

Pesticide user habits: public purchasing, use,
storage and disposal of pesticides

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1. Introduction

This report summarises a research project on pesticide user habits that was undertaken by Resource Futures on behalf of the Pesticide Safety Directorate (PSD), following identification of a need for research on the issues investigated by members of the Amateur Action Plan Implementation Group. The project comprised a survey exploring the purchasing, use, storage and disposal of garden chemicals by members of the public.

This report contains the following sections:

- background information on the context for the survey and the work being undertaken by the Amateur Use Action Plan Implementation Group (AUAPIG)
- a summary of project objectives
- a summary of methods
- discussion of survey findings and reliability
- possible future work that could be undertaken to support the ongoing work of AUAPIG.

2. Background

Pesticides are widely used by members of the public, with around 6-7 million people using products to protect plants in their gardens. The total quantity of plant protection products used by the public, while still small in relation to farm use, represents about 16% of the total amount used in the UK. Also, while products licensed for domestic use are much lower risk than professional products, their use by large numbers of untrained individuals raises potential health and safety and environmental concerns. For example, pesticides continue to reach rivers and streams in the UK at levels over the prescribed standards.

The European Commission has recently published proposals for a Directive for the Sustainable Use of Pesticides, including a range of measures designed to reduce the risk pesticides can pose both to the public and environment, eg ensuring that the public only have access to products specifically authorized for non-professional use; requiring distributors to give advice promoting sustainable use (hazard, risk, safe storage, handling, application and disposal); special measures to avoid dangerous handling of pesticides. It is likely that this Directive will require member states to ensure that any legislation helps to minimise use whilst enabling safe use, storage and disposal of pesticides in the amateur sector.

PSD is working with other stakeholders through AUAPIG to encourage best practice in use and storage, and to ensure the safe disposal of unused products and empty containers. One of the objectives of the group is to identify key research and information needs; a need to expand the knowledge base regarding public purchasing, use, storage and disposal of pesticides has been identified. On this basis, PSD requested that Resource Futures develop proposals for a survey of pesticide user habits.

3. Objectives

The project will contribute to the knowledge base for continuing research and communications on amateur pesticide use by providing robust information on the purchasing, use, storage and disposal of pesticides by domestic gardeners in the UK. The project will, for example, identify the extent of potentially unsafe or environmentally damaging pesticide user habits.

Project outputs will be used by the Pesticide Safety Directorate and other stakeholders (including the British Retail Consortium, Crop Protection Association, Garden Organic, the Horticultural Trades Association, the National Society of Allotment and Leisure Gardeners, Pesticide Action Network UK and the Royal Horticultural Society) to inform work being undertaken by the AUAPIG, with particular reference to:

- the development of resources for communicating with the public about appropriate purchasing, use, storage and disposal of pesticide products
- the development of indicators of the adoption of behaviours by pesticide users of practices which help minimise risk to the environment.

The specific objectives of the project are:

- to develop a questionnaire in consultation with members of AUAPIG, in order to ensure that the concerns of all stakeholders are addressed
- to implement the survey in six garden centre locations across the UK
- to analyse and report on the findings, including attendance at an AUAPIG meeting to discuss implications.

4. Methods

4.1 Questionnaire development

The questionnaire was developed through submission of a draft document to AUAPIG for discussion at a meeting in February 2007. A representative of Resource Futures attended this meeting and a revised draft was developed taking into account comments made during the course of the meeting. The revised draft was circulated to AUAPIG members by PSD in March 2007 and finalised by Resource Futures in consultation with PSD in early April 2007.

The subjects covered in the questionnaire include:

- respondents' attitudes to gardening
- age bracket
- different types and numbers of pesticides purchased
- main location(s) of purchases
- reading of instructions and other channels through which information on pesticide use is accessed
- type of product used (ready-to-use or concentrated)
- location and duration of storage
- disposal of empty pesticide containers and pesticides.

Survey respondents were offered an incentive of entry to a prize draw for garden centre vouchers, which were provided by the Horticultural Trades Association (HTA).

Survey respondents were also asked if they would be willing to take part in potential focus group research at a later date and contact details were separately recorded for all those who said that they would be happy to be contacted.

A copy of the questionnaire is provided in Appendix 1.

4.2 Survey locations

AUAPIG members indicated that it was important to choose survey locations in order to reflect the different climatic conditions in different regions of the UK, as these can have a significant impact on the types of product which are used by gardeners.

Contacts for a number of garden centres around the UK were provided by the HTA. Resource Futures liaised with centre and/or company managers in order to secure agreement for surveys to be carried out in the relevant centres. The garden centres at which the survey was carried out, and the regions in which these centres are located, are listed in Table 4.1.

Resource Futures would like to thank all garden centre managers and staff for their generous support for this survey.

Table 4.1: Survey locations

Location	Company	Region
Milngavie, Glasgow	Dobbies Garden World	Scotland
Newport	Hurrans	Wales
Oxford	Notcutts	South East
Preston	Dobbies Garden World	North West
Tunbridge Wells	Notcutts	South East
Woodbridge, Ipswich	Notcutts	East of England

4.3 Survey implementation

The work was undertaken by fully trained and experienced staff who are familiar with carrying out survey work in a retail environment. This element of the project was carried out by PH Research Services, as specified in the proposal to Defra.

Staff were briefed on the survey, and on key background facts relating to pesticides and their use, using a briefing sheet developed by PSD (see Appendix 2).

The survey was carried out at all centres from Wednesday 16 May to Sunday 20 May, with one member of staff in place Wednesday to Friday and two members of staff in place on the weekend days in order to take advantage of the periods with the highest footfall. The survey was carried out in six-hour shifts at all locations between 10am and 4pm, with modification of working hours on Sunday as required to fit in with store opening hours.

Questionnaires were only undertaken with garden centre shoppers who confirmed that they used pesticides in their gardens. Respondents were prompted with examples of relevant products if required (see Appendix 1 for the questionnaire). A total of 1,052 responses were obtained.

Data was inputted by PH Research staff and subject to minimum 10% validation.

5. Findings

This section details responses to the survey, focusing on:

- respondent characteristics, including attitudes to gardening, location of gardening and age bracket
- purchasing habits, including product types and numbers purchased and usual location of purchase
- use of products, including use of concentrated products that need diluting and ready-to-use products; perception and reading of instructions for use; and details of concentrated product use such as measuring amount required
- storage of products including location and duration of storage
- disposal routes for empty pesticide containers and, where relevant, unused or unwanted substances themselves.

5.1 Respondent characteristics

Respondents were asked “Which one of these descriptions best describes how you feel about gardening?” regarding the possible responses listed in Table 5.1.

The descriptions of the various potential attitudes to gardening were developed in consultation with the HTA with reference to the categories used by the association in its Garden Industry Monitor reports. These categories, and their definitions, are listed in Table 5.2.

The categories used by the HTA were not adopted for this project as they are not suitable for members of the public to “self-define” their attitudes to gardening, eg a member of the public would not define themselves as “marginal gardeners”. However, the thinking and definitions underlying these categories has been used in developing the attitude statements in Table 5.1, which can be seen as corresponding roughly to the HTA categories as follows:

- the “keen and regular gardener” statement corresponds to the “very keen” and “quite keen” gardener categories
- the “enjoy gardening but don't always have the time” statement corresponds approximately to the “marginal gardener” category
- the “like to keep the garden tidy, but not a hobby” statement can be seen as straddling the “marginal gardener” and the “not keen” categories
- the “gardening is a chore” statement corresponds to the “not keen” category.

The HTA’s “definitely hostile” and “unavailable” categories are unlikely to account for significant levels of pesticide use, and have not been addressed in this survey.

Table 5.1: Attitudes to gardening

Response	Frequency	%
I am a keen and regular gardener - gardening is an enjoyable activity	562	53.4
I enjoy gardening but don't always have the time for it	226	21.5
I like to keep the garden tidy, but wouldn't call it a hobby	213	20.2
Gardening is a chore	51	4.8
Total	1052	100.0

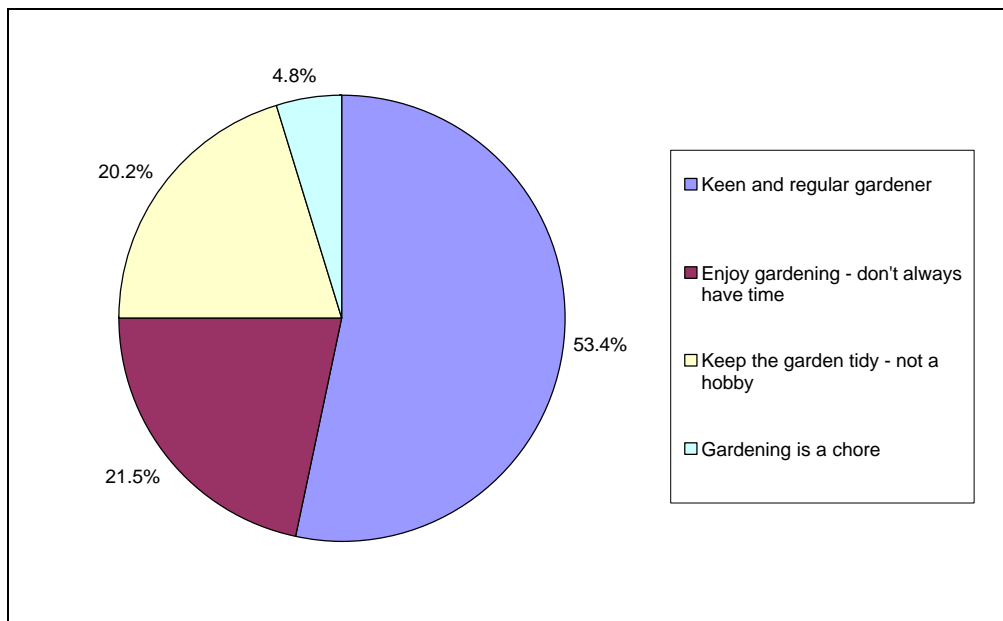
Table 5.2: HTA Garden Industry Monitor categories

Category of Gardener	Description	Proportion of the Great Britain population (%)
Very keen gardeners	Those who positively enjoy gardening are interested and knowledgeable and spend time pursuing what is really an established hobby.	18
Quite keen gardeners	Those who claim to be quite interested and who make a positive claim about enjoyment. Although they actively work in their own gardens, they do not express a desire to increase the amount of gardening that they currently do.	16
Marginal gardeners	Those who do some gardening, are not hostile to gardening and express a willingness to do more.	30
Not keen gardeners	Those who do some gardening, but do not wish to do more, coupled with negative attitudinal responses indicating that the gardening undertaken is not because it interests them. Largely those who see gardening as a chore.	21
Definitely hostile	Those with a place to grow outdoor plants who do very little or no gardening and who have totally negative attitudes to, or interest and enjoyment in gardening, with low knowledge and absolutely no wish to do more.	14
Unavailable	This group does not lack interest in gardening nor do they lack knowledge. However, they do little or no gardening, possibly due to insurmountable obstacles such as health or domestic responsibilities.	2

Source: Horticultural Trades Association

The survey findings regarding attitudes to gardening indicate that the majority of respondents (53.4%) regard themselves as “keen and regular” gardeners, as illustrated in Figure 5.1. This is considerably higher than the overall proportion of the population that would define themselves in such a way, with the HTA data indicating that around 34% of people are classed in equivalent categories in the general population. As might be expected, keen gardeners are well-represented in a survey that was undertaken in garden centres.

Figure 5.1: Attitudes to gardening



Similar proportions of respondents stated that they “enjoy gardening but don't always have the time” (21.5%) and “like to keep the garden tidy, but wouldn't call it a hobby” (20.2%). Only one in 20 respondents (4.8%) stated that “gardening is a chore”. The combined total for these

responses (46.5%) is similar to the combined proportion of the overall population that are defined as either “marginal” or “not keen” gardeners in the HTA figures (51%).

Respondents were asked where they did their gardening, with more than one response possible. A total of 1,113 responses were recorded, as shown in table 5.3, with 1,044 of the 1,051 people answering this question gardening at home. Forty respondents had an allotment and 29 people mentioned “other” locations including other people’s gardens.

Table 5.3: Home and allotment gardening

	Frequency	%
Garden at home	1044	99.3
Allotment	40	3.8
Other	29	2.8

Notes: n = 1,051; multi-response question; total responses = 1,113

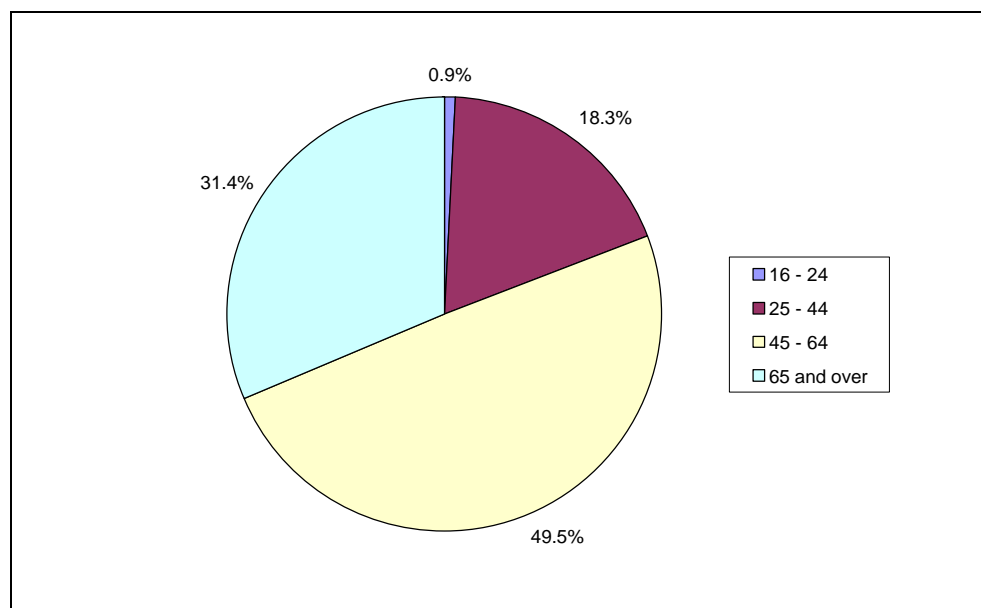
As might be expected, the 16-24 age group was under-represented in the survey. The majority of respondents came from the 45-64 and 65 and over age groups, as shown in Table 5.4 and illustrated in Figure 5.2.

Table 5.4: Age bracket

	Frequency	%
16 - 24	9	0.9
25 - 44	192	18.3
45 - 64	520	49.5
65 and over	330	31.4
Total	1051	100.0

Notes: Missing answers = 1; n = 1,051

Figure 5.2: Age bracket



5.2 Purchasing habits

Survey respondents were asked what type of pesticides they use, with more than one response possible. As shown in Table 5.5 and Figure 5.3, the most frequently purchased products were slug pellets (66.8% of respondents), weedkillers (50.1%) and lawn treatments (45%).

