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An Roinn
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Bia agus Mara

Pesticide Usage in Ireland

Grassland
& Fodder Crops
Survey Report 2017

Pesticide Usage in Ireland

GRASSLAND & FODDER CROPS SURVEY REPORT 2017

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Contents

List of tables

List of tables (contd.)

Grassland & fodder crops survey report summary

This is the third survey of pesticide usage on grassland and fodder crops in Ireland carried out by DAFM, providing comparative data to that obtained in the previous survey in 2013.

Information on all aspects of pesticide usage was collected from 530 holdings across Ireland representing 0.71% of the total area of grassland and fodder 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 2017 an estimated 4,661,983 hectares of grassland and fodder crops were grown which represents less than a 1 % decrease compared to total estimated area in 2013. In 2017 an estimated 516,189 kgs of active substance was applied to grassland and fodder crops which represents a 13% decrease in total weight of pesticide applied compared to 2013. When comparing 2013 and 2017 the total pesticide treated area decreased from 465,877 ha to 431,154 ha respectively representing a 7% reduction.

A total of 82 active substances were recorded in use on grassland and fodder crops in the survey compared to 78 in 2013.

Herbicides were applied to 89% of the pesticide-treated area, representing 96% of the total weight of pesticides used. Fungicides were applied to 7% of the pesticide-treated area, accounting for 3% of the total weight of pesticides used. Insecticides were applied to 1% of the pesticide treated area, representing less than 1% 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 less than 1% of the pesticide-treated area and less than 1% of the weight of active substance applied. Seed treatments were applied to 3% of the pesticide-treated area, representing 1% of the weight of active substances applied.

Permanent grassland comprised 57% of the area of grassland and fodder crops in Ireland 2017, accounting for 35% of the total pesticide treated area and 40% of the total weight of pesticides used on all grassland and fodder crops.

Grass silage 1st cut comprised 22% of the area of grassland and fodder crops in Ireland 2017, accounting for 17% of the total pesticide treated area and 14% of the total weight of pesticides used on all grassland and fodder crops in 2017.

Grass reseed comprised 2% of the area of grassland and fodder crops in Ireland 2017, accounting for 14% of the total pesticide treated area and 22% of the total weight of pesticides used on all grassland and fodder crops.

Fodder beet compromised less than 1% of the area of grassland and fodder crops grown in Ireland in 2017, accounting for 12% of the total pesticide-treated area and 8% of the total weight of pesticides used on grassland and fodder crops.

Arable silage comprised less than 1% of the area of grassland and fodder crops in 2017, accounting for 10% of the total pesticide-treated area and 8% of the total weight of pesticides.

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 amount 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 grassland and fodder 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 grassland and fodder 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 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 530 holdings were contacted during the period June to August 2018 and data collected by phone interview for grassland and fodder crops grown and harvested in 2017. The data collected included; the area of crops grown, area treated, target crop, pesticide used, application rates 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 sampled in each size group is 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 farms sampled from each size group.

Region	<10 ha Holdings sampled	10<20 ha Holdings sampled	20<30 ha Holdings sampled	30<50 ha Holdings sampled	50<100 ha Holdings sampled	>100 ha Holdings sampled	Total Holdings sampled
East	15	16	12	31	26	14	114
South	15	12	26	49	68	28	198
North/West	9	29	39	59	56	26	218
Ireland	***39***	***57***	***77***	***139***	***150***	***68***	***530***

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.
- ‘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)).
- ‘Seed treatments’; are defined as PPPs applied to seeds to provide protection and improve the establishment of healthy crops.
- ‘Arable silage’; is defined as arable crops particularly cereals, which has been ensiled whole and has not been combined for grain.
- ‘Rough grazing’; is defined as land containing semi natural vegetation including heathland, heather moorland, bog and rough grassland suitable only for use as grazing.
- ‘Spray applications’; refers to the number of treatments of any pesticide type to the treated areas.
- No applications of pesticides to 3rd cut grass silage were noted during the survey.

Crops

Information was collected for permanent grassland, grass silage (1st, 2nd & 3rd cuts), rough grazing, arable silage, grass reseed, fodder maize, fodder beet, hay & haylage , fodder turnip & fodder swedes and fodder kale & fodder rape.

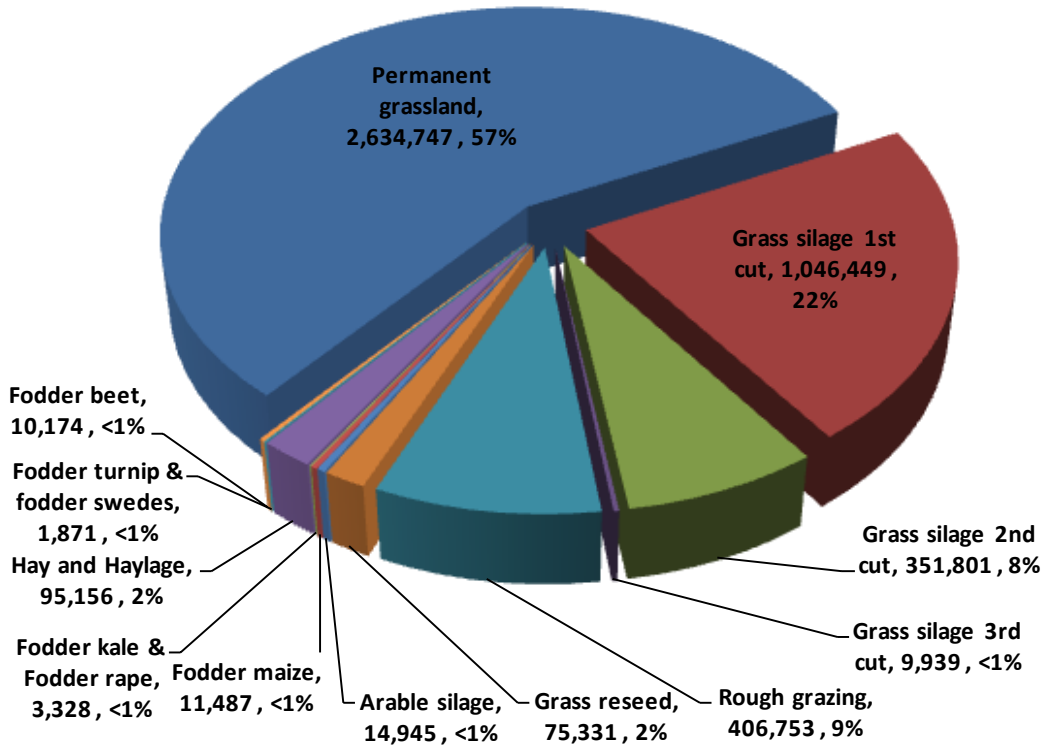
The number and areas of crops surveyed are shown in Table C. Data from 530 farms provided information on 1585 examples of 12 crop types. The total area of crops sampled in the survey (33,187 ha) was representative of the area of grassland and fodder crops grown in Ireland in 2017 (4,661,983 ha).

Table C: The total number and area (hectares) of crops sampled, estimated total area and the proportion (%) of the total area of grassland and fodder crops surveyed in Ireland, 2017.

Crop	Number of crops surveyed	Survey area (ha)	Estimated area (ha)	Proportion of crops surveyed (%)
Permanent grassland	574	17,452	2,634,747	0.66%
Grass silage 1st cut	404	6,633	1,046,449	0.63%
Grass silage 2nd cut	178	2,446	351,801	0.70%
Grass silage 3rd cut	7	107	9,939	1.08%
Rough grazing	80	3,711	406,753	0.91%
Grass reseed	85	570	75,331	0.76%
Arable silage	61	675	14,945	4.52%
Fodder maize	46	656	11,487	5.71%
Fodder Kale & Fodder Rape	10	97	3,328	2.92%
Hay and Haylage	99	487	95,156	0.51%
Fodder Turnip & Fodder swedes	9	47	1,871	2.50%
Fodder beet	32	307	10,174	3.02%
Total	***1,585***	***33,187***	***4,661,983***	***0.71%***

Permanent grassland covered an estimated 57% of the total area of grassland and fodder crops in 2017. Grass silage 1st and 2nd cuts accounted for 22% and 8% of the area of grassland and fodder crops in 2017 respectively. Grass reseed and rough grazing accounted for 2% and 9% of the total area of grassland and fodder crops in 2017 respectively. Hay and haylage accounted for 2% of the total area of grassland and fodder crops in 2017. Fodder maize and fodder beet each accounted for <1% of the total area of grassland and fodder crops in 2017.

Figure 1: Areas of individual grassland and fodder crops grown in Ireland (ha), 2017.



Regional distribution of crops

The North/West region had the largest area of grassland and forage crops during 2017, accounting for 44% of the area of grassland and fodder crops grown and 27% of the total pesticide-treated area. Overall, 33% of the weight of herbicides, 31% of the weight of fungicides, 50% of the weight of growth regulators and 1% of the weight of seed treatments were applied to grassland and fodder crops in this region.

The South region accounted for 40% of the total area of grassland and fodder crops grown and 48% of the total pesticide-treated area. Overall 46% of the weight of herbicides, 45% of the weight of fungicides, 49% of the weight of insecticides, 19% of the weight of molluscicides, 50% of the weight of growth regulators and 87% of the weight of seed treatments were applied to grassland and fodder crops in this region.

The East region accounted for 16% of the total grassland and fodder crop area and 25% of the pesticide treated area. Overall, 21% of the weight of herbicides, 24% of the weight of fungicides, 49% of the weight of insecticides, 81% of the weight of molluscicides and 11% of the weight of seed treatments were applied to grassland and fodder crops in this region.

Figure 2: Regional distribution (ha) of grassland and fodder crops grown in Ireland, 2017.

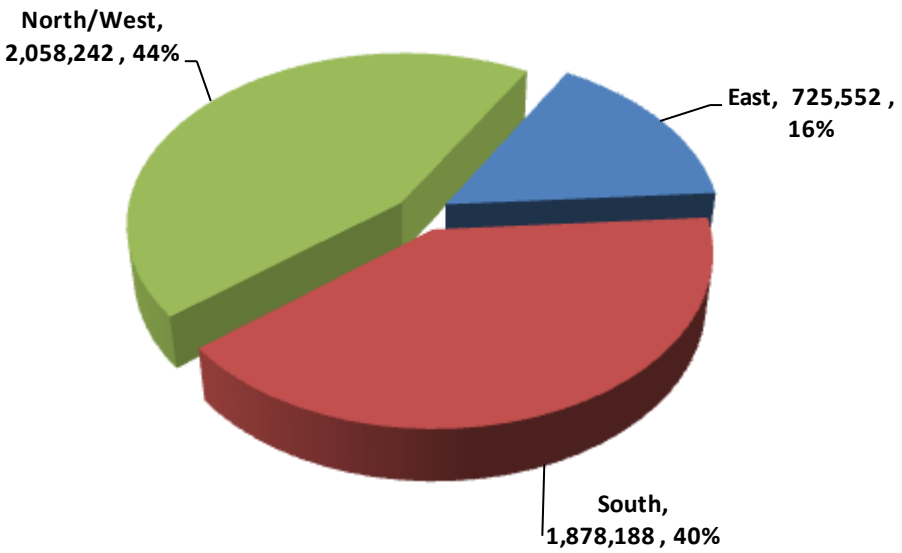


Figure 3: Regional distribution (ha) of individual grassland and fodder crops grown in Ireland, 2017.

