Marks & Spencer

Pesticides Policy

M&S
EST. 1884

Introduction

Aim & Scope

This policy covers all pesticides used on produce, flowers and plants supplied either directly or indirectly (such as Prepared and Frozen Produce) to Marks & Spencer Plc.

This policy is to be used by growers and suppliers supplying produce into the Marks & Spencer supply chain. It is designed to provide details on M&S pesticide requirements. This Policy should be used as a reference point for all growers and suppliers (including manufacturing), as part of their due diligence controls and for auditors involved in the M&S ***Select Farm Produce*** program.

Introduction

Marks & Spencer recognise that Pesticides have their place in modern day agriculture and without them the economics of growing could be seriously affected with yield and quality compromised. We want to ensure we are able to provide our customers with safe, nutritious, high-quality produce, while balancing the human health and environmental concerns associated with pesticide use. Our Policy is structured to ensure that we as a leading UK retailer take all reasonable steps to ensure that pesticides are managed responsibly within our supply base and that Integrated Pest Management is actively promoted. To enable us to do this we regularly review our pesticide lists and update them to bring them in line with other leading private and public sector policies to achieve better protection of human health and the environment, with the rationale focusing on Highly Hazardous Pesticides (HHPs). The HHP approach is promoted by the UN's Food & Agriculture (FAO) and World Health (WHO) Organisations. We have decided to use this approach to identify HHPs used in our supply chains and then to reduce and phase these uses out over time where possible, replacing them with safer, preferably non-chemical, alternatives.
We will however work collectively with our supply-base, independent bodies and other stakeholders on developing strategies that promotes good practice, minimises use and seeks other innovative alternatives to pesticides. To assist with our ambition to reduce pesticide use we are establishing long term nature friendly farming programmes across all of our growers of basic fresh produce.

We have introduced a Farming with Nature initiative for UK growers. As part of the programme over the course of five years together with specialist partners, we will be working with our farmers to:

- Help scale nature-friendly farming approaches, supporting farmer resilience to environmental pressures.
- Empower M&S Select Farms through advice, tools, and networks.
- Help farmers demonstrate their positive impact by measuring improvements along the way, from soil, water quality to wildlife habitats and regenerative practices.
- Communicate with our customers about M&S Select Farms and the work they are doing to produce M&S fresh products while protecting nature.

As part of the programme M&S has established 5 fresh produce Indicator and Innovation Farms. The farms will be supported by M&S-funded specialist industry partners to trial new ways of farming in harmony with nature and measuring environmental improvements and benefits over time – including testing of novel measurement approaches to provide farmers with deeper insights. Learnings from these farms will be shared through knowledge transfer activity and farm events with other M&S Select Farmers and the wider industry. We already ask all UK M&S growers to be LEAF (Linking Environment and Farming) Marque certified, but in addition we are partnering with LEAF to deliver a programme of modules for M&S growers that builds on the LEAF marque standard, including an Integrated Pest Management module. This will support M&S growers in enhancing environmental outcomes and will be complemented by a suite of support for growers from FWAG and the Wildlife Trusts.

A programme will be introduced for international growers in 2023.

Supporting Information

- M&S Select Farm Produce standard

Contact, Questions, Support

Central Technical Operations

Food.technicalcentre@marksandspencer.cpom

Amendment Log

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Integrated Pest Management (IPM) and Pesticides

It is the intention of Marks & Spencer's to actively support and develop Integrated Pest Management (IPM) strategies within our supply base and to reduce and minimise the use of pesticides. Many M&S growers already employ best practices in IPM (Integrated Pest Management) and several production contexts, for example protected cropping (glasshouse), use very few chemical pesticides. As part of our Farming with Nature programme, with partners we will provide specialist support and guidance for growers to enhance their IPM best practices and enable them to demonstrate progress on reducing reliance on pesticides. We will also be working with our Indicator and Innovation Farms to test methods to boost beneficial insects in order to manage pests naturally, using novel technologies to measure invertebrate populations and prove benefits to those farming businesses over time. Learnings will be disseminated through to the wider supply base.

For more information and guidance on IPM please refer to Appendix 2

Supporting Pollinator Health & Diversity

We have pollinators to thank for a third of the food we eat; they are particularly important in creating our fresh produce at Marks & Spencer. They're also vital for the survival of other wild plants that support so much of our wildlife. As part of the Farming with Nature strategy, growers will be going further to support pollinators, for example through monitoring and enhancing pollinator habitats.
We will be working with a range of Indicator and Innovation Farms and partners to explore practices to promote pollinators, for example, testing the impact of different wild-flower species on populations and measuring increases over time. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recommends moving towards more sustainable agriculture and reversing the simplification of farming landscapes to reduce pollinator declines, as well as actions to reduce pesticide use and promote IPM.

It is important for farmers and growers who supply Marks & Spencer to take bee health seriously. We therefore actively encourage our growers to improve their understanding on the plight of all insect pollinators and do all they can to stabilize and improve populations on their farms. Farmers and growers can make an important contribution to foraging, nesting and hibernation sites for

individual wild bees and colonies. The objective is to offer a diverse range of habitats and flowering sources and by following Good Agricultural Practice (GAP). There are several initiatives already in place which seek to improve bee habitat and populations.

Improving pollination on farm

Insect pollination is estimated to be worth £400 million per year to UK agriculture. Pollinators on farm include not just honeybees but solitary bees, hover flies, bumble bees, butterflies and moths. According to the Bumble Bee Conservation Trust 2 out 24 species of bumble bee have disappeared from the UK since the start of the 21st Century and 2 further species the Great Yellow bumble bee and the Shrill carder bee being present only in small numbers. Pollinators such as bumble bees need nectar and pollen between early spring and summer as well as areas of native plants and grass land for nesting in and refuge. Other species of insects such as butterflies require specific species of plants for their habitat. Farmers can provide these resources through various strategies that include the development and management of supporting habits.

Pollinator supporting habitats include:

- Wildflower meadows
- Hedgerows
- Field margins and plots
- In field habitats (tramlines)
- Mixed habitats

Pollinator and insect friendly farm practices include

Reduced Risk Practices:

- It is your legal obligation to follow the information on the product label. Guidance is also available on environmental information sheets.
- Do not spray unless you have too and consider where you could use an alternative to an insecticide
- Avoid applying insecticides to plants during flowering. Do not apply insecticides that are highly toxic to bees to plants any time during flowering. The risk to pollinators is too great. (Refer to the product label, EAMU, environmental information sheets, or relevant pesticide side-affects database). If applying an insecticide is necessary, choose the least toxic product and plan to apply it well before the plants flower.

- Spray in the evening, early morning or on cloudy days when bees are not flying
- Be aware that bumblebees might be active later in the evening than honeybees.
- Avoid pesticide drift around beehives or hedgerows (check wind speed is less than 5mph) and nozzles are as close to the crop as possible. Also, check that you are using the correct nozzles that are properly cleaned.
- Identify the locations of local beehives through communication with beekeeper associations and by using beekeeper notification systems like bee connected https://beeconnected.org.uk/
- Avoid spraying to cereal headlands.
- Reduce the use of spring herbicide use on land to encourage a diverse range of non-competitive weeds in the crops.

Additional information:
https://voluntaryinitiative.org.uk/environment/pollinators/
https://www.ceh.ac.uk/news-and-media/news/new-practical-guide-habitat-creation-and-management-pollinators
http://www.insectpollinatorsinitiative.net
https://www.buglife.org.uk/helping-pollinators-at-a-landscape-scale
https://bumblebeeconservation.org/get-involved/managing-your-land
https://beeconnected.org.uk/
The Bee Blog | M&S (marksandspencer.com)
Marks & Spencer Beekeeping Standard – Great Britain

Good Agricultural Practice (GAP)

The Global GAP and Red Tractor Assurance protocols outline the development of best practice when using pesticides for the fresh produce industry. In addition, several useful Codes of Practice already exist which explain the practical measures and systems Primary Producers and Direct Suppliers should follow when using pesticides on fresh produce. These include:

Fresh Produce Consortium (FPC) Pesticide Code of Practice 10th Ed 2017

DEFRA *Code of Practice for Safe Use of Pesticides on Farms ('Pesticides Code of Practice').* *https://www.hse.gov.uk/pesticides/using-pesticides/codes-of-practice/code-of-practice-for-using-plant-protection-products.htm*

Marks & Spencer endorse all programmes that have Integrated Crop Management (ICM) Systems as their core objective. This M&S document is designed to avoid unnecessarily duplicating requirements already adequately described in industry protocols - instead it focuses on M&S points of difference and critical issues of brand protection.

