

Pesticides in the UK



The 2019 report



on the
impact and
sustainable use
of pesticides



A report by the Pesticides Forum

Contents

Introduction	1
Chair's foreword	2
Executive summary	3
Forum activities in 2019	5
Review of activities supporting the UK National Action Plan	6
Part 1: Training	6
Part 2: Sales	7
Part 3: Information and awareness raising	8
Part 4: Inspection of application equipment	10
Part 5: Aerial application	12
Part 6: Measures to protect the aquatic environment and drinking water	13
Part 7: Reduction of risk in specific areas	17
Part 8: Handling and storage of pesticides and treatment of their packaging and remnants	19
Part 9: Low pesticide input management, including Integrated Pest Management (IPM)	21
Part 10: Indicators	24
Acknowledgements	60

Introduction

'Pesticides in the UK: The 2019 report on the impacts and sustainable use of pesticides' is the annual report of the Pesticides Forum.

About the Pesticides Forum

The Pesticides Forum (the Forum) was set up in 1996 to bring together a range of organisations with an interest in pesticides and the impacts of their use. It represents stakeholders with differing views about pesticides and how the impacts of their use should be addressed. More details about our [member organisations](#) are on the Forum's website.

Since 2013, the Forum has played an important role in supporting the government's [UK National Action Plan](#) for the Sustainable Use of Pesticides (Plant Protection Products). We provide a forum for stakeholder interaction, discussing important issues, and this annual report helps to monitor delivery of the plan using a number of indicators.

This report outlines the work of the Forum in 2019 and details objectives of, and progress in delivering, the National Action Plan (NAP). Data and charts relating to the sustainability of pesticide use are included in the report.

The report has been compiled from a wide range of sources and no part of the text should necessarily be taken to represent the views of the member organisations, either individually or collectively. If you have any comments or views on this report, please contact me:

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For more information about the Forum's work, look at the copies of [meeting papers](#), [presentations](#) and [minutes](#) of proceedings on our website.

Previous years' reports for [2011](#), [2012](#), [2013](#), [2014](#), [2015](#), [2016](#), [2017](#) and [2018](#) provide more detail on the NAP's priorities, regulatory and non-regulatory / industry incentives and research and development activities.



Chair's foreword

Welcome to the 2019 edition of the Pesticides Forum's annual report.

This report details our findings on the sustainability of pesticide use and accompanying graphs, charts and maps are provided in an annex.

There are a number of areas which deserve highlighting.

- Defra's 25-year environment plan has two priority areas related to the sustainable use of pesticides. The first of these is water, and the Forum has been keen to receive information from the environment agencies and Water UK on their related findings. This year we have again included some content on the latest reports of the Drinking Water Inspectorates in England and Wales, and Northern Ireland, and from the Scottish equivalent – the Drinking Water Quality Regulator. It is reassuring to see that these all show high compliance with the requirements of the associated legislation.
- The second priority in the plan, which we can evidence, is the use of integrated approaches. This is also a high priority in the National Action Plan (NAP) on the sustainable use of pesticides. Our indicators demonstrate users' awareness of the availability of different approaches that constitute integrated management, such as the availability and use of alternatives to conventional pesticides.
- The work of our sub-group on research and knowledge transfer has also been focussed on the protection of water and IPM. The group aims to identify relevant research in these areas, and whether or not it can be converted into guidance for professional pesticide users in all sectors. We hope to further develop this work in 2020, and will include more information in our next annual report.
- As we mentioned in our 2018 report, the requirement for pesticide application equipment in use to be inspected and certificated was introduced in November 2016. Data on the number of inspections are included in Part 4 of the annex and show the changes from previous years. The UK has a long history of testing application equipment, so the associated chart has data going back to 2008/9. Changes to the timing of testing of some types of machinery used in the application of pesticides will come into effect from November 2020 and this may be shown in the data we include in our 2020 annual report.
- We have included some data on agri-environment schemes in the annex to this report. Due to the nature of the different landscapes and land use in each country of the UK, we are not able to easily show an overview of the schemes at a UK level. We have picked out the most popular options taken up by farmers in each country, to give an idea of the range and uptake of the options.
- The Forum, like other stakeholders, has continued to engage in discussions with Defra when requested on the development of the new NAP. I look forward to hearing about Defra's work on this in future meetings.

I would like to thank the Forum's Secretariat and member organisations for their support for our activities and the important task we perform. Their input and enthusiasm ensure that our meetings and documents, such as this report, reflect full and careful consideration of issues relating to responsible and sustainable pesticide use.

**Professor John Moverley OBE, Chair
Independent Chair of the Amenity Forum**

Executive summary

The indicators in this report suggest that pesticides are being used in a sustainable fashion as a result of government, industry and other bodies working together.

Our training indicator data show a rise in recent years in the number of pesticide users obtaining qualifications that demonstrate their knowledge of safe use of these chemicals. This is expected, following the introduction of new legal requirements in November 2015. In addition, increasing numbers of these users engage with continuing professional development (CPD) schemes, demonstrating a commitment to keeping their knowledge and expertise up to date. They are supported by professional and well-trained distribution and advisory industries. The users, distributors and advisors are in turn assisted by organisations such as the Voluntary Initiative and Amenity Forum, which provide practical, clear and regularly updated guidance on how to best use pesticides and dispose of waste products.

Farm Assurance Schemes and Amenity Assurance Schemes provide a framework within which the guidance can be applied, and standards monitored. However, the level of engagement with assurance schemes does vary in different sectors of pesticide use.

Another requirement is that pesticide application equipment is tested on a regular basis. The data in this report suggest that the impact of this requirement has been relatively modest, reflecting the fact that industry-led approaches have been successful in embedding such practice within agricultural and horticultural situations. Better data are required on the impact of the testing regime in the other sectors. The numbers of equipment tests have dropped overall (though in the amenity and fruit sectors, numbers have increased), which is probably because of the requirements in the legislation (which currently requires testing on a five- or six-yearly basis, rather than annual testing conducted under industry-led schemes), and a move to using contractors. The change to the requirements that will come into force in November 2020, reducing the five-year interval to three for some application equipment (boom sprayers over 3 metres, sprayers attached to trains or aircraft, and air-assisted broadcast sprayers) may affect the figures as we go forward.

An important objective is assessing the short- and long-term effects of pesticides on human health. As in our previous two reports, we have included data from the National Poisons Information Service based on enquiries from health professionals. This provides an indication of acute effects. Information on chronic effects is more challenging to obtain, due to the range of factors that can affect long-term health and the timescales necessary to generate sufficiently robust information. We continue to monitor the work of the Prospective Investigation of Pesticide Applicators' Health study in this regard.

We are getting more information on the impact of pesticides on water quality, with an improved understanding of the effect and implications arising from this. The data identify those pesticides posing greatest risk of non-compliance with very strict water quality legislative standards. The knowledge of Forum members on the way the products are used ensures that we can understand their contamination pathways, and options for mitigating risks. The evidence available to us suggests contamination generally arises from diffuse as opposed to point sources.

The report also includes information on pesticide use in amenity situations. Although significant progress has been made to enable greater sustainability of pesticide use in this sector, more remains to be done in compiling a more complete and robust evidence base. It has proved challenging to obtain good information on pesticide practice and use in this sector, and positive steps are being taken to improve on this in the next amenity pesticide usage survey.

Assessing the extent to which integrated pest management (IPM) is employed by pesticide users is challenging. We know from previous studies that almost all farmers employ some practices that are consistent with the principles of IPM described in the sustainable use directive. The Amenity Forum has been very active in promoting integrated approaches and has developed comprehensive documentation to help users create IPM plans. The challenge is to establish whether use of integrated approaches is being optimised, and the impact they are having. The data presented in this report suggest users have greater access to a range of control measures. Furthermore, as training courses have given a higher priority to the use of integrated approaches, it would seem reasonable to assume users have greater awareness of IPM.

The picture that emerges from the indicators area is a mixed one. Much of the data suggest positive, if steady, progression to greater sustainability. However, this has to be balanced by the fact that there are a small number of negative trends and a need for greater progress in some areas. Interpreting the findings is not always straightforward but does provide an indication of the areas and subjects potentially warranting attention or further action.

Forum activities in 2019

We met twice in 2019: in April and in October.

At our April meeting, we again invited designated awarding bodies to inform the Forum of the training available to those who use, distribute and/or advise on pesticides, in order to obtain feedback and identify potential new training requirements. This helps to ensure that formal training reflects current understanding and provides an opportunity to explore alternative routes for disseminating new knowledge.

We also received reports from the Amenity Forum, which has an important role in improving practice in a key sector of pesticide use. We learned that it was seeking to secure greater engagement with local authorities (LAs), looking to double the number of LA members; Parks for London (which covers 28 LAs) had signed up. The Amenity Forum had revised its strategic plan in 2018 and had three key drivers: development of an amenity assured standard, IPM and communication. We learnt that it was planning the launch of the new 'Amenity Standard', which was designed to set standards, audit contractor performance and certificate staff and businesses and would require all professional users to be members of a recognised assurance scheme.

In relation to agricultural use of pesticides we heard updates from the Voluntary Initiative (VI) related to the NSTS, NRoSO, BeeConnected and recent VI activities relating to IPM (including proposals to further develop IPM plans). BeeConnected had 3710 hives registered and 5675 fields registered. The VI was also collaborating with Defra on the Environmental Land Management Schemes (ELMS), and had developed a network of 'VI Champions' (innovative farmers or advisors, who use best practice and IPM, are media trained, and are able to speak to farming groups and water catchment meetings at external regional events).

We ensured we were kept up to date and engaged with government developments, including those in the devolved administrations, to implement sustainable pesticide use. These included.

- the Harmonised Risk Indicators (HRIs) legislation was formally adopted in May 2019. The HRIs calculated for the UK were not overly informative. HRI 1, which is based on 'hazard' resulting from the overall sales of pesticide product, has shown a steady decline (an outcome anticipated given the impact of the pesticide review programme). HRI 2, which is based on 'hazard' resulting from the number of emergency authorisation granted, has increased (an outcome, once again, anticipated, given what we know about the increasing challenges which growers/others are facing controlling pests, weeds and diseases).
- the EU Drinking Water Directive underwent a revision. Negotiations were at a relatively advanced stage. There are no changes being proposed to the parametric values for pesticides.
- the continuing emphasis on the development and use of IPM.
- the Defra-led review of the NAP, which would be informed by changes in indicator data and evidence gaps and stakeholder feedback.

Protection of water remains a high-profile and important aspect of our activities. We receive regular updates from Defra and the UK environment agencies, and from Water UK. We had an update from Welsh Water on its [PestSmart](#) project. We expect to be updated at our 2020 meetings.

The [presentations](#) from our meetings are available on our [website](#).

Review of activities supporting the UK National Action Plan

Part 1: Training

Key priorities

- Pesticide users, distributors and advisors (and those who cause or permit the use of pesticides) continue to have access to high-quality initial and ongoing training in sustainable pesticide use
- There is a particular emphasis on improving the training available to those in the non-agricultural sectors

Overview

Effective training is fundamental to delivering sustainable pesticide use. It helps those who store, use, distribute and/or advise on the professional use of pesticides by making them aware of hazards and risks. It also teaches the importance of:

- maintaining equipment;
- protecting more sensitive environments;
- adopting good handling and storage practice;
- controlling pests, weeds and diseases in an integrated way.

It also helps society to maximise the benefits of pesticide use, while minimising the risks associated with the use of these chemicals.

Legal requirements which came into force in November 2015 require all users of professional pesticide products to hold a 'specified certificate'. Users who previously relied on so-called 'grandfather rights' were required to take action to obtain appropriate certification. Previous experience led us to believe that a significant proportion of these users would choose to complete more established forms of full training – this is reflected in the table in Part 1 of the Annex. The data presented in this report indicate the significant effect that the new legal requirement has had on the number of certificates being issued.

Significant and gradually increasing numbers of users continue to engage with CPD schemes, such as the National Register of Sprayer Operators (NRoSO) and the Amenity Training Register. Virtually all advisors in agriculture are members of the BASIS Professional Register. We consider participation in CPD schemes to be important given the speed of change in technological and scientific understanding and the regulatory environment relevant to pesticide use.

Indicators

Part 1 of the Annex to this report, on [pages 25 to 27](#)

Extra information

Pesticides Forum annual report 2018, page 7

[National Register of Sprayer Operators](#)

[BASIS](#)

[City & Guilds](#)

[Lantra Awards](#)

[List of recognised awarding bodies and specified certificates](#)

Part 2: Sales

Key priorities

- Distributors have a sufficient number of appropriately trained staff available at the time of sale to advise on managing the risks from use of pesticide products
- Amateur products are sold with information enabling users to store, apply and dispose of products safely

Overview

The law requires those who sell pesticide products to have an adequate number of suitably qualified staff available at the time of sale to advise purchasers of pesticides on their use, safety instructions and risks and how they can be managed. Distributors and retail businesses can store significant quantities of pesticides. It is therefore important that the chemicals are carefully managed. Advice is available in the Defra Code of Practice for Suppliers of Pesticides (Yellow Code), and in guidance on the HSE pesticides website.

The distribution part of the supply chain is broadly divided into two parts:

- Distribution of professional pesticide products. This is generally done by specialist retailers. Certification of storekeepers, store inspection and CPD schemes are provided by BASIS. A combination of new and previous legal obligations and market demands has resulted in a highly professional sector. The BASIS store inspection scheme records over 97.5% compliance with the required standards. It is estimated that there are approximately 577 such stores in the UK, 42 of which are amenity stores.
- Retail of amateur products. This is generally done by outlets such as garden centres and DIY stores but can include other retailers such as supermarkets. Qualifications for staff in this sector are largely provided by a government-approved [e-learning course](#) developed by the Horticultural Trades Association (HTA) in conjunction with the Crop Protection Association. Anyone wanting to take the course will need to register on the [HTA](#) website first. One retailer has developed its own government-approved version.

The indicators presented in the Annex suggest that distributors of professional pesticide products are maintaining a commitment to engage with CPD through the BASIS [Nominated Storekeepers scheme](#).

The indicators also show that a significant number of those involved in the retail of amateur products has undergone training, in response to the legal obligation to have a sufficient number of qualified staff available at the time of sale. What these data do not show is the differing approaches of businesses, with multiple outlets involved in the retail of amateur products. Many adopt a model of training a relatively small number of staff and providing advice by a centralised system (for example, telephone helplines), and others appear to have trained all their staff.

Indicators

Part 2 of the Annex to this report, on [pages 28 and 29](#)

Extra information

Pesticides Forum annual report 2018, page 8

[Defra Code of Practice for Suppliers of Pesticides to Agriculture, Horticulture and Forestry \(PB3529\) \(Yellow Code\)](#)

[Guidance for those affected by the Plant Protection Products \(Sustainable Use\) Regulations 2012](#)

Part 3: Information and awareness raising

Key priorities

- The public has access to accurate and balanced information on pesticide use and its impact
- There are systems for gathering and reporting information on pesticide poisoning incidents, and information gathered in this way is acted upon appropriately

Overview

To understand the extent to which pesticides are being used sustainably, it is important to consider the overall messages that emerge from a range of data and information. It may be misleading to focus on any single piece of information. This report plays a role in helping to understand the implications of pesticide use.

Information relating to areas of particular public interest is presented in Part 3 of the Annex and includes:

- pesticide residues in foodstuffs;
- the impact of pesticides on animals and wildlife;
- reports of adverse effects on human health.

The general picture that emerges from the data is a high level of compliance with statutory maximum residue levels (MRLs) in foodstuffs, and a downward trend of reported incidents, either of poisoning of wildlife or an adverse impact on human health.

It is important to view the data in context. For example, the programme which monitors pesticide residues in foodstuffs includes an element of targeting produce more likely to contain residues. It also monitors different foodstuffs each year and, as analytical capability develops, a greater number of pesticides are sought in each food sample. The data are not, therefore, representative of the overall quality of foodstuffs in the supply chain and care should be taken comparing data on a year-by-year basis. The indicators of poisoning of wildlife and adverse impacts on human health are drawn from schemes based on reports from members of the public and health professionals. Therefore it is probable that they under-report the number of incidents.

Human health monitoring

This report includes data on pesticide exposures provided by the [National Poisons Information Service](#) (NPIS). The NPIS work on pesticides records details of cases referred by health professionals. It is our best indication of the pattern of acute pesticide poisonings. Between April 2018 and March 2019, 1030 patients exposed to pesticides were reported by healthcare workers to the NPIS. Most suspected exposures were acute and unintentional. Severity was typically low. Many acute unintentional exposures involved amateur (home and garden) products. None was fatal. Products licensed for professional use accounted for 28.6% of exposures. Eighty-five individuals were unintentionally exposed to products authorised for professional use and around a third of these occurred through occupational exposure.

Over the last 10 years, there has been an overall reduction in the incidence of severe toxicity resulting from pesticide exposure (see figure 3.3.3 of the Annex).

[The Prospective Investigation of Pesticide Applicators' Health](#) (PIPAH) study began in 2013 and is a long-term study to investigate whether there is evidence of a link between working with pesticides and health, to identify any risks and target the appropriate controls. The study aims to build on the work of the Pesticide Users' Health Study by collecting more detailed information about the study participants. It also links to National Health Service data to help monitor the long-term health of study participants. A major focus is the development of tools to enable precision in measuring information on health, pesticide use and other factors which could affect health.

