

Pesticide Usage in Ireland

Arable Crops Survey Report 2016

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ARABLE CROPS SURVEY REPORT 2016

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Arable survey report summary

This is the third survey of pesticide usage on arable crops in Ireland carried out by the Department of Agriculture, Food and the Marine (DAFM), providing comparative data to that obtained in the previous survey in 2012.

Information on all aspects of pesticide usage was collected from 260 holdings across Ireland representing 7.58% of the total area of arable crops grown. Quantitative data have been adjusted to provide estimates of total pesticide usage.

**Pesticide is an over-arching term that includes both plant protection products (including, for the purpose of this report, fungicides, herbicides, insecticides, molluscicides, biological controls and seed treatments) and biocides.*

In 2016 an estimated 306,092 hectares of arable crops were grown which when adjusted for crops not surveyed (triticale) represents a 10% decrease compared to total estimated area in 2012. An estimated 1,058,461 kgs of active substance was applied to arable crops in 2016 which represents a 7.2% decrease in overall weight of pesticides applied compared to the equivalent figure in 2012. The total pesticide treated area of the crops surveyed declined by 11.2% from 2012 to 2016.

A total of 120 active substances were recorded in use on arable crops in the survey compared to 114 in 2012.

Winter barley comprised 25% of the area of arable crops, accounting for 27% of the total pesticide treated area and 29% of the total weight of pesticides used on all arable crops in 2016.

Spring barley comprised 37% of the area of arable crops and accounted for 30% of the total pesticide treated area and 22% of the total weight of pesticides used on all arable crops in 2016.

Winter wheat comprised 17% of the area of arable crops and accounted for 23% of the total pesticide treated area and 25% of the total weight of pesticides used on all arable crops in 2016.

Spring wheat comprised of 4% of the area of arable crops, accounting for 4% of the total pesticide treated area and 4% of the total weight of pesticides used on all arable crops in 2016.

Winter oats comprised of 4% of the total area of arable crops, accounting for 4% of the total pesticide treated area and 4% of the total weight of pesticides applied on arable crops in 2016.

Spring oats comprised of 3% of the total area of arable crops and accounted for 3% of the total pesticide treated area and 3% of total weight of pesticides used on all arable crops in 2016.

Oilseed rape (spring & winter) comprised of 3% of the total area of arable crops and accounted for 2% of the total pesticide treated area and 2% of the total weight of pesticides applied.

Beans and peas comprised 3% of the total area of arable crops, accounting for 2% of the total pesticide treated area and 3% of the total weight of pesticides applied.

Potato crops comprised 3% of the area of arable crops grown in Ireland in 2016, accounting for 5% of the total pesticide-treated area and 9% of the total weight of pesticides used on all arable crops. The total area of potatoes grown comprised 88% main crop, 4% seed and 8% early potato crops.

Background

The regulatory system for PPPs in Ireland is based directly on EU legislation which provides a very high level of protection for man, animals and the environment. The hazard of an active substance is an inherent property which can cause a harmful effect and cannot be altered or mitigated.

Legislation has been put in place at both EU and national level to minimise the risks associated with the use of PPPs while ensuring necessary crop protection. The Sustainable Use of Pesticides Directive based on the EU 'Thematic strategy on the sustainable use of pesticides' aims to achieve a balance between ensuring human and environmental safety while maintaining continued viability of the farming and amenity sectors. This involves training and registration of advisers, distributors, operators and inspectors of pesticide application equipment, controls on storage, supply and use, adoption of the principles of IPM and improved statistics on PPP use.

To address the requirement for improved statistics, Regulation (EC) No 1185/2009 was adopted on 25 November 2009 which requires each member state to collect statistics on PPP use. It is the area identified above as “improved statistics on PPP use” that this survey and future surveys will be addressing.

While sales data can provide information on the overall quantity of PPPs used in the country, surveys at farm/grower/producer level are required to quantify the amounts used on different crops and to identify where and how they are being used. This type of information is required to clearly identify the risks involved and to develop and defend a strategy for the sustainable use of PPPs. Some of the specific outputs of a usage survey are as follows:

1. Provision of reliable factual data to inform policy makers.
2. Provision of information for the on-going review process of existing PPPs by providing data regarding national and regional usage of PPPs and use patterns for particular crops.
3. Monitoring farm practices to highlight areas where PPP use might be reduced by supplementation with or replacement by alternative pest control strategies e.g. use of resistant varieties, cultivation practices etc.
4. Provision of data to assess likely operator exposure to PPPs and to predict environmental impact of PPP use.
5. Monitoring changes in patterns of PPP use over time in response to government policy or economic factors.
6. Provision of information for residue monitoring programmes to assist with identifying particular areas of risk and to validate findings.

Methods

The sample of holdings to be surveyed was selected from each of the 26 counties, on the basis of the total area of arable crops grown, using data from DAFM. For the purpose of the survey the country was divided into three geographical regions namely the East, South and the North/West as per Table A. The sample was stratified into six size groups, according to the total area of arable crops grown in each region. Holdings were selected at random within each of the size groups and the number of holdings selected was proportional to the total area of arable crops grown.

Table A: Regions selected for survey and respective counties.

Regions	East	South	North/West
Counties	Louth	Wexford	Donegal
	Meath	Kilkenny	Leitrim
	Dublin	Waterford	Monaghan
	Kildare	Tipperary	Cavan
	Offaly	Limerick	Westmeath
	Laois	Cork	Longford
	Carlow	Kerry	Sligo
	Wicklow		Roscommon
			Mayo
			Galway
			Clare

The purpose of the survey was explained to the occupiers of selected holdings in preliminary correspondence. A total of 260 holdings were visited during the period May to July 2017 and data collected by personal interview for arable crops harvested in 2016. The data collected included; the area of crops grown, area treated, target crop, pesticide used and number of treatments applied. Holdings selected in the original sample which were unable to provide data were replaced with ones from the same county and size group held on a reserve list. The total number of farms in each size group and the number of farms sampled are shown in Table B. The collected data were entered using Oracle, a relational database programme. Validated data were downloaded for analysis using SPSS software.

Table B: The total number of arable farms in each size group (A) and the number of samples from each size group (B).

Region	Size group (hectares)													
	<10		10<20		20<40		40<100		100-200		>200		Total	
	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings	Holdings
	in size group	sampled	in size group	sampled	in size group	sampled	in size group	sampled	in size group	sampled	in size group	sampled	in size group	sampled
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
East	1,457	7	857	8	897	19	803	40	229	27	86	19	4,329	120
South	2,343	8	1,287	15	1,073	27	712	34	140	14	57	14	5,612	112
North/West	795	7	203	3	118	7	102	7	10	4	2	0	1,230	28
Ireland	4,595	22	2,347	26	2,088	53	1,617	81	379	45	145	33	11,171	260

Definitions

- ‘Basic area’; refers to the actual planted area of crop treated with a given pesticide.
- ‘Biocides’; are defined as chemicals that are used to control and / or prevent various types of harmful or unwanted organisms, including disinfectants, preservatives, insect repellents, rodenticides and insecticides.
- ‘Fungicides’; are defined as PPPs used to control and / or prevent harmful fungal disease.
- ‘Growth regulators’; are defined as PPPs used to control/ regulate the growth of the plant.
- ‘Herbicides’; are defined as PPPs used to control and / or prevent unwanted vegetation.
- ‘Insecticides’; are defined as PPPs used to control and / or prevent harmful insects.
- ‘Molluscicides’; are defined as PPPs used to control and / or prevent harmful slugs and snails.
- ‘PPP’; refers to plant protection product.
- ‘Rounding’; due to rounding of figures there may be slight differences in totals both within and between tables.
- ‘Seed treatments’; are defined as PPPs applied to seeds to provide protection and improve the establishment of healthy crops.

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

Crops

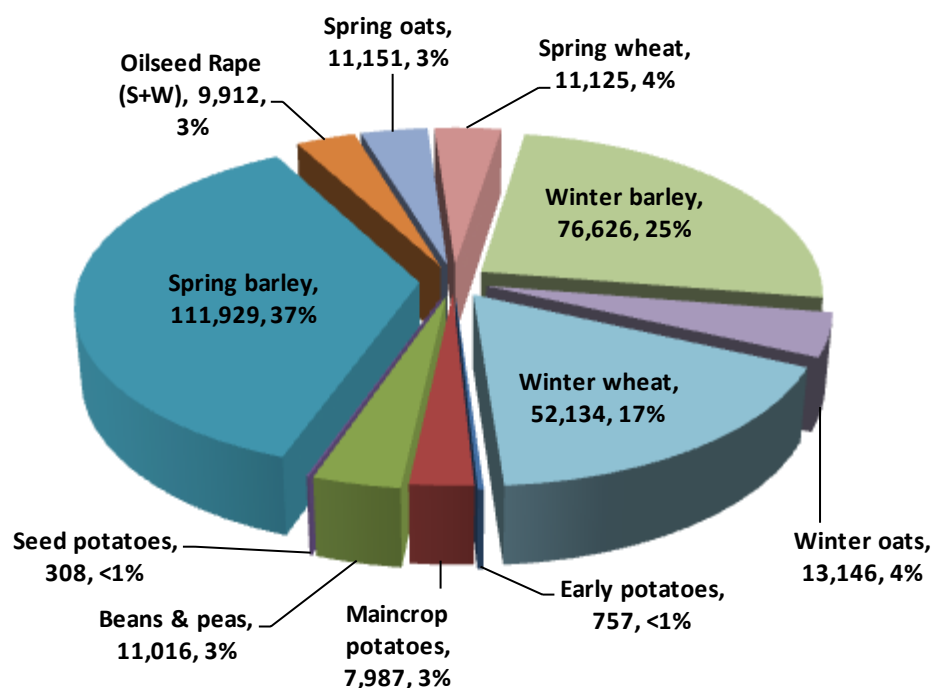
Information was collected for spring barley, winter barley, spring wheat, winter wheat, spring oats, winter oats, oilseed rape, peas & beans, seed potatoes, early potatoes and maincrop potatoes.

The number and areas of crops surveyed are shown in Table C. Data from 260 farms provided information on 860 examples of 11 crop types. The total area of crops sampled in the survey (23,199 ha) was representative of the area of arable crops grown in Ireland in 2016 (306,092 ha).

Table C: The total number and area (hectares) of crops sampled, and the proportion (%) of the total area of crops surveyed in Ireland, 2016.

Crop	Number of crops surveyed	Survey area (ha)	Proportion of crop area surveyed (%)
Spring barley	206	5,668	5.06%
Winter barley	182	5,803	7.57%
Spring wheat	41	527	4.74%
Winter wheat	139	5,661	10.86%
Spring oats	49	702	6.29%
Winter oats	56	940	7.15%
Oilseed rape (S & W)	54	1,207	12.17%
Peas & beans	67	935	8.49%
Seed potatoes	9	143	46.56%
Early potatoes	19	178	23.54%
Maincrop potatoes	38	1,436	17.98%
Total	860	23,199	7.58%

Figure 1: Areas of individual arable crops grown in Ireland (ha), 2016.



Regional distribution of crops

The East region was the largest producer of arable crops during 2016 and accounted for 50% of the total area of arable crops grown and 52% of the total pesticide-treated area. Overall, 50% of the weight of herbicides, 51% of the weight of fungicides, 73% of the weight of insecticides, 52% of the weight of molluscicides, 55% of the weight of growth regulators and 49% of the weight of seed treatments were applied to arable crops in this region.

The South region accounted for 45% of the area of arable crops grown and 44% of the total pesticide-treated area. Overall, 45% of the weight of herbicides, 44% of the weight of fungicides, 25% of the weight of insecticides, 39% of the weight of molluscicides, 43% of the weight of growth regulators and 47% of the weight of seed treatments were applied to arable crops in this region.

The North/West region accounted for 5% of the total arable growing area and 4% of the pesticide treated area. Overall, 5% of the weight of herbicides, 5% of the weight of fungicides, 2% of the weight of insecticides, 9% of the weight of molluscicides, 2% of the weight of growth regulators and 4% of the weight of seed treatments were applied to arable crops in this region.

Figure 2: Regional distribution (ha) of arable crops grown in Ireland, 2016.

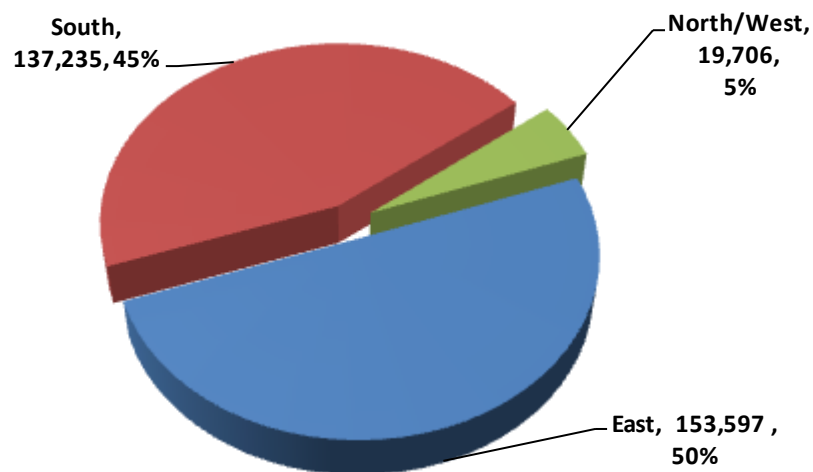


Figure 3: Regional distribution (ha) of individual arable crops grown in Ireland, 2016.

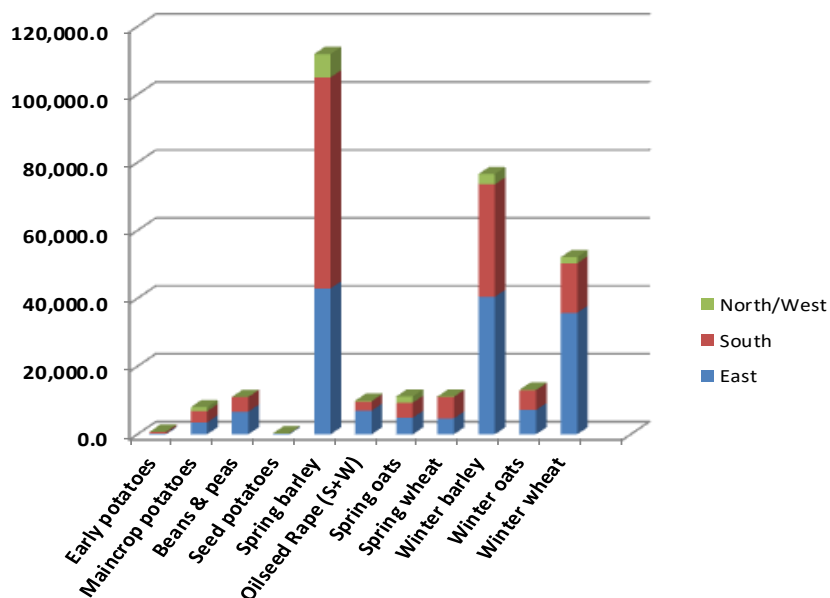


Figure 4: Regional distribution (ha) of cereal crops grown in Ireland, 2016.

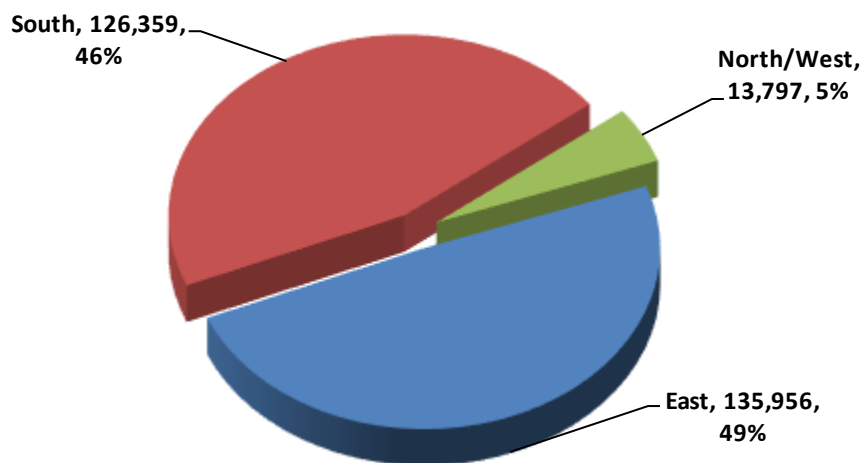


Figure 5: Regional distribution (ha) of potato crops (seed, early & maincrop) grown in Ireland, 2016.

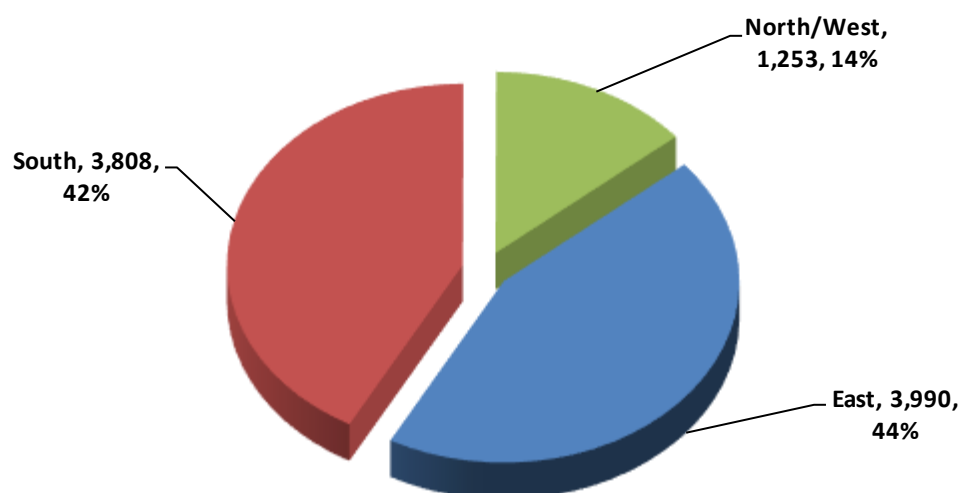
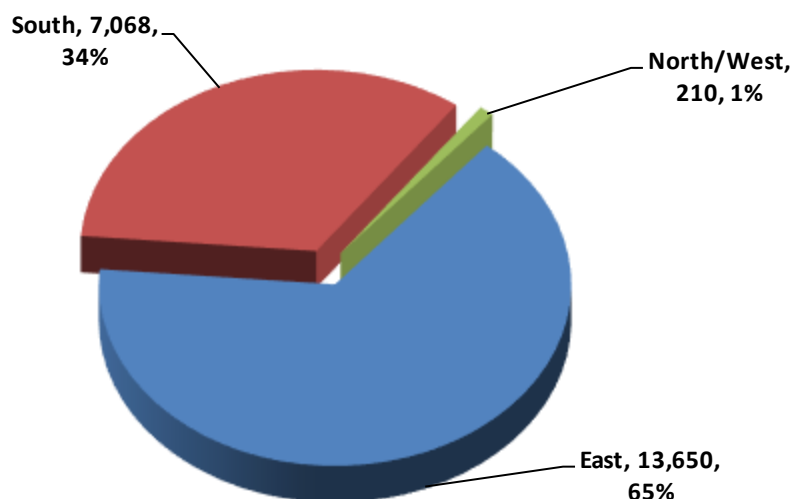


Figure 6: Regional distribution (ha) of other arable crops (oilseed rape, peas & beans) grown in Ireland, 2016.



