

**NATIONAL ACTION PLAN TO ACHIEVE THE SUSTAINABLE USE OF
PLANT PROTECTION PRODUCTS, REV. 2
2021-2025**

February 2021

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Annex 1: Assessment of the fulfilment of 2012 NAP tasks

Annex 2: NAP objectives and proposed measures, rev. 2

Annex 3: Harmonised risk indicators

1 Introduction

Agricultural production is one of the most important sectors of Slovak economy. It is therefore a priority public interest to ensure its quality and beneficial properties for health.

Plant production alone has an important role to play in agricultural production and its functioning requires high-quality basic inputs, including plant protection. The use of plant protection products (PPPs) offers one of the most important tools for protection of plants and plant products from pests including weeds and, at the same time, means of improving agricultural plant production. The advantage of their use in plant protection lies in the fact that in a short time, it is possible to treat large areas and thus carry out necessary procedures in time and often only locally, thus preventing further spread of weeds, diseases or pests. Compared to mechanical interventions, the advantage of PPPs is that their application is generally simpler.

'Pesticide' is a broad term covering both chemical substances as well as microorganisms or other substances of biological origin.

The use of pesticides in plant production, forestry and other areas is a necessity, especially considering the changing agro-climatic conditions and the related increasing pressure due to the growing number of pests. What is important, however, is how these pesticides are used, what substances are applied and in what manner. It should be borne in mind that the application of chemical pesticides in particular is more demanding in terms of qualified use and protection of health and the environment from possible adverse effects of these substances. Of course, the use of pesticides for plant protection can be successful only if it is properly complemented by other means of regulation within an integrated plant protection system.

The **2006 Thematic strategy on the sustainable use of pesticides**¹⁾ led to a new legislative framework for the approval and use of pesticides, in 2009 resulting in the adoption of the 'pesticide package', i.e. a set of four pieces of European Union legislation concerning PPPs:

- Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market ('Regulation (EC) No 1107/2009');
- Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides ('Directive 2009/128/EC');
- Directive 2009/127/EC of the European Parliament and of the Council of 21 October 2009 amending Directive 2006/42/EC with regard to machinery for pesticide application ('Directive 2009/127/EC');
- Regulation (EC) No 1185/2009 of the European Parliament and of the Council of 25 November 2009 concerning statistics on pesticides ('Regulation (EC) No 1185/2009').

Regulation (EC) No 1107/2009 lays down harmonised and strengthened rules for the approval of active substances and the placing of PPPs on the market with a view to simplifying and accelerating respective processes, thereby improving the availability of the necessary plant protection in practice and ensuring increased competitiveness of EU agriculture while maintaining a high level of protection of human, animal and environmental health.

Directive 2009/128/EC is aimed at the sustainable use of pesticides by providing for and applying measures which will reduce the risks and negative potential impacts of the use of pesticides

on human and animal health and the environment, where this Directive regulates pesticides falling within the category of plant protection products as defined pursuant to Article 2 of Regulation (EC) No 1107/2009.

Article 4 of Directive 2009/128/EC and Section 36 of Act No 405/2011 on phytosanitary care and amending Act of the National Council No 145/1995 on administration fees, as amended, which transposes the said Directive, require Member States to draw up and adopt National Action Plans to set up their qualitative and quantitative objectives, measures and timetables to reduce risks and impacts of pesticide use on human health and the environment and to encourage the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of pesticides.

The first National Action Plan to achieve the sustainable use of pesticides ('NAP') was adopted on 26 November 2012 and included an analysis of the current situation, quality objectives and measures proposed to reduce risks the use of pesticides poses for human health and the environment. For the purposes of the adopted NAP, 'pesticides' mean plant protection products.

The assessment of the performance of the NAP adopted in 2012 shows that a significant progress has been made in measures aimed at protecting water resources and in training of professional users in agriculture and forestry in terms of both basic compulsory training and complementary training focused on integrated pest management and organic farming. Improvements in interinstitutional cooperation have been reflected in detecting illegal imports and trade in and use of illegal PPPs in connection with environmental crime.

More activities need to be focused on the use of PPPs in public green spaces and in public areas and on raising awareness among non-professional users of the products, with ongoing tasks of monitoring of the impact of pesticides on the human organism, and development of crop-specific manuals to promote integrated pest management. Effective checks of compliance with the general principles of integrated pest management should be put in place, where particular attention should be paid to the collection and recovery of empty product packaging.

Based on the experience gained in the implementation of Regulation (EC) No 1107/2009 and Directive 2009/128/EC, as well as the analysis of the fulfilment of the tasks set out in the NAP adopted in 2012, this NAP has been updated in order to achieve both sustainable plant protection and a high level of protection of human health and the environment, while the NAP's name reflects the fact **that in this context, it concerns exclusively PPPs.**

2 Legal basis

The use of PPPs and their placing on the market is regulated by sectoral legislation and is also – directly or indirectly – related to legislation in other policy areas such as protection of public health, water policy, agricultural policy or environmental protection.

2.1 EU legislation

2.1.1 EU sectoral legislation

- ✓ Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market
- ✓ Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides
- ✓ Directive 2009/127/EC of the European Parliament and of the Council of 21 October 2009 amending Directive 2006/42/EC with regard to machinery for pesticide application
- ✓ Regulation (EC) No 1185/2009 of the European Parliament and of the Council of 25 November 2009 concerning statistics on pesticides
- ✓ Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC ('Regulation (EC) No 396/2005')

2.1.2 Related EU legislation

- ✓ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- ✓ Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations (EC) No 999/2001, (EC) No 396/2005, (EC) No 1069/2009, (EC) No 1107/2009, (EU) No 1151/2012, (EU) No 652/2014, (EU) 2016/429 and (EU) 2016/2031 of the European Parliament and of the Council, Council Regulations (EC) No 1/2005 and (EC) No 1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations (EC) No 854/2004 and (EC) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/EC and Council Decision 92/438/EEC (Official Controls Regulation)
- ✓ Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species
- ✓ Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, as amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council
- ✓ Commission Directive (EU) 2015/1787 of 6 October 2015 amending Annexes II and III to Council Directive 98/83/EC on the quality of water intended for human consumption
- ✓ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive)

- ✓ Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual directive within the meaning of Article 16(1) of Directive 89/391/EEC)
- ✓ Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (sixth individual directive within the meaning of Article 16(1) of Council Directive 89/391/EEC)
- ✓ Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC
- ✓ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds
- ✓ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
- ✓ Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste

2.1.3 International conventions and treaties

Slovakia is bound by international treaties (conventions) which aim to protect human health and the environment from possible damage and thus contribute to the environmentally friendly use of chemicals hazardous to human health and the environment, including pesticides. Slovakia is a signatory to the Basel, Stockholm and Rotterdam Conventions and a member of the OECD.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. To implement the requirements of the Convention, Regulation (EC) No 1013/2006 on shipments of waste was adopted, establishing procedures and control regimes for the shipment of waste, depending on the origin, destination and route of the shipment, the type of waste shipped and the type of treatment to be applied to the waste at its destination. The authority responsible for the Basel Convention is the Ministry of the Environment.

Stockholm Convention on Persistent Organic Pollutants (POPs). The Convention is a global environmental convention aimed at protecting human health and the environment from the harmful effects of persistent organic pollutants. The Convention's objective is to eliminate the production and use, as well as the import, export, and release into the environment of selected POPs, whose list is gradually updated and expanded. To implement the requirements of the Convention, Regulation (EU) 2019/1021 on persistent organic pollutants was adopted. The authority responsible for the Stockholm Convention is the Ministry of the Environment.

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The Convention is an important international legal instrument for improving international regulation of trade in certain hazardous chemicals and pesticides and provides for a national decision-making process on their import and export and for disseminating these decisions to the Parties. To implement the requirements of the Convention, Regulation (EU) No 649/2012 concerning the export and import of hazardous chemicals was adopted. The authority responsible for the Rotterdam Convention is the Ministry of Economy, receiving assistance from the Ministry of Agriculture and Rural Development.

Organisation for Economic Co-operation and Development (OECD). The Slovak Republic has been a member of the OECD since **14 December 2000**. The OECD's decision-making system is based on consensus among all its members, so normally no formal voting takes place during meetings (only in isolated cases that are strictly defined by OECD rules). **The OECD Council** is the organisation's highest

decision-making body. Each member country is represented by one representative. The OECD Council's meetings take place twice a month at the level of the heads of permanent delegations and are chaired by the Secretary-General of the OECD. Once a year, the OECD Council meets for the Ministerial Council Meeting. The resolutions and recommendations of the OECD Council are adopted on the basis of consensus among all its members. The Council has the power to adopt legal instruments which are commonly referred to as 'OECD Acts' and are the result of substantive work carried out in the organisation's Committees. They are based on in-depth analysis and reporting conducted at the Secretariat and cover a wide range of topics. The main types of Acts are decisions and recommendations.

The issue of pesticides falls within the responsibility of the Environment Directorate and is dealt with by the Working Group on Pesticides. This Working Group includes functional expert groups focused on specific issues such as biopesticides, reducing the risks of pesticide use, electronic communication on pesticides, combating illegal trade in pesticides, the impact of pesticides on pollinators and the exchange of information on bee mortality due to pesticides. Importantly, the Group engages in exchange of information and prepares expert publications, recommendations and testing methods. OECD brochures containing summaries of national policies in specific areas such as aerial pesticide applications, pesticide application in/near residential areas, etc. provide a useful basis for reviewing national measures in place.

2.2 Slovak legislation

2.2.1 Slovak sectoral legislation

- ✓ Act No 405/2011 on phytosanitary care and amending Act of the National Council No 145/1995 on administration fees, as amended ('Act No 405/2011'), as amended ('Act No 405/2011') [sic]
- ✓ Implementing decrees of the Ministry of Agriculture and Rural Development pursuant to Section 40(a) to (i) of Act No 405/2011
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 485/2011 laying down details of plant protection products, as amended
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 486/2011 laying down the details of the conditions, procedures and deadlines for the implementation of provisions on biological activity tests, requests, the principles of good experimental practice, audits and certification, the extension of the scope of certificates, and recertification, as amended
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 487/2011 on integrated pest management and the application thereof
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 488/2011 laying down details of principles and measures to protect human health, drinking water sources, bees, animals, water and other non-target organisms, the environment and specific areas in the use of plant protection products
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 489/2011 on conditions and procedures for the registration and inspection of application equipment
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 490/2011 laying down detailed conditions, requirements and procedures for the implementation of provisions on the aerial application of plant protection products and on requests for aerial application permits
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 491/2011 on keeping records of plant protection products and reporting data, conditions and procedures for storage and handling of plant protection products and cleaning of used application equipment

- Implementing Decree of the Ministry of Agriculture and Rural Development No 492/2011 on training in the field of plant protection products
- ✓ Act No 387/2013 on plant protection adjuvants and amending and supplementing certain laws, as amended by Act No 177/2018
 - Implementing Decree of the Ministry of Agriculture and Rural Development No 477/2013 implementing the Plant Protection Adjuvants Act
- ✓ Act No 282/2020 on organic production
- ✓ Act No 189/2009 on organic production
- ✓ Act No 150/2019 on the prevention and management of introduction and spread of invasive alien species and amending and supplementing certain laws
- ✓ Slovak Government Regulation No 449/2019, which lists invasive alien species which are of concern to the Slovak Republic
- ✓ Implementing Decree of the Ministry of the Environment No 450/2019 laying down the conditions and methods of removal of invasive alien species
- ✓ Implementing Decree of the Ministry of Agriculture No 508/2004 implementing Section 27 of Act No 220/2004 on the protection and use of agricultural land and amending Act No 245/2003 concerning integrated pollution prevention and control and amending and supplementing certain laws, as amended by Slovak Government Regulation No 59/2013

2.2.2 Related Slovak legislation

- ✓ Act of the National Council No 152/1995 on food, as amended
- ✓ Act No 17/1992 on the environment, as amended
- ✓ Act No 543/2002 on nature and landscape conservation, as amended
- ✓ Act No 409/2011 on certain measures concerning environmental burden and amending and supplementing certain laws, as amended by Act No 49/2018
- ✓ Act No 442/2002 on public water supply systems and public sewer systems and amending and supplementing Act No 276/2001 on regulation in network industries, as amended
- ✓ Act No 364/2004 on waters and amending and supplementing Act of the National Council No 372/1990 on misdemeanours, as amended (Waters Act), as amended
- ✓ Act No 305/2018 on protected natural water accumulation areas (protected water management areas) and amending and supplementing certain laws
- ✓ Act No 79/2015 on waste and amending and supplementing certain laws, as amended
- ✓ Act No 67/2010 on conditions applicable to the placing on the market of chemical substances and chemical mixtures and amending and supplementing certain laws (Chemicals Act), as amended
- ✓ Act No 355/2007 on protection, support and development of public health and amending and supplementing certain laws, as amended
- ✓ Act No 576/2004 on health care, services associated with the provision of health care, and amending and supplementing certain laws, as amended
- ✓ Act No 124/2006 on occupational safety and health protection and amending and supplementing certain laws, as amended
- ✓ Act No 143/1998 on civil aviation (Civil Aviation Act) and amending and supplementing certain laws, as amended
- ✓ Slovak Government Regulation No 355/2006 on the protection of employees from risks related to exposure to chemical agents at work, as amended
- ✓ Slovak Government Regulation No 356/2006 on the protection of the health of employees from risks related to exposure to carcinogens and mutagens at work, as amended
- ✓ Slovak Government Regulation No 395/2006 on minimum requirements for the provision and use of personal protective equipment
- ✓ Slovak Government Regulation No 174/2017 establishing sensitive areas and vulnerable zones

- ✓ Implementing Decree of the Ministry of Health No 247/2017 laying down details on the quality of drinking water, the control of drinking water quality, the monitoring and risk management programme for drinking water supply, as amended by Implementing Decree No 97/2018
- ✓ Implementing Decree of the Ministry of the Environment No 29/2005 laying down details concerning the determination of water protection zones, measures for the protection of waters and technical modifications in the water protection zones
- ✓ Implementing Decree of the Ministry of the Environment No 636/2004 laying down requirements for raw water quality and for water quality monitoring in public water supply systems
- ✓ Implementing Decree of the Ministry of the Environment No 371/2015 implementing certain provisions of the Waste Act, as amended
- ✓ Implementing Decree of the Ministry of the Environment No 365/2015 establishing the Waste Catalogue as amended by Implementing Decree No 320/2017
- ✓ Implementing Decree of the Ministry of the Environment No 366/2015 on registration and reporting obligations, as amended
- ✓ Implementing Decree of the Ministry of the Environment No 24/2003 implementing Act No 543/2002 on nature and landscape conservation, as amended
- ✓ Implementing Decree of the Ministry of the Environment No 200/2018 laying down details on the handling of pollutants, the requirements for emergency plans and the procedure for dealing with exceptional deterioration of waters
- ✓ Notice of the Ministry of Agriculture and Rural Development on the publication of the list of plant protection products whose use is prohibited in protected water management areas pursuant to Act No 305/2018 on protected natural water accumulation areas and amending and supplementing certain laws

3 NAP objectives

In accordance with the Slovak Government Manifesto for 2020-2024, as well as the Green Deal, Farm to Fork Strategy and the Biodiversity Strategy, the NAP's framework objectives are as follows:

- *quality and healthy agricultural production;*
- *balance between economic and eco-friendly farming practices;*
- *adaptation of agriculture and forestry to climate change;*
- *increased protection of drinking water resources and ensuring their optimum status;*
- *protection of public health;*
- *protection of bees and other pollinators;*
- *protection of wild animals and aquatic environments;*
- *promotion of precision farming;*
- *promotion of organic farming;*
- *promotion of non-chemical plant protection methods.*

Specific objectives for each area as well as measures proposed to achieve them are set out in Annex 2.

4 Analysis of the current situation and measures proposed to achieve the objectives

The issue of pesticides falls within the competence of the Ministry of Agriculture and Rural Development. The Ministry of Health, Ministry of the Environment and Ministry of Education are involved in the performance of tasks according to the current legislation, having individual professional sites within their establishment competence that are authorised under Section 7 of Act No 405/2011 for the areas of toxicology, residues, environmental fate and behaviour and ecotoxicology.

In accordance with Section 3(f) of Act No 405/2011, the Ministry of Agriculture and Rural Development established the Expert Commission for Plant Protection Products and Plant Protection Application Equipment (Statute of the Expert Commission was published on 21 March 2012 in the Journal of the Ministry of Agriculture and Rural Development, year XLIV, Vol. 9), composed of representatives of the Ministry of Agriculture and Rural Development, Ministry of the Environment, Central Control and Testing Institute in Agriculture in Bratislava (ÚKSÚP) and authorised professional sites. All cross-cutting issues related to PPPs, their authorisation, use and control, protection of bees, water resources, non-target organisms, as well as application equipment for plant protection are being discussed and addressed at the Commission's meetings. At the same time, opinions and underlying materials are being prepared for potential changes in legislation. Representatives of non-governmental organisations and other stakeholders, professional organisations, companies and associations may also be invited to the Commission's meetings as appropriate.

