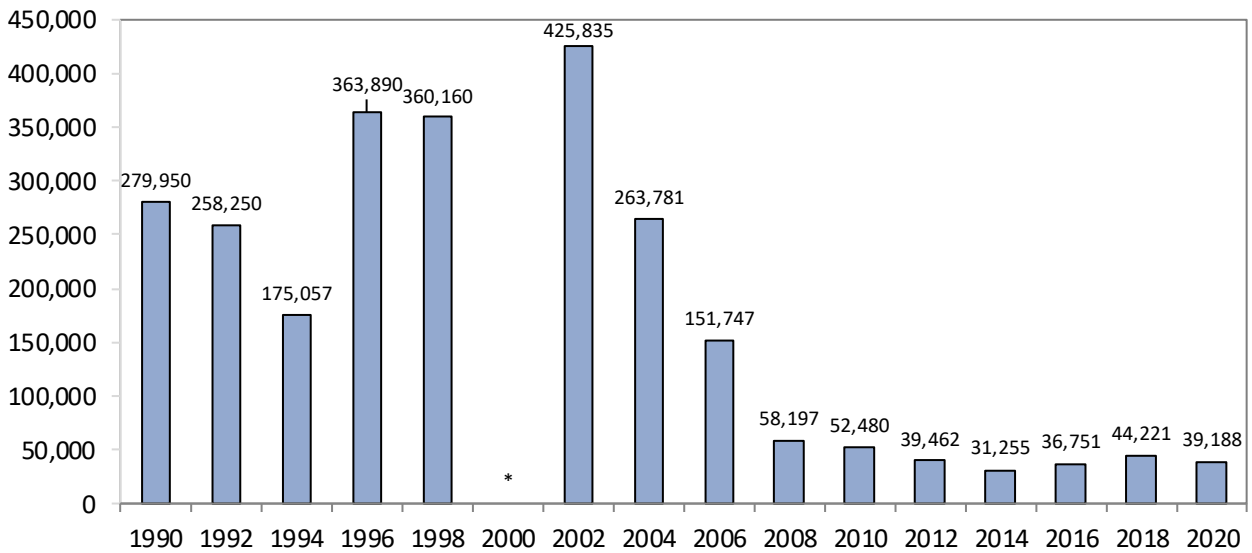
**Figure 23:** Weight (kg) of pesticides applied to other arable crops in Northern Ireland, 2020.



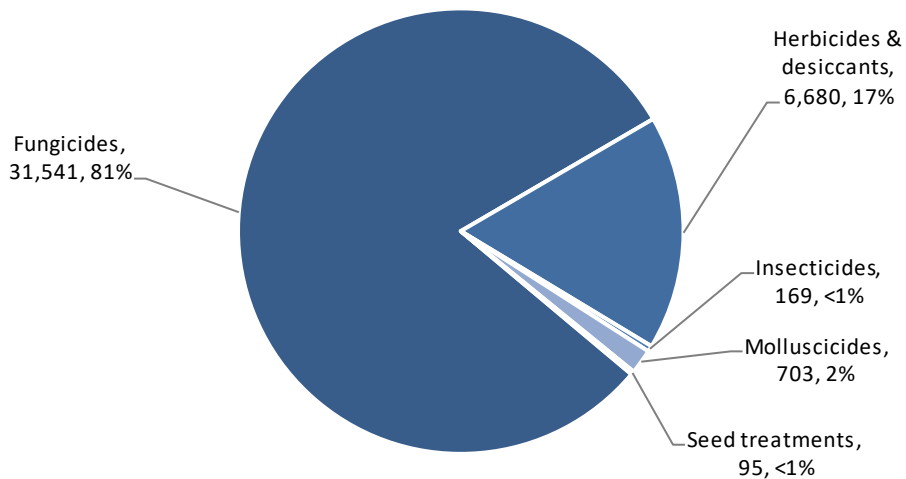
**Figure 24:** Total area (spha) of potato crops treated in Northern Ireland from 1990-2020. \*No potato data for 2000.



**Figure 25:** Pesticide usage (spha) on potato crops in Northern Ireland, 2020.



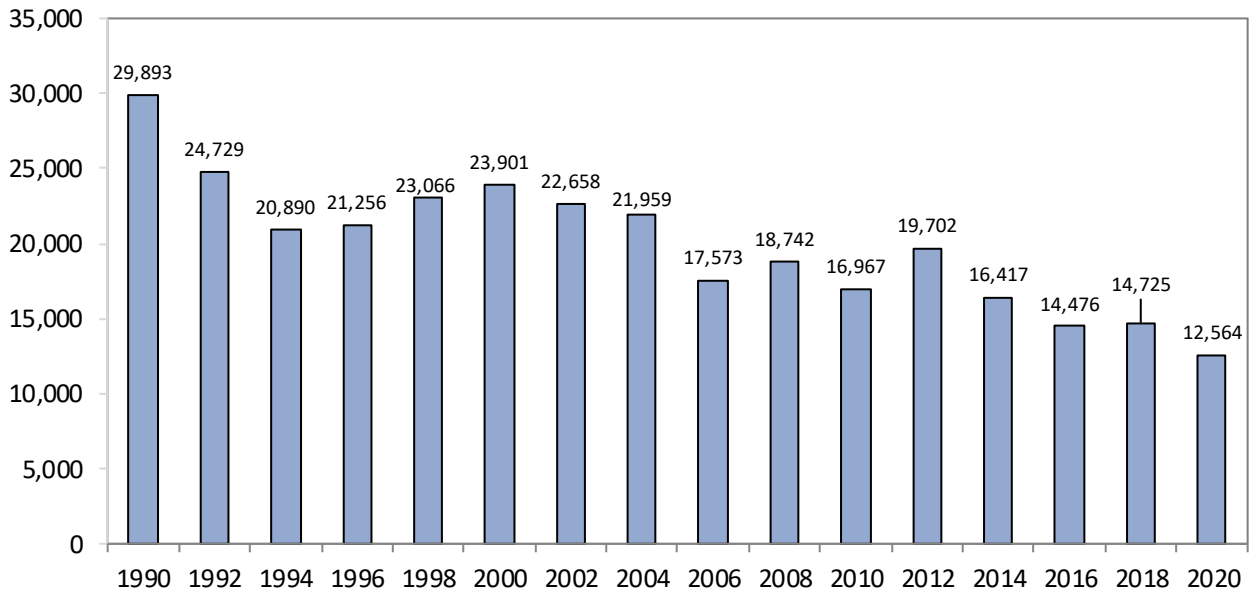
**Figure 26:** Total weight (kg) of pesticides applied to potato crops in Northern Ireland from 1990-2020. \*No potato data for 2000.



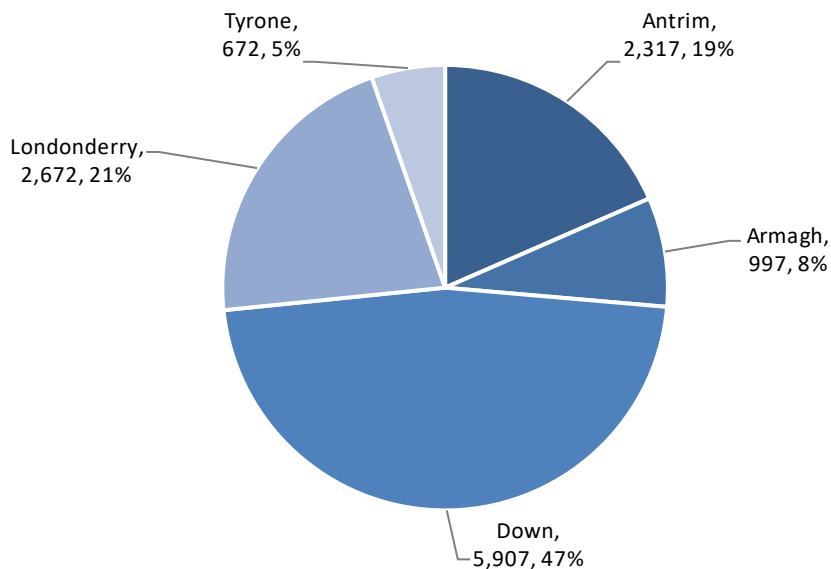
**Figure 27:** Weight (kg) of pesticides applied to potato crops in Northern Ireland, 2020.

**Pesticide usage on spring barley (Tables 3, 5, 6, 7, 8, 9 & 16):**

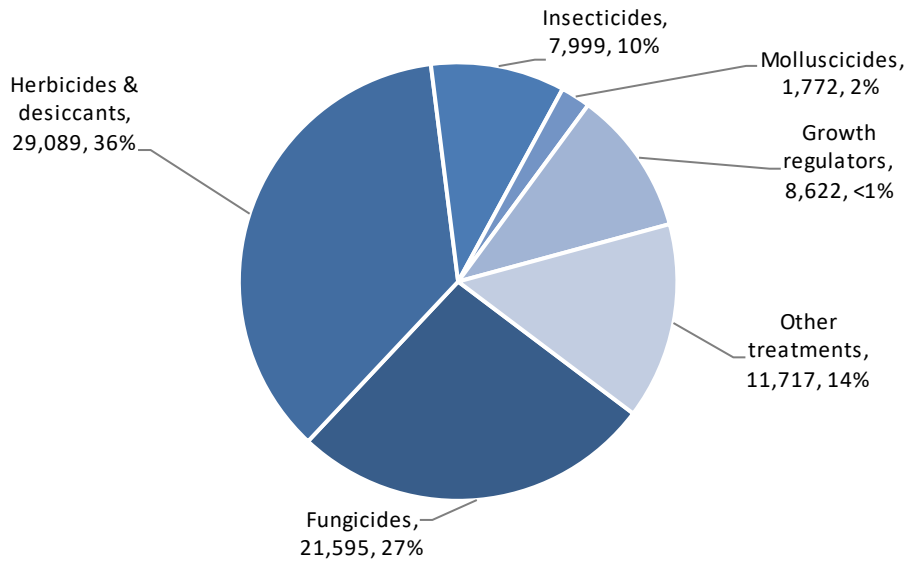
- 12,564 hectares of spring barley grown in Northern Ireland
- 80,793 treated hectares
- 19,511 kilogrammes applied
- 100% of the area of spring barley crops grown received a pesticide treatment.
- Spring barley received on average 2 fungicide, 2 herbicide, 1 insecticide, 1 molluscicide, 1 growth regulator and 1 seed treatment applications.



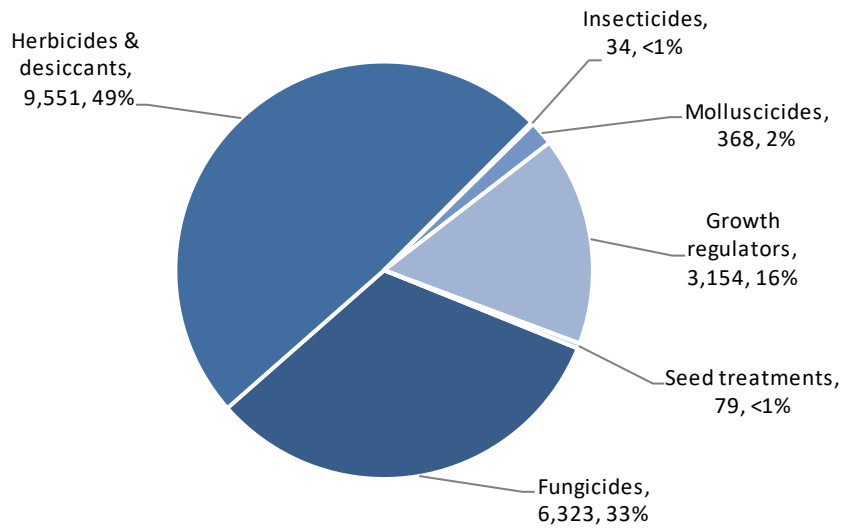
**Figure 28:** Total area (ha) of spring barley crops grown in Northern Ireland from 1990-2020.



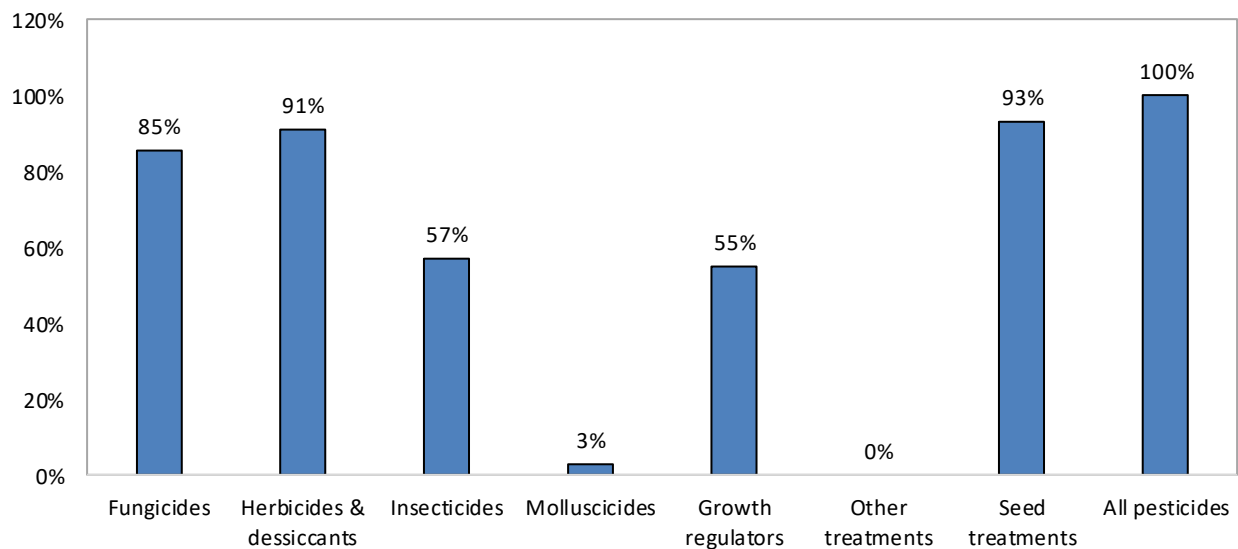
**Figure 29:** Regional distribution (ha) of spring barley crops grown in Northern Ireland, 2020.



**Figure 30:** Pesticide usage (spha) on spring barley crops in Northern Ireland, 2020.



**Figure 31:** Weight (kg) of pesticides applied to spring barley crops in Northern Ireland, 2020.

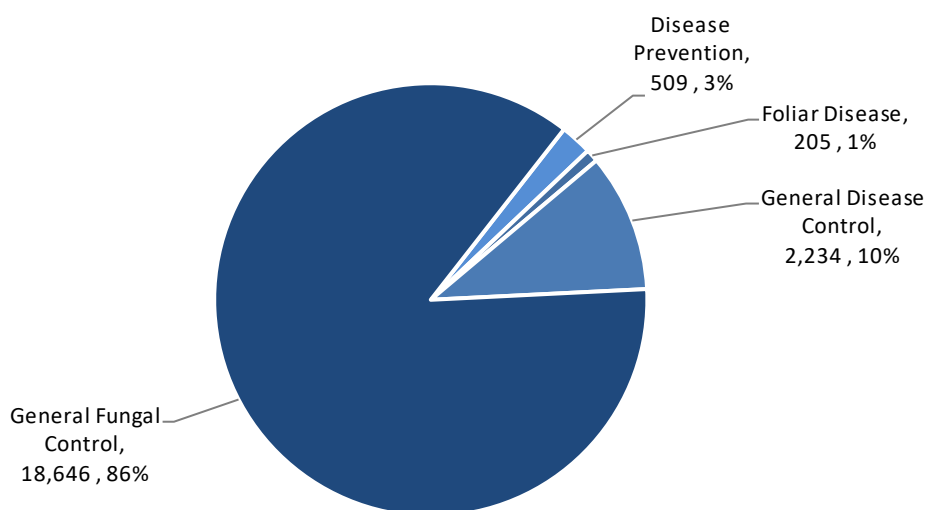


**Figure 32:** Proportional area (%) of spring barley crops treated with each pesticide type in Northern Ireland, 2020.

## Fungicides - spring barley

- Basic treated area: 10,737 hectares
- Total treated area: 21,595 spray hectares
- Quantity applied: 6,323 kilogrammes
- 85% 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	4,539	4,293	2,951	21
Prothioconazole	1,574	1,574	244	7
Prothioconazole/tebuconazole	1,454	1,454	335	7
Prothioconazole/trifloxystrobin	1,296	1,212	237	6
Epoxiconazole	1,199	931	110	6

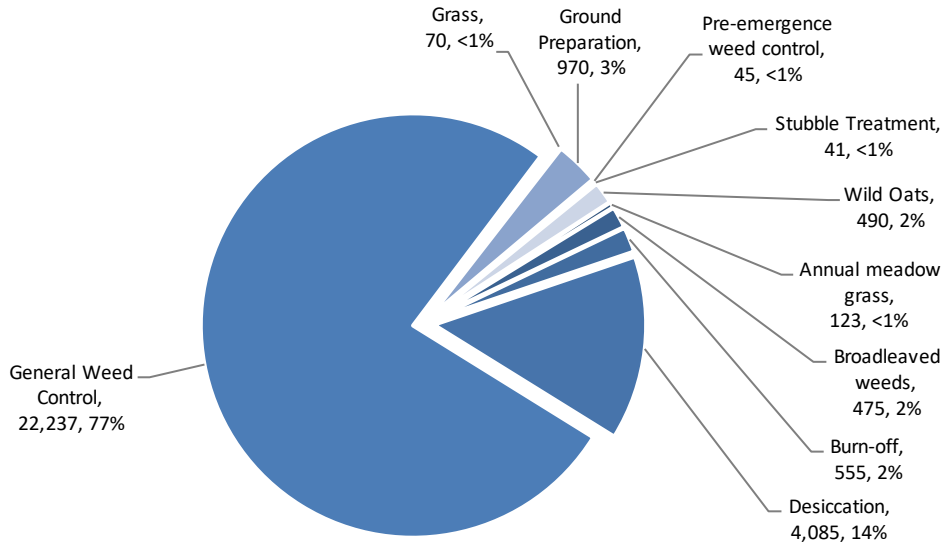


**Figure 33:** Spring barley: reasons for fungicide use (spha), 2020.

## Herbicides & desiccants - spring barley

- Basic treated area: 11,423 hectares
- Total treated area: 29,089 spray hectares
- Quantity applied: 9,551 kilogrammes
- 91% 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

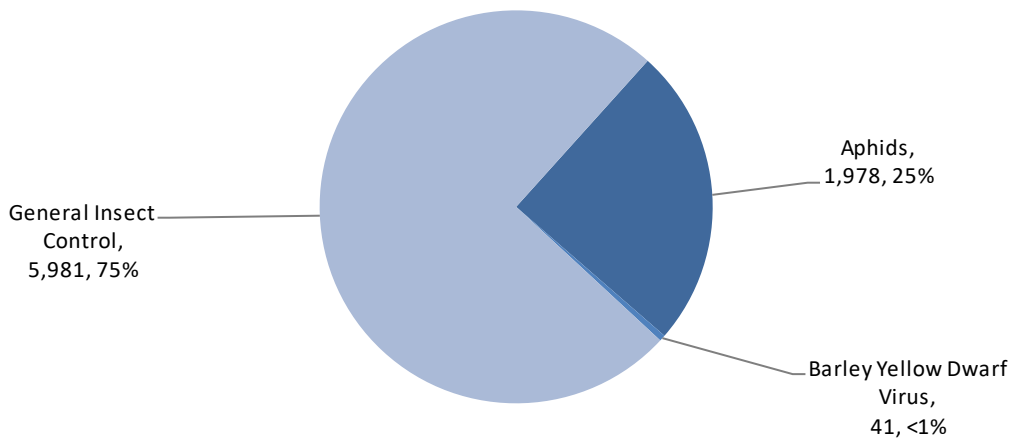


**Figure 34:** Spring barley: reasons for herbicide & desiccant use (spha), 2020.

### Insecticides - spring barley

- Basic treated area: 7,152 hectares
- Total treated area: 7,999 spray hectares
- Quantity applied: 34 kilogrammes
- 57% of the area grown treated with insecticides
- The only active substances applied 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



**Figure 35:** Spring barley: reasons for insecticide use (spha), 2020.

## Growth regulators - spring barley

- Basic treated area: 6,893 hectares
- Total treated area: 8,622 spray hectares
- Quantity applied: 3,154 kilogrammes
- 55% of the area grown treated with growth regulators
- The active substances applied were:

<i>Active substance</i>	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Chlormequat	4,197	4,197	2,762	49
Trihexapac-ethyl	3,325	3,212	227	39
Mepiquat chloride/prohexadione-calcium	804	804	155	9
Prohexadione-calcium/trihexapac-ethyl	295	295	10	3

## Molluscicides - spring barley

- Basic treated area: 354 hectares
- Total treated area: 1,772 spray hectares
- Quantity applied: 368 kilogrammes
- 3% of the area grown treated with molluscicides
- The only reason given for use was 'slugs'
- The only active substance applied was ferric phosphate

## Seed treatments - spring barley

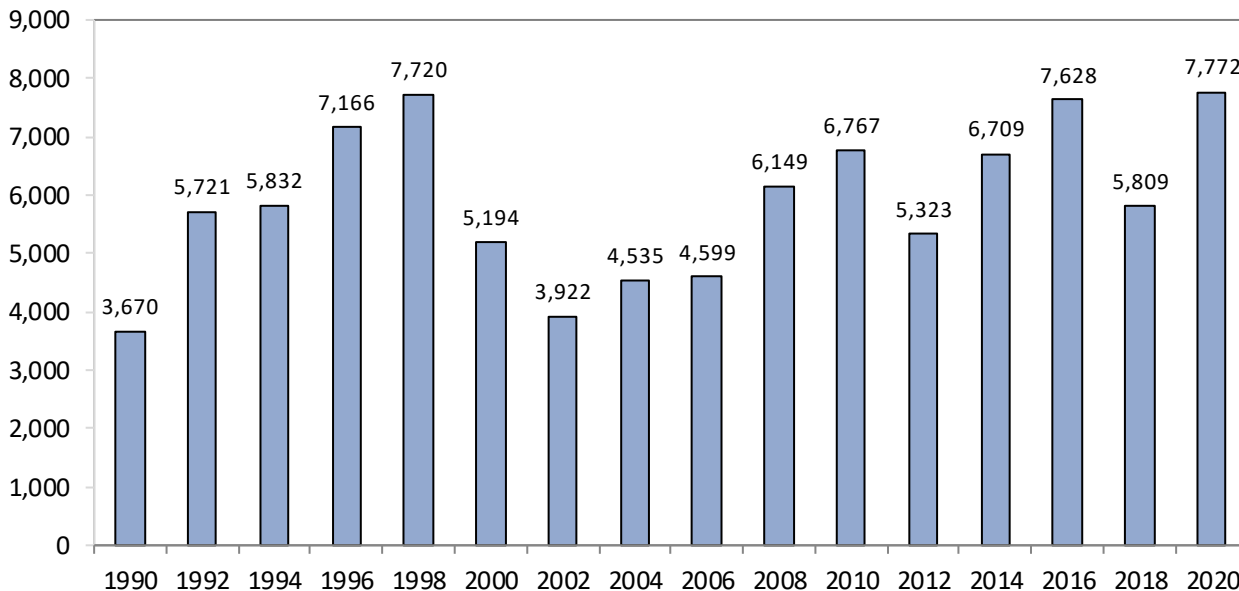
- Basic treated area: 11,682 hectares
- Total treated area: 11,717 spray hectares
- Quantity applied: 79 kilogrammes
- 93% of the area grown was sown with treated seed
- The most commonly applied active substances were:

<i>Active substance</i>	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Fludioxonil	6,858	6,858	59	59
Unknown seed treatment*	3,209	3,209	.	27
Imazalil/ipconazole	826	826	11	7
Prothioconazole/tebuconazole	680	680	6	6
Fluopyram/prothioconazole/tebuconazole	126	126	2	1

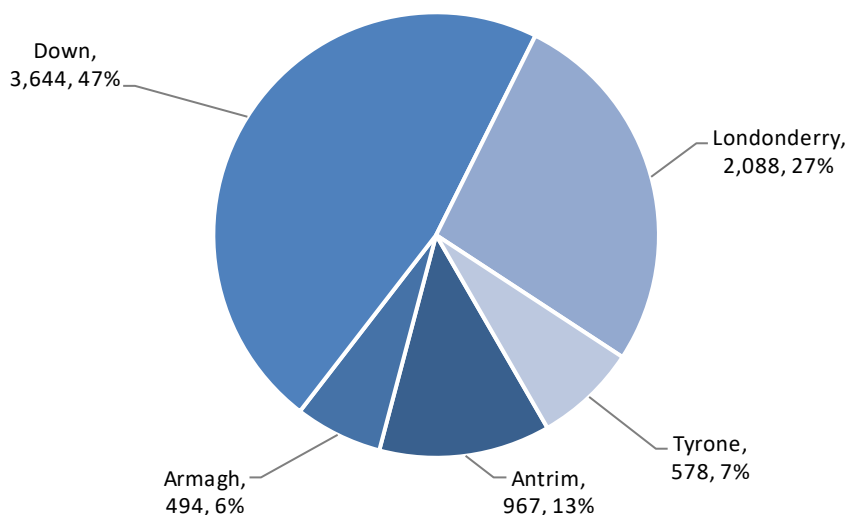
\*Quantities not available for unknown seed treatments

**Pesticide usage on winter barley (Tables 3, 5, 6, 7, 8, 9 & 21):**

- 7,772 hectares of winter barley grown in Northern Ireland
- 67,572 treated hectares
- 21,652 kilogrammes applied
- 96% of the area of winter barley crops grown received a pesticide treatment.
- Winter barley received on average 3 fungicide, 2 herbicide, 1 insecticide, 2 growth regulator and 1 seed treatment applications

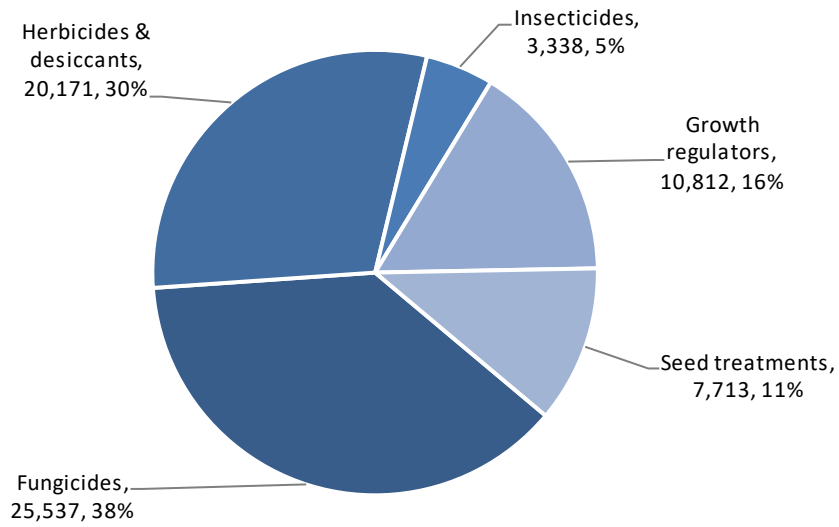


**Figure 36:** Total area (ha) of winter barley crops grown in Northern Ireland, 1990-2020.

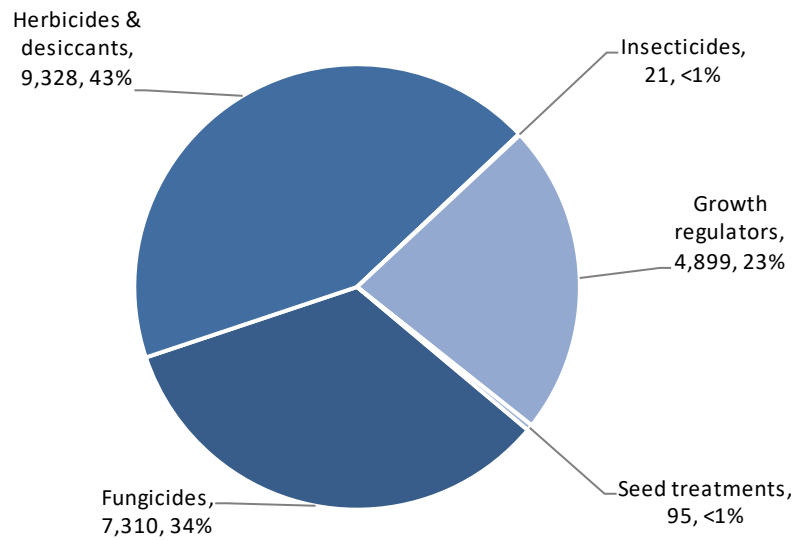


**Figure 37:** Regional distribution (ha) of winter barley crops grown in Northern Ireland, 2020.

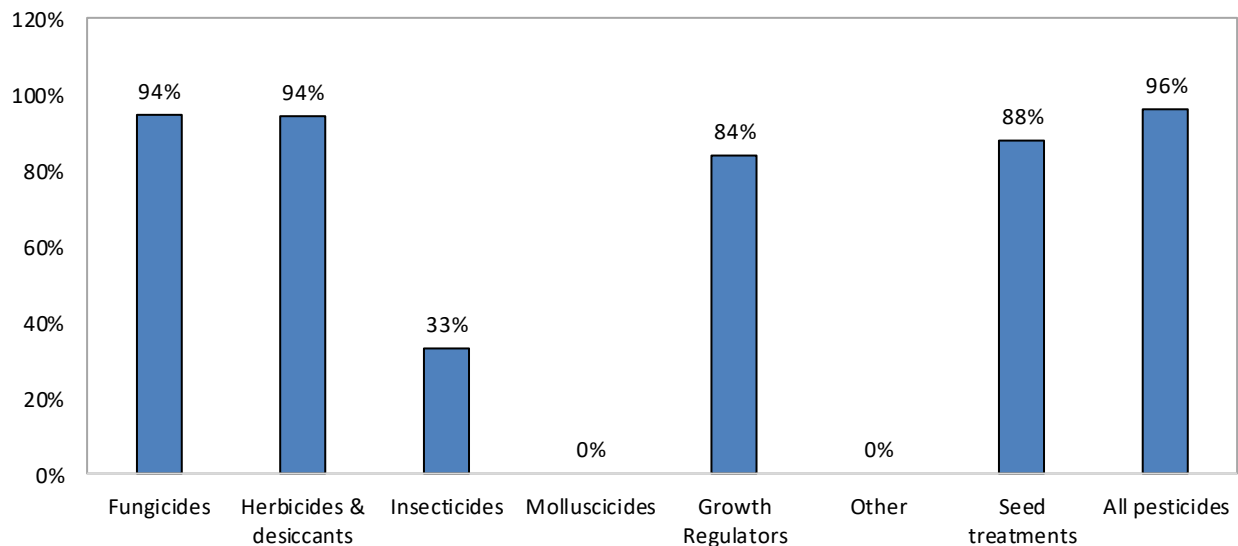




**Figure 38:** Pesticide usage (spha) on winter barley crops in Northern Ireland, 2020.



**Figure 39:** Weight (kg) of pesticides applied to winter barley crops in Northern Ireland, 2020.



**Figure 40:** Proportional area (%) of winter barley crops treated with each pesticide type in Northern Ireland, 2020.

## Fungicides - winter barley

- Basic treated area: 7,337 hectares
- Total treated area: 25,537 spray hectares
- Quantity applied: 7,130 kilogrammes
- 94% 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	6,410	4,466	3,806	25
Bixafen/prothioconazole	3,947	2,813	634	15
Prothioconazole	2,239	1,581	249	9
Fluoxastrobin/prothioconazole	1,800	1,492	367	7
Prothioconazole/spiroxamine	1,704	1,495	479	7

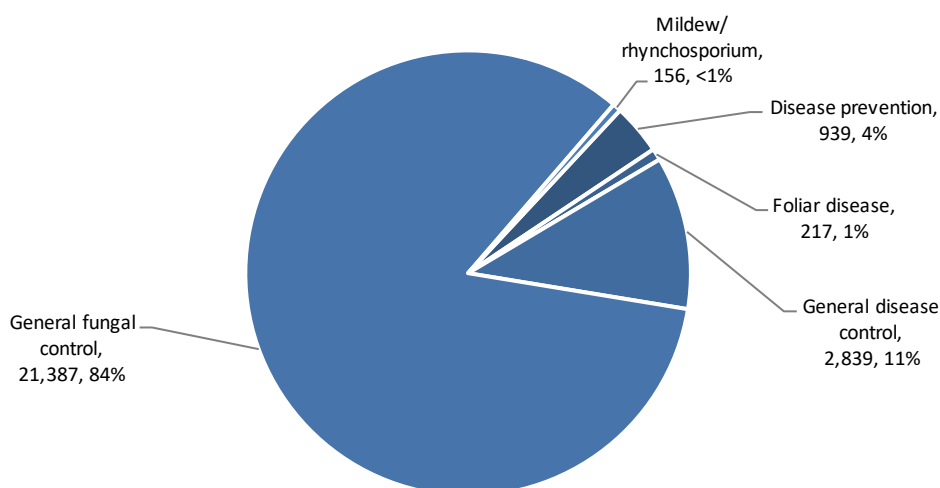
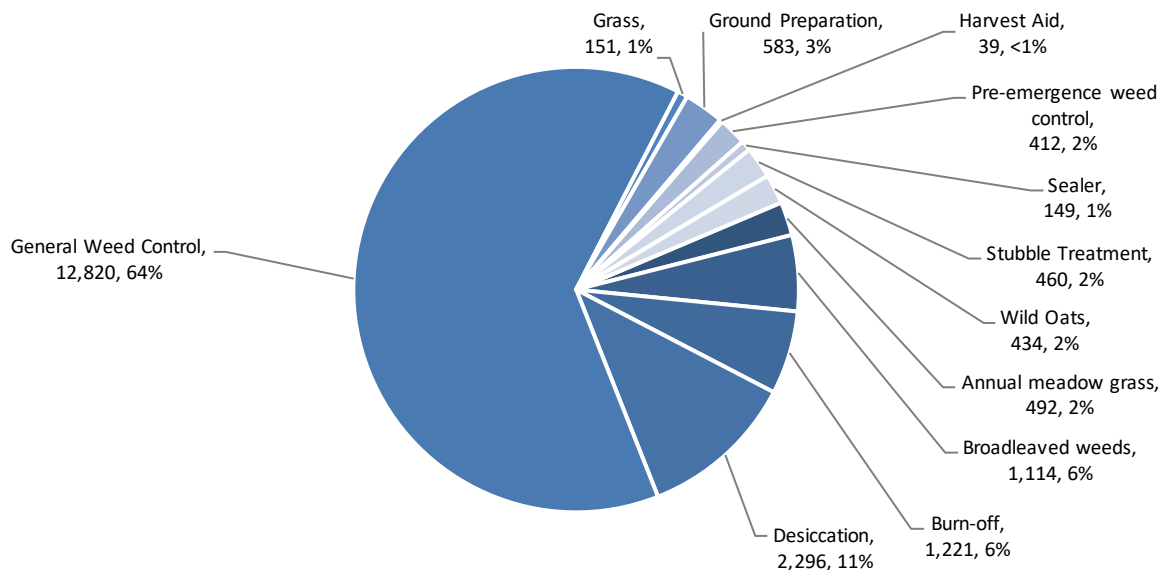


Figure 41: Winter barley: reasons for fungicide use (spha), 2020.

## Herbicides & desiccants - winter barley

- Basic treated area: 7,313 hectares
- Total treated area: 20,171 spray hectares
- Quantity applied: 9,328 kilogrammes
- 94% 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	4,682	4,052	3,355	23
Diflufenican	2,286	2,166	193	11
Diflufenican/flufenacet	2,041	2,041	402	10
Flufenacet/pendimethalin	1,799	1,799	2,229	9
Pendimethalin/picolinafen	1,415	1,415	1,427	7

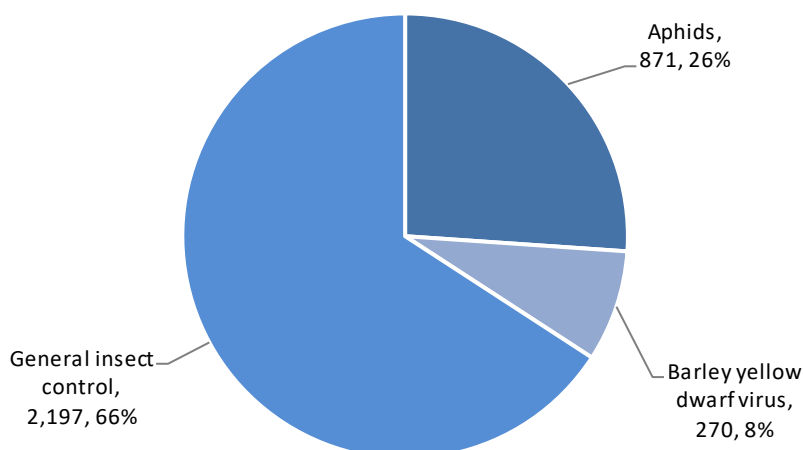


**Figure 42:** Winter barley: reasons for herbicide & desiccant use (spha), 2020.

### *Insecticides - winter barley*

- Basic treated area: 2,560 hectares
- Total treated area: 3,338 spray hectares
- Quantity applied: 21 kilogrammes
- 33% 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	2224	1916	10	67
Esfenvalerate	806	696	3	24
Chlorpyrifos	308	308	7	9



**Figure 43:** Winter barley: reasons for insecticide use (spha), 2020.

## Growth regulators - winter barley

- Basic treated area: 6,508 hectares
- Total treated area: 10,812 spray hectares
- Quantity applied: 4,899 kilogrammes
- 84% of the area grown treated with growth regulators
- The most commonly applied active substances were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total growth regulator-treated area (spha)</b>
Chlormequat	5,599	4,828	4,514	52
Trinexapac-ethyl	3,899	3,299	200	36
Prohexadione-calcium/trinexapac-ethyl	617	617	27	6
Mepiquat chloride/prohexadione-calcium	395	395	99	4
2-chloroethylphosphonic acid	274	274	46	3

## Seed treatments - winter barley

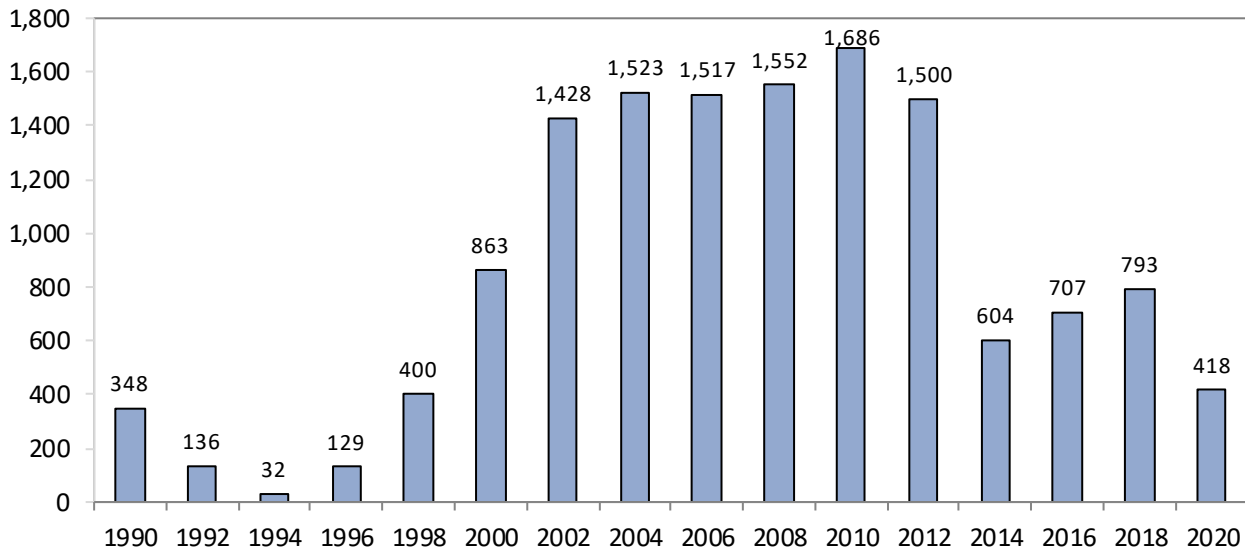
- Basic treated area: 6,815 hectares
- Total area treated: 7,713 spray hectares
- Quantity applied: 95 kilogrammes
- 88% of the area grown was sown with treated seed
- The most commonly applied active substances were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total seed treatment-treated area (spha)</b>
Fludioxonil	3,771	3,771	36	49
Unknown seed treatment*	1,418	1,418	.	18
Fludioxonil/fluxapyroxad/triticoconazole	1,007	1,007	30	13
Fluopyram/prothioconazole/tebuconazole	924	924	16	12
Prothioconazole/tebuconazole	228	228	4	3

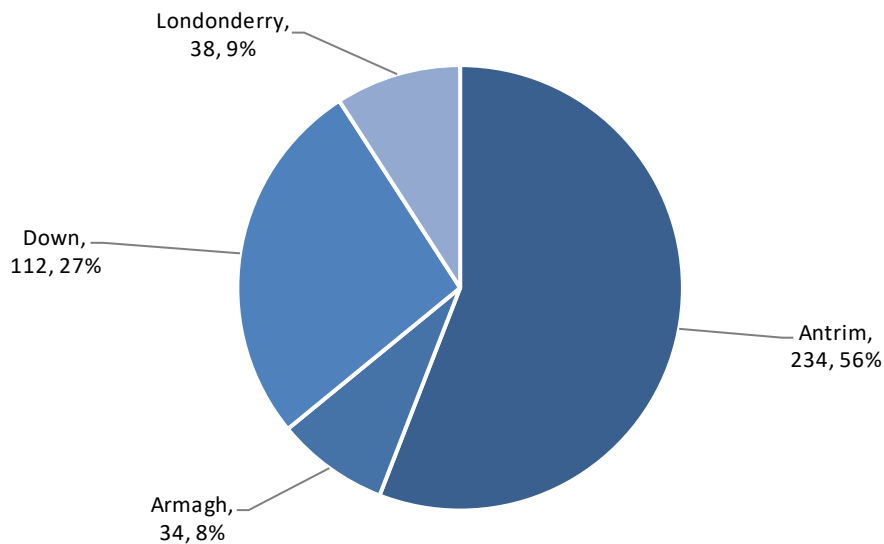
\*Quantities not available for unknown seed treatments

## Pesticide usage on spring wheat (Tables 3, 5, 6, 7, 8, 9 & 18):

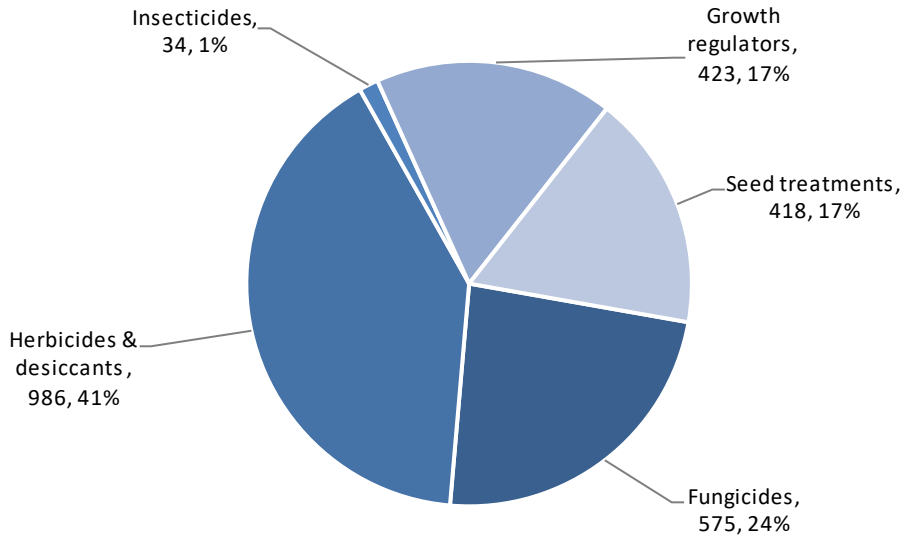
- 418 hectares of spring wheat grown in Northern Ireland
- 2,436 treated hectares
- 625 kilogrammes applied
- 100% of the area of spring wheat crops grown received a pesticide treatment
- Spring wheat received on average 2 fungicide, 3 herbicide, 1 insecticide, 1 growth regulator and 1 seed treatment applications



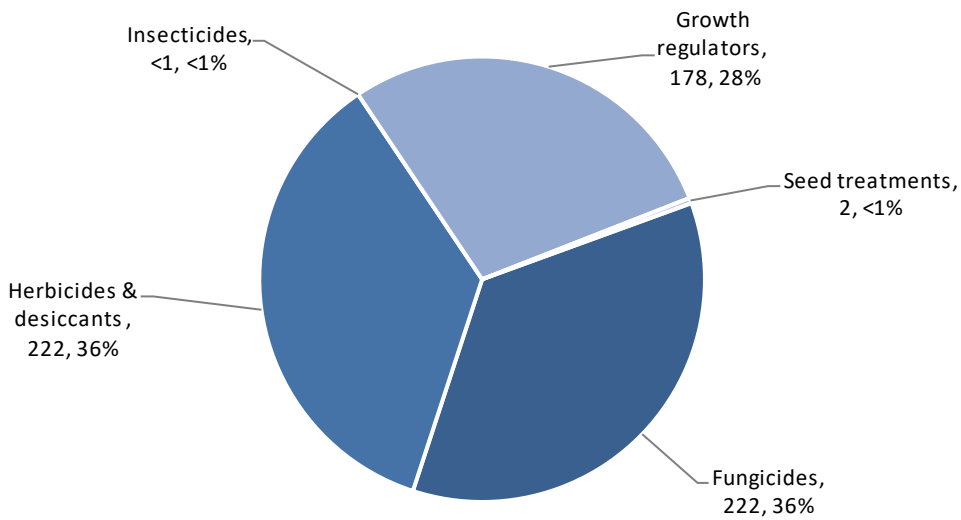
**Figure 44:** Total area (ha) of spring wheat crops grown in Northern Ireland from 1990 to 2020.



