



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

Pesticide Usage in Ireland

Soft Fruit Crops Survey Report 2018

Pesticide Usage in Ireland

SOFT FRUIT CROPS SURVEY REPORT 2018

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Contents

List of tables	3
Executive summary	5
Definitions and notes	6
Background	7
Methods	9
Results	
Crops	10
Pesticide usage	12
Pesticide usage survey results 2018	14
Non-protected strawberries	14
Protected strawberries	16
Semi-protected strawberries	18
Non-protected raspberries	20
Protected raspberries	22
Semi-protected raspberries	24
Non-protected blackcurrants	26
Semi-protected blackcurrants	26
Non-protected other soft fruit crops	26
Protected & semi-protected other soft fruit crops	28
Tables	30
Acknowledgements	46

List of tables

Table		Page
1	Estimated area (hectares) of soft fruit crops grown in Ireland, 2018.	30
2	Estimated area (spray-hectares) of soft fruit crops treated with each pesticide type in Ireland, 2018.	30
3	Estimated weight (kg) applied to soft fruit crops with each pesticide type in Ireland, 2018.	30
4	The total area (spray hectares) and the basic area (hectares), of soft fruit crops in Ireland 2018 treated with each pesticide type.	31
5	The total quantities (kilograms) of each pesticide type used on soft fruit crops in Ireland, 2018.	32
6	Estimated area (spray-hectares) of soft fruit crops treated with pesticide formulations in Ireland, 2018.	33
7	Estimated quantities (kilograms) of pesticide formulations used on soft fruit crops in Ireland, 2018.	35
8	The forty active ingredients most extensively used on soft fruit crops in Ireland in 2018 ranked by area treated (spray-hectares).	37
9	The forty active ingredients most extensively used on soft fruit crops in Ireland in 2018, ranked by weight (kilograms).	38
10	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected strawberries, 2018.	39
11	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected strawberries, 2018.	40

List of tables (contd.)

Table		Page
12	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for semi-protected strawberries, 2018.	41
13	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected raspberries, 2018.	42
14	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected raspberries, 2018.	42
15	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for semi-protected raspberries, 2018.	43
16	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected blackcurrants, 2018.	44
17	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected other soft fruit crops, 2018.	44
18	Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected & semi-protected other soft fruit crops, 2018.	45

Executive summary

This is the second survey of pesticide* usage on soft fruit crops in Ireland carried out by DAFM. Information on all aspects of pesticide usage was collected from 29 holdings across Ireland representing 69% of the total area of soft fruit crops grown. Quantitative data have been adjusted to provide estimates of total pesticide usage.

In 2018 an estimated 363 hectares of soft fruit crops were grown and an estimated 1,639.6 kgs of active substance was applied. A total of 55 active substances were recorded in use on soft fruit crops in the survey.

Fungicides were applied to 70% of the pesticide-treated area, accounting for 83% of the total weight of pesticides used. Herbicides were applied to 3% of the pesticide-treated area, representing 12% of the total weight of pesticides used. Insecticides were applied to 17% of the pesticide treated area, representing 4% of the weight of pesticides applied. Molluscicide treatments represented 1% of pesticide treated area representing 1% of the weight of pesticides applied. Biological control usage accounted for 9% of the pesticide-treated area.

Protected strawberries comprised 38% of the area of soft fruit crops in Ireland 2018, accounting for 59% of the total pesticide treated area and 53% of the total weight of pesticides used on all soft fruit crops. Protected strawberries accounted for 60% of the area of soft fruit crops treated with fungicide and received 57% of the total weight of fungicides applied.

Semi-protected strawberries comprised 26% of the area of soft fruit crops in Ireland 2018, accounting for 35% of the total pesticide treated area and 38% of the total weight of pesticides used on soft fruit crops. Semi-protected strawberries accounted for 37% of the area of crops treated with fungicide and received 39% of the weight of total fungicides applied.

Non-protected blackcurrants comprised 12% of the area of soft fruit crops in Ireland 2018, accounting for 1% of the total pesticide treated area and 4% of the total weight of pesticides used on all soft fruit crops.

**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.*

Definitions & notes

- ‘Basic area’; refers to the actual planted area of crop treated with a given pesticide.
- ‘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)).
- ‘Rounding’; due to rounding of figures there may be slight differences in totals both within and between tables and diagrams.
- ‘Other crops’; collectively refers to blackberries, blueberries, gooseberries, loganberries, red currants and tayberries.
- ‘Spray applications’; refers to the number of treatments of any pesticide type to the treated areas.
- ‘PPP’; refers to plant protection product.
- ‘Protected crops’; refers to all crops grown under permanent protection, i.e. glasshouse or polythene tunnel, for the entire duration of their production cycle.
- ‘Semi-protected crops’; refers to all crops grown outdoors which are covered at various times during production with Spanish tunnels.
- ‘Non-protected crops’; refers to all crops grown outdoors in field conditions without any protection during their production cycle.
- ‘Herbicides’; are defined as PPPs used to control and / or prevent unwanted vegetation

- ‘Fungicides’; are defined as PPPs used to control and / or prevent harmful fungal disease
- ‘Insecticides’; are defined as PPPs used to control and / or prevent harmful insects
- ‘Molluscicides’; are defined as PPPs used to control and / or prevent harmful slugs and snails
- ‘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.
- ‘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.

Background

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

Legislation has been put in place at both EU and national level to minimise the risks associated with the use of PPPs while ensuring necessary crop protection. The Sustainable Use of Pesticides Directive based on the EU ‘Thematic strategy on the sustainable use of pesticides’ aims to achieve a balance between ensuring human and environmental safety while maintaining continued viability of the farming and

amenity sectors. This involves training and registration of advisers, distributors, operators and inspectors of pesticide application equipment, controls on storage, supply and use, adoption of the principles of IPM and improved statistics on PPP use. To address the requirement for improved statistics, Regulation (EC) No 1185/2009 concerning statistics on pesticides was adopted on 25 November 2009 which requires each member state to collect statistics on PPP use. It is the area identified above as “improved statistics on PPP use” that this survey and future surveys will be addressing.

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

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

6. Provision of information for residue monitoring programmes to assist with identifying particular areas of risk and to validate findings.

Methods

The sample of holdings to be surveyed was selected from each of the 26 counties, on the basis of the total area of soft fruit 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 sample was stratified into five size groups, according to the total area of soft fruit 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 29 holdings were contacted during the period August to October 2019 and data collected by personal interview for soft fruit crops

harvested in 2018. The data collected included the area of crops grown, area treated with pesticides, target pests, pesticides used, application rate 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. Due to the small number of soft fruit growers located in the North/West region and for confidentiality reasons, results are displayed on a national basis. The total number of farms sampled in each size group is shown in Table B. The collected data were entered using Oracle, a relational database programme. Validated data were downloaded for analysis using SPSS software.

Table B: The total number of farms sampled from each size group.

Region	<1 Holdings sampled	1<3 Holdings sampled	3<10 Holdings sampled	10<14 Holdings sampled	14+ Holdings sampled	ROI Holdings sampled
Ireland	6	11	5	2	5	29

Crops

Information was collected for non-protected strawberries, semi-protected strawberries, protected strawberries, non-protected raspberries, semi-protected raspberries, protected raspberries, non-protected blackcurrants, semi-protected blackcurrants, non-protected other crops, semi-protected and protected other soft fruit crops. Other crops collectively refer to blackberries, blueberries, gooseberries, loganberries, red currants, and tayberries and are amalgamated due to small areas grown.

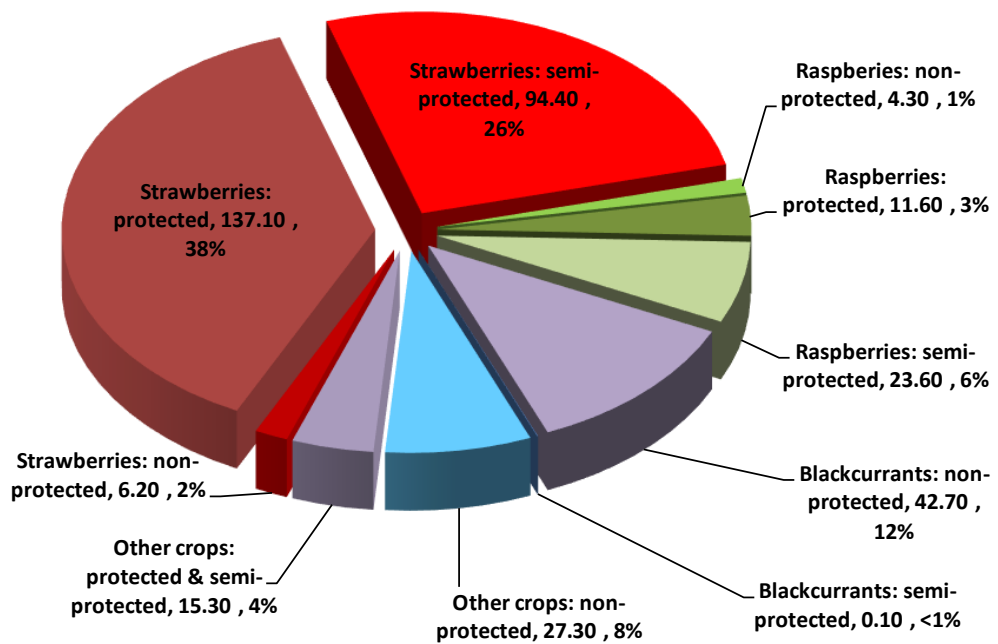
The number and areas of crops surveyed are shown in Table C. Data from 29 farms provided information on 74 examples across 10 crop types. The total area of crops sampled in the survey (250 ha) was representative of the area of soft fruit crops grown in Ireland in 2018 (363 ha).

