Amateur Pesticide User Habits Survey 2019

Public purchasing, use, storage and disposal of pesticides in plant protection products

Executive summary

An online survey designed to determine gardener user habits in relation to purchase, storage, use and disposal of plant protection products was carried out by the Health and Safety Executive from 1 May 2019 to 2 June. This followed a similar approach to the first online survey carried out in 2013 by Resource Futures. The survey was limited to responses about plant protection products (amateur pesticides to protect and control plants).

The questionnaire remained largely the same as in previous years and retained the expanded disposal section that was introduced in the 2013 survey. This section split all possible answers by product type (eg ready-to-use and concentrate). Questions were asked to ascertain whether respondents disposed of containers with product still in the container, whether they removed the lid/cap/trigger spray handle, whether they rinsed the container before disposal, and about the disposal route of rinsings. One additional question asked respondents how they obtained information about disposal of products.

Of the respondents to the survey, 495 used plant protection products and these included gardeners in all age categories and all gardener 'types' although the highest category of respondents were the keen and regular gardeners (59%) and those aged over 45 (77%). The most popular types of product purchased were weedkillers, slug/snail killers and insecticides. The majority of respondents purchased between one and two products a year.

The most popular storage location continued to be the garden shed (62%), followed by the garage (37%). Of respondents, 21% stated they used some form of safety precaution for storing plant protection products (ie high shelf or locked cupboard). Just under half of the respondents stored products for up to two years (42%), 13% of whom stored products for less than a year.

In terms of product use, 61% of respondents stated they read the instructions on how to use the product before purchasing and 51% would read before they used the product for the first time. The majority (94%) of respondents stated the instructions for use provided with the product were clear, and a similar percentage of respondents (96%) claimed to follow the instructions either 'very closely' or 'fairly closely'. Less than half of the respondents (40%) used ready-to-use products only, compared to 20% using concentrate products only, while 40% stated they used both ready-to-use and concentrate products. The majority of respondents who used concentrate products used the measuring device/cap provided to measure the volume of concentrate product required when diluting (84%).

The majority of respondents used up the contents of plant protection products before disposing of the empty container (70% for ready-to-use and 74% for concentrate products). For those disposing of the container with ready-to-use product in the container, nearly half disposed in the normal household bin (53%).

The highest proportion of respondents using ready-to-use plant protection products disposed of the empty container in the household recycling bin/bag used for kerbside collection (65%), while 39% of respondents disposed of the empty container in the normal household bin. Similarly, the largest percentage of respondents using concentrate products disposed of the empty container in household recycling bin/bag used for kerbside collection (45%), while 40% of respondents disposed of the empty container in the normal household bin.

This report set outs the findings from the 2019 survey in detail, and also compares them to previous years (2007, 2010, 2013 and 2016).

Contents

1. Introduction

The Health and Safety Executive (HSE) carried out an online survey to identify the user habits of amateur plant protection product users. This follows previous surveys carried out in 2007, 2010, 2013 and 2016 to inform our Chemicals Regulation Division on user habits and disposal of amateur plant protection products. The survey contributes to the knowledge base for continuing research and communications on amateur use of plant protection products by providing robust information on the purchasing, use, storage and disposal by domestic gardeners in the UK. This continues to support the ongoing work of the Amateur Liaison Group (ALG) which involves HSE and other stakeholders encouraging best practice in use, storage, and safe disposal of unused plant protection products and empty containers.

Importantly, the survey continues to highlight whether any changes in user habits have occurred over recent years. Where the survey results indicate a change in behaviour, this can support the development of communication resources to provide consumer advice on best practice.

The specific objectives of the project were to:

- develop an online survey (in HSE) and disseminate through the Amateur Liaison Group;
- collate and analyse online survey responses;
- compare findings from 2019 with surveys undertaken in 2007, 2010, 2013 and 2016;
- present the findings to the Amateur Liaison Group and Pesticides Forum.

2. Background

Plant protection products are pesticides which include weedkillers, slug and snail killers (eg pellets), fungicides, insecticides (including acaricides), lawn treatments which contain moss killers and weedkillers, animal repellents and hormone rooting substances.

Plant protection products are regulated by Regulation (EC) No 1107/2009 which came into force in June 2011. HSE is the competent authority regulating plant protection products in the UK. More information can be found at www.hse.gov.uk/pesticides.

3. Methods

The 2019 survey continued with the significantly updated disposal section that was introduced in the 2013 questionnaire to provide more detailed information on the disposal route of plant protection products, rinsings and containers separately for those that use ready-to-use, concentrate products and those that use both. Three additional questions were added for the 2019 survey as mentioned in Table 3.1 below.

Table 3.1 Minor amendments to the 2019 survey questionnaire

2016 Question	2019 Question	Amendment / reason
Do you use pesticides when gardening?	Do you use garden chemicals - whether growing outside (garden, allotment or balcony) or indoors (house plants)?	The question was altered to take account of respondents living in flats that might have a balcony or just grow plants indoors.
Which region do you live in?	One option was added: • Outside the UK	This was added to exclude any respondents from outside the UK as the survey is aimed at UK residents only.
Which of these best describes how you feel about gardening?	One option was added: • I don't have a garden, but I enjoy growing plants indoors/on my balcony	This option was added to take account of respondents living in flats or apartments.
Where do you do your gardening?	One option was added: • I grow plants indoors/on my balcony.	This option was added to take account of respondents living in flats or apartments.
Which of the following age brackets do you fall into?	One option was added: • Prefer not to say	
Which types of pesticides do you use?	When trying to control weeds, pests and diseases which of the following do you use, including products marketed as organic?	This question was changed to include some alternative options to pesticides to understand the level of sustainable use by gardeners. The additional options added were: • Non-chemical physical barriers eg copper tape, slug/snail traps • Biological products eg nematodes • Home-made remedies (using household products such as washing up liquid)
Where do you usually buy pesticides from?	Some of the options were amended: • From 'DIY store / hardware shop' to DIY store or home store (eg B&Q, Homebase, Wickes, B&M, Range, Wilko etc.' • From Garden centre' to 'Garden centre or plant nursery' • From 'Internet' to 'Internet (eg Amazon, eBay, Retailer website including those above)' • Removal of 'Other' option	These amendments were made to rationalise and modernise the options available and to avoid respondents listing many stores under the previous option of 'other'.

2016 Question	2019 Question	Amendment / reason
Where do you normally store pesticides?	One option was amended: • From 'Garage' to 'Garage or out-house'	This option was amended to avoid out-house being added to 'other' as a separate option.
Other than on the product label, where else do you get information on how to use pesticides?	Other than on the product label, do you obtain information elsewhere on how to use pesticides? The options available were: • Yes • No	If respondents answered yes, they were asked to select all that applied, some of the options were amended: • From 'Garden centre staff' to 'Retail shop staff' • From 'Gardening advice helpline eg RHS' to 'Telephone helpline' • Removal of 'Product company helpline' as covered by above option • From 'Websites' to 'Internet'
How do you generally dispose of any unused/excess, diluted solution?	How do you generally dispose of any leftover solution?	This question was clarified for respondents who indicated they use concentrate products requiring diluting.
How do you generally dispose of any unused/unwanted pesticide BEFORE disposing of the container?	Two options were added: • Spray onto garden plants as allowed on the label • Household waste bin (non-recycling)	These options were added to avoid them being listed separately under the 'other' option.
What do you generally do with the liquid from rinsing the empty pesticide container?	One option was added: • Spray onto garden plants as allowed on the label	This option was added to avoid it being listed separately under the 'other' option.

A number of the questions in the survey allow the respondent to answer 'other' and provide a free-text response. For the 2019 survey, additional exploration of these responses was conducted, revealing that in many cases the option should not have been ticked as the respondent went on to mention only something they had already ticked in the options. For future surveys some of the question wording will be made clearer in an attempt to limit this pattern of response.

Such responses have been removed from the 'other' count for the relevant questions. Since this indicates some uncertainty about the true number of 'other' responses, this category has been removed from tables and charts and instead mentioned in the narrative as an approximate count. It follows that, although mentioned in previous years' reports, the 'other' category is entirely excluded from tables and charts showing comparisons over time.

It also became clear at a late stage of the analysis (when examining 'other' responses), that some respondents should have indicated at the screening stage of the survey that they were not pesticide users and therefore not given the chance to complete the survey. As this affected only a very small number of respondents, they have not been excluded as it would take a disproportionate effort to identify and remove their responses.

3.1 Online survey

Surveys in 2007, 2010 and 2013 were carried out by Resource Futures using face to face surveys. An additional online survey was added in 2013. HSE carried out online surveys in 2016 and 2019 using Survey Monkey.

The online survey was advertised through the Amateur Liaison Group members to invite amateur users of plant protection products to respond. Advertising of the survey took the form of providing links on websites and posting tweets via Twitter.

A total of 1155 completed surveys were received in 2019 from those confirming that they use plant protection products and are not professional gardeners.

3.2 Comparison of survey results

The report includes a comparison of the results over the survey years 2007, 2010, 2013, 2016 and 2019 in Table 5.1. The table provides analysis of differences of key variables to show whether an increase or decrease in percentages occurred between survey years.

4. 2019 Survey results

4.1 Respondent characteristics

4.1.1 Number of respondents

In total, 1214 people responded to say that they used plant protection products and went on to complete the survey. A further 458 people accessed the survey but said that they did not use plant protection products and were therefore excluded from the survey.

Of the 1214 remaining respondents, 59 were professional gardeners and their responses have been excluded from the analysis. A further 180 had been trained in the use of plant protection products; this group has been included in the analysis but where their responses strongly influence the overall picture this has been noted in the report.

Sample size = 1155

4.1.2 Location and age of respondents

A regional breakdown of respondents is provided in Table 4.1 and an age breakdown in Table 4.2. No analysis of regional or age variation has been completed as there is no known reason to expect any systematic differences across groups.

Table 4.1 Regional distribution of respondents in 2019

Region	Number of respondents	% of respondents
Scotland	60	5%
Northern Ireland	12	1%
North East	54	5%
Yorkshire and Humber	96	8%
North West	124	11%
West Midlands	66	6%
East Midlands	134	12%
Wales	51	4%
East of England	131	11%
London	84	7%
South East	211	18%
South West	132	12%

Table 4.2 Age distribution of respondents in 2019

Range	Number of respondents	% of respondents
16-24	10	1%
25-44	238	21%
45-64	595	51%
65 plus	301	26%
Prefer not to say	11	1%

The proportion of respondents in the 25-44 age group is lower than in 2013 and 2016 and there has been an increase in the proportion of respondents who are in the 65 and over age group.

Table 4.3 Comparison of respondents in the 25-44 and 65 and over age group from 2007 to 2019

	2007	2010	2013	2016	2019
25-44	18%	20%	28%	30%	21%
65 and over	31%	34%	21%	11%	26%

4.1.3 Gardener type

Table 4.4 shows how respondents feel about gardening. This information has been collected to give an idea of who is in our sample of responses and again no comparison between these groups has been made yet. However, the data could be interrogated this way.

A new option was added in 2019 to include respondents who do not have a garden but enjoy growing plants indoors or on a balcony.

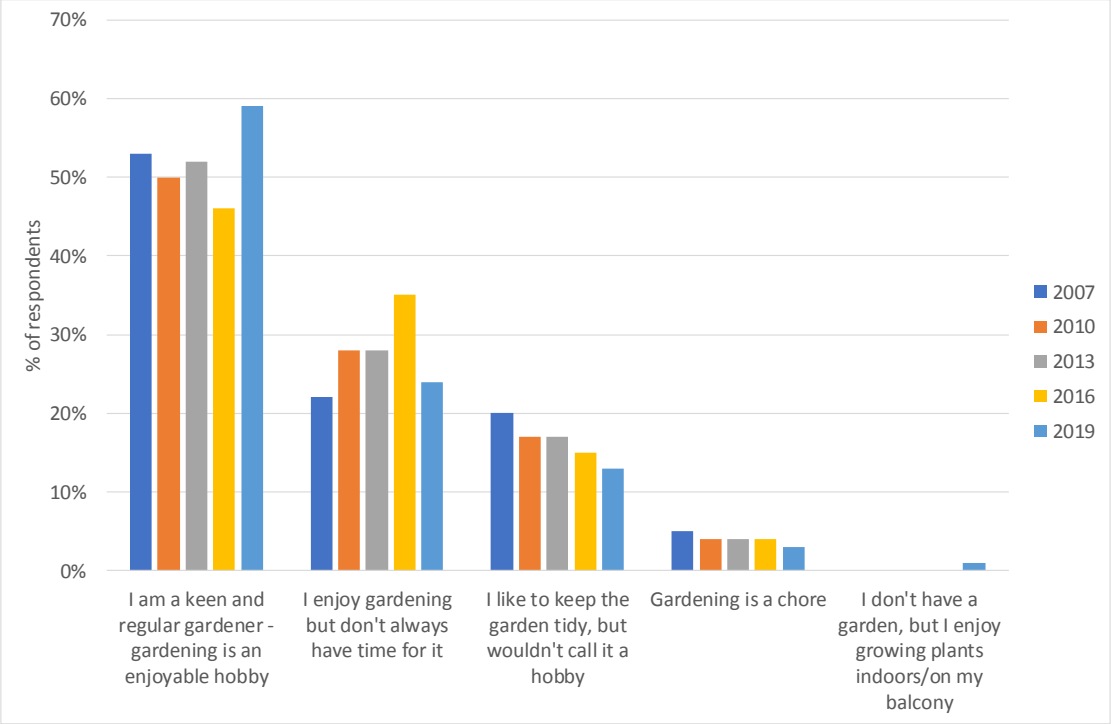
Note that the likelihood of being a keen gardener is similar between trained plant protection product users and amateurs (55% and 59% respectively).

Table 4.4 Attitudes to gardening in 2019

Attitude	Number of respondents	% of respondents
I am a keen and regular gardener – gardening is an enjoyable hobby	676	59%
I enjoy gardening but don't always have time for it	280	24%
I like to keep the garden tidy, but wouldn't call it a hobby	155	13%
Gardening is a chore	30	3%
I don't have a garden, but I enjoy growing plants indoors/on my balcony	12	1%

Figure 4.1 shows that “gardening is a chore” has remained low among survey respondents since the surveys started in 2007 (5 to 3%). Until 2019, there had been a steady increase in the number of respondents who “enjoy gardening but don’t always have time for it”, but in 2019 that number was lower and there was an increase in the percentage of respondents who considered themselves “keen and regular” gardeners. The increase in “keen and regular” gardeners taking part in the 2019 survey is likely to reflect the increased number of respondents in the 65 and over age bracket and especially those doing allotment gardening (as mentioned in section 4.1.4. below).

Figure 4.1 Comparison of attitudes to gardening by respondents (2007, 2010, 2013 and 2019)



4.1.4 Where respondents do their gardening

Table 4.5 shows where respondents do their gardening. There had been a small continuing increase in allotment gardening from 4% in 2007 up to 16% in 2016, possibly due to the trend in 'grow your own'. In 2019 there was a large jump to 43% now gardening in allotments. A new category was added in 2019 allowing respondents to report that they grow plants indoors or on a balcony and around a fifth of respondents said they did so.

Table 4.5 Where respondents do their gardening (2019)

Location (respondents tick all that apply)	Number of respondents	% of respondents
Private gardens	1048	91%
Allotments	502	43%
Public/community gardens	62	5%
Indoors/on balcony	245	21%

A typical gardener from this survey is aged 45-64, lives in the South East, gardens in a private garden, and is a keen and regular gardener.

4.2 Purchasing habits

The questions in this section were asked of all 1155 respondents. They were asked:

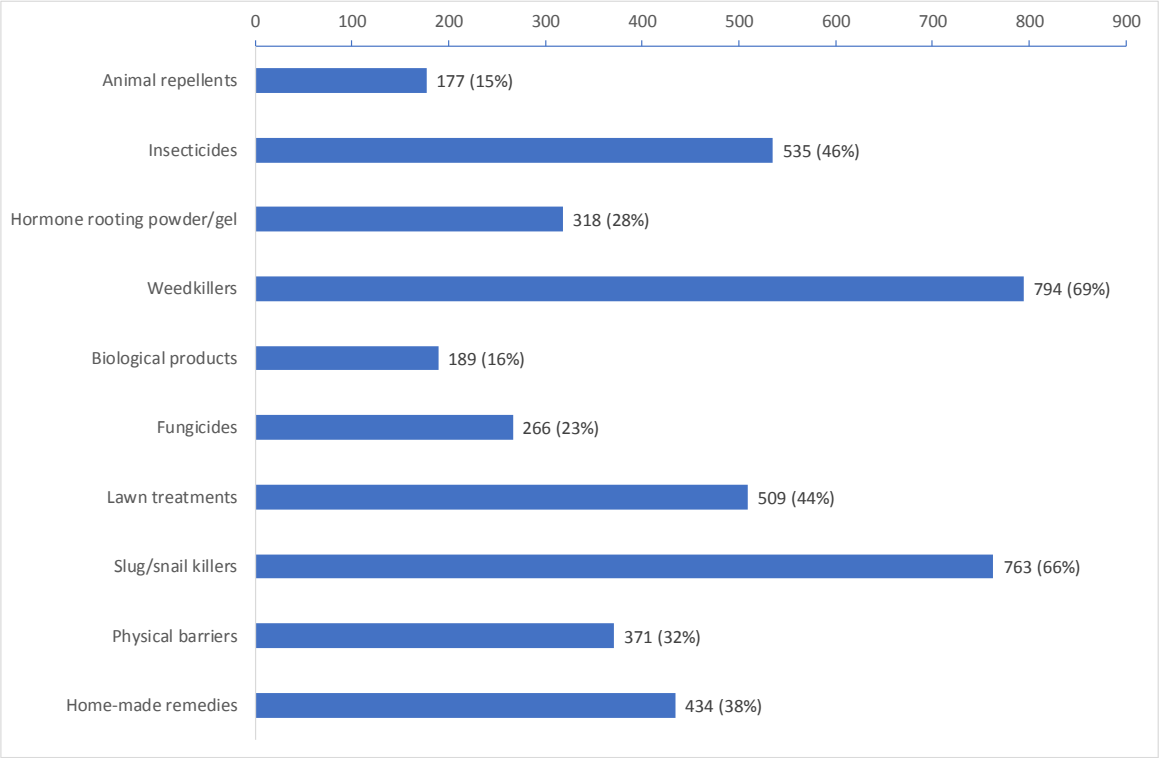
> *"What types of pesticides do you use?"*
> *"How many do you purchase per year?"*
> *"Where do you buy them from?"*

4.2.1 Types of product

Figure 4.2 shows the results of the types of plant protection products used by respondents. Note that the types being used varied very little between the trained users and amateurs.

Since the previous survey, three new response categories have been added to gauge use of alternatives to plant protection products. The new categories included biological products (such as nematodes), physical barriers (such as copper tape, slug and snail traps) or home-made remedies which was the fifth most common response. However, it should be noted that use of home-made remedies including use of common household chemicals as a pesticide is not without risk and may not always be legal. Around 3% of respondents gave 'other' answers, most commonly weeding or removing slugs and snails by hand.