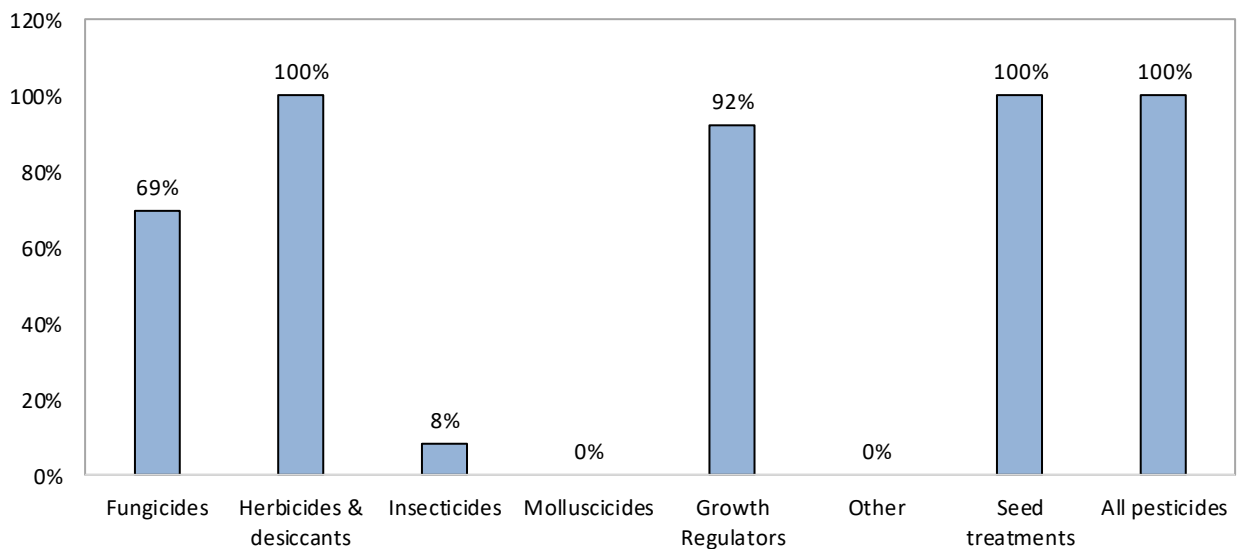
**Figure 45:** Regional distribution (ha) of spring wheat crops grown in Northern Ireland, 2020.



**Figure 46:** Pesticide usage (spha) on spring wheat crops in Northern Ireland, 2020.



**Figure 47:** Weight of pesticides (kg) applied to spring wheat crops in Northern Ireland, 2020.



**Figure 48:** Proportional area (%) of spring wheat crops treated with each pesticide type in Northern Ireland, 2020.

## Fungicides - spring wheat

- Basic treated area: 291 hectares
- Total treated area: 575 spray hectares
- Quantity applied: 222 kilogrammes
- 69% 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)
Unknown fungicide	318	106	141	55
Epoxiconazole/metrafenone	69	34	16	12
Bixafen/prothioconazole/spiroxamine	41	41	20	7
Prothioconazole/tebuconazole	38	38	10	7
Chlorothalonil	38	38	19	7

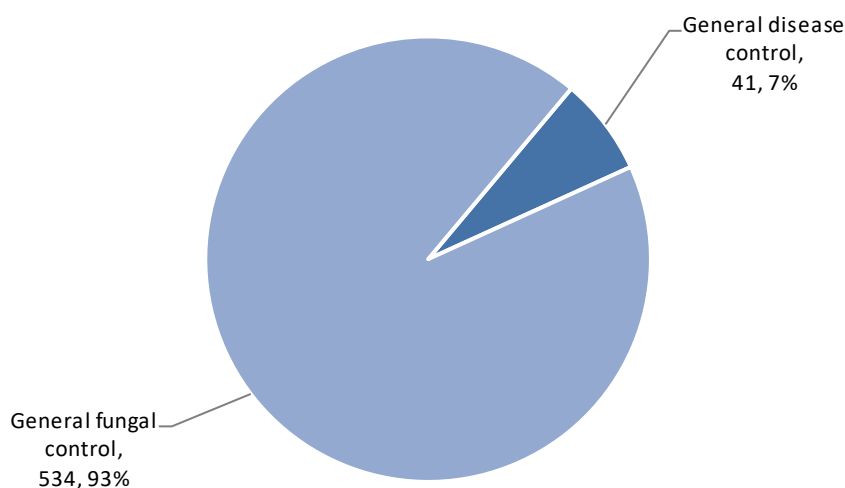
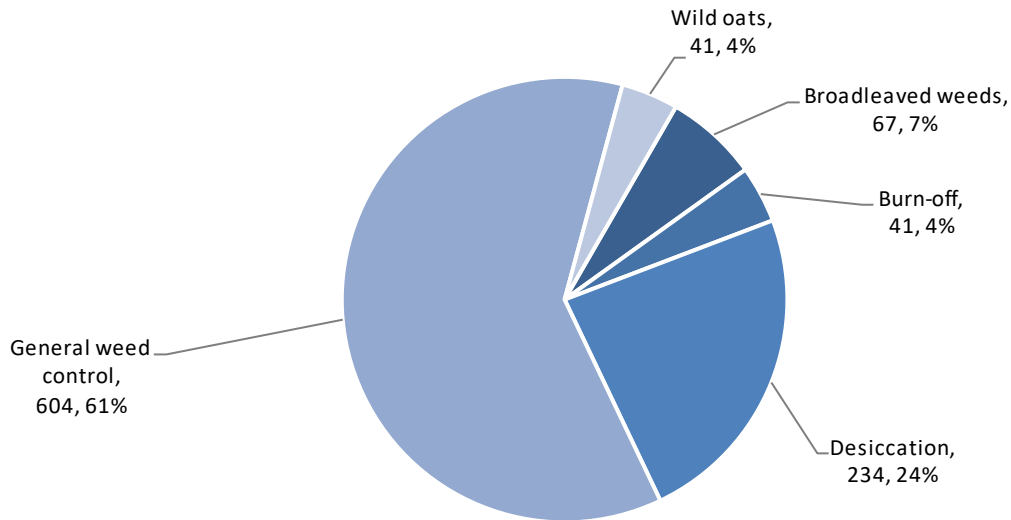


Figure 49: Spring wheat: reasons for fungicide use (spha), 2020.

## Herbicides & desiccants - spring wheat

- Basic treated area: 418 hectares
- Total treated area: 986 spray hectares
- Quantity applied: 222 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	275	275	162	28
Fluroxypyr	185	185	32	19
Thifensulfuron-methyl/tribenuron-methyl	147	147	3	15
Florasulam/pyroxsulam	128	128	2	13
Metsulfuron-methyl	72	72	0	7



**Figure 50:** Spring wheat: reasons for herbicide & desiccant use (spha), 2020.

### ***Insecticides - spring wheat***

- Basic treated area: 34 hectares
- Total treated area: 34 spray hectares
- Quantity applied: <1 kilogrammes
- 8% of the area grown treated with insecticides
- The only reason given for use was 'general insect control'
- The only active substance applied was lambda-cyhalothrin

### ***Growth regulators - spring wheat***

- Basic treated area: 385 hectares
- Total treated area: 423 spray hectares
- Quantity applied: 178 kilogrammes
- 92% of the area grown treated with growth regulators
- The active substances applied were:

<b><i>Active substance</i></b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total growth regulator-treated area (spha)</b>
Chloromequat	275	275	171	65
Trinexapac-ethyl	114	76	6	27
Prohexadione-calcium/trinexapac-ethyl	34	34	1	8



## Seed treatments - spring wheat

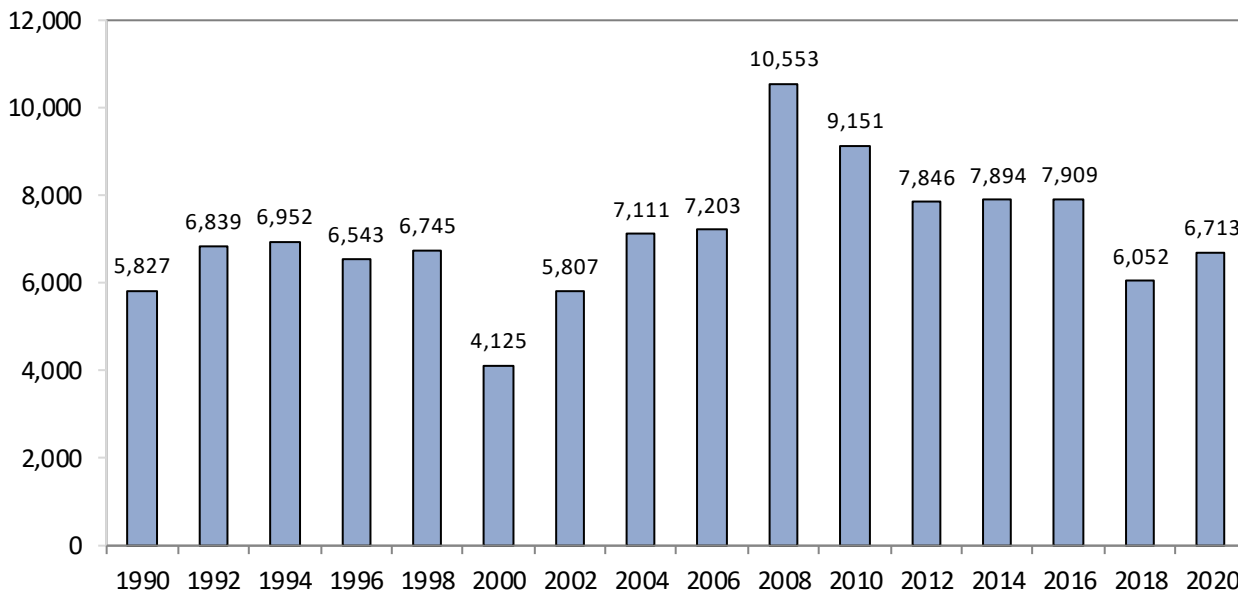
- Basic treated area: 418 hectares
- Total treated area: 418 spray hectares
- Quantity applied: 2 kilogrammes
- 100% of the area grown was sown with treated seed
- The active substances applied were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total seed treatment-treated area (spha)</b>
Fludioxonil	252	252	2	60
Unknown seed treatment*	166	166	.	40

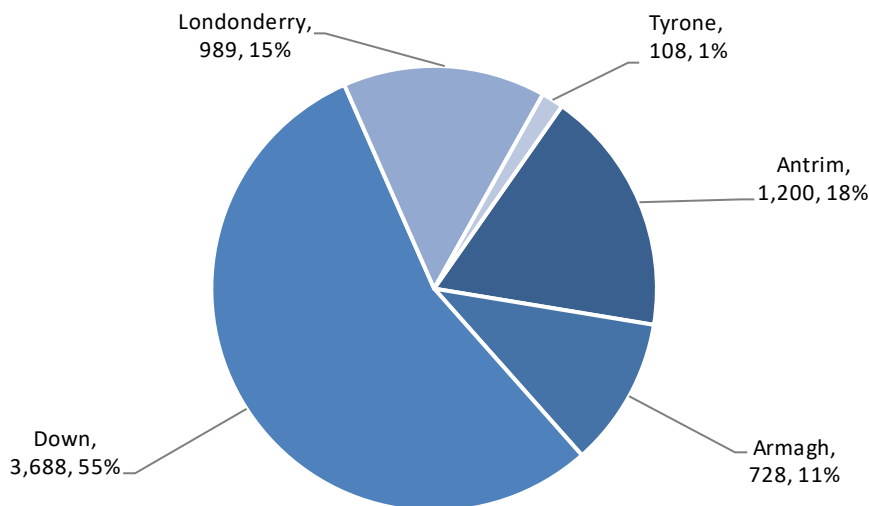
\*Quantities not available for unknown seed treatments

**Pesticide usage on winter wheat (Tables 3, 5, 6, 7, 8, 9 & 24):**

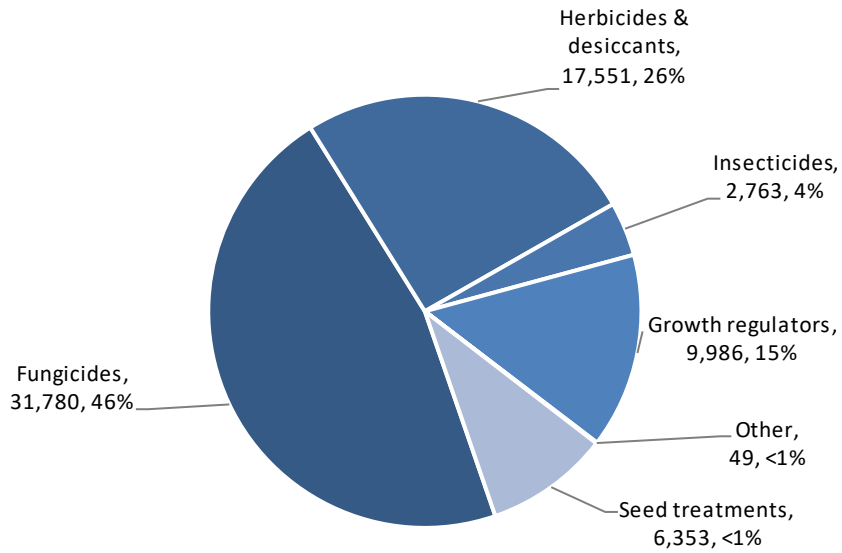
- 6,713 hectares of winter wheat grown in Northern Ireland
- 68,483 treated hectares
- 19,485 kilogrammes applied
- 100% of the area of winter wheat crops grown received a pesticide treatment
- Winter wheat received on average 5 fungicide, 3 herbicide, 1 insecticide, 2 growth regulator, 1 other treatment and 1 seed treatment applications



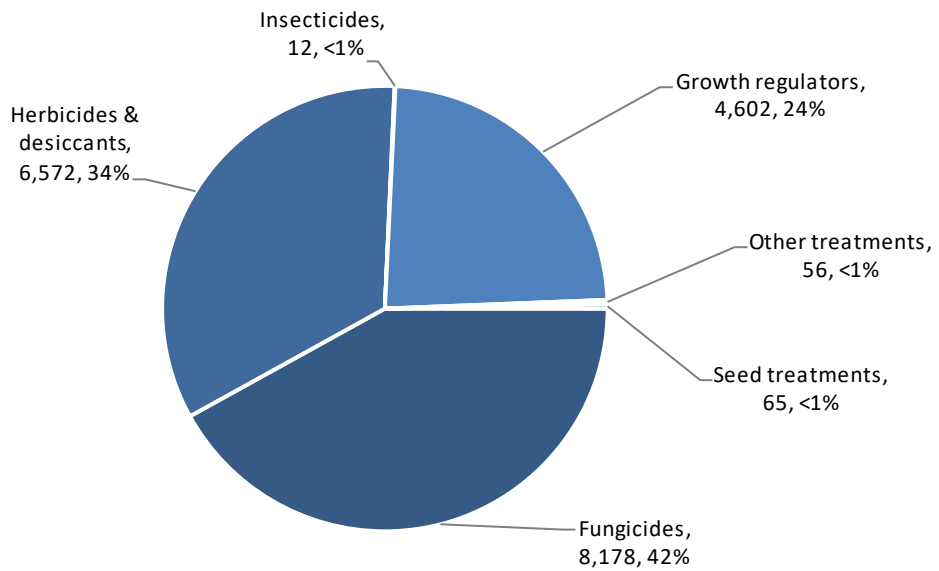
**Figure 51:** Total area (ha) of winter wheat crops grown in Northern Ireland from 1990 to 2020.



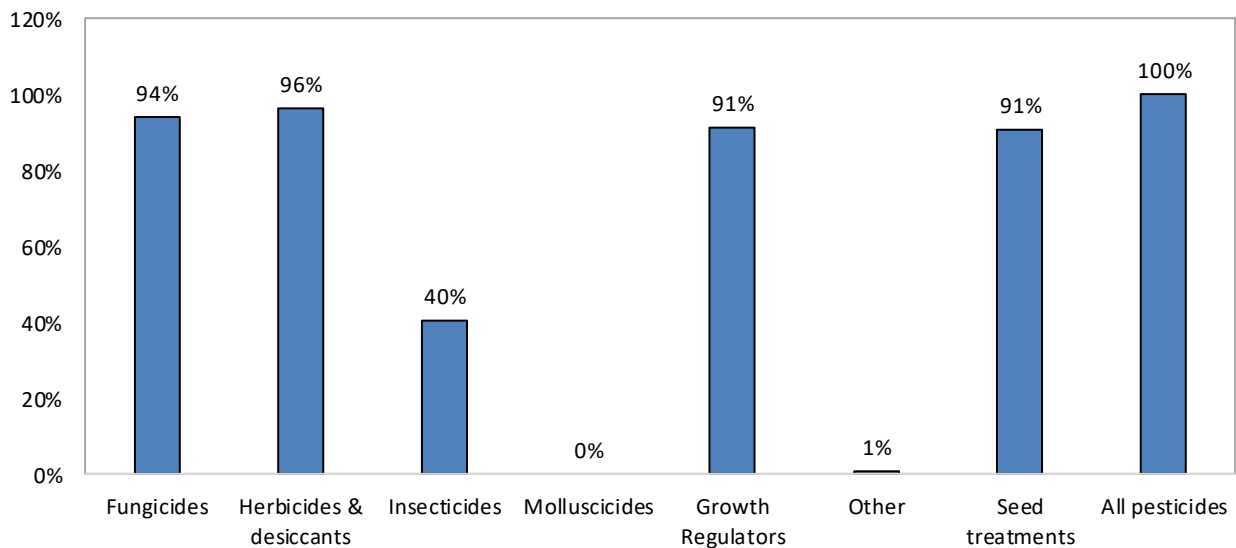
**Figure 52:** Regional distribution (ha) of winter wheat crops grown in Northern Ireland, 2020.



**Figure 53:** Pesticide usage (spha) on winter wheat crops in Northern Ireland, 2020.



**Figure 54:** Weight (kg) of pesticides applied to winter wheat crops in Northern Ireland, 2020.



**Figure 55:** Proportional area (%) of winter wheat crops treated with each pesticide type in Northern Ireland, 2020.

## Fungicides - winter wheat

- Basic treated area: 6,298 hectares
- Total treated area: 31,780 spray hectares
- Quantity applied: 8,178 kilogrammes
- 94% 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	5,812	3,880	3,028	18
Prothioconazole/tebuconazole	3,550	2,832	729	11
Fluxapyroxad	3,153	1,796	273	10
Epoxiconazole	2,821	1,610	251	9
Prothioconazole	1,690	1,383	186	5

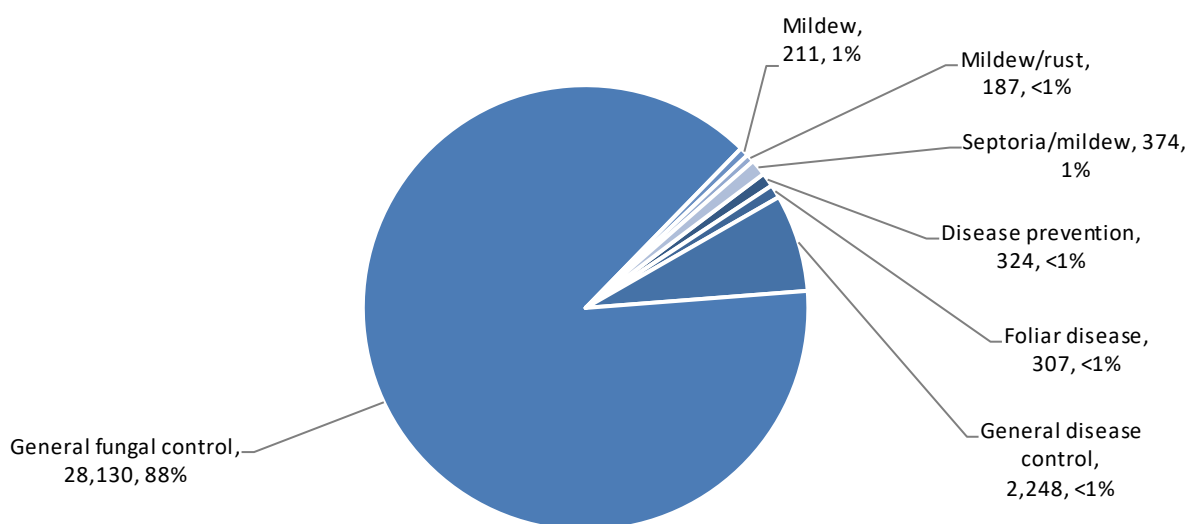
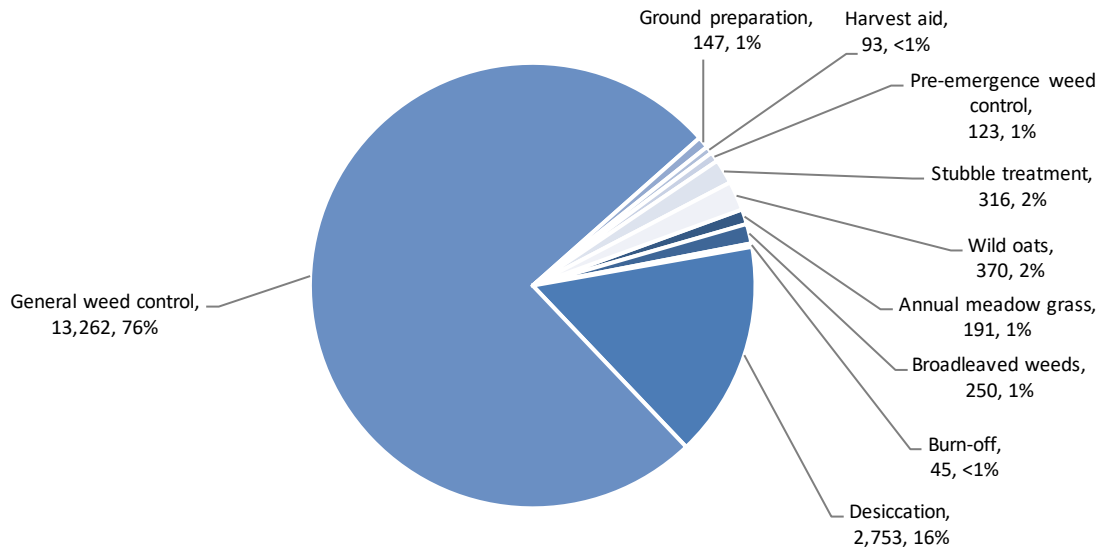


Figure 56: Winter wheat: reasons for fungicide use (spha), 2020.

## Herbicides & desiccants - winter wheat

- Basic treated area: 6,461 hectares
- Total treated area: 17,551 spray hectares
- Quantity applied: 6,572 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	3639	3337	3544	21
Florasulam/halauxifen-methyl	2320	2320	15	13
Diflufenican/iodosulfuron-methyl-sodium/mesosulfuron-methyl	2234	2234	134	13
Diflufenican/flufenacet	1446	1446	338	8
Diflufenican	1207	1207	83	7

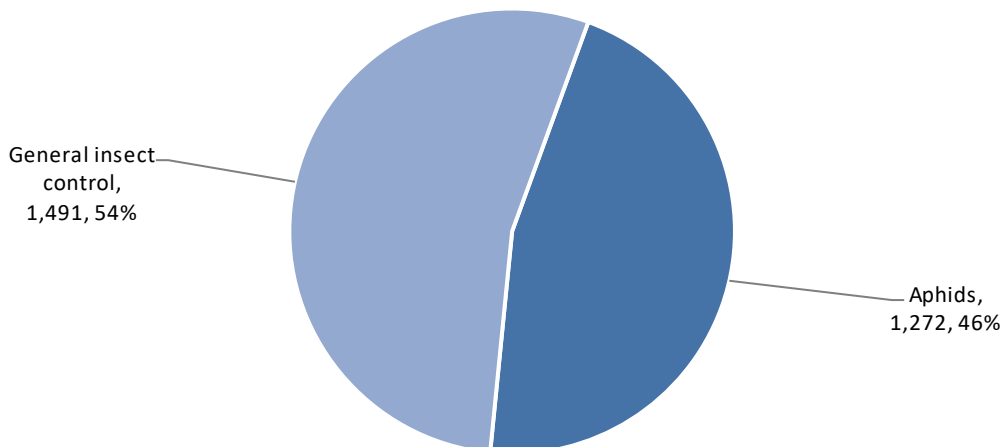


**Figure 57:** Winter wheat: reasons for herbicide & desiccant use (spha), 2020.

### Insecticides - winter wheat

- Basic treated area: 2,709 hectares
- Total treated area: 2,763 spray hectares
- Quantity applied: 12 kilogrammes
- 40% 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)
Esfenvalerate	1,664	1,653	7	60
Lambda-cyhalothrin	1,099	1,099	5	40



**Figure 58:** Winter wheat: reasons for insecticide use (spha), 2020.

## Growth regulators - winter wheat

- Basic treated area: 6,120 hectares
- Total treated area: 9,986 spray hectares
- Quantity applied: 4,602 kilogrammes
- 91% of the area grown treated with growth regulators
- The active substances applied were:

<i>Active substance</i>	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total growth regulator-treated area (spha)
Chlormequat	5,401	4,703	4,179	54
Trinexapac-ethyl	2,722	2,501	123	27
Mepiquat chloride/prohexadione-calcium	1,061	1,061	252	11
Prohexadione-calcium/trinexapac-ethyl	760	687	32	8
2-chloroethylphosphonic acid/mepiquat chloride	43	43	16	<1

## Other treatments - winter wheat

- Basic treated area: 49 hectares
- Total treated area: 49 spray hectares
- Quantity applied: 56 kilogrammes
- 1% of the area grown treated with other substances
- The only reason given for use was 'plant nutrition'
- The only substance applied was magnesium sulphate

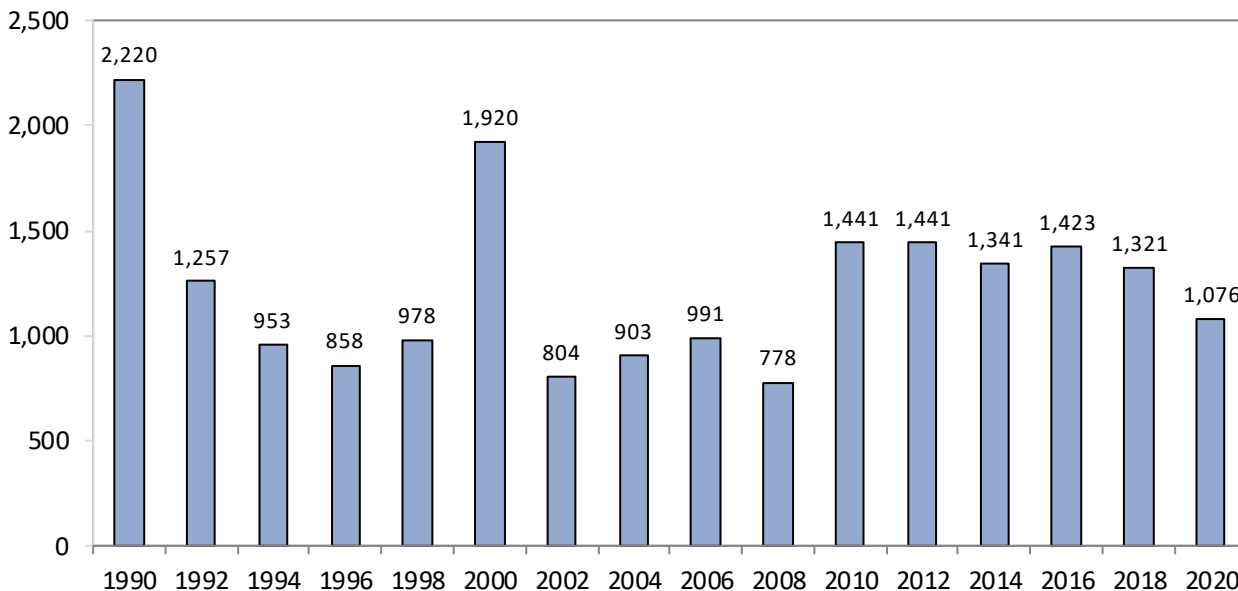
## Seed treatments - winter wheat

- Basic treated area: 6,083 hectares
- Total treated area: 6,353 spray hectares
- Quantity applied: 65 kilogrammes
- 91% of the area grown was sown with treated seed
- The most commonly applied active substances were:

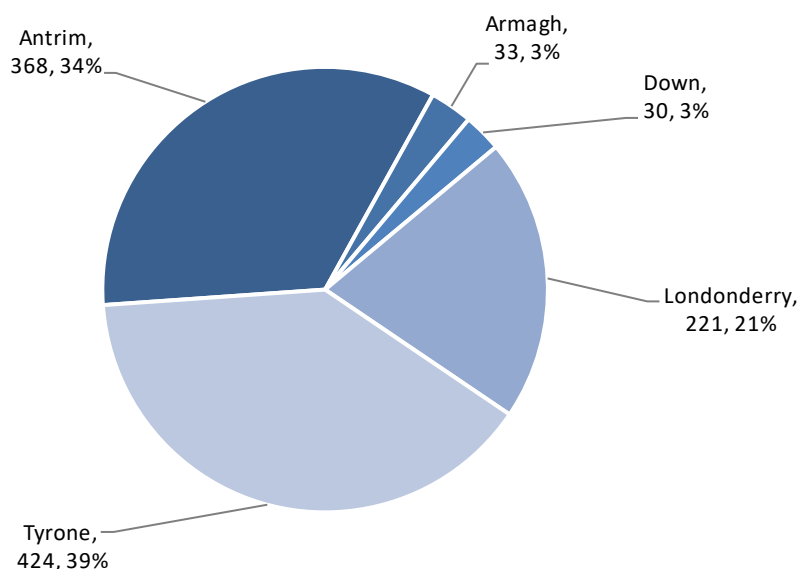
<i>Active substance</i>	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total seed treatment-treated area (spha)
Difenoconazole/fludioxonil	10	10	<1	<1
Fludioxonil	3,053	3,053	28	48
Fludioxonil/fluxapyroxad/triticonazole	419	419	13	7
Prothioconazole	106	106	2	2
Prothioconazole/tebuconazole	441	441	9	7

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

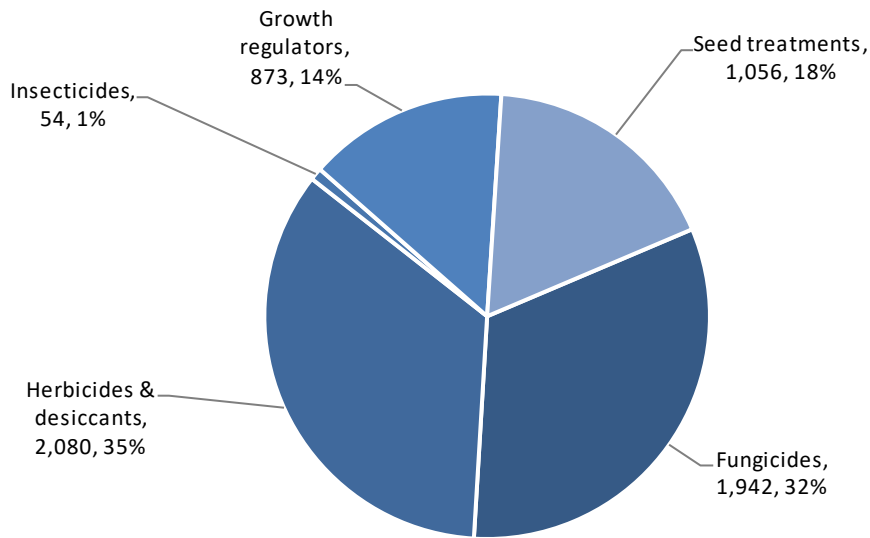
- 1,076 hectares of spring oats grown in Northern Ireland
- 6,005 treated hectares
- 955 kilogrammes applied
- 100% of the area of spring oat crops grown received a pesticide treatment
- Spring oats received on average 2 fungicide, 2 herbicide, 1 insecticide, 1 growth regulator and 1 seed treatment applications



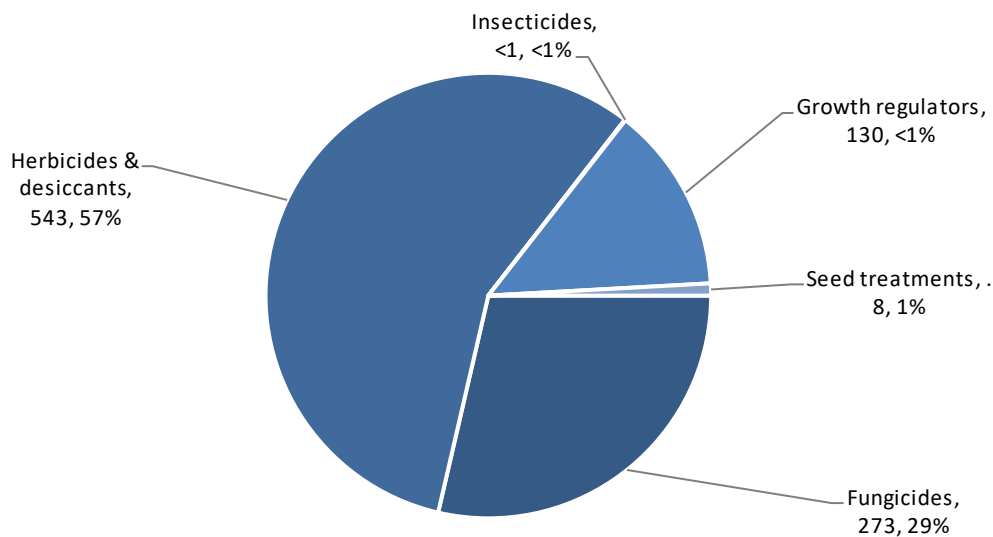
**Figure 59:** Total area (ha) of spring oat crops grown in Northern Ireland from 1990 to 2020.



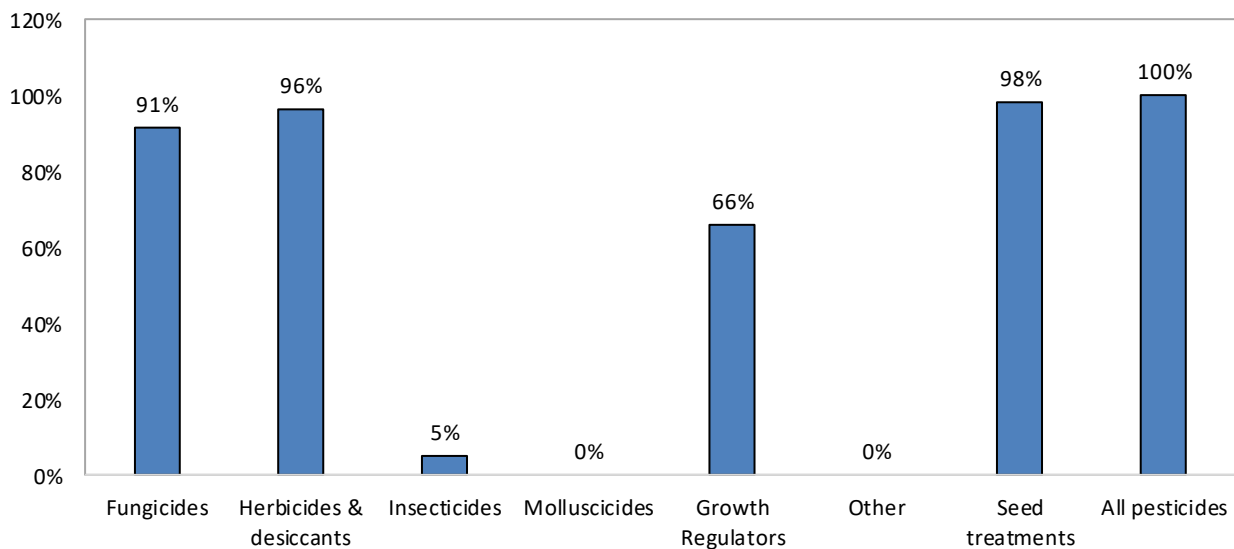
**Figure 60:** Regional distribution (ha) of spring oat crops grown in Northern Ireland, 2020.



**Figure 61:** Pesticide usage (spha) on spring oat crops in Northern Ireland, 2020.



**Figure 62:** Weight (kg) of pesticides applied to spring oat crops in Northern Ireland, 2020.



**Figure 63:** Proportional area (%) of spring oat crops treated with each pesticide type in Northern Ireland, 2020.



## Fungicides – spring oats

- Basic treated area: 982 hectares
- Total treated area: 1,942 spray hectares
- Quantity applied: 273 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)
Proquinazid	562	547	20	29
Epoxiconazole	547	547	66	28
Epoxiconazole/fenpropimorph/kresoxim-metf	294	294	93	15
Prothioconazole	247	207	25	13
Pyraclostrobin	108	108	14	6

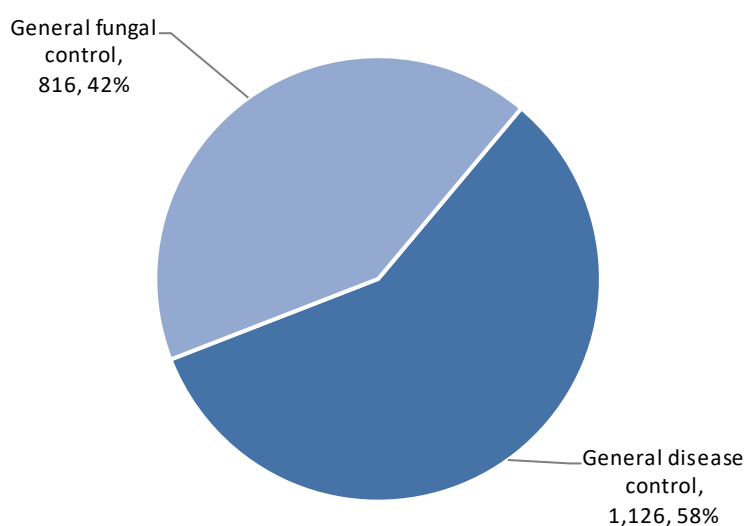
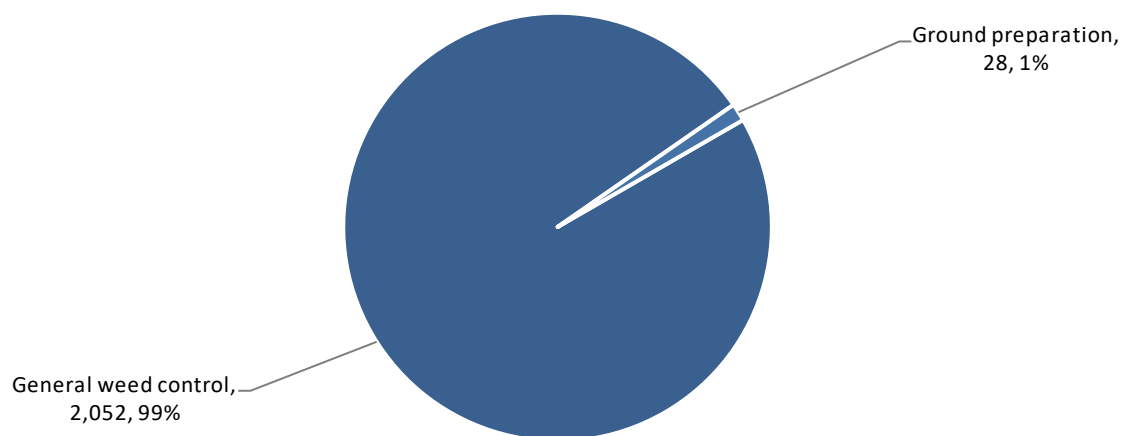


Figure 64: Spring oats: reasons for fungicide use (spha), 2020.

