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# Environmental impact of neonicotinoids and other pesticides

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## Summary

There will be a debate in Westminster Hall on Tuesday 5 March 2024 on the environmental impact of neonicotinoids and other pesticides. The debate will be opened by Samantha Dixon MP.

# 1 Background

## 1.1 Use of pesticides

Pesticides now protect around a third of all agricultural goods globally.<sup>1</sup> In general, pesticides are used in agriculture to help ensure food supplies by enhancing crop productivity and preventing damage to plants from pests, moulds and toxins. The term pesticide covers a wide range of compounds including insecticides, fungicides, herbicides, rodenticides, molluscicides, nematocides, plant growth regulators and others.

Pesticides are highly regulated products in the UK, used to protect crops during production and storage and for landscape management. The Health and Safety Executive (HSE) regulates the use of pesticides (plant protection products or PPPs) and [publishes a list of approved PPPs](#).

The National Farmers' Union (NFU) states that farmers only use pesticides "if they have to" and use other techniques where possible, such as rotating which crops are planted in certain fields, choosing varieties of crops that are more resistant to pests, and cultivating the land, and encouraging natural enemies, to help control weeds, insect pests and diseases. Without plant protection products, the NFU considers that some crop yields [could fall by up to 50 per cent](#):

some crops, such as frozen peas, apples and fresh carrots, would become extremely challenging to grow in the UK. It would also mean much more land would be needed to grow the same amount of food as is currently produced. Plant protection products also help keep food prices down.<sup>2</sup>

### Statistics on UK pesticide use

While a professional user of plant protection products must keep a record of the pesticides they use, there is [no general requirement to log these records](#) with a central database or send this information routinely to the pesticides regulator, the Health and Safety Executive. As such, comprehensive data on the total volume and frequency of pesticides use on all crops in the UK in an average year is not available.

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<sup>1</sup> Pathak Vinay Mohan et al, [Current status of pesticide effects on environment, human health and it's eco-friendly management as bioremediation: A comprehensive review](#), Frontiers in Microbiology vol 13, 2022

<sup>2</sup> NFU online, [Pesticides – your questions answered](#), 15 August 2023

There is some data available from [Fera](#)<sup>3</sup> which surveys pesticide usage for a selection of crops each year.<sup>4</sup> It does not provide data on specific pesticide use across all crops in a given year. The data only refers to pesticides used in agriculture and so excludes the amenities sector, urban areas (such as parks, playgrounds and pavements), fish farming, forestry, conservation and amateur use by gardeners.

The [2022 Fera report on arable crops](#),<sup>5</sup> shows that from 2014 to 2020, the total area treated with pesticides decreased by 24% and the weight of pesticides applied decreased by 8%. From 2020 to 2022, there was a 20% increase in the total area treated and an 18% increase in the total weight of pesticides applied to arable crops. However, the increase in area grown and the switch back to winter cropping in 2022 is likely to be the main reason for this increase in usage.

Figures for all pesticides used on arable crops are in the table below.

Pesticide usage on arable crops in the United Kingdom					
	2014	2016	2018	2020	2022
Weight applied (tonnes)	15,839	16,731	17,134	12,552	14,798
Area treated (million hectares)	51.4	50.8	50.0	39.0	46.9
Area grown (million hectares)	4.3	4.2	4.2	3.9	4.0

Source: Fera, [Pesticide usage survey report 309](#), Arable crops in the United Kingdom, 21 November 2023

## What are neonicotinoids?

Neonicotinoids (neonics) are active substances used in some plant protection products (PPPs) to control harmful insects, which means they are insecticides. The name means "new nicotine-like insecticides". Chemically similar to nicotine, they were developed in the 1980s and 1990s as the first new class of pesticides for 50 years. Neonics are a systemic pesticide which means they are taken up and transported throughout the plant – the flowers, leaves, roots, stems, pollens, and nectars. They have low toxicity towards mammals (including humans). Neonics can also be applied to a seed before planting, which is cheaper than applying to crops in the field. The

<sup>3</sup> The Food and Environment Research Agency (Fera) is no longer a government agency. On 1st April 2015 the Department for Environment, Food and Rural Affairs (DEFRA) sold it to form a new private and public sector joint venture known as Fera Science Ltd (Fera).

<sup>4</sup> The Food and Environment Research Agency (Fera) is no longer a government agency. On 1st April 2015 the Department for Environment, Food and Rural Affairs (DEFRA) sold it to form a new private and public sector joint venture known as Fera Science Ltd (Fera).

<sup>5</sup> Fera, [Published Reports](#), Arable crops in the UK 2022, 21 November 2023

leading developers of neonicotinoid pesticides include Bayer CropScience and Syngenta.<sup>6</sup>

A [2019 report published in the journal Environmental Health on trends in neonicotinoids](#) highlighted some of the advantages of neonics. These include:

- reducing the use of [organophosphate and carbamate](#) products which have human toxicity concerns
- higher persistence; effectiveness against a broad spectrum of crop pests; systemic properties which means that the product transfer into all parts of treated plants
- versatility in application (such as using leaf sprays or seed coating and soil treatment)
- high water solubility; and assumed lower impacts on fish and other wildlife.<sup>7</sup>

Neonicotinoids are the [most widely used class of insecticide in the world](#), with registration in 120 countries.<sup>8</sup> They represented more than 25% of the global pesticide market in 2018, with an estimated market value of \$4.75 billion.<sup>9</sup> Three types of neonicotinoid, thiamethoxam, imidacloprid and clothianidin, accounted for almost 85% of the total worldwide neonicotinoid sales in crop protection in 2012.<sup>10</sup>