Table C: The total number and area (hectares) of crops sampled, estimated total area and the proportion (%) of the total area of soft fruit crops surveyed in Ireland, 2018.

Crop	Number of crops surveyed	Survey area (ha)	Estimated area (ha)	Proportion of crops surveyed (%)
Strawberries				
Non-protected	3	3.77	6.20	61
Protected	19	95.70	137.10	70
Semi-protected	7	65.53	94.40	69
Raspberries				
Non-protected	3	2.24	4.30	52
Protected	8	8.32	11.60	72
Semi-protected	4	16.35	23.60	69
Blackcurrant				
Non-protected	3	29.91	42.70	70
Semi-protected	1	0.04	0.10	
Other crops				
Non-protected	12	17.85	27.30	65
Protected & Semi-protected	14	10.30	15.30	67
Total	74	250	363	69

Protected and semi-protected strawberries covered an estimated 38% and 26% respectively of the total area of soft fruit crops in 2018 as per figure 1 below. Blackcurrants (non-protected and semi-protected collectively) accounted for 12% of the area of soft fruit crops in 2018. Raspberries (non-protected, protected & semi-protected collectively) accounted for 11% of the soft fruit crops in 2018. Other crops (non-protected, protected and semi-protected collectively) accounted for 12% of the total area of soft fruit crops in 2018.

Figure 1: Areas of individual soft fruit crops grown in Ireland (ha), 2018.



Pesticide usage

Fungicides were applied to 70% of the pesticide-treated area, accounting for 83% of the total weight of pesticides used. Herbicides were applied to 3% of the pesticide-treated area, representing 12% of the total weight of pesticides used. Insecticides were applied to 17% of the pesticide treated area, representing 4% of the weight of pesticides applied. Molluscicide treatments represented 1% of pesticide treated area representing 1% of the weight of pesticides applied. Biological control usage accounted for 9% of the pesticide-treated area.

Figure 2: Pesticide usage (spha) on soft fruit crops treated in Ireland, 2018.

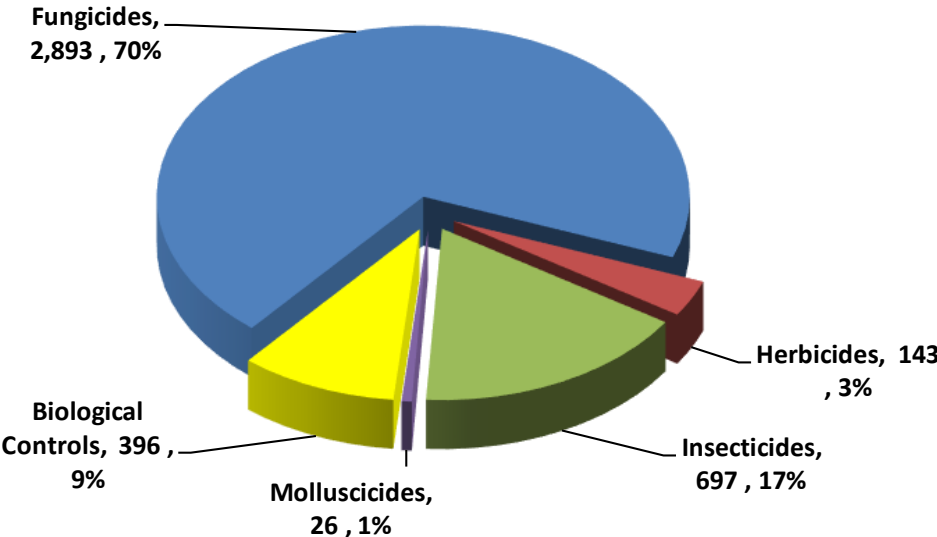
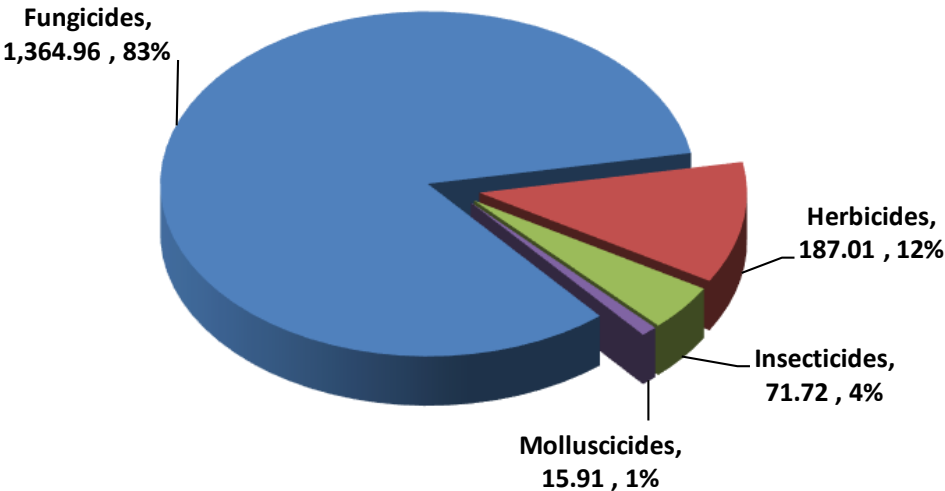


Figure 3: Weight (kgs) of pesticides applied to soft fruit crops treated in Ireland, 2018.



Pesticide usage survey results 2018

Pesticide usage on non-protected strawberries

6.18 ha of non-protected strawberries grown in Ireland.

26.37 treated hectares.

19.17 kilogrammes applied

Figure 4: Pesticide usage (spha) on non-protected strawberries in Ireland, 2018.

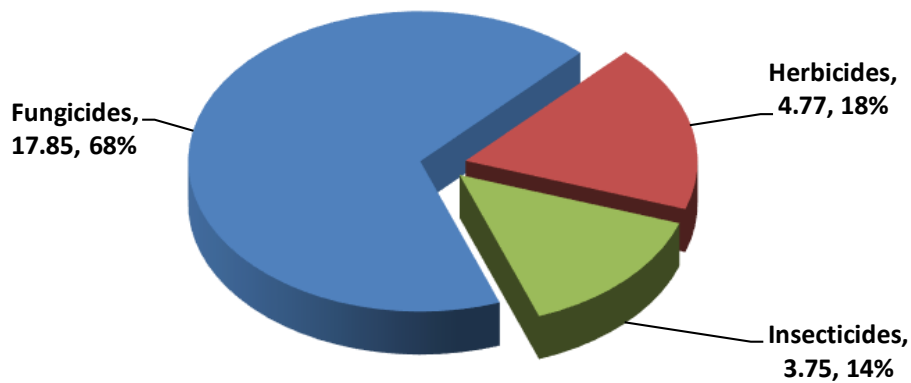


Figure 5: Weight of pesticides (kg) applied to non-protected strawberries in Ireland, 2018.

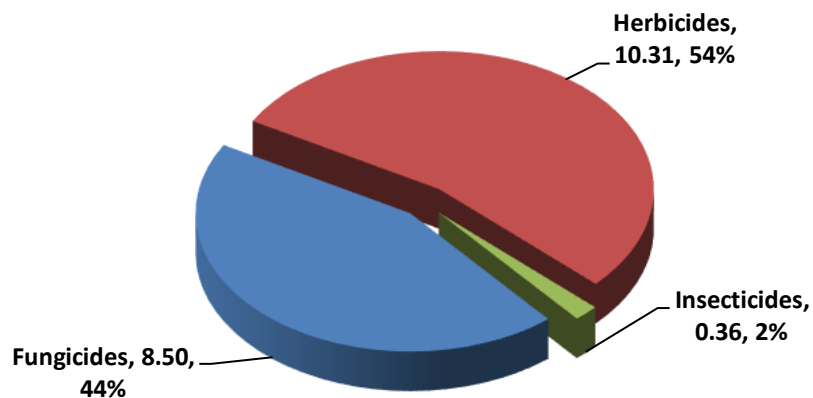


Figure 6: The top 10 active ingredients most extensively used on non-protected strawberries in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Glyphosate	4.77	2.90	10.31
Pyrimethanil	3.75	1.88	3.00
Boscalid	3.21	2.54	1.54
Pyraclostrobin	3.21	2.54	0.39
Fenhexamid	2.71	1.69	2.03
Azoxystrobin	1.88	1.88	0.38
Bupirimate	1.88	1.88	0.47
Difenoconazole	1.88	1.88	0.24
Myclobutanil	1.88	1.88	0.17
Proquinazid	1.88	1.88	0.07

Figure 7: The top 10 active ingredients most extensively used on non-protected strawberries in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Glyphosate	10.31	4.77	2.90
Pyrimethanil	3.00	3.75	1.88
Fenhexamid	2.03	2.71	1.69
Boscalid	1.54	3.21	2.54
Bupirimate	0.47	1.88	1.88
Pyraclostrobin	0.39	3.21	2.54
Azoxystrobin	0.38	1.88	1.88
Difenoconazole	0.24	1.88	1.88
Thiacloprid	0.23	1.88	1.88
Mepanipyrim	0.21	0.67	0.67

Pesticide usage on protected strawberries

137.10 ha of protected strawberries grown in Ireland.
2,437.51 treated hectares.
862.05 kilogrammes applied

Figure 8: Pesticide usage (spha) on protected strawberries in Ireland, 2018.