## Herbicides & desiccants – spring oats

- Basic treated area: 1,036 hectares
- Total treated area: 2,080 spray hectares
- Quantity applied: 543 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)
Metsulfuron-methyl/tribenuron-methyl	844	844	8	41
Dicamba/mecoprop-p	698	698	369	34
Glyphosate	140	140	137	7
Metsulfuron-methyl	124	124	1	6
Fluroxypyr	103	103	15	5



**Figure 65:** Spring oats: reasons for herbicide & desiccant use (spha), 2020.

### ***Insecticides – spring oats***

- Basic treated area: 54 hectares
- Total treated area: 54 spray hectares
- Quantity applied: <1 kilogrammes
- 5% of the area grown treated with insecticides
- The only reason given for use was 'general insect control'
- The active substances applied were:

<b><i>Active substance</i></b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total insecticide-treated area (spha)</b>
Lambda-cyhalothrin	33	33	<1	62
Esfenvalerate	20	20	<1	38

### ***Growth regulators – spring oats***

- Basic treated area: 709 hectares
- Total treated area: 873 spray hectares
- Quantity applied: 130 kilogrammes
- 66% of the area grown treated with growth regulators
- The active substances applied were:

<b><i>Active substance</i></b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total growth regulator-treated area (spha)</b>
Trinexapac-ethyl	626	596	32	72
Prohexadione-calcium/trinexapac-ethyl	126	126	5	14
Chlormequat	122	122	92	14

## Seed treatments – spring oats

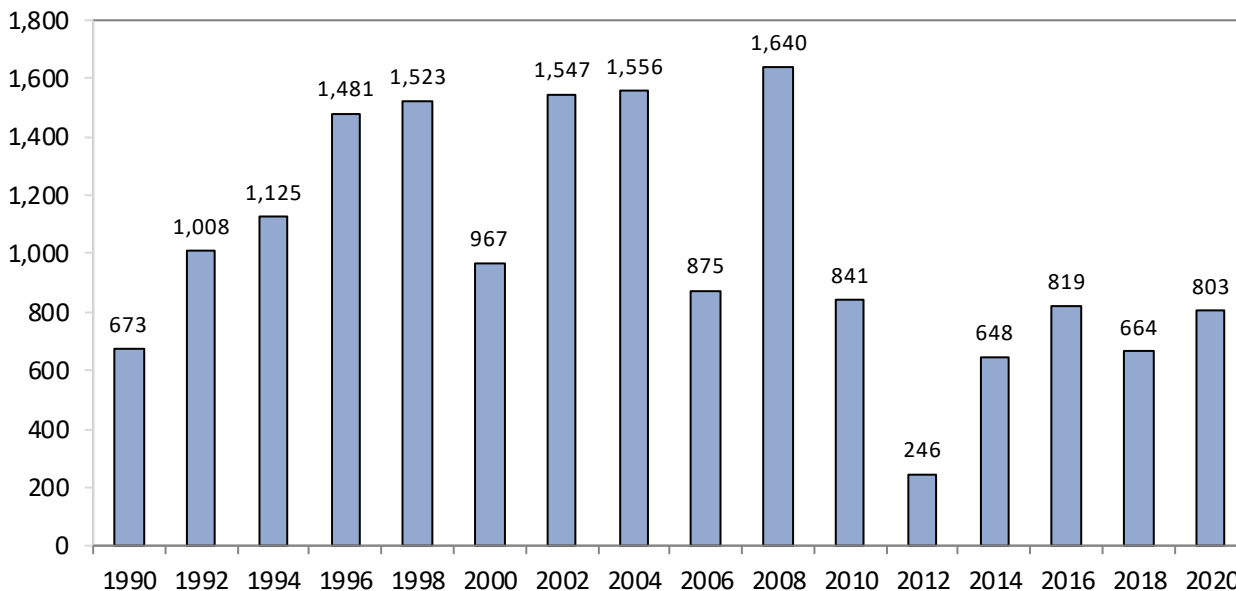
- Basic treated area: 1,056 hectares
- Total treated area: 1,056 spray hectares
- Quantity applied: 8 kilogrammes
- 98% of the area grown was sown with treated seed
- The active substances applied were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total seed treatment-treated area (spha)</b>
Fludioxonil	731	731	7	69
Unknown seed treatment*	244	244	.	23
Prothioconazole	81	81	1	8

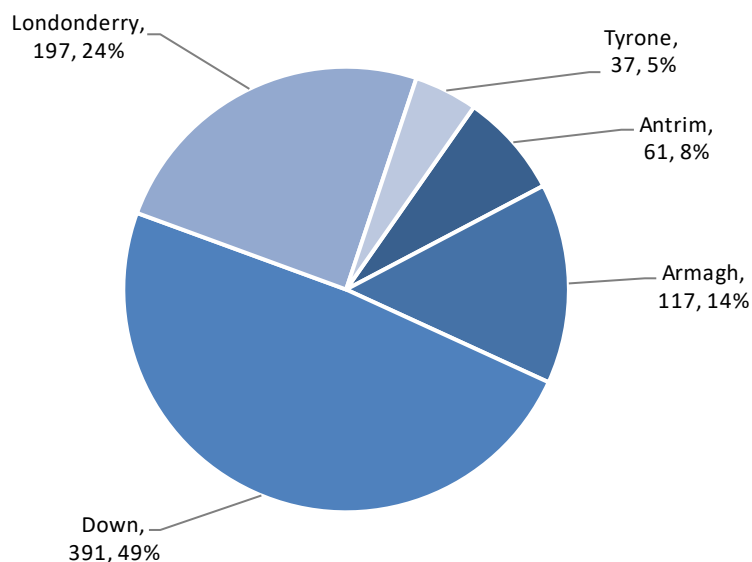
*\*Quantities not available for unknown seed treatments*

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

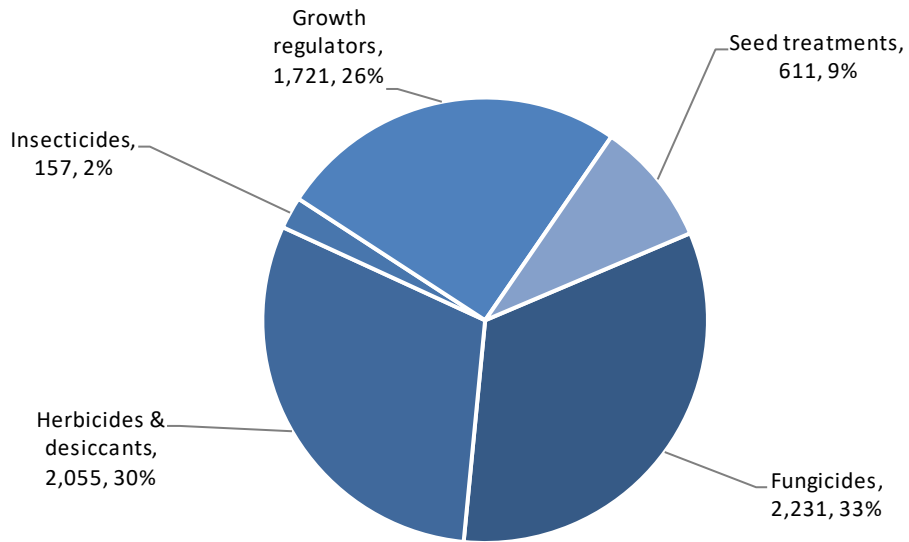
- 803 hectares of winter oats grown in Northern Ireland
- 6,776 treated hectares
- 1,866 kilogrammes applied
- 100% of the area of winter oat crops grown received a pesticide treatment
- Winter oats received on average 3 fungicide, 3 herbicide, 1 insecticide, 2 growth regulator and 1 seed treatment applications



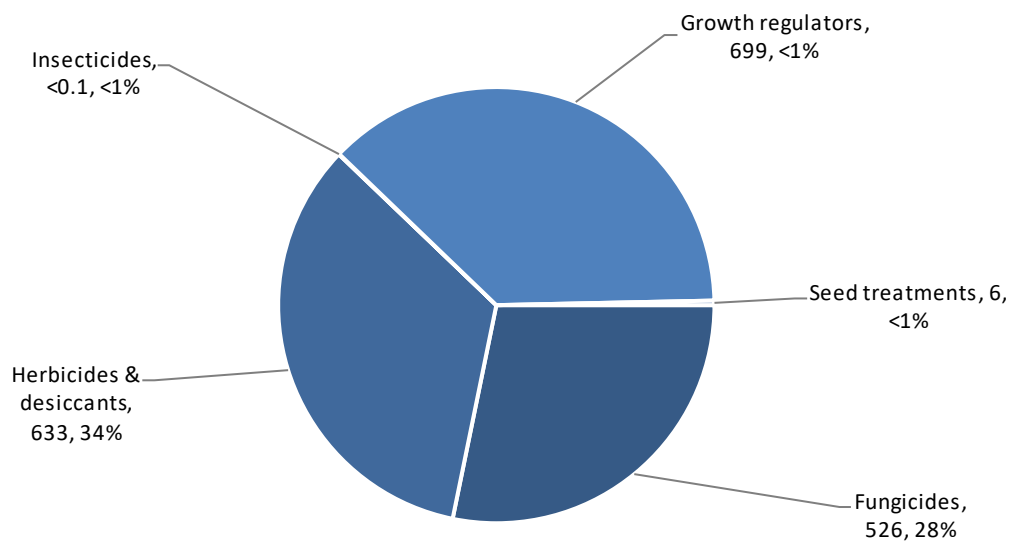
**Figure 66:** Total area (ha) of winter oat crops grown in Northern Ireland from 1990 to 2020.



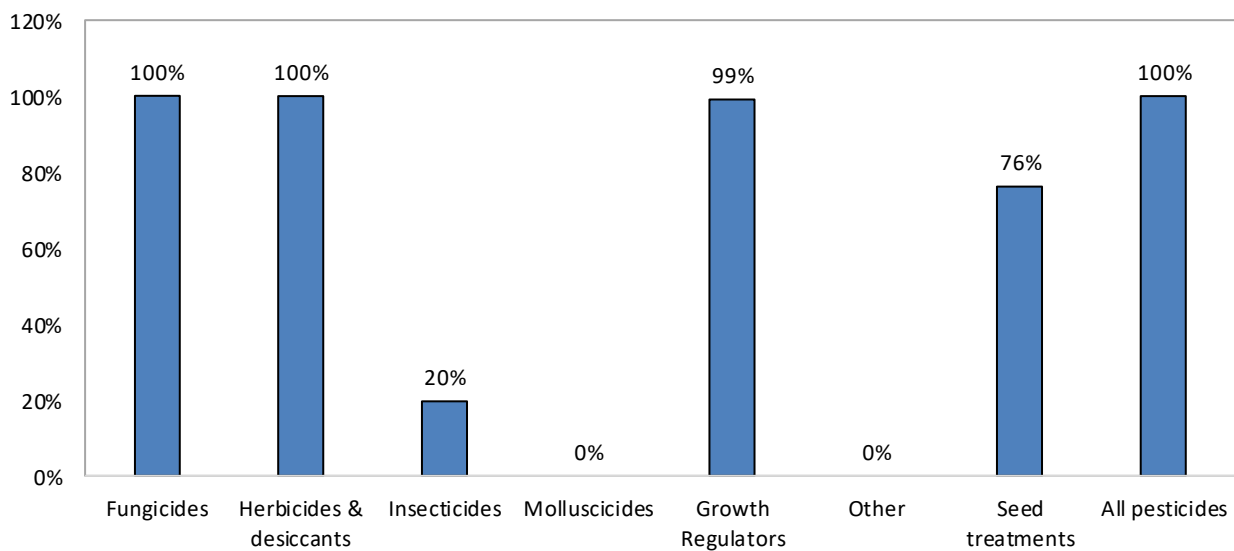
**Figure 67:** Regional distribution (ha) of winter oat crops grown in Northern Ireland, 2020.



**Figure 68:** Pesticide usage (spha) on winter oat crops in Northern Ireland, 2020.



**Figure 69:** Weight (kg) of pesticides applied to winter oat crops in Northern Ireland, 2020.

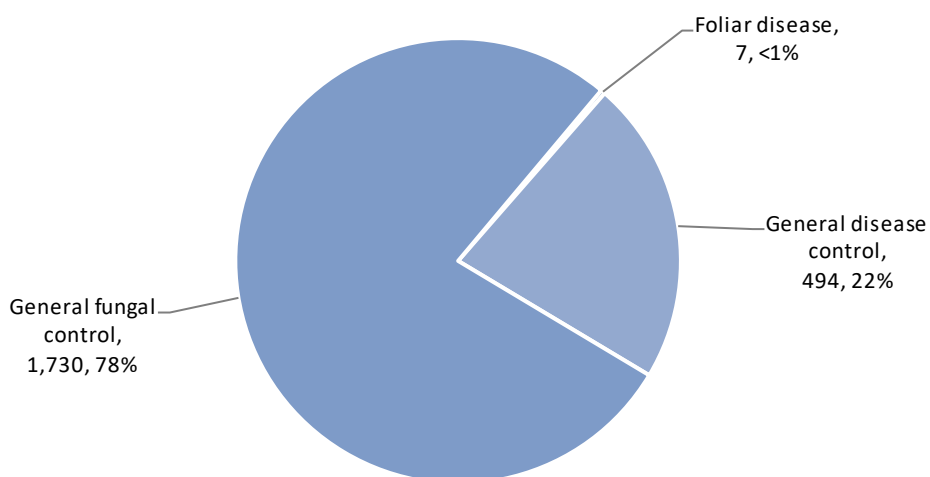


**Figure 70:** Proportional area (%) of winter oat crops treated with each pesticide type in Northern Ireland, 2020.

## Fungicides – winter oats

- Basic treated area: 803 hectares
- Total treated area: 2,231 spray hectares
- Quantity applied: 526 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	448	296	54	20
Tebuconazole	222	222	35	10
Fenpropimorph	197	146	52	9
Epoxiconazole/fenpropimorph	189	133	71	8
Epoxiconazole/metrafenone	158	105	36	7

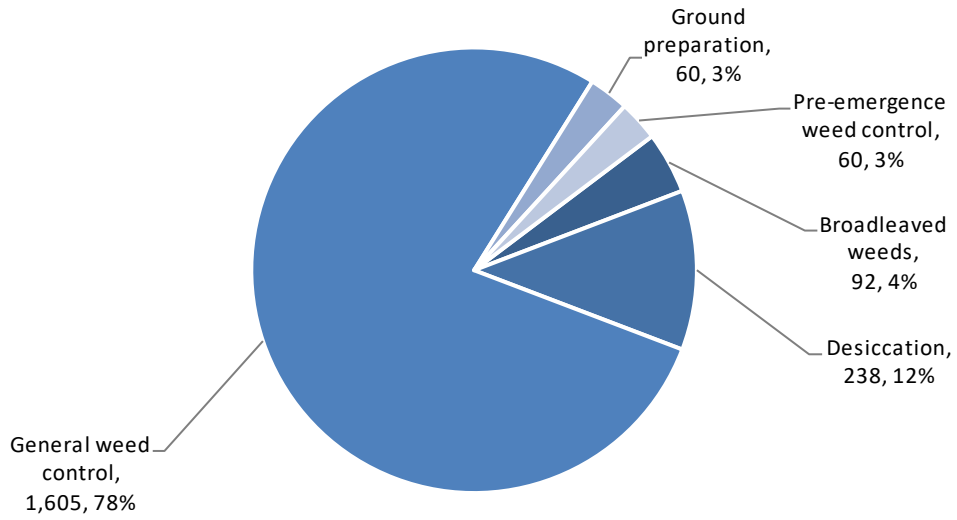


**Figure 71:** Winter oats: reasons for fungicide use (spha), 2020.

## Herbicides & desiccants – winter oats

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

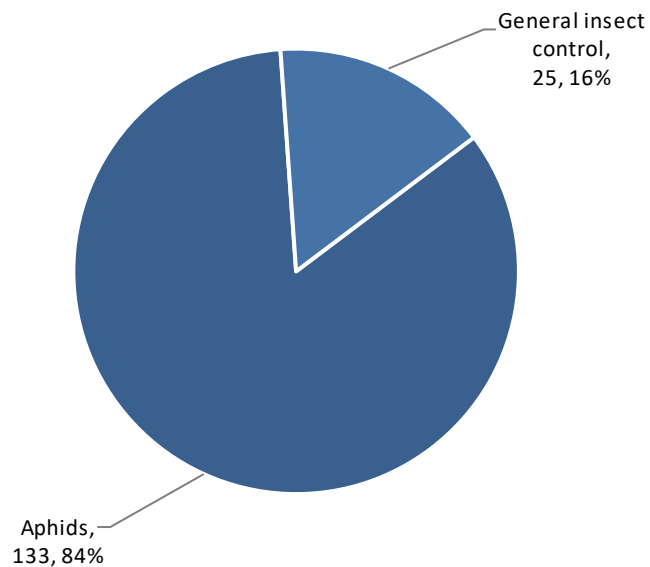
Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Glyphosate	382	301	316	19
Diflufenican/flufenacet	323	323	50	16
Fluroxypyr	279	254	39	14
Diflufenican	263	263	29	13
Thifensulfuron-methyl/tribenuron-methyl	222	222	3	11



**Figure 72:** Winter oats: reasons for herbicide & desiccant use (spha), 2020.

### ***Insecticides – winter oats***

- Basic treated area: 157 hectares
- Total treated area: 157 spray hectares
- Quantity applied: 1 kilogramme
- 20% of the area grown treated with insecticides
- The only active substance applied was lambda-cyhalothrin



**Figure 73:** Winter oats: reasons for insecticide use (spha), 2020.

## Growth regulators – winter oats

- Basic treated area: 796 hectares
- Total treated area: 1,721 spray hectares
- Quantity applied: 699 kilogrammes
- 99% of the area grown treated with growth regulators
- The active substances applied were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total insecticide-treated area (spha)</b>
Chlormequat	854	590	664	50
Trinexapac-ethyl	680	602	26	39
Prohexadione-calcium/trinexapac-ethyl	156	156	6	9
Mepiquat chloride/prohexadione-calcium	31	31	3	2

## Seed treatments – winter oats

- Basic treated area: 611 hectares
- Total treated area: 611 spray hectares
- Quantity applied: 6 kilogrammes
- 76% of the area grown was sown with treated seed
- The active substances applied were:

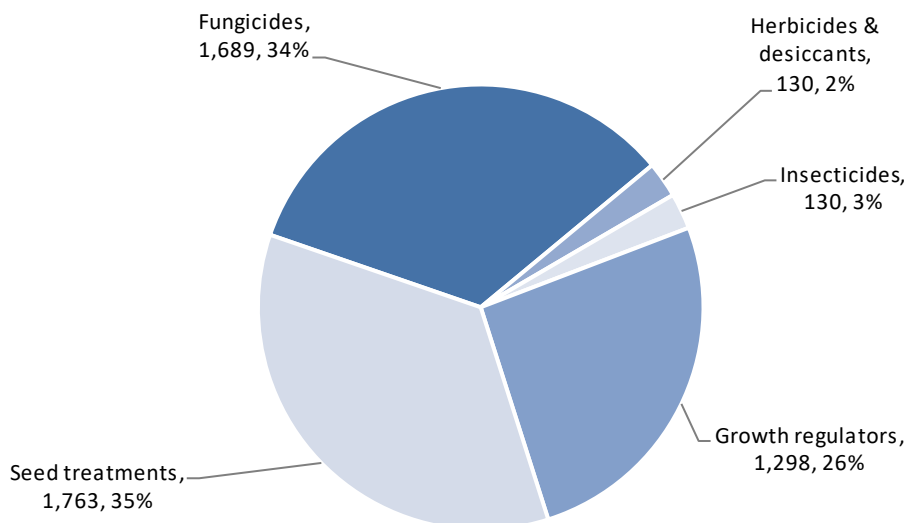
<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total seed treatment-treated area (spha)</b>
Fludioxonil	307	307	3	50
Unknown seed treatment*	138	138	.	23
Prothioconazole/tebuconazole	89	89	2	15
Prothioconazole	78	78	1	13

\*Quantities not available for unknown seed treatments

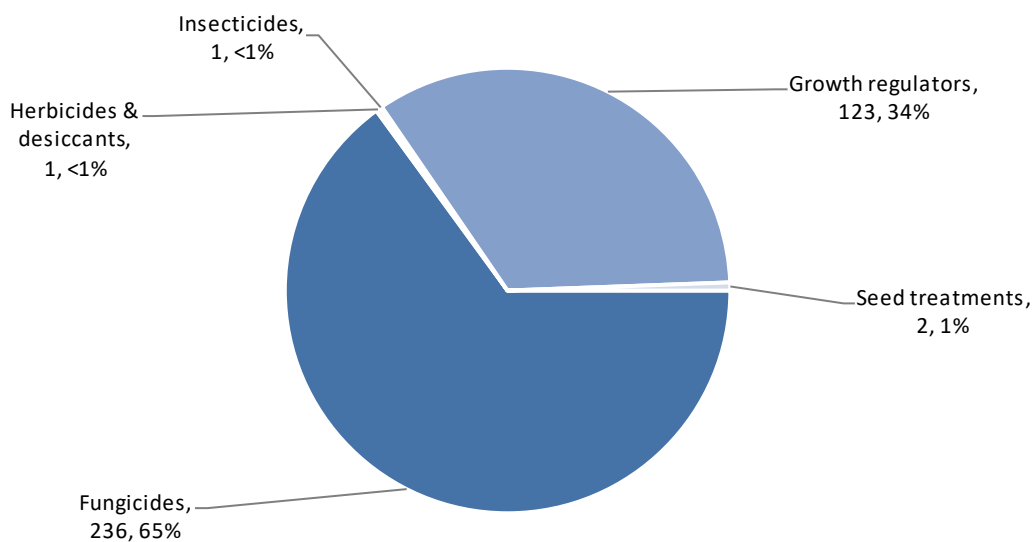


**Pesticide usage on rye (Tables 3, 5, 6, 7, 8, 9 & 14):**

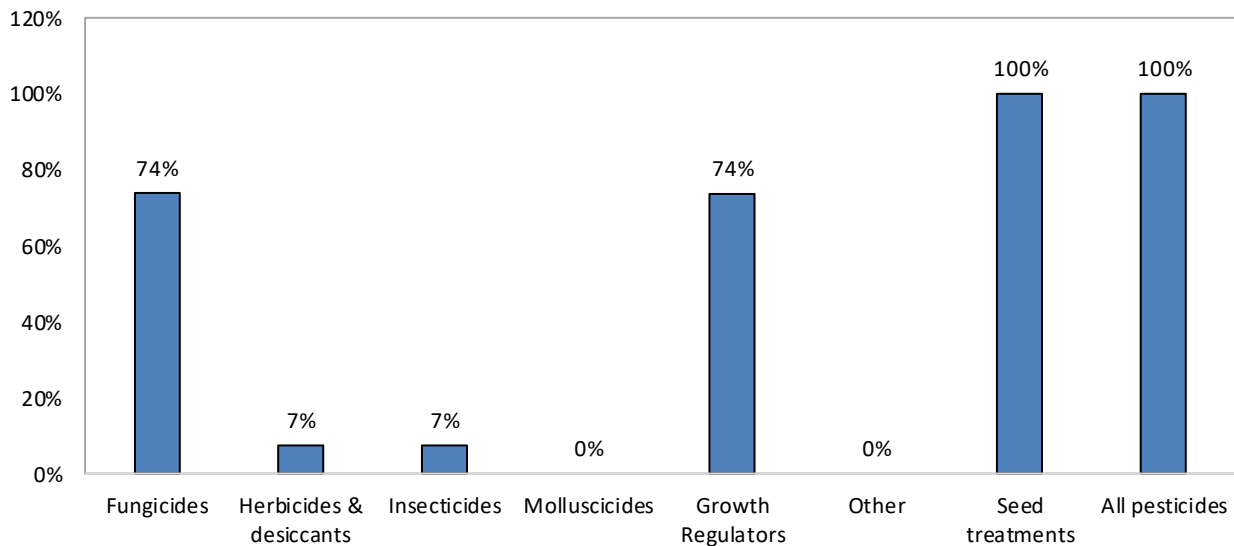
- 1,763 hectares of rye grown in Northern Ireland
- 5,010 treated hectares
- 363 kilogrammes applied
- 100% of the area of rye crops grown received a pesticide treatment
- Rye received on average 1 fungicide, 1 herbicide, 1 insecticide, 1 growth regulator and 1 seed treatment applications



**Figure 74:** Pesticide usage (spha) on rye crops in Northern Ireland, 2020.



**Figure 75:** Weight (kg) of pesticides applied to rye crops in Northern Ireland, 2020.



**Figure 76:** Proportional area (%) of rye crops treated with each pesticide type in Northern Ireland, 2020.

### Fungicides – rye

- Basic treated area: 1,298 hectares
- Total treated area: 1,689 spray hectares
- Quantity applied: 236 kilogrammes
- 74% of the area grown treated with fungicides
- The only reason given for use was ‘general fungal control’
- 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)
Epoxiconazole	1167	1167	137	69
Azoxystrobin	130	130	20	8
Epoxiconazole/fenpropimorph	130	130	54	8
Proquinazid	130	130	5	8
Tebuconazole	130	130	20	8

### Herbicides – rye

- Basic treated area: 130 hectares
- Total treated area: 130 spray hectares
- Quantity applied: 1 kilogramme
- 7% of the area grown treated with herbicides
- The only reason given for use was ‘general weed control’
- The only active substance formulation applied was florasulam/haloxifen-methyl

## Growth regulators – rye

- Basic treated area: 1,298 hectares
- Total treated area: 1,298 spray hectares
- Quantity applied: 123 kilogrammes
- 74% of the area grown treated with growth regulators
- The active substances applied were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total herbicide-treated area (spha)</b>
Trinexapac-ethyl	1167	1167	117	90
Prohexadione-calcium/trinexapac-ethyl	130	130	7	10

## Seed treatments – rye

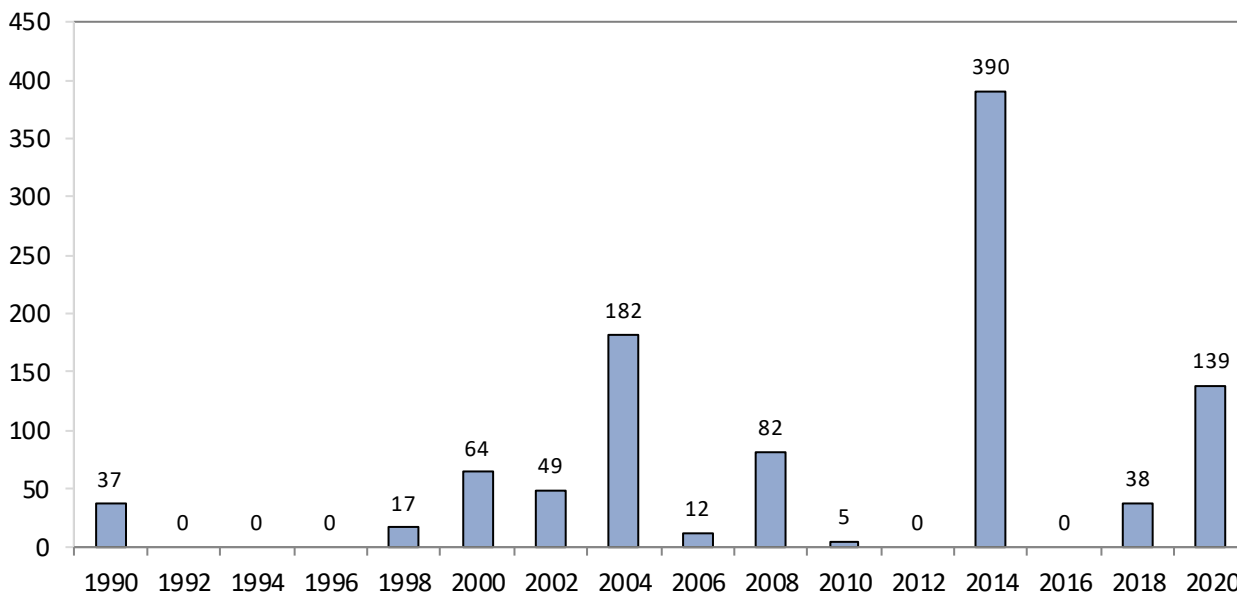
- Basic treated area: 1,763 hectares
- Total treated area: 1,763 spray hectares
- Quantity applied: 2 kilogrammes
- 100% of the area grown was sown with treated seed
- The active substances applied were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total fungicide-treated area (spha)</b>
Unknown seed treatment*	1,298	1,298	.	74
Prothioconazole/tebuconazole	465	465	2	26

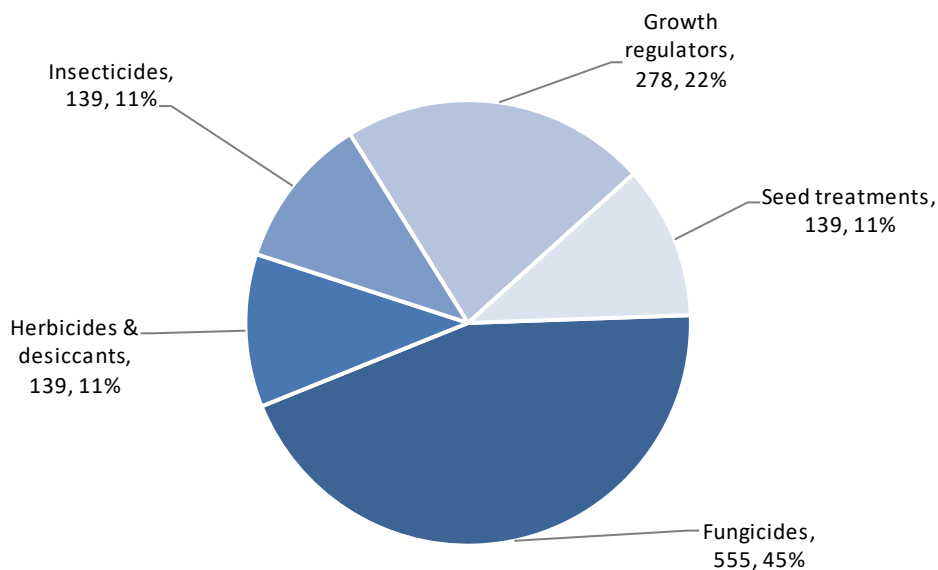
\*Quantities not available for unknown seed treatments

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

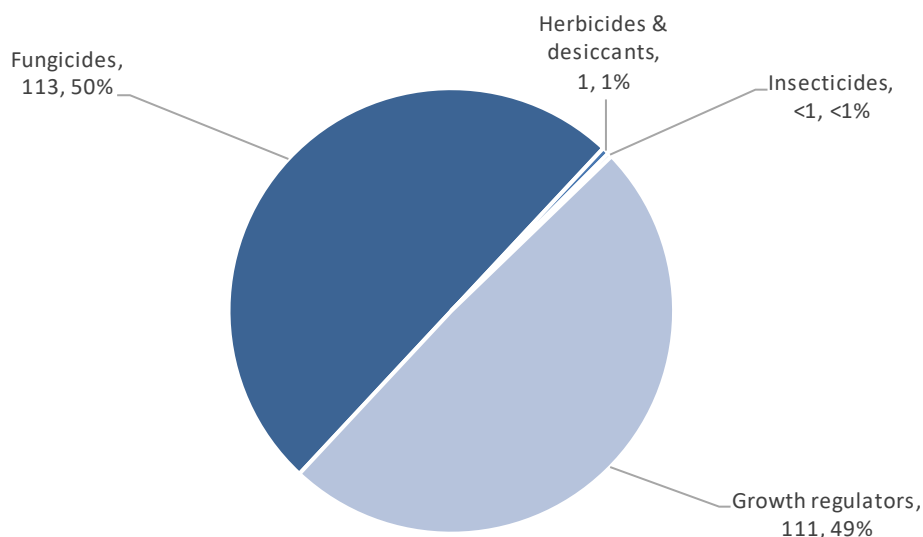
- 139 hectares of triticale grown in Northern Ireland
- 1,249 treated hectares
- 226 kilogrammes applied
- 100% of the area of triticale crops grown received a pesticide treatment
- Triticale received on average 4 fungicide, 1 herbicide, 1 insecticide, 2 growth regulator and 1 seed treatment applications



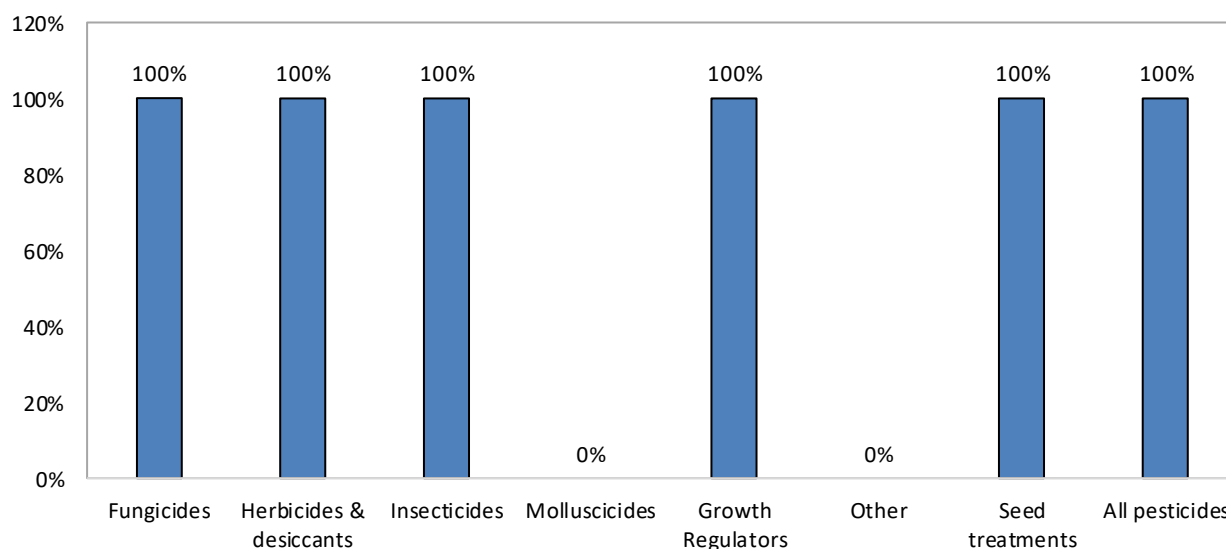
**Figure 77:** Total area (ha) of triticale crops grown in Northern Ireland (ha) from 1990 to 2020.



**Figure 78:** Pesticide usage (spha) on triticale crops in Northern Ireland, 2020.



**Figure 79:** Weight (kg) of pesticides applied to triticale crops in Northern Ireland, 2020.



**Figure 80:** Proportional area (%) of triticale crops treated with each pesticide type in Northern Ireland, 2020.

### Fungicides – triticale

- Basic treated area: 139 hectares
- Total treated area: 555 spray hectares
- Quantity applied: 113 kilogrammes
- 100% of the area grown treated with fungicides
- The only reason given for use was '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)
Epoxiconazole/fenpropimorph	139	139	58	25
Isopyrazam/prothioconazole	139	139	29	25
Proquinazid	139	139	6	25
Tebuconazole	139	139	21	25

## **Herbicides – triticale**

- Basic treated area: 139 hectares
- Total treated area: 139 spray hectares
- Quantity applied: 1 kilogramme
- 100% of the area grown treated with herbicides
- The only reason given for use was 'general weed control'
- The only active substance formulation applied was florasulam/haloxifen-methyl

## **Insecticides – triticale**

- Basic treated area: 139 hectares
- Total treated area: 139 spray hectares
- Quantity applied: 1 kilogramme
- 100% of the area grown treated with insecticides
- The only reason given for use was 'general insect control'
- The only active substance applied was lambda-cyhalothrin

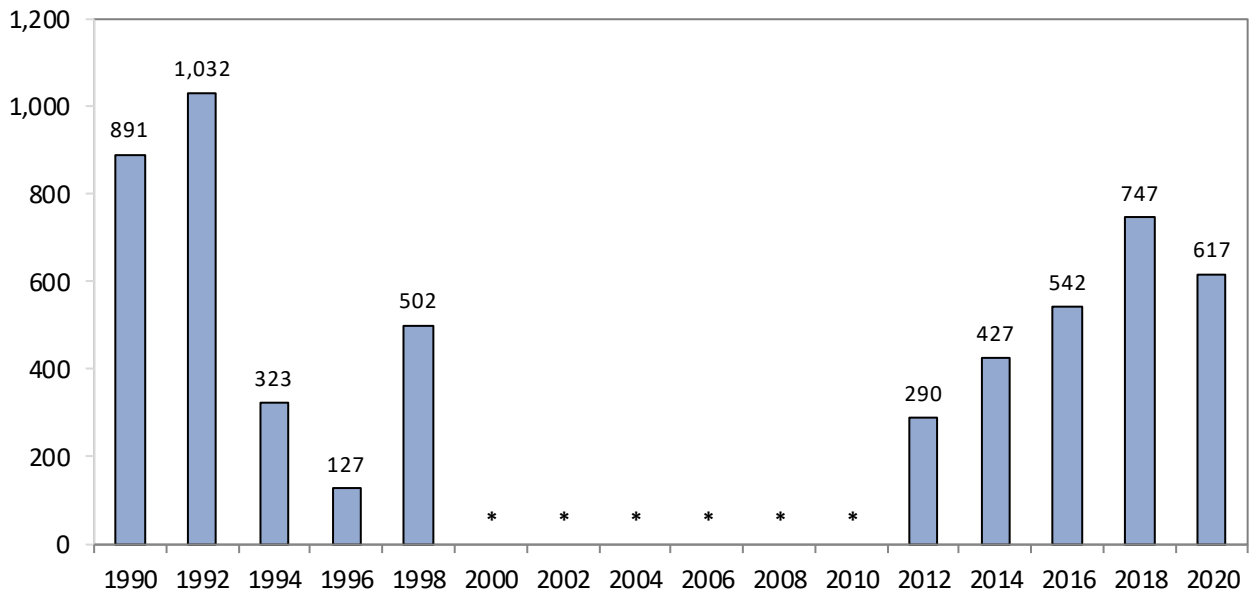
## **Growth regulators – triticale**

- Basic treated area: 139 hectares
- Total treated area: 278 spray hectares
- Quantity applied: 111 kilogrammes
- 100% of the area grown treated with growth regulators
- The active substances applied were:

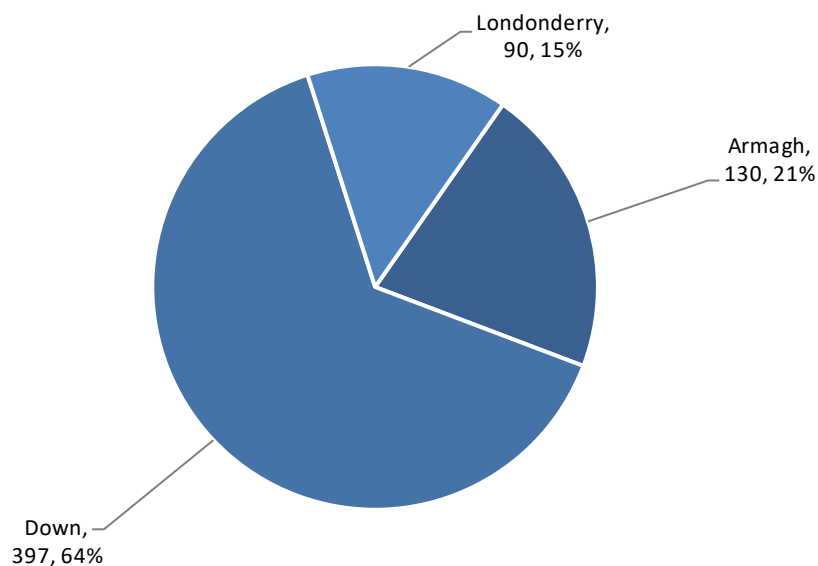
<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total growth regulator-treated area (spha)</b>
Chlormequat	139	139	104	50
Prohexadione-calcium/trinexapac-ethyl	139	139	7	50

## Pesticide usage on winter oilseed rape (Tables 3, 5, 6, 7, 8, 9 & 23):

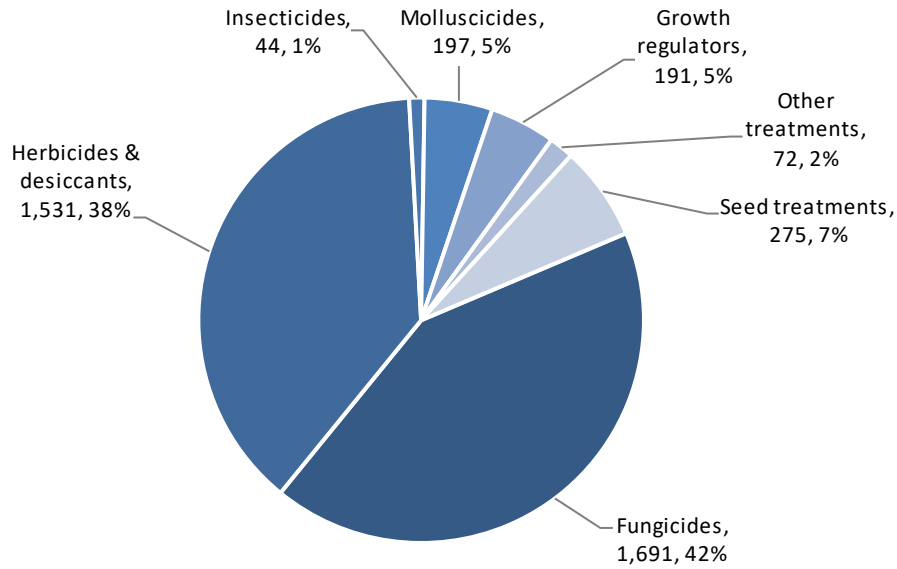
- 617 hectares of winter oilseed rape grown in Northern Ireland
- 4,001 treated hectares
- 1,675 kilogrammes applied
- 100% of the area of winter oilseed rape crops grown received a pesticide treatment
- Winter oilseed rape crops received on average 2 fungicide, 3 herbicide, 1 insecticide, 1 molluscicide, 1 growth regulator, 1 other treatment and 1 seed treatment applications



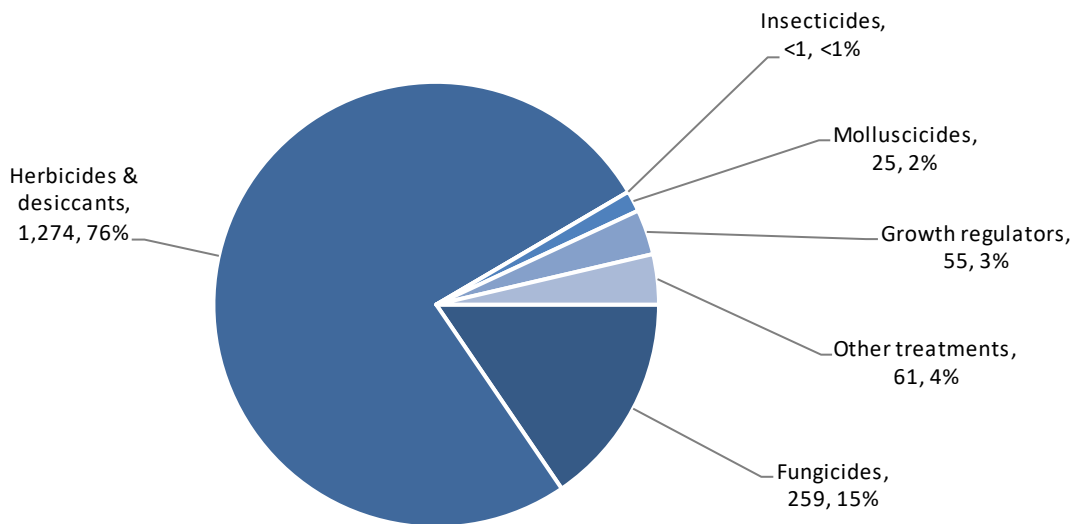
**Figure 81:** Total area (ha) of winter oilseed rape crops grown in Northern Ireland from 1990 to 2020. \*Data specified as 'oilseed rape' only so winter sowing specifically could not be determined for the purpose of this chart.