## 1.2

## What environmental impacts do pesticides have?

The environmental advantages of pesticides generally come from their effectiveness in reducing crop loss. As noted above, the ability to apply neonics to the seed is cheaper, because less product is needed compared to applying to crops in fields. The NFU cites the widely used herbicide

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<sup>6</sup> Craddock, H.A., Huang, D., Turner, P.C. et al. [Trends in neonicotinoid pesticide residues in food and water in the United States, 1999–2015](#), Environmental Health 18, 7 (11 January 2019)

<sup>7</sup> Craddock, H.A., Huang, D., Turner, P.C. et al. [Trends in neonicotinoid pesticide residues in food and water in the United States, 1999–2015](#), Environmental Health 18, 7 (11 January 2019)

<sup>8</sup> Craddock, H.A., Huang, D., Turner, P.C. et al. [Trends in neonicotinoid pesticide residues in food and water in the United States, 1999–2015](#), Environmental Health 18, 7 (11 January 2019)

<sup>9</sup> Sparks et al, [Insecticides, biologics and nematocides: Updates to IRAC's mode of action classification - a tool for resistance management – Pesticide Biochemistry and Physiology, ScienceDirect](#), July 2020

<sup>10</sup> Grist, [Bee-killing pesticide companies are pretending to save bees](#)

[glyphosate](#) as an example of the benefits of plant protection products in reducing carbon emissions and land use:

without glyphosate the equivalent of an extra 12 million tonnes of CO<sub>2</sub> would be added to the atmosphere each year – the equivalent of the emissions from 2.5 million new cars – through additional use of machinery and bringing more land back into agricultural production to enable current yields to be maintained.<sup>11</sup>

However, concerns about the environmental impacts of pesticides ( in particular neonicotinoids as discussed below) have been growing.

There are several ways in which synthetic pesticides can negatively impact the environment, including by:

- Weakening soil quality and ability to retain moisture, potentially leading to lower crop yield
- Contaminating water supplies when they leach down through the soil or run-off after heavy rain, potentially harming aquatic life and affecting drinking water quality
- Contaminating air either directly or when in combination with other particles to form pollutants such as ground-level ozone
- Being ingested by pollinators when foraging for example, potentially harming bee health and bee colonies
- Reducing plant availability, potentially forcing animals to relocate to find food (as well as the animals potentially ingesting pesticides which can accumulate in their bodies and then pass up the food chain).<sup>12</sup>

The [European Environment Agency \(EEA\)](#) has said that even though several harmful active substances contained in pesticides have been banned in recent years, the use of chemical pesticides in Europe remains a “major source of pollution, an important driver of biodiversity loss and a possible cause of negative health impacts”. By affecting pollinators, soil microorganisms and pest control agents, pesticide use also threatens key ecosystem services which help maintain food security in Europe according to the EEA.<sup>13</sup>

A UN Environmental Programme (UNEP) [report on the environmental and health effects of pesticide use published in 2022](#) stated that pesticides pose risks to non-target organisms. However, environmental risks will range from “very high to virtually absent” because so many factors affect their impact.

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<sup>11</sup> NFU online, [Pesticides – your questions answered](#), 15 August 2023

<sup>12</sup> Envirotech online, [How do pesticides affect the environment](#), 10 December 2022

<sup>13</sup> EEA, [Pesticides: what are the risks to our health and to the environment?](#) 15 June 2023

Factors include toxicity of the pesticide, its use pattern, exposure of non-target organisms, and the type of ecosystem exposed.<sup>14</sup>

The UNEP report noted that pesticides end up in different parts of the environment, so residues of pesticides and their metabolites are found in air, surface waters, groundwater, soil and biota.<sup>15</sup>

The campaign group, Pesticides Action Network UK (PAN), list impacts of pesticides on animals, birds and aquatic life on its website:

Animals may be poisoned by pesticide residues that remain on food after spraying. An application of pesticides in an area can eliminate food sources that certain types of animals need, causing the animals to relocate, change their diet, or starve. Poisoning from pesticides can even make its way up the food chain; for example, birds can be harmed when they eat insects and worms that have consumed pesticides [...]

Fish and other aquatic biota may be harmed by pesticide-contaminated water. Application of herbicides to bodies of water can cause plants to die, diminishing the water's oxygen and suffocating the fish. Repeated exposure of some pesticides can cause physiological and behavioural changes in fish that reduce populations.<sup>16</sup>

## Are neonicotinoids bad for bees?

The [Commons Library briefing, Bees and neonicotinoids](#), July 2017, discusses a number of key studies of the impacts of this type of pesticide on bees. Additionally, a 2022 study provides an analysis of the global research landscape on neonicotinoids including on ecological aspects.<sup>17</sup>

Farmers target neonics at crop-damaging pests, such as aphids which carry yellowing viruses that damage sugar beet. The pesticides affect the central nervous system of insects, leading to eventual paralysis and death of the targeted pest. However neonics can also affect other insects which are not the intended target.