Figure 4.2 Types of plant protection products used (2019) (respondents tick all that apply)



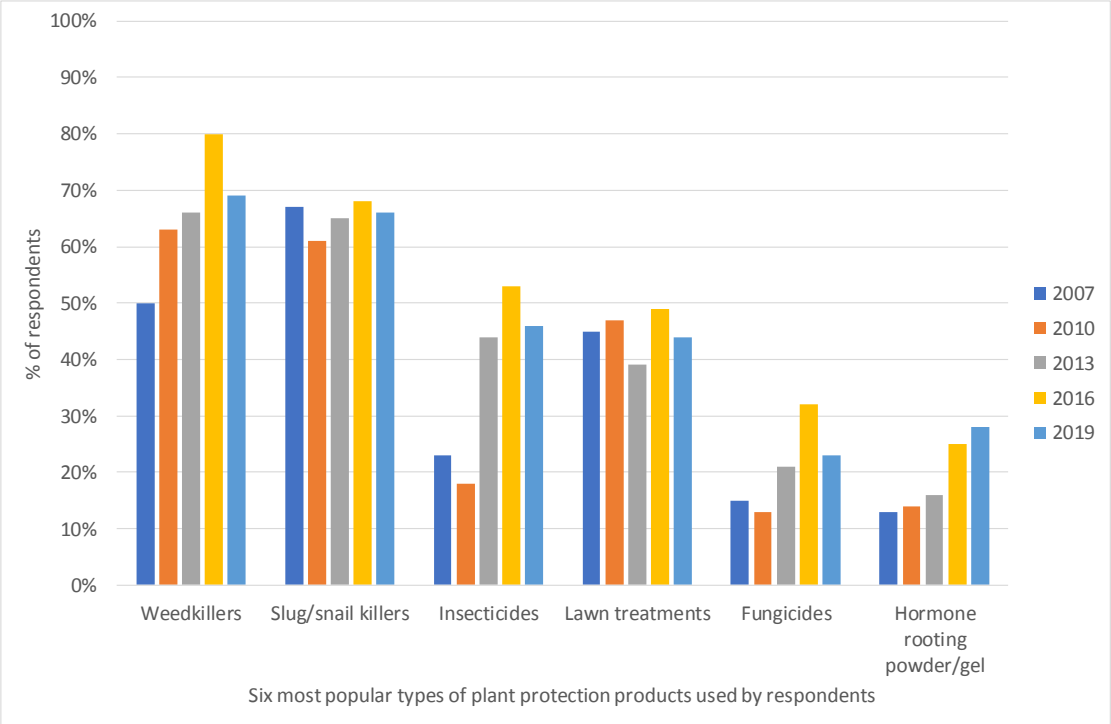
Although weedkillers were the highest purchase over all with slug/snail killers second, the reverse was seen for Wales and South West England. Results for London also showed slug/snail killers were the highest purchase with insecticides second but weedkillers were a close third.

The use of physical barriers was third highest for Welsh respondents and fourth for Scottish respondents, while biological products were more likely to be purchased by respondents from South East England.

There had been a steady increase in the use of weedkillers, insecticides and fungicides between 2007 and 2016. In 2019, the percentage of respondents using each of these was lower than in 2016 but still higher than previous years, as shown in Figure 4.3. The only product to increase in use between 2016 and 2019 was hormone rooting powder/gel, which overtook fungicides to become the fifth most popular plant protection product, and is probably due to more experienced gardeners' taking part in the 2019 survey, as seen from the increase in one or more of the following categories: the 65 and over age bracket, "keen and regular" and/or allotment gardeners.

Note that the new category of home-made remedies has a higher percentage than two of the categories in Figure 4.3 (fungicides and hormone rooting powder/gel) but is not shown in the chart as its purpose is to demonstrate year on year changes for plant protection products.

Figure 4.3 Comparison of the six most popular types of plant protection products used by respondents (2007, 2010, 2013, 2016 and 2019)



4.2.2 Quantities of product purchased

The responses are shown in Figure 4.4. Note there was a very similar distribution in terms of how many plant protection products were purchased per year between trained users and amateurs. The most common number purchased is 2 in each group – making 28% of the amateur group and 33% of the trained group.

Figure 4.4 Number of plant protection products purchased per year on average (2019)

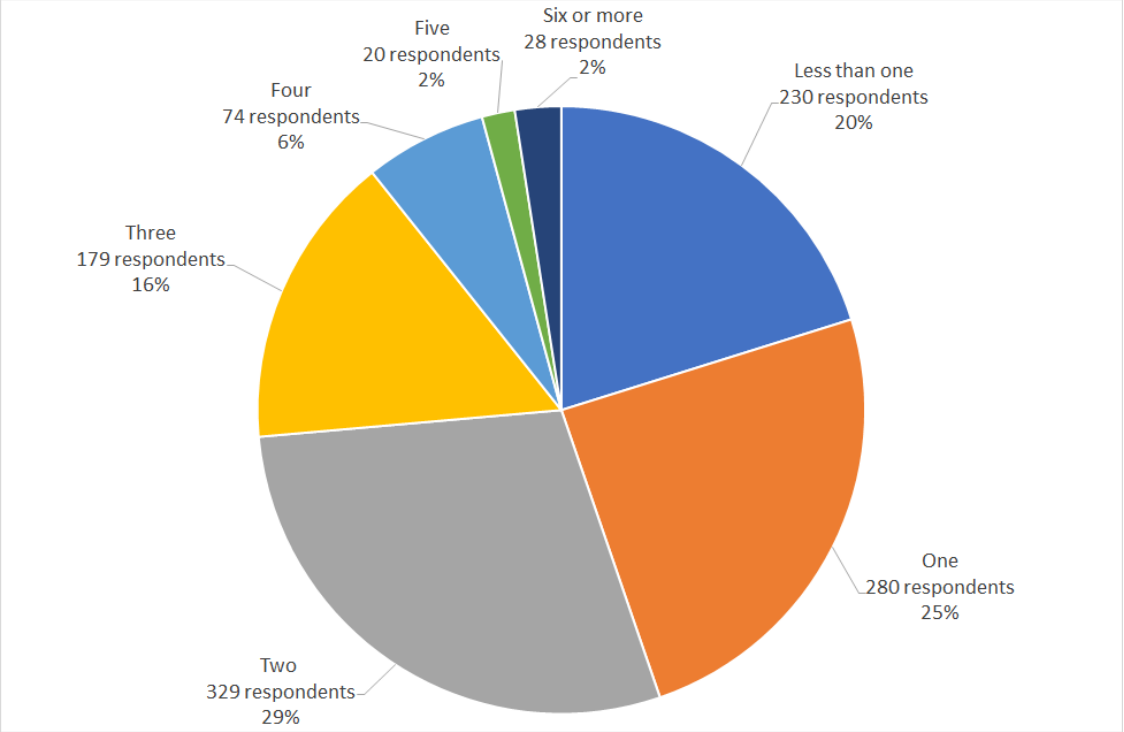
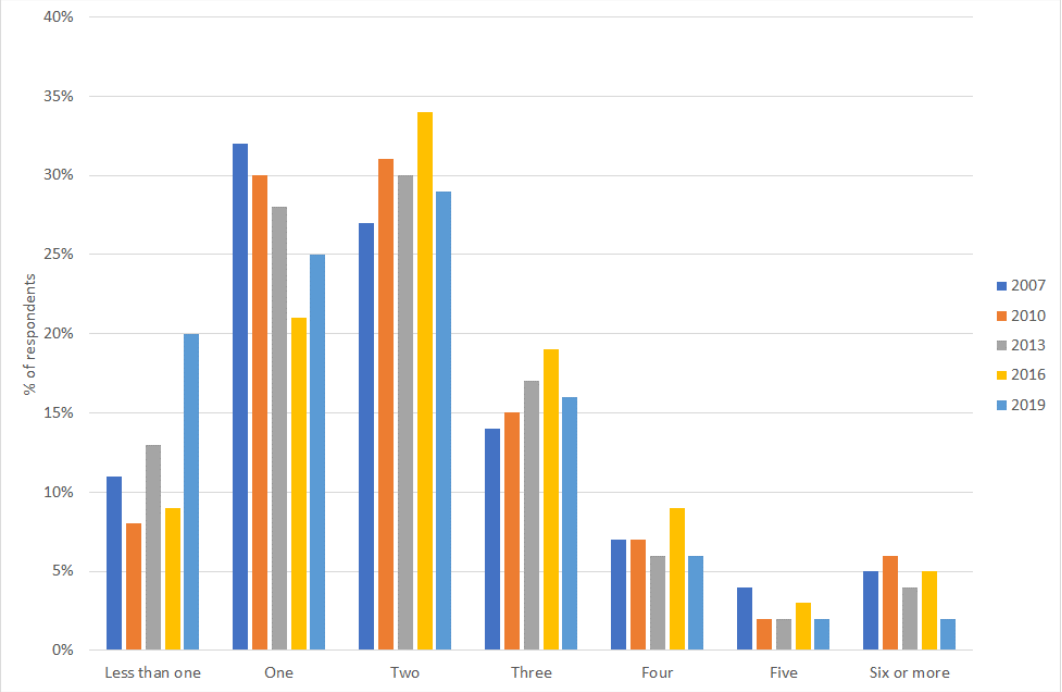


Figure 4.5 shows that in 2019, there was an increase in the proportion of respondents using less than one or only one product and a corresponding decrease in the number of people using two or more. Previously there had been a steady increase in people using two or three and a corresponding steady decrease in people using only one.

Figure 4.5 Comparison of number of plant protection products purchased in 2007, 2010, 2013, 2016 and 2019



4.2.3 Purchase locations

Respondents were asked where they usually bought their plant protection products. The highest proportion bought their products from DIY or home stores, followed closely by garden centres.

Figure 4.6 Where plant protection products are purchased (2019) (respondents tick all that apply)

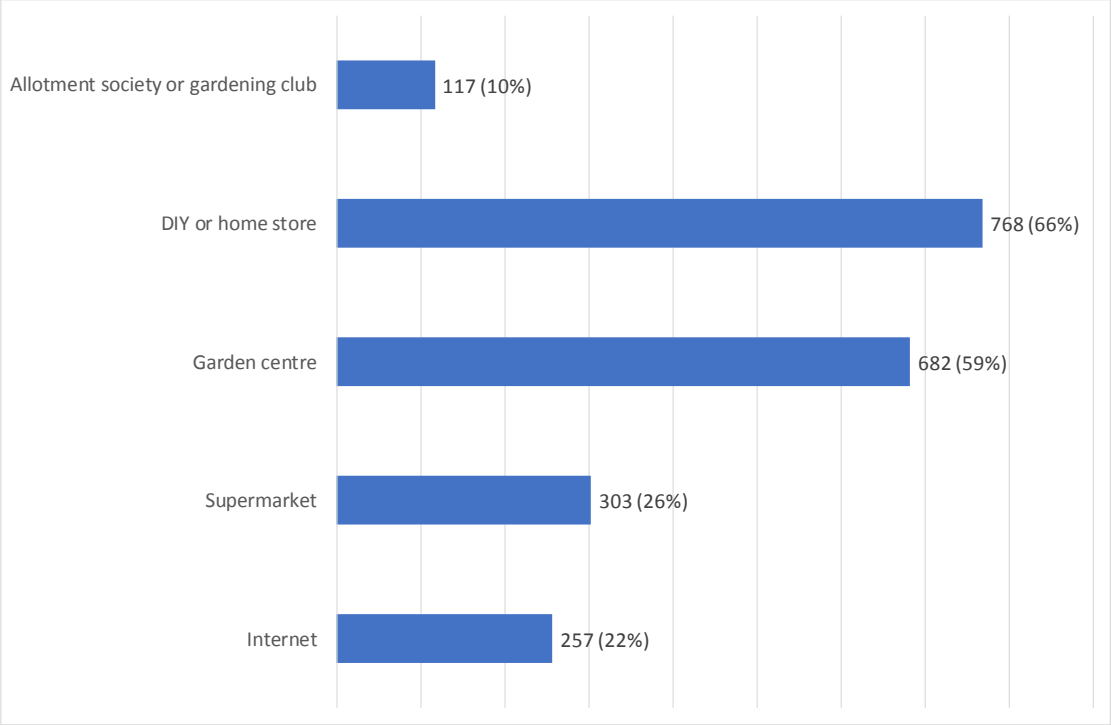
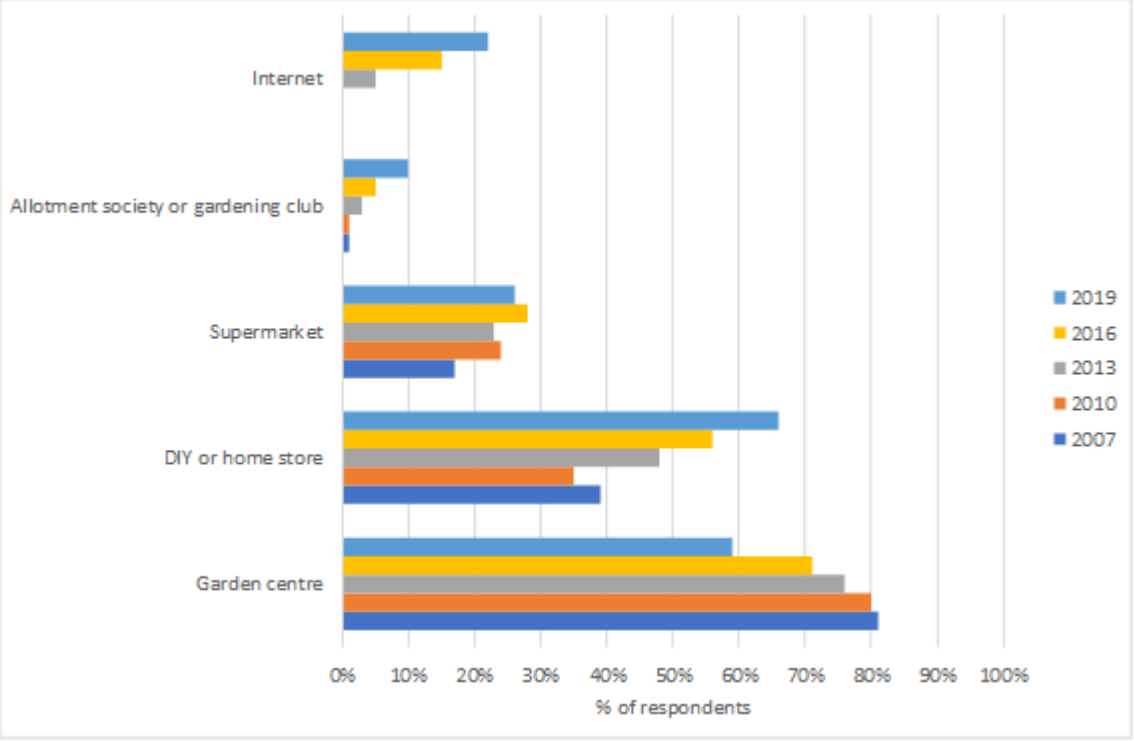


Figure 4.7 compares the purchase location in the survey years since 2007. In 2019, for the first time, the greatest proportion of respondents purchased their products from DIY or home stores. The proportion using the internet continues to increase and has almost caught up with supermarkets in popularity. The increase in purchasing via the internet could be partly due to more respondents purchasing biological products such as nematodes for slug/snail and vine weevil control, as twice as many respondents that use these products also indicated that they purchased products online. In addition, although some can be bought or ordered in stores, many of these biological products have a shorter shelf life and some need refrigeration (eg some nematode products) which means they are more likely to be bought online. Although some micro-organisms (eg bacteria, fungi, viruses) are authorised as plant protection products, these products are for professional use only and not currently available to amateur gardeners. However, this option was introduced to gauge the level of sustainable use, particularly with regard to integrated pest management amongst amateur gardeners. Integrated pest management combines different types of controls in a sensible, long-term plan using a mixture of cultural, biological, mechanical/physical and pesticide controls.

Figure 4.7 Comparison of main purchase locations for plant protection products (2007, 2010, 2013, 2016 and 2019)



4.3 Storage

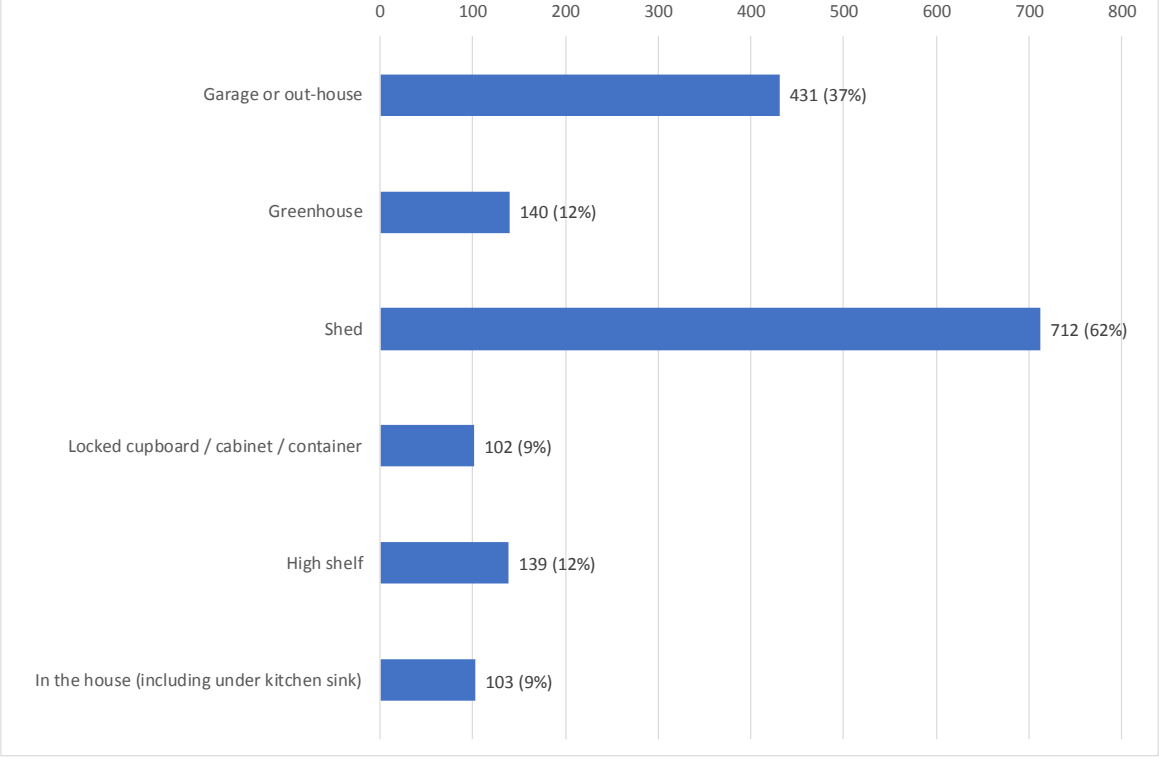
The questions in this section were asked of all 1155 respondents. They were asked:

> *"Where do you store them?"*
> *"How long would you store them?"*

4.3.1 Storage location

Figure 4.8 shows that the shed (62%) was the most popular storage location followed by the garage (37%). 12% of respondents reported that they stored products securely on a high shelf, while 9% stored them in a locked cupboard or container and 9% somewhere else in the house. Around 1% gave 'other' answers, of which only 'car boot' appeared more than once.

Figure 4.8 Where plant protection products are stored (2019) (respondents tick all that apply)



The proportions of respondents storing products in the garage, greenhouse, shed and house are similar to previous survey years. Table 4.6 shows there was a decrease in those storing plant protection products securely (locked cupboard/cabinet and/or high shelf), which is considered good practice in keeping plant protection products out of the reach of children and pets. However, the percentage is still higher than in years prior to 2016.