In the long term, the information from the study will help to ensure that any risks identified are properly controlled. By the end of 2019, there were just over 6000 participants. In 2019 the study updated the information collected when participants first joined; this included information on pesticide use, physical activity, diet, lifestyle, and self-report health status. These data can provide an insight into the incidence of ill-health among the participants since they joined.

Indicators

Part 3 of the Annex to this report, on [pages 30 to 32](#)

Extra information

Pesticides Forum report 2018, pages 9 and 10

[Defra Expert Committee on Pesticide Residues in Food \(PRiF\)](#)

[PRiF annual reports](#)

[Enforcement monitoring](#)

[Prospective Investigation of Pesticide Applicators' Health Study Newsletter 2020](#)

[Amateur Pesticide User Habits survey](#)

Part 4: Inspection of application equipment

Key priorities

- Pesticide application equipment is tested on a regular basis in accordance with legal requirements

Overview

Regular testing and certification of pesticide application equipment helps to reduce the risk of contamination from, for example, worn or partially blocked nozzles, or damaged or leaking pipes or hoses. From November 2016, currently used application equipment (other than knapsacks and hand-held) had to pass an officially designated inspection conducted by the National Sprayer Testing Scheme (NSTS). The requirements are detailed in Regulation 11 of the Plant Protection Products (Sustainable Use) Regulations 2012. The Voluntary Initiative and Amenity Forum have continued to raise awareness of these requirements among operators.

The data presented in Part 4 of the Annex show the number of machines tested each year by NSTS. An important driver for testing of application equipment was that Farm Assurance Schemes require annual certification of machinery. Research conducted just over 10 years ago estimated that there are around 20 000 to 25 000 machines in the agricultural and horticultural sectors potentially requiring testing. However, industry intelligence suggests that there is a move towards greater use of contract farming, and that smaller farms are being taken up into larger farm shares, so the number of machines that will require testing before use may be fewer than this.

We do not have good information on machinery in the non-agricultural sectors that may require testing. Industry intelligence suggests that there is a substantial number of machines that should have been tested before they can lawfully be used. The suspected disparity in the proportion of machinery tested in the agricultural and amenity sectors may reflect the fact that the latter has no equivalent of Farm Assurance Standards to drive this best practice.

The latest data, for 2018/19, show that the number of tests in each sector has changed as follows:

- agriculture, from 14 397 to 13 937;
- amenity, from 670 to 717;
- horticulture, from 497 to 494;
- fruit, from 993 to 1029.

Fifty-two per cent of sprayers tested had no faults. The data presented in Part 4 of the Annex show that, as expected, there was an initial peak when the requirement came into force (in November 2016), and then lower changes in comparison since 2018.

The 10 most common faults that require repair before the machine can pass the test (test item wording) are related to:

- diaphragm check valves working correctly – no drips;
- free from leaks under pressure (above normal working pressure) – spraying;
- filters;
- free from leaks – visual inspection (system not running);
- contents gauge legible with complete graduated scale;
- hoses in good condition – spray lines;
- boom straight;
- chemical induction system free from leaks;
- pressure gauge accuracy;
- free from leaks under pressure (above normal working pressure) – not spraying.

Indicators

Part 4 of the Annex to this report, on [page 33](#)

Extra information

Pesticides Forum report 2018, pages 11 and 12

[NSTS](#)

[AEA](#)

[The Plant Protection Products \(Sustainable Use\) Regulations 2012](#)

Part 5: Aerial application

Key priorities

- Applications for aerial spraying operations are assessed appropriately and permitted or refused in accordance with the relevant legislation

Overview

The Health and Safety Executive (HSE) is the UK authority designated to establish the conditions under which aerial spraying may be carried out, and the competent authority for assessing and permitting applications to undertake aerial spraying. HSE, by agreement, carries out these functions for Defra and the devolved administrations of the UK.

Aerial spraying of pesticides is almost exclusively confined to control of bracken in upland areas. Ground-based methods of control, such as crushing, are used where it is safe and appropriate to do so. However, in many cases the topography and scale of control necessitates the aerial application of a pesticide. Only one product, containing the active substance asulam, is authorised for this use. The authorisation has been granted annually on an emergency basis following careful consideration of an application from a group of stakeholders. The emergency authorisation helps the UK to deal with bracken problems while an application for EU approval of the active substance is being considered.

Only a handful of companies undertake aerial spraying in the UK. Before carrying out any aerial spraying, the company must notify HSE of its proposed operations and secure a permit for the jobs. HSE permits the operations provided a range of conditions is met. Where spraying takes place in, or close to, conservation areas, conservation authorities conduct additional checks. Careful consideration is given to permitting this operation and specific conditions may be imposed to assess medium to longer-term impacts. Water companies can also have access to information related to planned aerial spraying operations.

Work to develop alternative (ground-based) methods of control and to test the suitability of other pesticide products for bracken control is ongoing.

The chart in Part 5 of the Annex shows that the number of permits issued in 2019 was somewhat lower than in 2018. The Pesticide Usage Survey data on aerial application for 2019 show that 1319 hectares were sprayed in England, 3636 hectares in Scotland, and 288 hectares in Wales. There was no aerial spraying in Northern Ireland.

We are aware that there is still a lot of industry interest in the potential to apply pesticides from unmanned aerial vehicles (drones). Government has told us that it considers this method of application to be aerial spraying. Currently neither pesticide authorisations nor specified certificates enable this. HSE is working towards understanding the risks from this type of application, and whether new risk assessments are required to permit such use.

Indicators

Part 5 of the Annex to this report, on [page 34](#)

Extra information

More information on Protected Areas, Areas/Sites of Special Scientific Interest (ASSIs/SSSIs) and Natura 2000 sites can be found in Part 7 (pages 52 and 53) of our 2012 annual report

Pesticides Forum annual report 2018, page 13

[Bracken Control Group website](#)

Part 6: Measures to protect the aquatic environment and drinking water

Key priorities

- We understand which pesticides are identified as contaminating water and the routes by which this occurs
- Pesticides detected in surface water, groundwater and drinking water do not harm human health or have unacceptable effects on the environment, or lead to failure to comply with the requirements of legislation
- Effective action is taken to prevent or reduce the contamination problem identified, working with relevant stakeholders to ensure positive socio-economic impacts
- Accidental spillages, which can result in substantial adverse impacts on aquatic ecosystems, are minimised
- Efforts are undertaken to improve the standards of practice of infrequent pesticide users

Overview

Ensuring that pesticide use does not have unacceptable effects on the environment or compromise our ability to meet the requirements of water quality legislation is a priority area of the UK NAP. Even careful, authorised use of pesticides can result in residues being detected in surface waters, groundwater and (occasionally) tap water supplied to consumers. All of these must comply with statutory quality standards established for chemical substances. Detection of tiny amounts of pesticides, or a rising trend in detections, can potentially result in the UK failing to comply with EU water quality legislation. It should be emphasised that the limits for pesticides in water set by law are lower than guidance levels to protect human health. Therefore, the fact that a limit has been exceeded, even in drinking water, does not necessarily mean that there is a risk to human health.

The Pesticides Forum and Voluntary Initiative joint working group on grassland and forage pesticide issues continues to work on:

- developing an IPM-style system for these crops;
- the risk of losing tools to control pests, weeds and diseases;
- ways of facilitating resilient grassland businesses.

This work has helped to ensure that grassland users (who manage a large area which is treated on an infrequent basis) have access to good information on sustainable use practices. Examples of outputs include three leaflets: '[Do you spray](#)'; '[Knapsacks do's and don'ts](#)'; and '[Grassland Weed Control](#)'. The group has also published articles in Pro-Operator and in grassland publications, had a presence at grass-related shows and events, and produced NRoSO training resources.

In addition to overarching stewardship initiatives, such as the VI or Amenity Forum, there is a number of more product-specific industry-led programmes. These programmes cover a range of products, including: those containing metaldehyde; products containing bentazone; chlorpropham in potato storage; oilseed rape and grassland herbicides; and certain nematicides. The programmes demonstrate a commitment by industry to help ensure users have the best possible understanding of the risks associated with the application of specific pesticides and how to minimise the risks associated with this. Such schemes can also help ensure farmers and others retain access to a sufficiently wide range of chemistry enabling them to produce safe, high-quality, reasonably priced, and locally grown foodstuffs.

The indicators presented in Part 6 of the Annex contain details of the extent to which pesticides detected in surface waters and groundwater create a risk of non-compliance with water quality legislation, and contamination incidents. Collection and analysis of these data is resource-intensive, so they are updated every two to three years. The main pesticides which result in water quality standards being compromised are metaldehyde (used for slug control) and herbicides used to control weeds in oilseed rape crops. They are understood to reach water mostly by drainflow when applied in wet autumn periods, or after storm events. In addition, the continued detection of the insecticide cypermethrin at levels above the Environmental Quality Standard led to additional research into potential sources and an analysis of source control options. Further monitoring is required for this pesticide until compliance is achieved. It is also used as a veterinary medicine. In 2019, the Forum heard of work done under industry product stewardship campaigns, including the Voluntary Initiative's 'OSR Herbicides? Think Water' initiative, to help reduce the risk of these pesticides reaching water.

England

Surface water sample points not currently meeting Water Framework Directive (WFD) Environmental Quality Standards (EQS) for pesticides in England

There are no new published data. The Environment Agency's current surface water classifications are being published in 2020.

Surface Water Drinking Water Protected Areas (DrWPAs) in England where pesticides are putting WFD Article 7 compliance at risk in England

Across England, 231 of the 485 (48%) surface water Drinking Water Protected Areas (DrWPAs) are 'at risk' from pesticides. Where a DrWPA is at risk, a non-statutory safeguard zone (SgZ) is established around a drinking water abstraction. This zone identifies an area where land use practices are most likely to be causing, or have caused, water quality to deteriorate. These non-statutory zones encourage voluntary actions to ensure contamination prevention and regulatory actions where they are most needed. There are 143 surface water SgZs in England. Pesticides are the largest cause of surface water DrWPAs being 'at risk' of not meeting DrWPA objectives in England, with 129 surface waters 'at risk' in 2019 for pesticides. Metaldehyde is causing the majority (109) of those surface waters to be 'at risk'. Some surface water DrWPAs are at risk for more than one pesticide.

The Environment Agency has identified a number of active substances as nationally significant because of elevated or increasing concentrations in DrWPAs and most of these are now subject to voluntary industry-led stewardship measures. The substances are: bentazone, carbetamide, chlortoluron, clopyralid, cypermethrin, MCPA, mecoprop-P, metaldehyde and propyzamide. Increasing detection frequency of 2,4-D amine is also of concern.

Scotland

Surface water bodies not currently meeting WFD EQS for pesticides in Scotland in 2018

The Scottish Environment Protection Agency (SEPA) takes two approaches to monitoring for pesticides and their impact on the water environment. Firstly, SEPA carries out monitoring of the ecology of surface waters, which can be indicative of pesticide impacts. If this monitoring indicates an environmental impact, chemical monitoring can be carried out to authenticate the issue(s) responsible. No surface waters were assessed as falling good status due to pesticides in 2018.

In October 2019, SEPA undertook a small, targeted sampling programme to test the capabilities of a new chemical screening approach as a 'proof of concept'. A number of pesticides were detected in samples from the study, some of which SEPA has not had the ability to detect before. Following the proof of concept study, SEPA is now developing an approach for chemical screening that best captures chemical (including pesticide) risks in the water environment.

Drinking Water Inspectorate (England and Wales)

The Drinking Water Inspectorate (DWI) ensures that water companies and local authorities have taken the appropriate action to maintain confidence in drinking water quality and to safeguard public health. Overall, in 2018, in England and Wales, the figure for public water supply compliance with the EU Drinking Water Directive was 99.95% (for all parameters). This remains largely unchanged since 2004 but represents the high standards for compliance in England and Wales recorded since 1990. Compliance is achieved through a combination of water treatment, catchment control and blending. Ozone and granular activated carbon have been installed by water companies since 1990, specifically to remove pesticides and other contaminants.

Throughout 2018, water companies sampled drinking water to verify compliance with the drinking water regulations. Almost half of the tests were carried out on samples drawn from consumers' taps selected at random. Collectively, the water companies in England and Wales carried out a total of 207 154 tests for individual pesticides during 2018. Only 11 of these tests failed to meet one or more of the standards set down in the Regulations. The failures were all for England and were comprised of carbetamide (2), metaldehyde (4), oxadixyl (3) and propyzamide (2).

Drinking Water Quality Regulator for Scotland

The Drinking Water Quality Regulator (DWQR) performs a similar role in Scotland to the DWI in England and Wales. Scottish Water is required to carry out numerous tests on drinking water at customers' taps. In 2018, Scottish Water completed 148 086 different tests on randomly selected consumer tap water, which demonstrated a high standard of drinking water quality in Scotland. Of the tests completed across all parameters, there was 99.90% compliance with the EU Drinking Water Directive, consistent with results in previous years.

Compliance was marginally higher for pesticide active substances, with 99.96% of 9822 tests for individual pesticides meeting the required standard. None of the individual pesticide tests failed to meet the required standard.

Drinking Water Inspectorate Northern Ireland

During 2018, 35 individual pesticides were monitored by NI Water under its sampling programmes. There are two separate sampling programmes in place:

- the compliance programme, which is the set regulatory frequencies that NI Water is required to monitor for assessing compliance;
- the operational monitoring programme, which NI Water uses to ensure any risks are fully assessed and to assist in the operation of its treatment processes.

Within the compliance programme, there were 236 samples taken, resulting in a total of 8256 determinations. From these, two samples contravened the drinking water standard for MCPA. MCPA is a herbicide, widely used in Northern Ireland for controlling broadleaved weeds in grass and cereal crops, and for clearing rushes.

During 2018, within the Operational Sampling programme, NI Water identified three samples with residues of MCPA above the regulatory limit.

The number of pesticide contraventions reported from both compliance and operational sampling in 2018 was five, which is significantly lower than for 2017 (23 contraventions).

Water UK

Challenges from a wide range of pesticides abstracted from both surface and groundwaters pose an ongoing risk to drinking water quality.

To manage this challenge, water companies across the UK have dedicated catchment management teams who work proactively with stakeholders (including members of the Pesticides Forum) to investigate and raise awareness of pesticides issues affecting water quality. These teams undertake catchment monitoring programmes to determine pesticide sources and pathways, enabling resources to be focussed on innovative pesticide mitigation projects targeted at the areas posing the greatest risk.

This proactive approach allows water companies to work with land managers, agronomists, the amenity sector and regulators to mitigate pesticide contamination at the source – helping to reduce reliance on expensive water treatment processes and ensure drinking water quality is wholesome, compliant with UK standards and more resilient to future challenges such as climate change.

As the pesticides detected vary according to region, landscape and land use, projects are wide-ranging, and examples of key focus areas include:

- **grassland herbicides:** activities to minimise the impact of grassland herbicides (particularly MCPA), particularly where livestock farming, equestrian, rush control, etc is prevalent;
- **oilseed rape herbicides:** evolving focus on the suite of herbicides associated with blackgrass management (in particular propyzamide) in arable areas;
- **metalddehyde:** continuation of projects and engagement in arable lowland areas to protect drinking water sources from metalddehyde.

On behalf of the UK water companies, Water UK compiles a national pesticide dataset which is shared with the Pesticides Forum and the Voluntary Initiative (VI), including the joint Pesticides Forum/VI working group on grassland and forage pesticide issues throughout the year to highlight local, regional and national issues during each season.

Water companies are supporting a range of national stewardship campaigns such as the VI's 'OSR Herbicides? Think Water' initiative and proactively collaborate with other key sectors through initiatives such as the Network Rail Pesticide Agreement. This agreement between the water industry, Environment Agency and Network Rail highlights vulnerable groundwater areas within the UK rail network and ensures appropriate mitigation measures are implemented (in these areas) to protect groundwater quality.

Indicators

Part 6 of the Annex to this report, on [pages 35 to 41](#)

Extra information

Pesticides Forum annual report 2018, pages 14 to 17

Drinking Water Inspectorate Chief Inspector's Reports (<http://www.dwi.gov.uk/about/annual-report/index.htm>)

[Drinking Water Inspectorate \(England and Wales\) Report – Drinking Water 2018](#)

England:

[River Basin Management Plans 2015](#)

[Environment Agency \(EA\) guide to accessing data and information](#)

[EA maps for drinking water safeguard zones and nitrate vulnerable zones](#)

[Natural England: 'MAGIC' mapping website](#)

[Voluntary Initiative](#)

[Catchment Sensitive Farming](#)

Scotland:

[Know the Rules information sheet – 'Using Pesticides'](#)

[River Basin Management Plans](#)

[Drinking Water Quality Regulator for Scotland annual report 2018](#)

Wales:

[River Basin Management Plans](#)

[Protected Areas Register](#)

[Welsh Water PestSmart project](#)

Northern Ireland:

[NI WFD Statistics Report October 2018](#)

[NI Environmental Statistics Report 2019](#)

[Drinking Water Inspectorate for Northern Ireland Report – Drinking Water Quality in Northern Ireland, 2018](#)

Part 7: Reduction of risk in specific areas

Key priorities

- The particular challenges of pest control in public spaces and protected areas are understood, and risks and use of pesticides in these areas are minimised accordingly
- Industry bodies continue to play an important role in developing and promoting best practice measures and disseminating advice when pesticides are used in public spaces

Overview

Improving the practices of pesticide users in the amenity sector is a priority under the NAP. Some situations of pesticide use have been identified as carrying a particular potential risk to people or to the environment. The UK also has strict legislative requirements to protect, for example, conservation areas and recently treated areas accessible to agricultural workers. Further action under the NAP is focussed on public spaces.

