



**An Roinn Talmhaíochta,
Bia agus Mara**
Department of Agriculture,
Food and the Marine

Pesticide Usage in Ireland

Outdoor & Protected Vegetable Crops Survey Report 2015

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OUTDOOR & PROTECTED VEGETABLE CROPS SURVEY REPORT 2015

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Introduction

This is the second survey of pesticide* usage on outdoor vegetable crops and the first survey of protected vegetable crops in Ireland carried out by DAFM. Information on all aspects of pesticide usage was collected from 79 outdoor vegetable holdings and 30 protected vegetable holdings across Ireland representing 61% of the total area of outdoor vegetable crops grown and 67% of the total area of protected vegetable crops grown respectively. Since outdoor vegetables were surveyed separately from protected vegetables their respective results will be reported separately in this report. Quantitative data have been adjusted to provide estimates of total pesticide usage for the results.

**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.*

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. Previously legislation has concentrated mainly on the authorisation of PPPs for specific uses and the laboratory testing of food samples for PPP residues. New legislation (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 will involve 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 samples of holdings to be surveyed was selected from each of the 26 counties, on the basis of the total area of outdoor vegetable crops and protected vegetable crops grown, using data from the Department of Agriculture Food and Marine. 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 samples was stratified into five size groups, according to the total area of outdoor vegetable and protected vegetable 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 79 outdoor vegetable holdings and 30 protected vegetable holdings were contacted during the period April to June 2016 and data collected by personal interview for vegetable crops grown in 2015. The data collected included; the area of crops grown, area treated, target pests, pesticide used, rates applied 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 for outdoor vegetable crops and protected vegetable crops are shown in table B and table C respectively. No protected crops were recorded in the North/West region. 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 outdoor vegetable farms sampled from each size group.

Region	Holding area grown (ha)					ROI Holdings sampled
	<2 Holdings sampled	2<5 Holdings sampled	5>15 Holdings sampled	15>40 Holdings sampled	40+ Holdings sampled	
<i>Ireland</i>	14	6	16	15	28	79

Table C: The total number of protected vegetable farms sampled from each size group.

Region	Holding area grown (ha)				ROI Holdings sampled
	<1 Holdings sampled	1<2 Holdings sampled	2<5 Holdings sampled	5+ Holdings sampled	
<i>Ireland</i>	11	11	4	4	30

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.

- ‘Biological controls’; are defined as the use of biological organisms to control and / or prevent harmful insects, mites, weeds and plant diseases. Their usage is recorded by area treated (spha) only, as they are applied in units other than weight or volume (e.g. million/ha) and this does not translate readily into a conventional weight.
- ‘Broccoli’; collectively refers to broccoli and calabrese.
- ‘Fungicides’; are defined as PPPs used to control and / or prevent harmful fungal disease.
- ‘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.
- ‘Leafy and flowerhead brassica crops’ collectively refers to cabbages, cauliflower, brussel sprouts, broccoli and kale.
- ‘Molluscicides’; are defined as PPPs used to control and / or prevent harmful slugs and snails.
- ‘Onions and leeks crops’ collectively refers to leeks, onions and scallions.
- ‘Other outdoor vegetables’; collectively refers to celeriac, chards, courgettes, Chinese leaves, endives, pumpkins, salad leaves & sweetcorn.
- ‘Other outdoor vegetable crops’ (pg 24 only) collectively refers to celeriac, chards, courgettes, chinese leaves, endives, pumpkins, salad leaves, sweetcorn, beetroot & rhubarb.

- ‘Other protected vegetables’; collectively refers to peppers, pumpkins, runner beans, salad leaves, courgettes and spinach.
- ‘Other protected brassicas’; collectively refers to kale and summer cauliflower.
- ‘PPP’; refers to plant protection product.
- ‘Protected celery & parsley’; collectively refers to celery, parsley and other herbs.
- ‘Protected onions & scallions’; collectively refers to onions, summer scallions and winter scallions.
- ‘Protected roots’; collectively refers to beetroot, carrots and potatoes.
- ‘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)).

Outdoor vegetable report summary

In 2015 an estimated 4,635 hectares of outdoor vegetable crops were grown which represents a 4.2 % increase compared to total estimated area in 2011. In 2015 an estimated 19,916 kgs of active substance was applied to outdoor vegetable crops which represents 0.92% decrease in weight of pesticide applied compared to 2011.

A total of 80 active substances were recorded in use on outdoor vegetable crops in the survey.

Herbicides were applied to 31% of the pesticide-treated area, representing 47% of the total weight of pesticides used. Fungicides were applied to 38% of the pesticide-treated area, accounting for 42% of the total weight of pesticides used. Insecticides were applied to 26% of the pesticide treated area, representing 7% of the weight of pesticides applied. Molluscicide treatments represented 5% of pesticide treated area and 2% of the weight of pesticides applied. Growth regulator usage accounted for less than 1% of the pesticide-treated area and 2% of the weight of active substance applied. Seed treatments were applied to less than 1% of the pesticide-treated area, representing less than 1% of the weight of active substances applied.

Cabbage crops comprised 20% of the area of outdoor vegetable crops in Ireland 2015, accounting for 21% of the total pesticide treated area and 18% of the total weight of pesticides used on all outdoor vegetable crops

Carrots comprised 14% of the area of outdoor vegetable crops in Ireland 2015, accounting for 19% of the total pesticide treated area and 14% of the total weight of pesticides used on outdoor vegetable crops.

Broccoli comprised 13% of the area of outdoor vegetable crops grown in Ireland in 2015, accounting for 12% of the total pesticide-treated area and 10% of the total weight of pesticides used on all crops.

Turnips and swedes comprised 11% of the area of outdoor vegetable crops in Ireland 2015, accounting for 6% of the total pesticide treated area and 6% of the total weight of pesticides used on all outdoor vegetable crops.

Cauliflower comprised of 9% of the area of outdoor vegetable crops grown in Ireland in 2015, accounting for 8% of the total pesticide-treated area and 6% of the total weight of pesticides used on all outdoor vegetable crops.

Crops

Information was collected for cabbages, cauliflower, brussels sprouts, broccoli, beetroot, carrots, parsnips, celery, kale, leeks, lettuce, onions, parsley, herbs, rhubarb, spinach, scallions, turnips and swedes and other crops.

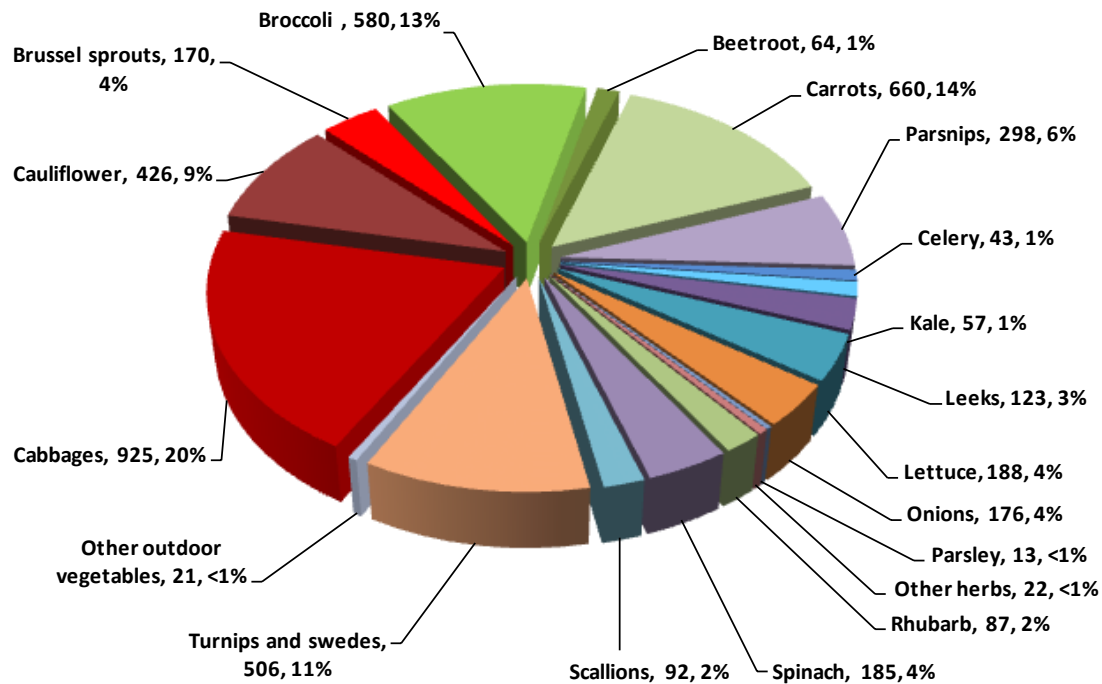
The number and areas of crops surveyed are shown in Table D. Data from 79 farms provided information on 451 examples of 19 crop types. The total area of crops sampled in the survey (2,831 ha) was representative of the area of outdoor vegetable crops grown in Ireland in 2015 (4,635 ha).

Table D: The total number and area (hectares) of crops sampled, estimated total area and the proportion (%) of the total area of outdoor vegetable crops surveyed in Ireland, 2015.

Crop	Number of crops surveyed	Survey area (ha)	Estimated area (ha)	Proportion of crop area surveyed (%)
Beetroot	10	26	64	41
Broccoli	44	503	580	87
Brussels sprouts	15	133	170	79
Cabbages	149	528	925	57
Carrots	19	407	660	62
Cauliflower	47	178	426	42
Celery	12	44	44	100
Courgettes	3	1	3	44
Kale	13	43	57	76
Leeks	20	83	123	67
Lettuce	13	76	188	40
Onions	9	66	176	38
Other herbs	13	12	22	53
Other outdoor vegetables	8	9	18	50
Parsley	6	9	13	74
Parsnips	15	168	298	56
Rhubarb	6	36	87	42
Scallions	8	66	92	71
Spinach	7	135	185	73
Turnips & swedes	34	307	506	61
	451	2831	4635	61

Cabbage covered an estimated 20% of the total area of outdoor vegetable crops in 2015. Carrots accounted for 14% of the area outdoor vegetable crops in 2015. Broccoli accounted for 13% of the total area of outdoor vegetable crops in 2015. Turnips and swedes accounted for 11% of the total area of outdoor vegetable crops in 2015.

Figure 1: Areas of individual outdoor vegetable crops grown in Ireland (ha), 2015.



Regional distribution of crops and pesticides

The East region had the largest area of outdoor vegetable crops during 2015, accounting for 72% of the area of outdoor vegetable crops grown and 70% of the total pesticide-treated area. Overall, 71% of the weight of herbicides, 66% of the weight of fungicides, 71% of the weight of molluscicides, 79% of the weight of insecticides, 45% of the weight of growth regulators and 98% of the weight of seed treatments were applied to outdoor vegetable crops in this region.

The South region accounted for 25% of the total area of outdoor vegetable crops grown and 29% of the total pesticide-treated area. Overall 28% of the weight of herbicides, 34% of the weight of fungicides, 19% of the weight of insecticides, 28% of

the weight of molluscicides, 55% of the weight of growth regulators and 2% of the weight of seed treatments were applied to outdoor vegetable crops in this region.

The North/West region accounted for 3% of the total outdoor vegetable crop area and 1% of the pesticide treated area. Overall, 1% of the weight of herbicides, less than 1% of the weight of fungicides, 1% of the weight of insecticides, 1% of the weight of molluscicides were applied to outdoor vegetable crops in this region.

Figure 2: Regional distribution (ha) of outdoor vegetable crops grown in Ireland, 2015.

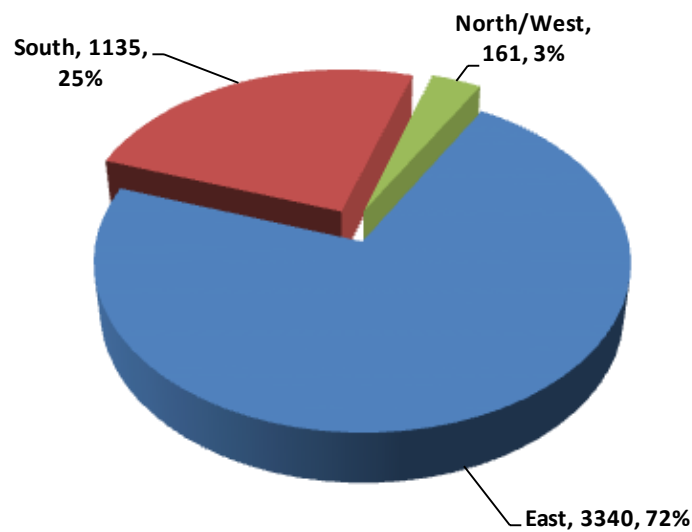
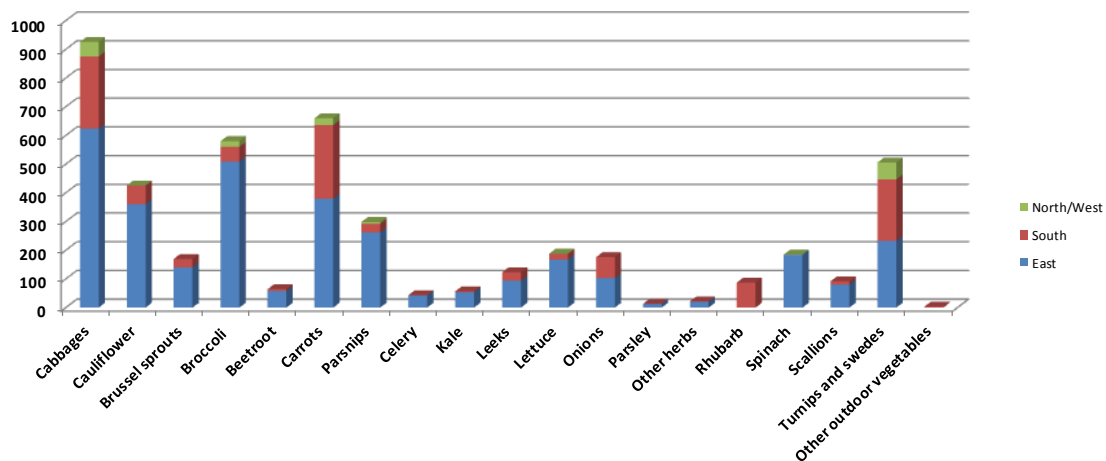


Figure 3: Regional distribution (ha) of individual outdoor vegetable crops grown in Ireland, 2015.



Pesticide usage

Herbicides were applied to 31% of the pesticide-treated area accounting for 47% of the total weight of pesticides used. Fungicides were applied to 38% of the pesticide-treated area and accounted for 42% of the total weight of pesticides used. Insecticides were applied to 26% of the pesticide treated area accounting for 7% of the weight of pesticides applied. Molluscicide treatments represented 5% of pesticide treated area and 2% of the weight of pesticides applied. Growth regulators were applied to less than 1% of the pesticide-treated area and accounted for 2% of the weight of active substance applied. Seed treatment usage accounted for less than 1% of the pesticide-treated area, representing less than 1% of the weight of active substances applied. Biological control agents were applied to less than 1% of the pesticide-treated area.

Figure 4: Pesticide usage (spha) on outdoor vegetable crops treated in Ireland, 2015.

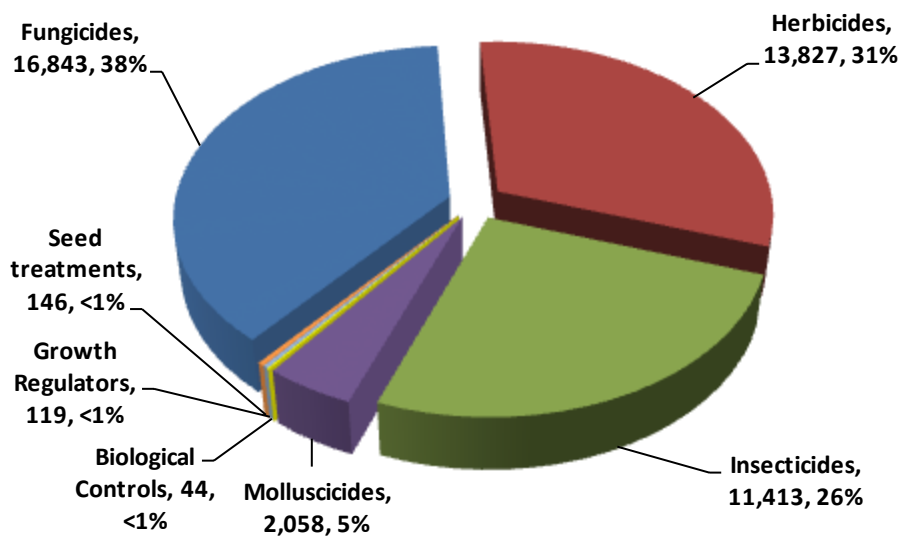
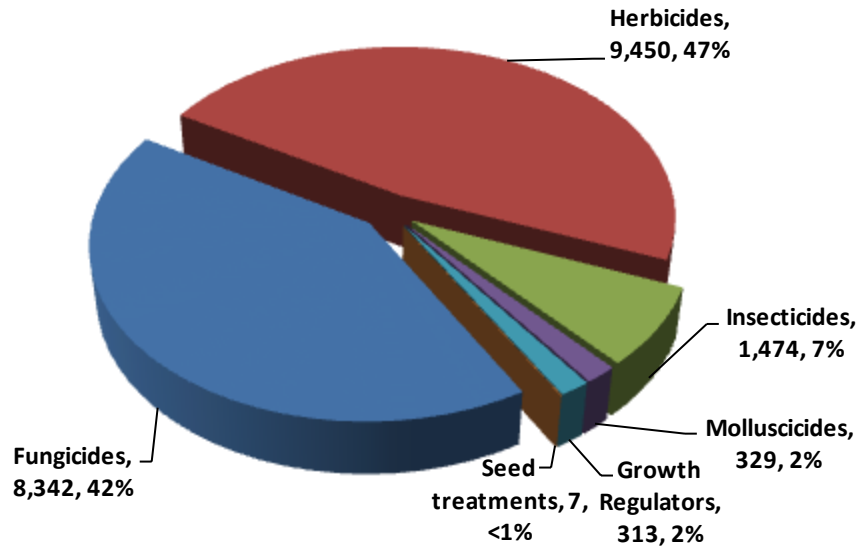


Figure 5: Weight (kgs) of pesticides applied to outdoor vegetable crops treated in Ireland, 2015.



Outdoor vegetable crop areas 2011-2015

Overall the total area of outdoor vegetable crops has increased by 4.2% to 4,635ha when comparing 2011 and 2015. In addition the areas of some individual crops have changed. Areas under Kale, Beetroot and Leeks increased significantly while areas under parsley, other herbs, scallions and other crops decreased. Details of changes in outdoor vegetable crop areas between 2011 and 2015 are outlined in Table E below.

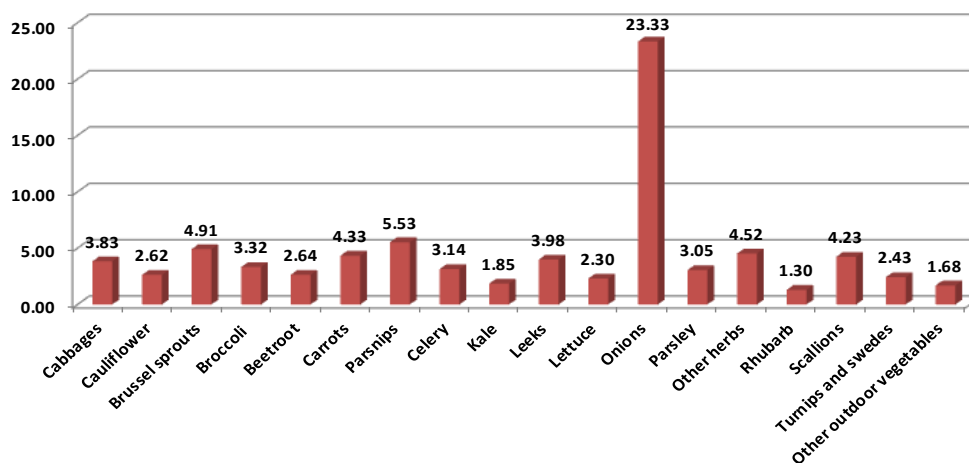
Table E: Outdoor vegetable crop areas (ha) for surveys in 2011 and 2015 and percentage (%) change in areas grown.

Crop	Ha grown		% change
	2011	2015	
All cabbages	921	925	0.5
All cauliflower	423	426	0.6
Brussel sprouts	177	170	-4.2
Broccoli	596	580	-2.6
Beetroot	8	64	668.3
Carrots	651	660	1.3
Parsnips	343	298	-13.0
All celery	45	43	-3.8
Kale	2	57	3547.2
All leeks	60	123	105.2
Lettuce	183	188	2.7
Onions	171	176	2.7
Parsley	56	13	-77.3
Other herbs	60	22	-63.4
Rhubarb	45	87	93.7
Scallions	107	92	-14.0
Turnips and swedes	517	506	-2.2
Other outdoor vegetables	72	21	-71.1
Spinach	*	185	
Peas	6	*	
Beans	2	*	
Marrows	1	*	
Total	4447	4635	4.2

Quantity of pesticide applied per crop, 2011-2015

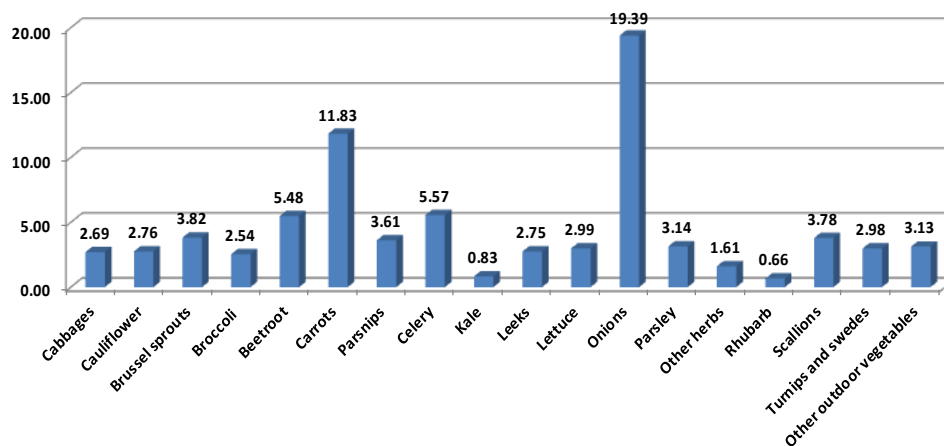
The average weight of pesticide applied per hectare of crop grown for each crop in 2015 is provided in Figure 6. Average weights were calculated as the total weight of pesticides applied divided by the total area of crop grown (whether treated or untreated)

Figure 6: Average weight of pesticides applied per hectare of outdoor vegetable crops grown in Ireland (kg/ha), 2015.



The highest weight of pesticides applied per hectare was on onion crops (23.33kg/ha). Parsnips had the next highest levels of pesticide use (5.53kg/ha) followed by brussels sprouts (4.91kg/ha). The average weight of pesticide applied per hectare of crop grown as per 2011 survey is provided in Figure 7.

Figure 7: Average weight of pesticides applied per hectare of outdoor vegetable crops grown in Ireland (kg/ha), 2011.



The quantity of pesticides applied to carrot crops decreased from 11.83kg/ha (2011) to 4.33kg/ha (2015). In addition the quantity of pesticides applied to onions increased from 19.39 kgs/ha (2011) to 23.33 kg/ha (2015). The quantity of pesticides applied to lettuce has decreased from 2.99 kg/ha (2011) to 2.30 kg/ha (2015).

Pesticide applied on crop growing area, 2011-2015.

The average weight of pesticide applied per hectare for agronomic crop groups for 2011 and 2015 including percentage change is provided.

Leafy & flowerhead brassica crops

Quantities (kg/ha) of herbicides increased by 41% when comparing 2011 and 2015. Quantities of insecticide applied increased by 63% over the same period. Quantities of molluscicides increased by 121% over the same period. Overall the quantity of pesticides applied to leafy and flowerhead brassicas increased by 26% when comparing 2011 and 2015.

Figure 8: Quantity of pesticide type (kg/ha) and percentage change (%) for leafy and flowerhead brassicas for surveys in 2011 and 2015.

Pesticide type	Kg/ha on area grown		% change
	2011	2015	
Fungicides	1.18	1.15	-2.62
Herbicides	1.21	1.71	41.18
Insecticides	0.30	0.50	63.86
Molluscicides	0.06	0.13	121.15
Growth regulators	0.00	0.00	0.00
Seed treatments	0.00	0.00	0.00
All pesticides	2.75	3.49	26.68

Onions & leeks

Quantities (kg/ha) of insecticides, molluscicides & fungicides decreased by 42%, 93% and 7% respectively when comparing 2011 and 2015. Quantities (kg/ha) of herbicides increased by 4% when comparing 2011 and 2015. Overall the quantity of pesticides applied to onion and leek crops decreased by 0.75% when comparing 2011 and 2015.

Figure 9: Quantity of pesticide type (kg/ha) and percentage change (%) for onions and leeks for surveys in 2011 and 2015.

Pesticide type	Kg/ha on area grown		% change
	2011	2015	
Fungicides	8.83	8.20	-7.19
Herbicides	2.63	2.75	4.66
Insecticides	0.03	0.02	-42.86
Molluscicides	0.00	0.00	-93.27
Growth Regulators	0.00	0.44	100.00
Biological controls	0.01	0.00	0.00
Seed treatments	0.00	0.00	0.00
All pesticides	11.49	11.41	-0.75

Celery, parsley and other herbs

Quantities (kg/ha) of fungicides decreased by 37% when comparing 2011 and 2015. Quantities (kg/ha) of herbicides increased by 7% when comparing 2011 and 2015. Overall the quantity of pesticides applied to onion and leek crops decreased by 7% when comparing 2011 and 2015.

Figure 10: Quantity of pesticide type (kg/ha) and percentage change (%) for celery, parsley and other herbs for surveys in 2011 and 2015.

Pesticide type	Kg/ha on area grown		% change
	2011	2015	
Fungicides	1.34	0.84	-37.58
Herbicides	2.20	2.37	7.87
Insecticides	0.27	0.27	0.05
Molluscicides	0.00	0.04	100.00
Growth regulators	0.00	0.00	0.00
Seed treatments	0.00	0.00	0.00
All pesticides	3.80	3.51	-7.60

Lettuce

Quantities (kg/ha) of fungicides and herbicides decreased by 29% and 10% respectively when comparing 2011 and 2015. Quantities (kg/ha) of insecticides & molluscicides decreased by 56 and 39 respectively when comparing 2011 and 2015. Overall the quantity of pesticides applied to lettuce crops decreased by 22% when comparing 2011 and 2015.

Figure 11: Quantity of pesticide type (kg/ha) and percentage change (%) for lettuce for surveys in 2011 and 2015.

Pesticide type	Kg/ha on area grown		% change
	2011	2015	
Fungicides	0.97	0.69	-29.55
Herbicides	1.60	1.43	-10.89
Insecticides	0.35	0.15	-56.48
Molluscicides	0.06	0.04	-39.43
Growth regulators			
Seed treatments			
All pesticides	2.99	2.30	-22.92

Carrots and parsnips

Quantities (kg/ha) of fungicides and insecticides decreased by 71% and 57% respectively when comparing 2011 and 2015. Quantities (kg/ha) of growth regulators decreased by 68% when comparing 2011 and 2015. The quantity of herbicides increased by 7% over the same period. Overall the quantity of pesticides applied to carrot and parsnip crops decreased by 47% when comparing 2011 and 2015.

Figure 12: Quantity of pesticide type (kg/ha) and percentage change (%) for carrots and parsnips for surveys in 2011 and 2015.

Pesticide type	Kg/ha on area grown		% change
	2011	2015	
Fungicides	4.91	1.38	-71.80
Herbicides	3.22	2.99	-7.07
Insecticides	0.38	0.16	-57.10
Molluscicides	0.01	0.02	59.28
Growth regulators	0.47	0.15	-68.77
Seed treatments	0.00	0.00	-100.00
All pesticides	8.99	4.70	-47.70

Turnips & swedes

Quantities (kg/ha) of insecticides decreased by 75% respectively when comparing 2011 and 2015. Quantities (kg/ha) of fungicides, herbicides and molluscicides increased 51%, 19% 41% respectively when comparing 2011 and 2015. Overall the quantity of pesticides applied to turnip and swede crops decreased by 18% when comparing 2011 and 2015.

Figure 13: Quantity of pesticide type (kg/ha) and percentage change (%) for turnips and swedes for surveys in 2011 and 2015.

Pesticide type	Kg/ha on area grown		% change
	2011	2015	
Fungicides	0.36	0.55	51.81
Herbicides	1.26	1.51	19.89
Insecticides	1.33	0.32	-75.59
Molluscicides	0.03	0.04	41.94
Growth regulators			
Seed treatments			
All pesticides	2.98	2.43	-18.50

Other outdoor vegetable crops

Quantities (kg/ha) of fungicides and herbicides increased by 58% and 48% respectively when comparing 2011 and 2015. Quantities (kg/ha) of insecticides and molluscicides decreased 88% and 48% respectively when comparing 2011 and 2015. Overall the quantity of pesticides applied to other outdoor vegetable crops decreased by 13% when comparing 2011 and 2015.

Figure 14: Quantity of pesticide type (kg/ha) and percentage change (%) for other outdoor vegetable crops for surveys in 2011 and 2015.

Pesticide type	Kg/ha on area grown		% change
	2011	2015	
Fungicides	0.60	0.95	58.44
Herbicides	1.13	1.67	48.86
Insecticides	0.63	0.07	-88.30
Molluscicides	0.04	0.02	-48.93
Growth regulators	0.00	0.00	0.00
Seed treatments	0.00	0.00	0.00
All pesticides	2.40	2.72	13.42

Outdoor vegetable pesticide usage survey results 2015

Pesticide usage on beetroot.

64 ha of beetroot in Ireland.

210 treated hectares.

170 kilogrammes applied.

87.8% of the area of beetroot received a pesticide treatment

Figure 15: Pesticide usage (spha) on beetroot in Ireland, 2015.

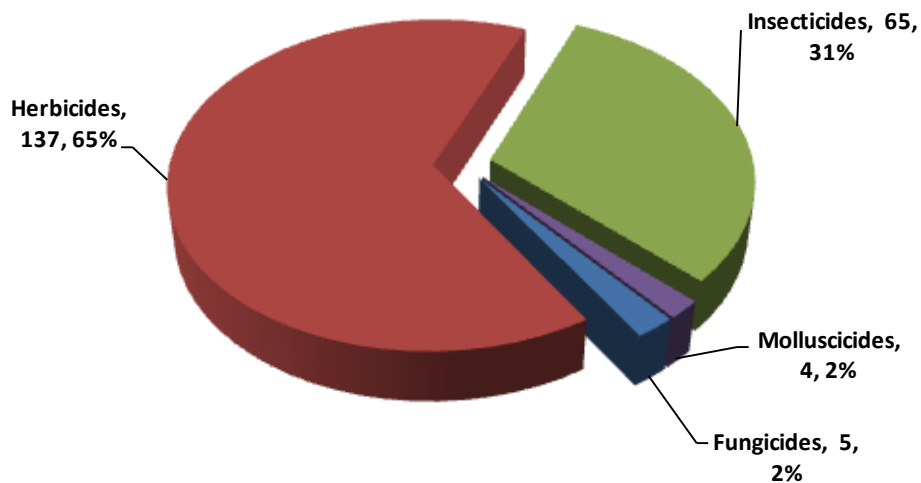


Figure 16: Weight of pesticides (kg) applied to beetroot in Ireland, 2015.

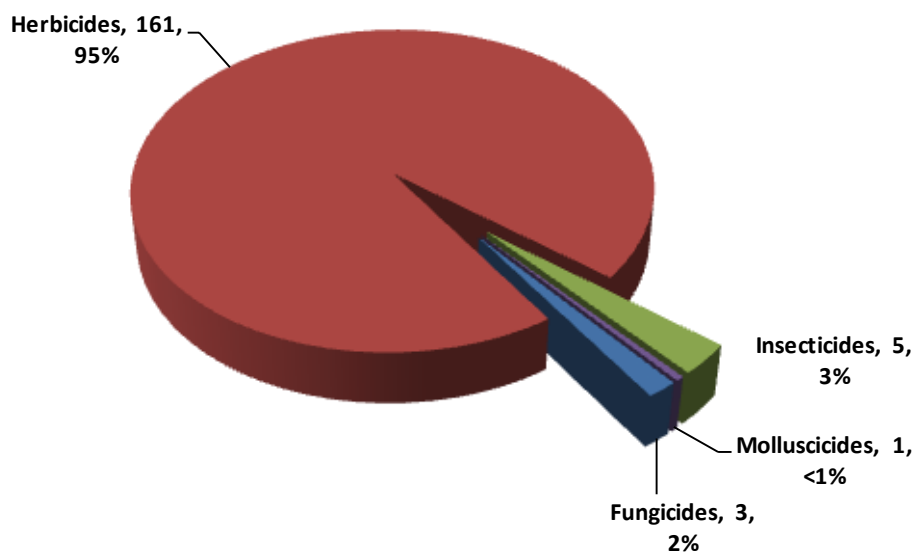


Figure 17: Proportional area of beetroot treated with each pesticide group in Ireland, 2015.

