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PESTICIDE USAGE IN NORTHERN IRELAND
SURVEY REPORT 222

NORTHERN IRELAND VEGETABLE CROPS 2007

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PESTICIDE USAGE SURVEY REPORT 207

Northern Ireland
Vegetable Crops

2007

J.A. Withers, C.A.Kearns, S. Jess, D. Matthews and T. Moreland

Pesticide Usage Survey Group
Agriculture and Food Science Centre
Newforge Lane
Belfast BT9 5PX

Tel: 028 90255283
Fax: 028 90255380
email: stephen.jess@afbini.gov.uk

Department of Agriculture & Rural Development for Northern Ireland

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The County Regions of Northern Ireland

SUMMARY

This is the fifth survey of pesticide usage on outdoor vegetable crops in Northern Ireland, providing comparative data to that obtained in the previous surveys in 1991, (Jess *et al*., 1993), 1995 (Kidd *et al*., 1998), 1999 (Kearns *et al*., 2002) and 2004 (Kearns *et al*., 2005). Information on all aspects of pesticide usage was collected from 87 holdings throughout the province. Quantitative data have been adjusted to provide estimates of total pesticide usage.

The area of vegetable crops grown in Northern Ireland in 2007 was an estimated 1900 hectares, which represented an 18% increase compared with 2004. There was a 28% increase in the area of brassica crops grown, with a significant increase of 46% in the area of Brussels sprouts grown. The area of turnips & swedes grown decreased by 20% when compared with 2004, while the area of carrot and parsnip crops grown increased by 25% and 87%, respectively. The total area of celery crops increased by 79%when compared to 2004.

By comparison with 2004, the pesticide-treated area increased by 23%, to 13,909 spray hectares, while the weight of pesticide active ingredients applied increased by 19% to 8.5 tonnes. The average number of spray applications (2.5) remained similar to that recorded in 2004 and 1999. The fungicide-treated area increased by 50%, while the weight of fungicide active ingredients increased by more than two fold. Overall, both the application area and weight of herbicides and desiccants applied increased by 8% and 5%, respectively. Both the treated area and the weight of insecticides applied increased by 23% and 1%, respectively. Applications of organophosphate insecticides decreased by 51% with a corresponding 41% decrease in weight applied. However, the application of azomethine, chloronicotinyl and carbamoyl triazole type insecticides, principally to brassicas, increased. Insecticides were most frequently used to control carrot fly (*Psila rosae*) on carrot and parsnip crops. However, overall, they were also often applied to control aphids. The area treated with molluscicides and the weight applied increased by 42% and 3%, respectively. An estimated 1,039 hectares of vegetable crops were sown with treated seed. This was a 23% increase compared to 2004 which is in proportion with the increase in the area of vegetable crops grown. In 2007 the proportion of brassica crops sown with treated seed increased but there was a reduction in the area of turnips and swedes sown with treated seed.

Fungicides, applied to 27% of the pesticide-treated area, accounted for 24% of the weight of pesticides applied. Herbicides and desiccants accounted for 35% of the pesticide-treated area and 68% of the total weight of pesticides used. Insecticides, applied to 29% of the pesticide-treated area, accounted for 7% of the total weight of pesticides used. Seed treatments applied to vegetable crops grown in 2007 accounted for 7% of the pesticide-treated area representing 1% of the weight of active ingredients applied. Molluscicides accounted for less than 1% of both the

total pesticide-treated area and the weight of pesticides applied to vegetable crops grown.

Brassica crops received 28% of the weight of fungicides applied to all vegetable crops, representing 42% of the area of vegetable crops treated with fungicides. The single most commonly used fungicide active ingredient applied to brassicas was difenoconazole. Carrots and parsnips collectively accounted for 32% of the weight of fungicide active ingredients applied, representing 22% of the area treated with fungicides. The single active ingredient tebuconazole, along with the new formulation azoxystrobin/difenoconazole were the most frequently applied fungicides to these vegetable crops.

Herbicide applications to brassica and carrot crops individually represented 29% of the herbicide-treated area and 28% of the weight of herbicides applied. Linuron was the herbicide active ingredient most frequently applied to vegetable crops, particularly carrot crops. Trifluralin was also frequently applied, principally to brassicas.

Carrots and parsnips collectively accounted for 49% of the insecticide-treated area, representing 29% of the weight of insecticide active ingredients applied. Brassicas accounted for 44% and 66% of the insecticide-treated area and weight applied, respectively. Pyrethroids were the most frequently used insecticide active ingredients, particularly lambda-cyhalothrin.

Methiocarb was the only molluscicide applied to vegetable crops and slug control was the only reason for its use. An estimated 83% of all molluscide applications were to brassica crops.

The neonicotinoid insecticide imidacloprid was the most frequently used seed treatment accounting for 36% of the area sown with treated seed and 82% of the weight of seed treatments applied. An estimated 42% of all seed treatments were applied to brassicas and 32% to carrot and parsnip crops.

DEFINITIONS AND NOTES

- ‘Basic area’: refers to the actual planted area of crop, which was 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.
- ‘Reasons for use’: the reasons reported for the use of pesticides are the growers stated reason for use and may sometimes be inappropriate.
- ‘Rounding’: due to rounding of figures, there may be slight differences in totals both within and between tables.

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- ‘Propagation’: pesticides applied at the propagation stage are normally applied when the plants are indoors and in trays. This should be taken into account when comparing area grown and pesticide-treated area.
- ‘Brassica’: refers to Brussels sprouts, calabrese, cauliflower and all cabbage.
- ‘Hard cabbage’: refers to cabbage used for coleslaw, the majority of which is classified as summer cabbage for comparison purposes.
- ‘Organic crops’: This data has already been included in the tables and is a guide to the area of organic vegetable crops that were produced during 2007.

INTRODUCTION

As a participant of the UK Working Party on Pesticide Usage Surveys, the Agri-Food Bioscience Institute (AFBINI) on behalf of the Department of Agriculture and Rural Development for Northern Ireland (DARD), conducts a programme of surveys to examine pesticide usage in all sectors of the agricultural and horticultural industry. Principally, the data collected provides information for consideration by the Advisory Committee on Pesticides. In addition, the information may be used by those involved in residue testing, for public information and to evaluate the impact of policy and trends in pesticide usage.

This is the fifth survey examining pesticide usage practices on vegetable crops grown in Northern Ireland. Summary results from the previous surveys conducted in 1991 (Jess *et al.*, 1993), 1995 (Kidd *et al.*, 1998), 1999 (Kearns *et al.*, 2002) and 2004 (Kearns *et al.*, 2005) are included in the report for comparative purposes.

A list of published Northern Ireland Pesticide Usage Survey reports is included in Appendix 1.

METHODS

The sample of holdings to be surveyed was selected from each of the six counties, on the basis of the total area of vegetable crops grown, using data from the Northern Ireland Agricultural Census, June 2006 (Anon., 2007). However, due to sampling procedures and the distribution of vegetable production in Northern Ireland, no holdings were selected from County Fermanagh.

The sample was stratified into five size groups, according to the total area of 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 vegetable crops grown.

The purpose of the survey was explained to the occupiers of selected holdings in preliminary correspondence. A total of 87 holdings were visited during the period November 2007 to April 2008 and data collected by personal interview. The data

collected included; the area of crops grown, area treated, target crop, pesticide used and number of treatments applied. The grower's stated reasons for pesticide use were also included but may not always seem appropriate. Holdings selected in the original sample unable to provide data were replaced with those from the same county and size group held on a reserve list. The total number of farms in each size group and the number of farms sampled are shown in Table 1. The collected data were entered using Oracle, a relational database programme. Validated data were downloaded for analysis using SPSS software.

RESULTS AND DISCUSSION

Crops

The number and areas of crops surveyed are shown in Table 2. Data from 87 farms provided information on 445 examples of 25 crop types (including one group of organic crops). Crops included, Brussels sprouts, cabbage, cauliflower, calabrese, turnips and swedes, beans, peas, table leeks, soup leeks, onions, spring onions, carrots, parsnips, soup celery, table celery, parsley, lettuce, beetroot rhubarb and pumpkin. The total area of crops sampled in the survey was representative of the area of vegetable crops grown in Northern Ireland in 2007.

Brassicas were grown on an estimated 39% of the total area of vegetable crops grown. Cabbages (including savoys) accounted for 47% of the area of brassicas grown. Carrots and parsnips collectively represented 32% of the vegetable growing area, while turnips/swedes accounted for 12% of the total area grown. Alliums including leeks, spring onions and onions, collectively accounted for 8% of the total area of outdoor vegetable crops grown in Northern Ireland in 2007 (Table 3, Figure 2).

Regional Pesticide Usage (Table 4, Figure 3)

County Down was the largest producer of vegetable crops in Northern Ireland during 2007, accounting for 47% of the area of vegetables grown and 59% of the total pesticide-treated area. Overall, 48% of herbicides, 65% of fungicides, 64% of insecticides 79% of molluscicides and 64% of seed treatments were applied to vegetables in this county. County Armagh accounted for 25% of the pesticide-treated area (28% of the area of vegetables grown), County Tyrone 10% (19%), County Londonderry 5% (4%) and County Antrim 2% (3%).

Pesticide Usage On Crops (Tables 5 & 6)

Carrot crops, which comprised 23% of the total area of vegetable crops (Table 3), received the highest pesticide usage and accounted for 30% of the total pesticide-treated area and 25% of the weight of pesticides applied to vegetables. The area of carrots treated with fungicides accounted for 24% of the total fungicide-treated area and the weight of fungicide active ingredients applied to carrot crops represented 17% of the total weight of fungicides used. An estimated 37% of the

area treated with insecticides was planted with carrot crops (28% of the weight of insecticides applied). Carrot crops also represented 32% of the area sown with treated seed (8% of the weight of seed treatment active ingredients) and 30% of the herbicide-treated area (28% of the weight of herbicides applied).

Cabbages (including 'Savoys') accounted for 18% of both the total area grown and the total pesticide-treated area, accounting for 15% of the total weight of pesticide applied. However, 31% and 22% of the total weight of insecticides and molluscicides applied to vegetables were applied to cabbage crops, respectively. Calabrese, grown on 8% of the vegetable area, represented 5% of the total pesticide-treated area and 6% of the weight of pesticide applied. However, this crop represented 7% of the area sown with treated seed and 36% of the weight of seed treatment active ingredients applied to vegetable crops. Cauliflowers, grown on 10% of the vegetable area accounted for 10% of the total pesticide-treated area and 7% of the weight applied. Collectively, leeks, spring onions and onion crops were grown on 8% of the total area of vegetable crops grown in Northern Ireland in 2007, representing 9% of the total pesticide-treated area and 13% of the total weight of pesticide used. Parsnips, grown on 10% of the vegetable area, represented 11% of the total pesticide-treated area and 10% of the weight of pesticide applied. Brussels sprouts grown on 2% of the total vegetable area accounted for 5% of the total pesticide-treated area and 4% of the weight of pesticide applied. An estimated 31% of all molluscicide treatments were applied to this crop accounting for 37% of the total weight of molluscicides applied.

Proportion of Crops Treated

The proportional areas of crops treated with different pesticide groups, together with the number of spray applications are shown in Table 7.

All crop types received a herbicide and/or desiccant treatment. Table leeks, onions and table celery received an average of 3 applications of herbicide and desiccants. With the exception of onions, beetroot, pumpkin and rhubarb, other crops received an insecticide treatment. The entire crop of Brussels sprouts grown in Northern Ireland during 2007 received an average of 3.9 insecticide treatments.

Fungicide treatments were applied to 46% of the vegetable crops grown. All onion crops received a fungicide treatment with an average of 11 fungicide applications. Brassicas and celery crops received around 4-5 fungicide applications.

All lettuce and onion crops (not scallions) were sown with treated seed. However, overall 48% of vegetable crops were sown from seed treated with various pesticides.

Molluscicides were applied to 6% of vegetable crops during 2007.

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Total Pesticide Usage (Tables 8 & 9)

A total of 8.5 tonnes of pesticide active ingredients were applied to 13,909 spray hectares of outdoor vegetable crops grown in Northern Ireland in 2007.

Fungicides were applied to 27% of the pesticide-treated area accounting for 24% of the total weight of pesticides used (Tables 8 & 9). Brassica crops received 42% of fungicide applications, with a further 32% applied to carrot and parsnip crops. Difenoconazole was the most frequently used fungicide, applied to 24% of the total fungicide-treated area (3% of the weight of fungicides used), with 88% of all applications being made to brassica crops. Tebuconazole, applied to 20% of the total fungicide-treated area and accounting for 8% of the weight of fungicides used, was most frequently applied to carrot and parsnip crops. Sulphur, applied to swedes for 'general disease control', represented 3% of the fungicide-treated area but accounted for 30% of the weight of fungicides applied.

Herbicides and desiccants were applied to 35% of the pesticide-treated area accounting for 68% of the total weight of pesticides used. Carrot and parsnip crops collectively accounted for 42% of all herbicide and desiccant applications, with a further 29% being applied to brassica crops. Linuron and trifluralin, were the most frequently used herbicides each accounting for 20% of the herbicide-treated area. An estimated 88% of linuron applications were to carrot and parsnip crops and 62% of trifluralin applications were to brassica crops. Propachlor, applied mainly to brassica and leek crops represented 6% of the herbicide-treated area and 23% if the weight of herbicides applied.

Insecticides were used on 29% of the pesticide-treated area of vegetable crops, accounting for 7% of the weight of pesticides used. The insecticide active ingredient lambda-cyhalothrin accounted for 65% of the total insecticide-treated area, representing only 5% of the weight of insecticides used. Approximately 50% of all insecticide applications were to carrot and parsnip crops, mainly to control carrot fly (*Psila rosae*) and 44% were applied to brassicas mainly to control aphids.

Methiocarb was the only molluscicide applied to vegetable crops and accounted for less than 1% of pesticide use in both area of application and weight of pesticides applied. An estimated 83% of these applications were to brassica crops, all of which were for slug control.

Seed treatments applied to vegetable crops grown in 2007 accounted for 7% of the pesticide-treated area while representing 1% of the weight of active ingredients applied. Treatments to brassica seed accounted for 42% of the seed-treated area with carrot and parsnip seed treatments representing a further 32%. Imidacloprid, applied as a treatment on brassica and lettuce seed was the single active ingredient most frequently used, accounting for 36% of the area sown with treated seed and 82% of the weight of seed treatments used.

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The 50 most commonly used active ingredients, ranked by spray area and weight, are shown in Tables 10 and 11, respectively.

PESTICIDE USAGE ON INDIVIDUAL CROPS:

Brussels Sprouts (Table 12)

An estimated 44 hectares of Brussels sprouts were grown in Northern Ireland during 2007. Fungicides accounted for 42% of the pesticide-treated area (37% of the weight of pesticides applied), insecticides 36% (20%), herbicides 14% (35%) and molluscicides accounted for 5% of the pesticide-treated area and 1% of the weight of pesticides applied. Almost 32 hectares (73%) were grown with treated seed.(Tables 5 & 6).

In total, 13 fungicide single active ingredients or formulations were applied to Brussels sprouts. Approximately 57% of fungicide active ingredients were applied to control 'leafspot'. Difenoconazole, was the most frequently applied fungicide representing 43% of the fungicide-treated area but only 6% of the weight of fungicides applied.

Pre-emergence weed control accounted for 76% of the herbicide-treated area. Metazachlor applied to 38% and trifluralin 29% of the herbicide-treated area were the two herbicides most commonly used. However, propachlor was also frequently used representing 20% of the herbicide-treated area and 50% of the weight of desiccants applied.

An estimated 78% of insecticide applications were to control aphids. Lambda-cyhalothrin and primicarb, applied as single active ingredients or in formulation, were the most frequently applied insecticides accounting for 64% of the insecticide-treated area and 33% of the weight of pesticides applied. Chlorpyrifos, applied most frequently for general insect control at the propagation stage, represented 3% of the insecticide-treated area but 50% of the weight of pesticides applied.

Methiocarb, applied to 33 hectares to control slugs was the only molluscicide recorded used on Brussels sprouts.

Spring Cabbage: (Table 13)

Fungicides accounted for 29% of the pesticide-treated area of spring cabbage, representing 19% of the weight of pesticides used on this crop (Tables 5 & 6). Difenoconazole was the most extensively used fungicide, applied to 57% of the fungicide-treated area, principally to control ringspot.

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Trifluralin and metazachlor, applied as single active ingredients, were the most extensively used herbicides, applied to 45% and 44% of the herbicide-treated area. Approximately 86% of herbicide applications were for 'pre-emergence weed control'.

Insecticides accounted for 31% of the pesticide-treated area of this crop, representing 6% of the weight of active ingredients applied. The pyrethroid active ingredient lambda-cyhalothrin, applied to control aphids and caterpillars, was the most extensively used. This was applied to 57% of the insecticide-treated area and accounted for 6% of the weight of insecticides applied. However, primicarb, applied as a single active ingredient for aphid control, represented 18% of the insecticide-treated area and 51% of the weight of insecticides applied.

Methiocarb was the only molluscicide active ingredient recorded on this crop.

Summer Cabbage: (Table 14)

Approximately 9 hectares of summer cabbage were grown in Northern Ireland during 2007. Fungicides accounted for 37% of the pesticide-treated area and 38% of the weight of pesticides applied. Control of leaf spot (26%) and general disease control (27%) were the principal reasons for fungicide use. Difenoconazole was applied to 45% of the area treated with fungicides and represented 3% of the weight of pesticides applied. However, fosetyl-aluminium, used to control propagation mildew, accounted for 7% of the fungicide-treated area but represented 66% of the weight of pesticides applied.

Herbicides accounted for 20% of the pesticide-treated area of summer cabbage while accounting for 26% of the weight of pesticides applied (Tables 5 & 6). Pre-emergence weed control (66%) was the main reason given for herbicide applications. Trifluralin, applied as a single active ingredient, was the most extensively used herbicide applied to 44% of the herbicide-treated area and representing 31% of the weight of herbicides used. Metazachlor was applied to a further 30% of the herbicide-treated area. The chloroacetanilide herbicide propachlor, was applied to 17% of the herbicide-treated area but represented 49% of the weight of pesticides applied.

Insecticides accounted for 32% of the pesticide-treated area representing 35% of the weight of pesticides applied. An estimated 53% of all insecticide applications were to control aphids with a further 33% used to control caterpillars. The pyrethroid lambda-cyhalothrin and the carbamate pirimicarb, applied both as single active ingredients or in formulation with each other, were the insecticide active ingredients most extensively used on summer cabbage crops representing 76% of the insecticide-treated area.

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The molluscicide methiocarb was applied to approximately 0.4ha of summer cabbage crops to control slugs.

Winter Cabbage: (Table 15)

An estimated 14 hectares of winter cabbage were grown in Northern Ireland during 2007.

All crops received a pesticide treatment (Table 7). Applications of fungicides to winter cabbage accounted for 39% of the pesticide-treated area (28% of the weight of pesticides applied), insecticides 42% (18%), herbicides 15% (53%), seed treatments 3% (<1%) and molluscicides less than 1% (<1%) (Tables 5 & 6).

The fungicide active ingredient difenoconazole was most extensively used accounting for 60% of the fungicide-treated area and 19% of the weight of fungicides applied. However, chlorothalonil, applied principally for 'general disease control', represented 11% of the fungicide-treated area but 56% of the weight of fungicides applied. 'General disease control' and 'control of leaf spot' were the reasons most commonly given for fungicide applications, representing 38% and 34% of applications, respectively.

Four herbicide single active ingredients were applied to winter cabbage crops in 2007. Metazachlor and trifluralin were the most frequently used representing 42% and 37% of the herbicide-treated area and 28% and 37% of the weight of herbicides applied, respectively.

Primicarb, applied as a single active ingredient and also in formulation with lambda-cyhalothrin, was the most extensively applied insecticide representing 51% of the insecticide-treated area. However, the azomethine insecticide pymetrozine was also frequently used. 'Aphid control' was the most common reason for insecticide applications.

Approximately 1 hectare of winter cabbage was treated with the molluscicide methiocarb to control slugs.

Savoys: (Table 16)

Fungicides accounted for 31% of the pesticide-treated area and 21% of the weight applied, while herbicide applications represented 25% of the treated area and 63% of the weight used. Insecticides were used on 35% of the pesticide-treated area and accounted for 15% of the weight of active ingredients applied. While seed treatments accounted for 7% of the pesticide-treated area of spring wheat, the weight of active ingredients represented 1% of the pesticides applied to this crop. Molluscicides represented less than 1% of the pesticide-treated area and weight of pesticides used (Tables 5 & 6).

Difenoconazole was the most extensively used fungicide active ingredient accounting for 62% of the fungicide-treated area and 15% of the weight of fungicides applied. 'Control of leaf spot' and 'general disease control' were the reasons most commonly given for fungicide applications, representing 44% and 25% of applications, respectively.