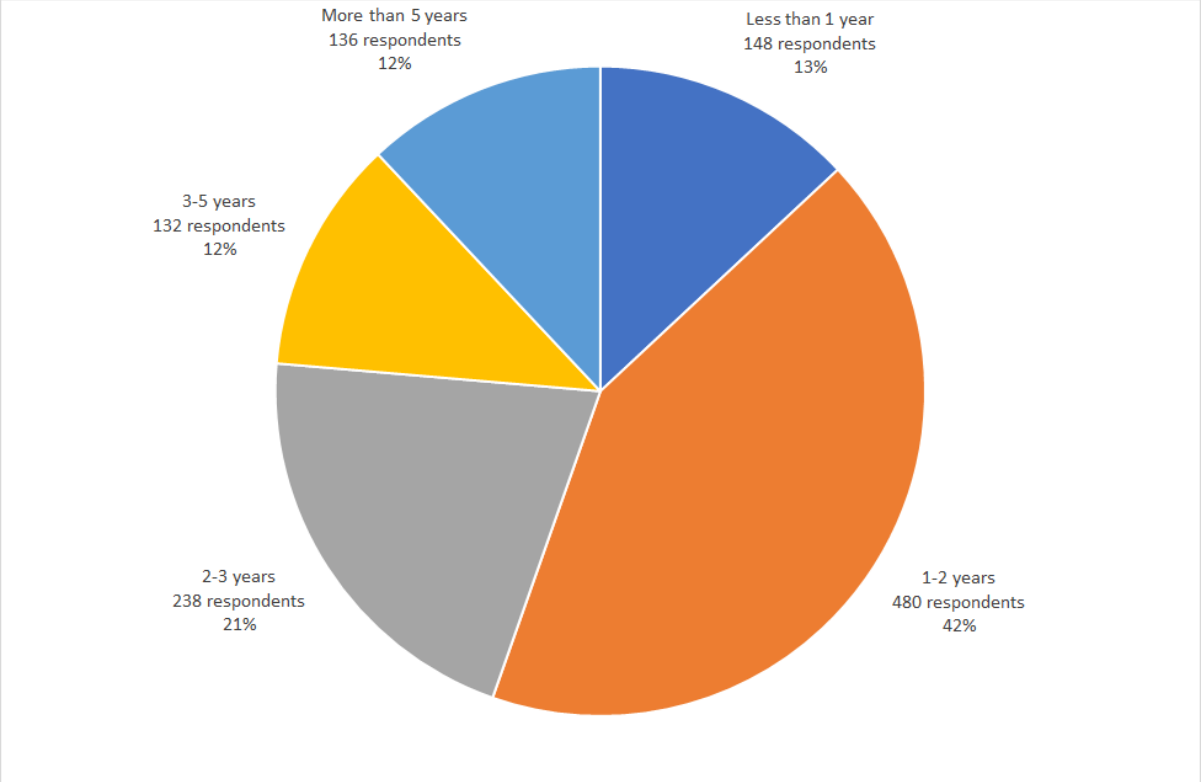
Table 4.6 Respondents storing plant protection products securely (2007, 2010, 2013, 2016 and 2019)

2007	2010	2013	2016	2019
11%	4%	14%	27%	21%

4.3.2 Length of storage

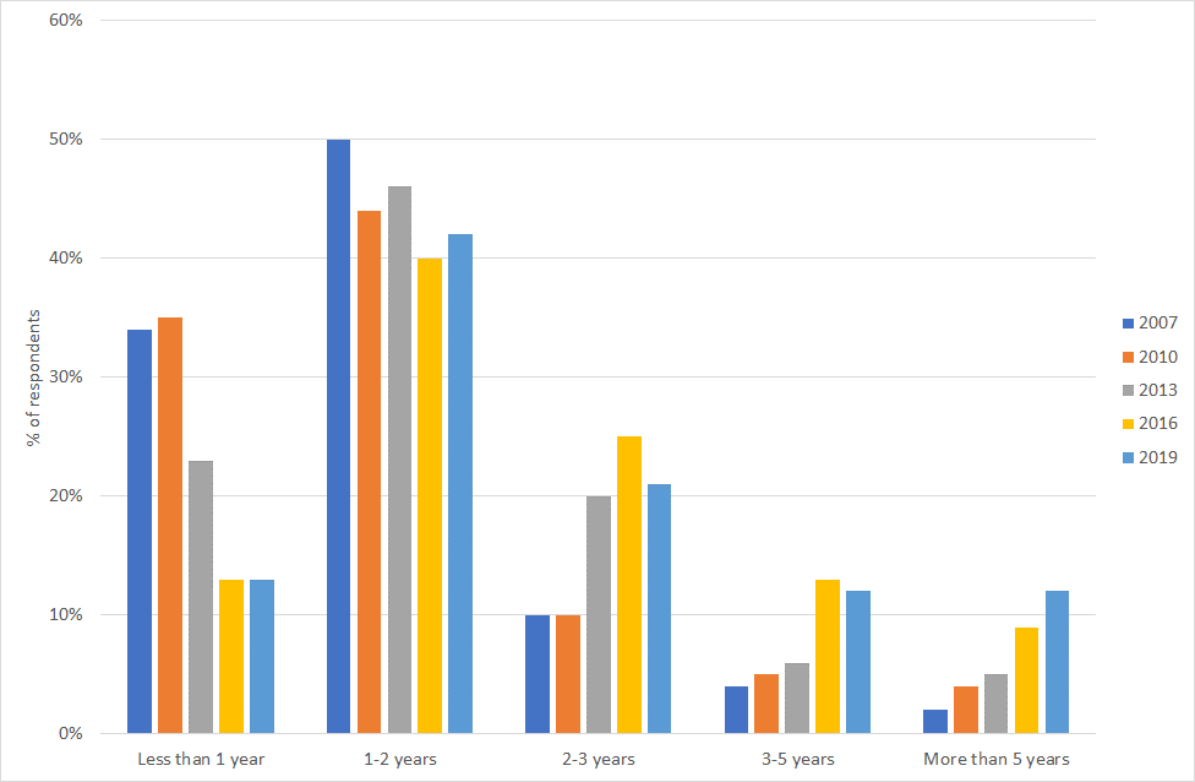
The highest proportion of respondents store products for 1-2 years (42%), while 21% store products for 2-3 years as shown in Figure 4.9.

Figure 4.9 How long plant protection products are typically stored (2019)



Comparison of storage lengths over the survey years in Figure 4.10 shows that storing for two years or less has decreased since the earlier surveys (before 2016), with longer storage now more common. Storage for more than two years is not encouraged as products may deteriorate and not be as effective. In addition, labels may also deteriorate making it difficult to read the instructions for safe use and disposal.

Figure 4.10 Comparison of length of storage of plant protection products (2007, 2010, 2013, 2016 and 2019)



4.4 Use

4.4.1 Product instructions

The questions in this section were asked of all 1155 respondents. They were asked:

> *"When would you read pesticide instructions on the label?"*
> *"How clear do you think the instructions are?"*
> *"How closely do you follow the instructions?"*

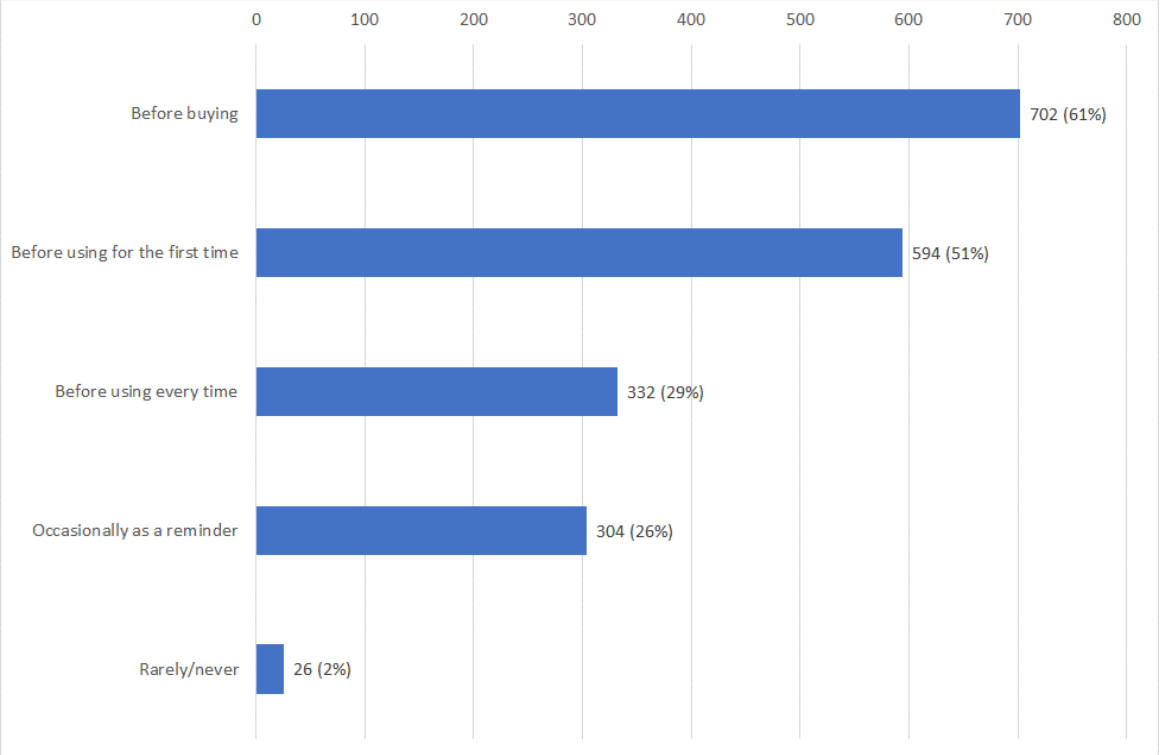
Figure 4.11 shows the different times at which people read the instructions on the product label, with the most common time being before buying. Respondents were able to indicate that they read the instructions at various different times and the pattern of responses indicated the following:

- The vast majority of respondents do read the instructions either at the point of buying or at the point of using for the first time, with many reading them at both these points.

- Around one third of the respondents would read the instructions again every time and a similar number read them occasionally as a reminder. Very few people do not consult the instructions or consult them only rarely.

Compared with when this question was asked before, in 2019 there was a larger difference between the trained users and amateurs. For example, 70% of those with training read before buying compared with 59% of amateurs; and 40% of those with training read before every use, compared with 27% of amateurs.

Figure 4.11 When are the instructions on the product label read? (2019) (respondents tick all that apply)



In terms of when respondents read product instructions, the pattern in 2019 is very similar to that seen in 2016. There continues to be a higher proportion reading product instructions before using for the first time compared with earlier years (51% in 2019 compared with just 27% in the first survey in 2007). Likewise, the proportion reading before using every time remains higher than in the earliest years of the survey (29% in 2019 compared with just 13% in 2007).

This generally indicates a continuing trend of good practice, which may be due to addition of the caption “Use pesticides safely. Read the label” that was required to be added to the front of product labels and adverts from 2012 onwards.

Figure 4.12 Comparison of how often respondents read plant protection product labels (2007, 2010, 2013, 2016 and 2019)

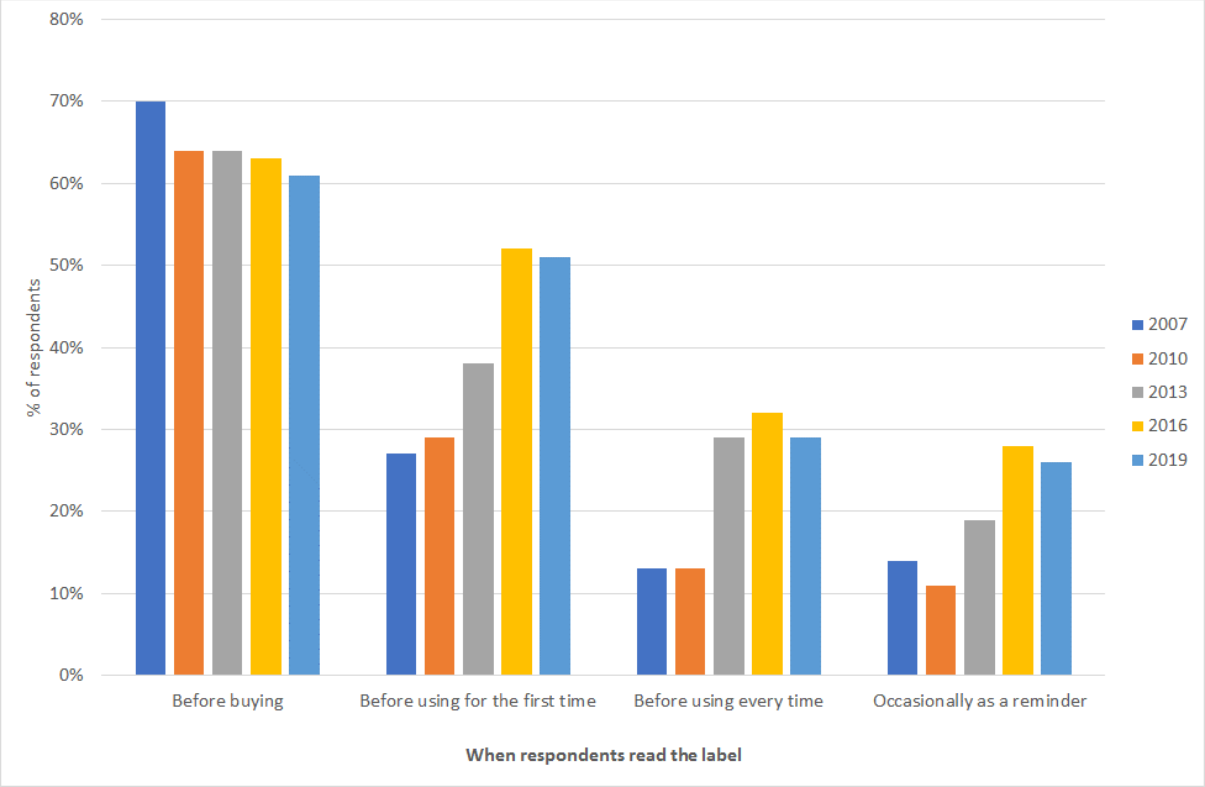
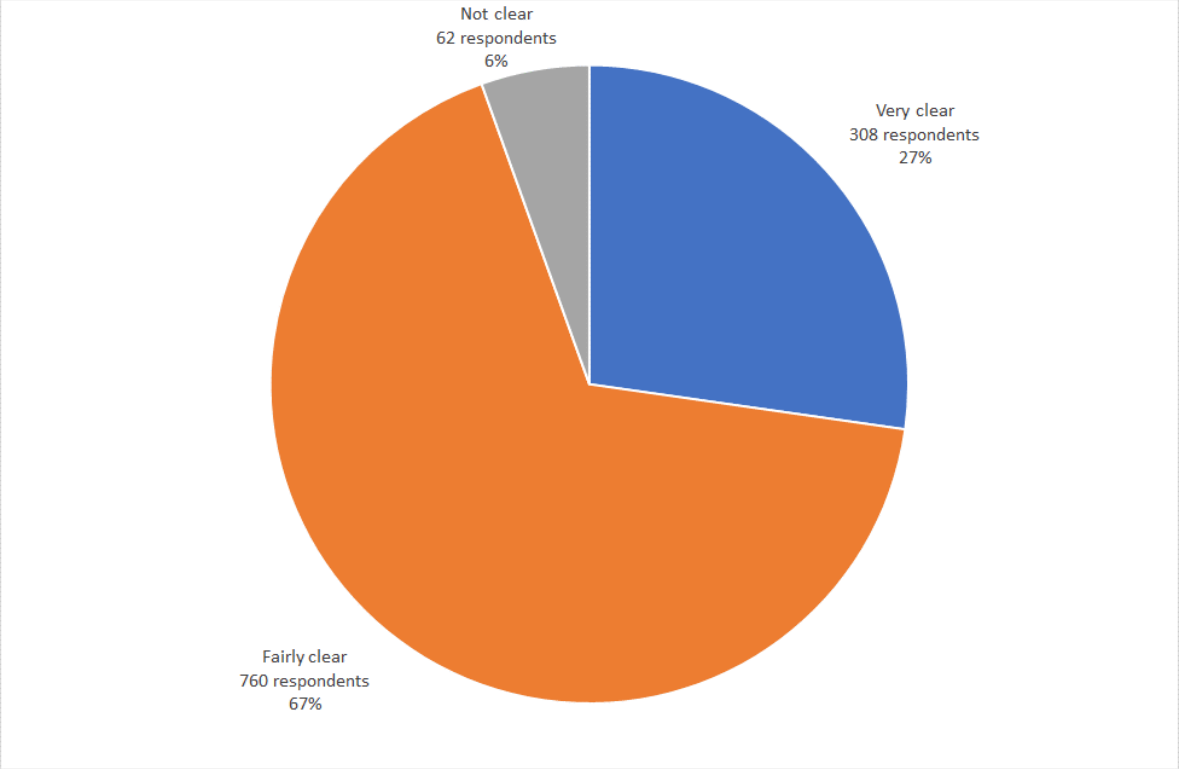


Figure 4.13 shows respondents' perception of clarity of product labels. Note that the perception of clarity of instructions on plant protection product labels was fairly similar between trained users and amateurs. For example, 26% of amateurs said the instructions are very clear, compared with an only slightly higher 31% amongst those with training, while 5% of amateurs said they were not clear, compared with a similar 6% amongst those with training.

A total of 94% respondents said they were very clear or fairly clear, which is similar to the percentage in previous years.

Figure 4.13 Respondents views on the clarity of instructions on product labels (2019)

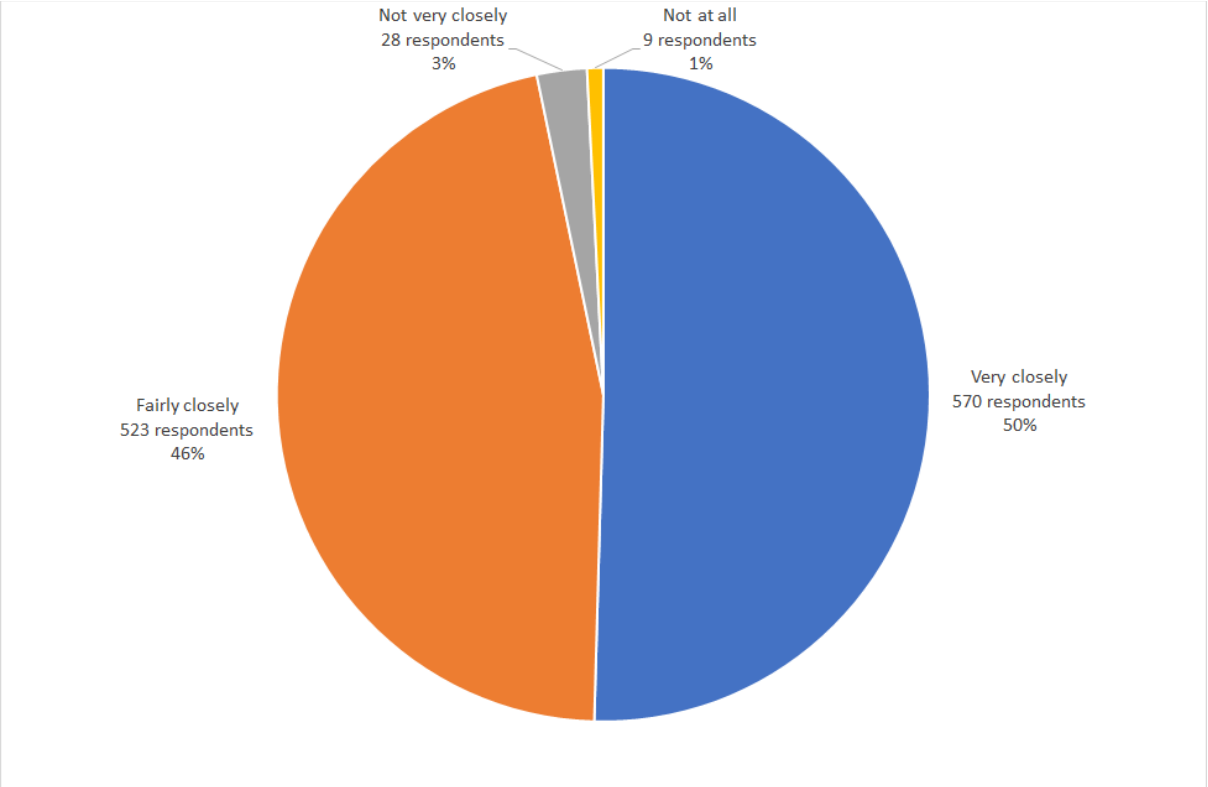


The final question about product instructions asked respondents how closely they followed the instructions. As shown in Figure 4.14, most respondents follow the instructions very closely (50%) or fairly closely (46%).