[Several studies](#) have suggested that exposure to neonicotinoids at sub-lethal doses while foraging (for example by collecting pollen and nectar containing neonicotinoids) can have significant negative effects on bee health and bee

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<sup>14</sup> United Nations Environment Programme, World Health Organization, & Food and Agriculture Organization of the United Nations, [Environmental and Health Effects of Pesticide Use](#), 2022, Chapter 4.1

<sup>15</sup> United Nations Environment Programme, World Health Organization, & Food and Agriculture Organization of the United Nations, [Environmental and Health Effects of Pesticide Use](#), 2022, Chapter 4.3.1

<sup>16</sup> Pesticide Action Network UK, [Impacts of pesticides on the environment webpages](#) (accessed 27 February 2024)

<sup>17</sup> Doris Klingelhöfer, Markus Braun, Dörthe Brüggmann, David A. Groneberg, [Neonicotinoids: A critical assessment of the global research landscape of the most extensively used insecticide](#), Environmental Research, Volume 213, 2022,

colonies, including (perhaps) lower egg production and less honey being produced.<sup>18</sup> Over the last decade or so, neonicotinoids have been suggested as a possible factor in the colony collapse disorder of bees.<sup>19</sup> Colony Collapse Disorder is characterized by the rapid disappearance of adult bees from colonies and there has been debate about its causes.

Neonicotinoids' effects are not yet fully understood (and differ among neonicotinoids). Many other factors, such as habitat and parasites, are also involved in pollinator health and the debate is complicated by a lack of understanding about the relative importance of pesticides as a driver of bee declines.<sup>20</sup> There are gaps in the evidence. [Xerces, the society for invertebrate conservation, published an updated report](#) in 2016 on the impacts of neonics on bees. It identified key questions for further research such as how the chemicals move through plants, remain and build-up in soils, and affect other pollinators such as beetles, flies, moths and wasps.<sup>21</sup>

None the less, there are an increasing number of studies adding to the evidence base,<sup>22</sup> such the European Food Safety Agency (EFSA) 2018 study providing additional data supporting concerns about bee health.<sup>23</sup> The 2018 study updated [EFSA's 2013 study](#) which had led to the EU restricting neonicotinoid use in 2013 EFSA carried out an extensive data collection exercise, including a systematic literature review, to gather all the scientific evidence published since the previous evaluations. The weight of evidence, it found, supported the EFSA position. It concluded that "most uses of neonicotinoid pesticides represent a risk to wild bees and honeybees". It added that:

There is variability in the conclusions, due to factors such as the bee species, the intended use of the pesticide and the route of exposure. Some low risks have been identified, but overall the risk to the three types of bees we have assessed is confirmed.<sup>24</sup>

In February 2023, the [European Academies Science Advisory Council \(EASAC\) published a report](#) on neonicotinoids and their substitutes in sustainable pest control. The EASAC is the collaborative body for the national science academies of the EU Member States which aims to provide advice to European policy-makers. The report noted that evidence continued to accumulate and that "while multiple factors are involved, reducing the role

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<sup>18</sup> Juliet L Osborne, [Bumblebees and pesticides](#), Nature Vol 491, 1 November 2012, page 43

<sup>19</sup> Juliet L Osborne, [Bumblebees and pesticides](#), Nature Vol 491, 1 November 2012, page 43

<sup>20</sup> US Environmental Protection Agency, [Pollinator Health Concerns](#) (accessed 28 February 2024)

<sup>21</sup> Xerces, [How neonicotinoids can kill bees](#), second edition, 2016 (summary)

<sup>22</sup> See also BA Woodcock et al, Science, [Country-specific effects of neonicotinoid pesticides on honey bees and wild bees](#), 30 June 2017

<sup>23</sup> EFSA news release, [Neonicotinoids: risk to bees confirmed](#), 28 February 2018

<sup>24</sup> EFSA news release, [Neonicotinoids: risk to bees confirmed](#), 28 February 2018

that neonicotinoids may play in agricultural landscapes remains a priority in maintaining food security”.<sup>25</sup>

Environmental groups such as the [Friends of the Earth](#) and the Wildlife Trusts have [called for an outright ban](#) on neonicotinoids in view of the “growing evidence” of harm from the chemicals.

## Support for neonicotinoids

Manufacturers of neonicotinoids, on the other hand, have generally argued that neonics are unlikely to be responsible for declining bee health or bee numbers and that the alternatives (such as organophosphates) might pose greater risks. [Bayer Crop Science](#), one of the producers of neonicotinoids, has said that the development of neonicotinoid insecticides represented a step change in a farmer’s or grower’s ability to control destructive pests and the diseases that they spread, using products of very low mammalian toxicity.<sup>26</sup> The company has published a document refuting what it describes as some of the myths about the negative impact of neonics, including on bees.<sup>27</sup> The company has also suggested that the doses used in some laboratory tests are far higher than bees would encounter in the field and so unrealistic compared to field conditions.<sup>28</sup>

Farming groups have highlighted the value of neonicotinoids. The National Farmers’ Union (NFU) has questioned whether neonicotinoids are causing widespread declines in bee populations.<sup>29</sup> There has not, the NFU contends, been an “apocalyptic” decline caused by neonicotinoids.<sup>30</sup> It has argued for continued access to neonicotinoids as they provide valuable crop protection tools:

[neonicotinoids] effectively control crop pests in a way that is responsible, not just in terms of minimizing environmental impacts, but also in terms of being able to produce food and plants in a way that is safe, reliable and affordable for everyone – from the farmer to the buying public.<sup>31</sup>

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<sup>25</sup> EASAC, Neonicotinoids and their substitutes in sustainable pest control, 28 February 2023