M&S take customers' concerns seriously, openly explaining what we do and modifying practices if they are unhappy with the way we produce food. That is why we have taken a number of additional measures which go beyond industry best practices to improve our pesticide performance:-

- Pesticide residue free as a first choice (to 0.01mg/kg)
- No Pesticide residue on or above stated maximum residue levels (MRL's)
- Adopt the strictest MRL for an active where MRL's legislation differs between the UK and EU.
- Marks & Spencer 'Prohibited' list of hazardous pesticides
- Marks & Spencer 'Restricted' list of pesticides, where written prior consent is needed for use.
- Marks & Spencer 'Monitored' list of pesticides, where action is needed if a pesticide is above 50% of the stated MRL for that active.
- Engagement with stakeholders to work on the removal of Highly Hazardous Pesticides (HHP's)
- Supporting suppliers to reduce pesticide use by adopting Integrated Pest Management Strategies (IPM) and other alternative methods of pest & disease control.

We will set challenging targets agreed with suppliers world-wide for reducing residues to below industry standards and minimising the presence of multiple residues.

Legislation

Food businesses supplying Marks & Spencer are responsible for ensuring that the food they produce (domestically or imported) is compliant with current legislation, including maximum residue levels (MRLs).

These guidelines are **not** designed to include an exhaustive list of current legislation. This document will be revised from time to time, **but you must keep up to date with any changes**: -

You should make sure you obtain and understand the relevant sections of the following legislation:

Pesticides (General)

- Food and Environment Protection Act 1985, (Part III Pesticides) as amended (FEPA)
- The control of Pesticides Regulations 1986 (COPR)

  https://www.hse.gov.uk/pesticides/pesticides-registration/general/fepa-and-copr.htm
- The Plant Protection Products Regulations 2011

  https://www.legislation.gov.uk/uksi/2011/2131/contents/made
- The Plant Protection Products (Sustainable Use) Regulations 2012

  https://www.legislation.gov.uk/uksi/2012/1657/pdfs/uksi_20121657_en.pdf
- Regulation (EC) No 1107/2009 – Placing of plant protection products on the market.

  https://www.hse.gov.uk/pesticides/resources/index.htm#UK-legs
- The Control of Substances Hazardous to Health Regulations 2002 (COSHH)

  https://www.hse.gov.uk/pubns/indg136.htm
- Plant Protection Products (Amendments) Regulations 1997

https://www.legislation.gov.uk/uksi/1997/7/contents/made

Candidates for Substitution - CfS (UK)

https://www.hse.gov.uk/pesticides/pesticides-registration/active-substances/substitution.htm

Pesticides (MRL's)

The Pesticides (Maximum Residue Levels in Crops, Food and Feeding Stuffs) England and Wales Regulations 2005

https://www.legislation.gov.uk/uksi/2005/3286/contents/made

https://www.hse.gov.uk/pesticides/mrls/index.htm

https://secure.pesticides.gov.uk/MRLs/search

Pesticides (Application and Handling)

Certificates of Competence – the roles of BASIS and NPTC

https://www.basis-reg.co.uk/index

https://www.nptc.org.uk

https://www.nroso.org.uk

Pesticides (EU)

Active Substances banned in the European Union under Council Directive 79/117/EEC and Active Substances banned in the UK

https://www.hse.gov.uk/pesticides/pesticides-registration/withdrawal-and-restrictions/banned-and-non-authorised-pesticides.htm

EU Legislation on MRL's

https://ec.europa.eu/food/plants/pesticides/maximum-residue-levels/eu-legislation-mrls_en

Sustainable Use of Pesticides

https://ec.europa.eu/food/plant/pesticides/sustainable_use_pesticides_en

https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:02009L0128-20091125

Candidates for substitution - CfS (EU)

https://ec.europa.eu/commission/presscorner/detail/de/MEMO_15_3743

Food Safety (in relation to pesticides)

Food Safety Act 1990 (Amendment) Regulations 2004

https://www.legislation.gov.uk/uksi/2004/2990/contents/made

Food Safety and Hygiene England) Regulations 2013 under EC regulation 852/2004

https://www.legislation.gov.uk/uksi/2013/2996/made

https://www.legislation.gov.uk/eur/2004/852/contents\

https://www.food.gov.uk/business-guidance/pesticides-in-food

M&S Pesticides Lists

- The M&S pesticides lists are built around the human health and environmental hazard criteria for HHPs, using the criteria from the Pesticide Action Network (PAN) International HHP List (version March 2021) https://www.pan-uk.org/site/wp-content/uploads/PAN-HHP-List-2021.pdf.
- In principle, any pesticide listed in the 3 relevant international conventions relating to hazardous pesticides goes onto the M&S Prohibited List. These conventions are the Stockholm Convention on Persistent Organic Pollutants

(POPs); the Rotterdam Convention on Prior Informed Consent (PIC); and the Montreal Protocol on protecting the ozone layer. All other pesticides formerly prohibited by M&S have been kept on the Prohibited List.

- For the M&S Restricted List, priority is given to pesticides with EITHER acute toxicity to humans (WHO Class 1a and 1b and the 'fatal by inhalation' classification) OR the highest level of cancer concern ('known carcinogen' categories of EU, US or global cancer hazard classifications).
- HHPs with chronic health hazards (including probable carcinogens, endocrine disrupting pesticides and those linked with mutagenic and reproductive hazards) and those showing environmental persistence, bioaccumulation properties or high toxicity to bees or aquatic invertebrates are placed on the M&S Monitored List.
- A number of HHPs which qualify to be on the M&S Restricted List are in widespread use. Following feedback from supply companies, to make a workable system for producers and avoid serious economic disadvantage from a sudden restriction, the most widely used of these HHPs have been placed temporarily on the M&S Monitored List with '*Special Attention*' requirements aiming for short to medium term phase out to the restricted list, as alternatives become available.

Additional requirements for Restricted List and Special Attention pesticides

- Marks and Spencer recognise that several of the more hazardous pesticides will remain in use within M&S supply chains for some time, as there are currently little or no alternatives. We therefore expect extra effort is made to raise awareness of their hazards and to take short-term actions to reduce the risks they pose and exposure to humans and the environment. In the medium term, Marks & Spencer will collaborate with growers and supply companies to explore ways to reduce their use and phase out over time.
- Additional requirements will be put in place for all Restricted List pesticides and for a subset of the Monitored List. Creating a limited set of Special Attention pesticides helps focus efforts on a manageable number of pesticides. Implementing additional requirements for these pesticides will be the joint responsibility of growers, producer associations and supply Companies.

Additional requirements for Restricted List pesticides:

The following must be considered when using a restricted pesticide: -

1. **Residue Risk**
   1.1. Growers must understand the residue risk of using a restricted product by reviewing the application method, harvest interval, the MRL permitted for the particular active and any historic residue information.
2. **Operator Safety Risk:**
   2.1. Identification of the risk of using the product to the operator
   2.2. Ensure that operators are using appropriate PPE for the pesticide being applied
   2.3. Operator training and competency - All persons handling or applying pesticides must be suitably trained and should have access to refresher training programmes.
   2.4. Application methods should be identified and risk assessed.
   2.5. Health screening programmes for operators - Staff involved in the application of pesticides should be health screened to monitor any potential exposure risks.

   https://www.hse.gov.uk/pesticides/pesticides-registration/data-requirements-handbook/operator-exposure.htm
3. **Third party Exposure Risk:**
   3.1. Ensure that the spraying operation does not contaminate other workers, nearby dwellings, footpaths, or any other public areas. Signage should be used to warn fellow workers and members of the public that spraying is/has taken place, so they can avoid the area.
4. **Environmental Risk:**
   4.1. The environmental fate of the active being used must be assessed. Any potential risk to the environment surrounding the area to be treated must be considered.
   4.2. Follow label recommendations. – make sure equipment is calibrated – Take account of weather conditions - Assess proximity to watercourses – Avoid non target areas. and ensure that appropriate control measures are in place to reduce contamination from volatilization into the atmosphere, aerial drift or leaching, etc.

5. **Bio-diversity Risk:**

5.1. The risk to biodiversity must be assessed. What control measures are in place to reduce the impact of the active to be used on the biodiversity within the area to be treated?

5.2. Growers must understand the impact of the active to be used, on bees and pollinators and take the appropriate steps outlined in section 5.1.2.

There must be a concerted effort to reduce use of a Restricted or Special attention pesticides and explore alternatives for longer term phase out, via reportable action plans, with support/collaboration from M&S and the Agronomy group.

Pesticide Concession Process:

In the event that a pesticide which is on the M&S restricted list is required to be used, then an application requesting it's use must be raised. This must be completed online through our **nominated M&S agronomy online platform** and submitted to the relevant Agronomist responsible for that crop. The concession application needs to be risk assessed to ensure appropriate control measures are in place to minimize any impacts when using a restricted product. Please follow guidance within the 'additional requirements for restricted list pesticides'. Similarly, this guidance should also be considered when using a Special Attention pesticide, however a concession request is not required for their use.