All herbicide applications were for 'general weed control'. The single active ingredients trifluralin and metazachlor were the most frequently applied herbicides, collectively representing 84% of herbicide applications and 62% of the weight of herbicides applied.

Lambda-cyhalothrin applications accounted for 39% of the area treated with insecticides and 2% of the weight of insecticides applied. However, chlorpyrifos, applied mainly at the propagation stage for 'general insect control' and to 'control cabbage root fly', represented 4% of the insecticide-treated area and 46% of the weight of insecticides applied.

The molluscicide methiocarb was applied to an estimated 11 hectares to control slugs.

Hard Cabbage: (Table 17)

Fungicides accounted for 24% and 11% of the pesticide-treated area and weight applied, respectively. Herbicide and desiccant applications represented 34% of the pesticide-treated area and 81% of the weight of pesticides applied. Seed treatments accounted for 7% of the pesticide-treated area, the weight of active ingredients represented 1% of the pesticides applied to this crop. Insecticide treatments accounted for 34% of the pesticide-treated area and 7% of the weight of pesticides used. Molluscicide usage represented less than 1% of both the pesticide-treated area and weight of pesticides applied. (Tables 5 & 6).

Difenoconazole, applied as a single active ingredient, was the most extensively used fungicide, accounting for 57% of the fungicide-treated area and 17% of the weight applied. Azoxystrobin was also frequently used. The principal reason for the use of fungicides on hard cabbage was to control 'leaf spot'.

Metazachlor and trifluralin were the most extensively used herbicides, representing 42% and 40% of the herbicide-treated area, respectively. 'Pre-emergence weed control' was the principal reason for herbicide applications.

Lambda-cyhalothrin, applied as a single active ingredient, was the most extensively used insecticide accounting for 61% of the insecticide-treated area and 6% of the weight of insecticides applied. Approximately 50% of insecticide applications were for 'aphid' control with a further 29% to control 'caterpillars'.

The molluscicide methiocarb was applied to an estimated 3 hectares to control slugs.

Approximately 32% of the area of hard cabbage grown in Northern Ireland in 2007 was sown with treated seed (Table 7).

Calabrese: (Table 18)

An estimated 160 hectares of calabrese was grown in Northern Ireland during 2007 with the majority being grown in county Armagh (61%). Insecticides accounted for 25% of the treated area, representing 11% of the weight of pesticides applied. Herbicides represented 44% of the treated area, accounting for 68% of the weight of pesticide active ingredients applied to this crop. Fungicides accounted for 19% of the pesticide-treated area and 14% of the weight of pesticides used. Molluscicides were used on 2% of the pesticide-treated area and accounted for less than 1% of the weight of pesticides applied. While seed treatments represented 11% and 7% of the pesticide-treated area and weight applied, respectively.

Difenoconazole was the most extensively used fungicide active ingredient, applied to 56% of the fungicide-treated area, principally to control leafspot (77%) but also to control white blister (22%).

Metazachlor (47%) and trifluralin (45%) were the most extensively used herbicides, principally applied as a pre-emergence weed control.

The pyrethroid insecticide lambda-cyhalothrin, applied as a single active ingredient, was the most extensively used insecticide (51% of the insecticide-treated area), applied mainly to control 'caterpillars'. Primicarb (37%) was also frequently used, solely to control aphids.

Approximately 12 hectares of calabrese crops were treated with methiocarb to control slugs representing 2% of the pesticide-treated area of this crop.

Cauliflower (Table 19)

Fungicides accounted for 27% of the pesticide-treated area and 23% of the weight of pesticides applied. Approximately 47% of fungicide applications were applied to control leafspot. The active ingredient difenoconazole was the most extensively used fungicide, applied to 35% of the fungicide-treated area, accounting for 6% of the weight of fungicides applied to cauliflower crops.

Herbicides accounted for 27% of the weight of pesticides used and 61% of the active ingredients applied to the treated area. Pre-emergence weed control accounted for 78% of all herbicide applications. Metazachlor (46%) and trifluralin (43%) accounted for 89% of the herbicide-treated area and 72% of the weight of herbicides applied.

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Insecticides accounted for 34% of the pesticide-treated area of cauliflower crops and 13% of the weight of pesticides used. The single active ingredient lambda-cyhalothrin, principally applied to control caterpillars, was the most extensively used insecticide and accounted for 54% of the area treated with insecticides and 3% of the weight of insecticides applied. Aphid control (49%) and caterpillar control (39%) together accounted for 88% of insecticide applications to cauliflower crops in Northern Ireland in 2007.

Approximately 21 hectares of cauliflower crops were treated with the molluscicide methiocarb to control 'slugs'.

Turnips & Swedes (Table 20)

An estimated 224 hectares of turnip and swede crops were grown in Northern Ireland in 2007 (Table 3).

Fungicide applications accounted for 20% of the pesticide-treated area and 53% of the weight of pesticides applied to turnip & swede crops (Tables 5 & 6). Approximately 97% of applications were for 'general disease control'. Sulphur was the most frequently applied fungicide contributing 94% of all fungicide applications.

Herbicides accounted for 67% of the pesticide-treated area and 47% of the weight of pesticides applied (Tables 5 & 6). An estimated 92% of all herbicide applications were as a pre-emergence weed control. Trifluralin (54%) and metazachlor (33%) were the active ingredients most extensively used on the herbicide-treated area of this crop.

Insecticide applications accounted for 1% of the pesticide-treated area and less than 0.1% of the weight of pesticides used on turnip and swede crops. Lambda-cyhalothrin was applied to an estimated 6 hectares to control 'aphids'. The systemic carbamate, carbosulfan, was applied to 0.3ha to control 'cabbage root fly'.

The molluscicide methiocarb was applied to 0.1ha of turnips to control slugs representing less than 1% of the pesticide area for this crop.

Beans & Peas (Tables 21 & 22)

An estimated 8 hectares of peas and beans were grown in Northern Ireland in 2007 (Table 3).

Herbicides were applied to 35% of the pesticide-treated area of peas (78% of the weight of pesticides applied) and 24% of the pesticide-treated area of beans (43% of the weight of pesticides applied) (Tables 5 & 6). The active ingredient paraquat

was the most extensively used herbicide on both crops, predominantly applied for 'ground preparation'.

Insecticides were applied to 11% and 35% of the bean and pea pesticide-treated areas respectively, accounting for 3% of the weight of pesticides used on beans and 11% of that used on peas (Tables 5 & 6). Pirimicarb, for aphid control, was the principal insecticide applied to both bean and pea crops. However, lambda-cyhalothrin was also frequently applied to pea crops for 'general insect control'.

Fungicides accounted for 46% of the pesticide-treated area and 52% of the weight of pesticides applied to beans, all of which were to control chocolate spot (*Botrytis fabae*). The formulation chlorothalonil/metalaxyl-M was the most frequently applied. The protective dithiocarbamate fungicide mancozeb was applied to 0.1ha of pea crops for 'general disease control'.

Leeks (Tables 23 & 23b)

Collectively an estimated 109 hectares of table (99 ha) and soup leeks (10 ha) were grown in Northern Ireland in 2007 (Table 3).

Fungicides accounted for 40% and 50% of the table and soup leek pesticide-treated area, respectively (Table 5). Tebuconazole was the fungicide most extensively used on both table and soup leeks. An estimated 76% of fungicides were applied to control rust (*Puccinia allii*).

Herbicides accounted for 52% (80% of the weight) and 37% (75% of the weight) of the pesticide-treated area of table and soup leek crops, respectively. Ioxynil was the most extensively used herbicide on both table and soup leeks, applied principally for 'general weed control'. However, propachlor was also frequently used on soup leek crops.

Approximately 3 hectares of table leeks and 1 hectare of soup leeks received a treatment with the insecticide chlorpyrifos to control 'aphids'. However, it was more likely that onion thrips were the target.

An estimated 0.1ha of soup leeks were treated with the molluscicide methiocarb to control slugs.

Onions & Spring Onions (Tables 24 & 25)

Approximately 11 hectares of onions and 39 hectares of spring onions were recorded grown in 2007 (Table 3).

Fungicides accounted for 69% and 9% of the pesticide-treated area (66% and 3% of the weight of pesticides used) of onion and spring onion crops, respectively (Tables 5 & 6). Control of *Botrytis spp.* on onion crops accounted for 91% of all fungicide

applications to this crop. However, 69% of fungicide applications to spring onion crops were to control mildew (*Hyaloperonospora destructor*). The single active ingredient chlorothalonil and formulation dimethomorph/mancozeb were the most extensively used fungicides applied to onions, collectively accounting for 55% of the fungicide-treated area of this crop. There were approximately 11 applications of fungicides to onion crops in 2007.

All onion and spring onion crops were treated with herbicides (Table 7). Herbicide applications represented 19% and 90% (34% and 96% of the weight of pesticides applied) of the pesticide-treated areas of onion and spring onion crops, respectively (Tables 5 & 6). All onion crops received treatments with pendemethalin, propachlor and tepraloxydim. However, of the 10 herbicide active ingredients applied to spring onion crops, ioxynil and propachlor were the most extensively used accounting for 35% and 28% of the herbicide treated area, respectively.

One application of the organophosphorus insecticide chlorpyrifos was applied to approximately 1.4 hectares of spring onions to control aphids. However, it was more likely that onion thrips were the target.

Carrots (Table 26)

An estimated 436 hectares of carrots were grown in Northern Ireland in 2007 (Table 3).

Fungicides accounted of 22% and 16% of the pesticide-treated area and weight applied to carrot crops respectively (Table 5 & 6). The single active ingredient tebuconazole, along with the formulation azoxystrobin/difenoconazole were the most extensively applied fungicides to carrots, primarily to control 'alternaria leaf blight' (*Alternaria dauci).* Approximately 7% of fungicide applications were to control cavity spot which is much lower than recorded in Great Britain.

Herbicides were primarily applied for 'pre-emergence' and 'general weed control'. They accounted for 35% of the herbicide-treated area and 76% of the weight of pesticides applied. Linuron was the most commonly applied herbicide accounting for 43% of the herbicide-treated area of carrots.

Insecticides accounted for 36% of the pesticide-treated area but only 8% of the weight of pesticides applied. The pyrethroid insecticide lambda-cyhalothrin was the most extensively used insecticide accounting for 82% of the carrot insecticide-treated areas. An estimated 72% of all insecticide applications on carrot crops were to control carrot fly (*Psila rosae*).

Less than 1 hectare of carrots were treated with the molluscicide methiocarb for slug control.

Parsnips (Table 27)

Approximately 186 hectares of parsnips were grown in Northern Ireland in 2007 (Table 3) and all crops received treatment with a pesticide (Table 7).

Herbicides accounted for 42% of the pesticide-treated area of parsnips (86% of the weight of pesticides applied), fungicides 21% (13%), insecticides 36% (<1%), molluscicides <1% (<1%) and seed treatments <1% (<1%) (Tables 5 & 6).

Fungicides were most frequently applied to parsnips for the control of alternaria leaf blight (*Alternaria dauci).* The single active ingredient tebuconazole represented 44% of all fungicide applications to parsnip crops. The formulation azoxystrobin /difenoconazole (37%) along with the single active ingredients fenpropimorph (18%) and metalaxyl-M (<1%), were the only fungicides active ingredients applied.

Linuron was the most frequently used herbicide accounting for 41% of the herbicide-treated area and 47% of the weight applied. 'General weed control' was the principal reason for the use of this active ingredient however, it was frequently applied for 'pre-emergence weed control'. The reason given for over 57% of herbicide applications was 'pre-emergence weed control' with 39% being attributed to 'general weed control'.

Lambda-cyhalothrin was the most extensively used insecticide accounting for 98% of the insecticide-treated area and 93% of the weight of insecticides applied to parsnip crops. Approximately 96% of all insecticide applications to parsnip crops were to control carrot fly (*Psila rosae*).

An estimated 2 hectares of parsnips were treated with the molluscicide methiocarb for slug control.

Parsley, Table Celery and Soup Celery (Tables 28, 29a & 29b)

There were an estimated 48 hectares of parsley, 20 hectares of table celery and 37 hectares of soup celery grown in Northern Ireland in 2004 (Table 3).

Fungicides accounted for 34% of the total pesticide-treated area of all celery crops and 23% of parsley crops (Table 5). Difenoconazole, applied as a single active ingredient, was the most extensively applied fungicide to parsley and soup celery crops. This was used primarily for 'general disease control' and 'blight control' (*Septoria* spp.), respectively. Azoxystrobin and difenoconazole were the only fungicides recorded applied to table celery crops to control blight (*Septoria* spp.).

Herbicides accounted for 35% of the total pesticide-treated area of parsley (70% of the weight of pesticides applied to parsley), 38% of soup celery (85%) and 33% of

table celery (74%). Linuron was the most extensively used herbicide active ingredient on parsley and soup celery however, glyphosate and prometrym were also frequently used on table celery.

Insecticides accounted for approximately 29%, 27% and 21% of the total pesticide-treated area of parsley, soup celery and table celery crops, respectively. Lambda-cyhalothrin was the most extensively used, principally to control 'aphids' and 'carrot fly' (*P. rosae*) on parsley and soup celery crop types. However, the formulation lambda-cyhalothrin/pirimicarb was the only insecticide applied to table celery crops for 'aphid' control.

The molluscicide methiocarb was applied to 13 hectares of these crops to control slugs.

Lettuce (Table 30)

There were approximately 24 hectares of lettuce grown outdoors in this survey period, 19 of which were grown in County Armagh and 5 in County Down.

Fungicides accounted for 47% of the pesticide-treated area and 42% of pesticide applications (Table 5 & 6). All fungicide applications were to control either powdery mildew (*Erysiphe cichoracearum*) or downy mildew (*Bremia lactucae*). The fungicide active ingredients azoxystrobin, fosetyl-aluminium and iprodione were all used in approximately equal proportions.

Herbicides accounted for 26% of the pesticide-treated area representing 50% of the weight of pesticides used. Combined applications of the individual active ingredients propachlor and trifluralin represented an estimated 63% of all herbicide applications. These were to control 'pre-emergence weeds'.

Insecticides accounted for 16% of the pesticide-treated area and 6% of the weight of pesticides used. The formulation lambda-cyhalothrin/pirimicarb was the insecticide most commonly used. All insecticide applications were to control 'aphids'.

The molluscicide methiocarb was applied to approximately 2 hectares to control slugs.

Rhubarb (Table 31)

Approximately 5 hectares of rhubarb were recorded grown during this survey period (Table 3).

The herbicide glyphosate was the only pesticide recorded. This was applied to three hectares for 'general weed control'.

Beetroot (Table 32)

An estimated 7 hectares of beetroot were grown in Northern Ireland during 2007 (Table 3). Approximately 2 hectares of beetroot crops were grown with treated seed (Table 5). Herbicides were the main group of pesticides applied and the contact carbamate herbicide phenmedipham was the active ingredient most frequently used.

Molluscicides were applied to 0.1ha of beetroot to control slugs.

No other pesticide groups were applied.

Pumpkin (Table 33)

A total of approximately 2 hectares of pumpkin were grown Counties Antrim, Armagh and Down during this survey period.

An estimated 0.6 hectares were treated with the fungicide fenpropimorph to control 'mildew'.

The herbicides, paraquat and glyphosate, were applied to 0.5 and 0.6 hectares for 'general weed control' and 'ground preparation', respectively.

No other pesticides were applied to this crop in 2007.

COMPARISON WITH PREVIOUS SURVEYS

Area of vegetable crops grown (Table 34 & Figure 4)

The total area of vegetable crops grown in Northern Ireland in 2007 was approximately 1,900 hectares, an 18% increase compared with 2004.

Overall, there was a 28% increase in the area of brassicas grown, with a significant increase of 46% in the area of Brussels sprouts grown. The area of turnips & swedes decreased by 20% compared with 2004. However, this was still greater than that recorded in preceding surveys, 1991 - 1999. The combined area of leeks and onions decreased by 3% compared to 2004. Carrot and parsnip crops increased by 25% and 87% respectively compared with the area grown during the same period. The total area of celery (including table and soup celery) increased by 79% when compared to 2004. Outdoor lettuce production decreased by 43% compared with 2004 which is comparable to levels grown in both 1991 and 1999. The area of beetroot grown in 2007 increased by 76% compared to 2004, returning to the level grown in 1999. There was a 55% decrease in the area of rhubarb grown and there was also a 14% increase in parsley production compared to 2004. The area grown of cucurbits was similar to that grown in 1999.

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Trends in pesticide usage (Table 35)

In comparison with 2004 the pesticide-treated area of vegetable crops increased by 23%, while the weight of pesticides used increased by 19%. The area treated with fungicides increased by 50% with a two fold increase in the weight of fungicides applied. The area treated and the weight of herbicides/desiccants active ingredients applied increased by 8% and 5%, respectively. The insecticide-treated area of vegetable crops increased by 23% but the weight of insecticides applied remained similar to that applied during 2004. This was due mainly to the increased usage of azomethine and chloronicotinyl type insecticides and a reduction in the use of organophosphates which have a much higher rate of application per unit area. The area of vegetable crops that received carbamates remained constant. However, the weight applied increased by 48% due to increased application rates to brassicas and carrots. Pyrethroid usage continued to increase (23%) but with reduced application rates. The data also suggests that molluscicide usage increased (42%) but with reduced application rates as the weight of molluscicides applied was similar to that recorded in 2004. The area of vegetable crops sown or planted with treated seed increased by 23%.

Comparison of pesticide usage on brassicas (Table 36)

An estimated 744 hectares of brassica crops were grown in 2007. This was a 28% increase compared with the previous survey. However, the pesticide-treated area increased by 44% and the weight of active ingredients applied increased by 36% compared with 2004.

Fungicide usage increased by 62%. In common with 1999 and 2004, difenoconazole was the fungicide active ingredient most frequently used on brassica crops with this fungicide showing a 50% increase in usage and 86% increase in weight applied when compared with 2004.

The area of brassica crops treated with herbicides increased by 25% and the weight of active ingredients applied increased by 32%. Trifluralin was the most frequently applied herbicide in 1999 and 2004. However, during 2007, metazachlor was the herbicide active ingredient most frequently applied to brassica crops.

Overall, applications of insecticides to brassica crops increased by 31% since 2004. This level was similar to that applied during 1999. However, the weight of active ingredients applied decreased by 9% compared with 2004. This may be attributed to the decreased use of dimethoate which had previously been applied to control aphids. There was however an overall significant decrease (43%) in the area treated with organophosphates and also weight applied (34%). Conversely, the usage of pyrethroids increased by more than 31%, principally due to the increased usage of lambda-cyhalothrin (40%) for ‘aphid’ and ‘caterpillar’ control. Carbamate usage remained at a level similar to 2004. However the weight applied increased by 16%.

An estimated 88 hectares of brassica crops were treated with molluscicides. This was a 31% increase compared with 2004 but the weight applied decreased by 9%.

Approximately 439 hectares (59%) of brassica crops were sown with treated seed compared with only 138 hectares in 2004, 7 hectares in 1999 and 57 hectares in 1995. In common with 2004, imidacloprid was the most popular seed treatment but thiamethoxam was also used in 2007.

Comparison of pesticide usage on turnip & swedes (Table 37)

The area of turnip and swede crops grown in 2007 decreased by 20% compared with 2004.

Up to and including 2004, fungicide use had declined with only 2 hectares receiving 1 kilogramme of fungicides in that survey. However, in 2007 there was a dramatic increase recorded with 116 spray hectares being treated with 612 kilogrammes being applied. This was almost entirely due to the use of sulphur as a fungicide and may suggest a move towards organic treatments.

In keeping with the 2004 survey the majority of herbicide applications were for 'pre-emergence weed control'. However, both the treated area and weight applied decreased by 32% and 22% respectively. Trifluralin and metazachlor remained as the herbicide active ingredients most frequently applied to turnip and swede crops.

The trend for reduced insecticide applications, which began in 1995, continued with an 81% reduction being recorded when compared with 2004. This may be attributed to the decline in insecticide active ingredients available particularly for the control of cabbage root fly, for which no chemical control is currently approved for use on turnip and swede. Lambda-cyhalothrin became the most frequently applied insecticide.

In 2007, an estimated 33% of turnip and swede crops were sown with treated seed. This was a reduction compared with other years as in 2004 95% were sown, 1999 72%, 1995 94% and 1991 75%.

No molluscicides were applied to turnip and swede crops in 2007.

Comparison of pesticide usage on leeks (Table 38)

The area of leeks grown in 2007 increased by 21% compared with that grown in 1999. However, the pesticide-treated area increased by 64% and the weight of active ingredients applied by 31%.