Amenity areas

Our understanding of the amenity sector is improving with the introduction of regular surveys into the Pesticide Usage Survey programme. The picture emerging from this work corresponds with anecdotal intelligence indicating that understanding of the risks associated with pesticide use, and adoption of best practice measures, is significantly improved but does not always fully match that in other sectors. This statement must be qualified by noting the extremely diverse nature of amenity pesticide use and it is appropriate to acknowledge that some parts of this sector operate at the very top end of best practice.

Notable activities in 2019 were:

- production of the second [Amenity Forum Annual Report](#)
- refresh of the 'GetMoving' campaign, aimed at the younger generation and now linked to the main Amenity Forum and 'Amenity Standard' websites
- a Twitter account, [@Amenity Forum](#), using the hashtag [#AmenityMatters](#)
- development of new documentation: integrated weed management (IWM) guidance and the creation of an integrated management plan template, plus 'Good Parks Guidance' launched in London, and development of an IWM policy with Parks for London
- continuing contribution to conferences, seminars and events
- increased engagement with the water sector, particularly Welsh Water and the Rivers Trust
- the Amenity Sprayer Operator of the Year award 2019 (the category winners were announced at the Amenity Forum conference, and the overall winner at the British and International Golf Greenkeepers' Association's Turf Management Exhibition in January 2020)

Protected areas

[Protected areas](#) – also known as designated sites – receive protection because of their recognised nature conservation and/or cultural values, and represent the best of the country's wildlife, geology and landscapes. They can be designated under international treaties and laws, national legislation or local policies and include sites of local interest, as well as designations of national and international importance. There are different categories of protected areas and some sites benefit from multiple designations. They include special sites of scientific interest (SSSIs) and areas of special scientific interest (ASSIs), national nature reserves, special protection areas (SPAs) and special areas of conservation (SACs). SPAs and SACs are collectively known as Natura 2000 sites and are further protected under European legislation for their important wildlife and habitats.

The use of pesticides in or near protected areas may affect their conservation, particularly on sites that have been designated for the protection of plants and animals. Before applying pesticides in designated sites, the relevant statutory nature conservation authority (Natural England, Natural Resources Wales, Northern Ireland Environment Agency, Scottish Natural Heritage) must be consulted and their consent obtained. In some circumstances, pesticides are used as part of the site management, for example where an invasive plant compromises the nature conservation objectives of a site.

Site conditions are determined by a survey protocol called [Common Standards Monitoring](#), which relates to the habitat condition.

Information on site designations and lists of activities requiring consultation in each country of the UK can be found at:

England

<https://designatedsites.naturalengland.org.uk/>

More information about the different types of designations in England can be found at: <https://sac.jncc.gov.uk/> and <https://www.gov.uk/topic/planning-development/protected-sites-species>

Natural England's mapping website, [Nature on the Map](#), provides information on individual protected sites and the areas covered by individual designations.

Scotland

<https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/site-condition-monitoring>

A list and description of the different designations for Scotland can be found on the [Scottish Natural Heritage](#) (SNH) website

Information on individual sites, including their location and what they were designated for, can be found on [SiteLink](#)

Some sites are also nature reserves, which the public is encouraged to visit. Information about National Nature Reserves can be found at: https://www.nnr.scot/Search_by_AZ

Northern Ireland

<https://www.daera-ni.gov.uk/landing-pages/protected-areas>

Wales

<http://lle.gov.wales/Catalogue?lang=en&text=sssi>

To see the documents relating to a protected site, such as its reason for designation and location and the list of activities likely to damage an SSSI, use Natural Resources Wales' designated site search at: <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en>

Indicators

Part 7 of the Annex to this report, on [page 42](#)

Extra information

Pesticides Forum reports: 2017, pages 14 and 15; 2018, pages 18 and 19

[PUS Amenity Report 2016](#)

[NI Environmental Statistics Report 2019](#)

[UK Biodiversity Indicators 2019](#)

Part 8: Handling and storage of pesticides and treatment of their packaging and remnants

Key priorities

- Practice in the handling, storage and disposal of pesticides is done to high standards in both the professional and amateur sectors
- Guidance relating to best practice is available for professional users in all sectors

Overview

Good handling, storage and disposal practice help to ensure pesticides are used sustainably. It is extremely challenging to obtain detailed and robust information on the range of pesticide handling, storage and disposal practices given the variations that are likely to exist between individuals and the fact that they will operate differently in particular situations.

The indicators we have selected for this part of the report are designed to capture the extent to which:

- farmers are complying with basic legislative requirements on the use and storage of pesticides (storage of authorised products and use in accordance with the product label, including use of habitat protection zones where appropriate);
- operators are demonstrating an appreciation of more sustainable ways of managing pesticide waste, in this case by creating biobeds to dispose of waste.

These data are drawn from inspections carried out by government to assess entitlement to farming subsidies. Penalties are levied on a sliding scale against the subsidy claimed, depending on the severity of the failure to comply with legal requirements.

The charts in Part 8 of the Annex suggest there is an appreciation of more sustainable ways of safely managing pesticide waste and a high degree of compliance with the laws relating to the use and storage of pesticides.

Amateur sector

Improving the practice of users in the amateur sector is another priority area in the UK NAP. Our work has highlighted the importance of emphasising that amateur users dispose of pesticides and packaging appropriately.

HSE carried out an amateur pesticide user habits survey in May 2019, the [results](#) of which were published in August 2020. The survey was undertaken to determine gardener user habits in relation to purchase, storage, use and disposal of amateur pesticides. This followed on from previous surveys done every three years since 2007 and introduced a new question to understand the level of integrated pest management to indicate sustainable use. The 2019 survey saw a large increase in responses from allotment gardeners (from 16% in 2016 to 43% in 2019) due to the efforts of the Amateur Liaison Group to engage this group of gardeners. In addition, a new category for indoor/balcony gardening was introduced for the first time, accounting for 21% of respondents.

Results of note from the 2019 survey include:

- 16% of respondents using biological products (such as nematodes), 32% using physical barriers (such as copper tape, slug and snail traps) and 38% using home-made remedies;
- DIY or home stores becoming the most popular purchase location (66%), taking over from garden centres or nurseries (59%), with internet purchases continuing to increase (to 22%);
- in addition to finding information on the product label, there was a continued increase in using websites for information on how to use pesticides (39%), while asking retail staff continued to decline (4%);
- there was an increase in storing products for three years or more, with an indication that some respondents did not know how to dispose of leftover product;
- a slight decrease was seen in respondents storing products securely (locked cupboard/cabinet and/or high shelf) from 2016, but it was still an improvement overall from 2007 onwards (NB the 2016 report warned that results should be viewed with caution due to the lower number of respondents that year);
- the percentage of respondents rinsing empty concentrate containers was the lowest since 2007, with a reduction in the rinsings being added to the spray solution, while many respondents indicated that they use up the rinsings on waste ground/soil or plants;
- there was a slight increase from 2016 in those rinsing empty containers and disposing of rinse water to drains/toilets/sinks – 18% for concentrate containers and 32% for ready-to-use containers. However, these results are still considerably lower than the highest results from 2007 to 2013 (63% and 40% respectively).

In addition, some responses indicated confusion with the questionnaire, particularly regarding the disposal section.

As a result of the 2019 survey, the Amateur Liaison Group will work on the following actions:

- developing communications material for external groups to use if they wish;
- rationalising the disposal information on product labels;
- simplifying the next questionnaire.

Indicators

Part 8 of the Annex to this report, on [pages 43 and 44](#)

Extra information

Pesticides Forum report 2018, pages 20 and 21

Cross compliance

[The Farming Advice Service](#)

[Cross compliance \(England\)](#)

[Scottish Government](#)

[Department of Agriculture, Environment and Rural Affairs \(DAERA\) Northern Ireland](#)

[Cross compliance Wales](#)

[Rural Payments Wales](#)

Biobeds, biofilters and waste exemptions

[SEPA paragraph 42 waste exemption](#)

Part 9: Low pesticide input management, including Integrated Pest Management (IPM)

Key priorities

- Low pesticide input management systems continue to be developed, promoted and taken up by users of professional pesticide products
- That awareness of the general principles of IPM increases and that they are adopted, as appropriate, by professional users
- An effective range of non-pesticide and integrated approaches to pest, weed and disease control be developed and is made available
- The systems which are adopted emphasise growth of a healthy crop with the least possible disruption to agroecosystems and encourage natural pest control mechanisms

Overview

Integrated pest management is a priority area in the NAP. There are good reasons to promote low pesticide input pest management. The declining availability of pesticide products and continuing emergence of pest resistance mean that there are good practical reasons for pesticide users, and those who cause or permit the use of pesticides, to consider a range of products and techniques. Although virtually all pesticide users undertake some form of management consistent with aspects of integrated control, more needs to be done to develop a range of cost-effective tools and techniques and ensure pest, weed and disease control is done in a fully integrated fashion.

There are challenges associated with:

- obtaining clear and robust information on the extent to which IPM is being used, as this approach requires site- and time-based decisions to be made;
- assessing the impact of adopting such approaches (a range of factors will affect, for example, the environment).

We know that all pesticide users who have been trained in recent years have been taught about the importance of controlling pests, weeds and diseases in an integrated fashion (see Part 1 of the Annex).

We have chosen indicators relating to:

- users' awareness of environmental issues and integrated approaches (such as information on agri-environment options used by farmers);
- the availability and use of alternatives to conventional pesticides;
- outcomes.

It is not straightforward to draw conclusions from the differing messages which emerge from the data presented.

Awarding bodies include IPM in their syllabuses. IPM is the first module taught of the BASIS Certificate in Crop Protection syllabus, and all candidates are assessed on their knowledge of the principles and practice of IPM to reflect the changing pace and demands on our food production systems and the need to deliver more sustainable farming. City & Guilds requires candidates to be able to demonstrate a knowledge of IPM methods and when they are appropriate to use, as well as plan to implement an IPM programme and determine the effectiveness of an IPM solution. IPM is also integral to the NRoSO scheme, and the 2018/19 training included the benefits of completing an IPM plan and considered some of the potential approaches used by UK growers depending upon the farming enterprise.

As we reported in our last report, in 2018 we established a sub-group of the Pesticides Forum to look at research and knowledge transfer. A gap appeared to exist in assessing the practicality of research related to the sustainable use of pesticides and whether it was truly novel, converting relevant information into practical guidance and disseminating this to relevant stakeholders. The group's focus was on IPM and the protection of water. These are priority areas in the government's [25-year environment plan](#). The work of the group is complete, and we will be discussing the outcomes at our October 2020 meeting. We will provide more information in our 2020 annual report.

Bird populations

Bird populations have long been considered to provide a good indication of the broad state of wildlife. Birds occupy a wide range of habitats and there are considerable long-term data on changes in bird populations, which help in the interpretation of shorter-term fluctuations in numbers. As they are a well-studied taxonomic group, drivers of change for birds are better understood than for other species groups, which allows for better interpretation of observed changes. Birds also have huge cultural importance and are highly valued as a part of the UK's natural environment by the general public. However, the bird indicators presented here are not intended, in isolation, as indicators of the health of the wider natural environment. Bird numbers are influenced by many factors including weather and land management.

Although we have provided unsmoothed data up to 2018, it is best practice when looking at trends to use the smoothed index up to the penultimate year (2017). Bird indices for the four main habitat groups representing farmland, woodland, water and wetland, and seabird habitats are presented in [Defra's Wild Birds Release](#).

Indicators

Part 9 of the Annex to this report on [pages 45 to 55](#)

Extra information

Pesticides Forum report 2018, pages 22 and 23

[LEAF](#)

[ADAS](#)

[Wild Bird Populations in the UK](#)

[The Game and Wildlife Conservation Trust](#)

[International Biocontrol Manufacturers' Association](#)

[Natural England](#)

[Natural Resources Wales](#)

[Scottish Natural Heritage](#)

[National Farmers' Union \(NFU\)](#)

[NFU: Time to fill in your IPM plan](#)

[Voluntary Initiative IPM FAQs](#)

[Conservation grade/fair to nature farming](#)

[LEAF Sustainable Farming Review](#)

[LEAF 'Simply Sustainable' series](#)

[Amenity Forum](#)

[Defra Organic farming statistics](#)

Agri-environment links

England: [Countryside Stewardship](#)

[New Environmental Land Management \(ELM\) scheme in England](#)

Natural England: [Investigation of the impact of changes in pesticide use on invertebrate populations \(NECR182\)](#)

Scotland: [Agri-environment Climate Scheme](#)

Wales: [Glastir](#)

[Consultation on future Sustainable Land Management Programme in Wales](#)

Northern Ireland: [Northern Ireland Environmental Statistics report 2019](#)

[UK Biodiversity Indicators 2019](#)

Part 10: Indicators

Key priorities

- Indicators enable everyone to understand where, why and how pesticides are being used, and all the indicators in this report should provide an objective measure of progress towards meeting the objectives of the NAP
- The analysis of the messages emerging from indicator data and information is explained in a clear and easily understood fashion
- Our suite of indicators is used to identify both priority items (such as active substances, crops, regions or practices requiring particular attention) or good practices in sustainable pesticide use

Overview

This report has been designed to provide an overview of pesticide use and its impacts. We have selected a range of data and information that helps to do this and have highlighted any strengths and/or limitations in our approach. This part of the report contains information on pesticide use, areas of cropped land and use of pesticides on key crops (focussed this year on wheat). It helps to provide some context for the data and information contained elsewhere in the report.

In our 2013 annual report (pages 70 to 75) we explained the background to the indicators we include. It is important to note that pesticide usage is closely correlated to cropping patterns and is also subject to seasonal variation in response to weather conditions, and the introduction of products with lower application rates. Around 70% of the land area in the UK is used for agriculture.

The 2018 harvest was affected by the weather (high rainfall in spring and a long dry spell with high temperatures in the summer) causing varying yields across regions of the UK. As a result of the increase in yield in 2019, total cereal production has increased by 21.0% to 25.5 million tonnes.

The data show:

- that overall, pesticide use in 2018 remained steady;
- that the area of cropped land in 2019 decreased slightly, to 4.71 million hectares;
- how pesticide use on wheat (our focus crop this year) has changed.

The EU continued to collect information on European harmonised risk indicators in 2019, with a view to populating Annex IV of the sustainable use directive. These are calculated using member states' pesticides sales data (collected as a requirement of the Statistics Regulation). Active substances are divided into categories (loosely based on the perceived hazard of the pesticide). The quantity sold in each category is then multiplied by a hazard weighting and these are added together to give an overall value. We will need to consider how these indicators will fit into our suite of indicators, along with other work underway to assess the impact of pesticide use.

Indicators

Part 10 of the Annex to this report, on [pages 56 to 59](#)

Extra information

Pesticides Forum report 2018, page 19

[Defra June Agricultural Survey](#)

[Pesticide Usage Survey](#)

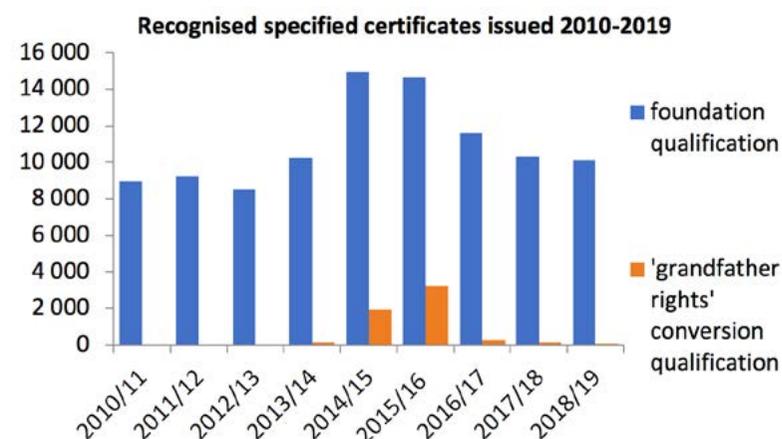
Annex: Summary of indicators

Part 1: Training

1.1 Recognised specified certificates

- This indicator reflects the number of pesticide users who have undergone basic training.
- Training is modular; everyone undertakes a foundation qualification and users must then be trained in elements relating to the type of application equipment they will be using.
- Since 'grandfather rights' exemption from holding a certificate of competence ended in November 2015, fewer users than expected took a specially developed conversion course, and many opted to undertake full training instead.
- The numbers obtaining a foundation qualification dropped in 2017/18 and again in 2018/19, returning close to the levels in place before the introduction of the new regulatory requirements.
- The figures in the chart reflect the number of individuals obtaining a specified certificate at foundation level or after passing the conversion course.