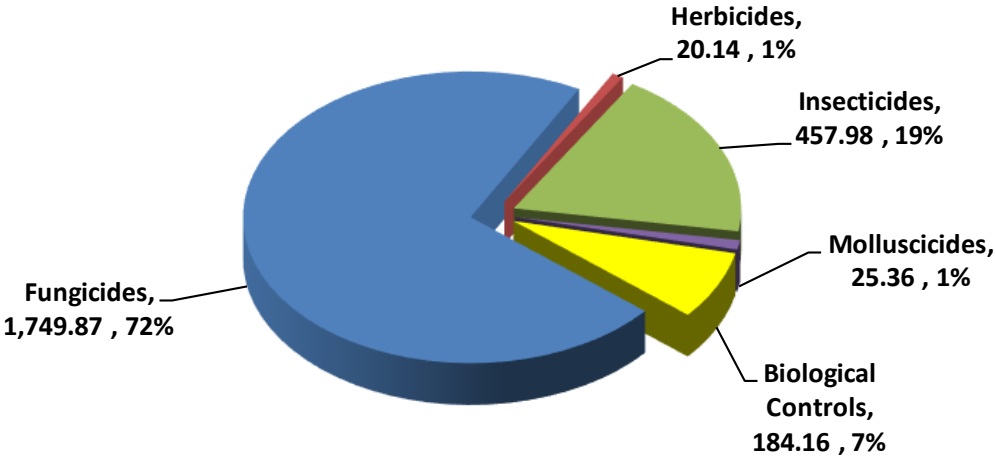


Figure 9: Weight of pesticides (kg) applied to protected strawberries in Ireland, 2018.

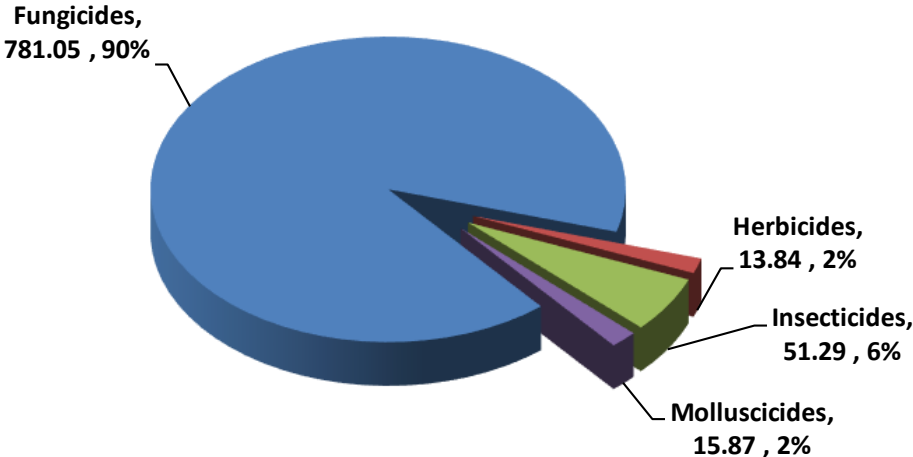


Figure 10: The top 10 active ingredients most extensively used on protected strawberry crops in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Boscalid	256.74	79.75	110.07
Pyraclostrobin	256.74	79.75	27.61
Bupirimate	227.41	58.47	73.01
Quinoxifen	220.97	79.47	27.62
Myclobutanil	152.11	63.34	9.50
Fenhexamid	116.20	76.27	76.29
Fenamidone	113.14	15.04	8.39
Fosetyl-aluminium	113.14	15.04	83.80
Bacillus subtilis	112.55	76.72	
Azoxystrobin	100.55	43.11	19.29

Figure 11: The top 10 active ingredients most extensively used on protected strawberry crops in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Boscalid	110.07	256.74	79.75
Fosetyl-aluminium	83.80	113.14	15.04
Fenhexamid	76.29	116.20	76.27
Pyrimethanil	75.44	99.61	57.28
Bupirimate	73.01	227.41	58.47
Dimethomorph	59.67	42.74	30.57
Potassium hydrogen	39.56	24.12	22.62
Iprodione	35.95	64.95	40.53
Cyprodinil	33.63	78.64	40.76
Fenpyrazamine	30.36	48.70	42.72

Pesticide usage on semi-protected strawberries

94.44 ha of semi-protected strawberries in Ireland.
1,449.66 treated hectares.
624.65 kilogrammes applied.

Figure 12: Pesticide usage (spha) on semi-protected strawberries in Ireland, 2018.

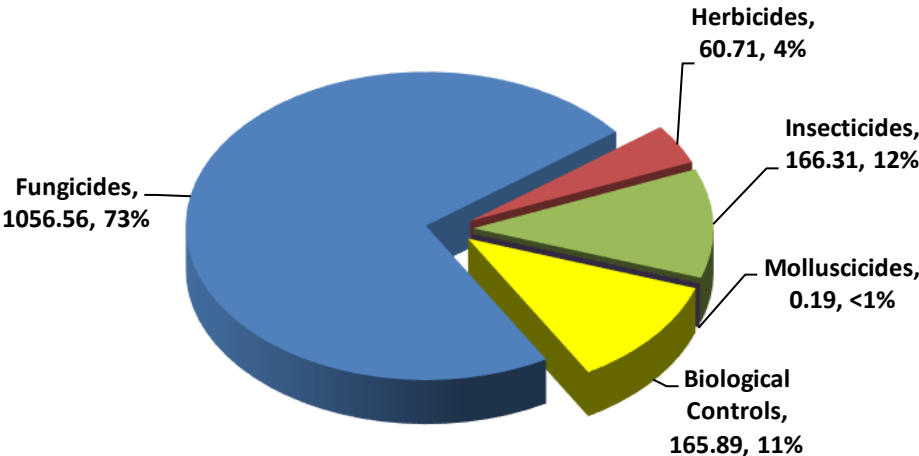


Figure 13: Weight of pesticides (kg) applied to semi-protected strawberries in Ireland, 2018.

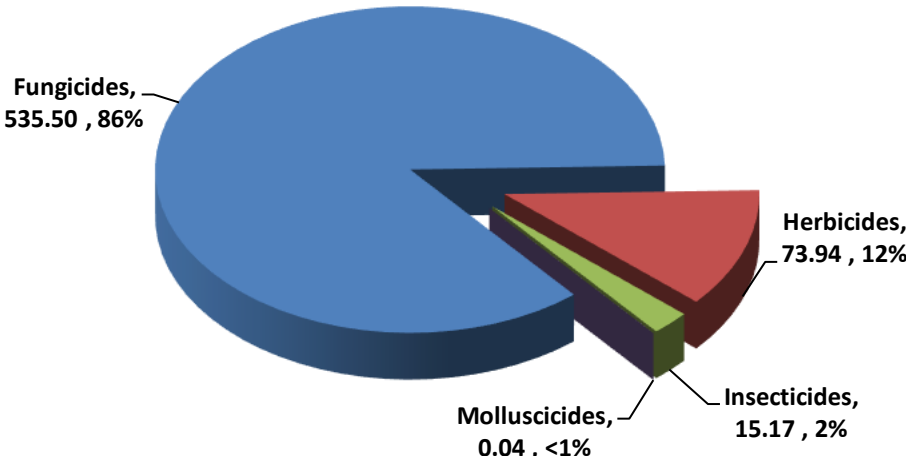


Figure 14: The top 10 active ingredients most extensively used on semi-protected strawberry crops in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Myclobutanil	115.07	51.39	7.57
Azoxystrobin	110.18	46.85	22.03
Difenoconazole	110.18	46.85	13.77
Ampelomyces quisqualis	94.98	31.66	
Sulphur	94.98	31.66	113.98
Pyrimethanil	93.30	47.21	74.64
Bupirimate	77.39	45.73	19.35
Spinosad	77.39	45.73	5.57
Fenhexamid	71.58	37.32	37.01
Bacillus subtilis	69.79	35.07	

Figure 15: The top 10 active ingredients most extensively used on semi-protected strawberry crops in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Sulphur	113.98	94.98	31.66
Pyrimethanil	74.64	93.30	47.21
Glyphosate	60.78	28.14	14.07
Fosetyl-aluminium	56.99	31.66	31.66
Dimethomorph	47.49	31.66	31.66
Fenpyrazamine	38.64	64.40	32.02
Fenhexamid	37.01	71.58	37.32
Mepanipyrim	26.07	64.44	32.78
Azoxystrobin	22.03	110.18	46.85
Boscalid	21.56	50.65	50.46

Pesticide usage on non-protected raspberries

4.28 ha of non-protected raspberries in Ireland.
8.55 treated hectares.
6.47 kilogrammes applied

Figure 16: Pesticide usage (spha) on non-protected raspberries in Ireland, 2018.