Stakeholder Consultation:

We will engage with our supply base, Industry bodies, PAN UK and LEAF to help to develop our pesticide policies and strategies. This will take the form of an Agronomy group made up of key stakeholders. Areas of work will include: -

- Development and supporting IPM strategies with suppliers and growers
- Residue reduction initiatives
- Reduction programmes on those pesticides of interest
- New & emerging Technologies and alternatives to pesticides
- Legislative changes and horizon scanning
- Best Practice in the handling, storage and use of Pesticides.

- Educational programmes within the supply base to instruct on residue risk, human health, environmental and biodiversity protection.
- Engagement with Bio-pesticide manufacturers to explore alternative controls and actively encourage growers to use bio controls where appropriate.
- Explore further use of barrier controls, e.g. nets to reduce the ingress of insects into crops during key crop growth stages.

Pesticide Testing

Testing for pesticide residues is one way for checking that correct applications have been made in accordance with Good Agricultural Practice (GAP). An effective testing programme should be established by the M&S Direct Supplier and/or the Primary Producers.

Marks & Spencer also conduct independent product testing (IPT) for pesticide residue across our fresh produce lines. The results of these tests will be made available to the public and other interested parties. As part of our produce testing, we also test for nitrates and Glyphosate. ***Our residue testing program not only covers produce, but also cereal products, wine and honey.***

Pesticide Residues

M&S have the ambition to only sell fresh produce that does not have any pesticide residues (based on a tolerance of 0.01ppm). All Direct Suppliers are required to share the results from their residue testing surveillance programmes, conducted on product supplied to M&S. These results are to be uploaded via our nominated online platform. We also require all Direct suppliers to upload their pesticide testing risk assessment and schedule onto the supply chain tab of the online platform. It is important that suppliers are reporting and analysing detections as well as any exceedances. We would therefore encourage our suppliers to monitor the number of actives detected, as well as the % of the MRL detected by product/ country of origin and grower. This information along with our own IPT testing will be used to target areas for improvements.

MRL Exceedance Procedure

The following outlines the action to take in the case of a pesticide residue exceeding the Maximum Residue Level (MRL), or where a non-approved pesticide is identified.

NB: It is illegal to place a product that contains pesticide residues in excess of the MRL or a product which contains a non-approved pesticide on the market.

Procedures for Marks & Spencer technologists

1.Discuss with the laboratory the significance of the results compared with their own historic data and Pesticide Residues in Food (PRiF) data. The laboratory will advise on the testing that has been carried out and recovery rates.

2. Ask the supplier to identify the source (grower, field/plot) of the sample, the size of the lot where the sample came from, and what the lot is used for. Also find out if there is a possibility of further products from the same source being in the production or marketing system, or whether further products could enter the system from the same field or cold store. If raw material from the exact same lot is being used to supply Marks & Spencer, then you should remove the affected crop from display where the volumes are small. You should consider further testing if the volume involved is high e.g., frozen products, because there will be greater variability in residue levels within larger batches. Inform prepared suppliers if a product from the same lot is used for further processing. Replace the affected crop with a new supply.

3. If the suppliers current supply is from a different source (grower or field), and if the new field has not received the same treatment as the implicated crop, then you can continue selling the product while we wait for the supplier's residue results.

4. If you identify a pesticide issue, the supplier should provide the full pesticide control documentation and usage information relating to the issue or incident, ideally within 4 hours of the initial request and **definitely** within 24 hours.

Procedures for Direct Suppliers:

1. Identify the source of the sample. For example, is the product from the same source (grower and field) still being used to supply Marks & Spencer? Is raw material from the same source being sent to our prepared suppliers for

further processing? Take immediate action to isolate any product from the identified source on-site and place a temporary hold on bringing in further product from the same source. Inform your Marks & Spencer technologist of any product in transit to Depot or store providing full pack details.

2. You should send samples of the isolated stock or samples from the same field or store, for analysis to the supplier's own laboratory and the M&S nominated Laboratory - an urgent response is required. You must review the results of this repeat analysis immediately with Marks & Spencer.
3. If the product supplied to Marks & Spencer is from a different source, then samples from this new lot should also be tested for pesticide residues as outlined above.

Investigation by Marks & Spencer technologists and Direct Suppliers

1. Conduct a traceability exercise to identify the source of the sample.
2. Provide a field map of the affected crop indicating location and type of neighbouring crops. Also indicate on the map any natural barriers or buffer zones.
3. Review the proposed pesticide usage list for the affected crop or grower.
4. Review grower's actual application records relating to the affected consignment. Check that all the pesticides used are approved in the country of origin. Does the harvest interval, frequency or dosage comply with the product label details? *(If the active detected does not appear on the proposed usage or actual pesticide record then check if it could have been used on neighbouring crops).*
5. Who is responsible for providing advice on the quantity and type of pesticide applied? Check qualifications.
6. Check the grower's permission to harvest procedures. Are they robust enough?
7. Review the suppliers and grower's residue testing programme. Review the historic residue data for the affected product. Is any pre-harvest sampling done?
8. Has anything on the farm changed recently e.g. adverse weather, crop covers, new formulations, new equipment, which could result in an MRL issue?
9. Check Field History and previous applications based on type of active detected e.g. nematicide from previous cropping.

10. Review any audits completed by the supplier or the grower who supplied the affected product e.g. UK source Red Tractor and for overseas sources, Global GAP.
11. The supplier's technical personnel responsible for pesticides must complete an **out of specification report,** that summarises the information obtained above. An out of specification template will be sent directly from our nominated laboratory to the supplier for completion. This should identify the cause of the problem and recommend appropriate corrective actions. A re-evaluation of the risk category of the particular grower must take place depending on the conclusions.

Global Counterfeiting of Plant Protection Products:

As in most high value industries, the incidence of counterfeiting and the illegal trafficking of plant protection products (PPP's) has been growing substantially over recent years and across all regions of the world. Current economic difficulties and high input costs, together with the loss of many exceptionally useful products from the marketplace, has led to the "provision" of "cheaper" alternatives from "new" sources.

These counterfeits take the form off fake products which can contain anything from water to talcum powder, sophisticated counterfeits of legitimate brands which usually have high quality labelling (and looks like the real thing) and illegal parallel imports which are illegal generic copies of legitimate parallel imports, which have been repackaged and sold as branded products.

All Plant Protection Products used should be legally registered in the country of application. If no registration process exists in the Country of application, then a neighbouring country's registration process can be used.

If a farmer or grower has suspicions about a product, they should immediately contact one of the following: the manufacturing company, the relevant enforcement authority (e.g., plant protection inspectors) or the national trade association and work with them to determine the nature and source of the product. Likewise, if you are aware of illegal PPPs in the marketplace, please report any information directly to the relevant enforcement authority (e.g., plant protection inspectors) or anonymously through toll-free anti-counterfeit helplines established in most countries.

Appendix 1

M&S PROHIBITED LIST (85 pesticides + 1 formulation)

Includes pesticides listed under international conventions, including single pesticides in PIC List Severely Hazardous Pesticide Formulations (SHPFs). PLUS **23** pesticides (marked *) which have been eliminated from the latest PAN HHP list (March 2021 version) either because they are now classified as obsolete by FAO, or because they no longer qualify under the HHP hazard criteria for cancer concern (they are only 'possible' carcinogens). These will, however, remain on the M&S Prohibited list, as agreed by M&S and suppliers. Also included is the PIC listed SHPF mixture containing 10% carbofuran + 15% thiram + 7% benomyl.

	PROHIBITED LIST: Name of active ingredient of pesticide	CAS number	Type of pesticide	EU status	PIC	POP	Montreal Protocol	Acute Toxicity rating	Chronic toxicity rating	Environment rating
1	Acephate	30560-19-1	IN	X						●
2	Acetochlor	34256-82-1	HB	X					●	
3	Alachlor	15972-60-8	HB	X	●				●	
4	Aldicarb	116-06-3	NE; IN; AC	X	●			●		●
5	alpha-BHC; alpha-HCH	319-84-6	IN	X - Ban		●				
6	Atrazine	1912-24-9	HB	X					●	
7	Azinphos-ethyl	2642-71-9	IN; AC	X				●		●
8	Azinphos-methyl	86-50-0	IN; AC	X	●			●		●
9	beta-HCH; beta-BCH	319-85-7	IN	X - Ban		●			●	
10	Captafol	2425-06-1	FU	X - Ban	●			●	●	
11	Carbofuran	1563-66-2	IN; NE; AC	X	●			●		●
12	Carbosulfan	55285-14-8	IN; NE	X	●			●		●