ÚKSÚP is the institution authorised for the performance of activities pursuant to Sections 4 and 6 of Act No 405/2011, meaning it accepts applications for evaluation of active substances, safeners, synergists or adjuvants, accepts applications for evaluation and authorisation of PPPs, coordinates the evaluation process and issues decisions. At the same time, it acts as a professional site in the field of identity and physicochemical and microbiological properties, analytical methods and biological activity. ÚKSÚP conducts controls of PPPs and draws up statistical overviews of sales and consumption of PPPs. Apart from that, it serves as the official laboratory for chemical laboratory controls of PPPs. Since 2017, it has also performed evaluations of the properties of PPP packaging intended for non-professional users.

The National Forest Centre (NLC) prepares expert opinions for PPPs used in forestry, provides ÚKSÚP with data on forestry PPP consumption and performs tests of biological activity of PPPs in application in forest areas.

Professional sites authorised under Section 7 of Act No 405/2011 are as follows:

- Public Health Authority of the Slovak Republic (ÚVZ SR) – serves as the professional site for consumer protection (residue evaluation);
- Slovak Hydrometeorological Institute (SHMÚ) – serves as the professional site for surface water and air;
- Water Research Institute (VÚVH) – serves as the professional site for groundwater (and, with regard to microbial substances, also surface water), soil, methods of water analysis and protection of drinking water;

- the national reference laboratory (NRL) – serves as the professional site for ecotoxicology with the exception of bees and non-target arthropods (risk assessment for birds, mammals, aquatic animals, soil organisms, microorganisms and non-target plants) and toxicology;
- National Agricultural and Food Centre, Institute of Apiculture (NPPC/ÚVČ) – serves as the professional site for bees and non-target arthropods.

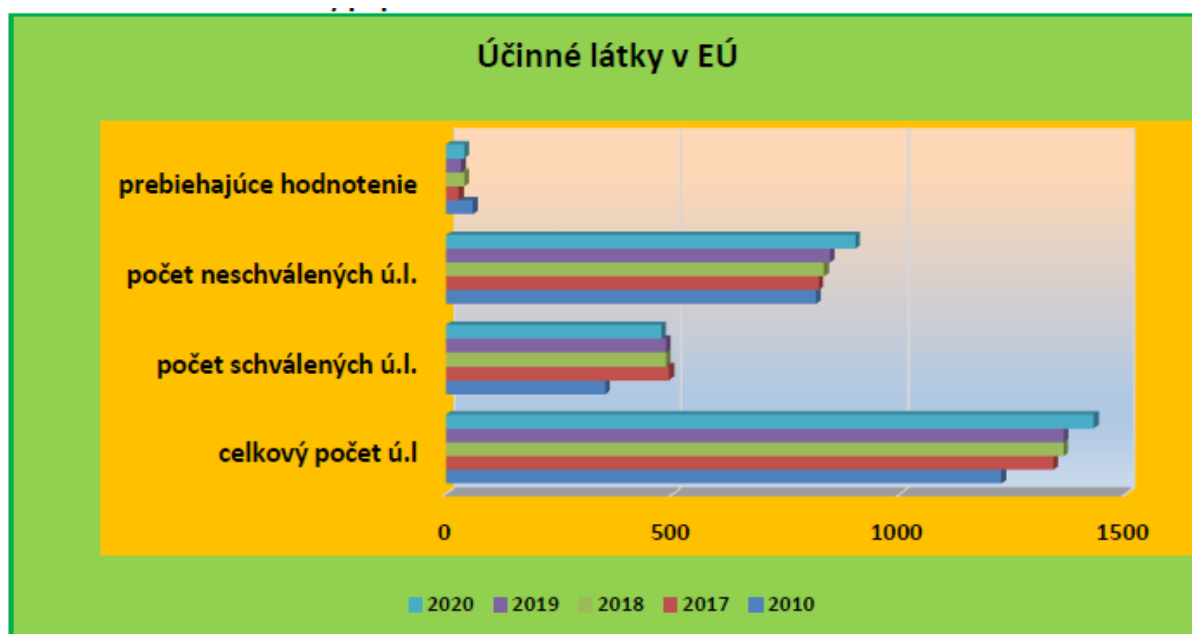
4.1 Plant protection products, plant protection adjuvants, basic substances

4.1.1 Placing on the market

Currently, there are 1 414 active substances (plus 10 safeners and 5 synergists) for PPPs registered within the EU. Out of these, 473 active substances (plus 23 basic substances) (33.5%) are permitted for use in PPPs in the EU.

Evaluation of 40 (2.8%) active substances is currently in progress, while 901 (63.7%) active substances are not authorised and their use is not permitted in the EU. A comparison with the years 2010 to 2020 is shown in Chart 1.

Chart 1 Active substances in PPPs in the EU



| Key to graphic | |
|--------------------------|--|
| Original text | Translation |
| Účinné látky v EÚ | Active substances in the EU |
| prebiehajúce hodnotenie | Evaluation in progress |
| počet neschválených ú.l. | Number of non-authorised active substances |
| počet schválených ú.l. | Number of authorised active substances |
| celkový počet ú.l. | Total number of active substances |

The decrease in the number of active substances permitted in the EU also affected the number of active substances authorised in Slovakia and the related number of PPPs authorised in Slovakia (Table 1). Since 2012, we have witnessed an increase in the number of authorised active

substances as well as a significant increase in authorised PPPs (Chart 2). In 2014, 6 active substances were authorised in Slovakia consisting of microorganisms, as well as 5 potentially low-risk substances. In 2020, this number rose to 9 authorised active substances consisting of microorganisms and 11 potentially low-risk substances. While no low-risk active substance was authorised in Slovakia in 2018, in 2020 there are 6 authorised active substances with this status.

Of the hazardous substances which are to be gradually replaced (candidates for substitution) under Article 24 of Regulation (EC) No 1107/2009, 46 substances are authorised in Slovakia, mainly substances that meet at least two criteria of a persistent, bioaccumulative and toxic (PBT) substance, or have very low toxicological reference values. Their annual consumption represents approximately 15% of the total consumption of active substances in Slovakia.

A comparison of the number of PPPs authorised/permitted in Slovakia between 2008 and 2019 is shown in Table 2.

Table 1 Number of PPPs and their active substances authorised in Slovakia

| Year | Number of authorised PPPs | Number of authorised active substances | Year | Number of authorised PPPs | Number of authorised active substances |
|------|---------------------------|--|------|---------------------------|--|
| 1993 | 856 | 364 | 2007 | 459 | 212 |
| 1994 | 877 | 350 | 2008 | 487 | 218 |
| 1995 | 931 | 351 | 2009 | 500 | 218 |
| 1996 | 969 | 382 | 2010 | 516 | 213 |
| 1997 | 625 | 385 | 2011 | 441 | 204 |
| 1998 | 655 | 335 | 2012 | 470 | 215 |
| 1999 | 692 | 318 | 2013 | 529 | 244 |
| 2000 | 674 | 298 | 2014 | 619 | 221 |
| 2001 | 662 | 262 | 2015 | 647 | 223 |
| 2002 | 564 | 237 | 2016 | 723 | 225 |
| 2003 | 585 | 268 | 2017 | 783 | 230 |
| 2004 | 596 | 246 | 2018 | 772 | 233 |
| 2005 | 545 | 242 | 2019 | 529 | 244 |
| 2006 | 473 | 223 | 2020 | | |

Chart 2 Number of PPPs authorised or permitted in Slovakia between 2008 and 2019



| Key to graphic | |
|--|--|
| Original text | Translation |
| Počet prípravkov autorizovaných alebo povolených v SR v rokoch 2008 až 2019 | Number of PPPs authorised or permitted in Slovakia between 2008 and 2019 |
| Autorizované prípravky na ochranu rastlín na profesionálne použitie | Authorised PPPs for professional use |
| Autorizované prípravky na ochranu rastlín na neprofesionálne použitie | Authorised PPPs for non-professional use |
| Paralelné prípravky na profesionálne použitie povolené pre uvedenie na trh | Parallel PPPs for professional use permitted for placing on the market |
| Paralelné prípravky na profesionálne použitie povolené pre uvedenie prípravku na osobnú spotrebu | Parallel PPPs for professional use permitted for personal use |
| Paralelné prípravky na neprofesionálne použitie- povolené pre uvedenie na trh | Parallel PPPs for non-professional use permitted for placing on the market |
| Rok | Year |

The first prerequisite enabling placing of PPPs for non-professional users on the market as well as their subsequent use by non-professional users is their evaluation and subsequent authorisation of PPPs in retail packaging taking into account specific potential risks for this target group of users. **Therefore, PPPs classified as toxic, very toxic, carcinogenic, mutagenic or toxic for reproduction are not authorised for non-professional users.**

Apart from PPPs as such, plant protection also makes use of ‘plant protection adjuvants’. These are products used to detect pests or beneficial organisms, biocontrol agents or products applied to plants or plant products which do not fall within the scope of the definition of a plant protection product under Regulation (EC) No 1107/2009. **In 2012, 30 different biocontrol agents were authorised in Slovakia, while in 2020, we recorded a decrease in the number to 22 authorised agents.**

Table 2 Number of PPPs authorised or permitted in Slovakia between 2008 and 2019

| PPPs | Number of authorised/permitted PPPs | | | | | | | | | | | |
|--|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| Authorised (professional use) | 414 | 426 | 432 | 441 | 470 | 529 | 574 | 647 | 723 | 783 | 772 | 795 |
| Authorised (non-professional use) | 109 | 105 | 99 | 75 | 64 | 61 | 66 | 70 | 71 | 71 | 77 | 83 |
| Parallel PPPs (professional use – placing on the market) | 33 | 40 | 39 | 34 | 60 | 119 | 128 | 140 | 120 | 166 | 166 | 117 |
| Parallel PPPs (professional use – personal use) | 83 | 83 | 37 | 27 | 35 | 43 | 41 | 37 | 44 | 41 | 44 | 19 |
| Parallel PPPs (non-professional use – placing on the market) | 0 | 12 | 14 | 20 | 19 | 19 | 19 | 16 | 28 | 25 | 16 | 13 |

Basic substances are approved at EU level pursuant to Article 23 of Regulation (EC) No 1107/2009 and are a complementary, more environmentally friendly alternative in plant protection, generally also suitable for organic farming. **In 2018, a task concerning basic substances was approved as part of the 2019 expert assistance tasks in order to provide for translations of the review reports (RRs) into the national language, present procedures for use of basic substances in a form accessible to the general public and promote their use. In 2019, 3 training courses were held on principles of best practice in plant protection focused on the principles of integrated pest control, in which the results of this task were presented.**

Detailed information on the possibilities of the use of basic substances has been made available on the website of the National Agricultural and Food Centre:
<http://www.nppc.sk/index.php/sk/component/content/article/2-all/582-zakladne-latky?Itemid=195>

The list of authorised PPPs and PPPs permitted for parallel trade, as well as the list of authorised adjuvants and adjuvants permitted for parallel trade, is kept by ÚKSÚP. The lists are published annually in the Journal of the Ministry of Agriculture and Rural Development. **In addition, an online database of authorised PPPs and adjuvants, as well as PPPs and adjuvants permitted for parallel trade – ISPOR (<https://www.uksup.sk/orp-databaza-autorizovanych-pripravkov-ispor> or <http://pripravky.uksup.sk/pripravok/search>)** was finished and made available to the public in 2018, allowing the lists to be continuously updated on the basis of new, amended or withdrawn authorisations or permits.

Due to the changing procedures, legislation and the absence of an electronic database of products prior to 2018, there is no consistency in information and requirements on labels in the area of protection of human health and the environment or in the system of indicating crops and pests, especially for older authorised products. This inconsistency needs to be remedied in the procedure of the authorisation renewal or during other procedures for the product concerned.

The authorisation of PPPs for their intended use (the crop/pest combination) is conditional on remuneration of the costs spent on authorisation.

Authorisations for **'majority crops'**, i.e. crops grown on large areas of land, are usually economically attractive. In Slovakia, this mainly concerns cereals, maize, sunflower and oilseed rape. **Less significant or minor uses** are defined as uses on crops grown on small areas of land (less than 10 000 ha), or on major crops against minor pests (quarantine pests, locally occurring pests or pests occurring once in several years). Minor crops include, for example, all kinds of vegetables, fruits and industrial crops.

Minor crops have high nutritional or economic significance, but for the plant protection industry (PPP producers), preparation of studies necessary to authorise the use on such crops (mainly residue tests, biological activity tests) does not provide economic returns. Of course, without residue tests, use cannot be authorised with regard to the safety of the consumer and therefore for many minor crops and their pests, adequate means of protection are lacking.

Minority uses account for 22% of EU crop production and 3% of the area sown in the EU.

A simplified extension of authorisations for minor uses is possible under Article 51 of Regulation (EC) No 1107/2009 concerning the placing of plant protection products on the market. This concerns an extension of the use of an already authorised product in a given Member State to another minor crop/pest. The condition of this form of authorisation is that the product must already be duly authorised in a given Member State for at least one crop (e.g. oilseed rape, sunflower, maize) and use on a minority crop must be supported by residue tests or extrapolation from other crops where these tests have been carried out.

Effective stakeholder communication, effective cooperation with the EU Minor Uses Coordination Facility (EUMUCF) and the search for systemic solutions are all important factors. In order to facilitate the extension of authorisation to minor uses, these uses do not require biological activity tests and fees for expert opinions are reduced. An important aspect is the analysis of the necessary uses and coordination of the submission of applications.

The list of minor crops and minor uses is kept by ÚKSÚP and is published in the Journal of the Ministry of Agriculture and Rural Development, as well as on ÚKSÚP's website:

<https://www.uksup.sk/orp-zoznamy-menej-vyznamnych-pouziti>

4.1.2 Official controls

In Slovakia, the system of PPP controls was established in 1995 under Act No 193/1995, as amended, and its aim has been to ensure effective control of PPPs throughout their life cycle, i.e. during their production, placing on the market, storage, use and disposal in line with the applicable legislation, focusing mainly on:

- prevention, elimination or reduction of risks related to plant protection to an acceptable extent;
- controls of the placing on the market, storage, use and disposal of PPPs;
- controls of PPP imports from third countries to the Slovak market and from third countries to the EU;
- compliance with the principles of good farming practice.

ÚKSÚP maintains and updates a database of producers, repackagers, wholesale storage facilities, distributors, wholesale stores, retail stores, golf courses and professional users of PPPs. Using the data from the databases and on the basis of a risk analysis, ÚKSÚP prepares, in accordance with Article 9 of Regulation (EU) 2017/625, a breakdown of the control plan for individual regions in order to ensure the necessary frequency of controls. A separate area outside the official control plan consists of controls at an instigation, i.e. in cases of suspected breaches of the applicable legislation.

Official controls are carried out by ÚKSÚP's plant health officers following the 'Set of guidance notes on post-authorisation controls of plant protection products in Slovakia', where the control plan for PPPs for individual years includes controls of:

- producers;
- wholesale storage facilities;
- distribution and sale of products for both professional and non-professional users;
- online sales;
- imports from third countries;
- repackaging;
- application equipment;

- applications of products in public areas and other non-agricultural areas;
- applications of products on golf courses;
- applications of products on railways and highways;
- products in treated seed and planting stock, and treated seed and planting stock;
- professional users;
- correct application in relation to the protection of the environment (groundwater and surface water, bees, wild animals, birds and aquatic organisms);
- at an instigation, in the case of occurrence of drifts during ground and aerial application;
- aerial applications;
- illegal, counterfeit or unauthorised PPPs on the Slovak market;
- all undertakings specialising in plant protection services that apply PPPs at the grower, in ornamental horticulture, in public green spaces, etc.;
- obsolete products / environmental burdens;
- quality of products (sampling and laboratory analysis).