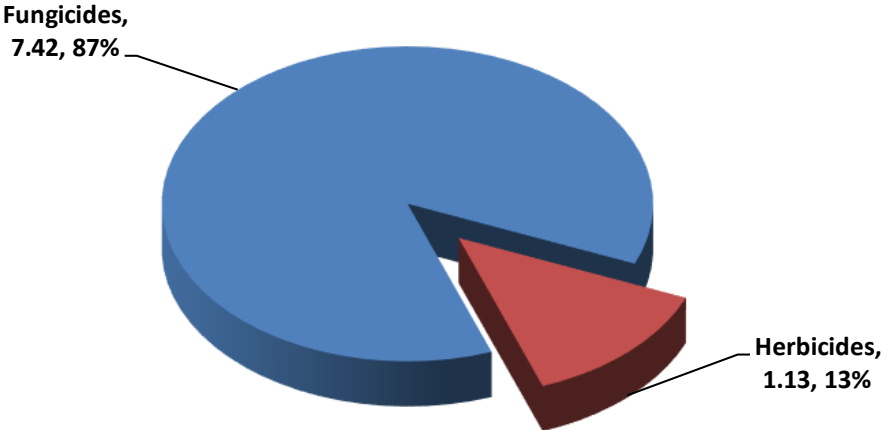


Figure 17: Weight of pesticides (kg) applied to non-protected raspberries in Ireland, 2018.

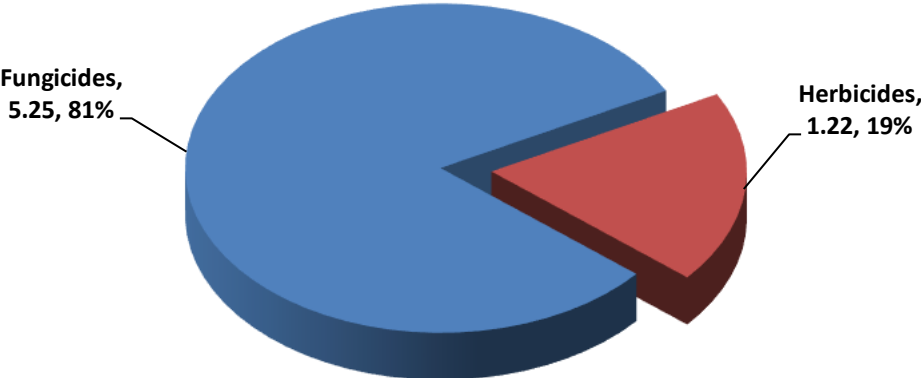


Figure 18: The 4 active ingredients most extensively used on non-protected raspberries in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Fenhexamid	5.03	2.52	3.75
Cyprodinil	2.39	1.19	0.89
Fludioxonil	2.39	1.19	0.60
Glyphosate	1.13	1.13	1.22

Figure 19: The 4 active ingredients most extensively used on non-protected raspberries in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Fenhexamid	3.75	5.03	2.52
Glyphosate	1.22	1.13	1.13
Cyprodinil	0.89	2.39	1.19
Fludioxonil	0.60	2.39	1.19

Pesticide usage on protected raspberries.

11.59 ha of protected raspberries in Ireland.
60.77 treated hectares.
15.05 kilogrammes applied.

Figure 20: Pesticide usage (spha) on protected raspberries in Ireland, 2018.

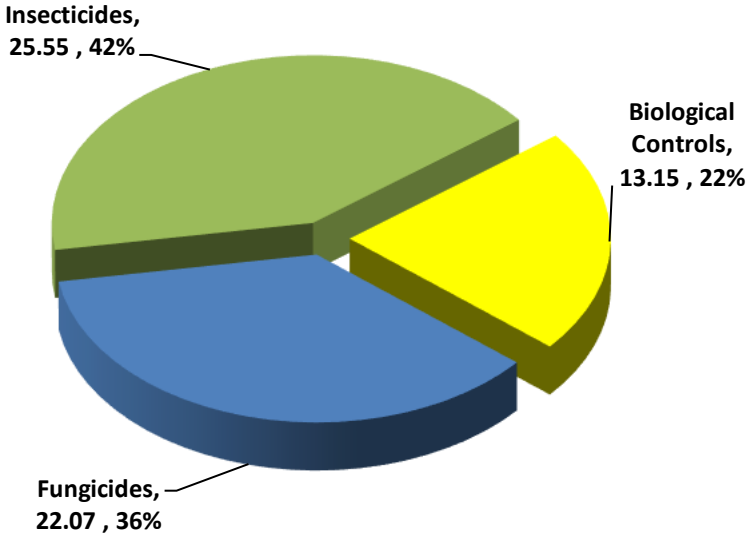


Figure 21: Weight of pesticides (kg) applied to protected raspberries in Ireland, 2018.

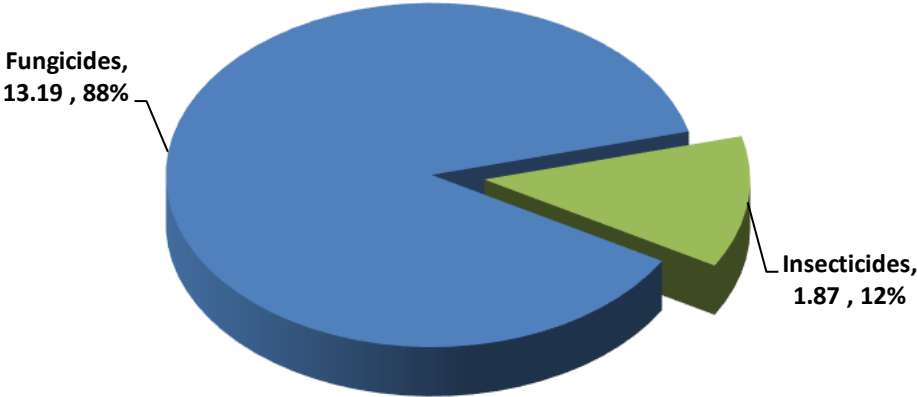


Figure 22: The top 10 active ingredients most extensively used on protected raspberry crops in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Pyrethrins	14.11	2.91	0.76
Bacillus subtilis	13.15	3.76	
Thiacloprid	8.18	4.50	0.98
Pyrimethanil	5.90	3.89	4.72
Cyprodinil	5.83	3.41	2.13
Fludioxonil	5.83	3.41	1.42
Azoxystrobin	5.41	3.41	1.22
Fenhexamid	4.50	2.49	3.38
Abamectin	2.18	1.09	0.02
Difenoconazole	1.40	1.40	0.18

Figure 23: The top 10 active ingredients most extensively used on protected raspberry crops in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pyrimethanil	4.72	5.90	3.89
Fenhexamid	3.38	4.50	2.49
Cyprodinil	2.13	5.83	3.41
Fludioxonil	1.42	5.83	3.41
Azoxystrobin	1.22	5.41	3.41
Thiacloprid	0.98	8.18	4.50
Pyrethrins	0.76	14.11	2.91
Difenoconazole	0.18	1.40	1.40
Fenpropimorph	0.12	0.42	0.42
Spinosad	0.10	1.09	1.09

Pesticide usage on semi-protected raspberries

23.58 ha of semi-protected raspberries grown in Ireland.
59.93 treated hectares.
15.09 kilogrammes applied

Figure 24: Pesticide usage (spha) on semi-protected raspberries in Ireland, 2018.

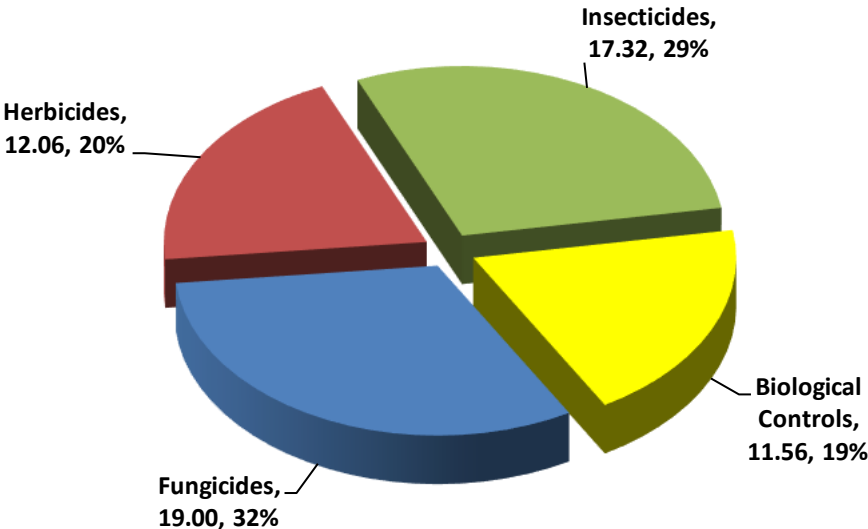


Figure 25: Weight of pesticides (kg) applied to protected raspberries in Ireland, 2018.