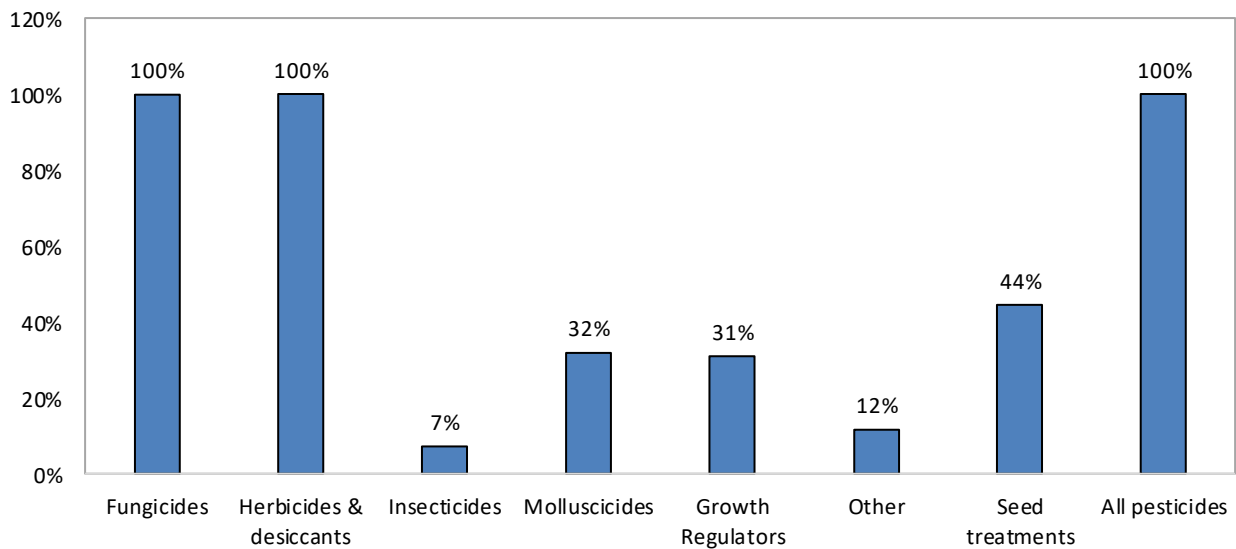
**Figure 82:** Regional distribution (ha) of winter oilseed rape crops grown in Northern Ireland, 2020.



**Figure 83:** Pesticide usage (spha) on winter oilseed rape crops in Northern Ireland, 2020.



**Figure 84:** Weight (kg) of pesticides applied to winter oilseed rape crops in Northern Ireland, 2020.



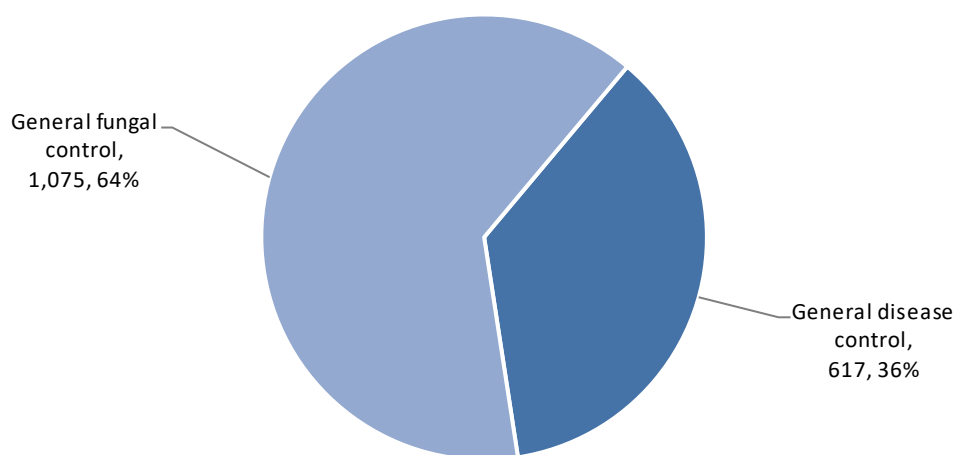
**Figure 85:** Proportional area (%) of winter oilseed rape crops treated with each pesticide type in Northern Ireland, 2020.

**Fungicides – winter oilseed rape**



- Basic treated area: 617 hectares
- Total treated area: 1,691 spray hectares
- Quantity applied: 259 kilogrammes
- 100% of the area grown treated with fungicides
- The most commonly applied active substances were:

<i>Active substance</i>	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Prothioconazole	730	556	77	43
Tebuconazole	278	278	40	16
Metconazole	206	206	9	12
Azoxystrobin	159	159	25	9
Prothioconazole/tebuconazole	84	84	10	5

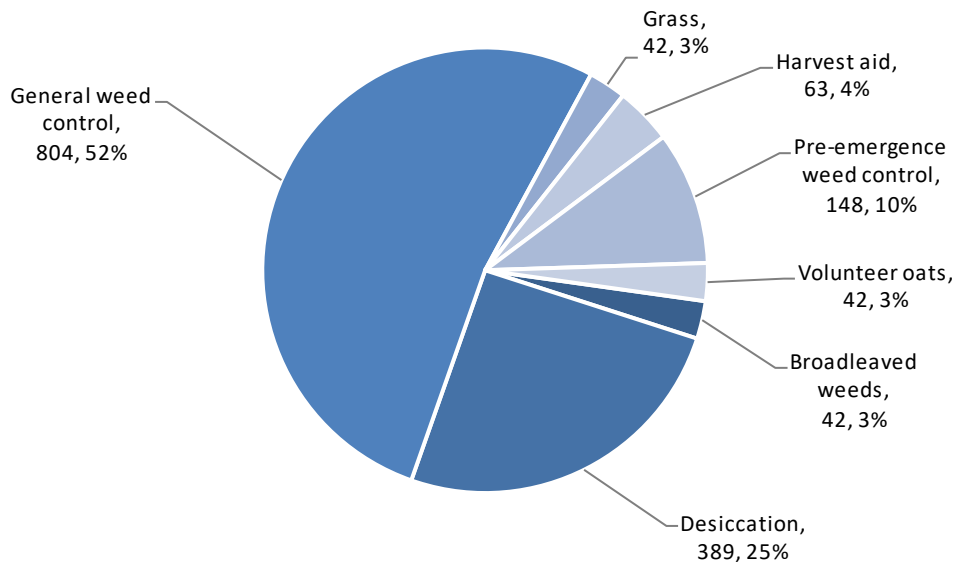


**Figure 86:** Winter oilseed rape: reasons for fungicide use (spha), 2020.

### **Herbicides & desiccants – winter oilseed rape**

- Basic treated area: 617 hectares
- Total treated area: 1,531 spray hectares
- Quantity applied: 1,274 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

<i>Active substance</i>	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Aminopyralid/propryzamide	471	21	18	31
Dimethenamid-P/metazachlor/quinmerac	323	225	275	21
Glyphosate	276	389	569	18
Imazamox/metazachlor	225	44	35	15
Metazachlor	128	128	77	8



**Figure 87:** Winter oilseed rape: reasons for herbicide & desiccant use (spha), 2020.

### ***Insecticides – winter oilseed rape***

- Basic treated area: 44 hectares
- Total treated area: 44 spray hectares
- Quantity applied: <1 kilogramme
- 7% of the area grown treated with insecticides
- The only reason given for use was 'general insect control'
- The only active substance applied was lambda-cyhalothrin

### ***Molluscicides – winter oilseed rape***

- Basic treated area: 197 hectares
- Total treated area: 197 spray hectares
- Quantity applied: 25 kilogrammes
- 32% of the area grown treated with molluscicides
- The only reason given for use was 'slugs'
- The only active substance applied was ferric phosphate

### ***Growth regulators – winter oilseed rape***

- Basic treated area: 191 hectares
- Total treated area: 191 spray hectares
- Quantity applied: 55 kilogrammes
- 31% of the area grown treated with growth regulators
- The only active substance formulation applied was mepiquat chloride/metconazole

### ***Other treatments – winter oilseed rape***

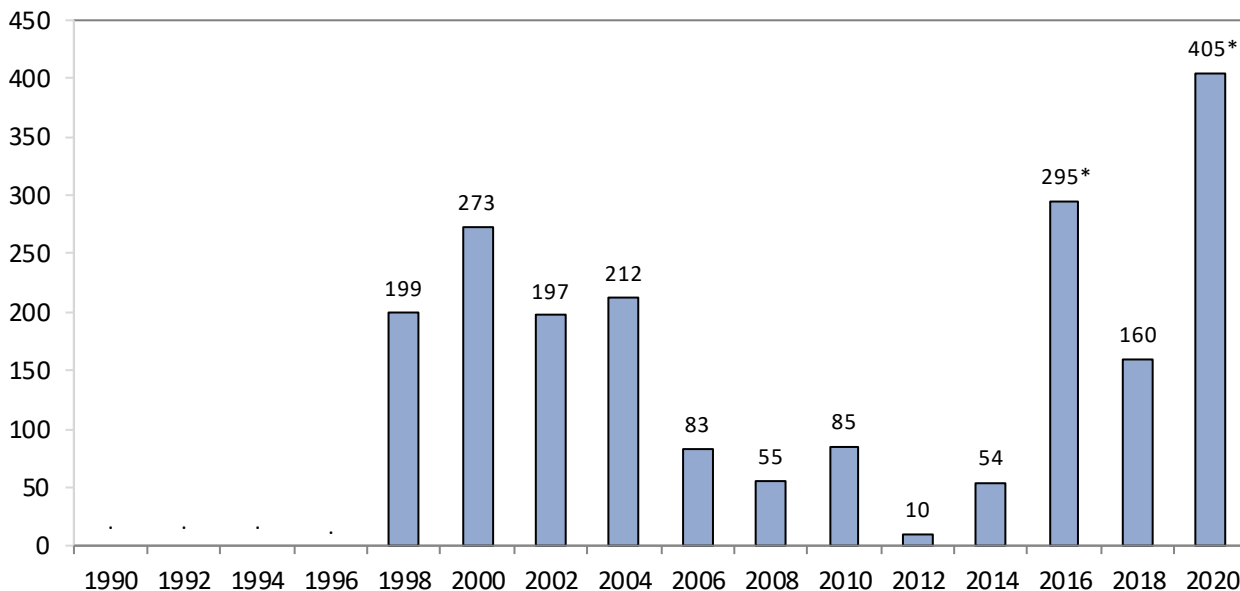
- Basic treated area: 72 hectares
- Total treated area: 72 spray hectares
- Quantity applied: 61 kilogrammes
- 12% of the area grown treated with other treatments
- The only reason given for use was 'adjuvant'
- The only active substance applied was synthetic latex

### ***Seed treatments – winter oilseed rape***

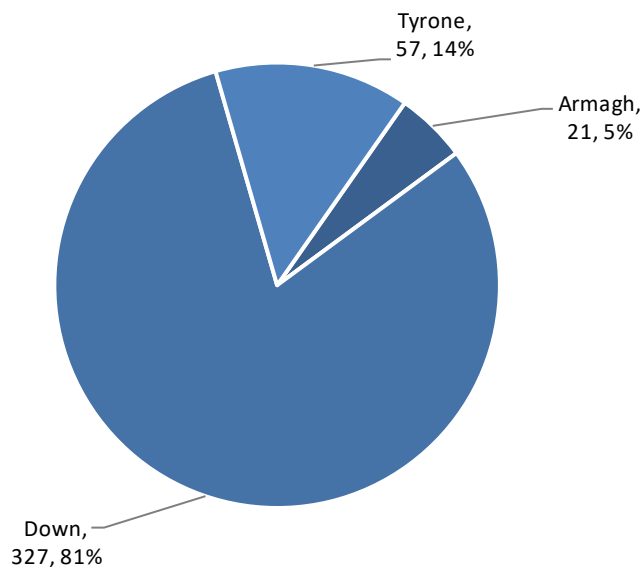
- Basic treated area: 275 hectares
- Total treated area: 275 spray hectares
- Quantity applied: Unknown
- 44% of the area grown was sown with treated seed
- The only active substance applied was 'unknown seed treatment'

## Pesticide usage on field beans (Tables 3, 5, 6, 7, 8, 9 & 13):

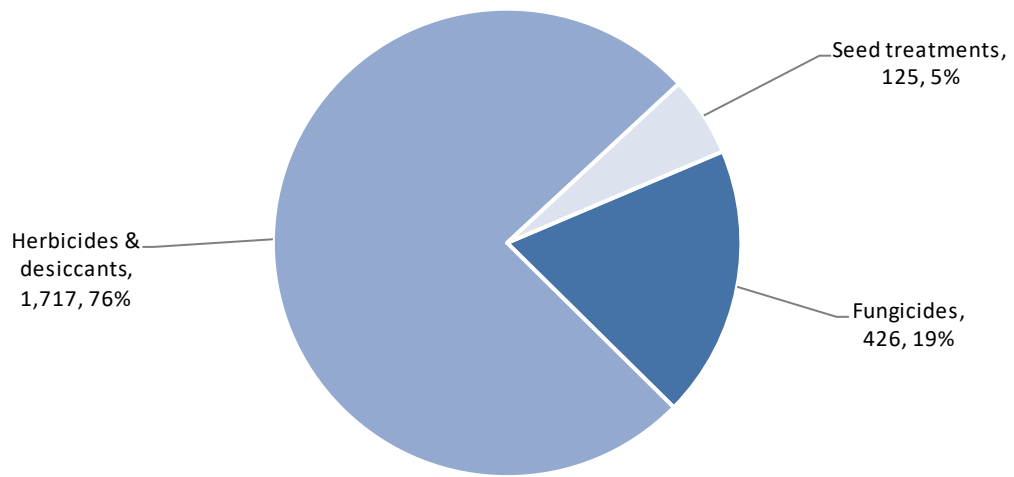
- 405 hectares of field beans grown in Northern Ireland
- 2,268 treated hectares
- 1,423 kilogrammes applied
- 100% of the area of field bean crops grown received a pesticide treatment
- Field bean crops received on average 1 fungicide, 5 herbicide and 1 seed treatment applications



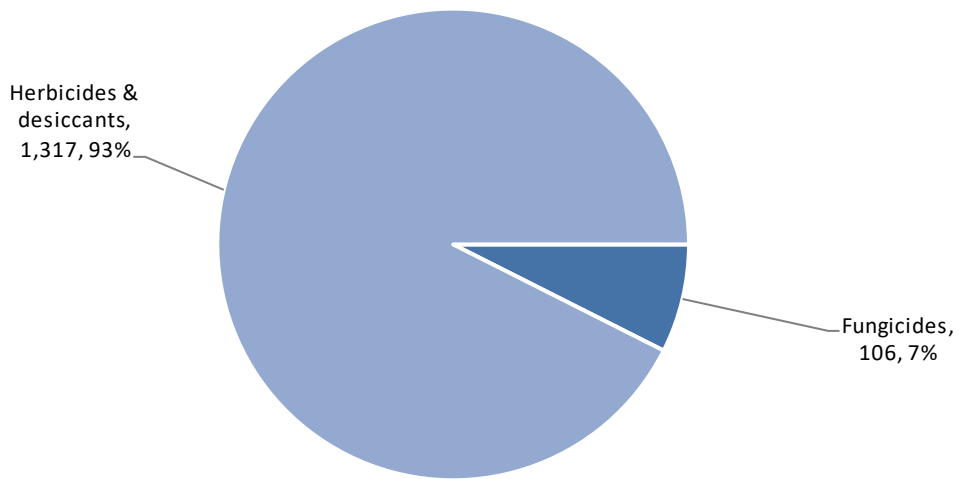
**Figure 88:** Total area (ha) of pea and bean crops grown in Northern Ireland from 1990 to 2020. \*Only beans recorded in 2016 and 2020.



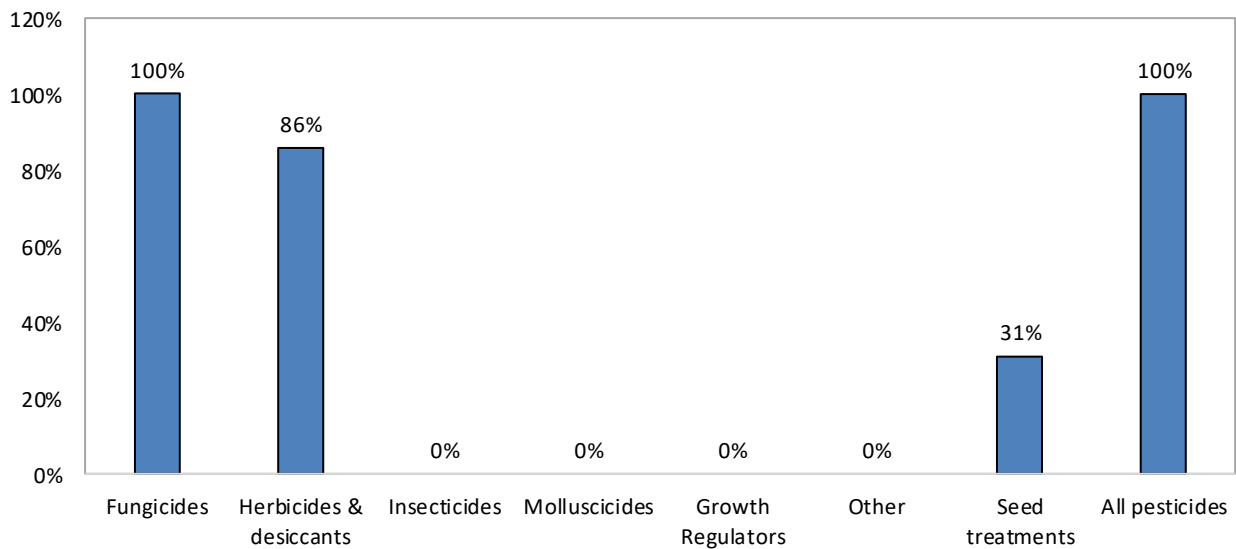
**Figure 89:** Regional distribution (ha) of field bean crops grown in Northern Ireland, 2020.



**Figure 90:** Pesticide usage (spha) on field bean crops in Northern Ireland, 2020.



**Figure 91:** Weight (kg) of pesticides applied to field bean crops in Northern Ireland, 2020.



**Figure 92:** Proportional area (%) of field bean crops treated with each pesticide type in Northern Ireland, 2020.

## Fungicides – field beans

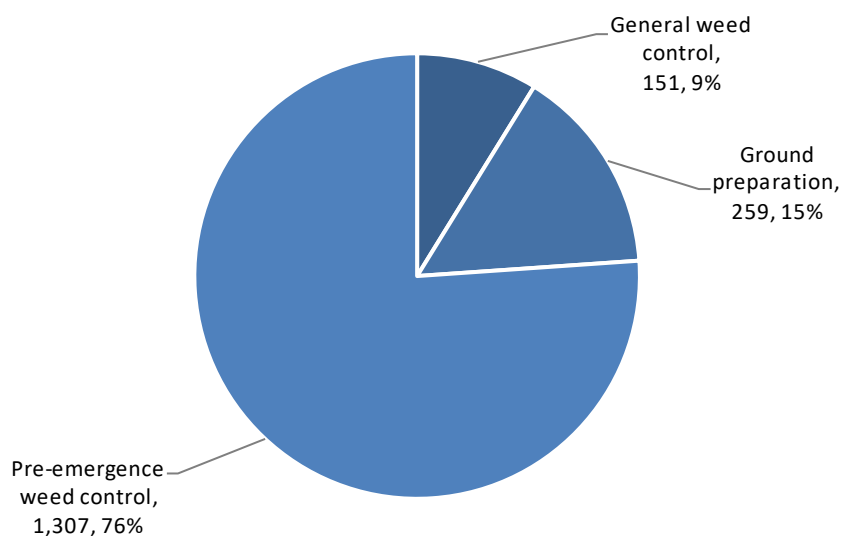
- Basic treated area: 405 hectares
- Total treated area: 426 spray hectares
- Quantity applied: 106 kilogrammes
- 100% of the area grown treated with fungicides
- The only reason given for use was ‘general fungal control’
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Boscalid/pyraclostrobin	42	21	10	10
Tebuconazole	384	384	96	90

## Herbicides & desiccants – field beans

- Basic treated area: 348 hectares
- Total treated area: 1,717 spray hectares
- Quantity applied: 1,317 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	348	348	309	20
Clomazone	327	327	29	19
Pendimethalin	327	327	392	19
Propaquizafop	327	327	23	19
Prosulfocarb	327	327	523	19



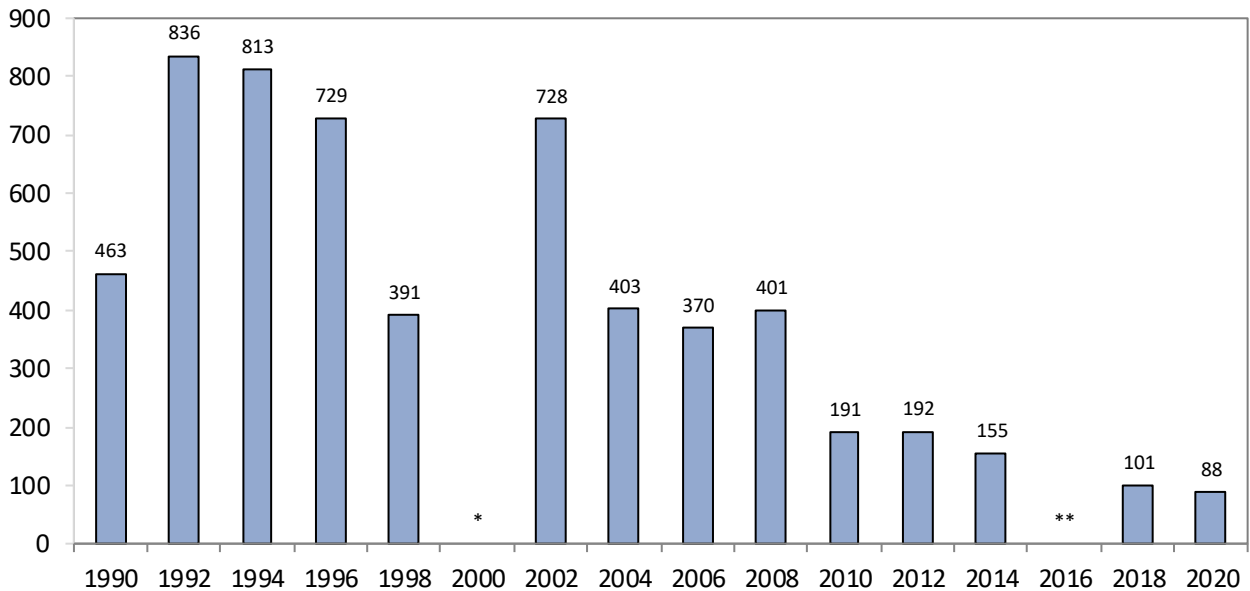
**Figure 93:** Field beans: reasons for herbicide & desiccant use (spha), 2020.

## ***Seed treatments – field beans***

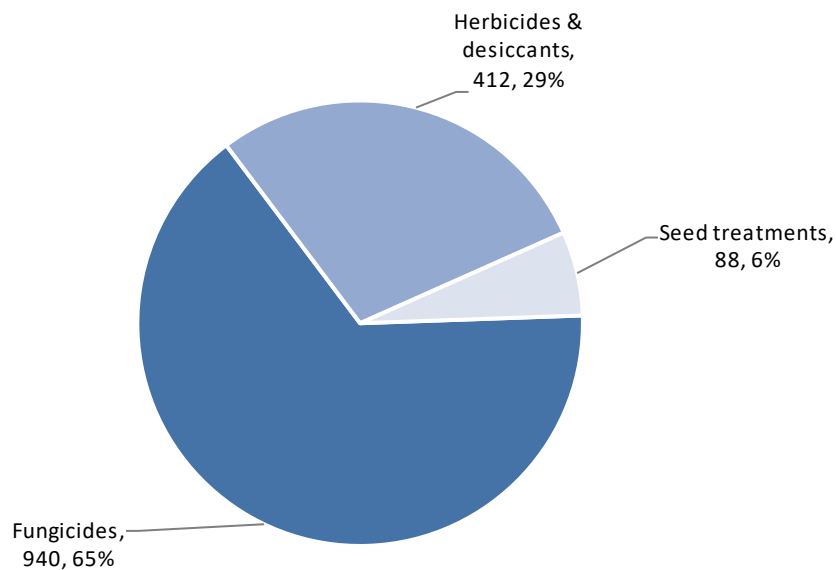
- Basic treated area: 125 hectares
- Total treated area: 125 spray hectares
- Quantity applied: Unknown
- 31% of the area grown treated with seed treatments
- The only active substance applied was 'unknown seed treatment'

## Pesticide usage on early potatoes (Tables 3, 5, 6, 7, 8, 9 & 12):

- 88 hectares of early potatoes grown in Northern Ireland
- 1,440 treated hectares
- 876 kilogrammes applied
- 100% of the area of early potato crops grown received a pesticide treatment
- Early potato crops received on average 10 fungicide, 4 herbicide and 1 seed treatment applications

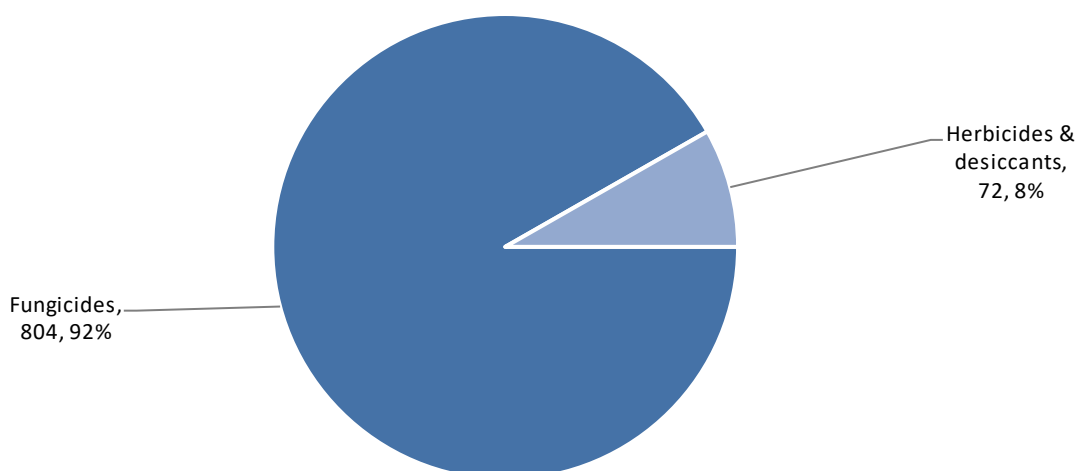


**Figure 94:** Total area (ha) of early potato crops grown in Northern Ireland from 1990 to 2020. \*No potato data available for 2000. \*\*Early potatoes included with maincrop potatoes.

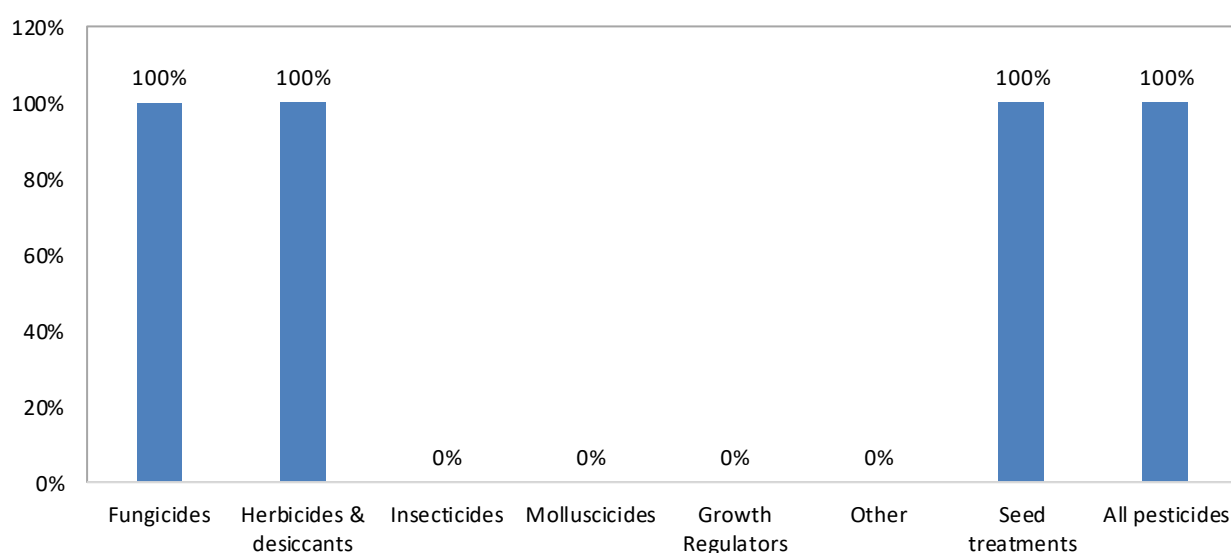


**Figure 95:** Pesticide usage (spha) on early potato crops in Northern Ireland, 2020.





**Figure 96:** Weight of pesticides (kg) applied to early potato crops in Northern Ireland, 2020.



**Figure 97:** Proportional area (%) of early potato crops treated with each pesticide type in Northern Ireland, 2020.

### **Fungicides – early potatoes**

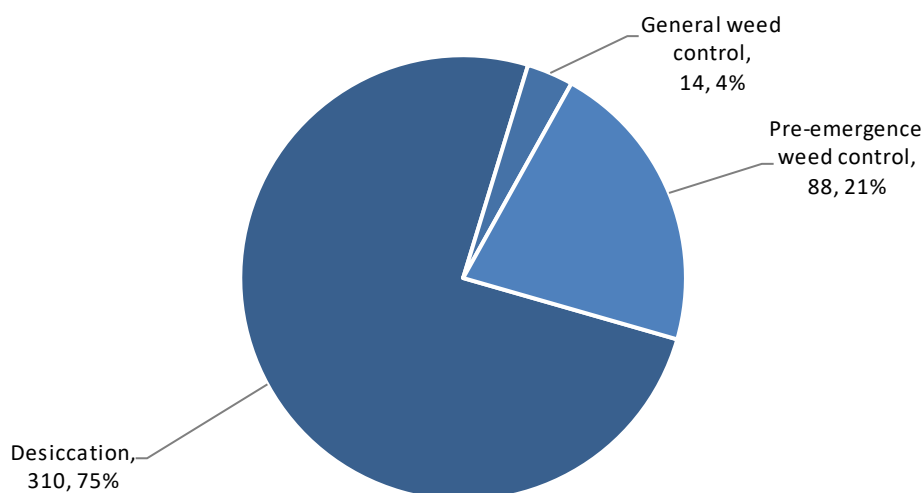
- Basic treated area: 88 hectares
- Total treated area: 940 spray hectares
- Quantity applied: 804 kilogrammes
- 100% of the area grown treated with fungicides.
- The only reason given for use was ‘blight’
- The active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total fungicide-treated area (spha)
Dimethomorph/mancozeb	299	88	444	32
Fluazinam	368	72	59	39
Fluopicolide/propamocarb hydrochloride	273	88	300	29

## Herbicides & desiccants – early potatoes

- Basic treated area: 88 hectares
- Total treated area: 412 spray hectares
- Quantity applied: 72 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The three active substances applied were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Carfentrazone-ethyl	310	71	15	75
Metribuzin	88	88	57	21
Rimsulfuron	14	14	1	3



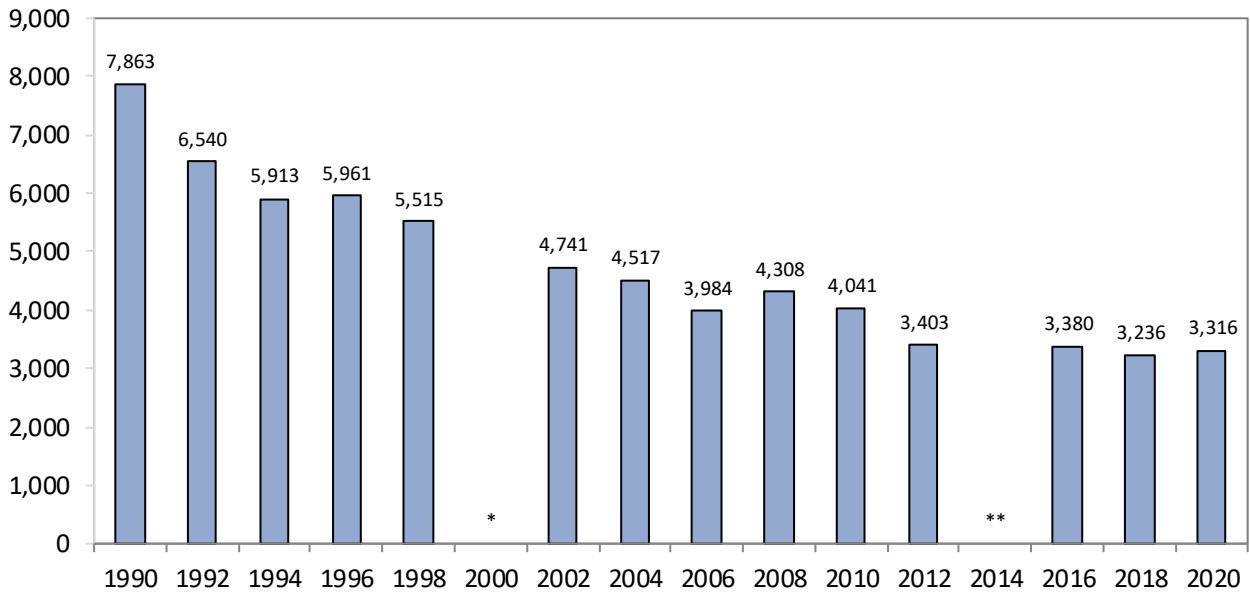
**Figure 98:** Early potatoes: reasons for herbicide & desiccant use (spha), 2020.

## Seed treatments – early potatoes

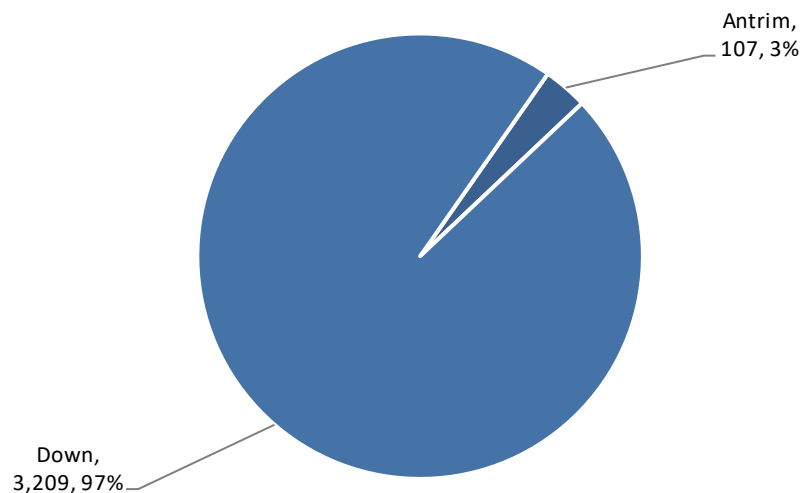
- Basic treated area: 88 hectares
- Total treated area: 88 spray hectares
- Quantity applied: Unknown
- 100% of the area grown was sown with treated seed
- The only active substance applied was 'unknown seed treatment'

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

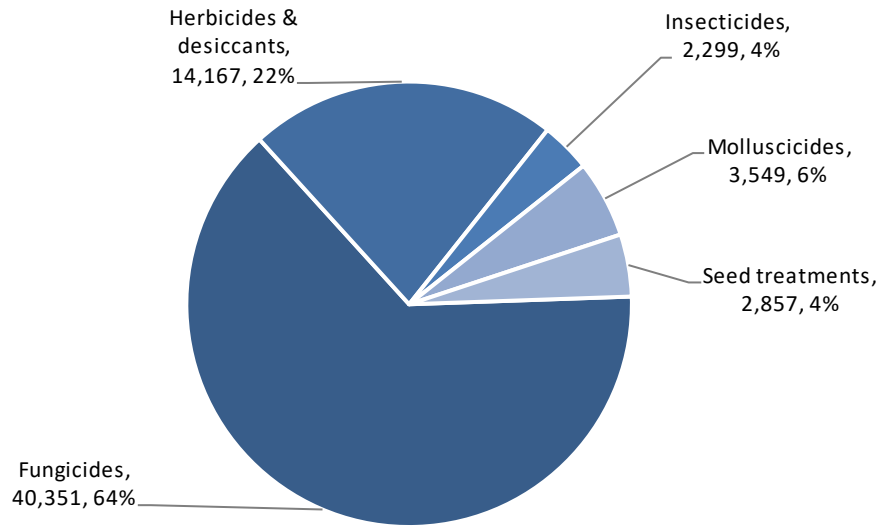
- 3,316 hectares of maincrop potatoes grown in Northern Ireland
- 63,221 treated hectares
- 33,010 kilogrammes applied
- 100% of the area of maincrop potatoes grown received a pesticide treatment
- Maincrop potato crops received on average 11 fungicide, 4 herbicide, 3 insecticide, 2 molluscicide and 1 seed treatment applications



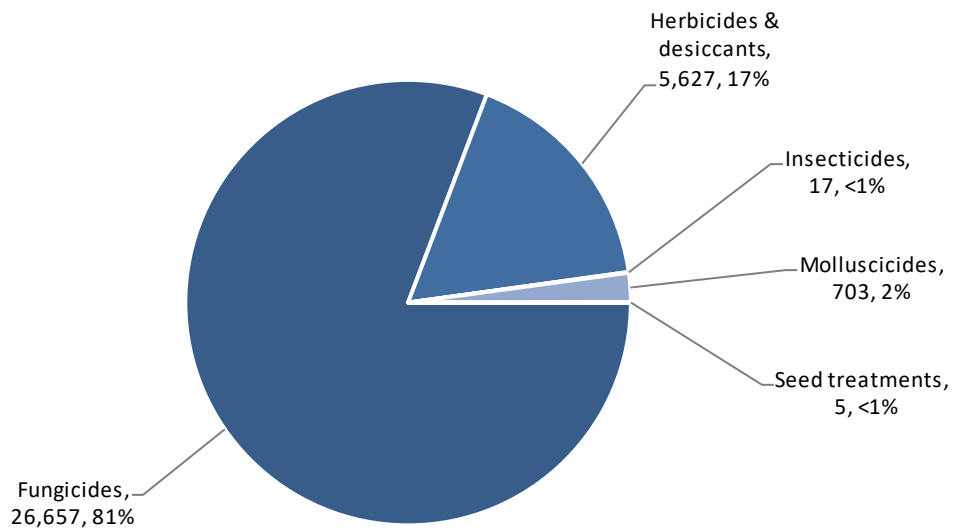
**Figure 99:** Total area (ha) of maincrop potatoes grown in Northern Ireland from 1990 to 2020. \*No potato data for 2000. \*\*No maincrop potato data for 2014.



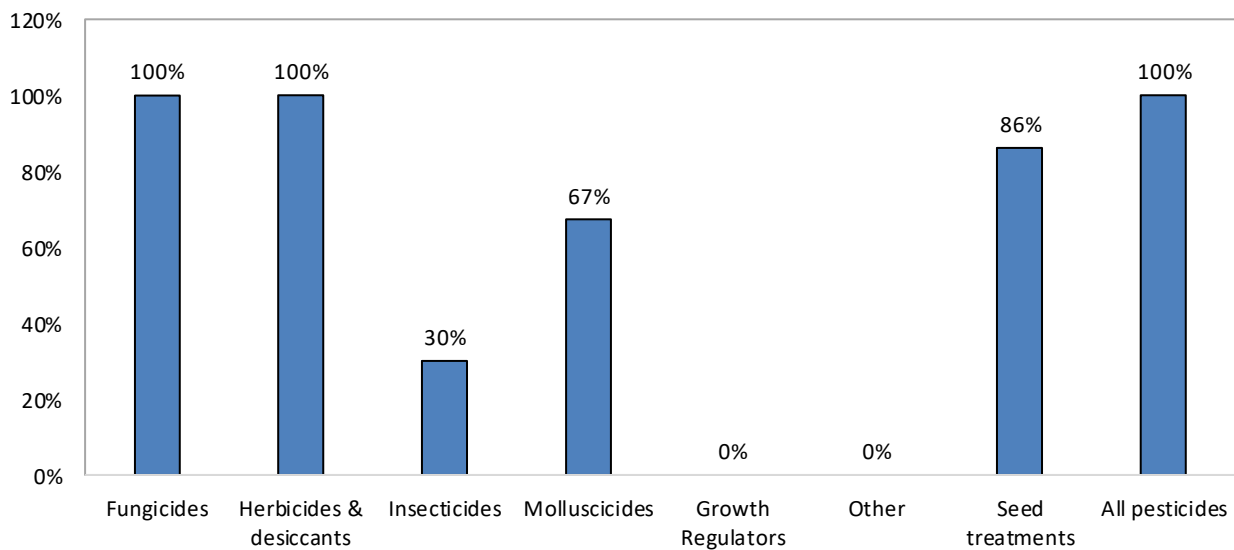
**Figure 100:** Regional distribution (ha) of maincrop potatoes grown in Northern Ireland, 2020. Potatoes also grown extensively in Londonderry but data received unreliable for publication.