Pesticide usage

Fungicides were applied to 44% of the pesticide-treated area, accounting for 46% of the total weight of pesticides used. Herbicides were applied to 28% of the pesticide-treated area, representing 31% of the total weight of pesticides used. Insecticides were applied to 9% of the pesticide treated area of arable crops, representing 2% of the weight of pesticides applied. Molluscicide treatments represented less than 1% of pesticide treated area and less than 1% of the weight of pesticides applied. Growth regulator usage accounted for 11% of the pesticide-treated area and 18% of the weight of active substance applied. Seed treatments were applied to 8% of the pesticide-treated area, representing 2% of the weight of active substances applied.

The use of fungicides on cereal crops accounted for 42% of the cereal pesticide treated area and 44% of the total weight of pesticides applied to cereal crops. The use of fungicides on potato crops accounted for 68% of the potato pesticide treated area and 70% of the total weight of pesticides applied to potato crops. The use of herbicides on other arable crops (Peas, beans and Oil seed rape) accounted for 38% of the treated area and 68% of the total weight of pesticides applied to this crop group.

Figure 7: Pesticide usage (spha) on arable crops treated in Ireland, 2016.

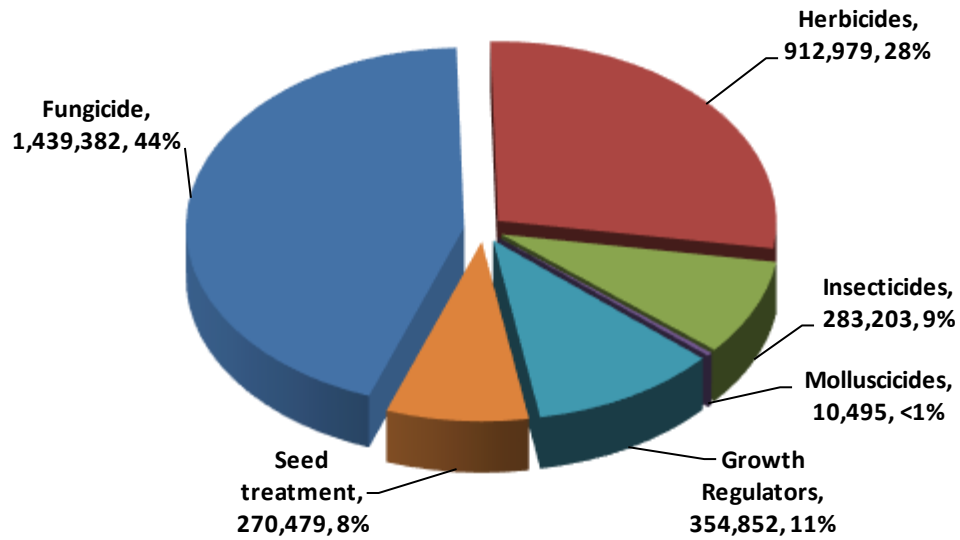


Figure 8: Weight (kgs) of pesticides applied to arable crops treated in Ireland, 2016.

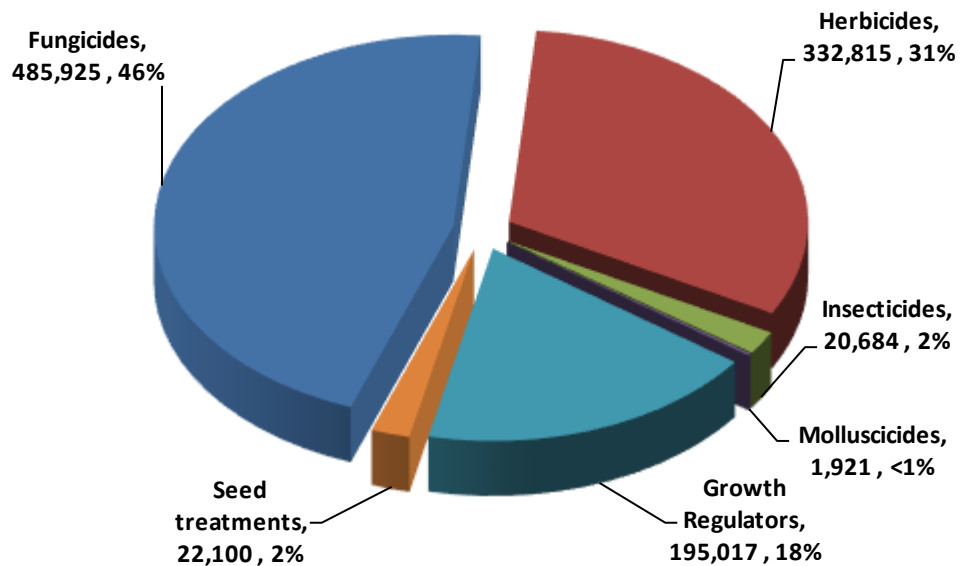


Figure 9: Pesticide usage (spha) on cereal crops grown in Ireland, 2016.

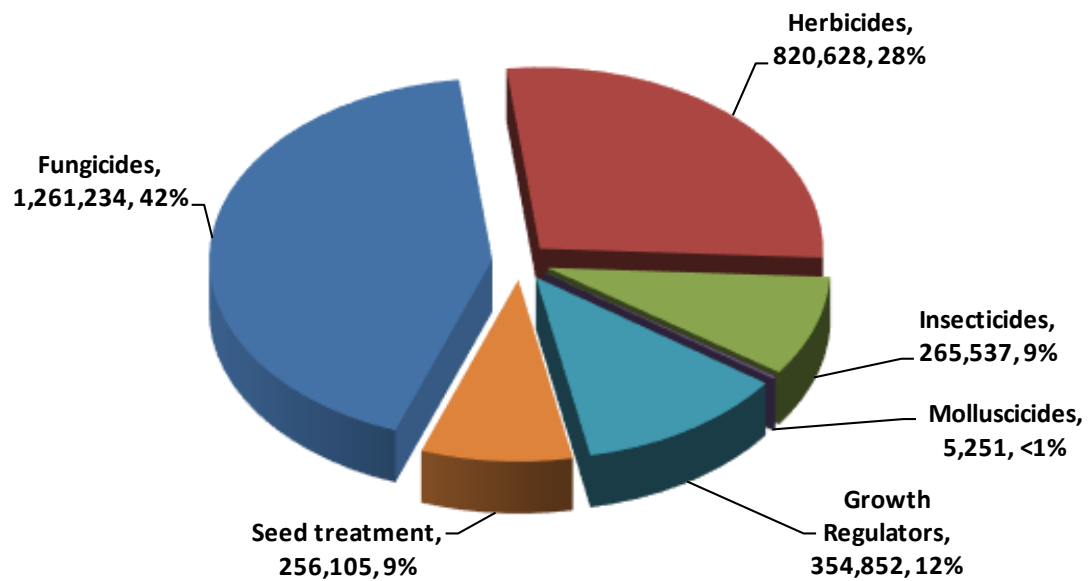


Figure 10: Weight of pesticides (kg) applied to cereal crops grown in Ireland, 2016.

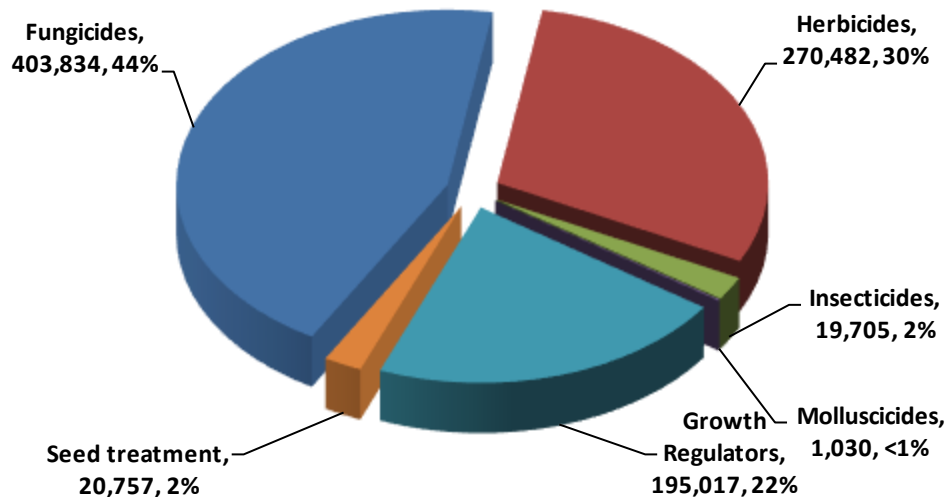


Figure 11: Pesticide usage (spha) on potato crops (seed, early & maincrop) grown in Ireland, 2016.

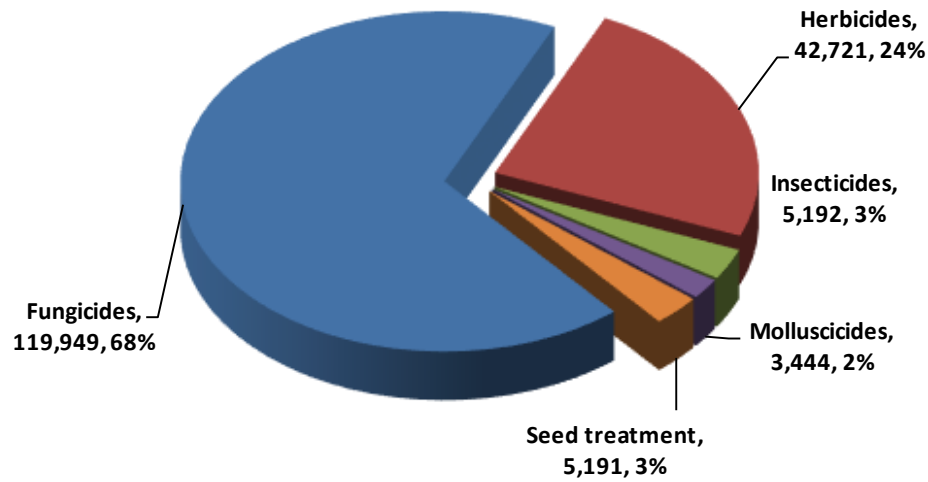


Figure 12: Weight of pesticides (kg) applied to potato crops (seed, early & maincrop) grown in Ireland, 2016.

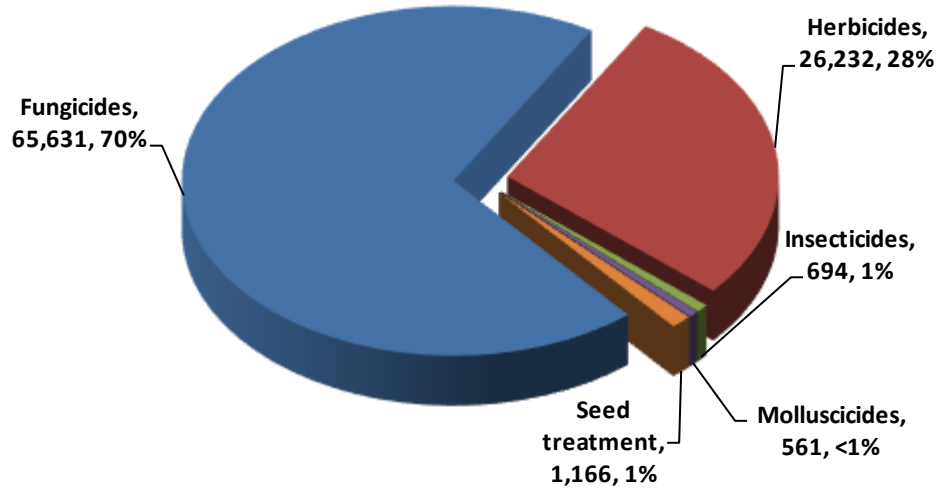


Figure 13: Pesticide usage (spha) on other arable crops (oilseed rape, peas & beans) grown in Ireland, 2016.

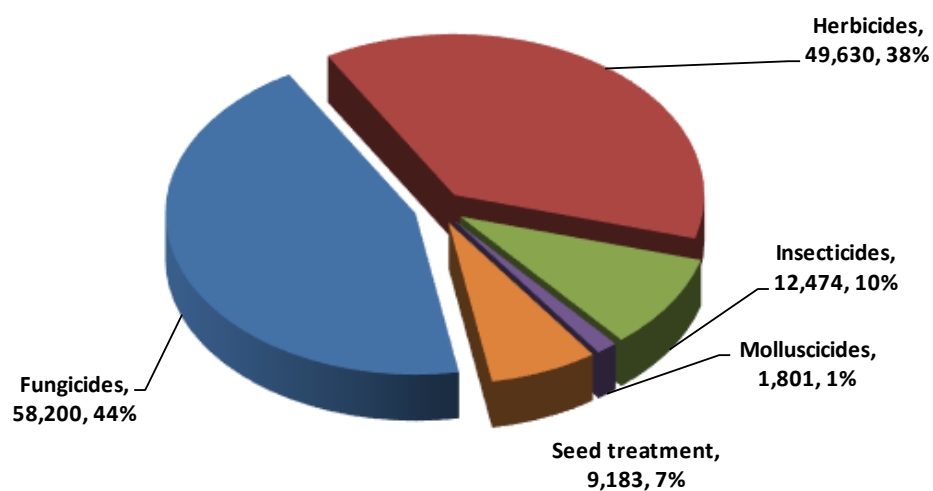
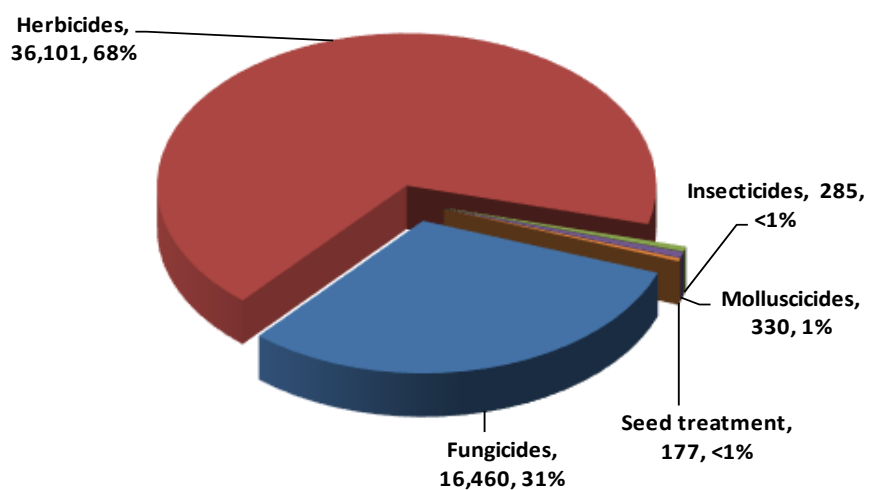


Figure 14: Weight of pesticides (kg) applied to other arable crops (oilseed rape, peas & beans) grown in Ireland, 2016.



Arable crop areas 2012-2016

Winter barley increased in area by 88% to 76,626 ha when comparing 2016 and 2012. The area of Spring barley decreased by 26%. Winter wheat witnessed a 38% reduction in area from 83,751 ha to 52,134 ha. There was a 34% increase in the area of winter oats in the period 2012 to 2016. Details of changes in crop areas between 2012 and 2016 are outlined in Table D below.

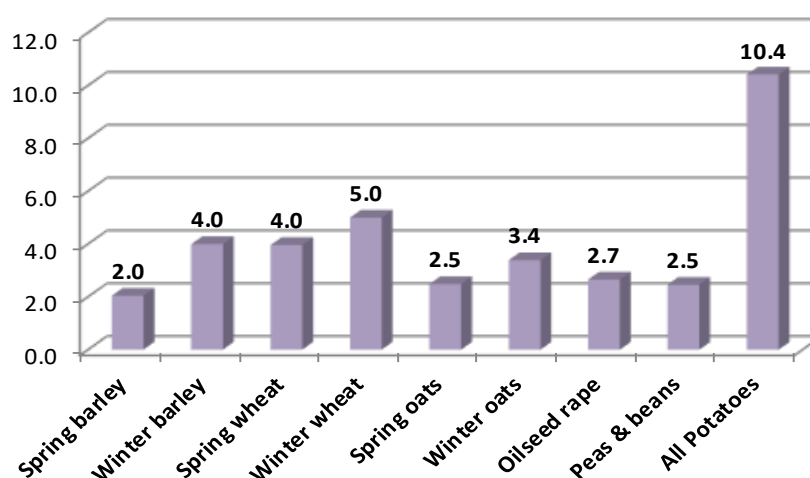
Table D: Arable crops areas (ha) for surveys in 2012 and 2016 and percentage (%) change in areas grown.

Crop	Ha grown		% change
	2012	2016	
Spring barley	150,378	111,929	-26
Winter barley	40,717	76,626	88
Spring wheat	13,314	11,125	-16
Winter wheat	83,751	52,134	-38
Spring oats	13,998	11,151	-20
Winter oats	9,782	13,146	34
Oilseed rape	17,282	9,912	-43
Peas & beans	3,696	11,016	198
Triticale	1,445	(not surveyed)	
All Potatoes	9,035	9,052	0
All crops (excl. triticale)	341,953	306,092	-10

Quantity of pesticide applied per crop, 2012-2016

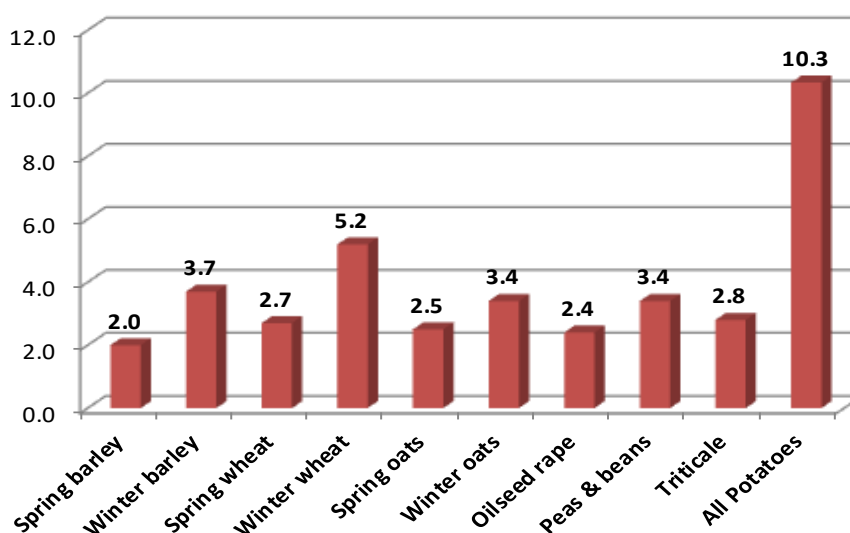
The average weight of pesticide applied per hectare of crop grown for each crop is provided in Figure 15. Average weights were calculated as the total weight of pesticides applied divided by the total area of crop grown (whether treated or untreated).

Figure 15: Average weight of pesticides applied per hectare of crop grown in Ireland (kg/ha), 2016.



The highest weight of pesticides applied per hectare was on potato crops (10.4 kg/ha) which results from the relatively high number of pesticide treatments, in particular fungicide treatments, applied to potato crops. The winter cereal crops had the next highest levels of pesticide use with winter wheat (5.0 kg/ha), winter barley (4.0 kg/ha) and winter oats (3.4 kg/ha). The average weight of pesticide applied per hectare of crop grown as per 2012 survey is provided in Figure 16.

Figure 16: Average weight of pesticides applied per hectare of crop grown in Ireland (kg/ha), 2012.



The quantity of pesticides applied to potato crops increased from 10.3 kg/ha to 10.4 kg/ha during the period 2012 to 2016. The quantity of pesticides applied to peas and beans has decreased from 3.4 kg/ha to 2.5 kgs/ha during this period. There has been a decrease in pesticides applied to winter wheat from 5.2 kgs/ha to 5.0 kgs/ha. The level of pesticides applied to spring wheat increased from 2.7 kgs/ha to 4.0kgs ha.