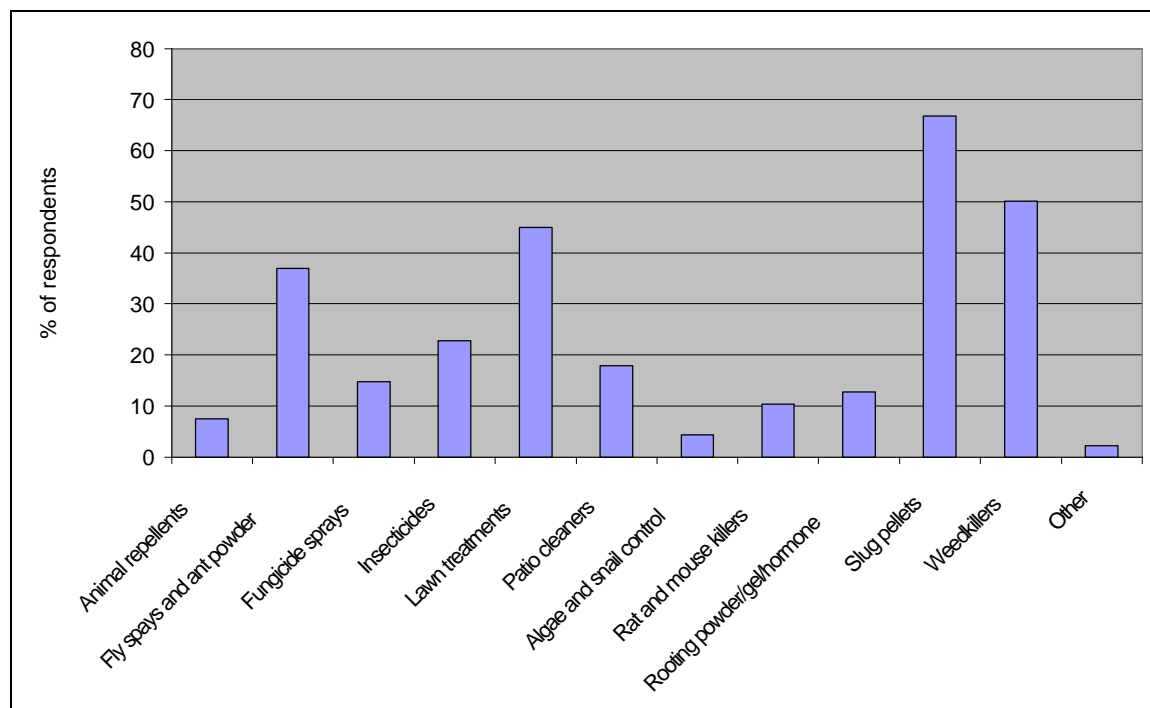
A total of 3,065 responses were provided, indicating that an average of three product types was used by each respondent.

Table 5.5: Product types used

	Frequency	%
Animal repellents, e.g. cat/dog	79	7.5
Fly spays and ant powder	389	37.0
Fungicide sprays	155	14.7
Insecticides	239	22.7
Lawn treatments	473	45.0
Patio cleaners	188	17.9
Products for algae and snail control in ponds	46	4.4
Rat and mouse killers	109	10.4
Rooting powder/gel/hormone	134	12.7
Slug pellets	703	66.8
Weedkillers	527	50.1
Other	23	2.2

Notes: Multi-response question; n = 1,052; total responses 3,065

Figure 5.3: Product types used



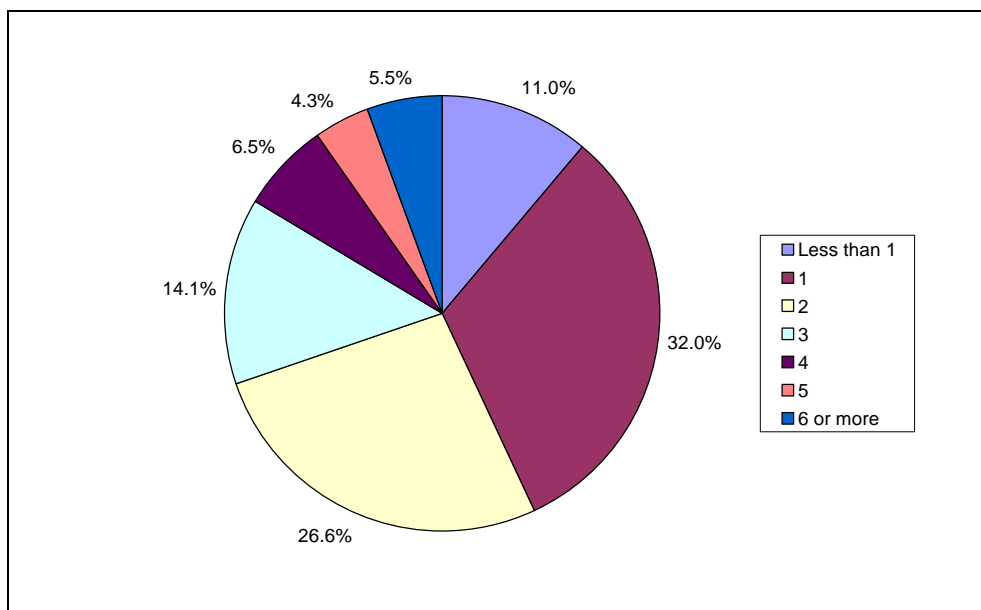
Survey respondents were asked how many pesticide products they purchased on average each year. As Table 5.6 shows, the majority of respondents purchased either one (32%) or two (26.6%) products each year. Around one in ten people purchased an average of less than one product per year, while a total of 16.3% of respondents purchased 4 or more products each year.

Table 5.6: Average numbers of products purchased per year

	Frequency	%
Less than 1	116	11.0
1	336	32.0
2	279	26.6
3	148	14.1
4	68	6.5
5	45	4.3
6 or more	58	5.5
Total	1050	100.0

Notes: Missing answers 2; n = 1050

Figure 5.4: Average numbers of products purchased per year



Respondents were asked where they “usually” bought their pesticide products from, with more than one response allowed. The most frequent answer was garden centres (81.4%). A total of 1,510 responses were provided. However, despite the survey being undertaken in garden centres, this was not the usual place of purchase for all respondents, and considerable proportions also indicated DIY stores and supermarkets.

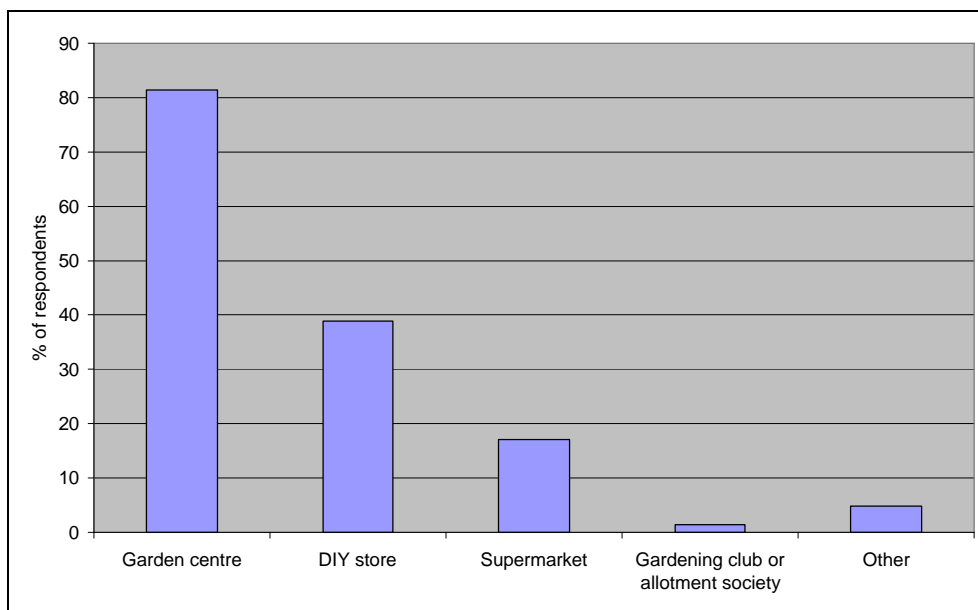
Only a small proportion of gardeners indicated that they obtained their pesticides through a gardening club or allotment society. Of the 50 respondents who indicated “other” purchase locations, 19 usually bought their pesticides at Wilkinsons, the household goods and hardware chain.

Table 5.7: Main purchase locations

	Frequency	%
Garden centre	856	81.4
DIY store	409	38.9
Supermarket	179	17.0
Gardening club or allotment society	14	1.3
Other	50	4.8

Notes: Missing answers 2; n = 1050; multi-response question; total responses 1,510

Figure 5.5: Main purchase locations



5.3 Use of products

5.3.1 Product instructions

In this section of the questionnaire, respondents were asked a series of questions regarding instructions for use on products:

- When do you read the instructions for use on pesticides?
- Do you generally find that instructions for use on pesticides are clear?
- Do you follow the instructions for use on pesticides?

Regarding reading of instructions, a range of options were provided and more than one response was allowed, to reflect the fact that gardeners may, for example, read instructions before buying and before using for the first time. The total number of responses was 1,365.

As Table 5.8 and Figure 5.6 show, the most frequent response was “before buying” with 69.6%, although this result does indicate that 3 in 10 people do *not* read product instructions before purchase.

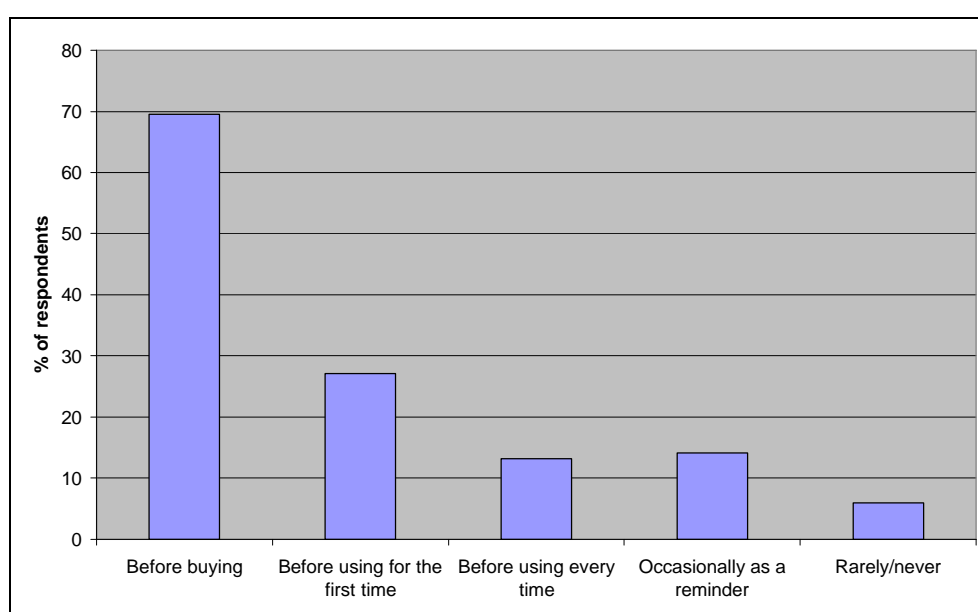
More than a quarter of respondents read instructions before using pesticides for the first time, but only around one in eight (13.1%) claimed to read them before each use.

Table 5.8: Reading of product instructions

	Frequency	%
Before buying	732	69.6
Before using for the first time	285	27.1
Before using every time	138	13.1
Occasionally as a reminder	148	14.1
Rarely/never	62	5.9

Notes: n = 1052; multi-response question; total responses 1,365

Figure 5.6: Reading of product instructions



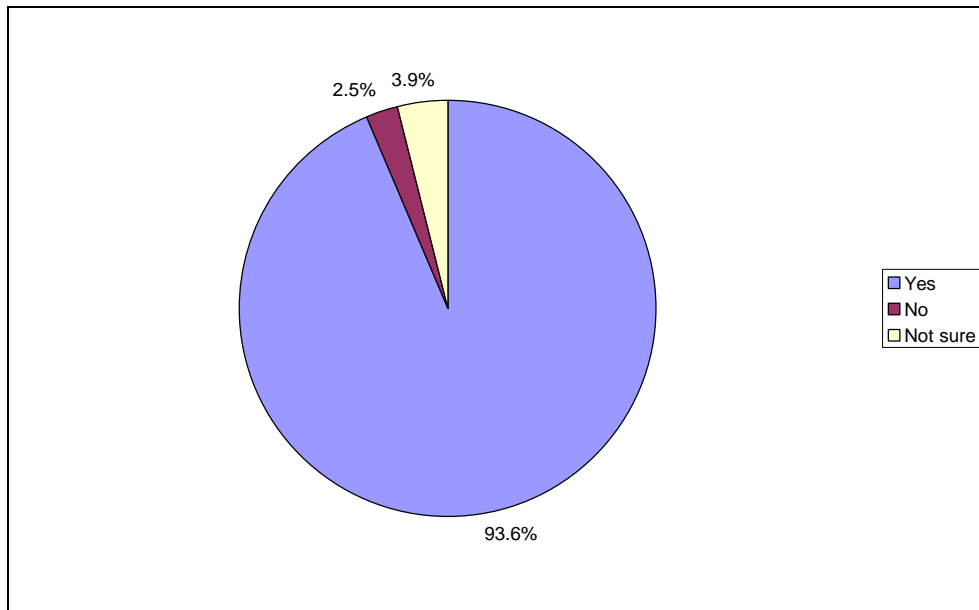
Regarding perceived clarity of instructions, more than 9 in 10 respondents indicated that they thought instructions were clear, with only one in 40 saying that they are not clear and a further 4% unsure.

Table 5.9: Perceptions of instruction clarity

	Frequency	%
Yes	985	93.6
No	26	2.5
Not sure	41	3.9
Total	1052	100.0

Notes: n = 1052

Figure 5.7: Perceptions of instruction clarity



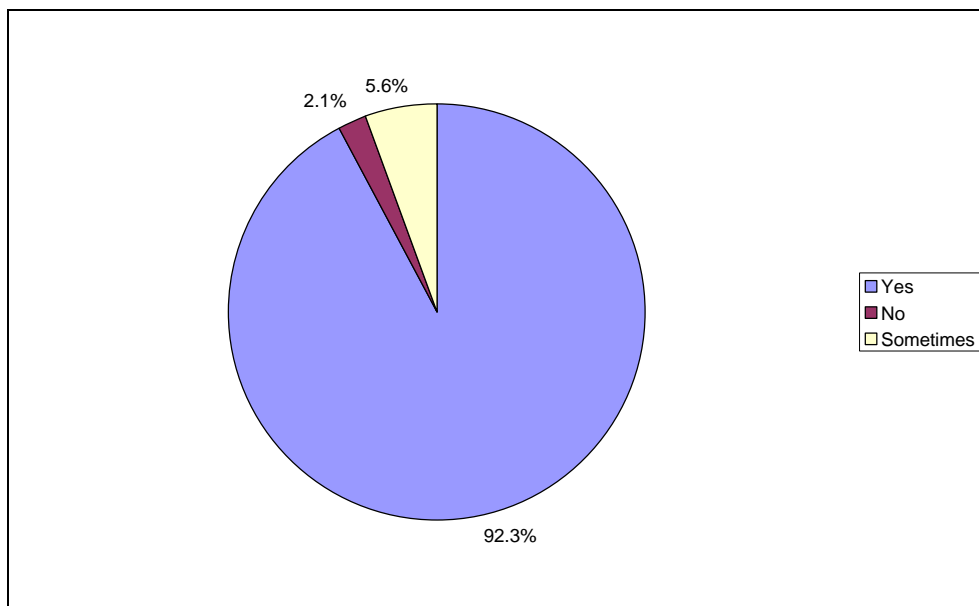
As shown in Table 5.10 and Figure 5.8, more than 9 in 10 respondents also stated that they followed product instructions. However, a small minority (one in fifty) stated that they did not follow instructions, and one in 20 respondents indicated that they did so only sometimes.