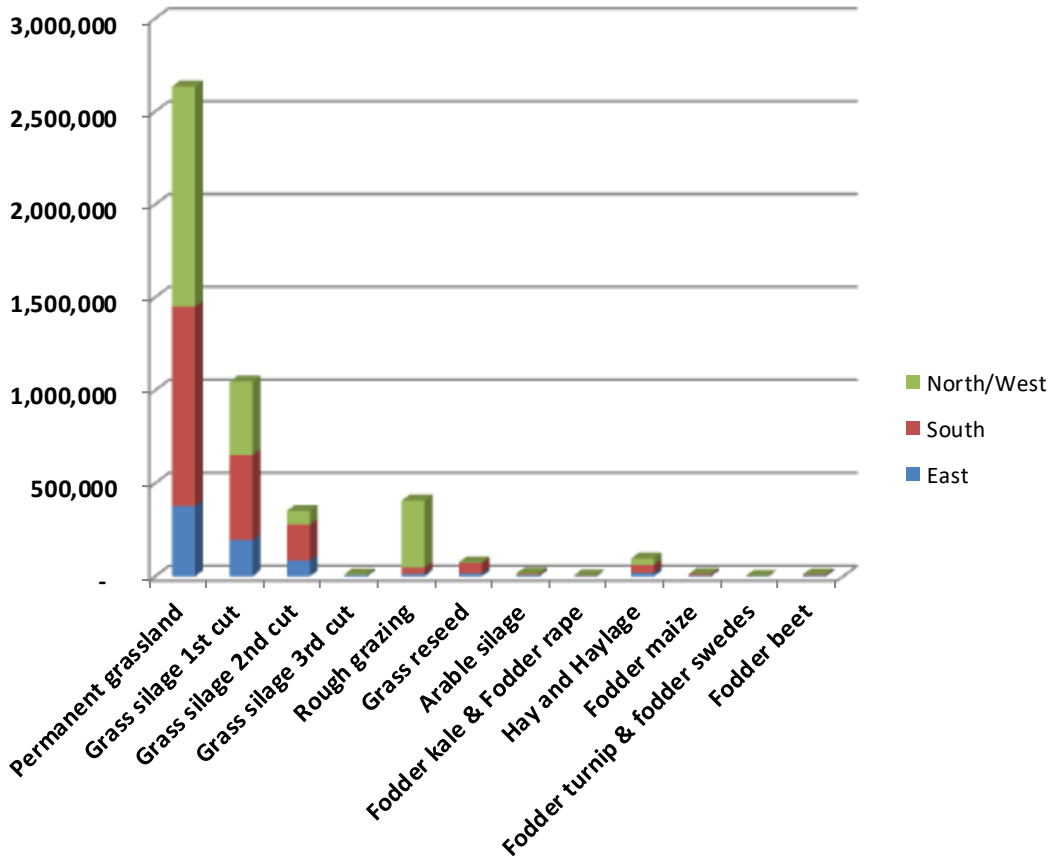


Figure 4: Regional distribution (ha) of all grassland crops grown in Ireland, 2017.

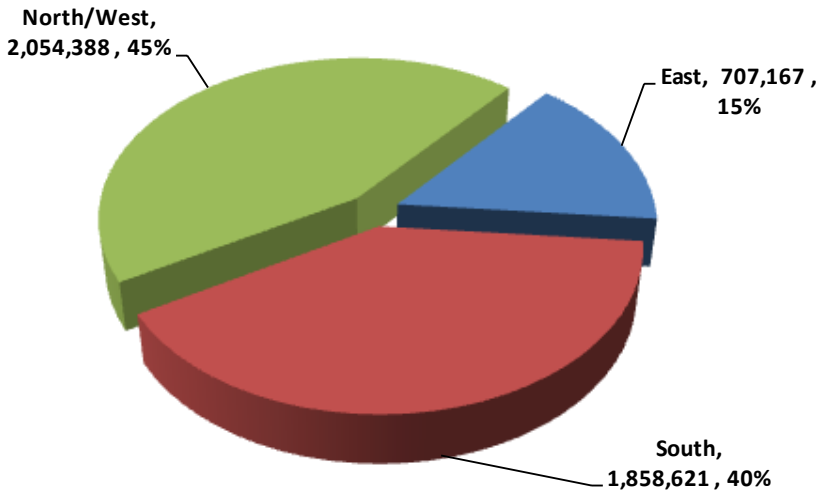
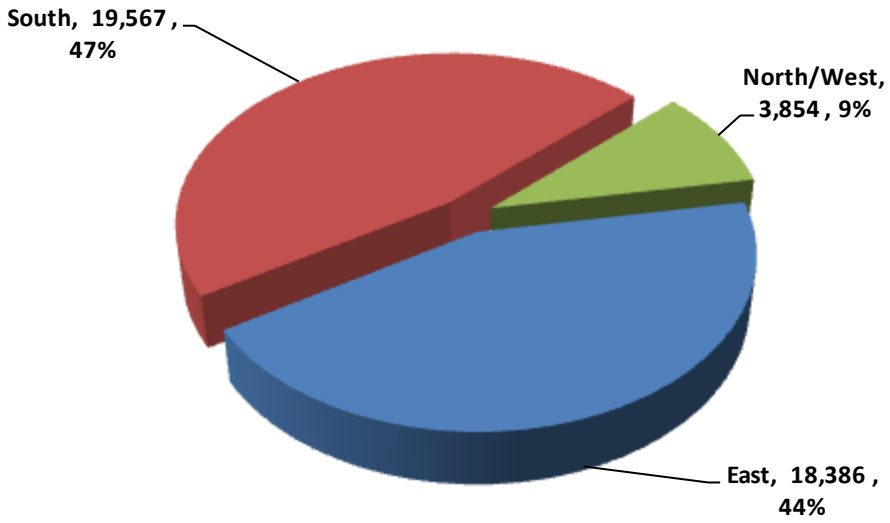


Figure 5: Regional distribution (ha) of fodder crops grown in Ireland, 2017.



Pesticide usage

Herbicides were applied to 89% of the pesticide-treated area accounting for 96% of the total weight of pesticides used. Fungicides were applied to 7% of the pesticide-treated area and accounted for 3% of the total weight of pesticides used. Insecticides were applied to 1% of the pesticide treated area of grassland and fodder crops, accounting for less than 1% 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. The use of growth regulators accounted for less than 1% of the pesticide-treated area and less than 1% of the weight of active substance applied. Seed treatment usage accounted for 3% of the pesticide-treated area, representing 1% of the weight of active substances applied.

Figure 6: Pesticide usage (spha) on grassland and fodder crops treated in Ireland, 2017

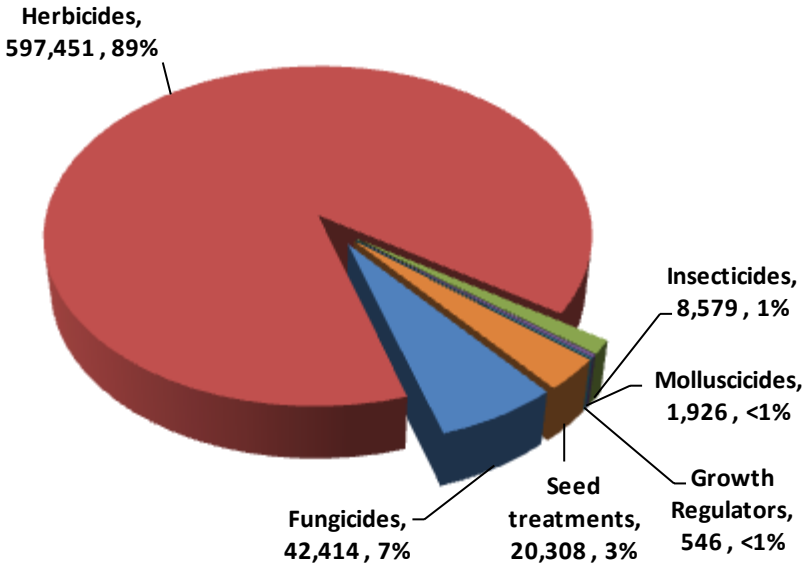
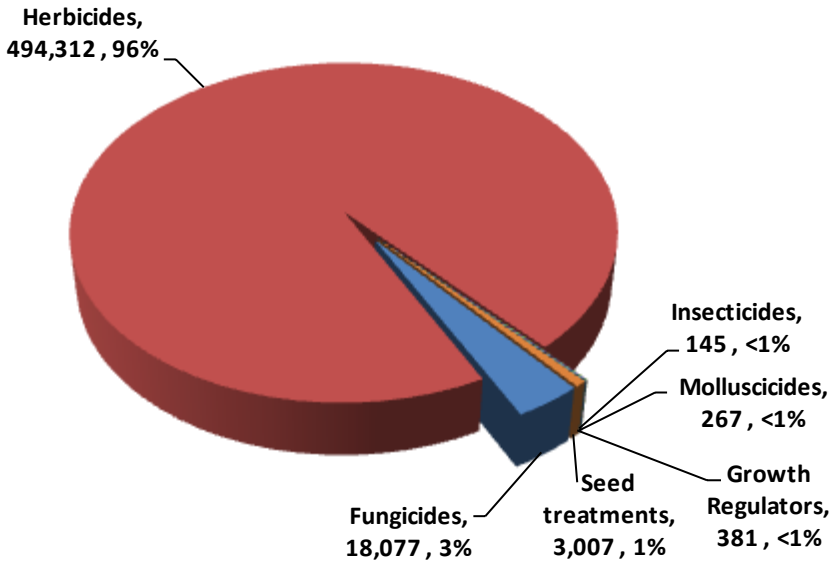


Figure 7: Weight (kgs) of pesticides applied to grassland and fodder crops treated in Ireland, 2017.



The use of herbicide on grassland crops accounted for 100% of the grassland pesticide treated area and 100% of the total weight of pesticides applied to grassland crops.

Figure 8: Pesticide usage (spha) on grassland crops treated in Ireland, 2017.

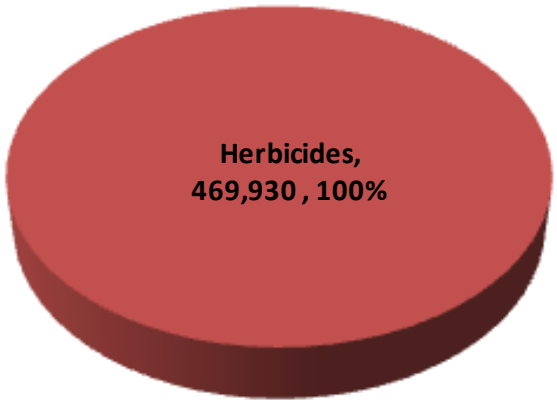
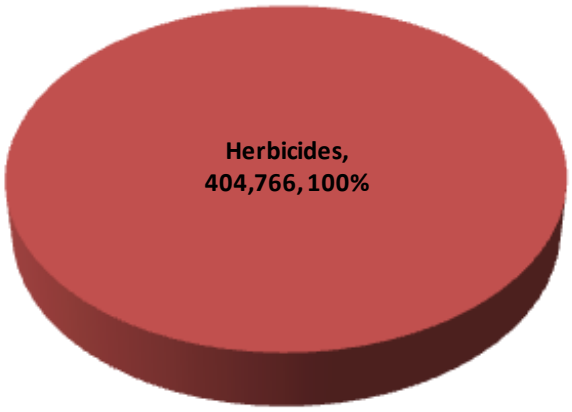


Figure 9: Weight (kgs) of pesticides applied to grassland crops treated in Ireland, 2017.