The fungicide-treated area and the weight applied increased more than two-fold compared with 2004. In keeping with the previous surveys, 'rust' (*Puccinia allii*) control continued to be the main reason for fungicide applications to leek crops

and from 1999 tebuconazole continued to be the fungicide active ingredients most frequently applied.

There was a 35% increase in the herbicide-treated area (20% of the weight of herbicides applied) compared with 2004 which is related to the increased area of leeks grown. The contact herbicide ioxynil continued to be the active ingredient most frequently used on leek crops. However propachlor was also frequently applied

Insecticide applications and weight applied increased two-fold and three-fold respectively when compared to 2004 and 1999. However, the organophosphate chlorpyrifos, was the only insecticide applied.

An estimated 77 hectares of leek crops were sown with treated seed, which was similar to 2004 but more than two-fold that applied in previous year's.

No molluscicides were recorded on leek crops in 2004.

Comparison of pesticide usage on carrots (Table 39)

The area of carrots grown in 2007 increased by 25% compared with that recorded in 2004. However, the pesticide-treated area increased by 4% and the weight of active ingredients applied remained the same.

During the five-year period 1999-2004, the area of carrot crops treated with fungicides increased by 88% while the weight of active ingredients applied decreased by 12%, suggesting the use of fungicides at reduced rates. Applications of fungicides in 2007 were similar to 2004. During 2004, metalaxyl-M and tebuconazole were the fungicide active ingredients most extensively used. However, in 2007 tebuconazole and the formulation azoxystrobin/difenoconazole were the most frequently applied.

During 2007 both the treated area and the weight of herbicides applied were similar to those recorded in 2004. Linuron, continued to be the herbicide active ingredient most frequently used.

The area treated with insecticides increased by 10% compared with 1999 but the weight of insecticides applied increased two-fold. This was principally due to applications of the carbamates carbosulfan, oxamyl and pirimicarb for 'general insect' and 'aphid' control. These are generally used at higher rates per unit area than pyrethroids.

In 2007, an estimated 1 hectare of carrot crops received treatment with the molluscicide methiocarb. This was similar to 2004.

An estimated 327 hectares of carrots sown in Northern Ireland in 2007 received seed treatments. This was a 14% increase compared to 2004 but less than previous years. However, the weight of seed treatments applied increased by 27%.

Comparison of pesticide usage on parsnips (Table 40)

The area of parsnips grown in Northern Ireland during 2007 increased by 86% when compared to that grown during 2004 and was the largest area grown since pesticide usage surveys began. However, the pesticide-treated area of parsnips increased by only 52%, while the weight of pesticides applied increased by 44%.

In comparison with previous surveys, the area treated with fungicides continued to rise with a 56% increase in fungicide-treated area and 51% increase in weight of fungicides applied. In keeping with the 2004 report, fungicides were applied most frequently to parsnips to control '*Alternaria*'.

Herbicide applications increased by approximately 50% in area of application and weight applied. Linuron continued to be the most frequently applied herbicide with 'general weed control' being the principal reason for use.

The use of organophosphate and carbamate insecticides on parsnip crops have steadily declined. Pyrethroids were now the only insecticide group applied to control carrot fly (*Psila rosae*). Overall, insecticide treatments increased by 49%. However, the weight of pesticides applied reduced by 56% due to the reduction in use of carbamate insecticides and the absence of organophosphates both of which are used at higher rates than pyrethroids.

Approximately 9 hectares (3%) of parsnips received a seed treatment in 2007. This was a similar proportion to that recorded in 2004, 1995 and 1991.

An estimated 2 hectares (1%) of parsnips were treated with the molluscicide, methiocarb, to control slugs. No molluscicides were recorded used on this crop in 2004.

Comparison of pesticide usage on lettuce (Table 41)

The area of outdoor lettuce crops grown reduced by 44% when compared with 2004, but was similar to that grown in 1991 and 1999. The pesticide-treated area reduced by 27% compared with 2004 while the weight of pesticides used decreased by 47%.

The fungicide-treated area increased by 37%. However, the weight of fungicides applied reduced by 7%. The fungicide active ingredients azoxystrobin, fosetyl-aluminium and iprodione were all applied with approximately equal coverage during 2007 and all applications were to control mildew. On average, there were

3.5 fungicide spray applications to lettuce crops during 2007 which was a increase from previous years.

Compared with 2004, herbicide usage decreased in both area treated and weight of active ingredients applied returning to levels similar to 1995. Propyzamide continued to be the most frequently applied herbicide.

Insecticide applications reduced by 65% and the weight applied decreased by 46% compared with 2004. The mixture lambda-cyhalothrin/primicarb was the most frequently used insecticide, being applied in similar quantities to 2004. Control of 'aphids' was again the most popular reason for use.

Approximately 2 hectares of lettuce crops received molluscicides to control slugs. This was a 60% reduction compared with 2004.

There was a 27% reduction in the use of seed treatments compared to 2004.

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Figure 1: The regional distribution of vegetable crops grown in Northern Ireland, 2007.

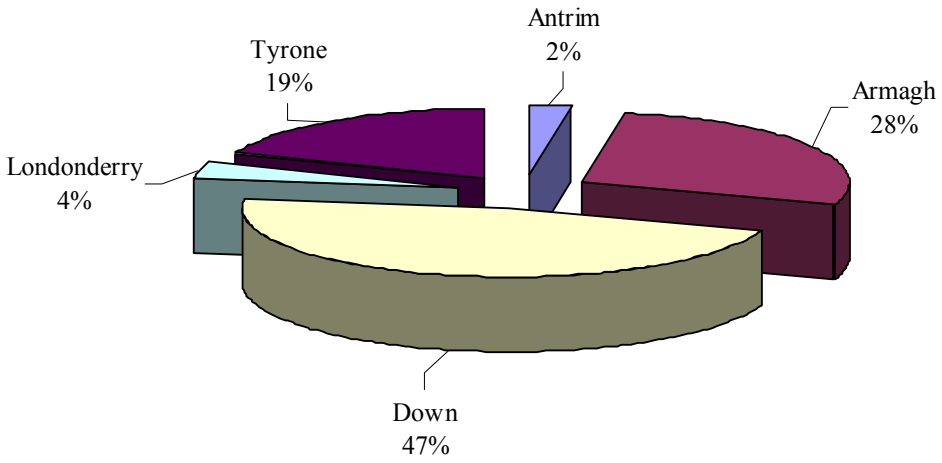

Figure 2: The utilization of vegetable land in Northern Ireland, 2007.

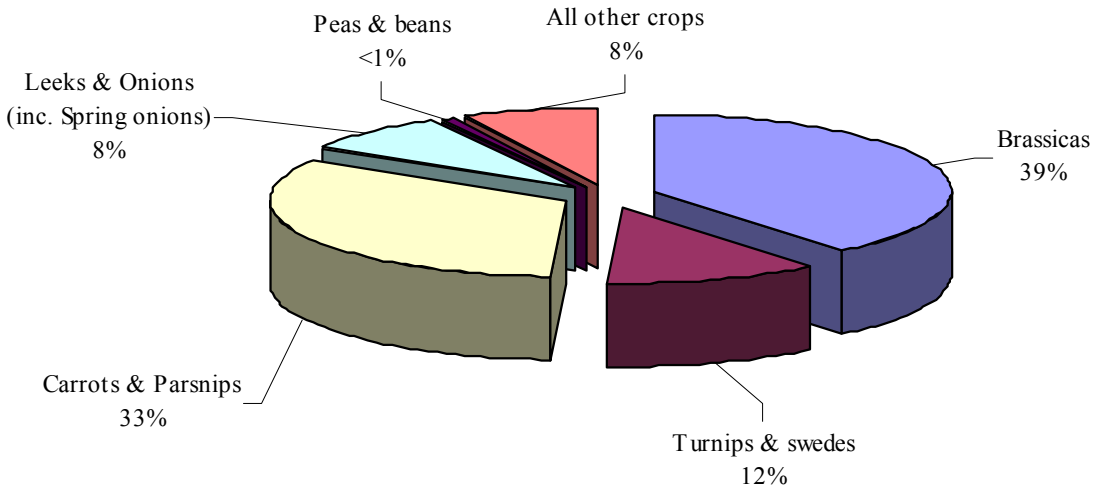

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Figure 3: The area of vegetable crops treated (spray hectares) with each pesticide type in the county regions of Northern Ireland, 2007.

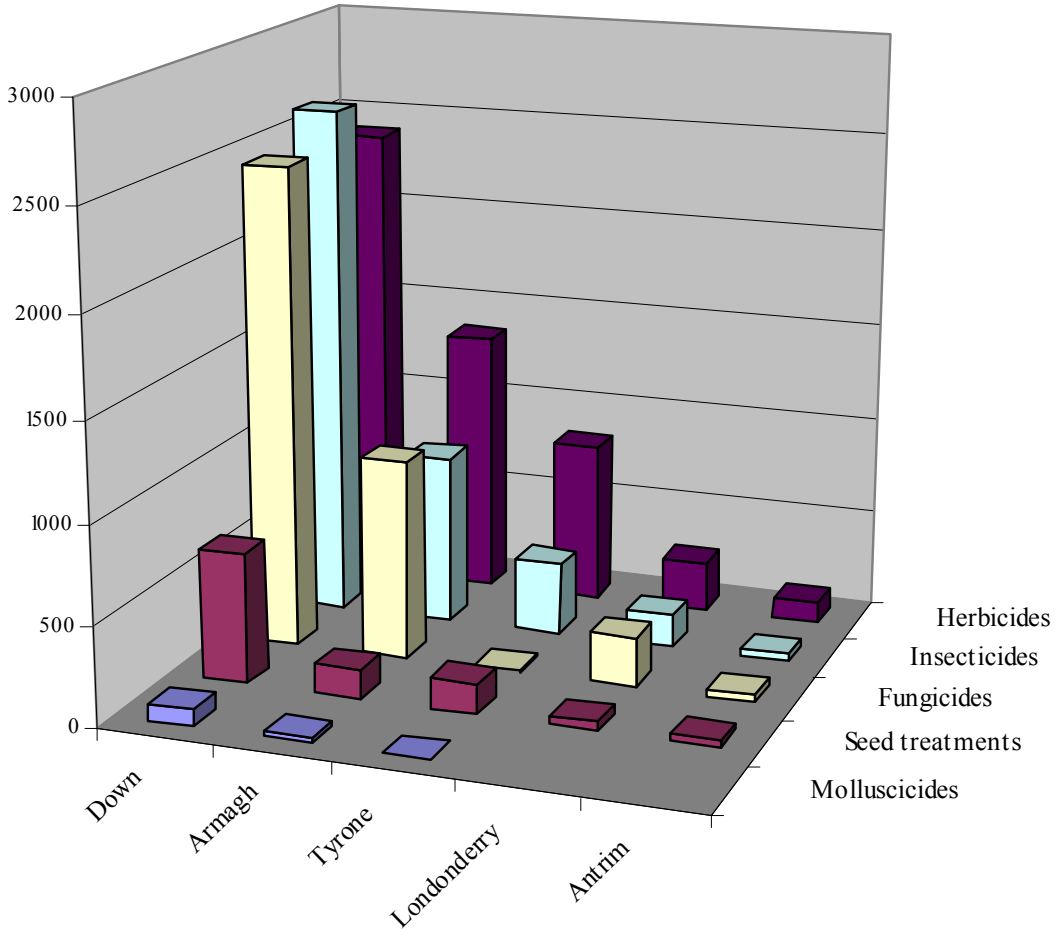

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Figure 4: Comparison of the area of Vegetable crops grown in Northern Ireland, 1991 – 2007.

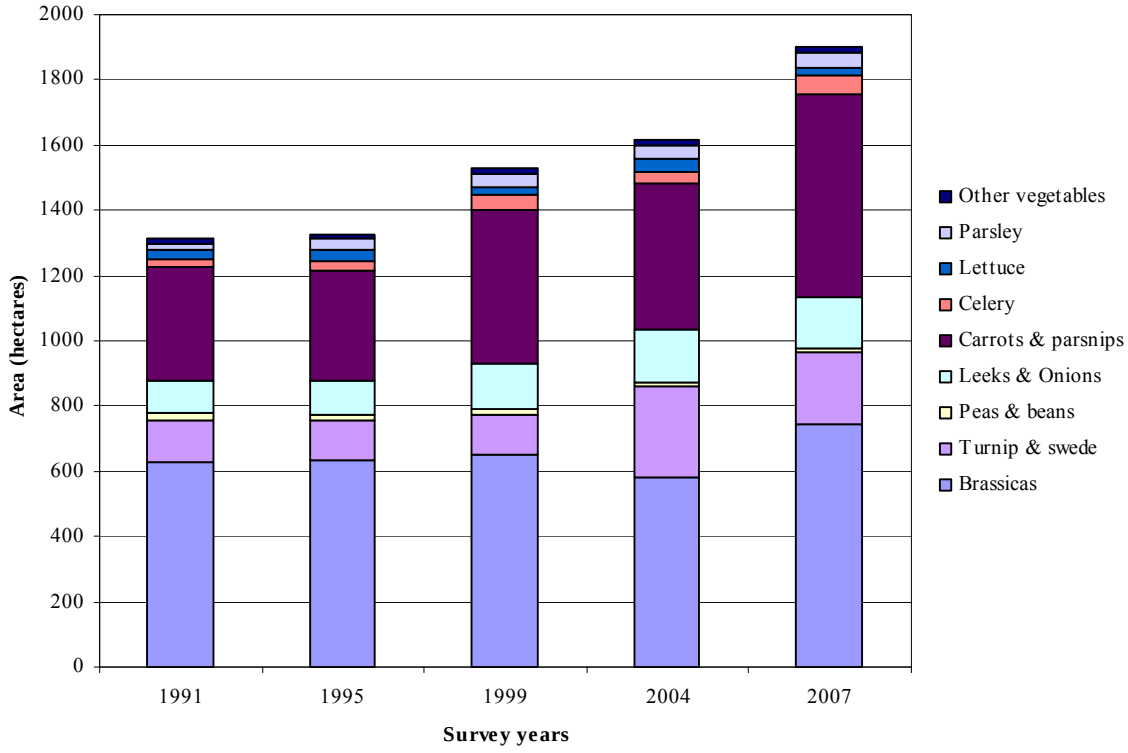

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Table 1: **The total number of farms in each size group with vegetable crops in the June 2007 census and number of samples from each size group.**

	Size group (hectares)											
	< 2		2 < 3		3 < 5		5 < 10		10+		Total	
County	A	B	A	B	A	B	A	B	A	B	A	B
Antrim	8	7	2	2	1	1	2	1	1	1	14	12
Armagh	7	6	0	0	5	3	3	2	6	5	21	16
Down	14	10	3	3	4	3	9	9	22	21	52	46
Fermanagh	1	1	0	0	0	0	0	0	0	0	1	1
Londonderry	1	1	3	2	0	0	0	0	3	3	7	6
Tyrone	4	2	1	1	0	0	1	1	2	2	8	6
Northern Ireland	*35*	*27*	*9*	*8*	*10*	*7*	*15*	*13*	*24*	*32*	*103*	*87*

Legend

A = Total number of holdings in strata

B = Number of holdings surveyed

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Table 2: Total number and area of crops surveyed (hectares) in Northern Ireland, 2007.

Crop	*Number of Crops Surveyed*	*Surveyed area (ha)*
Brussels sprouts	19	40.5
Spring cabbage	13	63.4
Summer cabbage	10	8.0
Winter cabbage	6	13.1
Savoys	41	147.7
Hard cabbage	22	96.4
Calabrese	25	149.1
Cauliflowers	33	175.4
Turnips & swedes	24	209.0
Beans	14	4.3
Peas	7	2.4
Table leeks	29	91.3
Soup leeks	19	8.8
Onions	1	10.1
Summer spring onions	18	36.3
Carrots	37	407.2
Parsnips	28	173.6
Table celery	3	19.0
Soup celery	29	33.6
Parsley	34	43.3
Lettuce	3	22.8
Beetroot	14	5.8
Rhubarb	2	4.1
Pumpkin	4	1.4
Organic crops	10	18.4
All crops	*445*	*1,785.1*

Table 3: Estimated area (hectares) of vegetable crops grown regionally in Northern Ireland, 2007.

	County					
Crop type	Antrim	Armagh	Down	Londonderry	Tyrone	Northern Ireland
Brussel sprouts	0.3	9.5	31.6	2.1	0.1	43.6
Spring cabbage	.	5.2	30.5	.	32.2	68.0
Summer cabbage	.	0.7	8.2	.	.	8.9
Winter cabbage	.	4.1	9.9	.	.	14.0
Savoys	.	41.5	81.9	2.4	32.9	158.6
Hard cabbage	.	31.6	37.0	2.2	32.2	103.1
Calabrese	0.3	96.9	60.5	1.7	0.2	159.5
Cauliflower	.	36.0	117.9	1.7	32.4	188.1
Turnips	24.9	103.9	87.2	2.0	5.4	223.5
Beans	0.6	1.4	2.9	.	0.1	5.0
Peas	0.2	1.0	1.4	.	0.1	2.7
Table leeks	0.2	25.2	71.8	.	1.8	99.1
Soup leeks	1.6	0.3	7.9	0.3	0.0	10.2
Onions	.	.	.	10.7	.	10.7
Summer spring onions	3.9	.	35.3	.	0.2	39.4
Carrots	0.5	122.4	131.8	41.6	139.4	436.3
Parsnips	6.9	2.0	87.7	0.9	88.4	185.9
Table celery	.	19.8	0.6	.	.	20.4
Soup celery	1.8	2.1	32.7	0.6	0.3	37.4
Parsley	1.8	2.4	42.9	0.6	0.3	47.8
Lettuce	.	19.3	4.9	.	.	24.3
Beetroot	1.0	0.6	4.7	0.2	0.1	6.7
Rhubarb	3.0	1.8	.	.	.	4.9
Pumkin	0.2	0.5	1.1	.	.	1.8
Organic crops	2.9	.	13.5	3.2	1.3	20.9
All vegetable crops	*50.1*	*528.3*	*904.1*	*70.2*	*367.5*	*1,920.9*

Table 4: **Estimated area (spray hectares) of vegetable crops treated regionally in Northern Ireland with each pesticide type.**

	County					
Pesticide type	**Antrim**	**Armagh**	**Down**	**Londonderry**	**Tyrone**	**Northern Ireland**
Fungicides	37.4	1015.1	2451.4	250.8	10.6	3765.3
Herbicides & desiccants	111.3	1353.3	2389.2	254.4	824.4	4933.3
Insecticides	36.0	868.5	2620.9	170.7	368.0	4065.4
Molluscicides	.	22.4	83.6	.	0.1	106.1
Seed treatments	30.6	148.3	661.6	41.3	155.4	1038.6
All pesticides	*215.3*	*3,407.5*	*8,206.7*	*717.3*	*1,358.6*	*13,908.6*

Table 5: **The total area (spray hectares) and the basic area (hectares), of vegetable crops in Northern Ireland treated with each pesticide type, 2007.**

	Pesticide Type											
	Fungicides		Herbicide & desiccants		Insecticides		Molluscicides		Seed treatments		All pesticides	
Crop type	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)	(sp ha)	(ha)
Brussel sprouts	302.46	43.47	98.02	41.17	257.43	43.62	32.49	32.49	32.33	31.75	722.74	43.62
Cabbage (Spring)	121.15	31.29	117.05	58.56	126.67	54.82	7.54	7.54	39.71	30.18	412.12	68.02
Cabbage (Summer)	32.23	6.23	17.62	8.23	27.59	5.95	0.38	0.38	9.39	7.45	87.21	8.93
Cabbage (Winter)	79.97	13.33	31.80	14.04	86.42	14.04	0.91	0.91	6.30	6.30	205.40	14.04
Savoys	410.94	112.87	324.01	157.01	461.36	138.51	11.27	11.27	96.48	73.19	1304.06	158.13
Hard cabbage	135.01	32.40	187.95	87.00	191.11	64.36	2.65	2.65	38.72	33.12	555.44	87.13
Calabrese	136.30	37.78	308.58	156.93	174.51	52.92	11.63	11.63	75.44	69.55	706.46	159.31
Cauliflowers	358.70	85.36	361.89	168.91	457.39	140.39	21.21	21.21	140.54	100.90	1339.73	175.60
Turnips	115.53	10.41	392.85	220.49	5.90	1.72	0.10	0.10	73.77	73.77	588.16	222.75
Beans	7.56	4.03	4.00	3.91	1.77	1.77	0.04	0.04	3.19	3.19	16.57	4.77
Peas	0.09	0.09	2.82	2.50	2.79	1.50	.	.	2.37	2.37	8.07	2.68
Table Leeks	338.01	91.44	435.68	98.49	2.68	2.68	.	.	68.69	65.68	845.06	98.49
Soup Leeks	36.32	8.94	27.46	8.37	1.07	1.07	0.10	0.10	8.48	8.48	73.43	10.15
Onions	118.24	10.75	32.25	10.75	.	.	.	.	21.50	10.75	171.99	10.75
Scallions (Summer)	13.75	9.88	142.80	39.43	1.43	1.43	.	.	.	.	157.98	39.43
Carrots	900.49	188.52	1460.14	364.80	1485.82	422.39	0.69	0.69	327.25	319.29	4174.40	436.34
Parsnips	307.47	73.27	620.30	182.90	527.24	180.79	1.94	1.94	9.29	6.18	1466.25	185.94
Celery (Table)	60.63	19.78	59.34	19.78	38.70	19.35	1.93	1.93	19.78	19.78	180.37	19.78
Soup celery	89.29	35.44	100.90	37.42	71.07	23.11	4.48	4.48	0.23	0.23	265.97	37.42
Parsley	82.33	37.23	125.32	47.26	103.64	27.15	6.63	6.63	38.78	38.78	356.72	47.26
Lettuce	118.22	21.47	65.76	24.27	40.82	21.47	1.93	1.93	24.27	24.27	251.00	24.27
Beetroot	.	.	12.67	5.81	.	.	0.10	0.10	2.06	2.06	14.84	6.36
Rhubarb	.	.	3.05	3.05	.	.	.	.	.	.	3.05	3.05
Pumpkin	0.57	0.57	1.04	1.04	.	.	.	.	.	.	1.61	1.04
All vegetable crops	*3,765.27*	*874.54*	*4,933.31*	*1,762.10*	*4,065.42*	*1,219.03*	*106.05*	*106.05*	*1,038.58*	*927.28*	*13,908.63*	*1,865.26*