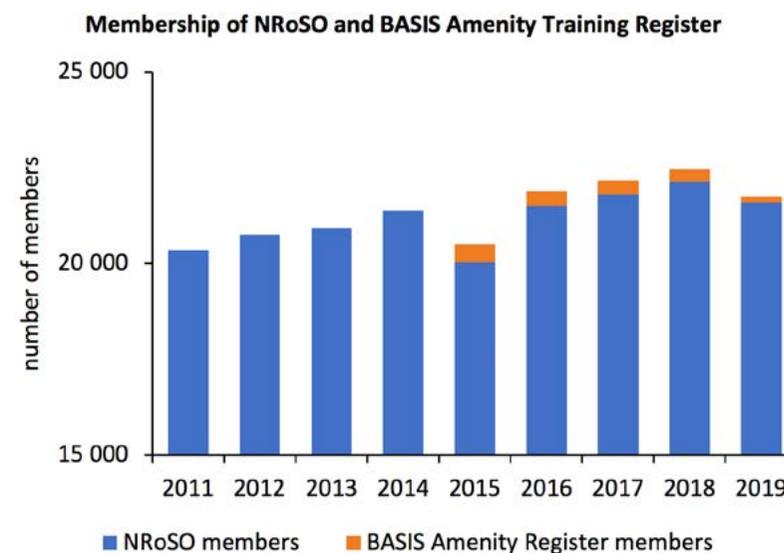
Source: Awarding bodies



1.2 Membership of NRoSO and BASIS Amenity Training Register (BATR)

- National Register of Sprayer Operators (NRoSO) membership indicates the number of pesticide users undertaking continuing professional development (CPD).
- The target audience for NRoSO membership is broadly agriculture and production horticulture.
- BASIS Amenity Training Register (introduced in 2015) indicates the number of pesticide users in the amenity sector undertaking CPD.
- The drop in membership in 2014/15 NRoSO numbers was mainly caused by those with 'grandfather rights' being inactivated on 26 November 2015.
- The requirement, from 26 November 2015, for users of professional products to hold a specified certificate has contributed to the rise in membership of NRoSO in the following years.
- Some amenity pesticide users have opted to join the BASIS professional register and/or NRoSO rather than BATR.
- There were 146 members of BATR as at 31 December 2019 (down from 347 at the previous year end).

Source: [City & Guilds/BASIS](#)



1.3 BASIS: membership of Professional Register

- Register membership indicates the number of advisors on professional pesticide products undertaking continuing professional development.
- There were 5372 BASIS Professional Register members as at 31 December 2019 (down from 5738 the year before).

Source: BASIS

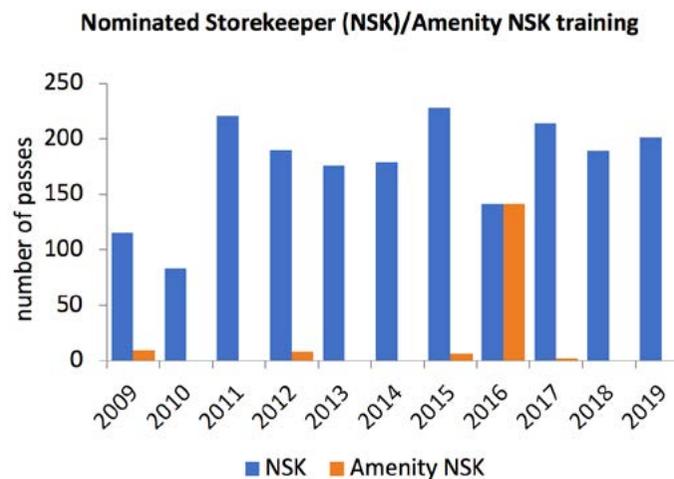


Part 2: Sales

2.1 BASIS Nominated Storekeeper/Amenity Storekeeper training: number of passes

- This qualification is relevant for distributors of professional pesticide products.
- It requires storekeepers to operate best practice in store design and management and undertake continuing professional development.
- Stores are audited annually by BASIS. The audits indicate a high standard of compliance with the scheme standards.
- Over 7800 people have passed Nominated Storekeeper training.
- BASIS Nominated Storekeeper (NSK): 163 passes in 2019.
- BASIS NSK Amenity qualifications: none in 2019 (no courses held).
- Some storekeepers working in the amenity sector opted to take the full Nominated Storekeeper course.

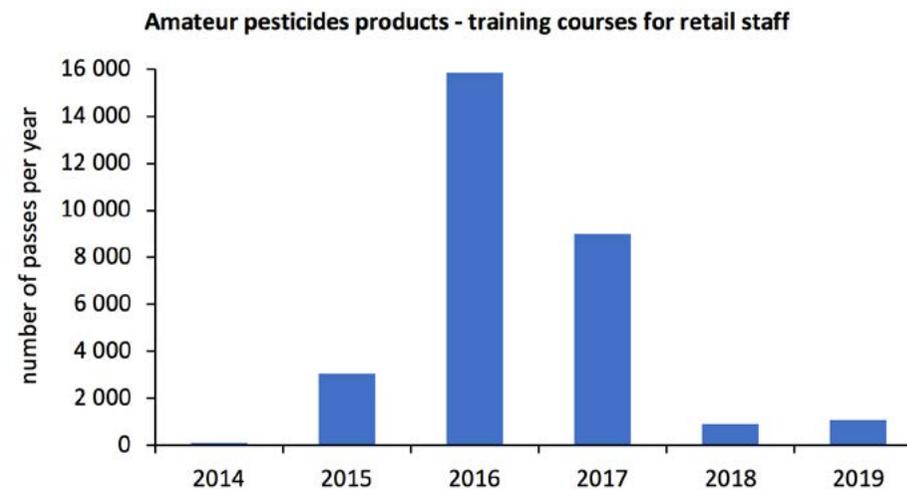
Source: BASIS



2.2 Amateur pesticide products: training for retail staff

- These qualifications are awarded to retail staff following completion of a training module and successfully passing a test.
- The requirement for this training was introduced in November 2015.
- The large numbers in 2016 and 2017 reflect the fact that a single multiple retailer has trained all members of its staff, and that another launched its own qualification.
- The numbers have evened up since 2017.

Source: Training providers

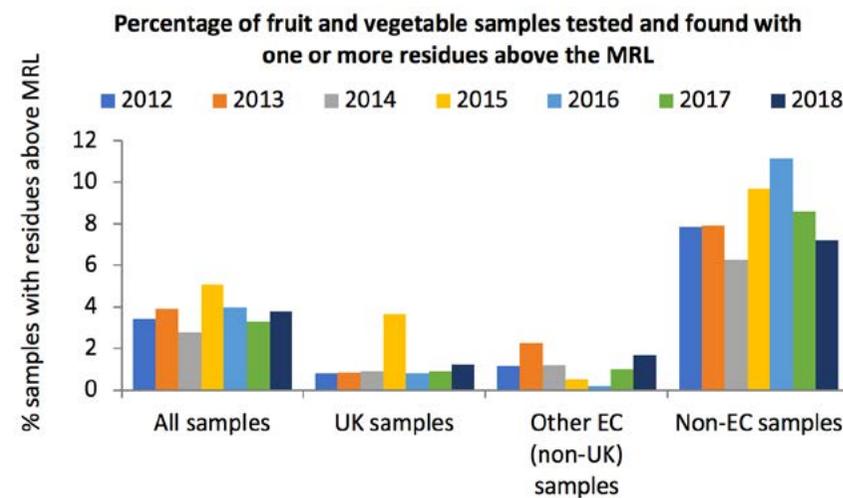


Part 3: Information and awareness raising

3.1 Consumer protection: compliance with Maximum Residue Levels (MRLs)

- 576 UK and 1386 non-UK samples of fresh, unprocessed fruit and vegetable samples were tested in 2018.
- Seven (1.2%) of the UK samples and 67 (4.8%) of the non-UK samples contained residues above the MRL.
- Five of the non-UK samples were referred to the Food Standards Agency (FSA) as there were concerns about the potential risk to the health of people eating those foods. The FSA notified the Rapid Alert System for Food and Feed about these samples.

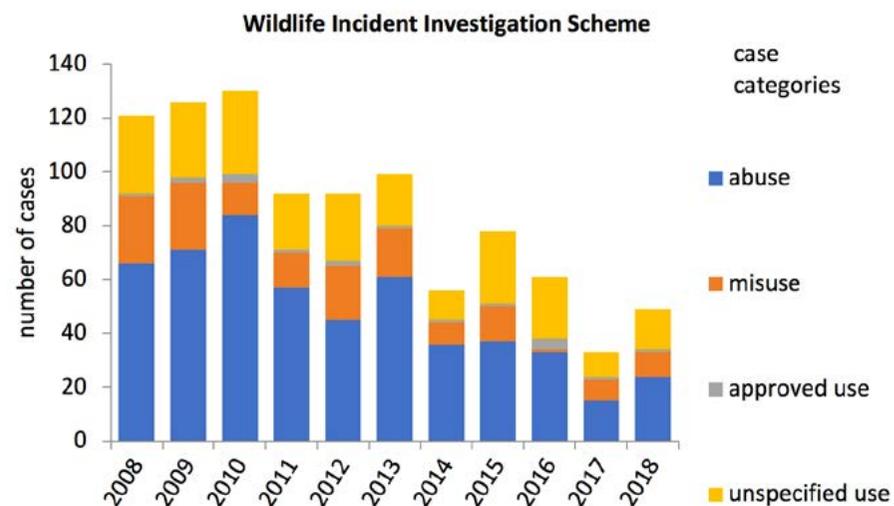
Source: HSE



3.2 Wildlife Incident Investigation Scheme (WIIS): UK

- In 2018, the majority of cases investigated by WIIS involved poisoning of birds, wild mammals and other wildlife.
- Eight cases involved honeybees and three involved bumblebees.
- Pesticides were: the cause of death in three of the bee cases (one of which was considered to have been due to approved use, and one of which was considered to be due to misuse); detected but not the cause of death in three cases; and not detected in five cases.
- Neonicotinoid pesticides are screened for in all bee cases. In one case, imidacloprid and thiamethoxam was detected and considered (in combination with chlorpyrifos, diazinon and fipronil) to be the likely cause of the bee deaths in this case. Further investigation failed to identify the source and the exposure was considered unspecified use. Thiacloprid (and a number of other substances) were also detected in this bee case at levels considered to represent background residues and were not considered to be the cause of death. In another bee case (in which the cause of death was considered to be due to bendiocarb), acetamiprid was detected at levels considered to represent background residues and was not considered to be the cause of death.
- There were no prosecutions resulting from a WIIS investigation in 2018.

Source: [WIIS](#)



3.3 National Poisons Information Service (NPIS): monitoring adverse effects of pesticides exposure in humans

- This is the third year of inclusion for these NPIS indicators.
- The three charts show results from a national surveillance project run by HSE and the UK NPIS. The project has been running since 2004.
- Information was gathered on 1060 potential cases involving pesticides in 2018/19. Of 1030 followed up for further analysis, 880 cases (46.2% adults and 51.8% children) were instances of suspected acute unintentional exposure. Of these 880, over 90% of exposures were graded as none (no signs or symptoms) or minor; 3.4% (30 cases) were of uncertain severity; 0.6% (5 cases) moderate; and 0.2% (2 cases) severe.

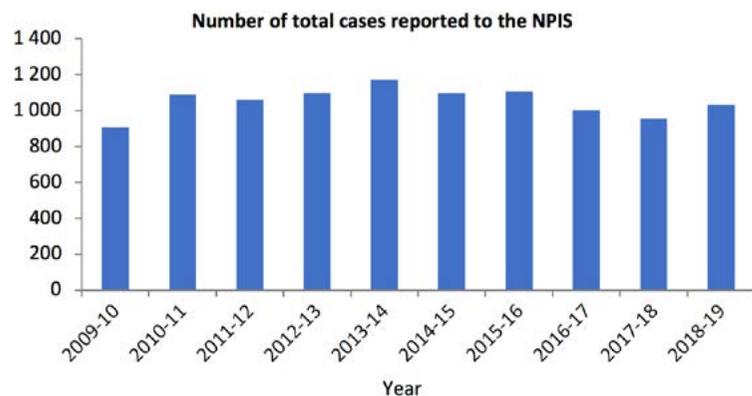


Figure 3.3.1 Number of total cases reported to the NPIS

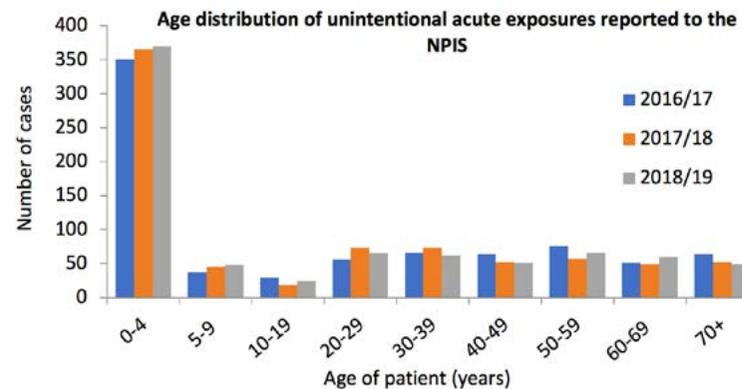


Figure 3.3.2 Age distribution of unintentional acute exposures reported to the NPIS

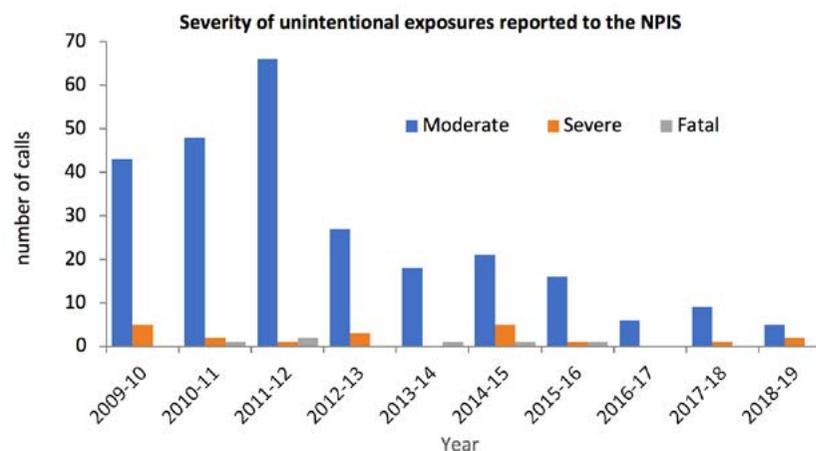


Figure 3.3.3 Severity of unintentional exposures reported to the NPIS

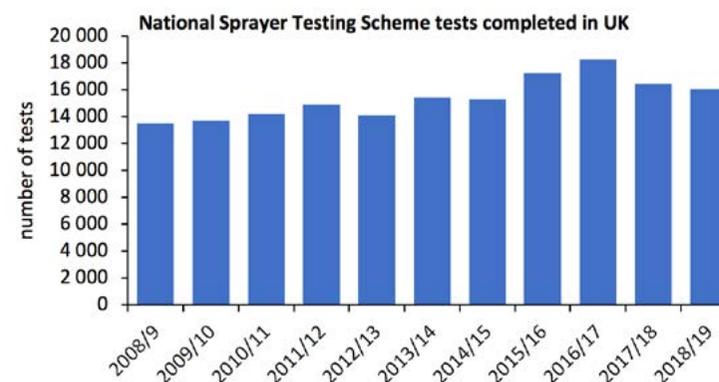
Source: NPIS

Part 4: Inspection of application equipment

4.1 User practice: National Sprayer Testing Scheme (NSTS) (number of sprayer tests)

- NSTS tested 16 084 machines in 2018/19.
- Tests were split between:
 - England: 14 056
 - Wales: 401
 - Scotland: 1244
 - Northern Ireland: 431
- In addition, 1081 micro-granular applicator tests, 49 fogger tests and 541 (down from 2017/18) slug pellet applicator tests were conducted.