The use of herbicide on fodder crops accounted for 64% of the fodder crop treated area and 81% of the total weight of pesticides applied to fodder crops. The use of fungicides on fodder crops accounted for 21% of the fodder crop pesticide treated area and 16% of the total weight of pesticides applied to fodder crops. Seed treatments on fodder crops accounted for 10% of the pesticide treated area and 3% of the total weight of pesticides applied to fodder crops. The use of molluscicides on

fodder crops accounted for 1% of the pesticide treated area and less than 1% of the total weight of pesticides applied to fodder crops.

Figure 10: Pesticide usage (spha) on fodder crops grown in Ireland, 2017.

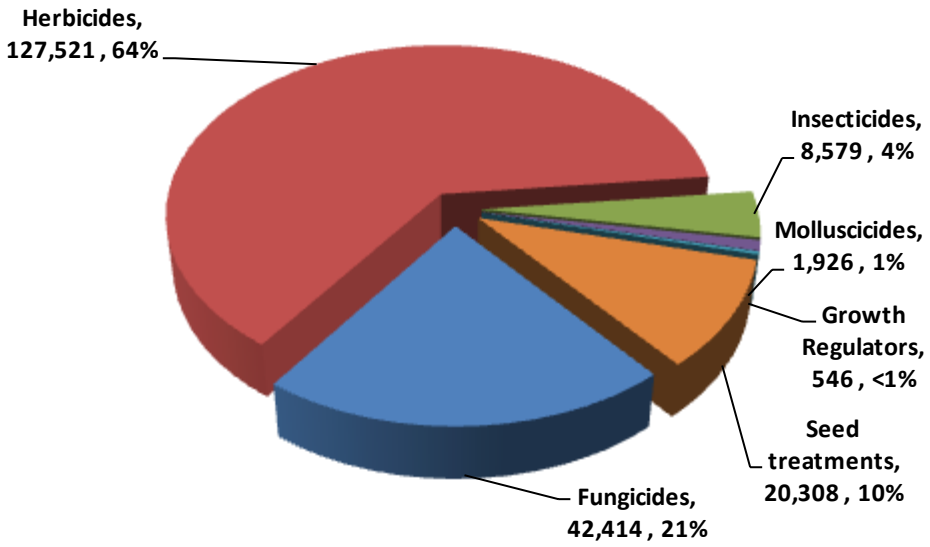
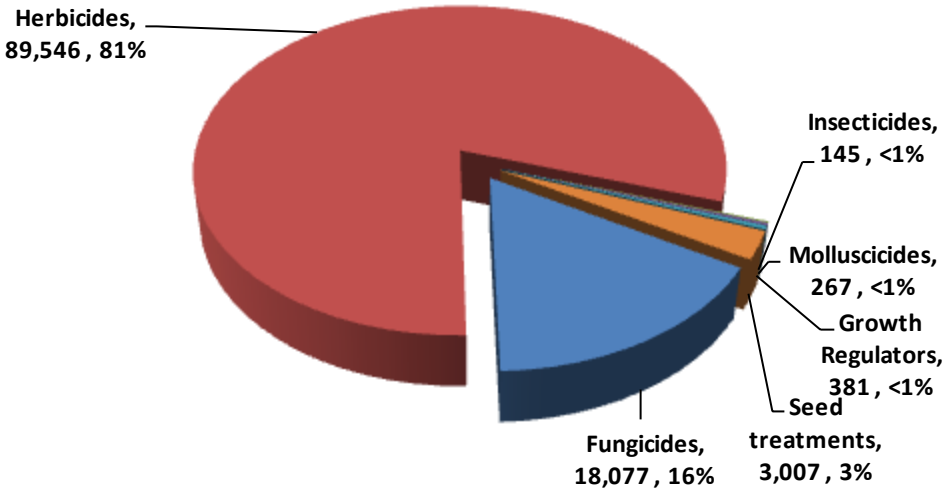


Figure 11: Weight of pesticides (kg) applied to fodder crops grown in Ireland, 2017.



Grassland & fodder crop areas 2013-2017

The largest proportional change in crop areas when comparing 2013 with 2017 data is fodder turnips and swedes where the area has increased from 645 ha to 1,871 ha. The second largest increase is in arable silage where the area has increased from 9,751 ha to 14,945 ha. Grass area has slightly decreased from 4,660,903 ha to 4,620,176 ha. Fodder maize as well as fodder kale rape witnessed a reduction in areas grown of 20% and 6% respectively when compared to 2013 areas. Details of changes in crop areas between 2013 and 2017 are outlined in Table D below.

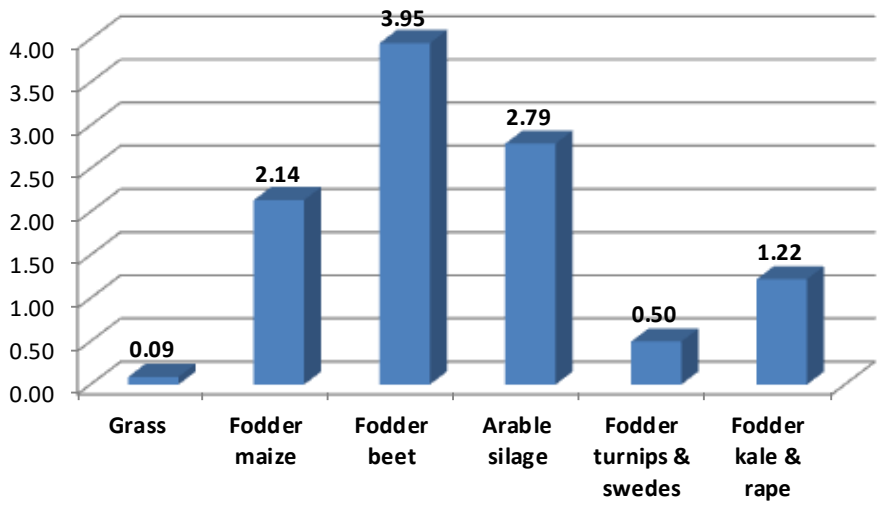
Table D: Grassland and fodder crops areas (ha) for surveys in 2013 and 2017 and percentage (%) change in areas grown.

	Ha grown		
Crop	2013	2017	% change
Grass	4,660,903	4,620,176	-1
Fodder maize	14,414	11,487	-20
Fodder beet	9,207	10,174	11
Arable silage	9,751	14,945	53
Fodder turnips & swedes	645	1,871	190
Fodder kale & rape	3,530	3,328	-6
All crops	4,698,451	4,661,983	-1

Quantity of pesticide applied per crop, 2013-2017

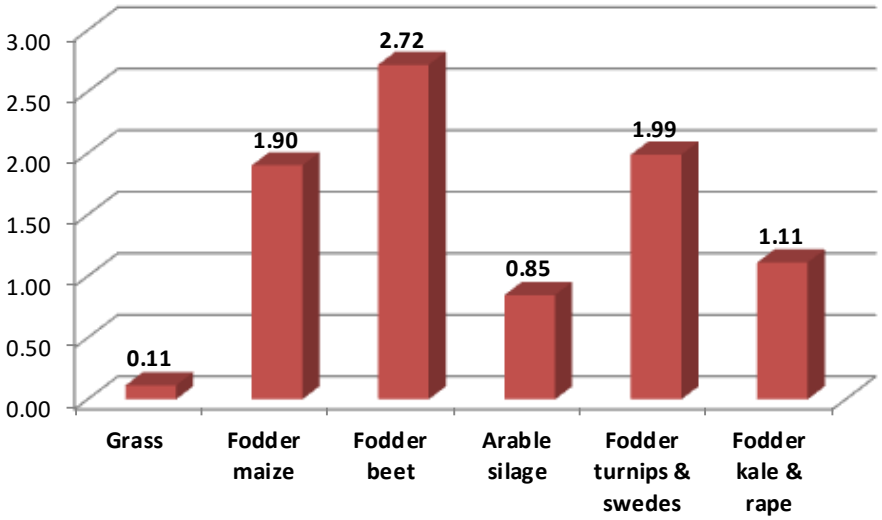
The average weight of pesticide applied per hectare of crop grown for each crop in 2017 is provided in Figure 12. Average weights were calculated as the total weight of pesticides applied divided by the total area of crop grown (whether treated or untreated).

Figure 12: Average weight of pesticides applied per hectare of crop grown in Ireland (kg/ha), 2017.



The highest weight of pesticides applied per hectare was on fodder beet (3.95kg/ha). Arable silage had the next highest levels of pesticide use (2.79kg/ha) followed by fodder maize (2.14kg/ha). The average weight of pesticide applied per hectare of crop grown as per 2013 survey is provided in Figure 13.

Figure 13: Average weight of pesticides applied per hectare of crop grown in Ireland (kg/ha), 2013.



The quantity of pesticides applied to fodder beet increased from 2.72 kgs/ha (2013) to 3.95 kg/ha (2017). In addition the quantity of pesticides applied to arable silage

crops has increased from 0.85 kgs/ha (2013) to 2.79 kg/ha (2017). The quantity of pesticides applied to fodder turnips & fodder swedes has decreased from 1.99 kg/ha (2013) to 0.50 kg/ha (2017).

Pesticide applied on crop growing area, 2013-2017.

The average weight of pesticide applied per hectare of crop grown for 2013 and 2017 including percentage change is provided.

Grass

Overall there was a 23% reduction in the quantities (kg/ha) of pesticides applied to all grass crops when comparing 2013 and 2017. This reduction is mostly attributable to a reduction in herbicides being applied. No applications of fungicides, seed treatments, molluscicides, insecticides and growth regulators to grassland were noted during the survey.

Figure 14: Quantity of pesticide type (kg/ha) and percentage change (%) for grass for surveys in 2013 and 2017.

	Kg/ha on area grown		
Pesticide type	2013	2017	% change
Fungicides			
Herbicides (incl. spot tr)	0.11	0.09	-23
Insecticides	0.00	0.00	0
Molluscicides	0.00001	0.00	-100
Growth Regulators			
Seed treatments			
All pesticides	0.11	0.09	-23

Fodder crops

Quantities (kg/ha) of insecticides, molluscicides and growth regulators decreased by 66%, 79% and 44% respectively when comparing 2013 and 2017. Quantities (kg/ha) of fungicides, herbicides & seed treatments increased by 241%, 42% and 20% respectively when comparing 2013 and 2017.

Figure 15: Quantity of pesticide type (kg/ha) and percentage change (%) for fodder crops for surveys in 2013 and 2017.

	Kg/ha on area grown		
Pesticide type	2013	2017	% change
Fungicides	0.13	0.43	241
Herbicides	1.51	2.14	42
Insecticides	0.01	0.0035	-66
Molluscicides	0.03	0.01	-79
Growth Regulators	0.02	0.01	-44
Seed treatments	0.06	0.07	20
All pesticides	1.76	2.67	52

Pesticide usage survey results 2017

Pesticide usage on permanent grassland

2,634,747 ha of permanent grassland in Ireland.

232,257 treated hectares (spha).

206,761 kilogrammes applied (100% herbicides)

Figure 16: The top 10 active ingredients most extensively used on permanent grassland in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
MCPA	75,719	74,145	94,587
Fluroxypyr	59,050	55,163	12,877
Triclopyr	56,229	52,740	15,288
Glyphosate	35,486	35,486	38,111
Clopyralid	27,330	27,330	3,226
Aminopyralid	21,143	21,143	1,284
2,4-D	19,733	19,733	24,071
Mecoprop-P	12,728	12,728	7,561
Dicamba	10,774	10,774	1,294
Amidosulfuron	3,884	3,884	159

Figure 17: The top 10 active ingredients most extensively used on permanent grassland in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
MCPA	94,587	75,719	74,145
Glyphosate	38,111	35,486	35,486
2,4-D	24,071	19,733	19,733
Triclopyr	15,288	56,229	52,740
Fluroxypyr	12,877	59,050	55,163
2,4-DB	8,244	3,545	3,545
Mecoprop-P	7,561	12,728	12,728
Clopyralid	3,226	27,330	27,330
Dicamba	1,294	10,774	10,774
Aminopyralid	1,284	21,143	21,143

Pesticide usage on grass silage 1st cut

1,046,449 ha of grass silage 1st cut in Ireland.