Pesticide applied on crop growing area, 2012-2016.

The average weight of pesticide applied per hectare of crop grown for 2012 and 2016 including percentage change is provided.

Spring barley

Quantities (kg/ha) of fungicides, herbicides and molluscicides applied to spring barley decreased by 3%, 8% and 100% respectively when comparing 2012 and 2016. Quantities of insecticides, growth regulators and seed treatments increased by 74%, 84% and 52% respectively. Overall, there was only a 2% increase in quantities of pesticides (kg/ha) applied to spring barley when comparing 2012 and 2016.

Figure 17: Quantity of pesticide type (kg/ha) and percentage change (%) for spring barley for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	1.14	1.11	-3
Herbicides	0.67	0.61	-8
Insecticides	0.0203	0.0354	74
Molluscicides	0.0002	0.0000	-100
Growth Regulators	0.11	0.21	84
Seed treatments	0.05	0.07	52
All pesticides	1.99	2.04	2

Winter barley

Quantities (kg/ha) of fungicides & molluscicides reduced by 6% & 65% respectively when comparing 2012 and 2016. Quantities of herbicides, insecticides, growth regulators and seed treatments increased by 12%, 92%, 19% and 51% respectively. Overall, there was a 7% increase in quantities of pesticides applied to winter barley when comparing 2012 and 2016.

Figure 18: Quantity of pesticide type (kg/ha) and percentage change (%) for winter barley for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	1.57	1.48	-6
Herbicides	1.35	1.52	12
Insecticides	0.01	0.03	92
Molluscicides	0.0058	0.0020	-65
Growth Regulators	0.75	0.89	19
Seed treatments	0.05	0.08	51
All pesticides	3.74	3.99	7

Spring wheat

Overall, there was a 46% increase in quantities of pesticides applied to Spring Wheat when comparing 2012 and 2016.

Figure 19: Quantity of pesticide type (kg/ha) and percentage change (%) for spring wheat for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	1.23	1.70	38
Herbicides	0.52	0.75	46
Insecticides	0.11	0.20	81
Molluscicides	0.00	0.00	0
Growth Regulators	0.79	1.22	55
Seed treatments	0.06	0.09	46
All pesticides	2.71	3.96	46

Winter wheat

Quantities (kg/ha) of fungicides, herbicides & growth regulators applied to winter wheat reduced by 3%, 7% and 7% respectively when comparing 2012 and 2016. Overall, there was a 4% reduction in quantities of pesticides applied when comparing 2012 and 2016.

Figure 20: Quantity of pesticide type (kg/ha) and percentage change (%) for winter wheat for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	2.37	2.30	-3
Herbicides	1.30	1.21	-7
Insecticides	0.19	0.21	9
Molluscicides	0.01	0.02	21
Growth Regulators	1.26	1.18	-7
Seed treatments	0.07	0.08	9
All pesticides	5.21	5.00	-4

Spring oats

There was no significant change in overall quantities of pesticides applied to spring oats when comparing 2012 and 2016.

Figure 21: Quantity of pesticide type (kg/ha) and percentage change (%) for spring oats for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	0.98	0.98	0
Herbicides	0.6099	0.6063	-1
Insecticides	0.0242	0.0237	-2
Molluscicides	0.00	0.00	0
Growth Regulators	0.81	0.82	1
Seed treatments	0.06	0.05	-6
All pesticides	2.48	2.48	0

Winter oats

Quantities (kg/ha) of fungicides, herbicides and insecticides applied to winter oats reduced by 8%, 11% and 70% respectively during the period 2012 to 2016. No molluscicide applications were recorded on winter oats. Overall, there was no significant change in total pesticides applied to winter oats when comparing 2012 and 2016.

Figure 22: Quantity of pesticide type (kg/ha) and percentage change (%) for winter oats for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	1.42	1.30	-8
Herbicides	0.62	0.55	-11
Insecticides	0.02	0.01	-70
Molluscicides	0.00	0.00	0
Growth Regulators	1.28	1.44	12
Seed treatments	0.05	0.08	47
All pesticides	3.39	3.39	0

Oilseed rape

Quantities (kg/ha) of molluscicides applied to oilseed rape reduced by 40% when comparing 2012 and 2016. Overall, there was a 10% increase in total quantities of pesticides applied to oilseed rape during the period 2012 to 2016. No growth regulator applications were recorded on oilseed rape.

Figure 23: Quantity of pesticide type (kg/ha) and percentage change (%) for oilseed rape for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	0.37	0.40	8
Herbicides	1.99	2.20	10
Insecticides	0.0035	0.0145	311
Molluscicides	0.05	0.03	-40
Growth Regulators	0.00	0.00	0
Seed treatments	0.01	0.02	17
All pesticides	2.42	2.65	10

Peas and beans

Quantities (kg/ha) of fungicides and herbicides applied to peas and beans reduced by 5% and 41% respectively when comparing 2012 and 2016. Overall, there was a 28% reduction in total pesticides applied to peas and beans during the period 2012 to 2016. No growth regulator or molluscicide applications were noted on peas and beans.

Figure 24: Quantity of pesticide type (kg/ha) and percentage change (%) for peas and beans for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	1.19	1.14	-5
Herbicides	2.21	1.30	-41
Insecticides	0.0062	0.0128	108
Molluscicides	0.00	0.00	0
Growth Regulators	0.00	0.00	0
Seed treatments	(not recorded)	0.00	n/a
All pesticides (Ex. sd. tr.)	3.41	2.46	-28

Potatoes (seed, early and maincrop)

Quantities (kg/ha) of fungicides, molluscicides, growth regulators and seed treatments applied to potatoes (as a group) reduced by 6%, 44%, 100% and 29% respectively when comparing 2012 and 2016. Overall, there was only a 1% increase in total pesticides when comparing 2012 and 2016.

Figure 25: Quantity of pesticide type (kg/ha) and percentage change (%) for potatoes for surveys in 2012 and 2016.

Pesticide type	Kg/ha on area grown		% change
	2012	2016	
Fungicides	7.71	7.25	-6
Herbicides	2.20	2.90	32
Insecticides	0.0188	0.0767	308
Molluscicides	0.11	0.06	-44
Growth Regulators	0.09	0.00	-100
Seed treatments	0.18	0.13	-29
All pesticides	10.31	10.42	1

Pesticide usage survey results 2016

Pesticide usage on spring barley

111,929 ha of spring barley grown in Ireland.

978,966 treated hectares.

227,973 kilogrammes applied.

Figure 26: Pesticide usage (spha) on spring barley crops in Ireland, 2016.

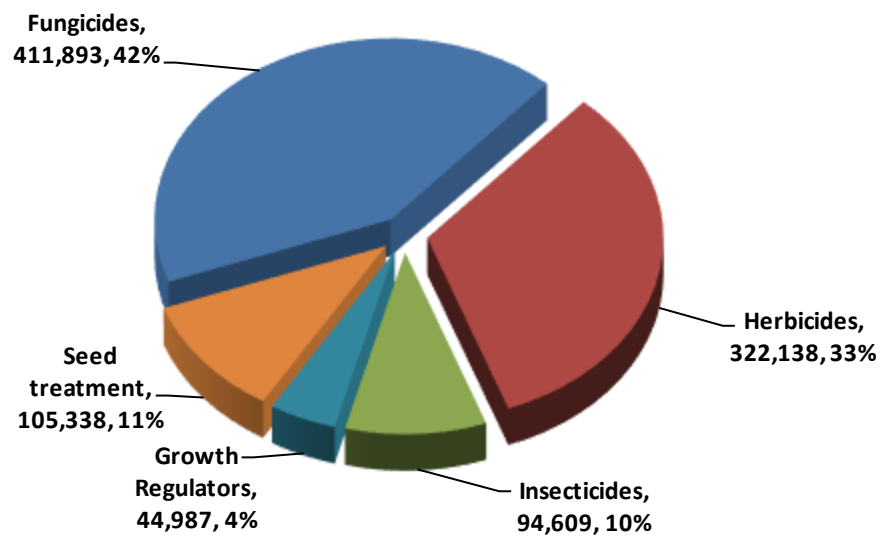


Figure 27: Weight of pesticides (kg) applied to spring barley crops in Ireland, 2016.

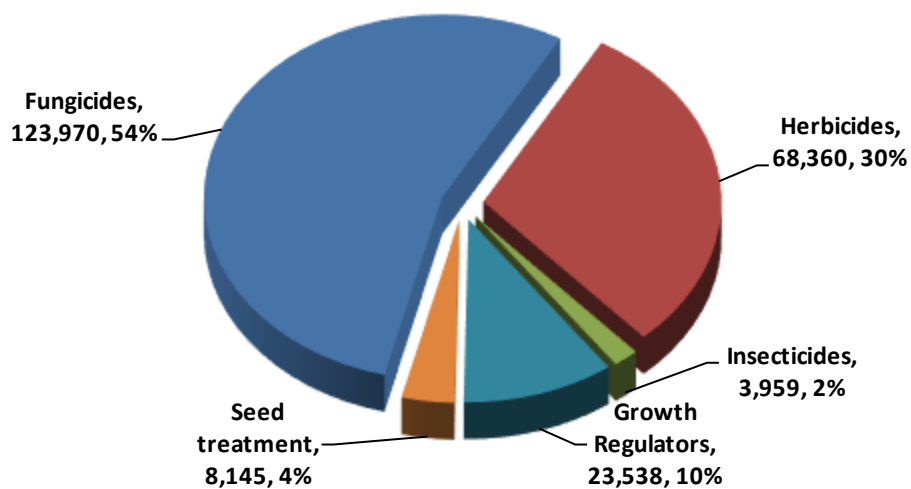


Figure 28: The top 10 active ingredients most extensively used on spring barley in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)	% of the treated area
Prothioconazole	133,547	91,513	16,129	9.5
Chlorothalonil	116,017	95,771	55,179	8.2
Fluroxypyr	83,068	81,194	11,288	5.9
Thifensulfuron-methyl	75,657	73,859	2,066	5.4
Tribenuron-methyl	73,950	73,479	738	5.3
Epoxiconazole	67,661	50,186	3,946	4.8
Pinoxaden	62,578	60,799	1,797	4.4
Fenpropimorph	62,018	53,784	17,101	4.4
Metsulfuron-methyl	59,159	56,164	245	4.2
Lambda-cyhalothrin	56,757	55,142	274	4.0

Figure 29: The top 10 active ingredients most extensively used on spring barley in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)	% of the weight applied
Chlorothalonil	55,179	116,017	95,771	24.2
Glyphosate	32,230	36,952	32,924	14.1
Chlormequat chloride	21,575	29,810	29,458.6	9.5
Fenpropimorph	17,101	62,018	53,784	7.5
Prothioconazole	16,129	133,547	91,513	7.1
Fluroxypyr	11,288	83,068	81,194	5.0
Mecoprop-P	7,192	15,989	15,168	3.2
Carboxin/thiram	5,360	28,313	28,313	2.4
Pyraclostrobin	4,945	50,629	45,982	2.2
Cyprodinil	4,847	16,400	16,400	2.1

Pesticide usage on winter barley

76,626 ha of winter barley grown in Ireland.

887,186 treated hectares.

305,992 kilogrammes applied.

Figure 30: Pesticide usage (spha) on winter barley crops in Ireland, 2016.

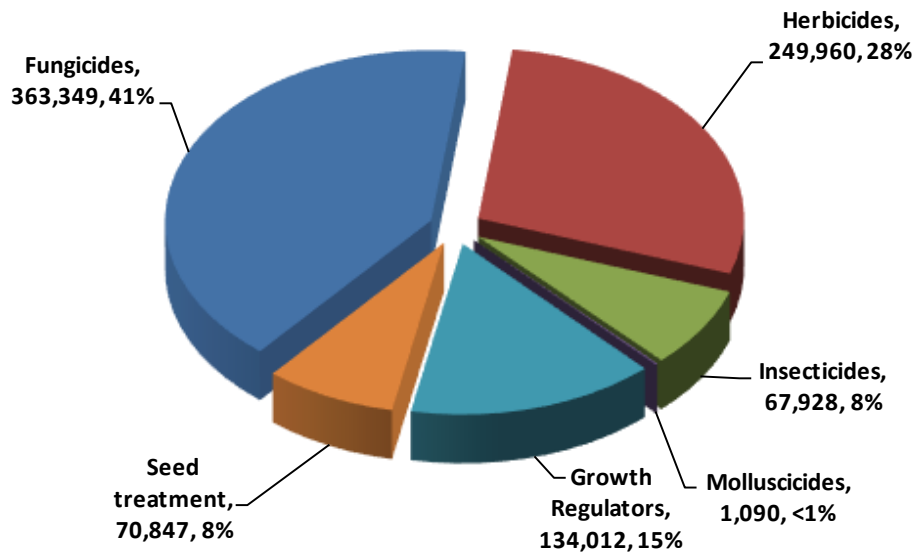


Figure 31: Weight of pesticides (kg) applied to winter barley crops in Ireland, 2016.

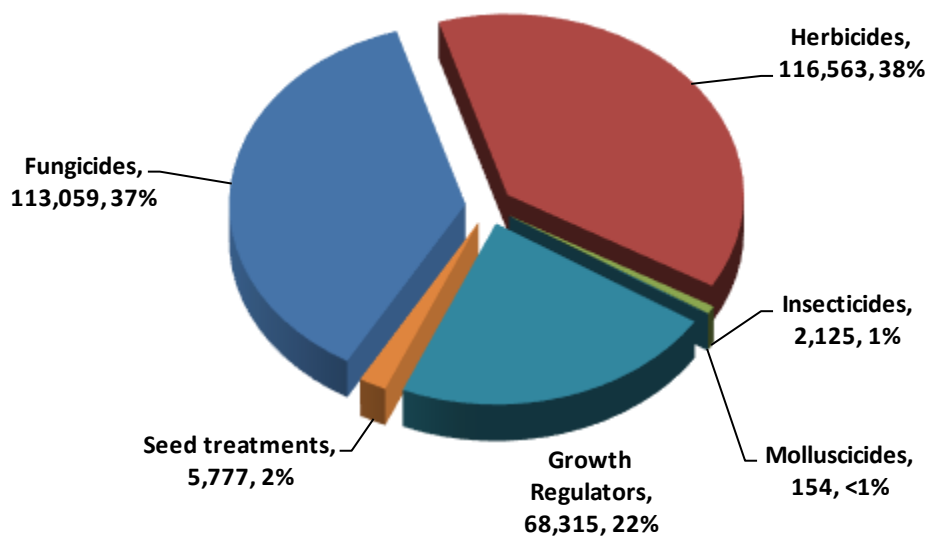


Figure 32: The top 10 active ingredients most extensively used on winter barley in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated	Quantity applied (kg)	% of the treated area
Chlorothalonil	110,466	66,954	53,779	9.5
Prothioconazole	107,877	64,914	13,684	9.3
Isoproturon	63,466	61,593	69,585	5.5
Chlormequat chloride	63,155	57,798	51,643	5.4
Diflufenican	56,286	53,920	6,606	4.8
Pyraclostrobin	55,843	40,365	6,097	4.8
Epoxiconazole	54,228	39,074	3,473	4.7
Lambda-cyhalothrin	43,796	40,698	207	3.8
Pinoxaden	41,473	40,910	1,124	3.6
Trinexapac-ethyl	41,070	35,522	2,405	3.5

Figure 33: The top 10 active ingredients most extensively used on winter barley in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated	% of the weight applied
Isoproturon	69,585	63,466	61,593	22.7
Chlorothalonil	53,779	110,466	66,954	17.6
Chlormequat chloride	51,643	63,155	57,798	16.9
Glyphosate	29,266	34,212	27,063	9.6
Prothioconazole	13,684	107,877	64,914	4.5
Fenpropimorph	8,661	31,892	25,381	2.8
Mepiquat chloride	7,967	23,367	22,800	2.6
Spiroxamine	6,941	27,468	19,983	2.3
Diflufenican	6,606	56,286	53,920	2.2
Ethephon	6,299	29,787	29,219	2.1

Pesticide usage on spring wheat

11,125 ha of spring wheat grown in Ireland.

126,449 treated hectares.

44,050 kilogrammes applied.

Figure 34: Pesticide usage (spha) on spring wheat crops in Ireland, 2016.

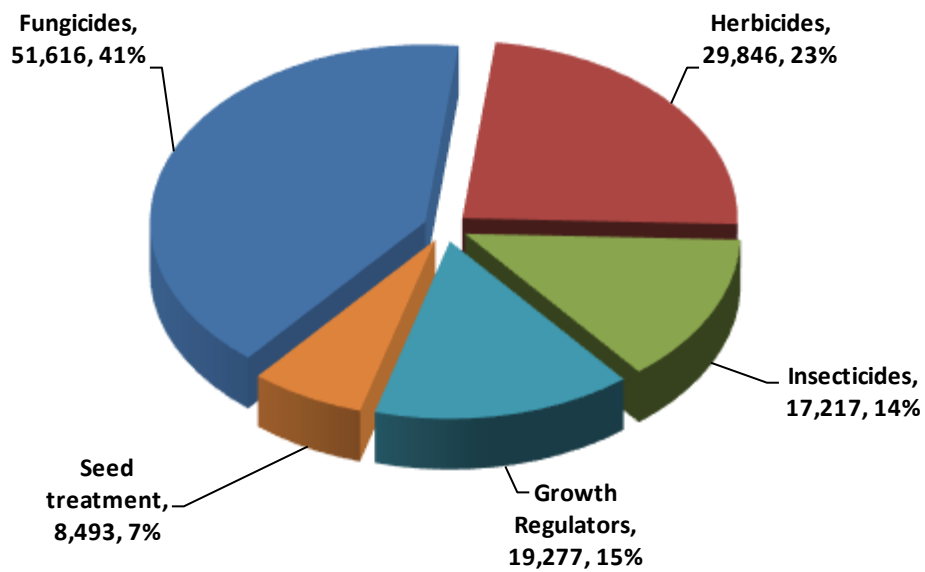


Figure 35: Weight of pesticides (kg) applied to spring wheat crops in Ireland, 2016.