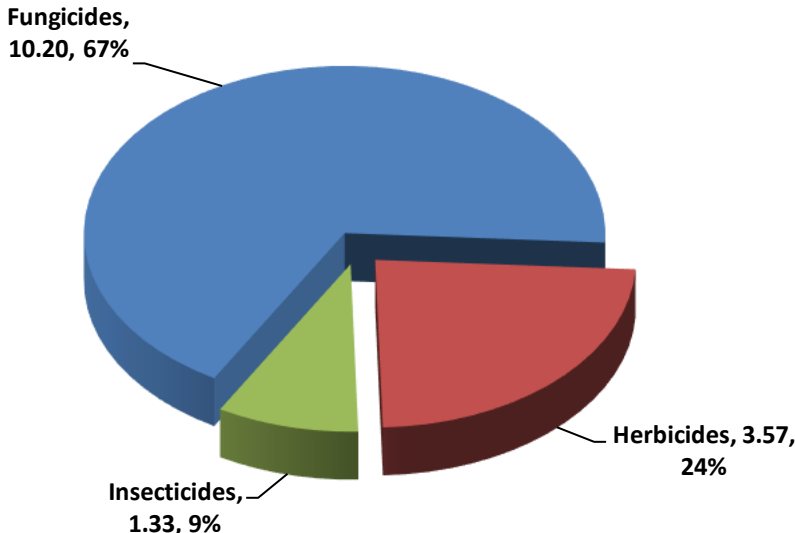


Figure 26: The top 10 active ingredients most extensively used on semi-protected raspberry crops in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Bacillus subtilis	11.56	5.61	
Pyrethrins	10.53	5.26	0.58
Pyrimethanil	6.64	5.42	5.31
Thiacloprid	6.18	5.42	0.74
Azoxystrobin	5.72	5.42	1.15
Cyprodinil	5.72	5.42	1.16
Difenoconazole	5.72	5.42	0.72
Diquat	5.72	5.42	2.29
Fludioxonil	5.72	5.42	0.77
Carfentrazone-ethyl	5.26	5.26	0.11

Figure 27: The top 10 active ingredients most extensively used on semi-protected raspberry crops in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pyrimethanil	5.31	6.64	5.42
Diquat	2.29	5.72	5.42
Cyprodinil	1.16	5.72	5.42
Azoxystrobin	1.15	5.72	5.42
Propyzamide	1.07	0.61	0.61
Fludioxonil	0.77	5.72	5.42
Potassium hydrogen	0.75	0.46	0.15
Thiacloprid	0.74	6.18	5.42
Difenoconazole	0.72	5.72	5.42
Pyrethrins	0.58	10.53	5.26

Pesticide usage on non-protected blackcurrants

42.70 ha of non-protected blackcurrants grown in Ireland.

31.87 treated hectares.

68.83 kilogrammes of herbicide Glyphosate were applied on a basic area of 31.87ha.

Pesticide usage on semi-protected blackcurrants

0.08 ha of semi-protected blackcurrants were grown in Ireland and no application of pesticides was noted during the survey.

Pesticide usage on non-protected other soft fruit crops

27.30 ha of non-protected other soft fruit crops grown in Ireland.

15.84 treated hectares.

14.71 kilogrammes applied.

Figure 28: Pesticide usage (spha) on non-protected other soft fruit crops in Ireland, 2018.

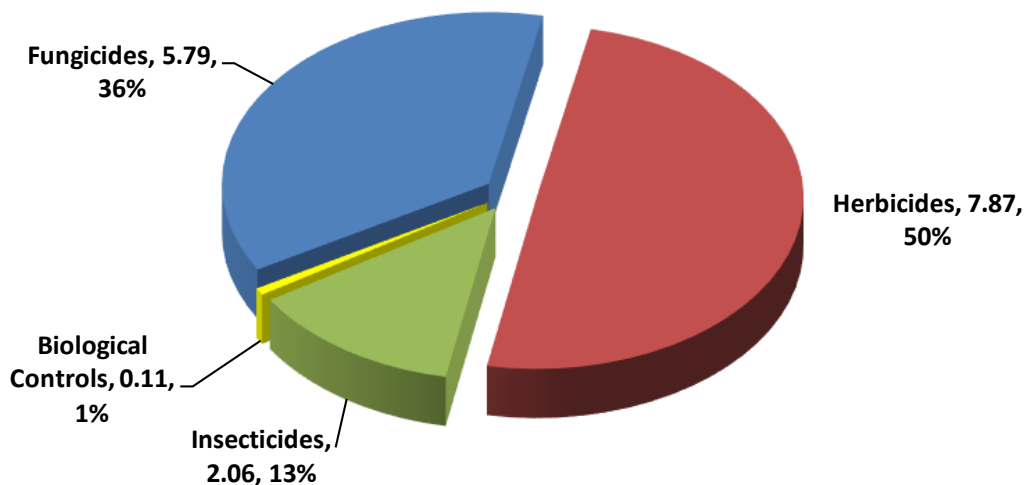


Figure 29: Weight of pesticides (kg) applied to non-protected other soft fruit crops in Ireland, 2018.

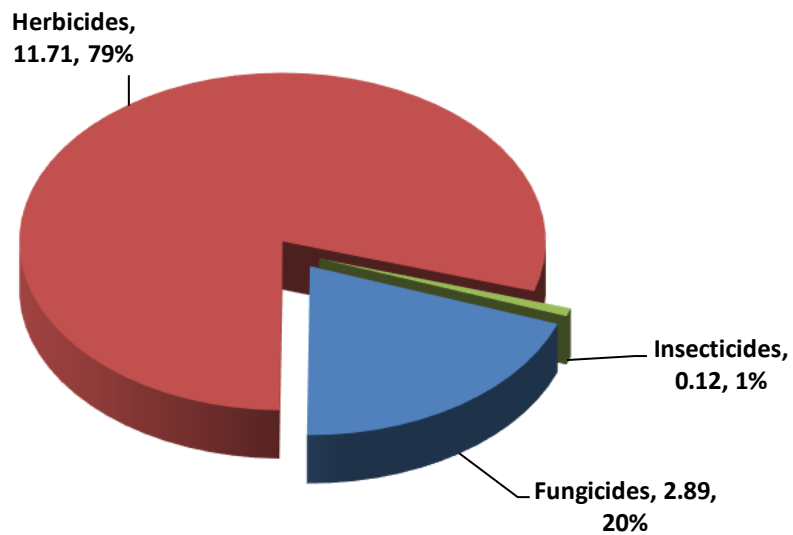


Figure 30: The top 10 active ingredients most extensively used on non-protected other soft fruit crops grown in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Glyphosate	5.53	4.13	10.81
Bupirimate	2.80	1.40	0.70
Fenhexamid	2.79	2.41	2.09
Fluazifop-P-butyl	2.03	2.03	0.76
Pyrethrins	2.03	2.03	0.11
Glufosinate-ammonium	0.32	0.32	0.14
Myclobutanil	0.13	0.13	0.01
Bacillus subtilis	0.11	0.04	
Fenpropimorph	0.04	0.04	0.03
Potassium hydrogen carbonate	0.04	0.04	0.06

Figure 31: The top 10 active ingredients most extensively used on non-protected other soft fruit crops grown in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Glyphosate	10.81	5.53	4.13
Fenhexamid	2.09	2.79	2.41
Fluazifop-P-butyl	0.76	2.03	2.03
Bupirimate	0.70	2.80	1.40
Glufosinate-ammonium	0.14	0.32	0.32
Pyrethrins	0.11	2.03	2.03
Potassium hydrogen carbonate	0.06	0.04	0.04
Fenpropimorph	0.03	0.04	0.04
Myclobutanil	0.01	0.13	0.13
Thiacloprid	0.00	0.04	0.04

Pesticide usage on protected & semi-protected other soft fruit crops

15.25 ha of protected & semi-protected other soft fruit crops grown in Ireland.

63.94 treated hectares.

13.57 kilogrammes applied.

Figure 32: Pesticide usage (spha) on protected & semi-protected other soft fruit crops in Ireland, 2018.

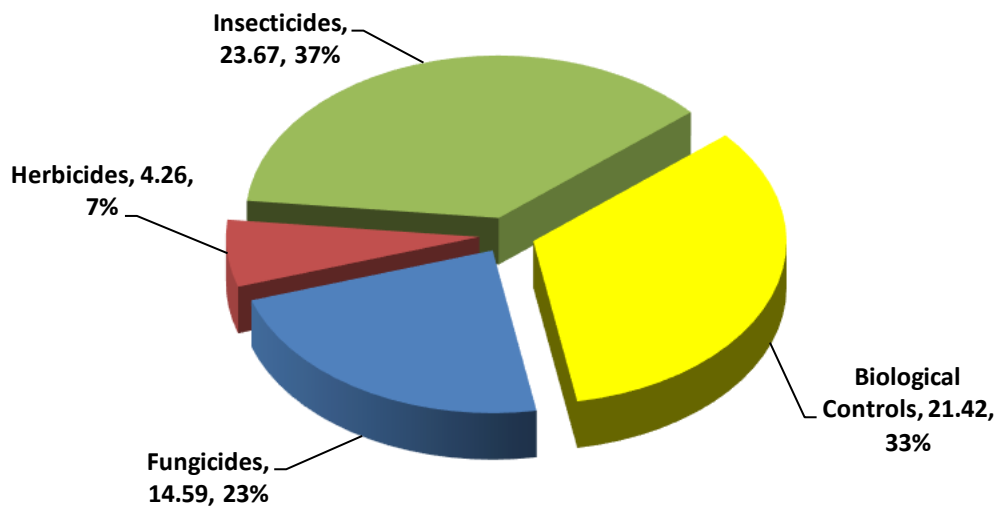


Figure 33: Weight of pesticides (kg) applied to protected & semi-protected other soft fruit crops in Ireland, 2018.

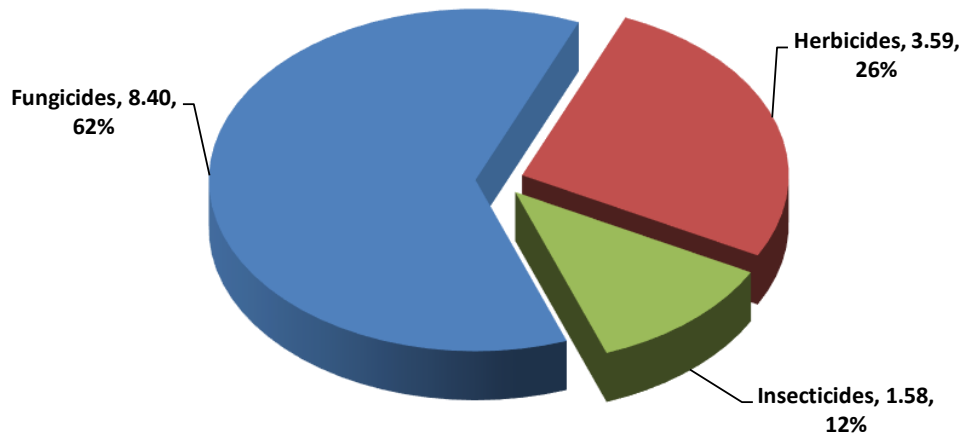


Figure 34: The top 10 active ingredients most extensively used on protected & semi-protected other soft fruit crops in Ireland in 2018, ranked by area treated (spray-hectares).