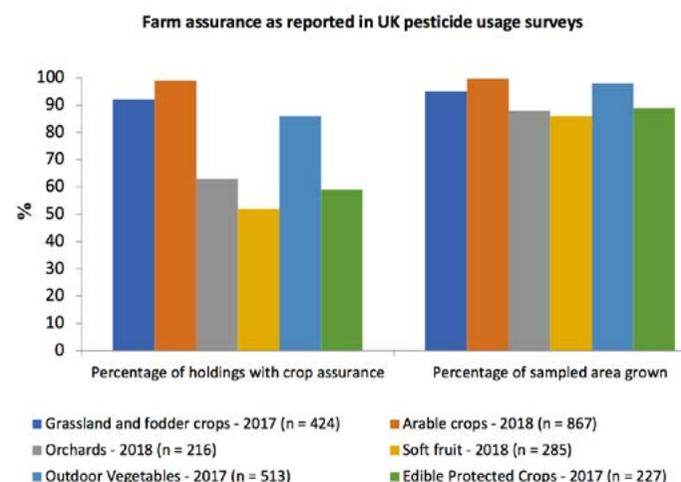
Source: [NSTS](#)



4.2. Farm assurance as reported in Pesticide Usage Surveys (PUS) to 2018

- Membership of farm assurance was assessed in surveys on arable crops, orchards and soft fruit crops in 2018.
- ‘Orchards’ include apples grown for dessert and cider production. The level of farm assurance is normally higher for dessert apples.
- The percentage of holdings with farm assurance noted in the 2018 survey period remained at similar levels to those recorded in previous surveys.
- PUS reports are available at <https://secure.fera.defra.gov.uk/pusstats/surveys/index.cfm>

Source: [Fera Pesticide Usage Surveys](#)



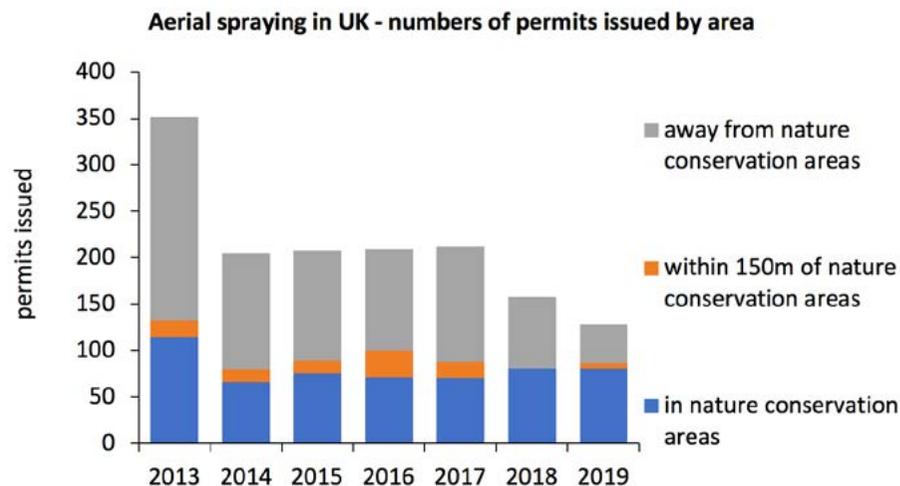
Note to chart: n = number of farms surveyed.

Part 5: Aerial application

5.1 User practice: aerial applications

- Of the 128 permits (including 31 jobs updated from 2018) issued in 2019, 28 were for jobs in England, 81 in Scotland and 19 in Wales. All were for the application of asulam to control bracken.
- No applications were received for Northern Ireland.
- Jobs that take place in or within 150 metres of a nature conservation area are permitted only when the relevant conservation agency authority has confirmed its consent.
- HSE consults conservation authorities on spray jobs within 150 metres of conservation areas when asulam is being used. The measurement was determined by the view of the authorities on an appropriate distance given the toxicity of the product. Appropriate alternative distances may be necessary if products containing active substances other than asulam are applied by aerial means.

Source: [HSE](#)



Part 6: Measures to protect the aquatic environment and drinking water

6.1 England

Surface water sample points not currently meeting Water Framework Directive Environmental Quality Standards for pesticides in England in 2016

There are no new data.

6.2 England

Groundwater

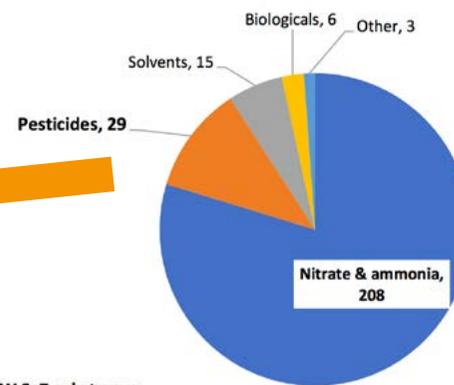
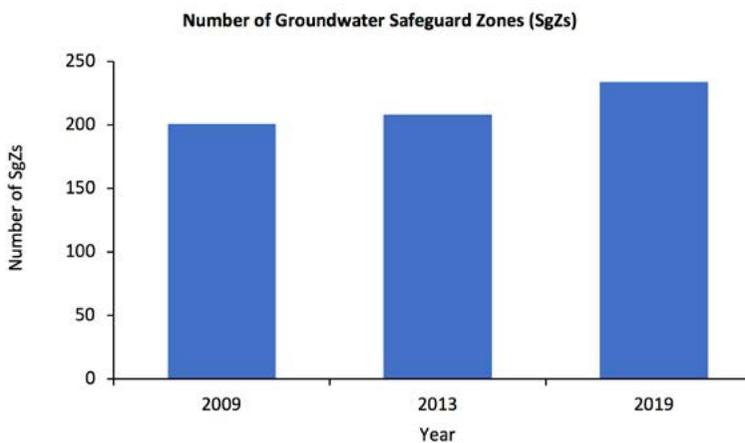
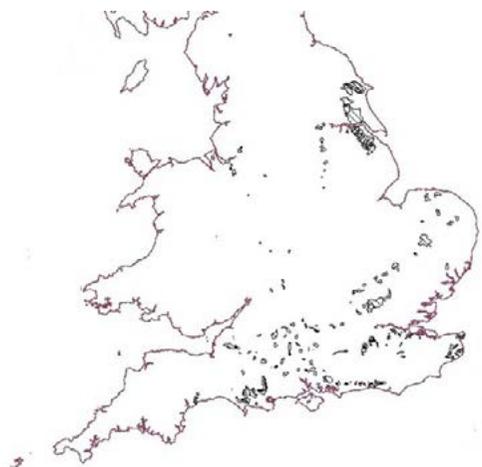
- There are 254 groundwater SgZs in total. A SgZ may be identified as being 'at risk' for one or more reasons.
- There are 26 groundwater SgZs for pesticides.
- The table opposite shows how many SgZs are designated for pesticides. Some will be designated for more than one pesticide.
- The following pesticides are no longer approved:
 - Atrazine (since 2007)
 - Dichlorprop (since 2003)
 - Bromacil (since 2003)
 - Linuron (since 2018)
 - Mecoprop (since 2003)
 - Monuron (since 2003)
 - Oxadixyl (since 2003)
 - Simazine (since 2007)

Source: [Environment Agency](#)

Pesticide	Number of SgZs for pesticides
Bentazone	8
Metaldehyde	4
Atrazine	2
Other pesticides	2
Dichlorprop	1
Diuron	2
Mecoprop	2
Bromacil	1
Chlorotoluron	1
Linuron	1
Monuron	1
Oxadixyl	1
Picloram	1
Propyzamide	1
Simazine	1
Total	29

6.3 England Groundwater Safeguard Zones

Sources: charts, Environment Agency; map, MAGIC



Sources: charts [Environment Agency](#); (map: MAGIC)

6.4 Scotland

Surface water bodies not currently meeting Water Framework Directive Environmental Quality Standards for pesticides

- No surface waters were assessed as failing good status due to pesticides in 2018.

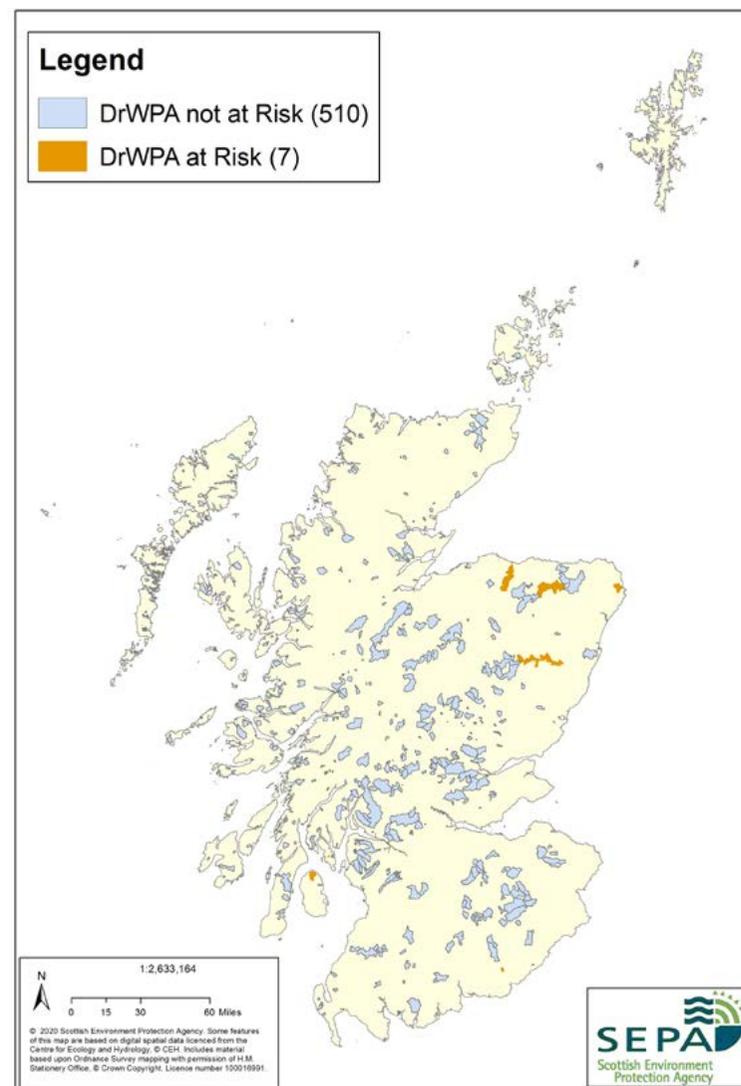
Surface water Drinking Water Protected Areas

- Seven of the 517 surface water DrWPAs in Scotland are identified as being at risk of deterioration from pesticides. This represents less than 2% of all such areas.

Map opposite:

Drinking Water Protected Areas (DrWPAs) in Scotland at risk of failing to meet Article 7 objectives due to pesticides

Source: [Scottish Environment Protection Agency \(SEPA\)](https://www.sepa.gov.uk)



6.5 Scotland

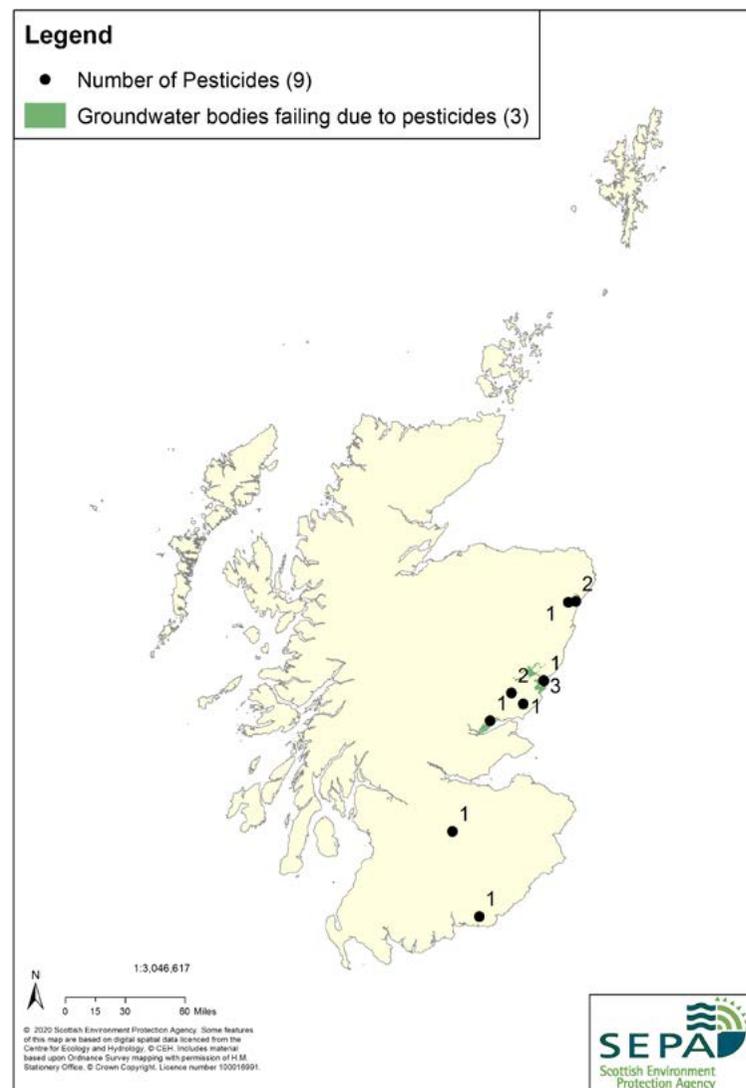
Groundwater bodies failing WFD objectives due to pesticides

- Three groundwater bodies in Scotland are currently assessed as failing 'good status' due to the levels of pesticides in 2018.
- One of the failures is for atrazine and the other two are for simazine. These active substances are no longer approved for use.
- Monitoring during 2018 at sampling locations detected around 28 active substances above the limit of detection.
- The top five active substances detected (by frequency) were:
 - atrazine (22 samples), no longer approved (since 2007);
 - simazine (15 samples), no longer approved (since 2007);
 - oxadixyl (11 samples), no longer approved (since 2003);
 - bentazone (6 samples);
 - triclopyr (6 samples).
- Of these detections, 13 results exceeded 0.075 µg/l. This is the concentration that denotes a risk of breaching the 0.1 µg/l limit.
- The top active substances detected (by frequency) were simazine and atrazine (three samples each), and third was tebuconazole (two samples). Overall, fewer than 3% of the analyses carried out by SEPA for groundwater resulted in the detection of a residue, and of these, 0.3% of analyses threaten to exceed the 0.1 µg/l limit.

Map opposite:

Groundwater bodies failing good status due to pesticides. The map also shows the number of active substances present which threaten to exceed 0.1 µg per litre for each at risk monitoring location.

Source: SEPA



6.6 Wales: 2018 monitoring results

Surface water Drinking Water Protected Areas

Data for 2015 were reported in the Pesticides Forum's 2016 annual report, on page 31.

No new data are available.

Surface water bodies not currently meeting WFD Environmental Quality Standards for Pesticides

Data for 2015 were reported in the Pesticides Forum's 2015 annual report, on page 19.

An interim surface water classification has been published at <http://waterwatchwales.naturalresourceswales.gov.uk/en/>. No EQS exceedances were reported for pesticides.

Groundwater bodies failing WFD objectives due to pesticides

Data for 2015 were reported in the Pesticides Forum's 2016 annual report, on page 31.

The next update is due in 2021.

6.7 Northern Ireland

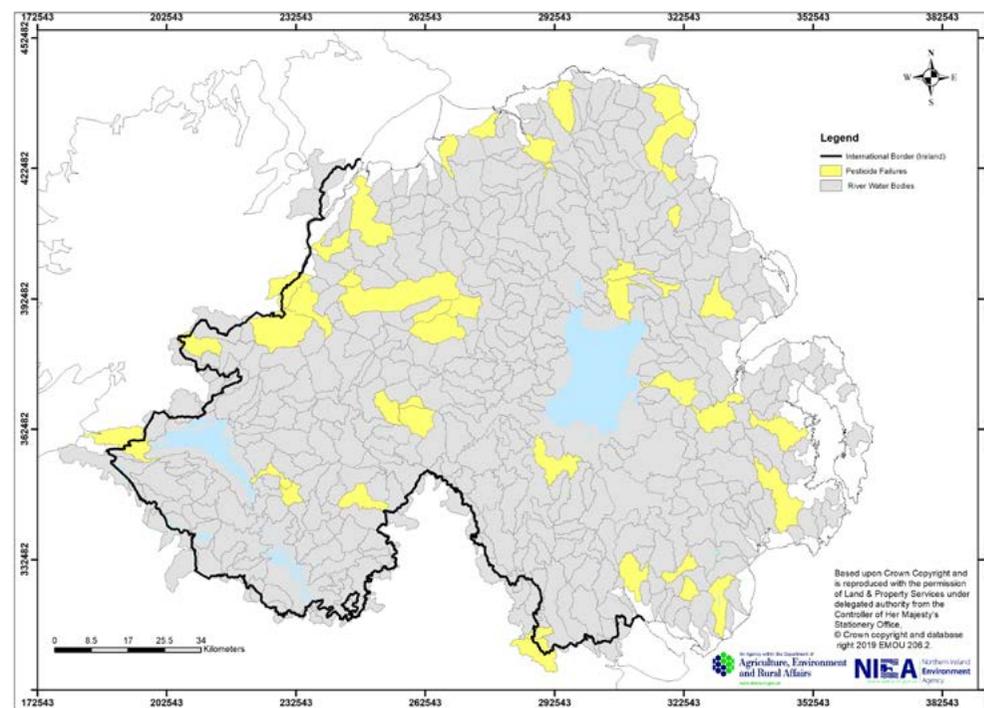
Surface water monitoring

- Surveillance monitoring data collected during the second river basin management plan (RBMP) cycle (2015 to 2021) show WFD EQS pesticide breaches in 41 of the 450 river water bodies in Northern Ireland (identified in the map opposite). All of these are attributed to cypermethrin, which is also used as a veterinary medicine.
- In four of these river water bodies, there were additional breaches due to these pesticides:
 - diazinon caused breaches in two river water bodies
 - permethrin caused breaches in two river water bodies
- One river water body is at less than 'good overall' status due to a pesticide breach, attributed to cypermethrin.
- During the second RBMP cycle, samples were analysed for urea herbicide and acid herbicide suites between July 2015 and June 2016, glyphosate between July 2016 and June 2017, generic pesticides between August 2017 and July 2018, and fungicides between September 2018 and October 2019. No EQS breaches were found for any of these substances.