	PROHIBITED LIST: Name of active ingredient of pesticide	CAS number	Type of pesticide	EU status	PIC	POP	Montreal Protocol	Acute Toxicity rating	Chronic toxicity rating	Environment rating
13	Chlordane	57-74-9	IN	X - Ban	•	•			•	•
14	Chlorfenvinphos	470-90-6	IN	X				•		•
15	Cyhexatin	13121-70-5	AC	X						•
16	DDT	50-29-3	IN	X - Ban	•	•			•	•
17	Demeton-S-methyl	919-86-8	IN; AC	X				•		•
18	*Dicofol	115-32-2	IN; AC	X	•	•		•		
19	Dinoterb	1420-07-1	HB	X				•	•	
20	Disulfoton	298-04-4	IN	X				•		
21	DNOC and its salts	534-52-1	IN; AC; FU; HB	X	•			•		
22	Endosulfan	115-29-7	IN; AC	X	•	•		•		
23	Ethiofencarb	29973-13-5	IN	X				•		
24	Ethylene dibromide; 1,2-dibromoethane	106-93-4	FM; NE	X - Ban	•				•	
25	Ethylene dichloride; 1,2-Dichloroethane	107-06-2	FM; IN	X - Ban	•				•	
26	Ethylene oxide	75-21-8	FM	X - Ban	•				•	
27	Fenitrothion	122-14-5	IN; AC	X					•	•
28	Fenthion / Fenthion > 640g/L	55-38-9	IN	X	•					•
29	Fentin acetate; Triphenyltin acetate	900-95-8	FU; HB	X				•	•	
30	Fentin hydroxide; Triphenyltin hydroxide	76-87-9	FU; HB	X				•	•	
31	Fenvalerate	51630-58-1	IN; AC	X						•

	PROHIBITED LIST: Name of active ingredient of pesticide	CAS number	Type of pesticide	EU status	PIC	POP	Montreal Protocol	Acute Toxicity rating	Chronic toxicity rating	Environment rating
32	Fluoroacetamide	640-19-7	RO	X	●			●		
33	Haloxyfop-methyl (unstated stereochemistry)	69806-40-2	HB	X					●	
34	Heptenophos	23560-59-0	IN	X				●		●
35	Hexachlorobenzene / benzene hexachloride (HCB/BHC)	118-74-1	FU; IN; MI	X - Ban	●	●		●	●	●
36	Hexchlorocyclohexane; BHC mixed isomers	608-73-1	IN		●				●	
37	Lindane	58-89-9	IN; RO	X	●	●			●	●
38	Maneb	12427-38-2	FU	X					●	
39	Mercury and its compounds	7439-97-6	FU	X - Ban	●			●		
40	Methamidophos	10265-92-6	IN; AC	X	●			●		●
41	Methoxychlor	72-43-5	IN	X		●				
42	Methyl bromide	74-83-9	FU; IN; NE; HB	X			●			
43	Monocrotophos	6923-22-4	AC; IN	X	●			●		●
44	Omethoate	1113-02-6	IN; AC	X				●	●	●
45	Oxydemeton-methyl	301-12-2	IN; AC	X				●		●
46	Paraquat dichloride (liquid formulations candidate PIC)	1910-42-5	HB	X	●			●		
47	Parathion	56-38-2	IN; AC	X	●			●		●
48	Parathion-methyl	298-00-0	IN; RE	X	●			●		
49	PCP; Pentachlorphenol	87-86-5	HB	X	●			●	●	

	PROHIBITED LIST: Name of active ingredient of pesticide	CAS number	Type of pesticide	EU status	PIC	POP	Montreal Protocol	Acute Toxicity rating	Chronic toxicity rating	Environment rating
50	Permethrin	52645-53-1	IN	X					●	●
51	Phorate	298-02-2	IN	X				●		●
52	Phosphamidon	13171-21-6	IN; AC	X	●			●		●
53	Propoxur	114-26-1	IN	X					●	●
54	Pyrazophos	13457-18-6	FU	X						●
55	Quinalphos	13593-03-8	IN	X					●	●
56	Terbutryn	886-50-0	HB	X					●	
57	Thiometon	640-15-3	IN; AC	X				●		●
58	Trichlorfon	52-68-6	IN	X	●				●	●
59	Tridemorph	81412-43-3	FU	X					●	
60	Trifluralin	1582-09-8	HB	X					●	●
61	Vinclozolin	50471-44-8	FU	X					●	
62	Zineb	12122-67-7	FU	X					●	
*63	*2,4,5-T,butyric acid*	*93-80-1*	*HB*						●	
*64	*2-aminobutane; sec-butylamine*	*13952-84-6*	*FU*	X						
*65	*Amitraz*	*33089-61-1*	*AC; IN*	X						
*66	*ANTU*	*86-88-4*	*RO*							
*67	*Cadmium compounds*	*7440-70-2*								
*68	*Calcium arsenate*	*7778-44-1*	*HB, IN, MO,FU*							
*69	*Cyanazine*	*21725-46-2*	*HB*	X					●	

	PROHIBITED LIST: Name of active ingredient of pesticide	CAS number	Type of pesticide	EU status	PIC	POP	Montreal Protocol	Acute Toxicity rating	Chronic toxicity rating	Environment rating
*70	*Ethion*	*563-12-2*	*AC*	X						
*71	*Etrimfos*	*38260-54-7*	*IN*	X						
*72	*Mephosfolan*	*950-10-7*	*IN*	X						
*73	*Metolachlor*	*51218-45-2*	*HB*	X						•
*74	*Monolinuron*	*1746-81-2*	*HB*	X						
*75	*Nitrofen*	*1836-75-5*	*HB*	X - Ban						
*76	*Phosalone*	*2310-17-0*	*IN; AC*	X						
*77	*Potassium arsenite*	*10124-50-2 & other*	*HB; IN; RO*							
*78	*Prometryn*	*7287-19-6*	*HB*	X					•	
*79	*Quintozene (PCNB)*	*82-68-8*	*FU*	X						
*80	*Selenium compounds*	*x7782-49-2*								
*81	*Simazine*	*122-34-9*	*HB*	X					•	
*82	*Sodium arsenite*	*7784-46-5*	*HB; RO; IN; FU*	X						
*83	*Sulphuric acid*	*7664-93-9*	*DE; FU; HB; MI*	X						
*84	*Tecnazene*	*117-18-0*	*FU; PG*	X						
*85	*Tetrachloroethane*	*79-34-5*	*FM; SO*							
	SHPF mixture products of 10% carbofuran, 15% thiram and 7% benomyl		**FU + IN/NE**		SHPF					

*Dicofol

C PIC: agreed by the PIC Convention's Chemical Review Committee and the Conference of the Parties as meeting the criteria of the Convention but yet not formally listed.
C POP: agreed by the POPs Chemical Review Committee and the Conference of the Parties as meeting the criteria of the Stockholm Convention but yet not formally listed

Key:

AC= Acaricide	MI = Microbiocide
AF = Antifoulant	MO= Molluscicide
AL = Algicide	NE= Nematicide
AV= Avicide	PGR= Plant Growth Regulator
BP = Breakdown Product	RE= Repellant
BIO= Biopesticide	RO= Rodenticide
BR = Bird repellent	SO= Solvent
DE= Defoliant	ST= Sterilant
FM= Fumigant	SY = Synergist
FU= Fungicide	WP = Wood Preservative
HB= Herbicide	? = no current pesticidal use
HS= Herbicide Safener	
IN = Insecticide	

M&S RESTRICTED LIST (68 pesticides)

All chemicals listed in the table below are classified as Restricted due to their acute toxicity OR cancer 'hazard level 1' rating. The only exception is chlorpyrifos, which M&S is now restricting.

	RESTRICTED LIST: Name of active ingredient of pesticide	**CAS number**	**Type of pesticide**	**EU status**	WHO Ia	WHO Ib	H330 fatal if inhaled	EPA carcinogenic	IARC carcinogenic	EU GHS carcinogenic (1A, 1B)
1	Azocyclotin	41083-11-8	AC	**X**			●			
2	Benomyl	17804-35-2	FU	**X**						
3	Biphenyl; Diphenyl	92-52-4	FU	**X**						●
4	Blasticidin-S	2079-00-7	FU	**X**		●				
5	Bromoxynil	1689-84-5	HB	**X**			●			
6	Butoxycarboxim	34681-23-7	IN; AC	**X**		●				
7	Cadusafos	95465-99-9	IN; NE	**X**		●				
8	Chlorethoxyphos	54593-83-8	IN	**X**	●					
9	Chlormephos	24934-91-6	IN	**X**	●					
10	Chlorpyrifos	2921-88-2	IN; AC	**X**						●
11	Chlorpyrifos-methyl	5598-13-0	IN; AC	**X**						●
12	Chloropicrin	76-06-2	NE	**X**			●			
13	Chorthalonil	1897-45-6	FU	-			●	●		
14	Clothiandin	210880-92-5	IN	-						
15	Creosote	8001-58-9	WP	-						●
16	Demeton-methyl (isomer mix of *O*-methyl and *S*-methyl)	8022-00-2	IN; AC	**-**			●			