Over recent surveys, the most common response has flipped between very and fairly closely, always with similar proportions between the two. The combined percentage for those respondents following the label instructions very and fairly closely remains high (96% in 2019, compared with 97% in 2016 and 95% in 2013).

Note that trained users were more likely to say that they followed the instructions very closely (63%, compared with 47% of the amateurs).

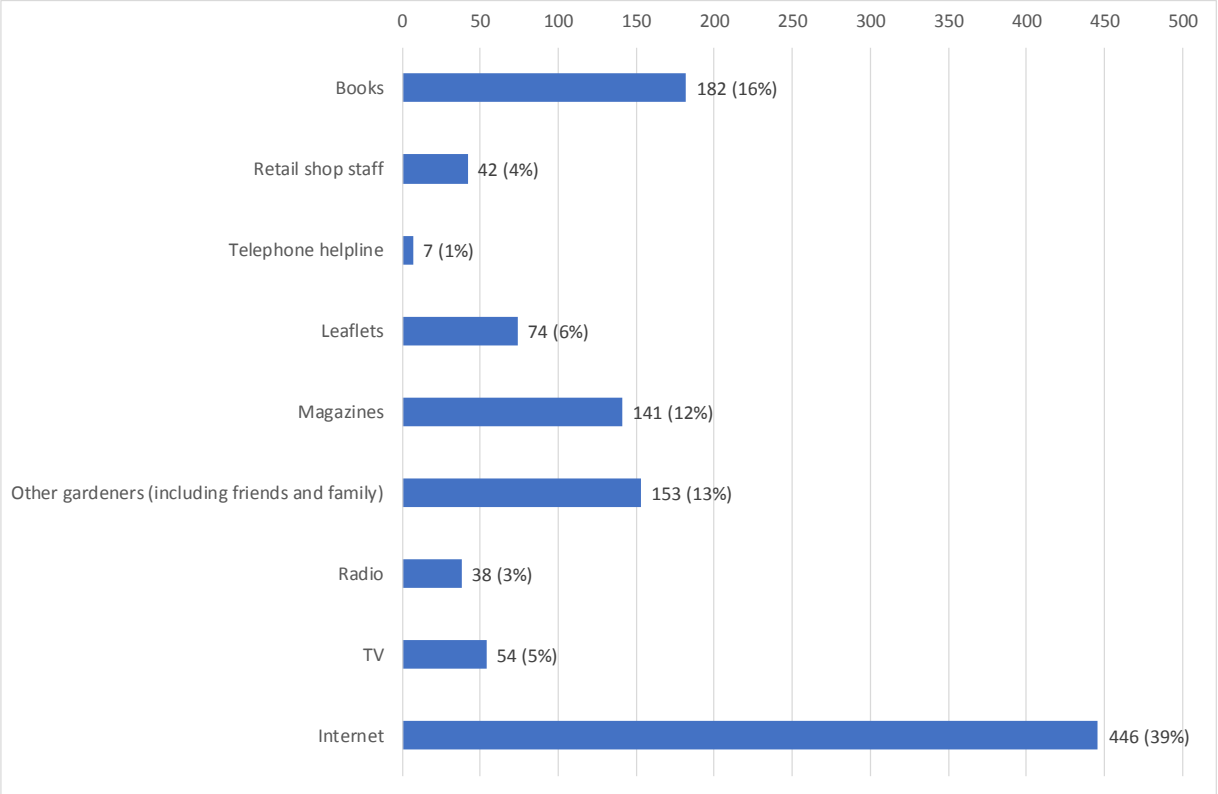
Figure 4.14 How closely respondents follow the instructions on the plant protection product labels (2019)



4.4.2 Other sources of information

In addition to product label information all 1155 respondents were asked where else they get information on how to use plant protection products. 503 respondents did use other sources of information and Figure 4.15 shows that many different options are used by respondents, with the most popular source of information being the internet. Around 3% gave 'other' answers.

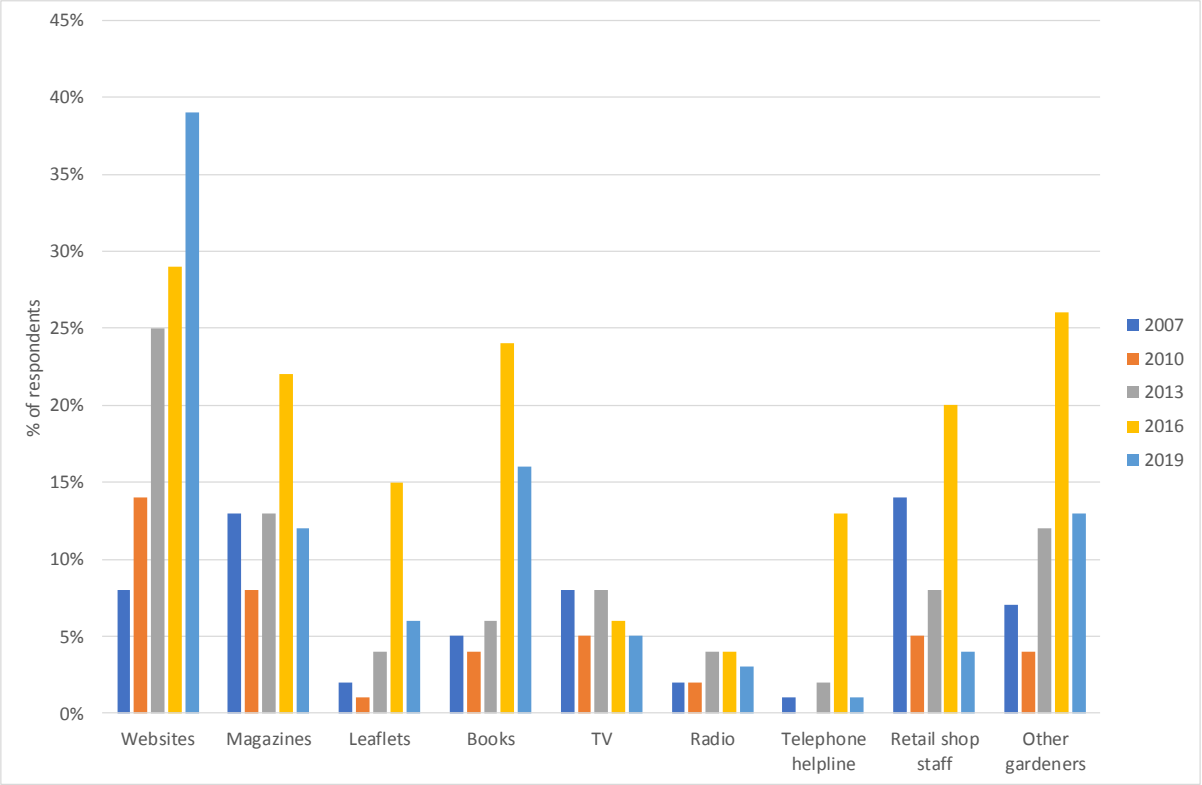
Figure 4.15 Other sources of information on how to use plant protection products in 2019 (respondents tick all that apply)



Comparison with previous survey years, as shown in Figure 4.16, shows that the internet continues to increase in popularity as a source of information. In 2019 there were large decreases in the proportion of people using books and magazines and also the number of people consulting retail shop staff or other gardeners. However, this represents a fall back to levels seen in previous surveys and it appears these were all just unusually high in 2016.

It is a concern that respondents are now less likely to ask retail staff, since most retailers are required by law to have trained staff available to provide information and advice on request, at the point of sale, about amateur plant protection products.

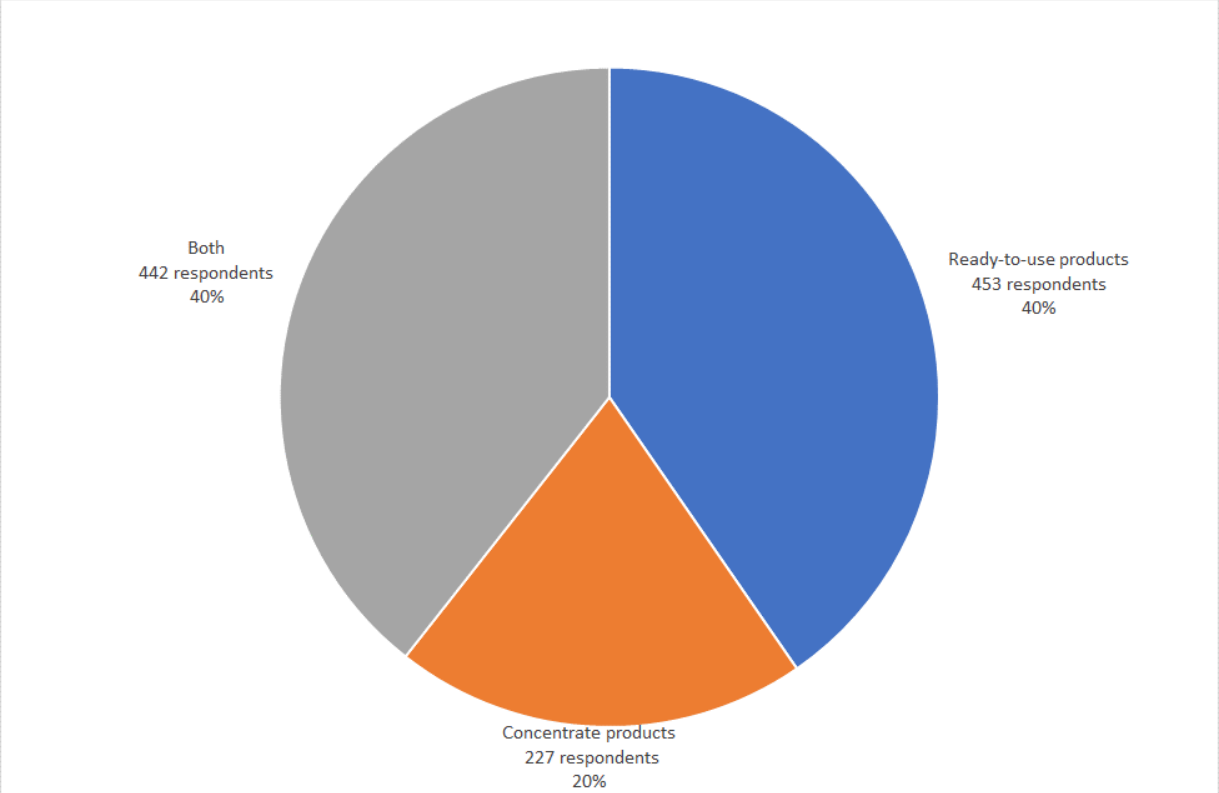
Figure 4.16 Comparison of other sources of information used for plant protection products (2007, 2010, 2013, 2016 and 2019)



4.4.3 Ready-to-use and concentrate products

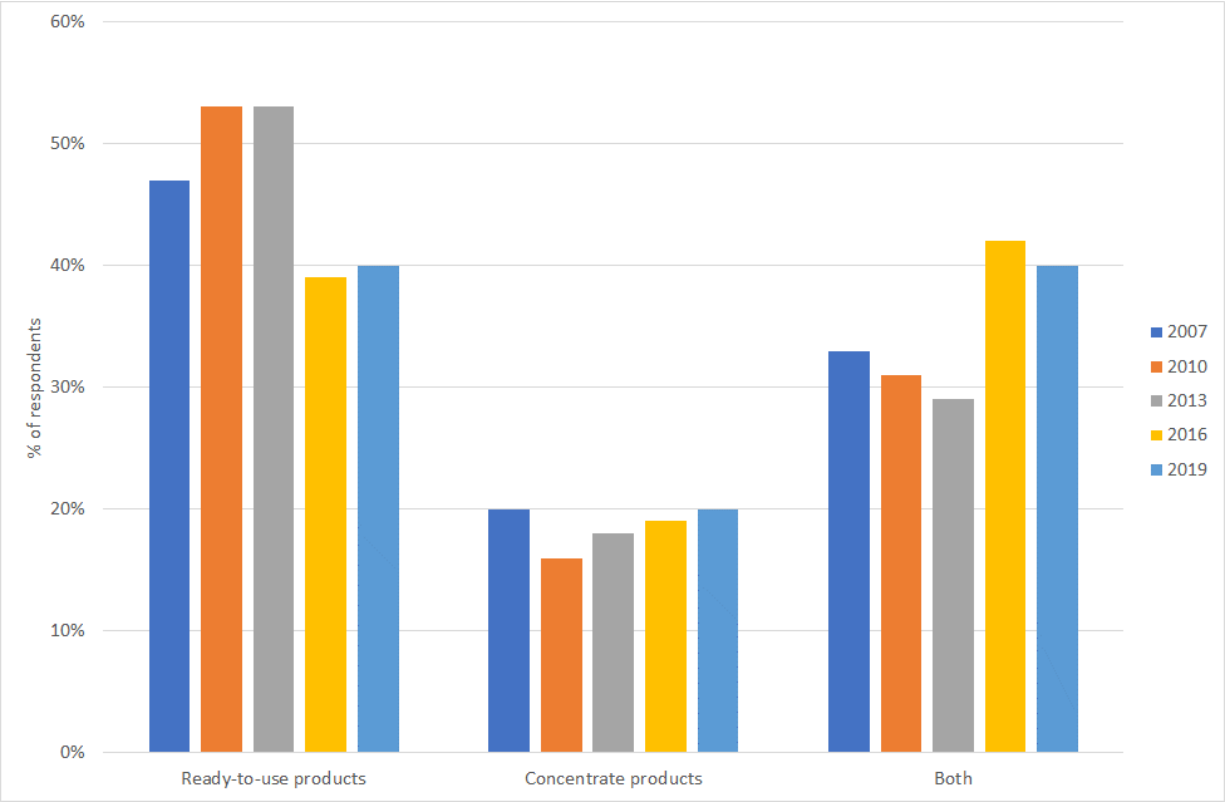
As with previous survey years, respondents were asked whether they used only ready-to-use products, only concentrate products that need diluting before use, or both types of products. Figure 4.17 shows the results.

Figure 4.17 Types of product used (2019)



Comparison of results with previous survey years, as shown in Figure 4.18, reveals a clear change in 2016 that has been largely maintained in 2019; with fewer respondents using only ready-to-use products and instead using both ready-to-use and concentrate products.

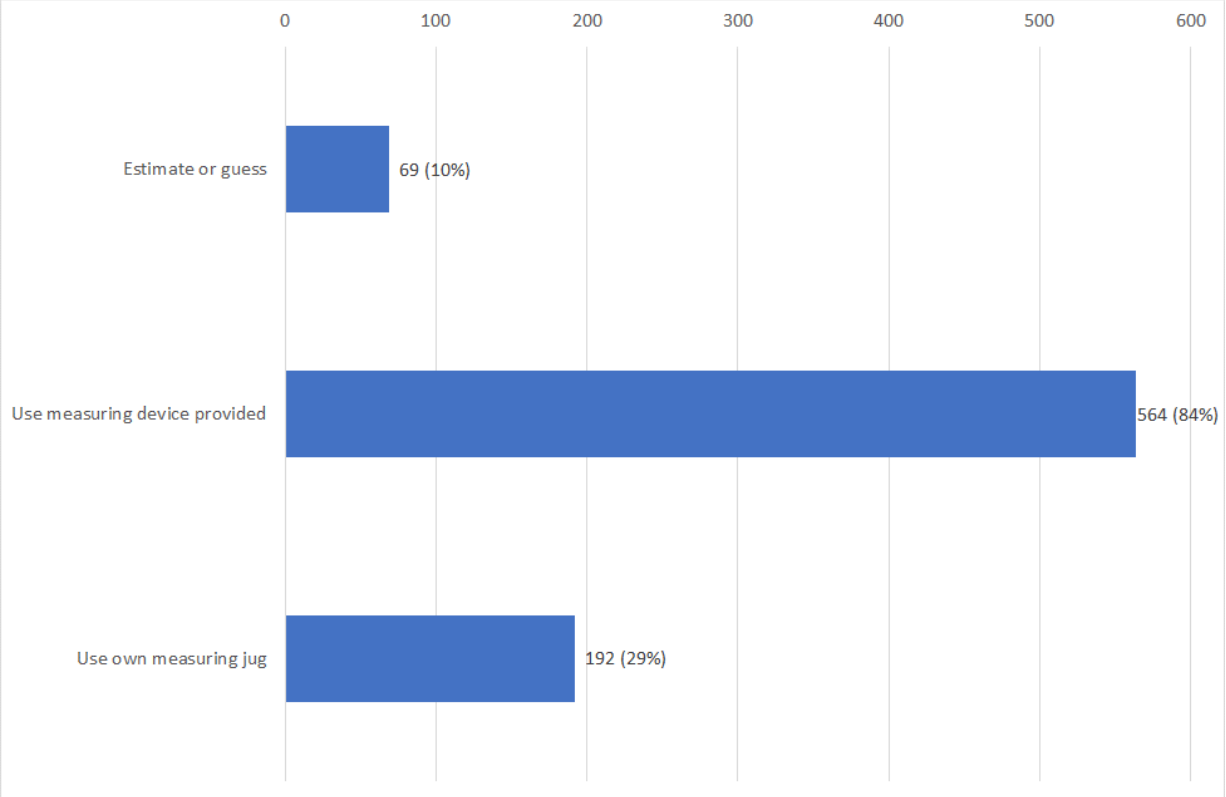
Figure 4.18 Comparison of use of ready-to-use and concentrate products (2007, 2010, 2013, 2016 and 2019)



4.4.4 Measuring out concentrate product for diluting

Respondents who use concentrate products (n=669) were asked how they would measure the concentrate product for diluting. Figure 4.19 shows the results, which are similar to previous survey years, with people most commonly using the measuring device provided with the product. Multiple answers were allowed.

Figure 4.19 Method of measuring out concentrate product for diluting (2019)

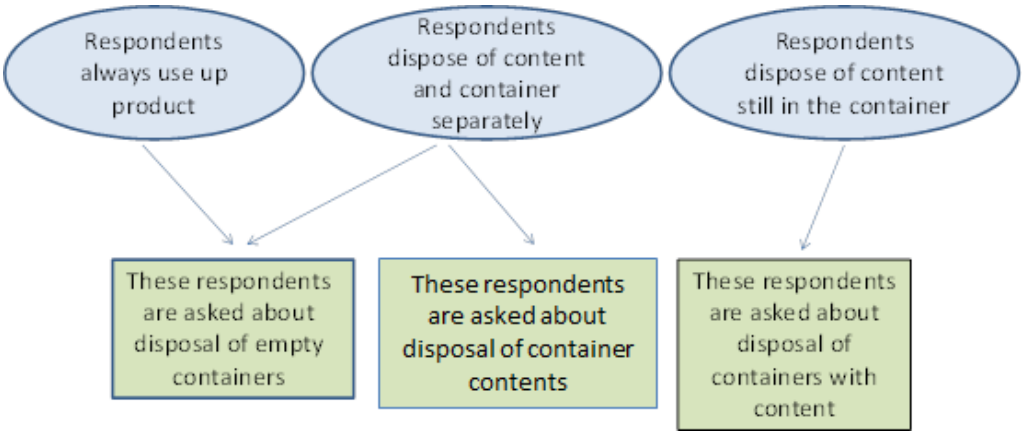


n=669 respondents

4.5 Disposal

At this point in the survey, respondents were asked whether they disposed of the content and container of a plant protection product together or separately. Their answers route them towards appropriate questions as shown in Figure 4.20 below.

Figure 4.20 Flowchart showing survey routing



4.5.1 Disposal of unused/unwanted plant protection product before disposing of the container

Depending on the type of product respondents used, they were asked if they used up the contents or, if they had content left over at the point of disposal, whether they disposed of the content and container separately or together in the original container.