Table 5.10: Following product instructions

	Frequency	%
Yes	969	92.3
No	22	2.1
Sometimes	59	5.6
Total	1050	100.0

Notes: Missing answers 2; n = 1050

Figure 5.8: Following product instructions



5.3.2 Other sources of information

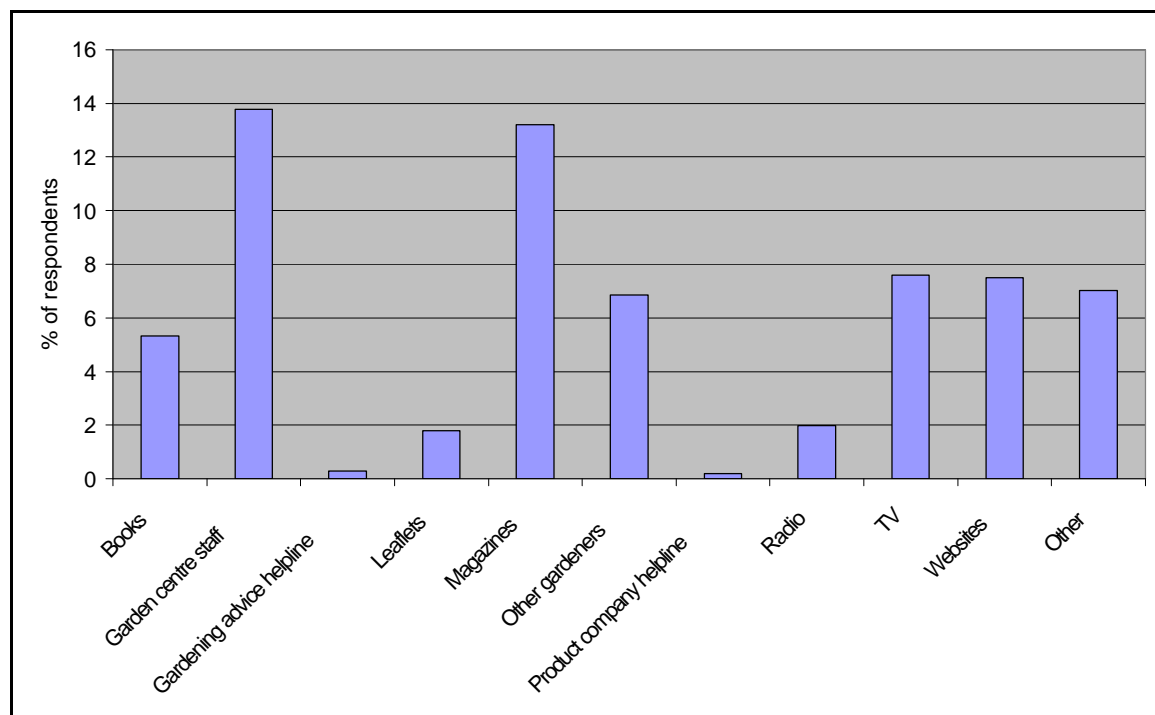
Gardeners were also asked what other sources of information they used to obtain information about appropriate use of pesticides. A total of 690 responses were provided by 484 respondents for this question. As Table 5.11 and Figure 5.9 show, the most frequently cited sources of information were garden centre staff (13.8%) and magazines (13.2%). Approximately 7% of respondents cited TV programmes, websites and other gardeners.

Table 5.11: Other sources of information

	Frequency	%
Books	56	5.3
Garden centre staff	145	13.8
Gardening advice helpline	3	0.3
Leaflets	19	1.8
Magazines	139	13.2
Other gardeners	72	6.8
Product company helpline	2	0.2
Radio	21	2.0
TV	80	7.6
Websites	79	7.5
Other	74	7.0
None	568	54.0

Notes: n = 1052; total 690 responses excluding "none"

Figure 5.9: Other sources of information



Respondents were also asked to indicate which specific TV programmes, books etc. they used to find information. The most frequent responses within the most frequently cited categories are listed in Table 5.12 where relevant. The sources are dominated by 2 organisations – the BBC and the RHS – across different media, with the Google search engine being the most frequently cited “source” through which information could be found on the internet.

The staff of the garden centres where the survey was undertaken were all cited as sources of information by a considerable number of respondents.

Table 5.12: Specific sources of information

Category	Total in category	Specific responses	Frequency
Magazines	139	BBC Gardeners' World	29
		RHS The Garden	9
TV	80	Gardeners' World	21
Websites	79	Google	16
		BBC	9
		Royal Horticultural Society	6

5.3.3 Ready-to-use and concentrated products

Table 5.13 and Figure 5.10 show the numbers of people that used either ready-to-use products or concentrated products that need diluting before use, or both. Nearly half of respondents used ready-to-use products only, with 80% using these products in total. Only one in five gardeners used concentrated products only, with over half using these products in total.

Table 5.13: Ready-to-use and concentrated products

	Frequency	%
Ready-to-use only	491	46.7
Need diluting only	210	20.0
Both	350	33.3
Total	1051	100.0

Notes: missing answers 1; n = 1,051

All 560 respondents who did use products that need diluting before use were asked a series of questions regarding their use of these products:

- How do you measure amounts of product when diluting?
- Do you ever save products that you have mixed up?
- Do you rinse out pesticides containers before disposing of the empty container?
- If yes, what do you do with rinsings?

Table 5.14 and Figure 5.11 summarise methods of measurement used, with around one in 10 indicating that they estimate or guess the amounts of product required.

Figure 5.10: Ready-to-use and concentrated products

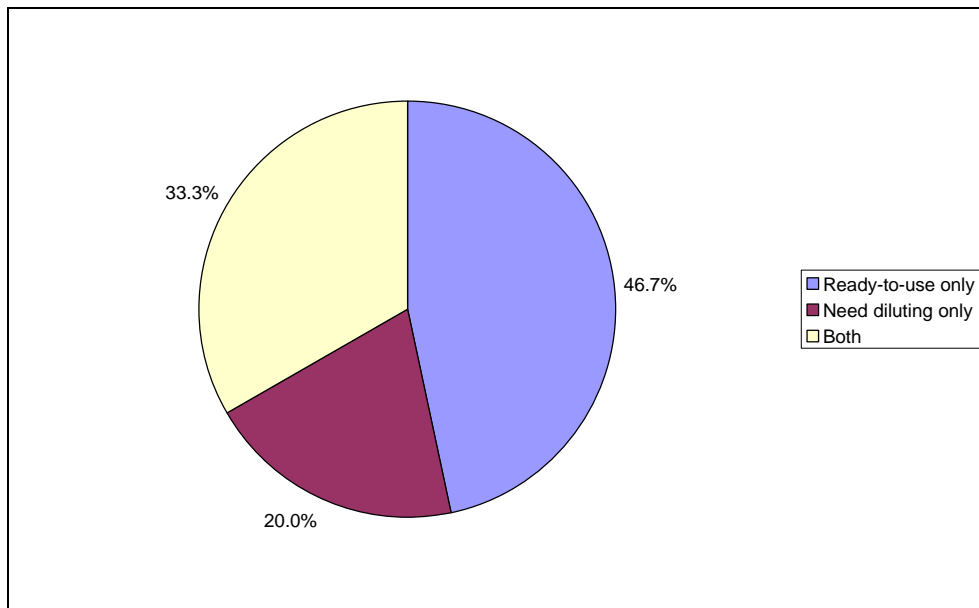
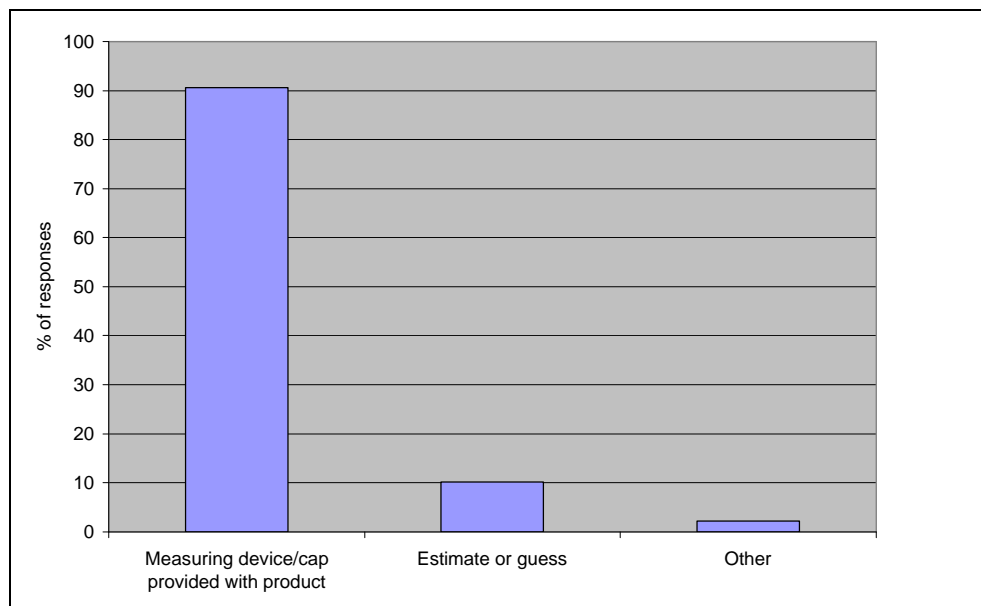


Table 5.14: Measurement methods

	Frequency	%
Measuring device/cap provided with product	507	90.5
Estimate or guess	57	10.2
Other	12	2.1

Notes: n = 560; multi-response question; total responses 576

Figure 5.11: Measurement methods



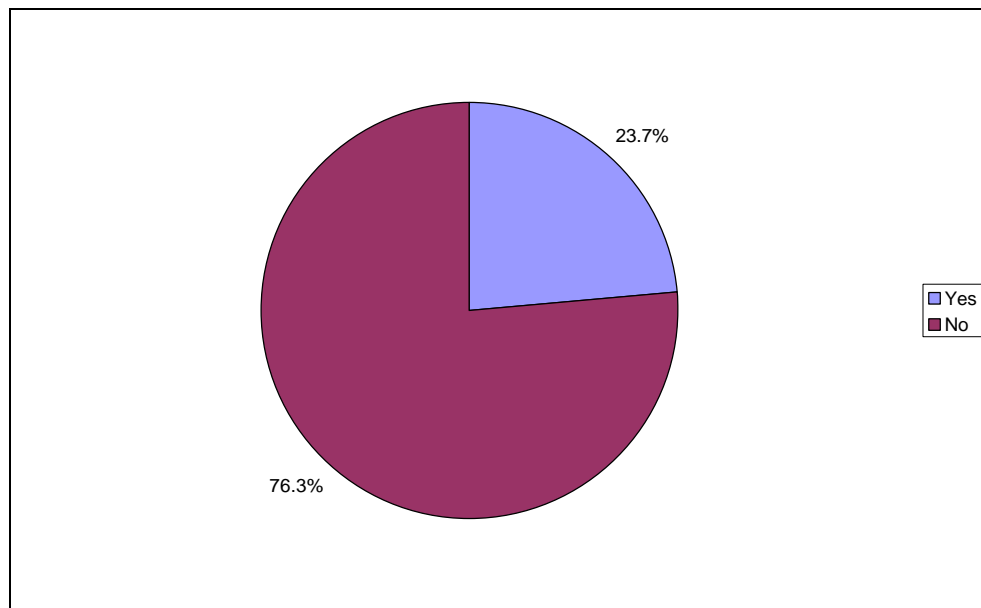
Nearly a quarter of gardeners using products that require dilution stated that they would sometimes store these products after diluting, as shown in Table 5.15 and Figure 5.12.

Table 5.15: Storage of products after dilution

	Frequency	%
Yes	132	23.7
No	424	76.3
Total	556	100.0

Notes: Missing answers = 4

Figure 5.12: Storage of products after dilution



As Table 5.16 and Figure 5.13 show, nearly 60% of gardeners using concentrated products rinsed the containers before disposal.

Table 5.16: Rinsing of empty containers

	Frequency	%
Yes	333	59.7
No	225	40.3
Total	558	100.0

Notes: Missing answers = 2

Of the 333 gardeners rinsing out containers, half disposed of rinsings by putting them down the drain, with a further 6.6% using the sink. A quarter of respondents put rinsings onto waste ground, while 8.1% added rinsings to the dilute product.

Figure 5.13: Rinsing of empty containers

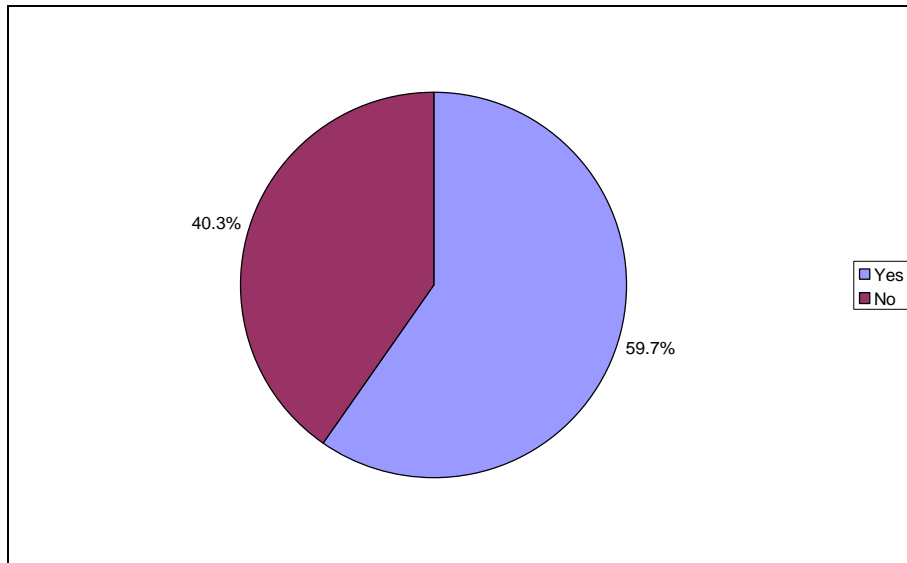
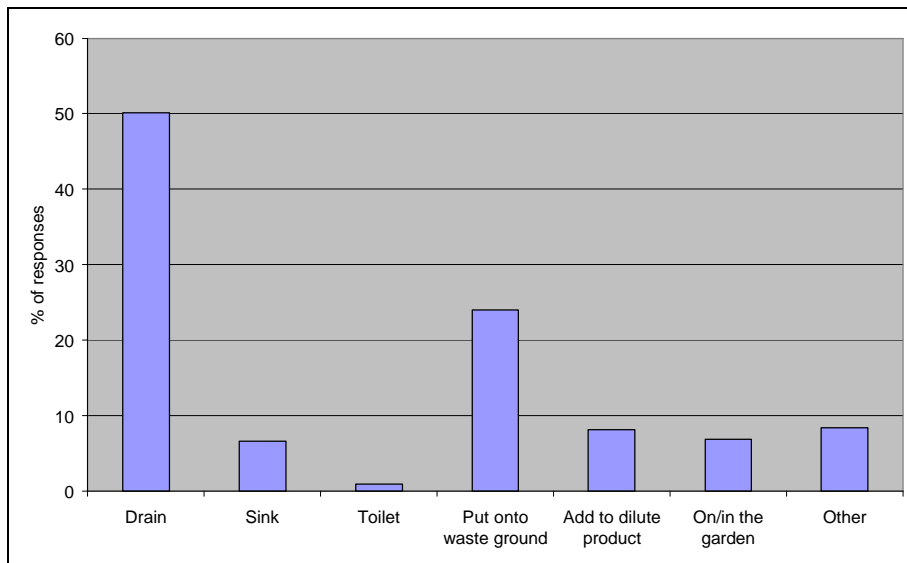


Table 5.17: Disposal of rinsings

	Frequency	%
Drain	167	50.2
Sink	22	6.6
Toilet	3	0.9
Put onto waste ground	80	24.0
Add to dilute product	27	8.1
On/in the garden	23	6.9
Other	28	8.4

Notes: n = 333; multi-response question; total responses 350

Figure 5.14: Disposal of rinsings



5.4 Storage

Regarding storage of pesticides, gardeners were asked to indicate storage locations, with more than one answer possible to account for multiple storage locations. A total of 1,206 locations were specified. As Table 5.18 and Figure 5.15 show, the shed was the most frequent location, followed by the garage. Only 4.1% of people stored pesticides in the home.