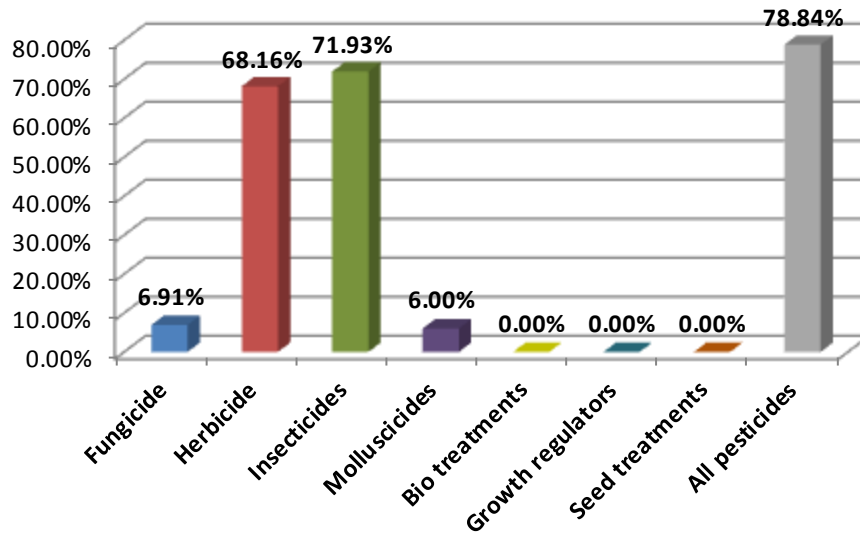


Figure 18: The top 10 active ingredients most extensively used on beetroot in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Metamitron	55.8	18.6	70.3
Thiacloprid	37.2	18.6	4.7
S-metolachlor	23.0	23.0	23.7
Chloridazon	22.4	22.4	30.4
Prosulfocarb	18.6	18.6	29.7
Lambda-cyhalothrin	17.0	17.0	0.0
Phenmedipham	17.0	17.0	6.8
Pyrethrins	6.8	6.8	0.3
Cyprodinil	4.4	4.4	1.7
Fludioxonil	4.4	4.4	1.1

Figure 19: The top 10 active ingredients most extensively used on beetroot in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metamitron	70.3	55.8	18.6
Chloridazon	30.4	22.4	22.4
Prosulfocarb	29.7	18.6	18.6
S-metolachlor	23.7	23.0	23.0
Phenmedipham	6.8	17.0	17.0
Thiacloprid	4.7	37.2	18.6
Cyprodinil	1.7	4.4	4.4
Fludioxonil	1.1	4.4	4.4
Metaldehyde	0.8	3.9	3.9
Pyrethrins	0.3	6.8	6.8

Pesticide usage on broccoli

580 ha of broccoli in Ireland.

5,315 treated hectares.

1,927 kilogrammes applied.

99.43% of the area of broccoli received a pesticide treatment.

Figure 20: Pesticide usage (spha) on broccoli in Ireland, 2015.

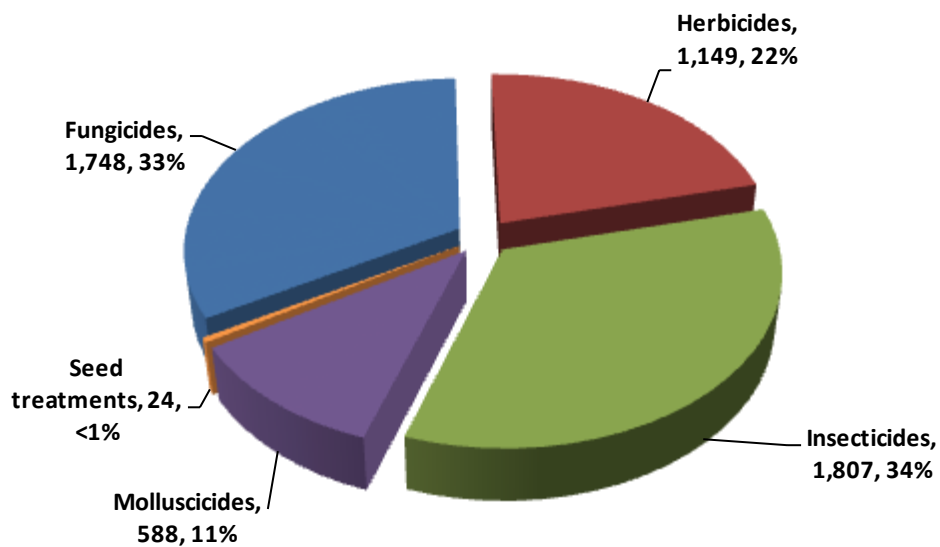


Figure 21: Weight of pesticides (kg) applied to broccoli in Ireland, 2015.

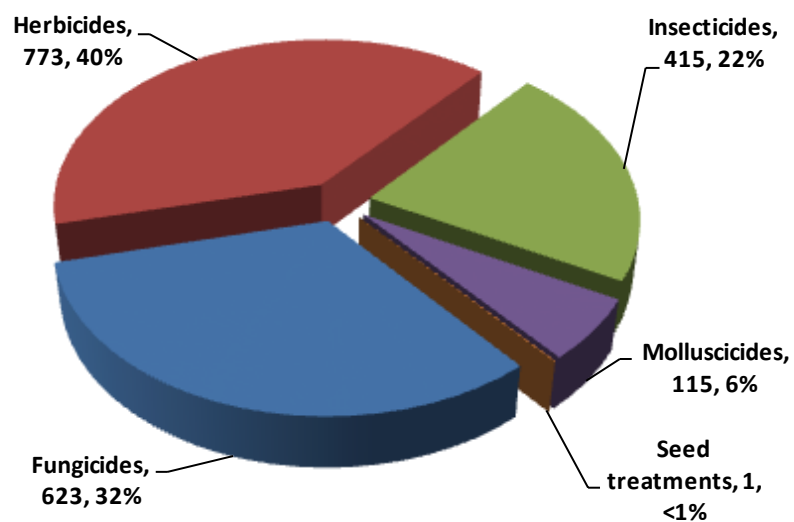


Figure 22: Proportional area of broccoli treated with each pesticide group in Ireland, 2015.

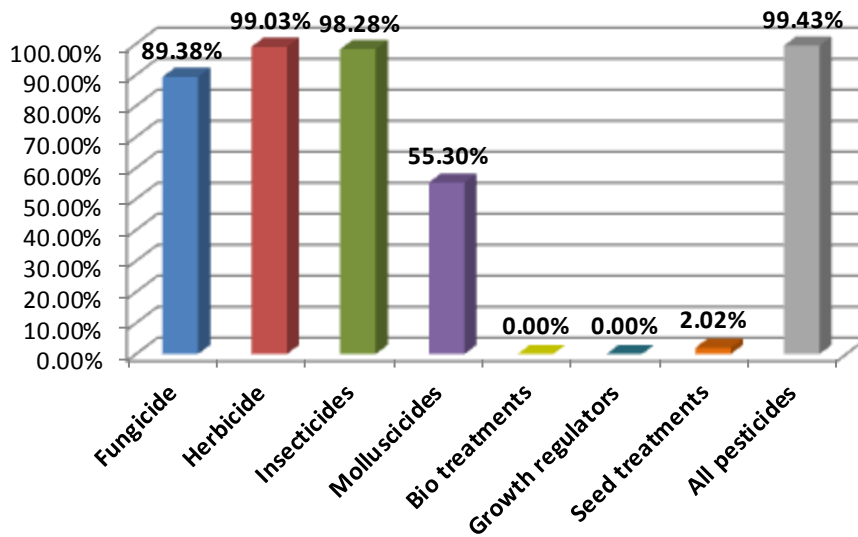


Figure 23: The top 10 active ingredients most extensively used on broccoli in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Cypermethrin	867.1	474.1	22.0
Metalaxyl-m	695.3	397.4	351.8
Azoxystrobin	694.1	425.0	139.6
Chlorpyrifos	580.3	313.4	372.4
Metaldehyde	546.7	279.8	109.3
Metazachlor	543.8	543.8	387.0
Pyridate	318.5	318.5	135.7
Difenoconazole	159.4	159.4	18.9
Pendimethalin	133.5	133.5	147.7
Lambda-cyhalothrin	109.6	109.6	1.0

Figure 24: The top 10 active ingredients most extensively used on broccoli in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metazachlor	387.0	543.8	543.8
Chlorpyrifos	372.4	580.3	313.4
Metalaxyl-m	351.8	695.3	397.4
Pendimethalin	147.7	133.5	133.5
Azoxystrobin	139.6	694.1	425.0
Pyridate	135.7	318.5	318.5
Metaldehyde	109.3	546.7	279.8
Glyphosate	69.1	72.9	72.9
Propamocarb hydrochloride	38.7	2.1	1.9
Cypermethrin	22.0	867.1	474.1

Pesticide usage on brussels sprouts

170 ha of brussels sprouts in Ireland.

2743 treated hectares.

833 kilogrammes applied.

100% of the area of brussels sprouts received a pesticide treatment

Figure 25: Pesticide usage (spha) on brussels sprouts in Ireland, 2015.

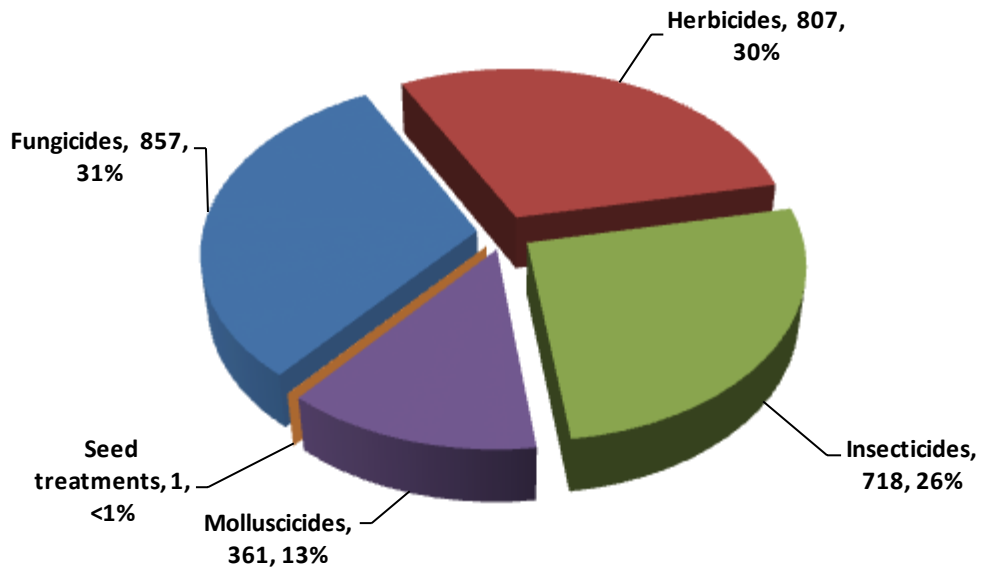


Figure 26: Weight of pesticides (kg) applied to brussels sprouts in Ireland, 2015.

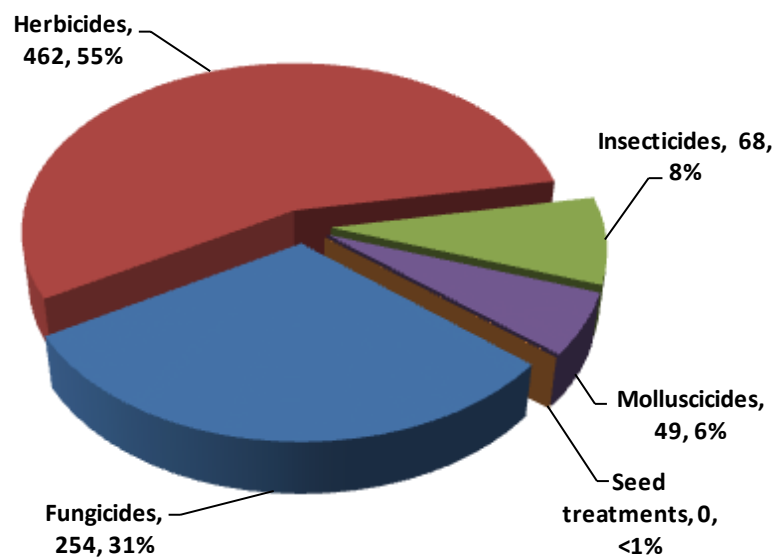


Figure 27: Proportional area of brussels sprouts treated with each pesticide group in Ireland, 2015.

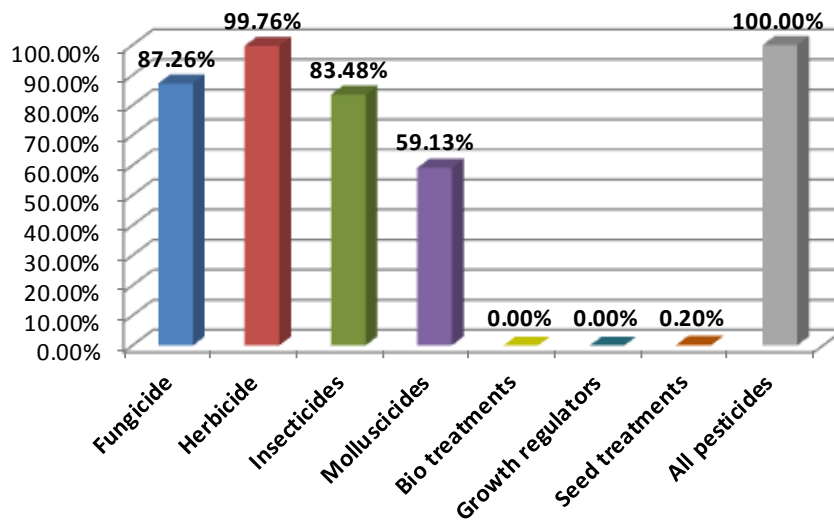


Figure 28: The top 10 active ingredients most extensively used on brussels sprouts in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Difenoconazole	405.2	113.5	50.8
Methiocarb	276.7	72.2	25.1
Metazachlor	164.6	164.6	112.2
Pyridate	161.5	93.4	74.7
Clopyralid	157.0	88.8	31.4
Deltamethrin	156.8	100.7	1.2
Spirotetramat	147.3	35.2	8.5
Pirimicarb	141.8	73.7	20.2
Azoxystrobin	131.3	131.3	37.1
Pendimethalin	125.5	125.5	151.3

Figure 29: The top 10 active ingredients most extensively used on brussels sprouts in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pendimethalin	151.3	125.5	125.5
Metazachlor	112.2	164.6	164.6
Chlorothalonil	78.9	78.9	75.8
Pyridate	74.7	161.5	93.4
Glyphosate	71.0	49.7	49.7
Difenoconazole	50.8	405.2	113.5
Azoxystrobin	37.1	131.3	131.3
Clopyralid	31.4	157.0	88.8
Chlorpyrifos	31.2	0.4	0.4
Methiocarb	25.1	276.7	72.2

Pesticide usage on cabbage

925 ha of cabbage grown in Ireland.

9,499 treated hectares.

3,548 kilogrammes applied

98.88% of the area of cabbage received a pesticide treatment

Figure 30: Pesticide usage (spha) on cabbage in Ireland, 2015.

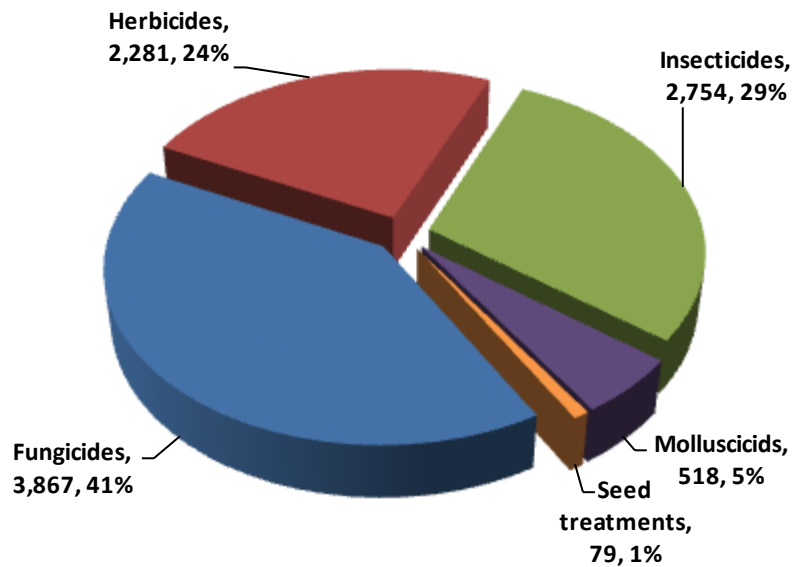


Figure 31: Weight of pesticides (kg) applied to cabbage in Ireland, 2015.

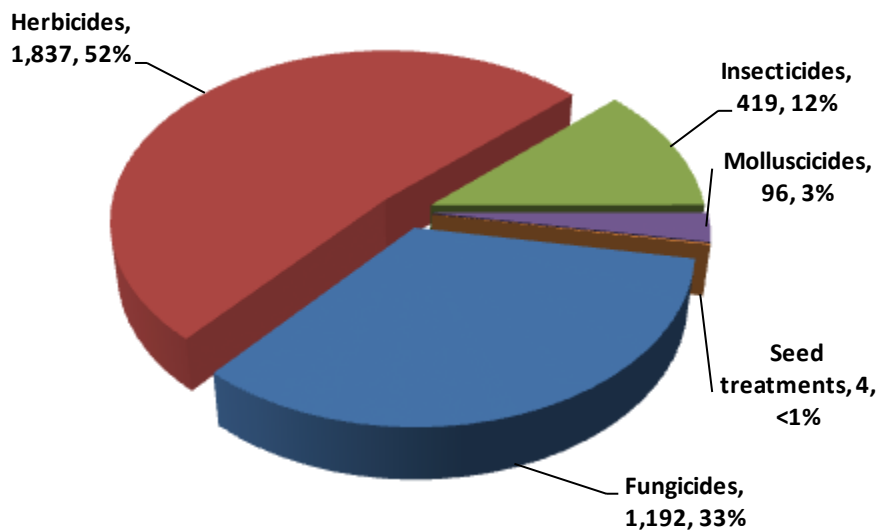


Figure 32: Proportional area of cabbage treated with each pesticide group in Ireland, 2015.

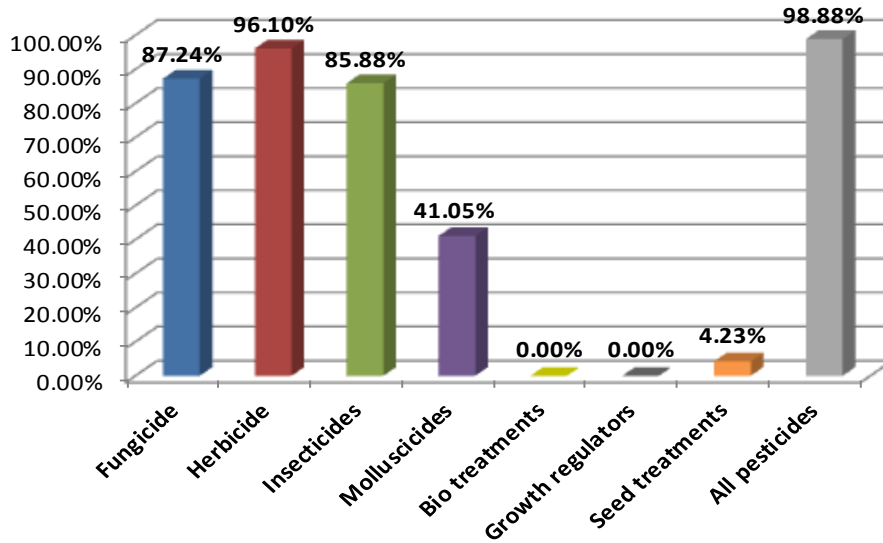


Figure 33: The top 10 active ingredients most extensively used on cabbage in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Difenoconazole	1078.2	638.1	131.1
Azoxystrobin	914.3	551.6	220.5
Metazachlor	896.3	874.9	665.6
Cypermethrin	664.0	507.9	17.3
Metalaxyl-m	563.5	397.7	315.7
Pendimethalin	560.7	485.2	536.3
Tebuconazole	478.1	308.1	97.1
Lambda-cyhalothrin	448.8	240.7	5.1
Trifloxystrobin	437.4	273.8	43.7
Chlorpyrifos	359.0	303.5	286.9

Figure 34: The top 10 active ingredients most extensively used on cabbage in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metazachlor	665.6	896.3	874.9
Pendimethalin	536.3	560.7	485.2
Metalaxyl-m	315.7	563.5	397.7
Chlorpyrifos	286.9	359.0	303.5
Glyphosate	273.5	244.3	244.3
Azoxystrobin	220.5	914.3	551.6
Propamocarb hydrochloride	160.9	121.7	121.1
Pyridate	157.0	238.2	238.2
Difenoconazole	131.1	1078.2	638.1
Dimethenamid-P	112.0	150.4	150.4

Pesticide usage on carrots.

660 ha of carrots grown in Ireland.

8,264 treated hectares.

2,856 kilogrammes applied.

76.69% of the area of carrots received a pesticide treatment.

Figure 35: Pesticide usage (spha) on carrots in Ireland, 2015.

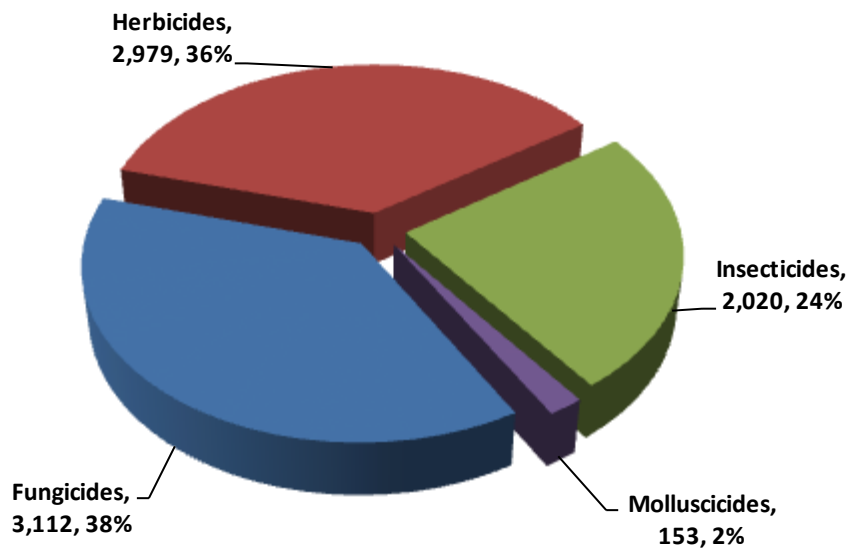


Figure 36: Weight of pesticides (kg) applied to carrots in Ireland, 2015.

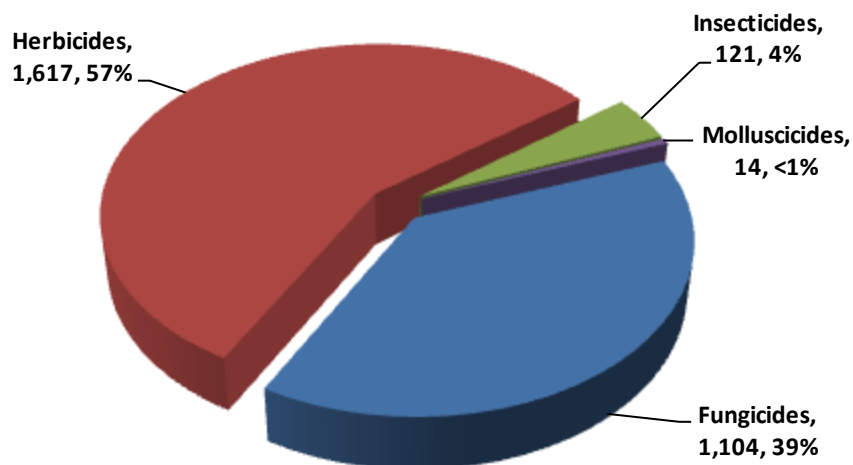


Figure 37: Proportional area of carrots treated with each pesticide group in Ireland, 2015.

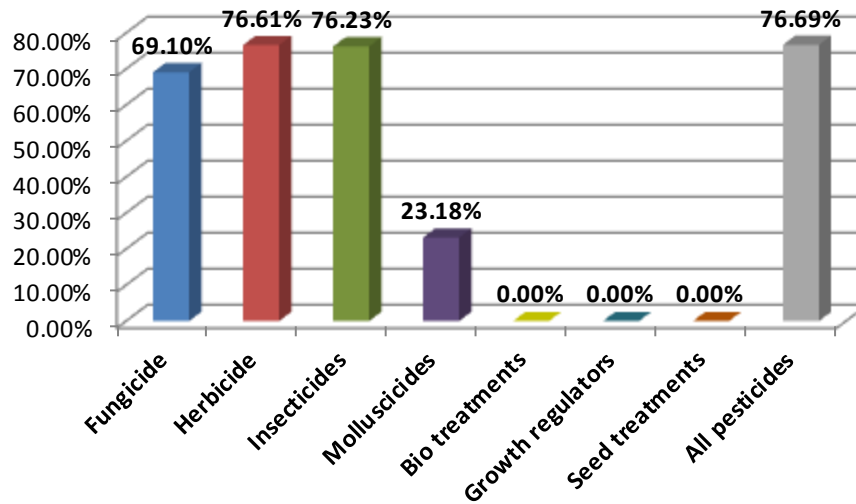


Figure 38: The top 10 active ingredients most extensively used on carrots in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Lambda-cyhalothrin	1421.8	502.4	14.4
Linuron	948.8	491.1	349.4
Metribuzin	831.7	439.9	109.5
Azoxystrobin	673.5	312.5	154.4
Difenoconazole	521.5	316.3	65.2
Pendimethalin	482.0	482.0	613.3
Prothioconazole	393.8	321.3	75.7
Boscalid	353.6	353.6	94.4
Pyraclostrobin	353.6	353.6	23.7
Tebuconazole	353.6	353.6	51.3

Figure 39: The top 10 active ingredients most extensively used on carrots in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pendimethalin	613.3	482.0	482.0
Linuron	349.4	948.8	491.1
Prosulfocarb	344.9	154.2	154.2
Fenpropimorph	243.8	326.8	326.8
Azoxystrobin	154.4	673.5	312.5
Mancozeb	141.9	116.2	116.2
Cyprodinil	128.6	342.9	205.2
Glyphosate	115.0	210.4	210.4
Metribuzin	109.5	831.7	439.9
Boscalid	94.4	353.6	353.6

Pesticide usage on cauliflower

426 ha of cauliflower in Ireland.

3,398 treated hectares.

1,116 kilogrammes applied.

99.3% of the area of cauliflower received a pesticide treatment.

Figure 40: Pesticide usage (spha) on cauliflower in Ireland, 2015.

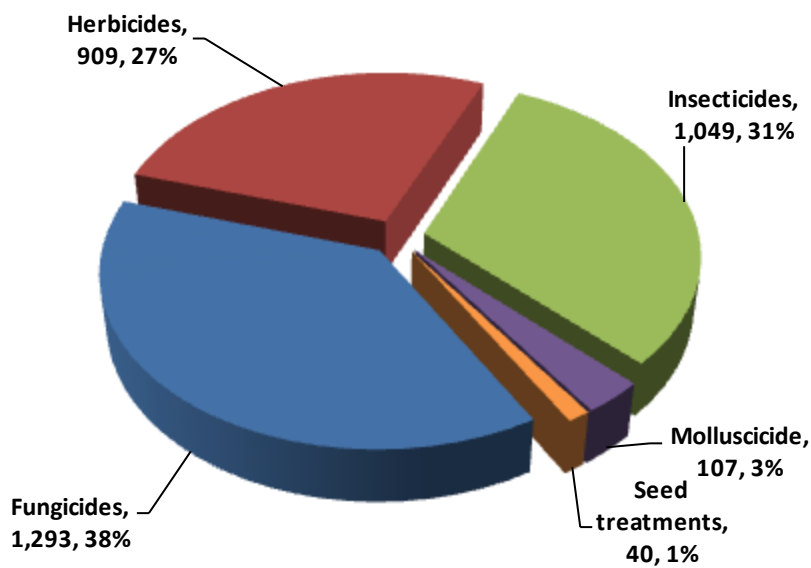


Figure 41: Weight of pesticides (kg) applied to cauliflower in Ireland, 2015.

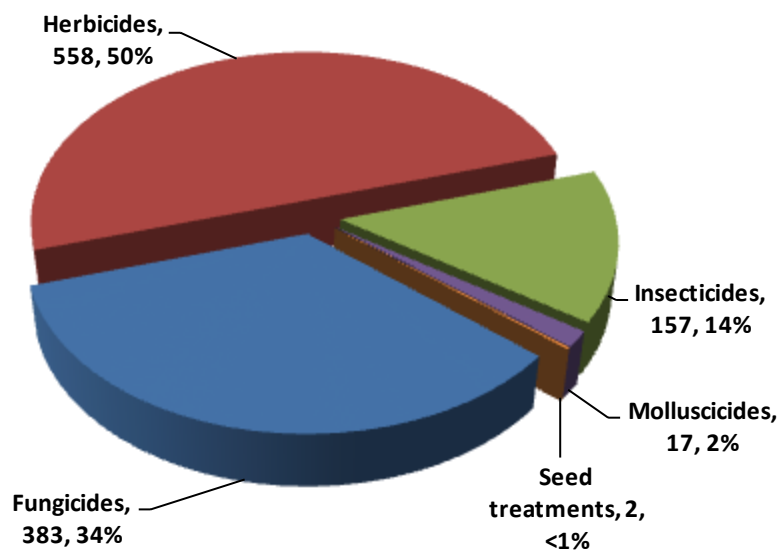


Figure 42: Proportional area of cauliflower treated with each pesticide group in Ireland, in 2015.

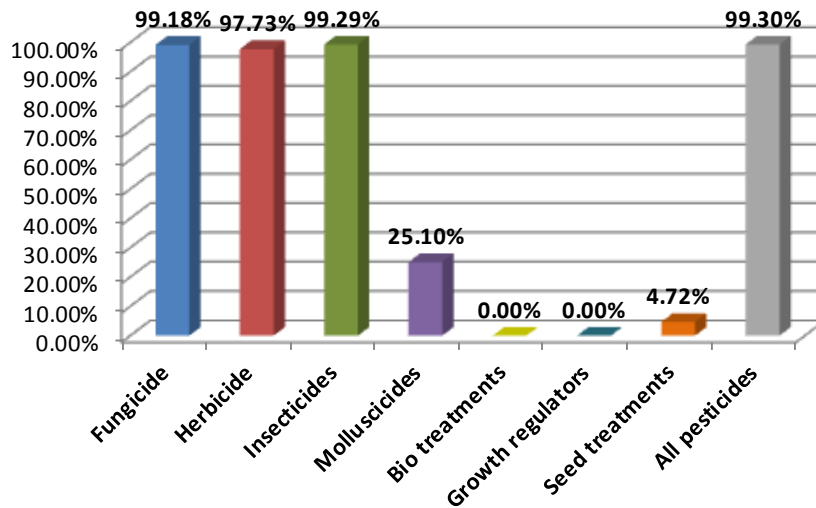


Figure 43: The top 10 active ingredients most extensively used on cauliflower in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Azoxystrobin	360.7	279.9	88.8
Metazachlor	339.8	339.8	221.8
Difenoconazole	315.2	252.3	39.4
Cypermethrin	313.2	271.5	8.3
Pendimethalin	211.0	182.3	194.3
Glyphosate	181.6	181.6	75.5
Tebuconazole	179.3	179.3	40.9
Pirimicarb	166.5	141.1	37.7
Prothioconazole	154.4	154.4	31.5
Lambda-cyhalothrin	153.2	134.8	1.4

Figure 44: The top 10 active ingredients most extensively used on cauliflower in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metazachlor	221.8	339.8	339.8
Pendimethalin	194.3	211.0	182.3
Azoxystrobin	88.8	360.7	279.9
Chlorpyrifos	83.0	82.2	82.2
Metalaxyl-m	82.2	146.9	128.5
Glyphosate	75.5	181.6	181.6
Iprodione	64.8	86.6	86.5
Tebuconazole	40.9	179.3	179.3
Difenoconazole	39.4	315.2	252.3
Diquat	38.1	76.1	76.1

Pesticide usage on celery.

43 ha of celery grown in Ireland.

431 treated hectares.

136 kilogrammes applied.

99.98% of the area of celery received a pesticide treatment.

Figure 45: Pesticide usage (spha) on celery in Ireland, 2015.