115,131 treated hectares.

69,986 kilogrammes applied (100% herbicides).

Figure 18: The top 10 active ingredients most extensively used on grass silage 1st cut in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Triclopyr	60,415	54,814	16,001
Fluroxypyr	58,905	56,969	14,182
MCPA	19,911	18,242	21,562
Aminopyralid	17,062	17,062	971
Clopyralid	13,435	13,435	1,905
2,4-D	6,463	6,463	8,691
Glyphosate	3,448	3,448	3,168
Mecoprop-P	2,920	2,920	1,585
Dicamba	1,953	1,953	198
Florasulam	1,050	1,050	4

Figure 19: The top 10 active ingredients most extensively used on grass silage 1st cut in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
MCPA	21,562	19,911	18,242
Triclopyr	16,001	60,415	54,814
Fluroxypyr	14,182	58,905	56,969
2,4-D	8,691	6,463	6,463
Glyphosate	3,168	3,448	3,448
Clopyralid	1,905	13,435	13,435
2,4-DB	1,693	968	968
Mecoprop-P	1,585	2,920	2,920
Aminopyralid	971	17,062	17,062
Dicamba	198	1,953	1,953

Pesticide usage on grass silage 2nd cut

351,801 ha of grass silage 2nd cut in Ireland.

16,867 treated hectares.

6,633 kilogrammes applied (100% herbicides).

Figure 20: The top 9 active ingredients most extensively used on grass silage 2nd cut in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Fluroxypyr	12,621	12,621	3,023
Clopyralid	5,895	5,895	471
Triclopyr	5,439	5,439	1,703
Florasulam	5,410	5,410	14
Aminopyralid	1,478	1,478	89
Amidosulfuron	1,122	1,122	37
MCPA	730	730	1,095
2,4-D	472	472	142
Dicamba	472	472	60

Figure 21: The top 9 active ingredients most extensively used on grass silage 2nd cut in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Fluroxypyr	3,023	12,621	12,621
Triclopyr	1,703	5,439	5,439
MCPA	1,095	730	730
Clopyralid	471	5,895	5,895
2,4-D	142	472	472
Aminopyralid	89	1,478	1,478
Dicamba	60	472	472
Amidosulfuron	37	1,122	1,122
Florasulam	14	5,410	5,410

Pesticide usage on rough grazing

406,753 ha of rough grazing in Ireland.

5,541 treated hectares.

5,396 kilogrammes applied (100% herbicides).

Figure 22: The top 5 active ingredients most extensively used on rough grazing in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
MCPA	3,207	3,207	3,587
Glyphosate	1,576	1,576	1,399
Clopyralid	672	672	126
Triclopyr	672	672	141
2,4-D	87	87	143

Figure 23: The top 5 active ingredients most extensively used on rough grazing in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
MCPA	3,587	3,207	3,207
Glyphosate	1,399	1,576	1,576
2,4-D	143	87	87
Triclopyr	141	672	672
Clopyralid	126	672	672

Pesticide usage on grass reseed.

75,331 ha of grass reseed in Ireland.

97,001 treated hectares.

113,801 kilogrammes applied.

Figure 24: The top 10 active ingredients most extensively used on grass reseed in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Glyphosate	52,416	52,416	64,939
2,4-DB	29,122	28,220	37,613
MCPA	26,106	25,977	5,472
Fluroxypyr	9,715	9,715	2,123
Mecoprop-P	5,905	5,905	2,311
Clopyralid	2,813	2,813	400
Dicamba	2,588	2,588	241
Linuron	1,935	1,935	203
Triclopyr	1,766	1,766	427
Amidosulfuron	1,547	1,547	58

Figure 25: The top 10 active ingredients most extensively used on grass reseed in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Glyphosate	64,939	52,416	52,416
2,4-DB	37,613	29,122	28,220
MCPA	5,472	26,106	25,977
Mecoprop-P	2,311	5,905	5,905
Fluroxypyr	2,123	9,715	9,715
Triclopyr	427	1,766	1,766
Clopyralid	400	2,813	2,813
Dicamba	241	2,588	2,588
Linuron	203	1,935	1,935
Amidosulfuron	58	1,547	1,547

Pesticide usage on hay and haylage.

95,156 ha of hay and haylage grown in Ireland.

3,133 treated hectares.

2,189 kilogrammes applied (100% herbicides).

Figure 26: The top 7 active ingredients most extensively used on hay & haylage in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Amidosulfuron	983	983	44
Mecoprop-P	820	820	1,230
Triclopyr	600	600	190
MCPA	474	474	628
Clopyralid	362	362	29
Fluroxypyr	296	296	56
Aminopyralid	237	237	11

Figure 27: The top 7 active ingredients most extensively used on hay & haylage in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Mecoprop-P	1230	820	820
MCPA	628	474	474
Triclopyr	190	600	600
Fluroxypyr	56	296	296
Amidosulfuron	44	983	983
Clopyralid	29	362	362
Aminopyralid	11	237	237

Pesticide usage on arable silage.

14,945 ha of arable silage grown in Ireland.

69,619 treated hectares.

41,692 kilogrammes applied.

Figure 28: Pesticide usage (spha) on arable silage crops in Ireland, 2017.

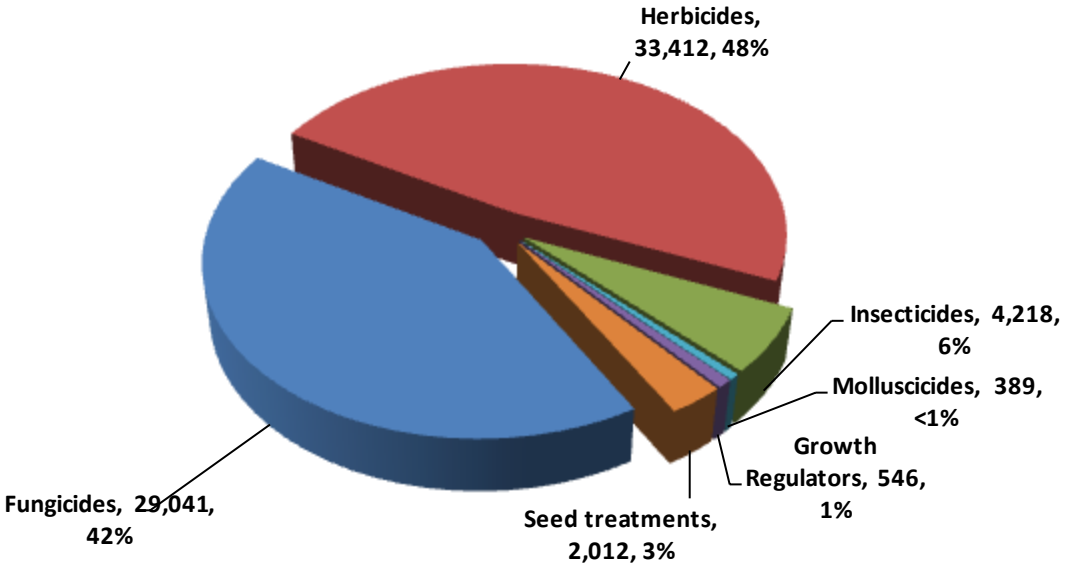


Figure 29: Weight of pesticides (kg) applied to arable silage crops in Ireland, 2017.

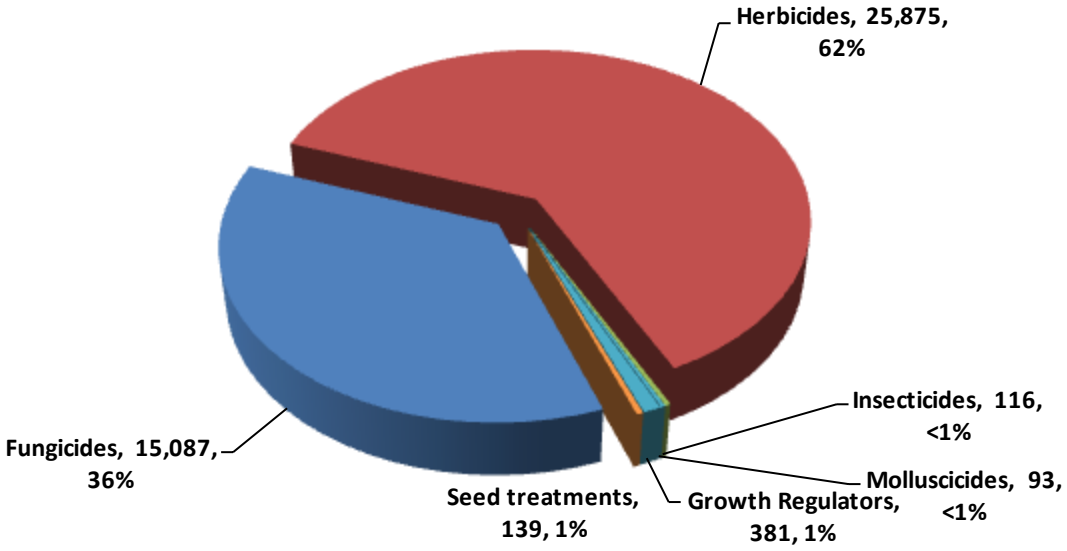


Figure 30: The top 10 active ingredients most extensively used on arable silage in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Chlorothalonil	10,927	7,198	8,959
Pendimethalin	10,723	10,723	8,451
Imazamox	10,235	10,235	531
Pyraclostrobin	8,813	6,041	416
Boscalid	8,466	5,770	1,480
Linuron	8,037	8,037	3,171
Clomazone	7,648	7,648	539
Glyphosate	6,110	5,549	6,613
Metalaxyl-M	3,964	3,703	3,010
Lambda-cyhalothrin	3,687	3,366	27

Figure 31: The top 10 active ingredients most extensively used on arable silage in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Chlorothalonil	8,959	10,927	7,198
Pendimethalin	8,451	10,723	10,723
Glyphosate	6,613	6,110	5,549
Prosulfocarb	3,544	1,371	1,371
Linuron	3,171	8,037	8,037
Metalaxyl-M	3,010	3,964	3,703
Boscalid	1,480	8,466	5,770
Bentazone	805	1,205	884
2,4-DB	605	408	408
Clomazone	539	7,648	7,648

Pesticide usage on fodder maize.

11,487 ha of fodder maize grown in Ireland.

34,218 treated hectares.

24,532 kilogrammes applied.

Figure 32: Pesticide usage (spha) on fodder maize crops in Ireland, 2017.