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Table 6: **The total quantities (kilograms) of each pesticide type used on vegetable crops in Northern Ireland, 2007.**

Crop type	Pesticide type					
	Fungicides	Herbicides & desiccants	Insecticides	Molluscicides	Seed treatments	Total quantity (kg)
Brussel sprouts	129.89	123.39	70.87	4.44	22.14	350.73
Cabbage (Spring)	31.06	120.36	10.31	0.90	3.62	166.25
Cabbage (Summer)	41.80	28.42	39.06	0.05	0.77	110.10
Cabbage (Winter)	19.07	35.53	12.37	0.11	0.58	67.66
Savoys	126.13	384.36	93.27	1.30	7.59	612.65
Hard cabbage	32.18	234.98	19.12	0.29	3.75	290.32
Calabrese	67.80	327.68	52.65	1.07	35.92	485.11
Cauliflowers	137.77	368.37	77.73	2.26	22.06	608.19
Turnips	612.34	545.96	0.30	0.01	0.13	1158.75
Beans	5.28	4.41	0.29	0.01	0.21	10.20
Peas	0.14	3.16	0.40	.	0.32	4.03
Table Leeks	134.66	545.14	2.21	.	0.74	682.74
Soup Leeks	15.01	46.02	0.51	0.01	0.09	61.65
Onions	118.80	60.57	.	.	0.37	179.74
Scallions (Summer)	7.23	203.61	0.69	.	.	211.53
Carrots	345.12	1615.99	159.80	0.07	9.20	2130.17
Parsnips	113.00	727.45	6.68	0.19	0.07	847.39
Celery (Table)	12.63	62.07	8.51	0.23	0.00	83.45
Soup celery	14.99	97.55	1.71	0.41	.	114.66
Parsley	44.87	116.94	5.65	0.60	0.13	168.18
Lettuce	49.82	59.88	6.92	0.23	2.04	118.89
Beetroot	.	9.95	.	0.01	0.19	10.16
Rhubarb	.	5.49	.	.	.	5.49
Pumpkin	0.43	0.95	.	.	.	1.38
All vegetable crops	*2,060.03*	*5,728.23*	*569.04*	*12.19*	*109.93*	*8,479.41*

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Table 7: **The proportional area (%) of each crop treated with pesticides and the number of spray applications (in parentheses) in Northern Ireland, 2007.**

	Pesticide type										
Crop type	Fungicides		Herbicides & desiccants		Insecticides		Molluscicides		Seed treatments	All pesticides	
Brussel sprouts	99.64%	(5.82)	94.37%	(2.06)	100.00%	3.87	74.47%	1.00	72.79%	100.00%	3.41
Cabbage (Spring)	46.00%	(4.62)	86.09%	(1.70)	80.60%	2.86	11.09%	1.00	44.37%	100.00%	2.47
Cabbage (Summer)	69.75%	(4.99)	92.06%	(1.82)	66.63%	3.31	4.25%	1.00	83.43%	100.00%	2.92
Cabbage (Winter)	94.95%	(5.50)	100.00%	(1.95)	100.00%	4.25	6.45%	1.00	44.87%	100.00%	3.24
Savoys	71.17%	(3.53)	99.00%	(1.71)	87.34%	2.88	7.11%	1.00	46.15%	99.71%	2.46
Hard cabbage	31.43%	(3.10)	84.40%	(1.93)	62.43%	3.00	2.57%	1.00	32.13%	84.53%	2.44
Calabrese	23.70%	(3.00)	98.41%	(1.94)	33.19%	2.14	7.30%	1.00	43.62%	99.91%	2.16
Cauliflowers	45.38%	(4.49)	89.81%	(1.81)	74.65%	2.44	11.28%	1.00	53.65%	93.37%	2.44
Turnips	4.66%	(2.56)	98.67%	(1.38)	0.77%	2.91	0.05%	1.00	33.02%	99.69%	1.74
Beans	81.29%	(1.47)	78.96%	(1.11)	35.77%	1.00	0.85%	1.00	64.30%	96.27%	1.22
Peas	3.25%	(1.00)	91.05%	(1.18)	54.52%	1.29	.	.	86.52%	97.51%	1.19
Table Leeks	92.30%	(2.98)	99.42%	(3.08)	2.70%	1.00	.	.	66.30%	99.42%	2.95
Soup Leeks	88.09%	(3.09)	82.46%	(2.36)	10.55%	1.00	1.03%	1.00	83.51%	100.00%	2.57
Onions	100.00%	(11.00)	100.00%	(3.00)	.	.	.	.	100.00%	100.00%	7.00
Spring onions	25.05%	(1.47)	100.00%	(2.95)	3.62%	1.00	.	.	.	100.00%	2.32
Carrots	43.21%	(1.78)	83.60%	(2.65)	96.80%	3.01	0.16%	1.00	73.17%	100.00%	2.57
Parsnips	39.40%	(2.35)	98.37%	(2.63)	97.23%	3.07	1.04%	1.00	3.33%	100.00%	2.63
Celery (Table)	97.16%	(4.50)	97.16%	(3.00)	95.05%	2.00	9.50%	1.00	97.16%	97.16%	3.00
Soup celery	94.70%	(2.53)	100.00%	(2.07)	61.76%	2.57	11.98%	1.00	0.61%	100.00%	2.27
Parsley	77.83%	(1.92)	98.79%	(1.99)	56.75%	2.48	13.87%	1.00	81.08%	98.79%	2.05
Lettuce	88.48%	(3.50)	100.00%	(2.00)	88.48%	1.50	7.97%	1.00	100.00%	100.00%	2.13
Beetroot	.	.	86.16%	(1.80)	.	.	1.56%	1.00	30.56%	94.37%	1.73
Rhubarb	.	.	62.41%	(1.00)	.	.	.	.	.	62.41%	1.00
Pumpkin	30.89%	(1.00)	56.13%	(1.00)	.	.	.	.	.	56.13%	1.00
All crops	*45.5%*	*(3.17)*	*91.7%*	*(2.12)*	*63.5%*	*(2.80)*	*5.5%*	*(1.00)*	*48.3%*	*97.1%*	*2.46*

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Table 8: **Estimated area (spray hectares) of vegetable crops treated with pesticide formulations in Northern Ireland, 2007.**

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other Vegetables	Total Area (sp ha)
Fungicides											
Azoxystrobin	304	1	1	64	24	.	.	64	39	.	497
Azoxystrobin/difenoconazole	.	.	.	.	.	448	3	.	.	.	451
Boscalid/pyraclostrobin	50	.	.	.	.	.	.	.	.	.	50
Carbendazim/flusilazole	5	.	.	0	.	.	.	.	.	.	5
Chlorothalonil	107	.	1	29	32	.	.	1	.	.	170
Chlorothalonil/cyproconazole	.	.	.	15	.	.	.	.	.	.	15
Chlorothalonil/metalaxyl-m	128	.	4	55	25	.	2	.	.	.	214
Copper oxychloride	.	.	.	.	11	.	.	.	.	.	11
Cyproconazole	.	.	.	15	.	.	.	.	.	.	15
Cyprodinil/fludioxonil	.	.	.	.	.	.	11	.	.	.	11
Difenoconazole	795	.	.	1	2	.	29	82	.	.	909
Dimethomorph/mancozeb	.	.	.	.	32	.	.	.	.	.	32
Fenpropimorph	4	1	.	14	.	161	.	.	.	1	181
Fosetyl-aluminium	12	.	.	.	.	.	.	.	41	.	52
Iprodione	5	.	.	0	3	.	.	.	39	.	47
Mancozeb	.	.	0	0	1	.	.	1	.	.	2
Mancozeb/metalaxyl-m	.	.	.	.	.	12	21	.	.	.	34
Metalaxyl-m	.	.	.	.	.	132	.	.	.	.	132
Propamocarb hydrochloride	31	.	.	.	.	.	.	.	.	.	31
Sulphur	.	109	.	.	.	.	.	.	.	.	109
Tebuconazole	103	4	1	181	1	454	16	1	.	.	762
Tebuconazole/trifloxystrobin	5	.	.	.	.	.	.	.	.	.	5
Tolclofos-methyl	28	.	.	.	.	.	.	.	.	.	28
Unknown fungicide	.	.	1	.	.	.	.	.	.	.	1
All fungicides	*1,577*	*116*	*8*	*374*	*132*	*1,208*	*82*	*150*	*118*	*1*	*3,765*

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Table 8 (cont.): **Estimated area (spray hectares) of vegetable crops treated with pesticide formulations in Northern Ireland, 2007.**

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other vegetables	Total Area (sp ha)
Herbicides & desiccants											
Desmedipham/ethofumesate/ phenmedipham	.	.	.	.	.	.	.	.	.	2	2
Bentazone/MCPB	.	.	0	.	.	.	.	.	.	.	0
Chlorpropham	.	.	.	26	13	.	.	.	.	.	39
Chlorpropham/pentanochlor	.	.	.	.	.	14	1	1	.	.	16
Chlorthal-dimethyl	.	.	.	.	1	.	.	.	.	.	1
Clopyralid	.	3	.	.	.	.	.	.	.	.	3
Cyanazine	53	.	0	3	.	.	.	1	.	.	57
Cycloxydim	.	.	.	.	.	215	.	.	.	.	215
Diquat/paraquat	3	.	.	5	3	2	1	1	.	3	18
Ethofumesate	.	.	.	.	.	.	.	.	.	1	1
Glyphosate	24	.	0	4	.	5	2	21	.	4	59
Ioxynil	.	.	.	208	50	.	.	.	.	.	258
Lenacil	.	.	.	.	.	.	.	.	.	1	1
Linuron	.	1	.	0	.	889	57	63	.	.	1,011
Metamitron	.	.	.	.	.	2	.	.	.	2	4
Metazachlor	632	131	.	0	.	.	.	.	.	.	763
Metoxuron	.	.	.	.	.	288	.	.	.	.	288
Paraquat	1	0	3	4	2	48	4	2	.	0	65
Pendimethalin	12	.	0	56	35	295	24	20	.	.	442
Pentanochlor	.	.	.	.	.	45	.	.	.	.	45
Phenmedipham	.	.	.	.	.	.	.	.	.	4	4
Prometryn	.	.	2	63	11	5	34	47	.	.	161
Propachlor	115	45	.	84	50	.	0	1	19	0	315

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Table 8 (cont.): **Estimated area (spray hectares) of vegetable crops treated with pesticide formulations in Northern Ireland, 2007.**

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other vegetables	Total Area (sp ha)
Herbicides & desiccants (contd.)											
Propaquizafop	.	.	.	1	1	58	.	.	.	.	59
Propyzamide	.	.	.	.	.	.	.	.	24	.	24
Simazine	.	.	0	.	.	.	.	.	.	1	1
Tepraloxydim	.	.	.	8	11	76	1	1	.	.	97
Terbuthylazine/terbutryn	.	.	1	.	.	.	.	.	.	.	1
Trifluralin	607	212	0	1	.	138	1	1	22	.	984
Unknown herbicide	.	.	.	.	.	0	.	.	.	.	0
All herbicides & desiccants	*1,447*	*393*	*7*	*463*	*175*	*2,080*	*125*	*160*	*66*	*17*	*4,933*
Insecticides											
Carbosulfan	8	0	.	.	.	38	.	.	.	.	46
Chlorpyrifos	63	.	0	4	1	2	2	1	.	.	74
Cypermethrin	31	.	0	.	.	.	1	1	.	.	34
Deltamethrin	23	.	.	.	.	91	.	.	.	.	114
Dimethoate	1	.	.	.	.	.	.	.	.	.	1
Lambda-cyhalothrin	772	6	1	.	.	1,735	76	68	.	.	2,659
Lambda-cyhalothrin/pirimicarb	210	.	.	.	.	.	.	39	39	.	288
Oxamyl	.	.	.	.	.	74	.	.	.	.	74
Pirimicarb	502	.	3	.	.	72	24	0	2	.	603
Pymetrozine	106	.	.	.	.	.	.	.	.	.	106
Thiacloprid	57	.	.	.	.	.	.	.	.	.	57
Triazamate	9	.	.	.	.	.	.	.	.	.	9
Unknown insecticide	.	.	.	.	.	0	.	.	.	.	0
All insecticides	*1,782*	*6*	*5*	*4*	*1*	*2,013*	*104*	*110*	*41*	*.*	*4,065*

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Table 8 (cont.): **Estimated area (spray hectares) of vegetable crops treated with pesticide formulations in Northern Ireland, 2007.**

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other vegetables	Total Area (sp ha)
Molluscicides											
Methiocarb	88	0	0	0	.	3	7	6	2	0	106
All molluscicides	*88*	*0*	*0*	*0*	*.*	*3*	*7*	*6*	*2*	*0*	*106*
Seed Treatments											
Thiamethoxam	86	.	.	.	.	.	.	.	.	.	86
Cymoxanil/fludioxonil/ metalaxyl-m	.	.	2	.	.	192	.	.	.	.	195
Hymexazol	.	.	.	.	.	.	.	.	.	2	2
Iprodione	.	52	.	.	.	.	.	.	.	.	52
Thiabendazole/thiram	.	.	.	.	11	.	.	.	.	.	11
Thiram	0	21	3	3	.	.	39	20	.	.	87
Imidacloprid	352	.	.	.	.	.	.	.	24	.	376
Tefluthrin	.	.	.	74	11	144	.	.	.	.	229
All seed treatments	*439*	*74*	*6*	*77*	*21*	*337*	*39*	*20*	*24*	*2*	*1,039*
All pesticides	*5,333*	*588*	*25*	*918*	*330*	*5,641*	*357*	*446*	*251*	*19*	*13,909*

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Table 9: **Estimated quantities (kilograms) of pesticide formulations used on vegetable crops in Northern Ireland, 2007.**

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other vegetables	Total quantity (kg)
Fungicides											
Azoxystrobin	74	0	0	15	5	.	.	16	10	.	120
Azoxystrobin/difenoconazole	.	.	.	.	.	146	1	.	.	.	147
Boscalid/pyraclostrobin	17	.	.	.	.	.	.	.	.	.	17
Carbendazim/flusilazole	0	.	.	.	.	.	.	.	.	.	0
Chlorothalonil	133	.	1	17	32	.	.	2	.	.	184
Chlorothalonil/cyproconazole	.	.	.	6	.	.	.	.	.	.	6
Chlorothalonil/metalaxyl-M	137	.	4	53	26	.	3	.	.	.	223
Copper oxychloride	.	.	.	.	11	.	.	.	.	.	11
Cyproconazole	.	.	.	1	.	.	.	.	.	.	1
Cyprodinil/fludioxonil	.	.	.	.	.	.	7	.	.	.	7
Difenoconazole	56	.	.	0	0	.	2	8	.	.	65
Dimethomorph/mancozeb	.	.	.	.	48	.	.	.	.	.	48
Fenpropimorph	3	1	.	11	.	120	.	.	.	0	135
Fosetyl-aluminium	137	.	.	.	.	.	.	.	17	.	154
Iprodione	3	.	.	0	2	.	.	.	23	.	28
Mancozeb	.	.	0	1	1	.	.	2	.	.	4
Mancozeb/metalaxyl-M	.	.	.	.	.	12	29	.	.	.	42
Metalaxyl-M	.	.	.	.	.	70	.	.	.	.	70
Propamocarb hydrochloride	11	.	.	.	.	.	.	.	.	.	11
Sulphur	.	610	.	.	.	.	.	.	.	.	610
Tebuconazole	13	1	0	46	1	109	4	0	.	.	174
Tebuconazole/trifloxystrobin	2	.	.	.	.	.	.	.	.	.	2
Tolclofos-Methyl	0	.	.	.	.	.	.	.	.	.	0
All fungicides	*586*	*612*	*5*	*150*	*126*	*458*	*45*	*28*	*50*	*0*	*2,060*

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Table 9: **Estimated quantities (kilograms) of pesticide formulations used on vegetable crops in Northern Ireland, 2007.**

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other vegetables	Total quantity (kg)
Herbicides & desiccants											
Bentazone/MCPB	.	.	0	.	.	.	.	.	.	.	0
Chlorpropham	.	.	.	2	2	.	.	.	.	.	4
Chlorpropham/pentanochlor	.	.	.	.	.	33	2	2	.	.	38
Chlorthal-dimethyl	.	.	.	.	4	.	.	.	.	.	4
Clopyralid	.	1	.	.	.	.	.	.	.	.	1
Cyanazine	39	.	0	2	.	.	.	0	.	.	41
Cycloxydim	.	.	.	.	.	212	.	.	.	.	212
Desmedipham/ethofumesate/phenmedipham	.	.	.	.	.	.	.	.	.	1	1
Diquat/paraquat	3	.	.	2	1	1	1	1	.	1	10
Ethofumesate	.	.	.	.	.	.	.	.	.	1	1
Glyphosate	25	.	0	4	.	5	3	30	.	6	73
Ioxynil	.	.	.	73	9	.	.	.	.	.	82
Lenacil	.	.	.	.	.	.	.	.	.	1	1
Linuron	.	1	.	0	.	781	44	58	.	.	883
Metamitron	.	.	.	.	.	3	.	.	.	2	6
Metazachlor	456	98	.	0	.	.	.	.	.	.	554
Metoxuron	.	.	.	.	.	653	.	.	.	.	653
Paraquat	1	0	3	3	1	21	3	2	.	0	34
Pendimethalin	14	.	0	56	32	441	28	25	.	.	597
Pentanochlor	.	.	.	.	.	64	.	.	.	.	64
Phenmedipham	.	.	.	.	.	.	.	.	.	3	3
Prometryn	.	.	2	57	13	4	32	36	.	.	144
Propachlor	481	203	.	389	202	.	1	4	12	1	1,294
Propaquizafop	.	.	.	0	0	5	.	.	.	.	5
Propyzamide	.	.	.	.	.	.	.	.	34	.	34
Simazine	.	.	0	.	.	.	.	.	.	1	1
Tepraloxydim	.	.	.	1	1	6	0	0	.	.	7
Terbuthylazine/terbutryn	.	.	1	.	.	.	.	.	.	.	1
Trifluralin	605	243	0	2	.	115	2	2	14	.	982
All herbicides & desiccants	*1,623*	*546*	*8*	*591*	*264*	*2,343*	*117*	*160*	*60*	*16*	*5,728*

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Table 9 (cont.):Estimated quantities (kilograms) of pesticide formulations used on vegetable crops in Northern Ireland, 2007.