Table 4.7 shows that the majority of respondents use up both types of plant protection products: 74% for concentrate and 69% for ready to-use. The majority is a little lower than in 2016 and 2013 as shown in Figure 4.21.

For ready-to-use products, 161 respondents (18%) would sometimes dispose of leftover content while it was still in the container. For concentrate products, 85 respondents (13%) would do so.

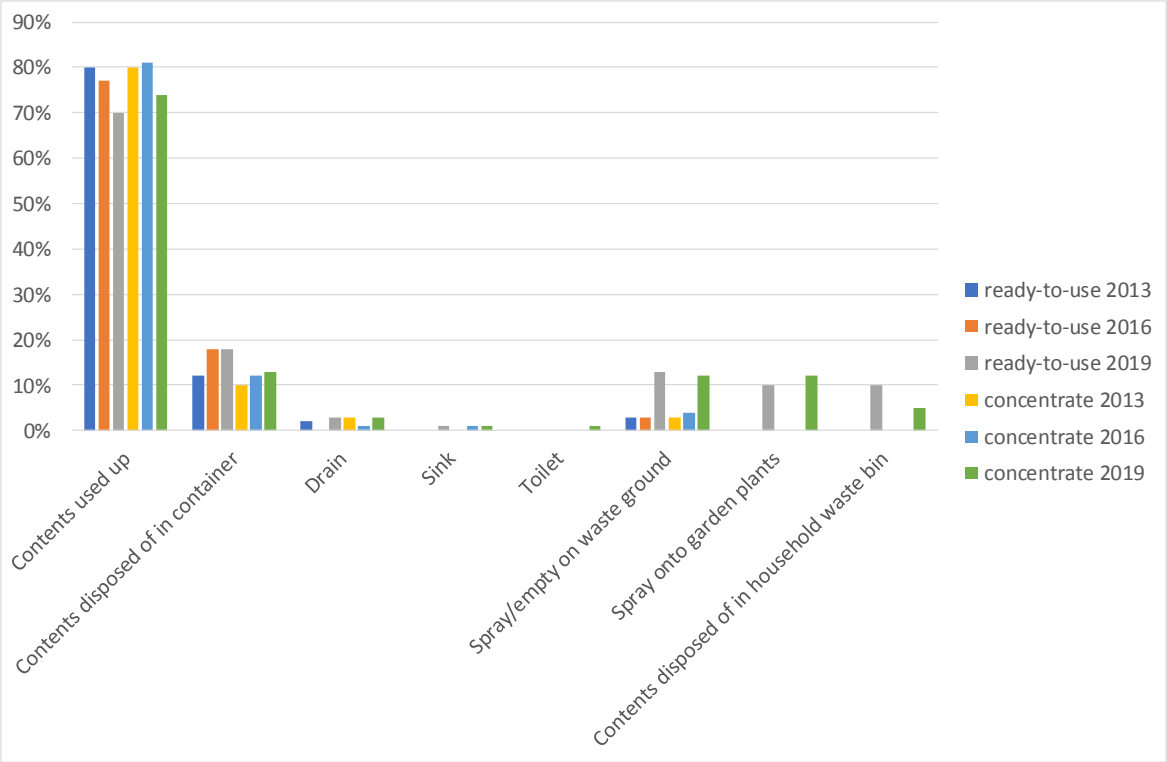
When respondents dispose of contents and container separately, they do so in a number of ways but most commonly by spraying onto waste ground or onto plants. The same is true for both ready-to-use and concentrate products, with ready-to-use products also being quite likely to be disposed of in a household bin. Disposal of certain products to the household bin might be allowed on the product label, such as those containing iron sulphate as the only active substance (eg mosskiller only products); but the contents should be disposed of in the original container and not separated, and is therefore considered to be poor practice. Around 1-2% of respondents gave ‘other’ responses, had not yet been in a situation where they needed to do this. There was also some confusion around the question with a number of respondents clearly talking about disposal of containers in the ‘other’ comments for this question about contents.

The distribution of responses for 2019 is similar to previous years, as shown in Figure 4.21.

Table 4.7 Disposal routes of unused/unwanted plant protection product before disposing of the container (2019)

Response	Ready-to-use		Concentrate	
	Frequency	Percentage	Frequency	Percentage
Contents used up	625	70%	496	74%
Contents disposed of in container	161	18%	85	13%
Contents disposed to drain	29	3%	18	3%
Contents disposed to sink	8	1%	4	1%
Contents disposed to toilet	1	0%	4	1%
Contents sprayed/emptied onto waste ground	113	13%	80	12%
Contents sprayed onto garden plants	93	10%	79	12%
Contents disposed of in household waste bin	86	10%	34	5%

Figure 4.21 Comparison of disposal routes of unused/unwanted plant protection product before disposing of the container (2013, 2016 and 2019)



4.5.2 Disposal of containers with plant protection product still in the container

161 respondents indicated that they sometimes disposed of containers with ready-to-use product still inside and 85 indicated that they sometimes disposed of containers with concentrate product still inside. Tables 4.8 and 4.9 show how they dispose of these, for ready-to-use and concentrate products respectively. A small number of respondents (1-2%) gave 'other' responses to this question, with the most common 'other' response being people saying they did not dispose of the product because they did not know how.

Of the 161 respondents who dispose of ready-to-use plant protection products with some or all of the contents in the product container, the most common disposal route is a normal household waste bin (53%) and the second most common route is a hazardous chemical waste facility at a household waste recycling centre (29%).

Of the 85 respondents who dispose of concentrate plant protection products with some or all of the contents in the product container, the most common disposal route is a hazardous chemical waste facility (49%) and the second most common route is a normal household waste bin (38%).

Figure 4.22 shows comparisons with previous years for ready-to-use products. In 2019 there are fewer people using hazardous chemical waste facilities and more using the normal household waste bin, compared with 2016.The opposite is true for concentrate products, as shown in Figure 4.23.

Disposal to the normal household bin would appear to indicate no improvement in good practice. However, it is not clear from the survey what type of unused/unwanted product is being disposed of to the normal household bin, so it is not possible to know if this disposal route is allowed on the label of the product being disposed of in this way. Only granular ferrous sulphate products (for moss control in lawns) or ferrous sulphate plus fertiliser products (for lawn feed and moss control) are allowed to be disposed of in the normal household bin. All other products should be disposed of as household hazardous waste via local authorities, often at household waste recycling centres (HWRCs) although facilities vary between local authorities.

Table 4.8 Disposal methods used for ready-to-use product containers with plant protection product still in the container (2019)

Response	Number	Percentage
Normal waste (non-recycling): household waste bin	85	53%
Normal waste (non-recycling): HWRC	23	14%
Plastic recycling: household - kerbside/street collection	24	15%
Plastic recycling: HWRC	14	9%
Plastic recycling point: supermarket/car park etc.	2	1%
Glass recycling: household - kerbside/street collection	7	4%
Glass recycling: HWRC	4	2%
Hazardous chemical waste: HWRC	46	29%
Hazardous chemical waste: local authority doorstep collection	1	1%
Burn	1	1%

Multiple answers (n=161 respondents)

Figure 4.22 Comparison of disposal methods used for ready-to-use product containers with plant protection product still in the container (2013, 2016 and 2019)

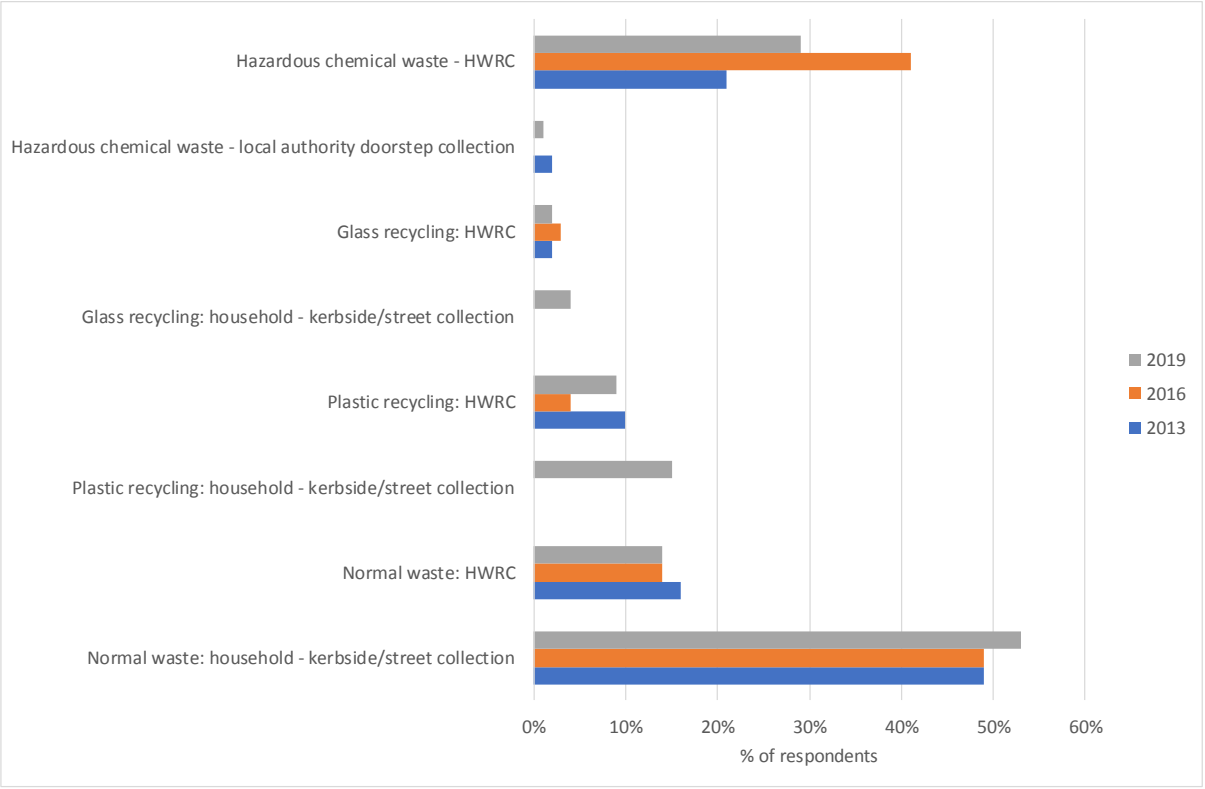


Table 4.9 Disposal methods used for concentrate product containers with plant protection product still in the container (2019)

Response	Number	Percentage
Normal waste (non-recycling): household - kerbside/street collection	32	38%
Normal waste (non-recycling): HWRC	14	16%
Plastic recycling: household - kerbside/street collection	9	11%
Plastic recycling: HWRC	2	2%
Glass recycling: household - kerbside/street collection	4	5%
Glass recycling: HWRC	1	1%
Hazardous chemical waste: HWRC	42	49%
Hazardous chemical waste: local authority doorstep collection	1	1%
Burn	1	1%

Multiple answers (n=85 respondents)

Figure 4.23 Comparison of disposal methods used for concentrate product containers with plant protection product still in the container (2013, 2016 and 2019)

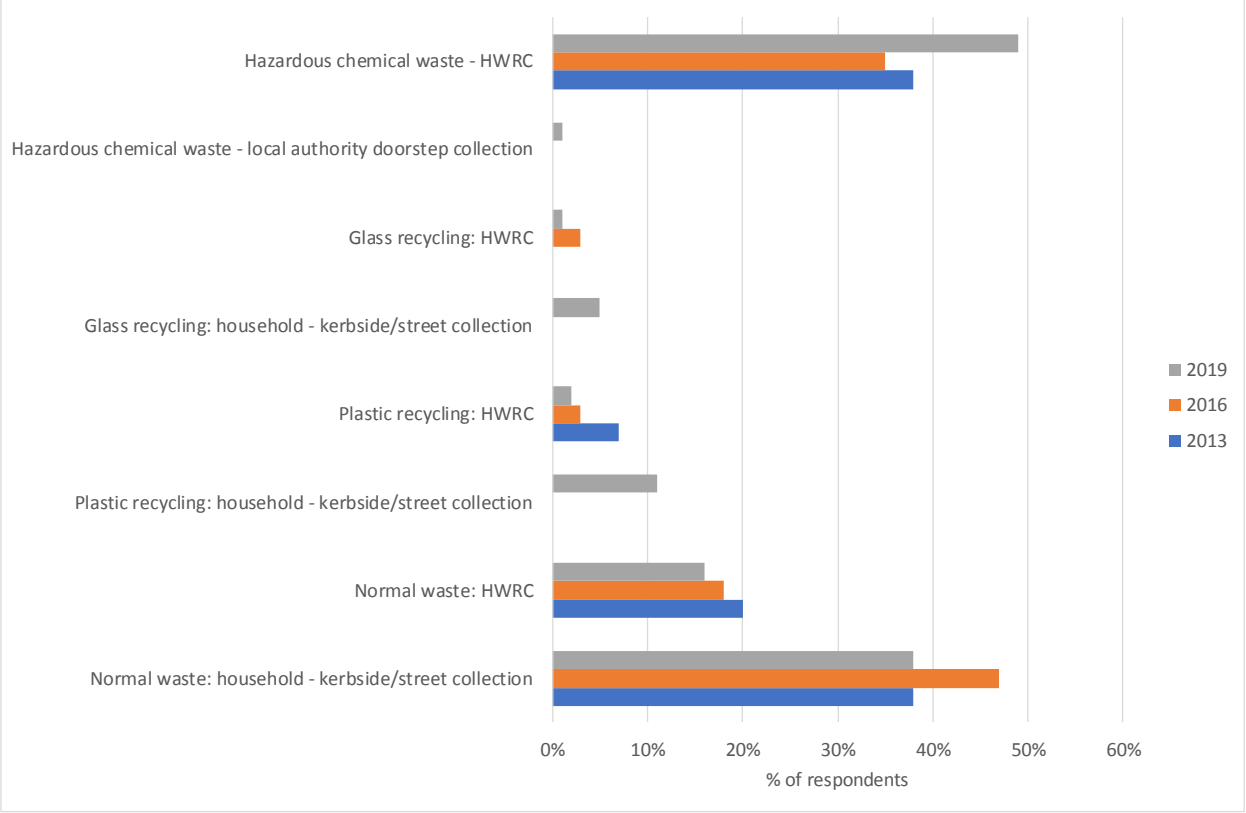
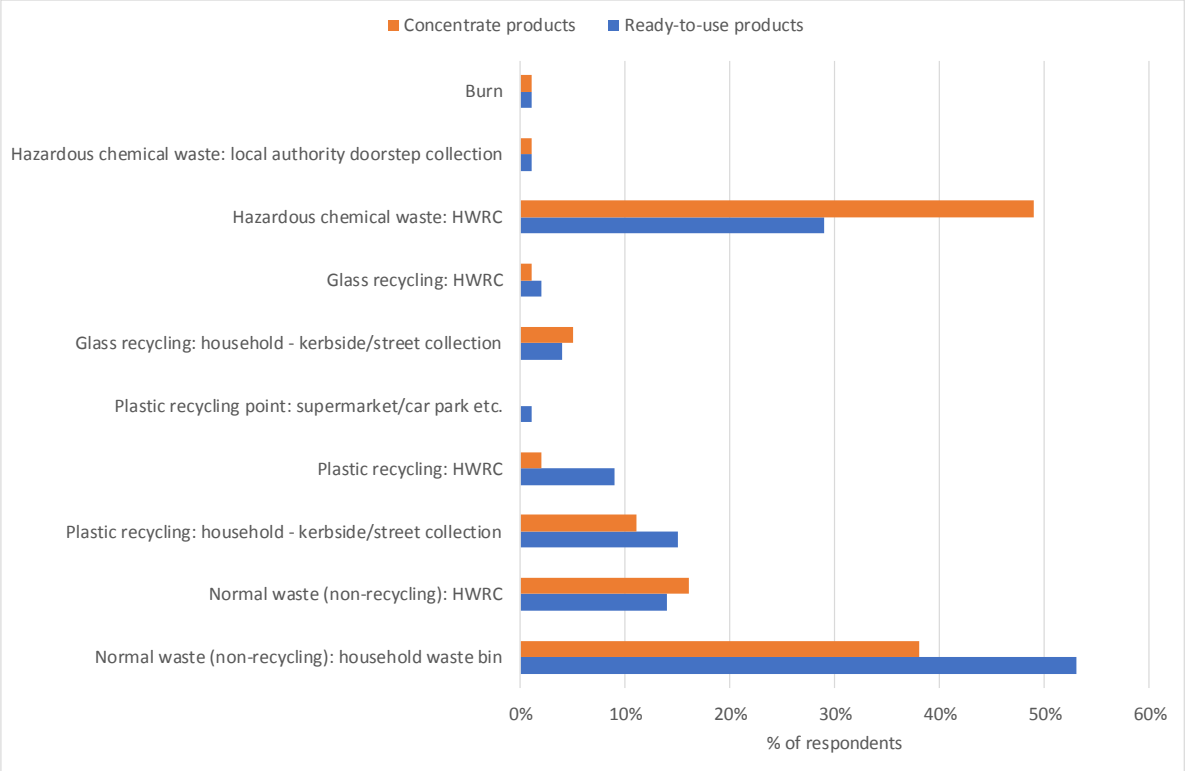


Figure 4.24 compares the results for ready-to-use and concentrate products, showing that correct disposal for most products as household hazardous waste is higher for concentrate products than ready-to-use products.

Figure 4.24 Comparison of disposal methods used for ready-to-use and concentrate containers with plant protection product still in the container (2019)

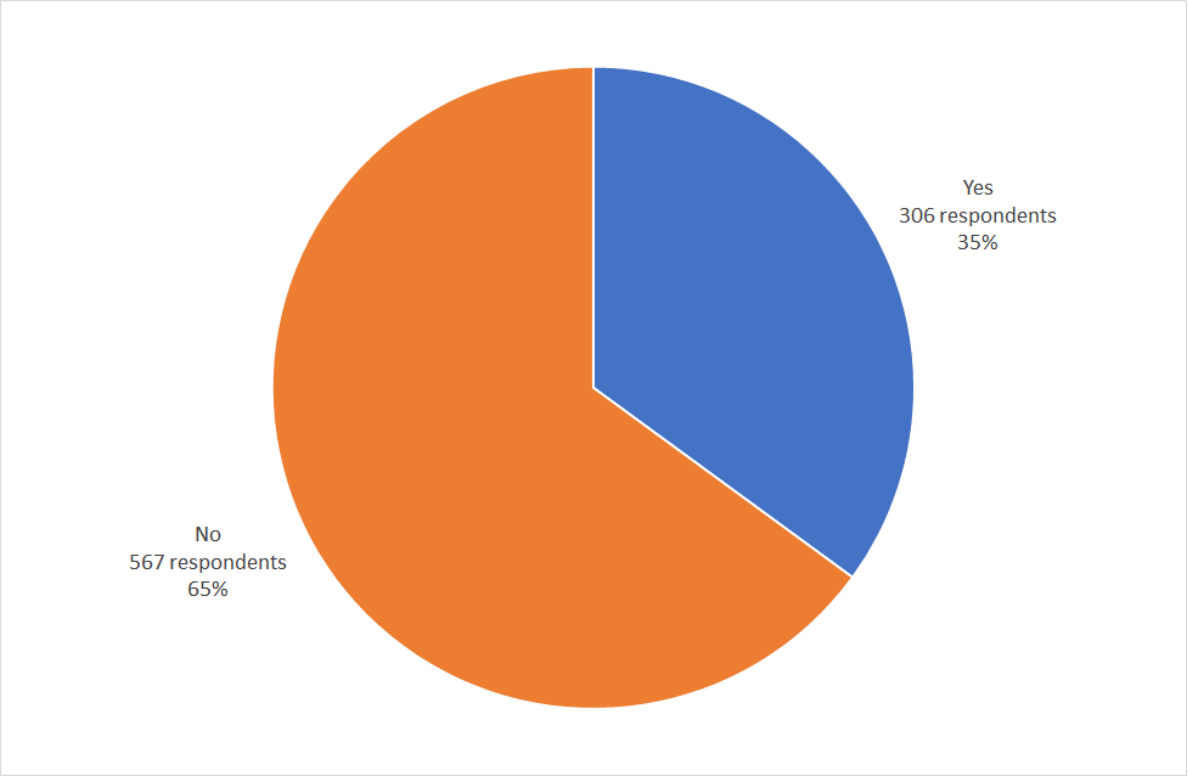


4.5.3 Rinsing out of empty product containers

This section of the report focuses on those respondents who say they are sometimes left with an empty container, either because they dispose of the content separately or because they use the product up.