Active substance	Treated area (spha)	Basic area treated (ha)	Quantity applied (kg)
Bacillus subtilis	19.72	4.31	
Pyrethrins	13.46	3.02	0.74
Cyprodinil	5.09	3.70	1.82
Fludioxonil	5.09	3.70	1.22
Thiacloprid	3.94	2.55	0.47
Abamectin	3.83	1.39	0.03
Pyrimethanil	2.64	2.31	2.08
Fenhexamid	2.28	1.14	1.18
Azoxystrobin	2.08	1.74	0.44
Diquat	1.97	1.97	0.77

Figure 35: The top 10 active ingredients most extensively used on protected & semi-protected other soft fruit crops in Ireland in 2018, ranked by weight (kg).

Active substance	Quantity applied (kg)	Treated area (spha)	Basic area treated (ha)
Pendimethalin	2.11	1.63	1.63
Pyrimethanil	2.08	2.64	2.31
Cyprodinil	1.82	5.09	3.70
Fludioxonil	1.22	5.09	3.70
Fenhexamid	1.18	2.28	1.14
Diquat	0.77	1.97	1.97
Pyrethrins	0.74	13.46	3.02
Glyphosate	0.70	0.33	0.33
Fenpropimorph	0.66	0.88	0.88
Boscalid	0.64	1.63	1.63

Table 1: Estimated area (ha) of soft fruit crops grown in Ireland, 2018.

Crop	Ireland
Strawberries: non-protected	6.18
Strawberries: protected	137.10
Strawberries: semi-protected	94.44
Raspberries: non-protected	4.28
Raspberries: protected	11.59
Raspberries: semi-protected	23.58
Blackcurrants: non-protected	42.70
Blackcurrants: semi-protected	0.08
Other crops: non-protected	27.30
Other crops: protected & semi-protected	15.25
Total	362.50

Table 2: Estimated area (spray-hectares) of soft fruit crops treated with each pesticide type in Ireland, 2018.

Pesticide type	Ireland
Fungicides	2,893.14
Herbicides	142.81
Insecticides	696.65
Molluscicides	25.55
Biological controls	396.29
Total	4,154.43

Table 3: Estimated weight (kg) applied to soft fruit crops with each pesticide type in Ireland, 2018.

Pesticide type	Ireland
Fungicides	1,364.96
Herbicides	187.01
Insecticides	71.72
Molluscicides	15.91
Biological controls	.
Total	1,639.60

Table 4: The total area (spray hectares) and the basic area (hectares), of soft fruit crops in Ireland 2018 treated with each pesticide type.

Crop type	Pesticide Type												All Pesticides (ha) treated	(ha) grown
	Fungicides		Herbicides		Insecticides		Molluscicides		Biological controls		(sp ha)			
	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(ha)	
Strawberries: non-protected	17.85	3.57	4.77	2.90	3.75	1.88					26.37	3.57	6.18	
Strawberries: protected	1749.87	83.43	20.14	13.12	457.98	82.70	25.36	25.36	184.16	80.11	2437.51	83.43	137.10	
Strawberries: semi-protected	1056.56	51.58	60.71	46.28	166.31	48.33	0.19	0.19	165.89	36.20	1449.66	51.58	94.44	
Raspberries: non-protected	7.42	2.52	1.13	1.13							8.55	2.52	4.28	
Raspberries: protected	22.07	3.89			25.55	4.49			13.15	3.76	60.77	5.35	11.59	
Raspberries: semi-protected	19.00	5.42	12.06	6.03	17.32	6.03			11.56	5.61	59.93	6.22	23.58	
Blackcurrants: non-protected			31.87	31.87							31.87	31.87	42.70	
Blackcurrants: semi-protected													0.08	
Other crops: non-protected	5.79	3.98	7.87	4.13	2.06	2.06			0.11	0.04	15.84	4.30	27.30	
Other crops: protected & semi-protected	14.59	4.59	4.26	2.29	23.67	4.18			21.42	4.31	63.94	4.99	15.25	
Total	2893.14	158.97	142.81	107.74	696.65	149.67	25.55	25.55	396.29	130.02	4154.43	193.81	362.50	

Table 5: The total quantities (kilograms) of each pesticide type used on soft fruit crops in Ireland 2018.

<i>Crop</i>	Pesticide type					Total weight applied (kg)
	Fungicides	Herbicides	Insecticides	Molluscicides	Biological controls	
Strawberries: non-protected	8.50	10.31	0.36			19.17
Strawberries: protected	781.05	13.84	51.29	15.87		862.05
Strawberries: semi-protected	535.50	73.94	15.17	0.04		624.65
Raspberries: non-protected	5.25	1.22				6.47
Raspberries: protected	13.19		1.87			15.05
Raspberries: semi-protected	10.20	3.57	1.33			15.09
Blackcurrants: non-protected		68.83				68.83
Blackcurrants: semi-protected						
Other crops: non-protected	2.89	11.71	0.12			14.71
Other crops: protected & semi-protected	8.40	3.59	1.58			13.57
All crops	1,364.96	187.01	71.72	15.91	0.00	1,639.60

Table 6: Estimated area (spray-hectares) of soft fruit crops treated with pesticide formulations in Ireland, 2018.

Pesticide type & formulation	Crop									
	Strawberries: non-protected	Strawberries: protected	Strawberries: semi protected	Raspberry: non-protected	Raspberry: protected	Raspberry: semi protected	Blackcurrant non-protected	Other: non-protected	Other Protected & semi-protected	All crops
Fungicides										
Azoxystrobin		8.36			3.59				0.41	12.36
Azoxystrobin/difenoconazole	1.88	79.83	110.17		1.40	5.72			1.67	200.67
Azoxystrobin/fenpropimorph		12.36			0.42					12.78
Boscalid/pyraclostrobin	3.21	256.73	50.65						1.63	312.22
Bupirimate	1.88	227.40	77.39					2.80		309.47
Cyflufenamid		21.00								21.00
Cyprodinil/fludioxonil		78.63	65.16	2.39	5.83	5.72			5.09	162.82
Dimethomorph		42.74	31.66							74.40
Fenamidone/fosetyl-aluminium		113.13	31.66							144.79
Fenhexamid	2.71	116.19	71.58	5.03	4.50	0.46		2.79	2.28	205.54
Fenpropimorph								0.04	0.88	0.92
Fenpyrazamine		48.70	64.40							113.09
Iprodione		64.95	5.61							70.56
Kresoxim-methyl		87.28	63.68							150.96
Mepanipyrim	0.67	54.78	64.44							119.90
Myclobutanil	1.88	152.10	115.07		0.42			0.13		269.60
Potassium hydrogen carbonate		24.12	1.43				0.46	0.04		26.05
Proquinazid	1.88	40.98	46.85							89.71
Pyrimethanil	3.75	99.61	93.30		5.90	6.64			2.64	211.84
Quinoxifen		220.95	68.52							289.48
Sulphur			94.98							94.98
All fungicides	17.85	1749.87	1056.56	7.42	22.07	19.00	0.00	5.79	14.59	2893.14
Herbicides										
Carfentrazone-ethyl						5.26			0.34	5.60
Clopyralid/florasulam/fluroxypyr			0.72			0.46				1.17
Diquat		6.18	31.66			5.72			1.96	45.53
Fluazifop-P-butyl								2.03		2.03
Glufosinate-ammonium		10.40						0.32		10.72
Glyphosate	4.77	3.56	28.14	1.13			31.87	5.53	0.33	75.33
Pendimethalin									1.63	1.63
Propyzamide			0.19			0.61				0.80
All herbicides	4.77	20.14	60.71	1.13	0.00	12.06	31.87	7.87	4.26	142.81

Table 6 (cont.): Estimated area (spray-hectares) of soft fruit crops treated with pesticide formulations in Ireland, 2018.