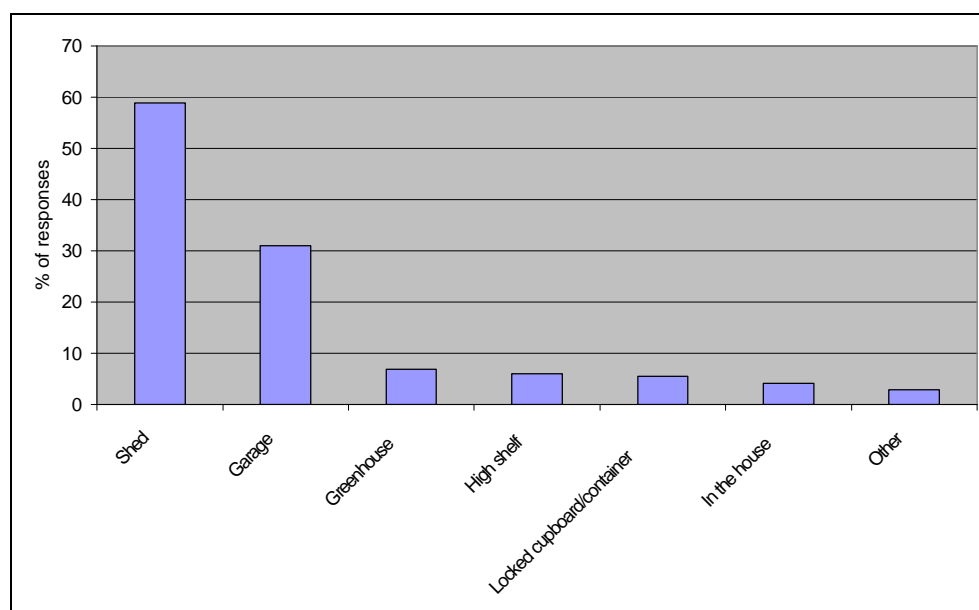
Just over one in ten respondents specified safety precautions such as keeping pesticides on a high shelf or in a locked cupboard or other container.

Table 5.18: Storage locations

	Frequency	%
Shed	617	58.9
Garage	325	31.0
Greenhouse	72	6.9
High shelf	62	5.9
Locked cupboard/container	57	5.4
In the house	43	4.1
Other	30	2.9

Notes: n = 1,052; multi-response question; total responses 1,206

Figure 5.15: Storage locations



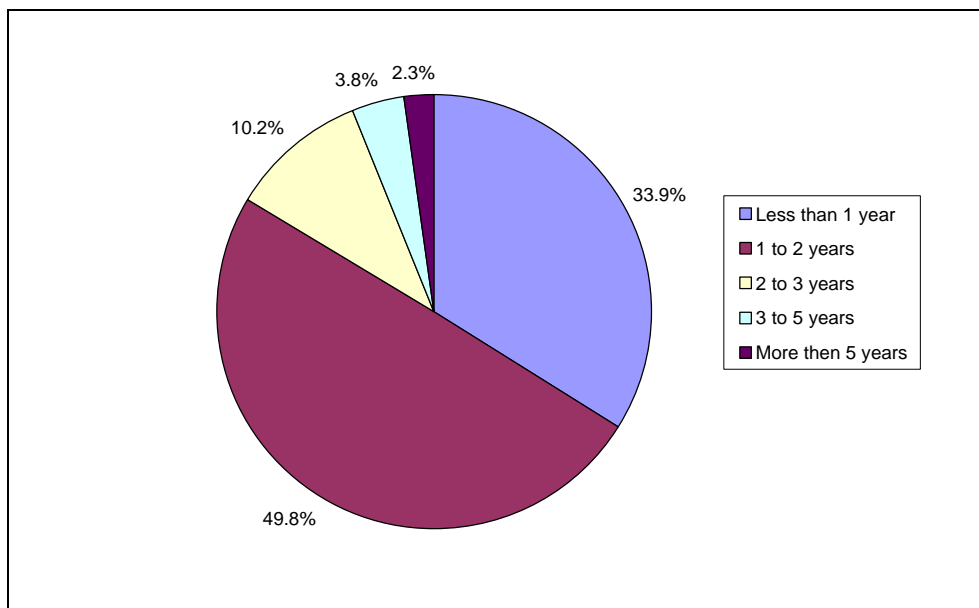
Gardeners were also asked how long they store pesticides for before using them up or disposing of them. A third of respondents stored pesticides for less than one year, with half averaging between 1 and 2 years.

However, one in ten respondents stored products for 2 to 3 years, and around 6% stored products for three years or more.

Table 5.19: Length of storage

	Frequency	%
Less than 1 year	351	33.9
1 to 2 years	515	49.8
2 to 3 years	106	10.2
3 to 5 years	39	3.8
More then 5 years	24	2.3
Total	1035	100.0

Figure 5.16: Length of storage



5.5 Disposal

The final section of the questionnaire covered disposal of empty containers and, where relevant, disposal of pesticides themselves.

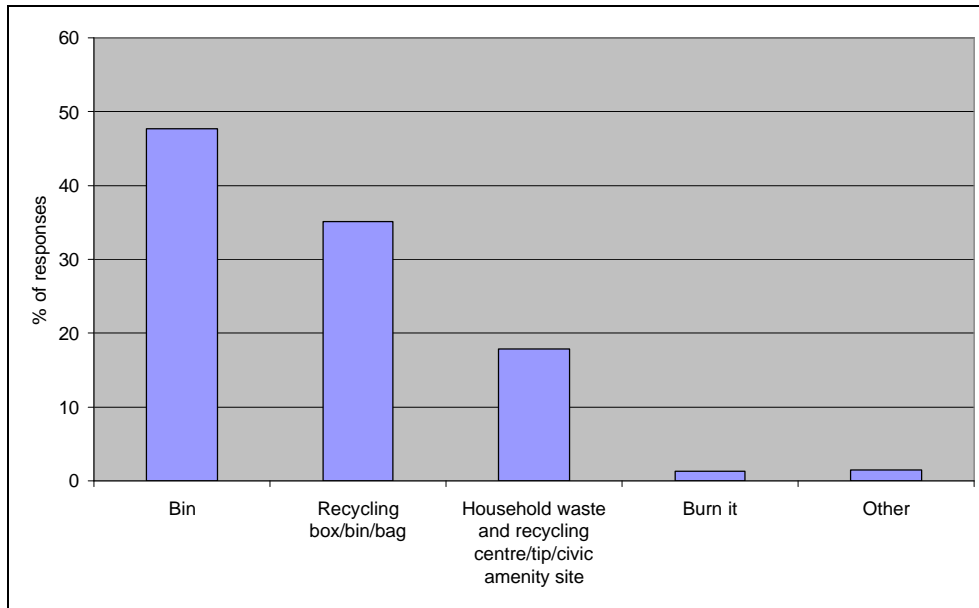
As Table 5.20 shows, nearly half of gardeners disposed of empty pesticide containers in the dustbin, while more than a third were recycling them. Nearly one in five were disposing of containers at their local household waste recycling centre (HWRC), while a small number burned containers.

Table 5.20: Disposal of pesticide containers

	Frequency	%
Bin	500	47.5
Recycling box/bin/bag	368	35.0
Household waste and recycling centre/tip/civic amenity site	187	17.8
Burning	14	1.3
Other	16	1.5

Notes: n = 1,052; multi-response question; total responses 1,085

Figure 5.17: Disposal of pesticide containers



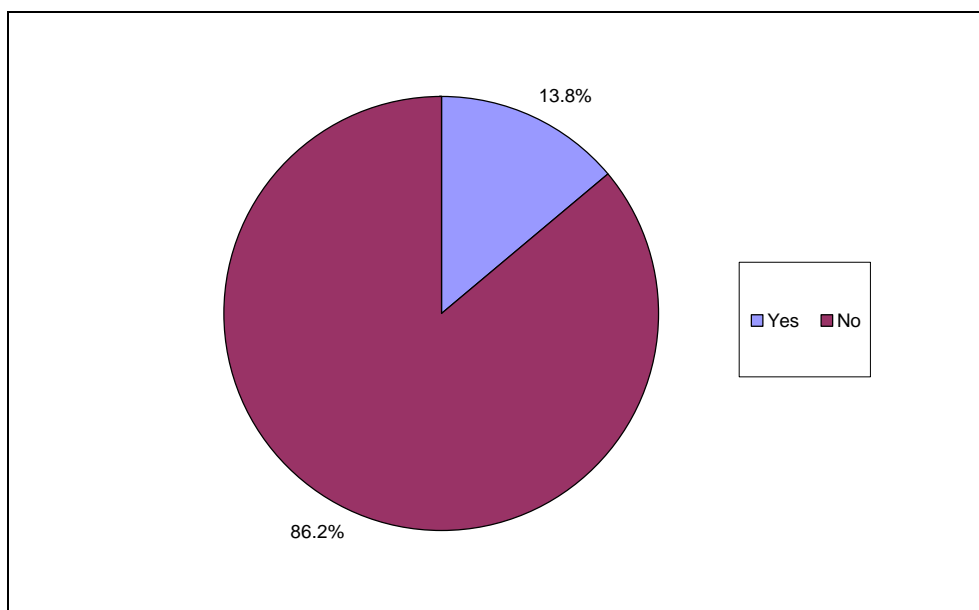
Regarding disposal of pesticides themselves, as shown in Table 5.21 and Figure 5.18, only a fairly small proportion – around one in eight – found that they ever had to dispose of unused or unwanted products. This implies that the majority of respondents are using all pesticides purchased for their intended purpose.

Table 5.21: Disposal of unused or unwanted pesticides

	Frequency	%
Yes	145	13.8
No	905	86.2
Total	1050	100.0

Notes: missing answers = 2

Figure 5.18: Disposal of unused or unwanted pesticides



The methods used for disposal of unused or unwanted pesticides varied, but the survey clearly shows that products are being disposed of by some gardeners in an inappropriate fashion. A total of 153 responses to this question were provided by the 145 individuals who stated that they disposed of pesticides.

On a positive note, the most frequently cited disposal route was to take products to the local HWRC (31.7%). However, it should be noted that not all of these centres have appropriate facilities for disposal of waste pesticides, and some of the items disposed of at HWRCs may be placed in general waste containers. A small proportion (3.4%) used a local authority collection service.

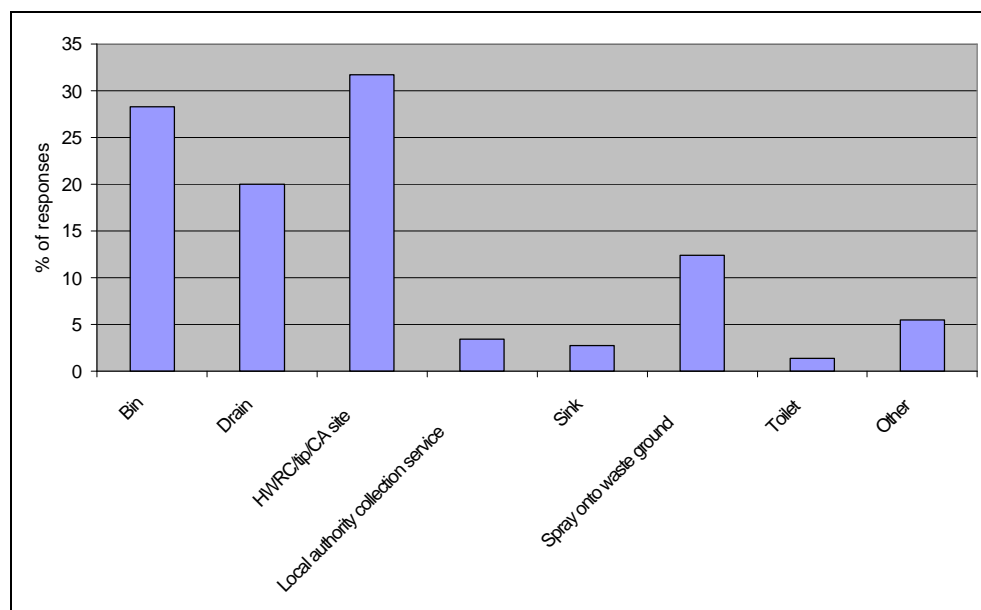
The second most frequent disposal method stated was the bin (28.3%). Significant numbers of respondents (20%) disposed of pesticides by putting them down the drain, while small numbers also used the sink or the toilet.

Table 5.21: Disposal method for unused or unwanted pesticides

	Frequency	%
Bin	41	28.3
Drain	29	20.0
Household waste and recycling centre/tip/civic amenity site	46	31.7
Local authority collection service	5	3.4
Sink	4	2.8
Spray onto waste ground	18	12.4
Toilet	2	1.4
Other	8	5.5

Notes: n = 145; multi-response question; total responses 153

Figure 5.19: Disposal method for unused or unwanted pesticides



5.6 Cross-tabulation

This section summarises findings from cross-tabulation of key variables, and identifies variation between different locations and age groups, as well as by attitudes to gardening.

The analysis also contains a specific section that identifies other characteristics of respondents disposing of pesticides.

5.6.1 Location

Table 5.22 shows the numbers of questionnaires completed at each location, which comprised an even spread, with similar numbers completed in each of the six locations. The numbers of people indicating that they would be happy to be contacted regarding possible participation in a focus group at a later date varied between locations (see Section 7).