<sup>26</sup> Environmental Audit Committee, [Pollinators and Pesticides](#), HC 668, 5 April 2013 2012-13: [Ev 123](#)

<sup>27</sup> Bayer.com, [Bee Myth Separating Facts from Fiction](#), [PDF] 2019 (accessed 28 February 2024)

<sup>28</sup> Bayer.com, [Bee Myth Separating Facts from Fiction](#), [PDF] 2019, page 24 (accessed 28 February 2024)

<sup>29</sup> NFU, [Bees and neonicotinoids - what's it all about?](#), 23 July 2015

<sup>30</sup> NFU, [Bees and neonicotinoids - what's it all about?](#), 23 July 2015

<sup>31</sup> NFU, [Bees and neonicotinoids - what's it all about?](#), 23 July 2015



## 1.3

## Regulation of pesticides

The Parliamentary Office of Science and Technology's briefing on [Pesticides and Health](#) (September 2021) provides background on pesticide regulation after the UK left the EU. In summary:

- EU Pesticide regulations were transferred into UK Law under the [European Union \(Withdrawal\) Act 2018](#), with amendments.
- Northern Ireland is still subject to EU regulations, while Great Britain (England, Wales and Scotland) now operates a separate regime that began 1 January 2021.<sup>32</sup> However the [Health and Safety Executive](#) (HSE) is the regulatory body for the whole UK.
- The active substance in a pesticide product must be approved before a pesticide can be used. EU regulations require that, when applied in accordance with good practice, residues should have no harmful effects on human health and no 'unacceptable' effects on the environment.<sup>33</sup>
- In Great Britain, the HSE reviews applications for approval, consulting the [Expert Committee on Pesticides](#) for independent advice.
- [Ministers in England, Wales and Scotland](#) provide final sign-off on active substance approvals and can intervene if they disagree with a decision made by the HSE.<sup>34</sup>

## Neonicotinoid regulation

Certain neonicotinoids have been heavily restricted by the EU due to concerns over bee health. For background information see the Library paper on [Bees and neonicotinoids](#) (July 2017), and the European Commission web page on [Neonicotinoids](#). The EU webpage explains that:

In 2013, [the Commission severely restricted](#) the use of plant protection products and treated seeds containing three of these neonicotinoids (clothianidin, imidacloprid and thiamethoxam) to protect honeybees (see [Regulation \(EU\) No 485/2013](#)).

The measure was based on a risk assessment of the European Food Safety Authority (EFSA) in 2012. It prohibits the use of these three neonicotinoids in bee-attractive crops (including maize, oilseed rape and sunflower) with the

<sup>32</sup> HSE website, [Regulating pesticides in the UK after Brexit](#) (accessed 19 October 2021)

<sup>33</sup> [Regulation \(EC\) No 1107/2009 of the European Parliament and of the Council \(Article 4\)](#)

<sup>34</sup> Parliamentary Office of Science and Technology, [Pesticides and health](#) (POSTbrief 43), 21 September 2021, pp15-17

exception of uses in greenhouses, of treatment of some crops after flowering and of winter cereals.<sup>35</sup>

In 2018, this was extended to completely ban the outdoor uses of the three active substances imidacloprid, clothianidin and thiamethoxam, except for use in permanent greenhouses.<sup>36</sup>

The UK government has supported the EU's 2018 position on these restrictions, saying in 2020 that:

the evidence on the toxicity of these chemicals to bees and their persistence in the environment means that the clear advice of scientific advisers is that these restrictions are justified.<sup>37</sup>

## Emergency authorisations

EU regulations, now assimilated in UK law, allow emergency authorisations for pesticide products.<sup>38</sup> Emergency authorisations are overseen in the UK by the [Chemicals Regulation Directorate](#) in the HSE and considered by the [UK Expert Committee on Pesticides](#) (ECP) before decision by Ministers.

When the EU's 2018 neonicotinoid restrictions were approved, a [UK Government press release](#) welcoming the announcement noted that “the UK reserves the right to consider emergency authorisations” but that “we will only do so where there is a real need for the products and the risk to bees and other pollinators is sufficiently low”.

Emergency authorisations have been granted for use in 2021, 2022, 2023 and 2024. In October 2018, the [government rejected applications](#) for emergency authorisations to allow two neonicotinoid products to be used to treat sugar beet seed.<sup>39</sup> The environmental group [Wildlife Trusts criticised](#) the government's decision to issue emergency authorisations for 2021, questioning the change in position since 2018.<sup>40</sup> Wildlife Trusts said that the decision to allow the use of thiamethoxam on sugar beet went against the government's own expert advice:

Both the Health and Safety Executive and the Expert Committee on Pesticides advised against authorising neonicotinoids, even in cases where the potential

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<sup>35</sup> European Commission, [Food Safety: Some facts about neonicotinoids webpages](#) (Accessed 27 February 2024)

<sup>36</sup> [Regulation restricting the use of imidacloprid, Regulation restricting the use of clothianidin, Regulation restricting the use of thiamethoxam](#)

<sup>37</sup> [PQ 100349, \[Neonicotinoids\] 19 October 2020](#)

<sup>38</sup> Emergency authorisation is established by [Article 53 of Regulation \(EC\) No. 1107/2009](#) as retained in UK law

<sup>39</sup> Defra, Statement on the decision to refuse applications to use neonicotinoid products as seed treatments for sugar beet, 11 October 2018.