Pesticide type & formulation	Crop									All crops
	Strawberries: not protected	Strawberries: protected	Strawberries: semi protected	Raspberry: not protected	Raspberry: protected	Raspberry: semi protected	Blackcurrant not protected	Other: not protected	Other Protected & semi-protected	
<i>Insecticides</i>										
Abamectin		15.00	2.60		2.18				3.83	23.61
Bifenazate		80.94								80.94
Clofentezine		30.95							1.05	32.01
Cyantraniliprole		21.00							1.05	22.05
Deltamethrin		21.00				0.61				21.61
Etoxazole		2.23								2.23
Fatty acids		1.07								1.07
Lambda-cyhalothrin		42.00								42.00
Pymetrozine		30.59	1.12							31.71
Pyrethrins		70.47	3.36		14.11	10.53		2.03	13.46	113.95
Spinosad	1.88	37.12	77.39		1.09				0.34	117.81
Spirotetramat			31.66							31.66
Tebufenpyrad		6.18								6.18
Thiacloprid	1.88	99.44	50.17		8.18	6.18		0.04	3.94	169.82
All Insecticides	3.75	457.98	166.31	0.00	25.55	17.32	0.00	2.06	23.67	696.65
<i>Molluscicides</i>										
Metaldehyde		25.36	0.19							25.55
All molluscicides	0.00	25.36	0.19	0.00	0.00	0.00	0.00	0.00	0.00	25.55
<i>Biological controls</i>										
Ampelomyces quisqualis strain AQ 10			94.98							94.98
B.thuringiensis(BC)		24.80							1.05	25.85
Bacillus subtilis		112.55	69.79		13.15	11.56		0.11	19.71	226.86
Beauveria basiana GHA / ATCC 74040		41.72								41.72
Gliocladium catenulatum		2.15								2.15
Steinernema kraussei		0.77	1.12						0.66	2.55
Trichoderma harzianum Strain T22		2.18								2.18
All biological controls	0.00	184.16	165.89	0.00	13.15	11.56	0.00	0.11	21.42	396.29
All pesticides	26.37	2437.51	1449.66	8.55	60.77	59.93	31.87	15.84	63.94	4154.43

Table 7: Estimated quantities (kilograms) of pesticide formulations used on soft fruit crops in Ireland, 2018.

Pesticide type & formulation	Crop									
	Strawberries: non-protected	Strawberries: protected	Strawberries: semi protected	Raspberry: non-protected	Raspberry: protected	Raspberry: semi protected	Blackcurrant non-protected	Other: non-protected	Other Protected & semi-protected	All crops
<i>Fungicides</i>										
Azoxystrobin		2.09			0.90				0.10	3.09
Azoxystrobin/difenoconazole	0.61	25.94	35.81		0.46	1.86			0.54	65.22
Azoxystrobin/fenpropimorph		4.70			0.16					4.86
Boscalid/pyraclostrobin	1.93	137.69	26.97						0.79	167.39
Bupirimate	0.47	73.02	19.35					0.70		93.53
Cyflufenamid		0.32								0.32
Cyprodinil/fludioxonil		56.05	20.94	1.49	3.54	1.93			3.03	86.98
Dimethomorph		59.67	47.49							107.16
Fenamidone/fosetyl-aluminium		92.17	62.69							154.86
Fenhexamid	2.03	76.29	37.01	3.75	3.38	0.34		2.09	1.18	126.08
Fenpropimorph								0.03	0.66	0.69
Fenpyrazamine		30.36	38.64							69.00
Iprodione		35.95	2.10							38.05
Kresoxim-methyl		12.32	9.55							21.87
Mepanipyrim	0.21	20.80	26.06							47.08
Myclobutanil	0.17	9.50	7.57		0.04			0.01		17.29
Potassium hydrogen carbonate		39.56	2.35			0.75		0.06		42.72
Proquinazid	0.07	1.56	1.78							3.41
Pyrimethanil	3.00	75.44	74.64		4.72	5.31			2.08	165.19
Quinoxifen		27.62	8.57							36.18
Sulphur			113.98							113.98
All fungicides	8.50	781.05	535.50	5.25	13.19	10.20	0.00	2.89	8.40	1,364.96
<i>Herbicides</i>										
Carfentrazone-ethyl						0.11			0.01	0.11
Clopyralid/florasulam/fluroxypyr			0.16			0.10				0.27
Diquat		2.47	12.66			2.29			0.77	18.20
Fluazifop-P-butyl								0.76		0.76
Glufosinate-ammonium		7.80						0.14		7.94
Glyphosate	10.31	3.57	60.78	1.22			68.83	10.81	0.70	156.22
Pendimethalin									2.11	2.11
Propyzamide			0.33			1.07				1.40
All herbicides	10.31	13.84	73.94	1.22	0.00	3.57	68.83	11.71	3.59	187.01

Table 7 (cont.): Estimated quantities (kilograms) of pesticide formulations used on soft fruit crops in Ireland, 2018.

Pesticide type & formulation	Crop							Other: not protected	Other Protected & semi-protected	All crops
	Strawberries: not protected	Strawberries: protected	Strawberries: semi protected	Raspberry: not protected	Raspberry: protected	Raspberry: semi protected	Blackcurrant not protected			
<i>Insecticides</i>										
Abamectin		0.12	0.02		0.02				0.03	0.20
Bifenazate		7.92								7.92
Clofentezine		6.19							0.21	6.40
Cyantraniliprole		1.58							0.09	1.67
Deltamethrin		0.26				0.01				0.27
Etoxazole		0.09								0.09
Fatty acids		7.73								7.73
Lambda-cyhalothrin		3.15								3.15
Pymetrozine		5.50	0.22							5.72
Pyrethrins		3.53	0.17		0.76	0.58		0.11	0.74	5.89
Spinosad	0.14	2.67	5.57		0.10				0.03	8.52
Spirotetramat			3.17							3.17
Tebufenpyrad		0.62								0.62
Thiacloprid	0.23	11.93	6.02		0.98	0.74		0.00	0.47	20.38
All Insecticides	0.36	51.29	15.17	0.00	1.87	1.33	0.00	0.12	1.58	71.72
<i>Molluscicides</i>										
Metaldehyde		15.87	0.04							15.91
All molluscicides	0.00	15.87	0.04	0.00	0.00	0.00	0.00	0.00	0.00	15.91
<i>Biological controls</i>										
Ampelomyces quisqualis strain AQ 10										
B.thuringiensis(BC)										
Bacillus subtilis										
Beauveria basiana GHA / ATCC 74040										
Gliocladium catenulatum										
Steinernema kraussei										
Trichoderma harzianum Strain T22										
All biological control										
All pesticides	19.17	862.05	624.65	6.47	15.05	15.09	68.83	14.71	13.57	1,639.60

Table 8: The forty active ingredients most extensively used on soft fruit crops in Ireland in 2018, ranked by area treated (spray-hectares).

No.	Active ingredient	Treated area (sp ha)
1	Pyraclostrobin	312.23
2	Boscalid	312.23
3	Bupirimate	309.48
4	Quinoxifen	289.50
5	Myclobutanil	269.60
6	Bacillus subtilis	226.88
7	Azoxystrobin	225.81
8	Pyrimethanil	211.85
9	Fenhexamid	205.55
10	Difenoconazole	200.67
11	Thiacloprid	169.82
12	Cyprodinil	162.83
13	Fludioxonil	162.83
14	Kresoxim-methyl	150.96
15	Fosetyl-aluminium	144.80
16	Fenamidone	144.80
17	Mepanipyrim	119.90
18	Spinosad	117.82
19	Pyrethrins	113.97
20	Fenpyrazamine	113.10
21	Sulphur	94.98
22	Ampelomyces quisqualis strain AQ 10	94.98
23	Proquinazid	89.71
24	Bifenazate	80.94
25	Glyphosate	75.33
26	Dimethomorph	74.41
27	Iprodione	70.56
28	Diquat	45.53
29	Lambda-cyhalothrin	42.00
30	Beauveria basiana GHA / ATCC 74040	41.72
31	Clofentezine	32.01
32	Pymetrozine	31.71
33	Spirotetramat	31.66
34	Potassium hydrogen carbonate	26.05
35	B.thuringiensis(BC)	25.85
36	Metaldehyde	25.56
37	Abamectin	23.62
38	Cyantraniliprole	22.05
39	Deltamethrin	21.61
40	Cyflufenamid	21.00

Table 9: The forty active ingredients most extensively used on soft fruit crops in Ireland in 2018, ranked by weight (kilograms).

No.	Active ingredient	Quantity (kgs)
1	Pyrimethanil	165.19
2	Glyphosate	156.22
3	Fosetyl-aluminium	140.79
4	Boscalid	133.81
5	Fenhexamid	126.09
6	Sulphur	113.98
7	Dimethomorph	107.16
8	Bupirimate	93.53
9	Fenpyrazamine	69.00
10	Cyprodinil	52.19
11	Mepanipyrim	47.08
12	Azoxystrobin	44.50
13	Potassium hydrogen carbonate	42.72
14	Iprodione	38.06
15	Quinoxifen	36.19
16	Fludioxonil	34.79
17	Pyraclostrobin	33.57
18	Difenoconazole	25.09
19	Kresoxim-methyl	21.87
20	Thiacloprid	20.38
21	Diquat	18.20
22	Myclobutanil	17.29
23	Metaldehyde	15.91
24	Fenamidone	14.08
25	Spinosad	8.52
26	Glufosinate-ammonium	7.94
27	Bifenazate	7.92
28	Fatty acids	7.73
29	Clofentezine	6.40
30	Pyrethrins	5.89
31	Pymetrozine	5.72
32	Fenpropimorph	4.27
34	Proquinazid	3.41
35	Spirotetramat	3.17
36	Lambda-cyhalothrin	3.15
37	Pendimethalin	2.11
38	Cyantraniliprole	1.67
39	Propyzamide	1.40
40	Fluazifop-P-butyl	0.76

Table 10: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected strawberries, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Strawberries: Non-protected	Fungicides			
	Azoxystrobin	0.38	1.88	1.88
	Boscalid	1.54	3.21	2.54
	Bupirimate	0.47	1.88	1.88
	Difenoconazole	0.24	1.88	1.88
	Fenhexamid	2.03	2.71	1.69
	Mepanipirim	0.21	0.67	0.67
	Myclobutanil	0.17	1.88	1.88
	Proquinazid	0.07	1.88	1.88
	Pyraclostrobin	0.39	3.21	2.54
	Pyrimethanil	3.00	3.75	1.88
	Herbicides			
	Glyphosate	10.31	4.77	2.90
	Insecticides			
	Spinosad	0.14	1.88	1.88
Thiacloprid	0.23	1.88	1.88	