**Figure 101:** Pesticide usage (spha) on maincrop potatoes in Northern Ireland, 2020.



**Figure 102:** Weight (kg) of pesticides applied to maincrop potatoes in Northern Ireland, 2020.



**Figure 103:** Proportional area (%) of maincrop potatoes treated with each pesticide type in Northern Ireland, 2020.

## Fungicides – maincrop potatoes

- Basic treated area: 3,316 hectares
- Total treated area: 40,351 spray hectares
- Quantity applied: 26,657 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	8,535	3,163	9,223	21
Cyazofamid	6,510	2,226	521	16
Dimethomorph/mancozeb	6,509	1,907	11,046	16
Mandipropamid	3,828	1,276	574	9
Amisulbrom	3,080	1,563	181	8

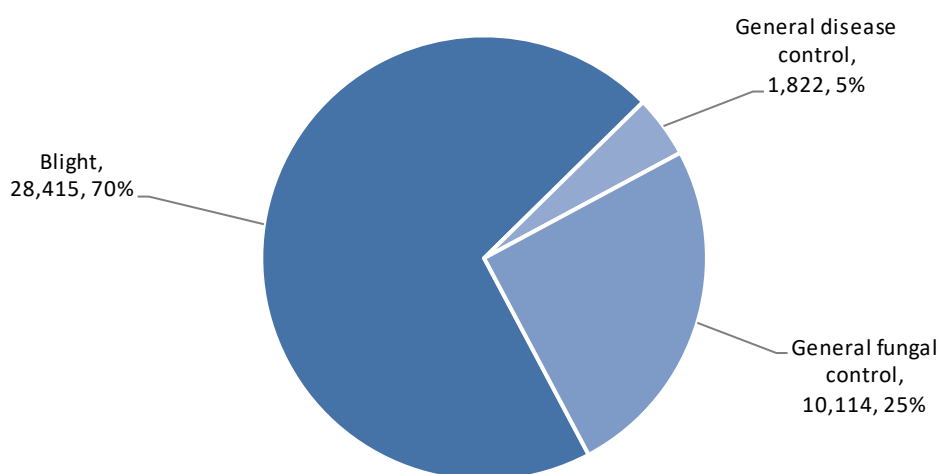
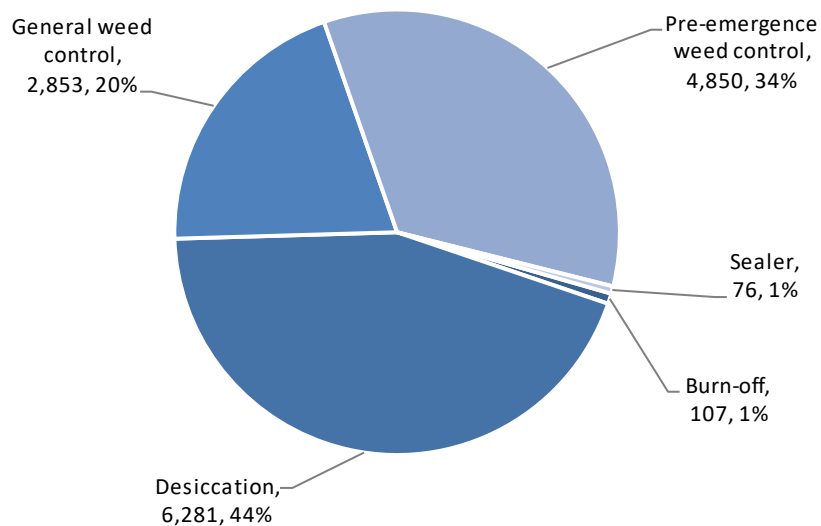


Figure 104: Maincrop potatoes: reasons for fungicide use (spha), 2020.

## Herbicides & desiccants – maincrop potatoes

- Basic treated area: 3,316 hectares
- Total treated area: 14,167 spray hectares
- Quantity applied: 5,627 kilogrammes
- 100% of the area grown treated with herbicides & desiccants
- The most commonly applied active substances were:

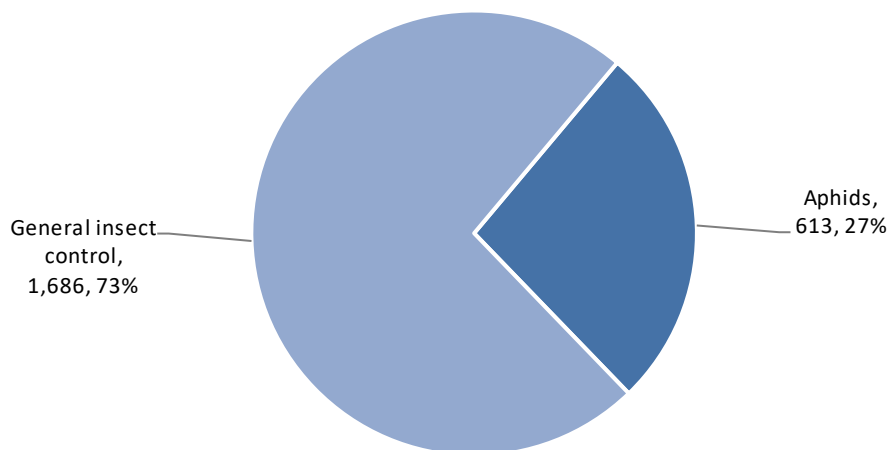
Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Carfentrazone-ethyl	3253	1627	156	23
Pyraflufen-ethyl	3028	2012	64	21
Metribuzin	2964	2857	1662	21
Diquat	1123	1123	449	8
Prosulfocarb	1103	1103	2145	8



**Figure 105:** Maincrop potatoes: reasons for herbicide & desiccant use (spha), 2020.

### *Insecticides – maincrop potatoes*

- Basic treated area: 996 hectares
- Total treated area: 2,299 spray hectares
- Quantity applied: 17 kilogrammes
- 30% of the area grown treated with insecticides
- The only active substance applied was lambda-cyhalothrin



**Figure 106:** Maincrop potatoes: reasons for insecticide use (spha), 2020.

### *Molluscicides – maincrop potatoes*

- Basic treated area: 2,226 hectares
- Total treated area: 3,549 spray hectares
- Quantity applied: 703 kilogrammes
- 67% of the area grown treated with molluscicides
- The only reason given for use was 'slugs'
- The only active substance applied was ferric phosphate

## Seed treatments – maincrop potatoes

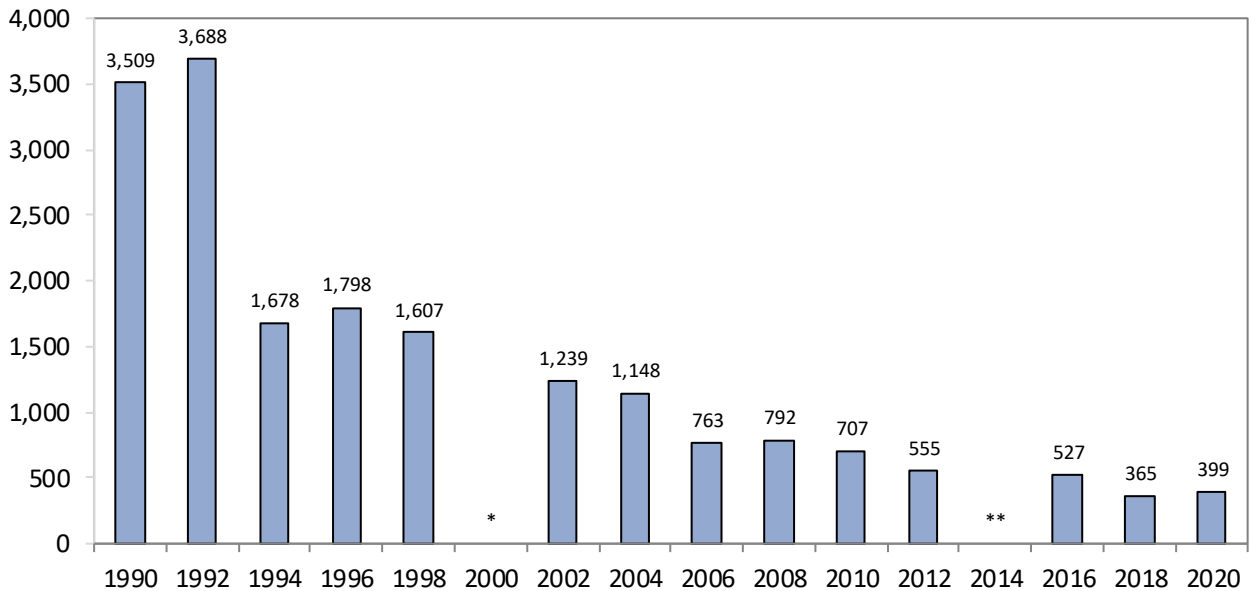
- Basic treated area: 2,857 hectares
- Total treated area: 2,857 spray hectares
- Quantity applied: 5 kilogrammes
- 86% of the area grown planted with treated seed
- The active substances applied were:

<b>Active substance</b>	<b>Total treated area (spha)</b>	<b>Basic treated area (ha)</b>	<b>Quantity applied (kgs)</b>	<b>% of the total seed treatment-treated area (spha)</b>
Unknown seed treatment*	2,749	2,749	.	96
Imazalil	107	107	5	4

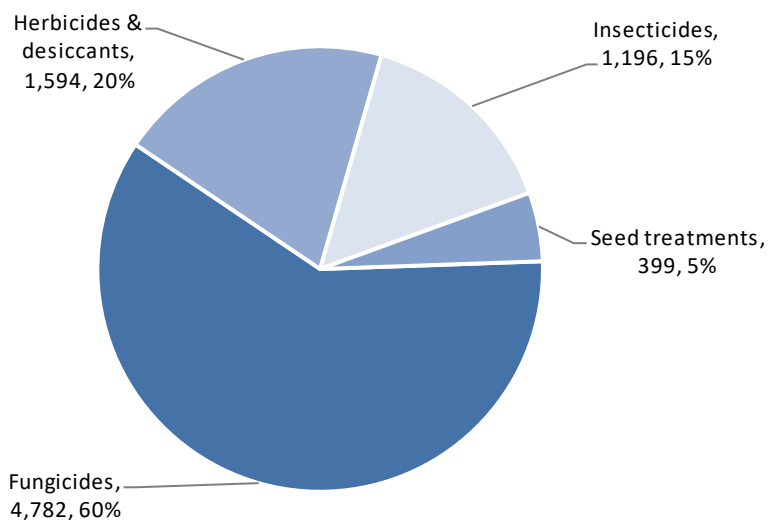
*\*Quantities not available for unknown seed treatments*

**Pesticide usage on seed potatoes (Tables 3, 5, 6, 7, 8, 9 & 15):**

- 399 hectares of seed potatoes grown in Northern Ireland
- 7,970 treated hectares
- 5,303 kilogrammes applied
- 100% of the area of seed potato crops grown received a pesticide treatment
- Seed potato crops received on average 12 fungicide, 4 herbicide, 3 insecticide and 1 seed treatment applications

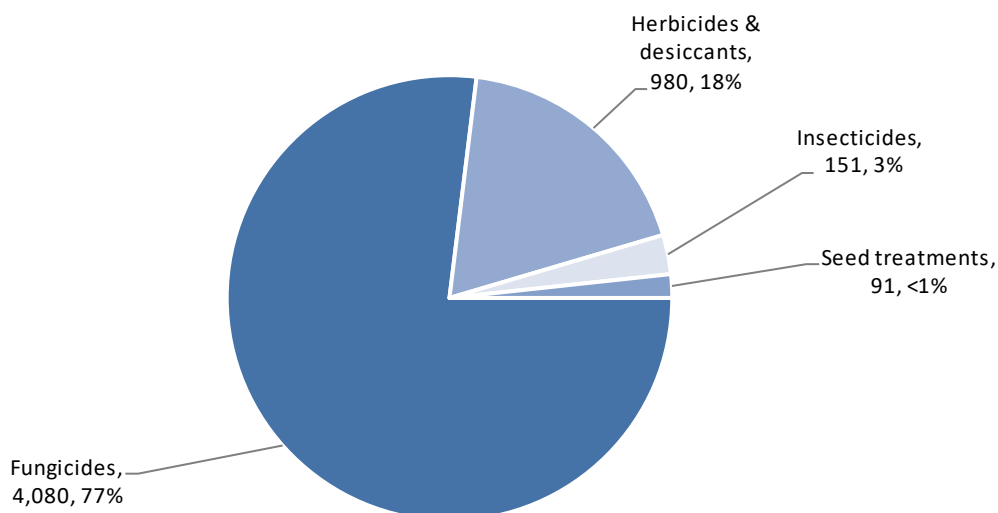


**Figure 107:** Total area (ha) of seed potato crops grown in Northern Ireland from 1990 to 2020. \*No potato data for 2000. \*\*No seed potato data for 2014.

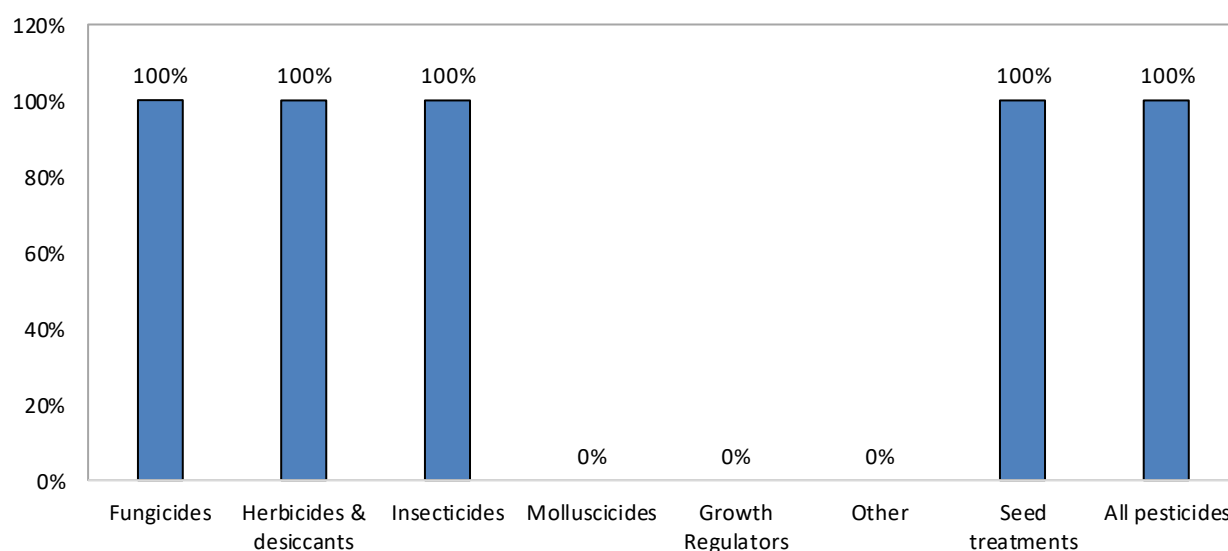


**Figure 108:** Pesticide usage (spha) on seed potato crops in Northern Ireland, 2020.





**Figure 109:** Weight (kg) of pesticides applied to seed potato crops in Northern Ireland, 2020.



**Figure 110:** Proportional area (%) of seed potato crops treated with each pesticide type in Northern Ireland, 2020.

### **Fungicides – seed potatoes**

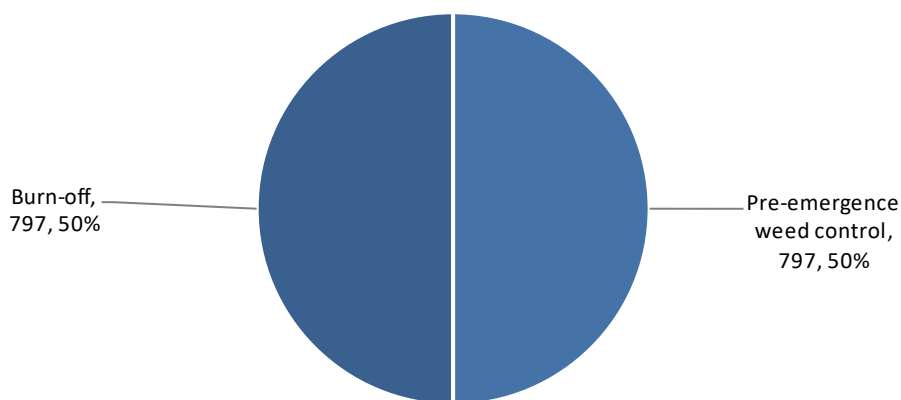
- Basic treated area: 399 hectares
- Total treated area: 4,782 spray hectares
- Quantity applied: 4,080 kilogrammes
- 100% of the area grown treated with fungicides
- The only reason given for use was 'blight'
- The most commonly applied active substances were:

Active substance	Total treated area (spha)	Basic treated area (ha)	Quantity applied (kgs)	% of the total herbicide-treated area (spha)
Cymoxanil/propamocarb hydrochloride	1196	399	1345	25
Fluopicolide/propamocarb hydrochloride	1196	399	1315	25
Amisulbrom	797	399	48	17
Oxathiapiprolin	797	399	13	17
Cymoxanil/mancozeb	399	399	722	8

## Herbicides & desiccants – seed potatoes

- Basic treated area: 399 hectares
- Total treated area: 1,594 spray hectares
- Quantity applied: 980 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)
Carfentrazone-ethyl	399	399	24	25
Diquat	399	399	80	25
Metribuzin	399	399	239	25
Prosulfocarb	399	399	638	25



**Figure 111:** Seed potatoes: reasons for herbicide & desiccant use (spha), 2020.

## Insecticides – seed potatoes

- Basic treated area: 399 hectares
- Total treated area: 1,196 spray hectares
- Quantity applied: 151 kilogrammes
- 100% of the area grown treated with insecticides
- The only reason given for use was 'aphids'
- 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)
Pymetrozine	797	399	120	67
Flonicamid	399	399	32	33

## Seed treatments – seed potatoes

- Basic treated area: 399 hectares
- Total treated area: 399 spray hectares
- Weight of active substances applied: 91 kilogrammes
- 100% of the area grown received a seed treatment
- The only active substance applied was flutolanil

**Table 1:** Number of farms in each size class with arable crops in the Northern Ireland June 2020 census and the number of samples from each class.

<i>County</i>	<i>Size group (hectares)</i>												<i>Total</i>	
	<i>&lt; 5</i>		<i>5 &lt; 10</i>		<i>10 &lt; 20</i>		<i>20 &lt; 50</i>		<i>50 &lt; 100</i>		<i>100+</i>		<i>Holdings in size group</i>	<i>Holdings sampled</i>
	<i>Holdings in size group</i>	<i>Holdings sampled</i>	<i>Holdings in size group</i>	<i>Holdings sampled</i>	<i>Holdings in size group</i>	<i>Holdings sampled</i>	<i>Holdings in size group</i>	<i>Holdings sampled</i>	<i>Holdings in size group</i>	<i>Holdings sampled</i>	<i>Holdings in size group</i>	<i>Holdings sampled</i>	<i>Holdings in size group</i>	<i>Holdings sampled</i>
Antrim	158	1	120	.	79	5	61	5	19	3	4	1	441	15
Armagh	58	.	59	2	35	2	26	1	8	4	4	1	190	10
Down	314	2	225	2	166	5	140	10	60	10	18	10	923	39
Londonderry	191	.	119	.	75	2	60	7	24	8	16	3	485	20
Tyrone	61	.	56	.	44	1	18	1	5	3	3	1	187	6
<b><i>Northern Ireland</i></b>	<b>786</b>	<b>3</b>	<b>582</b>	<b>4</b>	<b>400</b>	<b>15</b>	<b>305</b>	<b>24</b>	<b>117</b>	<b>28</b>	<b>45</b>	<b>16</b>	<b>2235</b>	<b>90</b>

**Table 2: Total grown area (ha), total surveyed area (ha), number of crops surveyed and percentage of crops surveyed in Northern Ireland, 2020.**

<b>Crop</b>	<b>Total grown area (ha)</b>	<b>Surveyed area (ha)</b>	<b>Number of crops surveyed</b>	<b>Percentage of crops surveyed</b>
Early potatoes	88	30	10	35%
Field beans	405	52	5	13%
Rye	1,763	65	3	4%
Seed potatoes	399	10	1	3%
Spring barley	12,564	1,428	87	11%
Spring oats	1,076	117	11	11%
Spring wheat	418	108	7	26%
Triticale	139	40	1	29%
Maincrop potatoes	3,316	130	20	4%
Winter barley	7,772	1,547	81	20%
Winter oats	803	210	17	26%
Winter oilseed rape	617	166	13	27%
Winter wheat	6,713	1,434	70	21%
<b>All crops</b>	<b>36,074</b>	<b>5,337</b>	<b>326</b>	<b>15%</b>

**Table 3: Estimated area (ha) of arable crops grown regionally in Northern Ireland, 2020.**

<i>Crop</i>	County					Northern Ireland
	Antrim	Armagh	Down	Londonderry	Tyrone	
Early potatoes	.	.	88	.	.	88
Field beans	.	21	327	.	57	405
Rye	.	1,763	.	.	.	1,763
Seed potatoes	.	.	399	.	.	399
Spring barley	2,317	997	5,907	2,672	672	12,564
Spring oats	368	33	30	221	424	1,076
Spring wheat	234	34	112	38	.	418
Triticale	.	139	.	.	.	139
Maincrop potatoes	107	.	3,209	.	.	3,316
Winter barley	967	494	3,644	2,088	578	7,772
Winter oats	61	117	391	197	37	803
Winter oilseed rape	.	130	397	90	.	617
Winter wheat	1,200	728	3,688	989	108	6,713
<b>All crops</b>	<b>5,254</b>	<b>4,456</b>	<b>18,192</b>	<b>6,296</b>	<b>1,877</b>	<b>36,074</b>

**Table 4a:** Estimated area (spha) of arable crops treated regionally with each pesticide type in Northern Ireland, 2020.

<i>Pesticide type</i>	<i>County</i>					<i>Northern Ireland</i>
	<i>Antrim</i>	<i>Armagh</i>	<i>Down</i>	<i>Londonderry</i>	<i>Tyrone</i>	
Fungicides	13,150	8,206	88,990	18,867	4,882	134,094
Herbicides & desiccants	12,432	4,106	53,719	17,238	4,128	91,622
Insecticides	2,681	1,539	11,698	2,235	.	18,153
Molluscicides	107	86	3,505	48	1,772	5,518
Growth regulators	3,738	3,726	16,492	8,597	1,651	34,205
Other treatments	.	.	42	79	.	121
Seed treatments	5,309	4,287	16,804	5,201	1,912	33,513
<b>All active substances</b>	<b>37,417</b>	<b>21,949</b>	<b>191,250</b>	<b>52,265</b>	<b>14,345</b>	<b>317,226</b>

**Table 4b:** Estimated weight (kg) of active ingredients applied to arable crops regionally with each pesticide type in Northern Ireland, 2020.

<i>Pesticide type</i>	<i>County</i>					<i>Northern Ireland</i>
	<i>Antrim</i>	<i>Armagh</i>	<i>Down</i>	<i>Londonderry</i>	<i>Tyrone</i>	
Fungicides	4,582	2,830	41,891	4,390	1,393	55,087
Herbicides & desiccants	4,647	1,568	22,351	5,647	1,910	36,123
Insecticides	11	14	204	10	.	239
Molluscicides	20	13	691	6	368	1,097
Growth regulators	1,513	1,166	7,452	3,525	294	13,951
Other treatments	.	.	36	81	.	118
Seed treatments	45	22	225	38	24	354
<b>All active substances</b>	<b>10,818</b>	<b>5,613</b>	<b>72,851</b>	<b>13,698</b>	<b>3,989</b>	<b>106,968</b>

**Table 5: The total treated area (spha) and the basic treated area (ha) of arable crops treated with each pesticide type in Northern Ireland, 2020.**

Crop	Pesticide type															
	Fungicides		Herbicides & dessicants		Insecticides		Molluscicides		Growth regulators		Other		Seed treatments		All pesticides	
	Sp ha	ha	Sp ha	ha	Sp ha	ha	Sp ha	ha	Sp ha	ha	Sp ha	ha	Sp ha	ha	Sp ha	ha
Early potatoes	940	88	412	88	.	.	.	.	.	.	.	.	88	88	1,440	88
Field beans	426	405	1,717	348	.	.	.	.	.	.	.	.	125	125	2,268	405
Rye	1,689	1,298	130	130	130	130	.	.	1,298	1,298	.	.	1,763	1,763	5,010	1,763
Seed potatoes	4,782	399	1,594	399	1,196	399	.	.	.	.	.	.	399	399	7,970	399
Spring barley	21,595	10,737	29,089	11,423	7,999	7,152	1,772	354	8,622	6,893	.	.	11,717	11,682	80,793	12,564
Spring oats	1,942	982	2,080	1,036	54	54	.	.	873	709	.	.	1,056	1,056	6,005	1,076
Spring wheat	575	291	986	418	34	34	.	.	423	385	.	.	418	418	2,436	418
Triticale	555	139	139	139	139	139	.	.	278	139	.	.	139	139	1,249	139
Maincrop potatoes	40,351	3,316	14,167	3,316	2,299	996	3,549	2,226	.	.	.	.	2,857	2,857	63,221	3,316
Winter barley	25,537	7,337	20,171	7,313	3,338	2,560	.	.	10,812	6,508	.	.	7,713	6,815	67,572	7,772
Winter oats	2,231	803	2,055	803	157	157	.	.	1,721	796	.	.	611	611	6,776	803
Winter oilseed rape	1,691	617	1,531	617	44	44	197	197	191	191	72	72	275	275	4,001	617
Winter wheat	31,780	6,298	17,551	6,461	2,763	2,709	.	.	9,986	6,120	49	49	6,353	6,083	68,483	6,713
<b>Total</b>	<b>134,094</b>	<b>32,709</b>	<b>91,622</b>	<b>32,492</b>	<b>18,153</b>	<b>14,374</b>	<b>5,518</b>	<b>2,778</b>	<b>34,205</b>	<b>23,038</b>	<b>121</b>	<b>121</b>	<b>33,513</b>	<b>32,310</b>	<b>317,226</b>	<b>36,074</b>

**Table 6: Total quantities (kg) of each pesticide type used on arable crops in Northern Ireland, 2020.**

<i>Pesticide type</i>	<i>Pesticide type</i>							<i>All pesticides</i>
	<i>Fungicides</i>	<i>Herbicides &amp; desiccants</i>	<i>Insecticides</i>	<i>Molluscicides</i>	<i>Growth regulators</i>	<i>Other</i>	<i>Seed treatments</i>	
Early potatoes	804	72	.	.	.	.	.	876
Field beans	106	1,317	.	.	.	.	.	1,423
Rye	236	1	1	.	123	.	2	363
Seed potatoes	4,080	980	151	.	.	.	91	5,303
Spring barley	6,323	9,551	34	368	3,154	.	79	19,511
Spring oats	273	543	<1	.	130	.	8	955
Spring wheat	222	222	<1	.	178	.	2	625
Triticale	113	1	1	.	111	.	.	226
Maincrop potatoes	26,657	5,627	17	703	.	.	5	33,010
Winter barley	7,310	9,328	21	.	4,899	.	95	21,652
Winter oats	526	633	1	.	699	.	6	1,866
Winter oilseed rape	259	1,274	<1	25	55	61	.	1,675
Winter wheat	8,178	6,572	12	.	4,602	56	65	19,485
<b>Total</b>	<b>55,087</b>	<b>36,123</b>	<b>239</b>	<b>1,097</b>	<b>13,951</b>	<b>118</b>	<b>354</b>	<b>106,968</b>



**Table 7:** The proportional area (%) of each crop treated with pesticides and the mean number of spray applications (sp apps) applied to each crop in Northern Ireland, 2020.

Crop	Pesticide type															
	Fungicides		Herbicides & desiccants		Insecticides		Molluscicides		Growth regulators		Other		Seed treatments		All pesticides	
	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps	%	sp apps
Early potatoes	100%	10	100%	4									100%	1	100%	4.8
Field beans	100%	1	86%	5	.	.	.	.	.	.	.	.	31%	1	100%	2.5
Rye	74%	1	7%	1	7%	1	.	.	74%	1	.	.	100%	1	100%	1.0
Seed potatoes	100%	12	100%	4	100%	3	.	.	.	.	.	.	100%	1	100%	5.0
Spring barley	85%	2	91%	2	57%	1	3%	5	55%	1	.	.	93%	1	100%	1.4
Spring oats	91%	2	96%	2	5%	1	.	.	66%	1	.	.	98%	1	100%	1.6
Spring wheat	69%	2	100%	3	8%	1	.	.	92%	1	.	.	100%	1	100%	1.7
Triticale	100%	4	100%	1	100%	1	.	.	100%	2	.	.	100%	1	100%	1.8
Maincrop potatoes	100%	11	100%	4	30%	3	67%	2	.	.	.	.	86%	1	100%	4.7
Winter barley	94%	3	94%	2	33%	1	.	.	84%	2	.	.	88%	1	96%	1.8
Winter oats	100%	3	100%	3	20%	1	.	.	99%	2	.	.	76%	1	100%	2.2
Winter oilseed rape	100%	2	100%	3	7%	1	32%	1	31%	1	12%	1	44%	1	100%	2.0
Winter wheat	94%	5	96%	3	40%	1	.	.	91%	2	1%	1	91%	1	100%	2.4
<b>Total</b>	<b>91%</b>	<b>3</b>	<b>90%</b>	<b>2</b>	<b>40%</b>	<b>1</b>	<b>8%</b>	<b>3</b>	<b>64%</b>	<b>1</b>	<b>&lt;1%</b>	<b>1</b>	<b>90%</b>	<b>1</b>	<b>99%</b>	<b>1.8</b>

**Table 8:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Fungicides</b>														
Ametoctradin/dimethomorph	.	.	2,114	.	.	.	.	.	.	.	.	.	.	2,114
Amisulbrom	.	.	3,080	.	797	.	.	.	.	.	.	.	.	3,877
Azoxystrobin	.	.	.	130	.	702	.	.	.	116	144	159	1,600	2,852
Azoxystrobin/chlorothalonil	.	.	.	.	.	.	.	.	.	.	.	.	134	134
Benthiavalicarb/oxathiapiprolin	.	.	1,226	.	.	.	.	.	.	.	.	.	.	1,226
Benthiavalicarb-isopropyl/mancozeb	.	.	1,210	.	.	.	.	.	.	.	.	.	.	1,210
Benzovindiflupyr	.	.	.	.	.	.	.	.	.	302	.	.	339	641
Benzovindiflupyr/propiconazole	.	.	.	.	.	.	.	.	.	.	.	.	460	460
Benzovindiflupyr/prothioconazole	.	.	.	.	.	518	.	.	.	421	.	.	1,072	2,011
Bixa fen	.	.	.	.	.	351	.	.	.	59	.	.	.	410
Bixa fen/fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	1,233	1,233
Bixa fen/prothioconazole	.	.	.	.	.	1,171	.	.	.	3,947	37	.	758	5,913
Bixa fen/prothioconazole/spiroxamine	.	.	.	.	.	656	.	41	.	316	81	.	533	1,627
Boscalid	.	.	.	.	.	.	.	.	.	.	.	44	.	44
Boscalid/epoxiconazole	.	.	.	.	.	.	.	.	.	28	.	.	.	28
Boscalid/metconazole	.	.	.	.	.	.	.	.	.	.	.	19	.	19
Boscalid/pyraclostrobin	.	42	.	.	.	.	.	.	.	.	.	.	.	42
Bromuconazole/tebuconazole	.	.	.	.	.	.	.	.	.	.	.	.	.	261
Chlorothalonil	.	.	.	.	.	4,539	15	38	.	6,410	.	.	5,812	16,815
Chlorothalonil/cyproconazole	.	.	.	.	.	425	.	.	.	.	.	.	117	542
Chlorothalonil/cyproconazole/propiconazole	.	.	.	.	.	.	.	.	.	.	.	.	410	410
Chlorothalonil/fluxapyroxad	.	.	.	.	.	.	.	.	.	52	.	.	12	64
Chlorothalonil/proquinazid	.	.	.	.	.	.	.	.	.	52	112	.	.	164
Cyazofamid	.	.	6,510	.	.	.	.	.	.	.	.	.	.	6,510
Cyflufenamid	.	.	.	.	.	.	40	.	.	78	105	.	61	284
Cymoxanil	.	.	2,130	.	.	.	.	.	.	.	.	.	.	2,130
Cymoxanil/fluazinam	.	.	460	.	.	.	.	.	.	.	.	.	.	460
Cymoxanil/mancozeb	.	.	153	.	399	.	.	.	.	.	.	.	.	552
Cymoxanil/propamocarb hydrochloride	.	.	1,870	.	1,196	.	.	.	.	.	.	.	.	3,065
Cyprodinil	.	.	.	.	.	462	.	.	.	193	.	.	.	655
Cyprodinil/isopyrazam	.	.	.	.	.	283	.	.	.	303	.	.	.	586
Difenoconazole/paclobutrazol	.	.	.	.	.	.	.	.	.	.	.	42	.	42

**Table 8 contd:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Fungicides</b>														
Dimethomorph/mancozeb	299	.	6,509	.	.	.	.	.	.	.	.	.	.	6,809
Epoxiconazole	.	.	.	1,167	.	1,199	547	38	.	1,525	88	.	2,821	7,384
Epoxiconazole/fenpropimorph	.	.	.	130	.	399	.	.	139	68	189	.	54	979
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	.	.	1,010	294	.	.	658	.	.	505	2,467
Epoxiconazole/fenpropimorph/metrafenone	.	.	.	.	.	.	28	.	.	.	.	.	.	28
Epoxiconazole/fluxapyroxad	.	.	.	.	.	403	.	.	.	452	.	.	280	1,134
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	.	.	.	672	.	.	.	491	66	.	309	1,538
Epoxiconazole/metrafenone	.	.	.	.	.	.	.	69	.	.	158	.	.	227
Epoxiconazole/pyraclostrobin	.	.	.	.	.	.	33	.	.	28	73	.	43	177
Fenpropimorph	.	.	.	.	.	151	.	.	.	.	197	.	.	348
Fluazinam	368	.	564	.	.	.	.	.	.	.	.	.	.	933
Fluopicolide/propamocarb hydrochloride	273	.	8,535	.	1,196	.	.	.	.	.	.	.	.	10,003
Fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	63	.	63
Fluoxastrobin/prothioconazole	.	.	.	.	.	595	.	.	.	1,800	.	.	.	2,395
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	.	.	.	70	.	.	.	117	.	.	.	187
Fluxapyroxad	.	.	.	.	.	1,111	.	.	.	1,679	.	.	3,153	5,943
Fluxapyroxad/mefentrifluconazole	.	.	.	.	.	59	.	.	.	.	.	.	1,141	1,200
Fluxapyroxad/metconazole	.	.	.	.	.	.	.	.	.	.	.	.	78	78
Folpet	.	.	.	.	.	340	.	.	.	279	.	.	354	973
Isopyrazam	.	.	.	.	.	18	.	.	.	.	.	.	.	18
Isopyrazam/prothioconazole	.	.	.	.	.	931	.	.	139	142	.	.	.	1,211
Mancozeb	.	.	.	.	399	.	.	.	.	.	.	.	61	459
Mandipropamid	.	.	3,828	.	.	.	.	.	.	.	.	.	.	3,828
Metconazole	.	.	.	.	.	.	.	.	.	.	206	.	.	206
Oxathiapiprolin	.	.	2,160	.	797	.	.	.	.	.	.	.	.	2,957
Prochloraz/proquinazid/tebuconazole	.	.	.	.	.	.	28	.	.	.	.	.	146	174
Proquinazid	.	.	.	130	.	222	562	.	139	74	.	.	804	1,931
Prothioconazole	.	.	.	.	.	1,574	247	.	.	2,239	448	730	1,690	6,928
Prothioconazole/spiroxamine	.	.	.	.	.	276	.	.	.	1,704	78	.	.	2,058
Prothioconazole/spiroxamine/tebuconazole	.	.	.	.	.	.	.	33	.	.	.	.	.	33
Prothioconazole/tebuconazole	.	.	.	.	.	1,454	40	38	.	216	78	84	3,550	5,460
Prothioconazole/trifloxystrobin	.	.	.	.	.	1,296	.	.	.	378	.	.	474	2,148

**Table 8 contd:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

<i>Pesticide group &amp; active substance</i>	<i>Crop type</i>													<i>All crops</i>
	<i>Early potatoes</i>	<i>Field beans</i>	<i>Maincrop potatoes</i>	<i>Rye</i>	<i>Seed potatoes</i>	<i>Spring barley</i>	<i>Spring oats</i>	<i>Spring wheat</i>	<i>Triticale</i>	<i>Winter barley</i>	<i>Winter oats</i>	<i>Winter oilseed rape</i>	<i>Winter wheat</i>	
<b><i>Fungicides</i></b>														
Pyraclostrobin	.	.	.	.	.	45	108	.	.	676	156	.	801	1,786
Tebuconazole	.	384	.	130	.	354	.	.	139	.	222	278	1,368	2,875
Trifloxystrobin	.	.	.	.	.	308	.	.	.	409	.	.	.	717
Unknown fungicide	.	.	.	.	.	.	.	318	.	325	.	63	1,349	2,055
<b>All fungicides</b>	<b>940</b>	<b>426</b>	<b>40,351</b>	<b>1,689</b>	<b>4,782</b>	<b>21,595</b>	<b>1,942</b>	<b>575</b>	<b>555</b>	<b>25,537</b>	<b>2,231</b>	<b>1,691</b>	<b>31,780</b>	<b>134,094</b>

**Table 8 contd:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Herbicides &amp; desiccants</b>														
Aclonifen	.	.	460	.	.	.	.	.	.	.	.	.	.	460
Amidosulfuron/iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	31	31
Aminopyralid/propryzamide	.	.	.	.	.	.	.	.	.	.	.	21	.	21
Bentazone	.	21	.	.	.	.	.	.	.	.	.	.	.	21
Carfentrazone-ethyl	310	.	3,253	.	399	.	.	.	.	.	.	.	.	3,962
Chlorotoluron/diflufenican/pendimethalin	.	.	.	.	.	.	.	.	.	222	.	.	.	222
Clomazone	.	327	364	.	.	.	.	.	.	.	.	.	.	690
Cycloxydim	.	21	.	.	.	.	.	.	.	.	.	.	.	21
Dicamba/MCPA/mecoprop-p	.	.	.	.	.	.	.	.	.	.	37	.	.	37
Dicamba/mecoprop-p	.	.	.	.	.	469	698	38	.	116	38	.	.	1,359
Diflufenican	.	.	.	.	.	222	33	.	.	2,286	263	.	1,207	4,012
Diflufenican/flufenacet	.	.	.	.	.	567	.	.	.	2,041	323	.	1,446	4,377
Diflufenican/flufenacet/flurtamone	.	.	.	.	.	.	.	.	.	209	.	.	.	209
Diflufenican/iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	2,234	2,234
Dimethenamid-P/metazachlor/quinmerac	.	.	.	.	.	.	.	.	.	.	.	225	.	225
Diquat	.	.	1,123	.	399	.	.	.	.	.	.	.	.	1,521
Florasulam	.	.	.	.	.	.	.	.	.	578	142	.	.	720
Florasulam/fluroxypyr	.	.	.	.	.	272	.	.	.	263	.	.	.	534
Florasulam/halauxifen-methyl	.	.	.	130	.	3,325	15	68	139	1,157	54	.	2,320	7,207
Florasulam/pyroxsulam	.	.	.	.	.	.	.	128	.	.	.	.	234	362
Flufenacet/metribuzin	.	.	613	.	.	.	.	.	.	.	.	.	.	613
Flufenacet/pendimethalin	.	.	.	.	.	208	.	.	.	1,799	.	.	812	2,818
Flufenacet/picolinafen	.	.	.	.	.	.	.	.	.	743	.	.	251	995
Flumioxazine	.	.	.	.	.	.	.	.	.	.	.	.	12	12
Fluroxypyr	.	.	.	.	.	4,226	103	185	.	838	279	.	812	6,444
Fluroxypyr/halauxifen-methyl	.	.	.	.	.	781	94	.	.	.	.	.	391	1,266
Fluroxypyr/metsulfuron-methyl	.	.	.	.	.	.	.	.	.	100	.	.	.	100
Fluroxypyr/metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	.	.	.	.	.	108	.	.	.	108
Glyphosate	.	348	260	.	.	6,735	140	275	.	4,682	382	471	3,639	16,932
Imazamox/metazachlor	.	.	.	.	.	.	.	.	.	.	.	44	.	44
Imazamox/pendimethalin	.	21	.	.	.	.	.	.	.	.	.	.	.	21
Iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	311	311

**Table 8 contd:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Herbicides &amp; desiccants</b>														
MCPA	.	.	.	.	.	385	.	.	.	.	.	.	.	385
Mecoprop-P	.	.	.	.	.	1,080	.	.	.	130	128	.	977	2,314
Metazachlor	.	.	.	.	.	.	.	.	.	.	.	128	.	128
Metazachlor/quinmerac	.	.	.	.	.	.	.	.	.	.	.	42	.	42
Metribuzin	88	.	2,964	.	399	.	.	.	.	.	.	.	.	3,450
Metsulfuron-methyl	.	.	.	.	.	2,116	124	72	.	655	89	.	560	3,617
Metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	.	598	.	33	.	23	7	.	.	662
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	.	5,203	844	.	.	399	93	.	562	7,100
Pendimethalin	.	327	.	.	.	70	.	.	.	360	.	.	270	1,026
Pendimethalin/picolinafen	.	.	.	.	.	.	.	.	.	1,415	.	.	125	1,540
Pinoxaden	.	.	.	.	.	1,083	.	41	.	1,142	.	.	740	3,006
Propaquizafop	.	327	151	.	.	.	.	.	.	.	.	276	.	753
Propyzamide	.	.	.	.	.	.	.	.	.	.	.	323	.	323
Prosulfocarb	.	327	1,103	.	399	.	.	.	.	361	.	.	284	2,474
Pyraflufen-ethyl	.	.	3,028	.	.	.	.	.	.	.	.	.	.	3,028
Rimsulfuron	14	.	741	.	.	.	.	.	.	.	.	.	.	755
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	.	1,323	28	147	.	543	222	.	333	2,595
Unknown herbicide	.	.	107	.	.	425	.	.	.	.	.	.	.	532
<b>All herbicides</b>	<b>412</b>	<b>1,717</b>	<b>14,167</b>	<b>130</b>	<b>1,594</b>	<b>29,089</b>	<b>2,080</b>	<b>986</b>	<b>139</b>	<b>20,171</b>	<b>2,055</b>	<b>1,531</b>	<b>17,551</b>	<b>91,622</b>