For ready-to-use products, there are 873 such respondents and Figure 4.25 shows how many respondents rinse the empty container from the ready-to-use product.

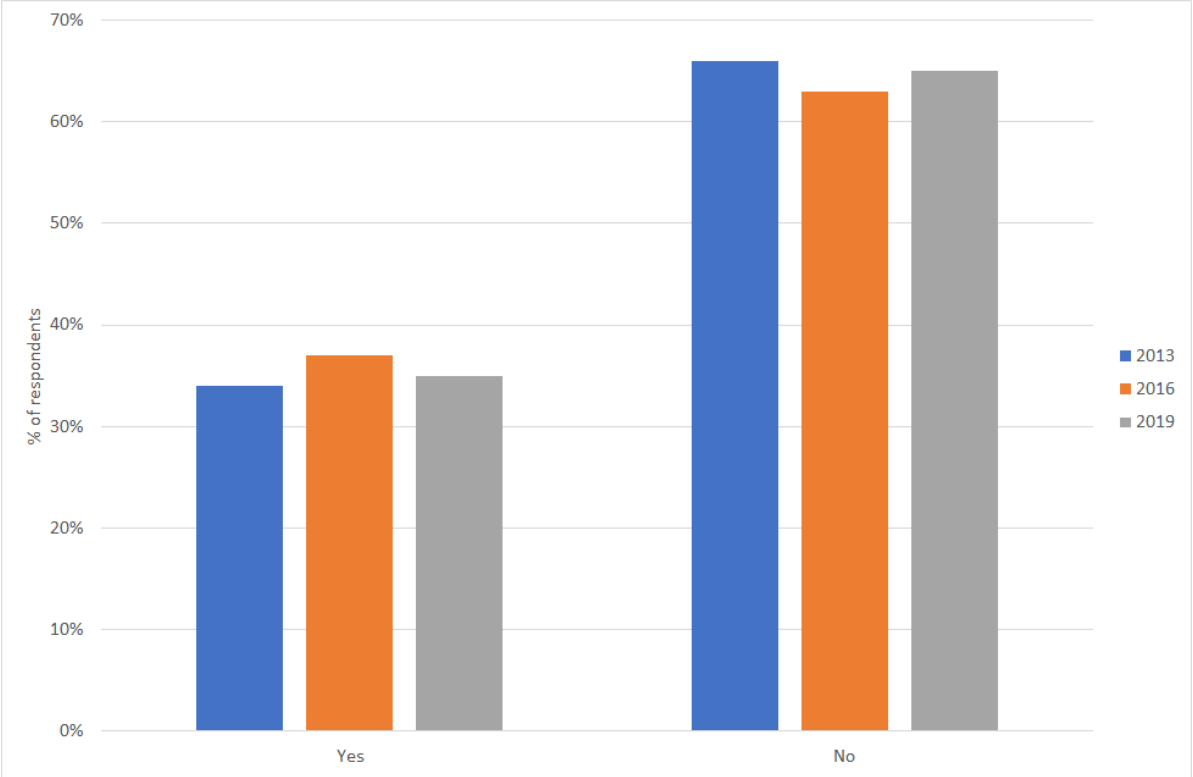
Figure 4.25 Do respondents rinse out empty ready-to-use plant protection product containers? (2019)



n=873 respondents

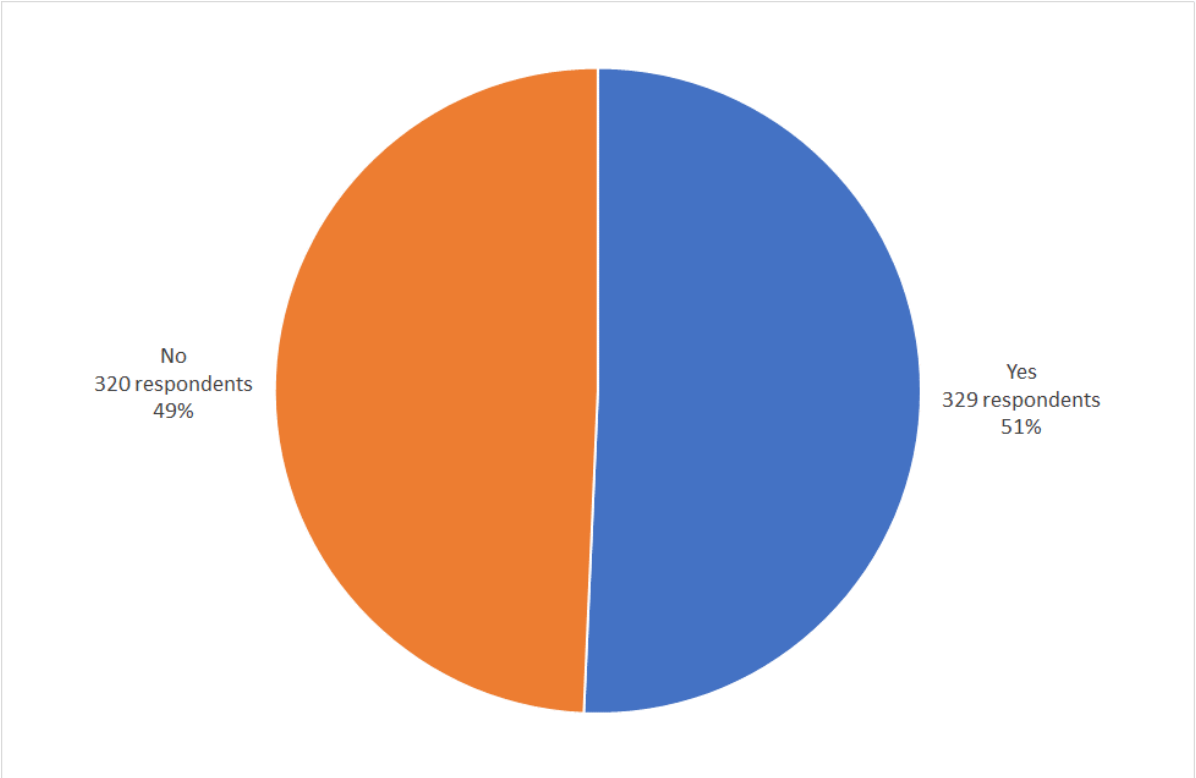
Responses are similar to those in 2013 and 2016 as shown in Figure 4.26.

Figure 4.26 Comparison of whether respondents using ready-to-use products rinse out the empty plant protection product container before disposal (2013, 2016 and 2019)



For ready-to-use products, there are 649 such respondents and Figure 4.27 shows how many respondents rinse the empty container from the concentrate product.

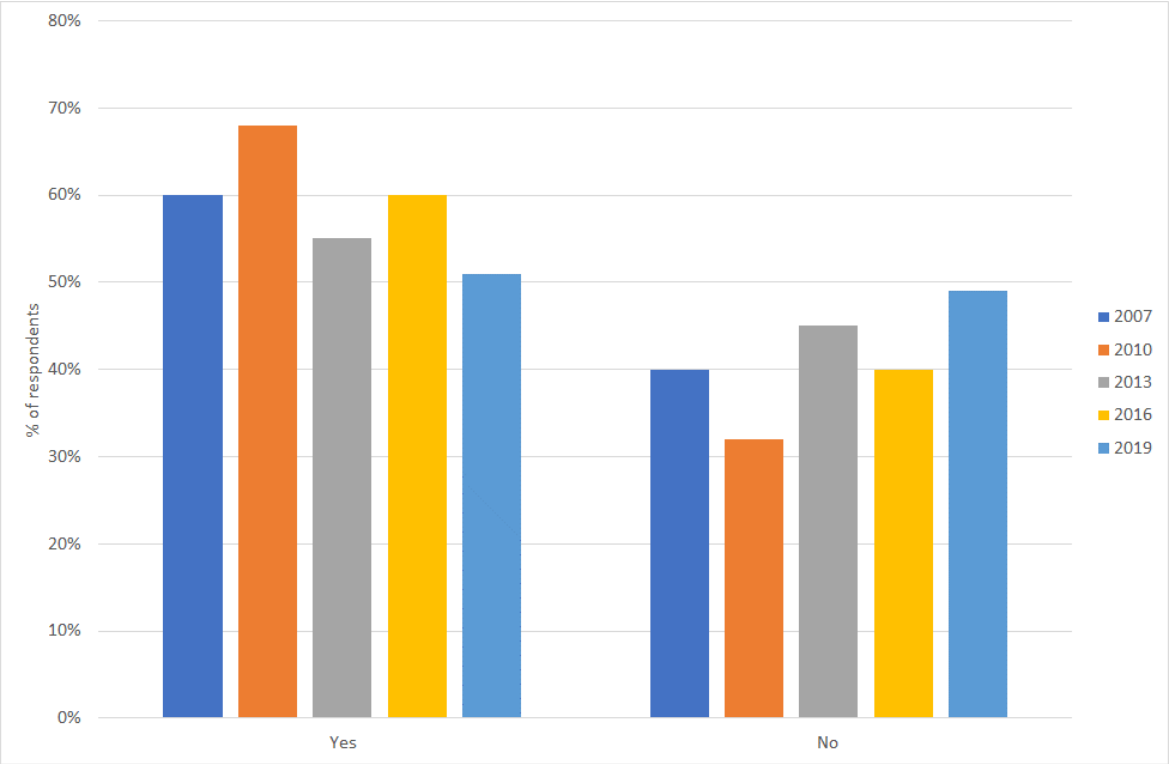
Figure 4.27 Do respondents rinse out empty concentrate plant protection product containers? (2019)



n=649 respondents

The proportion of respondents who rinse out empty containers after using concentrate products is at its lowest since these surveys began, as shown in Figure 4.28.

Figure 4.28 Comparison of whether respondents using concentrate products rinse out the empty plant protection product container before disposal (2007, 2010, 2013, 2016 and 2019)



4.5.4 Disposal of liquid from rinsing empty product containers

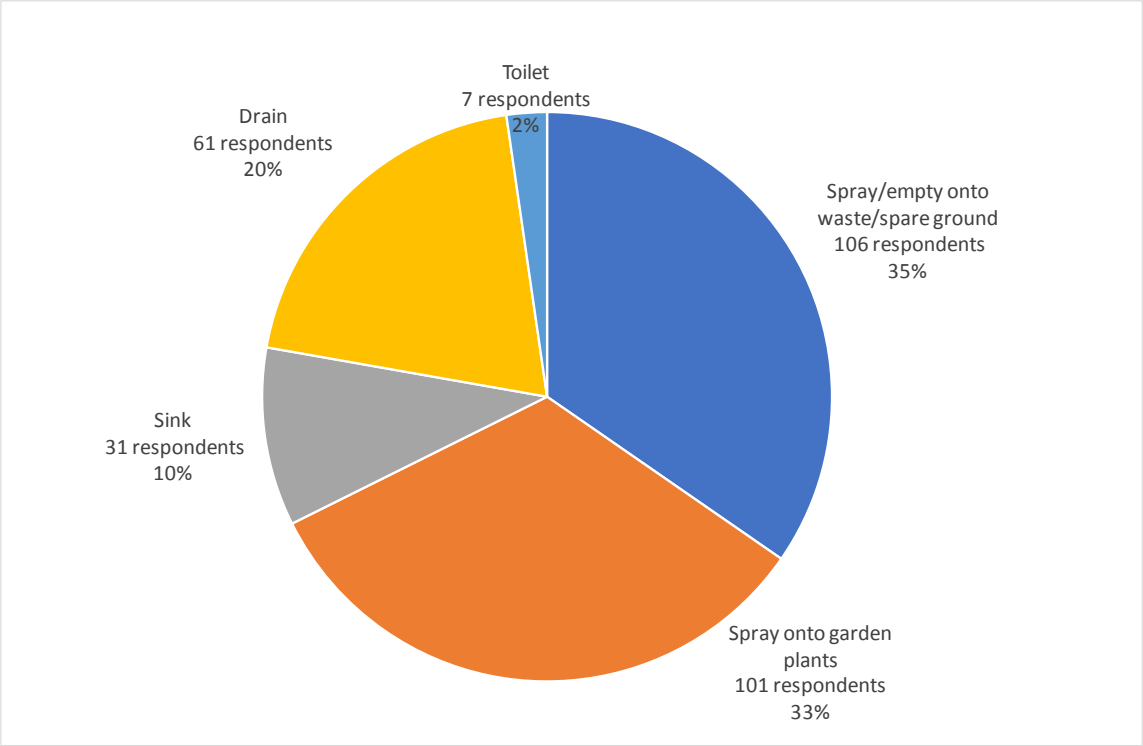
For respondents who stated they did rinse out containers before disposal, a follow-up question was asked to find out where they disposed of the rinsing. This has been asked only since 2013 for ready-to-use products.

For ready-to-use products there were 306 respondents for whom this question was relevant. Figure 4.29 shows that most of these respondents rinsing out ready-to-use containers spray/empty the rinsing onto waste/spare ground (35%) or onto plants (33%). However, over a quarter of respondents (n=99) dispose of the rinsings to either the sink (10%), drain (20%) or toilet (2%).

Although local authorities often ask householders to rinse out plastic containers before recycling, rinsing of empty ready-to-use plant protection product containers is not necessary before disposal of the container. In addition, disposal of rinsings to water drainage systems indicates that respondents are not following instructions on the product label regarding disposal and environmental protection which indicates poor practice and risks contaminating water and the environment.

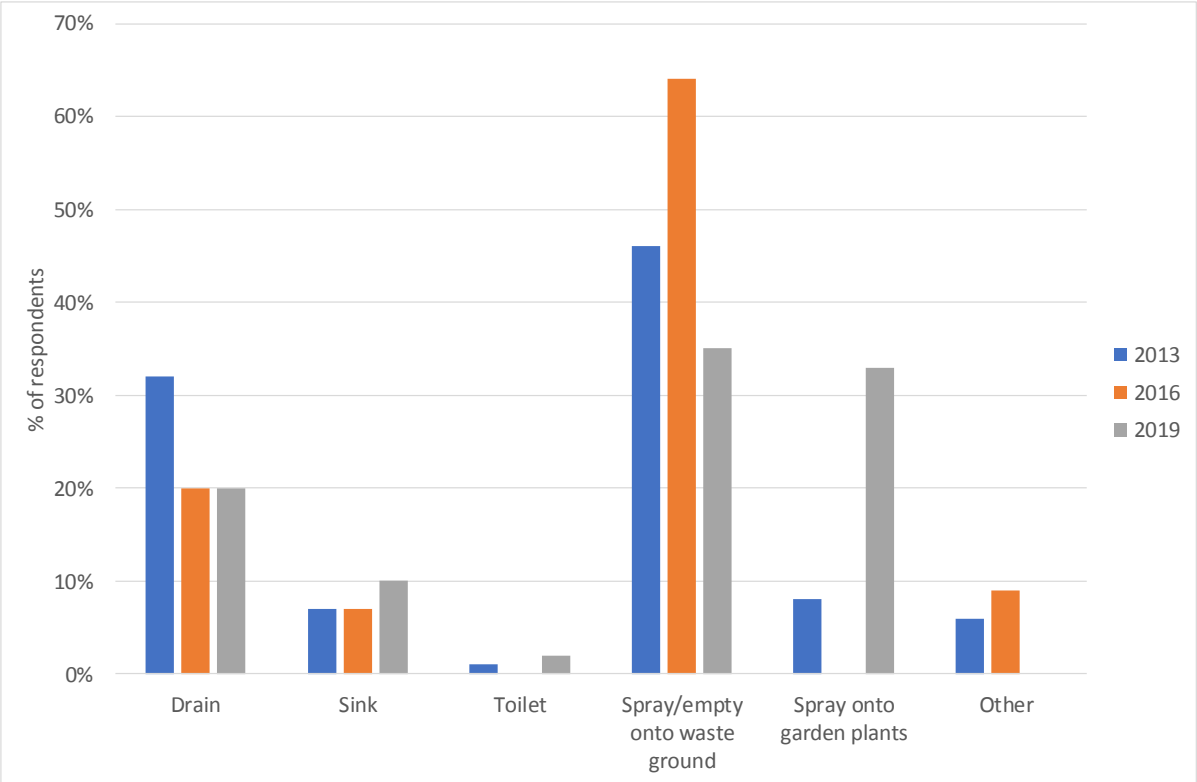
Comparison with previous results indicates that disposal to the sink/toilet/drain (now 32%) has reduced from 40% in 2013 but is higher than the 27% in 2016. Figure 4.30 provides further information.

Figure 4.29 What do people do with the liquid from rinsing out empty ready-to-use plant protection product containers? (2019)



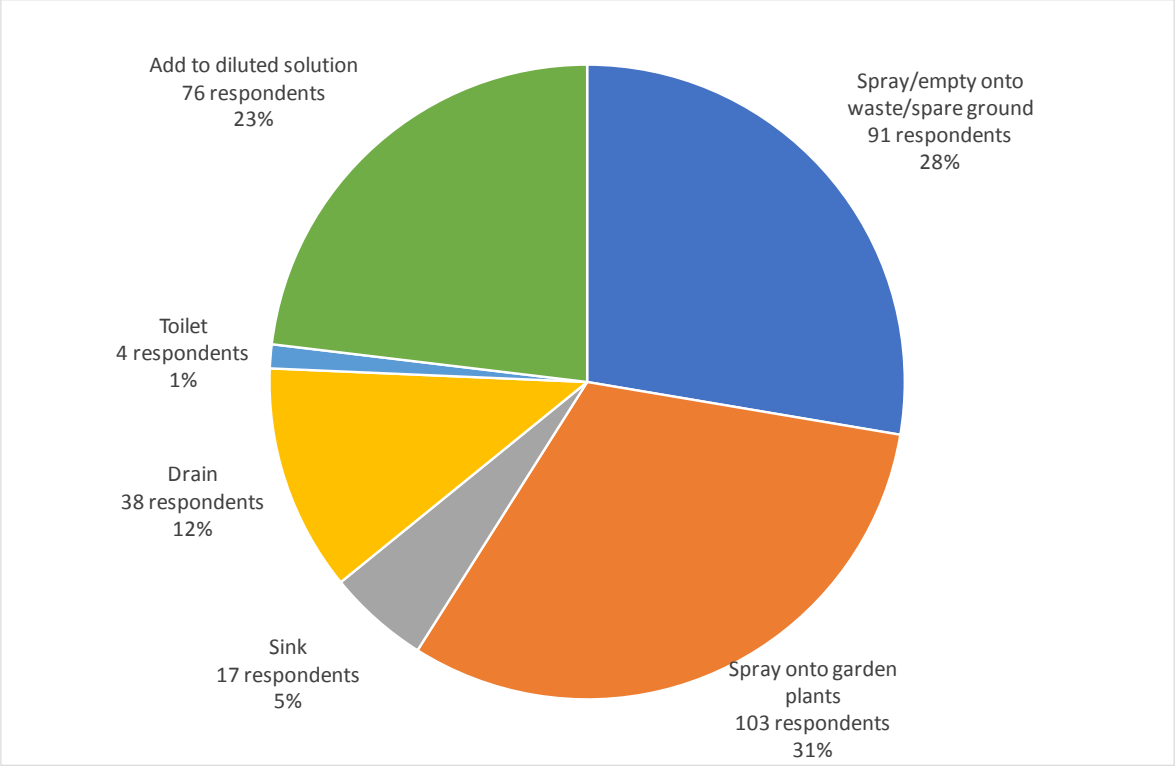
n=306 respondents

Figure 4.30 Comparison of disposal of liquid from rinsing empty ready-to-use plant protection product containers (2013, 2016 and 2019)



For concentrate products there were 329 respondents for whom this question was relevant. Figure 4.31 shows that more than half of the respondents spray or empty the rinsing onto waste ground or over plants, while 23% add the rinsing to the diluted solution and 18% (n=59) of respondents dispose of rinsings to a drain, sink or toilet.