	RESTRICTED LIST: Name of active ingredient of pesticide	CAS number	Type of pesticide	EU status	WHO Ia	WHO Ib	H330 fatal if inhaled	EPA carcinogenic	IARC carcinogenic	EU GHS carcinogenic (1A, 1B)
17	Dichlorvos; DDVP	62-73-7	IN; AC	X		●	●			
18	Dicrotophos	141-66-2	IN; AC	X		●				
19	Diquat dibromide	85-00-7	HB	X			●			
20	Diquat dichloride	4032-26-2	IN	-			●			
21	Edifenphos	17109-49-8	IN			●				
22	E-Phosphamidon	297-99-4	IN	X	●					
23	Epichlorohydrin	106-89-8	FU; IN; MI	-						●
24	EPN	2104-64-5	IN; AC	X	●					
25	Ethoprophos; Ethoprop	13194-48-4	NE; IN	-	●		●			
26	Famphur	52-85-7	IN	-		●				
27	Fenamiphos	22224-92-6	NE	-		●	●			
28	Fenbutatin-oxide	13356-08-6	AC	X			●			
29	Fenchlorazole-ethyl	103112-35-2	HS	-						●
30	Fenpropathrin	39515-41-8	IN; AC	X			●			
31	Ferbam	14484-64-1	FU	X			●			
32	Fipronil	120068-37-3	IN	-						
33	Flucythrinate	70124-77-5	IN	X		●				
34	Flusulfamide	106917-52-6	FU	-			●			
35	Fluvalinate	69409-94-5	IN	-			●			
36	Formaldehyde	50-00-0	FU; ST	X					●	
37	Formetanate	22259-30-9	IN; AC	-		●	●			
38	Furathiocarb	65907-30-4	IN	X		●	●			
39	Imidicloprid	138261-41-3	IN	X						

	RESTRICTED LIST: Name of active ingredient of pesticide	CAS number	Type of pesticide	EU status	WHO Ia	WHO Ib	H330 fatal if inhaled	EPA carcinogenic	IARC carcinogenic	EU GHS carcinogenic (1A, 1B)
40	Isoxathion	18854-01-8	IN	X		●				
41	Magnesium phosphide	12057-74-8	IN	-			●			
42	Mecarbam	2595-54-2	IN; AC	X		●				
43	Methidathion	950-37-8	IN; AC	X		●				
44	Methiocarb (mercaptodimethur)	2032-65-7	MO; IN; AC; BR	X		●				
45	Methomyl	16752-77-5	IN			●				
46	Mevinphos	7786-34-7	IN	X	●					
47	Nicotine	54-11-5	IN	X		●				
48	Oxamyl	23135-22-0	IN; NE	X	●		●			
49	Paraffin oils; mineral oils (These CAS numbers have Approval in the EU) (See page 32)	97862-82-3	IN; AC; FU							●
		4742-46-7	IN; AC; FU							●
		72623-86-0	IN; AC; FU							●
50	Potasan	299-45-6	IN	-			●			
51	Propetamphos	31218-83-4	IN	X		●				
52	Pyrimidifen	105779-78-0	AC	X			●			
53	Pyrazoxon	108-34-9	IN	-			●			
54	Sulfotep	3689-24-5	IN; AC	X	●					
55	TCMTB	21564-17-0	FU	X			●			
56	Tebupirimifos	96182-53-5	IN	-	●					
57	Tefluthrin	79538-32-2	IN	X		●	●			
58	Terbufos	13071-79-9	IN	X	●					

	RESTRICTED LIST: Name of active ingredient of pesticide	**CAS number**	**Type of pesticide**	**EU status**	WHO Ia	WHO Ib	H330 fatal if inhaled	EPA carcinogenic	IARC carcinogenic	EU GHS carcinogenic (1A, 1B)
59	Thiacloprid	111988-49-9	IN	**X**				●		●
60	Thiamethoxam	153719-23-4	IN	**X**						
61	Thiofanox	39196-18-4	IN	**X**		●				
62	Thiram in formulations with benomyl and carbofuran	137-26-8 (&17804-35-2 & 1563-66-2)	FU	**X**						
63	Tolylfluanid	731-27-1	FU; AC	**X**			●			
64	Triazophos	24017-47-8	IN; AC	**X**		●				
65	Vamidothion	2275-23-2	IN; AC	**X**		●				
66	zeta-Cypermethrin	52315-07-8z	IN	-		●				
67	Ziram	137-30-4	FU; RE	-			●			
68	Z-Phosphamidon	23783-98-4	IN	-	●					

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DE= Defoliant	ST= Sterilant
FM= Fumigant	SY = Synergist
FU= Fungicide	WP = Wood Preservative
HB= Herbicide	? = no current pesticidal use
HS= Herbicide Safener	
IN = Insecticide	

MONITORED LIST (7 Special Attention pesticides + 156 pesticides)

The Marks & Spencer Monitored List includes 7 'Special Attention' pesticides, which all qualify by their acute toxicity hazard to be on the Restricted List. These have been put on the Monitored List in recognition of their current use in several cropping systems and countries, to enable suppliers to continue use in the medium term but highlighting the need for additional requirements on how they are used.

Candidate for Substitution (CfS): We would like to create awareness of those special attention pesticides, to which Candidate for Substitution (CfS) applies. Please see below. This is to encourage growers to seek alternative actives where possible.

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	New Candidate for Substitution	Acute toxicity	Chronic health effects	Environmental hazards
SP1	Abamectin (Avermectin)	71751-41-2	AC; IN	-	No	H330 - Fatal if inhaled		Highly toxic to bees
SP2	Beta-cyfluthrin; Cyfluthrin	68359-37-5	IN	-	No	H330 - Fatal if inhaled WHO Ib - Highly hazardous		Highly toxic to bees
SP3	Copper (II) hydroxide	20427-59-2	FU	-	Yes	H330 - Fatal if inhaled		Very toxic to aquatic organism Very persistent in water, soil or sediment
SP4	Fenhexamid	126833-17-8	FU	-	No	H330 - Fatal if inhaled		
SP5	Fluazinam	79622-59-6	FU	-	No	H330 - Fatal if inhaled		
SP6	Lambda-cyhalothrin	91465-08-6	IN	-	Yes	H330 - Fatal if inhaled	Endocrine disruptor	Highly toxic to bees
SP7	Tau-fluvalinate	102851-06-9	IN	-	No	H330 - Fatal if inhaled		

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
1	1,3-dichloropropene	542-75-6	NE;HB	X	●								
2	2-4-D	94-75-7	HB, PG	-				●					
3	Acetamaprid	135410-20-7	IN	-						●			
4	Acifluorfen - sodium	62476-59-9	HB	X	●								
5	Acrinathrin	101007-06-1	AC	-									●
6	Alanycarb	83130-01-2	IN	X									●
7	Amisulbrom	348635-87-0	FU	-							●	●	
8	Amitrole	61-82-5	HB	X					●				
9	Anthraquinone	84-65-1	BR	X	●								
10	Azafenidin	68049-83-2	HB	X				●					
11	Azamethiphos	35575-96-3	IN	X									●
12	Bendiocarb	22781-23-3	IN	X									●
13	Benfuracarb	82560-54-1	IN; NE	X									●
14	Bensulide	741-58-2	HB	X									●
15	Benthiavalicarb-isopropyl	177406-68-7	FU	-	●								
16	Bifenthrin	82657-04-3	IN; AC	-					●				●
17	Bioresmethrin	28434-01-7	IN	X									●
18	Borax; Borate salts	1303-96-4	HB; IN	-				●					
19	Boric acid	10043-35-3	IN	X				●	●				
20	Bromoxynil heptanoate	56634-95-8	HB	-						●		●	

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
21	Bromoxynil octanoate	1689-99-2	HB	-						●		●	
22	Butachlor	23184-66-9	HB	X	●								
23	Butocarboxim	34681-10-2	IN	X									●
24	Carbaryl	63-25-2	IN; PG	X	●				●				●
25	Captan	133-06-2	FU	X	●								
26	Carbendazim	10605-21-7	FU	X			●	●					
27	Chinomethionat (Oxythioquinox)	2439-01-2	AC; FU	X	●								
28	Chlorantraniliprole	500008-45-7	IN	-							●	●	
29	Chlorfenapyr	122453-73-0	IN; AC	X									●
30	Chlorfluazuron	71422-67-8	IN	X						●		●	
31	Chlorotoluron	15545-48-9	HB	-					●				
32	Chlorpropham	101-21-3	HB	X									
33	Cholecalciferol	67-97-0	RO	X				●					
34	Climbazole	38083-17-9	FU	-									●
35	Cyhalothrin	68085-85-8	IN	X									●
36	Cyhalothrin, gamma	76703-62-3	IN	-									●
37	Cypermethrin	52315-07-8	IN; AC	-									●
38	Cypermethrin, alpha	67375-30-8	IN	-									●
39	Cypermethrin, beta	65731-84-2	IN	-									●
40	Daminozide	1596-84-5	PG	-	●								
41	Deltamethrin	52918-63-5	IN	-					●				●