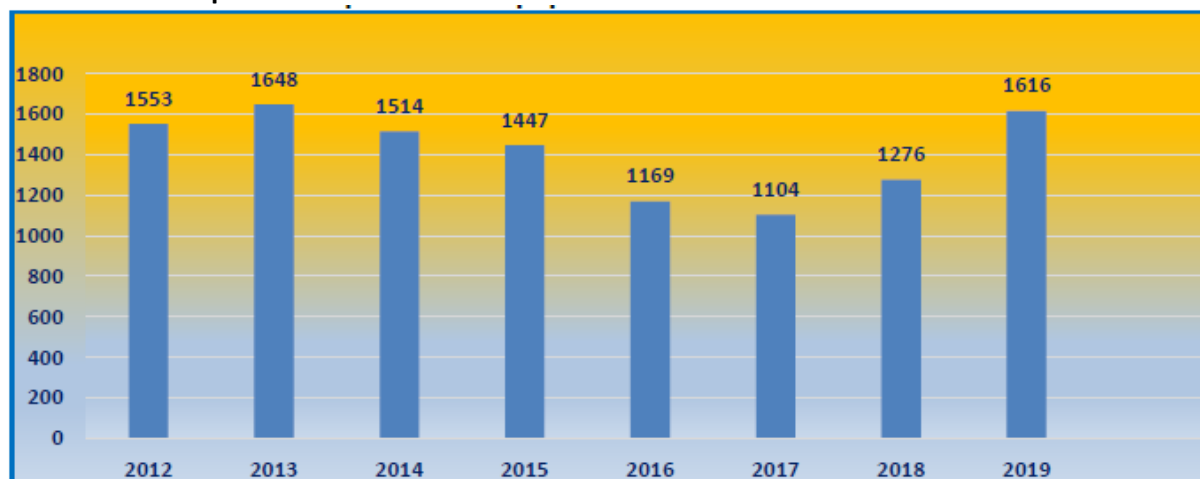
A comparison of the number of PPP controls carried out between 2012 and 2019 is shown in Table 3 and Chart 3.

Table 3 Comparison of the number of PPP controls in Slovakia in 2012-2019

| PPP controls | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| Controls of end (professional) users of products | 693 | 650 | 508 | 553 | 385 | 374 | 391 | 534 |
| - of which controls of aerial application of products | 15 | 32 | 15 | 4 | 13 | 14 | 12 | 3 |
| Controls of agricultural services related to products (undertakings performing applications for other entities) | 10 | 20 | 15 | 30 | 10 | 20 | 17 | 22 |
| Controls of wholesale storage facilities and wholesale chains (Hornbach, Baumax, Tesco) | 81 | 36 | 38 | 52 | 19 | 18 | 25 | 36 |
| Controls of retail packaging of products when sold | 167 | 175 | 212 | 234 | 222 | 203 | 222 | 226 |
| Controls of imports of products from third countries | 2 | 30 | 62 | 50 | 39 | 51 | 113 | 82 |
| Controls of drifts of products during their application | 16 | 8 | 5 | 9 | 11 | 18 | 9 | 8 |
| Assessment of applications and licensing of aerial application of products | 59 | 60 | 77 | 59 | 97 | 57 | 62 | 45 |
| Controls of damage to bees during application of products | 0 | 6 | 0 | 0 | 1 | 2 | 1 | 3 |
| Controls of online sales of products | 0 | 3 | 10 | 15 | 5 | 6 | 10 | 20 |
| Controls of ground application equipment and machines for seed and planting stock treatment | 333 | 429 | 316 | 217 | 125 | 137 | 162 | 181 |
| Controls of producers | 0 | 0 | 3 | 1 | 1 | 0 | 1 | 1 |
| Controls of products during application | 0 | 0 | 21 | 20 | 17 | 14 | 17 | 60 |
| Cross-compliance controls of products | 177 | 199 | 232 | 203 | 224 | 190 | 234 | 395 |
| Total | 1 553 | 1 648 | 1 514 | 1 447 | 1 169 | 1 104 | 1 276 | 1 616 |

From the above data, it is clear that the number of official controls focused on the placing on the market and use of PPPs decreased in 2013-2019, with a significant reduction in the number of official controls carried out for end (professional) users, which does not correspond to the required objectives for PPP controls. In 2018 and 2019, the total number of official controls carried out increased, with the same trend in the number of official controls carried out for end (professional) users.

Chart 3 Comparison of the number of PPP controls in Slovakia in 2012-2019



On 14 December 2019, the Official Controls Regulation entered into force. Pursuant to Article 24 thereof, official controls of PPPs include not only active substances, safeners and synergists, but also co-formulants and adjuvants.

In the area of product quality controls, the range of active substances controlled has been expanded and profile analysis methods are being introduced. Due to the steady increase in imports of both illegal and counterfeit products, there is also an increased demand for analyses of highly toxic relevant impurities and co-formulants. In addition to samples from official controls, PPP samples originating from illegal imports are also analysed on the basis of cooperation with the Financial Administration of the Slovak Republic, as well as samples of products within the framework of the investigation of cases in cooperation with the police in the area of environmental crime.

Both the number of samples analysed and analytes controlled (parameters monitored) has increased, with the number of official samples increasing as shown in Chart 4.

Chart 4 Number of samples of products analysed in 2016-2019



| Key to graphic | |
|---|--------------------------------|
| Original text | Translation |
| Počet analyzovaných vzoriek prípravkov na ochranu rastlín | Number of PPP samples analysed |
| externé vzorky | external samples |

úradné vzorky

official samples

Laboratory controls of PPPs consist of three parts:

- a) analysis of active substances, safeners, relevant impurities;
- b) determination of physicochemical parameters (foaming, pH, specific mass, emulsifiable characteristics, grinding fineness, suspensibility, wettability, dispersibility, acidity); 9 different parameters in total;
- c) GC/MS profiles – comparison of analytical profiles of products with reference samples, or identification of individual components of products.

Chart 5 Overview of parameters monitored in products in 2005-2019



| Key to graphic | |
|--|--------------------------------|
| Original text | Translation |
| Kontrola prípravkov na ochranu rastlín | PPP controls |
| Počet sledovaných parametrov | Number of parameters monitored |
| Rok | Year |

In order to ensure operational availability of reference samples, their archiving has been introduced, with samples being supplied by authorisation applicants or authorisation holders.

Controls of PPP imports at border control posts (Vyšné Nemecké, Čierna nad Tisou, Bratislava Airport) are conducted by the staff of the Customs Department of the Financial Directorate of the Slovak Republic in cooperation with ÚKSÚP’s plant health officers. In 2018, a common methodology of ÚKSÚP, the Police Presidium of the Slovak Republic and the Financial Directorate of the Slovak Republic for the performance of import controls and transport of PPPs was developed in order to identify illegal trade. Up to a total of 980 kg of illegal products originating in Ukraine were intercepted in 2018 as a result of the increased efficiency of cooperation of individual sections of the state administration. Sources of illegal products were verified in cooperation with holders of product authorisations or representatives of products’ producers.

Four cases were dealt with in 2019 in cooperation with the Criminal Office of the Financial Administration of the Slovak Republic concerning intercepted consignments containing illegal, counterfeit and unauthorised PPPs in the total amount of 368.2 kg (litres); three of these cases concerned intercepted illegal consignments in Slovakia’s inland areas, while one consignment was intercepted at the Vyšné Nemecké border control post.

The Slovak Crop Protection Association (SAOR) published a practical document addressing this issue titled *'Falšované a ilegálne prípravky'* (Counterfeit and illegal products). Complemented by a DVD, poster and leaflet, it highlights the risks arising from the use of counterfeit and illegal products.

As concerns obsolete PPPs registered as 'waste' under Act No 405/2011, ÚKSÚP keeps records of the stocks and if any stocks are found with a known owner, ÚKSÚP issues a decision ordering disposal of such products within a specified time-limit and then checks whether this disposal has been carried out in accordance with the applicable legislation (disposal of hazardous waste).

Table 4 Overview of stocks of obsolete PPPs in Slovakia

| Year | Quantity (kg) |
|------|---------------|
| 2007 | 215 244.00 |
| 2008 | 198 814.00 |
| 2009 | 132 532.87 |
| 2010 | 117 254.23 |
| 2011 | 61 366.40 |
| 2012 | 47 599.70 |
| 2013 | 47 291.70 |
| 2014 | 43 288.03 |
| 2015 | 42 608.53 |
| 2016 | 42 148.53 |
| 2017 | 41 577.94 |
| 2018 | 30 319.14 |
| 2019 | 28 539.14 |

Monitoring of abandoned PPP storage facilities and keeping of records thereon falls within the responsibility of the Slovak Environment Agency in cooperation with ÚKSÚP. Disposal of obsolete stocks of pesticides in abandoned storage facilities is carried out pursuant to Act No 409/2011. According to the approved Slovak Government Manifesto for 2016-2020, the basic environmental priorities of the Slovak Government include, among other things, the adoption of measures for remediation of environmental burdens in order to reduce environmental and health risks arising from contamination of components of the environment. Štátny program sanácie environmentálnych záťaží (*State programme for remediation of environmental burdens*) (2016-2021) is a basic strategic planning document for a systematic removal of environmental burdens in Slovakia, which also covers abandoned storage facilities with agrochemicals, including pesticides. The disposal of PPPs which have become waste as well as empty packaging is carried out by companies authorised to handle and dispose of hazardous waste.

4.1.3 Use

4.1.3.1 Use in agriculture

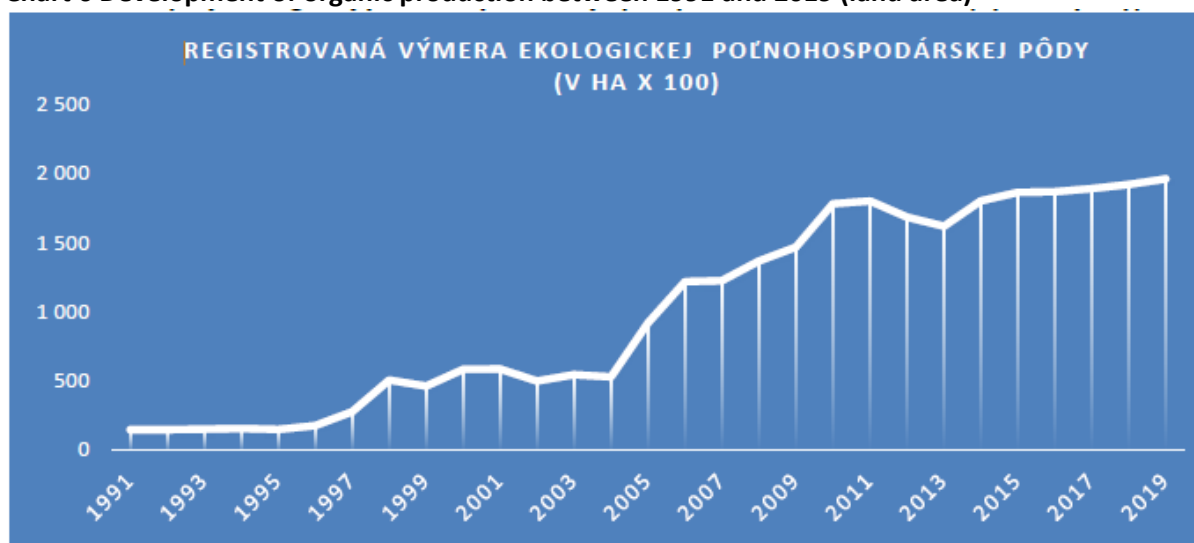
Slovakia's utilised agricultural area corresponds to 1 910 654 ha, 1 342 885 ha of which is arable land. Permanent crops (vineyards, vineyards subject to rehabilitation, orchards, hop gardens and other permanent crops) take up the area of 17 761 ha, kitchen gardens cover the area of 32 329 ha and permanent meadows and pastures correspond to 517 679 ha.

Sustainable use of PPPs is included in the Common Agricultural Policy for 2014-2020, in particular through measures in the first pillar and cross-compliance rules. In this context, the implementation of ‘greening’ (direct payment for agricultural practices beneficial for the climate and the environment) is of particular importance, including setting up practices for crop diversification, preservation of existing permanent grassland and the existence of ecological focus areas. As regards the second pillar, key is a proper implementation of agri-environmental schemes promoting environmentally friendly agricultural practices (promoting both integrated and organic farming).

On 20 May 2020, a key strategy was adopted for pesticides as part of the European Green Deal, i.e. Farm to Fork Strategy, which is in conformity with the Biodiversity Strategy in its ambitious objectives. The two strategies complement each other, as demonstrated by their equal objectives related to reducing the use of pesticides (reducing the use and risk of chemical pesticides by 50% and the use of high-risk pesticides by 50%) and increasing the total area of agricultural land used for organic farming to 25% of the EU’s agricultural land.

The total area of land registered in the organic production system has been gradually slightly increasing (Chart 6). As at 31 December 2017, it was taking up 189 147.61 ha, representing 9.59% of the total area of agricultural land in Slovakia. In 2016, 187 010.70 ha of land were utilised in the organic production system, corresponding to 9.46% of the total area of agricultural land in Slovakia. There was an increase of 1.13% as compared to 2016.

Chart 6 Development of organic production between 1991 and 2019 (land area)



| Key to graphic | |
|---|--|
| Original text | Translation |
| Registrovaná výmera ekologickej poľnohospodárskej pôdy (v ha x 100) | Area of organic agricultural land registered (in ha x 100) |

The total area of land registered in the organic production system as at 31 December 2019 was 196 209.92 ha (Table 5). In 2018, 192 143.05 ha of land was utilised in the organic production system. This means an increase of 2.07% as compared to 2018 and 4.9% as compared to 2016 (see Table 6). It follows from Chart 7 that the number of farms engaged in organic production has also been increasing.

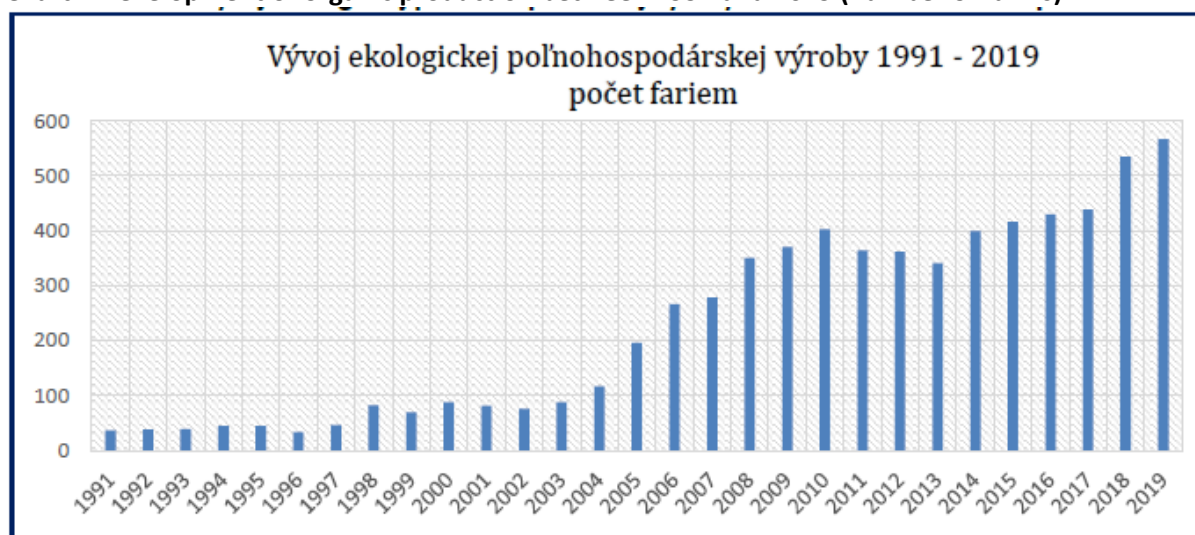
Table 5 Structure of land registered for organic production as at 31 December 2017

| Agricultural land for organic production | Total agricultural land (ha) | Arable land (ha) | Permanent grassland (ha) | Orchards (ha) | Vineyards (ha) |
|--|------------------------------|------------------|--------------------------|-----------------|----------------|
| Area of land used for organic farming | 176 579.78 | 56 961.41 | 118 296.11 | 1 204.28 | 117.98 |
| Area in conversion | 12 567.83 | 6 016.56 | 5 933.92 | 602.96 | 14.39 |
| Total: | 189 147.61 | 62 977.97 | 124 230.03 | 1 807.24 | 132.37 |

Structure of land registered for organic production as at 31 December 2019

| Agricultural land for organic production | Total agricultural land (ha) | Arable land (ha) | Permanent grassland (ha) | Orchards (ha) | Vineyards (ha) |
|--|------------------------------|------------------|--------------------------|-----------------|----------------|
| Area of land used for organic farming | 181 021.73 | 59 278.62 | 119 882.26 | 1 729.81 | 131.04 |
| Area in conversion | 15 188.19 | 7 281.34 | 7 729.45 | 136.26 | 41.14 |
| Total: | 196 209.92 | 66 559.96 | 127 611.71 | 1 866.07 | 172.18 |

Chart 7 Development of organic production between 1991 and 2019 (number of farms)



| Key to graphic | |
|--|---|
| Original text | Translation |
| Vývoj ekologickej poľnohospodárskej výroby 1991 - 2019 | Development of organic production between 1991 and 2019 |
| počet fariem | number of farms |