<sup>40</sup> BBC news, [Legal threat over bee-harming pesticide use](#), 27 January 2021

impact from Virus Yellows was high, as the risks to the environment far outweigh any benefits to the sugar beet industry.<sup>41</sup>

### 2024 emergency authorisation for neonicotinoid use

On 18 January 2024, the [government announced that it would grant an application for emergency authorisation](#) to allow the “limited and controlled use” of the product Cruiser SB, which contains the neonicotinoid thiamethoxam, for the treatment of sugar beet seed in 2024. It said that this was “in recognition of the potential danger posed to the 2024 crop by yellows virus”. The product can only be used if an independent, scientifically verified level of threat posed by the disease, yellows virus, is met in March. That threshold will be a 65% infection across the national sugar beet crop.<sup>42</sup> On 1 March, Farmers Weekly reported that the latest data from the British Beet Research Organisation (BBRO) put “the risk at 83% in the absence of any disease controls, triggering the emergency authorisation for a third consecutive year”.<sup>43</sup>

The announcement said that the Defra Minister had accepted the conclusion of the [Health and Safety Executive \(HSE\) \[PDF\]](#),<sup>44</sup> that many environmental risks were low for the proposed limited and controlled use of Cruiser SB. It also noted that the HSE had raised concerns about “risks to honeybees, specifically chronic lethal and sub-lethal risks to bees arising from pollen, nectar and guttation fluid,<sup>45</sup> from crops following the treated sugar beet crop”. However, the Minister accepted Defra’s Chief Scientific Adviser’s advice that risks from pollen and nectar were “addressed by the restrictions on following crops and that risks from guttation fluid were likely to be over-estimated. The Minister therefore concluded that the mitigated risks appeared likely to be low”. The announcement added that:

In terms of benefits, the Minister considers that the use of Cruiser SB is expected to be effective in addressing the danger described above, which is not effectively dealt with by the available alternatives. At and above the proposed threshold of 65% predicted virus incidence, the Minister noted that the benefits for the worst-affected growers are higher than the average. He concluded that these benefits outweigh the mitigated risks and therefore decided that the balance is in favour of allowing the limited and controlled use of Cruiser SB in 2024.<sup>46</sup>

The [Labour Party has said](#) neonicotinoids appear to have been “particularly damaging to insect life”. Its policy is to set targets to reduce the use of these and other harmful pesticides and support sustainable farming methods such

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<sup>41</sup> Wildlife Trusts webpages, [Say No to Neonics](#), (accessed 28 February 2024)

<sup>42</sup> BBC News, [Bee-harming neonicotinoid pesticide has emergency approval again](#), 18 January 2024

<sup>43</sup> Farmers Weekly, [Green light for neonics on sugar beet seed this spring](#), 1 March 2024

<sup>44</sup> HSE, [Cruiser SB Emergency Registration Report 2023](#), October 2023

<sup>45</sup> Guttation fluid is xylem sap exuded from leaf margins of a wide range of plants

<sup>46</sup> Defra news release, [Statement of reasons for the decision on the application for emergency authorisation for the use of Cruiser SB on sugar beet crops in 2024](#), 18 January 2024

as integrated pest management with “less reliance on chemicals.”<sup>47</sup> Labour’s then environment spokesman, Luke Pollard, said in February 2023 that the [government was wrong](#) to issue the 2023 emergency authorisation and it should be revoked.<sup>48</sup> Labour’s farming spokesman said that the government had “reneged on promises on neonicotinoids” in 2024.<sup>49</sup>

Farming groups have supported the decision to protect a high value crop. The sector lost over £65 million after a yellows virus outbreak in 2020 reduced yields by a quarter compared to the five-year average.<sup>50</sup> The NFU said that “Virus Yellows disease had already caused sugar beet crop losses of up to 80% in recent years and threatened an industry with more than 9,500 jobs”.<sup>51</sup>

Environmental and wildlife organisations have been highly critical of the move, citing growing evidence of the potential harm it could cause. For example, the Wildlife Trusts said the decision was a “deathblow” for wildlife.<sup>52</sup> The Wildlife Trusts also noted that its formal complaint to the Office for Environmental Protection (OEP) in June 2023 about the Minister’s decision to grant authorisations in previous years was still under consideration. It added that:

The UK Government’s decision to authorise this chemical is in contradiction with the OEP’s report released today: [Progress on improving the natural environment in England](#). The report states that UK Government’s efforts to manage exposure to chemicals and pesticides has been limited and they it is largely off track to meet its commitments.<sup>53</sup>

## 1.4

# Minimising the use of synthetic pesticides

## Integrated Pest Management

The UK Government’s [25 year environment plan \(published in 2018\)](#) sets out its broad aim for minimising pesticide use, including a focus on Integrated Pest Management (IPM). IPM aims to diversify crop protection and reduce the use of pesticides by utilising alternatives and promoting natural processes. The plan stated that:

We should put Integrated Pest Management (IPM) at the heart of an in-the-round approach, using pesticides more judiciously and supplementing them

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<sup>47</sup> Labour Party, [Labour’s Plan for Nature](#) ([PDF], page 17, (accessed 28 February 2024)

<sup>48</sup> [HC Deb 1 February 2023 c94WH](#)

<sup>49</sup> [HC Deb 24 January 2024 c124WH](#)

<sup>50</sup> John Innes Centre, [Tackling Virus Yellows Disease in Sugar Beet](#) (accessed 1 March 2024)

<sup>51</sup> BBC News, [Bee-harming neonicotinoid pesticide has emergency approval again](#), 18 January 2024

<sup>52</sup> BBC News, [Bee-harming neonicotinoid pesticide has emergency approval again](#), 18 January 2024

<sup>53</sup> Wildlife Trusts press release, [Emergency authorisation of bee-killing pesticide is a “deathblow”, say The Wildlife Trusts](#), 18 January 2023

with improved crop husbandry and the use of natural predators. More can be done in the way we breed our plants for traits beyond productivity, making better use of genetics and the resources held in gene banks to ensure their natural resilience to pests and diseases.