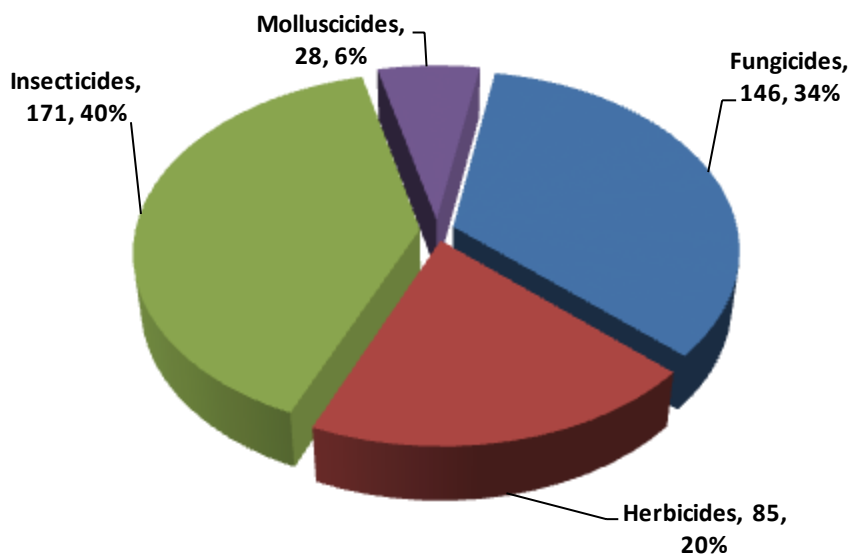


Figure 46: Weight of pesticides (kg) applied to celery in Ireland, 2015.

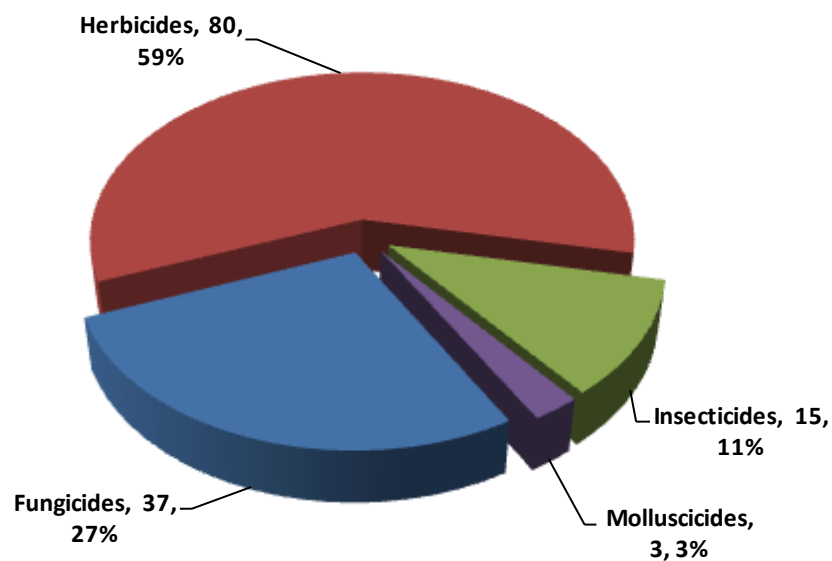


Figure 47: Proportional area of celery treated with each pesticide group in Ireland, 2015.

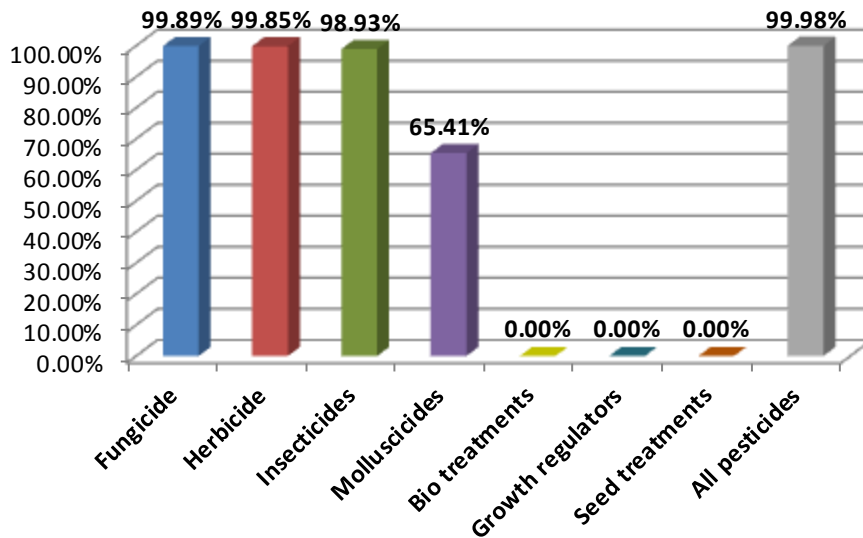


Figure 48: The top 10 active ingredients most extensively used on celery in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Lambda-cyhalothrin	84.1	42.2	0.4
Pymetrozine	80.4	40.2	14.4
Difenoconazole	75.6	41.1	9.2
Azoxystrobin	59.3	42.8	13.7
Linuron	43.0	42.6	20.3
Prosulfocarb	40.7	40.7	58.9
Methiocarb	28.3	28.3	3.4
Copper oxychloride	11.5	5.8	14.4
Cypermethrin	6.1	6.1	0.2
Deltamethrin	0.7	0.7	0.0

Figure 49: The top 10 active ingredients most extensively used on celery in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Prosulfocarb	58.9	40.7	40.7
Linuron	20.3	43.0	42.6
Copper oxychloride	14.4	11.5	5.8
Pymetrozine	14.4	80.4	40.2
Azoxystrobin	13.7	59.3	42.8
Difenoconazole	9.2	75.6	41.1
Methiocarb	3.4	28.3	28.3
Glyphosate	0.6	0.7	0.7
Pendimethalin	0.4	0.7	0.7
Lambda-cyhalothrin	0.4	84.1	42.2

Pesticide usage on kale.

57 ha of kale grown in Ireland.

300 treated hectares.

105 kilogrammes applied.

98.16% of the area of kale received a pesticide treatment.

Figure 50: Pesticide usage (spha) on kale in Ireland, 2015.

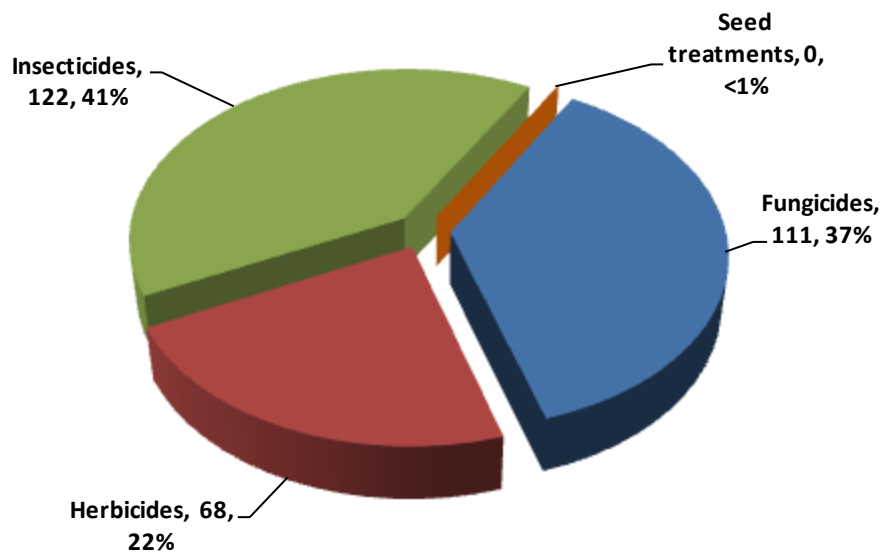


Figure 51: Weight of pesticides (kg) applied to kale in Ireland, 2015.

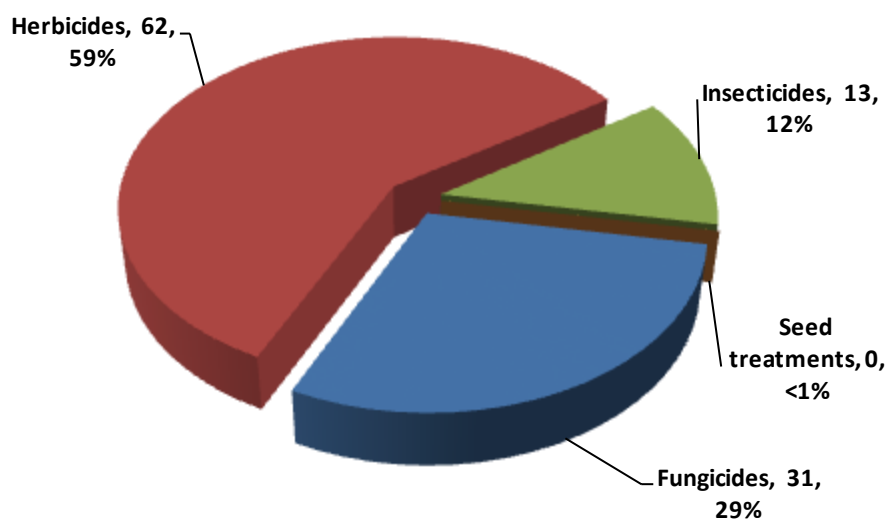
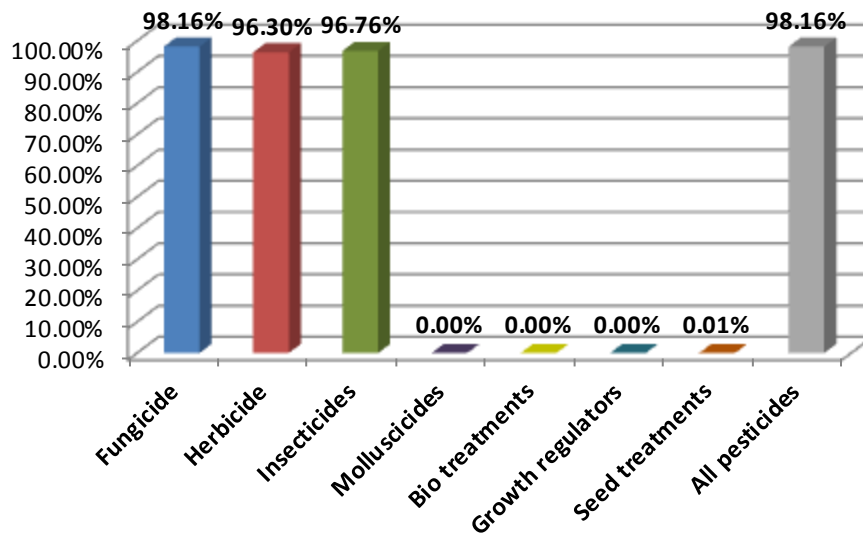


Figure 52: Proportional area of kale treated with each pesticide group in Ireland, 2015.**Figure 53:** The top 10 active ingredients most extensively used on kale in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Azoxystrobin	44.0	41.9	11.1
Metazachlor	41.9	41.9	31.3
Difenoconazole	39.4	39.4	3.0
Pymetrozine	38.6	38.6	7.7
Esfenvalerate	38.6	38.6	0.2
Lambda-cyhalothrin	15.7	13.6	0.1
Spinosad	13.2	13.2	1.3
Propyzamide	12.9	12.9	18.0
Glyphosate	12.9	12.9	12.3
Boscalid	12.9	12.9	5.1

Figure 54: The top 10 active ingredients most extensively used on kale in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metazachlor	31.3	41.9	41.9
Propyzamide	18.0	12.9	12.9
Glyphosate	12.3	12.9	12.9
Azoxystrobin	11.1	44.0	41.9
Pymetrozine	7.7	38.6	38.6
Propamocarb hydrochloride	7.7	0.4	0.4
Boscalid	5.1	12.9	12.9
Pirimicarb	3.2	12.9	12.9
Difenoconazole	3.0	39.4	39.4
Mandipropamid	1.9	12.9	12.9

Pesticide usage on leeks.

123 ha of leeks grown in Ireland.

1,175 treated hectares.

490 kilogrammes applied.

99.26% of the area of leeks received a pesticide treatment.

Figure 55: Pesticide usage (spha) on leeks in Ireland, 2015.

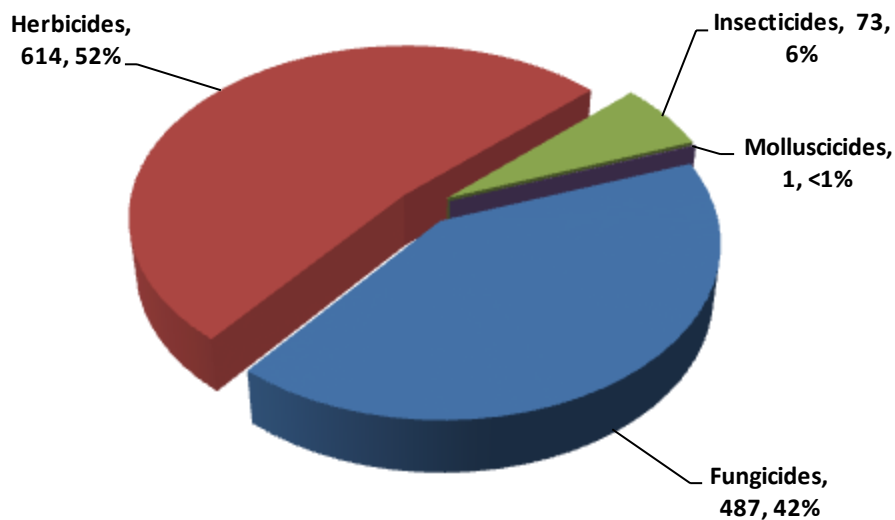


Figure 56: Weight of pesticides (kg) applied to leeks in Ireland, 2015.

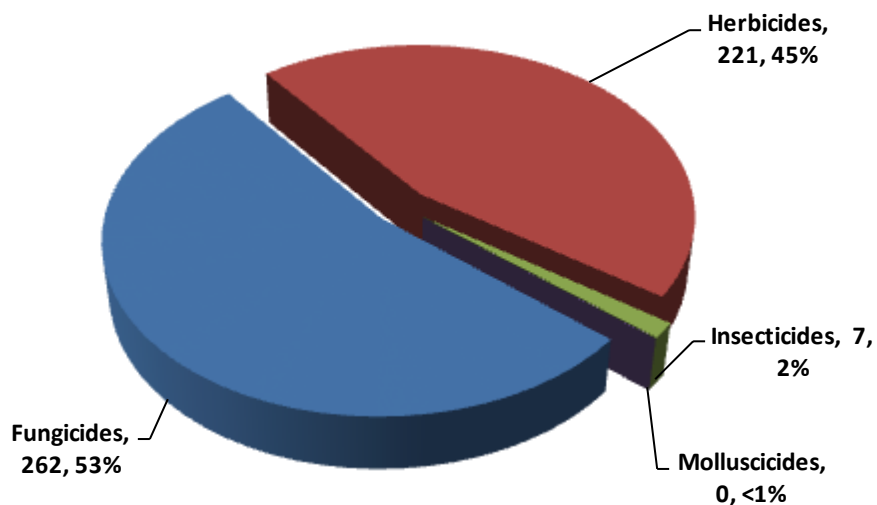


Figure 57: Proportional area of leeks treated with each pesticide group in Ireland, 2015.

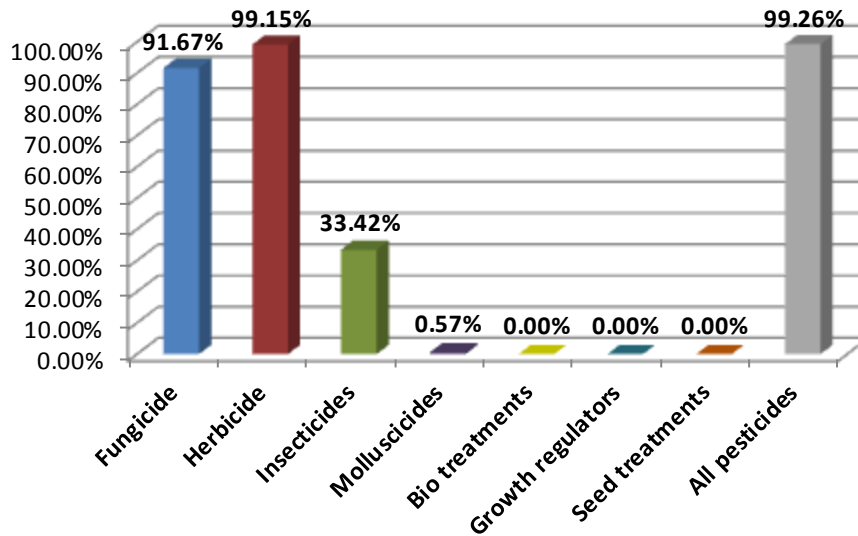


Figure 58: The top 10 active ingredients most extensively used on leeks in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
loxynil	234.2	108.7	16.7
Tebuconazole	161.7	105.2	30.5
Trifloxystrobin	161.0	104.5	15.2
Bentazone	124.9	41.6	32.6
Pendimethalin	111.4	111.4	68.4
Dimethomorph	108.9	67.3	14.8
Mancozeb	108.9	67.3	132.0
Prothioconazole	92.5	47.9	21.3
Azoxystrobin	63.1	63.1	13.2
Metazachlor	61.5	61.5	35.5

Figure 59 The top 10 active ingredients most extensively used on leeks in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Mancozeb	132.0	108.9	67.3
Pendimethalin	68.4	111.4	111.4
Metazachlor	35.5	61.5	61.5
Bentazone	32.6	124.9	41.6
Prosulfocarb	32.4	52.2	52.2
Tebuconazole	30.5	161.7	105.2
Dimethenamid-P	21.5	50.6	50.6
Prothioconazole	21.3	92.5	47.9
loxynil	16.7	234.2	108.7
Fenpropimorph	16.0	34.7	25.7

Pesticide usage on lettuce.

188 ha of lettuce grown in Ireland.

1,024 treated hectares.

433 kilogrammes applied.

54.67% of the area of lettuce received a pesticide treatment.

Figure 60: Pesticide usage (spha) on lettuce in Ireland, 2015.

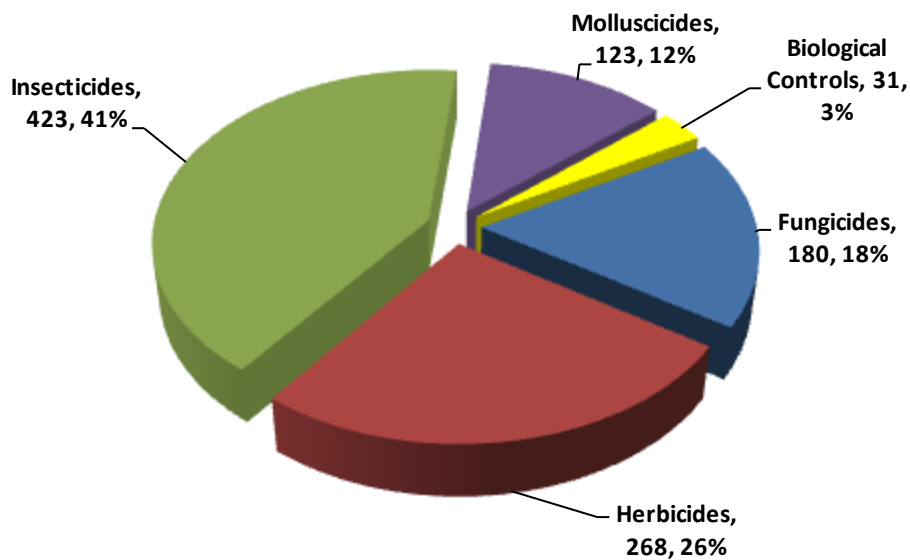


Figure 61: Weight of pesticides (kg) applied to lettuce in Ireland, 2015.

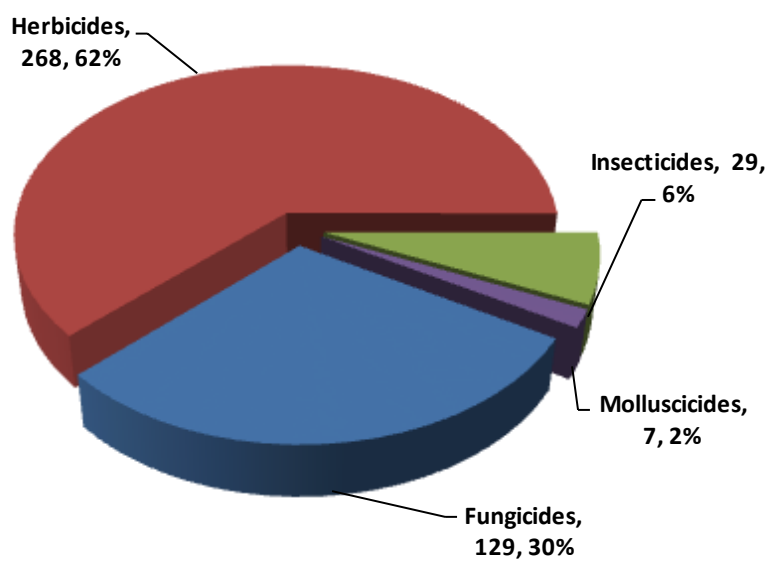
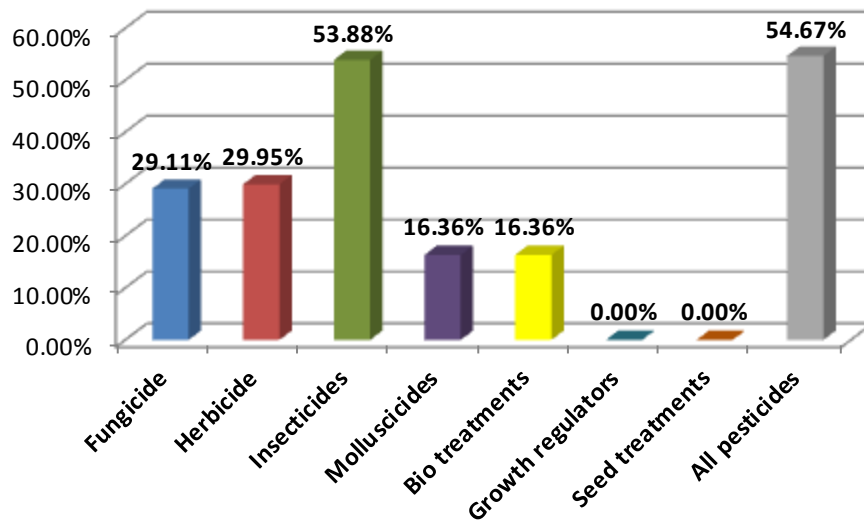


Figure 62: Proportional area of lettuce treated with each pesticide group in Ireland, 2015.**Figure 63:** The top 10 active ingredients most extensively used on lettuce in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Spirotetramat	146.1	98.7	10.9
Propyzamide	132.3	60.2	167.9
Pendimethalin	125.2	40.2	78.8
Methiocarb	122.9	30.7	7.4
Lambda-cyhalothrin	94.7	50.7	0.8
Cypermethrin	61.5	30.7	1.5
Boscalid	52.1	38.2	20.9
Pirimicarb	52.1	38.2	7.8
Pyraclostrobin	52.1	38.2	5.2
Mancozeb	49.6	38.2	69.2

Figure 64: The top 10 active ingredients most extensively used on lettuce in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Propyzamide	167.9	132.3	60.2
Pendimethalin	78.8	125.2	40.2
Mancozeb	69.2	49.6	38.2
Boscalid	20.9	52.1	38.2
Dimethenamid-P	12.4	46.8	38.2
Propamocarb hydrochloride	10.9	8.2	8.2
Spirotetramat	10.9	146.1	98.7
Glyphosate	8.2	9.2	9.2
Azoxystrobin	7.8	31.2	31.2
Pirimicarb	7.8	52.1	38.2

Pesticide usage on onions.

176 ha of onions grown in Ireland.

3,719 treated hectares.

4,096 kilogrammes applied.

98.97% of the area of onions received a pesticide treatment.

Figure 65: Pesticide usage (spha) on onions in Ireland, 2015.

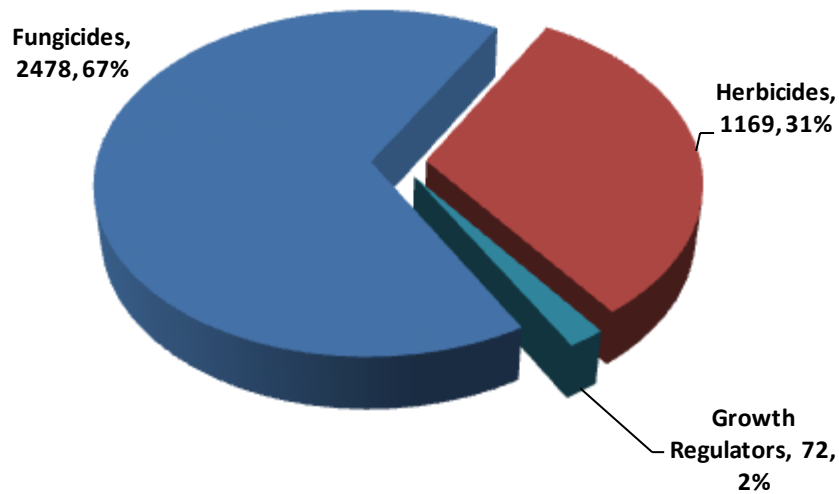


Figure 66: Weight of pesticides (kg) applied to onions in Ireland, 2015.

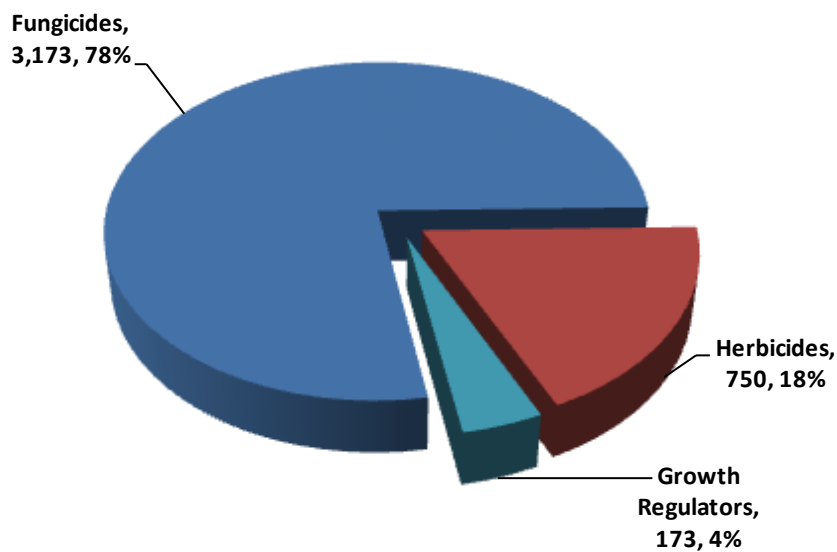


Figure 67: Proportional area of onions treated with each pesticide group in Ireland, 2015.

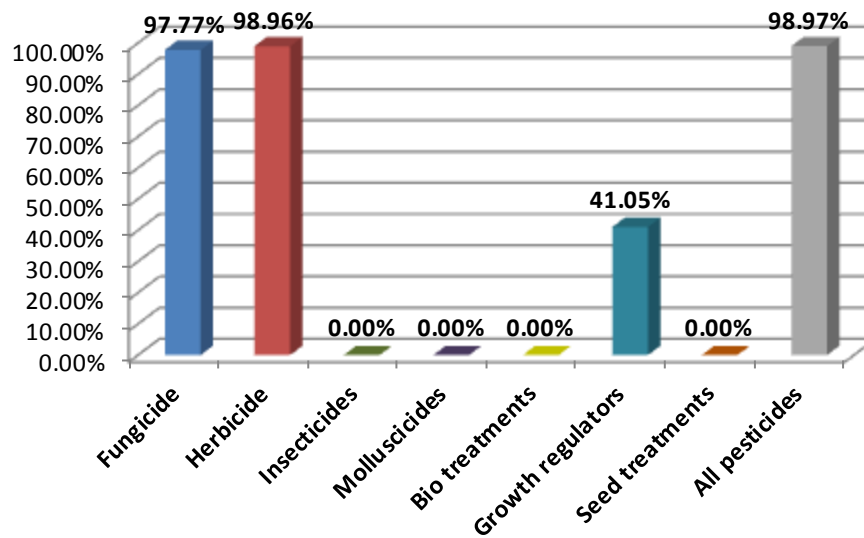


Figure 68: The top 10 active ingredients most extensively used on onions in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Mancozeb	1720.6	171.7	2536.4
Benthiavdicarb-isopropyl	581.3	171.7	16.3
Dimethomorph	475.9	165.9	83.3
Ioxynil	411.7	173.8	28.0
Prosulfocarb	409.6	171.7	402.7
Cyprodinil	331.7	165.9	88.4
Fludioxonil	331.7	165.9	59.0
Copper oxychloride	187.6	93.8	197.9
Pendimethalin	173.8	173.8	108.1
Dimethenamid-P	171.7	171.7	89.8

Figure 69: The top 10 active ingredients most extensively used on onions in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Mancozeb	2536.4	1720.6	171.7
Prosulfocarb	402.7	409.6	171.7
Copper oxychloride	197.9	187.6	93.8
Maleic hydrazide	173.0	72.1	72.1
Chlorothalonil	165.9	165.9	165.9
Glyphosate	121.1	165.9	165.9
Pendimethalin	108.1	173.8	173.8
Dimethenamid-P	89.8	171.7	171.7
Cyprodinil	88.4	331.7	165.9
Dimethomorph	83.3	475.9	165.9

Pesticide usage on other herbs.

22 ha of other herbs grown in Ireland.

165 treated hectares.

99 kilogrammes applied.

89.88% of the area of other herbs received a pesticide treatment.

Figure 70: Pesticide usage (spha) on other herbs in Ireland, 2015.

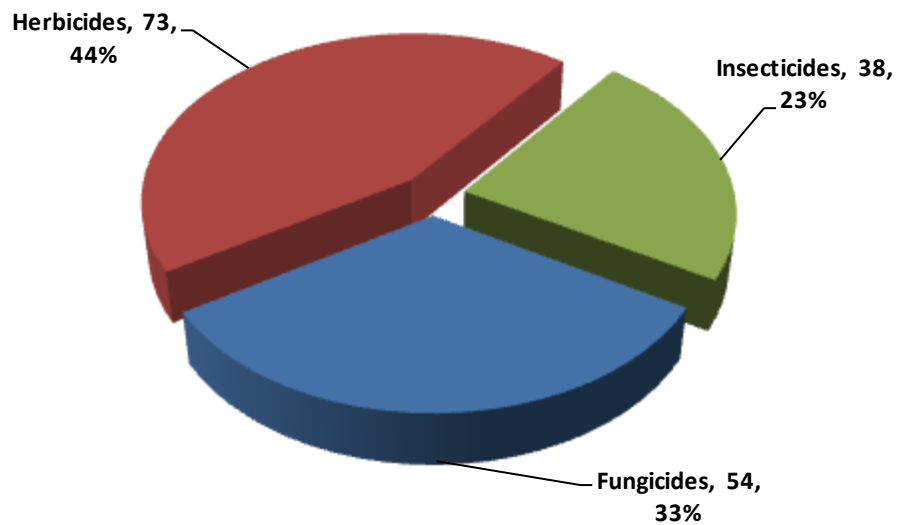


Figure 71: Weight of pesticides (kg) applied to other herbs in Ireland, 2015.

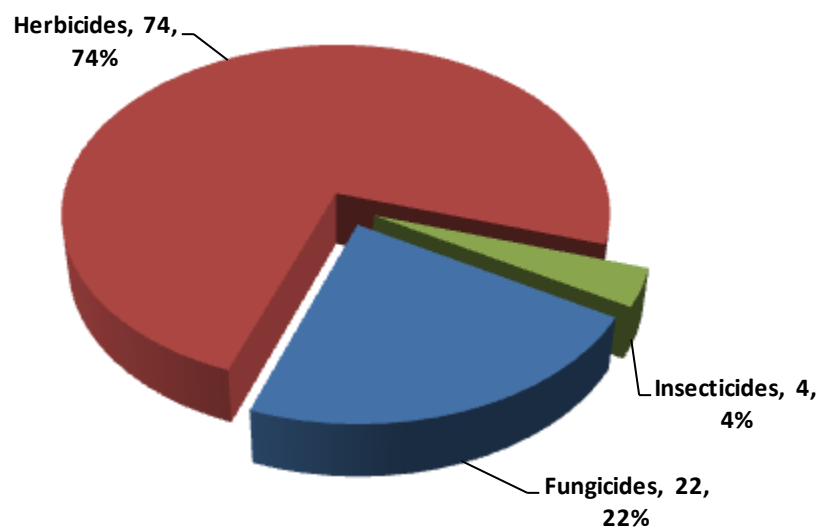


Figure 72: Proportional area of other herbs treated with each pesticide group in Ireland, 2015.