Table 5.22: Responses per location

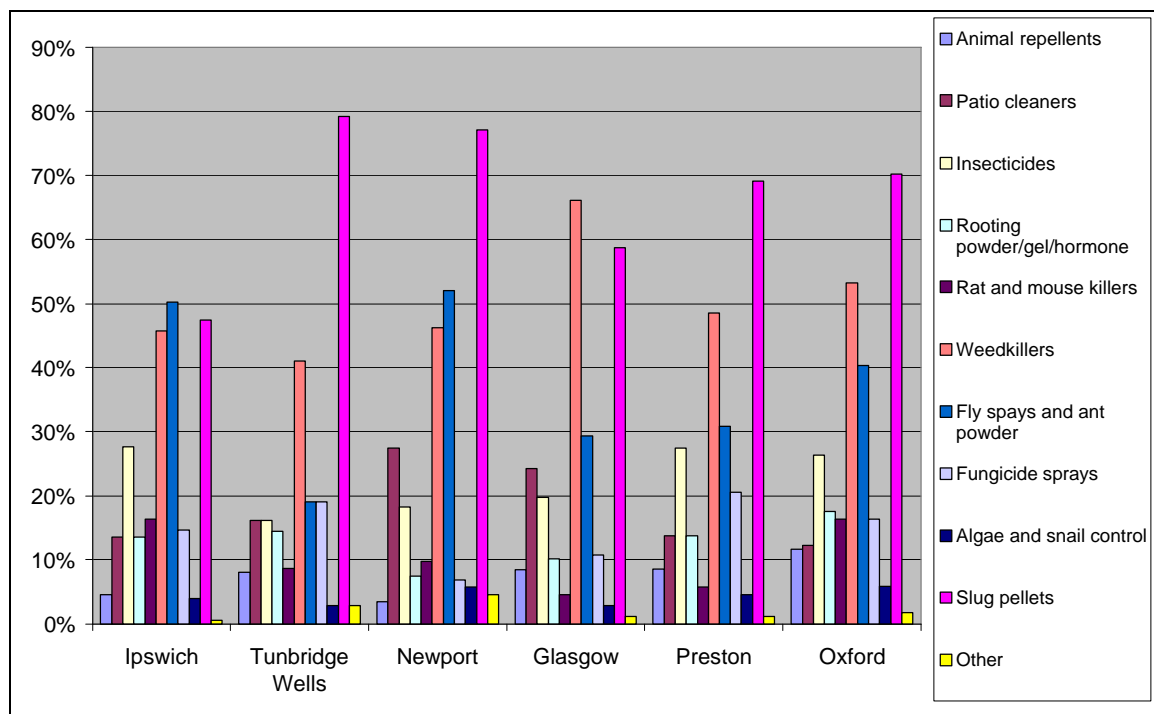
	Frequency	%
Ipswich	177	16.8
Tunbridge Wells	173	16.4
Newport	175	16.6
Glasgow	177	16.8
Preston	175	16.6
Oxford	171	16.3
Missing data	4	0.4
Total	1052	100.0

Table 5.23 summarises the proportions of respondents in each location using different product types, as illustrated in Figure 5.20.

Table 5.23: Product types used (%)

	Ipswich	Tunbridge Wells	Newport	Glasgow	Preston	Oxford
Animal repellents	4.5	8.1	3.4	8.5	8.6	11.7
Patio cleaners	13.6	16.2	27.4	24.3	13.7	12.3
Insecticides	27.7	16.2	18.3	19.8	27.4	26.3
Rooting powder/gel/hormone	13.6	14.5	7.4	10.2	13.7	17.5
Rat and mouse killers	16.4	8.7	9.7	4.5	5.7	16.4
Weedkillers	45.8	41.0	46.3	66.1	48.6	53.2
Fly spays and ant powder	50.3	19.1	52.0	29.4	30.9	40.4
Fungicide sprays	14.7	19.1	6.9	10.7	20.6	16.4
Algae and snail control	4.0	2.9	5.7	2.8	4.6	5.8
Slug pellets	47.5	79.2	77.1	58.8	69.1	70.2
Other	0.6	2.9	4.6	1.1	1.1	1.8

Figure 5.20: Product types used (%)



Some considerable variations can be observed in the proportions of respondents in different locations stating that they used different product types:

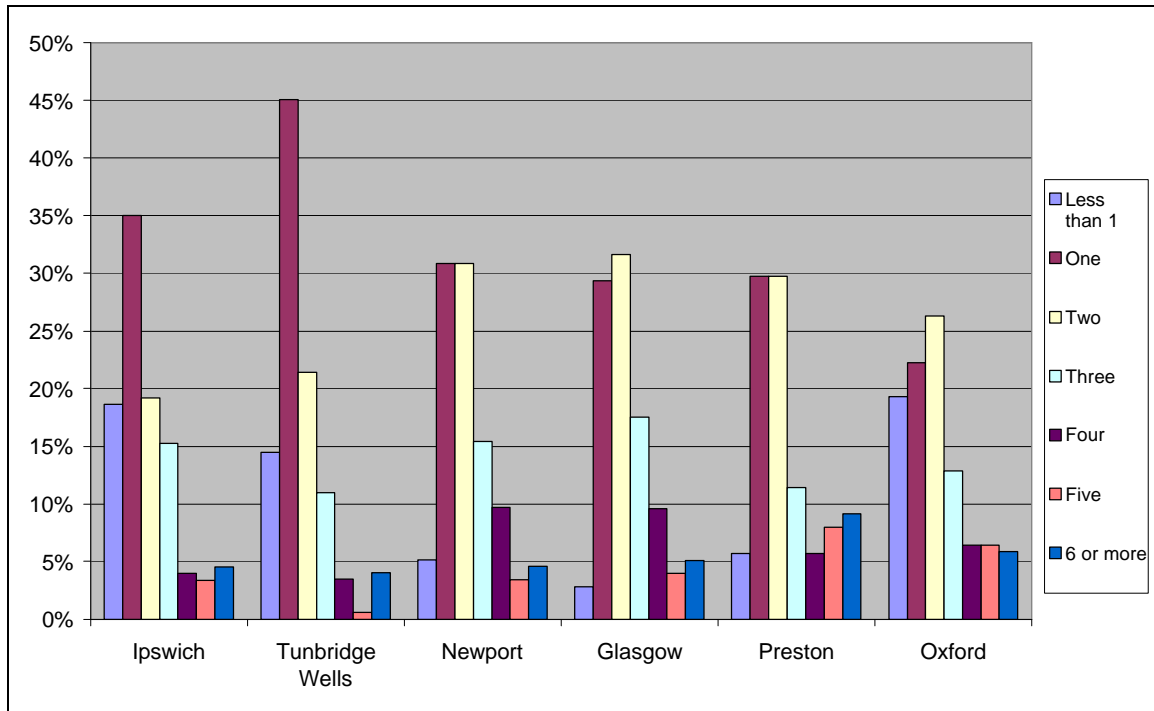
- There was greater use of patio cleaners in Newport (27.4%) and Glasgow (24.3%) than in other areas, which ranged from 12.3% to 16.2%.
- Use of rat and mouse killers was particularly prevalent in Ipswich (16.4%) and Oxford (16.4%) compared with other areas, which ranged from 4.5% to 9.7%.
- More respondents in Glasgow used weedkiller (66.1%) than in other areas (41% to 53.2%).
- Use of fly sprays and ant powder ranged from 19% in Tunbridge Wells to 50.3% in Ipswich and 52% in Newport.
- Fungicide use ranged from 6.9% in Newport to 20.6% in Preston.
- Slug pellets were the most frequently used product in most areas, with proportions of gardeners in each location ranging from 47.5% in Ipswich to 79.2% in Tunbridge Wells.

The numbers of products purchased each year by respondents in different locations is summarised in Table 5.24 and illustrated in Figure 5.21.

Table 5.24: Numbers of products purchased per year (%)

	Ipswich	Tunbridge Wells	Newport	Glasgow	Preston	Oxford
Less than 1	18.6	14.5	5.1	2.8	5.8	19.4
One	35.0	45.1	30.9	29.4	29.8	22.3
Two	19.2	21.4	30.9	31.6	29.8	26.4
Three	15.3	11.0	15.4	17.5	11.5	13.0
Four	4.0	3.5	9.7	9.6	5.8	6.5
Five	3.4	0.6	3.4	4.0	8.1	6.5
6 or more	4.5	4.0	4.6	5.1	9.2	5.9
Totals	100	100	100	100	100	100

Figure 5.21: Numbers of products purchased per year



The proportions of gardeners buying four or more products each year ranged from 8.1% in Tunbridge Wells to 22.9% in Preston, as illustrated in Figure 5.22.

Figure 5.22: Gardeners buying four or more products per year (%)

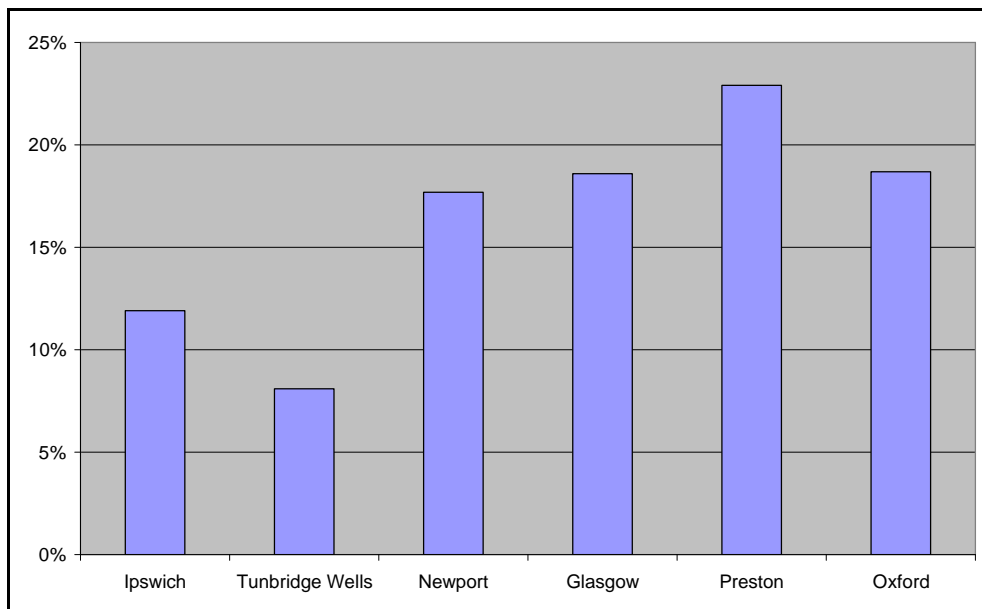


Table 5.25 and Figure 5.23 show that the proportions of gardeners disposing of unused or unwanted pesticides ranged from 5.7% in Newport (10 respondents) to 22.8% in Oxford (39 respondents).

Table 5.25: Disposal of unused or unwanted pesticides

	Ipswich	Tunbridge Wells	Newport	Glasgow	Preston	Oxford
Yes	27 15.3%	22 12.7%	10 5.7%	26 14.7%	21 12.0%	39 22.8%
No	150 84.7%	151 87.3%	165 94.3%	151 85.3%	152 86.9%	132 77.2%
Missing answer	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 1.1%	0 0.0%
Total	177	173	175	177	175	171

Figure 5.23: Disposal of unused or unwanted pesticides

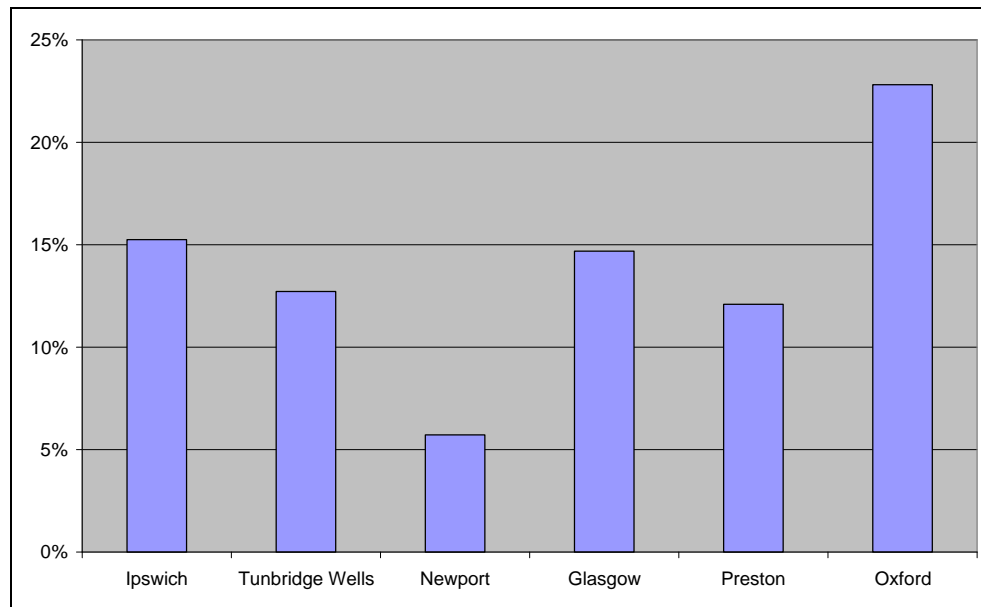
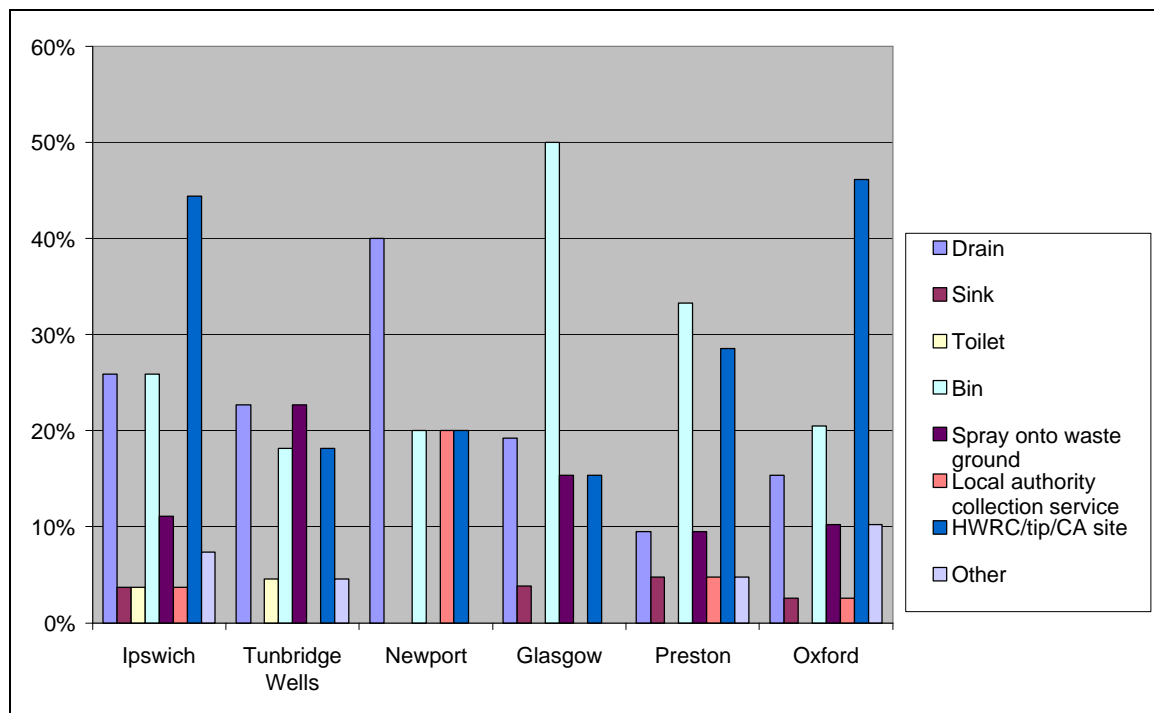


Table 5.26 and Figure 5.24 summarise proportions of respondents in each location using different disposal methods for pesticides. Some differences can be observed, but findings in this section should be treated with caution due to small sample sizes:

- 40% of respondents disposing of pesticides in Newport put them down the drain
- half of respondents in Glasgow disposed of pesticides via the bin
- higher proportions of respondents in Ipswich (44.4%) and Oxford (46.2%) took pesticides to their local HWRC than those in other areas.