We will develop our existing strong regulation of pesticides and work with others on different approaches to minimise the impacts of pesticide use in farming.<sup>54</sup>

The government's new farm funding scheme for England includes payments to farmers who opt to take actions on [integrated pest management under the Sustainable Farming Initiative \(SFI\)](#).

## National Action Plan for the Sustainable Use of Pesticides

The UK [National Action Plan 2013](#), covering the whole of the UK set out how the governments across the UK would support users of pesticides, over the following five years, to “develop more sustainable methods of crop protection, amenity management, and garden pest control”. The NAP aimed to increase uptake of Integrated Pest Management (IPM) and sustainable crop protection.<sup>55</sup>

The updated plan being developed by the Department for Environment, Food and Rural Affairs (Defra) the Scottish and Welsh Governments and the Department for Agriculture, Environment and Rural Affairs (Daera) in Northern Ireland. A public consultation on the draft NAP was issued in 2020 and closed in February 2021.<sup>56</sup>

The consultation on the NAP stated that the high-level aim was to “minimise the risks and impacts of pesticides to human health and the environment, while ensuring pests and pesticide resistance are managed effectively”. The NAP will lay out the government's strategy to:

- Ensure pesticides are used sustainably across all sectors;
- Support the agricultural and horticultural industry in producing a sustainable and resilient food supply;
- Combat increasing resistance to pesticides; • Meet the challenges of new pests; and,
- Minimise effects of pesticides on the environment, and ensure they pose no risk to human health.<sup>57</sup>

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<sup>54</sup> HM Government, [A Green Future: Our 25 Year Plan to Improve the Environment](#), 2018, pp 40-41

<sup>55</sup> Defra, [Pesticides: UK national action plan](#), 26 February 2013

<sup>56</sup> Defra, Daera, Scottish Government, Welsh Government, [Consultation on the Revised National Action Plan for the Sustainable Use of Pesticides \(Plant Protection Products\)](#) [PDF] December 2020

<sup>57</sup> Defra, Daera, Scottish Government, Welsh Government, [Consultation on the Revised National Action Plan for the Sustainable Use of Pesticides \(Plant Protection Products\)](#) [PDF] December 2020

Defra Minister Mark Spencer said in response to a PQ on 6 February 2024 that the government would “shortly” publish an updated National Action Plan for the Sustainable Use of Pesticides:

It will set out Defra’s ambition to minimise the risks and impacts of pesticides to human health and the environment, including how we intend to increase the uptake of Integrated Pest Management across all sectors.<sup>58</sup>

## New approaches

Research is being undertaken to find solutions to pests such as yellow viruses that affect sugar beet, with the [British Beet Research Organisation \(BBRO\)](#) undertaking work on crop protection and production.

In February 2024, British Sugar secured £660,000 from the government’s Farming Futures R&D fund to look at how gene editing can be used to develop natural virus yellows resistance in sugar beet.<sup>59</sup>

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<sup>58</sup> PQ11300 [[Pesticides](#)] 6 February 2024

<sup>59</sup> British Sugar news release, [British Sugar secures £660k government funding for gene editing research](#) 14 February 2024

## 2

## PQs

### Sugar Beet: Neonicotinoids

Asked by: Lucas, Caroline

To ask the Secretary of State for Environment, Food and Rural Affairs, what steps his Department is taking to monitor the environmental impact of the use of the product Cruiser SB on sugar beet crops.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

If Cruiser SB is used on the 2024 sugar beet crop, the sugar beet industry will be required to carry out a range of environmental monitoring activities as a condition of the emergency authorisation. This will be supplemented by several government-funded monitoring projects.

The overall programme will include the monitoring of residues of thiamethoxam (the active ingredient in Cruiser SB) and its metabolite, clothianidin, in the environment, to gain a better understanding of potential exposure to non-target organisms. This will include monitoring the soil of treated fields; the soil, vegetation, and pollen from field margins; and rivers in sugar beet catchments. Detail of similar monitoring programmes carried out after an emergency authorisation for Cruiser SB was granted in 2023 can be found within the HSE's emergency registration report on Cruiser SB, published on GOV.UK.

HC Deb 12 February 2024 | PQ 12781

### Sugar Beet: Neonicotinoids

Asked by: Lucas, Caroline

To ask the Secretary of State for Environment, Food and Rural Affairs, with reference to emergency authorisation of Cruiser SB on sugar beet crops in 2024, what discussions his Department has had with British Sugar on support for farmers who choose not to use Cruiser SB on their crops, including about (a) processing and (b) marketing of neonicotinoid-free sugar.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

On 1st November 2023, Defra hosted a roundtable with members of the British sugar industry and environmental NGOs to discuss British Sugar's action plan, the Virus Yellow's Pathway to find alternative methods to

neonicotinoids in controlling Virus Yellows in the British sugar crop. The roundtable allowed British Sugar to present their work to date, as well as allowing the opportunity for Defra and our external partners to encourage further work in this area.