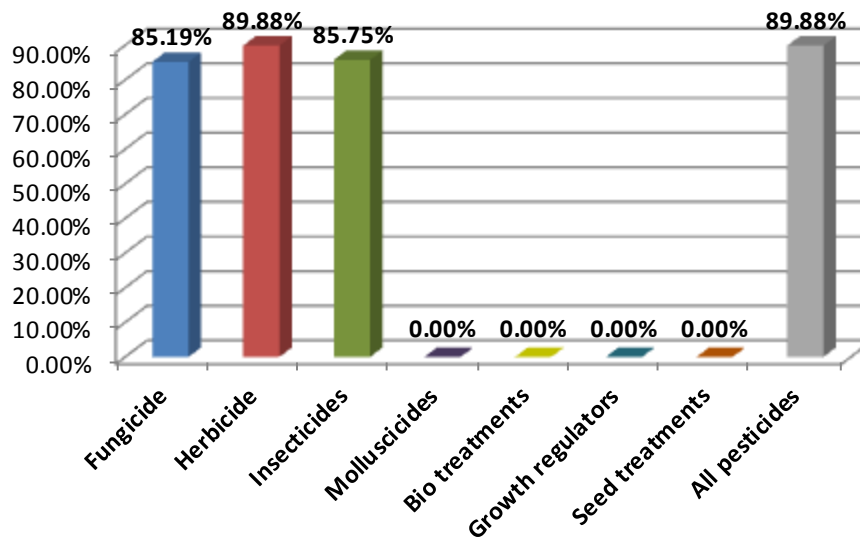


Figure 73: The top 10 active ingredients most extensively used on other herbs in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Azoxystrobin	18.7	18.7	4.7
Linuron	17.8	17.8	9.1
Propyzamide	17.8	17.8	19.2
Spinosad	10.4	10.4	1.0
Glyphosate	10.3	10.3	10.3
Boscalid	9.4	9.4	3.8
Chlorpropham	9.4	9.4	10.5
Lambda-cyhalothrin	9.4	9.4	0.1
Mandipropamid	9.4	9.4	1.4
Pirimicarb	9.4	9.4	2.3

Figure 74: The top 10 active ingredients most extensively used on other herbs in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Prosulfocarb	20.2	8.4	8.4
Propyzamide	19.2	17.8	17.8
Chlorpropham	10.5	9.4	9.4
Glyphosate	10.3	10.3	10.3
Linuron	9.1	17.8	17.8
Metalaxyl-m	5.9	8.4	8.4
Azoxystrobin	4.7	18.7	18.7
Boscalid	3.8	9.4	9.4
Diquat	3.4	8.4	8.4
Prochloraz	3.4	8.4	8.4

Pesticide usage on other outdoor vegetables.

21 ha of other outdoor vegetables grown in Ireland.

71 treated hectares.

35 kilogrammes applied.

60.93% of the area of other outdoor vegetables received a pesticide treatment.

Figure 75: Pesticide usage (spha) on other outdoor vegetables in Ireland, 2015.

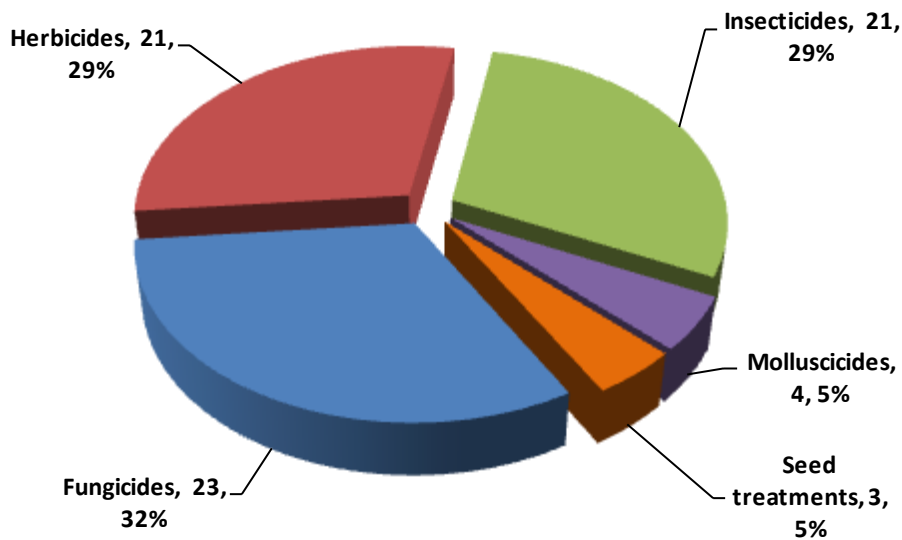


Figure 76: Weight of pesticides (kg) applied to other outdoor vegetables in Ireland, 2015.

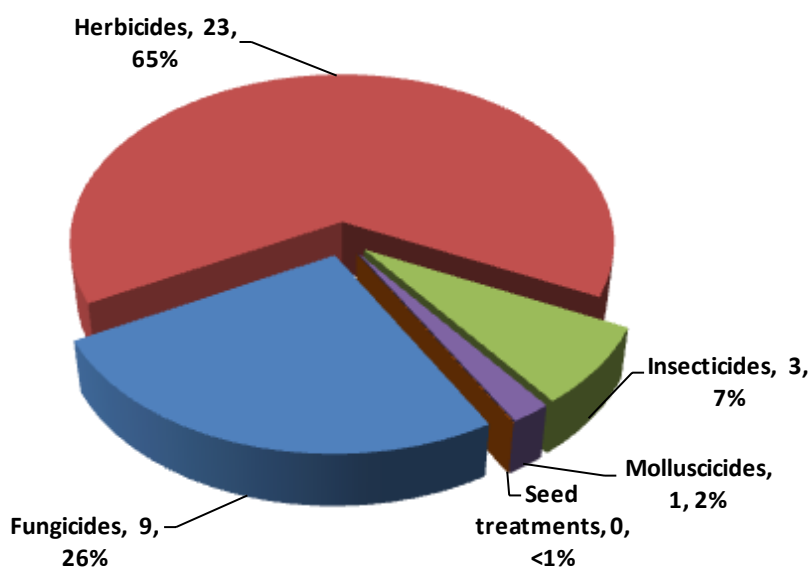


Figure 77: Proportional area of other outdoor vegetables treated with each pesticide group in Ireland, 2015.

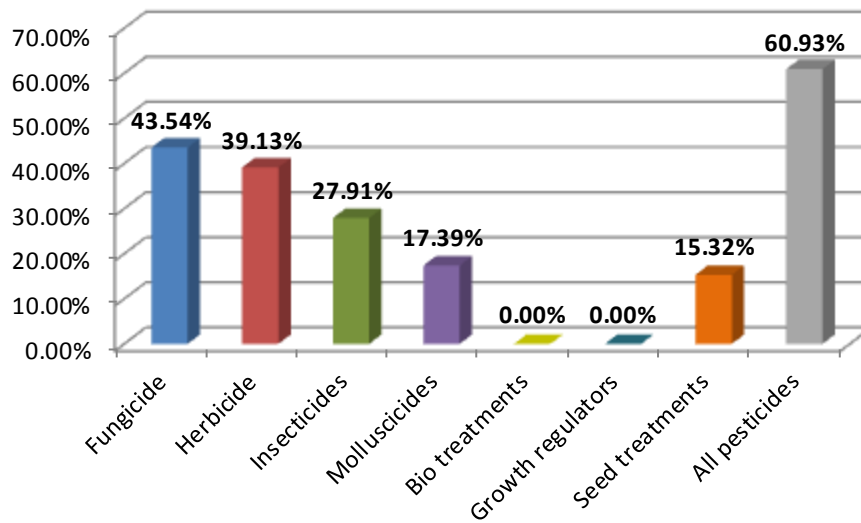


Figure 78: The top 10 active ingredients most extensively used on other outdoor vegetables in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Azoxystrobin	11.8	8.4	2.8
Difenoconazole	4.1	2.9	0.5
Esfenvalerate	4.1	2.9	0.0
Pirimicarb	3.7	2.9	0.2
Spinosad	3.7	2.9	0.4
Glyphosate	3.6	3.6	4.6
Metaldehyde	3.6	3.6	0.7
Pendimethalin	3.6	3.6	4.8
Deltamethrin	2.8	2.8	0.0
Diquat	2.8	2.8	1.1

Figure 79: The top 10 active ingredients most extensively used on other outdoor vegetables in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Prosulfocarb	6.7	2.8	2.8
Pendimethalin	4.8	3.6	3.6
Glyphosate	4.6	3.6	3.6
Azoxystrobin	2.8	11.8	8.4
Propyzamide	2.0	2.8	2.8
Metalaxyl-m	2.0	2.8	2.8
Metazachlor	1.9	2.5	2.5
Linuron	1.6	2.8	2.8
Propamocarb hydrochloride	1.5	0.1	0.1
Chlorpyrifos	1.3	1.9	1.9

Pesticide usage on parsley.

13 ha of parsley grown in Ireland.

70 treated hectares.

39 kilogrammes applied.

96.70% of the area of parsley received a pesticide treatment.

Figure 80: Pesticide usage (spha) on parsley in Ireland, 2015.

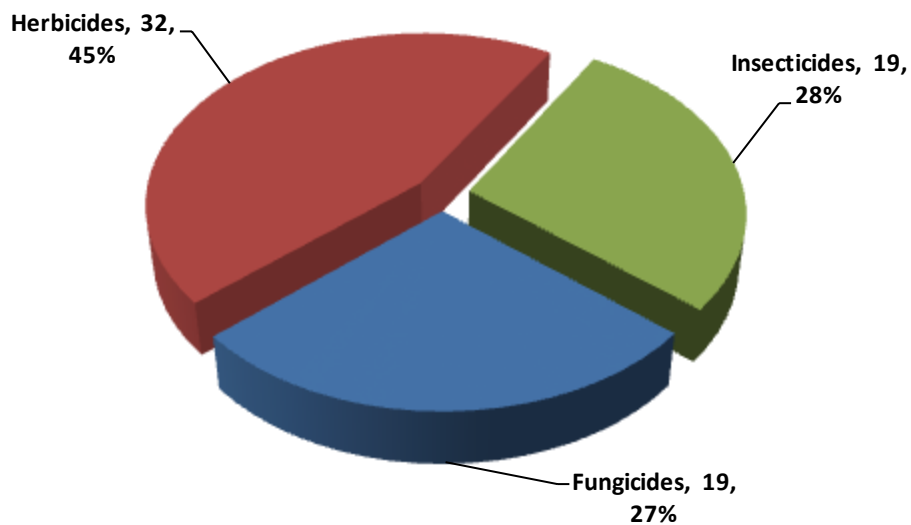


Figure 81: Weight of pesticides (kg) applied to parsley in Ireland, 2015.

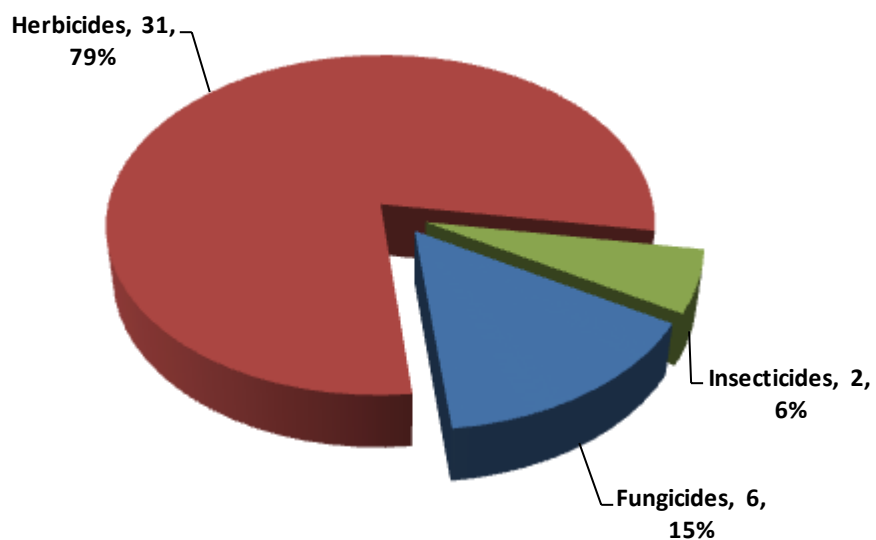
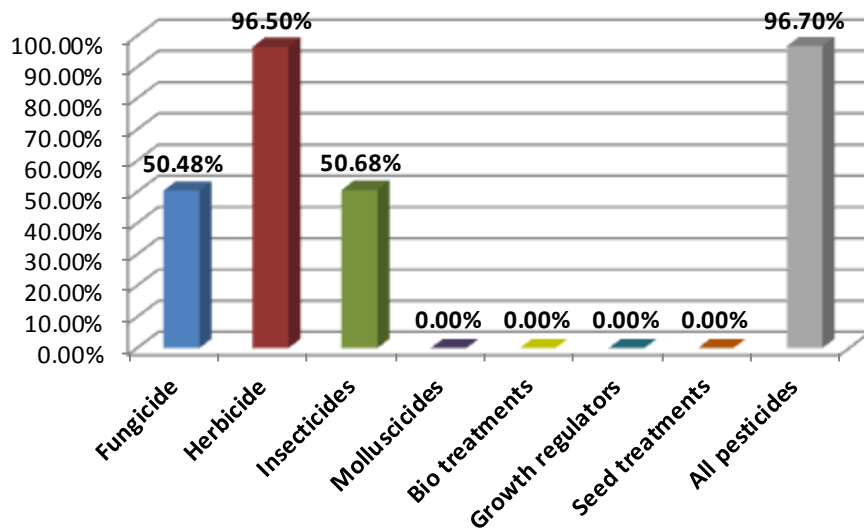


Figure 82: Proportional area of parsley treated with each pesticide group in Ireland, 2015.**Figure 83:** The top 10 active ingredients most extensively used on parsley in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Linuron	11.7	11.7	7.9
Spinosad	6.5	6.5	0.6
Azoxystrobin	6.4	6.4	1.6
Boscalid	6.4	6.4	2.6
Chlorpropham	6.4	6.4	7.2
Glyphosate	6.4	6.4	6.2
Lambda-cyhalothrin	6.4	6.4	0.0
Mandipropamid	6.4	6.4	1.0
Pirimicarb	6.4	6.4	1.6
Propyzamide	6.4	6.4	9.0

Figure 84: The top 10 active ingredients most extensively used on parsley in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Propyzamide	9.0	6.4	6.4
Linuron	7.9	11.7	11.7
Chlorpropham	7.2	6.4	6.4
Glyphosate	6.2	6.4	6.4
Boscalid	2.6	6.4	6.4
Azoxystrobin	1.6	6.4	6.4
Pirimicarb	1.6	6.4	6.4
Mandipropamid	1.0	6.4	6.4
Pyraclostrobin	0.6	6.4	6.4
Spinosad	0.6	6.5	6.5

Pesticide usage on parsnips.

298 ha of parsnips grown in Ireland.

3,505 treated hectares.

1,649 kilogrammes applied.

99.74% of the area of parsnips received a pesticide treatment

Figure 85: Pesticide usage (spha) on parsnips in Ireland, 2015.

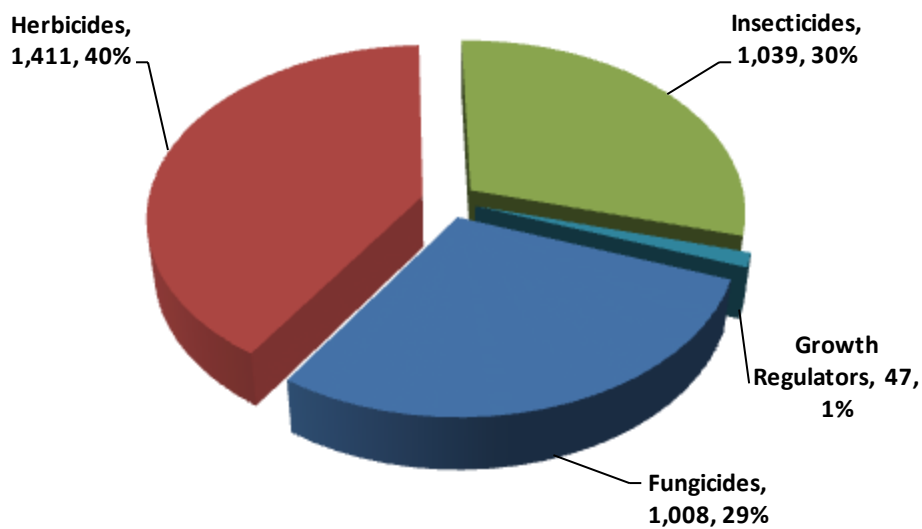


Figure 86: Weight of pesticides (kg) applied to parsnips in Ireland, 2015.

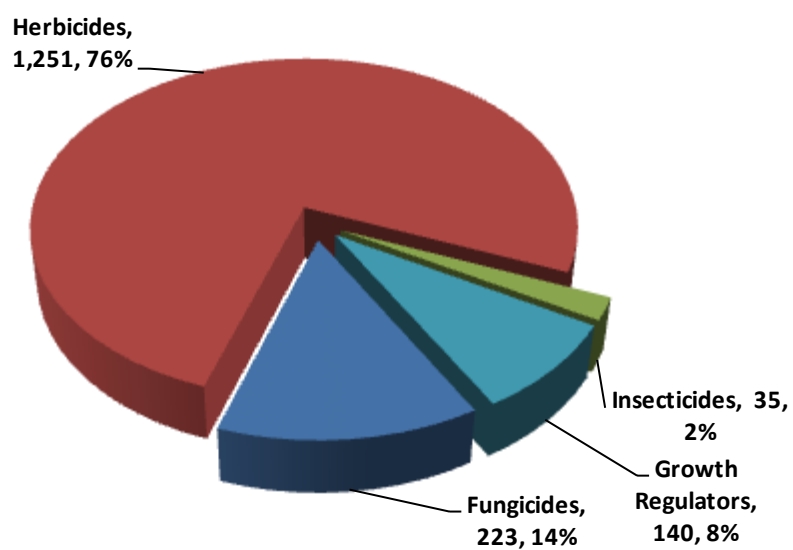
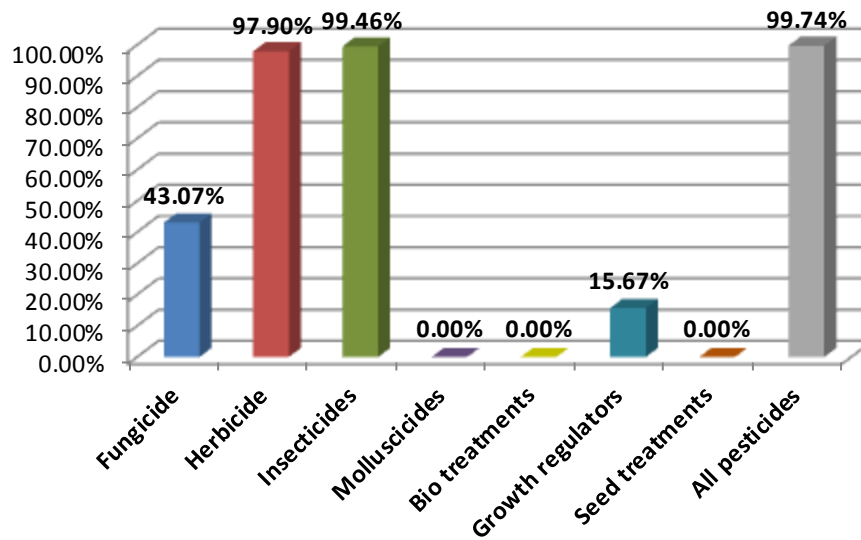


Figure 87: Proportional area of parsnips treated with each pesticide group in Ireland, 2015.**Figure 88:** The top 10 active ingredients most extensively used on parsnips in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Lambda-cyhalothrin	743.6	291.3	9.5
Linuron	416.4	279.3	232.0
Prothioconazole	315.0	110.2	60.5
Pendimethalin	286.0	286.0	371.2
Metamitron	263.5	263.5	446.0
Thiacloprid	247.3	247.3	23.7
Azoxystrobin	246.4	128.5	61.6
Difenoconazole	204.8	110.2	25.6
Tebuconazole	189.2	94.6	28.4
Trifloxystrobin	189.2	94.6	14.2

Figure 89: The top 10 active ingredients most extensively used on parsnips in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metamitron	446.0	263.5	263.5
Pendimethalin	371.2	286.0	286.0
Linuron	232.0	416.4	279.3
Prosulfocarb	177.6	145.7	145.7
Maleic hydrazide	140.3	46.8	46.8
Azoxystrobin	61.6	246.4	128.5
Prothioconazole	60.5	315.0	110.2
Tebuconazole	28.4	189.2	94.6
Difenoconazole	25.6	204.8	110.2
Fenpropimorph	25.0	33.3	33.3

Pesticide usage on rhubarb.

87 ha of rhubarb grown in Ireland.

148 treated hectares.

113 kilogrammes applied.

84.50% of the area of rhubarb received a pesticide treatment.

Figure 90: Pesticide usage (spha) on rhubarb in Ireland, 2015.

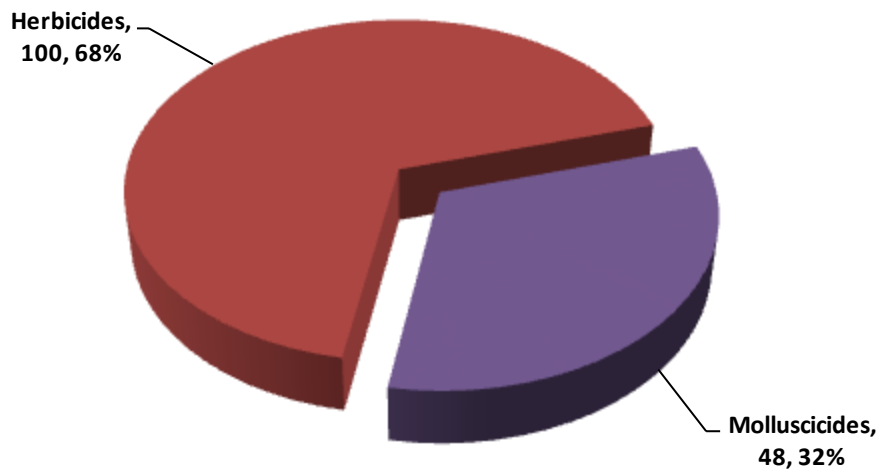


Figure 91: Weight of pesticides (kg) applied to rhubarb in Ireland, 2015.

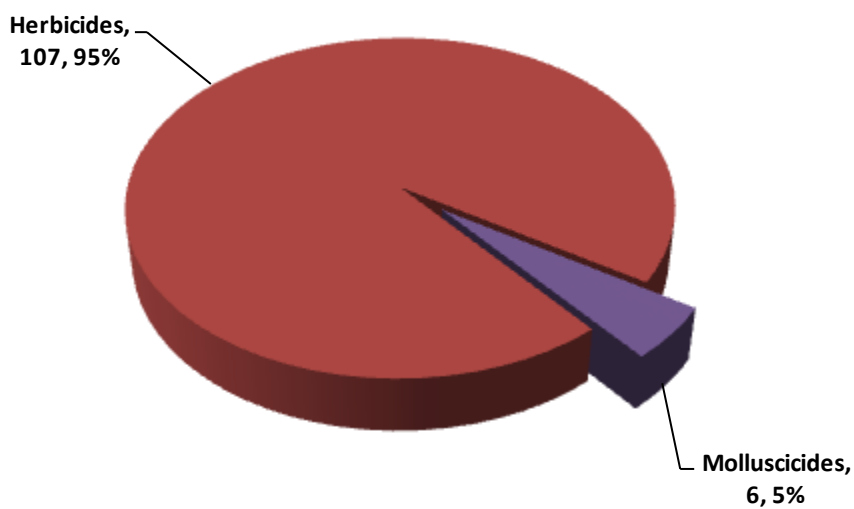


Figure 92: Proportional area of rhubarb treated with each pesticide group in Ireland, 2015.

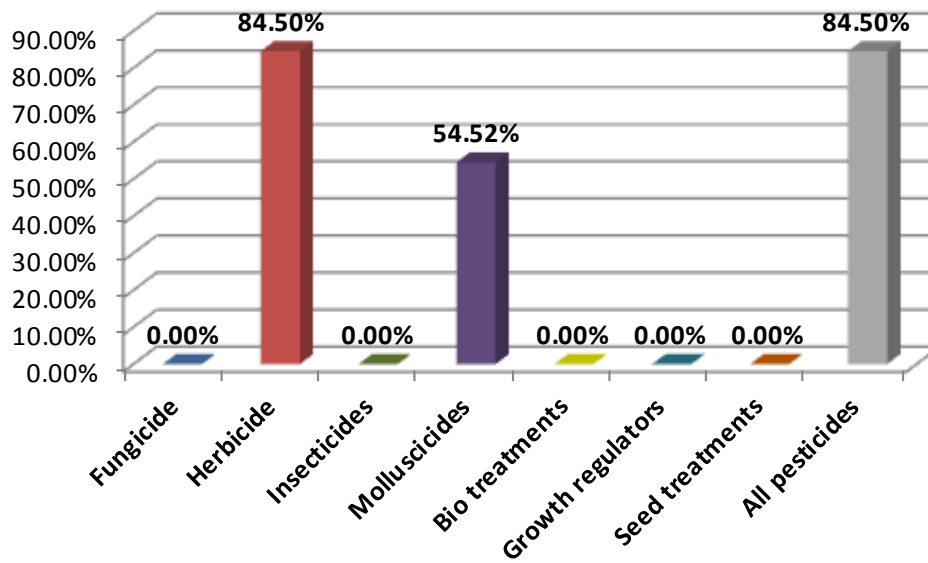


Figure 93: The top 10 active ingredients most extensively used on rhubarb in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Bromoxynil	47.5	47.5	8.0
Ferric phosphate	47.5	47.5	5.6
Ioxynil	47.5	47.5	8.0
Mecoprop-P	47.5	47.5	31.9
Pendimethalin	26.1	26.1	34.0
Propyzamide	19.9	19.9	15.4
Glyphosate	3.3	3.3	3.6
Prosulfocarb	3.3	3.3	6.7

Figure 94: The top 10 active ingredients most extensively used on rhubarb in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pendimethalin	34.0	26.1	26.1
Mecoprop-P	31.9	47.5	47.5
Propyzamide	15.4	19.9	19.9
Bromoxynil	8.0	47.5	47.5
Ioxynil	8.0	47.5	47.5
Prosulfocarb	6.7	3.3	3.3
Ferric phosphate	5.6	47.5	47.5
Glyphosate	3.6	3.3	3.3

Pesticide usage on scallions.

92 ha of scallions grown in Ireland.

873 treated hectares.

389 kilogrammes applied.

99.73% of the area of scallions received a pesticide treatment.

Figure 95: Pesticide usage (spha) on scallions in Ireland, 2015.

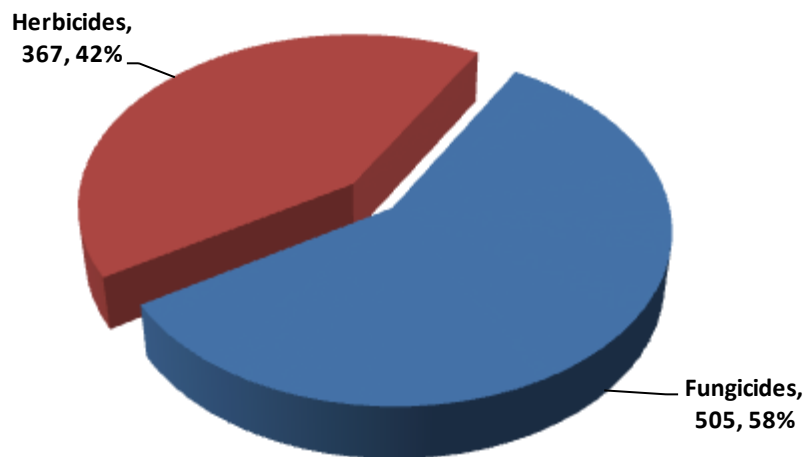


Figure 96: Weight of pesticides (kg) applied to scallions in Ireland, 2015.

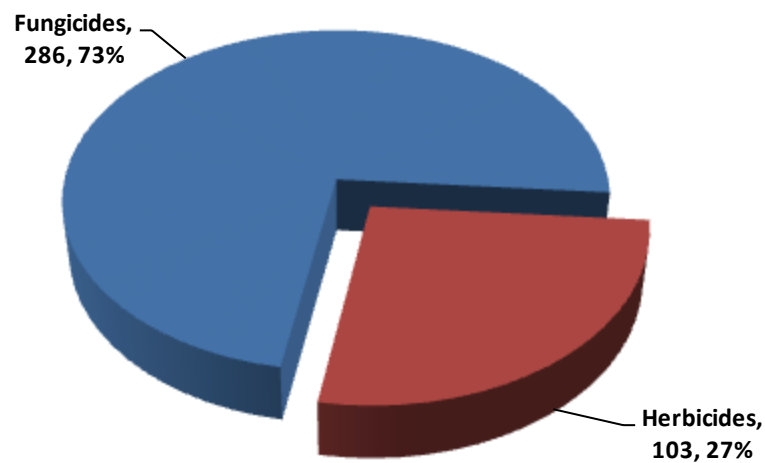
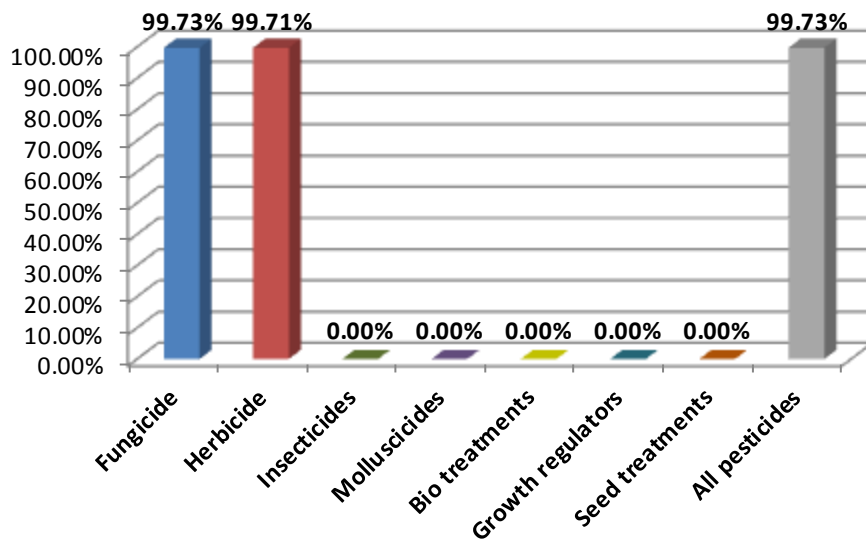


Figure 97: Proportional area of scallions treated with each pesticide group in Ireland, 2015.**Figure 98:** The top 10 active ingredients most extensively used on scallions in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Ioxynil	194.9	91.8	11.6
Chlorothalonil	172.2	91.8	85.0
Azoxystrobin	160.9	80.5	40.2
Mancozeb	91.8	91.8	134.8
Pendimethalin	91.8	91.8	45.1
Bentazone	80.5	80.5	21.0
Cyprodinil	80.5	80.5	15.1
Dimethenamid-P	80.5	80.5	25.6
Fludioxonil	80.5	80.5	10.1
Dimethomorph	11.3	11.3	0.7

Figure 99: The top 10 active ingredients most extensively used on scallions crops in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Mancozeb	134.8	91.8	91.8
Chlorothalonil	85.0	172.2	91.8
Pendimethalin	45.1	91.8	91.8
Azoxystrobin	40.2	160.9	80.5
Dimethenamid-P	25.6	80.5	80.5
Bentazone	21.0	80.5	80.5
Cyprodinil	15.1	80.5	80.5
Ioxynil	11.6	194.9	91.8
Fludioxonil	10.1	80.5	80.5
Dimethomorph	0.7	11.3	11.3

Pesticide usage on spinach.

185 ha of spinach grown in Ireland.

987 treated hectares.

654 kilogrammes applied.

92.06% of the area of spinach received a pesticide treatment.

Figure 100: Pesticide usage (spha) on spinach in Ireland, 2015.

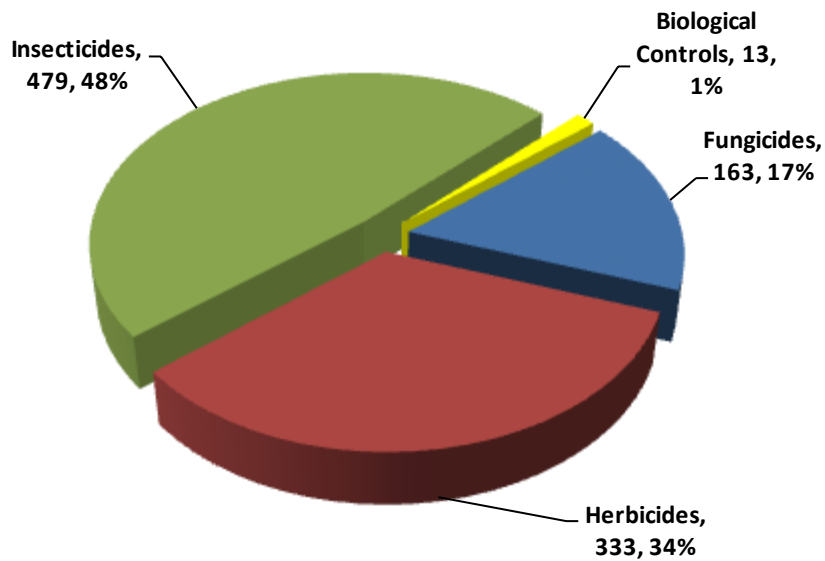


Figure 101: Weight of pesticides (kg) applied to spinach in Ireland, 2015.