Table 5.26: Disposal routes for unused or unwanted pesticides

	Ipswich	Tunbridge Wells	Newport	Glasgow	Preston	Oxford
Drain	7	5	4	5	2	6
	25.9%	22.7%	40.0%	19.2%	9.5%	15.4%
Sink	1	0	0	1	1	1
	3.7%	0.0%	0.0%	3.8%	4.8%	2.6%
Toilet	1	1	0	0	0	0
	3.7%	4.5%	0.0%	0.0%	0.0%	0.0%
Bin	7	4	2	13	7	8
	25.9%	18.2%	20.0%	50.0%	33.3%	20.5%
Spray onto waste ground	3	5	0	4	2	4
	11.1%	22.7%	0.0%	15.4%	9.5%	10.3%
Local authority collection service	1	0	2	0	1	1
	3.7%	0.0%	20.0%	0.0%	4.8%	2.6%
HWRC/tip/CA site	12	4	2	4	6	18
	44.4%	18.2%	20.0%	15.4%	28.6%	46.2%
Other	2	1	0	0	1	4
	7.4%	4.5%	0.0%	0.0%	4.8%	10.3%

Figure 5.24: Disposal routes for unused or unwanted pesticides


5.7 Age bracket

As noted in Section 5.1, the 16-24 age group was under-represented in the survey (0.9%), with the majority of respondents coming from the 45-64 years old (49.5%) and 65 and over (31.4%) age groups. The 25-44 age group accounted for 18.3% of the sample. The sample size for the 16-24 age group was only 9 respondents. Therefore, although the results from this group are included in the tables and figures below, results for this group should be treated with caution.

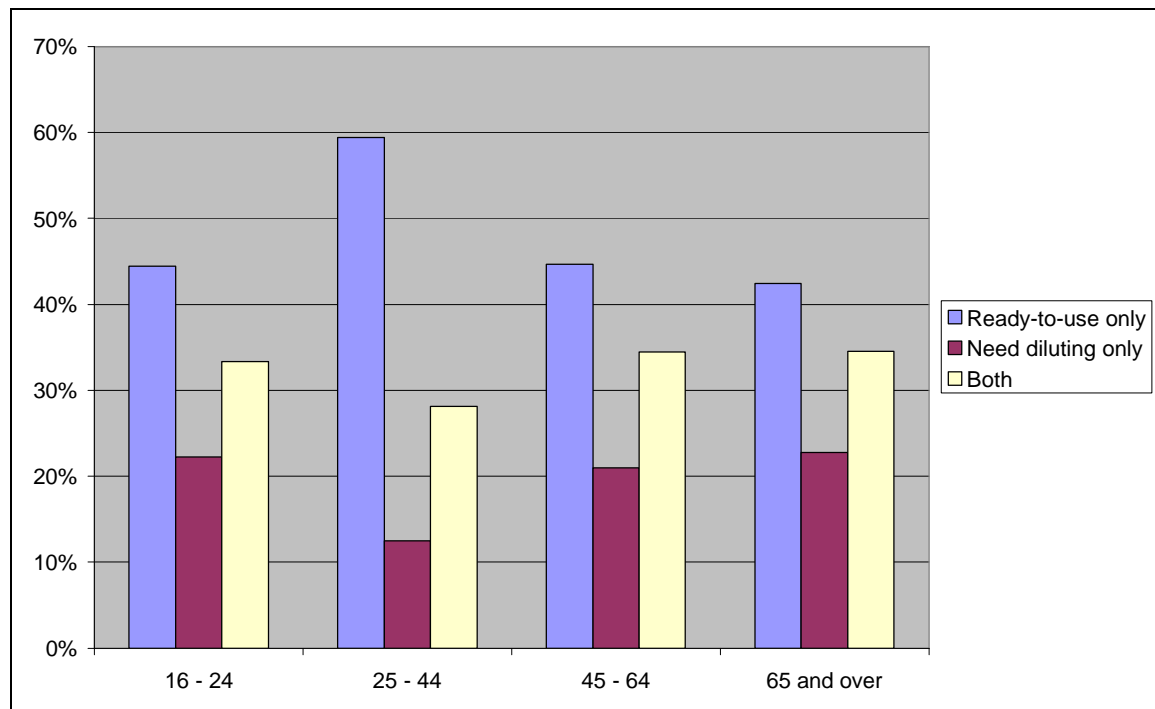
The discussion in this section focuses on questions and issues where differences of a reasonable magnitude were observed between different age groups. In general, only very small differences between age groups were recorded for most questions in the survey.

As Table 5.27 and Figure 5.25 show, there were some differences between age groups regarding use of ready-to-use products and concentrated products that need diluting before use. Respondents from the 25-44 age group were considerably more likely to use ready-to-use products only, with nearly 60%, compared to 44.6% and 42.4% for the 45-64 and 65 and over groups.

Table 5.27: Ready-to-use and concentrated products use by age bracket

	16 – 24	25 - 44	45 - 64	65 and over
Ready-to-use only	4	114	232	140
	44.4%	59.4%	44.6%	42.4%
Need diluting only	2	24	109	75
	22.2%	12.5%	21.0%	22.7%
Both	3	54	179	114
	33.3%	28.1%	34.4%	34.5%

Figure 5.25: Ready-to-use and concentrated products use by age bracket



There were also observable differences between age groups regarding use of concentrated products. However, the sample size of people using these products for the 16 to 24 age group was very small (five respondents in total), and results for this group should be treated with

caution. In Tables 5.28 to 5.30, percentages and actual numbers of responses for each age group are shown for each question.

Regarding measurement methods when diluting products, as Table 5.28 shows, the data indicated a slightly lower likelihood to estimate or guess the amount of product to use with ascending age, although differences were small.

Table 5.28: Measurement methods

	16 - 24	25 - 44	45 - 64	65 and over	Totals
Measuring device/cap provided with product	3	70	259	175	507
	60.0%	89.7%	89.9%	92.6%	90.5%
Estimate or guess	2	11	29	15	57
	40.0%	14.1%	10.1%	7.9%	10.2%
Other	0	1	7	4	12
	0.0%	1.3%	2.4%	2.1%	2.1%
Missing	0	0	1	0	1
	0.0%	0.0%	0.3%	0.0%	0.3%

Disregarding the 16-24 age group, there appeared to be a higher propensity to save products once they had been diluted in the older age groups, with more than twice as many of the 65 and over group (27.0%) as the 25-44 group (12.8%) storing products.

Table 5.29: Storage of products after dilution

	16 - 24	25 - 44	45 - 64	65 and over	Totals
Yes	1	10	70	51	132
	20.0%	12.8%	24.3%	27.0%	23.6%
No	4	68	214	138	424
	80.0%	87.2%	74.3%	73.0%	75.7%
Missing	0	0	4	0	4
	0.0%	0.0%	1.4%	0.0%	0.7%
Totals	5	78	288	189	560
	100.0%	100.0%	100.0%	100.0%	100.0%

The data indicated that those in the 65 and over group (65.6%) were the most likely to rinse empty containers prior to disposal, closely followed by the 45 -64 age group (61.5%). Fewer respondents (39.7%) in the 25-44 age group claimed to rinse out empty containers.

Table 5.31: Rinsing of empty containers

	16 - 24	25 - 44	45 - 64	65 and over	Totals
Yes	1	31	177	124	333
	20.0%	39.7%	61.5%	65.6%	59.5%
No	4	47	109	65	225
	80.0%	60.3%	37.8%	34.4%	40.2%
Missing	0	0	2	0	2
	0.0%	0.0%	0.7%	0.0%	0.4%
Totals	5	78	288	189	560
	100.0%	100.0%	100.0%	100.0%	100.0%

5.8 Attitudes to gardening

The discussion in this section focuses on questions and issues where it might be expected that attitudes to gardening would have an impact on the responses provided. For example it might be expected that:

- keen and regular gardeners would purchase more products than other groups, or different types of products
- keen gardeners might be more at home with using products that need diluting before use
- keen gardeners might demonstrate a more conscientious attitude to product instructions, including appropriate disposal of unwanted or unused products.

Regarding product types used, Table 5.32 and Figure 5.26 show that:

- The four most commonly used products across all groups were slug pellets, lawn treatments, weedkillers and flysprays/ ant powders.
- The profiles of product type used were in general very similar across the groups, although fewer members of the “gardening is a chore” group used most products, indicating that members of this group generally purchase fewer products.

This conclusion is confirmed by the responses to the question regarding average numbers of pesticide products purchased each year. As shown in Table 5.33 and Figure 5.27, the profile of the “gardening is a chore” group indicates that fewer products are bought on average by many members of this group. This is illustrated in Figure 5.28, which shows that the numbers of respondents buying one product or fewer each year ranges from 39.2% for the “keen and regular gardener” group to 58.8% for the “gardening is a chore” group.

Figure 5.26: Product types used

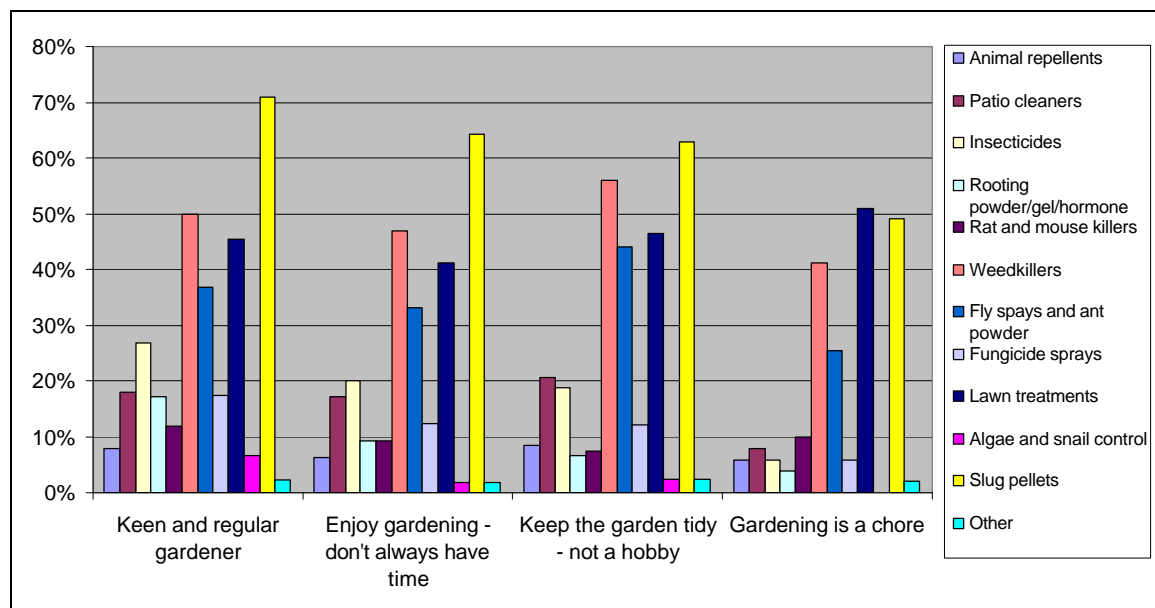


Table 5.32: Product types used

	Animal repellents		Patio cleaners		Insecticides		Rooting powder/gel/hormone		Rat and mouse killers		Weedkillers		Fly spays and ant powder		Fungicide sprays		Lawn treatments		Algae and snail control		Slug pellets		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Keen and regular gardener - enjoyable hobby	44	7.8	101	18.0	151	26.9	97	17.3	67	11.9	281	50.0	207	36.8	98	17.4	255	45.4	37	6.6	399	71.0	13	2.3
Enjoy gardening - don't always have time	14	6.2	39	17.3	45	19.9	21	9.3	21	9.3	106	46.9	75	33.2	28	12.4	93	41.2	4	1.8	145	64.2	4	1.8
Like to keep garden tidy, but not a hobby	18	8.5	44	20.7	40	18.8	14	6.6	16	7.5	119	55.9	94	44.1	26	12.2	99	46.5	5	2.3	134	62.9	5	2.3
Gardening is a chore	3	5.9	4	7.8	3	5.9	2	3.9	5	9.8	21	41.2	13	25.5	3	5.9	26	51.0	0	0.0	25	49.0	1	2.0
Total	79	7.5	188	17.9	239	22.7	134	12.7	109	10.4	527	50.1	389	37.0	155	14.7	473	45.0	46	4.4	703	66.8	23	2.2

Table 5.33: Numbers of products purchased

	Less than 1		One		Two		Three		Four		Five		6 or more		Missing data		Totals	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Keen and regular gardener	51	9.1	169	30.1	147	26.2	82	14.6	40	7.1	29	5.2	44	7.8	0	0.0	562	100.0
Enjoy gardening - don't always have time	38	16.8	72	31.9	52	23.0	38	16.8	11	4.9	5	2.2	8	3.5	2	0.9	226	100.0
Keep the garden tidy - not a hobby	18	8.5	74	34.7	66	31.0	25	11.7	14	6.6	10	4.7	6	2.8	0	0.0	213	100.0
Gardening is a chore	9	17.6	21	41.2	14	27.5	3	5.9	3	5.9	1	2.0	0	0.0	0	0.0	51	100.0