Of particular emphasis was the need for British Sugar to encourage peer-to-peer learning between sugar beet farmers. This would allow farmers who opt not to use neonicotinoids to share knowledge and help expedite the transition to neonicotinoid free farming, which I encourage British Sugar to take forward at pace.

HC Deb 12 February 2024 | PQ 12780

### Sugar Beet: Neonicotinoids

Asked by: Lucas, Caroline

To ask the Secretary of State for Environment, Food and Rural Affairs, whether he considered the prevention principle when making his decision on the emergency authorisation of Cruiser SB on sugar beet crops in 2024.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

The environmental principles policy statement requires the government to apply the prevention principle in the development of policy. It is not applied when decisions are taken under existing policy/legal frameworks, as was the case for the consideration of the emergency authorisation for Cruiser SB.

A full statement of reasons for the decision on the application for emergency authorisation for the use of Cruiser SB on sugar beet crops in 2024 can be found [here](#).

HC Deb 12 February 2024 | PQ 12779

### Neonicotinoids

Asked by: Lucas, Caroline

To ask the Secretary of State for Environment, Food and Rural Affairs, how many compliance inspections his Department made to ensure that the conditions of the emergency authorisation of Thiamethoxam were met in (a) 2021, (b) 2022 and (c) 2023; and what proportion of inspections found non-compliance with those conditions.



Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

There is no specific programme of enforcement/compliance visits exclusively focused on Cruiser SB use, or for any other Emergency Authorisation. All pesticide use in the UK is regulated through HSE's overarching programme of enforcement and compliance. This includes intelligence-led monitoring and enforcement activities to ensure that the supply and use of pesticides complies with legal requirements.

In line with the terms of the Emergency Authorisation granted for this year, if Cruiser SB is used on sugar beet seeds, growers are required to participate in a stewardship scheme, which includes requirements for the correct use of treated seed. All sugar beet growers are supported through the season by weekly monitoring and advice provided by the British Beet Research Organisation (BBRO). This provides a robust support mechanism to drive effective stewardship. As part of the stewardship scheme, the applicant must monitor soils and plants following use of the treated seed at key indicator sites and report back to the Health and Safety Executive at the end of the season of use.

HC Deb 12 February 2024 | PQ 12778

### Sugar Beet: Neonicotinoids

Asked by: Byrne, Ian

To ask the Secretary of State for Environment, Food and Rural Affairs, if he will take steps to (a) reduce the supply of sugar and (b) reverse the exemption for sugar beet crops to the ban on neonicotinoid pesticides.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

British farmers take decisions on the planting of crops based on a variety of factors including the weather, their soil type, and their long-term agronomic strategy, in addition to reacting to market signals. Sugar beet often plays a vital role in soil and crop health in the arable farm rotation, allowing a season of "rest" from intensive cereal production. It is not for the Government to determine which crops farmers should grow or prioritise to include in their crop rotation.

The Government is fully persuaded that the widespread use of neonicotinoids should not be permitted. Approval was withdrawn from December 2018 for the outdoor use of three neonicotinoid pesticides (clothianidin, imidacloprid and thiamethoxam) on any crops, including crops such as sugar beet which are harvested prior to flowering, due to the risk of

harmful effects on pollinators. There is no intention to change these restrictions.

There is no ongoing exemption for sugar beet crops from the ban on neonicotinoid pesticides. An application for emergency authorisation to use the neonicotinoid thiamethoxam on the 2024 sugar beet crop has been received. No decision has yet been made; once taken, the decision will be published on GOV.UK. Emergency authorisations for pesticides are only granted where strict legal requirements are met. More information on the emergency authorisation process can be found on HSE's website, [here](#).

HC Deb 16 January 2024 | PQ 8240

### Oilseed Rape: Imports

Asked by: Baldwin, Harriett

To ask the Secretary of State for Environment, Food and Rural Affairs, if he will (a) make an estimate of the level of rapeseed imports in each year since 2013 and (b) commission research on the potential impact of restrictions on the use of neonicotinoids on the level of rapeseed imports.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

The details requested for imports of oilseed rape dated back to 2013 can be seen in the below table. These are published annually by Government in Agriculture in the United Kingdom, [the data set](#) can be found under Table 7.5 Oilseed rape production, value, supply and use.

Units 1,000 tonnes

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total imports	117	87	87	63	345	206	354	503	926	811

Oilseeds are internationally traded commodities. Subsequently, their supply chains are dynamic and responsive to global market developments in price and availability. Our fantastic British farmers are world-leaders and carefully plan their planting to respond to market developments, suit the weather, their soil type, and their long-term agronomic strategy including pest and disease management.

Together with the devolved administrations, Defra has established the UK Agricultural Market Monitoring Group (UKAMMG) to monitor and assess the impact of market developments across the UK. It monitors UK agricultural markets including price, supply, inputs, trade and recent developments, enabling it to provide forewarning of any atypical market movements.

HC Deb 04 December 2023 | PQ 3802

### Neonicotinoids: Pollinators

Asked by: Oppong-Asare, Abena

To ask the Secretary of State for Environment, Food and Rural Affairs, what account her Department took when authorising the use of the neonicotinoid Cruiser SB in (a) 2021 and (b) 2022 of research on the effects of neonicotinoids on (i) bees and (ii) other pollinators.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

The EU withdrew approval for the outdoor use of three neonicotinoid pesticides (clothianidin, imidacloprid and thiamethoxam) on any crops, including crops such as sugar beet which are harvested prior to flowering, due to the risk of harmful effects on pollinators, in December 2018.