Surface water Drinking Water Protected Areas: A programme of monitoring of Drinking Water Protected Areas has been agreed by NIEA (DWI and Water Management Unit) and NI Water. The results of this programme are included in the section above. From 2019, this has been supplemented by a programme of screening for a range of pesticides and trace organics in those DrWPAs deemed most at risk.

Source: Department of Agriculture, Environment and Rural Affairs Northern Ireland ([DAERA-NI](https://www.daera-ni.gov.uk/))

River water bodies in Northern Ireland not currently meeting WFD EQS for pesticides



6.8 Northern Ireland

Groundwater monitoring

In 2018, monitoring of the 56 sites comprising the Northern Ireland Groundwater Monitoring Network showed three positive detections of three substances, across three sites. Those detected were:

- chlorotoluron
- glyphosate
- simazine (no longer approved (since 2007))

Each of these detections were at three separate sites and the only positive detection at each site.

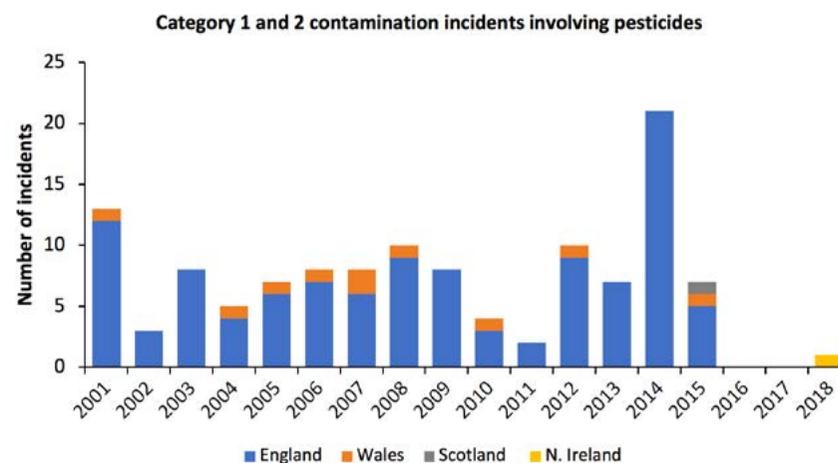
Two of these exceeded the drinking water standard (0.1 ug/l), chlorotoluron with a value of 0.771 ug/l and glyphosate with a value of 1.189 ug/l.

Source: DAERA (Northern Ireland Environment Agency)

6.9 Substantiated category 1 and 2 contamination incidents, involving agricultural and non-agricultural pesticides

- **England:** There were no substantiated category 1 and 2 incidents in 2018.
- **Scotland:** No serious incidents involving pesticides were investigated by SEPA during 2018. SEPA does not necessarily capture all pesticide incidents in Scotland, only those reported to them or those that come to light through their normal work.
- **Wales:** No substantiated category 1 or 2 incidents were reported in 2018.
- **Northern Ireland:** There was one category 1 incident reported in 2018. This was agriculture-related, and the result of an accident.

Source: Environment Agency, Scottish Environment Protection Agency, [Natural Resources Wales](#), DAERA



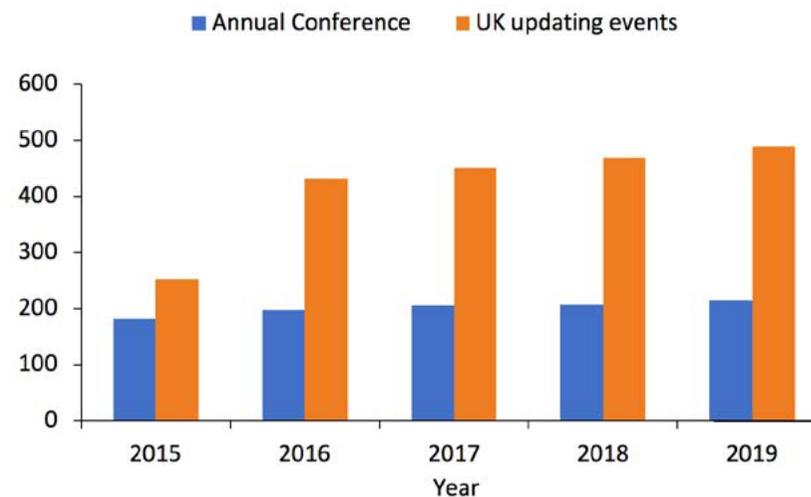
Part 7: Reduction of risk in specific areas

7.1 The Amenity Forum's activities in 2019

- 2019's annual conference received a record attendance (215 registrations).
- 14 free updating workshops were held across UK in 2019: 11 in England (359 attended) and one each in Scotland (25 attended), Wales (80 attended), and Northern Ireland (25 attended).
- 560 people are on recognised amenity continuing professional development schemes; there is potential to increase these, and a great deal of work is being undertaken in this area.
- 258 amenity contractors now hold the Amenity Assured standard. This includes 172 Lawn Assured.

Source: [Amenity Forum](#)

Number of registrations for Amenity Forum events

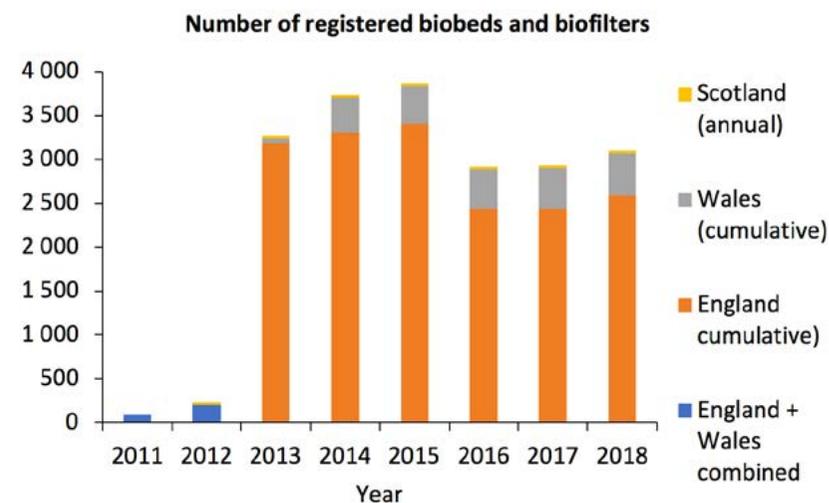


Part 8: Handling and storage of pesticides and treatment of their packaging and remnants

8.1 Number of registered biobeds and biofilters

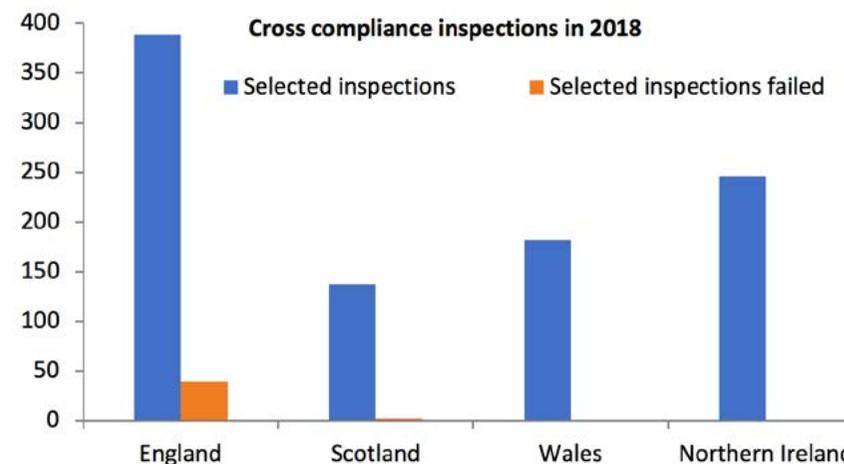
- Biobeds and biofilters offer a solution for ensuring pesticide losses to surface and groundwater are minimised.
- In England and Wales, site operators installing biobeds or biofilters must register a waste exemption with the EA or NRW. This is because treatment of pesticide washings in a biobed or biofilter is a waste management activity.
- Similar but separate arrangements exist in Scotland, where exemptions must be registered with SEPA.
- In England and Wales, the exemption lasts three years, whereas in Scotland it lasts 12 months.
- The 2013 increase reflects work by regulators and industry to promote uptake.
- In 2018, the number of registered biobeds and biofilters was: England (2589) (232 in 2018); Wales (46 exemptions issued in calendar year 2018); Scotland (five issued in 2018).

Source: SEPA, NRW, EA



8.2 Number of cross compliance breaches found during inspection in 2018 (SMR 10) (Proper use of Plant Protection Products)

- England: Of 388 selected inspections there were 13 failures under SMR 10 and 26 under SMR 4 (record-related requirements). There were a further three failures under SMR 10 during standalone inspections.
- Scotland: Of 137 selected inspections there were two failures under SMR 10 and none under SMR 4 (record-related requirements). There was a further failure under SMR 10 during standalone inspections.
- Wales: Of 182 selected inspection there were no failures under SMR 10 and no failures under SMR 4 (record-related requirements). No failures were found under SM10 standalone inspections.
- Northern Ireland: Of 246 selected inspections there were no failures under SMR 10 and no failures under SMR 4 (record-related requirements). There were no standalone inspections under SMR 10.



Source: [Rural Payments Agency](#) (England), [Rural Payments and Inspections Division](#), Scottish Government (Scotland), [Rural Payments Wales](#), [Feed and Food Inspectorate](#) DAERA (Northern Ireland)

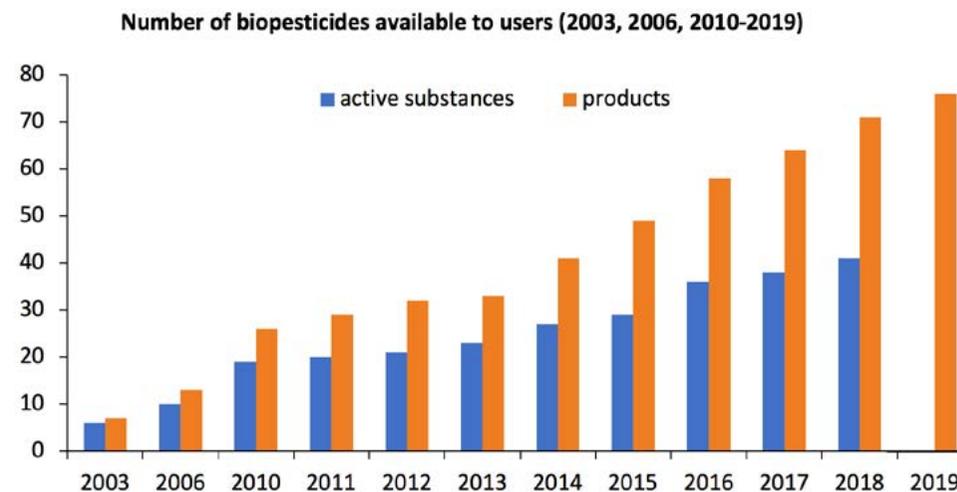
Part 9: Low pesticide input management, including Integrated Pest Management (IPM)

9.1 Cumulative numbers of active substances and products approved as biopesticides in UK (2003, 2006, 2010-2019)

- Dates included are:
 - 2003: date of the pilot exercise
 - 2006: biopesticide scheme started
 - 2010 to 2019

Following the success of the pilot scheme, the [biopesticides scheme](#) was introduced in 2006, to maximise the likelihood of successful applications. The scheme was reviewed in 2013.

Source: HSE

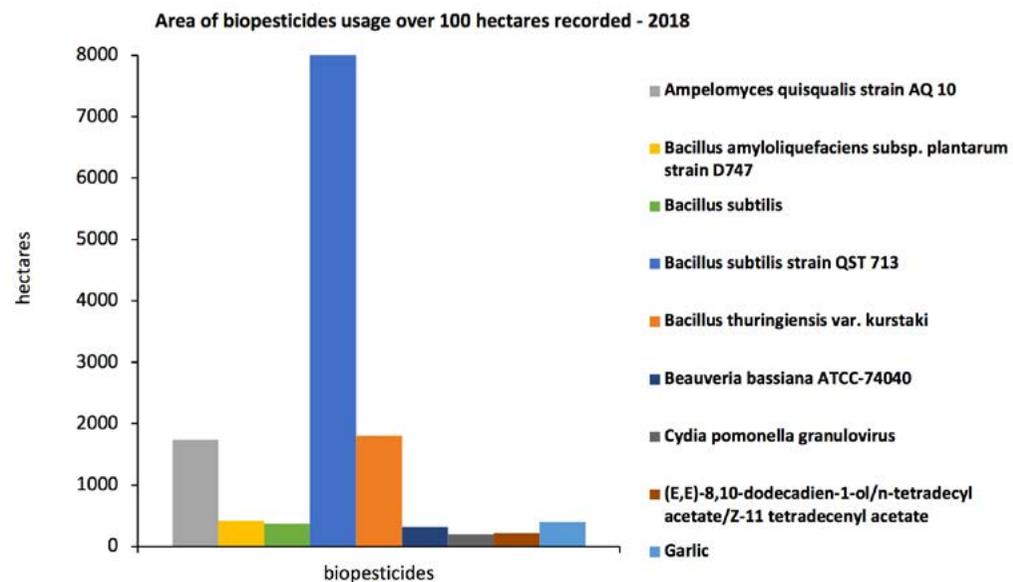


9.2 Biopesticide usage in the UK recorded during Pesticide Usage Surveys in 2019 (on usage in 2018 and where area treated is over 100 hectares)

- Not all uses are captured in surveys. Forestry, ornamental crops, hops and mushrooms are excluded from the surveys.
- Crops surveyed in 2018 were arable crops, orchard crops and soft fruit crops grown in the UK in the 2017/18 season, and potato stores.
- The actives included in the chart are as reported to the PUS, and so might not reflect exactly the approved strains.

Source: Fera Pesticide Usage Surveys

Note: Only those products with the requisite Ministerial Approved Pesticide Product (MAPP) number ensure safety to humans and the environment and effectiveness of control when used in accordance with the product label.

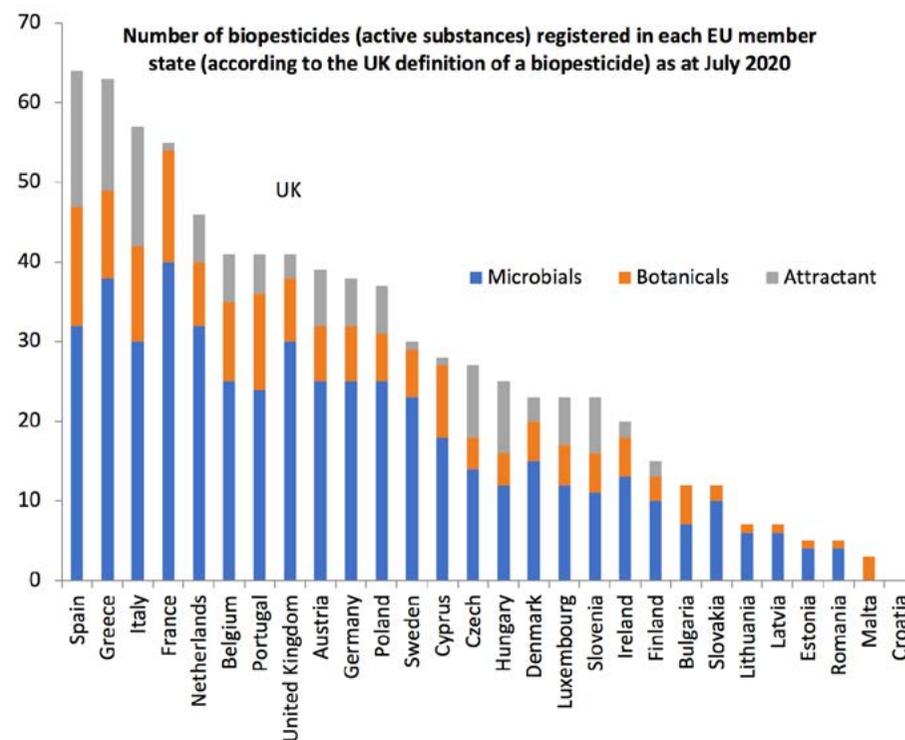


9.3 Comparison of numbers of biopesticide active substances authorised for use in EU member states (at July 2020)

- The UK definition of a biopesticide is “plant protection products which contain biological control agents (microbials, pheromones, plant extracts etc) for use as agricultural, horticultural and home garden pesticides”.
- They are divided into four categories:
 - products based on pheromone or semiochemical (for mass trapping or trap cropping)
 - products containing a microorganism (eg bacterium, fungus, protozoa, virus, viroid)
 - products based on plant extracts
 - other novel alternative products

Note: Figures are taken from the EU Pesticides database.