Figure 5.27: Numbers of products purchased

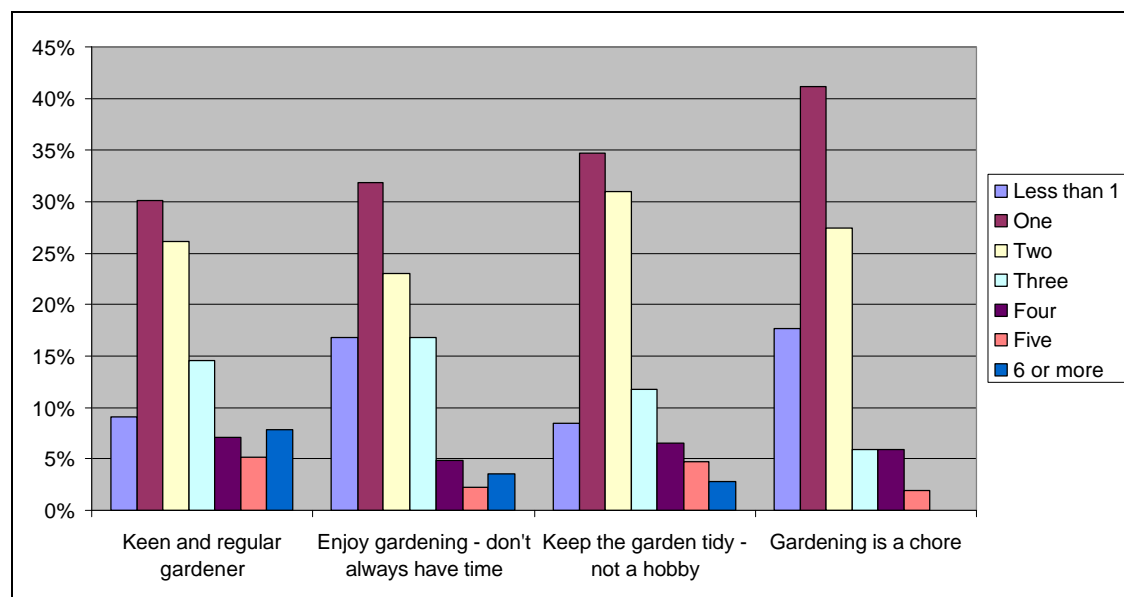


Figure 5.28: Respondents purchasing one pesticide product or fewer each year

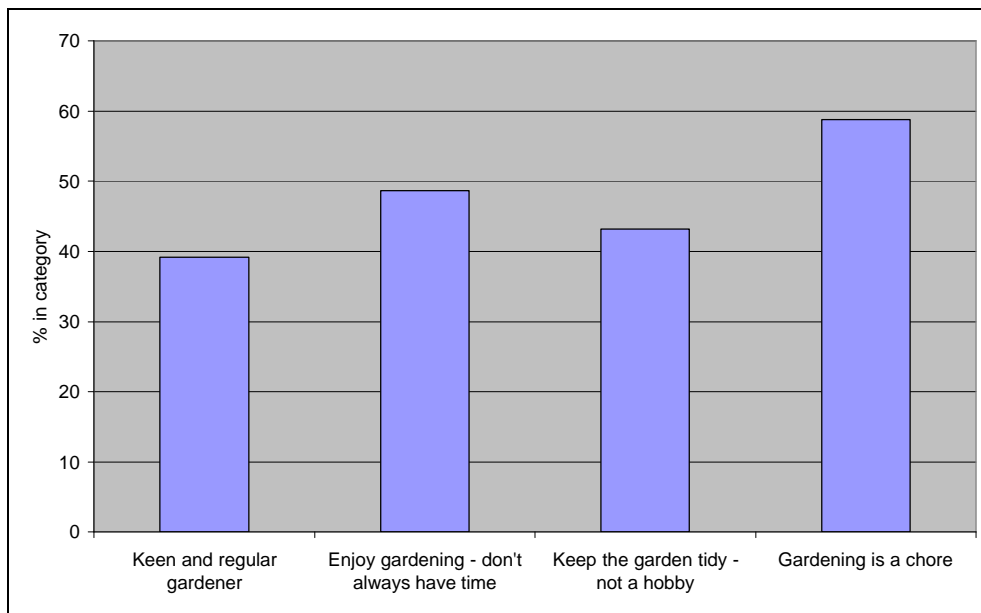


Table 5.34 summarises information on the series of questions regarding perceptions and use made of instructions. The data indicate that the differences between the groups were marginal, although, as might be expected, the “gardening is a chore” group included the highest proportions of people rarely/never reading instructions (9.8%); finding instructions unclear or answering unsure (11.7% combined); or not / only sometimes following instructions (13.7% combined).

Table 5.34: Use of product instructions by attitude to gardening

	Rarely /never read instructions		Instructions clear				Follow instructions			
			No		Not sure		No		Sometimes	
	no	%	no	%	no	%	no	%	no	%
Keen and regular gardener	36	6.4	12	2.1	19	3.4	7	1.2	24	4.3
Enjoy gardening - don't always have time	11	4.9	7	3.1	11	4.9	5	2.2	18	8.0
Keep the garden tidy - not a hobby	10	4.7	5	2.3	7	3.3	8	3.8	12	5.6
Gardening is a chore	5	9.8	2	3.9	4	7.8	2	3.9	5	9.8

Table 5.35 shows that the proportion of people using “ready-to-use” products only was highest in the “gardening is a chore” group, at 52.9%. However, the variation between groups in response to this question was narrow; even among keen and regular gardeners, 44.3% used “ready-to-use” products only.

Table 5.35: Use of concentrated and ready to use products by attitude to gardening

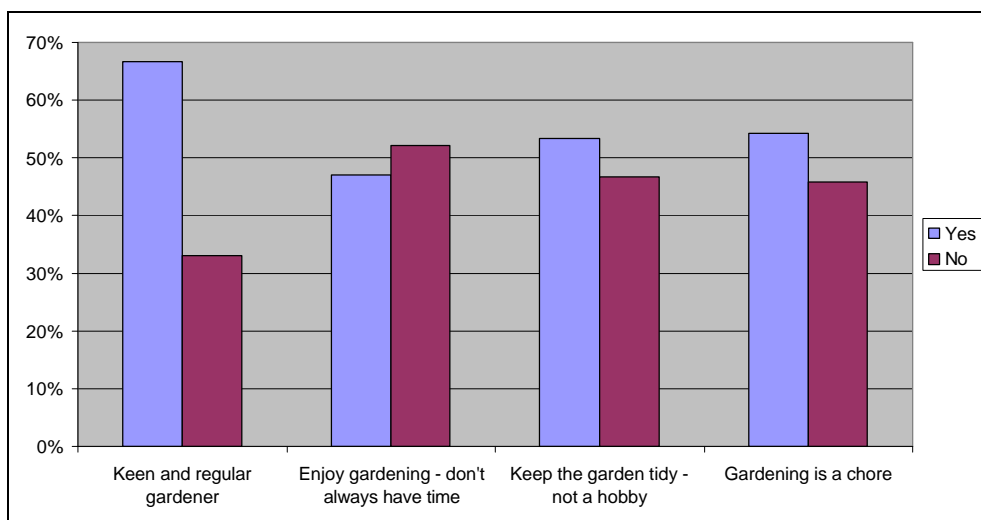
	Ready-to-use only		Need diluting only		Both		Missing answer		Totals	
	no	%	no	%	no	%	no	%	no	%
Keen and regular gardener	249	44.3	107	19.0	205	36.5	1	0.2	562	100.0
Enjoy gardening - don't always have time	109	48.2	59	26.1	58	25.7	0	0.0	226	100.0
Keep the garden tidy - not a hobby	106	49.8	33	15.5	74	34.7	0	0.0	213	100.0
Gardening is a chore	27	52.9	11	21.6	13	25.5	0	0.0	51	100.0

Table 5.36 shows the numbers and proportions in each category that stated they rinsed pesticide containers – for products that required dilution – prior to disposal. As illustrated in Figure 5.29, “keen and regular” gardeners were more likely than other categories to rinse pesticide containers before disposal.

Table 5.36: Rinsing of empty containers by attitude to gardening

	Yes		No		Missing data		Totals	
	no	%	no	%	no	%	no	%
Keen and regular gardener	208	66.7	103	33.0	1	0.3	312	100.0
Enjoy gardening - don't always have time	55	47.0	61	52.1	1	0.9	117	100.0
Keep the garden tidy - not a hobby	57	53.3	50	46.7	0	0.0	107	100.0
Gardening is a chore	13	54.2	11	45.8	0	0.0	24	100.0

Figure 5.29: Rinsing of empty containers by attitude to gardening



5.9 Product disposal

As noted above, in Section 5.5, the number of respondents stating that they dispose of unused or unwanted pesticides was 145 (13.8%), and these respondents indicated a total of 153 different disposal routes. This section summarises information on characteristics of respondents disposing of pesticides.

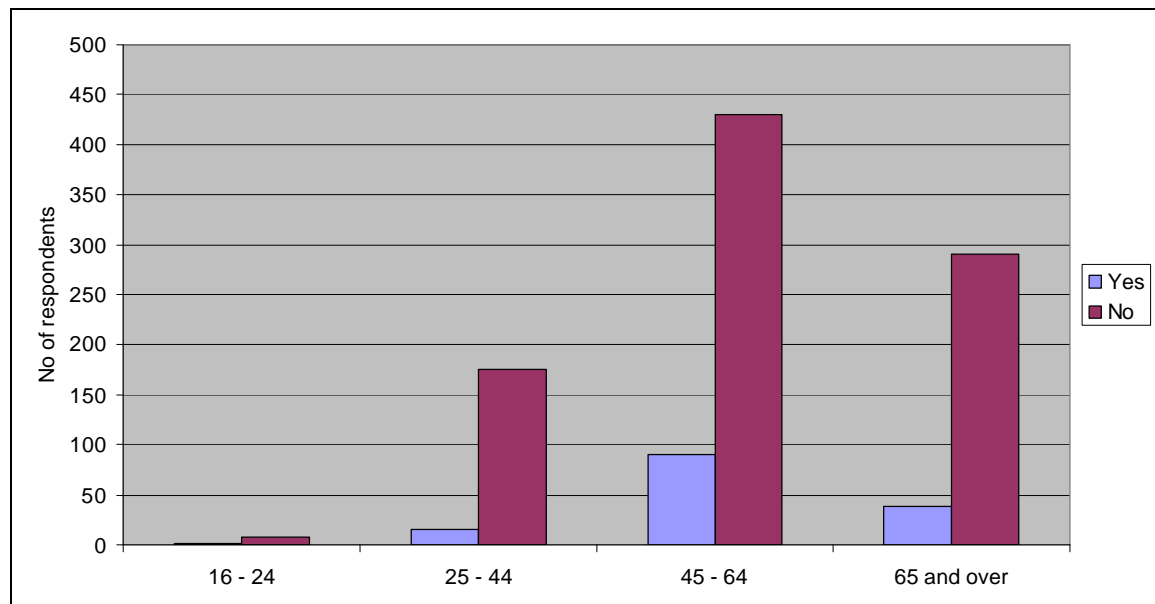
The numbers of respondents in different locations, and the disposal methods that they use, are summarised in Tables 5.25 and 5.26. Some variation between locations was observed, with only 10 Newport respondents (5.7%) stating that they disposed of pesticides whereas 22.8% of Oxford respondents stated that they did so. Variations in the numbers of people using different disposal methods were also observed between locations (see Section 5.6.1), but results here should be treated with caution because of small sample sizes.

Regarding age, it should be noted that a substantial majority (62%) of respondents stating that they dispose of pesticides fell into the 45-64 age group, as shown in Table 5.37 and Figure 5.30. This group made up 49.5% of the overall sample. In the 45-64 age group, 17.3% of respondents said that they disposed of pesticides, more than double the proportion of 25-44 year olds.

Table 5.37: Disposal of unwanted products by age bracket

	16 - 24	25 - 44	45 - 64	65 and over
Yes	1	16	90	38
%	11.1	8.3	17.3	11.5
No	8	176	430	290
%	88.9	91.7	82.7	87.9
Missing answer	0	0	0	2
%	0.0	0.0	0.0	0.6
Total	9	192	520	330
%	100.0	100.0	100.0	100.0

Figure 5.30: Disposal of unwanted products by age bracket



A majority of respondents disposing of pesticides were also in one category when analysed according to attitude to gardening, with 53.1% (77 respondents) classing themselves as keen and regular gardeners. The greatest proportion disposing of pesticides within the categories was 19%, for the “enjoy gardening – don’t have time” group. Only 1 respondent (2.0%) from the “gardening is a chore” group disposed of pesticides.

Table 5.38: Disposal of unwanted products by attitude to gardening

	Keen and regular gardener	Enjoy gardening - don't always have time	Keep the garden tidy - not a hobby	Gardening is a chore
Yes	77	43	24	1
%	13.7	19.0	11.3	2.0
No	483	183	189	50
%	85.9	81.0	88.7	98.0
Missing answer	2	0	0	0
%	0.4	0.0	0.0	0.0
Total	562	226	213	51
%	100.0	100.0	100.0	100.0

Figure 5.31: Disposal of unwanted products by attitude to gardening



When different disposal methods are reviewed, it is clear that inappropriate disposal methods are being used by significant numbers. As noted in Section 5.5, although the most frequently cited disposal route was to take products to the local HWRC (31.7%), the second most frequent disposal method stated was the bin (28.3%). Significant numbers of respondents (20%) disposed of pesticides by putting them down the drain, while small numbers also used the sink or the toilet.

It should also be noted that substantial proportions of those disposing of pesticides using inappropriate methods are disposing of products that need diluting before use. Thus, while 46.7% of the total survey sample used “ready-to-use” products only, this was true of only 17.2% of respondents who disposed of pesticides down the drain, and 29.3% of those who put them in the bin. In other words, users of concentrated products appear to be over-represented among those disposing of products in an inappropriate fashion.

Table 5.39: Use of ready-to-use and products requiring dilution by disposal method

	Ready-to-use only	Need diluting only	Both	Totals
Drain	5	11	13	29
	17.2%	37.9%	44.8%	100.0%
Sink	1	1	2	4
	25.0%	25.0%	50.0%	100.0%
Toilet	1	0	1	2
	50.0%	0.0%	50.0%	100.0%
Bin	12	12	17	41
	29.3%	29.3%	41.5%	100.0%
Spray onto waste ground	6	4	8	18
	33.3%	22.2%	44.4%	100.0%
Local authority collection service	1	1	3	5
	20.0%	20.0%	60.0%	100.0%
HWRC/tip/civic amenity site	16	7	23	46
	34.8%	15.2%	50.0%	100.0%
Other	5	2	1	8
	62.5%	25.0%	12.5%	100.0%

There appeared to be no relationship between perceptions of and use of instructions and inappropriate disposal methods. For instance, of those disposing of pesticides to the drain, 93.1% claimed to follow product instructions and 96.6% claimed that they found instructions clear. Findings on this issue are summarised in Tables 5.40 and 5.41.