Table 6 Comparison of organic production indicators

| Organic production indicator | 2016 | 2017 | Difference in % as compared to 2016 |
|---|------------|------------|-------------------------------------|
| Number of operators in organic production | 591 | 655 | + 9.77 |
| Number of operators with land in organic production | 430 | 439 | + 2.05 |
| Agricultural land (ha) | 187 010.70 | 189 147.61 | + 1.13 |
| Arable land (ha) | 60 302.13 | 62 977.97 | + 4.25 |
| Permanent grassland (ha) | 124 807.48 | 124 230.03 | - 0.46 |
| Orchards (ha) | 1 777.74 | 1 807.24 | + 1.63 |
| Vineyards (ha) | 123.35 | 132.37 | + 6.82 |

| | | | |
|---|-------------|-------------|--|
| Organic food producers | 86 | 91 | + 5.50 |
| Organic production indicator | 2018 | 2019 | Difference in % as compared to 2018 |
| Number of operators in organic production | 802 | 859 | + 6.64 |
| Number of operators with land in organic production | 535 | 567 | + 5.64 |
| Agricultural land (ha) | 192 143.05 | 196 209.92 | + 2.07 |
| Arable land (ha) | 64 820.89 | 66 559.96 | + 2.61 |
| Permanent grassland (ha) | 125 365.64 | 127 611.71 | + 1.76 |
| Orchards (ha) | 1 809.59 | 1 866.07 | + 3.03 |
| Vineyards (ha) | 146.93 | 172.18 | + 14.66 |
| Organic food producers | 98 | 100 | + 2.00 |

4.1.3.2 Use in forestry

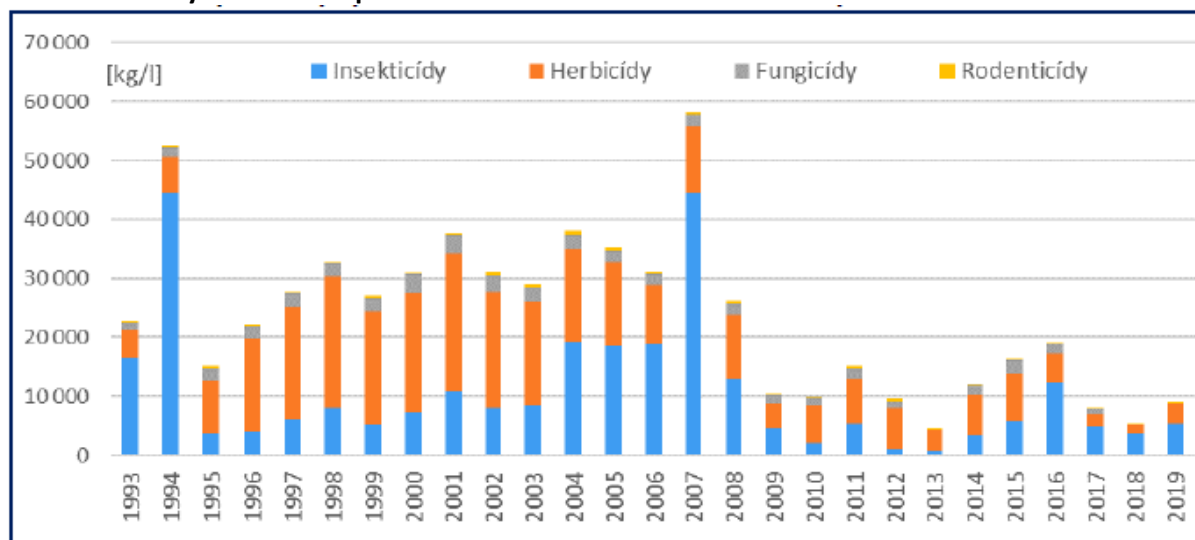
Since 1993, NLC, the Forest Research Institute (LVÚ), and the Forest Protection Service Centre (LOS) have kept records of the consumption of PPPs in forest protection (Chart 8). Apart from that, LOS, which holds the GEP certificate, also performs biological activity tests of PPPs intended for forest protection.

Outbreaks of insect pests in specific years and the measures implemented have had a significant impact on the consumption of insecticides. For example, in 1993 and 1994, 15 700 ha and 12 600 ha respectively of forest crops were treated against gypsy moth. The situation was similar in 2004 and 2005, with 21.3 thousand ha (2004) and 13.5 thousand ha (2005) being sprayed against this pest. The use of insecticides is also significantly affected by outbreaks of bark beetles. For example, in 1997, in aftermath of a devastating windstorm in the Nízke Tatry mountains (Osrbliie), almost 150 thousand m³ of wood were treated with the aim of reducing the risk of bark beetle outbreaks. To put it into perspective: in 1995, there were less than 66 thousand m³ of wood treated. LOS recorded another significant increase in wood treatment with insecticides in 2005 in the aftermath of the windstorm Elisabeth, with more than 295 thousand m³ of wood being treated. Large volumes of wood were treated until 2011. With one exception (2010 – 125 thousand m³ treated), the annual volumes of wood treated did not fall below 200 thousand m³. The year 2008 marked a record year with nearly 478 thousand m³ of wood treated. However, in terms of insecticide consumption, the year 2007 was more significant. That year, almost 358 thousand m³ of wood and almost 23.5 thousand ha of forest area were treated against bark beetles. Occasional spraying against aphids on firs, larch casebearers on spruce trees, or against pine carpets and pine sawflies on pine trees also has a significant impact.

Fluctuations in the consumption of herbicides can be caused by a number of factors. One of them is the scope of use in crops, in preparation for forestation and in the treatment of crops, as well as nature conservation restrictions linked to the restriction or prohibition of the use of herbicides by the type of protected area and the level of protection applied. The use of herbicides in forestry is also affected, to a certain extent, by the 'Pro Silva' principles, which favour natural regeneration, thus reducing the need for trimming and preparation of the area for forestation.

Generally, the share of consumption of PPPs applied in forests as compared to the national PPP consumption does not exceed the limit of 2.2% in individual categories (insecticides, herbicides, fungicides, rodenticides) with some exceptions. As can be seen in Table 7 (comparison of the national PPP consumption and forestry PPP consumption since 2000), the share of forestry PPP consumption did not exceed 1.5% in any of the years. **Since 2011, consumption in forestry has amounted to less than 0.5% of the national PPP consumption.** Consumption of pheromones and insect repellents is not included in the PPP consumption.

Chart 8 Forestry PPP consumption in 1993-2019



| Key to graphic | |
|----------------|--------------|
| Original text | Translation |
| [kg/l] | [kg/L] |
| insekticídy | Insecticides |
| herbicídy | Herbicides |
| fungicídy | Fungicides |
| rodenticídy | Rodenticides |

Table 7 Comparison of the forestry PPP consumption and national PPP consumption

| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Slovakia (t) | 3 347.4 | 3 443.9 | 3 995.3 | 3 468.2 | 3 463.4 | 3 507.6 | 3 802.2 | 3 864.9 | 3 902.7 | 3 867.1 |
| Forestry (t) | 31 | 37.7 | 31.1 | 29.2 | 38.1 | 35.2 | 31.1 | 58.1 | 26.2 | 10.4 |
| % | 0.93 | 1.1 | 0.78 | 0.84 | 1.1 | 1 | 0.82 | 1.5 | 0.67 | 0.27 |

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Slovakia (t) | 4 407.5 | 3 552.8 | 3 954.9 | 4 314.5 | 5 196.9 | 4 773.2 | 4 595.5 | 5 212.0 | 5 403.6 | 5 670.60 |
| Forestry (t) | 10.1 | 15.1 | 9.6 | 4.5 | 11.8 | 16.4 | 18.9 | 7.7 | 5.1 | 8.8 |
| % | 0.23 | 0.43 | 0.24 | 0.1 | 0.23 | 0.34 | 0.41 | 0.15 | 0.09 | 0.16 |

Currently, a limited number of PPPs containing 22 different active substances are authorised for use in forestry (Table 8).

Table 8 Number of PPPs authorised for use in forestry by their functions

| Function of the product | Herbicides | Fungicides | Insecticides | Rodenticides | Insect repellents |
|--|------------|------------|--------------|--------------|-------------------|
| Number of authorised** PPPs | 47 | 9 | 8 | 3 | 4 |
| Number of authorised** active substances | 6 | 4(1)* | 6(1)* | 2 | 2 |

* active substances consisting of microorganisms

** as of 20 April 2020

With the number of non-authorised active substances increasing and due to low forestry PPP consumption (non-economic authorisation of PPPs for that use), forest protection is becoming increasingly problematic and there is a need to address 55 minor uses in this area, also with a view to ensuring an anti-resistance strategy.

4.1.3.3 Use in public areas and public green spaces

PPPs should only be used in public areas and for the protection of public green spaces in cases of a strong pest presence. Due to the risks arising from the use of PPPs, any procedure and application of such products should take into account the protection of human health, as presence of people in the area treated cannot be completely avoided. **Also for this reason, pursuant to Section 1 of the Implementing Decree of the Ministry of Agriculture and Rural Development No 488/2011, in specific areas such as public parks, gardens, sports grounds, recreation centres, school grounds and playgrounds or areas surrounding healthcare facilities, low-risk PPPs are to be used and, if a product other than low-risk product is used, it is necessary to evaluate it by a professional site in the field of toxicology.** If PPPs need to be applied in public areas, measures to be taken are specified on the product's label.

Here, too, prevention serves as the general principle of plant protection. When selecting specific plant species for ornamental greenery, emphasis must be placed on those species that can grow in the conditions existing in the Slovak territory without the use of PPPs, i.e. species either resistant to pests or propagated in Slovakia's or very similar conditions; at the same time, ornamental greenery which is not host to quarantine pests must be preferred or species for which it has been established by practice that the pressure of pests in Slovakia's conditions is resisted even without human intervention, i.e. that the use of pesticides for protection is not necessary. The cultivation of native plant species of Central European flora is ideal. In order to dispose of weeds, mechanical methods should be preferred. Mulching with bark, gravel or impermeable (nonwoven) environmentally friendly membranes should be done around ornamental trees, shrubs and flowers. Their use ultimately saves the costs of maintaining public green spaces and does not burden the environment.

4.2 Protection of human health

4.2.1 Protection of operators, workers, residents and random persons

Pursuant to Section 5 of Act No 124/2006 on occupational safety and health protection and amending and supplementing certain laws, as amended, the employer is obliged to follow the general principles of prevention when carrying out measures necessary to ensure occupational safety and health protection, including the provision of information and training, as well as provision of the necessary work organisation and equipment. Pursuant to Section 6(1)(q) of Act No 124/2006, **'in order to ensure occupational safety and health protection, the employer shall ensure that health surveillance is carried out, including regular medical check-ups taking into account the nature of the work and working conditions at the workplace, as well as medical check-ups at an employee's request'**. Data from the National Labour Inspectorate (NIP) show that in the long term, there has been no damage to health recorded in connection with the use of PPPs.

Pursuant to Sections 15 and 16 of Act No 355/2007, a special condition for **working with very toxic substances and products and toxic substances and products**, i.e. categories which may also include PPPs, is the requirement for professional competence to work with these types of substances. After professional training is successfully completed by passing the examination or based on the length of professional experience, the competent public health authorities issue a certificate of professional competence to work with very toxic substances and products and toxic substances and products, where the respective training is provided for by staff of scientific research and professional institutions.

Occupational health protection in working with PPPs is one of the topics of professional training under Act No 405/2011, aimed at providing information on the risks of the use of PPPs, on

the categorisation of possible effects on the human organism, but mainly on protective measures in cases of exposure to a PPP. Increasing awareness of safe practices in the use of PPPs ensures readiness for emergencies, e.g. a machine failure during application.

Exposure levels of the operator and workers during work with PPPs are calculated or set in such a way so as to be acceptable; the use of personal protective equipment (PPE) is suggested when handling the products and working with them. The essential safety data related to the use of individual PPPs can be found on the product's label in the form of warning texts and symbols together with contact details of the National Toxicological Information Centre (NTIC). More detailed information can be found in safety data sheets (SDSs). **Under Act No 67/2010, every entity placing a chemical product on the market is obliged to send the respective SDS to NTIC (see: www.ntic.sk).** In this way, the NTIC database of all authorised PPPs and registered biocides is continuously supplemented and updated. Information on the composition of PPPs forms the basis for developing procedures and prognoses to assist the physician in the treatment of a patient poisoned by the product.

NTIC provides a 24-hour telephone consultation service in Slovakia on poisoning with medicines, chemicals, pesticides, drugs, plants, fungi and animal poisons. Since 1992, NTIC has been a member of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT) under the WHO, which provides expert and methodological guidance for the activities of all toxicological centres.

In accordance with Section 45(1)(b) of Act No 576/2004, the Ministry of Health issued Professional Guidance No 107 on the method of reporting and registration of cases of poisoning, which implies the obligation to report all cases of poisoning to NTIC, including cases where the poisoning was caused by PPPs or biocides.

Within EAPCCT, the severity of individual cases of poisoning is classified into the following categories:

Grade 0 – without subjective and objective symptoms or signs related to poisoning;
Grade 1 – minor poisoning;
Grade 2 – moderate poisoning;
Grade 3 – severe poisoning;
Grade 4 – fatal poisoning.

An analysis of NTIC consultations in 2013-2017 showed that pesticide exposures accounted for 5% of the total number of consultations, with a significant decrease in the number of consultations as compared to the previous 5-year period (2005-2009) when these exposures accounted for 8.2 to 10%.

Exposures were more frequent in adults (51.3%) than in children (43.8%). In terms of gender, in the long term, results have shown that poisoning occurs more often in men (61.0%) than in women (38.9%). Accidental poisoning (93.6%) strongly predominated over suicidal cases (6.3%). The most frequent ways of exposure were ingestion (76.8%) and inhalation (16.0%). Most consultations involved exposure to a rodenticide (29.3%), insecticide (28.5%), herbicide (13.5%) and fungicide (4.8%).

Insecticides pose a significantly higher risk of severe poisoning. As compared to the previous period, the number of cases of insecticide poisoning decreased significantly (36.2% in 2007 and 28.5% in 2016). The number of cases of poisoning by highly toxic organophosphate insecticides (OPIs) fell from 38.5% in 2007 to 16.9% in 2016.

In most cases, poisoning was asymptomatic, i.e. Grade 0 (74.3%), minor poisoning occurred in 17.8% of cases, and severe poisoning in 2% of cases. Since 2012, no serious poisoning has been reported in children. In the period monitored, 9 patients (0.7%) died. The most common cause of

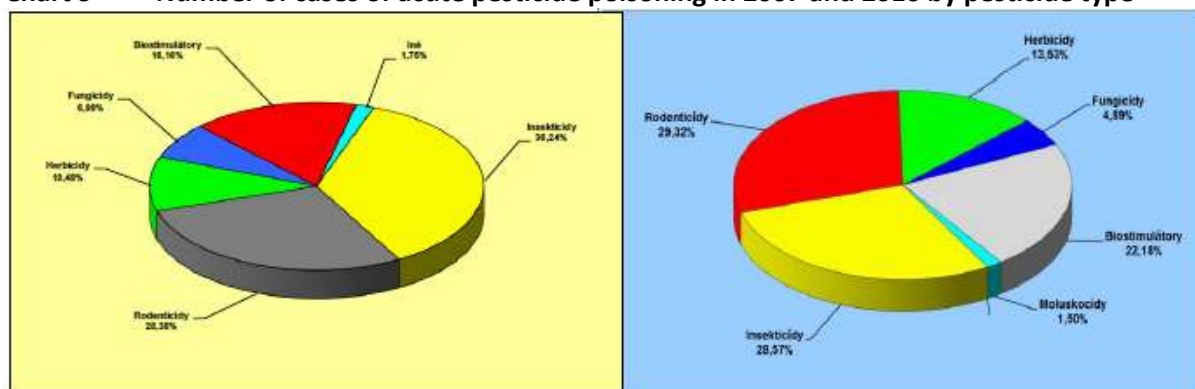
fatal poisoning was the ingestion of OPIs and herbicides with glyphosate as the active substance. The analysis of cases of poisoning showed recurring poisoning scenarios. In particular, these involved the following situations: pouring a pesticide into an unmarked bottle and subsequently mistaking it for beverage, careless handling of pesticides or application of the product in non-compliance with the rules of occupational health protection, misuse with suicidal intent and, in children, ingestion of easily accessible (e.g. placed on the ground) pest traps due to their interesting shape or colour.

In 2019, exposures to PPPs accounted for 4.6% of the total number of poisoning cases; these exposures occurred approximately evenly in adults (46%) and in children (48%).

In terms of gender, in the long term, results have shown that exposure occurs slightly more often in men (44%) than in women (39%). Accidental poisoning (74%) strongly predominated over suicidal cases (8%). The most frequent ways of exposure were ingestion (77%) and inhalation (17%), followed by dermal (2%) and ocular (0.7%) exposure.