The UK supported this move, and this has not changed. The restrictions on neonicotinoids were justified by the growing weight of scientific evidence that they are harmful to bees and other pollinators. This restriction remains in place.

In considering the applications for use of Cruiser SB on sugar beet in 2021 and 2022, a range of evidence was considered on the impacts of the proposed use of the product on people, pollinators, and the environment. Information on these decisions can be found [here](#).

HC Deb 19 October 2023 | PQ 202494

### Pesticides

Asked by: Pollard, Luke

To ask the Secretary of State for Environment, Food and Rural Affairs, what steps she is taking to help encourage the use of alternatives to neonicotinoid pesticides which do not harm pollinators.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

Neonicotinoids are not generally permitted for use on crops. Time-limited emergency authorisations have been given to protect sugar beet crops from Yellowing Viruses. This is not a permanent solution and the development of alternative, sustainable approaches to protect sugar beet crops is paramount. Work under way includes the development of resistant plant varieties, measures to improve crop hygiene and husbandry and alternative pesticides. British Sugar, seed companies and the British Beet Research Organisation are undertaking a programme of work developing these alternatives – which include Yellowing Virus specific Integrated Pest Management techniques. The Government is monitoring the progress of this.

Integrated Pest Management (IPM) lies at the heart of our approach to minimise the environmental impact of pesticides and is a key tool for businesses facing the challenges of pesticide resistance and changing pest pressures due to climate change. To support this, we are introducing new paid IPM actions within the Sustainable Farming Incentive scheme this year. Increased support for IPM approaches will also be a feature of the upcoming National Action Plan for the Sustainable Use of pesticides.

HC Deb 27 February 2023 | PQ 147081

### Neonicotinoids

Asked by: McCarthy, Kerry

To ask the Secretary of State for Environment, Food and Rural Affairs, pursuant to the Answer of 27 February 2023 to Question 146873 on Neonicotinoids, what the result of the exercise conducted by Rothamsted Research on 1 March on predicted virus incidence was; and whether the threshold for the use of Cruiser SB has been met.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

As per the conditions of the emergency authorisation granted in 2023, the seed treatment is only permitted for use if the predicted virus incidence level is 63% or above, as determined on 1 March 2023 by the Rothamsted YV forecast model. The forecast has been run and predicted a virus incidence of 67.51%. Sugar beet seed may therefore be treated with Cruiser SB and distributed to those growers who ordered it.

HC Deb 17 March 2023 | PQ 165297

### Neonicotinoids: EU Law

Asked by: Lucas, Caroline

To ask the Secretary of State for Environment, Food and Rural Affairs, with reference to the Plant Protection Products (Miscellaneous Amendments) (EU Exit) Regulations 2019, whether (a) Regulation (EU) No 485/2013, (b) Regulations (EU) No. 783/784 and 785/2018 and (c) other EU laws banning neonicotinoid use are in force in the UK.

Answering member: Mark Spencer | Department: Department for Environment, Food and Rural Affairs

Commission Implementing Regulations 485/2013, 783/2018, 784/2018 and 785/2018 placed restrictions on the approvals of the neonicotinoid active substance clothianidin, imidacloprid and thiamethoxam and collectively had the effect of prohibiting use of these active substances in certain circumstances. The approvals of these active substances have since lapsed and so all three active substances are not approved for use in pesticide products, either in the EU or in the UK.

The Plant Protection Products (Miscellaneous Amendments) (EU Exit) Regulations 2019 (the 2019 Regulations) established a GB register of approved active substances and provided that existing EU approvals were carried over. The 2019 Regulations then also revoked the EU legal instruments relating to the approval of a large number of active substances, including the four Commission Implementing Regulations referred to above. The GB register can be viewed on the website of the Health and Safety Executive and records that clothianidin, imidacloprid and thiamethoxam remain not approved.

HC Deb 21 March 2023 | PQ 163846

## 3

## News items

Wildlife Trusts

23 January 2024

[UK government allows 'emergency' use of banned bee-harming pesticide just days after EU tightens protections](#)

East Anglian Daily Times

19 January 2024

[Suffolk divided over easing of neonicotinoid ban on beet](#)

Department for Environment, Food and Rural Affairs press release

18 January 2024

[Emergency pesticide authorisation to protect sugar beet crop conditionally approved](#)

British Sugar

18 January 2024

[Statement on the emergency authorisation for limited use of a neonicotinoid seed treatment for the 2024/25 sugar beet crop](#)

The Wildlife Trusts

18 January 2024

[Emergency authorisation of bee-killing pesticide is a "deathblow", say The Wildlife Trusts](#)

BBC News Online

18 January 2024

[Bee-harming neonicotinoid pesticide has emergency approval again](#)

Guardian

22 December 2023

[Ban use of bee-killing pesticide in UK, business chiefs tell government](#)

Devon Wildlife Trust

8 December 2023

[British Sugar fails to deliver on 3 year plan to end use of banned neonicotinoids](#)

East Anglian Daily Times

8 December 2024

[Suffolk trust slams British Sugar over neonicotinoids bid](#)

Guardian

22 September 2024

[Bee-killing pesticides banned in EU found at unsafe levels in English rivers](#)

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