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other vegetables	Total quantity (kg)
Insecticides											
Carbosulfan	9	0	.	.	.	42	.	.	.	.	51
Chlorpyrifos	193	.	0	3	1	1	1	1	.	.	199
Cypermethrin	1	.	0	.	.	.	0	0	.	.	1
Deltamethrin	0	.	.	.	.	1	.	.	.	.	1
Dimethoate	0	.	.	.	.	.	.	.	.	.	0
Lambda-cyhalothrin	7	0	0	.	.	20	1	1	.	.	29
Lambda-cyhalothrin/pirimicarb	38	.	.	.	.	.	.	9	6	.	53
Oxamyl	.	.	.	.	.	93	.	.	.	.	93
Pirimicarb	104	.	1	.	.	10	3	0	1	.	119
Pymetrozine	17	.	.	.	.	.	.	.	.	.	17
Thiacloprid	5	.	.	.	.	.	.	.	.	.	5
Triazamate	0	.	.	.	.	.	.	.	.	.	0
All insecticides	*375*	*0*	*1*	*3*	*1*	*166*	*6*	*10*	*7*	*.*	*569*
Molluscicides											
Methiocarb	10	0	0	0	.	0	1	1	0	0	12
All molluscicides	*10*	*0*	*0*	*0*	*.*	*0*	*1*	*1*	*0*	*0*	*12*

Table 9 (cont.): **Estimated quantities (kilograms) of pesticide formulations used on vegetable crops in Northern Ireland, 2007.**

Pesticide type & formulation	Brassicas	Turnips & swedes	Peas & beans	Leeks	Onions & spring onions	Carrots & parsnip	Parsley	Celery	Lettuce	Other vegetables	Total quantity (kg)
Seed treatments											
Cymoxanil/fludioxonil/metalaxyl-M	.	.	0	.	.	0	.	.	.	.	1
Hymexazol	.	.	.	.	.	.	.	.	.	0	0
Imidacloprid	88	.	.	.	.	.	.	.	2	.	90
Iprodione	.	0	.	.	.	.	.	.	.	.	0
Tefluthrin	.	.	.	1	0	9	.	.	.	.	10
Thiabendazole/thiram	.	.	.	.	0	.	.	.	.	.	0
Thiamethoxam	9	.	.	.	.	.	.	.	.	.	9
Thiram	0	0	0	0	.	.	0	0	.	.	0
All seed treatments	*96*	*0*	*1*	*1*	*0*	*9*	*0*	*0*	*2*	*0*	*110*
All pesticides	*2,691*	*1,159*	*14*	*744*	*391*	*2,978*	*168*	*198*	*119*	*17*	*8,479*

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Table 10: **The fifty active ingredients most extensively used on vegetable crops in Northern Ireland 2007, ranked by treated area (spray hectares).**

	Active ingredient	Treated area (sp ha)
1.	Lambda-cyhalothrin	2946.46
2.	Difenoconazole	1360.60
3.	Linuron	1010.62
4.	Trifluralin	984.04
5.	Azoxystrobin	948.60
6.	Pirimicarb	891.19
7.	Tebuconazole	767.58
8.	Metazachlor	763.09
9.	Pendimethalin	442.48
10.	Chlorothalonil	399.36
11.	Metalaxyl-m	379.90
12.	Propachlor	314.68
13.	Metoxuron	287.97
14.	Ioxynil	257.59
15.	Cycloxydim	214.99
16.	Fenpropimorph	180.67
17.	Prometryn	161.34
18.	Deltamethrin	113.91
19.	Sulphur	108.99
20.	Methiocarb	106.06
21.	Pymetrozine	106.02
22.	Tepraloxydim	96.56
23.	Paraquat	82.85
24.	Chlorpyrifos	74.45
25.	Oxamyl	74.09
26.	Mancozeb	67.75
27.	Pentanochlor	60.51
28.	Glyphosate	59.48
29.	Propaquizafop	59.32
30.	Cyanazine	57.30
31.	Thiacloprid	57.19
32.	Chlorpropham	54.74
33.	Fosetyl-aluminium	52.38
34.	Pyraclostrobin	49.88
35.	Boscalid	49.88
36.	Iprodione	47.12
37.	Carbosulfan	45.96
38.	Cypermethrin	33.83
39.	Dimethomorph	32.25
40.	Propamocarb hydrochloride	31.27
41.	Cyproconazole	30.10
42.	Tolclofos-methyl	28.38
43.	Propyzamide	24.27
44.	Diquat	17.99
45.	Cyprodinil	10.75
45.	Copper oxychloride	10.75
45.	Fludioxonil	10.75
46.	Triazamate	8.60
47.	Phenmedipham	5.95
48.	Trifloxystrobin	5.16

Table 11: **The fifty active ingredients most extensively used on vegetable crops in Northern Ireland 2007 ranked by weight (kilograms).**

	Active ingredient	Quantity applied (kg)
1.	Propachlor	1293.58
2.	Chlorpyrifos	1219.78
3.	Trifluralin	982.01
4.	Linuron	882.71
5.	Metoxuron	653.15
6.	Sulphur	610.35
7.	Pendimethalin	596.75
8.	Metazachlor	553.69
9.	Chlorothalonil	397.77
10.	Cycloxydim	212.50
11.	Azoxystrobin	210.43
12.	Tebuconazole	174.78
13.	Pirimicarb	167.10
14.	Fosetyl-aluminium	154.42
15.	Prometryn	144.30
16.	Fenpropimorph	135.40
17.	Difenoconazole	121.57
18.	Oxamyl	92.61
19.	Pentanochlor	89.56
20.	Metalaxyl-m	88.55
21.	Mancozeb	86.02
22.	Ioxynil	82.19
23.	Glyphosate	73.27
24.	Carbosulfan	50.88
25.	Cyanazine	41.39
26.	Paraquat	39.87
27.	Propyzamide	33.98
28.	Lambda-cyhalothrin	33.58
29.	Iprodione	27.52
30.	Pymetrozine	17.40
31.	Chlorpropham	16.28
32.	Boscalid	13.32
33.	Methiocarb	12.19
34.	Propamocarb hydrochloride	11.46
35.	Copper oxychloride	10.75
36.	Tepraloxydim	7.12
37.	Metamitron	5.55
38.	Thiacloprid	5.49
39.	Dimethomorph	5.16
40.	Propaquizafop	4.97
41.	Cyprodinil	4.03
42.	Diquat	4.00
43.	Chlorthal-Dimethyl	3.54
44.	Pyraclostrobin	3.34
45.	Phenmedipham	2.97
46.	Fludioxonil	2.69
47.	Cyproconazole	1.79
48.	Ethofumesate	1.06
49.	Simazine	0.92
50.	Cypermethrin	0.91

Table 12: Brussels sprouts: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.

Pesticide type and formulation	Mildew	General disease control	White blister	Altenaria	Propagation general disease	Propagation mildew	Ringspot	Leafspot	Propagation damping off	General weed control	Ground preparation	Pre-emergence	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides															
Azoxystrobin	.	4.9	4.3	6.4	.	.	4.3	29.7	.	.	.	.	49.6	28.3	11.9
Boscalid/pyraclostrobin	.	12.9	.	.	.	.	.	.	.	.	.	.	12.9	6.4	4.3
Carbendazim/flusilazole	.	0.9	.	.	.	.	.	.	.	.	.	.	0.9	0.5	0
Chlorothalonil	.	12.9	.	.	1.2	.	.	11	.	.	.	.	25.1	12.4	34.1
Chlorothalonil/metalaxyl-M	.	8.6	21.8	.	0.6	.	.	.	.	.	.	.	31	15.8	33.3
Difenoconazole	.	19.3	.	.	.	.	5.2	105.7	.	.	.	.	130.2	40.6	8.5
Fenpropimorph	.	2.8	.	.	.	.	.	.	.	.	.	.	2.8	0.9	2.1
Fosetyl-aluminium	.	.	.	.	.	2.3	.	.	.	.	.	.	2.3	0.6	27.5
Iprodione	.	.	.	.	1.7	.	.	.	.	.	.	.	1.7	0.6	0.9
Propamocarb hydrochloride	.	.	.	.	.	0.6	.	.	6.4	.	.	.	7	7	2.3
Tebuconazole	4.3	1.9	.	.	.	.	0.4	21.5	.	.	.	.	28.1	16.4	3.6
Tebuconazole/trifloxystrobin	.	.	.	.	.	.	.	4.3	.	.	.	.	4.3	4.3	1.3
Tolclofos-Methyl	.	.	.	.	.	.	.	.	6.4	.	.	.	6.4	6.4	0
All fungicides	*4.3*	*64.3*	*26.1*	*6.4*	*3.5*	*2.9*	*9.9*	*172.2*	*12.9*				*302.5*	*140.2*	*129.9*
Herbicides & desiccants															
Cyanazine	.	.	.	.	.	.	.	.	.	10.7	.	.	10.7	10.7	2.7
Diquat/paraquat	.	.	.	.	.	.	.	.	.	.	1.7	.	1.7	1.7	1.4
Metazachlor	.	.	.	.	.	.	.	.	.	10.4	.	27.1	37.5	37.5	25.9
Propachlor	.	.	.	.	.	.	.	.	.	1.1	.	18.2	19.3	19.3	61.3
Trifluralin	.	.	.	.	.	.	.	.	.	.	.	28.7	28.7	28.7	32.2
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*22.2*	*1.7*	*74.1*	*98*	*98*	*123.4*

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Table 12 (cont.): **Brussels sprouts: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	Aphids	Cabbage root fly	Caterpillars	General insect control	Propagation cabbage root fly	Propagation general insect	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total Quantity applied (kgs)
Insecticides										
Carbosulfan	.	.	.	0.4	.	.	.	0.4	0.4	0.5
Chlorpyrifos	0.2	0.8	.	.	0.6	6.4	.	8	8	35.6
Cypermethrin	0.2	.	2.8	.	.	.	.	3	1.5	0.1
Dimethoate	1.1	.	.	.	.	.	.	1.1	1.1	0.4
Lambda-cyhalothrin	2.4	.	45.2	.	.	.	.	47.6	21.2	0.5
Lambda-cyhalothrin/pirimicarb	57.9	.	.	.	.	.	.	57.9	21.7	11
Pirimicarb	58.9	.	.	.	.	.	.	58.9	13.7	12
Pymetrozine	44	.	.	.	.	.	.	44	19.5	7.6
Thiacloprid	27.9	.	.	.	.	.	.	27.9	15	2.7
Triazamate	8.6	.	.	.	.	.	.	8.6	4.3	0.5
All insecticides	*201.2*	*0.8*	*48*	*0.4*	*0.6*	*6.4*	*.*	*257.4*	*106.5*	*70.9*
Molluscicides										
Methiocarb	.	.	.	.	.	.	32.5	32.5	32.5	4.4
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*32.5*	*32.5*	*32.5*	*4.4*

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Table 13: **Spring cabbage: pesticide treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General disease control	White blister	Altenaria	Ringspot	Leafspot	Propagation damping off	General weed control	Ground preparation	Pre-emergence weeds	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides												
Azoxystrobin	0.9	.	8.6	2.8	13.8	.	.	.	.	26.1	17	6.2
Boscalid/pyraclostrobin	3.4	.	.	.	.	.	.	.	.	3.4	3.4	1.1
Carbendazim/flusilazole	0.9	.	.	.	.	.	.	.	.	0.9	0.5	0
Chlorothalonil	10.7	.	.	.	.	.	.	.	.	10.7	7.3	14.4
Chlorothalonil/metalaxyl-M	.	.	3.9	.	.	.	.	.	.	3.9	3.9	4.2
Difenoconazole	15.9	11.6	.	28.4	13.3	.	.	.	.	69.2	22.7	5
Propamocarb hydrochloride	.	.	.	.	.	3.4	.	.	.	3.4	3.4	0.1
Tolclofos-Methyl	.	.	.	.	.	3.4	.	.	.	3.4	3.4	0
All fungicides	*32*	*11.6*	*12.5*	*31.2*	*27*	*6.9*	*.*	*.*	*.*	*121.1*	*61.7*	*31.1*
Herbicides & desiccants												
Cyanazine	.	.	.	.	.	.	1.7	.	.	1.7	1.7	1.7
Glyphosate	.	.	.	.	.	.	.	0.1	.	0.1	0.1	0.1
Metazachlor	.	.	.	.	.	.	9.2	.	41.7	50.9	50.9	36.6
Paraquat	.	.	.	.	.	.	.	0.8	.	0.8	0.8	0.9
Propachlor	.	.	.	.	.	.	5	.	6.1	11	8.9	36.9
Trifluralin	.	.	.	.	.	.	.	.	52.5	52.5	50.8	44.1
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*.*	*15.8*	*0.9*	*100.3*	*117*	*113.2*	*120.4*

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Table 13 (cont.): **Spring cabbage: pesticide treated area (spray hectares), basic area treated (hectares), quantities used (kilograms), and reasons for use.**

Pesticide type and formulation	Aphids	Cabbage rootfly	Caterpillars	Propagation general insect	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides								
Carbosulfan	.	0.6	.	.	.	0.6	0.6	0.5
Chlorpyrifos	0.2	.		3.4	.	3.6	3.5	0.4
Cypermethrin	1.4	.	0.6	.	.	1.9	1.4	0
Deltamethrin	.	.	3.9	.	.	3.9	3.9	0
Lambda-cyhalothrin	37.4	.	34.5	.	.	71.9	48.6	0.6
Lambda-cyhalothrin/pirimicarb	13.8	.	3.9	.	.	17.6	7.3	2.9
Pirimicarb	23.7	.	.	.	.	23.7	15.1	5.3
Pymetrozine	3.4	.	.	.	.	3.4	3.4	0.5
All insecticides	*79.9*	*0.6*	*42.8*	*3.4*	*.*	*126.7*	*83.8*	*10.3*
Molluscicides								
Methiocarb	.	.	.	.	7.5	7.5	7.5	0.9
All molluscicides	*.*	*.*	*.*	*.*	*7.5*	*7.5*	*7.5*	*0.9*

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Table 14: Summer cabbage: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.

Pesticide type and formulation	General disease control	White blister	Ringspot	Leafspot	Propagation damping off	Propagation general disease	Propagation mildew	General weed control	Ground preparation	Pre-emergence weeds	Cabbage rootfly	Aphids	Caterpillars	Propagation general insect	Propagation cabbage rootfly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	quantity applied (kgs)
Fungicides																			
Azoxystrobin	.	.	.	2.7	.	.	.	.	.	.	.	.	.	.	.	.	2.7	2.7	0.7
Boscalid/ pyraclostrobin	1.3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.3	1.3	0.4
Chlorothalonil	3.6	.	.	.	.	1.2	.	.	.	.	.	.	.	.	.	.	4.8	2.4	6.2
Chlorothalonil/ metalaxyl-M	.	3.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3.4	1.7	3.7
Difenoconazole	3.9	.	5.2	5.5	.	.	.	.	.	.	.	.	.	.	.	.	14.5	5.1	1.1
Fosetyl-aluminium	.	.	.	.	.	.	2.3	.	.	.	.	.	.	.	.	.	2.3	0.6	27.5
Propamocarb hydrochloride	.	.	.	.	1.3	.	0.6	.	.	.	.	.	.	.	.	.	1.9	1.9	2.1
Tolclofos-methyl	.	.	.	.	1.3	.	.	.	.	.	.	.	.	.	.	.	1.3	1.3	0
All fungicides	*8.8*	*3.4*	*5.2*	*8.2*	*2.6*	*1.2*	*2.9*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*32.2*	*17*	*41.8*
Herbicides & desiccants																			
Glyphosate	.	.	.	.	.	.	.	.	1.7	.	.	.	.	.	.	.	1.7	1.7	1.9
Metazachlor	.	.	.	.	.	.	.	2.5	.	2.7	.	.	.	.	.	.	5.2	5.2	3.9
Propachlor	.	.	.	.	.	.	.	1.7	.	1.3	.	.	.	.	.	.	3	3	13.8
Trifluralin	.	.	.	.	.	.	.	.	.	7.7	.	.	.	.	.	.	7.7	7.7	8.8
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*4.2*	*1.7*	*11.7*	*.*	*.*	*.*	*.*	*.*	*.*	*17.6*	*17.6*	*28.4*

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Table 14 (contd.): **Summer cabbage: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General disease control	White blister	Ringspot	Leafspot	Propagation damping off	Propagation general disease	Propagation mildew	General weed control	Ground preparation	Pre-emergence weeds	Cabbage rootfly	Aphids	Caterpillars	Propagation general insect	Propagation cabbage rootfly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	quantity applied (kgs)
Insecticides																			
Carbosulfan	.	.	.	.	.	.	.	.	.	.	0.2	.	.	.	.	.	0.2	0.2	0.2
Chlorpyrifos	.	.	.	.	.	.	.	.	.	.	.	0.5	.	1.3	2.3	.	4.1	4.1	36.5
Cypermethrin	.	.	.	.	.	.	.	.	.	.	.	0.2	0.2	.	.	.	0.5	0.2	0
Deltamethrin	.	.	.	.	.	.	.	.	.	.	.	0.4	.	.	.	.	0.4	0.2	0
Lambda-cyhalothrin	.	.	.	.	.	.	.	.	.	.	.	.	9	.	.	.	9	4.4	0.1
Lambda-cyhalothrin/ pirimicarb	.	.	.	.	.	.	.	.	.	.	.	6.6	.	.	.	.	6.6	2.7	1.1
Pirimicarb	.	.	.	.	.	.	.	.	.	.	.	5.5	.	.	.	.	5.5	2.7	0.9
Pymetrozine	.	.	.	.	.	.	.	.	.	.	.	1.3	.	.	.	.	1.3	1.3	0.2
All insecticides	.	.	.	.	.	.	.	.	.	.	*0.2*	*14.6*	*9.2*	*1.3*	*2.3*	.	*27.6*	*15.9*	*39.1*
Molluscicides																			
Methiocarb	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0.4	0.4	0.4	0
All molluscicides	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	*0.4*	*0.4*	*0.4*	*0*

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Table 15: **Winter cabbage: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General disease control	Ringspot	Leafspot	Propagation damping off	General weed control	Pre-emergence weeds	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides									
Azoxystrobin	.	.	6.4	.	.	.	6.4	6.4	1.6
Boscalid/pyraclostrobin	8.6	.	.	.	.	.	8.6	4.3	2.9
Chlorothalonil	8.6	.	.	.	.	.	8.6	4.3	10.7
Difenoconazole	12.9	13.8	21.1	.	.	.	47.7	13.3	3.7
Propamocarb hydrochloride	.	.	.	4.3	.	.	4.3	4.3	0.2
Tolclofos-methyl	.	.	.	4.3	.	.	4.3	4.3	0
All fungicides	*30.1*	*13.8*	*27.5*	*8.6*	*.*	*.*	*80*	*37*	*19.1*
Herbicides & desiccants									
Cyanazine	.	.	.	.	2.1	.	2.1	2.1	2.1
Metazachlor	.	.	.	.	3.4	9.9	13.3	13.3	9.8
Propachlor	.	.	.	.	.	4.4	4.4	4.4	10.4
Trifluralin	.	.	.	.	.	11.9	11.9	11.9	13.2
All herbicides & desiccants	*.*	*.*	*.*	*.*	*5.6*	*26.2*	*31.8*	*31.8*	*35.5*

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Table 15 (cont.): **Winter cabbage: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	Aphids	Caterpillars	Propagation general insect	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides							
Chlorpyrifos	.	.	4.3	.	4.3	4.3	0.7
Cypermethrin	.	6.9	.	.	6.9	3.4	0.2
Deltamethrin	.	1.3	.	.	1.3	0.7	0
Lambda-cyhalothrin	6.4	4.3	.	.	10.7	6.4	0.1
Lambda-cyhalothrin/pirimicarb	24.1	.	.	.	24.1	7.7	4.1
Pirimicarb	20.2	.	.	.	20.2	9.9	4.2
Pymetrozine	18.9	.	.	.	18.9	7.7	3
All insecticides	*69.7*	*12.5*	*4.3*	*.*	*86.4*	*40.3*	*12.4*
Molluscicides							
Methiocarb	.	.	.	0.9	0.9	0.9	0.1
All mollusicides	*.*	*.*	*.*	*0.9*	*0.9*	*0.9*	*0.1*

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Table 16: **Savoys: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General disease control	White blister	Altenaria	Ringspot	Leafspot	Propagation general disease	Propagation mildew	Propagation damping off	General weed control	Ground preparation	Pre-emergence weeds	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides														
Azoxystrobin	5.7	.	24.9	3.3	35.6	.	.	.	.	.	.	69.5	49.5	16.8
Boscalid/ pyraclostrobin	15.5	.	.	.	.	.	.	.	.	.	.	15.5	7.7	5.2
Carbendazim/ flusilazole	0.9	.	.	.	.	.	.	.	.	.	.	0.9	0.5	0
Chlorothalonil	21.6	.	.	2.1	.	1.2	.	.	.	.	.	24.9	16.3	31
Chlorothalonil/ metalaxyl-M	.	15.5	5.6	.	.	.	.	.	.	.	.	21.1	13.3	22.7
Difenoconazole	59.6	16.8	.	35.5	144.6	.	.	.	.	.	.	256.5	105.9	19.3
Fenpropimorph	0.7	.	.	.	.	.	.	.	.	.	.	0.7	0.2	0.5
Fosetyl-aluminium	.	.	.	.	.	.	2.3	.	.	.	.	2.3	0.6	27.5
Propamocarb hydrochloride	.	.	.	.	.	.	0.6	7.7	.	.	.	8.3	8.3	2.4
Tebuconazole	0.5	.	.	1.3	1.7	.	.	.	.	.	.	3.5	2.4	0.7
Tolclofos-methyl	.	.	.	.	.	.	.	7.7	.	.		7.7	7.7	0
All fungicides	*104.4*	*32.2*	*30.5*	*42.2*	*182*	*1.2*	*2.9*	*15.5*	*.*	*.*	*.*	*410.9*	*212.5*	*126.1*
Herbicides & desiccants														
Cyanazine	.	.	.	.	.	.	.	.	13.3	.	.	13.3	13.3	10.5
Diquat/paraquat	.	.	.	.	.	.	.	.	.	0.9	.	0.9	0.9	0.7
Glyphosate	.	.	.	.	.	.	.	.	.	8.8	.	8.8	8.8	9
Metazachlor	.	.	.	.	.	.	.	.	35.5	.	98.8	134.3	134.3	98.7
Pendimethalin	.	.	.	.	.	.	.	.	.	.	2.1	2.1	2.1	2.6
Propachlor	.	.	.	.	.	.	.	.	13.1	.	12.1	25.2	25.2	121.7
Trifluralin	.	.	.	.	.	.	.	.	.	.	139.3	139.3	139.3	141.2
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*62*	*9.6*	*252.4*	*324*	*324*	*384.4*

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Table 16 (cont.): **Savoys: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	Aphids	Cabbage root fly	Caterpillars	General insect control	Propagation cabbage rootfly	Propagation general insect	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides										
Carbosulfan	.	0.5	.	1.3	.	.	.	1.8	1.8	1.9
Chlorpyrifos	0.5	.	1	2.6	8.3	7.7	.	20.2	19.6	42.9
Cypermethrin	0.2	.	5.1	.	.	.	.	5.3	2.7	0.1
Deltamethrin	0.4	.	7.9	.	.	.	.	8.3	6.9	0.1
Lambda-cyhalothrin	32.1	.	117.4	32.2	.	.	.	181.7	95.7	1.6
Lambda-cyhalothrin/pirimicarb	45.4	.	6.5	.	.	.	.	52	24.2	9.3
Pirimicarb	146.5	.	.	.	.	.	.	146.5	89.3	31
Pymetrozine	27.1	.	.	3.1	.	.	.	30.2	14.7	4.9
Thiacloprid	15.5	.	.	.	.	.	.	15.5	7.7	1.5
All insecticides	*267.7*	*0.5*	*137.9*	*39.2*	*8.3*	*7.7*	*.*	*461.4*	*262.6*	*93.3*
Molluscicides										
Methiocarb	.	.	.	.	.	.	11.3	11.3	11.3	1.3
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*11.3*	*11.3*	*11.3*	*1.3*

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Table 17: Hard cabbage: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.