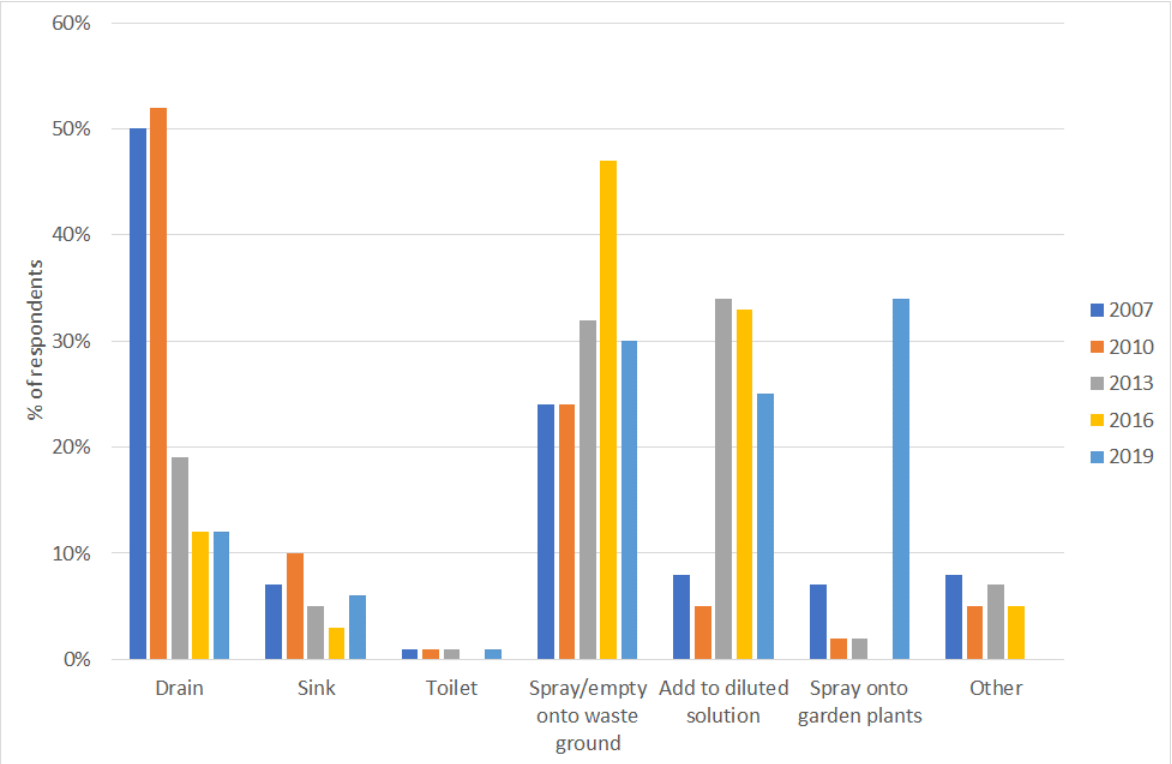
Figure 4.31 What do people do with the liquid from rinsing out empty concentrate plant protection product containers? (2019)



n=329 respondents

Figure 4.32 provides a comparison with previous survey years and shows a slight increase this year in disposing of rinsings to water drainage systems, up from 15% in 2016 to 18% in 2019. However, this is still much lower than figures from previous years, with the highest level being 63% in 2010. This indicates that there has been an improvement in complying with product label instructions and good practice to prevent contamination of water and the environment, but that the improvement may have plateaued.

Figure 4.32 Comparison of disposal of liquid from rinsing empty concentrate plant protection product containers (2007, 2010, 2013, 2016 and 2019)



4.5.5 Disposal of empty product containers

This section returns to those respondents who say they are sometimes left with an empty container, either because they dispose of the content separately or because they use the product up.

For ready-to-use products, there are 873 such respondents and their responses are shown in Table 4.10. Over half of the respondents recycle empty plastic product containers either via kerbside/street collection (54%), at a household waste recycling centre (HWRC) (10%) or at a supermarket/carpark recycling point (1%). Around 3% of respondents gave 'other' answers, including cardboard containers, saying that it depended on label instructions or that they would seek advice from local authority staff at the recycling centre.

Table 4.10 Disposal methods for empty ready-to-use plant protection product containers (2019)

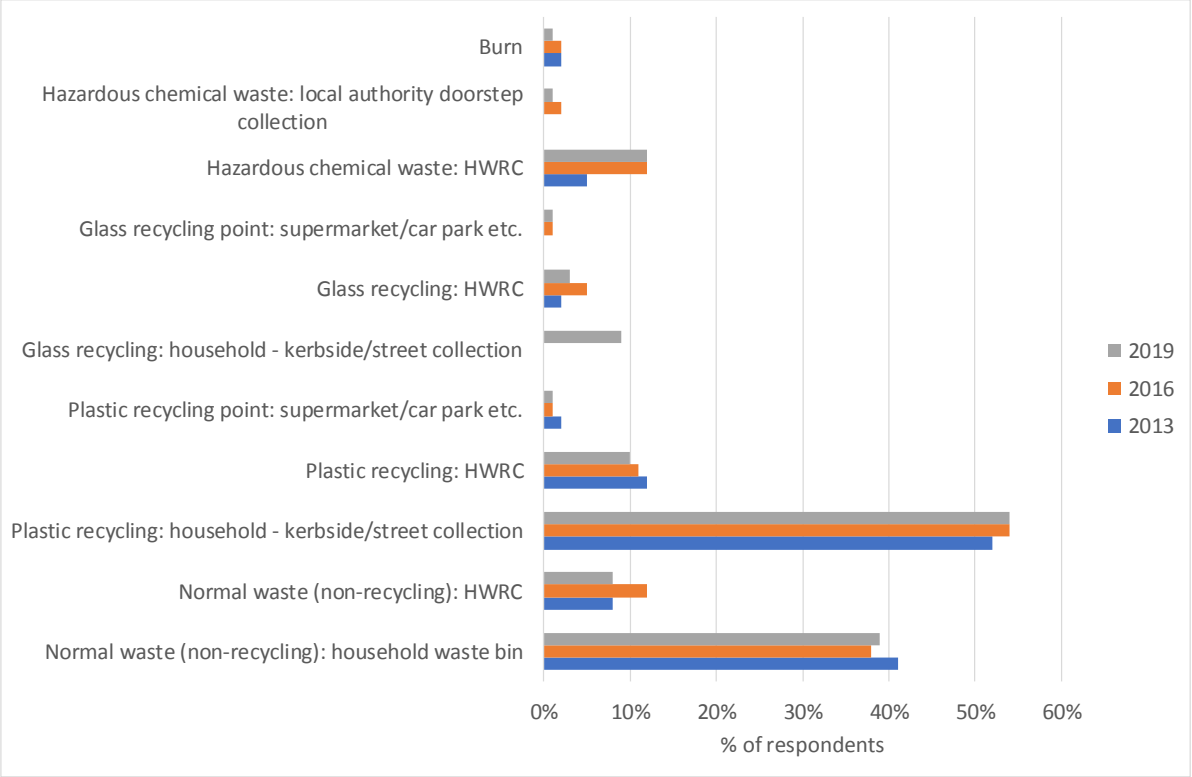
Response	Number	Percentage
Normal waste (non-recycling): household waste bin	337	39%
Normal waste (non-recycling): HWRC	69	8%
Plastic recycling: household - kerbside/street collection	470	54%
Plastic recycling: HWRC	89	10%
Plastic recycling point: supermarket/car park etc.	7	1%
Glass recycling: household - kerbside/street collection	79	9%
Glass recycling: HWRC	25	3%
Glass recycling point: supermarket/car park etc.	8	1%
Hazardous chemical waste: HWRC	109	12%
Hazardous chemical waste: local authority doorstep collection	9	1%
Burn	13	1%

Multiple answers (n=873 respondents, 1245 responses)

Figure 4.33 shows that this is similar to the pattern in 2013 and 2016.

The increase seen between 2013 and 2016 in those who dispose of empty containers as hazardous waste at their HWRC (from 5% to 12%) was maintained in 2019. This is not necessary as empty ready-to-use product containers are allowed to be recycled.

Figure 4.33 Comparison of disposal methods for empty ready-to-use plant protection product containers in 2013, 2016 and 2019



For concentrate products, there are 649 respondents for whom this question is relevant and their responses are shown in Table 4.11. It shows that 40% of respondents dispose of empty concentrate containers to the normal household bin (non-recycling) as directed on the product label, which is similar to 2016 (37%) and 2013 (39%).

However, many respondents indicate that they recycle empty containers contrary to product instructions to dispose of them in the household bin, with 45% recycling plastic containers via the kerbside/street collection. This may indicate confusion caused by plastic containers having an embossed recycling symbol added to the container by the manufacturers and consumers wanting to recycle as much as possible. Around 2% of respondents gave 'other' answers including following advice on the label and re-filling the same container.

Recycling of plastic containers has reduced slightly in 2019 for all collection routes (including kerbside/street collection) when compared with 2016 and 2013 responses.

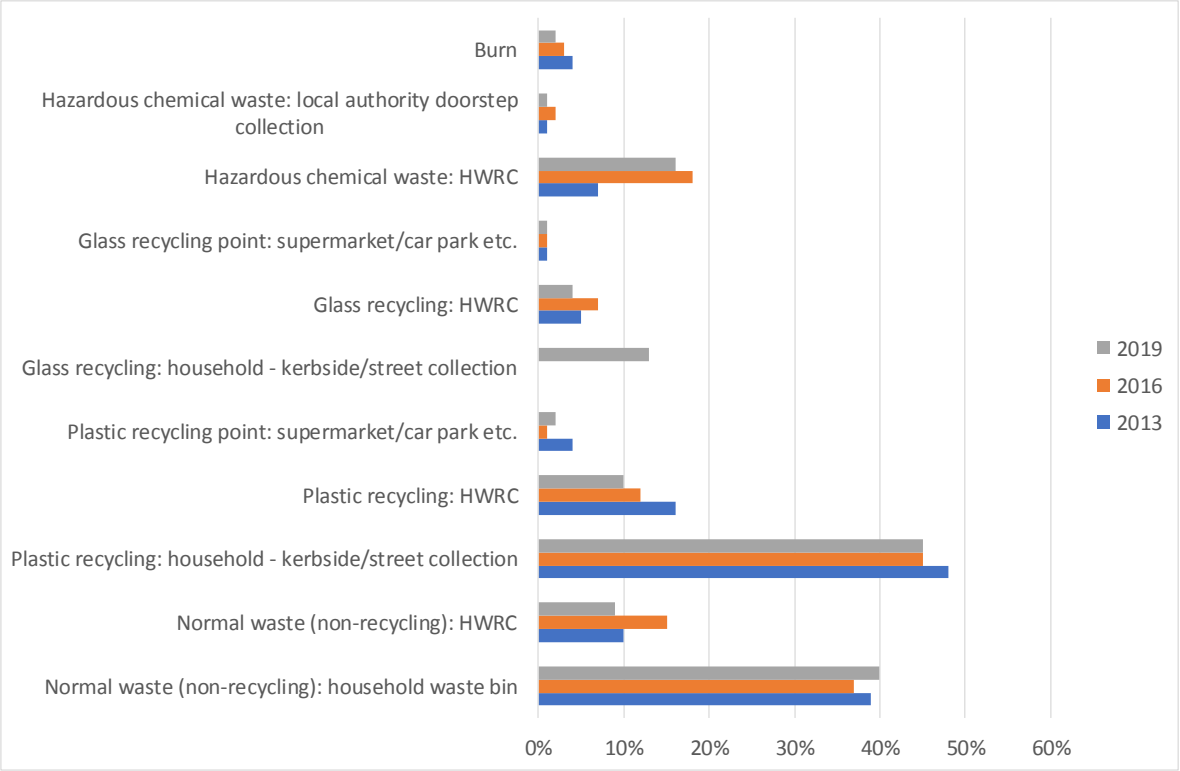
Similar to the case for empty ready-to-use containers, in 2016 there was an increase in respondents disposing of empty concentrate containers as hazardous waste at household waste recycling centres (HWRC) from 7% to 18%. This has decreased slightly to 16% in 2019 as shown in Figure 4.34.

Table 4.11 Disposal methods for empty concentrate plant protection product containers (2019)

Response	Number	Percentage
Normal waste (non-recycling): household waste bin	261	40%
Normal waste (non-recycling): HWRC	56	9%
Plastic recycling: household - kerbside/street collection	293	45%
Plastic recycling: HWRC	62	10%
Plastic recycling point: supermarket/car park etc.	10	2%
Glass recycling: household - kerbside/street collection	83	13%
Glass recycling: HWRC	27	4%
Glass recycling point: supermarket/car park etc.	6	1%
Hazardous chemical waste: HWRC	104	16%
Hazardous chemical waste: local authority doorstep collection	6	1%
Burn	12	2%

Multiple answers (n=649 respondents, 936 responses)

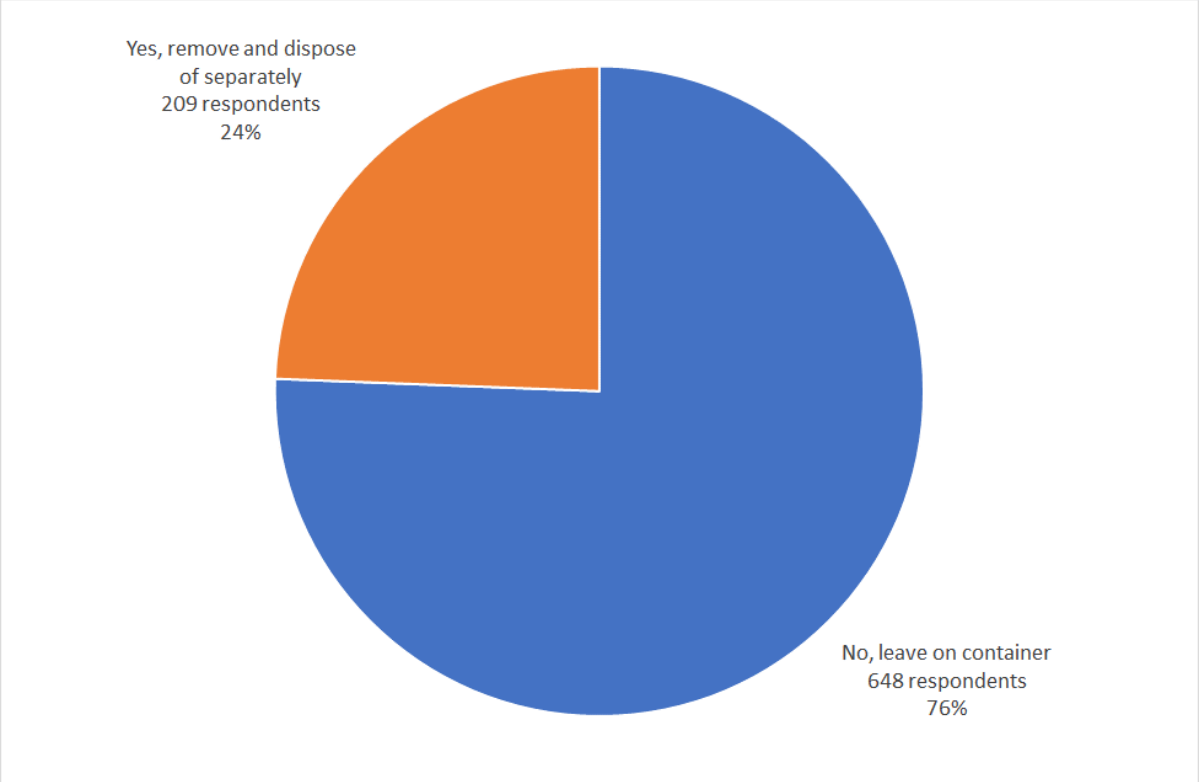
Figure 4.34 Comparison of disposal methods for empty concentrate plant protection product containers in 2013, 2016 and 2019



4.5.6 Removal of lid/cap/trigger spray handle before disposal of the container

Respondents who use ready-to-use products were asked whether they removed the lid/cap/trigger spray handle from the empty container before disposal. The majority (76%) did not remove them before disposal of the container which is encouraging as this is considered to be good practice.

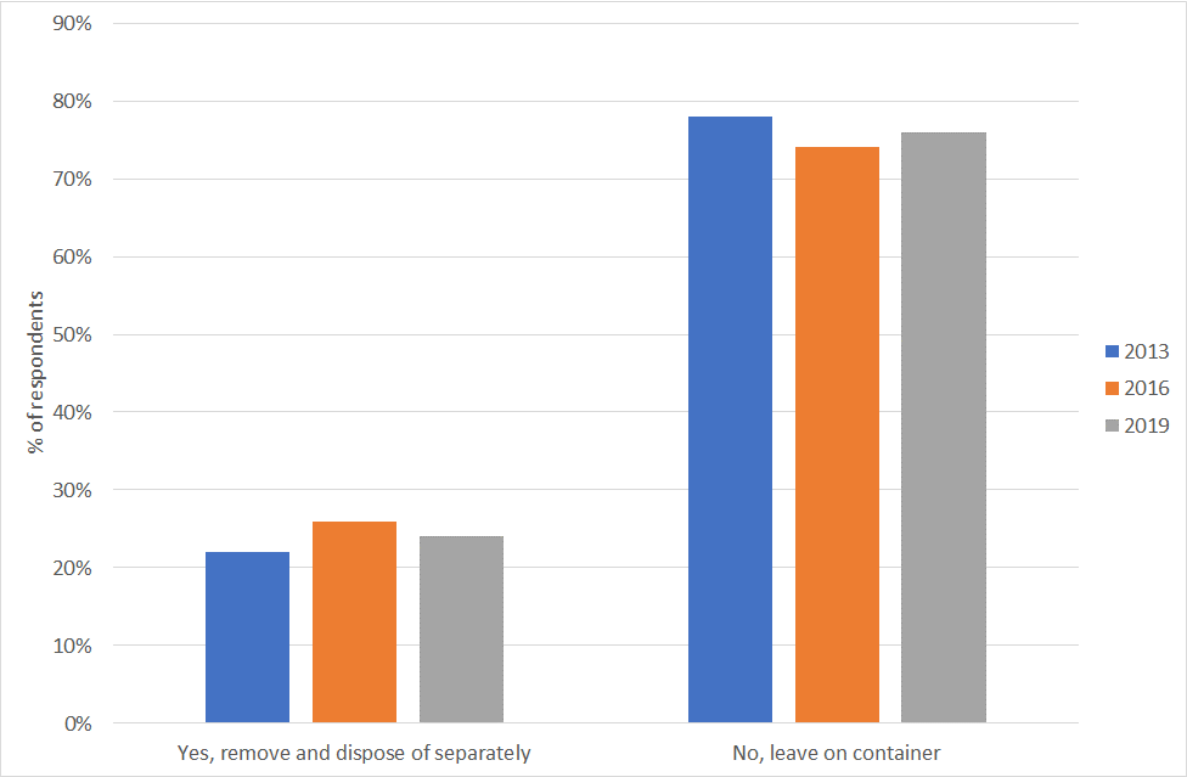
Figure 4.35 Do people remove the lid/trigger spray handle from the empty ready-to-use plant protection product container before disposing of it?