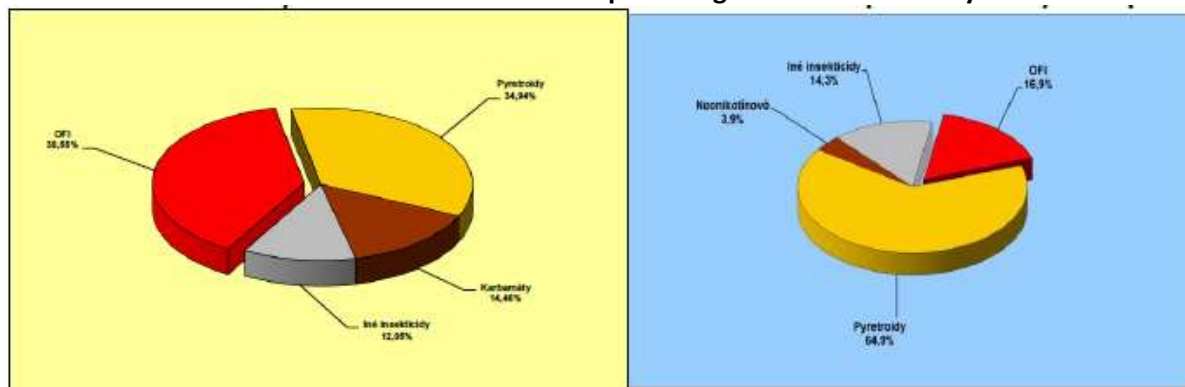
After exposure to PPPs there were no clinical signs in 66% of cases, while mild symptoms were observed in 21% of cases. Signs of severe poisoning developed in 3% of cases. One patient died as a result of ingesting a product containing glyphosate. Most consultations involved exposure to insecticides (44%), rodenticides (23%), herbicides (7%) and fungicides (5%).

Chart 9 Number of cases of acute pesticide poisoning in 2007 and 2016 by pesticide type



| Key to graphic | |
|-----------------------|----------------------|
| Original text | Translation |
| Biostimulatóry 16,16% | Biostimulants 16.16% |
| Fungicidy 6,99% | Fungicides 6.99% |
| Herbicidy 10,48% | Herbicides 10.48% |
| Rodenticidy 28,38% | Rodenticides 28.38% |
| Insekticidy 36,24% | Insecticides 36.24% |
| Iné 1,75% | Other 1.75% |
| Rodenticidy 29,32% | Rodenticides 29.32% |
| Insekticidy 28,57% | Insecticides 28.57% |
| Herbicidy 13,53% | Herbicides 13.53% |
| Fungicidy 4,89% | Fungicides 4.89% |
| Biostimulatóry 22,18% | Biostimulants 22.18% |
| Moluskocidy 1,50% | Molluscicides 1.50% |

Chart 10 Number of cases of acute insecticide poisoning in 2007 and 2016 by chemical classes



| Key to graphic | |
|------------------------|---------------------------|
| Original text | Translation |
| OFI 38,55% | OPIs 38.55% |
| Pyrethroidy 34,94% | Pyrethroids 34.94% |
| Karbamáty 14,46% | Carbamates 14.46% |
| Iné insekticídy 12,05% | Other insecticides 12.05% |
| Neonikotínové 3,9% | Neonicotinoids 3.9% |
| Iné insekticídy 14,3% | Other insecticides 14.3% |
| Pyrethroidy 64,9% | Pyrethroids 64.9% |
| OFI 16,9% | OPIs 16.9% |

In order to strengthen occupational health protection in working with PPPs, SAOR prepared a practical handbook in cooperation with NIP and other institutions titled **Iniciatíva za bezpečné a trvalo udržateľné používanie prípravkov na ochranu rastlín - Zodpovedné používanie prípravkov na ochranu rastlín** (*Initiative for the safe and sustainable use of plant protection products – Responsible use of plant protection products*). The handbook is intended for operators and workers and is focused on the use of PPE as well as storage and safe application of PPPs.

4.2.2 Consumer protection

4.2.2.1 Pesticide residues in food

Slovakia (same as other Member States) has established a national control programme for pesticide residues in food based on EU legislation. **The controls under this programme are conducted in Slovakia on the basis of the division of responsibilities pursuant to Act No 152/1995 on food, as amended, between the Ministry of Health and Ministry of Agriculture and Rural Development, so that the controls of pesticide residues in foods for infants and young children are ensured by ÚVZ SR and in other foods by the State Veterinary and Food Administration of the Slovak Republic (ŠVPS SR).**

ŠVPS SR is responsible for the methodological guidance and evaluation of the controls of pesticide residues in food. In addition, it also serves as the national contact point for the Rapid Alert System for Food and Feed (RASFF). The individual regional veterinary and food administrations (RVPS) coordinate activities within their responsibility, carry out sampling and controls of food business operators and growers. The analysis of the samples taken is carried out by the Veterinary and Food Institute (VPÚ). In cases of non-compliant food samples found, NPPC's Food Research Institute (VÚP) assesses the risk for the consumer upon request of ŠVPS SR. Within the Ministry of Health, sampling of foods for infants and young children is carried out by individual

regional public health authorities of the Slovak Republic (RÚVZ) and samples are analysed in laboratories of the ÚVZ SR.

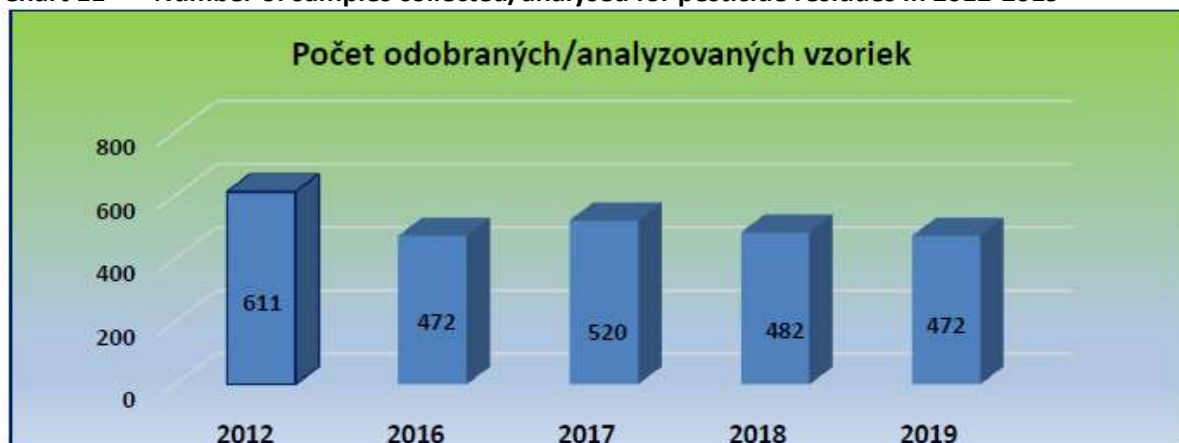
Official controls of pesticide residues in food are fully harmonised at Union level. In accordance with the *acquis communautaire*, each Member State is obliged to annually submit to the European Food Safety Authority (EFSA) an updated *multiannual control programme for pesticide residues in foods for infants and young children* and the *annual national report on controls of pesticide residues in food* through the **EFSA focal point for pesticide residue monitoring in Slovakia**, i.e. **ŠVPS SR**. The basis for preparing and updating the multiannual control programme consists of statistical data on Slovakia's consumption of individual PPP active substances, on the species and scope of crops grown in Slovakia and findings from previous years. If pesticide residues are found to be above the limit in samples from Slovak producers, ŠVPS SR in cooperation with ÚKSÚP identifies the reason for exceeding the applicable MRLs for the grower/processor in question.

The results of official controls are published annually on the ŠVPS SR website (<https://www.svps.sk/potraviny/spravy.asp#4>). The national report on controls of pesticide residues in food and infant food in Slovakia is published annually at: <https://www.mpsr.sk/?navID=47&slD=111&navID2=828>

The number of samples taken and subsequently analysed fell by almost 23% in 2019 as compared to 2012, with a downward trend already recorded in 2016 (Chart 11).

Samples from Slovak production account for 20 to 30% of the total number of samples; a comparison of the share with other Member States is shown in Figure 1. While samples originating in other EU Member States or third countries show a larger share of samples with one or more analytes found (below the applicable MRL), the samples from Slovak production show an opposite trend, with pesticide-free samples dominating (Table 9).

Chart 11 Number of samples collected/analysed for pesticide residues in 2012-2019



| Key to graphic | |
|---|--------------------------------------|
| Original text | Translation |
| Poččet odobraných/analyzovaných vzoriek | Number of samples collected/analysed |

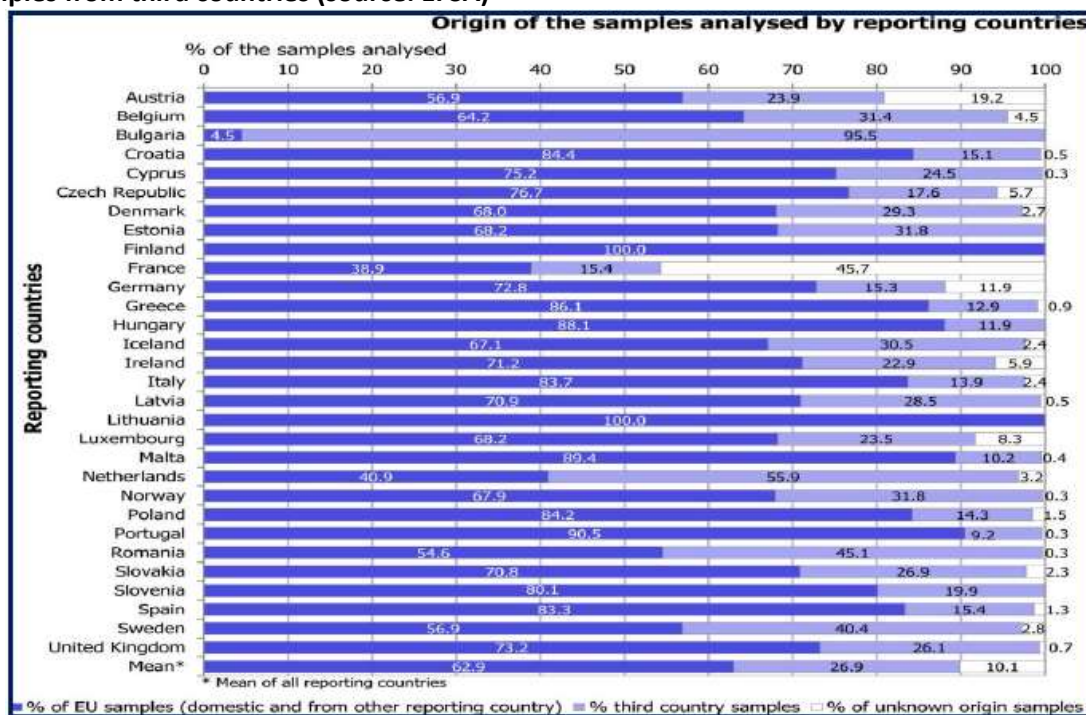
Table 9 Samples with/without pesticide residues found in 2012-2019

| EU Member States and third countries | 2012 | 2016 | 2017 | 2018 | 2019 |
|--|------|------|------|------|------|
| % of samples with at least one pesticide found | 52.9 | 56.6 | 52.1 | 55.4 | 55.1 |
| % of pesticide-free samples | 46.5 | 43.4 | 47.9 | 44.6 | 44.9 |
| % of samples with MRL exceeded | 0.6 | 3.2 | 1.7 | 2.1 | 3.1 |
| Slovakia | 2012 | 2016 | 2017 | 2018 | 2019 |
| % of samples with at least one pesticide found | 34.8 | 44.4 | 38.8 | 42.6 | 39.3 |
| % of pesticide-free samples | 62 | 53.2 | 59.8 | 55.4 | 60 |

| | | | | | |
|-------------------------------------|---|-----|-----|---|-----|
| number of samples with MRL exceeded | 0 | 2.5 | 1.4 | 2 | 0.7 |
|-------------------------------------|---|-----|-----|---|-----|

EFSA's 2018 European Union report on pesticide residues in food is available at <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2020.6057>

Figure 1: Comparison of the share (%) of samples from domestic production (or EU production) and samples from third countries (source: EFSA)



The comparison in Figure 2 shows that Slovakia is one of the countries with a low number of samples per 100 000 inhabitants. A year-on-year increase in the number of samples by at least 10% is needed.

Figure 2 Number of samples collected/analysed per 100 000 inhabitants in EU Member States (source: EFSA)

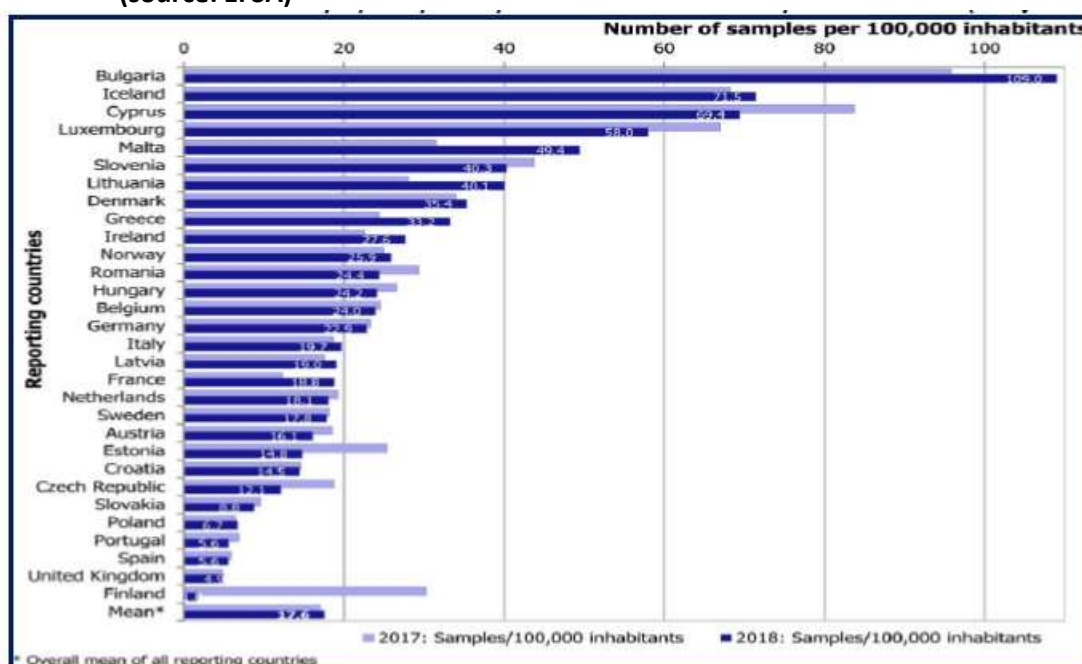
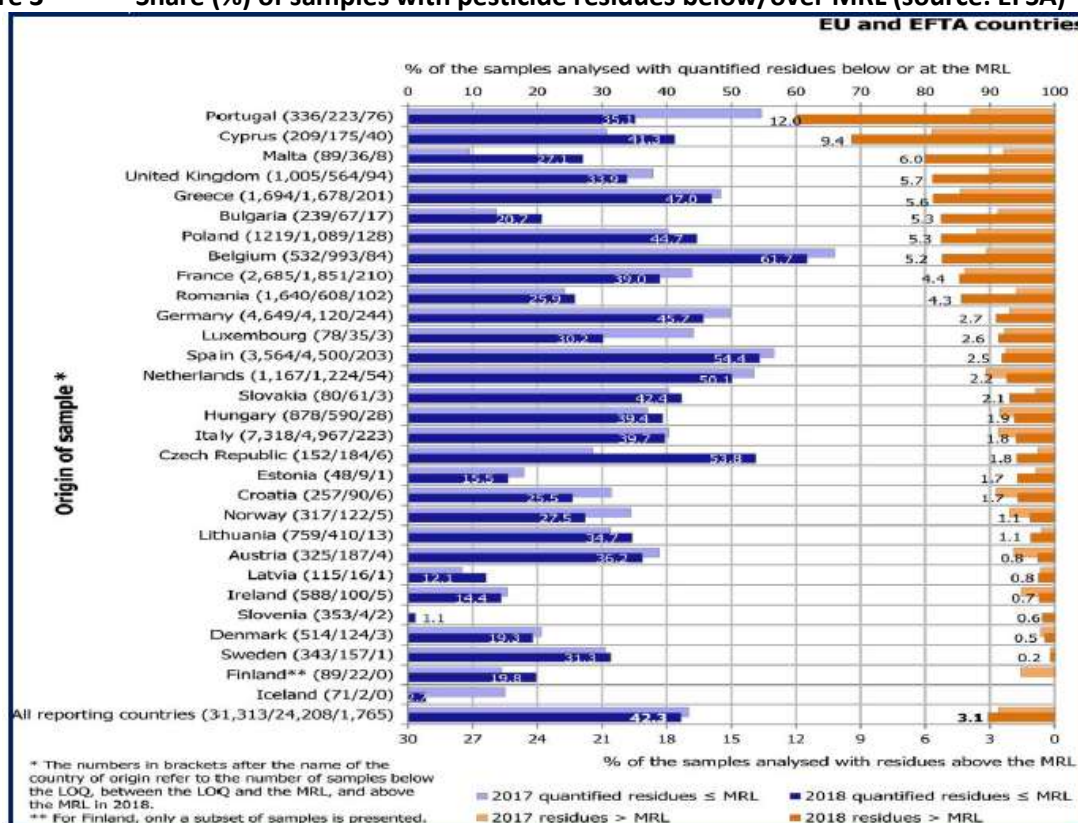


Figure 3 Share (%) of samples with pesticide residues below/over MRL (source: EFSA)



4.2.2.2 Pesticide residues in drinking water and in the aquatic environment

In terms of water quality, pesticides fall into the category of harmful to particularly harmful substances, and hence increased attention should be paid to them in relation to the risk of pollution and the protection of water resources.