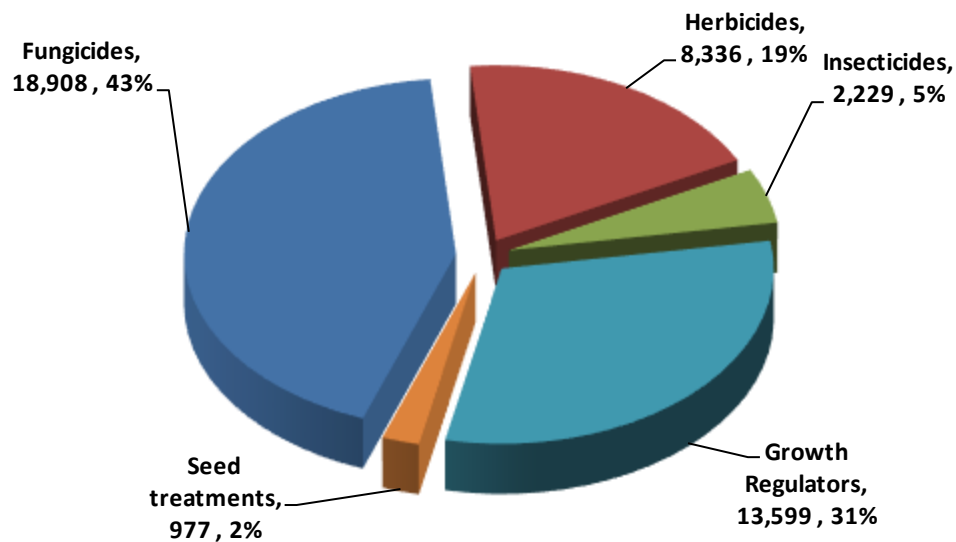


Figure 36: The top 10 active ingredients most extensively used on spring wheat in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)	% of the treated area
Chlorothalonil	22,010	10,396	10,927	13.6
Chlormequat chloride	15,510	8,972	13,212	9.6
Epoxiconazole	10,442	8,335	867	6.4
Fluroxypyr	8,868	8,661	1,252	5.5
Prothioconazole	7,315	6,549	1,183	4.5
Metsulfuron-methyl	6,385	6,385	28	3.9
Glyphosate	6,282	6,143	5,296	3.9
Tribenuron-methyl	5,626	5,412	49	3.5
Tebuconazole	5,195	5,195	618	3.2
Lambda-cyhalothrin	4,814	4,264	33	3.0

Figure 37: The top 10 active ingredients most extensively used on spring wheat in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)	% of the weight applied
Chlormequat chloride	13,212	15,510	8,972	30.0
Chlorothalonil	10,927	22,010	10,396	24.8
Glyphosate	5,296	6,282	6,143	12.0
Dimethoate	1,358	4,508	4,508	3.1
Fluroxypyr	1,252	8,868	8,661	2.8
Prothioconazole	1,183	7,315	6,549	2.7
Fenpropimorph	1,117	3,375	2,377	2.5
Boscalid	959	4,093	4,093	2.2
Carboxin/thiram	885	4,708	4,708	2.0
Fenpropidin	880	1,543	1,543	2.0

Pesticide usage on winter wheat

52,134 ha of winter wheat grown in Ireland.

746,636 treated hectares.

260,613 kilogrammes applied.

Figure 38: Pesticide usage (spha) on winter wheat crops in Ireland, 2016.

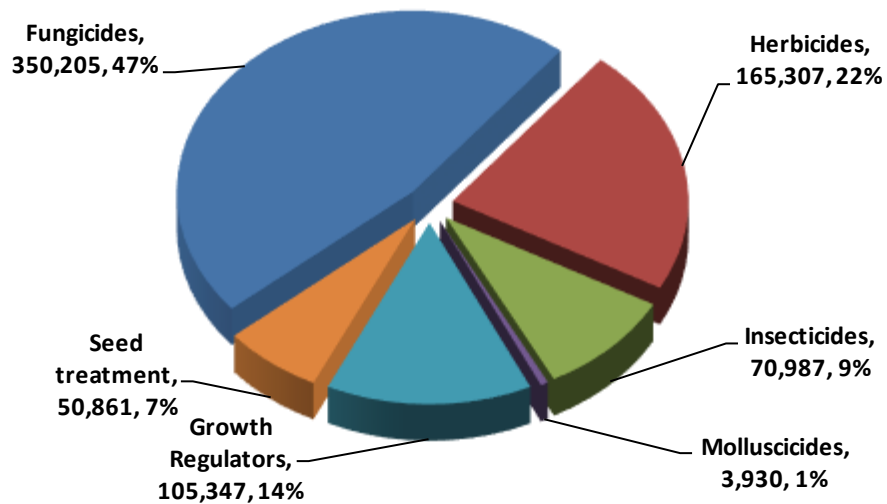


Figure 39: Weight of pesticides (kg) applied to winter wheat crops in Ireland, 2016.

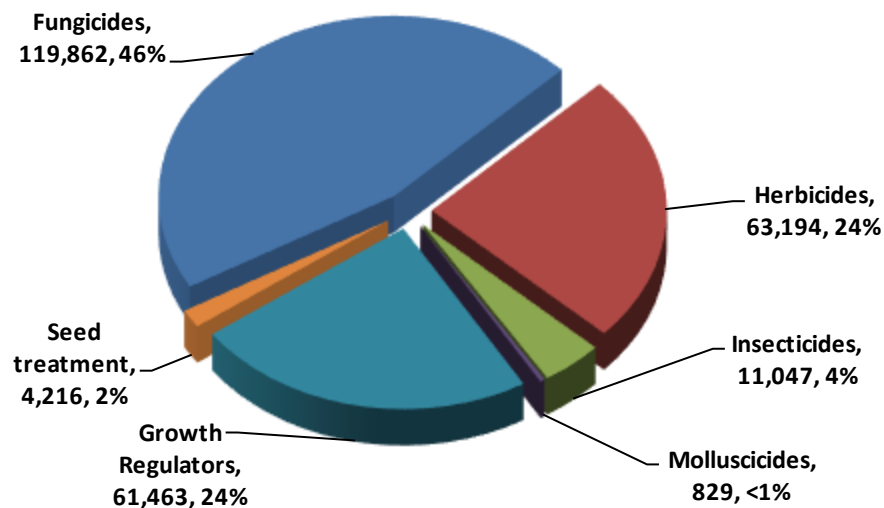


Figure 40: The top 10 active ingredients most extensively used on winter wheat in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)	% of the treated area
Chlorothalonil	138,714	50,549	70,189	13.9
Chlormequat chloride	68,018	44,843	57,826	6.8
Prothioconazole	66,201	45,072	8,516	6.6
Epoxiconazole	63,108	37,974	5,227	6.3
Fluxapyroxad	53,782	38,390	5,100	5.4
Tebuconazole	48,860	37,254	6,422	4.9
Metconazole	45,108	36,345	2,647	4.5
Diflufenican	40,057	33,543	4,512	4.0
Trinexapac-ethyl	33,162	26,620	2,349	3.3
Isoproturon	31,600	28,684	31,521	3.2

Figure 41: The top 10 active ingredients most extensively used on winter wheat in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)	% of the weight applied
Chlorothalonil	70,189	138,714	50,549	27
Chlormequat chloride	57,826	68,018	44,843	22
Isoproturon	31,521	31,600	28,684	12
Glyphosate	18,347	23,672	20,291	7
Dimethoate	9,079	30,791	30,171	3
Prothioconazole	8,516	66,201	45,072	3
Tebuconazole	6,422	48,860	37,254	2
Epoxiconazole	5,227	63,108	37,974	2
Fluxapyroxad	5,100	53,782	38,390	2
Fenpropimorph	4,790	17,249	13,574	2

Pesticide usage on spring oats.

11,151 ha of spring oats grown in Ireland.

92,122 treated hectares.

27,686 kilogrammes applied.

Figure 42: Pesticide usage (spha) on spring oat crops in Ireland, 2016.

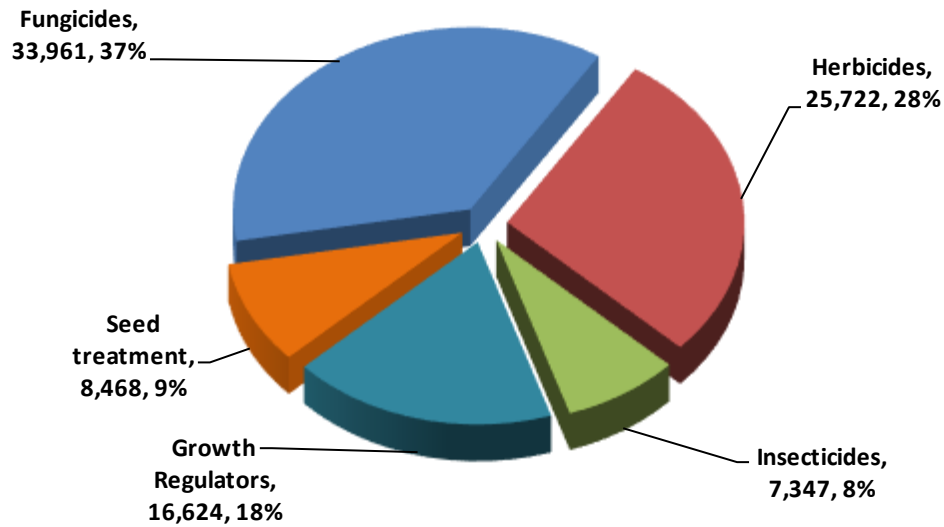


Figure 43: Weight of pesticides (kg) applied to spring oat crops in Ireland, 2016.

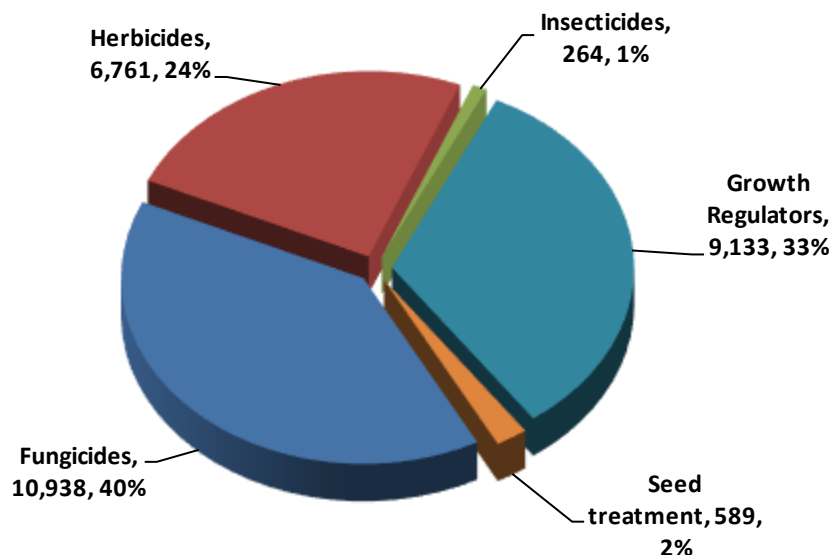


Figure 44: The top 10 active ingredients most extensively used on spring oats in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated	Quantity applied (kg)	% of the treated area
Fenpropimorph	18,337	9,167	6,240	13.9
Pyraclostrobin	12,469	8,028	1,473	9.4
Chlormequat chloride	11,258	8,756	8,855	8.5
Epoxiconazole	10,860	6,920	685	8.2
Tribenuron-methyl	10,091	10,091	91	7.6
Fluroxypyr	8,448	7,060	1,200	6.4
Thifensulfuron-methyl	6,441	6,441	72	4.9
Trinexapac-ethyl	5,239	4,714	260	4.0
Prochloraz/triticonazole	5,155	5,155	129	3.9
Metrafenone	4,228	4,051	363	3.2

Figure 45: The top 10 active ingredients most extensively used on spring oats in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated	% of the weight applied
Chlormequat chloride	8,855	11,258	8,756	32.0
Fenpropimorph	6,240	18,337	9,167	22.5
Glyphosate	3,180	3,583	3,214	11.5
Pyraclostrobin	1,473	12,469	8,028	5.3
Fluroxypyr	1,200	8,448	7,060	4.3
Mecoprop-P	911	1,430	1,330	3.3
Epoxiconazole	685	10,860	6,920	2.5
Fenpropidin	463	1,215	1,134	1.7
2,4-DB	398	237	237	1.4
Dimethomorph	397	397	397	1.4

Pesticide usage on winter oats.

13,146 ha of winter oats grown in Ireland.

132,247 treated hectares.

44,513 kilogrammes applied.

Figure 46: Pesticide usage (spha) on winter oat crops in Ireland, 2016.

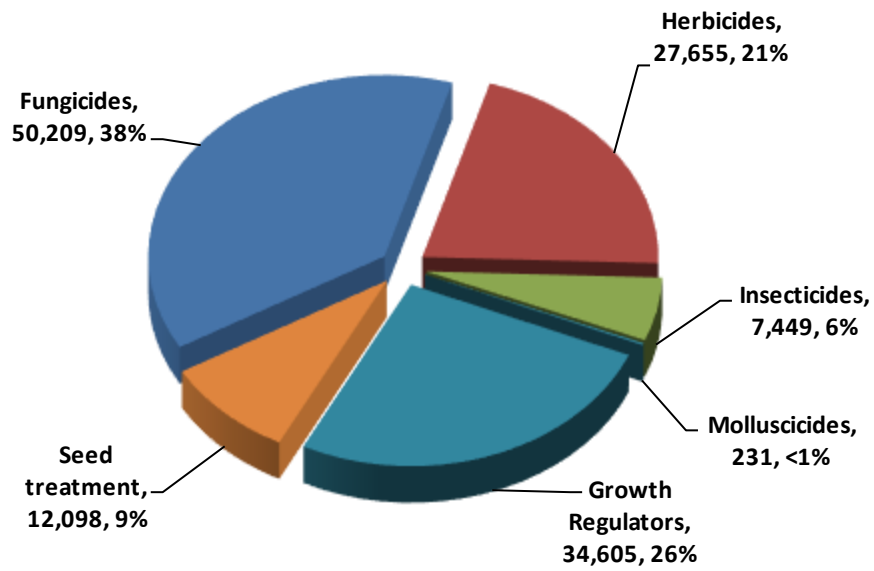


Figure 47: Weight of pesticides (kg) applied to winter oat crops in Ireland, 2016.

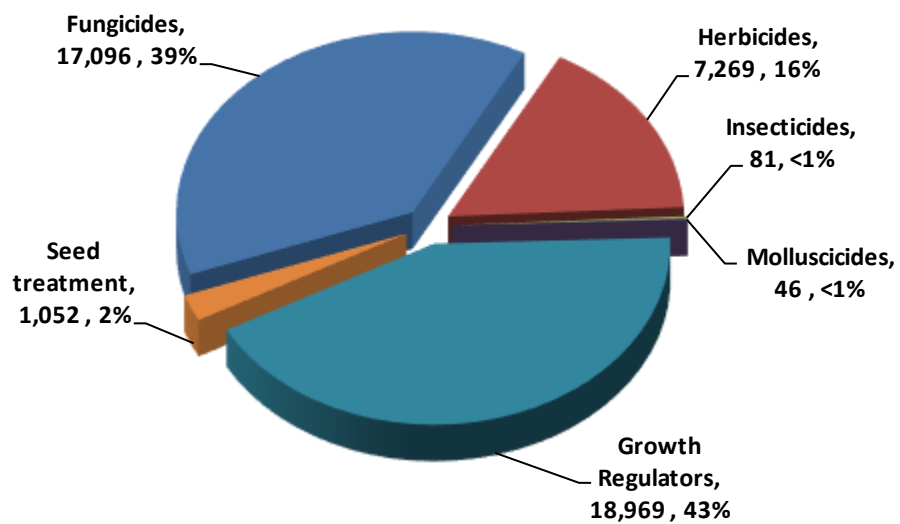


Figure 48: The top 10 active ingredients most extensively used on winter oats in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)	% of the treated area
Fenpropimorph	30,239	12,342	11,027	16.4
Chlormequat chloride	23,506	16,908	18,407	12.8
Epoxiconazole	16,159	10,003	1,228	8.8
Pyraclostrobin	14,527	10,466	1,930	7.9
Trinexapac-ethyl	11,099	8,355	562	6.0
Metrafenone	9,696	7,141	900	5.3
Tribenuron-methyl	9,389	9,389	103	5.1
Fluroxypyr	6,893	5,708	807	3.7
Prochloraz/triticonazole	6,330	6,330	153	3.4
Proquinazid	5,860	5,377	206	3.2

Figure 49: The top 10 active ingredients most extensively used on winter oats in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)	% of the weight applied
Chlormequat chloride	18,407	23,506	16,908	41.4
Fenpropimorph	11,027	30,239	12,342	24.8
Glyphosate	4,941	5,423	5,256	11.1
Pyraclostrobin	1,930	14,527	10,466	4.3
Epoxiconazole	1,228	16,159	10,003	2.8
Metrafenone	900	9,696	7,141	2.0
Fluroxypyr	807	6,893	5,708	1.8
Carboxin/thiram	783	4,515	4,515	1.8
Mecoprop-P	731	907	907	1.6
Tebuconazole	678	3,410	3,114	1.5

Pesticide usage on oilseed rape.

9,912 ha of oilseed rape grown in Ireland.

72,582 treated hectares.

26,283 kilogrammes applied.

Figure 50: Pesticide usage (spha) on oilseed rape crops in Ireland, 2016.

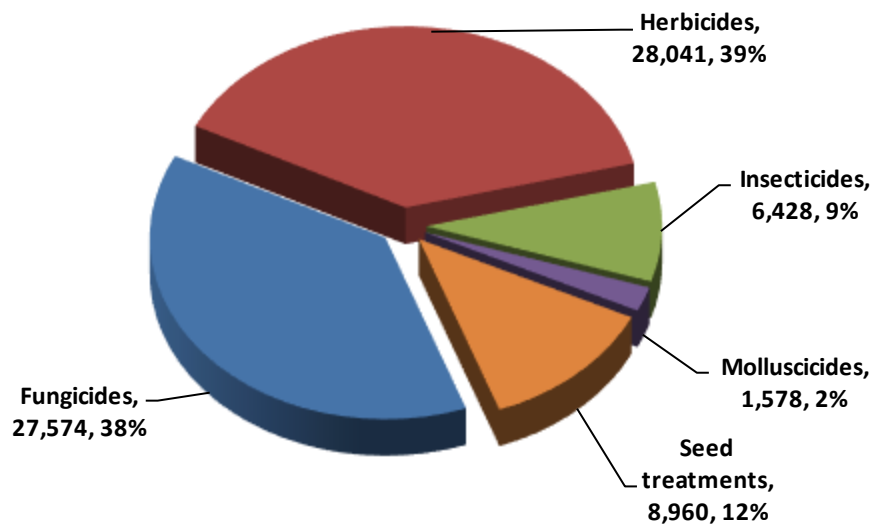


Figure 51: Weight of pesticides (kg) applied to oilseed rape crops in Ireland, 2016.

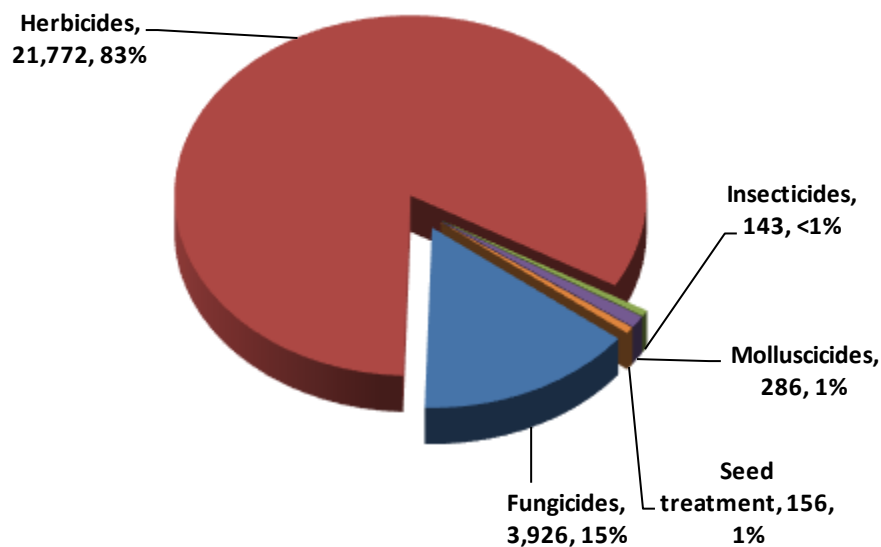


Figure 52: The top 10 active ingredients most extensively used on oilseed rape in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated	Quantity applied (kg)	% of the treated area
Glyphosate	10,417	8,306	12,688	12.5
Prothioconazole	10,294	7,026	1,222	12.4
Prochloraz/thiram	8,960	8,960	156	10.8
Metazachlor	6,278	5,868	4,443	7.6
Quinmerac	6,222	5,811	1,467	7.5
Lambda-cyhalothrin	6,082	4,261	39	7.3
Azoxystrobin	5,284	3,732	804	6.4
Metconazole	5,088	4,578	226	6.1
Propaquizafop	4,768	4,662	294	5.7
Boscalid	4,362	4,362	1,012	5.3

Figure 53: The top 10 active ingredients most extensively used on oilseed rape in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated	% of the weight applied
Glyphosate	12,688	10,417	8,306	48.3
Metazachlor	4,443	6,278	5,868	16.9
Propyzamide	2,322	3,245	2,934	8.8
Quinmerac	1,467	6,222	5,811	5.6
Prothioconazole	1,222	10,294	7,026	4.6
Boscalid	1,012	4,362	4,362	3.9
Azoxystrobin	804	5,284	3,732	3.1
Tebuconazole	435	3,252	2,539	1.7
Propaquizafop	294	4,768	4,662	1.1
Diquat	279	745	745	1.1

Pesticide usage on peas and beans.