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
42	Diafenthiuron	80060-09-9	IN; AC	X									●
43	Diazinon	333-41-5	IN; AC	X		●							●
44	Dichlobenil	1194-65-6	HB	X									
45	Diclofop-methyl	51338-27-3	HB	-	●								
46	Dichchlorprop	120-36-5	HB	X				●					
47	Dimethoate	60-51-5	IN; AC	-									●
48	Dimoxystrobin	149961-52-4	FU	-					●		●	●	
49	Dinocap	39300-45-3	FU; AC	X				●					
50	Dinotefuran	165252-70-0	IN	X									●
51	Disodium octaborate anhydrous	12008-41-2	IN										
52	Disodium octaborate tetrahydrate	12280-03-4	IN, FU	X				●					
53	Diuron	330-54-1	HB	-	●								
54	Epoxiconazole	133855-98-8	FU	-	●			●	●				
55	Esfenvalerate	66230-04-4	IN	-									●
56	Ethirimol	23947-60-6	FU	X									●
57	Ethylene thiourea	96-45-7	Breakdown Product - used in the manufacture of FUs		●			●	●				

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
58	Etofenprox; Ethofenprox	80844-07-1	IN	-							●	●	●
59	Fenbuconazole	114369-43-6	FU	X									
60	Fenazaquin	120928-09-8	AC	-									●
61	Fenoxycarb	72490-01-8	IN	-	●								●
62	Fluazifop-butyl	69806-50-4	HB	-				●					
63	Fluazolate	174514-07-9	HB	X						●		●	
64	Flufenoxuron	101463-69-8	IN	X						●		●	
65	Flumetralin	62924-70-3	PG	-						●		●	
66	Flumioxazin	103361-09-7	HB	-				●					
67	Flupyradifurone	951659-40-8	IN	-									
68	Flusilazole	85509-19-9	FU	X				●					
69	Fluthiacet-methyl	117337-19-6	HB	-	●								
70	Folpet	133-07-3	FU	-	●								
71	Forchlorfenuron	68157-60-8	PGR	X									
72	Fosthiazate	98886-44-3	NE	-									●
73	Furfural	98-01-1	Adjuvant HB	X	●								
74	Furilazole	121776-33-8	FU	-	●								
75	Glufosinate-ammonium	77182-82-2	HB	-				●					
76	Halfenprox	111872-58-3	AC; IN	X						●		●	
77	Hexaflumuron	86479-06-3	IN	X									●
78	Hexythiazox	78587-05-0	AC; IN	-	●								

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
79	Imazalil (Enilconazole)	35554-44-0	FU	-	●								
80	Imazalil sulfate	58594-72-2	FU	-	●								
81	Imiprothrin	72963-72-5	IN	-									●
82	Indoxacarb	173584-44-6	IN	-									●
83	Iprodione	36734-19-7	FU; NE	-	●								
84	Iprovalicarb	140923-17-7	FU	-	●								
85	Isopyrazam	881685-58-1	FU	-	●						●	●	
86	Isoxaflutole	141112-29-0	HB	-	●								
87	Kresoxim-methyl	143390-89-0	FU	-	●								
88	Lactofen	77501-63-4	HB	X	●								
89	Linuron	330-55-2	HB	X				●	●				
90	Lufenuron	103055-07-8	IN	-						●	●	●	
91	Malathion	121-75-5	IN; AC	-		●							●
92	Mancozeb	8018-01-7	FU	-	●				●				
93	Mecoprop; MCPP	7085-19-0	HB	X									
94	Mepanipyrim	110235-47-7	FU	-	●								
95	Meptyldinocap	131-72-6	FU	X				●					
96	Metaflumizone	139968-49-3	IN	-									●
97	Metam-potassium	137-41-7	FU; IN; HB; NE	-	●								
98	Metam-sodium	137-42-8	FU; IN; HB; NE	-	●				●				

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
99	Methabenzthiazuron	18691-97-9	HB	X									●
100	Metiram	9006-42-2	FU	-	●				●				
101	Metribuzin	21087-64-9	HB	-					●				
102	Milbemectin	51596-10-2	IN	-									●
103	Molinate	2212-67-1	HB	X					●				
104	MON 4660; AD 67	71526-07-3	HB Safener	-	●								
105	Naled	300-76-5	IN; AC	X									●
106	Nitenpyram	150824-47-8	IN	X									●
107	Nitrobenzene	98-95-3	Major precursor to aniline	-				●	●				
108	Oryzalin	19044-88-3	HB	-	●								
109	Oxadiazon	19666-30-9	HB	-	●								
110	Oxyfluorfen	42874-03-3	HB	-	●								
111	Phenthoate	2597-03-7	IN	X									●
112	Phosmet	732-11-6	IN	-									●
113	Pirimicarb	23103-98-2	IN	-	●						●	●	
114	Pirimiphos-methyl	29232-93-7	IN	-									●
115	Prallethrin	23031-36-9	IN	-									●

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
116	Procymidone	32809-16-8	FU	X	●				●				
117	Profenofos	41198-08-7	IN	X									●
118	Profoxydim	139001-49-3	HB	-					●				
119	Propachlor	1918-16-7	HB	X	●								
120	Propargite	2312-35-8	AC	X	●					●		●	
121	Prothiofos	34643-46-4	IN	X						●		●	
122	Pymetrozine	123312-89-0	IN	-	●								
123	Pyraclofos	77458-01-6	AC	X									●
124	Pyraflufen-ethyl	129630-19-9	HB	-	●								
125	Pyrazachlor	6814-58-0	FU	-	●								
126	Pyrethrum extract/pyrethrins	8003-34-7	IN	X									●
127	Pyridaben	96489-71-3	AC; IN	-									●
128	Pyridalyl	179101-81-6	IN	-						●	●	●	
129	Pyridiphenthion	119-12-0	IN; AC	X									●
130	Quinoclamine	2797-51-5	AL; HB	-									●
131	Quinoxyfen	124495-18-7	FU	-						●		●	
132	Quizalofop-p-tefuryl	119738-06-6	HB	-				●					
133	Resmethrin	10453-86-8	IN	X	●				●				●
134	Rotenone	83-79-4	IN	X									●
135	Silafluofen	105024-66-6	IN	X				●					●

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
136	Spinetoram	187166-15-0	IN	-									●
137	Spinosad	168316-95-8	IN	-									●
138	Spirodiclofen	148477-71-8	AC; IN	-	●								
139	Sulfoxaflor	946578-00-3	IN	-									●
140	Temephos	3383-96-8	IN	X									●
141	Tepraloxydim	149979-41-9	HB	X					●				
142	Terrazole; Etridiazole	2593-15-9	FU	-	●								
143	Tetrachlorvinphos	22248-79-9	IN	X	●								●
144	Tetraconazole	112281-77-3	FU	-	●								
145	Tetramethrin	7696-12-0	IN	X									●
146	Thiodicarb	59669-26-0	IN	X	●								●
147	Thiabendazole	148-79-8	FU	X	●								
148	Thiophanate-methyl	23564-05-8	FU	-	●								
149	Tolfenpyrad	129558-76-5	IN	X						●		●	
150	Tralomethrin	66841-25-6	IN	X									●
151	Tri-allate	2303-17-5	HB	-							●	●	
152	Tribufos; Tribuphos (s,s,s-tributyl-	78-48-8	PGR	X	●								

	MONITORED LIST: Name of active ingredient of Pesticide	CAS number	Type of pesticide	EU status	EPA prob likel carc	IARC prob carc	Muta genic	Reprot oxic	Endocrine disruptor	Very bio accum	Very persistent in water, soil or sediment	Very toxic to aquatic organism	Highly toxic to bees
	phosphorotrithioate)												
153	Trichloracetic acid (sodium trichloroacetate)	76-03-9	HB	-									
154	Triflumizole	99387-89-0		-				•					
155	Validamycin	37248-47-8	FU	X									•
156	XMC	2655-14-3	IN	X									•

Key:

AC= Acaricide	MI = Microbiocide
AF = Antifoulant	MO= Molluscicide
AL = Algicide	NE= Nematicide
AV= Avicide	PGR= Plant Growth Regulator
BP = Breakdown Product	RE= Repellant
BIO= Biopesticide	RO= Rodenticide
BR = Bird repellent	SO= Solvent
DE= Defoliant	ST= Sterilant
FM= Fumigant	SY = Synergist
FU= Fungicide	WP = Wood Preservative
HB= Herbicide	? = no current pesticidal use
HS= Herbicide Safener	
IN = Insecticide	