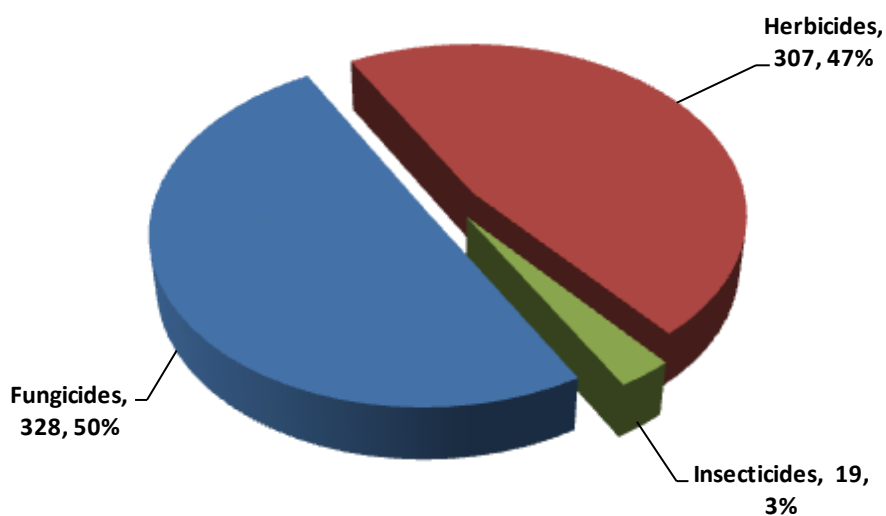


Figure 102: Proportional area of spinach treated with each pesticide group in Ireland, 2015.

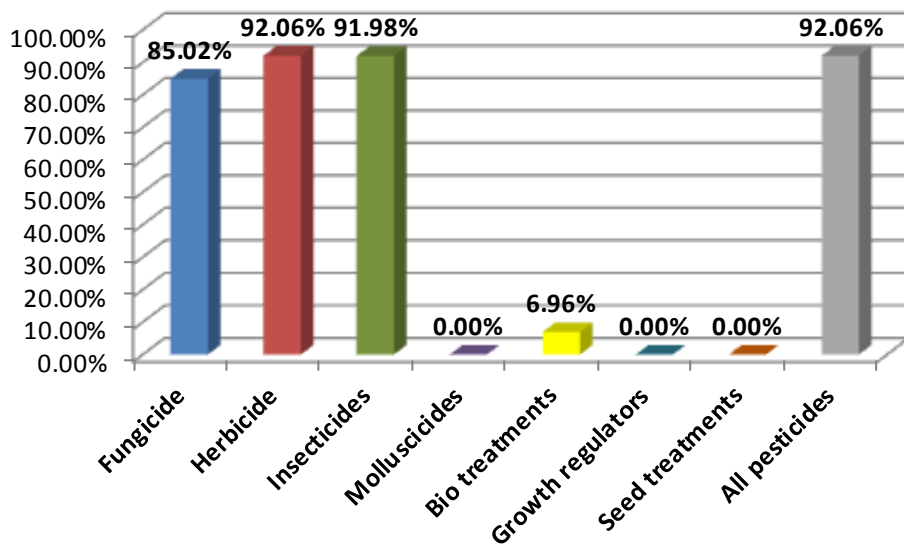


Figure 103: The top 10 active ingredients most extensively used on spinach in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Lenacil	167.1	167.1	147.1
Spinosad	167.1	167.1	16.0
Glyphosate	154.4	154.4	148.2
Fosetyl-aluminium	154.3	154.3	119.6
Lambda-cyhalothrin	154.3	154.3	1.2
Propamocarb hydrochloride	154.3	154.3	204.4
Pyrethrins	154.3	154.3	1.5
Bacillus subtilis	12.9	12.9	0.0
Azoxystrobin	2.8	2.8	0.7
Deltamethrin	2.8	2.8	0.0

Figure 104: The top 10 active ingredients most extensively used on spinach in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Propamocarb hydrochloride	204.4	154.3	154.3
Glyphosate	148.2	154.4	154.4
Lenacil	147.1	167.1	167.1
Fosetyl-aluminium	119.6	154.3	154.3
Spinosad	16.0	167.1	167.1
Prosulfocarb	6.7	2.8	2.8
Propyzamide	2.0	2.8	2.8
Metalaxyl-m	2.0	2.8	2.8
Linuron	1.6	2.8	2.8
Pyrethrins	1.5	154.3	154.3

Pesticide usage on turnips and swedes.

506 ha of turnips and swedes grown in Ireland.

2,553 treated hectares.

1,228 kilogrammes applied.

98.44% of the area of turnips and swedes received a pesticide treatment.

Figure 105: Pesticide usage (spha) on turnips and swedes in Ireland, 2015.

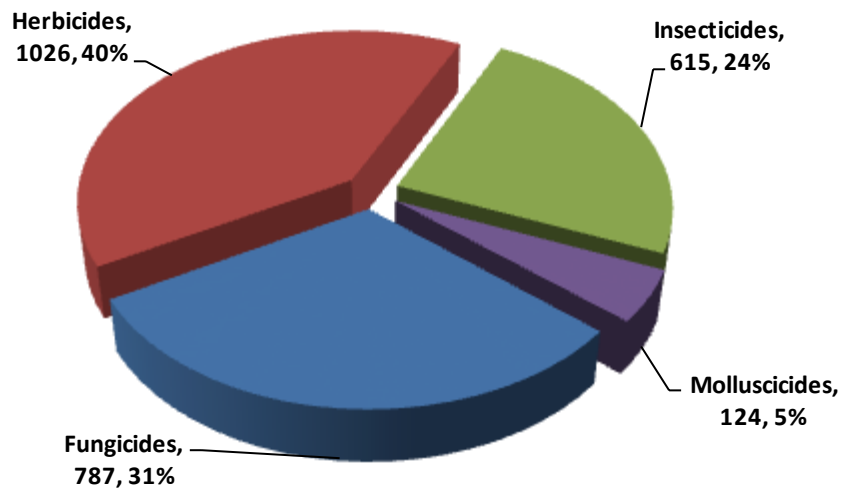


Figure 106: Weight of pesticides (kg) applied to turnips and swedes in Ireland, 2015.

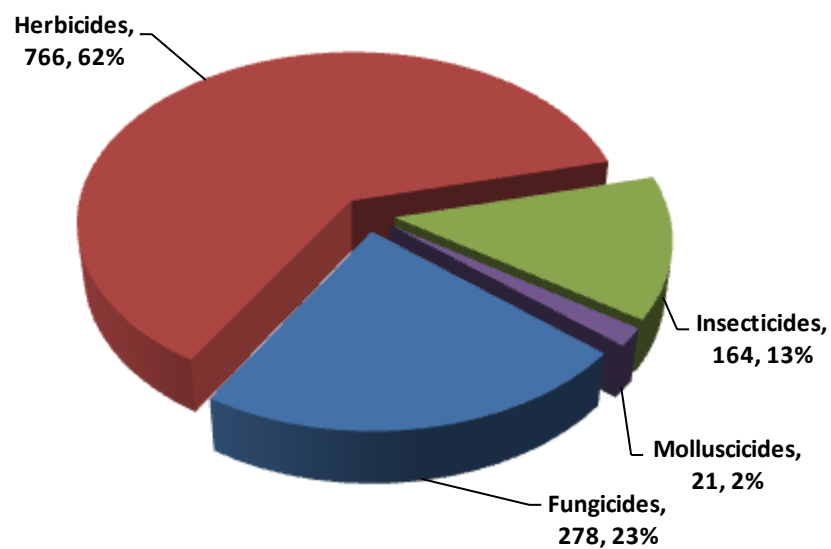


Figure 107: Proportional area of turnip and swedes treated with each pesticide group in Ireland, 2015.

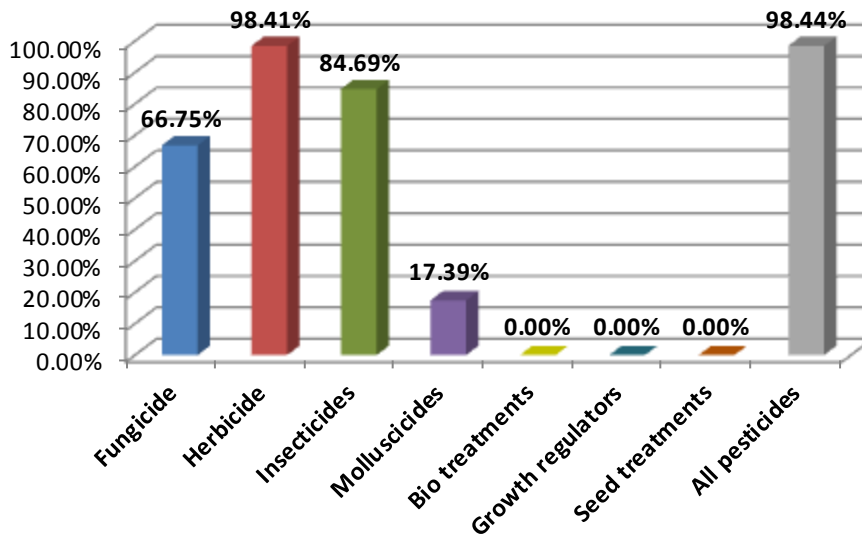


Figure 108: The top 10 active ingredients most extensively used on turnips and swedes in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Metazachlor	466.1	466.1	316.0
Chlorpyrifos	317.8	256.9	115.8
Azoxystrobin	289.8	289.8	76.1
S-metolachlor	148.6	148.6	159.9
Difenoconazole	137.4	137.4	17.2
Pirimicarb	136.4	125.5	25.5
Glyphosate	122.8	122.8	141.8
Fenpropimorph	120.4	60.3	90.3
Napropamide	93.5	93.5	57.8
Tebuconazole	81.8	71.0	20.5

Figure 109: The top 10 active ingredients most extensively used on turnip and swedes in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Metazachlor	316.0	466.1	466.1
S-metolachlor	159.9	148.6	148.6
Glyphosate	141.8	122.8	122.8
Chlorpyrifos	115.8	317.8	256.9
Fenpropimorph	90.3	120.4	60.3
Azoxystrobin	76.1	289.8	289.8
Pendimethalin	66.5	76.1	76.1
Napropamide	57.8	93.5	93.5
Propamocarb hydrochloride	31.6	31.3	15.6
Pirimicarb	25.5	136.4	125.5

Protected vegetable report summary

In 2015 an estimated 106 hectares of protected vegetable crops were grown in Ireland receiving an estimated 155 kgs of active substances. A total of 45 active substances were recorded in use on protected vegetable crops in the survey.

Herbicides were applied to 18% of the pesticide-treated area, representing 42% of the total weight of pesticides used. Fungicides were applied to 45% of the pesticide-treated area, accounting for 47% of the total weight of pesticides used. Insecticides were applied to 32% of the pesticide treated area, representing 11% 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. Biological control usage accounted for 5% of the pesticide-treated area. Seed treatments were applied to less than 1% of the pesticide-treated area, representing less than 1% of the weight of active substances applied.

Protected lettuce comprised 44% of the area of protected vegetable crops in Ireland 2015, accounting for 61% of the total pesticide treated area and 48% of the total weight of pesticides used on protected vegetable crops.

Protected celery and parsley comprised 25% of the area of outdoor vegetable crops in Ireland 2015, accounting for 15% of the total pesticide treated area and 25% of the total weight of pesticides used on all protected vegetable crops.

Protected tomatoes comprised 12% of the area of protected vegetable crops in Ireland 2015, accounting for 10% of the total pesticide treated area and 6% of the total weight of pesticides used on all protected vegetable crops.

Protected onions and scallions comprised 4% of the area of protected vegetable crops grown in Ireland in 2015, accounting for 5% of the total pesticide-treated area and 8% of the total weight of pesticides used on all protected vegetable crops.

Protected cucumber comprised 3% of the area of protected vegetable crops in Ireland 2015, accounting for 4% of the total pesticide treated area and 3% of the total weight of pesticides used on all protected vegetable crops

Crops

Information was collected for 8 protected crop groups namely cucumbers, lettuce, tomatoes, other brassicas, roots, onions & scallions, celery & parsley and other vegetables.

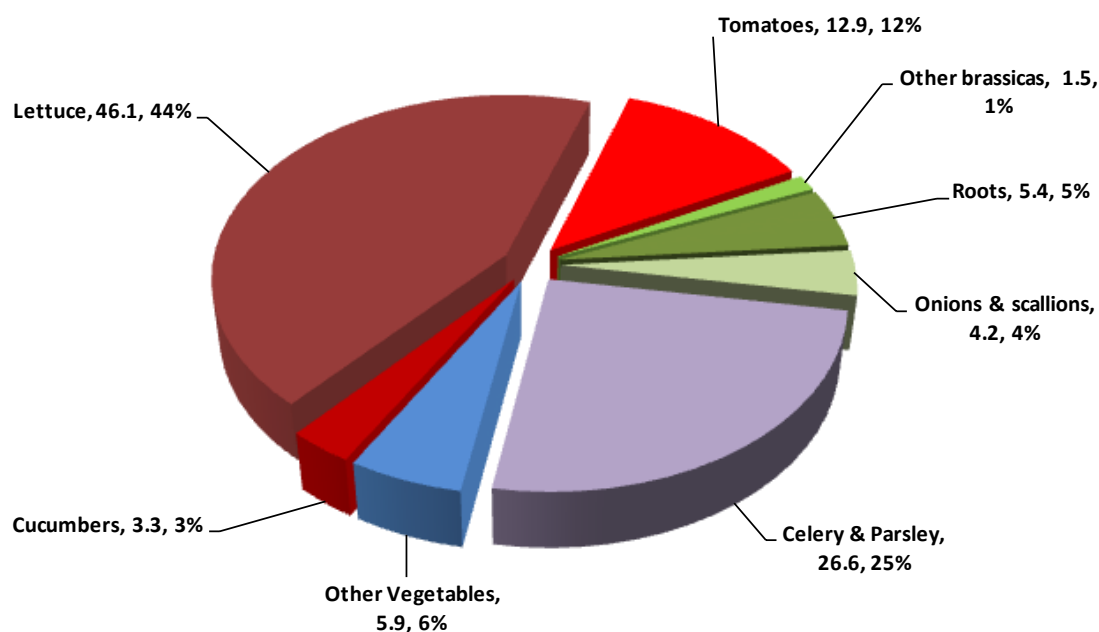
The number and areas of crops surveyed are shown in Table F. Data from 30 farms provided information on 68 examples of 8 crop types. The total area of crops sampled in the survey (71 ha) was representative of the area of protected vegetable crops grown in Ireland in 2015 (106 ha).

Table F: The total number and area (hectares) of protected crops sampled, estimated total area and the proportion (%) of the total area of protected vegetable crops surveyed in Ireland, 2015.

Crop	Number of crops surveyed	Survey area (ha)	Estimated area (ha)	Proportion of crop area surveyed (%)
Protected cucumbers	3	2.6	3.3	78
Protected lettuce	16	37.3	46.1	81
Protected tomatoes	8	6.8	12.9	53
Other protected brassicas	2	0.6	1.5	42
Protected roots	5	2.2	5.4	41
Protected onions & scallions	3	1.2	4.2	28
Protected celery & parsley	17	16.4	26.6	62
Other protected vegetables	14	3.6	5.9	61
	68	70.6	105.9	67

Protected lettuce covered an estimated 44% of the total area of protected vegetable crops in 2015. Celery & parsley accounted for 25% of the area of protected vegetable crops. Tomatoes accounted for 12% of the total area of protected vegetable crops in 2015.

Figure 110: Areas of individual protected vegetable crops grown in Ireland (ha), 2015.



Regional distribution of crops and pesticides

The East region had the largest area of protected vegetable crops during 2015, accounting for 88% of the area of protected vegetable crops grown and 87% of the total pesticide-treated area. Overall, 94% of the weight of herbicides, 77% of the weight of fungicides, 100% of the weight of molluscicides, 91% of the weight of insecticides and 100% of the weight of seed treatments were applied to protected vegetable crops in this region.

The South region accounted for 12% of the total area of protected vegetable crops grown and 13% of the total pesticide-treated area. Overall 6% of the weight of herbicides, 23% of the weight of fungicides and 9% of the weight of insecticides were applied to protected vegetable crops in this region.

Figure 111: Regional distribution (ha) of protected vegetable crops grown in Ireland, 2015.

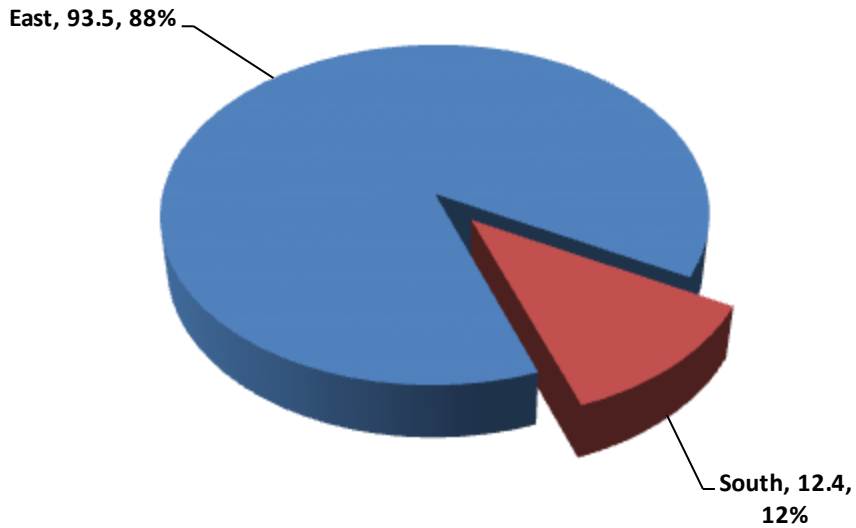
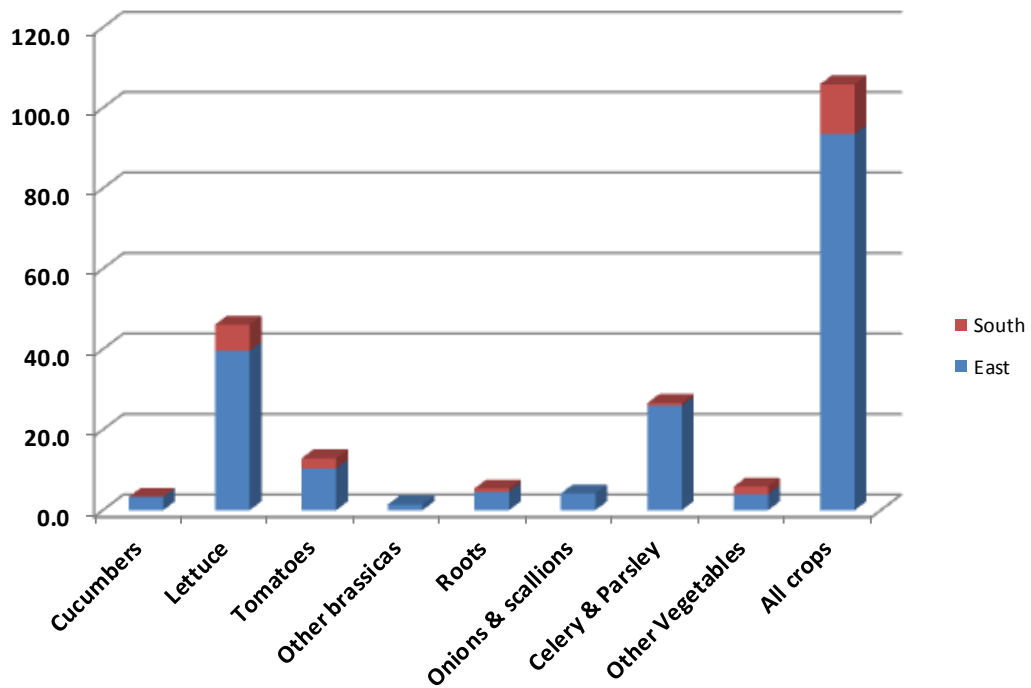


Figure 112: Regional distribution (ha) of individual protected vegetable crops grown in Ireland, 2015.



Pesticide usage

Herbicides were applied to 18% of the pesticide-treated area accounting for 42% of the total weight of pesticides used. Fungicides were applied to 45% of the pesticide-treated area and accounted for 47% of the total weight of pesticides used. Insecticides were applied to 32% of the pesticide treated area accounting for 11% 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. Seed treatment usage accounted for less than 1% of the pesticide-treated area, representing less than 1% of the weight of active substances applied. Biological control agents were applied to 5% of the pesticide-treated area.

Figure 113: Pesticide usage (spha) on protected vegetable crops treated in Ireland, 2015.

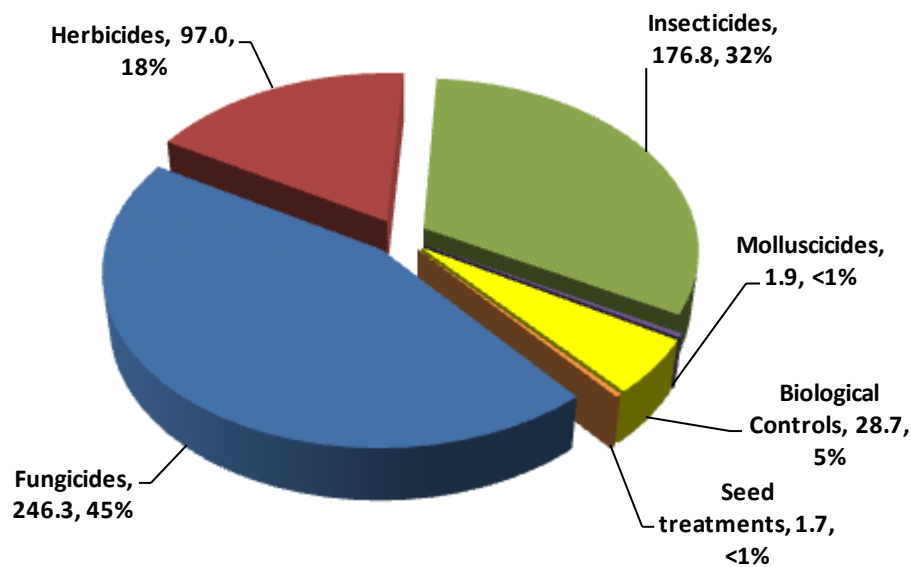
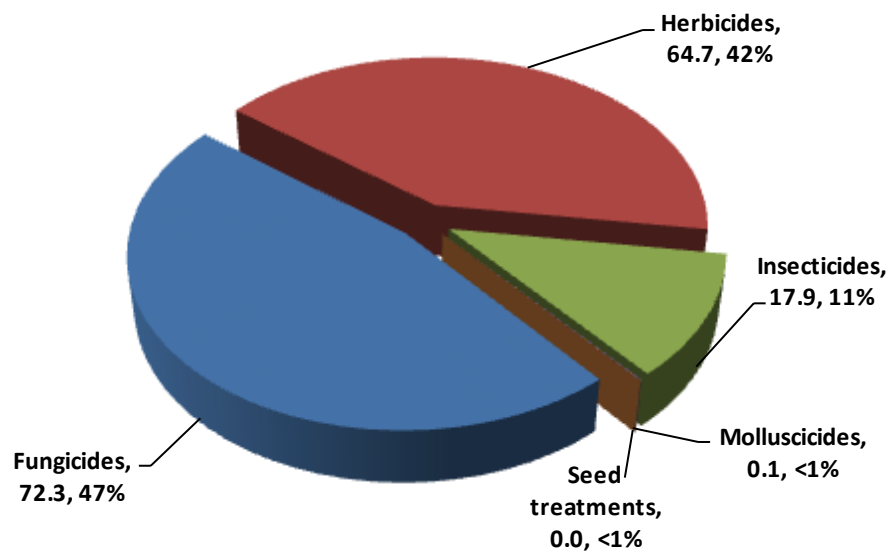


Figure 114: Weight (kgs) of pesticides applied to protected vegetable crops treated in Ireland, 2015.



Protected vegetable pesticide usage survey results 2015

Pesticide usage on protected cucumbers

3.3 ha of protected cucumbers grown in Ireland.

22.8 treated hectares.

5.3 kilogrammes applied

99.83% of the area of protected cucumbers received a pesticide treatment.

Figure 115: Pesticide usage (spha) on protected cucumbers in Ireland, 2015.

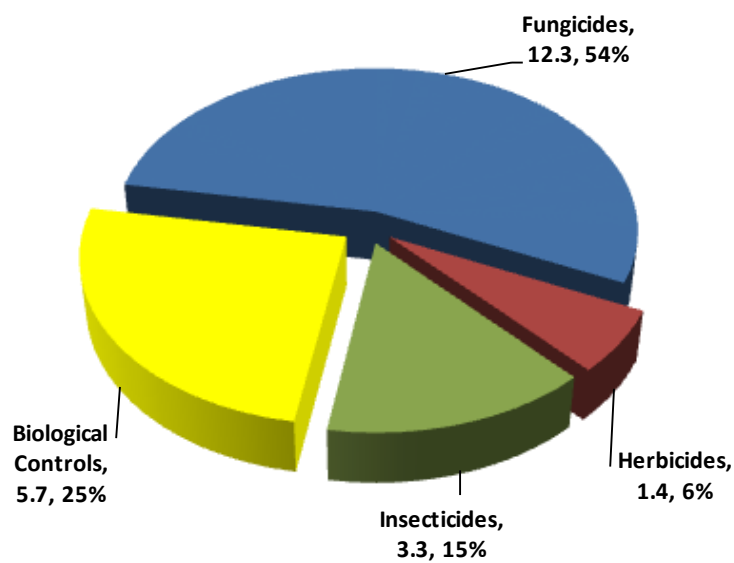


Figure 116: Weight of pesticides (kg) applied to protected cucumbers in Ireland, 2015.

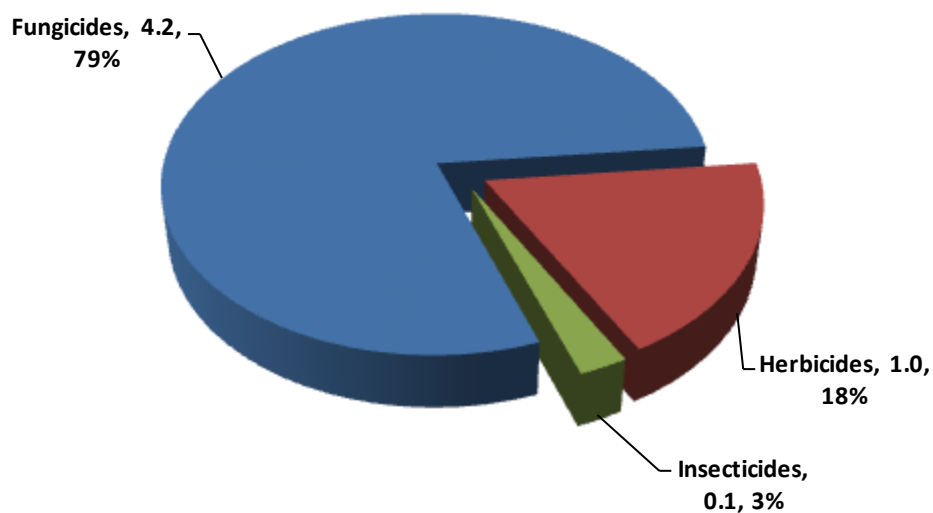


Figure 117: Proportional area of protected cucumbers treated with each pesticide group in Ireland, 2015.

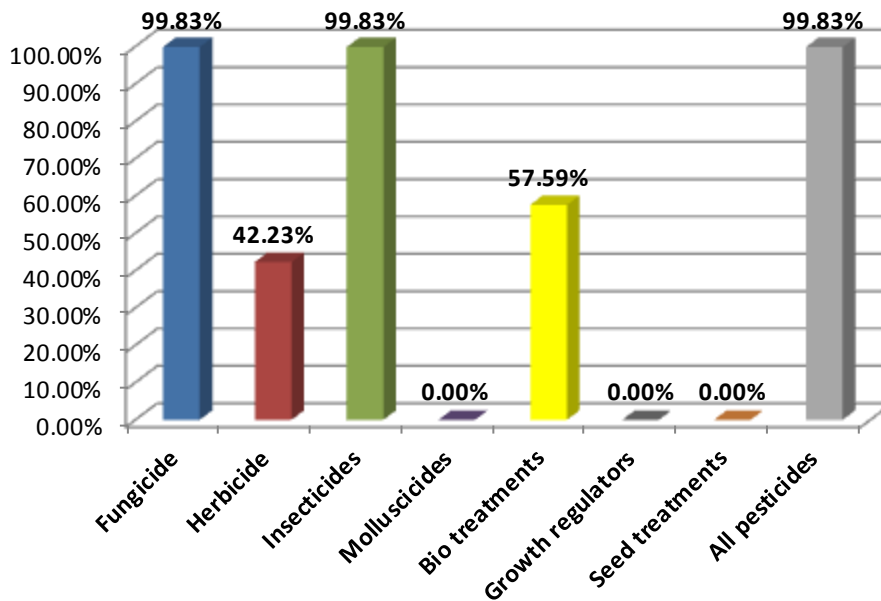


Figure 118: The top 8 active ingredients most extensively used on protected cucumbers in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Fluopyram	7.1	3.3	0.8
Bacillus subtilis	5.7	1.9	0.0
Cyprodinil	3.3	3.3	1.1
Fludioxonil	3.3	3.3	0.7
Fosetyl-aluminium	1.9	1.9	0.6
Propamocarb hydrochloride	1.9	1.9	1.0
Bifenazate	1.4	1.4	0.1
Metribuzin	1.4	1.4	1.0

Figure 119: The top 8 active ingredients most extensively used on protected cucumbers in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Cyprodinil	1.1	3.3	3.3
Propamocarb hydrochloride	1.0	1.9	1.9
Metribuzin	1.0	1.4	1.4
Fluopyram	0.8	7.1	3.3
Fludioxonil	0.7	3.3	3.3
Fosetyl-aluminium	0.6	1.9	1.9
Bifenazate	0.1	1.4	1.4
Bacillus subtilis	0.0	5.7	1.9

Pesticide usage on protected lettuce

46.1 ha of protected lettuce in Ireland.

335.7 treated hectares.

75 kilogrammes applied.

85.98% of the area of protected lettuce received a pesticide treatment.

Figure 120: Pesticide usage (spha) on protected lettuce in Ireland, 2015.

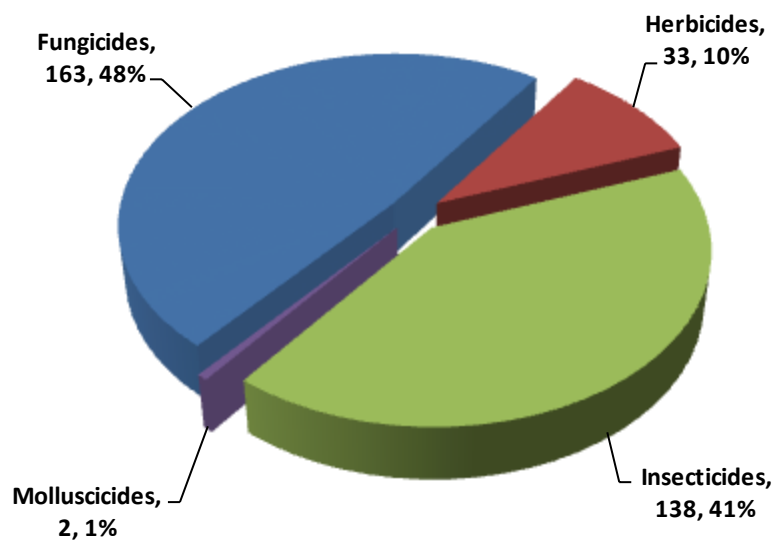


Figure 121: Weight of pesticides (kg) applied to protected lettuce in Ireland, 2015.

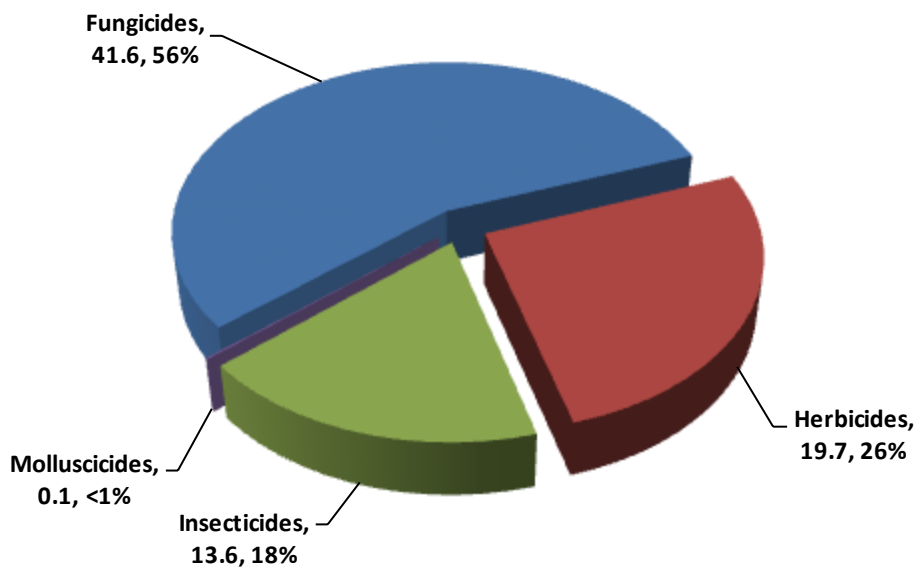


Figure 122: Proportional area of protected lettuce treated with each pesticide group in Ireland, in 2015.