11,016 ha of peas and beans grown in Ireland.

58,706 treated hectares.

27,070 kilogrammes applied.

Figure 54: Pesticide usage (spha) on pea and bean crops in Ireland, 2016.

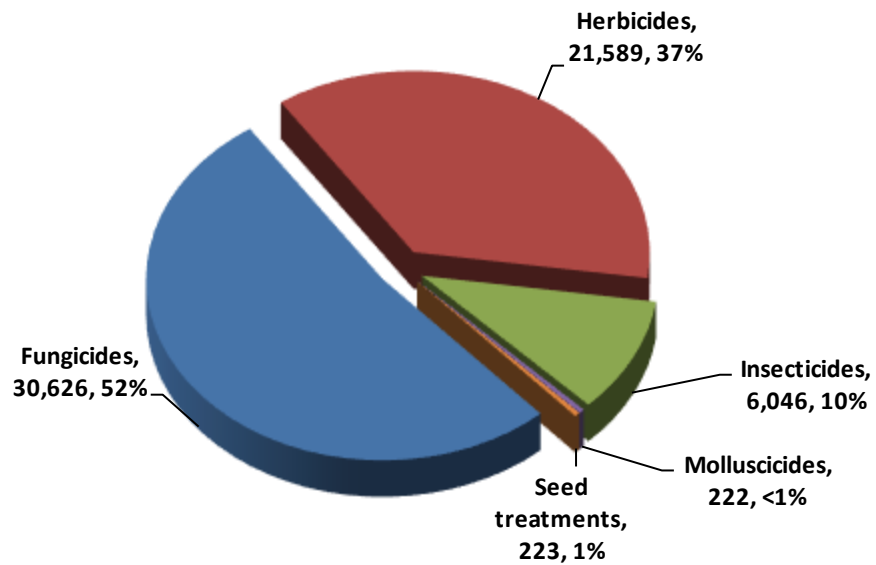


Figure 55: Weight of pesticides (kg) applied to pea and bean crops in Ireland, 2016.

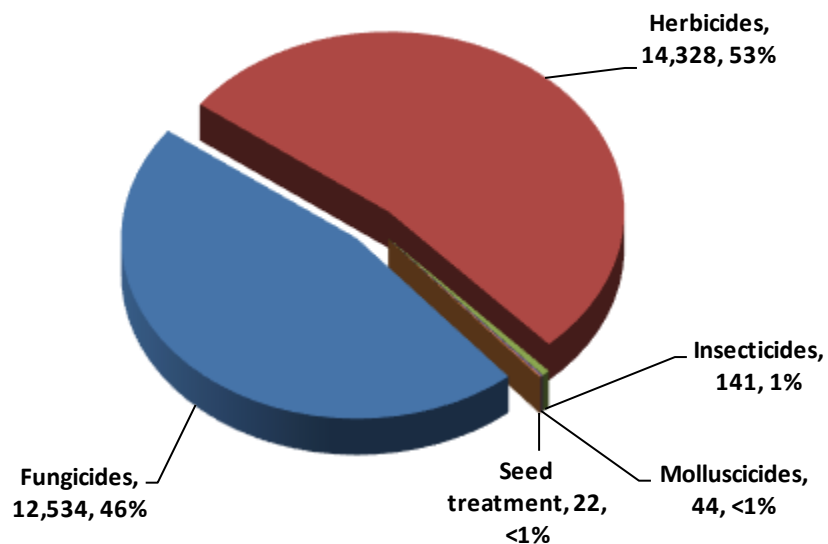


Figure 56: The top 10 active ingredients most extensively used on peas and beans in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated	Quantity applied (kg)	% of the treated area
Pyraclostrobin	12,540	8,479	589	14.3
Boscalid	12,439	8,479	2,299	14.2
Chlorothalonil	10,115	6,579	6,379	11.5
Pendimethalin	10,086	10,086	7,828	11.5
Imazamox	9,487	9,487	489	10.8
Linuron	6,506	6,506	2,305	7.4
Clomazone	6,305	6,305	394	7.2
Lambda-cyhalothrin	4,913	4,913	33	5.6
Azoxystrobin	3,816	3,144	577	4.3
Metalaxyl-M	2,682	2,631	1,839	3.1

Figure 57: The top 10 active ingredients most extensively used on peas and beans in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated	% of the weight applied
Pendimethalin	7,828	10,086	10,086	28.9
Chlorothalonil	6,379	10,115	6,579	23.6
Linuron	2,305	6,506	6,506	8.5
Boscalid	2,299	12,439	8,479	8.5
Metalaxyl-M	1,839	2,682	2,631	6.8
Glyphosate	1,731	1,935	1,535	6.4
Prosulfocarb	1,215	419	419	4.5
Pyraclostrobin	589	12,540	8,479	2.2
Azoxystrobin	577	3,816	3,144	2.1
Mancozeb	568	398	398	2.1

Pesticide usage on seed potato crops.

308 ha of seed potato grown in Ireland.

9,003 treated hectares.

3,870 kilogrammes applied.

Figure 58: Pesticide usage (spha) on seed potato crops in Ireland, 2016.

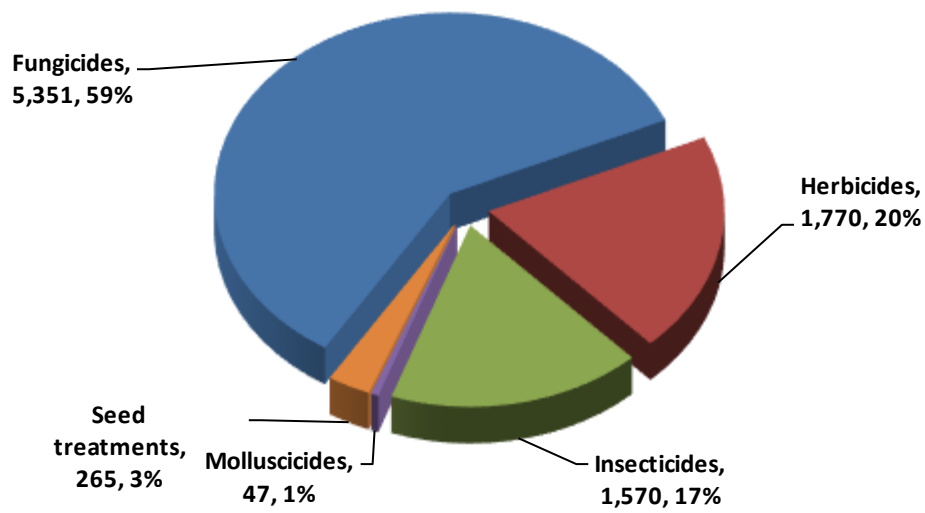


Figure 59: Weight of pesticides (kg) applied to seed potato crops in Ireland, 2016.

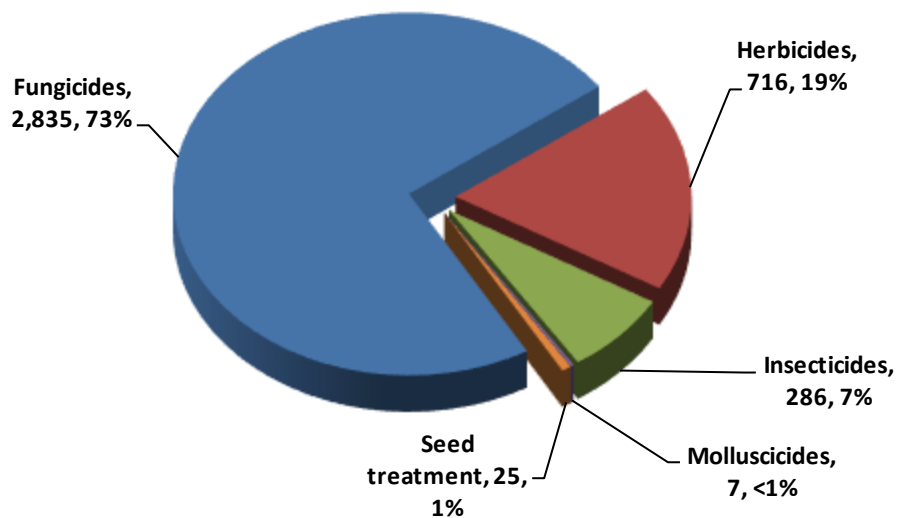


Figure 60: The top 10 active ingredients most extensively used on seed potato crops in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated	Quantity applied (kg)	% of the treated area
Cymoxanil	1,735	324	167	16.1
Fluazinam	1,445	324	264	13.4
Diquat	1,135	329	349	10.5
Mandipropamid	991	299	138	9.2
Mancozeb	950	310	1243	8.8
Propamocarb hydrochloride	892	297	870	8.3
Fluopicolide	793	263	79	7.4
Flonicamid	467	237	37	4.3
Thiacloprid	450	235	43	4.2
Metribuzin	308	308	170	2.9

Figure 61: The top 10 active ingredients most extensively used on seed potato crops in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated	% of the weight applied
Mancozeb	1,243	950	310	32
Propamocarb hydrochloride	870	892	297	22
Diquat	349	1,135	329	9
Fluazinam	264	1,445	324	7
Metribuzin	170	308	308	4
Cymoxanil	167	1,735	324	4
Mandipropamid	138	991	299	4
Linuron	132	256	256	3
Dimethoate	90	268	249	2
Fluopicolide	79	793	263	2

Pesticide usage on early potato crops.

757 ha of early potato grown in Ireland.

8,535 treated hectares.

6,457 kilogrammes applied.

Figure 62: Pesticide usage (spha) on early potato crops in Ireland, 2016.

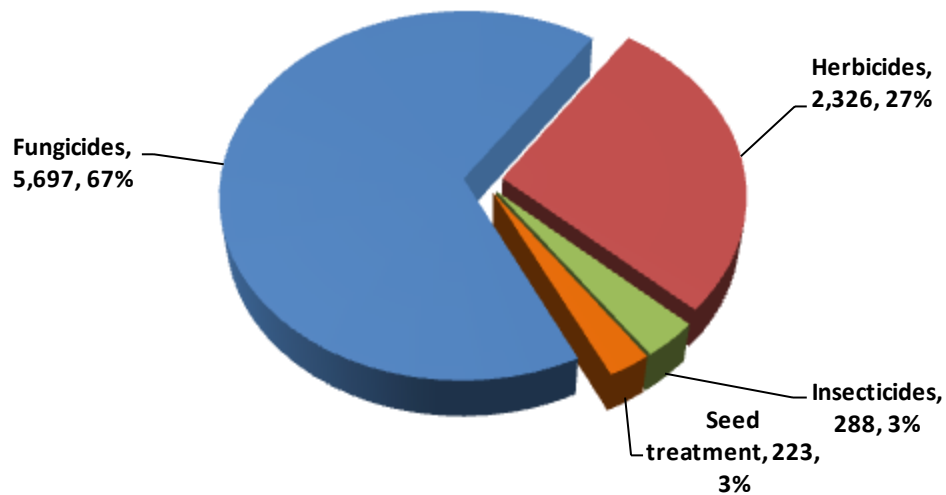


Figure 63: Weight of pesticides (kg) applied to early potato crops in Ireland, 2016.

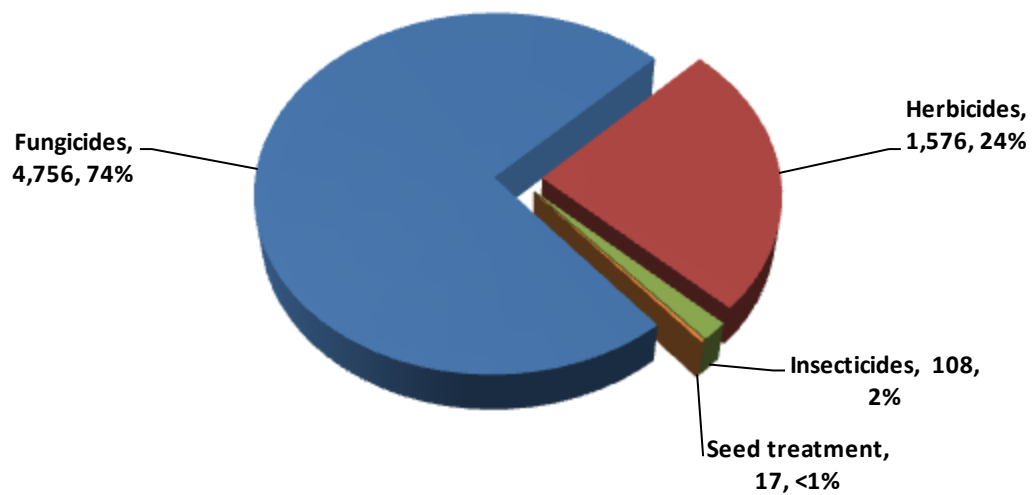


Figure 64: The top 10 active ingredients most extensively used on early potato crops in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated	Quantity applied (kg)	% of the treated area
Mancozeb	1,805	784	2,622	15.6
Cymoxanil	1,756	746	187	15.2
Propamocarb hydrochloride	1,561	799	1,450	13.5
Fluazinam	1,299	439	220	11.2
Fluopicolide	999	556	97	8.6
Metribuzin	673	673	306	5.8
Diquat	635	431	267	5.5
Mandipropamid	534	354	81	4.6
Linuron	386	386	174	3.3
Glyphosate	313	313	304	2.7

Figure 65: The top 10 active ingredients most extensively used on early potato crops in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated	% of the weight applied
Mancozeb	2,622	1,805	784	40.6
Propamocarb hydrochloride	1,450	1,561	799	22.5
Prosulfocarb	391	127	127	6.1
Metribuzin	306	673	673	4.7
Glyphosate	304	313	313	4.7
Diquat	267	635	431	4.1
Fluazinam	220	1,299	439	3.4
Cymoxanil	187	1,756	746	2.9
Linuron	174	386	386	2.7
Pendimethalin	123	93	93	1.9

Pesticide usage on maincrop potato crops.

7,987 ha of maincrop potato grown in Ireland.

158,959 treated hectares.

83,956 kilogrammes applied.

Figure 66: Pesticide usage (spha) on maincrop potato in Ireland, 2016.

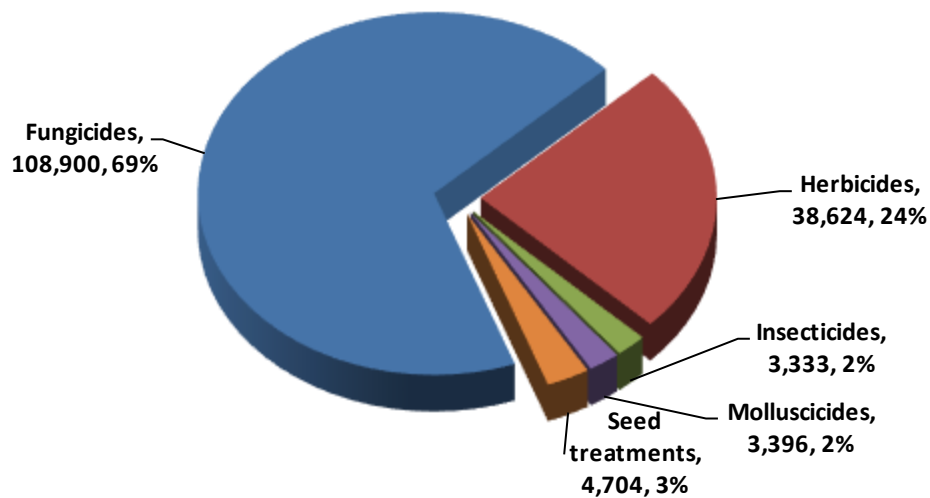


Figure 67: Weight of pesticides (kg) applied to maincrop potato in Ireland, 2016.

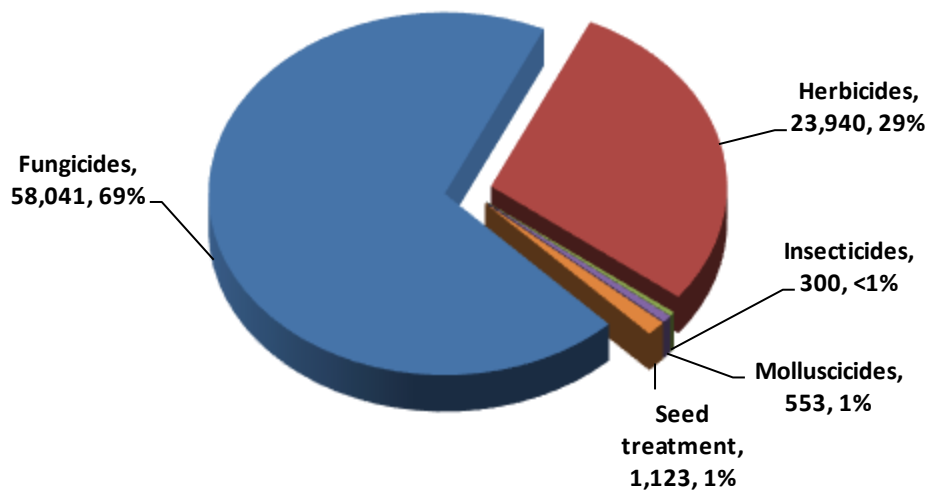


Figure 68: The top 10 active ingredients most extensively used on maincrop potato in Ireland in 2016, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated	Quantity applied (kg)	% of the treated area
Fluazinam	27,694	7,231	5,202	14.2
Cymoxanil	23,908	6,663	2,640	12.3
Propamocarb hydrochloride	21,219	7,391	17,582	10.9
Diquat	18,309	7,585	6,947	9.4
Mandipropamid	18,101	5,570	2,612	9.3
Mancozeb	17,790	6,021	25,624	9.1
Fluopicolide	17,536	7,179	1,471	9.0
Cyazofamid	11,412	4,506	1,936	5.9
Metribuzin	7,040	6,622	3,775	3.6
Glyphosate	4,562	4,562	4,291	2.3

Figure 69: The top 10 active ingredients most extensively used on maincrop potato in Ireland in 2016, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated	% of the weight applied
Mancozeb	25,624	17,790	6,021	30.5
Propamocarb hydrochloride	17,582	21,219	7,391	20.9
Diquat	6,947	18,309	7,585	8.3
Prosulfocarb	6,083	2,852	2,852	7.2
Fluazinam	5,202	27,694	7,231	6.2
Glyphosate	4,291	4,562	4,562	5.1
Metribuzin	3,775	7,040	6,622	4.5
Cymoxanil	2,640	23,908	6,663	3.1
Mandipropamid	2,612	18,101	5,570	3.1
Cyazofamid	1,936	11,412	4,506	2.3

Table 1: Estimated area (hectares) of arable crops grown regionally in Ireland, 2016.