**Table 8 contd:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

<i>Pesticide group &amp; active substance</i>	<i>Crop type</i>											<i>All crops</i>
	<i>Maincrop potatoes</i>	<i>Rye</i>	<i>Seed potatoes</i>	<i>Spring barley</i>	<i>Spring oats</i>	<i>Spring wheat</i>	<i>Triticale</i>	<i>Winter barley</i>	<i>Winter oats</i>	<i>Winter oilseed rape</i>	<i>Winter wheat</i>	
<b><i>Insecticides</i></b>												
Chlorpyrifos	.	.	.	.	.	.	.	308	.	.	.	308
Esfenvalerate	.	.	.	4,439	20	.	.	806	.	.	1,664	6,929
Flonicamid	.	.	399	.	.	.	.	.	.	.	.	399
Lambda-cyhalothrin	2,299	130	.	3,560	33	34	139	2,224	157	44	1,099	9,721
Pymetrozine	.	.	797	.	.	.	.	.	.	.	.	797
<b>All insecticides</b>	<b>2,299</b>	<b>130</b>	<b>1,196</b>	<b>7,999</b>	<b>54</b>	<b>34</b>	<b>139</b>	<b>3,338</b>	<b>157</b>	<b>44</b>	<b>2,763</b>	<b>18,153</b>
<b><i>Molluscicides</i></b>												
Ferric phosphate	3,549	.	.	1,772	.	.	.	.	.	197	.	5,518
<b>All molluscicides</b>	<b>3,549</b>	<b>.</b>	<b>.</b>	<b>1,772</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>197</b>	<b>.</b>	<b>5,518</b>

**Table 8 contd:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

<i>Pesticide group &amp; active substance</i>	<i>Crop type</i>									
	Rye	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	All crops
<b><i>Growth regulators</i></b>										
2-chloroethylphosphonic acid	.	.	.	.	.	274	.	.	.	274
2-chloroethylphosphonic acid/mepiquat chloride	.	.	.	.	.	28	.	.	43	71
Chlormequat	.	4,197	122	275	139	5,599	854	.	5,401	16,586
Mepiquat chloride/metconazole	.	.	.	.	.	.	.	191	.	191
Mepiquat chloride/prohexadione-calcium	.	804	.	.	.	395	31	.	1,061	2,292
Prohexadione-calcium/trinexapac-ethyl	130	295	126	34	139	617	156	.	760	2,258
Trinexapac-ethyl	1,167	3,325	626	114	.	3,899	680	.	2,722	12,533
<b>All growth regulators</b>	<b>1,298</b>	<b>8,622</b>	<b>873</b>	<b>423</b>	<b>278</b>	<b>10,812</b>	<b>1,721</b>	<b>191</b>	<b>9,986</b>	<b>34,205</b>
<b><i>Other active substances</i></b>										
Magnesium sulphate	.	.	.	.	.	.	.	.	49	49
Synthetic latex	.	.	.	.	.	.	.	72	.	72
<b>All other active substances</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>72</b>	<b>49</b>	<b>121</b>



**Table 8 contd:** Estimated area (spha) of arable crops treated with pesticide formulations in Northern Ireland, 2020.

<i>Pesticide group &amp; active substance</i>	<i>Crop type</i>													<i>All crops</i>
	<i>Early potatoes</i>	<i>Field beans</i>	<i>Maincrop potatoes</i>	<i>Rye</i>	<i>Seed potatoes</i>	<i>Spring barley</i>	<i>Spring oats</i>	<i>Spring wheat</i>	<i>Triticale</i>	<i>Winter barley</i>	<i>Winter oats</i>	<i>Winter oilseed rape</i>	<i>Winter wheat</i>	
<b><i>Seed treatments</i></b>														
Difenoconazole/fludioxonil	.	.	.	.	.	.	.	.	.	.	.	.	10	10
Fludioxonil	.	.	.	.	.	6,858	731	252	.	3,771	307	.	3,053	14,974
Fludioxonil/fluxapyroxad/triticonazole	.	.	.	.	.	.	.	.	.	1,007	.	.	419	1,426
Fludioxonil/sedaxane/triticonazole	.	.	.	.	.	18	.	.	.	.	.	.	.	18
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	.	126	.	.	.	924	.	.	.	1,050
Flutolanil	.	.	.	.	399	.	.	.	.	.	.	.	.	399
Imazalil	.	.	107	.	.	.	.	.	.	.	.	.	.	107
Imazalil/ipconazole	.	.	.	.	.	826	.	.	.	178	.	.	.	1,004
Prothioconazole	.	.	.	.	.	.	81	.	.	78	78	.	106	343
Prothioconazole/tebuconazole	.	.	.	465	.	680	.	.	.	228	89	.	441	1,902
Silthiofam	.	.	.	.	.	.	.	.	.	108	.	.	270	378
Unknown seed (trt)	88	125	2,749	1,298	.	3,209	244	166	139	1,418	138	275	2,054	11,903
<b>All seed treatments</b>	<b>88</b>	<b>125</b>	<b>2,857</b>	<b>1,763</b>	<b>399</b>	<b>11,717</b>	<b>1,056</b>	<b>418</b>	<b>139</b>	<b>7,713</b>	<b>611</b>	<b>275</b>	<b>6,353</b>	<b>33,513</b>

**Table 9: Estimated quantities (kg) of pesticide formulations used on arable crops in Northern Ireland, 2020.**

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Fungicides</b>														
Ametoctradin/dimethomorph	.	.	888	.	.	.	.	.	.	.	.	.	.	888
Amisulbrom	.	.	181	.	48	.	.	.	.	.	.	.	.	229
Azoxystrobin	.	.	.	20	.	132	.	.	.	22	22	25	236	456
Azoxystrobin/chlorothalonil	.	.	.	.	.	.	.	.	.	.	.	.	81	81
Benthiavalicarb/oxathiapiprolin	.	.	25	.	.	.	.	.	.	.	.	.	.	25
Benthiavalicarb-isopropyl/mancozeb	.	.	1,390	.	.	.	.	.	.	.	.	.	.	1,390
Benzovindiflupyr	.	.	.	.	.	.	.	.	.	15	.	.	17	33
Benzovindiflupyr/propiconazole	.	.	.	.	.	.	.	.	.	.	.	.	99	99
Benzovindiflupyr/prothioconazole	.	.	.	.	.	73	.	.	.	72	.	.	164	309
Bixa fen	.	.	.	.	.	18	.	.	.	2	.	.	.	20
Bixa fen/fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	.	180	180
Bixa fen/prothioconazole	.	.	.	.	.	158	.	.	.	634	6	.	133	931
Bixa fen/prothioconazole/spiroxamine	.	.	.	.	.	202	.	20	.	96	26	.	274	618
Boscalid	.	.	.	.	.	.	.	.	.	.	.	7	.	7
Boscalid/epoxiconazole	.	.	.	.	.	.	.	.	.	4	.	.	.	4
Boscalid/metconazole	.	.	.	.	.	.	.	.	.	.	.	4	.	4
Boscalid/pyraclostrobin	.	10	.	.	.	.	.	.	.	.	.	.	.	10
Bromuconazole/tebuconazole	.	.	.	.	.	.	.	.	.	.	.	.	66	66
Chlorothalonil	.	.	.	.	.	2,951	7	19	.	3,806	.	.	3,028	9,811
Chlorothalonil/cyproconazole	.	.	.	.	.	218	.	.	.	.	.	.	58	276
Chlorothalonil/cyproconazole/propiconazole	.	.	.	.	.	.	.	.	.	.	.	.	250	250
Chlorothalonil/fluxapyroxad	.	.	.	.	.	.	.	.	.	28	.	.	5	33
Chlorothalonil/proquinazid	.	.	.	.	.	.	.	.	.	68	118	.	.	186
Cyazofamid	.	.	521	.	.	.	.	.	.	.	.	.	.	521
Cyflufenamid	.	.	.	.	.	.	<1	.	.	1	1	.	1	3
Cymoxanil	.	.	223	.	.	.	.	.	.	.	.	.	.	223
Cymoxanil/fluazinam	.	.	136	.	.	.	.	.	.	.	.	.	.	136
Cymoxanil/mancozeb	.	.	278	.	722	.	.	.	.	.	.	.	.	1,000
Cymoxanil/propamocarb hydrochloride	.	.	2,042	.	1,345	.	.	.	.	.	.	.	.	3,387
Cyprodinil	.	.	.	.	.	106	.	.	.	12	.	.	.	118
Cyprodinil/isopyrazam	.	.	.	.	.	89	.	.	.	104	.	.	.	193
Difenoconazole/paclobutrazol	.	.	.	.	.	.	.	.	.	.	.	4	.	4

**Table 9 contd: Estimated quantities (kg) of pesticide formulations used on arable crops in Northern Ireland, 2020.**

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Fungicides</b>														
Dimethomorph/mancozeb	444	.	11,046	.	.	.	.	.	.	.	.	.	.	11,490
Epoxiconazole	.	.	.	137	.	110	66	3	.	127	8	.	251	702
Epoxiconazole/fenpropimorph	.	.	.	54	.	117	.	.	58	17	71	.	18	335
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	.	.	352	93	.	.	196	.	.	175	817
Epoxiconazole/fenpropimorph/metrafenone	.	.	.	.	.	.	19	.	.	.	.	.	.	19
Epoxiconazole/fluxapyroxad	.	.	.	.	.	76	.	.	.	65	.	.	31	171
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	.	.	.	129	.	.	.	114	17	.	77	336
Epoxiconazole/metrafenone	.	.	.	.	.	.	.	16	.	.	36	.	.	52
Epoxiconazole/pyraclostrobin	.	.	.	.	.	.	4	.	.	4	11	.	6	26
Fenpropimorph	.	.	.	.	.	34	.	.	.	.	52	.	.	86
Fluazinam	59	.	98	.	.	.	.	.	.	.	.	.	.	157
Fluopicolide/propamocarb hydrochloride	300	.	9,223	.	1,315	.	.	.	.	.	.	.	.	10,838
Fluopyram/prothioconazole	.	.	.	.	.	.	.	.	.	.	.	11	.	11
Fluoxastrobin/prothioconazole	.	.	.	.	.	97	.	.	.	367	.	.	.	464
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	.	.	.	17	.	.	.	17	.	.	.	34
Fluxapyroxad	.	.	.	.	.	56	.	.	.	107	.	.	273	436
Fluxapyroxad/mefentrifluconazole	.	.	.	.	.	6	.	.	.	.	.	.	181	187
Fluxapyroxad/metconazole	.	.	.	.	.	.	.	.	.	.	.	.	10	10
Folpet	.	.	.	.	.	170	.	.	.	164	.	.	245	579
Isopyrazam	.	.	.	.	.	1	.	.	.	.	.	.	.	1
Isopyrazam/prothioconazole	.	.	.	.	.	183	.	.	29	31	.	.	.	243
Mancozeb	.	.	.	.	638	.	.	.	.	.	.	.	46	683
Mandipropamid	.	.	574	.	.	.	.	.	.	.	.	.	.	574
Metconazole	.	.	.	.	.	.	.	.	.	.	.	9	.	9
Oxathiapiprolin	.	.	32	.	13	.	.	.	.	.	.	.	.	45
Prochloraz/proquinazid/tebuconazole	.	.	.	.	.	.	18	.	.	.	.	.	27	45
Proquinazid	.	.	.	5	.	7	20	.	6	3	.	.	26	66
Prothioconazole	.	.	.	.	.	244	25	.	.	249	54	77	186	834
Prothioconazole/spiroxamine	.	.	.	.	.	76	.	.	.	479	36	.	.	591
Prothioconazole/spiroxamine/tebuconazole	.	.	.	.	.	.	.	14	.	.	.	.	.	14
Prothioconazole/tebuconazole	.	.	.	.	.	335	7	10	.	30	19	10	729	1,140
Prothioconazole/trifloxystrobin	.	.	.	.	.	237	.	.	.	44	.	.	81	362

**Table 9 contd:** Estimated quantities (kg) of pesticide formulations used on arable crops in Northern Ireland, 2020.

<i>Pesticide group &amp; active substance</i>	<i>Crop type</i>													<i>All crops</i>
	<i>Early potatoes</i>	<i>Field beans</i>	<i>Maincrop potatoes</i>	<i>Rye</i>	<i>Seed potatoes</i>	<i>Spring barley</i>	<i>Spring oats</i>	<i>Spring wheat</i>	<i>Triticale</i>	<i>Winter barley</i>	<i>Winter oats</i>	<i>Winter oilseed rape</i>	<i>Winter wheat</i>	
<b><i>Fungicides</i></b>														
Pyraclostrobin	.	.	.	.	.	2	14	.	.	56	16	.	101	188
Tebuconazole	.	96	.	20	.	89	.	.	21	.	35	40	157	457
Trifloxystrobin	.	.	.	.	.	40	.	.	.	46	.	.	.	85
Unknown fungicide	.	.	.	.	.	.	.	141	.	331	.	73	967	1,511
<b>All fungicides</b>	<b>804</b>	<b>106</b>	<b>26,657</b>	<b>236</b>	<b>4,080</b>	<b>6,323</b>	<b>273</b>	<b>222</b>	<b>113</b>	<b>7,310</b>	<b>526</b>	<b>259</b>	<b>8,178</b>	<b>55,087</b>

**Table 9 contd:** Estimated quantities (kg) of pesticide formulations used on arable crops in Northern Ireland, 2020.

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Herbicides &amp; desiccants</b>														
Aclonifen	.	.	437	.	.	.	.	.	.	.	.	.	.	437
Amidosulfuron/iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Aminopyralid/propryzamide	.	.	.	.	.	.	.	.	.	.	.	18	.	18
Bentazone	.	13	.	.	.	.	.	.	.	.	.	.	.	13
Carfentrazone-ethyl	15	.	156	.	24	.	.	.	.	.	.	.	.	195
Chlorotoluron/diflufenican/pendimethalin	.	.	.	.	.	.	.	.	.	262	.	.	.	262
Clomazone	.	29	33	.	.	.	.	.	.	.	.	.	.	62
Cycloxydim	.	3	.	.	.	.	.	.	.	.	.	.	.	3
Dicamba/MCPA/mecoprop-p	.	.	.	.	.	.	.	.	.	.	46	.	.	46
Dicamba/mecoprop-p	.	.	.	.	.	224	369	20	.	79	19	.	.	711
Diflufenican	.	.	.	.	.	16	3	.	.	193	29	.	83	324
Diflufenican/flufenacet	.	.	.	.	.	83	.	.	.	402	50	.	338	874
Diflufenican/flufenacet/flurtamone	.	.	.	.	.	.	.	.	.	47	.	.	.	47
Diflufenican/iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	134	134
Dimethenamid-P/metazachlor/quinmerac	.	.	.	.	.	.	.	.	.	.	.	275	.	275
Diquat	.	.	449	.	80	.	.	.	.	.	.	.	.	529
Florasulam	.	.	.	.	.	.	.	.	.	4	1	.	.	4
Florasulam/fluroxypyr	.	.	.	.	.	28	.	.	.	19	.	.	.	47
Florasulam/halauxifen-methyl	.	.	.	1	.	28	<1	1	1	9	<1	.	15	56
Florasulam/pyroxsulam	.	.	.	.	.	.	.	2	.	.	.	.	5	7
Flufenacet/metribuzin	.	.	399	.	.	.	.	.	.	.	.	.	.	399
Flufenacet/pendimethalin	.	.	.	.	.	150	.	.	.	2,229	.	.	675	3,053
Flufenacet/picolinafen	.	.	.	.	.	.	.	.	.	123	.	.	41	164
Flumioxazine	.	.	.	.	.	.	.	.	.	.	.	.	0	0
Fluroxypyr	.	.	.	.	.	643	15	32	.	134	39	.	138	1,000
Fluroxypyr/halauxifen-methyl	.	.	.	.	.	73	10	.	.	.	.	.	37	119
Fluroxypyr/metsulfuron-methyl	.	.	.	.	.	.	.	.	.	12	.	.	.	12
Fluroxypyr/metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	.	.	.	.	.	18	.	.	.	18
Glyphosate	.	309	143	.	.	6,462	137	162	.	3,355	316	569	3,544	14,997
Imazamox/metazachlor	.	.	.	.	.	.	.	.	.	.	.	35	.	35
Imazamox/pendimethalin	.	25	.	.	.	.	.	.	.	.	.	.	.	25
Iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	.	.	.	.	.	.	.	.	3	3

**Table 9 contd:** Estimated quantities (kg) of pesticide formulations used on arable crops in Northern Ireland, 2020.

<i>Pesticide group &amp; active substance</i>	<i>Crop type</i>											<i>All crops</i>
	<i>Maincrop potatoes</i>	<i>Rye</i>	<i>Seed potatoes</i>	<i>Spring barley</i>	<i>Spring oats</i>	<i>Spring wheat</i>	<i>Triticale</i>	<i>Winter barley</i>	<i>Winter oats</i>	<i>Winter oilseed rape</i>	<i>Winter wheat</i>	
<b><i>Insecticides</i></b>												
Chlorpyrifos	.	.	.	.	.	.	.	7	.	.	.	7
Esfenvalerate	.	.	.	18	<1	.	.	3	.	.	7	28
Flonicamid	.	.	32	.	.	.	.	.	.	.	.	32
Lambda-cyhalothrin	17	1	.	17	<1	<1	1	10	1	<1	5	52
Pymetrozine	.	.	120	.	.	.	.	.	.	.	.	120
<b>All insecticides</b>	<b>17</b>	<b>1</b>	<b>151</b>	<b>34</b>	<b>&lt;1</b>	<b>&lt;1</b>	<b>1</b>	<b>21</b>	<b>1</b>	<b>&lt;1</b>	<b>12</b>	<b>239</b>
<b><i>Molluscicides</i></b>												
Ferric phosphate	703	.	.	368	.	.	.	.	.	25	.	1,097
<b>All molluscicides</b>	<b>703</b>	<b>.</b>	<b>.</b>	<b>368</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>25</b>	<b>.</b>	<b>1,097</b>

**Table 9 contd:** Estimated quantities (kg) of pesticide formulations used on arable crops in Northern Ireland, 2020.

<i>Pesticide group &amp; active substance</i>	<i>Crop type</i>									
	Rye	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	All crops
<b><i>Growth regulators</i></b>										
2-chloroethylphosphonic acid	.	.	.	.	.	274	.	.	.	274
2-chloroethylphosphonic acid/mepiquat chlor	.	.	.	.	.	28	.	.	43	71
Chlormequat	.	4,197	122	275	139	5,599	854	.	5,190	16,376
Mepiquat chloride/metconazole	.	.	.	.	.	.	.	191	.	191
Mepiquat chloride/prohexadione-calcium	.	804	.	.	.	395	31	.	1,061	2,292
Prohexadione-calcium/trinexapac-ethyl	130	295	126	34	139	617	156	.	760	2,258
Trinexapac-ethyl	1,167	3,325	626	76	.	3,899	680	.	2,722	12,495
<b>All growth regulators</b>	<b>1,298</b>	<b>8,622</b>	<b>873</b>	<b>385</b>	<b>278</b>	<b>10,812</b>	<b>1,721</b>	<b>191</b>	<b>9,776</b>	<b>33,956</b>
<b><i>Other active substances</i></b>										
Magnesium sulphate	.	.	.	.	.	.	.	.	56	56
Synthetic latex	.	.	.	.	.	.	.	61	.	61
<b>All other active substances</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>61</b>	<b>56</b>	<b>118</b>

**Table 9 contd:** Estimated quantities (kg) of pesticide formulations used on arable crops in Northern Ireland, 2020.

Pesticide group & active substance	Crop type													All crops
	Early potatoes	Field beans	Maincrop potatoes	Rye	Seed potatoes	Spring barley	Spring oats	Spring wheat	Triticale	Winter barley	Winter oats	Winter oilseed rape	Winter wheat	
<b>Seed treatments</b>														
Difenoconazole/fludioxonil	.	.	.	.	.	.	.	.	.	.	.	.	<1	<1
Fludioxonil	.	.	.	.	.	59	7	2	.	36	3	.	28	135
Fludioxonil/fluxapyroxad/triticonazole	.	.	.	.	.	.	.	.	.	30	.	.	13	43
Fludioxonil/sedaxane/triticonazole	.	.	.	.	.	1	.	.	.	.	.	.	.	1
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	.	2	.	.	.	16	.	.	.	18
Flutolanil	.	.	.	.	91	.	.	.	.	.	.	.	.	91
Imazalil	.	.	5	.	.	.	.	.	.	.	.	.	.	5
Imazalil/ipconazole	.	.	.	.	.	11	.	.	.	2	.	.	.	14
Prothioconazole	.	.	.	.	.	.	1	.	.	2	1	.	2	7
Prothioconazole/tebuconazole	.	.	.	2	.	6	.	.	.	4	2	.	9	23
Silthiofam	.	.	.	.	.	.	.	.	.	5	.	.	13	18
Unknown seed treatment*	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All seed treatments</b>	.	.	<b>5</b>	<b>2</b>	<b>91</b>	<b>79</b>	<b>8</b>	<b>2</b>	.	<b>95</b>	<b>6</b>	.	<b>65</b>	<b>354</b>

\*Quantities not available for unknown seed treatments



**Table 10: The fifty active substances most extensively used on arable crops in Northern Ireland, 2020, ranked by treated area (spha).**

	<i>Active substance</i>	<i>Treated area</i>
1	Prothioconazole	31,269
2	Chlormequat	18,155
3	Chlorothalonil	18,129
4	Glyphosate	17,025
5	Trinexapac-ethyl	14,791
6	Epoxiconazole	13,962
7	Propamocarb hydrochloride	13,068
8	Metsulfuron-methyl	11,587
9	Lambda-cyhalothrin	11,100
10	Diflufenican	11,054
11	Fluxapyroxad	10,621
12	Fluopicolide	10,003
13	Tribenuron-methyl	9,695
14	Bixafen	9,183
15	Mancozeb	9,030
16	Flufenacet	9,012
17	Dimethomorph	8,923
18	Florasulam	8,823
19	Tebuconazole	8,804
20	Halauxifen-methyl	8,473
21	Fluroxypyr	8,453
22	Esfenvalerate	6,929
23	Cyazofamid	6,510
24	Cymoxanil	6,206
25	Pendimethalin	5,627
26	Ferric phosphate	5,518
27	Prohexadione-calcium	4,550
28	Oxathiapiprolin	4,183
29	Metribuzin	4,063
30	Carfentrazone-ethyl	3,962
31	Amisulbrom	3,877
32	Pyraclostrobin	3,869
33	Mandipropamid	3,828
34	Fenpropimorph	3,822
35	Spiroxamine	3,719
36	Mecoprop-P	3,710
37	Thifensulfuron-methyl	3,366
38	Benzovindiflupyr	3,112
39	Trifloxystrobin	3,052
40	Pyraflufen-ethyl	3,028
41	Pinoxaden	3,006
42	Azoxystrobin	2,986
43	Fluoxastrobin	2,582
44	Iodosulfuron-methyl-sodium	2,576
45	Mesosulfuron-methyl	2,576
46	Mepiquat chloride	2,553
47	Picolinafen	2,535
48	Prosulfocarb	2,474
49	Kresoxim-methyl	2,467
50	Proquinazid	2,269

**Table 11: The fifty active substances most extensively used on arable crops in Northern Ireland, 2020, ranked by quantity applied (kg).**

	<i>Active substance</i>	<i>Quantity applied</i>
1	Glyphosate	15,113
2	Chlormequat	13,873
3	Mancozeb	13,305
4	Propamocarb hydrochloride	12,863
5	Chlorothalonil	10,522
6	Pendimethalin	5,187
7	Prosulfocarb	4,330
8	Prothioconazole	3,476
9	Metribuzin	2,127
10	Mecoprop-P	1,920
11	Flufenacet	1,567
12	Dimethomorph	1,542
13	Unknown fungicide	1,511
14	Epoxiconazole	1,257
15	Fluroxypyr	1,185
16	Ferric phosphate	1,097
17	Tebuconazole	1,048
18	Fluopicolide	985
19	Trinexapac-ethyl	789
20	Spiroxamine	780
21	Fluxapyroxad	739
22	Unknown herbicide	738
23	Cymoxanil	716
24	Fenpropimorph	654
25	Diflufenican	651
26	MCPA	650
27	Folpet	579
28	Mandipropamid	574
29	Diquat	529
30	Cyazofamid	521
31	Ametoctradin	507
32	Mepiquat chloride	503
33	Azoxystrobin	474
34	Aclonifen	437
35	Pyraclostrobin	382
36	Bixafen	335
37	Metazachlor	290
38	Propyzamide	266
39	Cyprodinil	262
40	Kresoxim-methyl	255
41	Trifloxystrobin	250
42	Fluoxastrobin	241
43	Fluazinam	239
44	Amisulbrom	229
45	Carfentrazone-ethyl	195
46	Benzovindiflupyr	169
47	Isopyrazam	160
48	Mefentrifluconazole	158
49	Fludioxonil	135
50	Pinoxaden	132

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Blight</i>	<i>Dessication</i>	<i>General weed control</i>	<i>Pre-emergence weed control</i>	<i>Seed treatment</i>			
<b><i>Fungicides</i></b>								
Dimethomorph/mancozeb	299	.	.	.	.	299	88	444
Fluazinam	368	.	.	.	.	368	72	59
Fluopicolide/propamocarb hydrochloride	273	.	.	.	.	273	88	300
<b>All fungicides</b>	<b>940</b>	.	.	.	.	<b>940</b>	.	<b>804</b>
<b><i>Herbicides</i></b>								
Carfentrazone-ethyl	.	310	.	.	.	310	71	15
Metribuzin	.	.	.	88	.	88	88	57
Rimsulfuron	.	.	14	.	.	14	14	<1
<b>All herbicides</b>	.	<b>310</b>	<b>14</b>	<b>88</b>	.	<b>412</b>	.	<b>72</b>
<b><i>Seed treatments</i></b>								
Unknown seed treatment*	.	.	.	.	88	88	88	.
<b>All seed treatments</b>	.	.	.	.	<b>88</b>	<b>88</b>	.	.

*\*Quantities not available for unknown seed treatments*

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>General fungal control</i>	<i>General weed control</i>	<i>Ground preparation</i>	<i>Pre-emergence weed control</i>	<i>Seed treatment</i>			
<b><i>Fungicides</i></b>								
Boscalid/pyraclostrobin	42	.	.	.	.	42	21	10
Tebuconazole	384	.	.	.	.	384	384	96
<b>All fungicides</b>	<b>426</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>426</b>	<b>.</b>	<b>106</b>
<b><i>Herbicides</i></b>								
Bentazone	.	21	.	.	.	21	21	13
Clomazone	.	.	.	327	.	327	327	29
Cycloxydim	.	21	.	.	.	21	21	3
Glyphosate	.	88	259	.	.	348	348	309
Imazamox/pendimethalin	.	21	.	.	.	21	21	25
Pendimethalin	.	.	.	327	.	327	327	392
Propaquizafop	.	.	.	327	.	327	327	23
Prosulfocarb	.	.	.	327	.	327	327	523
<b>All herbicides</b>	<b>.</b>	<b>151</b>	<b>259</b>	<b>1,307</b>	<b>.</b>	<b>1,717</b>	<b>.</b>	<b>1,317</b>
<b><i>Seed treatments</i></b>								
Unknown seed treatment*	.	.	.	.	125	125	125	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>125</b>	<b>125</b>	<b>.</b>	<b>.</b>

*\*Quantities not available for unknown seed treatments*

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>General fungal control</i>	<i>General insect control</i>	<i>General weed control</i>	<i>Growth regulation</i>	<i>Seed treatment</i>			
<b><i>Fungicides</i></b>								
Azoxystrobin	130	.	.	.	.	130	130	20
Epoxiconazole	1,167	.	.	.	.	1,167	1,167	137
Epoxiconazole/fenpropimorph	130	.	.	.	.	130	130	54
Proquinazid	130	.	.	.	.	130	130	5
Tebuconazole	130	.	.	.	.	130	130	20
<b>All fungicides</b>	<b>1,689</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1,689</b>	<b>.</b>	<b>236</b>
<b><i>Herbicides</i></b>								
Florasulam/halauxifen-methyl	.	.	130	.	.	130	130	1
<b>All herbicides</b>	<b>.</b>	<b>.</b>	<b>130</b>	<b>.</b>	<b>.</b>	<b>130</b>	<b>.</b>	<b>1</b>
<b><i>Insecticides</i></b>								
Lambda-cyhalothrin	.	130	.	.	.	130	130	1
<b>All insecticides</b>	<b>.</b>	<b>130</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>130</b>	<b>.</b>	<b>1</b>
<b><i>Growth Regulators</i></b>								
Prohexadione-calcium/trinexapac-ethyl	.	.	.	130	.	130	130	7
Trinexapac-ethyl	.	.	.	1,167	.	1,167	1,167	117
<b>All growth regulators</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1,298</b>	<b>.</b>	<b>1,298</b>	<b>.</b>	<b>123</b>
<b><i>Seed treatments</i></b>								
Prothioconazole/tebuconazole	.	.	.	.	465	465	465	2
Unknown seed treatment*	.	.	.	.	1,298	1,298	1,298	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1,763</b>	<b>1,763</b>	<b>.</b>	<b>2</b>

*\*Quantities not available for unknown seed treatments*

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Aphids</i>	<i>Blight</i>	<i>Burnoff</i>	<i>Pre-emergence weed control</i>	<i>Seed treatment</i>			
<b><i>Fungicides</i></b>								
Amisulbrom	.	797	.	.	.	797	399	48
Cymoxanil/mancozeb	.	399	.	.	.	399	399	722
Cymoxanil/propamocarb hydrochloride	.	1,196	.	.	.	1,196	399	1,345
Fluopicolide/propamocarb hydrochloride	.	1,196	.	.	.	1,196	399	1,315
Mancozeb	.	399	.	.	.	399	399	638
Oxathiapiprolin	.	797	.	.	.	797	399	13
<b>All fungicides</b>	.	<b>4,782</b>	.	.	.	<b>4,782</b>	.	<b>4,080</b>
<b><i>Herbicides</i></b>								
Carfentrazone-ethyl	.	.	399	.	.	399	399	24
Diquat	.	.	399	.	.	399	399	80
Metribuzin	.	.	.	399	.	399	399	239
Prosulfocarb	.	.	.	399	.	399	399	638
<b>All herbicides</b>	.	.	<b>797</b>	<b>797</b>	.	<b>1,594</b>	.	<b>980</b>
<b><i>Insecticides</i></b>								
Flonicamid	399	.	.	.	.	399	399	32
Pymetrozine	797	.	.	.	.	797	399	120
<b>All insecticides</b>	<b>1,196</b>	.	.	.	.	<b>1,196</b>	.	<b>151</b>
<b><i>Seed treatments</i></b>								
Flutolanil	.	.	.	.	399	399	399	91
<b>All seed treatments</b>	.	.	.	.	<b>399</b>	<b>399</b>	.	<b>91</b>

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

Pesticide group and active substance	Reasons for treatment				Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Disease prevention	Foliar disease	General disease control	General fungal Control			
<b>Fungicides</b>							
Azoxystrobin	.	.	.	702	702	702	132
Benzovindiflupyr/prothioconazole	.	.	117	401	518	460	73
Bixafen	.	.	.	351	351	268	18
Bixafen/prothioconazole	123	.	232	816	1,171	1,130	158
Bixafen/prothioconazole/spiroxamine	.	.	208	448	656	656	202
Chlorothalonil	.	.	157	4,382	4,539	4,293	2,951
Chlorothalonil/cyproconazole	.	.	.	425	425	425	218
Cyprodinil	.	.	109	353	462	462	106
Cyprodinil/isopyrazam	.	.	.	283	283	142	89
Epoxiconazole	132	.	.	1,067	1,199	931	110
Epoxiconazole/fenpropimorph	.	.	.	399	399	399	117
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	1,010	1,010	1,010	352
Epoxiconazole/fluxapyroxad	.	.	.	403	403	403	76
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	205	109	358	672	672	129
Fenpropimorph	.	.	.	151	151	151	34
Fluoxastrobin/prothioconazole	.	.	296	299	595	595	97
Fluoxastrobin/prothioconazole/trifloxystrobin	.	.	70	.	70	70	17
Fluxapyroxad	132	.	.	979	1,111	800	56
Fluxapyroxad/mefentrifluconazole	.	.	.	59	59	59	6
Folpet	.	.	.	340	340	340	170
Isopyrazam	.	.	.	18	18	18	1
Isopyrazam/prothioconazole	.	.	.	931	931	779	183
Proquinazid	.	.	.	222	222	222	7
Prothioconazole	123	.	76	1,376	1,574	1,574	244
Prothioconazole/spiroxamine	.	.	.	276	276	276	76
Prothioconazole/tebuconazole	.	.	651	802	1,454	1,454	335
Prothioconazole/trifloxystrobin	.	.	.	1,296	1,296	1,212	237
Pyraclostrobin	.	.	.	45	45	45	2
Tebuconazole	.	.	.	354	354	354	89
Trifloxystrobin	.	.	208	100	308	308	40
<b>All fungicides</b>	<b>509</b>	<b>205</b>	<b>2,234</b>	<b>18,646</b>	<b>21,595</b>	.	<b>6,323</b>

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

Pesticide group and active substance	Reasons for treatment										Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Annual meadow grass	Broadleaved weeds	Burnoff	Dessication	General weed control	Grass	Ground preparation	Pre-emergence weed control	Stubble treatment	Wild oats			
<b>Herbicides</b>													
Dicamba/mecoprop-p	.	.	.	.	469	.	.	.	.	.	469	469	224
Diflufenican	.	.	.	.	222	.	.	.	.	.	222	222	16
Diflufenican/flufenacet	.	.	.	.	523	.	.	45	.	.	567	567	83
Florasulam/fluroxypyr	.	.	.	.	272	.	.	.	.	.	272	272	28
Florasulam/halauxifen-methyl	.	151	.	.	3,174	.	.	.	.	.	3,325	3,325	28
Flufenacet/pendimethalin	.	.	.	.	208	.	.	.	.	.	208	208	150
Fluroxypyr	.	.	.	.	4,226	.	.	.	.	.	4,226	4,226	643
Fluroxypyr/halauxifen-methyl	.	41	.	.	740	.	.	.	.	.	781	781	73
Glyphosate	123	.	555	4,085	962	.	970	.	41	.	6,735	6,262	6,462
MCPA	.	.	.	.	385	.	.	.	.	.	385	385	614
Mecoprop-P	.	.	.	.	1,080	.	.	.	.	.	1,080	1,080	322
Metsulfuron-methyl	.	91	.	.	2,025	.	.	.	.	.	2,116	2,116	11
Metsulfuron-methyl/thifensulfuron-methyl	.	192	.	.	406	.	.	.	.	.	598	598	16
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	5,203	.	.	.	.	.	5,203	5,203	55
Pendimethalin	.	.	.	.	.	70	.	.	.	.	70	70	92
Pinoxaden	.	.	.	.	593	.	.	.	.	490	1,083	1,083	65
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	1,323	.	.	.	.	.	1,323	1,323	39
Unknown herbicide	.	.	.	.	425	.	.	.	.	.	425	425	631
<b>All herbicides</b>	<b>123</b>	<b>475</b>	<b>555</b>	<b>4,085</b>	<b>22,237</b>	<b>70</b>	<b>970</b>	<b>45</b>	<b>41</b>	<b>490</b>	<b>29,089</b>	<b>.</b>	<b>9,551</b>



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

Pesticide group and active substance	Reasons for treatment						Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Aphids	Barley yellow dwarf virus	General insect control	Growth regulation	Seed treatment	Slugs			
<b><i>Insecticides</i></b>									
Esfenvalerate	1,326	.	3,113	.	.	.	4,439	4,439	18
Lambda-cyhalothrin	652	41	2,868	.	.	.	3,560	2,713	17
<b>All insecticides</b>	<b>1,978</b>	<b>41</b>	<b>5,981</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>7,999</b>	<b>.</b>	<b>34</b>
<b><i>Growth Regulators</i></b>									
Chlormequat	.	.	.	4,197	.	.	4,197	4,197	2,762
Mepiquat chloride/prohexadione-calcium	.	.	.	804	.	.	804	804	155
Prohexadione-calcium/trinexapac-ethyl	.	.	.	295	.	.	295	295	10
Trinexapac-ethyl	.	.	.	3,325	.	.	3,325	3,212	227
<b>All growth regulators</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>8,622</b>	<b>.</b>	<b>.</b>	<b>8,622</b>	<b>.</b>	<b>3,154</b>
<b><i>Molluscicides</i></b>									
Ferric phosphate	.	.	.	.	.	1,772	1,772	354	368
<b>All molluscicides</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>1,772</b>	<b>1,772</b>	<b>.</b>	<b>368</b>
<b><i>Seed treatments</i></b>									
Fludioxonil	.	.	.	.	6,858	.	6,858	6,858	59
Fludioxonil/sedaxane/triticonazole	.	.	.	.	18	.	18	18	1
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	126	.	126	126	2
Imazalil/ipconazole	.	.	.	.	826	.	826	826	11
Prothioconazole/tebuconazole	.	.	.	.	680	.	680	680	6
Unknown seed treatment*	.	.	.	.	3,209	.	3,209	3,209	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>11,717</b>	<b>.</b>	<b>11,717</b>	<b>.</b>	<b>79</b>

\*Quantities not available for unknown seed treatments

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>				Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	General disease control	General fungal control	General weed control	Ground preparation			
<b>Fungicides</b>							
Chlorothalonil	.	15	.	.	15	15	7
Cyflufenamid	.	40	.	.	40	40	<1
Epoxiconazole	517	30	.	.	547	547	66
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	294	.	.	294	294	93
Epoxiconazole/fenpropimorph/metrafenone	.	28	.	.	28	28	19
Epoxiconazole/pyraclostrobin	.	33	.	.	33	33	4
Prochloraz/proquinazid/tebuconazole	.	28	.	.	28	28	18
Proquinazid	517	45	.	.	562	547	20
Prothioconazole	93	154	.	.	247	207	25
Prothioconazole/tebuconazole	.	40	.	.	40	40	7
Pyraclostrobin	.	108	.	.	108	108	14
<b>All fungicides</b>	<b>1,126</b>	<b>816</b>	<b>.</b>	<b>.</b>	<b>1,942</b>	<b>.</b>	<b>273</b>
<b>Herbicides</b>							
Dicamba/mecoprop-p	.	.	698	.	698	698	369
Diflufenican	.	.	33	.	33	33	3
Florasulam/halauxifen-methyl	.	.	15	.	15	15	<1
Fluroxypyr	.	.	103	.	103	103	15
Fluroxypyr/halauxifen-methyl	.	.	94	.	94	94	10
Glyphosate	.	.	113	28	140	140	137
Metsulfuron-methyl	.	.	124	.	124	124	1
Metsulfuron-methyl/tribenuron-methyl	.	.	844	.	844	844	8
Thifensulfuron-methyl/tribenuron-methyl	.	.	28	.	28	28	1
<b>All herbicides</b>	<b>.</b>	<b>.</b>	<b>2,052</b>	<b>28</b>	<b>2,080</b>	<b>.</b>	<b>543</b>

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>			<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>General insect control</i>	<i>Growth regulation</i>	<i>Seed treatment</i>			
<b><i>Insecticides</i></b>						
Esfenvalerate	20	.	.	20	20	<1
Lambda-cyhalothrin	33	.	.	33	33	<1
<b>All insecticides</b>	<b>54</b>	<b>.</b>	<b>.</b>	<b>54</b>	<b>.</b>	<b>&lt;1</b>
<b><i>Growth Regulators</i></b>						
Chlormequat	.	122	.	122	122	92
Prohexadione-calcium/trinexapac-ethyl	.	126	.	126	126	5
Trinexapac-ethyl	.	626	.	626	596	32
<b>All growth regulators</b>	<b>.</b>	<b>873</b>	<b>.</b>	<b>873</b>	<b>.</b>	<b>130</b>
<b><i>Seed treatments</i></b>						
Fludioxonil	.	.	731	731	731	7
Prothioconazole	.	.	81	81	81	1
Unknown seed treatment*	.	.	244	244	244	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>1,056</b>	<b>1,056</b>	<b>.</b>	<b>8</b>

*\*Quantities not available for unknown seed treatments*

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>							<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Broadleaved weeds</i>	<i>Burnoff</i>	<i>Dessication</i>	<i>General disease control</i>	<i>General fungal control</i>	<i>General weed control</i>	<i>Wild oats</i>			
<b><i>Fungicides</i></b>										
Bixafen/prothioconazole/spiroxamine	.	.	.	41	.	.	.	41	41	20
Chlorothalonil	.	.	.	.	38	.	.	38	38	19
Epoxiconazole	.	.	.	.	38	.	.	38	38	3
Epoxiconazole/metrafenone	.	.	.	.	69	.	.	69	34	16
Prothioconazole/spiroxamine/tebuconazole	.	.	.	.	33	.	.	33	33	14
Prothioconazole/tebuconazole	.	.	.	.	38	.	.	38	38	10
Unknown fungicide	.	.	.	.	318	.	.	318	106	141
<b>All fungicides</b>	.	.	.	<b>41</b>	<b>534</b>	.	.	<b>575</b>	.	<b>222</b>
<b><i>Herbicides</i></b>										
Dicamba/mecoprop-p	.	.	.	.	.	38	.	38	38	20
Florasulam/haloxifen-methyl	33	.	.	.	.	34	.	68	68	1
Florasulam/pyroxsulam	.	.	.	.	.	128	.	128	128	2
Fluroxypyr	.	.	.	.	.	185	.	185	185	32
Glyphosate	.	41	234	.	.	.	.	275	275	162
Metsulfuron-methyl	.	.	.	.	.	72	.	72	72	<1
Metsulfuron-methyl/thifensulfuron-methyl	33	.	.	.	.	.	.	33	33	1
Pinoxaden	.	.	.	.	.	.	41	41	41	3
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	.	147	.	147	147	3
<b>All herbicides</b>	<b>67</b>	<b>41</b>	<b>234</b>	.	.	<b>604</b>	<b>41</b>	<b>986</b>	.	<b>222</b>

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>			<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>General insect control</i>	<i>Growth regulation</i>	<i>Seed treatment</i>			
<b><i>Insecticides</i></b>						
Lambda-cyhalothrin	34	.	.	34	34	<1
<b>All insecticides</b>	<b>34</b>	<b>.</b>	<b>.</b>	<b>34</b>	<b>.</b>	<b>&lt;1</b>
<b><i>Growth Regulators</i></b>						
Chloromequat	.	275	.	275	275	171
Prohexadione-calcium/trinexapac-ethyl	.	34	.	34	34	1
Trinexapac-ethyl	.	76	.	76	57	3
<b>All growth regulators</b>	<b>.</b>	<b>385</b>	<b>.</b>	<b>385</b>	<b>.</b>	<b>176</b>
<b><i>Seed treatments</i></b>						
Fludioxonil	.	.	252	252	252	2
Unknown seed treatment*	.	.	166	166	166	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>418</b>	<b>418</b>	<b>.</b>	<b>2</b>

*\*Quantities not available for unknown seed treatments*

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>General fungal control</i>	<i>General insect control</i>	<i>General weed control</i>	<i>Growth regulation</i>	<i>Seed treatment</i>			
<b><i>Fungicides</i></b>								
Epoxiconazole/fenpropimorph	139	.	.	.	.	139	139	58
Isopyrazam/prothioconazole	139	.	.	.	.	139	139	29
Proquinazid	139	.	.	.	.	139	139	6
Tebuconazole	139	.	.	.	.	139	139	21
<b>All fungicides</b>	<b>555</b>	.	.	.	.	<b>555</b>	.	<b>113</b>
<b><i>Herbicides</i></b>								
Florasulam/haloxifen-methyl	.	.	139	.	.	139	139	1
<b>All herbicides</b>	.	.	<b>139</b>	.	.	<b>139</b>	.	<b>1</b>
<b><i>Insecticides</i></b>								
Lambda-cyhalothrin	.	139	.	.	.	139	139	1
<b>All insecticides</b>	.	<b>139</b>	.	.	.	<b>139</b>	.	<b>1</b>
<b><i>Growth Regulators</i></b>								
Chloromequat	.	.	.	139	.	139	139	104
Prohexadione-calcium/trinexapac-ethyl	.	.	.	139	.	139	139	7
<b>All growth regulators</b>	.	.	.	<b>278</b>	.	<b>278</b>	.	<b>111</b>
<b><i>Seed treatments</i></b>								
Unknown seed treatment*	.	.	.	.	139	139	139	.
<b>All seed treatments</b>	.	.	.	.	<b>139</b>	<b>139</b>	.	.