Horizon scanning (Actives of concern)	
Neonicotinoids	Four actives are subject to a European ban. Question marks over the future use of neonicotinoids globally. - Clothianidin - Imidicloprid - Thiacloprid - Thiamethoxam The European decision does not affect 3rd Countries outside Europe using these products, however we would encourage all our growers and suppliers globally, to re-evaluate the use of all these actives, with a view to removing them from their pesticide programmes. As such M&S have taken the decision to restrict their use globally. As a business we will continue to evaluate their use within the supply base and will work with our growers to seek alternatives. **Position on Acetamiprid** For another neonicotinoid, **acetamiprid**, EFSA established a low risk to bees. A ban or further restrictions of this substance is therefore neither scientifically nor legally appropriate. A draft Regulation proposing a renewal of approval had been presented to the Member States on 5-6 October 2017. The proposal was further discussed and presented to the Member States for opinion in the Regulatory Committee on 12 and 13 December 2017. The Committee gave a favourable opinion on the draft Regulation with a qualified majority of Member States. The Regulation renewing the approval until 28 February 2033 has been published in the Official Journal of the European Union. https://ec.europa.eu/food/plant/pesticides/approval_active_substances/approval_renewal/neonicotinoids_en Acetamiprid has now been moved to our monitored list.
Glyphosate	European Approval has recently been renewed, albeit for a much shorter period. We will continue to monitor what is likely to happen with this active, but do encourage our suppliers and growers to seek alternatives where possible. https://www.pan-europe.info/resources/reports/2023/03/weed-management-alternatives-use-glyphosate
Paraffin / Mineral Oils	The CAS numbers below have Approval for use as IN;AC;FU; in the EU – If Paraffin oils; mineral oils are to be used, then products with these CAS numbers should be chosen. Others by exception. 97862-82-3 / 4742-46-7 / 72623-86-0

M&S

EST. 1884

Appendix 2: More information on IPM

Background: Over the past 50 years IPM has been one of the strategies where farmers have been able to sustainably and holistically control and reduce the impact of insect pests on crops and maintain robust and environmentally friendly cropping systems (Dent and Binks, 2020). IPM standards have been developed and defined by the International Organization of Biological and Integrated Control (IOBC). In addition, IPM is an integral part of the European Sustainable Usage Directive (Directive 2009/128/EC).
The adoption of these techniques assisted with IPM will enable producers to meet worldwide food security demands as well as enable farmers to reduce their ecological footprints.

Strategy: IPM involves the use of cultural techniques including the use of host plant resistance, biological control, environmental management techniques and as a last resort the use of selective plant protection products. Coupled to this monitoring of pest insects, economic action thresholds and anti-resistance strategies remain at the center of IPM strategies. IPM can be represented using the triangle diagram in Figure 1.0. The use of economic thresholds can lead to a reductionist view of the systems with environmental considerations and the presence or absence of beneficial insects not being included in the economic thresholds. This approach can perpetuate a 'quick fix' mentality i.e., symptoms are treated instead of causes.

Additional information: https://s3-eu-west-1.amazonaws.com/leaf-website/Simply-Sustainable-Integrated-Pest-Management-FINAL.pdf

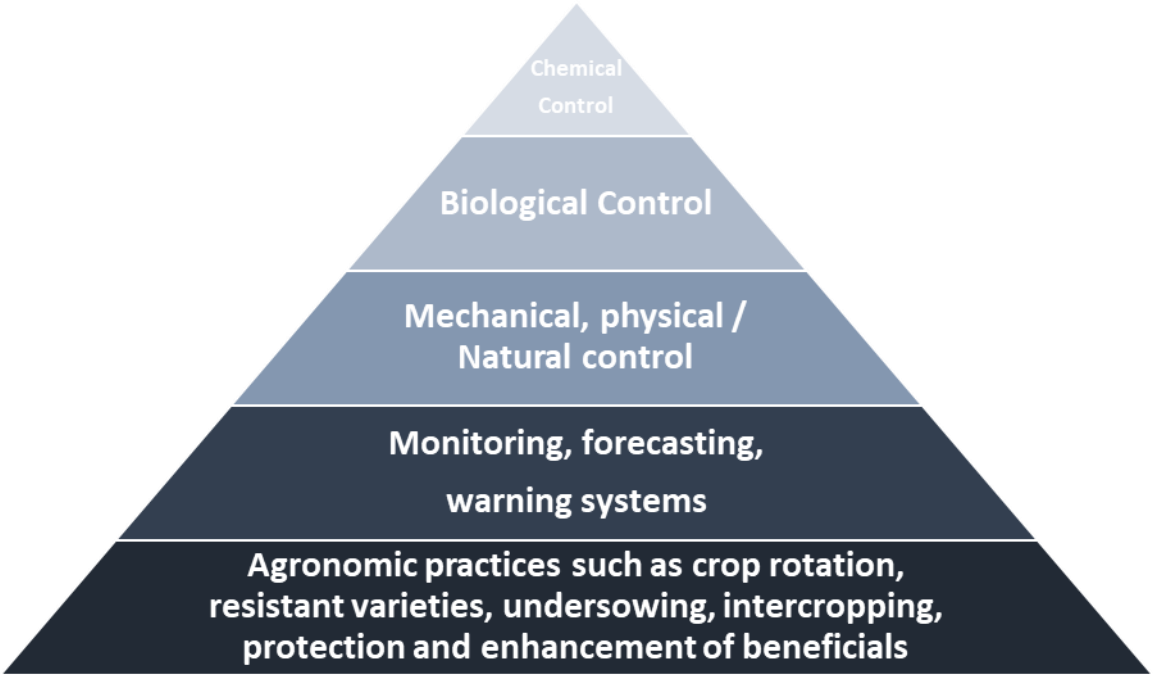

Figure 1.0 Adapted from the PAN IPM triangle (PAN Europe)

Additional information:

https://www.pan-europe.info/blog/reflections-6-symposia-sustainable-use-pesticides-directive-sud

Building on LEAF's 8-point IPM plan as well as the IOBC Integrated Production (IP) Guidelines the following strategy is based on holistic and organic approaches to control noxious pests and includes both indirect and preventative pest management strategies which are interlinked with direct and curative methods of pest control. This multilevel strategy combines various tactics in farm management and cropping design in a holistic approach to limit pest populations below damaging levels, thus minimizing the need for direct intervention. With the reduction in synthetic pesticides in the market and for farmers to work more closely with nature this strategy brings into play holistic thinking some of which is adopted in organic farming systems – the term 'organic fusion' farming can be used here which blends both conventional and organic IPM strategies into one strategy (See Fig 2.0).

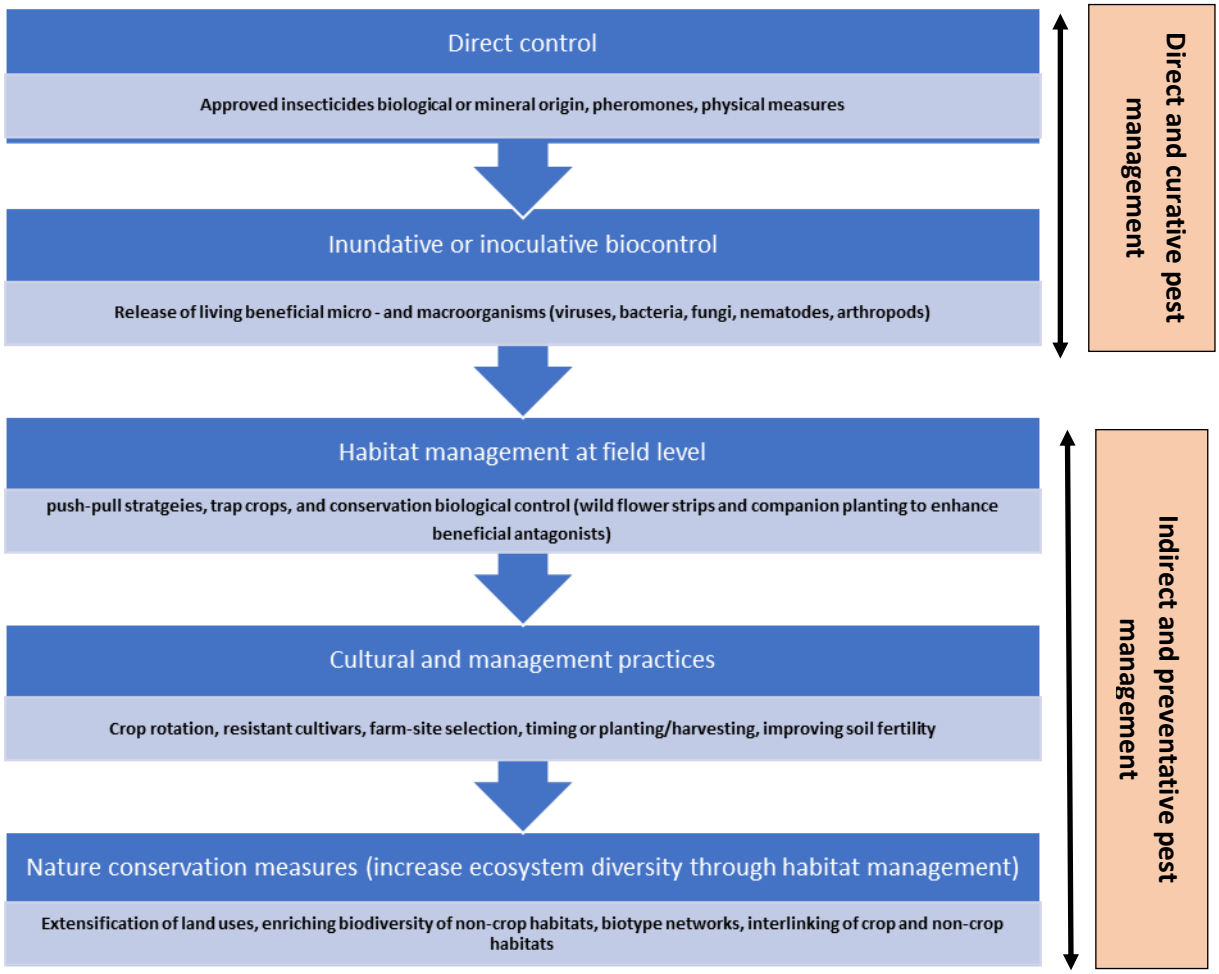

Fig 2.0 IPM in organic farming (Adapted from Vancate and Kreiter, 2018)