Crop	Region			
	East	South	North/West	Ireland
Spring barley	42,944	62,102	6,882	111,929
Winter barley	40,503	33,092	3,031	76,626
Spring wheat	4,691	6,344	89	11,125
Winter wheat	35,778	14,569	1,787	52,134
Spring oats	4,875	4,429	1,848	11,151
Winter oats	7,164	5,822	160	13,146
Oilseed rape	6,968	2,734	210	9,912
Peas & beans	6,682	4,334	0	11,016
Seed potatoes	216	41	51	308
Early potatoes	240	474	43	757
Maincrop potatoes	3,534	3,294	1,159	7,987
Total	153,597	137,235	15,260	306,092

Table 2a: Estimated area (spray-hectares) of arable crops treated regionally with each pesticide type in Ireland, 2016.

Pesticide type	Region			
	East	South	North/West	Ireland
Fungicides	746,615	633,545	59,222	1,439,382
Herbicides	469,379	408,476	35,124	912,979
Insecticides	150,501	123,215	9,486	283,203
Molluscicides	5,182	4,448	865	10,495
Growth Regulators	199,404	146,582	8,866	354,852
Seed treatments	140,754	112,837	16,888	270,479
Total	1,711,836	1,429,103	130,452	3,271,391

Table 2b: Estimated weight (kg) applied to arable crops regionally with each pesticide type in Ireland, 2016.

Pesticide type	Region			
	East	South	North/West	Ireland
Fungicides	248,155	212,682	25,088	485,925
Herbicides	168,389	149,176	15,250	332,815
Insecticides	15,091	5,165	428	20,684
Molluscicides	992	756	172	1,921
Growth Regulators	107,737	83,042	4,238	195,017
Seed treatments	10,746	10,496	858	22,100
Total	551,108	461,318	46,035	1,058,461

Table 3: The total area (spray hectares) and the basic area (hectares), of arable crops in Ireland 2016 treated with each pesticide type.

Crop type	Pesticide Type													
	Fungicides		Herbicides		Insecticides		Molluscicides		Growth regulators		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) treated (ha) grown
Spring barley	411,893	108,934	322,138	110,618	94,609	86,131			44,987	33,786	105,338	102,501	978,966	111,917 111,929
Winter barley	363,349	76,310	249,960	75,356	67,928	57,239	1,090	1,090	134,012	64,003	70,847	69,258	887,186	76,330 76,626
Spring wheat	51,616	11,125	29,846	11,089	17,217	11,102			19,277	9,864	8,493	8,460	126,449	11,125 11,125
Winter wheat	350,205	51,806	165,307	51,742	70,987	46,707	3,930	3,930	105,347	47,110	50,861	49,331	746,636	52,134 52,134
Spring oats	33,961	10,868	25,722	10,512	7,347	6,689			16,624	8,296	8,468	7,941	92,122	11,151 11,151
Winter oats	50,209	13,141	27,655	12,400	7,449	5,916	231	231	34,605	12,213	12,098	12,098	132,247	13,146 13,146
Oilseed rape	27,574	9,006	28,041	9,672	6,428	4,284	1,578	1,425			8,960	8,807	72,582	9,874 9,912
Peas & beans	30,626	10,720	21,589	10,861	6,046	6,046	222	222			223	223	58,706	11,016 11,016
Seed potatoes	5,351	308	1,770	308	1,570	263	47	47			265	265	9,003	308 308
Early potatoes	5,697	757	2,326	757	288	185					223	223	8,535	757 757
Maincrop potatoes	108,900	7,831	38,624	7,831	3,333	1,969	3,396	2,130			4,704	4,704	158,959	7,987 7,987
Total	1,439,382	300,806	912,979	301,146	283,203	226,532	10,495	9,076	354,852	175,272	270,479	263,811	3,271,391	305,744 306,092

Table 4: The total quantities (kilograms) of each pesticide type used on arable crops in Ireland 2016.

<i>Crop</i>	Pesticide type						Total weight applied (kg)
	Fungicides	Herbicides	Insecticides	Molluscicides	Growth regulators	Seed treatments	
Spring barley	123,970	68,360	3,959		23,538	8,145	227,973
Winter barley	113,059	116,563	2,125	154	68,315	5,777	305,992
Spring wheat	18,908	8,336	2,229		13,599	977	44,050
Winter wheat	119,862	63,194	11,047	829	61,463	4,216	260,613
Spring oats	10,938	6,761	264		9,133	589	27,686
Winter oats	17,096	7,269	81	46	18,969	1,052	44,513
Oilseed rape	3,926	21,772	143	286		156	26,283
Peas & beans	12,534	14,328	141	44		22	27,070
Seed potatoes	2,835	716	286	7		25	3,870
Early potatoes	4,756	1,576	108			17	6,457
Maincrop potatoes	58,041	23,940	300	553		1,123	83,956
All arable crops	485,925	332,815	20,684	1,921	195,017	22,100	1,058,461

Table 5: Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
Fungicides												
Azoxystrobin	487	2,943	303	6,316	190	1,919	5,105	3,178		36	904	21,380
Azoxystrobin/chlorothalonil	1,888	2,244	1,707	12,082			179	222			161	18,484
Azoxystrobin/difenoconazole					441			416				857
Benthiavalicarb-isopropyl/mancozeb									14	288	2,752	3,055
Bixafen/prothioconazole	41,989	32,629	1,539	9,717	437			117				86,428
Bixafen/prothioconazole/spiroxamine				1,427								1,427
Bixafen/prothioconazole/tebuconazole			1,852	10,259			714					12,825
Boscalid							4,362					4,362
Boscalid/epoxiconazole	16,430	18,315	4,093	11,997	525	403						51,764
Boscalid/pyraclostrobin								12,439				12,439
Chlorothalonil	104,392	100,223	17,019	113,393	707	297		9,893				345,923
Chlorothalonil/penthiopyrad	6,163	5,025	1,168	7,059								19,415
Chlorothalonil/picoxystrobin	3,464	2,040	290	1,615								7,410
Chlorothalonil/propiconazole			553									553
Chlorothalonil/proquinazid	109	935	1,273	4,565								6,883
Cyazofamid									244	181	11,412	11,837
Cymoxanil					78				795	262	11,326	12,460
Cymoxanil/mancozeb									885	1,176	11,056	13,118
Cymoxanil/propamocarb hydrochloride									55	318	1,526	1,900
Cyproconazole/penthiopyrad		132		171								303
Cyproconazole/picoxystrobin					71	86						158
Cyprodinil/isopyrazam	16,400	13,368	806	118								30,692
Difenoconazole		212		712								924
Difenoconazole/tebuconazole				3,046								3,046
Dimethomorph	463				397							860
Dimethomorph/mancozeb								63				63

Table 5 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
Fungicides (cont.)												
Epoxiconazole	3,847	1,346	2,311	3,037	1,450	2,054	93					14,138
Epoxiconazole/fenpropimorph	7,596	3,982	142	2,840	720	440						15,719
Epoxiconazole/fenpropimorph/kresoxim-methyl	1,151	1,854		1,299		2,205						6,510
Epoxiconazole/fenpropimorph/metrafenone	326		721	4,208	4,034	8,852						18,140
Epoxiconazole/fenpropimorph/pyraclostrobin	10,556	5,884			1,804	840						19,084
Epoxiconazole/fluxapyroxad	652	117	1,045	16,060	289						90	18,253
Epoxiconazole/fluxapyroxad/pyraclostrobin	21,810	21,316		1,193	1,909	985						47,213
Epoxiconazole/isopyrasam				601								601
Epoxiconazole/metconazole	1,212	484	1,164	21,511								24,372
Epoxiconazole/pyraclostrobin	4,079	930	966	362	129	381						6,847
Fenamidone/propamocarb hydrochloride									43	244	2,157	2,444
Fenpropidin	4,818	341	1,543	1,073	1,215	547						9,536
Fenpropimorph	35,342	10,830	2,124	4,136	4,331	7,056						63,820
Fenpropimorph/flusilazole				564								564
Fenpropimorph/pyraclostrobin	7,047	9,341	388	4,202	7,448	10,847						39,272
Fluazinam									1,445	1,299	27,684	30,429
Fluazinam/metalaxyl-M											9	9
Fluopicolide		620										620
Fluopicolide/propamocarb hydrochloride									793	999	17,536	19,328
Fluoxastrobin	4,693	3,548	290	352								8,883
Fluoxastrobin/prothioconazole	1,104	751			50	258						2,162
Fluoxastrobin/prothioconazole/trifloxystrobin	12,155	11,915		402								24,472
Fluxapyroxad	3,735	8,469	68	13,319	100							25,692
Fluxapyroxad/metconazole	652	1,087	106	23,210	292	297						25,645
Folpet	1,608	1,678	880	710								4,876
Iprodione				626								626
Isopyrasam	3,503	7,244										10,748
Mancozeb				161				335	51	340	3,821	4,708
Mancozeb/zoxamide											161	161

Table 5 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Ireland, 2016.

Pesticide type & formulation	Crop											All crops
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	
<i>Fungicides (cont.)</i>												
Mandipropamid	586								991	534	18,101	20,212
Metalaxyl-M								2,682	34	21	203	2,940
Metconazole	616	591		387		112	5,088					6,794
Metrafenone		1,588	161	1,926	194	845						4,713
Penthiopyrad	663	836		2,503								4,002
Penthiopyrad/picoxystrobin	2,001	4,859		206		86	401					7,553
Picoxystrobin	2,076	615				478						3,168
Prochloraz				896								896
Prochloraz/tebuconazole			880									880
Proquinazid	1,999	2,498	3,274	4,605	3,607	5,860						21,844
Prothioconazole	47,468	30,560	2,011	13,333		478	9,094					102,942
Prothioconazole/spiroxamine	24,902	26,799	142	2,181	388							54,412
Prothioconazole/spiroxamine/tebuconazole		669	221	7,562								8,452
Prothioconazole/tebuconazole		183	1,551	20,890	100		487					23,212
Prothioconazole/trifloxystrobin	5,930	4,371		429								10,730
Pyraclostrobin	7,137	18,372	334	5,639	1,179	1,475		102				34,237
Sulphur	247	276										523
Tebuconazole	594	201	691	7,103	1,876	3,410	2,051	1,180				17,106
Thiram				201								201
Tolclofos-methyl		1,128										1,128
<i>All fungicides</i>	<i>411,893</i>	<i>363,349</i>	<i>51,616</i>	<i>350,205</i>	<i>33,961</i>	<i>50,209</i>	<i>27,574</i>	<i>30,626</i>	<i>5,351</i>	<i>5,697</i>	<i>108,900</i>	<i>1,439,382</i>

Table 5 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides</i>												
2,4-D				712								712
2,4-D/triclopyr	270											270
2,4-DB/MCPA	791			282	237							1,310
2,4-DB/mecoprop-P	101											101
Aminopyralid/propyzamide							1,433					1,433
Asulam				146								146
Bentazone								88				88
Carfentrazone-ethyl											1,522	1,522
Clodinafop-Propargyl/ cloquintocet-mexyl/pinoxaden				176								176
Clomazone/linuron								6,305			487	6,792
Clopyralid							193					193
Clopyralid/florasulam/ fluroxypyr	37,882	4,591	2,215	3,438	1,454	2,814						52,393
Clopyralid/picloram							263					263
Clopyralid/triclopyr		238		429								667
Cycloxydim					260		600	1,167				2,028
Dicamba/MCPA/mecoprop-P	656											656
Dicamba/mecoprop-P	1,509		303		88	93						1,993
Dichlorprop-P/MCPA/mecoprop-P	4,330		295		277							4,902
Diflufenican	2,202	51,338	140	25,313	397	4,175				36		83,599
Diflufenican/ flufenacet		4,949		4,029								8,978
Diflufenican/iodosulfron-methyl-sodium				10,715								10,715
Diquat	1,145						745	24	1,135	635	18,309	21,993
Ethametsulfuron-methyl							618					618
Ethofumesate	826											826
Fenoxaprop-P-ethyl	1,509	441	457	5,917								8,324
Florasulam	683	3,199		2,615		326						6,822
Florasulam/ fluroxypyr	3,138	2,696		495		438						6,767
Florasulam/pyroxsulam		952		3,367								4,320
Fluazifop-P-butyl					260		140					400
Flumioxazin				33								33

Table 5 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides (cont.)</i>												
Flupyr-sulfuron-methyl						157						157
Fluroxypyr	42,048	10,829	6,653	11,743	6,994	3,641						81,909
Glufosinate-ammonium										11	183	193
Glyphosate	36,952	34,212	6,282	23,672	3,583	5,423	10,417	1,935	72	313	4,562	127,423
Imazamox/pendimethalin			130				93	9,487				9,711
Iodosulfuron-methyl-sodium	1,636											1,636
Iodosulfuron-methyl-sodium/mesosulfuron-methyl				13,664								13,664
Isoproturon	4,178	63,466	932	31,600								100,176
Linuron								200	256	386	2,155	2,997
MCPA					328							328
Mecoprop-P	9,393	1,445	149	3,134	1,066	814						16,002
Metazachlor	791				360		57					1,208
Metazachlor/quinmerac							6,222					6,222
Metribuzin									308	673	7,040	8,021
Metsulfuron-methyl	7,219	1,256	4,036		67	299						12,878
Metsulfuron-methyl/thifensulfuron-methyl	27,140	3,082	370	1,571		86		63				32,312
Metsulfuron-methyl/tribenuron-methyl	24,799	3,923	1,980	608	3,209	1,646						36,165
Pendimethalin	791							598		93	788	2,270
Pendimethalin/picolinafen	326	4,210	563	346								5,445
Pinoxaden	62,578	41,473	1,695	9,181								114,927
Propaquizafop					260		4,768	1,257		17	258	6,560
Propyzamide							1,813	44				1,857
Prosulfocarb	94	241		1,017				419		127	2,852	4,751
Rimsulfuron										36	470	506
Tepraloxymid		198		185			681					1,064
Thifensulfuron-methyl/tribenuron-methyl	48,517	11,686	3,623	8,726	6,441	5,561						84,554
Tribenuron-methyl	634	5,118	23	2,191	441	2,181						10,589
Triflusal-furon-methyl		418										418
All herbicides	322,138	249,960	29,846	165,307	25,722	27,655	28,041	21,589	1,770	2,326	38,624	912,979

Table 5 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Insecticides</i>												
Acetamiprid									14			14
Chlorpyrifos	1,796		382									2,178
Clofentezine								221				221
Cypermethrin	23,443	8,323	3,828	4,029	2,186	1,619	23	343				43,794
Deltamethrin	3,526	3,730	560	1,702	306	93		128				10,044
Dimethoate	708	2,453	4,508	30,791	585		323		268		903	40,537
Esfenvalerate	5,587	9,301	2,245	2,609	836			63				20,641
Ethoprophos									19			19
Flonicamid									467			467
Garlic Extract	2,793		880									3,674
Lambda-cyhalothrin	56,757	43,796	4,814	31,154	3,433	5,737	6,082	4,913	80	253	2,430	159,448
Metarhizium anisopliae (BIPESCO 5F/52)		327		703								1,030
Oxamyl										36		36
Pirimicarb								378				378
Pymetrozine									272			272
Thiacloprid									450			450
<i>All Insecticides</i>	<i>94,609</i>	<i>67,928</i>	<i>17,217</i>	<i>70,987</i>	<i>7,347</i>	<i>7,449</i>	<i>6,428</i>	<i>6,046</i>	<i>1,570</i>	<i>288</i>	<i>3,333</i>	<i>283,203</i>
<i>Molluscicides</i>												
Metaldehyde		649		3,930		231	1,186	222	40		3,396	9,654
Methiocarb		442					392	0	7			842
<i>All molluscicides</i>		<i>1,090</i>	<i>0</i>	<i>3,930</i>	<i>0</i>	<i>231</i>	<i>1,578</i>	<i>222</i>	<i>47</i>	<i>0</i>	<i>3,396</i>	<i>10,495</i>

Table 5 (cont.): Estimated area (spray-hectares) of arable crops treated with pesticide formulations in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Growth regulators</i>												
Chlormequat chloride	29,484	63,155	15,510	65,192	11,258	23,506						208,104
Chlormequat/imazaquin	326			2,826								3,152
Ethephon (2-chloroethylphosphonic acid)	792	6,420		2,658								9,869
Ethephon/mepiquat chloride	1,795	23,367	233	1,509								26,905
Mepiquat chloride/prohexadione-calcium					127							127
Trinexapac-ethyl	12,589	41,070	3,534	33,162	5,239	11,099						106,694
<i>All growth regulators</i>	<i>44,987</i>	<i>134,012</i>	<i>19,277</i>	<i>105,347</i>	<i>16,624</i>	<i>34,605</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>354,852</i>
<i>Seed treatments</i>												
Carboxin/thiram	28,313	16,237	4,708	13,217	1,908	4,515						68,898
Clothianidin/prothioconazole	12,348	20,429		13,022	1,242	1,254						48,295
Cymoxanil/fludioxonil/metalaxyl-M												223
Fludioxonil	183		161	161	162							668
Fludioxonil/flutriafol		166										166
Fluopyram/prothioconazole/tebuconazole	1,658	86										1,744
Flutolanil										31	1,127	1,158
Imazalil									213	175	2,114	2,502
Imazalil/pencycuron									41	17	1,463	1,520
Imazalil/thiabendazole									11			11
Prochloraz/thiram							8,960					8,960
Prochloraz/triticonazole	51,576	29,010	3,624	18,964	5,155	6,330						114,660
Silthiofam	11,260	4,919		5,496								21,674
<i>All seed treatments</i>	<i>105,338</i>	<i>70,847</i>	<i>8,493</i>	<i>50,861</i>	<i>8,468</i>	<i>12,098</i>	<i>8,960</i>	<i>0</i>	<i>265</i>	<i>223</i>	<i>4,704</i>	<i>270,479</i>
<i>All pesticides</i>	<i>978,966</i>	<i>887,186</i>	<i>126,449</i>	<i>746,636</i>	<i>92,122</i>	<i>132,247</i>	<i>72,582</i>	<i>58,483</i>	<i>9,003</i>	<i>8,535</i>	<i>158,959</i>	<i>3,271,391</i>

Table 6: Estimated quantities (kilograms) of pesticide formulations used on arable crops in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides</i>												
Azoxystrobin	65	474	36	1,197	24	245	785	475		9	246	3,556
Azoxystrobin/chlorothalonil	1,270	1,338	941	6,885			116	115			77	10,742
Azoxystrobin/difenoconazole					67			135				202
Benthiavalicarb-isopropyl/mancozeb									16	331	2,514	2,861
Bixafen/prothioconazole	7,462	5,676	489	2,187	58			15				15,888
Bixafen/prothioconazole/spiroxamine				758								758
Bixafen/prothioconazole/tebuconazole			509	3,152			152					3,813
Boscalid							1,012					1,012
Boscalid/epoxiconazole	3,705	4,667	1,301	4,226	79	106						14,084
Boscalid/pyraclostrobin								2,876				2,876
Chlorothalonil	50,876	48,819	8,424	57,946	351	148		6,283				172,848
Chlorothalonil/penthiopyrad	3,153	3,008	674	4,586								11,421
Chlorothalonil/picoxystrobin	1,174	1,424	348	1,065								4,011
Chlorothalonil/propiconazole			173									173
Chlorothalonil/proquinazid	11	532	849	2,454								3,847
Cyazofamid									26	24	1,936	1,986
Cymoxanil					8				87	29	1,313	1,436
Cymoxanil/mancozeb									1,207	1,923	18,637	21,767
Cymoxanil/propamocarb hydrochloride									50	347	1,469	1,866
Cyproconazole/penthiopyrad		44		47								91
Cyproconazole/picoxystrobin					13	16						30
Cyprodinil/isopyrazam	6,463	4,970	302	29								11,764
Difenoconazole		16		53								69
Difenoconazole/tebuconazole				936								936
Dimethomorph	463				397							860