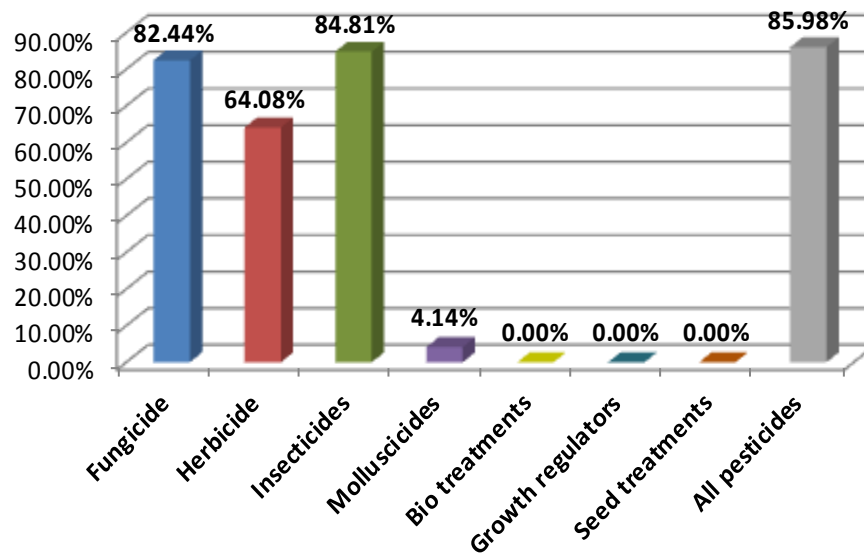


Figure 123: The top 10 active ingredients most extensively used on protected lettuce in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Iprodione	39.5	24.6	1.9
Boscalid	37.0	35.1	10.3
Pyraclostrobin	37.0	35.1	2.6
Spirotetramat	36.0	20.2	2.5
Pymetrozine	33.6	20.2	5.2
Propyzamide	32.5	29.6	19.7
Azoxystrobin	31.5	31.3	4.2
Spinosad	30.8	18.1	3.0
Cypermethrin	26.6	12.6	0.7
Metalaxyl-m	21.1	19.6	8.6

Figure 124: The top 10 active ingredients most extensively used on protected lettuce in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Propyzamide	19.7	32.5	29.6
Boscalid	10.3	37.0	35.1
Metalaxyl-m	8.6	21.1	19.6
Pymetrozine	5.2	33.6	20.2
Azoxystrobin	4.2	31.5	31.3
Propamocarb hydrochloride	3.4	3.8	3.8
Cyprodinil	3.3	12.5	11.3
Spinosad	3.0	30.8	18.1
Pyraclostrobin	2.6	37.0	35.1
Spirotetramat	2.5	36.0	20.2

Pesticide usage on protected tomatoes

12.8 ha of protected tomatoes in Ireland.

53.9 treated hectares.

10 kilogrammes applied.

94.56% of the area of protected tomatoes received a pesticide treatment

Figure 125: Pesticide usage (spha) on protected tomatoes in Ireland, 2015.

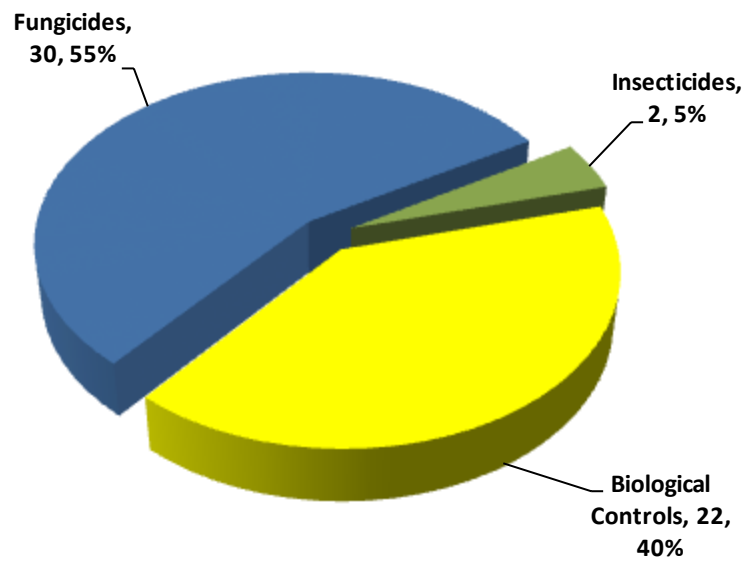


Figure 126: Weight of pesticides (kg) applied to protected tomatoes in Ireland, 2015.

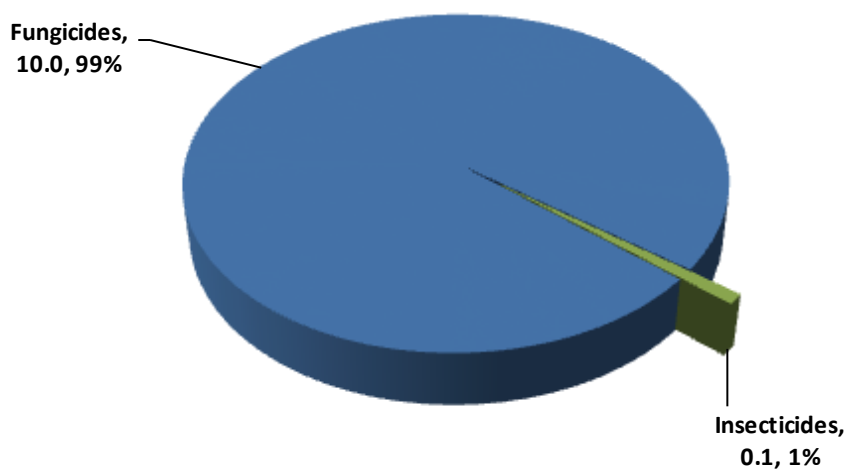


Figure 127: Proportional area of protected tomatoes treated with each pesticide group in Ireland, 2015.

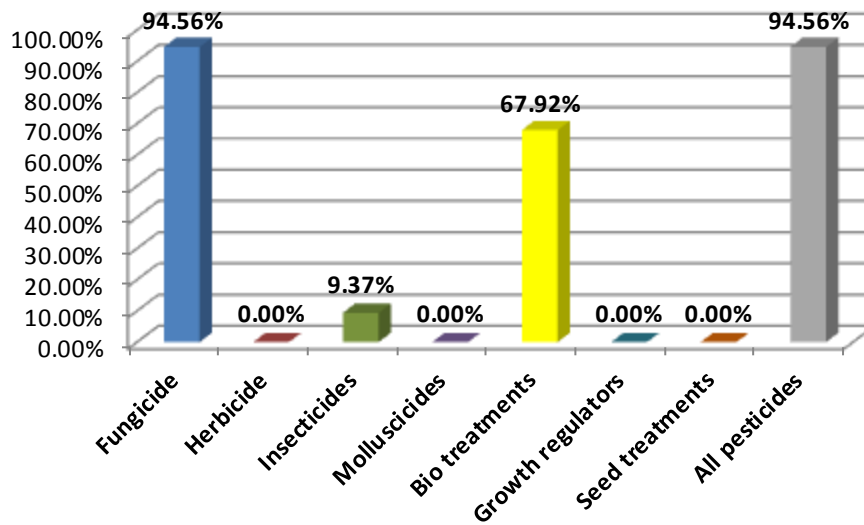


Figure 128: The top 10 active ingredients most extensively used on protected tomatoes in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Bacillus subtilis	21.7	8.8	0.0
Fluopyram	13.2	10.7	4.7
Azoxystrobin	7.1	7.1	0.3
Fosetyl-aluminium	3.8	2.5	0.8
Propamocarb hydrochloride	3.8	2.5	1.3
Fenhexamid	2.3	2.3	1.1
Cyprodinil	1.3	1.3	0.3
Fludioxonil	1.3	1.3	0.2
Mancozeb	1.3	0.6	0.9
Iprodione	0.9	0.9	0.3

Figure 129: The top 10 active ingredients most extensively used on protected tomatoes in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Fluopyram	4.7	13.2	10.7
Propamocarb hydrochloride	1.3	3.8	2.5
Fenhexamid	1.1	2.3	2.3
Mancozeb	0.9	1.3	0.6
Fosetyl-aluminium	0.8	3.8	2.5
Iprodione	0.3	0.9	0.9
Azoxystrobin	0.3	7.1	7.1
Cyprodinil	0.3	1.3	1.3
Fludioxonil	0.2	1.3	1.3
Thiacloprid	0.1	0.3	0.3

Pesticide usage on other protected brassicas

1.4 ha of other protected brassicas in Ireland.

4.2 treated hectares.

2.0 kilogrammes applied.

96.27% of the area of other protected brassicas received a pesticide treatment.

Figure 130: Pesticide usage (spha) on other protected brassicas in Ireland, 2015.

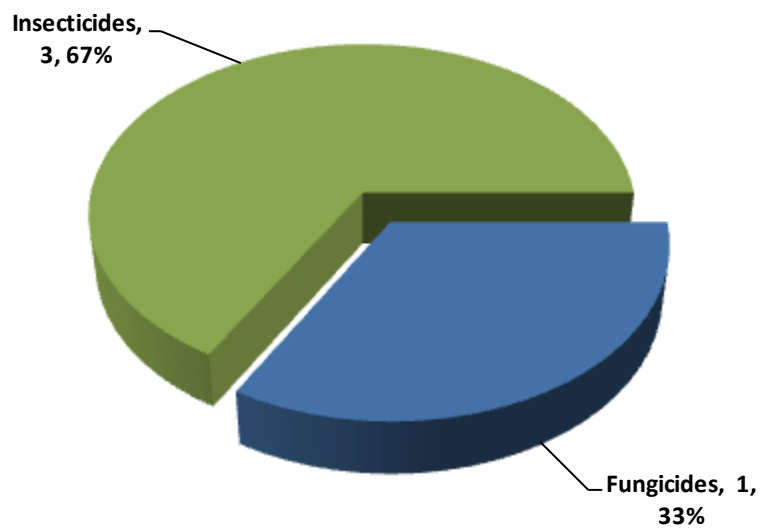


Figure 131: Weight of pesticides (kg) applied to other protected brassicas in Ireland, 2015.

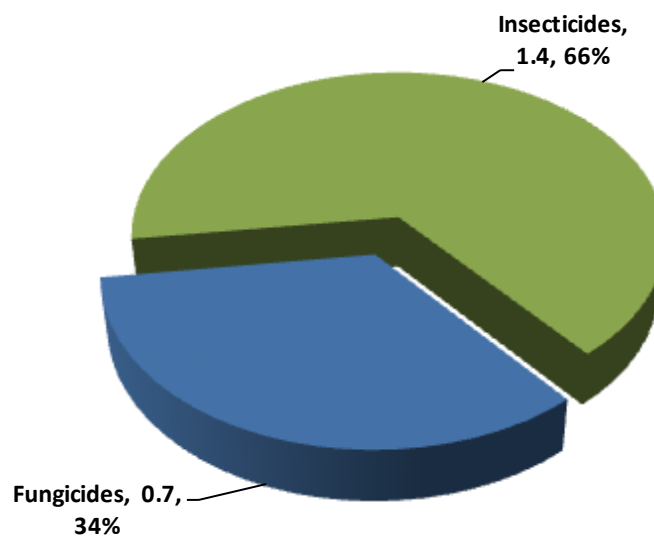


Figure 132: Proportional area of other protected brassicas treated with each pesticide group in Ireland, 2015.

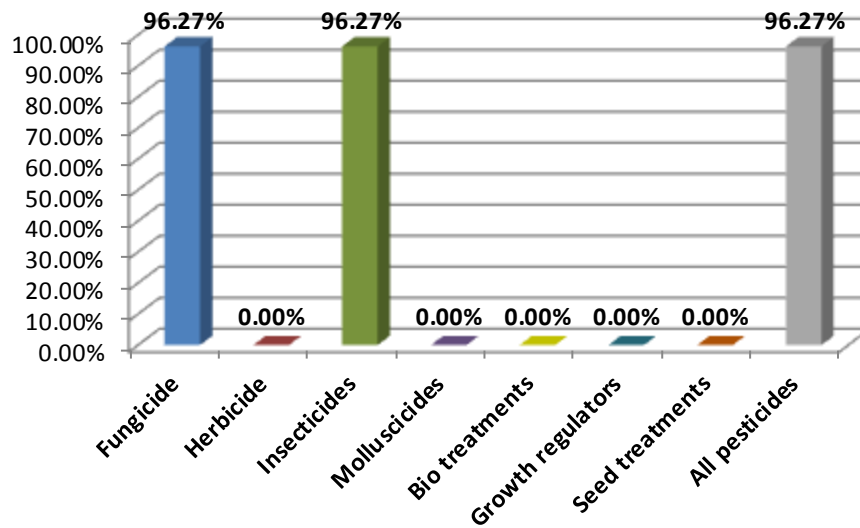


Figure 133: The top 3 active ingredients most extensively used on other protected brassicas in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Chlorothalonil	1.4	1.4	0.7
Chlorpyrifos	1.4	1.4	1.0
Pirimicarb	1.4	1.4	0.4

Figure 134: The top 3 active ingredients most extensively used on other protected brassicas in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Chlorpyrifos	1.0	1.4	1.4
Chlorothalonil	0.7	1.4	1.4
Pirimicarb	0.4	1.4	1.4

Pesticide usage on protected root crops.

5.3 ha of protected root crops in Ireland.

10.7 treated hectares.

10 kilogrammes applied.

71.50% of the area of protected root crops received a pesticide treatment.

Figure 135: Pesticide usage (spha) on protected root crops in Ireland, 2015.

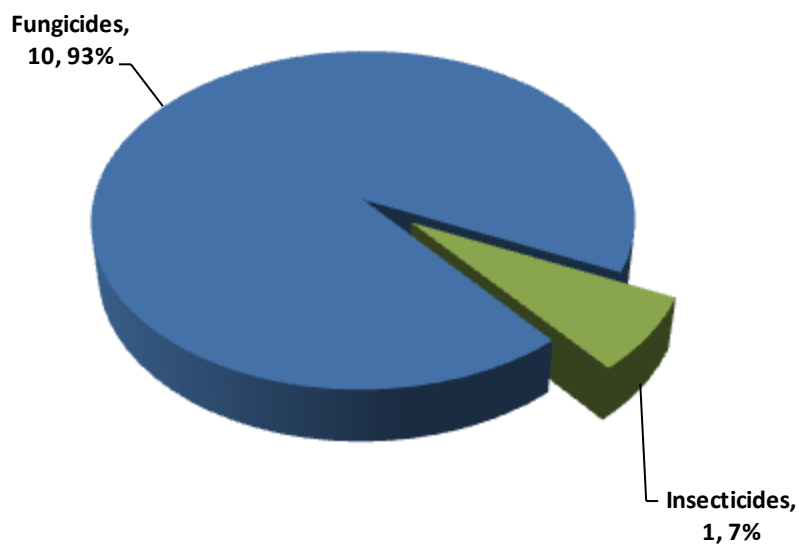


Figure 136: Weight of pesticides (kg) applied to protected root crops in Ireland, 2015.

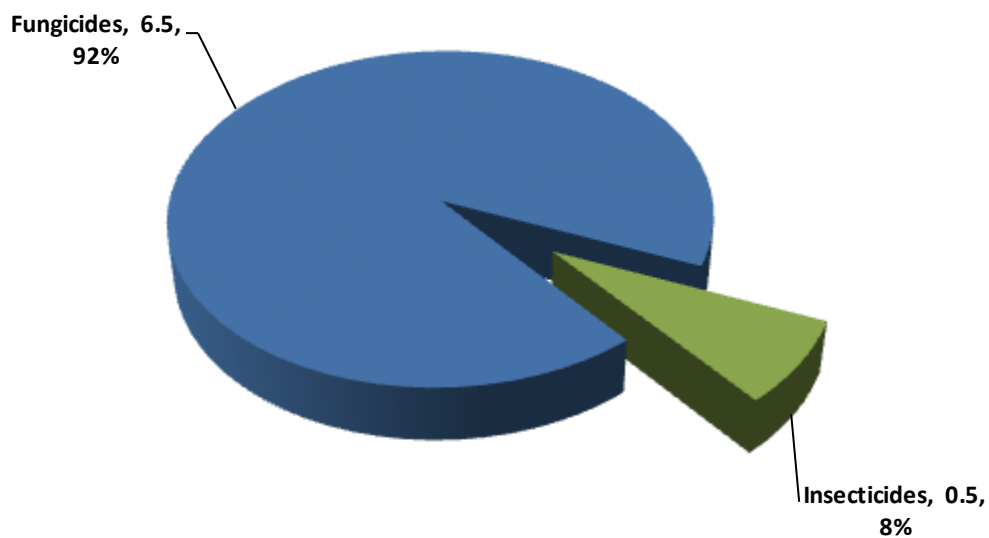


Figure 137: Proportional area of protected root crops treated with each pesticide group in Ireland, 2015.

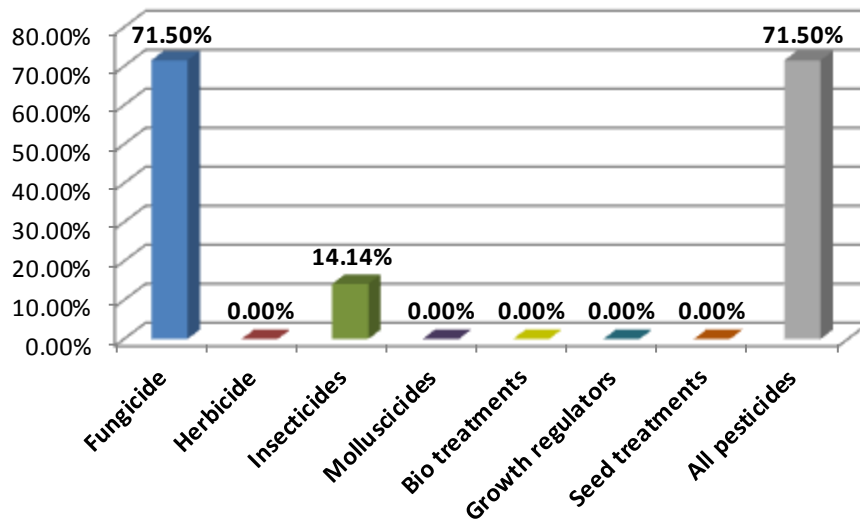


Figure 138: The top 7 active ingredients most extensively used on protected root crops in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Fluopicolide	3.8	0.8	0.4
Propamocarb hydrochloride	3.8	0.8	3.8
Mandipropamid	2.3	2.3	0.4
Metalaxyl-m	2.3	2.3	1.6
Chlorpyrifos	0.8	0.8	0.6
Copper oxychloride	0.8	0.8	0.2
Mancozeb	0.8	0.8	0.2

Figure 139: The top 7 active ingredients most extensively used on protected root crops in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Propamocarb hydrochloride	3.8	3.8	0.8
Metalaxyl-m	1.6	2.3	2.3
Chlorpyrifos	0.6	0.8	0.8
Fluopicolide	0.4	3.8	0.8
Mandipropamid	0.4	2.3	2.3
Mancozeb	0.2	0.8	0.8
Copper oxychloride	0.2	0.8	0.8

Pesticide usage on protected onions & scallions.

4.1 ha of protected onions and scallions grown in Ireland.

27.9 treated hectares.

11.7 kilogrammes applied (100% herbicides).

93.59% of the area of protected onions and scallions received a pesticide treatment.

Figure 140: Proportional area of protected onions and scallions treated with each pesticide group in Ireland, 2015.

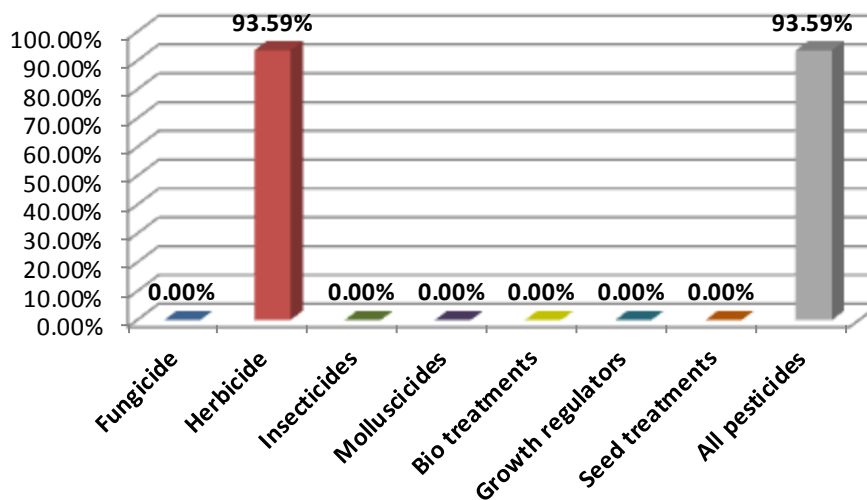


Figure 141: The top 5 active ingredients most extensively used on protected onions and scallions in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Diquat	6.9	3.4	2.6
Ioxynil	6.9	3.4	2.2
Pendimethalin	6.9	3.4	6.3
Tepraloxymid	6.9	3.4	0.3
Glyphosate	0.5	0.5	0.5

Figure 142: The top 5 active ingredients most extensively used on protected onions and scallions in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pendimethalin	6.3	6.9	3.4
Diquat	2.6	6.9	3.4
Ioxynil	2.2	6.9	3.4
Glyphosate	0.5	0.5	0.5
Tepraloxymid	0.3	6.9	3.4

Pesticide usage on protected celery and parsley.

26.6ha of protected celery and parsley grown in Ireland.

85.7 treated hectares.

38 kilogrammes applied.

73.73% of the area of protected celery and parsley received a pesticide treatment

Figure 143: Pesticide usage (spha) on protected celery and parsley in Ireland, 2015.

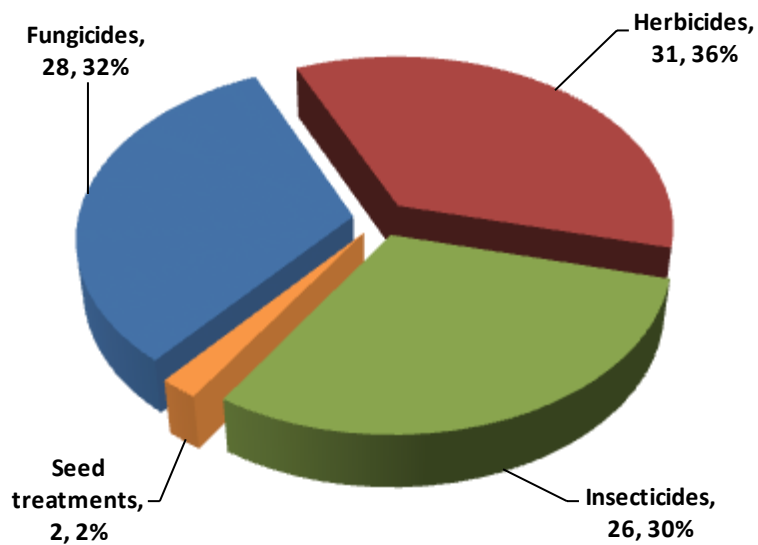


Figure 144: Weight of pesticides (kg) applied to protected celery and parsley in Ireland, 2015.

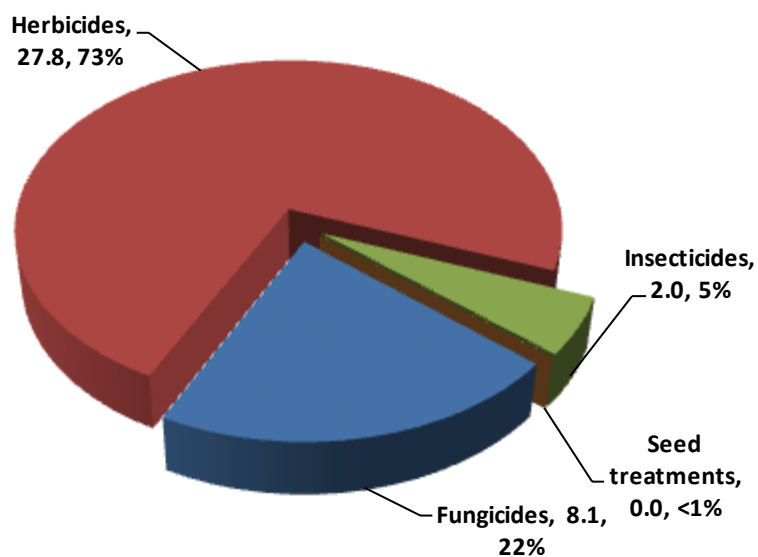


Figure 145: Proportional area of protected celery and parsley treated with each pesticide group in Ireland, 2015.

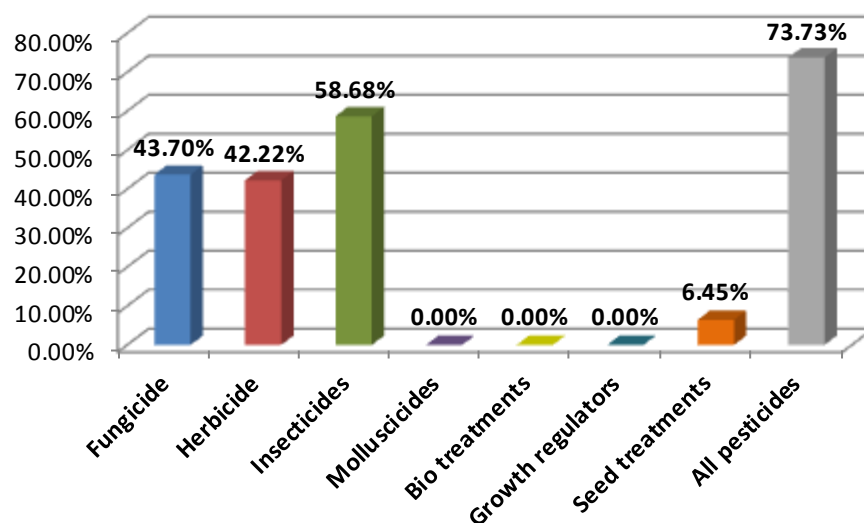


Figure 146: The top 10 active ingredients most extensively used on protected celery and parsley in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Linuron	11.2	11.2	8.6
Glyphosate	9.1	9.1	7.0
Spinosad	9.1	9.1	0.9
Azoxystrobin	8.3	8.3	1.8
Pymetrozine	6.4	4.4	0.6
Lambda-cyhalothrin	6.3	6.3	0.0
Metalaxyl-m	5.4	5.4	1.6
Mandipropamid	5.2	5.2	0.8
Boscalid	4.2	4.2	1.7
Pyraclostrobin	4.2	4.2	0.4

Figure 147: The top 10 active ingredients most extensively used on protected celery and parsley in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Linuron	8.6	11.2	11.2
Glyphosate	7.0	9.1	9.1
Prosulfocarb	5.0	2.1	2.1
Propyzamide	4.2	4.0	4.0
Chlorpropham	2.1	1.9	1.9
Azoxystrobin	1.8	8.3	8.3
Boscalid	1.7	4.2	4.2
Metalaxyl-m	1.6	5.4	5.4
Spinosad	0.9	9.1	9.1
Diquat	0.8	2.1	2.1

Pesticide usage on other protected vegetables.

5.0 ha of other protected vegetables grown in Ireland.

11.2 treated hectares.

5.5 kilogrammes applied.

75.61% of the area of other protected vegetables received a pesticide treatment.

Figure 148: Pesticide usage (spha) on other protected vegetables in Ireland, 2015.

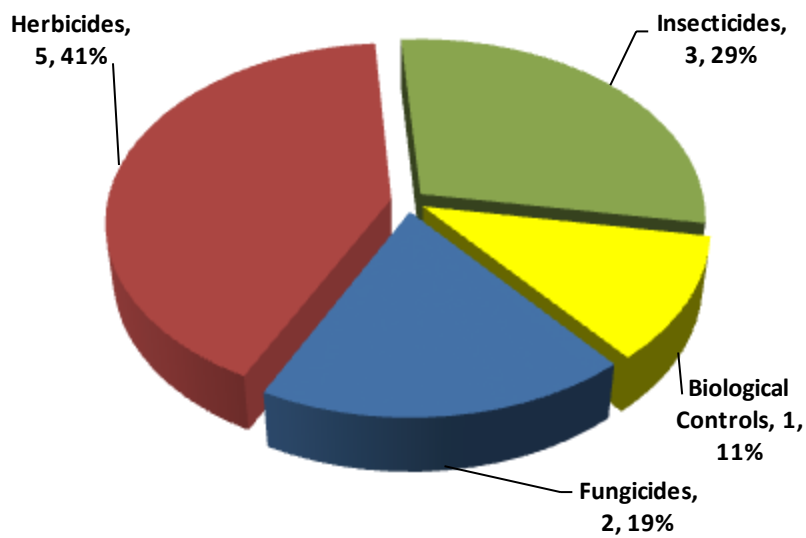


Figure 149: Weight of pesticides (kg) applied to other protected vegetables in Ireland, 2015.

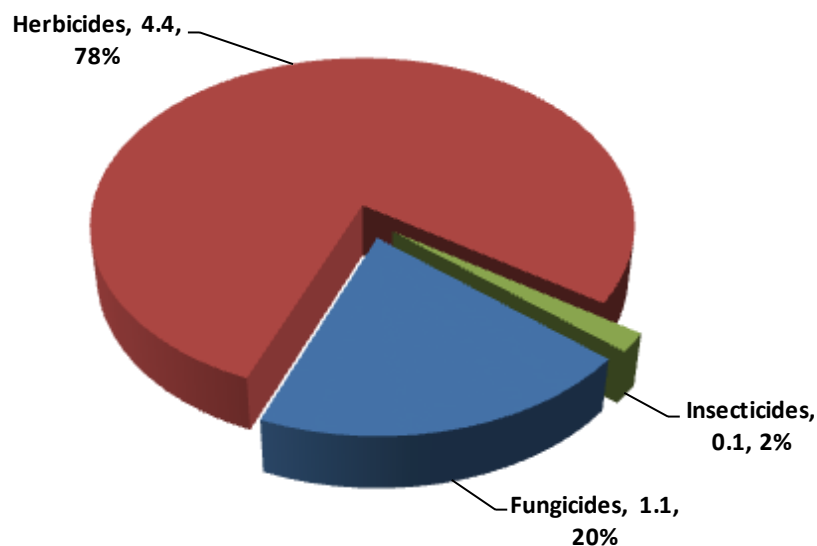


Figure 150: Proportional area of other protected vegetables treated with each pesticide group in Ireland, 2015.

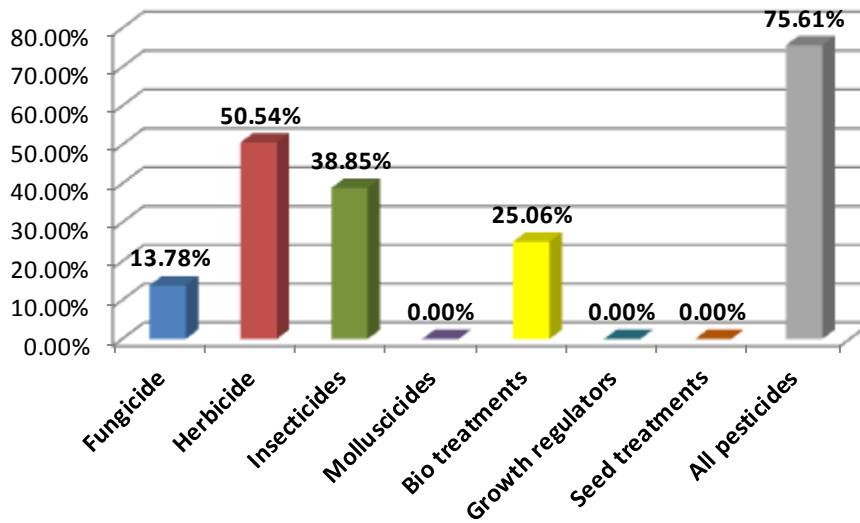


Figure 151: The top 10 active ingredients most extensively used on other protected vegetables in Ireland in 2015, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Chlorpropham	1.9	1.9	1.5
B. thuringiensis(bc)	1.3	1.3	0.0
Bifenazate	1.3	1.3	0.1
Azoxystrobin	0.7	0.7	0.2
Deltamethrin	0.7	0.7	0.0
Diquat	0.7	0.7	0.3
Linuron	0.7	0.7	0.4
Metalaxyl-m	0.7	0.7	0.5
Prochloraz	0.7	0.7	0.3
Propyzamide	0.7	0.7	0.5

Figure 152: The top 10 active ingredients most extensively used on other protected vegetables in Ireland in 2015, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Prosulfocarb	1.7	0.7	0.7
Chlorpropham	1.5	1.9	1.9
Propyzamide	0.5	0.7	0.7
Metalaxyl-m	0.5	0.7	0.7
Linuron	0.4	0.7	0.7
Diquat	0.3	0.7	0.7
Prochloraz	0.3	0.7	0.7
Azoxystrobin	0.2	0.7	0.7
Tebuconazole	0.1	0.7	0.7
Bifenazate	0.1	1.3	1.3

Tables

Outdoor vegetable tables

Table 1: Estimated area (ha) of outdoor vegetable crops grown regionally in Ireland, 2015.