The Water Framework Directive provides a legal basis for establishing a transnational approach to the protection of water quantity and quality and establishes a legal framework for the protection of groundwater and surface water, improvement of its status and for the sustainable use thereof. The main environmental objective of the Directive is to ensure good status in all waters by 2015 and 2027 respectively. The basic requirements and objectives of the Directive related to the possible use of PPPs focus on the following areas:

- preventing deterioration of water quality, protecting and improving the status of aquatic ecosystems (both groundwater and surface water) and, taking into account their need for water, terrestrial ecosystems and wetlands that are directly dependent on aquatic ecosystems;
- sustainable use of water based on long-term protection of available water resources;
- enhanced protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;
- ensuring the progressive reduction of pollution of groundwater and preventing its further pollution.

General protection of waters against pollution caused by hazardous substances (including pesticides) is to be ensured throughout Slovakia in accordance with Act No 364/2004 on waters. Pursuant to Section 39 thereof, **anyone who handles pollutants is required to take the necessary measures to prevent and control pollution** in a manner ensuring that such handling does not give rise to hazardous substances – pesticides – entering surface water or groundwater and jeopardising their quality, and also preventing deterioration of groundwater chemical status and non-observance of the limit values – the groundwater quality standard referred to in Annex 1a to Act No 364/2004 (Table 10), as well as an increase in significant and sustained upward trends in pollutants.

Table 10 Groundwater quality standard for pesticides

| Pollutant | Quality standard |
|---|---|
| Active substances in pesticides, including their relevant metabolites and breakdown and reaction products ²⁾ | 0,1 µg/l 0,5 µg/l (total) ¹⁾ |

Note:

1) Total means the sum of all individual pesticides established and quantified during the monitoring process, including relevant metabolites, biodegradation products and chemical reactions.

2) 'Pesticides' mean plant protection products and biocidal products.

Such preventive measures include, in particular:

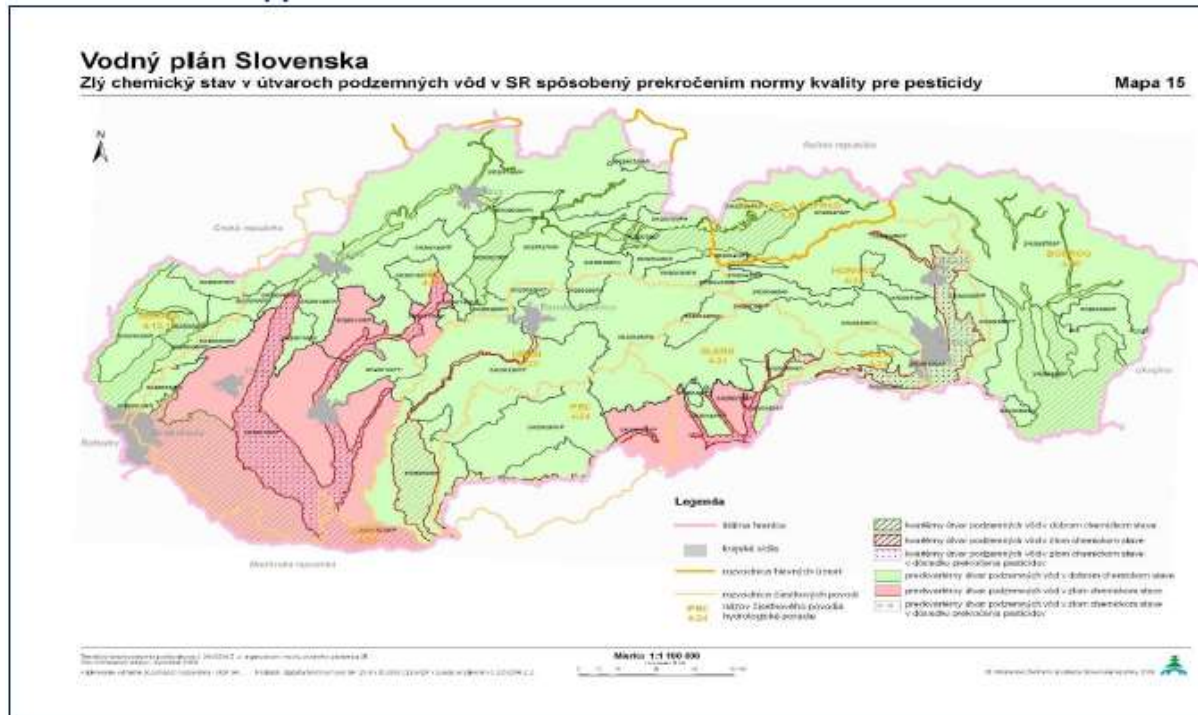
- ✓ preventing undesired releases of these substances into soil, groundwater or sewer systems to avoid undesired mixing with waste water or surface run-off water;
- ✓ using only such equipment, technological and application processes or other means of handling pollutants which are also suitable from the viewpoint of water protection;
- ✓ ensuring that PPPs are handled and application equipment operated by trained personnel familiar with the special legislation, safety regulations and conditions designed to ensure that pollutants are handled in accordance with water protection requirements;
- ✓ inspecting, on a regular basis, storage facilities and landfills and testing pipelines, tanks including farmyard VAP tanks and pollutant transport vehicles for tightness, and carrying out regular maintenance and repairs of such equipment;
- ✓ establishing and properly operating effective control systems for early detection of pollutant releases, for regular evaluation of monitoring results and for reporting results to the competent national water authority;
- ✓ other water protection measures required based on the nature of the pollutant and manner of its handling.

Special protection of waters is required in protected water management areas, in water protection zones established by decision of the district environmental authority under Act No 364/2004 and in vulnerable zones established by Slovak Government Regulation No 174/2017. Act No 305/2018 on protected natural water accumulation areas (protected water management areas), which was drafted and approved in 2018, regulates, amongst other things, pesticide use in the areas concerned. Under Section 3(3)(i) of Act No 305/2018 , **application of PPPs with a high risk to groundwater is prohibited in protected water management areas. A list of the products concerned was published in the Journal of the Ministry of Agriculture and Rural Development on 20 September 2019 and it must be updated on a regular basis.**

The use of PPPs in the relevant protected areas and in water protection zones used as sources of drinking water is based on the national classification of PPPs given in Implementing Decree of the Ministry of Agriculture and Rural Development No 488/2011.

Owing to its quality, groundwater is preferably used for drinking purposes. More than 80% of drinking water in Slovakia comes from groundwater resources.

Figure 4 Water Plan of Slovakia



| Key to graphic | |
|---|--|
| Original text | Translation |
| Vodný plán Slovenska | Water Plan of Slovakia |
| Zlý chemický stav v útvaroch podzemných vôd v SR spôsobený prekročením normy kvality pre pesticídy | Poor chemical status in bodies of groundwater in Slovakia due to non-compliance with quality standard for pesticides |
| Legenda | Key |
| štátna hranica | national border |
| krajské sídla | regional capitals |
| rozvodnica hlavných úmori | drainage divide (seas) |
| rozvodnica čiastkových povodí | drainage divide (sub-basins) |
| názov čiastkového povodia hydrologické poradie | sub-basin name waterbody index number |
| kvartérny útvar podzemných vôd v dobrom chemickom stave | quaternary body of groundwater having good chemical status |
| kvartérny útvar podzemných vôd v zlom chemickom stave | quaternary body of groundwater having poor chemical status |
| kvartérny útvar podzemných vôd v zlom chemickom stave v dôsledku prekročenia pesticídov | quaternary body of groundwater having poor chemical status due to excessive pesticide levels |
| predkvartérny útvar podzemných vôd v dobrom chemickom stave | quaternary body of groundwater having good chemical status |
| predkvartérny útvar podzemných vôd v zlom chemickom stave | pre-quaternary body of groundwater having poor chemical status |
| predkvartérny útvar podzemných vôd v zlom chemickom stave v dôsledku prekročenia pesticídov | pre-quaternary body of groundwater having poor chemical status due to excessive pesticide levels |
| © Ministerstvo Životného prostredia Slovenskej republiky, 2009 | © Ministry of the Environment of the Slovak Republic, 2009 |
| Tematický obsah zostavený podľa zákona č. 364/2004 Z.z. organizáciami rezortu životného prostredia SR | Thematic content compiled under Act No 364/2004 by organisations under the auspices of the Ministry of the Environment |

| | |
|--|---|
| Stav zobrazených údajov - december 2009 | Status of displayed data – December 2009 |
| Publikovanie výhradne so súhlasom vydavateľa MZP SR | Publishing strictly subject to the consent of the publisher – Ministry of the Environment |
| Podidada - digitálny terénny model SR (25m) © 2020 CEKSAŽP v súlade so zákonom č. 205/2004 Z. z. | Podidada – digital terrain model of Slovakia (25 m) © 2020 CEKSAŽP in accordance with Act No 205/2004 |
| Mierka 1:1 100 000 | Scale: 1:1 100 000 |

In terms of protection of surface waters in relation to the use of PPPs, the priority methods for preventing water pollution and elimination of surface water pollution are measures aimed at reducing release of PPPs resulting from spray mist drift and reducing release of PPPs resulting from surface run-off and water erosion.

Safe drinking water under Section 17 of Act No 355/2007

- does not contain microorganisms, parasites and substances that may endanger human health
- acute, chronic and late effects are taken into account

The requirements on drinking water quality as such are laid down by Implementing Decree of the Ministry of Health No 247/2017. Under Implementing Decree No 247/2017, indicators taken into consideration in evaluating chemical quality of drinking water include the following: **pesticides and total pesticides**. ‘Pesticides’ mean pesticide active substances and their relevant metabolites. Only pesticides that can be expected to be present in drinking water are to be detected and evaluated. The limit values for individual pesticides and for total pesticides are 0.1 µg/l and 0.5 µg/l, respectively. This is not the case for aldrin, dieldrin, heptachlor and heptachlor epoxide, which are subject to a limit value of 0.03 µg/l. The limits for both indicators are the maximum limit values, i.e. water cannot be used for drinking purposes if these values are exceeded.

Drinking water not meeting the limits for pesticidal substances may be authorised for use for a certain period of time by an exemption issued by the competent public health authority. Such an exemption is granted on the basis of health risk assessment carried out by a qualified person (under Section 15 of Act No 355/2007) for cases where water supply cannot be achieved by any other means and there is no risk to human health. A total of 3 exemptions may be granted, each for a maximum of 3 years. A third exemption may be granted only exceptionally, subject to the prior consent of the European Commission. An overview of prohibitions on the use of drinking water and exemptions granted is given in Table 12 [sic].

Table 11 Overview of prohibitions on the use of drinking water and exemptions granted

| Water supply system | Municipality / Population | Prohibition on drinking water use |
|---|--|--------------------------------------|
| Trstená na Ostrove aggregated water supply system | Trstená na Ostrove, Baka, Jurová/2 200 | 15 December 2017 to 8 January 2018 |
| Holice aggregated water supply system | Holice, Lúč na Ostrove/730 | 19 December 2017 to 23 January 2018 |
| Public water system Blatná na Ostrove | Blatná na Ostrove/445 | 19 December 2017 to 2 February 2018 |
| Water supply system | Municipality (population) | First exemption* for atrazine |
| Veľká Paka | Veľká Paka/802 | 14 February 2018 to 31 December 2018 |
| Mierovo | Mierovo/148 | 13 February 2018 to 31 December 2018 |

* The exemption did not apply to pregnant women and children under the age of 1 year (a prohibition applied to these population groups); although exemptions were granted until the end of December on the basis of health risk assessment, in fact they only lasted until September 2018.

Duties and competencies in drinking water monitoring

- a) Under Act No 355/2007, **drinking water supplier** carries out sampling and analyses for pesticides **throughout the supply system** (from raw water source to the point of drinking water connection to the customer) in accordance with the monitoring programme; if drinking water is supplied by the **operator of a public water supply system**, the duty to carry out inspections is laid down with respect to the operator also by Act No 442/2002 and Implementing Decree of the Ministry of the Environment No 636/2004.
- b) Under Act No 355/2007, **RÚVZ** perform drinking water sampling and analyses:
- as part of regular **monitoring of drinking water quality at the consumer** (at the tap) in performing their specialised role of public health authorities;
 - in exercising **State health surveillance** of large-scale drinking water supplies.
- c) **ÚVZ SR** evaluates drinking water quality:
- based on national requirements on the basis of RÚVZ monitoring;
 - according to European requirements, where it summarises and reports data for the health sector (from RÚVZ monitoring) and data for the environmental sector (from operational control of drinking water suppliers provided to ÚVZ SR by VÚVH).

In 2018, a methodology intended for suppliers of drinking water titled ‘*Odporúčaný postup pri zisťovaní a hodnotení pesticídov a ich metabolitov v pitnej vode a v jej zdrojoch*’ (*Recommended procedure for the detection and evaluation of pesticides and their metabolites in drinking water and its resources*) was developed and published by ÚVZ SR in cooperation with the Ministry of Agriculture and Rural Development, ÚKSÚP and VÚVH. The methodology needs to be regularly updated on the basis of changes in product authorisations and the results of monitoring of pesticide residues in groundwater, surface water and drinking water.

A tool for assessing the pollution of groundwater and surface water by pesticides, as well as for selecting the best measures to ensure water protection, is water quality monitoring with the possibility to effectively identify potential sources of pollution and, thus, ensure risk prevention measures. Monitoring of water quality is carried out by the Ministry of the Environment under the Framework Water Monitoring Programme in Slovakia, which is prepared for a period of 6 years and is updated each year by means of a supplement. The system of corrective and preventive measures is addressed within the Water Plan of Slovakia.

In addition to the basic operational, survey and inspection monitoring of pesticides, which is carried out by SHMÚ, a special-purpose monitoring of pesticides using a new combined sampling method is also underway. This special-purpose monitoring focused on the effects of the use of PPPs in Slovakia has been implemented by VÚVH since 2013 and is part of the Water Monitoring Programme of the Ministry of the Environment. It is implemented using not only conventional but also special passive sampling of groundwater. More detailed information is available on the VÚVH website at

<http://www.vuvh.sk/rsv2/default.aspx?pn=RPMV2PO>

The number of monitoring points and a list of pesticides subject to monitoring have been regularly extended within the **Framework Water Monitoring Programme**. **The monitoring also includes relevant pesticides identified by VÚVH on the basis of the methodology for the classification of groundwater-relevant pesticides in Slovakia**. It is still problematic that there is a need to regularly update information on relevant pesticides and to cover the increasing financial demands resulting from the scope and method of water monitoring and the costly chemical analyses, development of methods of analysis for new pesticides and technical equipment enabling the analysis of pesticide residues and their metabolites at low concentrations (<< 0.01 µg/l).