Table 5.40: Following instructions for use on pesticides by disposal method

	Yes	No	Sometimes	Totals
Drain	27	1	1	29
	93.1%	3.4%	3.4%	100.0%
Sink	4	0	0	4
	100.0%	0.0%	0.0%	100.0%
Toilet	2	0	0	2
	100.0%	0.0%	0.0%	100.0%
Bin	37	1	3	41
	90.2%	2.4%	7.3%	100.0%
Spray onto waste ground	14	1	3	18
	77.8%	5.6%	16.7%	100.0%
Local authority collection service	4	0	1	5
	80.0%	0.0%	20.0%	100.0%
Household waste and recycling centre/tip/civic amenity site	44	1	1	46
	95.7%	2.2%	2.2%	100.0%
Other	6	1	1	8
	75.0%	12.5%	12.5%	100.0%

Table 5.41: Perceived clarity of product instructions by disposal method

	Yes	No	Unsure	Totals
Drain	28	0	1	29
	96.6%	0.0%	3.4%	100.0%
Sink	3	0	1	4
	75.0%	0.0%	25.0%	100.0%
Toilet	2	0	0	2
	100.0%	0.0%	0.0%	100.0%
Bin	37	1	3	41
	90.2%	2.4%	7.3%	100.0%
Spray onto waste ground	16	1	1	18
	88.9%	5.6%	5.6%	100.0%
Local authority collection service	5	0	0	5
	100.0%	0.0%	0.0%	100.0%
Household waste and recycling centre/tip/civic amenity site	45	0	1	46
	97.8%	0.0%	2.2%	100.0%
Other	7	1	0	8
	87.5%	12.5%	0.0%	100.0%

6. Summary and discussion

Key survey findings can be summarised as follows:

- As might be expected, a majority of the respondents (53.4%) defined themselves as “keen and regular gardeners”.
- The sample had a bias to older age groups, with only 0.9% of respondents in the 16-24 age group, and more than 80% over 45.
- The most frequently purchased products were slug pellets (66.8% of respondents), weed-killers (50.1%) and lawn treatments (45%).
- The majority of respondents purchased either one (32%) or two (26.6%) products each year. Around one in ten people purchased an average of less than one product per year, while a total of 16.3% of respondents purchased 4 or more products each year.
- There was considerable variation between locations regarding types and numbers of products bought. For example, the proportions of gardeners buying four or more products each year ranged from 8.1% in Tunbridge Wells to 22.9% in Preston. This may be related to some extent to different climatic conditions across survey locations.
- There was also some variation regarding numbers of product purchased between different categories of gardener; numbers of respondents buying one product or fewer each year ranged from 39.2% for the “keen and regular gardener” group to 58.8% for the “gardening is a chore” group.
- Only small minorities of respondents stated that they rarely or never read product instructions (5.9%); regarded instructions as unclear (2.5%, with a further 3.9% unsure); or stated that they did not (2.1%) or only sometimes (5.6%) follow instructions.
- Differences between categories of gardener regarding attitude to instructions were marginal. However, as might be expected, the “gardening is a chore” group included the highest proportions of people rarely/never reading instructions (9.8%); finding instructions unclear or answering unsure (11.7% combined); or not / only sometimes following instructions (13.7% combined).
- In addition to product instructions, garden centre staff, magazines, TV programmes and websites were the most frequently cited sources, with the BBC (Gardeners’ World) and RHS being the most popular among these.
- Nearly half of respondents (46.9%) only used “ready-to-use” products, and are therefore not at risk of disposing of products that need diluting (and thus carry the greatest environmental risk) in an inappropriate fashion. Respondents from the 25-44 age group were considerably more likely to use ready-to-use products only, with nearly 60%, compared to 44.6% and 42.4% respectively for the 45-64 and 65 and over groups.
- Among respondents using products that require diluting before use:
 - 10.2% estimate or guess amount of product to be used, with a slightly lower likelihood of doing so with ascending age;
 - 23.7% save products that they have already mixed, with more than twice as many of the 65 and over group (27.0%) as the 25-44 group (12.8%) storing products;
 - 59.7% rinse empty containers, with those in the 65 and over group (65.6%) the most likely to do so;
 - “Keen and regular” gardeners were more likely than other categories to rinse pesticide containers before disposal (66.7%).
- More than half of respondents rinsing containers put the rinsings down the drain, with small numbers also using the sink (6.6%) or the toilet (0.9%).

- The shed was the most frequent location for storage of pesticides (58.9%), followed by the garage (31.0%). Only 4.1% of people stored pesticides in the home. Just over one in ten respondents specified safety precautions such as keeping pesticides on a high shelf or in a locked cupboard or other container.
- Regarding storage duration, most respondents used products in one season (33.9%), or stored for between 1 to 2 years (49.8%). However, one in ten stored products for 2 to 3 years and around 6% for 3 years or more. This indicates that there is some hoarding of products in lieu of disposal, but that this is only carried out by a minority.
- Nearly half of gardeners disposed of empty pesticide containers in the dustbin, while more than a third were recycling them. Nearly one in five were disposing of containers at their local household waste recycling centre (HWRC), while a small number (1.4%) burned containers.
- More than one in eight respondents (13.8%) stated that they disposed of pesticides. This implies that the majority of respondents were using up products for their intended purpose. It also implies that the sample size of respondents disposing of pesticides is relatively small (145), so findings relating to this group of respondents should be treated with some caution, eg disposal routes.
- The proportions of gardeners disposing of unused or unwanted pesticides ranged from 5.7% in Newport (10 respondents) to 22.8% in Oxford (39 respondents). No compelling explanation can be suggested for this variation.
- The methods used for disposal of unused or unwanted pesticides varied, but the survey made it clear that products are being disposed of by some gardeners in an inappropriate fashion. The most frequently cited disposal route was to take products to the local HWRC (31.7% of those disposing of pesticides). A small proportion (3.4%) used a local authority collection service. However, the second most frequent disposal method stated was the bin (28.3%). One in five respondents disposing of pesticides – 29 respondents – did so by putting them down the drain, while small numbers also used the sink or the toilet. As a proportion of the total sample, 3.9% of respondents were disposing of pesticides via the bin and 2.8% were putting them down the drain.
- Some variation between locations was observed with reference to disposal methods. However, findings should be treated with caution because of small sample sizes that differed between locations. It can be speculated, however, that areas with suitably publicised household hazardous waste collection services (either at HWRCs or from households) may attract more disposal via appropriate methods.

With specific reference to respondents disposing of pesticides:

- A substantial majority (62%) of respondents fell into the 45-64 age group, which made up 49.5% of the overall sample. In the 45-64 age group, 17.3% of respondents said that they disposed of pesticides; this was more than double the proportion of 25-44 year olds.
- A majority of respondents (53.1% or 77 respondents) disposing of pesticides classed themselves as keen and regular gardeners. The greatest proportion disposing of pesticides within any category was 19%, for the “enjoy gardening – don’t have time” group. Only 1 respondent (2.0%) from the “gardening is a chore” group disposed of pesticides.
- The most frequently cited disposal route was to take products to the local HWRC (31.7%). The second most frequent disposal method stated was the bin (28.3%). Significant numbers of respondents (20%) disposed of pesticides by putting them down the drain, while small numbers also used the sink or the toilet.
- Many of those disposing of pesticides using inappropriate methods are disposing of products that need diluting before use. Thus, while 46.7% of the total survey sample used “ready-to-use” products only, this was true of only 17.2% of respondents who disposed of pesticides down the drain, and 29.3% of those who put them in the bin. In other words, users of concentrated products appear to be over-represented among those disposing of products in an inappropriate fashion.

- There appeared to be no relationship between perceptions of and use of instructions and inappropriate disposal methods; of those disposing of pesticides to the drain, 93.1% claimed to follow product instructions and 96.6% claimed that they found instructions clear.
- The latter finding may indicate that respondents have claimed that they read and follow instructions when this is not the case. It also indicates that it is unlikely that people disposing of pesticides in inappropriate ways are aware that they may be causing environmental damage. On this basis, it could be argued that messages regarding appropriate disposal of pesticide products need to be marked more prominently on products.

Following consideration of this report, the Amateur Use Action Plan Implementation Group (AUAPIG) will continue to develop communications messages and materials. The group may wish to use additional qualitative focus group research to test or to inform the development of communications messages. In this respect, the numbers of survey respondents indicating that they were willing to take part in a focus group would be adequate for at least one group to be run in each location except Preston.

Table 5.42: Potential focus group participants by location

Location	
Ipswich	24
Tunbridge Wells	27
Newport	31
Glasgow	33
Preston	6
Oxford	49

Appendix 1: Questionnaire

Pesticide User Habits survey, May 2007

INTRODUCTION

Good morning/ afternoon

I'm carrying out a survey on behalf of the Pesticides Safety Directorate, a government body that works to ensure the safe use of pesticides.

The survey will only take a few minutes, and there's a prize draw for garden centre vouchers which we can enter you for if you would like. Would you be interested in taking part?

Additional information if required:

- Prize draw first prize £100, plus 5 x runner-up prizes of £25
- The survey information will be used by the Pesticides Safety Directorate to develop guidance for the public on safe use, storage and disposal of pesticides
- Length of survey depends on answers – 5 to 8 minutes

1. Do you use pesticides or garden chemicals in your garden? (prompt with examples if required)

Yes	1
No	2

If YES, continue to Question 2

If NO, thank and close interview

Questions about you

2. Which one of these descriptions best describes how you feel about gardening (single code):

I am a keen and regular gardener – gardening is an enjoyable hobby	1
I enjoy gardening but don't always have time for it	2
I like to keep the garden tidy, but wouldn't call it a hobby	3
Gardening is a chore	4

3. Where do you do your gardening?

Garden at home	1
Allotment	2
Other (please specify) _____	3

4. Which of the following age brackets do you fall into?

16-24	1
25-44	2
45-64	3
65 and over	4

Purchasing

5. Which types of pesticides do you use? (multi code)

Animal repellents, eg cat/ dog	01	Fly sprays and ant powder	07
Patio cleaners	02	Fungicide sprays	08
Insecticides	03	Lawn treatments	09
Rooting powder/gel/hormone	04	Products for algae and snail control in ponds	10
Rat and mouse killers	05	Slug pellets	11
Weedkillers	06	Other (please specify)	12

6. How many pesticide products do you purchase each year on average? (single code)

Less than 1	1
1	2
2	3
3	4
4	5
5	6
6 or more	7

7. Where do you usually buy your garden chemicals from? (multicode)

Garden centre	1
DIY store	2
Supermarket	3
Gardening club or allotment society	4
Other (please specify)	5

Use

8. When do you read the instructions for use on pesticides? (multicode)

Before buying	1
Before using for first time	2
Before using every time	3
Occasionally as a reminder	4
Rarely/ never	5

9. Do you generally find that instructions for use on pesticides are clear?

Yes	1
No	2
Not sure	3

10. Do you follow the instructions for use on pesticides?

Yes	1
No	2
Sometimes	3

11. What other places do you get information on how to use pesticides? (please specify which if possible)

	Multicode	Which?
Websites	01	
Magazines	02	
Leaflets	03	
Books	04	
TV	05	
Radio	06	
Gardening advice helpline	07	
Product company helpline	08	
Garden centre staff	09	
Other gardeners	10	
Other	11	

12. Do you tend to use ready-to-use products or products that need diluting before use? (single code)

Ready-to-use only	1	Go to Q14
'Need diluting' only	2	Go to Q13
Both	3	Go to Q13

[If using products that need diluting, continue to question 13. If only using ready-to-use products, continue to question 14]

13a). How do you measure amounts of product when diluting?

Measuring device/cap provided with product	1
Estimate or guess	2
Other (please specify) _____	3

13b). Do you ever save products that you have mixed up?

Yes	1
No	2

13c) Do you rinse out pesticides containers before disposing of the empty container?

Yes	1	Go to Q13d
No	2	Go to Q14

13d) If YES, what do you do with rinsings? [If NO continue to Q14]

Drain	1
Sink	2
Toilet	3
Put onto waste ground	4
Add to dilute product	5
Other (please specify) _____	6

Storage

14. Where do you store pesticides? (tick all that apply)

Shed	1	In the house	4
Garage	2	Locked cupboard/ container	5
Greenhouse	3	High shelf	6
Other (please specify) _____	7		

15. How long do you store pesticides for on average before using them up or disposing of them?

Less than 1 year	1
1 to 2 years	2
2 to 3 years	3
3 to 5 years	4
More than 5 years	5

Disposal

16. How do you dispose of empty pesticide containers?

Bin	1
Recycling box/bin/bag	2
Household waste and recycling centre/ tip/ civic amenity site	3
Other (please specify) _____	4

17. Do you ever dispose of unused or unwanted pesticides?

Yes	1	Go to Q18
No	2	Go to 'Close' after Q18

**18. How do you dispose of unused or unwanted pesticides (unprompted)?
(multicode)**

Drain	1
Sink	2
Toilet	3
Bin	4
Spray onto waste ground	5
Local authority collection service	6
Household waste and recycling centre/ tip/ civic amenity site	7
Other (please specify) _____	8

CLOSE:

Thank you very much.

Would you like to enter the prize draw, with a first prize of £100 garden centre vouchers and five runner-up prizes of £25? **YES** *Interviewer: write in their contact details below*

Also, we may be carrying out follow-up focus group research at a later date. There would be a small payment for taking part in the research. Would you be interested? **YES** *Interviewer: write in their contact details below*

NB: Your details will ONLY be used to enter you in the prize draw, and/or to invite you to take part in a focus group, and for possible backchecking.

Name: Address: Telephone number:
--

THANK AND CLOSE – NOW FILL IN THE RESPONDENT’S NAME, DETAILS, TELEPHONE NUMBER AND THE LENGTH OF INTERVIEW ON YOUR RESPONDENT SHEET – EVEN IF YOU HAVE ALREDY WRITTEN OUT CONTACT DETAILS ABOVE, THE RESPONDENT SHEET MUST STILL BE FILLED IN FOR BACKCHECKING PURPOSES.

I have carried out the interview according to the instructions and as per the MRS code of conduct.

Interviewer Name:----- Interviewer Signature:-----

Date: ----- Duration:-----

Appendix 2: Briefing sheet for User Habits Questionnaire

What are Pesticides?

'Pesticide' is a broad term, covering a range of products that are used to control pests. Pesticides you may have heard of include:

- ant powders
- insect killers (insecticides)
- mould and fungi killers (fungicides)
- weedkillers (herbicides)
- slug pellets (molluscicides)
- plant growth regulators
- bird and animal repellents, and
- rat and mouse killers (rodenticides)

Often people only think of pesticides as chemicals, but they include a huge range of different types of products. Some are natural (e.g. pyrethrums, obtained from chrysanthemums), while many are altered versions of natural chemicals (e.g. fatty acids). These 'natural' versions may be considered suitable for use by organic gardeners.

Organic gardening

However, organic gardening involves a lot more than just avoiding the use of chemicals. Organic gardeners focus their energy into increasing the natural health of their soil, choosing appropriate plant varieties, and working with nature to produce a healthy and productive garden.

Ready to use / concentrate products

Liquid Ready-to-Use products are often sold in trigger spray bottles. Liquid concentrate products are usually in plastic bottles with child proof screw caps that then need measuring out and diluting.

Granular products (e.g. some lawn treatments) are often ready to use as many can be bought in a container that will dispense the product at a particular rate. Although larger bags can also be bought which can be applied with a separate spreader.

Should I save pesticides that I have diluted?

No. You should try to avoid storing diluted pesticide by only mixing up or diluting the amount you need for a specific job.

Should I rinse out pesticide containers before disposing of them? What should I do with the rinsings?

It is good practice to rinse out pesticide containers that have held concentrated product (i.e. requiring dilution for use) before disposing of them. The container should be rinsed three times and the washings added to the final spray solution. Trigger bottles (Ready-to-Use products) and other containers do not need to be rinsed.

Should I keep pesticides locked up?

Garden pesticides do not need to be kept locked away, although they should be kept out of the reach of children and pets.

After you have used the pesticide, make sure that the packaging is tightly closed or sealed.

Take particular care to use and store slug pellets safely, so as to avoid accidentally poisoning any pets – particularly dogs.

How long should I store pesticides for before using them?

If you store it carefully, any remaining pesticide will be effective for some years to come. Check whether you can still legally use it by visiting our [Garden Pesticides Search](#).

Garden sheds and greenhouses are not ideal for storing pesticides as they can get very hot in summer or cold in winter. Pesticide products are best stored at an even temperature.

How should I dispose of empty pesticide containers?

First of all, check the label for advice.

Empty containers of Ready-to-Use products (e.g. trigger sprays) can be disposed of directly into your household waste.

Empty bottles of concentrates (pesticides you dilute with water for use) need to be rinsed out three times first and the washings added to the spray solution.

How should I dispose of unwanted pesticides?

Unwanted pesticides should be disposed of safely through your local amenity waste disposal site that accepts hazardous household waste. All local councils should make arrangements for disposing of hazardous household waste, so you should contact them for the nearest suitable site.

Pesticides (and other chemicals) are securely separated from other waste and disposed of safely later, usually in special high temperature incinerators that destroy them completely.