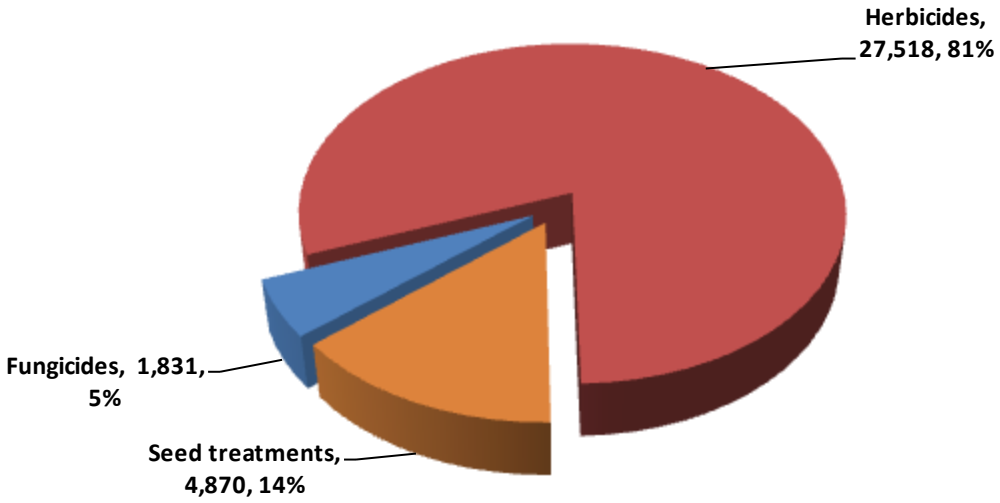


Figure 33: Weight of pesticides (kg) applied to fodder maize crops in Ireland, 2017.

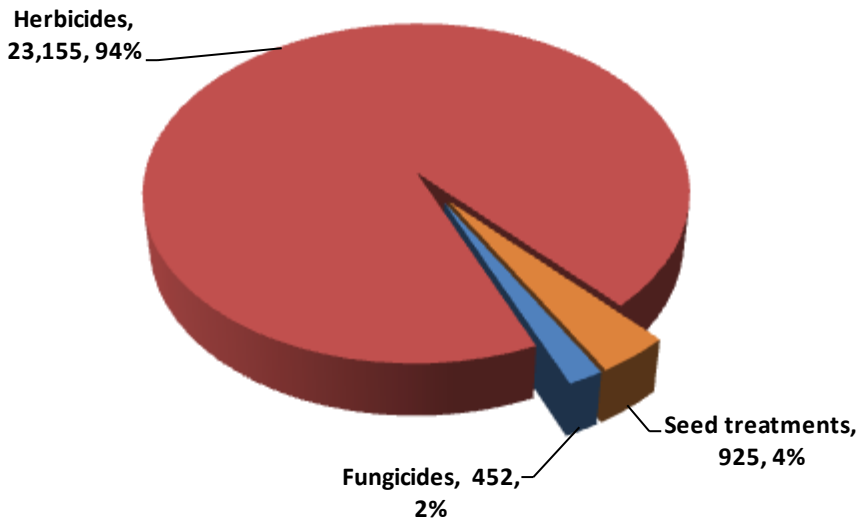


Figure 34: The top 10 active ingredients most extensively used on fodder maize in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Pendimethalin	13,081	9,402	13,147
Mesotrione	9,686	8,842	901
Terbuthylazine	9,686	8,842	4,249
Methiocarb	4,870	4,870	925
Dimethenamid-P	2,530	2,530	1,832
Glyphosate	2,398	2,131	2,750
Epoxiconazole	1,831	1,633	124
Pyraclostrobin	1,831	1,633	329
Nicosulfuron	1,314	1,314	29
Fluroxypyr	522	522	137

Figure 35: The top 10 active ingredients most extensively used on fodder maize in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pendimethalin	13,147	13,081	9,402
Terbuthylazine	4,249	9,686	8,842
Glyphosate	2,750	2,398	2,131
Dimethenamid-P	1,832	2,530	2,530
Methiocarb	925	4,870	4,870
Mesotrione	901	9,686	8,842
Pyraclostrobin	329	1,831	1,633
Fluroxypyr	137	522	522
Epoxiconazole	124	1,831	1,633
Flurtamone	46	182	182

Pesticide usage on Fodder Beet.

10,174 ha of fodder beet grown in Ireland.

82,029 treated hectares.

40,209 kilogrammes applied.

Figure 36: Pesticide usage (spha) on fodder beet crops in Ireland, 2017.

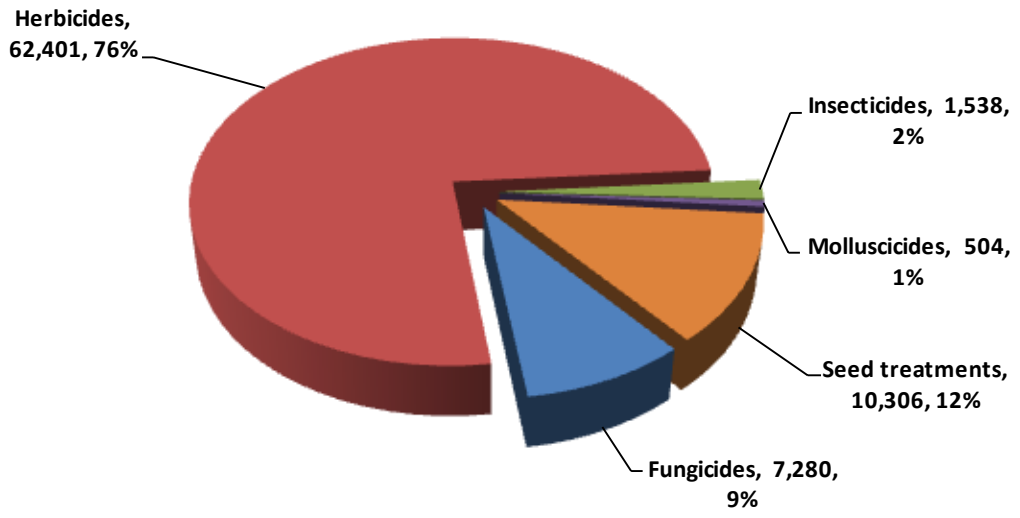


Figure 37: Weight of pesticides (kg) applied to fodder beet crops in Ireland, 2017.

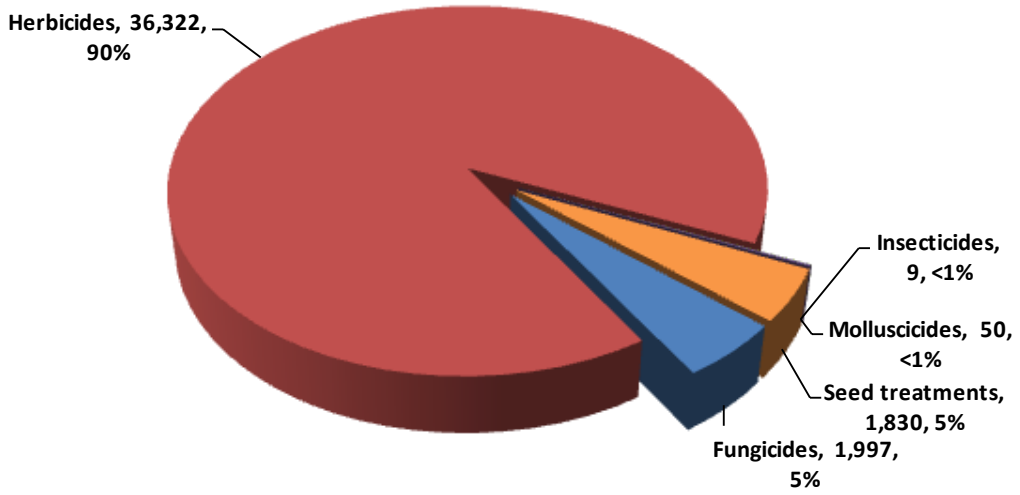


Figure 38: The top 10 active ingredients most extensively used on fodder beet in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Phenmedipham	18,902	9,198	3,571
Lenacil	16,759	8,365	3,042
Ethofumesate	16,496	8,395	3,122
Metamitron	13,572	8,697	20,517
Desmedipham	12,812	7,046	735
Triflusulfuron-methyl	9,262	6,703	162
Tefluthrin	6,659	6,659	12
Propaquizafop	3,455	3,455	331
Epoxiconazole	3,425	3,425	190
Thiram	3,143	3,143	126

Figure 39: The top 10 active ingredients most extensively used on fodder beet in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metamitron	20,517	13,572	8,697
Phenmedipham	3,571	18,902	9,198
Glyphosate	3,558	3,039	3,039
Ethofumesate	3,122	16,496	8,395
Lenacil	3,042	16,759	8,365
Imidacloprid	1,693	504	504
Desmedipham	735	12,812	7,046
Chloridazon	563	1,118	761
Pyraclostrobin	444	3,093	3,093
Fluazifop-P-butyl	424	1,312	999

Pesticide usage on fodder kale & fodder rape.

3,328 ha of other fodder crops grown in Ireland.

11,927 treated hectares.

4,061 kilogrammes applied.

Figure 40: Pesticide usage (spha) on fodder kale & fodder rape crops in Ireland, 2017.

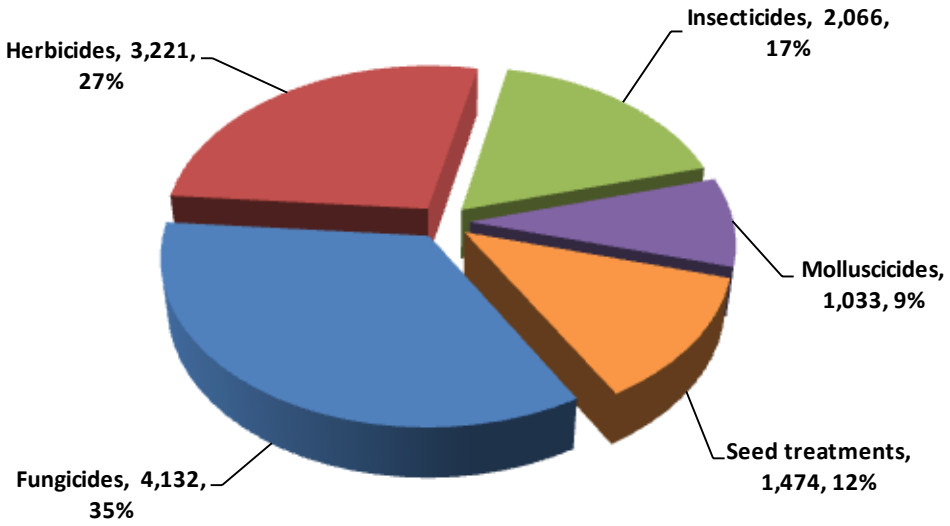


Figure 41: Weight of pesticides (kg) applied to fodder kale & fodder rape crops in Ireland, 2017.