The results of pesticide monitoring in groundwater and surface water in Slovakia are part of the Water Register and also part of the water status assessment, in accordance with the requirements of Directive 2000/60/EC on water and this information is published

- on the VÚVH website at <http://www.vuvh.sk/rsv2/default.aspx?pn=PDM>
- on the SHMÚ website in SHMÚ annual reports on groundwater quality at <http://www.shmu.sk/sk/?page=1939> and in annual reports on surface water quality at <http://www.shmu.sk/sk/?page=1834>

Within its activities under Directive 2000/60/EC on water, VÚVH carries out an assessment of non-point sources of groundwater pollution from agriculture and evaluates data from monitoring of groundwater quality in terms of pesticide residues. The results are presented in the annual final reports from VÚVH tasks; specifically, the following documents were released over the past 5 years:

- RNDr. Anna Patschová, PhD. et al., 2013: Task title: Ochrana vôd pred znečistením pesticídmi z poľnohospodárstva v zmysle smernice 2009/128/ES a Nariadenia 1107/2009 (*Protection of waters against pollution caused by pesticides from agriculture under Directive 2009/128/EC and Regulation 1107/2009*), VÚVH Bratislava, 77 pp.
- RNDr. Anna Patschová, PhD. et al., 2014: Project title: Implementácia smernice 200/60/ES (RVS)/Významné vodohospodárske problémy (*Implementation of Directive 200/60/EC (WFD)/Significant water problems*). Sub-task title: Revízia dopadov ľudskej činnosti na stav útvarov povrchových a podzemných vôd (*Review of the impact of human activity on the status of surface and groundwater bodies*). VÚVH Bratislava, 52 pp.
- RNDr. Anna Patschová, PhD. et al., 2015: Project title: Ochrana vôd pred znečistením pesticídmi z poľnohospodárstva v zmysle smernice 2009/128/ES a Nariadenia 1107/2009 (*Protection of waters against pollution caused by pesticides from agriculture under Directive 2009/128/EC and Regulation 1107/2009*), VÚVH Bratislava, 19 pp.
- Mgr. Oliver Horvát, PhD. et al., 2015: Project title: Hodnotenie podzemných vôd pre účely smernice.
- 2000/60/ES - dosiahnutie dobrého chemického stavu v útvaroch podzemných vôd (*Evaluation of groundwater for the purposes of Directive 2000/60/EC – achievement of good chemical status in bodies of groundwater*), VÚVH Bratislava, 136 pp.
- RNDr. Anna Patschová, PhD. et al., 2015: Project title: Návrh plánu manažmentu povodí. (*Draft drainage basin management plan*). Sub-task title: Hodnotenie plošných zdrojov znečistenia podzemných vôd (*Assessment of diffuse sources of groundwater pollution*), VÚVH Bratislava, 22 pp.
- RNDr. Anna Patschová, PhD. et al., 2017: Project title: Implementácia smernice 200/60/ES (RVS)/Významné vodohospodárske problémy (*Implementation of Directive 200/60/EC (WFD)/Significant water problems*). Sub-task title: Hodnotenie podzemných vôd pre účely smernice 2000/60/ES - dosiahnutie dobrého chemického stavu v útvaroch podzemných vôd (*Evaluation of groundwater for the purposes of Directive 2000/60/EC – achievement of good chemical status in bodies of groundwater*).

A total of 53 pesticides were monitored in groundwater between 2002 and 2016; 43 pesticides are being monitored at present. The results of the monitoring in 2005-2014 are presented in Table 12.

Pesticides I and II

acetochlor, alachlor, atrazine, carboxin, desethyl atrazine, desisopropyl atrazine, desmedipham, alpha-endosulfan, ethofumesate, chloridazon, chlorpropham, chlortoluron, isoproturon, metamitron, pendimethalin, phenmedipham, prometryn, simazine, terbutryn, terbuthylazine, hydroxy-terbuthylazine, metolachlor, hydroxyatrazine

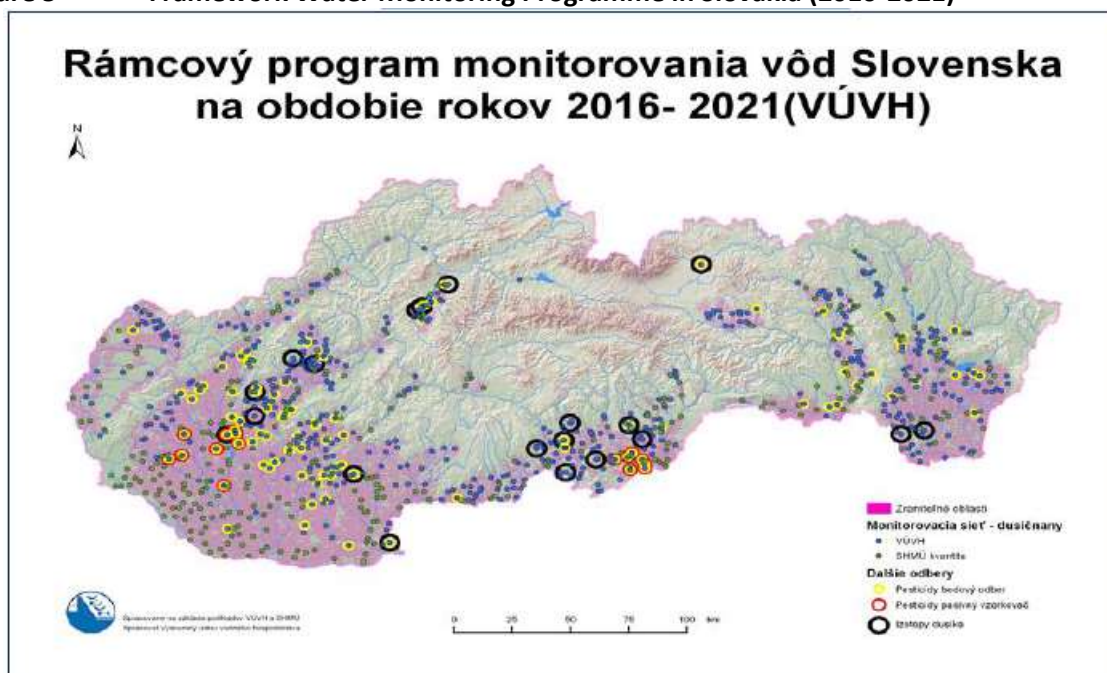
Acid pesticides

2,4D acid, 2-methyl-4-chlorophenoxyacetic acid (MCPA), bentazone, clopyralid, dicamba, MCPB, mCPP

Organochlorinated pesticides (OCP)

Aldrin, DDT (DDD, DDT, DDE), dieldrin, endrin, heptachlor, hexachlorobenzene, chlorpyrifos, chlorpyrifos-methyl, isodrin, lindan (g-hexachlorocyclohexane), methoxychlor, trifluralin, pentachlorobenzene

Figure 5 Framework Water Monitoring Programme in Slovakia (2016-2021)



| Key to graphic | |
|---|--|
| Original text | Translation |
| Rámčový program monitorovania vôd Slovenska na obdobie rokov 2016-2021 (VÚVH) | Framework Water Monitoring Programme in Slovakia for 2016-2021 (VÚVH). |
| Zraniteľné oblasti | Vulnerable zones |
| Monitorovacia sieť - dusičnany | Monitoring network – nitrates |
| VÚVH | VÚVH |
| SHMÚ kvalita | SHMÚ quality |
| Ďalšie odbery | Other sampling |
| Pesticídy bodový odber | Pesticides spot sampling |
| Pesticídy pasívny vzorkovač | Pesticides passive sampler |
| izotopy dusíka | isotopes of nitrogen |
| Spracovanie na základe podkladov VÚVM a SHMÚ | Processed based on underlying documents from VÚVM and SHMÚ |
| Spracoval Výskumný ústav vodného hospodárstva | Processed by the Water Research Institute |

MONITORING SITES in accordance with the Water Monitoring Programme in Slovakia

Table 12 Results of the monitoring of pesticides in waters (2005-2014)

| | Monitoring | Number of monitoring sites | Number of analyses | ≥ 0.1 µg/L | < 0.1 µg/L and > LOQ | ≤ LOQ |
|----------------|------------|----------------------------|--------------------|------------|----------------------|-------|
| SHMÚ | 2005-2014 | 259 | 1 952 | 0.5% | 1.5% | 98% |
| VÚVH | 2009-2014 | 67 | 491 | 2.6% | 6.4% | 91% |
| Slovakia total | 2009-2014 | 326 | 2 443 | 0.9% | 2.5% | 96.6% |

In 2015-2017, VÚVH (through SAOR) got involved, in the TOPPS-PROWADIS project dedicated to training of users of PPPs with the aim of preventing water pollution from point sources (Training the Operators to Prevent Pollution from Point Sources). The project output consists in information provided in the form of publications, leaflets and the website www.topps-drift.org. Awareness raising among officials, as well as experts and the general public, is carried out by VÚVH in the form of the workshop titled 'Problémy ochrany podzemných vôd' (*Groundwater Protection Problems*), which takes place every year since 2012.

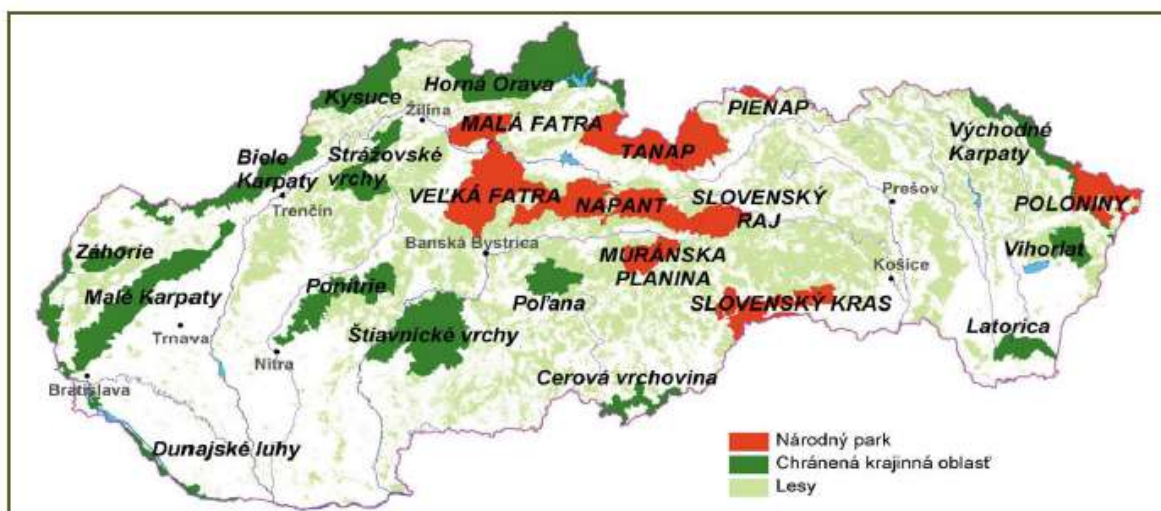
4.3 Environmental protection

4.3.1 Protected areas

Nature and landscape conservation is the competence of the Ministry of the Environment. Act No 543/2002 establishes the concept of territorial nature and landscape conservation in five levels of protection. As of 31 December 2006, 1 134 943 ha falling into the second to fifth levels of protection were registered in Slovakia, representing 23% of the total area of the country. As of 31 December 2016, the total area of the national system of protected areas in Slovakia classified in various levels of protection amounted to 1 147 059 ha, which represents 23.39% of the country's territory, where the system reflects protection levels applicable under the current legislation, including the national system's existing overlap with areas of European relevance. Forest land covers about 73% of the protected areas.

In addition to protected areas, the territory of Slovakia includes areas that are not classified according to protection levels, namely the following:

- ✚ 41 designated protected bird areas with a total area of 1 284 806 ha;
- ✚ 20 caves with designated protection zone with a total area of 3 347 ha.



| Key to graphic | |
|--------------------------|--------------------------|
| Original text | Translation |
| Národný park | National park |
| Chránená krajinná oblasť | Protected landscape area |
| Lesy | Forests |

In completing the European NATURA 2000 network (based on implementation of Directive 2009/147/EC on the conservation of wild birds and Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) as well as in the development of programmes aimed at the conservation of protected areas, the measures laid down in Directive 2009/128/EC are taken into account, namely the regulation of agricultural activity by reducing the use of fertilisers and chemicals on nest sites, prohibition of the application of chemical products having an impact on species reproduction and on the quality of food resources in the period from 1 April to 30 September of the calendar year, thus effectively linking both Directives on nature and landscape protection with Directive 2009/128/EC. Farming in these areas is possible and financially supported by agri-environmental aid paid on the basis of European support schemes. **The use of PPPs in specific areas (NATURA 2000 areas, protected bird areas, wetlands, etc.) is based on the national classification of these products established by Implementing Decree of the Ministry of Agriculture and Rural Development No 488/2011 and the conditions set out in that Decree.**

The national classification of PPPs has been developed with a view to achieving a higher protection of wild animals, birds, aquatic organisms, bees and non-target arthropods as well as water resources. Based on risk assessment and assessment of threshold values, risk indices are assigned to individual products that serve as a basis for applying the relevant measures aimed at reducing their use.

The objectives and principles of conservation of protected areas consisting in detailed protection conditions have also been incorporated into forest conservation programmes and are binding on foresters. Nature conservation principles are often applied also in forest stands outside the protected areas.

4.3.2 Removal of invasive alien species

The aspects of invasive alien species are laid down in Regulation (EU) No 1143/2014 of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species and in Act No 150/2019 on the prevention and management of introduction and spread of invasive alien species and amending and supplementing certain laws.

A list of invasive alien species of Union concern is issued by the Commission by virtue of implementing regulations. A list of invasive alien species was issued by Commission Implementing Regulation (EU) 2016/1141 of 13 July 2016 adopting a list of invasive alien species of Union concern pursuant to Regulation (EU) No 1143/2014 of the European Parliament and of the Council and supplemented by Commission Implementing Regulations (EU) 2017/1263 of 12 July 2017 and 2019/1262 of 25 July 2019.

At present, the list of invasive alien species of Union concern contains 36 plant species. Of this number, 31 plant species have not yet been observed to be naturally occurring in Slovakia.

The list of invasive alien species of Slovak Republic concern was issued by the Slovak Government by virtue of its Regulation No 449/2019, which lists invasive alien species which are of concern to the Slovak Republic. There are currently 7 species of invasive plants on that list.

Under Section 3 of Act No 150/2019, land owners or managers are obliged to remove from their land any invasive alien species that are included in the national list or in the EU list and are obliged to manage the land so as to prevent their spread. The methods of removing invasive alien species included in the national list and in the EU list were laid down in Implementing Decree of the Ministry of the Environment No 450/2019 laying down the conditions and methods of removal of invasive alien species. Chemical methods are one of the removal alternatives for most species of invasive plants. In two cases (*Acacia saligna* and *Ailanthus altissima*), the chemical method is the only established way of removing the plants. Preparation of manuals in cooperation with the Ministry of the Environment and inclusion of the aspects of removal of invasive alien species in professional training for operators using PPPs is essential for a proper application of legislation on pesticide use as well as legislation on prevention and management of invasive alien species.

4.3.3 Protection of pollinators

Assessment of the impact of PPPs on bees and other non-target arthropods is carried out by NPPC – **Institute of Apiculture in Liptovský Hrádok**, which also lays down the conditions of use of PPPs in Slovakia in order to minimise the risk of damage to bees and other pollinators as well as beneficial arthropods and to minimise the risk of contamination of bee pasture – pollen and nectar – and, consequently, bee products.

Institute of Apiculture:

- has established and maintains a toxicological information centre for both growers and beekeepers where it receives and handles over 90 telephone inquiries each year concerning correct application of PPPs with regard to the protection of bees and other pollinators of both agricultural crops and wild entomophilous plants;
- has developed, within the training of agricultural entities using PPPs, texts for a guide to correct application of PPPs, with an emphasis on minimising the adverse impact on bees and other pollinators;
- participates annually in the training of beekeepers – assistants to official veterinarians; between 2015 and 2017, more than 1 500 training participants also attended lectures on the protection of bees in the use of PPPs in agricultural production;
- has developed, in cooperation with the Environmental Crime Unit of the Criminal Police Department, a procedure for beekeepers for detecting mortality or damage to bees involving suspected adverse effect of PPPs and a form for incident reporting.

During the years 2014-2017, 8 incidents of damage to bees caused by incorrect application of PPPs in the treatment of oilseed rape crops were reported to the Institute of Apiculture – in six cases there was a violation of the principles of proper application under Section 2(6) of Implementing Decree of the Ministry of Agriculture and Rural Development No 488/2011 (tank mix application), failure to observe the instructions for use, daytime application (during foraging times, with bees foraging on pollen and nectar in flowering winter oilseed rape crops), and in one case, damage to bees was detected as a result of spraying flowering oilseed rape crops with DAM390 fertilisers combined with fertilisers containing copper (drop out of foraging bees as a result of the queen mandibular pheromone being overridden by the substance used for treatment). In the last case, the damage to the bees was apparently caused by viral diseases.

In 2018, one incident of damage to bees was reported to the Institute of Apiculture as a result of improper application of PPPs in the treatment of oilseed rape crops.

In 2019, the Institute of Apiculture dealt with an incident of acute intoxication of foraging bees at two beekeepers after chemical treatment of mustard crops in early May 2019. Residues of

two insecticide active substances were determined by laboratory analysis in the samples of the dead bees and the crops. The incident occurred due to non-observance of restrictions for the protection of bees in the application of products.