Table 11: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected strawberries, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Strawberries: Protected	Fungicides			
	Azoxystrobin	19.29	100.55	43.11
	Boscalid	110.07	256.74	79.75
	Bupirimate	73.01	227.41	58.47
	Cyflufenamid	0.32	21.00	21.00
	Cyprodinil	33.63	78.64	40.76
	Difenoconazole	9.98	79.83	34.75
	Dimethomorph	59.67	42.74	30.57
	Fenamidone	8.39	113.14	15.04
	Fenhexamid	76.29	116.20	76.27
	Fenpropimorph	3.46	12.36	6.18
	Fenpyrazamine	30.36	48.70	42.72
	Fludioxonil	22.42	78.64	40.76
	Fosetyl-aluminium	83.80	113.14	15.04
	Iprodione	35.95	64.95	40.53
	Kresoxim-methyl	12.32	87.28	46.38
	Mepanipyrim	20.80	54.79	36.50
	Myclobutanil	9.50	152.11	63.34
	Potassium hydrogen carbonate	39.56	24.12	22.62
	Proquinazid	1.56	40.98	31.03
	Pyraclostrobin	27.61	256.74	79.75
	Pyrimethanil	75.44	99.61	57.28
	Quinoxifen	27.62	220.97	79.47
	Herbicides			
	Diquat	2.47	6.18	6.18
	Glufosinate-ammonium	7.80	10.40	3.73
	Glyphosate	3.57	3.56	3.21
	Insecticides			
	Abamectin	0.13	15.00	14.75
	Bifenazate	7.92	80.94	59.94
	Clofentezine	6.19	30.95	30.95
	Cyantraniliprole	1.58	21.00	21.00
	Deltamethrin	0.26	21.00	21.00
	Etoazole	0.09	2.23	2.23
	Fatty acids	7.73	1.07	1.07
	Lambda-cyhalothrin	3.15	42.00	21.00
	Pymetrozine	5.50	30.59	24.89
	Pyrethrins	3.53	70.47	28.33
	Spinosad	2.67	37.12	32.67
	Tebufenpyrad	0.62	6.18	6.18
	Thiacloprid	11.93	99.44	75.75
	Molluscicides			
	Metaldehyde	15.87	25.36	25.36
	Biological Control			
	B.thuringiensis(BC)		24.80	22.90
	Bacillus subtilis		112.55	76.72
	Beauveria basiana GHA / ATCC 74040		41.72	11.85
	Gliocladium catenulatum		2.15	1.07
	Steinernema kraussei		0.77	0.42
	Trichoderma harzianum Strain T22		2.18	2.18

Table 12: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for semi-protected strawberries, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Strawberries: Semi-protected	Fungicides			
	Azoxystrobin	22.03	110.18	46.85
	Boscalid	21.56	50.65	50.46
	Bupirimate	19.35	77.39	45.73
	Cyprodinil	12.56	65.16	33.14
	Difenoconazole	13.77	110.18	46.85
	Dimethomorph	47.49	31.66	31.66
	Fenamidone	5.70	31.66	31.66
	Fenhexamid	37.01	71.58	37.32
	Fenpyrazamine	38.64	64.40	32.02
	Fludioxonil	8.37	65.16	33.14
	Fosetyl-aluminium	56.99	31.66	31.66
	Iprodione	2.11	5.61	2.24
	Kresoxim-methyl	9.55	63.68	32.02
	Mepanipyrim	26.07	64.44	32.78
	Myclobutanil	7.57	115.07	51.39
	Potassium hydrogen carbonate	2.35	1.43	0.36
	Proquinazid	1.78	46.85	46.85
	Pyraclostrobin	5.41	50.65	50.46
	Pyrimethanil	74.64	93.30	47.21
Quinoxifen	8.57	68.53	34.26	
Sulphur	113.98	94.98	31.66	
	Herbicides			
	Clopyralid	0.06	0.72	0.36
	Diquat	12.66	31.66	31.66
	Florasulam	0.00	0.72	0.36
	Fluroxypyr	0.10	0.72	0.36
	Glyphosate	60.78	28.14	14.07
	Propyzamide	0.33	0.19	0.19
	Insecticides			
	Abamectin	0.02	2.60	2.60
	Pymetrozine	0.22	1.12	1.12
	Pyrethrins	0.17	3.37	1.12
	Spinosad	5.57	77.39	45.73
	Spirotetramat	3.17	31.66	31.66
	Thiacloprid	6.02	50.17	48.33
	Molluscicides			
	Metaldehyde	0.04	0.19	0.19
	Biological Control			
	Ampelomyces quisqualis		94.98	31.66
	Bacillus subtilis		69.79	35.07
	Steinernema kraussei		1.12	1.12

Table 13: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected raspberries, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Raspberries: Non-protected	Fungicides			
	Cyprodinil	0.89	2.39	1.19
	Fenhexamid	3.75	5.03	2.52
	Fludioxonil	0.60	2.39	1.19
	Herbicides			
	Glyphosate	1.22	1.13	1.13

Table 14: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected raspberries, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Raspberries: Protected	Fungicides			
	Azoxystrobin	1.22	5.41	3.41
	Cyprodinil	2.13	5.83	3.41
	Difenoconazole	0.18	1.40	1.40
	Fenhexamid	3.38	4.50	2.49
	Fenpropimorph	0.12	0.42	0.42
	Fludioxonil	1.42	5.83	3.41
	Myclobutanil	0.038	0.42	0.42
	Pyrimethanil	4.72	5.90	3.89
	Insecticides			
	Abamectin	0.02	2.178	1.089
	Pyrethrins	0.76	14.11	2.91
	Spinosad	0.10	1.09	1.09
	Thiacloprid	0.98	8.18	4.50
	Biological Control			
	Bacillus subtilis		13.154	3.761

Table 15: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for semi-protected raspberries, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Raspberries: Semi-protected	Fungicides			
	Azoxystrobin	1.15	5.72	5.42
	Cyprodinil	1.16	5.72	5.42
	Difenoconazole	0.72	5.72	5.42
	Fenhexamid	0.35	0.46	0.15
	Fludioxonil	0.77	5.72	5.42
	Potassium hydrogen carbonate	0.75	0.46	0.15
	Pyrimethanil	5.31	6.64	5.42
	Herbicides			
	Carfentrazone-ethyl	0.11	5.26	5.26
	Clopyralid	0.04	0.46	0.15
	Diquat	2.29	5.72	5.42
	Florasulam	0.00	0.46	0.15
	Fluroxypyr	0.07	0.46	0.15
	Propyzamide	1.07	0.61	0.61
	Insecticides			
	Deltamethrin	0.01	0.61	0.61
	Pyrethrins	0.58	10.53	5.26
	Thiacloprid	0.74	6.18	5.42
	Biological Control			
	Bacillus subtilis		11.56	5.61

Table 16: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected blackcurrants, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Blackcurrants: Non-Protected	Herbicides Glyphosate	68.83	31.87	31.87

Table 17: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for non-protected other soft fruit crops, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Other crops: non-protected	Fungicides			
	Bupirimate	0.70	2.80	1.40
	Fenhexamid	2.09	2.79	2.41
	Fenpropimorph	0.03	0.04	0.04
	Myclobutanil	0.01	0.13	0.13
	Potassium hydrogen carbonate	0.06	0.04	0.04
	Herbicides			
	Fluazifop-P-butyl	0.76	2.03	2.03
	Glufosinate-ammonium	0.14	0.32	0.32
	Glyphosate	10.81	5.53	4.13
	Insecticides			
	Pyrethrins	0.11	2.03	2.03
	Thiacloprid	0.00	0.04	0.04
	Biological Control			
	Bacillus subtilis		0.11	0.04

Table 18: Estimated quantity (kg), spray area (spha) and basic area (ha) of active substance for protected & semi protected other soft fruit crops, 2018.

Crop	Active Substance	Quantity (kg) of Active Ingredient	Spray area (spha) of Active Ingredient	Basic area (ha) of Active Ingredient
		Total	Total	Total
Other crops:	Fungicides			
Semi protected & protected	Azoxystrobin	0.44	2.08	1.74
	Boscalid	0.64	1.63	1.63
	Cyprodinil	1.82	5.09	3.70
	Difenoconazole	0.21	1.67	1.67
	Fenhexamid	1.18	2.28	1.14
	Fenpropimorph	0.66	0.88	0.88
	Fludioxonil	1.22	5.09	3.70
	Pyraclostrobin	0.16	1.63	1.63
	Pyrimethanil	2.08	2.64	2.31
	Herbicides			
	Carfentrazone-ethyl	0.01	0.34	0.34
	Diquat	0.77	1.97	1.97
	Glyphosate	0.70	0.33	0.33
	Pendimethalin	2.11	1.63	1.63
	Insecticides			
	Abamectin	0.03	3.83	1.39
	Clofentezine	0.21	1.05	1.05
	Cyantraniliprole	0.09	1.05	1.05
	Pyrethrins	0.74	13.46	3.02
	Spinosad	0.03	0.34	0.34
	Thiacloprid	0.47	3.94	2.55
	Biological Control			
	B.thuringiensis(BC)		1.05	1.05
	Bacillus subtilis		19.72	4.31
	Steinernema kraussei		0.66	0.33

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