Direct and curative methods

Direct control methods include the use of approved organic insecticides, pheromones and physical measures. These include the use if biopesticides, mating disruption techniques and insect monitoring strategies as well as physical methods such as the use of barriers and nets. Innovative and inoculative biocontrol techniques can also be deployed. If these methods are deployed or timed incorrectly they can have detrimental effects on beneficial arthropods. This can lead to adverse effects on ecosystems services needed for pest prevention. Therefore, direct control measures should only be applied in case of threatening pest outbreaks and selective methods would be preferred. Examples include the mass release of antagonists or application of

biological control products such as entomopathogenic nematodes or insect predators.

Indirect and preventative methods

Nature conservation measures

Nature conservation and increasing ecosystem diversity can be achieved through the habitat management. Coupled to this is the extensification of land uses, establishment of non-crop habitat and biotope networks. Non-crop floral resources in agriculture and horticulture have become scarce in UK based farming landscapes. This in turn has led to constraints in the presence of beneficial insects, resulting in reduced biological pest control and pollination efficacy. By including non-crop floral resources such as flowering seed mixes (including grasses and legumes) into farming landscapes farmers are able to increase biodiversity and a range of ecological services which include improved biological pest control, improved pollination and increased buffering at field edges and in margins.

Cultural and management practices

A whole range of cultural methods can be adopted by growers. These include

- Crop rotation
- Increasing crop diversity
- Transplanting
- Weed management
- Resistant varieties
- Avoiding areas on the farm when pest pressure can be high.

Habitat management

Habitat management at a field level can restore a certain level of biodiversity within crop fields. Habitat management also aims to create conditions that are favorable to natural enemies (conservation biological control) or detrimental to pests (push-pull strategy). Habitat management strategies can also benefit ecosystems through weed control, mitigation of soil erosion and nutrient cycling.

Glossary

- AEA Agricultural Engineers Association
- ADI Acceptable Daily Intake – This is the amount of a chemical which can be consumed every day for a lifetime in the practical certainty that no harm will result.
- AHDB Agriculture and Horticulture Development Board
- ARfD Acute Reference Dose – The definition of the ARfD is similar to that of the ADI, but it relates to the amount of a chemical that can be taken in at one meal or on one day without appreciable health risk to the consumer.
- BASIS British Agrochemical Standards Inspection Scheme
- COPR Control of Pesticides Regulations
- COSHH Control of Substances Hazardous to Health
- CRD Chemicals Regulation Directorate
- DEFRA Department for Environment, Food and Rural Affairs
- EAMU Extension of Authorisation for Minor Use
- EU European Union
- FAPAS Food Analysis Performance Assessment Scheme
- FPC Fresh Produce Consortium
- Global GAP Euro-Retailer Good Agricultural Practice Protocol
- GLP Good Laboratory Practice
- HSE Health and Safety Executive
- ICM Integrated Crop Management
- IPBES Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
- IPM Integrated Pest Management
- LEAF Linking Environment and Farming
- LOD Limit of Determination
- MRL Maximum Residue Level
- NPTC National Proficiency Tests Council
- NRoSO National Register of Sprayer Operators
- NSTS National Sprayer Testing Scheme
- PAN Pesticide Action Network
- PPP's Plant Protection Products
- POP's Persistent Organic Pollutants
- PRiF Pesticide Residues in Food
- UKAS United Kingdom Accreditation Service
- WiGRAMP Working Group on the Risk Assessment of Pesticides: http://cot.food.gov.uk/committee/committee-on-toxicity/cotwg/wigramp

Further Reading

- Department for Environment, Food and Rural Affairs: https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs
- DEFRA The Code of Practice for using Plant Protection Products (PB11090)
- Copies of the Code can be downloaded from www.pesticides.gov.uk. Hard copies are available from DEFRA Publications.
- Protecting our Water, Soil and Air published by TSO
- All are available to download free from www.redtractor.org.uk or from DEFRA Publications
- "Is your sprayer fit for work?" DEFRA PB3160
- "Keeping Pesticides out of water" DEFRA PB2088
- "Pesticides and Integrated Farm Management – a guide to responsible use" DEFRA PB9241
- Opportunities for saving money by reducing waste on your farm – A manual for farmers and growers
- Pesticides, Reference Book 500 (published annually)
- The Prevention of Pollution of Controlled Waters by Pesticides – The Environment Agency Health and Safety Executive (HSE)
- HSE Guidance Note AS 16 Guidance on Storing Pesticides for Farmers and other Professional Users
- HSE Guidance Note MS 17 Biological Monitoring of Workers Exposed to Organophosphorus Pesticides
- Food Standards Agency: http://www.food.gov.uk/
- British Crop Protection Council (BCPC) http://www.bcpc.org/
- The UK Pesticide Guide (Published annually) (The "Green Book")
- The Pesticide Manual – A World Compendium
- The Biopesticide Manual – A World Compendium
- Campden & Chorleywood Food Research Association www.campden.co.uk
- "Pesticide Controls in the Food Chain" CCFRA Guideline No. 19
- Crop Protection Association (CPA): http://www.cropprotection.org.uk/
- "Minimising Food Residues" publication
- Why is the avoidance of pesticide residues so important? publication
- What can you do in the field to minimise residues? publication
- Guidelines for the safe and effective use of crop protection productshttp://www.gcpf.org/
- https://croplife.org/wp-content/uploads/2014/04/Guidelines-for-the-safe-and-effective-use-of-crop-protection-products.pdf

- Guidelines for personal protection when using pesticides in hot climates https://croplife.org/wp-content/uploads/2014/04/Guidelines-for-personal-protection-when-using-crop-protection-products-in-hot-climates.pdf
- Chemicals Regulation Directorate:
- http://www.pesticides.gov.uk/guidance/industries/pesticides/topics/About-The-Chemicals-Regulation-Directorate/General/Responsibility+for+Pesticides.htm
- HSE – Health & Safety Executive maintains an online database with the latest UK/EU http://www.pesticides.gov.uk/guidance/industries/pesticides/topics/pesticide-approvals
- PRiF – Pesticide Residues in Food: http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF
- Your guide to approved pesticides (The "Blue Book") http://www.pesticides.gov.uk/guidance/industries/pesticides/topics/publications/guide-to-pesticides/introduction-to-the-pesticides-guide-blue-book
- PAN Europe's basic introduction booklet on IPM and their low impact agriculture website could be referred to as follows: IPM. Working with Nature. IOBC, PAN Europe & IBMA, 2019. Via: https://www.pan-europe.info/sites/pan-europe.info/files/ipm-working-with-nature-2019-edition. This booklet explains the principles of IPM and how to put these into practice, with examples from arable and horticulture crops.
- Low Impact Farming website: https://www.low-impact-farming.info
- *This website brings together inspiring experiences in reducing pesticide use by farmers in various arable and horticulture cropping systems in Europe.*
- https://www.iobc-wprs.org/ip_practical_guidelines/index.html
- Dent, D and Binks, R.H., (2020) Insect Pest Management, CABI
- Collier, R., (2021) Improving Integrated Pest Management in Horticulture: 110, Burleigh Dodds Series in Agricultural Science
- Vacante, V and Kreiter, S., (2018) Handbook of Pest Management in Organic Farming, CABI.

Non-Governmental Organisations (NGO's)

- Agricultural Engineers Association (AEA) http://www.aea.uk.com/
- Chilled Food Association (CFA) http://www.chilledfood.org/
- FERA http://fera.co.uk/
- Fresh Produce Consortium (FPC) http://www.freshproduce.org.uk/

- LIAISON UK pesticide database: https://liaison.fera.co.uk/
- Linking the Environment and Farming (LEAF): http://www.leafuk.org/leaf/home.eb
- Global GAP: http://www.globalgap.org/uk_en/Plant Health: https://www.gov.uk/plant-health-controls
- Red Tractor Assurance: http://www.redtractor.org.uk/