Table 6 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides (cont.)</i>												
Dimethomorph/mancozeb								35				35
Epoxiconazole	314	75	263	342	127	150	12					1,283
Epoxiconazole/fenpropimorph	2,112	1,348	59	1,077	209	128						4,933
Epoxiconazole/fenpropimorph/kresoxim-methyl	361	703		423		750						2,236
Epoxiconazole/fenpropimorph/metrafenone	110		316	1,973	1,577	3,534						7,510
Epoxiconazole/fenpropimorph/pyraclostrobin	3,003	2,087			567	422						6,079
Epoxiconazole/fluxapyroxad	82	29	177	3,019	9						16	3,331
Epoxiconazole/fluxapyroxad/pyraclostrobin	5,017	4,903		429	429	228						11,006
Epoxiconazole/isoprazam				147								147
Epoxiconazole/metconazole	147	63	87	2,258								2,555
Epoxiconazole/pyraclostrobin	567	146	170	51	23	73						1,031
Fenamidone/propamocarb hydrochloride									39	201	1,882	2,122
Fenpropidin	2,659	255	880	409	463	125						4,791
Fenpropimorph	11,232	3,176	752	1,237	1,308	3,027						20,733
Fenpropimorph/flusilazole				272								272
Fenpropimorph/pyraclostrobin	2,984	3,812	169	1,556	4,450	6,693						19,664
Fluazinam									264	220	5,200	5,685
Fluazinam/metalaxyl-M											3	3
Fluopicolide		116										116
Fluopicolide/propamocarb hydrochloride									873	1,071	16,178	18,122
Fluoxastrobin	437	363	36	35								872
Fluoxastrobin/prothioconazole	205	182			9	54						450
Fluoxastrobin/prothioconazole/trifloxystrobin	2,202	2,442		91								4,734
Fluxapyroxad	214	635	3	1,155	4							2,012
Fluxapyroxad/metconazole	70	70	11	3,983	50	16						4,201
Folpet	804	1,112	440	410								2,765

Table 6 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Fungicides (cont.)</i>												
Iprodione				188								188
Isopyrazam	239	478										717
Mancozeb				181				536	96	496	5,504	6,813
Mancozeb/zoxamide											217	217
Mandipropamid	73								138	81	2,612	2,903
Metalaxyl-M								1,839	40	24	236	2,138
Metconazole	18	51		26		2	226					323
Metrafenone		224	12	263	13	115						627
Penthiopyrad	128	93		478								699
Penthiopyrad/picoxystrobin	492	1,168		49		21	78					1,808
Picoxystrobin	227	77				60						364
Prochloraz				351								351
Prochloraz/tebuconazole			242									242
Proquinazid	61	81	125	144	130	206						748
Prothioconazole	6,086	3,779	412	1,689		60	1,107					13,133
Prothioconazole/spiroxamine	7,369	10,310	58	907	112							18,756
Prothioconazole/spiroxamine/tebuconazole		385	105	4,040								4,530
Prothioconazole/tebuconazole		48	341	5,425	10		120					5,944
Prothioconazole/trifloxystrobin	806	820		34								1,659
Pyraclostrobin	834	2,379	61	600	154	237		12				4,277
Sulphur	326	220										547
Tebuconazole	148	35	142	1,017	294	678	320	214				2,848
Thiram				80								80
Tolclofos-methyl		429										429
All fungicides	123,970	113,059	18,908	119,862	10,938	17,096	3,926	12,534	2,835	4,756	58,041	485,925

Table 6 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides</i>												
2,4-D				178								178
2,4-D/triclopyr	42											42
2,4-DB/MCPA	1,419			79	464							1,963
2,4-DB/mecoprop-P	76											76
Aminopyralid/propyzamide							1,206					1,206
Asulam				117								117
Bentazone								32				32
Carfentrazone-ethyl											41	41
Clodinafop-Propargyl/cloquintocet-mexyl/pinoxaden				5								5
Clomazone/linuron								2,582			215	2,797
Clopyralid							17					17
Clopyralid/florasulam/fluroxypyr	7,717	812	448	788	273	407						10,444
Clopyralid/picloram							26					26
Clopyralid/triclopyr		21		39								60
Cycloxydim					8		90	167				266
Dicamba/MCPA/mecoprop-P	296											296
Dicamba/mecoprop-P	798		68		53	38						957
Dichlorprop-P/MCPA/mecoprop-P	2,889		186		201							3,276
Diflufenican	192	6,313	18	2,886	50	454				7		9,919
Diflufenican/flufenacet		878		723								1,601
Diflufenican/iodosulfuron-methyl-sodium				1,412								1,412
Diquat	458						279	13	349	267	6,947	8,312
Ethametsulfuron-methyl							11					11
Ethofumesate	289											289
Fenoxaprop-P-ethyl	66	25	18	326								435
Florasulam	3	13		12		1						30
Florasulam/fluroxypyr	288	241		37		23						589
Florasulam/pyroxsulam		20		69								89
Fluazifop-P-butyl					32		9					40
Flumioxazin				1								1

Table 6 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Herbicides (cont.)</i>												
Flupyr-sulfuron-methyl						4						4
Fluroxypyr	6,101	1,593	967	1,804	1,027	526						12,019
Glufosinate-ammonium										2	37	39
Glyphosate	32,230	29,266	5,296	18,347	3,180	4,941	12,688	1,731	66	304	4,291	112,340
Imazamox/pendimethalin			104				87	7,808				7,999
Iodosulfuron-methyl-sodium	24											24
Iodosulfuron-methyl-sodium/mesosulfuron-methyl				179								179
Isoproturon	3,292	69,585	725	31,521								105,122
Linuron								117	132	174	1,466	1,889
MCPA					223							223
Mecoprop-P	5,665	1,189	81	2,113	816	698						10,562
Metazachlor	395				180		42					618
Metazachlor/quinmerac							5,867					5,867
Metribuzin									170	306	3,775	4,250
Metsulfuron-methyl	40	6	19		0	1						67
Metsulfuron-methyl/thifensulfuron-methyl	1,201	107	15	36		1		2				1,361
Metsulfuron-methyl/tribenuron-methyl	267	41	17	6	32	22						384
Pendimethalin	791							510		123	1,039	2,462
Pendimethalin/picolinafen	330	4,462	238	351								5,380
Pinoxaden	1,797	1,124	51	306								3,278
Propaquizafop					78		294	118		2	41	533
Propyzamide							1,130	35				1,166
Prosulfocarb	151	429		1,627				1,215		391	6,083	9,895
Rimsulfuron										0	4	5
Tepaloxymid		10		9			26					45
Thifensulfuron-methyl/tribenuron-methyl	1,531	356	86	208	138	123						2,442
Tribenuron-methyl	10	64	0	16	7	30						127
Triflurosulfuron-methyl		6										6
All herbicides	68,360	116,563	8,336	63,194	6,761	7,269	21,772	14,328	716	1,576	23,940	332,815

Table 6 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Insecticides</i>												
Acetamiprid									1			1
Chlorpyrifos	1,343		76									1,419
Clofentezine								44				44
Cypermethrin	565	184	92	88	58	52	1	11				1,050
Deltamethrin	21	31	3	9	2	1		1				67
Dimethoate	238	866	1,358	9,079	184		103		90		286	12,204
Esfenvalerate	24	38	7	10	4							83
Ethoprophos									73			73
Flonicamid									37			37
Garlic Extract	1,495		660									2,154
Lambda-cyhalothrin	274	207	33	147	17	28	39	33	1	2	14	795
Metarhizium anisopliae (BIPESCO 5F/52)		798		1,714								2,513
Oxamyl										107		107
Pirimicarb								52				52
Pymetrozine									41			41
Thiacloprid									43			43
<i>All insecticides</i>	<i>3,959</i>	<i>2,125</i>	<i>2,229</i>	<i>11,047</i>	<i>264</i>	<i>81</i>	<i>143</i>	<i>141</i>	<i>286</i>	<i>108</i>	<i>300</i>	<i>20,684</i>
<i>Molluscicides</i>												
Metaldehyde		136		829		46	248	44	7		553	1,865
Methiocarb		18					38	0	0			56
<i>All molluscicides</i>		<i>154</i>		<i>829</i>		<i>46</i>	<i>286</i>	<i>44</i>	<i>7</i>		<i>553</i>	<i>1,921</i>

Table 6 (cont.): Estimated quantities (kilograms) of pesticide formulations used on arable crops in Ireland, 2016.

Pesticide type & formulation	Crop											
	Spring barley	Winter barley	Spring wheat	Winter wheat	Spring oats	Winter oats	Oilseed rape	Peas & beans	Seed potatoes	Early potatoes	Maincrop potatoes	All crops
<i>Growth Regulators</i>												
Chlormequat chloride	21,275	51,643	13,212	55,839	8,855	18,407						169,232
Chlormequat/imazaquin	301			1,991								2,292
Ethephon (2-chloroethylphosphonic acid)	234	2,049		502								2,785
Ethephon/mepiquat chloride	964	12,216	151	781								14,113
Mepiquat chloride/prohexadione-calcium					18							18
Trinexapac-ethyl	764	2,405	236	2,349	260	562						6,577
All growth regulators	23,538	68,315	13,599	61,463	9,133	18,969						195,017
<i>Seed treatments</i>												
Carboxin/thiram	5,360	3,001	885	2,269	347	783						12,644
Clothianidin/prothioconazole	1,108	1,833		1,251	112	116						4,420
Cymoxanil/fludioxonil/metalaxyl-M								22				22
Fludioxonil	1		1	1	1							5
Fludioxonil/flutriafol		3										3
Fluopyram/prothioconazole/tebuconazole	25	1										26
Flutolanil										7	257	264
Imazalil									6	5	56	67
Imazalil/pencycuron									18	6	809	833
Imazalil/thiabendazole									1			1
Prochloraz/thiram							156					156
Prochloraz/triticonazole	1,243	749	91	476	129	153						2,841
Silthiofam	408	190		219								817
All seed treatments	8,145	5,777	977	4,216	589	1,052	156	22	25	17	1,123	22,100
All pesticides	227,973	305,992	44,050	260,613	27,686	44,513	26,283	27,070	3,870	6,457	83,956	1,058,461

Table 7: The active ingredients most extensively used on arable crops in Ireland in 2016, ranked by area treated (spray-hectares).

No.	Active ingredient	Treated area (sp ha)
1	Chlorothalonil	398,667
2	Prothioconazole	327,063
3	Epoxiconazole	222,641
4	Chlormequat chloride	211,256
5	Fenpropimorph	163,110
6	Lambda-cyhalothrin	159,448
7	Pyraclostrobin	159,092
8	Fluroxypyr	141,069
9	Tribenuron-methyl	131,308
10	Glyphosate	127,423
11	Thifensulfuron-methyl	116,866
12	Fluxapyroxad	116,802
13	Pinoxaden	115,103
14	Trinexapac-ethyl	106,694
15	Diflufenican	103,292
16	Bixafen	100,680
17	Isoproturon	100,176
18	Metsulfuron-methyl	81,355
19	Florasulam	70,302
20	Boscalid	68,565
21	Tebuconazole	65,522
22	Spiroxamine	64,291
23	Metconazole	56,811
24	Clopyralid	53,516
25	Cypermethrin	43,794
26	Isoprazam	42,040
27	Azoxystrobin	40,721
28	Dimethoate	40,537
29	Fluoxastrobin	35,517
30	Trifloxystrobin	35,202
31	Ethephon	31,782
32	Penthiopyrad	31,274
33	Cyprodinil	30,692
34	Fluazinam	30,438
35	Proquinazid	28,726
36	Cymoxanil	27,477
37	Mepiquat chloride	27,032
38	Iodosulfon-methyl-sodium	26,015
39	Propamocarb hydrochloride	23,672
40	Mecoprop-P	23,654

Table 8: The active ingredients most extensively used on arable crops in Ireland in 2016, ranked by weight (kilograms).

No.	Active ingredient	Quantity (kg)
1	Chlorothalonil	197,113
2	Chlormequat chloride	171,519
3	Glyphosate	112,340
4	Isoproturon	105,122
5	Fenpropimorph	48,936
6	Prothioconazole	40,924
7	Mancozeb	30,238
8	Propamocarb hydrochloride	19,902
9	Fluroxypyr	19,227
10	Pyraclostrobin	16,397
11	Epoxiconazole	15,446
12	Spiroxamine	15,267
13	Pendimethalin	15,221
14	Boscalid	13,916
15	Mecoprop-P	12,324
16	Dimethoate	12,204
17	Diflufenican	11,838
18	Prosulfocarb	9,895
19	Mepiquat chloride	9,219
20	Fluxapyroxad	9,176
21	Tebuconazole	8,957
22	Cyprodinil	8,823
23	Diquat	8,312
24	Trinexapac-ethyl	6,577
25	Ethephon	6,123
26	Fluazinam	5,686
27	Azoxystrobin	5,471
28	Penthiopyrad	5,221
29	Metazachlor	5,018
30	Bixafen	4,983
31	Fenpropidin	4,791
32	Linuron	4,260
33	Metribuzin	4,250
34	Isopyrazam	3,740
35	Clopyralid	3,738
36	Pinoxaden	3,280
37	Metconazole	3,161
38	Cymoxanil	3,002
39	Mandipropamid	2,903
40	Folpet	2,765

Table 9: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for spring barley 2016.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of
		Total	Total	Total
Spring Barley	Fungicides			
	Azoxystrobin	277	2,375	2,375
	Bixafen	1,722	41,989	35,711
	Boscalid	2,841	16,430	16,430
	Chlorothalonil	55,179	116,017	95,771
	Cyprodinil	4,847	16,400	16,400
	Dimethomorph	463	463	463
	Epoxiconazole	3,946	67,661	50,186
	Fenpropidin	2,659	4,818	4,818
	Fenpropimorph	17,101	62,018	53,784
	Fluxapyroxad	1,689	26,850	24,979
	Folpet	804	1,608	1,608
	Isopyrazam	1,855	19,903	19,903
	Kresoxim-methyl	113	1,151	1,151
	Mandipropamid	73	586	586
	Metconazole	110	2,481	1,829
	Metrafenone	24	326	326
	Penthiopyrad	1,354	8,827	8,555
	Picoxystrobin	587	7,541	6,871
	Proquinazid	61	2,109	2,109
	Prothioconazole	16,129	133,547	91,513
	Pyraclostrobin	4,945	50,629	45,982
	Spiroxamine	4,806	24,902	17,766
	Sulphur	326	247	247
	Tebuconazole	148	594	594
	Trifloxystrobin	820	18,085	17,316
	Herbicides			
	2,4-D	20	270	270
	2,4-DB	1,286	892	892
	Clopyralid	2,726	37,882	37,104
	Dicamba	110	2,165	2,165
	Dichlorprop-P	1,456	4,330	3,509
	Diflufenican	192	2,202	2,202
	Diquat	458	1,145	1,145
	Ethofumesate	289	826	826
	Fenoxaprop-P-ethyl	66	1,509	1,509
	Florasulam	96	41,702	40,924
	Fluoxastrobin	1,090	17,951	16,387

Table 9 (cont.): Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for spring barley 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Spring Barley	Herbicides (cont.)			
	Fluroxypyr	11,288	83,068	81,194
	Glyphosate	32,230	36,952	32,924
	Imazaquin	1	326	326
	Iodosulfuron-methyl-sodium	24	1,636	1,636
	Isoproturon	3,292	4,178	4,178
	MCPA	1,101	5,777	4,956
	Mecoprop-P	7,192	15,989	15,168
	Metazachlor	395	791	791
	Metsulfuron-methyl	245	59,159	56,164
	Pendimethalin	1,114	1,117	1,117
	Picolinafen	7	326	326
	Pinoxaden	1,797	62,578	60,799
	Prosulfocarb	151	94	94
	Thifensulfuron-methyl	2,066	75,657	73,859
	Tribenuron-methyl	738	73,950	73,479
	Triclopyr	22	270	270
	Insecticides			
	Chlorpyrifos	1,343	1,796	1,796
	Cypermethrin	565	23,443	21,839
	Deltamethrin	21	3,526	3,526
	Dimethoate	238	708	708
	Esfenvalerate	24	5,587	4,909
	Garlic Extract	1,495	2,793	2,793
	Lambda-cyhalothrin	274	56,757	55,142
	Growth Regulators			
	Chlormequat chloride	21,575	29,810	29,459
	Ethephon	569	2,587	2,280
	Mepiquat chloride	629	1,795	1,795
	Trinexapac-ethyl	764	12,589	12,396
	Seed Treatments			
	Carboxin/thiram	5,360	28,313	28,313
	Clothianidin/prothioconazole	1,108	12,348	12,348
	Fludioxonil	1	183	183
	Fluopyram/prothioconazole/ tebuconazole	25	1,658	1,658
	Prochloraz/triticonazole	1,243	51,576	51,576
	Silthiofam	408	11,260	11,260

Table 10: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for winter barley 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Winter barley	Fungicides			
	Azoxystrobin	697	5,187	4,315
	Bixafen	1,321	32,629	29,255
	Boscalid	3,534	18,315	15,948
	Chlorothalonil	53,779	110,466	66,954
	Cyproconazole	13	132	132
	Cyprodinil	3,727	13,368	13,368
	Difenoconazole	16	212	212
	Epoxiconazole	3,473	54,228	39,074
	Fenpropidin	255	341	341
	Fenpropimorph	8,661	31,892	25,381
	Fluopicolide	116	620	620
	Fluoxastrobin	1,065	16,214	13,342
	Fluxapyroxad	2,051	30,990	24,864
	Folpet	1,112	1,678	1,678
	Isoprazam	1,720	20,613	20,613
	Kresoxim-methyl	220	1,854	1,291
	Metconazole	107	2,162	2,162
	Metrafenone	224	1,588	1,588
	Penthiopyrad	1,759	10,852	10,273
	Picoxystrobin	703	7,514	7,514
	Proquinazid	107	3,433	3,063
	Prothioconazole	13,684	107,877	64,914
	Pyraclostrobin	6,097	55,843	40,365
	Spiroxamine	6,941	27,468	19,983
	Sulphur	220	276	276
	Tebuconazole	143	1,054	1,054
	Tolclofos-methyl	429	1,128	1,128
	Trifloxystrobin	885	16,286	13,804
	Herbicides			
	Clopyralid	291	4,829	4,829
	Diflufenican	6,606	56,286	53,920
	Fenoxaprop-P-ethyl	25	441	441
	Florasulam	36	11,437	10,485
	Flufenacet	585	4,949	4,949
	Fluroxypyr	2,339	18,116	17,408
	Glyphosate	29,266	34,212	27,063
	Isoproturon	69,585	63,466	61,593