Pesticide type & formulation	General weed control	Aphids	Cabbage rootfly	General disease control	Caterpillars	Slugs	Ground preparation	White blister	General insect control	Altenaria	Propagation cabbage rootfly	Ringspot	Leafspot	Pre-emergence weeds	Total area treated (sp ha)	Basic area (ha) of treatment	Quantity (kgs)
Fungicides																	
Azoxystrobin	.	.	.	2	.	.	.	0.2	.	3.4	.	5.6	22.8	.	34.1	30	8.1
Carbendazim/ flusilazole	.	.	.	0.9	.	.	.	.	.	.	.	.	.	.	0.9	0.5	0
Chlorothalonil/ metalaxyl-M	.	.	.	0.4	.	.	.	15.5	.	.	.	.	.	.	15.9	8	17.1
Difenoconazole	.	.	.	6.5	.	.	.	.	.	.	.	24.1	46.6	.	77.2	31.3	5.4
Tebuconazole	.	.	.	.	.	.	.	.	.	.	.	5.6	1.3	.	6.9	6.2	1.6
All fungicides	*.*	*.*	*.*	*9.9*	*.*	*.*	*.*	*15.7*	*.*	*3.4*	*.*	*35.3*	*70.7*	*.*	*135*	*75.9*	*32.2*
Herbicides & desiccants																	
Cyanazine	10.7	.	.	.	.	.	.	.	.	.	.	.	.	.	10.7	10.7	10.7
Diquat/paraquat	.	.	.	.	.	.	0.9	.	.	.	.	.	.	.	0.9	0.9	0.7
Glyphosate	.	.	.	.	.	.	7.7	.	.	.	.	.	.	.	7.7	7.7	8.4
Metazachlor	14.2	.	.	.	.	.	.	.	.	.	.	.	.	64.7	78.9	78.9	57.5
Propachlor	12.1	.	.	.	.	.	.	.	.	.	.	.	.	2.9	15	15	88.5
Trifluralin	.	.	.	.	.	.	.	.	.	.	.	.	.	74.7	74.7	74.7	69.1
All herbicides & desiccants	*37.1*	*.*	*.*	*.*	*.*	*.*	*8.6*	*.*	*.*	*.*	*.*	*.*	*.*	*142.3*	*187.9*	*187.9*	*235*

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Table 17 (contd.): **Hard cabbage: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General weed control	Aphids	Cabbage rootfly	General disease control	Caterpillars	Slugs	Ground preparation	White blister	General insect control	Altenaria	Propagation cabbage rootfly	Ringspot	Leafspot	Pre-emergence weeds	Total area treated (sp ha)	Basic area (ha) of treatment	Quantity (kgs)
Insecticides																	
Carbosulfan	.	.	0	.	.	.	.	.	1.3	.	.	.	.	.	1.3	1.3	1.5
Chlorpyrifos	.	.	.	.	0	.	.	.	0.1	.	7.7	.	.	.	7.9	7.9	5.2
Cypermethrin	.	0.2	.	.	2.8	.	.	.	.	.	.	.	.	.	3.1	1.5	0.1
Lambda-cyhalothrin	.	33.1	.	.	51.9	.	.	.	32.2	.	.	.	.	.	117.2	64.5	1.1
Lambda-cyhalothrin/ pirimicarb	.	7.4	.	.	.	.	.	.	.	.	.	.	.	.	7.4	6.9	1.6
Pirimicarb	.	45.6	.	.	.	.	.	.	.	.	.	.	.	.	45.6	26.6	8.8
Thiacloprid	.	8.6	.	.	.	.	.	.	.	.	.	.	.	.	8.6	4.3	0.8
All insecticides	*.*	*94.9*	*0*	*.*	*54.7*	*.*	*.*	*.*	*33.7*	*.*	*7.7*	*.*	*.*	*.*	*191.1*	*113.2*	*19.1*
Molluscicides																	
Methiocarb	.	.	.	.	.	2.7	.	.	.	.	.	.	.	.	2.7	2.7	0.3
All molluscicides	*.*	*.*	*.*	*.*	*.*	*2.7*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*2.7*	*2.7*	*0.3*

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Table 18: **Calabrese: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General disease control	Mildew	White blister	Altenaria	Ringspot	Leafspot	Propagation general disease	Propagation mildew	General weed control	Pre-emergence weeds	Ground preparation	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides														
Azoxystrobin	0.9	.	.	.	.	7.3	.	.	.	.	.	8.2	7.8	2.1
Carbendazim/flusilazole	0.9	.	.	.	.	.	.	.	.	.	.	0.9	0.5	0
Chlorothalonil	5.4	4.3	.	.	.	.	1.2	.	.	.	.	10.8	10.3	11.7
Chlorothalonil/metalaxyl-M	.	.	8.6	5.4	1.4	.	0.6	.	.	.	.	16	16	16.4
Difenoconazole	0.4	.	17.1	.	.	58.4	.	.	.	.	.	75.9	38.9	4.4
Fosetyl-aluminium	.	.	.	.	.	.	.	2.3	.	.	.	2.3	0.6	27.5
Iprodione	.	.	.	.	.	.	1.7	.	.	.	.	1.7	0.6	0.9
Propamocarb hydrochloride	.	.	.	.	.	.	.	0.6	.	.	.	0.6	0.6	2.1
Tebuconazole	0.9	.	.	.	1.7	17.2	.	.	.	.	.	19.9	11.3	2.8
All fungicides	*8.6*	*4.3*	*25.7*	*5.4*	*3.1*	*82.9*	*3.5*	*2.9*	*.*	*.*	*.*	*136.3*	*86.3*	*67.8*
Herbicides & desiccants														
Cyanazine	.	.	.	.	.	.	.	.	3.7	.	.	3.7	3.7	3.7
Glyphosate	.	.	.	.	.	.	.	.	.	.	2.1	2.1	2.1	2.3
Metazachlor	.	.	.	.	.	.	.	.	23.7	121.9	.	145.5	144.1	106.3
Pendimethalin	.	.	.	.	.	.	.	.	.	4.3	.	4.3	4.3	5.2
Propachlor	.	.	.	.	.	.	.	.	2.1	13	.	15.1	15.1	63.9
Trifluralin	.	.	.	.	.	.	.	.	.	137.7	.	137.7	137.7	146.3
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*29.6*	*276.9*	*2.1*	*308.6*	*307.2*	*327.7*

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Table 18 (cont.): **Calabrese: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General insect control	Aphids	Caterpillars	Propagation cabbage root fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides								
Carbosulfan	1.7	.	.	.	.	1.7	1.7	1.9
Chlorpyrifos	0.4	.	.	0.6	.	1	1	34.7
Cypermethrin	.	1.2	0.5	.	.	1.7	1.4	0
Deltamethrin	.	.	5.4	.	.	5.4	5.4	0
Lambda-cyhalothrin	.	7.1	82.2	.	.	89.3	39.8	0.9
Lambda-cyhalothrin/pirimicarb	.	5.6	5.6	.	.	11.2	11.2	2.5
Pirimicarb	.	64.2	.	.	.	64.2	28.5	12.6
All insecticides	*2.1*	*78.1*	*93.7*	*0.6*	*.*	*174.5*	*89*	*52.6*
Molluscicides								
Methiocarb	.	.	.	.	11.6	11.6	11.6	1.1
All molluscicides	*.*	*.*	*.*	*.*	*11.6*	*11.6*	*11.6*	*1.1*

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Table 19: Cauliflower: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.

Pesticide type & formulation	General disease control	White blister	Mildew	Altenaria	Ringspot	Leafspot	Propagation general disease	Propagation mildew	Propagation damping off	General weed control	Ground preparation	Pre-emergence weeds	Total area treated (sp ha)	Basic area treated (ha)	Total quantity used (kgs)
Fungicides															
Azoxystrobin	1.6	8.6	.	39.6	8.6	48.7	.	.	.	.	.	.	107.1	64.1	26.8
Boscalid/pyraclostrobin	8.2	.	.	.	.	.	.	.	.	.	.	.	8.2	4.1	2.7
Chlorothalonil	15.6	.	5.2	.	.	.	1.2	.	.	.	.	.	21.9	14.6	24.9
Chlorothalonil/ metalaxyl-M	17.2	17.2	.	2.1	.	.	0.6	.	.	.	.	.	37.1	19.9	39.9
Difenoconazole	15.5	6.4	.	.	1	100.9	.	.	.	.	.	.	123.9	43.1	8
Fosetyl-aluminium	.	.	.	.	.	.	.	2.3	.	.	.	.	2.3	0.6	27.5
Iprodione	.	.	.	.	.	.	1.7	.	.	.	.	.	1.7	0.6	0.9
Propamocarb hydrochloride	.	.	.	.	.	.	.	0.6	5.2	.	.	.	5.7	5.7	2.3
Tebuconazole	.	.	25.8	.	1.7	17.2	.	.	.	.	.	.	44.7	18.9	4.5
Tebuconazole/ trifloxystrobin	.	.	.	.	.	0.9	.	.	.	.	.	.	0.9	0.9	0.3
Tolclofos-Methyl	.	.	.	.	.	.	.	.	5.2	.	.	.	5.2	5.2	0
All fungicides	*58.1*	*32.2*	*31*	*41.7*	*11.4*	*167.7*	*3.5*	*2.9*	*10.3*	*.*	*.*	*.*	*358.7*	*177.6*	*137.8*
Herbicides & desiccants															
Cyanazine	.	.	.	.	.	.	.	.	.	10.7	.	.	10.7	10.7	7.5
Glyphosate	.	.	.	.	.	.	.	.	.	.	3.4	.	3.4	3.4	3.7
Metazachlor	.	.	.	.	.	.	.	.	.	60.2	.	106.3	166.5	161.4	116.9
Pendimethalin	.	.	.	.	.	.	.	.	.	.	.	5.2	5.2	5.2	6.2
Propachlor	.	.	.	.	.	.	.	.	.	5	.	16.6	21.7	21.7	84.1
Trifluralin	.	.	.	.	.	.	.	.	.	.	.	154.3	154.3	154.3	149.9
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*76*	*3.4*	*282.5*	*361.9*	*356.8*	*368.4*

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Table 19 (cont.): **Cauliflower: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General insect control	Aphids	Cabbage root fly	Flea beetle	Caterpillars	Propagation general insect	Propagation cabbage root fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides											
Carbosulfan	1.7	.	0.2	.	.	.	.	.	2	2	2.1
Chlorpyrifos	7	1.6	.	.	.	5.2	0.6	.	14.3	14.3	36.5
Cypermethrin	.	0.2	.	.	8	.	.	.	8.2	6.7	0.2
Deltamethrin	.	0.4	.	.	3.4	.	.	.	3.8	3	0
Lambda-cyhalothrin	32.2	42	.	5.6	164.9	.	.	.	244.8	117.8	2.1
Lambda-cyhalothrin/pirimicarb	.	31.5	.	.	2.1	.	.	.	33.6	15.8	6
Pirimicarb	.	137.4	.	.	.	.	.	.	137.4	77.1	29
Pymetrozine	.	8.2	.	.	.	.	.	.	8.2	4.1	1.2
Thiacloprid	.	5.2	.	.	.	.	.	.	5.2	2.6	0.5
All insecticides	*41*	*226.4*	*0.2*	*5.6*	*178.5*	*5.2*	*0.6*	*.*	*457.4*	*243.3*	*77.7*
Molluscicides											
Methiocarb	.	.	.	.	.	.	.	21.2	21.2	21.2	2.3
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*21.2*	*21.2*	*21.2*	*2.3*

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Table 20: **Turnips and swedes: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Mildew	General weed control	Pre-emergence weeds	Aphids	Cabbage root fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides										
Azoxystrobin	0.9	.	.	.	.	.	.	0.9	0.5	0.1
Fenpropimorph	1.4	.	.	.	.	.	.	1.4	0.5	1.1
Sulphur	109	.	.	.	.	.	.	109	54.5	610.4
Tebuconazole	0.9	3.3	.	.	.	.	.	4.2	3.7	0.8
All fungicides	*112.3*	*3.3*	*.*	*.*	*.*	*.*	*.*	*115.5*	*59.2*	*612.3*
Herbicides & desiccants										
Clopyralid	.	.	3.4	.	.	.	.	3.4	3.4	0.7
Linuron	.	.	.	0.8	.	.	.	0.8	0.8	0.7
Metazachlor	.	.	27.8	102.8	.	.	.	130.6	130.6	97.9
Paraquat	.	.	0.1	.	.	.	.	0.1	0.1	0
Propachlor	.	.	.	45.5	.	.	.	45.5	45.5	203.1
Trifluralin	.	.	.	212.5	.	.	.	212.5	212.5	243.5
All herbicides & desiccants	*.*	*.*	*31.3*	*361.5*	*.*	*.*	*.*	*392.9*	*392.9*	*546*
Insecticides										
Carbosulfan	.	.	.	.	.	0.3	.	0.3	0.3	0.2
Lambda-cyhalothrin	.	.	.	.	5.6	.	.	5.6	1.5	0.1
All insecticides	*.*	*.*	*.*	*.*	*5.6*	*0.3*	*.*	*5.9*	*1.7*	*0.3*
Molluscicides										
Methiocarb	.	.	.	.	.	.	0.1	0.1	0.1	0
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*0.1*	*0.1*	*0.1*	*0*

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Table 21: **Beans: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General weed control	Aphids	Chocolate spot	Ground preparation	Pre-emergence weeds	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides									
Azoxystrobin	.	.	0.9	.	.	.	0.9	0.4	0.2
Chlorothalonil	.	.	1.1	.	.	.	1.1	0.6	0.6
Chlorothalonil/metalaxyl-M	.	.	3.9	.	.	.	3.9	1.3	4.2
Mancozeb	.	.	0.1	.	.	.	0.1	0.1	0.1
Tebuconazole	.	.	0.7	.	.	.	0.7	0.7	0.2
Unknown fungicide	.	.	0.9	.	.	.	0.9	0.9	.
All fungicides	*.*	*.*	*7.6*	*.*	*.*	*.*	*7.6*	*4*	*5.3*
Herbicides & desiccants									
Cyanazine	0.1	.	.	.	.	.	0.1	0.1	0.1
Paraquat	0.1	.	.	1.3	.	.	1.4	1.4	1.5
Pendimethalin	0.4	.	.	.	.	.	0.4	0.4	0.3
Prometryn	.	.	.	.	0.9	.	0.9	0.9	0.9
Simazine	.	.	.	0.3	.	.	0.3	0.3	0.2
Terbuthylazine/terbutryn	0.5	.	.	.	0.1	.	0.6	0.6	1.1
Trifluralin	.	.	.	.	0.3	.	0.3	0.3	0.3
All herbicides & desiccants	*1.1*	*.*	*.*	*1.6*	*1.3*	*.*	*4*	*4*	*4.4*
Insecticides									
Cypermethrin	.	0.4	.	.	.	.	0.4	0.4	0
Pirimicarb	.	1.4	.	.	.	.	1.4	1.4	0.3
All insecticides	*.*	*1.8*	*.*	*.*	*.*	*.*	*1.8*	*1.8*	*0.3*

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Table 21 (contd.): **Beans: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General weed control	Aphids	Chocolate spot	Ground preparation	Pre-emergence weeds	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Molluscicides									
Methiocarb	.	.	.	.	.	0	0	0	0
All molluscicides	*.*	*.*	*.*	*.*	*.*	*0*	*0*	*0*	*0*

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Table 22: **Peas: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	General weed control	Ground preparation	Pre-emergence weeds	General insect control	Aphids	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides									
Mancozeb	0.1	.	.	.	.	.	0.1	0.1	0.1
All fungicides	*0.1*	*.*	*.*	*.*	*.*	*.*	*0.1*	*0.1*	*0.1*
Herbicides & desiccants									
Bentazone/MCPB	.	0.1	.	.	.	.	0.1	0.1	0.2
Cyanazine	.	0.1	.	.	.	.	0.1	0.1	0.1
Glyphosate	.	.	0.2	.	.	.	0.2	0.2	0.3
Paraquat	.	0.1	1.3	.	.	.	1.4	1.4	1.4
Prometryn	.	.	.	0.9	.	.	0.9	0.9	0.9
Terbuthylazine/terbutryn	.	0.1	.	.	.	.	0.1	0.1	0.2
All herbicides & desiccants	*.*	*0.4*	*1.5*	*0.9*	*.*	*.*	*2.8*	*2.8*	*3.2*
Insecticides									
Chlorpyrifos	.	.	.	.	0.1	.	0.1	0.1	0.1
Lambda-cyhalothrin	.	.	.	.	1.3	.	1.3	1.3	0
Pirimicarb	.	.	.	.	.	1.4	1.4	1.4	0.3
All insecticides	*.*	*.*	*.*	*.*	*1.4*	*1.4*	*2.8*	*2.8*	*0.4*