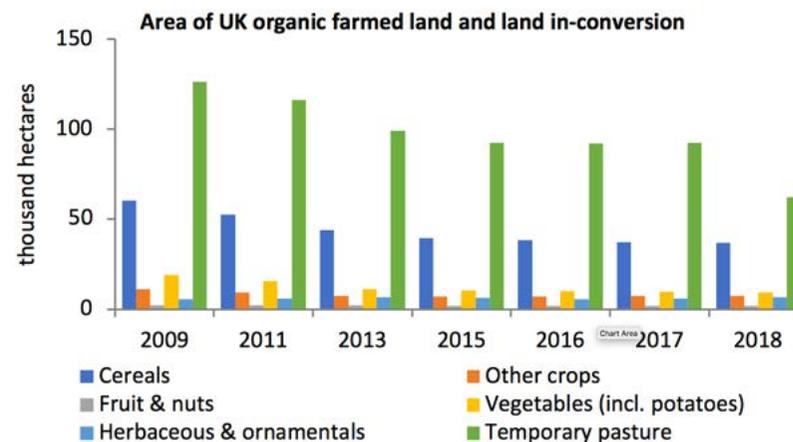
Source: [EU Pesticides database](#)



9.4 Area of organic and in-conversion land use and crops in UK

- In 2018, 474 000 hectares of UK land was organically farmed (both fully converted land and areas under conversion). This represents 2.7% of the total farmed area on agricultural holdings in the UK: 61% of the UK's total organic farmed area was in England.
- The area of UK land organically farmed decreased by 8.4% in 2018 (compared with 517 000 hectares in the UK in 2017). There has been an overall decline from the peak of 743 500 hectares in 2008.
- Permanent grassland accounted for the biggest share of the UK organic area in 2018 (70%), followed by temporary pasture (13%) and cereals (8%).
- Cereals, vegetables including potatoes, and other arable crops have all shown a decline since the late 2000s, mirroring the fall in the land area farmed organically since 2008.
- The area in-conversion expressed as a percentage of the total organic area rose slightly again in 2018, to 6.9%. This was the fourth consecutive increase since 2014.

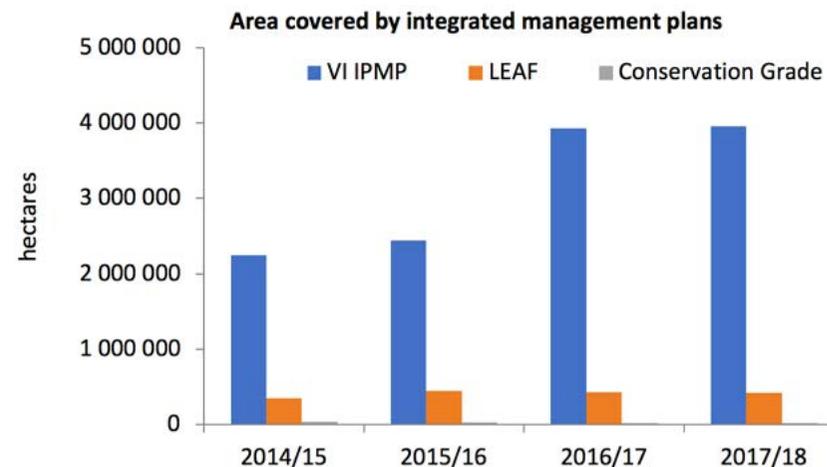
Source: [Defra Organic farming statistics 2019](#)



9.5 Integrated pest management plans (IPMPs)

- IPM plans (IPMPs) were introduced in 2014 and are required for membership of farm assurance schemes, such as Red Tractor. In 2016, the Scottish VI group and NFU Scotland developed a specific IPMP for Scotland in collaboration with Scotland's Rural College (SRUC).
- IPMPs use a range of cultural, chemical, physical and biological controls to help ensure economically and environmentally sustainable management of pests, weeds and diseases.
- LEAF Marque assurance scheme requires that an implemented crop health and protection plan, including IPM strategy, is in place as part of their members' annual audit. Conservation Grade farmers also fulfil the objectives of IPM.
- We have not updated the chart, as IT issues with the VI IPM plan database prevented the hectarage data being extracted in time for this report. These issues are being resolved, so we should be able to update the chart in our 2020 report.
- As at 31 March 2019, the LEAF Marque assurance scheme covered 305 465 hectares across the UK.
- The chart shows the area covered by IPMPs, including LEAF Marque and Conservation Grade assurance farming schemes, which meet IPMP requirements, and Scottish IPMPs.

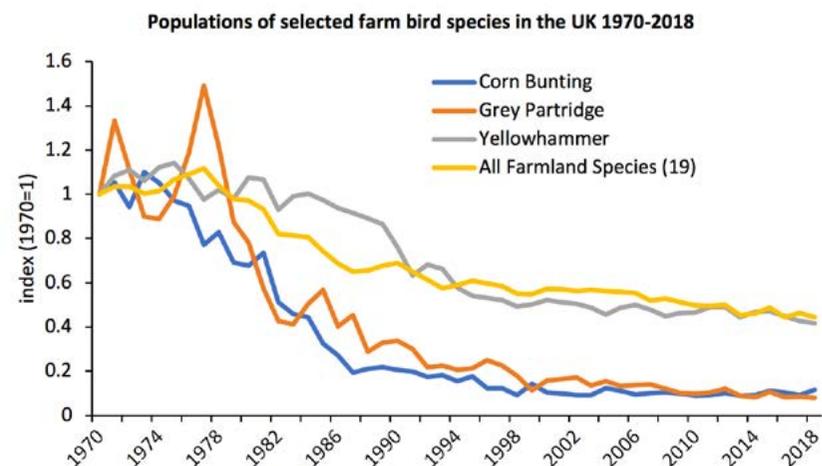
Source: [Voluntary Initiative \(VI\)](#)/[LEAF/Conservation Grade](#)



9.6 Populations of selected farmland bird species in the UK

- The grey partridge continues to show a strong decline; by 2016 the smoothed index had decreased by approximately 92% relative to 1970 levels.
- Over the same period, the corn bunting index has declined by 89% and yellowhammer by 57%.
- These three species are farmland specialists (they are restricted to, or highly dependent on, farmland habitats) and are known to be indirectly affected by pesticide use.
- The bird population indices have been compiled in conjunction with the Royal Society for the Protection of Birds, the British Trust for Ornithology, the Wildfowl and Wetlands Trust and the Joint Nature Conservation Committee.

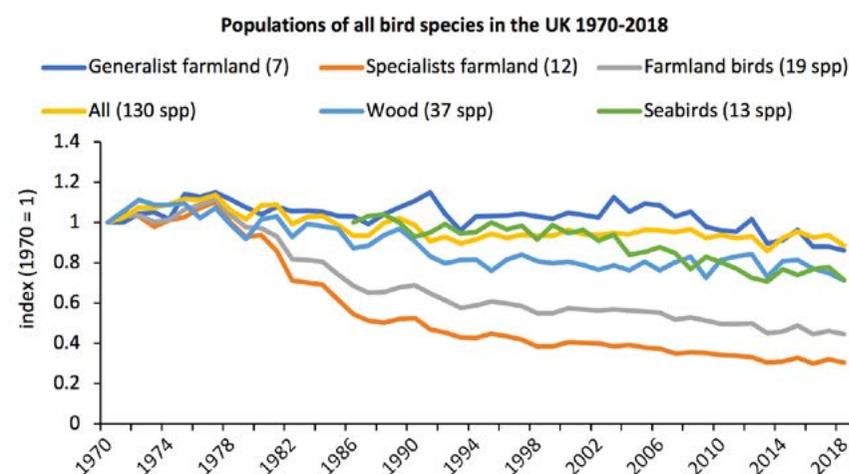
Source: [Defra](#)



9.7 Populations of all bird species in the UK

- The UK breeding farmland bird index, made up of 19 species including the corn bunting, grey partridge and yellowhammer, declined by 56% between 1970 and 2017.
- Over this time, 21% of the species in the indicator showed a weak increase, 16% showed no change and 63% showed either a weak or a strong decline.
- Most of the declines in farmland bird populations occurred between the late 1970s and the 1980s, largely due to the negative impact of rapid changes in farmland management during this period. Efforts to help farmland wildlife, including through agri-environment schemes, have so far slowed but not halted declines.
- There was an ongoing decline of 6% in breeding farmland birds between 2012 and 2017.

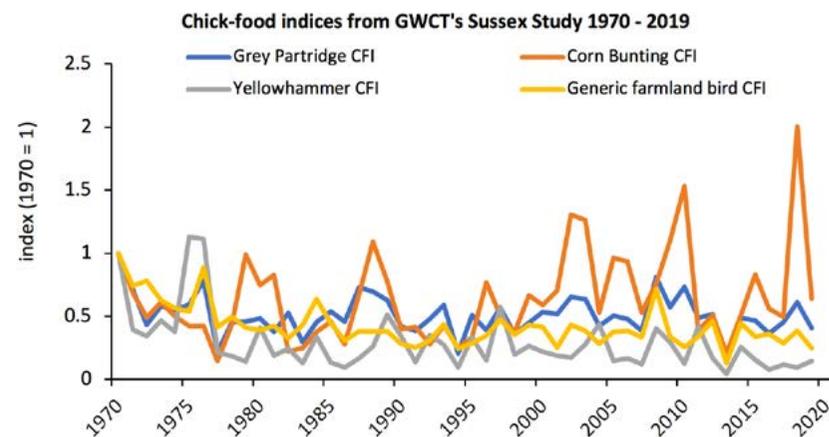
Source: Defra



9.8 Chick food index (CFI)

- The long-term trend in four indices of chick food resources from the Game and Wildlife Conservation Trust's Sussex Study is shown opposite. The indices are updated for two years, with information now available for 2018 and 2019. The chick food indices for grey partridge and corn bunting were higher in 2018 than in 2019, as was the generic farmland bird index, while the index for yellowhammer was lower in 2018, although only minimally so. This correlates well with the grey partridge chick survival rate across the Sussex Study, which was higher in 2018 (43%) than in 2019 (31%), with the 2019 values raising concern as 33% chick survival is needed to maintain grey partridge numbers.
- Chick food indices are calculated using the abundance of invertebrates collected from cereal fields. Samples are taken in the third week of June. The graph shows the change in each index relative to 1970, the first year that data are available. The dataset from Sussex now runs for 50 years, with results from it helping to inform the current debate around declines in invertebrate numbers in general, not just chick food.

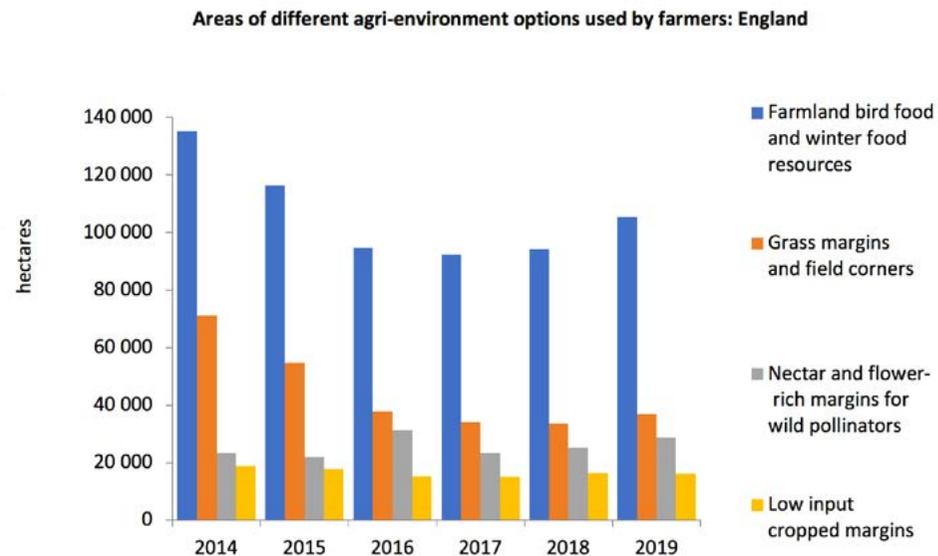
Source: [The Game and Wildlife Conservation Trust](#) (GWCT)



9.9 Areas of different agri-environment options used by farmers: England

- Environmental Stewardship (comprising (Organic) Entry Level Stewardship (ELS) and Higher Level Stewardship (HLS)) closed for new entrants in 2014. In July 2015, its successor scheme, Countryside Stewardship (CS), commenced with new agreements starting in January 2016.
- The chart opposite includes features from both schemes. The final five-year agreements under ELS continued to be 'live' until 2018 and those in HLS will continue until 2023.
- Since 2016, there is a further CS option of farmland bird food and winter food resources, measured by weight (in addition to the hectare planted measure): 198 tonnes in 2016; 779 tonnes in 2017; 1517 tonnes in 2018 and 3086 tonnes in 2019.

Source: Natural England



9.10 Areas of different agri-environment options used by farmers: Scotland

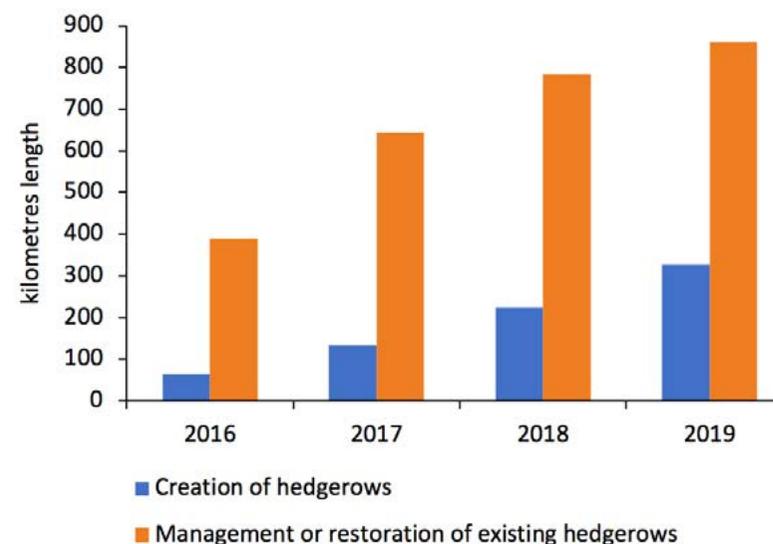
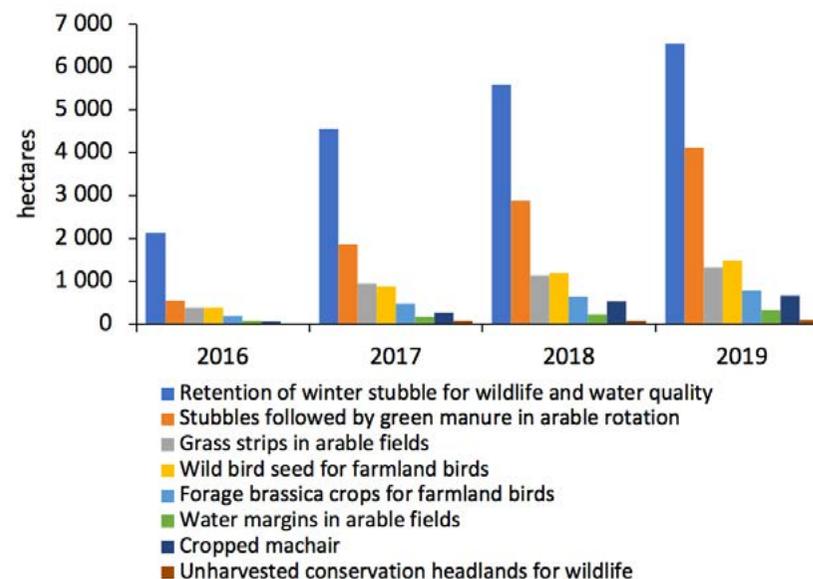
- The Agri-Environment Climate Scheme promotes land management practices which protect and enhance Scotland's natural heritage, improve water quality, manage flood risk and mitigate and adapt to climate change.
- Options under the scheme include those for: arable land; grassland; upland, peatland, moorland and heath; and managing water quality and flood risk.
- The scheme is delivered jointly by the Rural Payments and Inspections Division of the Scottish Government and Scottish Natural Heritage.
- The chart opposite shows the hectareage of options. The chart below that one shows the length of hedgerows covered by the scheme, from 2016 to 2019.
- The chart opposite has been updated to reflect actual figures for 2019, rather than what had been signed up for.

Source: [Scottish Government](#)

Other options under the scheme include:

- Beetle banks (taken up by 11 businesses), length in metres:
 - 2017: 3845 metres
 - 2018: 3838 metres
 - 2019: 5419 metres
- In 2019, the five most popular options (number of businesses in brackets) were:
 - wild bird seed for farmland birds (937)
 - retention of winter stubble for wildlife and water quality (698)
 - management or restoration of existing hedgerows (445)
 - grass strips in arable fields (419)
 - water margins in arable fields (418)

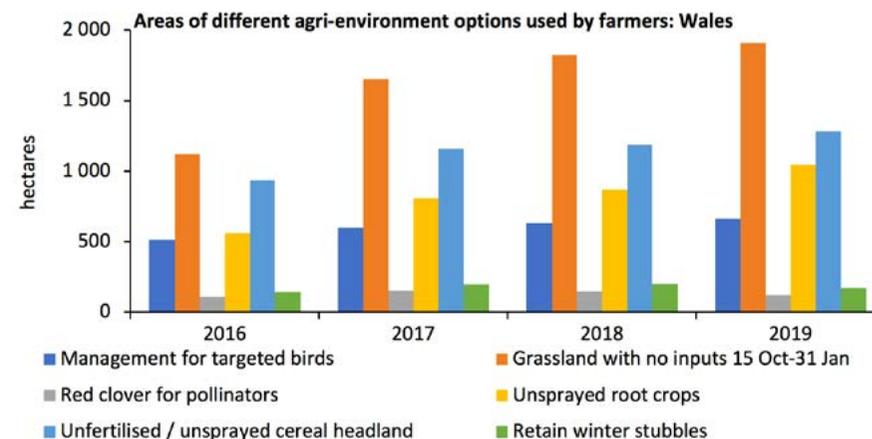
Source: Scottish Government



9.11 Areas of different agri-environment options used by farmers: Wales

- Agri-environment schemes were established in Wales in 1992. The present agri-environment scheme, Glastir, is a five-year sustainable land management scheme which is designed to deliver environmental aims including improving water quality and reversing the decline of Wales' native biodiversity.
- The Whole Farm Code is a basic requirement. It limits the use of herbicides on habitat land to spot treatment to control notifiable weeds and invasive alien species or to control invasive vegetation on historic features, traditional buildings and farm structures. In addition to this, for certain vulnerable habitats or for land near to water courses, there is an additional management option that prevents the use of pesticides.
- Under the scheme, there are also management options which address the use of pesticides on arable and improved grassland. Management options which limit the use of pesticides are targeted to certain species, such as birds or pollinators.
- Whole Farm Code uptake in 2019 shows increased pesticide restrictions on habitat land.