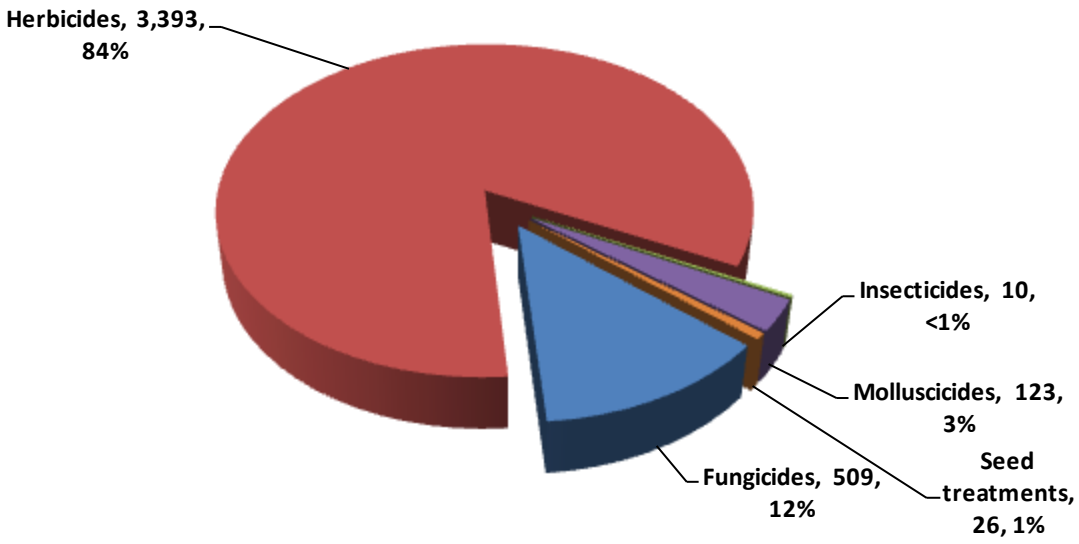


Figure 42: The top 9 active ingredients most extensively used on fodder kale & fodder rape crops in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Glyphosate	2,188	2,188	3,264
Lambda-cyhalothrin	2,066	1,033	10
Prochloraz/thiram	1.474	1.474	26
Azoxystrobin	1,033	1,033	194
Metconazole	1,033	1,033	31
Prothioconazole	1,033	1,033	155
Tebuconazole	1,033	1,033	129
Propaquizafop	1,033	1,033	129
Ferric phosphate	1,033	1,033	123

Figure 43: The top 9 active ingredients most extensively used on fodder kale & fodder rape crops in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Glyphosate	3,264	2,188	2,188
Azoxystrobin	194	1,033	1,033
Prothioconazole	155	1.033	1.033
Tebuconazole	129	1,033	1,033
Propaquizafop	129	1,033	1,033
Ferric phosphate	123	1,033	1,033
Metconazole	31	1,033	1,033
Prochloraz/thiram	26	1,474	1,474
Lambda-cyhalothrin	10	2,066	1,033

Pesticide usage on fodder turnips & fodder swedes.

1,871 ha of fodder turnips and fodder swedes grown in Ireland.

3,500 treated hectares.

928 kilogrammes applied.

Figure 44: Pesticide usage (spha) on fodder turnip & fodder swede crops in Ireland, 2017.

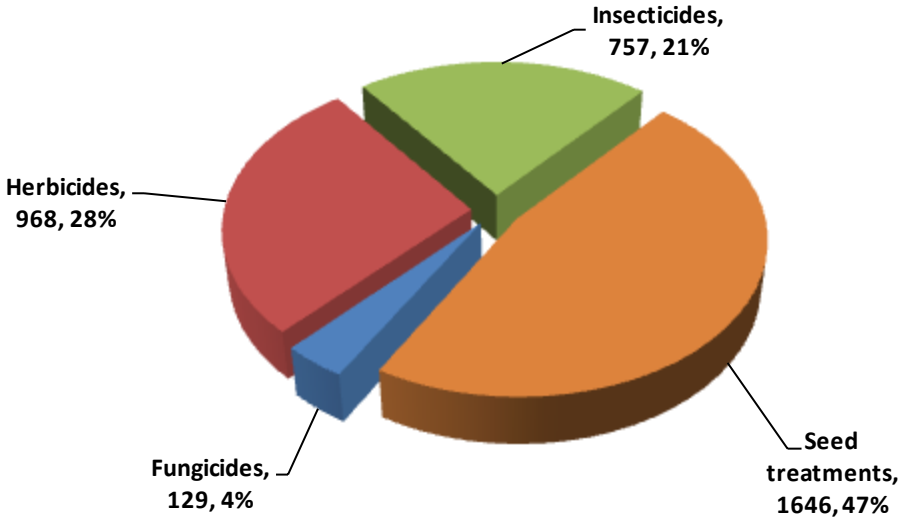


Figure 45: Weight of pesticides (kg) applied to fodder turnip & fodder swede crops in Ireland, 2017.

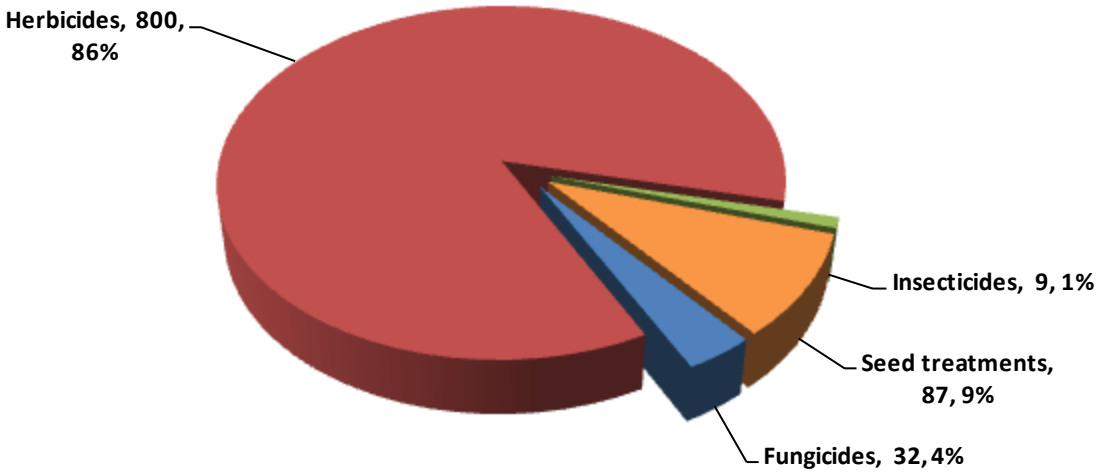


Figure 46: The top 8 active ingredients most extensively used on fodder turnip & fodder swede crops in Ireland in 2017, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Thiamethoxam	1,443	1,443	87
Glyphosate	497	497	427
Metazachlor	471	471	374
Lambda-cyhalothrin	429	429	2
Deltamethrin	258	129	3
Thiram	203	203	<1
Tebuconazole	129	129	32
Cypermethrin	69	69	4

Figure 47: The top 8 active ingredients most extensively used on fodder turnip & fodder swede crops in Ireland in 2017, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Glyphosate	427	497	497
Metazachlor	374	471	471
Thiamethoxam	87	1,443	1,443
Tebuconazole	32	129	129
Cypermethrin	4	69	69
Deltamethrin	3	258	129
Lambda-cyhalothrin	2	429	429
Thiram	<1	203	203

Table 1: Estimated area (ha) of grassland & fodder crops grown regionally in Ireland, 2017.

Crop	Region East	South	North/West	Ireland
Permanent Grassland	377,356	1,072,359	1,185,031	2,634,747
Grass silage 1st Cut	193,852	458,035	394,561	1,046,449
Grass silage 2nd cut	83,769	194,849	73,182	351,801
Grass silage 3rd cut	6,441	1,289	2,209	9,939
Rough grazing	12,737	34,233	359,783	406,753
Grass reseed	14,104	56,809	4,419	75,331
Arable silage	5,779	6,316	2,850	14,945
Fodder maize	5,089	5,971	427	11,487
Fodder kale & fodder rape	1,673	1,596	59	3,328
Fodder beet	4,530	5,192	453	10,174
Hay & Haylage	18,907	41,046	35,202	95,156
Fodder turnip & fodder swedes	1,314	492	65	1,871
Total	***725,552***	***1,878,188***	***2,058,242***	***4,661,983***

Table 2: Estimated area (spray-hectares) of grassland & fodder crops treated regionally with each pesticide type in Ireland, 2017.

Pesticide type	Region East	South	North/West	Ireland
Fungicides	15,762	20,689	5,963	42,414
Herbicides	134,619	286,146	176,687	597,451
Insecticides	4,837	3,397	346	8,579
Molluscicides	1,423	504		1,926
Growth Regulators		316	230	546
Seed treatments	7,894	11,899	514	20,308
Total	***164,534***	***322,951***	***183,739***	***671,224***

Table 3: Estimated weight (kg) applied to grassland & fodder crops regionally with each pesticide type in Ireland, 2017.

Pesticide type	Region East	South	North/West	Ireland
Fungicides	4,386	8,165	5,527	18,077
Herbicides	102,802	229,147	162,363	494,312
Insecticides	70	71	3	145
Molluscicides	216	50		267
Growth Regulators		189	191	381
Seed treatments	340	2,623	45	3,007
Total	***107,814***	***240,245***	***168,129***	***516,189***

Table 4: The total area (spray hectares) and the basic area (hectares), of grassland & fodder crops in Ireland 2017 treated with each pesticide type.

	Pesticide Type														
	Fungicides		Herbicides		Insecticides		Molluscicides		Growth regulators		Seed treatments		All Pesticides		
Crop type	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha) treated	(ha) grown
Permanent grassland			232,257	197,615									232,257	197,615	2,634,747
Silage 1st cut			115,131	105,462									115,131	105,462	1,046,449
Silage 2nd cut			16,867	16,867									16,867	16,867	351,801
Silage 3rd cut															9,939
Rough grazing			5,541	5,472									5,541	5,472	406,753
Grass reseed			97,001	61,923									97,001	61,923	75,331
Arable silage	29,041	10,797	33,412	13,920	4,218	3,391	389	389	546	395	2,012	2,012	69,619	14,532	14,945
Fodder maize	1,831	1,633	27,518	11,259							4,870	4,870	34,218	11,476	11,487
Fodder kale & Fodder rape	4,132	1,033	3,221	2,188	2,066	1,033	1,033	1,033			1,474	1,474	11,927	2,629	3,328
Hay & Haylage			3,133	3,133									3,133	3,133	95,156
Fodder turnip & Fodder swedes	129	129	968	626	757	499					1,646	1,646	3,500	1,871	1,871
Fodder beet	7,280	6,210	62,401	10,174	1,538	1,538	504	504			10,306	7,163	82,029	10,174	10,174
Total	***42,414***	***19,802***	***597,451***	***428,639***	***8,579***	***6,461***	***1,926***	***1,926***	***546***	***395***	***20,308***	***17,164***	***671,224***	***431,154***	***4,661,983***

Table 5: The total quantities (kilograms) of each pesticide type used on grassland and fodder crops in Ireland 2017.

	Pesticide type						
Crop	Fungicides	Herbicides	Insecticides	Molluscicides	Growth regulators	Seed treatments	Total weight applied (kg)
Permanent grassland		206,761					206,761
Silage 1st cut		69,986					69,986
Silage 2nd cut		6,633					6,633
Rough grazing		5,396					5,396
Grass reseed		113,801					113,801
Arable silage	15,087	25,875	116	93	381	139	41,692
Fodder maize	452	23,155				925	24,532
Fodder kale & fodder rape	509	3,393	10	123		26	4,061
Hay & Haylage		2,189					2,189
Fodder turnip & fodder swedes	32	800	9			87	928
Fodder beet	1,997	36,322	9	50		1,830	40,209
All crops	***18,077***	***494,312***	***145***	***267***	***381***	***3,007***	***516,189***

Table 6: Estimated area (spray-hectares) of grassland & fodder crops treated with pesticide formulations in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Fungicides												
Azoxystrobin						3,107		1,033				4,140
Benzovindiflupyr/prothioconazole						75						75
Boscalid/pyraclostrobin						8,466						8,466
Carbendazim/flusilazole											918	918
Chlorothalonil						10,927						10,927
Cyproconazole/picoxystrobin											1,494	1,494
Cyproconazole/propiconazole						205						205
Difenoconazole											357	357
Epoxiconazole											333	333
Epoxiconazole/fenpropimorph						90						90
Epoxiconazole/fenpropimorph/metrafenone						87						87
Epoxiconazole/pyraclostrobin							1,831				3,093	4,923
Fenpropimorph						254						254
Fenpropimorph/pyraclostrobin						272						272
Fluoxastrobin/prothioconazole						25						25
Metalaxyl-M						3,964						3,964
Metconazole								1,033				1,033
Prochloraz/proquinazid/tebuconazole											301	301
Propiconazole											119	119
Proquinazid						75						75
Prothioconazole						380		1,033				1,413
Prothioconazole/spiroxamine											666	666
Pyraclostrobin						75						75
Tebuconazole						1,038		1,033		129		2,200
All fungicides						***29,041***	***1,831***	***4,132***	***0***	***129***	***7,280***	***42,414***