*\*Quantities not available for unknown seed treatments*

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

Pesticide group and active substance	Reasons for treatment									Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)	
	Aphids	Blight	Burnoff	Dessication	General disease control	General fungal control	General weed control	Pre-emergence weed control	Sealer				
<b>Fungicides</b>													
Ametoctradin/dimethomorph	.	.	.	.	429	1,686	.	.	.	.	2,114	950	888
Amisulbrom	.	2,758	.	.	321	.	.	.	.	.	3,080	1,563	181
Benthiavalicarb/oxathiapiprolin	.	1,226	.	.	.	.	.	.	.	.	1,226	613	25
Benthiavalicarb-isopropyl/mancozeb	.	153	.	.	214	843	.	.	.	.	1,210	1,103	1,390
Cyazofamid	.	3,875	.	.	107	2,529	.	.	.	.	6,510	2,226	521
Cymoxanil	.	1,073	.	.	214	843	.	.	.	.	2,130	1,103	223
Cymoxanil/fluazinam	.	460	.	.	.	.	.	.	.	.	460	460	136
Cymoxanil/mancozeb	.	153	.	.	.	.	.	.	.	.	153	153	278
Cymoxanil/propamocarb hydrochloride	.	919	.	.	107	843	.	.	.	.	1,870	1,410	2,042
Dimethomorph/mancozeb	.	6,509	.	.	.	.	.	.	.	.	6,509	1,907	11,046
Fluazinam	.	564	.	.	.	.	.	.	.	.	564	358	98
Fluopicolide/propamocarb hydrochloride	.	5,057	.	.	107	3,371	.	.	.	.	8,535	3,163	9,223
Mandipropamid	.	3,828	.	.	.	.	.	.	.	.	3,828	1,276	574
Oxathiapiprolin	.	1,839	.	.	321	.	.	.	.	.	2,160	1,103	32
<b>All fungicides</b>	.	<b>28,415</b>	.	.	<b>1,822</b>	<b>10,114</b>	.	.	.	.	<b>40,351</b>	.	<b>26,657</b>
<b>Herbicides</b>													
Aclonifen	.	.	.	.	.	.	460	.	.	.	460	460	437
Carfentrazone-ethyl	.	.	.	3,253	.	.	.	.	.	.	3,253	1,627	156
Clomazone	.	.	.	.	.	.	.	326	38	.	364	364	33
Diquat	.	.	.	.	.	.	.	1,123	.	.	1,123	1,123	449
Flufenacet/metribuzin	.	.	.	.	.	.	613	.	.	.	613	613	399
Glyphosate	.	.	.	.	.	.	260	.	.	.	260	260	143
Metribuzin	.	.	.	.	.	.	368	2,558	38	.	2,964	2,857	1,662
Propaquizafop	.	.	.	.	.	.	151	.	.	.	151	151	23
Prosulfocarb	.	.	.	.	.	.	260	843	.	.	1,103	1,103	2,145
Pyraflufen-ethyl	.	.	.	3,028	.	.	.	.	.	.	3,028	2,012	64
Rimsulfuron	.	.	.	.	.	.	741	.	.	.	741	741	9
Unknown herbicide	.	.	107	.	.	.	.	.	.	.	107	107	107
<b>All herbicides</b>	.	.	<b>107</b>	<b>6,281</b>	.	.	<b>2,853</b>	<b>4,850</b>	<b>76</b>	.	<b>14,167</b>	.	<b>5,627</b>

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>				<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Aphids</i>	<i>General insect control</i>	<i>Seed treatment</i>	<i>Slugs</i>			
<b><i>Insecticides</i></b>							
Lambda-cyhalothrin	613	1,686	.	.	2,299	996	17
<b>All insecticides</b>	<b>613</b>	<b>1,686</b>	<b>.</b>	<b>.</b>	<b>2,299</b>	<b>.</b>	<b>17</b>
<b><i>Molluscicides</i></b>							
Ferric phosphate	.	.	.	3,549	3,549	2,226	703
<b>All molluscicides</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>3,549</b>	<b>3,549</b>	<b>.</b>	<b>703</b>
<b><i>Seed treatments</i></b>							
Imazalil	.	.	107	.	107	107	5
Unknown seed treatment*	.	.	2,749	.	2,749	2,749	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>2,857</b>	<b>.</b>	<b>2,857</b>	<b>.</b>	<b>5</b>

*\*Quantities not available for unknown seed treatments*



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

Pesticide group and active substance	Reasons for treatment					Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Disease prevention	Foliar disease	General disease control	General fungal control	Mildew/ rhynchosporium			
<b>Fungicides</b>								
Azoxystrobin	.	.	.	116	.	116	116	22
Benzovindiflupyr	.	.	161	142	.	302	302	15
Benzovindiflupyr/prothioconazole	.	.	121	300	.	421	421	72
Bixafen	.	.	.	59	.	59	59	2
Bixafen/prothioconazole	170	108	623	2,967	78	3,947	2,813	634
Bixafen/prothioconazole/spiroxamine	.	.	.	316	.	316	316	96
Boscalid/epoxiconazole	.	.	.	28	.	28	28	4
Chlorothalonil	222	108	778	5,224	78	6,410	4,466	3,806
Chlorothalonil/fluxapyroxad	.	.	.	52	.	52	52	28
Chlorothalonil/proquinazid	.	.	.	52	.	52	52	68
Cyflufenamid	.	.	.	78	.	78	78	1
Cyprodinil	.	.	.	193	.	193	193	12
Cyprodinil/isopyrazam	.	.	.	303	.	303	151	104
Epoxiconazole	137	.	161	1,227	.	1,525	993	127
Epoxiconazole/fenpropimorph	.	.	.	68	.	68	68	17
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	658	.	658	658	196
Epoxiconazole/fluxapyroxad	.	.	117	334	.	452	284	65
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	104	388	.	491	491	114
Epoxiconazole/pyraclostrobin	.	.	.	28	.	28	28	4
Fluxastrobin/prothioconazole	.	.	84	1,717	.	1,800	1,492	367
Fluxastrobin/prothioconazole/trifloxystrobin	.	.	117	.	.	117	117	17
Fluxapyroxad	137	.	99	1,444	.	1,679	1,065	107
Folpet	.	.	99	180	.	279	279	164
Isopyrazam/prothioconazole	.	.	.	142	.	142	142	31
Proquinazid	.	.	.	74	.	74	74	3
Prothioconazole	274	.	.	1,965	.	2,239	1,581	249
Prothioconazole/spiroxamine	.	.	260	1,445	.	1,704	1,495	479
Prothioconazole/tebuconazole	.	.	.	216	.	216	216	30
Prothioconazole/trifloxystrobin	.	.	.	378	.	378	378	44
Pyraclostrobin	.	.	.	676	.	676	483	56
Trifloxystrobin	.	.	.	409	.	409	409	46
Unknown fungicide	.	.	116	209	.	325	325	331
<b>All fungicides</b>	<b>939</b>	<b>217</b>	<b>2,839</b>	<b>21,387</b>	<b>156</b>	<b>25,537</b>	<b>.</b>	<b>7,310</b>

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

Pesticide group and active substance	Reasons for treatment												Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Annual meadow grass	Broadleaved weeds	Burnoff	Desiccation	General weed control	Grass	Ground preparation	Harvest aid	Pre-emergence weed control	Sealer	Stubble treatment	Wild oats			
<b>Herbicides</b>															
Chlorotoluron/diflufenican/pendimethalin	.	.	.	.	222	.	.	.	.	.	.	.	222	222	262
Dicamba/mecoprop-p	.	116	.	.	.	.	.	.	.	.	.	.	116	116	79
Diflufenican	.	.	.	.	2,002	.	209	.	.	74	.	.	2,286	2,166	193
Diflufenican/flufenacet	.	.	.	.	1,806	.	.	.	161	74	.	.	2,041	2,041	402
Diflufenican/flufenacet/flurtamone	.	.	.	.	.	.	209	.	.	.	.	.	209	209	47
Florasulam	.	270	.	.	308	.	.	.	.	.	.	.	578	578	4
Florasulam/fluroxypyr	.	.	.	.	263	.	.	.	.	.	.	.	263	263	19
Florasulam/halauxifen-methyl	.	.	.	.	1,157	.	.	.	.	.	.	.	1,157	1,062	9
Flufenacet/pendimethalin	270	.	.	.	1,377	151	.	.	.	.	.	.	1,799	1,799	2,229
Flufenacet/picolinafen	.	.	.	.	615	.	.	.	129	.	.	.	743	743	123
Fluroxypyr	.	190	.	.	648	.	.	.	.	.	.	.	838	838	134
Fluroxypyr/metsulfuron-methyl	.	.	.	.	100	.	.	.	.	.	.	.	100	100	12
Fluroxypyr/metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	108	.	.	.	.	.	.	.	108	108	18
Glyphosate	222	.	1,221	2,296	158	.	165	39	122	.	460	.	4,682	4,052	3,355
Mecoprop-P	.	78	.	.	52	.	.	.	.	.	.	.	130	130	74
Metsulfuron-methyl	.	190	.	.	465	.	.	.	.	.	.	.	655	655	3
Metsulfuron-methyl/thifensulfuron-methyl	.	.	.	.	23	.	.	.	.	.	.	.	23	23	1
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	399	.	.	.	.	.	.	.	399	399	4
Pendimethalin	.	.	.	.	360	.	.	.	.	.	.	.	360	360	307
Pendimethalin/picolinafen	.	.	.	.	1,415	.	.	.	.	.	.	.	1,415	1,415	1,427
Pinoxaden	.	270	.	.	438	.	.	.	.	.	.	434	1,142	1,142	41
Prosulfocarb	.	.	.	.	361	.	.	.	.	.	.	.	361	361	570
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	543	.	.	.	.	.	.	.	543	543	15
<b>All herbicides</b>	<b>492</b>	<b>1,114</b>	<b>1,221</b>	<b>2,296</b>	<b>12,820</b>	<b>151</b>	<b>583</b>	<b>39</b>	<b>412</b>	<b>149</b>	<b>460</b>	<b>434</b>	<b>20,171</b>	<b>.</b>	<b>9,328</b>

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Aphids</i>	<i>Barley yellow dwarf virus</i>	<i>General insect control</i>	<i>Growth regulation</i>	<i>Seed treatment</i>			
<b><i>Insecticides</i></b>								
Chlorpyrifos	.	.	308	.	.	308	308	7
Esfenvalerate	.	.	806	.	.	806	696	3
Lambda-cyhalothrin	871	270	1,084	.	.	2,224	1,916	10
<b>All insecticides</b>	<b>871</b>	<b>270</b>	<b>2,197</b>	<b>.</b>	<b>.</b>	<b>3,338</b>	<b>.</b>	<b>21</b>
<b><i>Growth Regulators</i></b>								
2-chloroethylphosphonic acid	.	.	.	274	.	274	274	46
2-chloroethylphosphonic acid/mepiquat chloride	.	.	.	28	.	28	28	13
Chlormequat	.	.	.	5,599	.	5,599	4,828	4,514
Mepiquat chloride/prohexadione-calcium	.	.	.	395	.	395	395	99
Prohexadione-calcium/trinexapac-ethyl	.	.	.	617	.	617	617	27
Trinexapac-ethyl	.	.	.	3,899	.	3,899	3,299	200
<b>All growth regulators</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>10,812</b>	<b>.</b>	<b>10,812</b>	<b>.</b>	<b>4,899</b>
<b><i>Seed treatments</i></b>								
Fludioxonil	.	.	.	.	3,771	3,771	3,771	36
Fludioxonil/fluxapyroxad/triticonazole	.	.	.	.	1,007	1,007	1,007	30
Fluopyram/prothioconazole/tebuconazole	.	.	.	.	924	924	924	16
Imazalil/ipconazole	.	.	.	.	178	178	178	2
Prothioconazole	.	.	.	.	78	78	78	2
Prothioconazole/tebuconazole	.	.	.	.	228	228	228	4
Silthiofam	.	.	.	.	108	108	108	5
Unknown seed treatment*	.	.	.	.	1,418	1,418	1,418	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>7,713</b>	<b>7,713</b>	<b>.</b>	<b>95</b>

*\*Quantities not available for unknown seed treatments*

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

Pesticide group and active substance	Reasons for treatment							Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)	
	Broadleaved weeds	Dessication	Foliar Disease	General disease control	General fungal control	General weed control	Ground preparation				Pre-emergence weed control
<b>Fungicides</b>											
Azoxystrobin	.	.	.	.	144	.	.	.	144	144	22
Bixafen/prothioconazole	.	.	.	.	37	.	.	.	37	37	6
Bixafen/prothioconazole/spiroxamine	.	.	.	.	81	.	.	.	81	81	26
Chlorothalonil/proquinazid	.	.	.	.	112	.	.	.	112	56	118
Cyflufenamid	.	.	.	105	.	.	.	.	105	105	1
Epoxiconazole	.	.	.	51	37	.	.	.	88	88	8
Epoxiconazole/fenpropimorph	.	.	.	.	189	.	.	.	189	133	71
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	.	.	.	66	.	.	.	66	66	17
Epoxiconazole/metrafenone	.	.	.	158	.	.	.	.	158	105	36
Epoxiconazole/pyraclostrobin	.	.	7	.	66	.	.	.	73	73	11
Fenpropimorph	.	.	.	102	95	.	.	.	197	146	52
Prothioconazole	.	.	.	78	370	.	.	.	448	296	54
Prothioconazole/spiroxamine	.	.	.	.	78	.	.	.	78	78	36
Prothioconazole/tebuconazole	.	.	.	.	78	.	.	.	78	78	19
Pyraclostrobin	.	.	.	.	156	.	.	.	156	117	16
Tebuconazole	.	.	.	.	222	.	.	.	222	222	35
<b>All fungicides</b>	.	.	<b>7</b>	<b>494</b>	<b>1,730</b>	.	.	.	<b>2,231</b>	.	<b>526</b>
<b>Herbicides</b>											
Dicamba/MCPA/mecoprop-p	.	.	.	.	.	37	.	.	37	37	46
Dicamba/mecoprop-p	.	.	.	.	.	38	.	.	38	38	19
Diflufenican	.	.	.	.	.	263	.	.	263	263	29
Diflufenican/flufenacet	.	.	.	.	.	263	.	60	323	323	50
Florasulam	.	.	.	.	.	142	.	.	142	142	1
Florasulam/halauxifen-methyl	.	.	.	.	.	54	.	.	54	54	0
Fluroxypyr	7	.	.	.	.	272	.	.	279	254	39
Glyphosate	.	238	.	.	.	84	60	.	382	301	316
Mecoprop-P	78	.	.	.	.	50	.	.	128	103	129
Metsulfuron-methyl	.	.	.	.	.	89	.	.	89	89	0
Metsulfuron-methyl/thifensulfuron-methyl	7	.	.	.	.	.	.	.	7	7	0
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	.	93	.	.	93	93	1
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	.	222	.	.	222	222	3
<b>All herbicides</b>	<b>92</b>	<b>238</b>	.	.	.	<b>1,605</b>	<b>60</b>	<b>60</b>	<b>2,055</b>	.	<b>633</b>

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>				<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Aphids</i>	<i>General insect control</i>	<i>Growth regulation</i>	<i>Seed treatment</i>			
<b><i>Insecticides</i></b>							
Lambda-cyhalothrin	133	25	.	.	157	157	1
<b>All insecticides</b>	<b>133</b>	<b>25</b>	<b>.</b>	<b>.</b>	<b>157</b>	<b>.</b>	<b>1</b>
<b><i>Growth Regulators</i></b>							
Chloromequat	.	.	854	.	854	590	664
Mepiquat chloride/prohexadione-calcium	.	.	31	.	31	31	3
Prohexadione-calcium/trinexapac-ethyl	.	.	156	.	156	156	6
Trinexapac-ethyl	.	.	680	.	680	602	26
<b>All growth regulators</b>	<b>.</b>	<b>.</b>	<b>1,721</b>	<b>.</b>	<b>1,721</b>	<b>.</b>	<b>699</b>
<b><i>Seed treatments</i></b>							
Fludioxonil	.	.	.	307	307	307	3
Prothioconazole	.	.	.	78	78	78	1
Prothioconazole/tebuconazole	.	.	.	89	89	89	2
Unknown seed treatment*	.	.	.	138	138	138	.
<b>All seed treatments</b>	<b>.</b>	<b>.</b>	<b>.</b>	<b>611</b>	<b>611</b>	<b>.</b>	<b>6</b>

*\*Quantities not available for unknown seed treatments*

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

Pesticide group and active substance	Reasons for treatment									Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Broadleaved weeds	Dessication	General disease control	General fungal control	General weed control	Grass	Harvest aid	Pre-emergence weed control	Volunteer oats			
<b>Fungicides</b>												
Azoxystrobin	.	.	86	74	.	.	.	.	.	159	159	25
Boscalid	.	.	.	44	.	.	.	.	.	44	44	7
Boscalid/metconazole	.	.	.	19	.	.	.	.	.	19	19	4
Difenoconazole/paclbutrazol	.	.	.	42	.	.	.	.	.	42	42	4
Fluopyram/prothioconazole	.	.	63	.	.	.	.	.	.	63	63	11
Metconazole	.	.	.	206	.	.	.	.	.	206	206	9
Prothioconazole	.	.	277	454	.	.	.	.	.	730	556	77
Prothioconazole/tebuconazole	.	.	42	42	.	.	.	.	.	84	84	10
Tebuconazole	.	.	86	193	.	.	.	.	.	278	278	40
Unknown fungicide	.	.	63	.	.	.	.	.	.	63	63	73
<b>All fungicides</b>	.	.	<b>617</b>	<b>1,075</b>	.	.	.	.	.	<b>1,691</b>	.	<b>259</b>
<b>Herbicides</b>												
Aminopyralid/propryzamide	.	.	.	.	21	.	.	.	.	21	21	18
Dimethenamid-P/metazachlor/quinmerac	.	.	.	.	162	.	.	63	.	225	225	275
Glyphosate	.	389	.	.	19	.	63	.	.	471	389	569
Imazamox/metazachlor	.	.	.	.	44	.	.	.	.	44	44	35
Metazachlor	.	.	.	.	86	.	.	42	.	128	128	77
Metazachlor/quinmerac	42	.	.	.	.	.	.	.	.	42	42	26
Propaquizafop	.	.	.	.	191	.	.	42	42	276	276	26
Propyzamide	.	.	.	.	281	42	.	.	.	323	323	248
<b>All herbicides</b>	<b>42</b>	<b>389</b>	.	.	<b>804</b>	<b>42</b>	<b>63</b>	<b>148</b>	<b>42</b>	<b>1,531</b>	.	<b>1,274</b>

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Adjuvant</i>	<i>General insect control</i>	<i>Growth regulation</i>	<i>Seed treatment</i>	<i>Slugs</i>			
<b><i>Insecticides</i></b>								
Lambda-cyhalothrin	.	44	.	.	.	44	44	<1
<b>All insecticides</b>	.	<b>44</b>	.	.	.	<b>44</b>	.	<b>&lt;1</b>
<b><i>Growth Regulators</i></b>								
Mepiquat chloride/metconazole	.	.	191	.	.	191	191	55
<b>All growth regulators</b>	.	.	<b>191</b>	.	.	<b>191</b>	.	<b>55</b>
<b><i>Molluscicides</i></b>								
Ferric phosphate	.	.	.	.	197	197	197	25
<b>All molluscicides</b>	.	.	.	.	<b>197</b>	<b>197</b>	.	<b>25</b>
<b><i>Others</i></b>								
Synthetic latex	72	.	.	.	.	72	72	61
<b>All others</b>	<b>72</b>	.	.	.	.	<b>72</b>	.	<b>61</b>
<b><i>Seed treatments</i></b>								
Unknown seed treatment*	.	.	.	275	.	275	275	.
<b>All seed treatments</b>	.	.	.	<b>275</b>	.	<b>275</b>	.	.

*\*Quantities not available for unknown seed treatments*

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

Pesticide group and active substance	Reasons for treatment							Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Disease prevention	Foliar disease	General disease control	General fungal control	Mildew	Mildew/rust	Septoria/mildew			
<b>Fungicides</b>										
Azoxystrobin	81	.	191	1,328	.	.	.	1,600	1,600	236
Azoxystrobin/chlorothalonil	.	.	61	73	.	.	.	134	134	81
Benzovindiflupyr	.	.	.	339	.	.	.	339	339	17
Benzovindiflupyr/propiconazole	.	.	.	460	.	.	.	460	460	99
Benzovindiflupyr/prothioconazole	.	.	289	784	.	.	.	1,072	916	164
Bixafen/fluopyram/prothioconazole	.	.	62	984	.	.	187	1,233	943	180
Bixafen/prothioconazole	.	.	.	758	.	.	.	758	488	133
Bixafen/prothioconazole/spiroxamine	.	.	.	533	.	.	.	533	533	274
Bromuconazole/tebuconazole	.	.	.	261	.	.	.	261	261	66
Chlorothalonil	.	107	459	5,059	.	.	187	5,812	3,880	3,028
Chlorothalonil/cyproconazole	.	.	.	117	.	.	.	117	117	58
Chlorothalonil/cyproconazole/propiconazole	.	.	.	410	.	.	.	410	410	250
Chlorothalonil/fluxapyroxad	.	.	.	12	.	.	.	12	12	5
Cyflufenamid	.	.	61	.	.	.	.	61	61	1
Epoxiconazole	81	.	.	2,740	.	.	.	2,821	1,610	251
Epoxiconazole/fenpropimorph	.	.	.	54	.	.	.	54	54	18
Epoxiconazole/fenpropimorph/kresoxim-methyl	.	.	.	505	.	.	.	505	505	175
Epoxiconazole/fluxapyroxad	.	.	.	280	.	.	.	280	202	31
Epoxiconazole/fluxapyroxad/pyraclostrobin	.	153	.	156	.	.	.	309	263	77
Epoxiconazole/pyraclostrobin	.	.	.	43	.	.	.	43	43	6
Fluxapyroxad	81	.	.	3,072	.	.	.	3,153	1,796	273
Fluxapyroxad/mefentrifluconazole	.	.	386	756	.	.	.	1,141	1,141	181
Fluxapyroxad/metconazole	.	.	.	78	.	.	.	78	78	10
Folpet	.	46	62	246	.	.	.	354	354	245
Mancozeb	.	.	61	.	.	.	.	61	61	46
Prochloraz/proquinazid/tebuconazole	.	.	.	146	.	.	.	146	146	27
Proquinazid	.	.	.	593	211	.	.	804	804	26



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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>							<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Disease prevention</i>	<i>Foliar disease</i>	<i>General disease control</i>	<i>General fungal control</i>	<i>Mildew</i>	<i>Mildew/ rust</i>	<i>Septoria/ mildew</i>			
<b><i>Fungicides</i></b>										
Prothioconazole	.	.	388	1,302	.	.	.	1,690	1,383	186
Prothioconazole/tebuconazole	.	.	167	3,383	.	.	.	3,550	2,832	729
Prothioconazole/trifloxystrobin	.	.	.	381	.	93	.	474	474	81
Pyraclostrobin	.	.	.	801	.	.	.	801	701	101
Tebuconazole	81	.	61	1,133	.	93	.	1,368	1,098	157
Unknown fungicide	.	.	.	1,349	.	.	.	1,349	508	967
<b>All fungicides</b>	<b>324</b>	<b>307</b>	<b>2,248</b>	<b>28,130</b>	<b>211</b>	<b>187</b>	<b>374</b>	<b>31,780</b>	<b>.</b>	<b>8,178</b>

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

Pesticide group and active substance	Reasons for treatment										Total treated area (spha)	Basic treated area (ha)	Quantity applied (kg)
	Annual meadow grass	Broadleaved weeds	Burnoff	Dessication	General weed control	Ground preparation	Harvest aid	Pre-emergence weed control	Stubble treatment	Wild oats			
<b>Herbicides</b>													
Amidosulfuron/iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	31	.	.	.	.	.	31	31	1
Diflufenican	.	.	.	.	1,207	.	.	.	.	.	1,207	1,207	83
Diflufenican/flufenacet	.	.	.	.	1,446	.	.	.	.	.	1,446	1,446	338
Diflufenican/iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	2,234	.	.	.	.	.	2,234	2,234	134
Florasulam/halauxifen-methyl	.	.	.	.	2,320	.	.	.	.	.	2,320	2,320	15
Florasulam/pyroxulam	.	.	.	.	234	.	.	.	.	.	234	234	5
Flufenacet/pendimethalin	191	.	.	.	620	.	.	.	.	.	812	812	675
Flufenacet/picolinafen	.	.	.	.	128	.	.	123	.	.	251	251	41
Flumioxazine	.	.	.	.	12	.	.	.	.	.	12	12	0
Fluroxypyr	.	125	.	.	687	.	.	.	.	.	812	812	138
Fluroxypyr/halauxifen-methyl	.	.	.	.	391	.	.	.	.	.	391	391	37
Glyphosate	.	.	45	2,753	284	147	93	.	316	.	3,639	3,337	3,544
Iodosulfuron-methyl-sodium/mesosulfuron-methyl	.	.	.	.	311	.	.	.	.	.	311	311	3
Mecoprop-P	.	.	.	.	977	.	.	.	.	.	977	977	765
Metsulfuron-methyl	.	125	.	.	435	.	.	.	.	.	560	560	2
Metsulfuron-methyl/tribenuron-methyl	.	.	.	.	562	.	.	.	.	.	562	562	4
Pendimethalin	.	.	.	.	270	.	.	.	.	.	270	270	235
Pendimethalin/picolinafen	.	.	.	.	125	.	.	.	.	.	125	125	70
Pinoxaden	.	.	.	.	370	.	.	.	.	370	740	740	24
Prosulfocarb	.	.	.	.	284	.	.	.	.	.	284	284	454
Thifensulfuron-methyl/tribenuron-methyl	.	.	.	.	333	.	.	.	.	.	333	333	4
<b>All herbicides</b>	<b>191</b>	<b>250</b>	<b>45</b>	<b>2,753</b>	<b>13,262</b>	<b>147</b>	<b>93</b>	<b>123</b>	<b>316</b>	<b>370</b>	<b>17,551</b>	<b>.</b>	<b>6,572</b>

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

<i>Pesticide group and active substance</i>	<i>Reasons for treatment</i>					<i>Total treated area (spha)</i>	<i>Basic treated area (ha)</i>	<i>Quantity applied (kg)</i>
	<i>Aphids</i>	<i>General insect control</i>	<i>Growth regulation</i>	<i>Plant nutrition</i>	<i>Seed treatment</i>			
<b><i>Insecticides</i></b>								
Esfenvalerate	814	851	.	.	.	1,664	1,653	7
Lambda-cyhalothrin	458	641	.	.	.	1,099	1,099	5
<b>All insecticides</b>	<b>1,272</b>	<b>1,491</b>	.	.	.	<b>2,763</b>	.	<b>12</b>
<b><i>Growth Regulators</i></b>								
2-chloroethylphosphonic acid/mepiquat chloride	.	.	43	.	.	43	43	16
Chlormequat	.	.	5,401	.	.	5,401	4,703	4,179
Mepiquat chloride/prohexadione-calcium	.	.	1,061	.	.	1,061	1,061	252
Prohexadione-calcium/trinexapac-ethyl	.	.	760	.	.	760	687	32
Trinexapac-ethyl	.	.	2,722	.	.	2,722	2,501	123
<b>All growth regulators</b>	.	.	<b>9,986</b>	.	.	<b>9,986</b>	.	<b>4,602</b>
<b><i>Others</i></b>								
Magnesium sulphate	.	.	.	49	.	49	49	56
<b>All others</b>	.	.	.	<b>49</b>	.	<b>49</b>	.	<b>56</b>
<b><i>Seed treatments</i></b>								
Difenoconazole/fludioxonil	.	.	.	.	10	10	10	<1
Fludioxonil	.	.	.	.	3,053	3,053	3,053	28
Fludioxonil/fluxapyroxad/triticonazole	.	.	.	.	419	419	419	13
Prothioconazole	.	.	.	.	106	106	106	2
Prothioconazole/tebuconazole	.	.	.	.	441	441	441	9
Silthiofam	.	.	.	.	270	270	270	13
Unknown seed treatment*	.	.	.	.	2,054	2,054	2,054	.
<b>All seed treatments</b>	.	.	.	.	<b>6,353</b>	<b>6,353</b>	.	<b>65</b>

*\*Quantities not available for unknown seed treatments*

**Table 25: Comparison of the area of arable crops grown (ha) in Northern Ireland, 1990-2020. \* both spring & winter oilseed rape. \*\*excluding potatoes. \*\*\*excluding peas.**

Crop	Survey year															
	1990	1992	1994	1996	1998	2000**	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020
<b>Cereals</b>																
Rye	.	.	.	.	.	.	.	.	.	.	.	.	.	.	122	1,763
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	12,564
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	1,076
Spring wheat	348	136	32	129	400	863	1,428	1,523	1,517	1,552	1,686	1,500	604	707	793	418
Triticale	37	.	.	.	17	64	49	182	12	82	5	.	390	.	38	139
Undersown barley	5,800	5,759	6,542	4,875	4,035	3,532	1,876	599	654	803	591	508	430	232	169	.
Undersown oats	117	221	337	130	102	25	20	234	71	.	49	193	98	15	29	.
Undersown wheat	27	.	42	.	.	.	.	.	.	.	58	48	.	.	.	.
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	7,772
Winter oats	673	1,008	1,125	1,481	1,523	967	1,547	1,556	875	1,640	841	246	648	819	664	803
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	6,713
<b>All cereals</b>	<b>48,612</b>	<b>45,670</b>	<b>42,704</b>	<b>42,438</b>	<b>44,586</b>	<b>40,592</b>	<b>38,111</b>	<b>38,601</b>	<b>33,494</b>	<b>40,299</b>	<b>37,556</b>	<b>36,807</b>	<b>34,530</b>	<b>33,209</b>	<b>29,721</b>	<b>31,249</b>
<b>Other arable crops</b>																
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	617
All oilseed rape *	906	1,063	610	193	739	131	111	255	471	439	446	807	494	552	816	617
Hemp	.	.	.	.	.	.	.	.	.	40	.	.	.	.	.	.
Linseed	.	158	.	.	.	.	14	.	.	2	.	.	.	.	.	.
Maize	.	45	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Peas & beans	.	.	.	.	199	273	197	212	83	55	85	10	54	295***	160	405***
Lupins	.	.	.	.	.	.	67	10	19	.	.	.	.	.	.	.
Camelina	.	.	.	.	.	.	.	.	.	.	.	81	.	.	.	.
Set-aside	.	.	.	.	.	2,451	3,013	3,394	2,284	.	.	.	.	.	.	.
<b>All other arable crops</b>	<b>1,812</b>	<b>2,329</b>	<b>1,220</b>	<b>386</b>	<b>1,677</b>	<b>2,855</b>	<b>3,513</b>	<b>3,871</b>	<b>2,857</b>	<b>537</b>	<b>531</b>	<b>1,705</b>	<b>1,042</b>	<b>1,399</b>	<b>1,792</b>	<b>1,022</b>
<b>Potatoes</b>																
Early potatoes	463	836	813	729	391	.	728	403	370	401	191	192	155	.	101	88
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	3,316
Seed potatoes	3,509	3,688	1,678	1,798	1,607	.	1,239	1,148	763	792	707	555	.	527	365	399
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	3,715
<b>All potatoes</b>	<b>11,835</b>	<b>11,064</b>	<b>8,404</b>	<b>8,488</b>	<b>7,513</b>	<b>.</b>	<b>6,708</b>	<b>6,068</b>	<b>5,118</b>	<b>5,501</b>	<b>4,939</b>	<b>4,150</b>	<b>3,765</b>	<b>3,907</b>	<b>3,702</b>	<b>3,803</b>
<b>All crops</b>	<b>62,259</b>	<b>59,063</b>	<b>52,328</b>	<b>51,312</b>	<b>53,775</b>	<b>43,447</b>	<b>48,332</b>	<b>48,541</b>	<b>41,469</b>	<b>46,337</b>	<b>43,026</b>	<b>42,662</b>	<b>39,337</b>	<b>37,963</b>	<b>34,398</b>	<b>36,074</b>

**Table 25 contd:** Comparison of the area of arable crops grown (ha) in Northern Ireland, 1990-2020.

Differences between:															
<i>Crop</i>	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Cereals</b>															
Rye	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1346%
Spring barley	-58%	-49%	-40%	-41%	-46%	-47%	-45%	-43%	-28%	-33%	-26%	-36%	-23%	-13%	-15%
Spring oats	-52%	-14%	13%	25%	10%	-44%	34%	19%	9%	38%	-25%	-25%	-20%	-24%	-18%
Spring wheat	20%	208%	1207%	224%	5%	-52%	-71%	-73%	-72%	-73%	-75%	-72%	-31%	-41%	-47%
Triticale	275%	.	.	.	735%	117%	183%	-24%	1076%	70%	2676%	.	-64%	.	269%
Undersown barley	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%
Undersown oats	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	.	-100%	-100%	-100%	-100%	-100%
Undersown wheat	-100%	.	-100%	.	.	.	.	.	.	.	.	.	.	.	.
Winter barley	112%	36%	33%	8%	1%	50%	98%	71%	69%	26%	15%	46%	16%	2%	34%
Winter oats	19%	-20%	-29%	-46%	-47%	-17%	-48%	-48%	-8%	-51%	-5%	226%	24%	-2%	21%
Winter wheat	15%	-2%	-3%	3%	0%	63%	16%	-6%	-7%	-36%	-27%	-14%	-15%	-15%	11%
<b>All cereals</b>	<b>-36%</b>	<b>-32%</b>	<b>-27%</b>	<b>-26%</b>	<b>-30%</b>	<b>-23%</b>	<b>-18%</b>	<b>-19%</b>	<b>-7%</b>	<b>-22%</b>	<b>-17%</b>	<b>-15%</b>	<b>-10%</b>	<b>-6%</b>	<b>5%</b>
<b>Other arable crops</b>															
Spring oilseed rape	-100%	-100%	-100%	-100%	-100%	.	-100%	.	.	.	.	-100%	-100%	-100%	-100%
Winter oilseed rape	-31%	-40%	91%	386%	23%	.	.	.	.	.	.	113%	45%	14%	-17%
All oilseed rape *	-32%	-42%	1%	220%	-16%	371%	456%	142%	31%	41%	38%	-23%	25%	12%	-24%
Hemp	.	.	.	.	.	.	.	.	.	-100%	.	.	.	.	.
Linseed	.	-100%	.	.	.	.	-100%	.	.	-100%	.	.	.	.	.
Maize	.	-100%	.	.	.	.	.	.	.	.	.	.	.	.	.
Peas & beans	.	.	.	.	104%	48%	106%	91%	389%	634%	376%	3809%	646%	37%	153%
Lupins	.	.	.	.	.	.	-100%	-100%	-100%	.	.	.	.	.	.
Camelina	.	.	.	.	.	.	.	.	.	.	.	-100%	.	.	.
Set-aside	.	.	.	.	.	-100%	-100%	-100%	-100%	.	.	.	.	.	.
<b>All other arable crops</b>	<b>-44%</b>	<b>-56%</b>	<b>-16%</b>	<b>165%</b>	<b>-39%</b>	<b>-64%</b>	<b>-71%</b>	<b>-74%</b>	<b>-64%</b>	<b>91%</b>	<b>93%</b>	<b>-40%</b>	<b>-2%</b>	<b>-27%</b>	<b>-43%</b>
<b>Potatoes</b>															
Seed potatoes	-81%	-89%	-89%	-88%	-78%	.	-88%	-78%	-76%	-78%	-54%	-54%	-43%	.	-13%
Early potatoes	-58%	-49%	-44%	-44%	-40%	.	-30%	-27%	-17%	-23%	-18%	-3%	.	-2%	2%
Maincrop potatoes	-89%	-89%	-76%	-78%	-75%	.	-68%	-65%	-48%	-50%	-44%	-28%	.	-24%	9%
Maincrop & seed potatoes	-67%	-64%	-51%	-52%	-48%	.	-38%	-34%	-22%	-27%	-22%	-6%	3%	-5%	3%
<b>All potatoes</b>	<b>-68%</b>	<b>-66%</b>	<b>-55%</b>	<b>-55%</b>	<b>-49%</b>	<b>.</b>	<b>-43%</b>	<b>-37%</b>	<b>-26%</b>	<b>-31%</b>	<b>-23%</b>	<b>-8%</b>	<b>1%</b>	<b>-3%</b>	<b>3%</b>
<b>All crops</b>	<b>-42%</b>	<b>-39%</b>	<b>-31%</b>	<b>-30%</b>	<b>-33%</b>	<b>-17%</b>	<b>-25%</b>	<b>-26%</b>	<b>-13%</b>	<b>-22%</b>	<b>-16%</b>	<b>-15%</b>	<b>-8%</b>	<b>-5%</b>	<b>5%</b>

**Table 26: The area (spha) of arable crops treated with pesticides in Northern Ireland, 1990-2020.**

Pesticide type	Survey year															
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020
<b>Fungicides</b>	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	134,094
<b>Herbicides &amp; desiccants</b>	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	91,622
<b>Insecticides</b>																
<i>Carbamates</i>	.	111	167	520	297	.	594	592	30	558	59	112	140	221	.	.
<i>Organochlorines</i>	.	79	255	222	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	1,472	2,454	2,124	3,085	1,587	.	1,265	2,423	1,818	1,164	1,163	2,405	2,736	622	457	308
<i>Pyrethroids</i>	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	16,650
<i>Azomethine</i>	.	.	.	.	.	.	.	673	71	.	.	272	.	.	.	797
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	96	.	78	274	.	609	291	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	252	77	66	101	.	.	399
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	581	96	.	129	.	.	.	.	.
<i>Unknown insecticides</i>	465	694	207	815	1,238	.	.	180	89	.	.	74	.	80	.	.
<b>All insecticides</b>	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	18,153
<b>Molluscicides</b>	834	871	243	434	1,123	.	1,926	337	1,237	1,277	816	3,642	1,387	2,712	2,002	5,518
<b>Growth regulators</b>	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	34,205
<b>Other</b>	.	.	.	.	.	.	.	.	.	89	210	664	633	315	902	121
<b>Mixed formulations</b>	233	186	134	137	128	.	86	.	.	.	.	.	.	.	.	.
<b>Seed treatments</b>	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	33,513
<b>All pesticides</b>	<b>234,985</b>	<b>245,485</b>	<b>245,971</b>	<b>268,710</b>	<b>308,881</b>	.	<b>288,348</b>	<b>325,299</b>	<b>295,635</b>	<b>374,207</b>	<b>337,336</b>	<b>374,845</b>	<b>335,215</b>	<b>354,216</b>	<b>329,104</b>	<b>317,226</b>
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	36,074

**Table 26 contd:** Comparison of the area (spha) of arable crops treated in Northern Ireland, 1990-2020.

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	31%	26%	17%	10%	-5%	.	5%	-4%	9%	-16%	-9%	-15%	-5%	-13%	-8%
<b>Herbicides &amp; desiccants</b>	22%	20%	26%	13%	0%	.	6%	-12%	-3%	-21%	-10%	-19%	-13%	-15%	-10%
<b>Insecticides</b>															
<i>Carbamates</i>	.	-100%	-100%	-100%	-100%	.	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	.
<i>Organochlorines</i>	.	-100%	-100%	-100%	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	-79%	-87%	-85%	-90%	-81%	.	-76%	-87%	-83%	-74%	-74%	-87%	-89%	-51%	-33%
<i>Pyrethroids</i>	475%	495%	410%	116%	-3%	.	-8%	-38%	-34%	-54%	-37%	-38%	-20%	-10%	7%
<i>Azomethine</i>	.	.	.	.	.	.	.	18%	1023%	.	.	193%	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	-100%	.	-100%	-100%	.	-100%	-100%
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	58%	418%	504%	293%	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	-100%	-100%	.	-100%	.	.	.	.
<i>Unknown insecticides</i>	-100%	-100%	-100%	-100%	-100%	.	.	-100%	-100%	.	.	-100%	.	-100%	.
<b>All insecticides</b>	276%	196%	202%	47%	-10%	.	-9%	-42%	-33%	-52%	-35%	-40%	-23%	-9%	11%
<b>Molluscicides</b>	562%	534%	2171%	1170%	391%	.	186%	1536%	346%	332%	576%	52%	298%	103%	176%
<b>Growth regulators</b>	294%	223%	166%	145%	80%	.	96%	107%	75%	53%	43%	8%	9%	-6%	2%
<b>Other</b>	.	.	.	.	.	.	.	.	.	36%	-42%	-82%	-81%	-62%	-87%
<b>Mixed formulations</b>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>Seed treatments</b>	-21%	-25%	-14%	-14%	-7%	.	-3%	2%	11%	-9%	-2%	-12%	4%	2%	18%
<b>All pesticides</b>	35%	29%	29%	18%	3%	.	10%	-2%	7%	-15%	-6%	-15%	-5%	-10%	-4%
<b>Area grown (ha)</b>	-41%	-38%	-30%	-29%	-32%	-17%	-25%	-26%	-3%	-13%	-16%	-14%	-7%	-5%	5%

**Table 27: The quantity (t) of pesticides applied to arable crops in Northern Ireland, 1990-2020. \* Seed treatments on potatoes not recorded.**