Table 10 (cont.): Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for winter barley 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Winter barley	Herbicides (cont.)			
	Mecoprop-P	1,189	1,445	1,445
	Metsulfuron-methyl	34	8,261	8,079
	Pendimethalin	4,363	4,210	4,210
	Picolinafen	99	4,210	4,210
	Pinoxaden	1,124	41,473	40,910
	Prosulfocarb	429	241	241
	Pyroxsulam	17	952	952
	Tepraloxym	10	198	198
	Thifensulfuron-methyl	315	14,768	14,768
	Tribenuron-methyl	225	20,727	19,213
	Triclopyr	17	238	238
	Triflurosulfuron-methyl	6	418	418
	Insecticides			
	Cypermethrin	184	8,323	7,475
	Deltamethrin	31	3,730	3,730
	Dimethoate	866	2,453	2,453
	Esfenvalerate	38	9,301	8,253
	Lambda-cyhalothrin	207	43,796	40,698
	Metarhizium anisopliae (BIPESCO 5F/52)	798	327	327
	Molluscicides			
	Metaldehyde	136	649	649
	Methiocarb	18	442	442
	Growth Regulators			
	Chlormequat chloride	51,643	63,155	57,798
	Ethephon	6,299	29,787	29,219
	Mepiquat chloride	7,967	23,367	22,800
	Trinexapac-ethyl	2,405	41,070	35,522
	Seed Treatments			
	Carboxin/thiram	3,001	16,237	16,237
	Clothianidin/prothioconazole	1,833	20,429	20,429
	Fludioxonil/flutriafol	3	166	166
	Fluopyram/prothioconazole/tebuconazole	1	86	86
	Prochloraz/triticonazole	749	29,010	29,010
	Silthiofam	190	4,919	4,919

Table 11: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for spring wheat 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Spring wheat	Fungicides			
	Azoxystrobin	193	2,011	2,011
	Bixafen	256	3,392	3,306
	Boscalid	959	4,093	4,093
	Chlorothalonil	10,927	22,010	10,396
	Cyprodinil	227	806	806
	Epoxiconazole	867	10,442	8,335
	Fenpropidin	880	1,543	1,543
	Fenpropimorph	1,117	3,375	2,377
	Fluoxastrobin	36	290	290
	Fluxapyroxad	98	1,218	1,218
	Folpet	440	880	880
	Isopyrazam	76	806	806
	Metconazole	41	1,270	1,270
	Metrafenone	82	882	882
	Penthiopyrad	192	1,168	1,168
	Picoxystrobin	58	290	290
	Prochloraz	145	880	880
	Propiconazole	35	553	553
	Proquinazid	165	4,548	4,548
	Prothioconazole	1,183	7,315	6,549
	Pyraclostrobin	216	1,688	1,645
	Spiroxamine	97	362	362
	Tebuconazole	618	5,195	5,195

Table 11 (cont.): Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for spring wheat 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Spring wheat	Herbicides			
	Clopyralid	158	2,215	2,215
	Dicamba	8	303	303
	Dichlorprop-P	92	295	295
	Diflufenican	18	140	140
	Fenoxaprop-P-ethyl	18	457	457
	Florasulam	5	2,215	2,215
	Fluroxypyr	1,252	8,868	8,661
	Glyphosate	5,296	6,282	6,143
	Imazamox	7	130	130
	Isoproturon	725	932	932
	MCPA	47	295	295
	Mecoprop-P	188	748	748
	Metsulfuron-methyl	28	6,385	6,385
	Pendimethalin	330	693	693
	Picolinafen	5	563	563
	Pinoxaden	51	1,695	1,695
	Thifensulfuron-methyl	59	3,992	3,846
	Tribenuron-methyl	49	5,626	5,412
	Insecticides			
	Chlorpyrifos	76	382	382
	Cypermethrin	92	3,828	3,123
	Deltamethrin	3	560	560
	Dimethoate	1,358	4,508	4,508
	Esfenvalerate	7	2,245	2,245
	Garlic Extract	660	880	880
	Lambda-cyhalothrin	33	4,814	4,264
	Growth Regulators			
	Chlormequat chloride	13,212	15,510	8,972
	Ethephon	52	233	233
	Mepiquat chloride	98	233	233
	Trinexapac-ethyl	236	3,534	3,534
	Seed Treatments			
	Carboxin/thiram	885	4,708	4,708
	Fludioxonil	1	161	161
	Prochloraz/triticonazole	91	3,624	3,624

Table 12: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for winter wheat 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Winter wheat	Fungicides			
	Azoxystrobin	2,345	18,397	18,397
	Bixafen	1,625	21,403	19,721
	Boscalid	3,129	11,997	11,442
	Chlorothalonil	70,189	138,714	50,549
	Cyproconazole	13	171	171
	Cyprodinil	22	118	118
	Difenoconazole	321	3,759	3,759
	Epoxiconazole	5,227	63,108	37,974
	Fenpropidin	409	1,073	1,073
	Fenpropimorph	4,790	17,249	13,574
	Fluoxastrobin	58	754	754
	Flusilazole	81	564	282
	Fluxapyroxad	5,100	53,782	38,390
	Folpet	410	710	710
	Iprodione	188	626	626
	Isopyrazam	90	719	601
	Kresoxim-methyl	132	1,299	1,299
	Mancozeb	181	161	161
	Metconazole	2,647	45,108	36,345
	Metrafenone	701	6,134	4,923
	Penthiopyrad	1,850	9,940	9,123
	Picoxystrobin	194	1,822	1,615
	Prochloraz	351	896	896
	Proquinazid	261	9,170	8,625
	Prothioconazole	8,516	66,201	45,072
	Pyraclostrobin	1,147	11,395	11,214
	Spiroxamine	3,349	11,171	10,854
	Tebuconazole	6,422	48,860	37,254
	Thiram	80	201	201
	Trifloxystrobin	34	831	831
	Herbicides			
	2,4-D	178	712	712
	2,4-DB	68	282	282
	Asulam	117	146	146
	Clodinafop-Propargyl	2	176	176
	Clopyralid	286	3,867	3,867
	Cloquintocet-mexyl	0	176	176
	Diflufenican	4,512	40,057	33,543
	Fenoxaprop-P-ethyl	326	5,917	4,253
	Florasulam	34	9,915	9,699
	Flufenacet	482	4,029	4,029

Table 12 (cont.): Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for winter wheat 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Winter wheat	Herbicides (cont.)			
	Flumioxazin	1	33	33
	Fluroxypyr	2,340	15,676	14,789
	Glyphosate	18,347	23,672	20,291
	Imazaquin	4	2,826	2,826
	Iodosulfuron-methyl-sodium	72	24,379	23,561
	Isoproturon	31,521	31,600	28,684
	MCPA	11	282	282
	Mecoprop-P	2,113	3,134	3,134
	Mesosulfuron-methyl	134	13,664	12,846
	Metsulfuron-methyl	6	2,179	2,179
	Pendimethalin	343	346	346
	Picolinafen	8	346	346
	Pinoxaden	309	9,357	9,357
	Prosulfocarb	1,627	1,017	1,017
	Pyroxulam	57	3,367	3,367
	Tepraloxym	9	185	185
	Thifensulfuron-methyl	151	10,297	10,297
	Tribenuron-methyl	109	11,524	10,313
	Triclopyr	31	429	429
	Insecticides			
	Cypermethrin	88	4,029	4,029
	Deltamethrin	9	1,702	1,702
	Dimethoate	9,079	30,791	30,171
	Esfenvalerate	10	2,609	2,609
	Lambda-cyhalothrin	147	31,154	26,459
	Metarhizium anisopliae (BIPESCO 5F/52)	1,714	703	703
	Molluscicides			
	Metaldehyde	829	3,930	3,930
	Growth Regulators			
	Chlormequat chloride	57,826	68,018	44,843
	Ethephon	774	4,167	4,167
	Mepiquat chloride	510	1,509	1,509
	Trinexapac-ethyl	2,349	33,162	26,620
	Seed Treatments			
	Carboxin/thiram	2,269	13,217	13,217
	Clothianidin/prothioconazole	1,251	13,022	13,022
	Fludioxonil	1	161	161
	Prochloraz/triticonazole	476	18,964	18,964
	Silthiofam	219	5,496	5,496

Table 13: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for spring oats 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Spring Oats	Fungicides			
	Azoxystrobin	66	631	631
	Bixafen	13	437	437
	Boscalid	61	525	525
	Chlorothalonil	351	707	689
	Cymoxanil	8	78	78
	Cyproconazole	4	71	71
	Difenoconazole	26	441	441
	Dimethomorph	397	397	397
	Epoxiconazole	685	10,860	6,920
	Fenpropidin	463	1,215	1,134
	Fenpropimorph	6,240	18,337	9,167
	Fluoxastrobin	5	50	50
	Fluxapyroxad	157	2,591	2,591
	Metconazole	21	292	292
	Metrafenone	363	4,228	4,051
	Picoxystrobin	10	71	71
	Proquinazid	130	3,607	2,645
	Prothioconazole	93	976	782
	Pyraclostrobin	1,473	12,469	8,028
	Spiroxamine	73	388	244
	Tebuconazole	300	1,976	1,956

Table 13 (cont.): Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for spring oats 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Spring Oats	Herbicides			
	2,4-DB	398	237	237
	Clopyralid	96	1,454	1,454
	Cycloxydim	8	260	260
	Dicamba	6	88	88
	Dichlorprop-P	101	277	176
	Diflufenican	50	397	397
	Florasulam	3	1,454	1,454
	Fluazifop-P-butyl	32	260	260
	Fluroxypyr	1,200	8,448	7,060
	Glyphosate	3,180	3,583	3,214
	MCPA	341	842	741
	Mecoprop-P	911	1,430	1,330
	Metazachlor	180	360	360
	Metsulfuron-methyl	14	3,276	3,276
	Propaquizafop	78	260	260
	Thifensulfuron-methyl	72	6,441	6,441
	Tribenuron-methyl	91	10,091	10,091
	Insecticides			
	Cypermethrin	58	2,186	2,186
	Deltamethrin	2	306	306
	Dimethoate	184	585	585
	Esfenvalerate	4	836	836
	Lambda-cyhalothrin	17	3,433	3,068
	Growth Regulators			
	Chlormequat chloride	8,855	11,258	8,756
	Mepiquat chloride	15	127	127
	Prohexadione-calcium	3	127	127
	Trinexapac-ethyl	260	5,239	4,714
	Seed Treatments			
	Carboxin/thiram	347	1,908	1,908
	Clothianidin/prothioconazole	112	1,242	1,242
	Fludioxonil	1	162	162
	Prochloraz/triticonazole	129	5,155	5,155

Table 14: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for winter oats 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Winter oats	Fungicides			
	Azoxystrobin	245	1,919	1,710
	Boscalid	82	403	403
	Chlorothalonil	148	297	297
	Cyproconazole	5	86	86
	Epoxiconazole	1,228	16,159	10,003
	Fenpropidin	125	547	547
	Fenpropimorph	11,027	30,239	12,342
	Fluoxastrobin	27	258	258
	Fluxapyroxad	73	1,282	985
	Kresoxim-methyl	234	2,205	1,276
	Metconazole	9	409	409
	Metrafenone	900	9,696	7,141
	Penthiopyrad	14	86	86
	Picoxystrobin	78	650	564
	Proquinazid	206	5,860	5,377
	Prothioconazole	87	735	735
	Pyraclostrobin	1,930	14,527	10,466
	Tebuconazole	678	3,410	3,114

Table 14 (cont.): Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for winter oats 2016.

Crop	Active Substance	Quantity (kg) of Active	Spray area (spha) of Active	Basic area (ha) of Active
		Ingredient Total	Ingredient Total	Ingredient Total
Winter oats	Herbicides			
	Clopyralid	144	2,814	2,126
	Dicamba	4	93	93
	Diflufenican	454	4,175	3,174
	Florasulam	7	3,578	2,890
	Flupyr-sulfuron-methyl	4	157	157
	Fluroxypyr	807	6,893	5,708
	Glyphosate	4,941	5,423	5,256
	Mecoprop-P	731	907	907
	Metsulfuron-methyl	12	2,031	2,031
	Thifensulfuron-methyl	62	5,648	5,648
	Tribenuron-methyl	103	9,389	9,389
	Insecticides			
	Cypermethrin	52	1,619	1,619
	Deltamethrin	1	93	93
	Lambda-cyhalothrin	28	5,737	4,892
	Growth Regulators			
	Chlormequat chloride	18,407	23,506	16,908
	Trinexapac-ethyl	562	11,099	8,355
	Molluscicides			
	Metaldehyde	46	231	231
	Seed Treatments			
	Carboxin/thiram	783	4,515	4,515
	Clothianidin/prothioconazole	116	1,254	1,254
	Prochloraz/triticonazole	153	6,330	6,330

Table 15: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for oilseed rape 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Oilseed rape	Fungicides			
	Azoxystrobin	804	5,284	3,732
	Bixafen	41	714	714
	Boscalid	1,012	4,362	4,362
	Chlorothalonil	96	179	179
	Epoxiconazole	12	93	93
	Metconazole	226	5,088	4,578
	Penthiopyrad	52	401	401
	Picoxystrobin	26	401	401
	Prothioconazole	1,222	10,294	7,026
	Tebuconazole	435	3,252	2,539
	Herbicides			
	Aminopyralid	15	1,433	1,433
	Clopyralid	38	455	455
	Cycloxydim	90	600	600
	Diquat	279	745	745
	Ethametsulfuron-methyl	11	618	618
	Fluazifop-P-butyl	9	140	140
	Glyphosate	12,688	10,417	8,306
	Imazamox	5	93	93
	Metazachlor	4,443	6,278	5,868
	Pendimethalin	82	93	93
	Picloram	5	263	263
	Propaquizafop	294	4,768	4,662
	Propyzamide	2,322	3,245	2,934
	Quinmerac	1,467	6,222	5,811
	Tepraloxydim	26	681	681
	Insecticides			
	Cypermethrin	1	23	23
	Dimethoate	103	323	323
	Lambda-cyhalothrin	39	6,082	4,261
	Molluscicides			
	Metaldehyde	248	1,186	1,139
	Methiocarb	38	392	286
	Seed Treatments			
	Prochloraz/thiram	156	8,960	8,960

Table 16: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for peas and beans 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Peas & beans	Fungicides			
	Azoxystrobin	577	3,816	3,144
	Bixafen	3	117	117
	Boscalid	2,299	12,439	8,479
	Chlorothalonil	6,379	10,115	6,579
	Difenoconazole	52	416	416
	Dimethomorph	4	63	63
	Mancozeb	568	398	398
	Metalaxyl-M	1,839	2,682	2,631
	Prothioconazole	12	117	117
	Pyraclostrobin	589	12,540	8,479
	Tebuconazole	214	1,180	935
	Herbicides			
	Bentazone	32	88	88
	Clomazone	394	6,305	6,305
	Cycloxydim	167	1,167	1,167
	Diquat	13	24	24
	Glyphosate	1,731	1,935	1,535
	Imazamox	489	9,487	9,487
	Linuron	2,305	6,506	6,506
	Metsulfuron-methyl	0.314	63	63
	Pendimethalin	7,828	10,086	10,086
	Propaquizafop	118	1,257	1,257
	Propyzamide	35	44	44
	Prosulfocarb	1,215	419	419
	Thifensulfuron-methyl	2	63	63
	Insecticides			
	Clofentezine	44	221	221
	Cypermethrin	11	343	343
	Deltamethrin	1	128	128
	Esfenvalerate	0.235	63	63
	Lambda-cyhalothrin	33	4,913	4,913
	Pirimicarb	52	378	378
	Molluscicides			
	Metaldehyde	44	222	222
	Seed Treatments			
	Cymoxanil/fludioxonil/metala	22	223	223

Table 17: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for seed potatoes 2016.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of
		Active Ingredient	Active Ingredient	Active Ingredient
		Total	Total	Total
Seed potatoes	Fungicides			
	Benthiavdicarb-isopropyl	0.394	14	14
	Cyazofamid	26	244	237
	Cymoxanil	167	1,735	324
	Fenamidone	6	43	14
	Fluazinam	264	1,445	324
	Fluopicolide	79	793	263
	Mancozeb	1,243	950	310
	Mandipropamid	138	991	299
	Metalaxyl-M	40	34	34
	Propamocarb hydrochloride	870	892	297
	Herbicides			
	Diquat	349	1,135	329
	Glyphosate	66	72	53
	Linuron	132	256	256
	Metribuzin	170	308	308
	Insecticides			
	Acetamiprid	1	14	14
	Dimethoate	90	268	249
	Ethoprophos	73	19	19
	Flonicamid	37	467	237
	Lambda-cyhalothrin	1	80	47
	Pymetrozine	41	272	235
	Thiacloprid	43	450	235
	Molluscicides			
	Metaldehyde	7	40	40
	Methiocarb	0.437	7	7
	Seed Treatments			
	Imazalil	6	213	213
	Imazalil/pencycuron	18	41	41
	Imazalil/thiabendazole	1	11	11

Table 18: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for early potatoes 2016.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Early Potatoes	Fungicides			
	Azoxystrobin	9	36	36
	Benthiavdicarb-isopropyl	8	288	185
	Cyazofamid	24	181	151
	Cymoxanil	187	1,756	746
	Fenamidone	34	244	100
	Fluazinam	220	1,299	439
	Fluopicolide	97	999	556
	Mancozeb	2,622	1,805	784
	Mandipropamid	81	534	354
	Metalaxyl-M	24	21	16
	Propamocarb hydrochloride	1,450	1,561	799
	Herbicides			
	Diflufenican	7	36	36
	Diquat	267	635	431
	Glufosinate-ammonium	2	11	11
	Glyphosate	304	313	313
	Linuron	174	386	386
	Metribuzin	306	673	673
	Pendimethalin	123	93	93
	Propaquizafop	2	17	17
	Prosulfocarb	391	127	127
	Rimsulfuron	0.444	36	36
	Insecticides			
	Lambda-cyhalothrin	2	253	149
	Oxamyl	107	36	36
	Seed Treatments			
	Flutolanil	7	31	31
	Imazalil	5	175	175
	Imazalil/pencycuron	6	17	17

Table 19: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for maincrop potatoes 2016.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of
		Total	Total	Total
Maincrop potatoes	Fungicides			
	Azoxystrobin	259	1,065	904
	Benthiavdicarb-isopropyl	61	2,752	1,547
	Chlorothalonil	64	161	161
	Cyazofamid	1,936	11,412	4,506
	Cymoxanil	2,640	23,908	6,663
	Epoxiconazole	8	90	90
	Fenamidone	314	2,157	833
	Fluazinam	5,202	27,694	7,231
	Fluopicolide	1,471	17,536	7,179
	Fluxapyroxad	8	90	90
	Mancozeb	25,624	17,790	6,021
	Mandipropamid	2,612	18,101	5,570
	Metalaxyl-M	237	212	202
	Propamocarb hydrochloride	17,582	21,219	7,391
	Zoxamide	24	161	161
	Herbicides			
	Carfentrazone-ethyl	41	1,522	1,522
	Clomazone	33	487	487
	Diquat	6,947	18,309	7,585
	Glufosinate-ammonium	37	183	183
	Glyphosate	4,291	4,562	4,562
	Linuron	1,649	2,641	2,641
	Metribuzin	3,775	7,040	6,622
	Pendimethalin	1,039	788	788
	Propaquizafop	41	258	258
	Prosulfocarb	6,083	2,852	2,852
	Rimsulfuron	4	470	470
	Insecticides			
	Dimethoate	286	903	903
	Lambda-cyhalothrin	14	2,430	1,969
	Molluscicides			
	Metaldehyde	553	3,396	2,130
	Seed Treatments			
	Flutolanil	257	1,127	1,127
	Imazalil	56	2,114	2,114
	Imazalil/pencycuron	809	1,463	1,463

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References

Pesticide Control Service, Department of Agriculture and Food Laboratories (2007).
Pesticide Usage Survey, Report Number 2, Arable Crops, 2004.

Pesticide Control Service, Department of Agriculture and Food Laboratories (2015).
Pesticide Usage Survey, Report Number 3, Arable Crops, 2012