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Table 23a: **Table Leeks: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Rust	White tip	Altenaria	Mildew	General weed control	Ground preparation	Fumatory	Pre-emergence weeds	Aphids	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides													
Azoxystrobin	.	56.5	.	.	.	.	.	.	.	.	56.5	30.7	13.5
Chlorothalonil	2.7	25.8	.	.	.	.	.	.	.	.	28.5	10	17
Chlorothalonil/cyproconazole	12.9	.	.	.	.	.	.	.	.	.	12.9	12.9	5.4
Chlorothalonil/metalaxyl-M	.	.	46.1	.	1.3	.	.	.	.	.	47.3	39	47
Cyproconazole	.	15	.	.	.	.	.	.	.	.	15	15	1.2
Difenoconazole	0	0.4	.	.	.	.	.	.	.	.	0.4	0.4	0
Fenpropimorph	.	11.8	.	.	.	.	.	.	.	.	11.8	6.1	9.2
Iprodione	0	.	.	.	.	.	.	.	.	.	0	0	0
Tebuconazole	5.2	147.3	.	12.9	.	.	.	.	.	.	165.4	78.6	41.4
All fungicides	*20.9*	*256.9*	*46.1*	*12.9*	*1.3*	*.*	*.*	*.*	*.*	*.*	*338*	*192.8*	*134.7*
Herbicides & desiccants													
Chlorpropham	.	.	.	.	.	23.6	.	.	.	.	23.6	23.6	0.6
Cyanazine	.	.	.	.	.	3.1	.	.	.	.	3.1	2.3	1.8
Diquat/paraquat	.	.	.	.	.	1.3	2.8	.	.	.	4.1	4.1	2.1
Glyphosate	.	.	.	.	.	2.8	1.2	.	.	.	4	4	3.6
Ioxynil	.	.	.	.	.	199	.	.	0.2	.	199.2	76	71.3
Metazachlor	.	.	.	.	.	.	.	.	0.2	.	0.2	0.2	0.2
Paraquat	.	.	.	.	.	.	2.8	.	1.4	.	4.2	4.2	3.5
Pendimethalin	.	.	.	.	.	15	.	.	36.8	.	51.8	51.8	50.9
Prometryn	.	.	.	.	.	50	.	8.6	1.3	.	59.9	59.9	56.7
Propachlor	.	.	.	.	.	3	.	.	73.4	.	76.4	73.4	352.4
Tepraloxydim	.	.	.	.	.	7.8	.	.	.	.	7.8	7.8	0.6
Trifluralin	.	.	.	.	.	.	.	.	1.4	.	1.4	1.4	1.5
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*305.6*	*6.8*	*8.6*	*114.7*	*.*	*435.7*	*308.6*	*545.1*

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Table 23a (contd.): **Table Leeks: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Rust	White tip	Altenaria	Mildew	General weed control	Ground preparation	Fumatory	Pre-emergence weeds	Aphids	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides													
Chlorpyrifos	.	.	.	.	.	.	.	.	.	2.7	2.7	2.7	2.2
All insecticides	.	.	.	.	.	.	.	.	.	*2.7*	*2.7*	*2.7*	*2.2*

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Table 23b: **Soup Leeks: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General disease control	Rust	White tip	General weed control	Pre-emergence weeds	Aphids	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides										
Azoxystrobin	.	7.6	.	.	.	.	.	7.6	4.4	1.5
Carbendazim/flusilazole	.	0.2	.	.	.	.	.	0.2	0.2	.
Chlorothalonil/cyproconazole	2.1	.	.	.	.	.	.	2.1	2.1	0.9
Chlorothalonil/metalaxyl-M	.	.	7.6	.	.	.	.	7.6	5.1	6.1
Difenoconazole	.	0.7	.	.	.	.	.	0.7	0.7	0.1
Fenpropimorph	.	2.1	.	.	.	.	.	2.1	1.2	1.6
Mancozeb	.	0.3	.	.	.	.	.	0.3	0.3	0.7
Tebuconazole	.	15.8	.	.	.	.	.	15.8	7.4	4.2
All fungicides	*2.1*	*26.6*	*7.6*	*.*	*.*	*.*	*.*	*36.3*	*21.3*	*15*
Herbicides & desiccants										
Chlorpropham	.	.	.	2	.	.	.	2	2	1.2
Diquat/paraquat	.	.	.	1.1	.	.	.	1.1	1.1	0.3
Ioxynil	.	.	.	8.6	.	.	.	8.6	5.1	1.7
Linuron	.	.	.	0.1	0.2	.	.	0.2	0.2	0.1
Pendimethalin	.	.	.	.	4.6	.	.	4.6	4.6	5.1
Prometryn	.	.	.	3	.	.	.	3	3	0.8
Propachlor	.	.	.	.	7.4	.	.	7.4	7.4	36.7
Propaquizafop	.	.	.	0.6	.	.	.	0.6	0.6	0.1
All herbicides & desiccants	*.*	*.*	*.*	*15.4*	*12.1*	*.*	*.*	*27.5*	*24*	*46*
Insecticides										
Chlorpyrifos	.	.	.	.	.	1.1	.	1.1	1.1	0.5
All insecticides	*.*	*.*	*.*	*.*	*.*	*1.1*	*.*	*1.1*	*1.1*	*0.5*

Table 23b (contd.): **Soup Leeks: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type and formulation	General disease control	Rust	White tip	General weed control	Pre-emergence weeds	Aphids	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Molluscicides										
Methiocarb	.	.	.	.	.	.	0.1	0.1	0.1	0
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*0.1*	*0.1*	*0.1*	*0*

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Table 24: **Onions: pesticide treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Botrytis	General weed control	Pre-emergence weeds	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides							
Azoxystrobin	.	21.5	.	.	21.5	10.7	4.3
Chlorothalonil	.	32.2	.	.	32.2	10.7	32.2
Chlorothalonil/metalaxyl-M	.	21.5	.	.	21.5	10.7	23.1
Copper oxychloride	10.7	.	.	.	10.7	10.7	10.7
Dimethomorph/mancozeb	.	32.2	.	.	32.2	10.7	48.4
All fungicides	*10.7*	*107.5*	*.*	*.*	*118.2*	*53.7*	*118.8*
Herbicides & desiccants							
Pendimethalin	.	.	.	10.7	10.7	10.7	10.7
Propachlor	.	.	.	10.7	10.7	10.7	49
Tepraloxydim	.	.	10.7	.	10.7	10.7	0.8
All herbicides & desiccants	*.*	*.*	*10.7*	*21.5*	*32.2*	*32.2*	*60.6*

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Table 25: **Spring onions: pesticide treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Mildew	Botrytis	General weed control	Ground preparation	Fumatory	Pre-emergence weeds	Aphids	Total area treated (sp ha)	Basic area treated (sp ha)	Total quantity applied (kgs)
Fungicides											
Azoxystrobin	.	2.9	.	.	.	.	.	.	2.9	2.9	0.7
Chlorothalonil/metalaxyl-M	1	2.5	.	.	.	.	.	.	3.5	2.8	3.2
Difenoconazole	.	2.1	.	.	.	.	.	.	2.1	2.1	0.1
Iprodione	.	.	3.2	.	.	.	.	.	3.2	2.7	1.7
Mancozeb	.	0.5	.	.	.	.	.	.	0.5	0.5	0.8
Tebuconazole	.	1.4	.	.	.	.	.	.	1.4	1.4	0.7
All fungicides	*1*	*9.5*	*3.2*	*.*	*.*	*.*	*.*	*.*	*13.8*	*12.6*	*7.2*
Herbicides & dessicants											
Chlorpropham	.	.	.	13.2	.	.	.	.	13.2	13.2	1.9
Chlorthal-dimethyl	.	.	.	.	.	.	0.5	.	0.5	0.5	3.5
Diquat/paraquat	.	.	.	2.5	.	.	.	.	2.5	2.5	1.1
Ioxynil	.	.	.	49.8	.	.	.	.	49.8	18.1	9.2
Paraquat	.	.	.	.	0.5	.	1.7	.	2.2	2.2	0.6
Pendimethalin	.	.	.	0.5	.	.	23.3	.	23.8	23.8	21.1
Prometryn	.	.	.	.	.	10.7	.	.	10.7	10.7	13.3
Propachlor	.	.	.	.	.	.	39.4	.	39.4	39.4	152.8
Propaquizafop	.	.	.	0.5	.	.	.	.	0.5	0.5	0.1
All herbicides & desiccants	*.*	*.*	*.*	*66.6*	*0.5*	*10.7*	*65*	*.*	*142.8*	*111.1*	*203.6*
Insecticides											
Chlorpyrifos	.	.	.	.	.	.	.	1.4	1.4	1.4	0.7
All insecticides	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*1.4*	*1.4*	*1.4*	*0.7*

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Table 26: Carrots: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.

Pesticide type & formulation	General disease control	Cavity spot	Altenaria	General weed control	Volunteer potatoes	Ground preparation	Pre-emergence weeds	General insect control	Carrot fly	Aphids	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides														
Azoxystrobin/ difenoconazole	89	.	244.2	.	.	.	.	.	.	.	.	333.2	226.3	108.3
Fenpropimorph	31	.	74.4	.	.	.	.	.	.	.	.	105.4	105.4	79.1
Mancozeb/ metalaxyl-M	.	12	.	.	.	.	.	.	.	.	.	12	12	12.3
Metalaxyl-M	81.4	49.9	.	.	.	.	.	.	.	.	.	131.3	131.3	70
Tebuconazole	72	.	246.5	.	.	.	.	.	.	.	.	318.5	216.1	75.5
All fungicides	*273.4*	*62*	*565.1*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*900.5*	*691.2*	*345.1*
Herbicides														
Chlorpropham/ pentanochlor	.	.	.	7	.	.	.	.	.	.	.	7	7	17.5
Cycloxydim	.	.	.	.	.	.	129	.	.	.	.	129	129	127.5
Glyphosate	.	.	.	.	.	1.7	.	.	.	.	.	1.7	1.7	2.1
Linuron	.	.	.	207.2	.	.	426.8	.	.	.	.	633.9	427.8	437.6
Metoxuron	.	.	.	84.1	147	.	.	.	.	.	.	231.1	230.6	591.5
Paraquat	.	.	.	.	.	18.2	5.9	.	.	.	.	24.2	24.2	10.9
Pendimethalin	.	.	.	57.1	.	.	166.3	.	.	.	.	223.4	223.4	320
Pentanochlor	.	.	.	27.9	.	.	.	.	.	.	.	27.9	27.9	44.7
Prometryn	.	.	.	0.9	.	.	.	.	.	.	.	0.9	0.9	0.9
Propaquizafop	.	.	.	58.1	.	.	.	.	.	.	.	58.1	58.1	4.8
Tepraloxydim	.	.	.	74.1	.	.	.	.	.	.	.	74.1	74.1	5.6
Trifluralin	.	.	.	.	.	.	48.6	.	.	.	.	48.6	48.6	52.9
Unknown herbicide	.	.	.	0.2	.	.	.	.	.	.	.	0.2	0.2	.
All herbicides & desiccants	*.*	*.*	*.*	*516.6*	*147*	*19.9*	*776.6*	*.*	*.*	*.*	*.*	*1,460.10*	*1,253.50*	*1,616.00*

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Table 26 (contd.): **Carrots: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Cavity spot	Altenaria	General weed control	Volunteer potatoes	Ground preparation	Pre-emergence weeds	General insect control	Carrot fly	Aphids	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides														
Carbosulfan	.	.	.	.	.	.	.	36.6	1	.	.	37.7	37.7	42
Chlorpyrifos	.	.	.	.	.	.	.	.	2.3	.	.	2.3	1.4	0.9
Deltamethrin	.	.	.	.	.	.	.	.	86.2	.	.	86.2	43.2	0.6
Lambda-cyhalothrin	.	.	.	.	.	.	.	212.2	973.1	31.2	.	1,216.50	427.6	14
Oxamyl	.	.	.	.	.	.	.	74.1	.	.	.	74.1	74.1	92.6
Pirimicarb	.	.	.	.	.	.	.	.	.	68.7	.	68.7	66.4	9.6
Unknown insecticide	.	.	.	.	.	.	.	.	0.2	.	.	0.2	0.2	.
All insecticides	.	.	.	.	.	.	.	*322.9*	*1,063.00*	*99.9*	.	*1,485.80*	*650.6*	*159.8*
Molluscicides														
Methiocarb	.	.	.	.	.	.	.	.	.	.	0.7	0.7	0.7	0.1
All molluscicides	.	.	.	.	.	.	.	.	.	.	*0.7*	*0.7*	*0.7*	*0.1*

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Table 27: **Parsnips: pesticide treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Canker	Cavity spot	Crown rot	Altenaria	General weed control	Ground preparation	Pre-emergence weeds	Volunteer potatoes	Aphids	Carrot fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides															
Azoxystrobin/difenoconazole	5.1	6.4	.	0.6	103.2	.	.	.	.	.	.	.	115.3	61.4	37.5
Fenpropimorph	.	.	.	55.9	.	.	.	.	.	.	.	.	55.9	54.2	41.4
Metalaxyl-M	.	.	0.5	.	.	.	.	.	.	.	.	.	0.5	0.5	0.3
Tebuconazole	7.9	21.8	.	1.1	104.9	.	.	.	.	.	.	.	135.8	69.6	33.8
All fungicides	*13.1*	*28.2*	*0.5*	*57.6*	*208.1*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*307.5*	*185.7*	*113*
Herbicides & desiccants															
Chlorpropham/pentanochlor	.	.	.	.	.	7.1	.	.	.	.	.	.	7.1	7.1	15.5
Cycloxydim	.	.	.	.	.	.	.	86	.	.	.	.	86	86	85
Diquat/paraquat	.	.	.	.	.	.	2.1	.	.	.	.	.	2.1	2.1	0.9
Glyphosate	.	.	.	.	.	.	2.8	.	.	.	.	.	2.8	2.8	2.5
Linuron	.	.	.	.	.	158.1	.	96.8	.	.	.	.	254.8	183.9	343.1
Metamitron	.	.	.	.	.	.	.	2.3	.	.	.	.	2.3	2.3	3.2
Metoxuron	.	.	.	.	.	52.1	.	.	4.8	.	.	.	56.9	56.9	61.6
Paraquat	.	.	.	.	.	0.3	15.3	8.4	.	.	.	.	24	24	9.8
Pendimethalin	.	.	.	.	.	.	.	71.9	.	.	.	.	71.9	71.9	121.1
Pentanochlor	.	.	.	.	.	16.7	.	.	.	.	.	.	16.7	16.7	19.7
Prometryn	.	.	.	.	.	4	.	.	.	.	.	.	4	4	2.9
Tepraloxydim	.	.	.	.	.	2.3	.	.	.	.	.	.	2.3	2.3	0.1
Trifluralin	.	.	.	.	.	.	.	89.5	.	.	.	.	89.5	89.5	62.1
All herbicides & desiccants	*.*	*.*	*.*	*.*	*.*	*240.4*	*20.3*	*354.8*	*4.8*	*.*	*.*	*.*	*620.3*	*549.3*	*727.4*

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Table 27 (contd.): **Parsnips: pesticide treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Canker	Cavity spot	Crown rot	Altenaria	General weed control	Ground preparation	Pre-emergence weeds	Volunteer potatoes	Aphids	Carrot fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides															
Deltamethrin	.	.	.	.	.	.	.	.	.	.	4.7	.	4.7	4.7	0
Lambda-cyhalothrin	.	.	.	.	.	.	.	.	.	18.1	500.8	.	518.9	181.4	6.2
Pirimicarb	.	.	.	.	.	.	.	.	.	3.4	.	.	3.4	3.4	0.5
Unknown insecticide	.	.	.	.	.	.	.	.	.	.	0.2	.	0.2	0.2	.
All insecticides	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*21.5*	*505.7*	*.*	*527.2*	*189.8*	*6.7*
Molluscicides															
Methiocarb	.	.	.	.	.	.	.	.	.	.	.	1.9	1.9	1.9	0.2
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*1.9*	*1.9*	*1.9*	*0.2*

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Table 28: **Parsley: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Mildew	Rust	Ground preparation	Pre-emergence weeds	General weed control	Aphids	Carrot fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides												
Azoxystrobin/difenoconazole	3	.	.	.	.	.	.	.	.	3	3	1
Chlorothalonil/metalaxyl-M	2.3	.	.	.	.	.	.	.	.	2.3	1.2	2.5
Cyprodinil/fludioxonil	.	10.7	.	.	.	.	.	.	.	10.7	10.7	6.7
Difenoconazole	28.5	.	.	.	.	.	.	.	.	28.5	9.2	1.7
Mancozeb/metalaxyl-M	21.5	.	.	.	.	.	.	.	.	21.5	10.7	29.2
Tebuconazole	3.7	1.8	10.7	.	.	.	.	.	.	16.3	13.8	3.8
All fungicides	*59*	*12.6*	*10.7*	*.*	*.*	*.*	*.*	*.*	*.*	*82.3*	*48.5*	*44.9*
Herbicides & desiccants												
Chlorpropham/pentanochlor	.	.	.	.	.	0.9	.	.	.	0.9	0.9	2.4
Diquat/paraquat	.	.	.	.	1.3	.	.	.	.	1.3	1.3	1.3
Glyphosate	.	.	.	2.1	.	.	.	.	.	2.1	2.1	2.7
Linuron	.	.	.	.	42.6	14.9	.	.	.	57.4	45	43.7
Paraquat	.	.	.	2.3	1.4	.	.	.	.	3.7	3.7	3.3
Pendimethalin	.	.	.	.	11.1	12.9	.	.	.	24	24	28.5
Prometryn	.	.	.	.	1.4	32.3	.	.	.	33.7	32.6	32.1
Propachlor	.	.	.	.	.	0.2	.	.	.	0.2	0.2	1.4
Tepraloxydim	.	.	.	.	.	0.6	.	.	.	0.6	0.6	0
Trifluralin	.	.	.	.	1.4	.	.	.	.	1.4	1.4	1.5
All herbicides & desiccants	*.*	*.*	*.*	*4.3*	*59.2*	*61.8*	*.*	*.*	*.*	*125.3*	*111.7*	*116.9*

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Table 28 (contd.): **Parsley: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Mildew	Rust	Ground preparation	Pre-emergence weeds	General weed control	Aphids	Carrot fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides												
Chlorpyrifos	.	.	.	.	.	.	2	.	.	2	1.7	1.4
Cypermethrin	.	.	.	.	.	.	1.4	.	.	1.4	1.4	0
Lambda-cyhalothrin	.	.	.	.	.	.	42.1	33.9	.	76	24	0.8
Pirimicarb	.	.	.	.	.	.	24.2	.	.	24.2	13.5	3.5
All insecticides	*.*	*.*	*.*	*.*	*.*	*.*	*69.8*	*33.9*	*.*	*103.6*	*40.6*	*5.6*
Molluscicides												
Methiocarb	.	.	.	.	.	.	.	.	6.6	6.6	6.6	0.6
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*6.6*	*6.6*	*6.6*	*0.6*

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Table 29a: **Soup celery: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Blight	Leafspot	General weed control	Ground preparation	Pre-emergence weeds	Aphids	Carrot fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides												
Azoxystrobin	0.2	23.7	.	.	.	.	.	.	.	23.9	12.1	6
Chlorothalonil	.	1.1	.	.	.	.	.	.	.	1.1	0.5	1.6
Difenoconazole	3	52.2	6.8	.	.	.	.	.	.	62	23.3	5.2
Mancozeb	.	1	.	.	.	.	.	.	.	1	0.4	1.9
Tebuconazole	1.1	0.2	.	.	.	.	.	.	.	1.4	1.2	0.3
All fungicides	*4.3*	*78.1*	*6.8*	*.*	*.*	*.*	*.*	*.*	*.*	*89.3*	*37.5*	*15*
Herbicides & desiccants												
Chlorpropham/pentanochlor	.	.	.	0.9	.	.	.	.	.	0.9	0.9	2.4
Diquat/paraquat	.	.	.	.	.	0.9	.	.	.	0.9	0.9	0.9
Glyphosate	.	.	.	.	1.8	.	.	.	.	1.8	1.8	2.5
Linuron	.	.	.	11	.	33	.	.	.	44	35.5	35.7
Paraquat	.	.	.	.	1	1.4	.	.	.	2.4	2.4	1.9
Pendimethalin	.	.	.	10.7	.	9.5	.	.	.	20.3	20.3	25.1
Prometryn	.	.	.	26.4	.	1.4	.	.	.	27.8	26.7	26.1
Propachlor	.	.	.	0.2	.	.	.	.	.	0.2	0.2	1.4
Tepraloxydim	.	.	.	1.1	.	.	.	.	.	1.1	1.1	0.1
Trifluralin	.	.	.	.	.	1.4	.	.	.	1.4	1.4	1.5
All herbicides & desiccants	*.*	*.*	*.*	*50.5*	*2.8*	*47.6*	*.*	*.*	*.*	*100.9*	*91.1*	*97.6*

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Table 29a (contd.): **Soup celery: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General disease control	Blight	Leafspot	General weed control	Ground preparation	Pre-emergence weeds	Aphids	Carrot fly	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Insecticides												
Chlorpyrifos	.	.	.	.	.	.	1.4	.	.	1.4	1.4	1
Cypermethrin	.	.	.	.	.	.	1.4	.	.	1.4	1.4	0
Lambda-cyhalothrin	.	.	.	.	.	.	33	35	.	68.1	21.5	0.7
Pirimicarb	.	.	.	.	.	.	0.2	.	.	0.2	0.2	0
All insecticides	*.*	*.*	*.*	*.*	*.*	*.*	*36*	*35*	*.*	*71.1*	*24.5*	*1.7*
Molluscicides												
Methiocarb	.	.	.	.	.	.	.	.	4.5	4.5	4.5	0.4
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*.*	*4.5*	*4.5*	*4.5*	*0.4*