Table 6 (cont.): Estimated area (spray-hectares) of grassland & fodder crops treated with pesticide formulations in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Herbicides												
2,4-D	13,579	1,714		87								15,380
2,4-D/dicamba/triclopyr	895		472			164						1,531
2,4-D/MCPA	4,706	4,749										9,455
2,4-D/triclopyr	553											553
2,4-DB/linuron/MCPA					1,935							1,935
2,4-DB/MCPA	631				23,870	344						24,844
2,4-DB/mecoprop-P	2,914	968			3,317	64						7,263
Amidosulfuron	3,884	721	1,122		1,547				983			8,256
Aminopyralid/fluroxypyr	10,526	1,935			185							12,646
Aminopyralid/triclopyr	10,617	15,127	1,478						237			27,460
Bentazone						1,205						1,205
Chloridazon											1,118	1,118
Clomazone/linuron						7,648						7,648
Clopyralid							182				2,167	2,349
Clopyralid/florasulam/fluroxypyr	2,844	1,050	5,410		1,047	559						10,911
Clopyralid/fluroxypyr/triclopyr	4,226		40		735	439			40			5,480
Clopyralid/triclopyr	20,260	12,385	445	672	1,032				322			35,116
Cycloxydim						1,842						1,842
Desmedipham/ethofumesate/lenacil/phenmedipham											7,119	7,119
Desmedipham/ethofumesate/phenmedipham											5,693	5,693
Dicamba/MCPA/mecoprop-P	639				301							940
Dicamba/mecoprop-P	9,175	1,953			2,286	191						13,606
Dicamba/mecoprop/triclopyr	64											64
Diflufenican							153					153
Diflufenican/flurtamone							182					182
Dimethenamid-P/pendimethalin							2,530					2,530

Table 6 (cont.): Estimated area (spray-hectares) of grassland & fodder crops treated with pesticide formulations in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Herbicides (cont.)												
Diquat	59											59
Ethofumesate/phenmedipham											3,684	3,684
Florasulam/metsulfuron-methyl/tribenuron-methyl						84						84
Fluazifop-P-butyl											1,312	1,312
Fluroxypyr	21,841	23,016	4,166		7,748		522		256			57,549
Fluroxypyr/triclopyr	19,613	32,903	3,004									55,520
Glyphosate	35,487	3,448		1,576	52,416	6,110	2,398	2,188		497	3,039	107,158
Imazamox/pendimethalin						10,235						10,235
Lenacil											9,574	9,574
Lenacil/triflusulfuron-methyl											67	67
Linuron						389						389
MCPA	69,744	15,162	730	3,207		26			474			89,343
MCPB						41						41
Mecoprop-P						180			820			1,000
Mesotrione/terbuthylazine							9,686					9,686
Metamitron											13,572	13,572
Metazachlor										471		471
Metsulfuron-methyl/tribenuron-methyl						96						96
Nicosulfuron							1,314					1,314
Pendimethalin						488	10,551					11,039
Phenmedipham											2,406	2,406
Pinoxaden						434						434
Propaquizafop						904		1,033			3,455	5,392
Prosulfocarb						1,371						1,371
Thifensulfuron-methyl/tribenuron-methyl						426						426
Tribenuron-methyl					580	171						751
Triflusulfuron-methyl											9,196	9,196
All herbicides	***232,257***	***115,131***	***16,867***	***5,541***	***97,001***	***33,412***	***27,518***	***3,221***	***3,133***	***968***	***62,401***	***597,451***

Table 6 (cont.): Estimated area (spray-hectares) of grassland & fodder crops treated with pesticide formulations in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Insecticides												
Cypermethrin						25				69		95
Deltamethrin										258		258
Dimethoate						90						90
Lambda-cyhalothrin						3,687		2,066		429	1,538	7,720
Pirimicarb						416						416
All Insecticides						***4,218***		***2,066***		***757***	***1,538***	***8,579***
Molluscicides												
Ferric phosphate								1,033				1,033
Metaldehyde						389					504	893
All molluscicides						***389***		***1,033***			***504***	***1,926***
Growth regulators												
Chlormequat chloride						471						471
Prohexadione-calcium/trinexapac-ethyl						75						75
All growth regulators						***546***						***546***
Seed treatments												
Carboxin/thiram						505						505
Clothianidin/prothioconazole						67						67
Imidacloprid											504	504
Methiocarb							4,870					4,870
Prochloraz/thiram								1,474				1,474
Prochloraz/triticonazole						1,137						1,137
Silthiofam						302						302
Tefluthrin											6,659	6,659
Thiamethoxam										1,443		1,443
Thiram										203	3,143	3,346
All seed treatment						***2,012***	***4,870***	***1,474***		***1,646***	***10,306***	***20,308***
All pesticides	***232,257***	***115,131***	***16,867***	***5,541***	***97,001***	***69,619***	***34,218***	***11,927***	***3,133***	***3,500***	***82,029***	***671,224***

Table 7: Estimated quantities (kilograms) of pesticide formulations used on grassland and fodder crops in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Fungicides												
Azoxystrobin						528		194				722
Benzovindiflupyr/prothioconazole						12						12
Boscalid/pyraclostrobin						1,851						1,851
Carbendazim/flusilazole											225	225
Chlorothalonil						8,959						8,959
Cyproconazole/picoxystrobin											418	418
Cyproconazole/propiconazole						59						59
Difenoconazole											37	37
Epoxiconazole											23	23
Epoxiconazole/fenpropimorph						78						78
Epoxiconazole/fenpropimorph/metrafenone						59						59
Epoxiconazole/pyraclostrobin							452				610	1,063
Fenpropimorph						107						107
Fenpropimorph/pyraclostrobin						175						175
Fluoxastrobin/prothioconazole						6						6
Metalaxyl-M						3,010						3,010
Metconazole								31				31
Prochloraz/proquinazid/tebuconazole											439	439
Propiconazole											15	15
Proquinazid						2						2
Prothioconazole						43		155				198
Prothioconazole/spiroxamine											230	230
Pyraclostrobin						8						8
Tebuconazole						191		129		32		352
All fungicides						***15,087***	***452***	***509***	***0***	***32***	***1,997***	***18,077***

Table 7 (cont.): Estimated quantities (kilograms) of pesticide formulations used on grassland and fodder crops in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Herbicides												
2,4-D	18,161	2,468		143								20,772
2,4-D/dicamba/triclopyr	1,490		248			230						1,968
2,4-D/MCPA	9,195	11,668										20,862
2,4-D/triclopyr	326											326
2,4-DB/linuron/MCPA					2,032							2,032
2,4-DB/MCPA	1,118				36,184	594						37,897
2,4-DB/mecoprop-P	8,014	1,863			5,470	106						15,452
Amidosulfuron	159	27	37		58				44			325
Aminopyralid/fluroxypyr	2,923	755			36							3,714
Aminopyralid/triclopyr	5,483	7,170	798						96			13,547
Bentazone						805						805
Chloridazon											563	563
Clomazone/linuron						3,535						3,535
Clopyralid							27				297	324
Clopyralid/florasulam/fluroxypyr	404	288	987		191	72						1,942
Clopyralid/fluroxypyr/triclopyr	2,010		27		496	277			27			2,837
Clopyralid/triclopyr	8,296	4,963	160	266	413				116			14,214
Cycloxydim						322						322
Desmedipham/ethofumesate/lenacil/phenmedipham											2,101	2,101
Desmedipham/ethofumesate/phenmedipham											2,664	2,664
Dicamba/MCPA/mecoprop-P	268				211							480
Dicamba/mecoprop-P	7,598	1,613			1,943	82						11,236
Dicamba/mecoprop/triclopyr	90											90
Diflufenican							19					19
Diflufenican/flurtamone							64					64
Dimethenamid-P/pendimethalin							3,987					3,987

Table 7 (cont.): Estimated quantities (kilograms) of pesticide formulations used on grassland and fodder crops in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Herbicides (cont.)												
Diquat	12											12
Ethofumesate/phenmedipham											1,715	1,715
Florasulam/metsulfuron-methyl/tribenuron-methyl						2						2
Fluazifop-P-butyl											424	424
Fluroxypyr	6,382	7,000	1,666		1,825		137		47			17,057
Fluroxypyr/triclopyr	6,709	12,888	1,614									21,211
Glyphosate	38,111	3,168		1,399	64,939	6,613	2,750	3,264		427	3,558	124,229
Imazamox/pendimethalin						8,478						8,478
Lenacil											2,758	2,758
Lenacil/triflusulfuron-methyl											14	14
Linuron						175						175
MCPA	90,009	16,117	1,095	3,587		44			628			111,480
MCPB						65						65
Mecoprop-P						356			1,230			1,587
Mesotrione/terbuthylazine							5,150					5,150
Metamitron											20,517	20,517
Metazachlor										374		374
Metsulfuron-methyl/tribenuron-methyl						1						1
Nicosulfuron							29					29
Pendimethalin						504	10,992					11,496
Phenmedipham											1,219	1,219
Pinoxaden						7						7
Propaquizafop						54		129			331	514
Prosulfocarb						3,544						3,544
Thifensulfuron-methyl/tribenuron-methyl						9						9
Tribenuron-methyl					3	1						4
Triflusulfuron-methyl											161	161
All herbicides	***206,761***	***69,986***	***6,633***	***5,396***	***113,801***	***25,875***	***23,155***	***3,393***	***2,189***	***800***	***36,322***	***494,312***

Table 7 (cont.): Estimated quantities (kilograms) of pesticide formulations used on grassland and fodder crops in Ireland, 2017.

Pesticide type & formulation	Permanent Grassland	Grass silage 1st cut	Grass silage 2nd cut	Rough grazing	Grass reseed	Crop Arable silage	Fodder maize	Fodder kale & rape	Hay & Haylage	Fodder turnip & swedes	Fodder beet	All crops
Insecticides												
Cypermethrin						1				4		4
Deltamethrin										3		3
Dimethoate						47						47
Lambda-cyhalothrin						27		10		2	9	49
Pirimicarb						42						42
All Insecticides						***116***		***10***		***9***	***9***	***145***
Molluscicides												
Ferric phosphate								123				123
Metaldehyde						93					50	144
All molluscicides						***93***		***123***			***50***	***267***
Growth regulators												
Chlormequat chloride						379						379
Prohexadione-calcium/trinexapac-ethyl						2						2
All growth regulators						***381***						***381***
Seed treatments												
Carboxin/thiram						95						95
Clothianidin/prothioconazole						6						6
Imidacloprid											1,693	1,693
Methiocarb							925					925
Prochloraz/thiram								26				26
Prochloraz/triticonazole						27						27
Silthiofam						11						11
Tefluthrin											12	12
Thiamethoxam										87		87
Thiram										0	126	126
All seed treatment						***139***	***925***	***26***	***0***	***87***	***1,830***	***3,007***
All pesticides	***206,761***	***69,986***	***6,633***	***5,396***	***113,801***	***41,692***	***24,532***	***4,061***	***2,189***	***928***	***40,209***	***516,189***

Table 8: The forty active ingredients most extensively used on grassland & fodder crops in Ireland in 2017, ranked by area treated (spray-hectares).