n=857 respondents

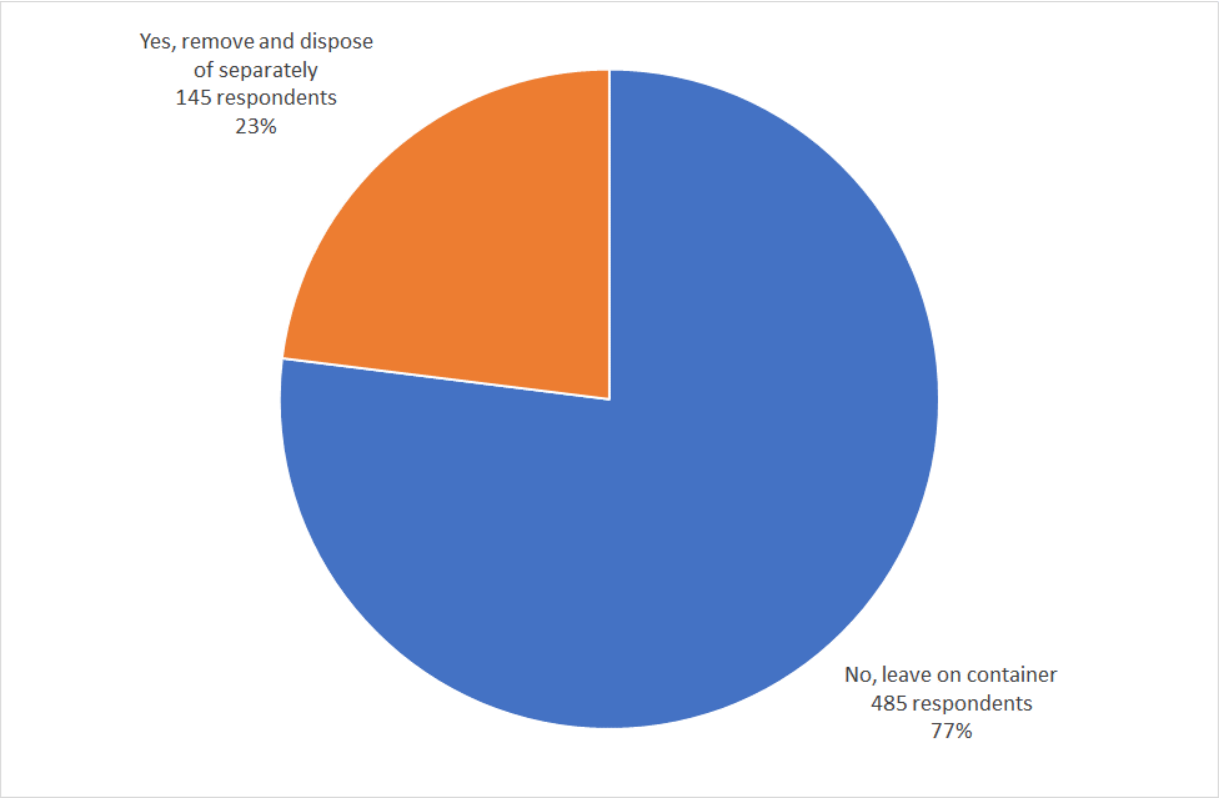
This is similar to 2013 (the first time this question was asked) when 77% did not remove them, and 2016, when the figure was 74%, as shown in Figure 4.36.

Figure 4.36 Removal of lid/cap/trigger handle from ready-to-use plant protection product containers before disposal in 2013, 2016 and 2019



Respondents using concentrate products were asked the same question and the majority (77%) did not remove the lid/cap/trigger spray handle from the empty container. Again, this is encouraging as this is considered to be good practice.

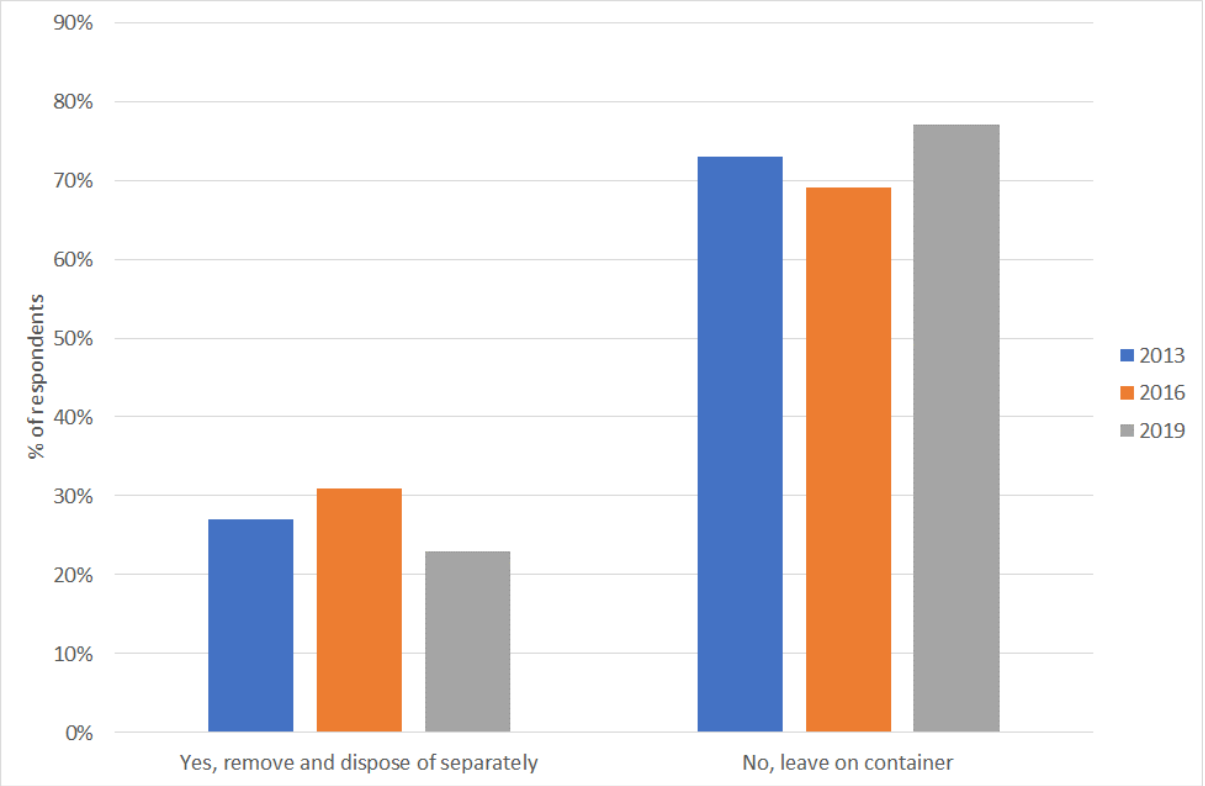
Figure 4.37 Do people remove the lid/trigger spray handle from the empty concentrate plant protection product container before disposing of it?



n=630 respondents

As shown in Figure 4.38, this is similar to 2013 and 2016 results (72% and 69% respectively).

Figure 4.38 Removal of lid/cap/trigger handle from concentrate plant protection product containers before disposal in 2013, 2016 and 2019



5. Summary and discussion

Key survey findings in 2019 can be summarised as follows:

5.1 Respondent profile

- 59% of respondents identified themselves as 'keen and regular gardeners', with a further 24% stating they 'enjoy gardening but don't always have the time for it'. Only 3% of respondents saw gardening as 'a chore'.
- Of all respondents, 91% carried out gardening in private gardens, while 43% stated they carried out gardening at an allotment. A new category for 2019 included tending plants indoors or on a balcony at 21%.
- As in previous survey years, the majority of respondents were over the age of 45 (77%), with only 1% of respondents aged between 16 and 24.

5.2 Purchasing habits

- For the third consecutive survey, the most frequently purchased products were weedkillers (69%), slug/snail killers (66%) and insecticides (46%). All product types purchased except hormone rooting powder/gel saw a fall from 2016 figures.
- Over half of respondents purchased between one and two products a year, as in previous years.
- Respondents purchased fewer products in 2019 in a departure from a previously increasing trend.
- The most popular purchase location for plant protection products was, for the first time, DIY or home stores (66%), moving ahead of garden centres (59%). Purchases via the internet rose again, increasing from 5% in 2013 to 15% in 2016 and 22% in 2019.

5.3 Storage

- As with previous survey years, the shed was the most popular location to store plant protection products (62%). A further 37% of respondents stored plant protection products in the garage. 21% cited some form of safety precaution such as a high shelf or locked cupboard (a decrease from 27% in 2016), indicating a fall in good practice, although this is still higher than for any of the first three survey years (2007, 2010 and 2013).
- The largest percentage of respondents stored plant protection products for one to two years (42%), with a further 13% storing for less than one year. This is similar to 2016 but a decrease from previous years. Over the course of the last two surveys there has been an increase in respondents keeping plant protection products for longer periods of time (2-3 years, 3-5 years and more than 5 years).

5.4 Product usage

- 61% stated they read the instructions on how to use the product before purchase, and 51% of respondents stated they would read before they used the product for the first time, similar numbers to those seen in 2016. Only 2% of respondents would rarely or never read the instructions, whereas 29% of respondents read the label again before

using every time.

- The majority of respondents (94%) stated the instructions for use were ‘very clear’ or ‘fairly clear’.
- The majority of respondents (96%) stated that they followed the instructions either ‘very closely’ or ‘fairly closely’. This is similar to 2013 and 2016.
- Other than the product label, the most popular source of additional information was websites (39%). The next most popular source of information was books (16%).
- Less than half of the respondents (40%) used ready-to-use products only. This is slightly higher than in 2016 (38%) but a reduction from previous years (2010 and 2013) where over half (53%) used ready-to-use products only. Whereas, 40% stated they used both ready-to-use and concentrate products which is a slight decrease on 2016 (42%) but an increase over previous years (33% in 2007, 31% in 2010 and 29% in 2013).
- Of the respondents who purchased concentrate products that need diluting, the majority (84%) used the measuring device/cap provided with the product to measure the volume of concentrate product required. The percentage estimating or guessing measurements for diluting returned to 10% as it had been in 2013 before a drop to just 3% in 2016. (3%) down from 10% in 2013.

5.5 Disposal

- The majority of respondents did not dispose of excess/unwanted plant protection product before disposing of the container (70% used up the product for ready-to-use and 74% for concentrate products).
- For those disposing of ready-to-use product in the container more than half disposed of to the normal household bin (53%), while 29% disposed of to a hazardous chemical waste disposal facility.
- For concentrate products, the highest percentage disposed of the concentrate product in the container to either the normal household bin (38%), or a hazardous chemical waste disposal facility at a household waste recycling centre (HWRC) (49%), which is good practice and indicates that they are following label instructions.
- Of the respondents using ready-to-use products, 65% did not rinse out the empty container before disposal, indicating that they are following disposal information on the label. However, of those rinsing out empty ready-to-use, 32% dispose of the rinsings to the drain, sink or toilet indicating that they are not following the product label and risk polluting water and the environment. This is a slightly higher percentage than in 2016 (27%) but still lower than the 2013 results, when 40% of respondents disposed of rinsings to the drain/toilet/sink, showing a fluctuating trend in complying with product labels and good practice.
- Of respondents using concentrate products, 50% did rinse out the empty container before disposal, 25% of whom added the rinsings to the diluted solution for spraying indicating good practice. However, 19% disposed of the rinsings to the drain, sink or toilet, indicating that they are not following the product label and risk pollution to water and the environment. Up until 2016, there was a continuing improvement in complying with product labels and good practice compared to previous years, but this may have plateaued with 2019 results very slightly worse than in 2016.
- The majority (65%) of respondents using ready-to-use products recycle empty plastic containers, indicating that they are following the disposal information on the product

label for plastic containers. Of the respondents, 39% dispose of empty ready-to-use containers in the normal household bin. It is not known what type of packaging material is being disposed of by this route, so it is not possible to know if respondents have followed the disposal information on the product label.

- Similarly, the highest percentage of respondents using concentrate products recycle empty plastic containers (45%) indicating that they are not following the product label. Of the respondents, 40% disposed of empty concentrate containers to the normal household bin, which indicates that they are following current label instructions for concentrate products.
- For both ready-to-use and concentrate products the majority of respondents did not remove the lid/cap/trigger spray handle from the container before disposal (76% and 77% respectively) which is encouraging as this is considered to be good practice.

5.6 Comparison of findings

Table 5.1 below compares some of the key findings from previous surveys with this year's survey.

Table 5.1 Comparison with previous survey results (2007, 2010, 2013 and 2016)

Question	2007 responses	2010 responses	2013 responses	2016 responses	2019 responses
Percentage of "keen and regular gardeners"	53%	50%	52%	46%	59%
Percentage of respondents over 45	81%	80%	71%	69%	78%
Top three most frequently purchased products	Slug pellets (67%) Weed killers (50%) Lawn treatments (45%)	Weed killers (63%) Slug pellets (61%) Lawn treatments (47%)	Weed killers (66%) Slug pellets (65%) Insecticide (44%)	Weed killers (80%) Slug pellets (68%) Insecticide (53%)	Weed killers (69%) Slug pellets (66%) Insecticide (46%)
Number of products purchased per year	Most purchase one or two products: One (32%) Two (27%)	Most purchase one or two products: One (30%) Two (31%)	Most purchase one or two products: One (28%) Two (30%)	Most purchase one or two products: One (21%) Two (34%)	Most purchase one or two products: One (25%) Two (29%)
One product or less purchased per year by gardener category	Keen and regular: 39% Gardening is a chore: 59%	Keen and regular: 35% Gardening is a chore: 38%	Keen and regular: 40% Gardening is a chore: 56%	Keen and regular: 28% Gardening is a chore: 33%	Keen and regular: 45% Gardening is a chore: 50%
Not reading / understanding instructions	Rarely or never read: 6% Instructions are unclear:	Rarely or never read: 4% Instructions are unclear:	Rarely or never read: 3% Instructions are unclear:	Rarely or never read: 1% Instructions are unclear:	Rarely or never read: 2% Instructions are unclear:

Question	2007 responses	2010 responses	2013 responses	2016 responses	2019 responses
	3% Do not follow: 2% Only sometimes follow: 6%	5% Do not follow: 3% Only sometimes follow: 5%	5% Do not follow: 1% Only sometimes follow: 3%	3% Do not follow very closely: 3%	5% Do not follow very closely or at all: 3%
Other sources of instructions	Garden centre staff: 14% Magazines: 13% Websites: 8% TV: 8%	Garden centre staff: 5% Magazines: 8% Websites: 14% TV: 5%	Garden centre staff: 8% Magazines: 13% Websites: 25% TV: 8%	Garden centre staff: 20% Magazines: 22% Websites: 29% TV: 6%	Garden centre staff: 4% Magazines: 12% Websites: 39% TV: 5%
Percentage only using ready-to-use products	47% Younger age groups more likely to use these Keen gardeners: 44%	53% Younger age groups more likely to use these Keen gardeners: 50%	53% Those aged over 65 more likely to use these Keen gardeners: 48%	38% Younger age groups more likely to use these Keen gardeners: 32%	40% Younger age groups more likely to use these Keen gardeners: 37%
Percentage estimating the amount of product diluted	10% Likelihood becomes slightly lower with ascending age	8% Likelihood becomes slightly lower with ascending age	10% Likelihood becomes slightly lower with ascending age	3% Likelihood becomes slightly lower with ascending age	10% Likelihood highest in 16-44 age range
Percentage that rinse empty containers	Concentrate products: 60%	Concentrate products: 67%	Concentrate products: 55% Ready to use products: 34%	Concentrate products: 60% Ready to use products: 37%	Concentrate products: 51% Ready to use products: 35%
Where rinsings are poured (from rinsing empty pesticide containers)	Concentrate products: Drain: 50% Waste ground: 24%	Concentrate products: Drain: 52% Waste ground: 24%	Concentrate products: Drain: 19% Waste ground: 32%	Concentrate products: Drain: 12% Waste ground: 47%	Concentrate products: Drain: 12% Waste ground: 30%

Question	2007 responses	2010 responses	2013 responses	2016 responses	2019 responses
	Sink: 7%	Sink: 10%	Sink: 5% Add to diluted solution 34% <u>Ready-to-use products:</u> Drain: 32% Waste ground: 46% Sink: 7%	Sink: 3% Add to diluted solution 33% <u>Ready-to-use products:</u> Drain: 20% Waste ground: 64% Sink: 7%	Sink: 6% Add to diluted solution 25% <u>Ready-to-use products:</u> Drain: 20% Waste ground: 35% Sink: 10% Garden plants: 33% (new option)
Storage location	Shed: 60% Garage: 31% Home: 4%	Shed: 60% Garage: 33% Home: 5%	Shed: 58% Garage: 32% Home: 9%	Shed: 59% Garage: 35% Home: 10%	Shed: 62% Garage: 37% Home: 8%
Secure storage location (locked cupboard/cabinet or high shelf)	11%	4%	14%	27%	21%
Storage duration	One season: 34% 1-2 years: 50% 2-3 years: 10% 3+ years: 6%	One season: 35% 1-2 years: 44% 2-3 years: 10% 3+ years: 9%	One season: 23% 1-2 years: 46% 2-3 years: 20% 3+ years: 11%	One season: 13% 1-2 years: 40% 2-3 years: 25% 3+ years: 22%	One season: 13% 1-2 years: 42% 2-3 years: 21% 3+ years: 24%
Percentage of all respondents that dispose of unwanted pesticides	14%	11%	Concentrate products: 20% Ready to use products: 20%	Concentrate products: 19% Ready to use products: 23%	Concentrate products: 26% Ready to use products: 21%
Disposal of containers WITH pesticide	Results not available	Results not available	<u>Concentrate products:</u> Residual waste bin: 38%	<u>Concentrate products:</u> Residual waste bin: 47%	<u>Concentrate products:</u> Residual waste bin: 38%

Question	2007 responses	2010 responses	2013 responses	2016 responses	2019 responses
			Hazardous chemical waste disposal facility at HWRC: 38% Household recycling collection: 11% Landfill via HWRC: 20% <u>Ready to use products:</u> Residual waste bin: 49% Hazardous chemical waste disposal facility at HWRC: 21% Household recycling collection: 16% Landfill via HWRC: 16%	Hazardous chemical waste disposal facility at HWRC: 35% Household recycling collection: 12% Landfill via HWRC: 18% <u>Ready to use products</u>: Residual waste bin: 49% Hazardous chemical waste disposal facility at HWRC: 41% Household recycling collection: 1% Landfill via HWRC: 14%	Hazardous chemical waste disposal facility at HWRC: 49% Household recycling collection: 16% Landfill via HWRC: 16% <u>Ready to use products:</u> Residual waste bin: 53% Hazardous chemical waste disposal facility at HWRC: 29% Household recycling collection: 19% Landfill via HWRC: 14%
Disposal of empty containers	<u>All containers:</u> Residual waste bin: 48% Recycling container: 35% Household Waste Recycling Centre: 18%	<u>All containers:</u> Residual waste bin: 38% Recycling container: 44% Household Waste Recycling Centre: 21%	<u>Concentrate products:</u> Residual waste bin: 39% Household recycling collection: 48% Plastic recycling at HWRC: 16%	<u>Concentrate products:</u> Residual waste bin: 37% Household recycling collection: 45% Plastic recycling at HWRC: 12%	<u>Concentrate products:</u> Residual waste bin: 40% Household recycling collection: 45% Plastic recycling at HWRC: 10%

Question	2007 responses	2010 responses	2013 responses	2016 responses	2019 responses
			Ready to use products: Residual waste bin: 41% Household recycling collection: 52% Plastic recycling at HWRC: 12%	Ready to use products: Residual waste bin: 38% Household recycling collection: 54% Plastic recycling at HWRC: 11%	Ready to use products: Residual waste bin: 39% Household recycling collection: 54% Plastic recycling at HWRC: 10%

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