Crop	Region			Ireland
	East	South	North/West	
Beetroot	58	6		64
Broccoli	509	51	20	580
Brussel sprouts	140	29		170
Cabbages	623	251	51	925
Carrots	379	257	23	660
Cauliflower	360	65		426
Celery	42	1		43
Kale	54	3		57
Leeks	93	30		123
Lettuce	167	19	1	188
Onions	102	73		176
Other herbs	21	1		22
Other outdoor vegetables	17	4		21
Parsley	13	0		13
Parsnips	262	30	6	298
Rhubarb		87		87
Scallions	81	11		92
Spinach	184	0		185
Turnips and swedes	232	214	59	506
Total	3,339	1,135	161	4,635

Table 2: Estimated area (spray-hectares) of outdoor vegetable crops treated regionally with each pesticide type in Ireland, 2015.

Pesticide type	Region			
	East	South	North/West	Ireland
Fungicides	10,987	5,757	99	16,843
Herbicides	9,633	4,033	161	13,827
Insecticides	8,647	2,605	161	11,413
Molluscicides	1,486	555	17	2,058
Biological Controls	44			44
Growth Regulators	47	72		119
Seed treatments	145	2		146
Total	30,989	13,024	437	44,449

Table 3: Estimated weight (kg) applied to outdoor vegetable crops treated regionally with each pesticide type in Ireland, 2015.

Pesticide type	Region			
	East	South	North/West	Ireland
Fungicides	5,474	2,848	20	8,342
Herbicides	6,706	2,624	120	9,450
Insecticides	1,171	285	18	1,474
Molluscicides	235	91	3	329
Biological Controls				
Growth Regulators	140	173		313
Seed treatments	7	0		7
Total	13,734	6,021	161	19,916

Table 4: The total area (spray hectares) and the basic area (hectares), of outdoor vegetable crops in Ireland 2015 treated with each pesticide type.

Crop type	Pesticide Type																
	Fungicides		Herbicides		Insecticides		Molluscicides		Biological control		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)	(sp ha)	(ha) treated	(ha) grown
Beetroot	5	4	137	44	65	46	4	4							210	51	64
Broccoli	1,748	519	1,149	575	1,807	570	588	321					24	12	5,315	577	580
Brussel sprouts	857	148	807	169	718	142	361	100					1	0	2,743	170	170
Cabbages	3,867	807	2,281	889	2,754	795	518	380					79	39	9,499	915	925
Carrots	3,112	456	2,979	505	2,020	503	153	153							8,264	506	660
Cauliflower	1,293	422	909	416	1,049	423	107	107					40	20	3,398	423	426
Celery	146	43	85	43	171	43	28	28							431	43	43
Kale	111	56	68	55	122	55							0	0	300	56	57
Leeks	487	113	614	122	73	41	1	1							1,175	122	123
Lettuce	180	55	268	56	423	101	123	31	31	31	31				1,024	103	188
Onions	2,478	172	1,169	174							72	72			3,719	174	176
Other herbs	54	19	73	20	38	19									165	20	22
Other outdoor vegetables	23	9	21	8	21	6	4	4	0	0	0	0	3	3	71	13	21
Parsley	19	6	32	12	19	6									70	12	13
Parsnips	1,008	129	1,411	292	1,039	297					47	47			3,505	298	298
Rhubarb			100	74			48	48							148	74	87
Scallions	505	92	367	92											873	92	92
Spinach	163	157	333	170	479	170			13	13					987	170	185
Turnips and swedes	787	338	1,026	498	615	428	124	88							2,553	498	506
Total	16,843	3,544	13,827	4,214	11,413	3,644	2,058	1,263	44	44	119	119	146	75	44,449	4,314	4,635

Table 5: The total quantities (kilograms) of each pesticide type used on outdoor vegetable crops in Ireland 2015.

<i>Crop</i>	Pesticide type						Total weight applied (kg)
	Fungicides	Herbicides	Insecticides	Molluscicides	Growth regulators	Seed treatments	
Beetroot	3	161	5	1			170
Broccoli	623	773	415	115		1	1,927
Brussel sprouts	254	462	68	49		0	833
Cabbages	1,192	1,837	419	96		4	3,548
Carrots	1,104	1,617	121	14			2,856
Cauliflower	383	558	157	17		2	1,116
Celery	37	80	15	3			136
Kale	31	62	13			0	105
Leeks	262	221	7	0			490
Lettuce	129	268	29	7			433
Onions	3,173	750			173		4,096
Other herbs	22	74	4				99
Other outdoor vegetables	9	23	3	1	0	0	35
Parsley	6	31	2				39
Parsnips	223	1,251	35		140		1,649
Rhubarb		107		6			113
Scallions	286	103					389
Spinach	328	307	19				654
Turnips and swedes	278	766	164	21			1,228
All crops	8,342	9,450	1,474	329	313	7	19,916

Table 6: Estimated area (spray-hectares) of outdoor vegetable crops treated with pesticide formulations in Ireland, 2015.

Pesticide type & formulation	Cabbages	Cauliflower	Brussel sprouts	Broccoli	Beetroot	Carrots	Parsnips	Celery	Kale	Leeks	Lettuce	Onions	Parsley	Other herbs	Rhubarb	Spinach	Scallions	Turnips and swedes	Other outdoor vegetables	Total
<i>Fungicides</i>																				
Azoxystrobin	914	361	131	694		673	246	59	44	63	31	72	6	19		3	161	290	12	3,781
Benthiavalcab-isopropyl/mancozeb												581								581
Boscalid/pyraclostrobin	350	50	73	30		354	16		13		52		6	9					1	954
Chlorothalonil	1	0	0	0				0	0	0		72					172	0		245
Chlorothalonil/metalaxyl-M	11	12	79							26		94								221
Copper oxychloride								12				188								199
Cymoxanil/mancozeb																		16		16
Cyprodinil/fludioxonil					4	343						332					80			760
Difenoconazole	1,078	315	405	159	0	521	205	76	39									137	4	2,941
Dimethomorph/mancozeb										109	31	476					11			627
Epoxiconazole	6																			6
Fenpropimorph					0	327	33			35										515
Fluopicolide/propamocarb hydrochloride	120	0	0	0					0										31	151
Fosetyl-aluminium/propamocarb hydrochloride	0	0	0	1							8					154				164
Iprodione	12	87	0	27						0	19	0					0			145
Mancozeb						116					19	663					80			879
Mandipropamid									13		20		6	9					16	64
Metalaxyl-M	551	134	9	695		30	4		1					8		3			21	1,460
Prochloraz/proquinazid/tebuconazole														8		3			3	14
Propamocarb hydrochloride	2	0	0	1				0	0	0		0					0			4
Prothioconazole	344	154	40	60		394	315			92										1,474
Tebuconazole	41	101	9	73		73				1									82	306
Tebuconazole/trifloxystrobin	437	78	120	72		281	189			161										1,338
All fungicides	3,867	1,293	857	1,748	5	3,112	1,008	146	111	487	180	2,478	19	54	0	163	505	787	23	16,843

Table 6 (cont.): Estimated area (spray-hectares) of outdoor vegetable crops treated with pesticide formulations in Ireland, 2015.

Pesticide type & formulation	Cabbages	Cauliflower	Brussel sprouts	Broccoli	Beetroot	Carrots	Parsnips	Celery	Kale	Leeks	Lettuce	Onions	Parsley	Other herbs	Rhubarb	Spinach	Scallions	Turnips and swedes	Other outdoor vegetables	Total
Herbicides																				
Amidosulfuron							3													3
Bentazone										125							80			205
Bromoxynil/loxylinil/mecoprop-P															48					48
Chloridazon					22															22
Chlorpropham													6	9						16
Clomazone	72	86	68	27		98												2		354
Clopyralid	122		157															76		355
Cycloxydim	38		69															10		117
Dimethenamid-P/pendimethalin	150	20		11						51	47	172					80			531
Diquat	24	76												8		3			3	114
Flumioxazin												6								6
Glyphosate	244	182	50	73		210	4	1	13	12	9	166	6	10	3	154		123	4	1,265
loxylinil										234		412					195			841
Isoproturon						138														138
Lenacil																167				167
Linuron	2					949	416	43					12	18			3		16	1,461
MCPA				14																14
Metamitron					56		263													319
Metazachlor	896	340	165	544					42	62	1					0		466	3	2,518
Metribuzin						832	17											16		864
Napropamide	19		5	14														93		131
Pendimethalin	410	191	125	122		482	286	1		61	78	2	1	1	26		11	76	4	1,878
Phenmedipham					17															17
Propaquizafop							137													137
Propyzamide									13		132		6	18	20	3				195
Prosulfocarb					19	154	146	41		52		410		8	3	3				838
Pyridate	238	7	162	318																726
S-metolachlor	6		6	5	23														149	188
Tepraloxymid	59	7		19		116	137			18		2								358
All herbicides	2,281	909	807	1,149	137	2,979	1,411	85	68	614	268	1,169	32	73	100	333	367	1,026	21	13,827

Table 6 (cont.): Estimated area (spray-hectares) of outdoor vegetable crops treated with pesticide formulations in Ireland, 2015.

Pesticide type & formulation	Cabbages	Cauliflower	Brussel sprouts	Broccoli	Beetroot	Carrots	Parsnips	Celery	Kale	Leeks	Lettuce	Onions	Parsley	Other herbs	Rhubarb	Spinach	Scallions	Turnips and swedes	Other outdoor vegetables	Total
<i>Insecticides</i>																				
Acetamiprid											20									20
Chlorantraniliprole						197	41		0									318	2	238
Chlorpyrifos	359	82	0	580														3		1,342
Clofentezine																		3		3
Cypermethrin	664	313	109	867				6			61							39		2,060
Deltamethrin	153	104	157	55	4			1			14				8		3	74	3	574
Dimethoate											14									14
Esfenvalerate	75		68						39										4	186
Garlic Extract																		2		2
Indoxacarb	350	44	68	78					0									0		541
Lambda-cyhalothrin	449	153	9	110	17	1,422	744	84	16		95		6	9		154		12		3,280
Oxamyl						42														42
Pirimicarb	249	167	142	75		71	2		13		52		6	9				136	4	926
Pymetrozine	155	76	5					80	39		5								3	363
Pyrethrins			5		7	0	5				8					154				180
Spinosad			0						13	41	8		6	10		167			4	250
Spirotetramat	149	24	147	23					3		146								2	494
Thiacloprid	151	85	8	19	37	288	247			32								32		899
Thiamethoxam		0	0	0																0
All insecticides	2,754	1,049	718	1,807	65	2,020	1,039	171	122	73	423	0	19	38	0	479	0	615	21	11,413
<i>Molluscicides</i>																				
Ferric phosphate	19			4											48					70
Metaldehyde	301	15	84	547	4	138												73	4	1,165
Methiocarb	198	92	277	37		15		28		1	123							51		823
All molluscicides	518	107	361	588	4	153	0	28	0	1	123	0	0	0	48	0	0	124	4	2,058
<i>Biological controls</i>																				
Bacillus subtilis																13				13
Coniothyrium minitans											31									31
All biological controls	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	13	0	0	0	44
<i>Growth regulators</i>																				
Maleic hydrazide							47					72								119
All growth regulators	0	0	0	0	0	0	47	0	0	0	0	72	0	0	0	0	0	0	0	119
<i>Seed treatments</i>																				
Iprodione	0	0		0																1
Metalaxyl-M	2	0	0	0					0											2
Thiram	77	40	0	23					0										3	143
All seed treatments	79	40	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	146
All pesticides	9,499	3,398	2,743	5,315	210	8,264	3,505	431	300	1,175	1,024	3,719	70	165	148	987	873	2,553	71	44,449

Table 7: Estimated quantities (kilograms) of pesticide formulations used on outdoor vegetable crops in Ireland, 2015.

Pesticide type & formulation	Cabbages	Cauliflower	Brussel sprouts	Broccoli	Beetroot	Carrots	Parsnips	Celery	Kale	Leeks	Lettuce	Onions	Parsley	Other herbs	Rhubarb	Spinach	Scallions	Turnips and swedes	Other outdoor vegetables	Total
Fungicides																				
Azoxystrobin	220	89	37	140		154	62	14	11	13	8	18	2	5		1	40	76	3	892
Benthiavalicarb-isopropyl/mancozeb												666								666
Boscalid/pyraclostrobin	116	17	24	10		118	5		6		26		3	5					0	331
Chlorothalonil	1	0	0	0				0	0	0		72					85	0		158
Chlorothalonil/metalaxyl-M	2	1	85							17		101								206
Copper oxychloride								14				198								212
Cymoxanil/mancozeb																		11		11
Cyprodinil/fludioxonil					3	214						147					25			390
Difenoconazole	131	39	51	19	0	65	26	9	3									17	1	361
Dimethomorph/mancozeb										147	46	824					7			1,024
Epoxiconazole	1																			1
Fenpropimorph					0	244	25			16									90	375
Fluopicolide/propamocarb hydrochloride	132	0	0	0					0										34	166
Fosetyl-aluminium/propamocarb hydrochloride	13	4	0	22							17									381
Iprodione	9	65	0	20						0	2	0								96
Mancozeb						142					28	1,145					129			1,444
Mandipropamid									2		2		1	1					2	8
Metalaxyl-M	316	82	3	352		18	3		1					6		2			5	789
Prochloraz/proquinazid/tebuconazole														5		2				9
Propamocarb hydrochloride	33	5	9	25				0	8	2		1					0		2	83
Prothioconazole	77	32	18	12		76	60			21										316
Tebuconazole	10	25		2		9				0										67
Tebuconazole/trifloxystrobin	131	23	28	22		63	43			46										355
All fungicides	1,192	383	254	623	3	1,104	223	37	31	262	129	3,173	6	22	0	328	286	278	9	8,342

Table 7 (cont.): Estimated quantities (kilograms) of pesticide formulations used on outdoor vegetable crops in Ireland, 2015.

Pesticide type & formulation	Cabbages	Cauliflower	Brussel sprouts	Broccoli	Beetroot	Carrots	Parsnips	Celery	Kale	Leeks	Lettuce	Onions	Parsley	Other herbs	Rhubarb	Spinach	Scallions	Turnips and swedes	Other outdoor vegetables	Total
Herbicides																				
Amidosulfuron							0													0
Bentazone										33							21			54
Bromoxynil/loxytil/mecoprop-P															48					48
Chloridazon					30															30
Chlorpropham													7	11						18
Clomazone	5	8	4	2		7													0	25
Clopyralid	22		31																11	64
Cycloxydim	9		10																1	21
Dimethenamid-P/pendimethalin	244	37		21						47	27	196					56			627
Diquat	7	38												3		1				50
Flumioxazin												0								0
Glyphosate	274	76	71	69		115	3	1	12	14	8	121	6	10	4	148		142	5	1,078
loxytil										17		28								56
Isoproturon						69														69
Lenacil																147				147
Linuron	1					349	232	20					8	9			2		11	634
MCPA				6																6
Metamitron					70		446													516
Metazachlor	666	222	112	387					31	35	1								316	1,772
Metribuzin						109	3												1	114
Napropamide	43		4	12															58	117
Pendimethalin	405	174	151	136		613	371	0		43	64	2	0	1	34		15	66	5	2,083
Phenmedipham					7															7
Propaquizafop							11													11
Propyzamide									18		168		9	19	15	2				234
Prosulfocarb					30	345	178	59		32		403		20	7	7			7	1,087
Pyridate	157	3	75	136																370
S-metolachlor	3		3	2	24														160	192
Tepraloxymid	3	0		1		9	7			0		0								20
All herbicides	1,837	558	462	773	161	1,617	1,251	80	62	221	268	750	31	74	107	307	103	766	23	9,450

Table 7 (cont.): Estimated quantities (kilograms) of pesticide formulations used on outdoor vegetable crops in Ireland, 2015.

Pesticide type & formulation	Cabbages	Cauliflower	Brussel sprouts	Broccoli	Beetroot	Carrots	Parsnips	Celery	Kale	Leeks	Lettuce	Onions	Parsley	Other herbs	Rhubarb	Spinach	Scallions	Turnips and swedes	Other outdoor vegetables	Total
<i>Insecticides</i>																				
Acetamiprid											1									1
Chlorantraniliprole						7	1													8
Chlorpyrifos	287	83	31	372					0									116	1	891
Clofentezine																		1		1
Cypermethrin	17	8	3	22				0			2							1		54
Deltamethrin	1	1	1	0	0			0			0			0		0		1	0	4
Dimethoate											5									5
Esfenvalerate	0		0						0											1
Garlic Extract																		15		15
Indoxacarb	9	1	2	2					0									0		14
Lambda-cyhalothrin	5	1	0	1	0	14	9	0	0		1		0	0		1		0		34
Oxamyl						63														63
Pirimicarb	43	38	20	13		10	0		3		8		2	2				26	0	166
Pymetrozine	30	15	1					14	8		1								1	70
Pyrethrins					0	0	0				0					2				2
Spinosad			0							4	1		1	1		16				24
Spirotetramat	11	2	9	2					0		11								0	34
Thiacloprid	14	8	1	2	5	28	24			3								4		89
Thiamethoxam		0	0	0																0
All Insecticides	419	157	68	415	5	121	35	15	13	7	29	0	2	4	0	19	0	164	3	1,474
<i>Molluscicides</i>																				
Ferric phosphate	4			1											6					10
Metaldehyde	68	3	24	109	1	12												15	1	233
Methiocarb	24	14	25	5		2		3		0	7							6		87
All molluscicides	96	17	49	115	1	14	0	3	0	0	7	0	0	0	6	0	0	21	1	329
<i>Growth regulators</i>																				
Maleic hydrazide							140						173							313
All growth regulators	0	0	0	0	0	0	140	0	0	0	0	173	0	0	0	0	0	0	0	313
<i>Seed treatments</i>																				
Iprodione	0	0		0																0
Metalaxyl-M	0	0	0	0					0											0
Thiram	4	2	0	1					0										0	7
All seed treatments	4	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
All pesticides	3,548	1,116	833	1,927	170	2,856	1,649	136	105	490	433	4,096	39	99	113	654	389	1,228	35	19,916

Table 8: The fifty active ingredients most extensively used on outdoor vegetable crops in Ireland in 2015, ranked by area treated (spray-hectares).

No.	Active ingredient	Treated area (sp ha)
1	Azoxystrobin	3,781
2	Lambda-cyhalothrin	3,280
3	Difenoconazole	2,941
4	Metazachlor	2,518
5	Pendimethalin	2,416
6	Mancozeb	2,122
7	Cypermethrin	2,060
8	Metalaxyl-m	1,682
9	Tebuconazole	1,658
10	Prothioconazole	1,474
11	Linuron	1,467
12	Trifloxystrobin	1,338
13	Glyphosate	1,271
14	Chlorpyrifos	1,268
15	Metaldehyde	1,172
16	Pyraclostrobin	954
17	Boscalid	954
18	Pirimicarb	926
19	Thiacloprid	899
20	Ioxynil	888
21	Metribuzin	871
22	Prosulfocarb	838
23	Methiocarb	823
24	Cyprodinil	760
25	Fludioxonil	760
26	Pyridate	726
27	Dimethomorph	627
28	Benthiavalicarb-isopropyl	581
29	Deltamethrin	574
30	Indoxacarb	541
31	Dimethenamid-P	531
32	Fenpropimorph	515
33	Spirotetramat	494
34	Chlorothalonil	467
35	Pymetrozine	363
36	Tepraloxydim	358
37	Clopyralid	355
38	Clomazone	354
39	Propamocarb hydrochloride	338
40	Metamitron	319
41	Spinosad	250
42	Chlorantraniliprole	238
43	Bentazone	205
44	Copper oxychloride	199
45	Propyzamide	195
46	S-metolachlor	188
47	Esfenvalerate	186
48	Pyrethrins	180
49	Fluopicolide	171
50	Lenacil	167

Table 9: The fifty active ingredients most extensively used on outdoor vegetable crops in Ireland in 2015, ranked by weight (kilograms).

No.	Active ingredient	Quantity (kgs)
1	Mancozeb	3,054
2	Pendimethalin	2,427
3	Metazachlor	1,772
4	Prosulfocarb	1,087
5	Glyphosate	1,085
6	Azoxystrobin	892
7	Chlorpyrifos	850
8	Metalaxyl-m	803
9	Linuron	637
10	Metamitron	516
11	Propamocarb hydrochloric	494
12	Fenpropimorph	375
13	Pyridate	370
14	Difenoconazole	361
15	Chlorothalonil	350
16	Prothioconazole	316
17	Maleic hydrazide	313
18	Tebuconazole	306
19	Dimethenamid-P	288
20	Boscalid	265
21	Metaldehyde	235
22	Cyprodinil	234
23	Propyzamide	234
24	Copper oxychloride	212
25	S-metolachlor	192
26	Pirimicarb	166
27	Fludioxonil	156
28	Lenacil	147
29	Fosetyl-aluminium	140
30	Trifloxystrobin	118
31	Napropamide	117
32	Metribuzin	116
33	Dimethomorph	103
34	Iprodione	96
35	Thiacloprid	89
36	Methiocarb	87
37	Pymetrozine	70
38	Isoproturon	69
39	Pyraclostrobin	66
40	Ioxynil	64
41	Clopyralid	64
42	Oxamyl	63
43	Diquat	55
44	Cypermethrin	54
45	Bentazone	54
46	Chlorpyrifos	40
47	Spirotetramat	34
48	Lambda-cyhalothrin	34
49	Mecoprop-P	32
50	Chloridazon	30

Table 10: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for beetroot, 2015.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Beetroot	Fungicides			
	Chloridazon	30.4	22.4	22.4
	Cyprodinil	1.7	4.4	4.4
	Difenoconazole	0.0	0.1	0.1
	Fenpropimorph	0.0	0.1	0.1
	Fludioxonil	1.1	4.4	4.4
	Herbicides			
	Metamitron	70.3	55.8	18.6
	Phenmedipham	6.8	17.0	17.0
	Prosulfocarb	29.7	18.6	18.6
	S-metolachlor	23.7	23.0	23.0
	Insecticides			
	Deltamethrin	0.0	3.9	3.9
	Lambda-cyhalothrin	0.0	17.0	17.0
	Pyrethrins	0.3	6.8	6.8
	Thiacloprid	4.7	37.2	18.6
	Biological Control			
	Molluscicides			
	Metaldehyde	0.8	3.9	3.9

Table 11: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for broccoli, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Broccoli	Fungicides				
	Azoxystrobin	139.6	694.1	425.0	
	Boscalid	7.9	29.6	29.6	
	Chlorothalonil	0.1	0.1	0.1	
	Difenoconazole	18.9	159.4	159.4	
	Fluopicolide	0.0	0.1	0.1	
	Fosetyl-aluminium	8.2	0.8	0.8	
	Iprodione	20.3	27.3	27.2	
	Metalaxyl-m	351.8	695.3	397.4	
	Propamocarb hydrochloride	38.7	2.1	1.9	
	Prothioconazole	11.6	60.3	60.3	
	Pyraclostrobin	2.0	29.6	29.6	
	Tebuconazole	16.5	80.3	80.3	
	Thiram	1.2	23.1	11.6	
	Trifloxystrobin	7.2	71.7	71.7	
		Herbicides			
	Clomazone	1.7	27.0	27.0	
	Dimethenamid-P	9.7	11.4	11.4	
	Glyphosate	69.1	72.9	72.9	
	MCPA	6.5	14.4	14.4	
	Metazachlor	387.0	543.8	543.8	
	Napropamide	12.3	14.4	14.4	
	Pendimethalin	147.7	133.5	133.5	
	Pyridate	135.7	318.5	318.5	
	S-metolachlor	2.3	4.7	4.7	
	Tepraloxydim	1.0	19.4	19.4	
		Insecticides			
	Chlorpyrifos	372.4	580.3	313.4	
	Cypermethrin	22.0	867.1	474.1	
	Deltamethrin	0.4	54.8	54.8	
	Indoxacarb	2.0	78.4	78.4	
	Lambda-cyhalothrin	1.0	109.6	109.6	
	Pirimicarb	13.4	75.1	61.6	
	Spirotetramat	1.7	22.7	22.7	
	Thiacloprid	1.8	18.6	18.6	
	Thiamethoxam	0.0	0.0	0.0	
		Molluscicides			
	Ferric phosphate	0.8	3.8	3.8	
Metaldehyde	109.3	546.7	279.8		
Methiocarb	5.0	37.4	37.4		

Table 12: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for brussels sprouts, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Brussels sprouts	Fungicides				
	Azoxystrobin	37.1	131.3	131.3	
	Boscalid	19.4	72.7	72.7	
	Chlorothalonil	78.9	78.9	75.8	
	Difenoconazole	50.8	405.2	113.5	
	Fluopicolide	0.0	0.0	0.0	
	Fosetyl-aluminium	0.1	0.0	0.0	
	Iprodione	0.0	0.0	0.0	
	Metalaxyl-m	9.0	87.9	84.6	
	Propamocarb hydrochloride	8.7	0.4	0.4	
	Prothioconazole	17.7	39.6	39.6	
	Pyraclostrobin	4.9	72.7	72.7	
	Tebuconazole	18.3	119.8	35.7	
	Thiram	0.0	0.3	0.2	
	Trifloxystrobin	9.2	119.8	35.7	
		Herbicides			
	Clomazone	3.7	68.2	68.2	
	Clopyralid	31.4	157.0	88.8	
	Cycloxydim	10.4	69.2	69.2	
	Glyphosate	71.0	49.7	49.7	
	Metazachlor	112.2	164.6	164.6	
	Napropamide	4.1	4.5	4.5	
	Pendimethalin	151.3	125.5	125.5	
	Pyridate	74.7	161.5	93.4	
	S-metolachlor	3.1	6.4	6.4	
		Insecticides			
	Chlorpyrifos	31.2	0.4	0.4	
	Cypermethrin	3.2	109.4	109.4	
	Deltamethrin	1.2	156.8	100.7	
	Esfenvalerate	0.3	68.2	68.2	
	Indoxacarb	1.7	68.2	68.2	
	Lambda-cyhalothrin	0.0	9.1	4.5	
	Pirimicarb	20.2	141.8	73.7	
	Pymetrozine	0.9	4.5	4.5	
	Pyrethrins	0.0	4.5	4.5	
	Spinosad	0.0	0.0	0.0	
	Spirotetramat	8.5	147.3	35.2	
	Thiacloprid	0.7	7.6	7.6	
	Thiamethoxam	0.0	0.0	0.0	
		Molluscicides			
	Metaldehyde	23.6	84.1	28.0	
	Methiocarb	25.1	276.7	72.2	

Table 13: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for cabbage crops, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Cabbages	Fungicides				
	Azoxystrobin	220.5	914.3	551.6	
	Boscalid	93.1	350.3	302.8	
	Chlorothalonil	2.7	11.3	7.7	
	Difenoconazole	131.1	1078.2	638.1	
	Diquat	6.5	24.3	24.3	
	Epoxiconazole	1.4	5.6	5.6	
	Fluopicolide	12.0	119.8	119.8	
	Fosetyl-aluminium	4.6	0.4	0.3	
	Iprodione	9.0	12.3	12.2	
	Metalaxyl-m	315.7	563.5	397.7	
	Propamocarb hydrochloride	160.9	121.7	121.1	
	Prothioconazole	77.1	344.4	194.3	
	Pyraclostrobin	23.4	350.3	302.8	
	Tebuconazole	97.1	478.1	308.1	
	Thiram	3.9	76.8	38.4	
	Trifloxystrobin	43.7	437.4	273.8	
		Herbicides			
		Clomazone	4.6	72.2	66.9
		Clopyralid	22.3	121.5	121.5
		Cycloxydim	9.4	37.7	37.7
		Dimethenamid-P	112.0	150.4	150.4
		Glyphosate	273.5	244.3	244.3
		Linuron	1.2	1.7	1.7
		Metazachlor	665.6	896.3	874.9
		Napropamide	42.6	18.9	18.9
		Pendimethalin	536.3	560.7	485.2
		Pyridate	157.0	238.2	238.2
		S-metolachlor	2.8	5.8	5.8
		Tepraloxymid	2.9	59.0	59.0
		Insecticides			
		Chlorpyrifos	286.9	359.0	303.5
		Cypermethrin	17.3	664.0	507.9
		Deltamethrin	1.2	152.6	152.6
		Esfenvalerate	0.3	75.4	37.7
		Indoxacarb	8.9	350.3	205.6
		Lambda-cyhalothrin	5.1	448.8	240.7
		Pirimicarb	43.5	248.8	196.7
		Pymetrozine	29.9	155.4	155.4
		Spirotetramat	11.2	148.6	148.6
		Thiacloprid	14.5	150.9	136.8
	Molluscicides				
	Ferric phosphate	3.9	18.9	18.9	
	Metaldehyde	68.1	301.1	176.4	
	Methiocarb	23.9	198.4	198.4	

Table 14: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for carrots, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Carrots	Fungicides				
	Azoxystrobin	154.4	673.5	312.5	
	Boscalid	94.4	353.6	353.6	
	Cyprodinil	128.6	342.9	205.2	
	Difenoconazole	65.2	521.5	316.3	
	Fenpropimorph	243.8	326.8	326.8	
	Fludioxonil	85.7	342.9	205.2	
	Mancozeb	141.9	116.2	116.2	
	Metalaxyl-m	18.3	30.2	30.2	
	Prothioconazole	75.7	393.8	321.3	
	Pyraclostrobin	23.7	353.6	353.6	
	Tebuconazole	51.3	353.6	353.6	
	Trifloxystrobin	21.1	281.1	281.1	
		Herbicides			
		Clomazone	7.1	98.0	98.0
		Glyphosate	115.0	210.4	210.4
		Isoproturon	68.9	137.7	137.7
		Linuron	349.4	948.8	491.1
		Metribuzin	109.5	831.7	439.9
		Pendimethalin	613.3	482.0	482.0
		Prosulfocarb	344.9	154.2	154.2
		Tepraloxydim	8.7	116.2	116.2
		Insecticides			
		Chlorantraniliprole	6.7	197.4	119.5
		Lambda-cyhalothrin	14.4	1421.8	502.4
		Oxamyl	62.5	41.7	41.7
		Pirimicarb	10.0	71.2	71.2
		Pyrethrins	0.0	0.5	0.5
		Thiacloprid	27.6	287.7	214.7
		Molluscicides			
		Metaldehyde	12.4	137.7	137.7
		Methiocarb	2.1	15.2	15.2

Table 15: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for cauliflower crops, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Cauliflower	Fungicides				
	Azoxystrobin	88.8	360.7	279.9	
	Boscalid	13.3	49.7	49.7	
	Chlorothalonil	1.3	12.5	6.3	
	Difenoconazole	39.4	315.2	252.3	
	Fluopicolide	0.0	0.0	0.0	
	Fosetyl-aluminium	1.6	0.1	0.1	
	Iprodione	64.8	86.6	86.5	
	Metalaxyl-m	82.2	146.9	128.5	
	Prothioconazole	31.5	154.4	154.4	
	Pyraclostrobin	3.3	49.7	49.7	
	Tebuconazole	40.9	179.3	179.3	
	Thiram	2.0	40.0	20.0	
	Trifloxystrobin	7.8	77.9	77.9	
		Herbicides			
	Clomazone	7.8	86.4	86.4	
	Dimethenamid-P	16.9	19.9	19.9	
	Diquat	38.1	76.1	76.1	
	Metazachlor	221.8	339.8	339.8	
	Pendimethalin	194.3	211.0	182.3	
	Pyridate	3.0	7.4	7.4	
	Tepaloxymid	0.3	6.5	6.5	
		Insecticides			
	Chlorpyrifos	83.0	82.2	82.2	
	Cypermethrin	8.3	313.2	271.5	
	Deltamethrin	0.7	103.9	103.9	
	Glyphosate	75.5	181.6	181.6	
	Indoxacarb	1.1	44.4	44.4	
	Lambda-cyhalothrin	1.4	153.2	134.8	
	Pirimicarb	37.7	166.5	141.1	
	Pymetrozine	15.2	76.1	76.1	
	Spirotetramat	1.8	24.2	24.2	
	Thiacloprid	8.2	85.3	85.3	
Thiamethoxam	0.0	0.0	0.0		
	Molluscicides				
Metaldehyde	3.0	14.9	14.9		
Methiocarb	13.6	91.9	91.9		

Table 16: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for celery, 2015.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Celery	Fungicides			
	Azoxystrobin	13.7	59.3	42.8
	Chlorothalonil	0.0	0.0	0.0
	Copper oxychloride	14.4	11.5	5.8
	Difenoconazole	9.2	75.6	41.1
	Propamocarb hydrochloride	0.1	0.0	0.0
	Prosulfocarb	58.9	40.7	40.7
	Herbicides			
	Glyphosate	0.6	0.7	0.7
	Linuron	20.3	43.0	42.6
	Pendimethalin	0.4	0.7	0.7
	Insecticides			
	Cypermethrin	0.2	6.1	6.1
	Deltamethrin	0.0	0.7	0.7
	Lambda-cyhalothrin	0.4	84.1	42.2
	Pymetrozine	14.4	80.4	40.2
	Molluscicides			
	Methiocarb	3.4	28.3	28.3

Table 17: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for kale, 2013.