No.	Active ingredient	Treated area (sp ha)
1	Fluroxypyr	142,107
2	MCPA	126,517
3	Triclopyr	125,725
4	Glyphosate	107,158
5	Clopyralid	53,857
6	Aminopyralid	40,106
7	2,4-DB	34,042
8	2,4-D	26,919
9	Pendimethalin	23,804
10	Mecoprop-P	22,809
11	Phenmedipham	18,902
12	Lenacil	16,759
13	Ethofumesate	16,496
14	Dicamba	16,142
15	Pyraclostrobin	13,737
16	Metamitron	13,572
17	Desmedipham	12,812
18	Florasulam	10,995
19	Chlorothalonil	10,927
20	Imazamox	10,235
21	Linuron	9,972
22	Terbuthylazine	9,686
23	Mesotrione	9,686
24	Triflusulfuron-methyl	9,262
25	Boscalid	8,466
26	Amidosulfuron	8,256
27	Lambda-cyhalothrin	7,720
28	Clomazone	7,648
29	Epoxiconazole	5,433
30	Propaquizafop	5,392
31	Azoxystrobin	4,140
32	Metalaxyl-M	3,964
33	Dimethenamid-P	2,530
34	Tebuconazole	2,501
35	Prothioconazole	2,179
36	Cycloxydim	1,842
37	Cyproconazole	1,698
38	Picoxystrobin	1,494
39	Prosulfocarb	1,371
40	Tribenuron-methyl	1,357

Table 9: The forty active ingredients most extensively used on grassland & fodder crops in Ireland in 2017, ranked by weight (kilograms).

No.	Active ingredient	Quantity (kgs)
1	MCPA	127,060
2	Glyphosate	124,229
3	2,4-DB	48,156
4	Triclopyr	33,915
5	2,4-D	33,178
6	Fluroxypyr	32,534
7	Pendimethalin	21,598
8	Metamitron	20,517
9	Mecoprop-P	13,125
10	Chlorothalonil	8,959
11	Clopyralid	6,570
12	Terbuthylazine	4,249
13	Phenmedipham	3,571
14	Prosulfocarb	3,544
15	Linuron	3,374
16	Ethofumesate	3,122
17	Lenacil	3,042
18	Metalaxyl-M	3,010
19	Aminopyralid	2,362
20	Dicamba	1,858
21	Dimethenamid-P	1,832
22	Boscalid	1,480
23	Pyraclostrobin	1,188
24	Mesotrione	901
25	Bentazone	805
26	Desmedipham	735
27	Azoxystrobin	722
28	Chloridazon	563
29	Clomazone	539
30	Imazamox	531
31	Propaquizafop	514
32	Tebuconazole	487
33	Fluazifop-P-butyl	424
34	Metazachlor	374
35	Epoxiconazole	344
36	Fenpropimorph	338
37	Amidosulfuron	325
38	Cycloxydim	322
39	Picoxystrobin	299
40	Prothioconazole	289

Table 10: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for permanent grassland, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Permanent grassland	Herbicides			
	2,4-D	24,071	19,733	19,733
	2,4-DB	8,244	3,545	3,545
	Amidosulfuron	159	3,884	3,884
	Aminopyralid	1,284	21,143	21,143
	Clopyralid	3,226	27,330	27,330
	Dicamba	1,294	10,774	10,774
	Diquat	12	59	59
	Florasulam	6	2,844	2,844
	Fluroxypyr	12,877	59,050	55,163
	Glyphosate	38,111	35,486	35,486
	MCPA	94,587	75,719	74,145
	Mecoprop	42	64	64
	Mecoprop-P	7,561	12,728	12,728
	Triclopyr	15,288	56,229	52,740

Table 11: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for grass silage 1st cut, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Grass silage 1st cut	Herbicides			
	2,4-D	8,691	6,463	6,463
	2,4-DB	1,693	968	968
	Amidosulfuron	27	721	721
	Aminopyralid	971	17,062	17,062
	Clopyralid	1,905	13,435	13,435
	Dicamba	198	1,953	1,953
	Florasulam	4	1,050	1,050
	Fluroxypyr	14,182	58,905	56,969
	Glyphosate	3,168	3,448	3,448
	MCPA	21,562	19,911	18,242
	Mecoprop-P	1,585	2,920	2,920
	Triclopyr	16,001	60,415	54,814

Table 12: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for grass silage 2nd cut, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Grass silage 2nd cut	Herbicides			
	2,4-D	142	472	472
	Amidosulfuron	37	1,122	1,122
	Aminopyralid	89	1,478	1,478
	Clopyralid	471	5,895	5,895
	Dicamba	60	472	472
	Florasulam	14	5,410	5,410
	Fluroxypyr	3,023	12,621	12,621
	MCPA	1,095	730	730
	Triclopyr	1,703	5,439	5,439

Table 13: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for grass reseed, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Grass reseed	Herbicides			
	2,4-DB	37,613	29,122	28,220
	Amidosulfuron	58	1,547	1,547
	Aminopyralid	8	185	185
	Clopyralid	400	2,813	2,813
	Dicamba	241	2,588	2,588
	Florasulam	3	1,047	1,047
	Fluroxypyr	2,123	9,715	9,715
	Glyphosate	64,939	52,416	52,416
	Linuron	203	1,935	1,935
	MCPA	5,472	26,106	25,977
	Mecoprop-P	2,311	5,905	5,905
	Tribenuron-methyl	3	580	580
	Triclopyr	427	1,766	1,766

Table 14: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for rough grazing, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Rough Grazing	Herbicides			
	2,4-D	143	87	87
	Clopyralid	126	672	672
	Glyphosate	1,399	1,576	1,576
	MCPA	3,587	3,207	3,207
	Triclopyr	141	672	672

Table 15: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for fodder beet, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Fodder Beet	Fungicides			
	Carbendazim	75	918	918
	Cyproconazole	120	1,494	1,494
	Difenoconazole	37	357	357
	Epoxiconazole	190	3,425	3,425
	Flusilazole	150	918	918
	Picoxystrobin	299	1,494	1,494
	Prochloraz	270	301	301
	Propiconazole	15	119	119
	Proquinazid	34	301	301
	Prothioconazole	80	666	333
	Pyraclostrobin	444	3,093	3,093
	Spiroxamine	150	666	333
	Tebuconazole	135	301	301
	Herbicides			
	Chloridazon	563	1,118	761
	Clopyralid	297	2,167	1,270
	Desmedipham	735	12,812	7,046
	Ethofumesate	3,122	16,496	8,395
	Fluazifop-P-butyl	424	1,312	999
	Glyphosate	3,558	3,039	3,039
	Lenacil	3,042	16,759	8,365
	Metamitron	20,517	13,572	8,697
	Phenmedipham	3,571	18,902	9,198
	Propaquizafop	331	3,455	3,455
	Triflusulfuron-methyl	162	9,262	6,703
	Insecticides			
	Lambda-cyhalothrin	9	1,538	1,538
	Molluscicides			
	Metaldehyde	50	504	504
	Seed Treatments			
	Imidacloprid	1,693	504	504
	Tefluthrin	12	6,659	6,659
	Thiram	126	3,143	3,143

Table 16: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for arable silage, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Arable silage	Fungicides			
	Azoxystrobin	528	3,107	2,122
	Benzovindiflupyr	4	75	75
	Boscalid	1,480	8,466	5,770
	Chlorothalonil	8,959	10,927	7,198
	Cyproconazole	23	205	205
	Epoxiconazole	31	177	177
	Fenpropimorph	338	703	462
	Fluoxastrobin	3	25	25
	Metalaxyl-M	3,010	3,964	3,703
	Metrafenone	13	87	87
	Propiconazole	36	205	205
	Proquinazid	2	75	75
	Prothioconazole	54	481	375
	Pyraclostrobin	416	8,813	6,041
	Tebuconazole	191	1,038	1,038
	Herbicides			
	2,4-D	131	164	164
	2,4-DB	605	408	408
	Bentazone	805	1,205	884
	Clomazone	539	7,648	7,648
	Clopyralid	89	999	999
	Cycloxydim	322	1,842	1,842
	Dicamba	65	356	356
	Florasulam	1	643	643
	Fluroxypyr	136	999	999
	Glyphosate	6,613	6,110	5,549
	Imazamox	531	10,235	10,235
	Linuron	3,171	8,037	8,037
	MCPA	128	370	370
	MCPB	65	41	41
	Mecoprop-P	438	435	345
	Metsulfuron-methyl	1	180	180
	Pendimethalin	8,451	10,723	10,723
	Pinoxaden	7	434	434
	Propaquizafop	54	904	904
	Prosulfocarb	3,544	1,371	1,371
	Thifensulfuron-methyl	5	426	426
	Tribenuron-methyl	6	776	776
	Triclopyr	166	603	603

Table 16 (cont.): Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for arable silage, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Arable silage	Insecticides			
	Cypermethrin	1	25	25
	Dimethoate	47	90	90
	Lambda-cyhalothrin	27	3,687	3,366
	Pirimicarb	42	416	416
	Growth regulators			
	Chlormequat chloride	379	471	395
	Prohexadione-calcium	1	75	75
	Trinexapac-ethyl	1	75	75
	Molluscicides			
	Metaldehyde	93	389	389
	Seed treatments			
	Carboxin/thiram	95	505	505
	Clothianidin/prothioconazole	6	67	67
	Prochloraz/triticonazole	27	1,137	1,137
	Silthiofam	11	302	302

Table 17: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for fodder maize, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Fodder maize	Fungicides			
	Epoxiconazole	124	1,831	1,633
	Pyraclostrobin	329	1,831	1,633
	Herbicides			
	Clopyralid	27	182	182
	Diflufenican	37	335	335
	Dimethenamid-P	1,832	2,530	2,530
	Fluroxypyr	137	522	522
	Flurtamone	46	182	182
	Glyphosate	2,750	2,398	2,131
	Mesotrione	901	9,686	8,842
	Nicosulfuron	29	1,314	1,314
	Pendimethalin	13,147	13,081	9,402
	Terbuthylazine	4,249	9,686	8,842
	Molluscicides			
	Methiocarb	925	4,870	4,870

Table 18: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for hay & haylage, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Hay & haylage	Herbicides			
	Amidosulfuron	44	983	983
	Aminopyralid	11	237	237
	Clopyralid	29	362	362
	Fluroxypyr	56	296	296
	MCPA	628	474	474
	Mecoprop-P	1,230	820	820
	Triclopyr	190	600	600

Table 19: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for fodder kale & fodder rape crops, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Fodder kale & fodder rape	Fungicides			
	Azoxystrobin	194	1,033	1,033
	Metconazole	31	1,033	1,033
	Prothioconazole	155	1,033	1,033
	Tebuconazole	129	1,033	1,033
	Herbicides			
	Glyphosate	3,264	2,188	2,188
	Propaquizafop	129	1,033	1,033
	Insecticides			
	Lambda-cyhalothrin	10	2,066	1,033
	Molluscicides			
	Ferric phosphate	123	1,033	1,033
	Seed treatments			
	Prochloraz/thiram	26	1,474	1,474

Table 20: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for fodder turnip & fodder swede crops, 2017.

Crop	Active Substance	Quantity (kg) of Active Ingredient Total	Spray area (spha) of Active Ingredient Total	Basic area (ha) of Active Ingredient Total
Fodder turnip & fodder swedes	Fungicides			
	Tebuconazole	32	129	129
	Herbicides			
	Glyphosate	427	497	497
	Metazachlor	374	471	471
	Insecticides			
	Cypermethrin	4	69	69
	Deltamethrin	3	258	129
	Lambda-cyhalothrin	2	429	429
	Seed Treatments			
	Thiamethoxam	87	1,443	1,443
	Thiram	<1	203	203

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