Pesticide type	Survey year															
	1990	1992	1994	1996	1998	2000*	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020
<b>Fungicides</b>	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	55.09
<b>Herbicides &amp; desiccants</b>	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	36.12
<b>Insecticides</b>																
<i>Carbamates</i>	.	0.02	0.02	0.07	0.04	.	0.08	0.08	0.004	0.075	0.008	0.01571	0.01823	0.03	.	0.00
<i>Organochlorines</i>	.	0.09	0.29	0.23	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	0.68	0.80	0.85	1.51	0.87	.	0.57	1.07	1.373	0.786	0.733	1.29359	1.92897	0.17	0.10	0.01
<i>Pyrethroids</i>	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	0.08
<i>Azomethine</i>	.	.	.	.	.	.	.	0.10	0.005	.	.	0.0433	.	.	.	0.12
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	0.009	.	0.006	0.02114	.	0.05	0.03	0.00
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	0.02	0.006	0.00528	0.00811	.	.	0.03
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	0.05	0.016	.	0.01	.	.	.	.	.
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	0.01	.	.	.	0.06	.	0.01	.	.
<b>All insecticides</b>	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	0.24
<b>Molluscicides</b>	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	1.10
<b>Growth regulators</b>	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	13.95
<b>Other</b>	.	.	.	.	.	.	.	.	.	0.014	0.180	0.244	0.351	0.22	0.69	0.12
<b>Mixed formulations</b>	0.51	0.41	0.29	0.30	0.28	.	0.13	.	.	.	.	.	.	.	.	.
<b>Seed treatments</b>	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	0.35
<b>All pesticides</b>	<b>363.74</b>	<b>328.89</b>	<b>242.12</b>	<b>448.78</b>	<b>448.40</b>	.	<b>491.93</b>	<b>341.30</b>	<b>237.89</b>	<b>169.06</b>	<b>136.28</b>	<b>132.10</b>	<b>118.24</b>	<b>121.43</b>	<b>121.65</b>	<b>106.97</b>
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	36,074



**Table 27 contd:** Comparison of quantity (t) of pesticides applied to arable crops in Northern Ireland, 1990-2020.

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	-44%	-46%	-39%	-42%	-40%	.	-35%	-23%	-18%	-29%	-19%	-6%	4%	-3%	-12%
<b>Herbicides &amp; desiccants</b>	-86%	-83%	-73%	-89%	-89%	.	-91%	-86%	-76%	-50%	-29%	-31%	-21%	-15%	-13%
<b>Insecticides</b>															
<i>Carbamates</i>	.	.	-100%	-100%	-100%	.	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	.
<i>Organochlorines</i>													.	.	.
<i>Organophosphates</i>	-99%	-99%	-99%	-100%	-99%	.	-99%	-99%	-99%	-99%	-99%	-99%	-100%	-96%	-93%
<i>Pyrethroids</i>	60%	60%	16%	-47%	-58%	.	-61%	-60%	-51%	-73%	-51%	-58%	-22%	-16%	-13%
<i>Azomethine</i>	.	.	.	.	.	.	.	17%	2291%	.	.	176%	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	-100%	.	-100%	-100%	.	-100%	-100%
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	59%	431%	504%	293%	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	-67%	-75%	-81%	-88%	-78%	.	-72%	-84%	-85%	-80%	-74%	-85%	-89%	-33%	4%
<b>Molluscicides</b>	232%	306%	828%	1126%	534%	.	225%	1729%	286%	550%	814%	269%	720%	201%	327%
<b>Growth regulators</b>	32%	49%	28%	9%	-3%	.	20%	19%	10%	-18%	-3%	-16%	-5%	-23%	-3%
<b>Other</b>	.	.	.	.	.	.	.	.	.	739%	-35%	-52%	-67%	-48%	-83%
<b>Mixed formulations</b>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>Seed treatments</b>	.	-91%	-93%	-88%	-90%	.	-87%	-84%	-91%	-81%	-83%	-86%	-82%	-90%	-84%
<b>All pesticides</b>	<b>-71%</b>	<b>-67%</b>	<b>-56%</b>	<b>-76%</b>	<b>-76%</b>	.	<b>-78%</b>	<b>-69%</b>	<b>-55%</b>	<b>-37%</b>	<b>-22%</b>	<b>-19%</b>	<b>-10%</b>	<b>-12%</b>	<b>-12%</b>
Area grown (ha)	-41%	-38%	-30%	-29%	-32%	-17%	-25%	-26%	-3%	-13%	-16%	-14%	-7%	-5%	5%

**Table 28: The area (spha) of cereal crops treated with pesticides in Northern Ireland, 1990-2020. \* Includes rye and triticale.**

Pesticide type	Survey year															
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018*	2020*
<b>Fungicides</b>	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	85,904
<b>Herbicides &amp; desiccants</b>	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	72,201
<b>Insecticides</b>																
<i>Carbamates</i>	.	88	167	493	249	.	182	120	.	127	59	.	140	30	.	0
<i>Organochlorines</i>	.	79	255	222	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	1,164	2,359	1,857	2,447	1,440	3,773	1,140	2,058	1,751	1,164	1,164	2,405	2,483	622	457	308
<i>Pyrethroids</i>	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	14,307
<i>Unknown insecticides</i>	465	694	207	816	1,207	2,290	.	114	89	.	.	74	.	.	.	.
<b>All insecticides</b>	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	14,615
<b>Molluscicides</b>	24	.	27	168	129	833	305	223	307	493	324	466	442	714	361	1,772
<b>Growth regulators</b>	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	34,014
<b>Other</b>	.	.	.	.	.	.	.	.	.	89	.	425	162	.	670	49
<b>Seed treatments</b>	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	29,771
<b>All pesticides</b>	<b>140,465</b>	<b>146,819</b>	<b>153,330</b>	<b>180,624</b>	<b>207,314</b>	<b>217,031</b>	<b>197,144</b>	<b>241,374</b>	<b>227,451</b>	<b>294,463</b>	<b>256,277</b>	<b>295,351</b>	<b>276,957</b>	<b>284,626</b>	<b>251,659</b>	<b>238,325</b>
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	31,249

**Table 28 contd:** Comparison of the area (spha) of cereal crops treated in Northern Ireland, 1990-2020.

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	155%	129%	102%	51%	34%	35%	43%	0%	11%	-20%	-6%	-18%	-16%	-21%	-8%
<b>Herbicides &amp; desiccants</b>	38%	37%	28%	14%	-1%	1%	4%	-13%	-7%	-24%	-13%	-23%	-20%	-20%	-13%
<b>Insecticides</b>															
<i>Carbamates</i>	.	-100%	-100%	-100%	-100%	.	-100%	-100%	.	-100%	-100%	.	-100%	-100%	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	-74%	-87%	-83%	-87%	-79%	-92%	-73%	-85%	-82%	-74%	-74%	-87%	-88%	-51%	-33%
<i>Pyrethroids</i>	501%	436%	338%	103%	-13%	-39%	-14%	-41%	-39%	-59%	-43%	-45%	-27%	-19%	0%
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	264%	148%	154%	33%	-25%	-51%	-19%	-45%	-42%	-59%	-44%	-49%	-34%	-20%	-1%
<b>Molluscicides</b>	7284%	.	6463%	955%	1274%	113%	481%	695%	477%	259%	447%	280%	301%	148%	390%
<b>Growth regulators</b>	295%	224%	165%	144%	79%	97%	96%	106%	74%	52%	42%	7%	9%	-6%	2%
<b>Other</b>	.	.	.	.	.	.	.	.	.	-45%	.	.	-69%	.	-93%
<b>Seed treatments</b>	-29%	-25%	-17%	-16%	-6%	-13%	-5%	2%	9%	-11%	-6%	-14%	-2%	-5%	15%
<b>All pesticides</b>	<b>70%</b>	<b>62%</b>	<b>55%</b>	<b>32%</b>	<b>15%</b>	<b>10%</b>	<b>21%</b>	<b>-1%</b>	<b>5%</b>	<b>-19%</b>	<b>-7%</b>	<b>-19%</b>	<b>-14%</b>	<b>-16%</b>	<b>-5%</b>
Area grown (ha)	-36%	-32%	-27%	-26%	-30%	-23%	-18%	-19%	-7%	-22%	-17%	-15%	-8%	-6%	5%

**Table 29: The quantity (t) of pesticides applied to cereal crops in Northern Ireland, 1990-2020. \* Includes rye and triticale.**

Pesticide type	Survey year															
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018*	2020*
<b>Fungicides</b>	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	23.18
<b>Herbicides &amp; desiccants</b>	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	26.85
<b>Insecticides</b>																
<i>Carbamates</i>	.	0.01	0.02	0.07	0.03	.	0.03	0.012	.	0.014	0.008	.	0.018	0.004	.	.
<i>Organochlorines</i>	.	0.09	0.29	0.23	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	0.51	0.68	0.49	1.24	0.74	2.51	0.56	0.948	1.200	0.785	0.733	1.294	1.731	0.174	0.103	0.007
<i>Pyrethroids</i>	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	0.063
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	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	0.07
<b>Molluscicides</b>	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	0.37
<b>Growth regulators</b>	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	13.90
<b>Other</b>	.	.	.	.	.	.	.	.	.	0.01	.	0.04	0.004	.	0.49	0.06
<b>Seed treatments</b>	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	0.26
<b>All pesticides</b>	<b>81.44</b>	<b>68.94</b>	<b>66.17</b>	<b>84.35</b>	<b>86.19</b>	<b>73.11</b>	<b>64.35</b>	<b>75.55</b>	<b>84.41</b>	<b>109.83</b>	<b>82.35</b>	<b>91.04</b>	<b>85.21</b>	<b>82.27</b>	<b>74.63</b>	<b>64.68</b>
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	31,249

**Table 29 contd:** Comparison of quantity (t) of pesticides applied to cereal crops in Northern Ireland, 1990-2020.

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	55%	26%	55%	-5%	2%	74%	53%	21%	15%	-28%	-16%	-25%	-25%	-20%	-21%
<b>Herbicides &amp; desiccants</b>	-51%	-32%	-25%	-37%	-42%	-36%	-24%	-36%	-45%	-54%	-30%	-33%	-27%	-19%	-6%
<b>Insecticides</b>															
<i>Carbamates</i>	.	-100%	-100%	-100%	-100%	.	-100%	-100%	.	-100%	-100%	.	-100%	-100%	.
<i>Organochlorines</i>	.	-100%	-100%	-100%	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	-99%	-99%	-98%	-99%	-99%	-100%	-99%	-99%	-99%	-99%	-99%	-99%	-100%	-96%	-93%
<i>Pyrethroids</i>	57%	57%	-9%	-52%	-68%	-76%	-68%	-65%	-60%	-77%	-58%	-67%	-35%	-23%	-14%
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	-87%	-92%	-92%	-96%	-93%	-97%	-91%	-94%	-95%	-94%	-92%	-95%	-96%	-73%	-60%
<b>Molluscicides</b>	3584%	.	5657%	821%	2113%	163%	469%	821%	757%	434%	1216%	889%	623%	496%	1599%
<b>Growth regulators</b>	32%	49%	28%	8%	-4%	8%	20%	19%	10%	-18%	-2%	-16%	-4%	-24%	-3%
<b>Other</b>	.	.	.	.	.	.	.	.	.	303%	.	26%	1297%	.	-88%
<b>Seed treatments</b>	-22%	-73%	-93%	-89%	-85%	-89%	-84%	-81%	-82%	-76%	-81%	-82%	-98%	-84%	-84%
<b>All pesticides</b>	<b>-21%</b>	<b>-6%</b>	<b>-2%</b>	<b>-23%</b>	<b>-25%</b>	<b>-12%</b>	<b>1%</b>	<b>-14%</b>	<b>-23%</b>	<b>-41%</b>	<b>-21%</b>	<b>-29%</b>	<b>-24%</b>	<b>-21%</b>	<b>-13%</b>
Area grown (ha)	-36%	-32%	-27%	-26%	-30%	-23%	-18%	-19%	-7%	-22%	-17%	-15%	-8%	-6%	5%

**Table 30: The area (spha) of oilseed rape crops treated with pesticides in Northern Ireland, 1990-2020. \* Winter oilseed rape only.**

Pesticide type	Survey year															
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020*
<b>Fungicides</b>	467	525	86	226	664	244	70	238	646	737	1,337	1,265	1,245	1,618	2,112	1,691
<b>Herbicides &amp; desiccants</b>	1,603	1,343	597	292	1,171	366	194	448	970	972	1,054	1,694	1,227	1,620	2,957	1,531
<b>Insecticides</b>																
<i>Carbamates</i>	.	.	.	.	28.6	.	.	.	.	.	.	13	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	67	180	25	5.4	.	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	.	131	.	.	190	.	49	55	149	316	361	132	93	154	100	44
<i>Azomethine</i>	.	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	.	198	180	25	234	.	49	55	149	316	361	146	93	154	100	44
<b>Molluscicides</b>	810	871	216	72	522	.	39	.	68	120	.	270	467	.	408	197
<b>Growth regulators</b>	.	84	.	.	.	.	.	.	.	.	.	.	.	256	131	191
<b>Other</b>	.	.	.	.	.	.	.	.	.	.	210	239	471	315	200	72
<b>Seed treatments</b>	906	1,063	610	140	339	123	98	106	271	22	423	786	66	.	88	275
<b>All pesticides</b>	<b>3,786</b>	<b>4,084</b>	<b>1,689</b>	<b>755</b>	<b>2,931</b>	<b>732</b>	<b>450</b>	<b>846</b>	<b>2,104</b>	<b>2,167</b>	<b>3,360</b>	<b>4,400</b>	<b>3,569</b>	<b>3,962</b>	<b>5,996</b>	<b>4,001</b>
Area grown (ha)	906	1,062	610	193	739	131	111	255	471	439	446	807	494	552	816	617

**Table 30 contd:** Comparison of the area (spha) of oilseed rape crops treated in Northern Ireland, 1990-2020.

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	262%	222%	1878%	648%	155%	594%	2303%	612%	162%	130%	27%	34%	36%	5%	-20%
<b>Herbicides &amp; desiccants</b>	-5%	14%	156%	424%	31%	319%	690%	242%	58%	57%	45%	-10%	25%	-5%	-48%
<b>Insecticides</b>															
<i>Carbamates</i>	.	.	.	.	-100%	.	.	.	.	.	.	-100%	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	-100%	-100%	-100%	-100%	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	.	-66%	.	.	-77%	.	-9%	-19%	-70%	-86%	-88%	-66%	-52%	-71%	-56%
<i>Azomethine</i>	.	.	.	.	-100%	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	.	-78%	-75%	78%	-81%	.	-9%	-19%	-70%	-86%	-88%	-70%	-52%	-71%	-56%
<b>Molluscicides</b>	-76%	-77%	-9%	174%	-62%	.	405%	.	190%	64%	.	-27%	-58%	.	-52%
<b>Growth regulators</b>	.	127%	.	.	.	.	.	.	.	.	.	.	.	-25%	46%
<b>Other</b>	.	.	.	.	.	.	.	.	.	.	-66%	-70%	-85%	-77%	-64%
<b>Seed treatments</b>	-70%	-74%	-55%	96%	-19%	123%	181%	160%	1%	1148%	-35%	-65%	314%	.	213%
<b>All pesticides</b>	<b>6%</b>	<b>-2%</b>	<b>137%</b>	<b>430%</b>	<b>37%</b>	<b>447%</b>	<b>789%</b>	<b>373%</b>	<b>90%</b>	<b>85%</b>	<b>19%</b>	<b>-9%</b>	<b>12%</b>	<b>1%</b>	<b>-33%</b>
Area grown (ha)	-32%	-42%	1%	220%	-16%	371%	456%	142%	31%	41%	38%	-23%	25%	12%	-24%

**Table 31: The quantity (t) of pesticides applied to oilseed rape crops in Northern Ireland, 1990-2020. \* Winter oilseed rape only.**

Pesticide type	Survey year															
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020*
<b>Fungicides</b>	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	0.26
<b>Herbicides &amp; desiccants</b>	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	1.27
<b>Insecticides</b>																
<i>Carbamates</i>	.	.	.	.	0.004	.	.	.	.	.	.	0.00195	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	<0.001	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	0.02	0.08	0.01	0.004	.	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	.	0.01	.	.	0.001	.	0.0001	0.0003	0.001	0.011	0.002	0.0008	0.0007	0.0009	0.0007	0.0002
<i>Azomethine</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	.	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	0.0002
<b>Molluscicides</b>	0.32	0.27	0.11	0.01	0.06	.	0.01	.	0.01	0.03	.	0.0224	0.0445	.	0.0300	0.0255
<b>Growth regulators</b>	.	0.04	.	.	.	.	.	.	.	.	.	.	.	0.06	0.04	0.05
<b>Other</b>	.	.	.	.	.	.	.	.	.	.	.	.	0.35	0.22	0.16	0.06
<b>Seed treatments</b>	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	.
<b>All pesticides</b>	<b>2.21</b>	<b>1.49</b>	<b>0.90</b>	<b>0.54</b>	<b>1.41</b>	<b>0.81</b>	<b>0.13</b>	<b>0.28</b>	<b>0.88</b>	<b>0.96</b>	<b>1.11</b>	<b>1.55</b>	<b>1.67</b>	<b>1.60</b>	<b>2.36</b>	<b>1.67</b>
Area grown (ha)	906	1,062	610	193	739	131	111	255	471	439	446	807	494	552	816	617



**Table 31 contd:** Comparison of quantity (t) of pesticides applied to oilseed rape crops in Northern Ireland, 1990-2020.

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	-51%	332%	683%	-14%	-57%	-60%	2078%	764%	152%	123%	-4%	43%	77%	14%	-21%
<b>Herbicides &amp; desiccants</b>	-3%	30%	107%	537%	73%	696%	1201%	410%	68%	57%	96%	12%	12%	17%	-29%
<b>Insecticides</b>															
<i>Carbamates</i>	.	.	.	.	-100%	.	.	.	.	.	.	-100%	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	-100%	-100%	-100%	-100%	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	.	-98%	.	.	-80%	.	122%	-26%	-82%	-98%	-89%	-71%	-68%	-76%	-68%
<i>Azomethine</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All insecticides</b>	.	-99%	.	.	-98%	.	100%	-26%	-83%	-98%	-93%	-93%	-71%	-79%	-70%
<b>Molluscicides</b>	-92%	-91%	-77%	155%	-58%	.	145%	.	82%	-6%	.	14%	-43%	.	-15%
<b>Growth regulators</b>	.	37%	.	.	.	.	.	.	.	.	.	.	.	-3%	30%
<b>Other</b>	.	.	.	.	.	.	.	.	.	.	.	.	-82%	-73%	-63%
<b>Seed treatments</b>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<b>All pesticides</b>	<b>-24%</b>	<b>12%</b>	<b>87%</b>	<b>210%</b>	<b>18%</b>	<b>107%</b>	<b>1149%</b>	<b>498%</b>	<b>90%</b>	<b>74%</b>	<b>51%</b>	<b>8%</b>	<b>0%</b>	<b>5%</b>	<b>-29%</b>
Area grown (ha)	-32%	-42%	1%	220%	-16%	371%	456%	142%	31%	41%	38%	-23%	25%	12%	-24%

**Table 32:** The area (spha) of pea and bean crops treated with pesticides in Northern Ireland, 1998-2020. \*Only beans recorded in 2016 and 2020.

<i>Pesticide type</i>	<i>Survey Year</i>											
	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016*	2018	2020*
<b>Fungicides</b>	314	138	302.7	676.7	19.0	8.0	296.0	.	133.2	425.7	190.8	426.1
<b>Herbicides &amp; desiccants</b>	444	199	241.1	321.5	120.0	63.0	137.0	20.7	98.7	822.0	387.5	1717.4
<b>Insecticides</b>												
<i>Carbamates</i>	19	18.3	54.2	.	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	22	.	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	64	.	66.1	197.20	12.00	8.00	99.00	.	44.4	146.5	52.8	.
<b>All insecticides</b>	105	18.3	120.3	197.2	12.00	8.00	99.00	.	44.4	146.5	52.8	.
<b>Seed treatments</b>	.	105	137.9	15.1	.	8	72	.	.	24.6	9.4	125.0
<b>All pesticides</b>	<b>863</b>	<b>459.9</b>	<b>802</b>	<b>1,210.5</b>	<b>151.0</b>	<b>88.0</b>	<b>604.0</b>	<b>20.7</b>	<b>276.3</b>	<b>1,418.8</b>	<b>640.5</b>	<b>2,268.5</b>
Area grown (ha)	199	273	197	212	763	55	85	10	54	295	160	405

**Table 32 contd:** Comparison of the area (spha) of pea and bean\* crops treated in Northern Ireland, 1998-2020.

Pesticide type	Differences between:										
	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	36%	208%	41%	-37%	2142%	5226%	44%	.	220%	0%	123%
<b>Herbicides &amp; desiccants</b>	287%	765%	612%	434%	1331%	2626%	1154%	8189%	1640%	109%	343%
<b>Insecticides</b>											
<i>Carbamates</i>	-100%	-100%	-100%	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	-100%	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	-100%	.	-100%	-100%	-100%	-100%	-100%	.	-100%	-100%	-100%
<b>All insecticides</b>	.	.	.	.	.	.	.	.	.	.	.
<b>Seed treatments</b>	.	19%	-9%	728%	.	1463%	74%	.	.	408%	1231%
<b>All pesticides</b>	<b>163%</b>	<b>393%</b>	<b>183%</b>	<b>87%</b>	<b>1402%</b>	<b>2478%</b>	<b>276%</b>	<b>10848%</b>	<b>721%</b>	<b>60%</b>	<b>254%</b>
Area grown (ha)	104%	48%	106%	91%	-47%	637%	377%	3951%	650%	37%	153%

\*Only beans recorded in 2016 and 2020

**Table 33:** The quantity (t) of pesticides applied to pea and bean\* crops in Northern Ireland, 1998-2020. \*Only beans recorded in 2016 and 2020.

Pesticide type	Survey Year											
	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016*	2018	2020*
<b>Fungicides</b>	0.20	0.05	0.1055	0.540	0.009	0.006	0.180	.	0.025	0.237	0.147	0.106
<b>Herbicides &amp; desiccants</b>	0.41	0.20	0.2545	0.197	0.098	0.062	0.132	0.018	0.078	0.572	0.295	1.317
<b>Insecticides</b>												
<i>Carbamates</i>	0.003	0.005	0.003	.	.	.	.	.	.	.	.	0.000
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	0.000
<i>Organophosphates</i>	0.002	.	.	.	.	.	.	.	.	.	.	0.000
<i>Pyrethroids</i>	0.001	.	0.0002	0.001	0.0001	<0.0001	<0.0001	.	0.0003	0.0008	0.0002	0.0000
<b>All insecticides</b>	0.006	0.005	0.0032	0.001	0.0001	<0.0001	<0.0001	.	0.0003	0.0010	0.0001	0.0000
<b>Seed treatments</b>	.	0.112	0.015	0.002	.	0.005	0.018	.	.	0.006	0.001	0.000
<b>All pesticides</b>	<b>0.614</b>	<b>0.367</b>	<b>0.3782</b>	<b>0.740</b>	<b>0.107</b>	<b>0.073</b>	<b>0.334</b>	<b>0.018</b>	<b>0.103</b>	<b>0.816</b>	<b>0.443</b>	<b>1.423</b>
Area grown (ha)	199	273	197	212	83	55	85	10	54	295	160	405

**Table 33 contd:** Comparison of quantity (t) of pesticides applied to pea and bean crops in Northern Ireland, 1998-2020.

<i>Pesticide type</i>	Differences between:										
	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>	-47%	97%	0%	-80%	1076%	1664%	-41%	.	325%	-55%	-28%
<b>Herbicides &amp; desiccants</b>	222%	570%	418%	570%	1244%	2025%	898%	7206%	1588%	130%	347%
<b>Insecticides</b>											
<i>Carbamates</i>	-100%	-100%	-100%	.	.	.	.	.	.	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	-100%	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	-100%	.	-100%	-100%	-100%	.	.	.	-100%	-100%	-100%
<b>All insecticides</b>	-100%	-100%	-100%	-100%	-100%	.	.	.	-100%	-100%	-100%
<b>Seed treatments</b>	.	-100%	-100%	-100%	.	-100%	-100%	.	.	-100%	-100%
<b>All pesticides</b>	<b>132%</b>	<b>288%</b>	<b>276%</b>	<b>92%</b>	<b>1229%</b>	<b>1849%</b>	<b>326%</b>	<b>7793%</b>	<b>1278%</b>	<b>74%</b>	<b>221%</b>
Area grown (ha)	104%	48%	106%	91%	389%	637%	377%	3951%	650%	37%	153%

**Table 34: The area (spha) of potato crops treated with pesticides in Northern Ireland, 1990-2020.**

Pesticide type	Survey Year															
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020
<b>Fungicides</b>	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	46,073
<b>Herbicides &amp; desiccants</b>	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	16,173
<b>Insecticides</b>																
<i>Carbamates</i>	.	23	.	28	.	.	357	473	30	431	.	98		191	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	253	.	.	.
<i>Organophosphates</i>	308	28	88	612	123	.	125	365	55	.	.	.	.	.	.	.
<i>Pyrethroids</i>	512	.	.	656	353	.	1,340	2,408	1,553	913	1,094	438	1,074	628	1,188	2,299
<i>Azomethine</i>	.	.	.	.	.	.	.	673	71	.	.	272	.	.	.	797
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	96	.	78	274	.	609	291	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	252	77	66	101	.	.	399
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	581	96	.	129	.	.	.	.	.
<i>Unknown insecticides</i>	.	.	14	.	20	.	.	66	.	.	.	.	.	80	.	.
<b>All insecticides</b>	820	51	102	1,295	492	.	1,823	4,565	1,900	1,595	1,379	1,369	1,428	1,508	1,479	3,494
<b>Molluscicides</b>	.	.	.	195	472	.	1,581	114	930	664	491	2,906	479	1,998	1,233	3,549
<b>Growth regulators</b>	233	186	134	137	128	.	86	.	.	.	.	.	.	.	.	.
<b>Mixed formulations</b>	.	.	.	.	.	.	72	.	.	23	56	10	93	.	31	.
<b>Seed treatments</b>	*	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	3,343
<b>All pesticides</b>	<b>90,583</b>	<b>93,972</b>	<b>90,952</b>	<b>87,330</b>	<b>97,658</b>	.	<b>88,295</b>	<b>80,347</b>	<b>66,954</b>	<b>77,473</b>	<b>77,085</b>	<b>74,992</b>	<b>54,413</b>	<b>64,209</b>	<b>70,809</b>	<b>72,632</b>
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	3,803

\* Seed treatments not recorded

**Table 34 contd:** Comparison of the area (spha) of potato crops treated in Northern Ireland, 1990-2020.

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>		-32%	-36%	-29%	-39%	.	-31%	-12%	1%	-12%	-17%	-9%	23%	4%	-9%
<b>Herbicides &amp; desiccants</b>	-24%	-26%	2%	-8%	-3%	.	9%	-18%	1%	-18%	-9%	-7%	22%	12%	6%
<b>Insecticides</b>															
<i>Carbamates</i>	.	-100%	.	-100%	.	.	-100%	-100%	-100%	-100%	.	-100%	.	-100%	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Organophosphates</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Pyrethroids</i>	349%	.	.	250%	551%	.	72%	-5%	48%	152%	110%	425%	114%	266%	93%
<i>Azomethine</i>	.	.	.	.	.	.	.	18%	1023%	.	.	193%	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	-100%	.	-100%	-100%	.	-100%	-100%
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	58%	418%	504%	293%	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	.	.	.	.	.	.	-100%	.
<b>All insecticides</b>	326%	6751%	3343%	170%	610%	.	92%	-23%	84%	119%	153%	155%	145%	132%	136%
<b>Molluscicides</b>	.	.	.	1720%	652%	.	124%	3013%	282%	434%	623%	22%	641%	78%	188%
<b>Growth regulators</b>	-100%	-100%	.	-101%	-101%	.	-101%	.	.	.	.	.	.	.	.
<b>Mixed formulations</b>	.	.	.	.	.	.	-100%	.	.	-100%	-100%	-100%	-100%	.	-100%
<b>Seed treatments</b>	.	-11%	38%	1%	-17%	.	9%	-9%	21%	6%	58%	25%	105%	86%	41%
<b>All pesticides</b>	<b>-20%</b>	<b>-23%</b>	<b>-20%</b>	<b>-17%</b>	<b>-26%</b>	.	<b>-18%</b>	<b>-10%</b>	<b>8%</b>	<b>-6%</b>	<b>-6%</b>	<b>-3%</b>	<b>33%</b>	<b>13%</b>	<b>3%</b>
Area grown (ha)	-68%	-66%	-55%	-55%	-49%	.	-43%	-37%	-26%	-31%	-23%	-8%	1%	-3%	3%

**Table 35: The quantity (t) of pesticides applied to potato crops in Northern Ireland, 1990-2020. \* Seed treatments not recorded.**

Pesticide type	Survey year															
	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020
<b>Fungicides</b>	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	31.54
<b>Herbicides &amp; desiccants</b>	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	6.68
<b>Insecticides</b>																
<i>Carbamates</i>	.	<0.01	.	<0.01	.	.	0.05	0.07	0.004	0.060	.	0.01376		0.02672	.	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.		0.22763	.	.	.
<i>Organophosphates</i>	0.17	0.10	0.28	0.26	0.12	.	0.02	0.12	0.164	.	.	.	.	.	.	.
<i>Pyrethroids</i>	0.01	.	.	0.02	<0.01	.	0.01	0.01	0.006	0.007	0.010	0.004	0.006	0.01157	0.01790	0.01724
<i>Azomethine</i>	.	.	.	.	.	.	.	0.102	0.005	.	.	0.043	.	.	.	0.11955
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	0.010	.	0.006	0.021	.	0.04611	0.03330	.
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	0.020	0.006	0.005	0.008	.	.	0.03188
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	0.051	0.015	.	0.014	.	.	.	.	.
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	0.003	.	.	.	.	.	0.01204	.	.
<b>All insecticides</b>	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	0.17
<b>Molluscicides</b>	.	.	.	0.04	0.10	.	0.26	0.02	0.23	0.07	0.09	0.24	0.04	0.30	0.21	0.70
<b>Growth regulators</b>	0.51	0.41	0.29	0.30	0.28	.	0.13	.	.	.	.	.	.	.	.	0
<b>Mixed formulations</b>	.	.	.	.	.	.	0.17	.	.	0.07	0.17	0.03	0.28	.	0.04	0.00
<b>Seed treatments</b>	*	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	0.10
<b>All pesticides</b>	<b>279.95</b>	<b>258.25</b>	<b>175.06</b>	<b>363.89</b>	<b>360.16</b>	.	<b>425.84</b>	<b>263.78</b>	<b>151.75</b>	<b>58.20</b>	<b>52.48</b>	<b>39.46</b>	<b>31.25</b>	<b>36.75</b>	<b>44.22</b>	<b>39.19</b>
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	3,803



**Table 35 contd: Comparison of quantity (t) of pesticides applied to potato crops in Northern Ireland, 1990-2020.**

Pesticide type	Differences between:														
	2020-90	2020-92	2020-94	2020-96	2020-98	2020-00	2020-02	2020-04	2020-06	2020-08	2020-10	2020-12	2020-14	2020-16	2020-18
<b>Fungicides</b>		-62%	-58%	-55%	-53%	.	-55%	-39%	-33%	-30%	-21%	15%	42%	16%	-3%
<b>Herbicides &amp; desiccants</b>	-97%	-96%	-93%	-98%	-98%	.	-98%	-97%	-93%	-45%	-43%	-37%	-14%	-8%	-38%
<b>Insecticides</b>															
<i>Carbamates</i>	.	.	.	.	.	.	-100%	-100%	-100%	-100%	.	-100%	.	-100%	.
<i>Organochlorines</i>	.	.	.	.	.	.	.	.	.	.	.	.	-100%	.	.
<i>Organophosphates</i>	-100%	-100%	-100%	-100%	-100%	.	-100%	-100%	-100%	.	.	.	.	.	.
<i>Pyrethroids</i>	72%	.	.	-14%	.	.	108%	72%	187%	146%	72%	311%	176%	49%	-4%
<i>Azomethine</i>	.	.	.	.	.	.	.	17%	2291%	.	.	176%	.	.	.
<i>Neonicotinoid</i>	.	.	.	.	.	.	.	.	-100%	.	-100%	-100%	.	-100%	-100%
<i>Feeding blocker</i>	.	.	.	.	.	.	.	.	.	59%	431%	504%	293%	.	.
<i>Mixed Formulations</i>	.	.	.	.	.	.	.	-100%	-100%	.	-100%	.	.	.	.
<i>Unknown insecticides</i>	.	.	.	.	.	.	.	-100%	.	.	.	.	.	-100%	.
<b>All insecticides</b>	-1%	69%	-39%	-40%	30%	.	124%	-53%	-17%	94%	369%	92%	-30%	75%	230%
<b>Molluscicides</b>	.	.	.	1658%	620%	.	168%	4295%	208%	850%	681%	196%	1736%	133%	243%
<b>Growth regulators</b>	-100%	-100%	-100%	-100%	-100%	.	-100%	.	.	.	.	.	.	.	.
<b>Mixed formulations</b>	.	.	.	.	.	.	-100%	.	.	-100%	-100%	-100%	-100%	.	-100%
<b>Seed treatments</b>	.	-96%	-92%	-84%	-95%	.	-92%	-89%	-96%	-87%	-86%	-91%	-87%	-95%	-85%
<b>All pesticides</b>	<b>-86%</b>	<b>-85%</b>	<b>-78%</b>	<b>-89%</b>	<b>-89%</b>	.	<b>-91%</b>	<b>-85%</b>	<b>-74%</b>	<b>-33%</b>	<b>-25%</b>	<b>-1%</b>	<b>25%</b>	<b>7%</b>	<b>-11%</b>
Area grown (ha)	-68%	-66%	-55%	-55%	-49%	.	-43%	-37%	-26%	-31%	-23%	-8%	1%	-3%	3%

**Table 36: Comparison of early/maincrop potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2020.**

	Ware (early and maincrop) potatoes													
	1992	1994	1996	1998	2002	2004	2006	2008	2010	2012	2014*	2016	2018	2020**
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	.

\* both seed and maincrop potatoes combined in 2014

\*\* storage data not available for 2020

**Table 37: Comparison of seed potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2020.**

	Seed potatoes													
	1992	1994	1996	1998	2002	2004	2006	2008	2010	2012	2014*	2016	2018	2020**
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	.

\* both seed and maincrop potatoes combined in 2014

\*\* storage data not available for 2020

**Table 38: Comparison of all potatoes stored (tonnes), treated (treated tonnes) and the weight of pesticides applied (kilograms) to stored potatoes between 1992 and 2020.**

	All potatoes													
	1992	1994	1996	1998	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020**
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	.

\*\* storage data not available for 2020

**Table 39:** Comparison of active substances unique to each survey period 2018-2020. \*Active substances and formulations recorded in arable crops in Northern Ireland for the first time. Please refer to Tables 8 & 9 for full list of active substances used in 2020.

Recorded in 2018	Recorded in 2020
<b>Fungicides</b>	
Azoxystrobin/fluazinam	Amisulbrom*
Bixafen/fluoxastrobin/prothioconazole	Benthiavalicarb/oxathiapiprolin*
Chlorothalonil/penthiopyrad	Benzovindiflupyr/propiconazole
Cymoxanil/zoxamide	Bixafen
Epoxiconazole/fenpropimorph/pyraclostrobin	Boscalid
Epoxiconazole/isopyrazam	Boscalid/epoxiconazole
Epoxiconazole/metconazole	Boscalid/metconazole
Fenamidon/propamocarb hydrochloride	Bromuconazole/tebuconazole*
Fenpropimorph/pyraclostrobin	Cyflufenamid*
Fluxapyroxad/pyraclostrobin	Difenoconazole/paclobutrazol*
Penthiopyrad	Epoxiconazole/metrafenone
Quinoxifen	Fluxapyroxad/mefentrifluconazole*
	Folpet
	Isopyrazam
	Isopyrazam/prothioconazole*
	Prothioconazole/spiroxamine/tebuconazole*

<b>Herbicides &amp; desiccants</b>	
2,4-DB	Aclonifen*
Amidosulfuron/iodosulfuron-methyl-sodium	Amidosulfuron/iodosulfuron-methyl-sodium/mesosulfuron-methyl*
Bromoxynil	Clomazone
Clethodim	Cycloxydim
Clopyralid	Flufenacet/picolinafen*
Clopyralid/florasulam/fluoxypyr	Flumioxazine
Clopyralid/picloram	Fluroxypyr/metsulfuron-methyl*
Diflufenican/flupyrsulfuron-methyl	Imazamox/metazachlor*
Diflufenican/metsulfuron-methyl	Metazachlor
Diflufenican/prosulfocarb	Pyraflufen-ethyl*
Ethametsulfuron-methyl	
Fenoxa prop-P-ethyl	
Flufenacet	
Flupyrsulfuron-methyl	
Iodosulfuron-methyl-sodium	
Linuron	
Mesosulfuron-methyl/propoxycarbazone-sodium	
Tri-allate	
Tribenuron-methyl	

**Table 39 contd:** Comparison of active substances unique to each survey period 2018-2020. \*Active substances and formulations recorded in arable crops in Northern Ireland for the first time. Please refer to Tables 8 & 9 for full list of active substances used in 2020.

Recorded in 2018	Recorded in 2020
<b><i>Insecticides</i></b>	
	Pymetrozine
<b><i>Molluscicides</i></b>	
Metaldehyde	
<b><i>Growth regulators</i></b>	
Chlormequat/imazaquin	2-chloroethylphosphonic acid/mepiquat chloride
<b><i>Other active substances</i></b>	
Manganese	
Nitrogen/phosphate/potassium	
Nitrogen/phosphate/potassium oxide	
<b><i>Seed treatments</i></b>	
Carboxin/thiram	Difenoconazole/fludioxonil*
Clothianidin/prothioconazole	Fludioxonil/fluxapyroxad/triticonazole*
Fluquinconazole/prochloraz	Fludioxonil/sedaxane/triticonazole*
Pencycuron	Imazalil/ipconazole*
Prochloraz/triticonazole	
Thiram	

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## REFERENCES

- Anon. (1998).** *Statistical Review of Northern Ireland Agriculture 1997*. Norwich: HMSO.
- Jess, S., McCallion, T., Kidd, S.L.B. (1992).** *Arable Crops 1990. Pesticide Usage Survey Report 105*. Belfast: HMSO.
- Jess, S., Kidd, S.L.B., McCallion, T. (1994).** *Arable Crops 1992. Pesticide Usage Survey Report 117*. Belfast: HMSO.
- Jess, S., Kidd, S.L.B., McCallion, T. (1997).** *Arable Crops 1994. Pesticide Usage Survey Report 132*. Belfast: The Stationary Office.
- Jess, S., Kidd, S.L.B., McCallion, T. (2000).** *Arable Crops 1996. Pesticide Usage Survey Report 146*. Belfast: The Stationary Office.
- Jess, S., Kearns C.A., Kidd, S.L.B., McCallion, T. (2002).** *Arable Crops 1998. Pesticide Usage Survey Report 168*. Belfast: The Stationary Office.
- Withers, J.A., Jess, S., Kearns, C.A., Kidd, S.L.B., McCallion, T. (2004).** *Arable Crops 2000. Pesticide Usage Survey Report 177*. Belfast: The Stationary Office.
- Withers, J.A., Jess, S., Kearns, C.A., McCallion, T., Matthews, D. (2004).** *Arable Crops 2002. Pesticide Usage Survey Report 194*. Belfast: DARD.
- Withers, J.A., Jess, S., Kearns, C.A., McCallion, T., Matthews, D. (2005).** *Arable Crops 2004. Pesticide Usage Survey Report 206*. Belfast: DARD.
- Withers, J.A., Jess, S., Kearns, C.A., Matthews, D., Moreland, T. (2007).** *Arable Crops 2006. Pesticide Usage Survey Report 216*. Belfast: DARD.
- Withers, J.A., Jess, S., Kirbas, J.M., Matthews, D., Kelly, T. (2009).** *Arable Crops 2008. Pesticide Usage Survey Report 230*. Belfast: DARD.
- Withers, J.A., Jess, S., Kirbas, J.M., Matthews, D., Kelly, T. (2011).** *Arable Crops 2010. Pesticide Usage Survey Report 242*. Belfast: DARD.
- Withers, J.A., Jess, S., Matthews, D., Patton, A. (2013).** *Arable Crops 2012. Pesticide Usage Survey Report 247*. Belfast: DARD.
- Withers, J.A., Jess, S., Matthews, D., Patton, A. (2015).** *Arable Crops 2014. Pesticide Usage Survey Report 260*. Belfast: AFBNI.
- Lavery, M.K., Jess, S., Kirbas, J.M., Matthews, D., Kelly, T. (2017).** *Arable Crops 2016. Pesticide Usage Survey Report 275*. Belfast: AFBNI.
- Lavery, M.K., Jess, S., Kirbas, J.M., Matthews, D., Kelly, T. (2019).** *Arable Crops 2018. Pesticide Usage Survey Report 288*. Belfast: AFBNI.

## Northern Ireland Pesticide Usage Survey Published Reports Appendix 1

<b>Report No.</b>	<b>Report title</b>	<b>ISBN</b>
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

<b>Report No.</b>	<b>Report title</b>	<b>ISBN</b>
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
231	Top Fruit Crops 2008	1-848 07 134 6
238	Grassland & Fodder Crops 2009	1-848 07 186 5
239	Hardy Nursery Stock Crops 2009	1-848 07 187 2
240	Soft Fruit Crops 2010	1-848 07 251 0
241	Top Fruit Crops 2010	1-848 07 250 3
242	Arable Crops 2010	1-848 07 252 7
245	Mushroom crops 2011	1-84807-308-1
246	Vegetable Crops 2011	1-848 07 309 8
247	Arable Crops 2012	1-848 07 404 3
248	Soft Fruit Crops 2012	1-848 07 402 6
249	Top Fruit Crops 2012	1-848 07 403 3
258	Grassland & Fodder Crops 2013	1-84807-485-9
259	Vegetable Crops 2013	1-84807-486-6
260	Arable Crops 2014	1-84807-552-8
261	Top Fruit Crops 2014	1-84807-553-5
262	Soft Fruit Crops 2014	1-84807-571-9
267	Edible Protected Crops 2015	1-84807-684-6
268	Outdoor Vegetable Crops 2015	1-84807-685-3
275	Arable Crops 2016	1-84807-808-6
276	Soft Fruit Crops 2016	1-84807-809-3
277	Top Fruit Crops 2016	1-84807-810-9
280	Edible Protected Crops 2017	1-84807-918-2
281	Outdoor Vegetable Crops 2017	1-84807-917-5
282	Grassland & Fodder Crops 2017	1-84807-916-8

288	Arable Crops 2018	1-83887-064-5
289	Soft Fruit Crops 2018	1-83887-065-2
290	Top Fruit Crops 2018	1-83887-066-9
293	Outdoor Vegetable Crops 2019	1-908471-15-4
294	Edible Protected Crops 2019	1-908471-16-1
300	Soft Fruit Crops 2020	1-908471-21-5
301	Top Fruit Crops 2020	1-908471-20-8

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