	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Kale	Fungicides			
	Azoxystrobin	11.1	44.0	41.9
	Boscalid	5.1	12.9	12.9
	Chlorothalonil	0.0	0.0	0.0
	Difenoconazole	3.0	39.4	39.4
	Fluopicolide	0.0	0.0	0.0
	Mandipropamid	1.9	12.9	12.9
	Metalaxyl-m	0.8	1.4	0.7
	Propamocarb hydrochloride	7.7	0.4	0.4
	Pyraclostrobin	1.3	12.9	12.9
	Thiram	0.0	0.0	0.0
	Herbicides			
	Glyphosate	12.3	12.9	12.9
	Metazachlor	31.3	41.9	41.9
	Propyzamide	18.0	12.9	12.9
	Insecticides			
	Chlorpyrifos	0.0	0.0	0.0
	Esfenvalerate	0.2	38.6	38.6
	Indoxacarb	0.0	0.0	0.0
	Lambda-cyhalothrin	0.1	15.7	13.6
	Pirimicarb	3.2	12.9	12.9
	Pymetrozine	7.7	38.6	38.6
	Spinosad	1.3	13.2	13.2
	Spirotetramat	0.2	2.9	2.9

Table 18: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for leeks, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Leeks	Fungicides			
	Azoxystrobin	13.2	63.1	63.1
	Chlorothalonil	15.7	25.7	25.7
	Dimethomorph	14.8	108.9	67.3
	Fenpropimorph	16.0	34.7	25.7
	Iprodione	0.0	0.1	0.1
	Mancozeb	132.0	108.9	67.3
	Metalaxyl-m	1.2	25.7	25.7
	Propamocarb hydrochloride	1.7	0.1	0.1
	Prothioconazole	21.3	92.5	47.9
	Tebuconazole	30.5	161.7	105.2
	Trifloxystrobin	15.2	161.0	104.5
	Herbicides			
	Bentazone	32.6	124.9	41.6
	Dimethenamid-P	21.5	50.6	50.6
	Glyphosate	14.1	11.9	11.9
	Ioxynil	16.7	234.2	108.7
	Metazachlor	35.5	61.5	61.5
	Pendimethalin	68.4	111.4	111.4
	Prosulfocarb	32.4	52.2	52.2
	Tepraloxydim	0.3	18.1	18.1
	Insecticides			
	Spinosad	4.0	41.1	41.1
	Thiacloprid	3.1	32.1	32.1
	Molluscicides			
	Methiocarb	0.1	0.7	0.7

Table 19: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for lettuce, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Lettuce	Fungicides			
	Azoxystrobin	7.8	31.2	31.2
	Boscalid	20.9	52.1	38.2
	Dimethomorph	4.6	30.7	30.7
	Fosetyl-aluminium	6.4	8.2	8.2
	Iprodione	2.2	18.9	7.5
	Mancozeb	69.2	49.6	38.2
	Mandipropamid	1.7	19.6	17.0
	Propamocarb hydrochloride	10.9	8.2	8.2
	Pyraclostrobin	5.2	52.1	38.2
	Herbicides			
	Dimethenamid-P	12.4	46.8	38.2
	Glyphosate	8.2	9.2	9.2
	Metazachlor	0.7	1.0	1.0
	Pendimethalin	78.8	125.2	40.2
	Propyzamide	167.9	132.3	60.2
	Insecticides			
	Acetamiprid	1.0	19.9	7.5
	Cypermethrin	1.5	61.5	30.7
	Deltamethrin	0.1	13.8	4.8
	Dimethoate	4.7	14.0	14.0
	Lambda-cyhalothrin	0.8	94.7	50.7
	Pirimicarb	7.8	52.1	38.2
	Pymetrozine	1.0	4.9	4.4
	Pyrethrins	0.1	8.2	8.2
	Spinosad	0.8	8.2	8.2
	Spirotetramat	10.9	146.1	98.7
	Molluscicides			
	Methiocarb	7.4	122.9	30.7
	Biological controls			
	Coniothyrium minitans	0.0	30.7	30.7

Table 20: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for onions, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Onions	Fungicides			
	Azoxystrobin	18.0	72.1	72.1
	Benthiavalicarb-isopropyl	16.3	581.3	171.7
	Chlorothalonil	165.9	165.9	165.9
	Copper oxychloride	197.9	187.6	93.8
	Cyprodinil	88.4	331.7	165.9
	Dimethomorph	83.3	475.9	165.9
	Fludioxonil	59.0	331.7	165.9
	Iprodione	0.0	0.0	0.0
	Mancozeb	2536.4	1720.6	171.7
	Metalaxyl-m	7.0	93.8	93.8
	Propamocarb hydrochloride	0.5	0.0	0.0
	Herbicides			
	Dimethenamid-P	89.8	171.7	171.7
	Flumioxazin	0.2	5.8	5.8
	Glyphosate	121.1	165.9	165.9
	Ioxynil	28.0	411.7	173.8
	Pendimethalin	108.1	173.8	173.8
	Prosulfocarb	402.7	409.6	171.7
	Tepraloxym	0.2	2.1	2.1
	Growth regulators			
	Maleic hydrazide	173.0	72.1	72.1

Table 21: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for other herbs, 2015.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Other herbs	Fungicides			
	Azoxystrobin	4.7	18.7	18.7
	Boscalid	3.8	9.4	9.4
	Mandipropamid	1.4	9.4	9.4
	Metalaxyl-m	5.9	8.4	8.4
	Prochloraz	3.4	8.4	8.4
	Proquinazid	0.4	8.4	8.4
	Pyraclostrobin	0.9	9.4	9.4
	Tebuconazole	1.7	8.4	8.4
	Herbicides			
	Chlorpropham	10.5	9.4	9.4
	Diquat	3.4	8.4	8.4
	Glyphosate	10.3	10.3	10.3
	Linuron	9.1	17.8	17.8
	Pendimethalin	0.9	1.0	1.0
	Propyzamide	19.2	17.8	17.8
	Prosulfocarb	20.2	8.4	8.4
	Insecticides			
	Deltamethrin	0.1	8.4	8.4
	Lambda-cyhalothrin	0.1	9.4	9.4
	Pirimicarb	2.3	9.4	9.4
	Spinosad	1.0	10.4	10.4

Table 22: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for other outdoor vegetables, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Other outdoor vegetables	Fungicides				
	Azoxystrobin	2.8	11.8	8.4	
	Boscalid	0.3	1.3	1.3	
	Difenoconazole	0.5	4.1	2.9	
	Metalaxyl-m	2.0	2.8	2.8	
	Propamocarb hydrochloride	1.5	0.1	0.1	
	Proquinazid	0.1	2.8	2.8	
	Pyraclostrobin	0.1	1.3	1.3	
	Tebuconazole	0.6	2.8	2.8	
	Thiram	0.0	3.2	3.2	
		Herbicides			
	Diquat	1.1	2.8	2.8	
	Glyphosate	4.6	3.6	3.6	
	Linuron	1.6	2.8	2.8	
	Metazachlor	1.9	2.5	2.5	
	Pendimethalin	4.8	3.6	3.6	
	Prochloraz	1.1	2.8	2.8	
	Propyzamide	2.0	2.8	2.8	
	Prosulfocarb	6.7	2.8	2.8	
		Insecticides			
	Chlorpyrifos	1.3	1.9	1.9	
	Deltamethrin	0.0	2.8	2.8	
	Esfenvalerate	0.0	4.1	2.9	
	Pirimicarb	0.2	3.7	2.9	
	Pymetrozine	0.5	2.6	1.3	
	Spinosad	0.4	3.7	2.9	
	Spirotetramat	0.2	2.3	0.4	
		Molluscicides			
	Metaldehyde	0.7	3.6	3.6	

Table 23: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for parsley, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Parsley	Fungicides			
	Azoxystrobin	1.6	6.4	6.4
	Boscalid	2.6	6.4	6.4
	Mandipropamid	1.0	6.4	6.4
	Pyraclostrobin	0.6	6.4	6.4
	Herbicides			
	Chlorpropham	7.2	6.4	6.4
	Glyphosate	6.2	6.4	6.4
	Linuron	7.9	11.7	11.7
	Pendimethalin	0.5	0.5	0.5
	Propyzamide	9.0	6.4	6.4
	Insecticides			
	Lambda-cyhalothrin	0.0	6.4	6.4
	Pirimicarb	1.6	6.4	6.4
	Spinosad	0.6	6.5	6.5

Table 24: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for parsnips, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Parsnips	Fungicides			
	Azoxystrobin	61.6	246.4	128.5
	Boscalid	4.2	15.6	15.6
	Difenoconazole	25.6	204.8	110.2
	Fenpropimorph	25.0	33.3	33.3
	Metalaxyl-m	2.6	4.2	4.2
	Prothioconazole	60.5	315.0	110.2
	Pyraclostrobin	1.0	15.6	15.6
	Tebuconazole	28.4	189.2	94.6
	Trifloxystrobin	14.2	189.2	94.6
	Herbicides			
	Amidosulfuron	0.1	3.4	3.4
	Glyphosate	2.7	4.2	4.2
	Linuron	232.0	416.4	279.3
	Metamitron	446.0	263.5	263.5
	Metribuzin	3.3	17.0	8.5
	Pendimethalin	371.2	286.0	286.0
	Propaquizafop	11.0	137.1	137.1
	Prosulfocarb	177.6	145.7	145.7
	Tepraloxymid	6.9	137.1	137.1
	Insecticides			
	Chlorantraniliprole	0.9	40.8	24.6
	Lambda-cyhalothrin	9.5	743.6	291.3
	Pirimicarb	0.3	2.1	2.1
	Pyrethrins	0.3	5.5	5.5
	Thiacloprid	23.7	247.3	247.3
	Growth regulators			
	Maleic hydrazide	140.3	46.8	46.8

Table 25: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for rhubarb, 2015.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Rhubarb	Herbicides			
	Bromoxynil	8.0	47.5	47.5
	Glyphosate	3.6	3.3	3.3
	loxynil	8.0	47.5	47.5
	Mecoprop-P	31.9	47.5	47.5
	Pendimethalin	34.0	26.1	26.1
	Propyzamide	15.4	19.9	19.9
	Prosulfocarb	6.7	3.3	3.3
	Molluscicides			
	Ferric phosphate	5.6	47.5	47.5

Table 26: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for scallions, 2015.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Scallions	Fungicides			
	Azoxystrobin	40.2	160.9	80.5
	Chlorothalonil	85.0	172.2	91.8
	Cyprodinil	15.1	80.5	80.5
	Dimethomorph	0.7	11.3	11.3
	Fludioxonil	10.1	80.5	80.5
	Iprodione	0.0	0.0	0.0
	Mancozeb	134.8	91.8	91.8
	Propamocarb hydrochloride	0.1	0.0	0.0
	Herbicides			
	Bentazone	21.0	80.5	80.5
	Dimethenamid-P	25.6	80.5	80.5
	loxynil	11.6	194.9	91.8
	Pendimethalin	45.1	91.8	91.8

Table 27: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for spinach, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Spinach	Fungicides			
	Azoxystrobin	0.7	2.8	2.8
	Fosetyl-aluminium	119.6	154.3	154.3
	Metalaxyl-m	2.0	2.8	2.8
	Prochloraz	1.1	2.8	2.8
	Propamocarb hydrochloride	204.4	154.3	154.3
	Proquinazid	0.1	2.8	2.8
	Tebuconazole	0.6	2.8	2.8
	Herbicides			
	Diquat	1.1	2.8	2.8
	Glyphosate	148.2	154.4	154.4
	Lenacil	147.1	167.1	167.1
	Linuron	1.6	2.8	2.8
	Metazachlor	0.1	0.2	0.2
	Propyzamide	2.0	2.8	2.8
	Prosulfocarb	6.7	2.8	2.8
	Insecticides			
	Deltamethrin	0.0	2.8	2.8
	Lambda-cyhalothrin	1.2	154.3	154.3
	Pyrethrins	1.5	154.3	154.3
	Spinosad	16.0	167.1	167.1
	Biological controls			
	Bacillus subtilis	0.0	12.9	12.9

Table 28: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for turnips and swedes, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Turnips & swedes	Fungicides				
	Azoxystrobin	76.1	289.8	289.8	
	Chlorothalonil	0.0	0.0	0.0	
	Cymoxanil	0.7	15.6	15.6	
	Difenoconazole	17.2	137.4	137.4	
	Fenpropimorph	90.3	120.4	60.3	
	Fluopicolide	3.1	31.2	15.6	
	Mancozeb	10.6	15.6	15.6	
	Mandipropamid	2.3	15.6	15.6	
	Metalaxyl-m	5.0	21.3	21.3	
	Propamocarb hydrochloride	31.6	31.3	15.6	
	Prothioconazole	20.4	73.5	49.2	
	Tebuconazole	20.5	81.8	71.0	
		Herbicides			
		Clomazone	0.1	2.1	2.1
		Clopyralid	10.6	76.0	76.0
		Cycloxydim	1.0	9.8	9.8
		Glyphosate	141.8	122.8	122.8
		Linuron	10.5	15.6	15.6
		Metazachlor	316.0	466.1	466.1
		Metribuzin	1.4	15.6	15.6
		Napropamide	57.8	93.5	93.5
		Pendimethalin	66.5	76.1	76.1
		S-metolachlor	159.9	148.6	148.6
		Insecticides			
		Chlorpyrifos	115.8	317.8	256.9
		Clofentezine	0.7	2.6	2.6
		Cypermethrin	1.2	38.9	38.9
		Deltamethrin	0.7	73.7	73.7
		Garlic extract	15.3	2.1	2.1
		Indoxacarb	0.0	0.0	0.0
		Lambda-cyhalothrin	0.2	11.9	11.9
		Pirimicarb	25.5	136.4	125.5
		Molluscicides			
		Metaldehyde	14.6	73.1	36.6
		Methiocarb	6.1	51.4	51.4

Protected vegetable tables

Table 29: Estimated area (ha) of protected vegetable crops grown regionally in Ireland, 2015.

Crop	Region		Ireland
	East	South	
Protected cucumbers	3.3	0.0	3.3
Protected lettuce	39.6	6.5	46.1
Protected tomatoes	10.3	2.6	12.9
Other protected brassicas	1.5		1.5
Protected roots	4.6	0.8	5.4
protected onions & scallions	4.2		4.2
Protected celery & parsley	26.0	0.6	26.6
Other protected vegetables	4.0	1.9	5.9
Total	93.5	12.4	105.9

Table 30: Estimated area (spray-hectares) of protected vegetable crops treated regionally with each pesticide type in Ireland, 2015.

Pesticide type	Region		Ireland
	East	South	
Fungicides	205.2	41.1	246.3
Herbicides	90.7	6.3	97.0
Insecticides	151.0	25.8	176.8
Molluscicides	1.9		1.9
Biological Controls	28.7		28.7
Seed treatments	1.7		1.7
Total	479.3	73.2	552.4

Table 31: Estimated weight (kg) applied to protected vegetable crops regionally with each pesticide type in Ireland, 2015.

Pesticide type	Region		
	East	South	Ireland
Fungicides	55.4	16.9	72.3
Herbicides	61.0	3.7	64.7
Insecticides	16.4	1.5	17.9
Molluscicides	0.1		0.1
Seed treatments	0.0		0.0
Total	132.8	22.2	155.0

Table 32: The total area (spray hectares) and the basic area (hectares), of protected vegetable crops in Ireland 2015 treated with each pesticide type.

<i>Crop type</i>	Pesticide Type														
	Fungicides		Herbicides		Insecticides		Molluscicides		Biological control		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
Protected cucumbers	12.3	3.3	1.4	1.4	3.3	3.3			5.7	1.9			22.8	3.3	3.3
Protected lettuce	163.0	38.0	32.5	29.6	138.4	39.1	1.9	1.9					335.7	39.7	46.1
Protected tomatoes	29.9	12.2			2.4	1.2			21.7	8.8			54.0	12.2	12.9
Other protected brassicas	1.4	1.4			2.8	1.4							4.2	1.4	1.5
Protected roots	10.0	3.9			0.8	0.8							10.8	3.9	5.4
Protected onions & scallions			28.0	3.9									28.0	3.9	4.2
Protected celery & parsley	27.6	11.6	30.5	11.2	25.9	15.6					1.7	1.7	85.7	19.6	26.6
Other protected vegetables	2.1	0.7	4.7	2.6	3.2	2.0			1.3	1.3			11.3	3.8	5.1
Total	246.3	71.1	97.0	48.7	176.8	63.4	1.9	1.9	28.7	11.9	1.7	1.7	552.4	87.8	105.1

Table 33: The total quantities (kilograms) of each pesticide type used on protected vegetable crops in Ireland 2015.

<i>Crop</i>	Pesticide type					Total weight applied (kg)
	Fungicides	Herbicides	Insecticides	Molluscicides	Seed treatments	
Protected cucumbers	4.2	1.0	0.1			5.3
Protected lettuce	41.6	19.7	13.6	0.1		75.1
Protected tomatoes	10.0		0.1			10.1
Other protected brassicas	0.7		1.4			2.1
Protected roots	6.5		0.5			7.1
Protected onions & scallions		11.8				11.8
Protected celery & parsley	8.1	27.8	2.0		0.0	38.0
Other protected vegetables	1.1	4.4	0.1			5.6
<i>All crops</i>	<i>72.3</i>	<i>64.7</i>	<i>17.9</i>	<i>0.1</i>	<i>0.0</i>	<i>155.0</i>

Table 34: Estimated area (spray-hectares) of protected vegetable crops treated with pesticide formulations in Ireland, 2015.

Pesticide type & formulation	Protected cucumbers	Protected lettuce	Protected tomatoes	Other protected brassicas	Protected roots	Protected onions & scallions	Protected celery & Parsley	Other protected vegetables	Total
<i>Fungicides</i>									
Azoxystrobin		31.50	7.11				8.35	0.70	47.65
Boscalid/pyraclostrobin		37.03					4.24		41.27
Chlorothalonil				1.40					1.40
Copper oxychloride					0.76				0.76
Cyprodinil/fludioxonil	3.31	12.47	1.27						17.05
Dimethomorph							3.29		3.29
Fenhexamid		1.44	2.29						3.73
Fluopicolide/propamocarb hydrochloride					3.82				3.82
Fluopyram	7.13		13.22						20.34
Fosetyl-aluminium/propamocarb hydrochloride	1.91	3.84	3.82						9.56
Iprodione		39.49	0.89						40.38
Mancozeb			1.27		0.76				2.04
Mandipropamid		16.11			2.33		5.20		23.64
Metalaxyl-M		21.08			2.33		4.43	0.70	28.55
Prochloraz/proquinazid/tebuconazole							2.10	0.70	2.80
All fungicides	12.35	162.96	29.87	1.40	10.01		27.61	2.10	246.29

Table 34 (cont.): Estimated area (spray-hectares) of protected vegetable crops treated with pesticide formulations in Ireland, 2015.

Pesticide type & formulation	Protected cucumbers	Protected lettuce	Protected tomatoes	Other protected brassicas	Protected roots	Protected onions & scallions	Protected celery & Parsley	Other protected vegetables	Total
<i>Herbicides</i>									
Chlorpropham							1.91	1.87	3.78
Diquat						6.87	2.10	0.70	9.67
Glyphosate						0.47	9.14		9.61
loxynil						6.87			6.87
Linuron							11.24	0.70	11.94
Metribuzin	1.40								1.40
Pendimethalin						6.87			6.87
Propyzamide		32.51					4.01	0.70	37.22
Prosulfocarb							2.10	0.70	2.80
Tepraloxydim						6.87			6.87
All herbicides	1.40	32.51				27.96	30.50	4.67	97.04

Table 34 (cont.): Estimated area (spray-hectares) of protected vegetable crops treated with pesticide formulations in Ireland, 2015.

Pesticide type & formulation	Protected cucumbers	Protected lettuce	Protected tomatoes	Other protected brassicas	Protected roots	Protected onions & scallions	Protected celery & Parsley	Other protected vegetables	Total
<i>Insecticides</i>									
Acetamiprid		3.41							3.41
Bifenazate	1.40							1.27	2.67
Chlorpyrifos				1.40	0.76				2.16
Cypermethrin		26.55							26.55
Deltamethrin							2.10	0.70	2.80
Lambda-cyhalothrin							6.29		6.29
Pirimicarb		8.08		1.40			1.91		11.39
Pymetrozine		33.55	0.32				6.43		40.30
Spinosad		30.79					9.14		39.93
Spirotetramat		35.97							35.97
Thiacloprid			0.32						0.32
Unknown insecticide	1.91								1.91
Unknown nematicide			1.78					1.27	3.05
All Insecticides	3.31	138.36	2.42	2.80	0.76		25.87	3.25	176.77
<i>Molluscicides</i>									
Metaldehyde		1.91							1.91
All molluscicides		1.91							1.91
<i>Biological controls</i>									
B. thuringiensis (BC)								1.27	1.27
Bacillus subtilis	5.73		21.70						27.43
All biological controls	5.73		21.70					1.27	28.70
<i>Seed treatments</i>									
Cymoxanil/fludioxonil/metalaxyl-M							1.72		1.72
All seed treatments							1.72		1.72
All pesticides	22.78	335.73	53.98	4.20	10.78	27.96	85.71	11.28	552.42

Table 35: Estimated quantities (kilograms) of pesticide formulations used on protected vegetable crops in Ireland, 2015.

Pesticide type & formulation	Protected cucumbers	Protected lettuce	Protected tomatoes	Other protected brassicas	Protected roots	Protected onions & scallions	Protected celery & Parsley	Other protected vegetables	Total
<i>Fungicides</i>									
Azoxystrobin		4.21	0.33				1.83	0.18	6.54
Boscalid/pyraclostrobin		12.90					2.13		15.03
Chlorothalonil				0.70					0.70
Copper oxychloride					0.15				0.15
Cyprodinil/fludioxonil	1.77	5.48	0.48						7.73
Dimethomorph							0.43		0.43
Fenhexamid		1.08	1.15						2.23
Fluopicolide/propamocarb hydrochloride					4.20				4.20
Fluopyram	0.80		4.71						5.51
Fosetyl-aluminium/propamocarb hydrochloride	1.60	5.36	2.14						9.10
Iprodione		1.92	0.33						2.26
Mancozeb			0.86		0.21				1.06
Mandipropamid		2.05			0.35		0.78		3.18
Metalaxyl-M		8.64			1.63		1.60	0.49	12.35
Prochloraz/proquinazid/tebuconazole							1.37	0.46	1.82
All fungicides	4.18	41.64	9.99	0.70	6.54		8.12	1.12	72.29

Table 35 (cont.): Estimated quantities (kilograms) of pesticide formulations used on protected vegetable crops in Ireland, 2015.

Pesticide type & formulation	Protected cucumbers	Protected lettuce	Protected tomatoes	Other protected brassicas	Protected roots	Protected onions & scallions	Protected celery & Parsley	Other protected vegetables	Total
<i>Herbicides</i>									
Chlorpropham							2.14	1.49	3.63
Diquat						2.61	0.84	0.28	3.73
Glyphosate						0.50	7.04		7.54
loxynil						2.16			2.16
Linuron							8.60	0.41	9.01
Metribuzin	0.98								0.98
Pendimethalin						6.25			6.25
Propyzamide		19.70					4.18	0.50	24.39
Prosulfocarb							5.04	1.68	6.72
Tepraloxydim						0.26			0.26
All herbicides	0.98	19.70				11.79	27.84	4.37	64.68

Table 35 (cont.): Estimated quantities (kilograms) of pesticide formulations used on protected vegetable crops in Ireland, 2015.

Pesticide type & formulation	Protected cucumbers	Protected lettuce	Protected tomatoes	Other protected brassicas	Protected roots	Protected onions & scallions	Protected celery & Parsley	Other protected vegetables	Total
<i>Insecticides</i>									
Acetamiprid		0.08							0.08
Bifenazate	0.13							0.09	0.23
Chlorpyrifos				1.01	0.55				1.56
Cypermethrin		0.66							0.66
Deltamethrin							0.03	0.01	0.04
Lambda-cyhalothrin							0.04		0.04
Pirimicarb		2.22		0.35			0.48		3.05
Pymetrozine		5.21	0.03				0.62		5.85
Spinosad		2.96					0.88		3.83
Spirotetramat		2.49							2.49
Thiacloprid			0.07						0.07
All Insecticides	0.13	13.62	0.10	1.36	0.55		2.04	0.10	17.90
<i>Molluscicides</i>									
Metaldehyde		0.10							0.10
All molluscicides		0.10							0.10
<i>Biological controls</i>									
B. thuringiensis (BC)									
Bacillus subtilis									
All biological controls									
<i>Seed treatments</i>									
Cymoxanil/fludioxonil/metalaxyl-M							0.00		0.00
All seed treatments							0.00		0.00
All pesticides	5.29	75.06	10.09	2.06	7.09	11.79	38.01	5.59	154.96

Table 36: The forty five active ingredients most extensively used on protected vegetable crops in Ireland in 2015, ranked by area treated (spray-hectares).

No.	Active ingredient	Treated area (sp ha)
1	Azoxystrobin	47.65
2	Pyraclostrobin	41.28
3	Boscalid	41.28
4	Iprodione	40.38
5	Pymetrozine	40.30
6	Spinosad	39.93
7	Propyzamide	37.22
8	Spirotetramat	35.97
9	Metalaxyl-m	28.55
10	Bacillus subtilis	27.43
11	Cypermethrin	26.55
12	Mandipropamid	23.64
13	Fluopyram	20.34
14	Cyprodinil	17.05
15	Fludioxonil	17.05
16	Propamocarb hydrochloride	13.39
17	Linuron	11.94
18	Pirimicarb	11.39
19	Diquat	9.67
20	Glyphosate	9.61
21	Fosetyl-aluminium	9.57
22	Ioxynil	6.87
23	Pendimethalin	6.87
24	Tepraloxydim	6.87
25	Lambda-cyhalothrin	6.29
26	Fluopicolide	3.82
27	Chlorpropham	3.78
28	Fenhexamid	3.73
29	Acetamiprid	3.42
30	Dimethomorph	3.29
31	Deltamethrin	2.80
32	Prochloraz	2.80
33	Tebuconazole	2.80
34	Proquinazid	2.80
35	Prosulfocarb	2.80
36	Bifenazate	2.67
37	Mancozeb	2.04
38	Metaldehyde	1.91
39	Chlorothalonil	1.40
40	Chlorpyrifos	1.40
41	Metribuzin	1.40
42	B.thuringiensis(bc)	1.27
43	Copper oxychloride	0.76
44	Chlorpyrifos	0.76
45	Thiacloprid	0.32

Table 37: The forty five active ingredients most extensively used on protected vegetable crops in Ireland in 2015, ranked by weight (kilograms).

No.	Active ingredient	Quantity (kgs)
1	Propyzamide	24.39
2	Metalaxyl-m	12.35
3	Boscalid	12.01
4	Propamocarb hydrochloric	9.56
5	Linuron	9.01
6	Glyphosate	7.55
7	Prosulfocarb	6.72
8	Azoxystrobin	6.54
9	Pendimethalin	6.25
10	Pymetrozine	5.85
11	Fluopyram	5.51
12	Cyprodinil	4.64
13	Spinosad	3.83
14	Diquat	3.73
15	Chlorpropham	3.63
16	Fosetyl-aluminium	3.36
17	Mandipropamid	3.18
18	Fludioxonil	3.10
19	Pirimicarb	3.05
20	Pyraclostrobin	3.01
21	Spirotetramat	2.51
22	Iprodione	2.25
23	Fenhexamid	2.23
24	Ioxynil	2.17
25	Prochloraz	1.12
26	Mancozeb	1.06
27	Chlorpyrifos	1.01
28	Metribuzin	0.98
29	Chlorothalonil	0.70
30	Cypermethrin	0.68
31	Tebuconazole	0.56
32	Chlorpyrifos	0.55
33	Dimethomorph	0.43
34	Fluopicolide	0.38
35	Tepraloxydim	0.26
36	Bifenazate	0.23
37	Copper oxychloride	0.15
38	Proquinazid	0.14
39	Metaldehyde	0.10
40	Acetamiprid	0.08
41	Thiacloprid	0.07
42	Lambda-cyhalothrin	0.04
43	Deltamethrin	0.04
44	Bacillus subtilis*	0.00
45	B.thuringiensis(bc)*	0.00

* No weight
calculated

Table 38: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected cucumbers, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Protected cucumbers	Fungicides			
	Cyprodinil	1.1	3.3	3.3
	Fludioxonil	0.7	3.3	3.3
	Fluopyram	0.8	7.1	3.3
	Fosetyl-aluminium	0.6	1.9	1.9
	Propamocarb hydrochloride	1.0	1.9	1.9
	Herbicides			
	Metribuzin	1.0	1.4	1.4
	Insecticides			
	Bifenazate	0.1	1.4	1.4
	Biological Control			
	Bacillus subtilis	0.0	5.7	1.9

Table 39: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected lettuce, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Protected lettuce	Fungicides			
	Azoxystrobin	4.2	31.5	31.3
	Boscalid	10.3	37.0	35.1
	Cyprodinil	3.3	12.5	11.3
	Fenhexamid	1.1	1.4	0.7
	Fludioxonil	2.2	12.5	11.3
	Fosetyl-aluminium	2.0	3.8	3.8
	Iprodione	1.9	39.5	24.6
	Mandipropamid	2.1	16.1	16.1
	Metalaxyl-m	8.6	21.1	19.6
	Propamocarb hydrochloride	3.4	3.8	3.8
	Pyraclostrobin	2.6	37.0	35.1
	Herbicides			
	Propyzamide	19.7	32.5	29.6
	Insecticides			
	Acetamiprid	0.1	3.4	3.1
	Cypermethrin	0.7	26.6	12.6
	Pirimicarb	2.2	8.1	6.7
	Pymetrozine	5.2	33.6	20.2
	Spinosad	3.0	30.8	18.1
	Spirotetramat	2.5	36.0	20.2
	Molluscicides			
	Metaldehyde	0.1	1.9	1.9

Table 40: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected tomatoes, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Protected tomatoes	Fungicides			
	Azoxystrobin	0.3	7.1	7.1
	Cyprodinil	0.3	1.3	1.3
	Fenhexamid	1.1	2.3	2.3
	Fludioxonil	0.2	1.3	1.3
	Fluopyram	4.7	13.2	10.7
	Fosetyl-aluminium	0.8	3.8	2.5
	Iprodione	0.3	0.9	0.9
	Mancozeb	0.9	1.3	0.6
	Propamocarb hydrochloride	1.3	3.8	2.5
	Insecticides			
	Pymetrozine	0.0	0.3	0.3
	Thiacloprid	0.1	0.3	0.3
	Biological Control			
Bacillus subtilis	0.0	21.7	8.8	

Table 41: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for other protected brassicas, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Other protected brassicas	Fungicides			
	Chlorothalonil	0.7	1.4	1.4
	Insecticides			
	Chlorpyrifos	1.0	1.4	1.4
	Pirimicarb	0.4	1.4	1.4

Table 42: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected root crops, 2015.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Protected roots	Fungicides			
	Copper oxychloride	0.2	0.8	0.8
	Fluopicolide	0.4	3.8	0.8
	Mancozeb	0.2	0.8	0.8
	Mandipropamid	0.4	2.3	2.3
	Metalaxyl-m	1.6	2.3	2.3
	Propamocarb hydrochloride	3.8	3.8	0.8
	Insecticides			
	Chlorpyrifos	0.6	0.8	0.8

Table 43: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected onions and scallions, 2015.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Protected onions and scallions	Herbicides			
	Diquat	2.6	6.9	3.4
	Glyphosate	0.5	0.5	0.5
	Ioxynil	2.2	6.9	3.4
	Pendimethalin	6.3	6.9	3.4
	Tepraloxym	0.3	6.9	3.4

Table 44: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected celery and parsley, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active	
		Active Ingredient	Active Ingredient	Ingredient	
		Total	Total	Total	
Protected celery & parsley	Fungicides				
	Azoxystrobin	1.8	8.3	8.3	
	Boscalid	1.7	4.2	4.2	
	Cymoxanil	0.0	0.5	0.5	
	Dimethomorph	0.4	3.3	3.3	
	Fludioxonil	0.0	0.3	0.3	
	Mandipropamid	0.8	5.2	5.2	
	Metalaxyl-m	1.6	5.4	5.4	
	Prochloraz	0.8	2.1	2.1	
	Proquinazid	0.1	2.1	2.1	
	Pyraclostrobin	0.4	4.2	4.2	
	Tebuconazole	0.4	2.1	2.1	
		Herbicides			
		Chlorpropham	2.1	1.9	1.9
		Diquat	0.8	2.1	2.1
		Glyphosate	7.0	9.1	9.1
		Linuron	8.6	11.2	11.2
		Propyzamide	4.2	4.0	4.0
		Prosulfocarb	5.0	2.1	2.1
		Insecticides			
		Deltamethrin	0.0	2.1	2.1
		Lambda-cyhalothrin	0.0	6.3	6.3
		Pirimicarb	0.5	1.9	1.9
		Pymetrozine	0.6	6.4	4.4
		Spinosad	0.9	9.1	9.1

Table 45: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for other protected vegetables, 2015.

Crop	Active Substance	Quantity (kg) of	Spray area (spha) of	Basic area (ha) of Active
		Active Ingredient	Active Ingredient	Ingredient
		Total	Total	Total
Other protected vegetables	Fungicides			
	Azoxystrobin	0.2	0.7	0.7
	Metalaxyl-m	0.5	0.7	0.7
	Prochloraz	0.3	0.7	0.7
	Proquinazid	0.0	0.7	0.7
	Herbicides			
	Chlorpropham	1.5	1.9	1.9
	Diquat	0.3	0.7	0.7
	Linuron	0.4	0.7	0.7
	Propyzamide	0.5	0.7	0.7
	Prosulfocarb	1.7	0.7	0.7
	Insecticides			
	Bifenazate	0.1	1.3	1.3
	Deltamethrin	0.0	0.7	0.7
	Biological Control			
	B. thuringiensis(bc)	0.0	1.3	1.3

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