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Table 29b: **Table celery: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	Blight	General weed control	Ground preparation	Pre-emergence weeds	Aphids	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides									
Azoxystrobin	40.4	.	.	.	.	.	40.4	19.8	10.1
Difenoconazole	20.2	.	.	.	.	.	20.2	19.8	2.5
All fungicides	*60.6*	*.*	*.*	*.*	*.*	*.*	*60.6*	*39.6*	*12.6*
Herbicides									
Cyanazine	.	0.9	.	.	.	.	0.9	0.4	0.2
Glyphosate	.	.	19.3	.	.	.	19.3	19.3	27.9
Linuron	.	19.3	.	.	.	.	19.3	19.3	21.8
Prometryn	.	19.3	.	.	.	.	19.3	19.3	9.7
Propachlor	.	.	.	0.4	.	.	0.4	0.4	2.6
All herbicides & desiccants	*.*	*39.6*	*19.3*	*0.4*	*.*	*.*	*59.3*	*58.9*	*62.1*
Insecticides									
Lambda-cyhalothrin/pirimicarb	.	.	.	.	38.7	.	38.7	19.3	8.5
All insecticides	*.*	*.*	*.*	*.*	*38.7*	*.*	*38.7*	*19.3*	*8.5*
Molluscicides									
Methiocarb	.	.	.	.	.	1.9	1.9	1.9	0.2
All molluscicides	*.*	*.*	*.*	*.*	*.*	*1.9*	*1.9*	*1.9*	*0.2*

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Table 30: **Lettuce: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	Mildew	General weed control	Ground preparation	Pre-emergence weeds	General insect control	Aphids	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides										
Azoxystrobin	38.7	.	.	.	.	.	.	38.7	19.3	9.7
Fosetyl-aluminium	40.8	.	.	.	.	.	.	40.8	21.5	17
Iprodione	38.7	.	.	.	.	.	.	38.7	19.3	23.1
Total fungicides	*118.2*	*.*	*.*	*.*	*.*	*.*	*.*	*118.2*	*60.2*	*49.8*
Herbicides & dessicants										
Propachlor	.	.	.	19.3	.	.	.	19.3	19.3	12.1
Propyzamide	.	19.3	4.9	.	.	.	.	24.3	24.3	34
Trifluralin	.	.	.	22.1	.	.	.	22.1	22.1	13.8
All herbicides & desiccants	*.*	*19.3*	*4.9*	*41.5*	*.*	*.*	*.*	*65.8*	*65.8*	*59.9*
Insecticides										
Lambda-cyhalothrin/pirimicarb	.	.	.	.	.	38.7	.	38.7	19.3	6.4
Pirimicarb	.	.	.	.	.	2.1	.	2.1	2.1	0.5
All insecticides	*.*	*.*	*.*	*.*	*.*	*40.8*	*.*	*40.8*	*21.5*	*6.9*
Molluscicides										
Methiocarb	.	.	.	.	.	.	1.9	1.9	1.9	0.2
All molluscicides	*.*	*.*	*.*	*.*	*.*	*.*	*1.9*	*1.9*	*1.9*	*0.2*

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Table 31: **Rhubarb: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General weed control	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Herbicides & desiccants				
Glyphosphate	3.0	3.0	3.0	5.5
All herbicides & desiccants	*3.0*	*3.0*	*3.0*	*5.5*

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Table 32: **Beetroot: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	General weed control	Ground preparation	Pre-emergence weeds	Slugs	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Herbicides & desiccants							
Desmedipham/ethofumesate/phenmedipham	1.7	.	.	.	1.7	1.1	0.9
Diquat/paraquat	2.1	0.4	.	.	2.6	2.6	0.6
Ethofumesate	0.5	.	.	.	0.5	0.5	0.5
Lenacil	0.2	.	0.4	.	0.6	0.6	0.7
Metamitron	1.7	.	.	.	1.7	0.6	2.4
Phenmedipham	3.8	.	0.4	.	4.3	4.3	2.7
Propachlor	.	.	0.2	.	0.2	0.2	1.3
Simazine	.	1	.	.	1	1	0.7
All herbicides & desiccants	*10.1*	*1.5*	*1.1*	*.*	*12.7*	*11*	*10*
Molluscicides							
Methiocarb	.	.	.	0.1	0.1	0.1	0
All molluscicides	*.*	*.*	*.*	*0.1*	*0.1*	*0.1*	*0*

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Table 33: **Pumpkin: pesticide-treated area (spray hectares), basic area treated (hectares), quantities used (kilograms) and reasons for use.**

Pesticide type & formulation	Mildew	General weed control	Ground preparation	Total area treated (sp ha)	Basic area treated (ha)	Total quantity applied (kgs)
Fungicides						
Fenpropimorph	0.6	.	.	0.6	0.6	0.4
Total fungicides	*0.6*	*.*	*.*	*0.6*	*0.6*	*0.4*
Herbicides & desiccants						
Glyphosate	.	.	0.6	0.6	0.6	0.8
Paraquat	.	0.5	.	0.5	0.5	0.1
All herbicides & desiccants	*.*	*0.5*	*0.6*	*1*	*1*	*1*

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Table 34 **Comparison of the area of vegetable crops grown (hectares) in Northern Ireland and the proportional differences (%) between 1991 - 2007.**

Crop type	Survey year 1991 (ha)	1995 (ha)	1999 (ha)	2004 (ha)	2007 (ha)	% change in area 2007 / 2004
Brassicas						
Brussels sprouts	121.6	85.7	114.5	29.8	43.6	46%
Cabbage (summer/autumn)	118.6	61.0	120.7	76.6	110.8	45%
Cabbage (other)*	168.6	202.8	175.3	156.0	241.8	55%
Calabrese	50.6	55.8	60.6	147.5	159.5	8%
Cauliflower	166.8	228.8	181.4	171.4	188.1	10%
All brassicas	*626.2*	*634.1*	*652.5*	*581.3*	*743.8*	*28%*
Turnip & swede	127.6	121.9	121.5	280.8	223.5	-20%
Peas & beans						
Beans	11.8	11.7	9.4	6.6	5.0	-24%
Peas	13.2	6.9	5.5	2.4	2.7	11%
All peas & beans	*25.0*	*18.6*	*14.9*	*9.0*	*7.7*	*-15%*
Leeks & onions						
Leeks	39.3	63.5	68.1	89.9	109.3	22%
Onions	6.4	.	14.5	13.3	10.7	-19%
Spring onions	51.9	42.0	58.9	61.8	39.4	-36%
All leeks & onions	*97.6*	*105.51*	*141.5*	*164.9*	*159.4*	*-3%*
Carrots & parsnips						
Carrots	269.9	261.0	360.8	347.8	436.3	25%
Parsnips	80.9	73.8	109.8	99.6	185.9	87%
All carrots and parsnips	*350.8*	*334.8*	*470.6*	*447.4*	*622.2*	*39%*

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Table 34 (contd.) **Comparison of the area of vegetable crops grown (hectares) in Northern Ireland and the proportional differences (%) between 1991 - 2007.**

Crop type	Survey year 1991 (ha)	1995 (ha)	1999 (ha)	2004 (ha)	2007 (ha)	% change in area 2007 / 2004
Celery	24.5	27.1	45.5	32.2	57.8	79%
Lettuce	26.6	38.4	27.0	42.8	24.3	-43%
Parsley*	20.1	31.4	40.0	41.9	47.8	14%
Other vegetables						
Cucurbits	0.1	1.5	1.8	.	1.8	*N/A*
Beetroot	3.6	3.1	6.9	3.8	6.7	76%
Rhubarb	13.7	6.8	6.1	10.8	4.9	-55%
All other vegetables	*17.5*	*11.3*	*14.8*	*14.6*	*13.4*	*-8%*
Total vegetable crops	**1,316.0**	**1,323.2**	**1,528.0**	**1,614.9**	**1,900.0**	*18%*

* Cabbage other includes Spring & Winter cabbage and Savoys for 1999, 2004 & 2006.

* Parsley was included in the 'Other vegetables' category in 1991.

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Table 35: **Comparison of pesticide usage on *vegetable crops* in Northern Ireland 1991-2007, area treated (spray hectares), quantity applied (kilograms) and the area grown (hectares).**

	Survey year											
	1991		1995		1999		2004		2007		% Differences 2007-2004	
Pesticide type	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)
Fungicides	720	814	924	1,304	2,078	1,243	*2,506*	997	*3,765*	2,060	50%	107%
Herbicides & desiccants	2,159	3,558	2,560	3,723	3,735	4,707	*4,579*	5,449	4,933	5,728	8%	5%
Insecticides												
Carbamates	*104*	*108*	*269*	*188*	*949*	*649*	*722*	*178*	*723*	*263*	0%	48%
Organochlorines	*66*	*16*	*17*	*3*	-	-	-	-	-		.	.
Organophosphates	*1,698*	*1,211*	*2,300*	*1,756*	*738*	*424*	*153*	*338*	*75*	*199*	-51%	-41%
Pyrethroids	*274*	*7*	*579*	*13*	*2,091*	*23*	*2,282*	*29*	*2,807*	*31*	23%	6%
Carbamate Pyrethroid	.	.	.	.	.	.	.	.	*288*	*53*	.	.
Unknown insecticides	*34*	.	*23*	.	*16*	.	*135*	.	.	.	.	.
Other	.	.	.	.	*4*	*16*	*4*	*16*	*172*	*22*	4200%	38%
All insecticides	2,176	1,342	3,189	1,961	3,794	1,096	*3,296*	561	*4,065*	569	23%	1%
Molluscicides	29	16	33	27	188	56	75	12	106	12	. 42%	. 3%
Rodenticides	.	.	.	.	50	159	.	.	.	.	.	.
Seed treatments	874	11	799	8	617	1	843	53	1,039	110	23%	108%
Soil fumigants	4	1,238	.	.	.	.	.	.	.	.	.	.
All pesticides	**5,962**	**6,979**	**7,505**	**7,024**	**10,460**	**7,262**	**11,299**	**7,142**	**13,909**	**8,479**	**23%**	**19%**
Area grown (ha)	1,316		1,323		1,528		1,615		1,900		18%	

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Table 36: **Comparison of pesticide usage on *brassica crops* in Northern Ireland 1991-2007, area treated (spray hectares), quantity applied (kilograms) and the area grown (hectares).**

	Survey year											
	1991		1995		1999		2004		2007		% Differences 2007-2004	
Pesticide type	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)
Fungicides	399	391	449	479	1,102	420	976	296	1,577	586	62%	98%
Herbicides & desiccants	541	1,021	827	1,044	976	1,272	1,156	1,232	1,447	1,623	25%	32%
Insecticides												
Carbamates	*13*	*13*	*149*	*53*	*335*	*69*	*518*	*97*	*510*	*113*	-2%	16%
Organochlorines	*41*	*13*	*16*	*2*	-	-	-	-			.	.
Organophosphates	*908*	*452*	*1,394*	*438*	*565*	*200*	*113*	*294*	*64*	*193*	-43%	-34%
Pyrethroids	*260*	*6*	*504*	*11*	*754*	*10*	*629*	*8*	*826*	*8*	31%	0%
Carbamate/ Pyrethroid	.	.	.	.	.	.	.	.	*210*	*38*	.	.
Unknown insecticides	*25*	.	*18*	.	*15*	.	*3*	.	.	.	.	.
Other	.	.	.	.	.	.	*96*	*14*	*172*	*22*	79%	57%
All insecticides	1,247	485	2,082	505	1,668	278	1,359	413	1,782	375	31%	-9%
Molluscicides	22	12	3	2	143	47	67	11	88	10	31%	-9%
Rodenticides	.	.	.	.	50	159	.	.	.	.	.	.
Seed treatments	80	1	57	< 0.5	7	<0.5	138	29	439	96	218%	231%
Soil fumigants	4	1,238	.	.	.	.	.	.	.	.	.	.
All pesticides	**2,293**	**3,147**	**3,419**	**2,030**	**3,946**	**2,177**	**3,695**	**1,981**	**5,333**	**2,691**	**44%**	**36%**
Area grown (ha)	628		635		652		581		744		28%	

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Table 37: **Comparison of pesticide usage on *turnip & swede crops* in Northern Ireland 1991-2007, area treated (spray hectares), quantity applied (kilograms), the proportional differences (%) and the area grown (hectares).**

	Survey year											
	1991		1995		1999		2004		2007		% Differences 2007-2004	
Pesticide type	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)
Fungicides	55	32	155	76	10	3	2	1	*116*	612	5700%	61100%
Herbicides & desiccants	170	445	159	239	209	353	575	698	393	546	-32%	-22%
Insecticides												
Carbamates	*46*	*51*	*65*	*86*	87	*109*	3	*3*	0	0	-90%	-93%
Organochlorines	.	.	.	.	.	.	.	.	.	.	.	.
Organophosphates	*162*	*122*	*162*	*272*	130	*155*	26	*27*	.	.	.	.
Pyrethroids	*1*	*< 0.1*	*23*	*1*	*6*	*<0.1*	*3*	*<0.1*	*6*	*<1*	100%	0%
Unknown insecticides	*2*	.	*1*	.	*1*	.	.	.	.	.	.	.
All insecticides	210	173	252	358	225	264	32	40	*6*	*0*	-81%	-99%
Molluscicides	.	.	23	21	.	< 0.1	.	.	.	.	.	.
Seed treatments	133	2	115	< 0.5	87	< 0.5	266	1	74	<1	-72%	reduction
All pesticides	**568**	**652**	**704**	**695**	**531**	**620**	**874**	**740**	**589**	**1,159**	**-36%**	**57%**
Area grown (ha)	128		122		122		281		224		-20%	

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Table 38: **Comparison of pesticide usage on *leek crops* in Northern Ireland 1991-2007, area treated (spray hectares), quantity applied (kilograms), the proportional differences (%) and the area grown (hectares).**

	Survey year											
	1991		1995		1999		2004		2007		% Differences 2007-2004	
Pesticide type	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)
Fungicides	64	54	90	57	93	49	143	73	*374*	150	162%	105%
Herbicides & desiccants	95	222	155	299	239	443	343	494	463	591	35%	20%
Insecticides												
Carbamates	.	.	.	.	*1*	*1*	.	.	.	.	.	.
Organochlorines	.	.	.	.	*1*	*1*	.	.	.	.	.	.
Organophosphates	*7*	*4*	*3*	*3*	.	.	2	0.5	*4*	*3*	100%	500%
Pyrethroids	.	.	*3*	*< 0.5*	*0*	*< 0.1*	.	.	.	.	.	.
Unknown insecticides	.	.	.	.	.	.	.	.	.	.	.	.
All insecticides	7	4	6	3	2	1	2	1	*4*	*3*	100%	200%
Molluscicides	.	.	1	1	.	.	.	.	.	.	.	.
Seed treatments	29	< 0.5	28	< 0.5	34	< 0.5	72	2	77	1	7%	-50%
All pesticides	**195**	**280**	**280**	**360**	**368**	**494**	**560**	**568**	*918*	*744*	**64%**	**31%**
Area grown (ha)	39		64		68		90		109		21%	

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Table 39: **Comparison of pesticide usage on *carrot crops* in Northern Ireland 1991-2007, area treated (spray hectares), quantity applied (kilograms) and the area grown (hectares).**

	Survey year											
	1991		1995		1999		2004		2007		% Differences 2007-2004	
Pesticide type	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)
Fungicides	33	147	70	434	468	398	879	349	*900*	345	2%	-1%
Herbicides & desiccants	791	1,104	884	1,348	1,266	1,290	1,502	1,702	1,460	1,615	-3%	-5%
Insecticides												
Carbamates	*39*	*38*	*50*	*45*	394	*353*	147	*61*	*181*	*144*	23%	136%
Organochlorines	*12*	*< 0.5*	.	.	.	.	.	.	.	.	.	.
Organophosphates	*465*	*492*	*506*	*778*	24	*54*	1	*<0.5*	*2*	*<1*	100%	.
Pyrethroids	.	.	.	.	*943*	*9*	*1,198*	*16*	*1,303*	*15*	9%	-6%
Unknown insecticides	*6*	.	*4*	.	.	.	*<0.5*	.	*<0.5*	.	.	.
All insecticides	523	532	560	823	1,361	415	1,346	78	*1,485*	*160*	10%	105%
Molluscicides	3	1	.	.	2	1	1	<0.5	*1*	<0.1	0%	.
Seed treatments	494	2	503	3	359	< 0.5	286	11	327	14	14%	27%
All pesticides	**1,844**	**1,784**	**2,017**	**2,607**	**3,455**	**2,103**	**4,013**	**2,139**	**4,174**	**2,134**	**4%**	**0%**
Area grown (ha)	270		261		361		348		436		25%	

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Table 40: Comparison of pesticide usage on *parsnip crops* in Northern Ireland 1991-2007, area treated (spray hectares), quantity applied (kilograms) and the area grown (hectares).

	Survey year											
	1991		1995		1999		2004		2007		% Differences 2007-2004	
Pesticide type	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)
Fungicides	8	30	17	115	120	89	197	75	*307*	113	56%	51%
Herbicides & desiccants	219	252	194	242	398	343	412	497	620	727	50%	46%
Insecticides												
Carbamates	*5*	*5*	*4*	*4*	*115*	*103*	*10*	*12*	*3*	*<1*	-70%	>-92%
Organochlorines	*9*	*< 0.5*	.	.	.	.	.	.	.	.	.	.
Organophosphates	*85*	*99*	*135*	*200*	*3*	*6*	.	.	.	.	.	.
Pyrethroids	.		.	.	*293*	*3*	*344*	*3*	*524*	*7*	52%	133%
All insecticides	99	104	139	204	411	111	354	16	*527*	*7*	49%	-56%
Molluscicides	.	.	.	.	33	< 0.5	.	.	*2*	*<1*	.	.
Seed treatments	4	.	3	< 0.5	71	< 0.5	3	<0.1	9	<0.1	200%	0%
All pesticides	**330**	**386**	**353**	**561**	**1,032**	**543**	**966**	**587**	**1466**	**847**	**52%**	**44%**
Area grown (ha)	81		74		110		100		186		86%	

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Table 41: **Comparison of pesticide usage on *lettuce crops* in Northern Ireland 1991-2007, area treated (spray hectares), quantity applied (kilograms) and the area grown (hectares).**

	Survey year											
	1991		1995		1999		2004		2007		% Differences 2007-2004	
Pesticide type	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)	Area (sp ha)	Quantity (kg)
Fungicides	57	48	36	41	42	49	86	54	*118*	50	37%	-7%
Herbicides & desiccants	25	45	52	70	79	144	102	150	66	60	-35%	-60%
Insecticides										-		
Carbamates	.	.	.	.	*1*	*< 0.3*	*44*	*4*	*2*	*1*	-95%	-75%
Organochlorines	*2*	*1*	.	.	.	.	.	.				
Organophosphates	*19*	*16*	*61*	*20*	*3*	*1*	*5*	*3*	.	.	.	.
Pyrethroids	*11*	*< 0.5*	*45*	*1*	*28*	*<0.3*	*69*	*6*	.	.	.	.
Carbamates/pyrethroids	.	.	.	.	.	.	.	.	*39*	*6*	.	.
All insecticides	34	18	106	21	33	1	118	13	*41*	*7*	-65%	-46%
Molluscicides	3	3	6	2	2	1	5	1	*2*	*<1*	-60%	.
Seed treatments	7	.	.	.	.	.	*33*	*10*	24	2	-27%	-80%
All pesticides	**126**	**114**	**200**	**133**	**155**	**195**	**343**	**226**	**251**	**119**	**-27%**	**-47%**
Area grown (ha)	27		38		27		43		24		-44%	

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Report No.	Report title	ISBN
99	Grassland & Fodder Crops 1989	1-85527 079 X
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106	Soft Fruit Crops 1990	1-85527 149 4
109	Vegetable Crops 1991	1-85527 137 0
110	Protected Crops 1991 (edible & ornamental)	1-85527 283 0
111	Mushroom Crops 1991	1-85527 150 8
117	Arable Crops 1992	1-85527 193 1
118	Top Fruit Crops 1992	1-85527 194 X
124	Grassland & Fodder crops 1993	1-85527 221 0
131	Forestry 1993	1-85527 282 2
132	Arable Crops 1994	1-85527 314 4
139	Vegetable Crops 1995	1-85527 346 2
140	Mushroom Crops 1995	1-85527 347 0
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157	Sheep Treatments 1997	1-85527 425 6
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168	Arable Crops 1998	1-85527 536 8
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170	Mushroom Crops 1999	1-85527 549 X
177	Arable Crops 2000	1-85527 670 4
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209	Sheep Treatments 2005	1-85527 999 5
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