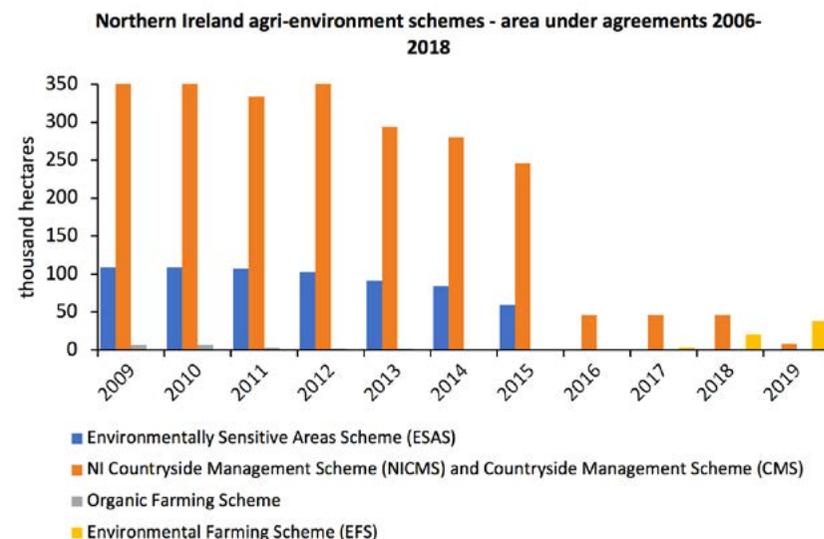
Source: [Welsh Government](#)



9.12 Agri-environment schemes: Northern Ireland (NI)

- The Environmental Farming Scheme (EFS) opened in 2017.
- The scheme aims to protect and enhance biodiversity and water quality, and mitigate against climate change.
- The Higher Level is for environmentally designated land and priority habitats. It aims to put environmentally beneficial land practices in place to achieve favourable conservation status.
- The Wider Level is focussed on creating green infrastructure on land outside of Higher Level areas, such as riparian margins, new hedgerows, native woodland and winter feed crop for wild birds.
- Some 4968 agreements are in place after three intake tranches, covering approximately 49 000 hectares of land.
- A fourth intake tranche will be opened for both levels in 2020.
- EFS has lower area coverage than previous NI agri-environment schemes because it is not a ‘whole farm’ scheme. The Higher Level is prioritised to SACs, SPAs and other environmentally designated land. The Wider Level is focussed on creating areas of green infrastructure on more intensively farmed land.
- Many of the management options in both the Higher and Wider levels restrict or prohibit the use of pesticides.

Source: DAERA-NI



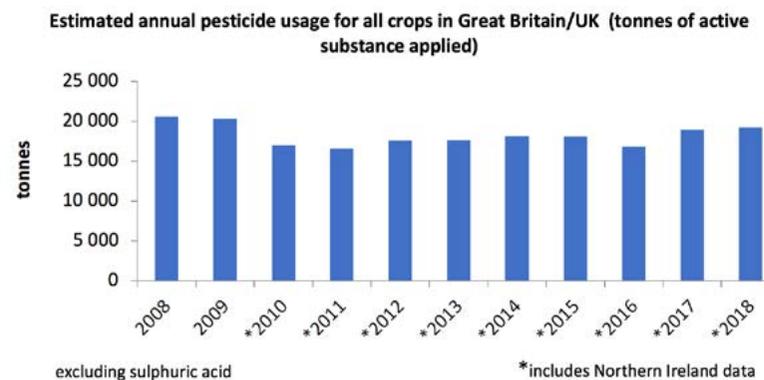
Part 10: Indicators

10.1 Estimated annual pesticide usage for all crops in Great Britain/UK (tonnage of active substance applied)

- Different crops are surveyed each year.
- In 2018, the crops were:
 - arable crops
 - orchards
 - soft fruit
 - potato stores

Not all crops are surveyed every year. In years where crops are not surveyed, the figures from the previous year are included in the chart.

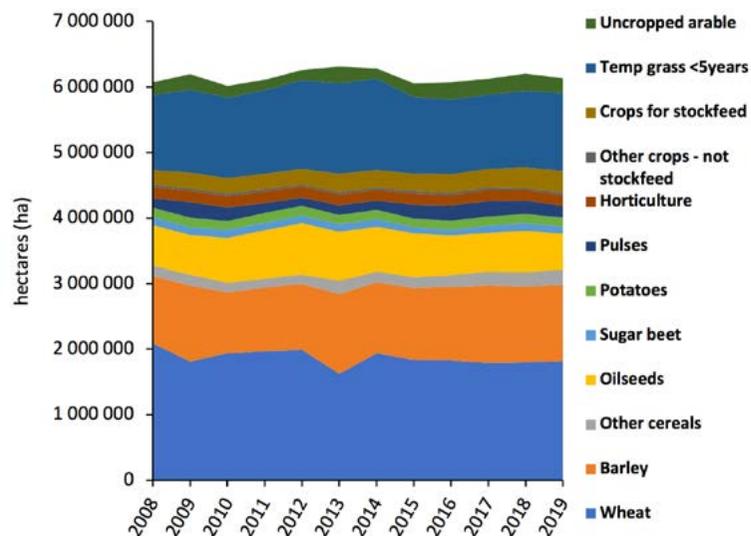
Source: Fera Pesticide Usage Surveys



10.2 Cropped areas in the UK (2008 to 2019)

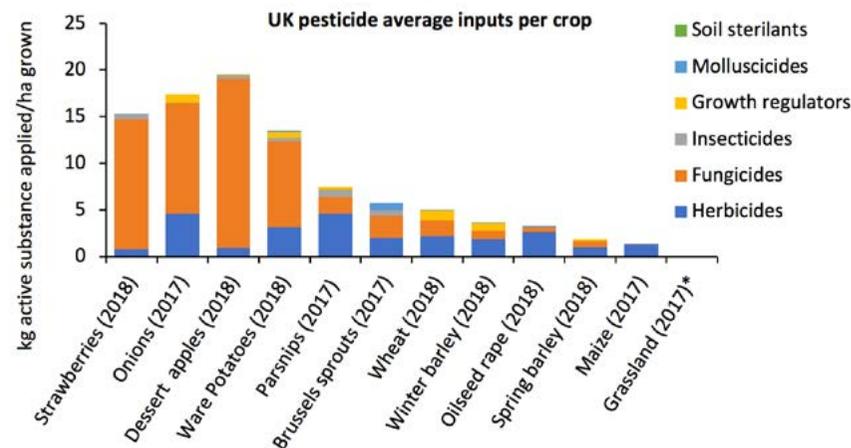
- Croppable land consists of cereals, oilseed rape, potatoes, other arable crops, horticultural crops, uncropped arable land and temporary grass.
- The three crops grown on the greatest area in the UK are wheat, barley and oilseed rape.
- The area of wheat has decreased slightly, from 2.08 million hectares in 2008 to 1.82 million hectares in 2019.
- The area of barley has increased slightly from 1.03 million hectares in 2008 to 1.16 million hectares in 2019.
- The oilseed rape area in 2012 reached a record high of 756 000 hectares. In 2019, it was 547 000 hectares, 10% lower than in 2018 (609 000 hectares).

Source: Defra



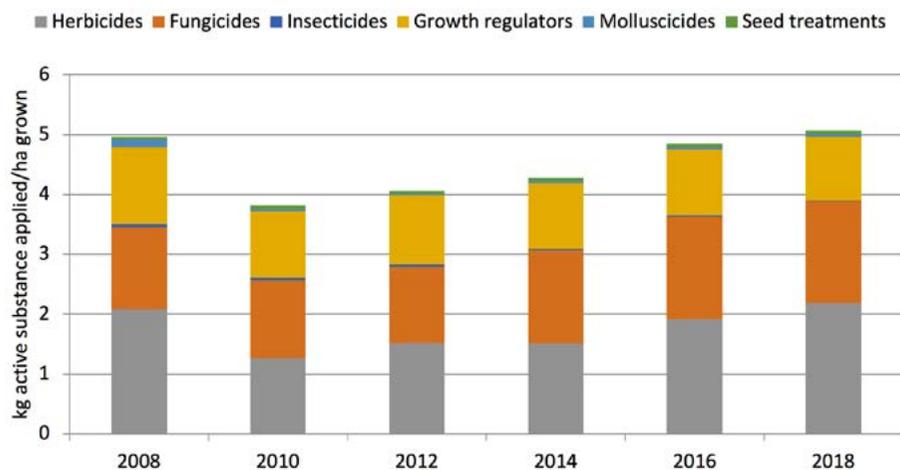
10.3 UK pesticide average inputs per crop (including soil sterilants)

- The new data are from 2018 surveys of strawberries, dessert apples (Cox and other dessert apples), ware potatoes, wheat, winter barley, spring barley and oilseed rape.
- The chart shows that some crops had more pesticide input to ensure the production of a marketable crop. Dessert apples, in contrast to many of the other crops surveyed, are a perennial crop, with orchards encountered in the 2018 survey being between 10 and 20 years old. Applications to dessert apples, mainly fungicides to control scab, mildew and canker, are used both to improve the fruit quality during the year and tree health in subsequent years. Fungicide usage for disease control on both strawberries and ware potatoes accounted for the majority of the weight of pesticides applied to these two crops.
- All values exclude seed treatments.
- Soil sterilants are used on a limited range of crops. In contrast to previous years, there was no usage of soil sterilants on the highlighted crops. Soil sterilant usage on strawberries has been encountered in previous surveys, but growing strawberries in substrate systems, such as bags and troughs, has reduced the need for soil sterilants.



* on grassland, the only inputs were insecticide and growth regulators, each less than 0.01kg/ha
 Source: [Fera Pesticide Usage Surveys](#)

10.4 UK pesticide average inputs for wheat



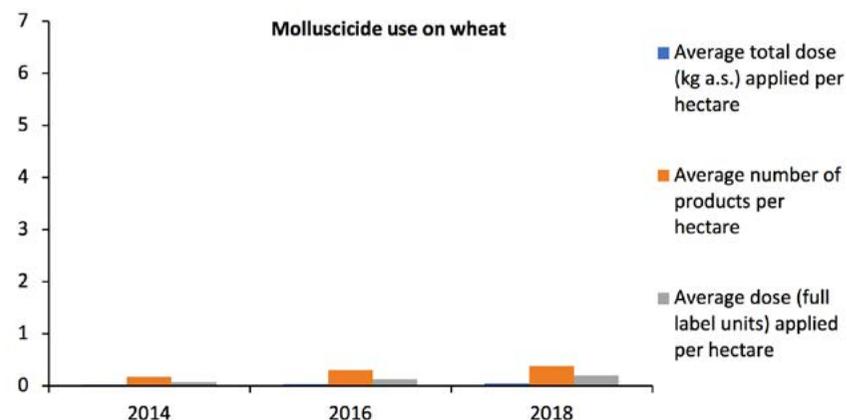
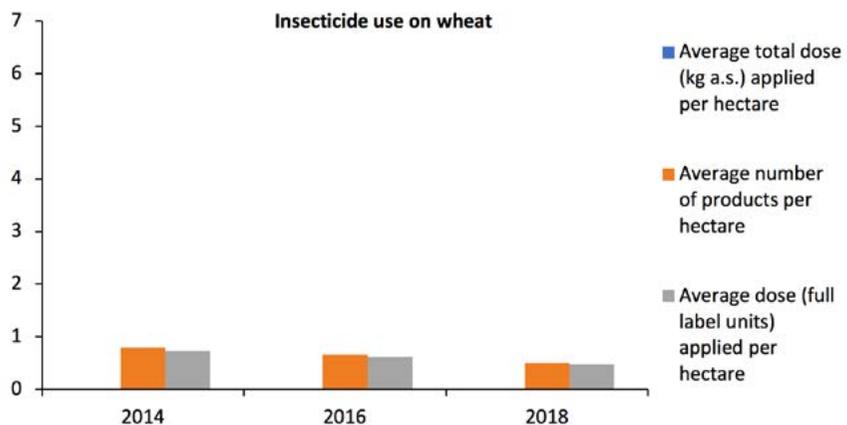
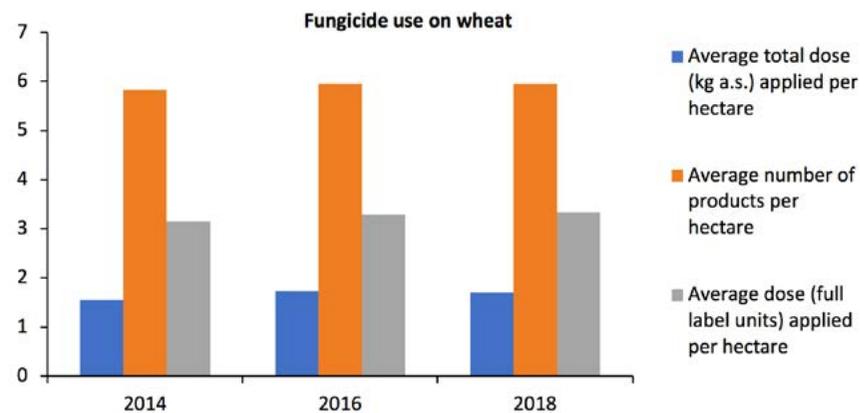
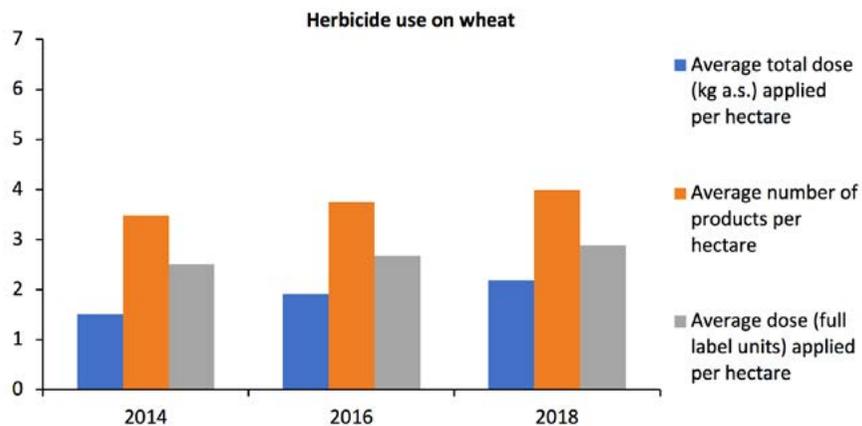
Source: Fera Pesticide Usage Surveys

10.5 UK pesticide usage on wheat

(Please see the charts on the following page.)

- Fungicide active substance inputs in 2018 increased slightly compared to 2016. In 2018, the main diseases recorded were Septoria and rust. Chlorothalonil was the principal fungicide active substance used. Compared to other fungicides used on wheat, chlorothalonil has a relatively high rate of application and would have contributed significantly to the increase in the total dose applied in recent years. However, most products containing chlorothalonil lost their approval in 2019.
- Compared to 2000, herbicide usage on wheat has shown relatively little change, with an average of four products and 2.2 kg/ha in both 2000 and 2018. By contrast, the average dose (full label units) applied per hectare has increased from 2.37 in 2000 to 2.89 in 2018. This could be because of active substances, such as iodosulfuron-methyl/mesosulfuron, first introduced in 2006 and the third most used herbicide in 2018, having fixed non-variable rates of application.
- Insecticide usage on wheat in 2018 was largely dominated by lambda-cyhalothrin, which accounted for 74% of all insecticides applied. The recommended rate of lambda-cyhalothrin is 0.005 kg/ha, and as only 33% of the wheat crop was treated in 2018, this has resulted in an average rate of application less than 0.01 kg/ha grown.
- There has been an increase in the use of molluscicides on wheat in 2018 compared to 2016. The average total dose (kg of active substance) applied per hectare has risen from 0.04 kg/ha in 2016 to 0.05 kg/ha in 2018. However, as molluscicide usage is seasonal and applied more in wetter periods when slugs are active, all measures have shown fluctuations.

10.5 UK pesticide usage on wheat (continued)



Acknowledgements

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