The Institute of Apiculture trained 618 assistants in 2018 and 321 assistants of official veterinary surgeons in 2019, who also attended lectures on the protection of bees in the use of PPPs.

4.3.4 Environmental crime

Combating environmental crime is an important element in environmental protection, determined by national Regulation No 77/2005 of the Minister of the Interior on the procedure, prevention, avoidance, detection and documentation of environmental crime, in the detection of its perpetrators, in its investigation and in shortened investigation. Under the aforementioned Regulation, 'environmental crime' means, inter alia, offences in the area of endangering and harming the environment, unauthorised management of waste (including illicit import, export and transport of waste), violation of the principles of protection of water and air, protection of plants and animals (including illegal trade therein), violation of the principles of protection of trees and bushes, endangering health by defective foods, and the illicit production or possession of high-risk chemicals. **These crimes are listed in the second part of Act No 300/2005, the Criminal Act, Title Six, titled 'Generally Dangerous Crimes and Environmental Crimes'.**

Under the above national Regulation No 77/2005, the Environmental Crime Unit of the Criminal Police Department prevents, avoids, detects and documents environmental crime, detects its perpetrators and conducts its investigation, provides guidance and practical assistance to Police officers of designated units, processes and distributes methodological materials and guidelines, organises and conducts instructional and methodological training. It also coordinates the activities of the designated units, monitors the fulfilment of the tasks of the Police Force and develops intersectoral cooperation.

Environmental crime involving PPPs has been addressed by the unit in more detail since 2017; the unit intensively cooperates with the Ministry of Agriculture and Rural Development, ÚKSÚP, SAOR and the Financial Directorate; in 2017 the unit delivered professional training in environmental crime for plant health officers in Bratislava, Košice and Zvolen.

The intersectoral coordinating body for combating crime, operating on an intersectoral platform, is responsible for 16 national expert groups involving 474 members from 74 entities. **In relation to PPPs, the Ministry of Agriculture and Rural Development is represented in two relevant groups:**

- **National Expert Group for the Elimination of Environmental Crime;**
- **National Expert Group for CBRNE Threats.**

Good cooperation among these institutions has resulted in successful resolution of cases of illegal use of PPPs with environmental impact, as well as detection of cases of illegal imports of products, generally from third countries, as these often contain high-risk active substances not authorised for use in the EU. Each year, Slovakia actively participates in the SILVER AXE event organised by EUROPOL which aims to eliminate illegal imports, trade and use of PPPs and is an active member of the OECD ONIP Expert Group.

4.4 Communication and awareness raising

Sustainable use of PPPs requires that the general public be informed in an appropriate manner of the risks arising from their use, their potential effects on human health and the environment, and alternative methods of protection against pests.

Ample information on PPPs is currently available on various websites. Information is provided:

- ✓ by national bodies and professional organisations (for example: www.uksup.sk; www.mpsr.sk; www.los.sk; www.nlcsk.org; www.uniag.sk; www.uvz.sk; www.svssr.sk; www.zas.sk/sk/; www.agroporadenstvo.sk; www.agroportal.sk; www.agroserver.sk; www.soprsr.sk; www.vuvh.sk; www.uvzsr.sk);
- ✓ interested parties (www.scpa.sk)
- ✓ and NGOs (www.srsweb.sk; www.bezpecnepestovanie.scpa.sk; www.cepta.sk, etc.).

A list of authorised PPPs, plant protection adjuvants and plant protection products permitted for parallel trade is published **on the website of the ÚKSÚP** at (<https://www.uksup.sk/orp-zoznamy/>).

ÚKSÚP also operates a public online application with information on plant protection products and adjuvants called 'Informačný systém pre prípravky na ochranu rastlín' (*Information System for Plant Protection Products*, 'ISPOR'), available at <http://pripravky.uksup.sk/pripravok/search>

The application can be used to search authorised plant protection products, authorised adjuvants and permitted parallel trade operators in the Slovak Republic. It can also be used to look up PPPs whose authorisation has expired, but which have been granted a deferral for clearance sales or consumption of existing stocks.

Being an online application with continuously updated data, ISPOR instantly displays in its public section the relevant information as soon as authorisation for a PPP is granted, a change is made, or authorisation is cancelled.

The application has the functionality of filtering according to the following criteria:

- ✓ trade name of the product;
- ✓ authorisation number;
- ✓ authorisation holder;
- ✓ crop or area of application;
- ✓ pest or other purpose of use;
- ✓ type of function of the product;
- ✓ name of active substance;
- ✓ intended use;
- ✓ parallel import;
- ✓ application method;
- ✓ packaging size;
- ✓ product type;
- ✓ group of active substances;
- ✓ authorisation period;
- ✓ product classification.

The website www.topps-drift.org established by SAOR provides information for users of PPPs aimed at **eliminating drifts of products in their application.**

Information on monitoring surface and groundwater quality and quality of water in protected water management areas is published on the website of SHMÚ

http://www.shmu.sk/sk/?page=1&id=kvalita_povrchovych_vod

http://www.shmu.sk/sk/?page=1&id=kvalita_podzemnych_vod

http://www.shmu.sk/sk/?page=1&id=hydro_chvo

Information on PPPs is available **in specialised agricultural magazines (Naše pole, Agro magazín, Farmár, Sady a vinice, Moderná mechanizácia v poľnohospodárstve, Záhradkár)** and at farming exhibitions and workshops organised by governmental authorities and the distribution network of PPPs.

Information is also disseminated by **Radio and Television of Slovakia (RTVS)**, which traditionally broadcasts programmes on agriculture (**Farmárska revue, Farmárova nedeľa, Hurá do zahrady, Postav dom, zasad' strom**).

The Ministry of Agriculture and Rural Development, in cooperation with professional sites authorised under Act No 405/2011 and Agroinštitút Nitra, š. p., has released **leaflets for professional and non-professional users on the correct application of products with regard to the protection of bees and other pollinators**; the same information is also available on the websites of the Ministry of Agriculture and Rural Development, ÚKSÚP, NPPC/ÚVČ and Agroinštitút Nitra, š. p.

The Agroecology Research Institute in Michalovce, with the support of the Ministry of Agriculture and Rural Development, has produced an **information brochure on the range of uses of basic substances in plant protection**, which is published on the websites of the Ministry of Agriculture and Rural Development, ÚKSÚP, and Agroinštitút Nitra, š. p.

Certification systems for 'Pollinator Friendly Practices' are available at

<https://www.pollinator.org/bff>

<https://era-susan.eu/content/bpractices>

<https://pollinators.ie/>

<https://www.fs.fed.us/wildflowers/pollinators/friendlypractices.shtml>

In addition to the above sources of information:

- ✚ **NTIC** provides a 24-hour telephone consultation service in Slovakia on poisoning with medicines, chemicals, pesticides, drugs, plants, fungi and animal poisons;
- ✚ **VÚVH**
 - together with SAOR, VÚVH has implemented the TOPPS-PROWADIS project focused on the training of end users of PPPs to prevent water pollution from point sources;
 - each year since 2012, VÚVH organises a workshop titled 'Aspects of Groundwater Protection' with participation of governmental authorities, experts and the general public;
- ✚ as part of administration of the Toxicological Information Centre, **NPPC/ÚVČ** provides telephone information and consulting for growers and beekeepers on the correct application of products with regard to the protection of bees and other pollinators of both agricultural crops and wild entomophilous plants.
- ✚ **NIP** provides for the distribution and promotion of handbooks and other materials focused on plant protection materials at its workshops, e.g. workshop on the
 - handbook titled 'Správne postupy pri zaobchádzaní s prípravkami na ochranu rastlín so zreteľom na ochranu čistoty vodných zdrojov' (*Good practices in handling plant protection products with regard to protection of purity of water resources*);

- handbook titled ‘Iniciatíva za bezpečné a trvalo udržateľné používanie prípravkov na ochranu rastlín’ (*Initiative for the safe and sustainable use of plant protection products*);
- ✚ **ÚVZ SR** provides opinions and informs the general public about the impact of pesticides on human health through the media, information on the website and consultations;
- ✚ **SAOR** organised/prepared:
 - international conference ‘SUI pre bezpečné a trvalo udržateľné používanie prípravkov’ (*SUI for the safe and sustainable use of products*), 2013;
 - workshop ‘Predchádzanie falšovaniu, nezákonnému dovozu a nakladaniu s týmito prípravkami na ochranu rastlín’ (*Preventing counterfeiting, illegal import and handling of these plant protection products*), 2014;
 - international conference ‘Ochranou vôd k dosiahnutiu ich priaznivého stavu’ (*Water protection towards a good water status*), 2013;
 - international conference ‘Odpady z obalov v poľnohospodárstve - ako s nimi ďalej nakladať’ (*Packaging waste in agriculture – how to manage it further*), 2015;
 - international conference ‘Bezpečnosť a účinnosť v ochrane rastlín’ (*Security and effectiveness in plant protection*), 2017;
 - international conference ‘Nové výzvy v ochrane rastlín - cesta do budúcnosti’ (*New challenges in plant protection – a way to the future*), 2019;
 - practical document ‘Falšované a ilegálne prípravky’ (*Counterfeit and illegal products*), together with a DVD, poster and leaflet.

4.5 Professional training

The system of professional training focused on PPPs was introduced in Slovakia through Act No 193/2005 on phytosanitary care to the extent provided by the Implementing Decree of the Ministry of Agriculture No 88/2009 on training in the field of placing on the market and application of PPPs or other products. The implementation of the system began in 2010, when the Ministry of Agriculture charged three entities with its organisation:

- ✓ Agroinštitút Nitra, š. p.;
- ✓ Slovak Agricultural and Food Chamber;
- ✓ National Forest Centre in Zvolen.

Agroinštitút Nitra, š. p. and the Slovak Agricultural and Food Chamber are responsible for professional training focused on agriculture and placing of PPPs on the market; at the same time, **Agroinštitút Nitra, š. p.** is responsible for organising professional training for applicators of PPPs **on railways in cooperation with the Central Institute of Training and Psychology of the Railways of the Slovak Republic**. The **National Forest Centre in Zvolen is responsible for organising training in forestry**. It has so far been provided to technical and economic staff of the state enterprise Lesy SR, š. p., and continues to be provided to the personnel of nurseries, production plants and service companies carrying out application of PPPs for the forestry sector.

At present, professional training focused on PPPs is provided in accordance with Act No 405/2011 and Implementing Decree No 492/2011; the training is organised by the above entities authorised by the Ministry of Agriculture and Rural Development, where the Ministry has also determined requirements on and conditions of training organisation to be observed by the entities in charge.

Under internal Guideline of the Ministry of Agriculture and Rural Development No 1360/2013-610 on lifelong learning, the Expert Committee for Professional Training in Plant Protection Products (Statute of expert commissions for the issue of accreditations

for training in the agricultural sector No 192/2013-100) was set up to issue accreditations for training in the agricultural sector, for assessment of curricula, providing trainers and preparation of proposals for the issue of authorisations for training activity. **Under Article 3 (Preparation and Delivery of Training Activities) of the Guideline, professional guarantors of the Ministry of Agriculture and Rural Development participate in training activities, are authorised to evaluate training and, if serious deficiencies are detected, may propose that the** chair of the expert commission, i.e. the General Director of the Section of Agriculture of the Ministry of Agriculture and Rural Development, **suspend or terminate the training activity in question.**

Professional training is carried out in a modular system:

| |
|---|
| Module 01 – Professional training in PPPs for sellers; Module 02 – Professional training in PPPs for agricultural managers; Module 03 – Professional training in PPPs for agricultural applicators. |
|---|

i.e. in practice it is differentiated to target various groups. Persons placing PPPs on the market, farm managers and operators are each trained separately. Separate specific training is delivered to forestry workers and workers responsible for railway maintenance. Workers maintaining public green spaces, public areas and airport and road spaces are yet to be trained.

A certificate of professional competence is issued to persons who complete the relevant training and pass a final written examination. The certificate of professional competence is valid for 10 years.

Persons applying PPPs on plants or plant products for personal use are exempted from the duty to receive professional training and hold the certificate of professional competence.

The professional section of the training, including the elaboration of professional literature and questions for the final written examination, is provided by lecturers – experts in the relevant fields of the training. **Lecturers and specialised materials for the training, as well as questions for the final written examinations, are approved by ÚKSÚP, which also maintains a database of approved lecturers.**

In the area of forestry, a separate publication has been developed, ‘Používanie prípravkov na ochranu rastlín v lesoch (Príručka pre absolventov odborného vzdelávania v oblasti aplikácie prípravkov na ochranu rastlín alebo iných prípravkov v lesnom hospodárstve)’ (Use of plant protection products in forests (Handbook for graduates from professional training in application of plant protection products or other products in forestry)). Participants of forestry training receive, in addition to the above literature, also a CD with lectures. Participants of training in agriculture have access to individual presentations; study materials are published on the websites of the institutions delivering the training activity and are available in printed form at the training itself.

The sale of PPPs in garden shops and by retail chains is a sale of products to non-professional users (these products must be listed in the relevant chapter of the list of authorised products or products permitted for parallel trade pursuant to Section 25 of Act No 405/2011). An undertaking selling such products must satisfy the condition of professional competence to operate the sale of PPPs, either itself or through an appointed responsible person, although in the actual sale the undertaking is not obliged to provide for the presence of an employee with a certificate of professional competence and consultancy under Section 32(5), the second sentence, of Act No 405/2011. If the undertaking concerned has several establishments, at least one responsible person holding the certificate of professional competence must be present at each establishment (shop).

By the end of 2019, 1 504 persons had been trained in module 01 (persons placing PPPs on the market), 3 601 persons had been trained in module 02 (farm managers) and 4 288 persons in

module 03 (operators and workers) + 2 268 persons (forestry). A total of 1 336 people had been trained for non-agricultural use of PPPs in the railway sector. In total, 12 997 people were trained in the period in question.

Table 13 Number of people receiving professional competence training from 2010 to 2019

| | Module 01 | Module 02 | Module 03 | Railways |
|------------------------|--------------|--------------|--------------|--------------|
| 2010 | 166 | 250 | 186 | 41 |
| 2011 | 504 | 1 380 | 1 536 | 203 |
| 2012 | 38 | 280 | 581 | 132 |
| 2013 | 24 | 206 | 212 | 182 |
| 2014 | 19 | 171 | 219 | 120 |
| 2015 | 28 | 306 | 361 | 79 |
| 2016 | 49 | 437 | 378 | 116 |
| 2017 | 274 | 162 | 214 | 174 |
| 2018 | 213 | 118 | 216 | 118 |
| 2019 | 189 | 291 | 385 | 198 |
| 2020 | 275 | 366 | 407 | 122 |
| 2010-2020 TOTAL | 1 779 | 3 967 | 4 698 | 1 485 |

Table 14 Number of people receiving professional competence training in forestry from 2011 to 2020

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Total |
|------------------|------|------|------|------|------|------|------|------|------|------|-------|
| Number of people | 316 | 263 | 170 | 313 | 599 | 342 | 105 | 116 | 44 | 0 | 2 268 |

A specific qualification in the use of substances that pose a particular risk to health or the environment is required by Act No 355/2007, which regulates professional competence and the issue of certificates of professional competence for work with very toxic substances and products and toxic substances and products. This type of training and issue of certificates is the responsibility of the Public Health Authority of the Slovak Republic. The certificates are valid for 5 years.

On 14 October 2014, the Ministry of Education issued, under Section 9(2) of Act No 568/2009 on lifelong learning and amending and supplementing certain laws, a confirmation for **Agroinštitút Nitra, š. p. on accreditation of the Work with very toxic and toxic substances and mixtures programme** based on meeting the conditions for accreditation of a further training programme under Section 10 of the same Act. The accreditation is recorded under No 2782/2014/95/2 **in two modules, each comprising 10 lessons.**

Module names:

1. Training to verify professional competence for working with very toxic substances and mixtures and toxic substances and mixtures;
2. Updating training to verify professional competence for working with very toxic substances and mixtures and toxic substances and mixtures.

The training programme is intended for applicants for verification of professional competence for work with very toxic substances and mixtures and toxic substances and mixtures under Section 15(3)(a) of Act No 355/2007, as amended, and holders of certificates of professional

competence for work very highly toxic substances and mixtures and toxic substances and mixtures. The training programme is set up in a modular structure enabling people interested in the training to choose only the module they need for exercising their professional activities. The modules are designed so as to provide participants with the knowledge and skills required either to pass the examination for obtaining a certificate of professional competence for working with very toxic substances and mixtures and toxic substances and mixtures or, if already certified, to update their knowledge of the applicable legislation and safe work with the substances in question, thus extending the validity of their certificate of professional competence. Table 15 provides a summary of the numbers of certificates issued.

Table 15 Numbers of issued certificates of professional competence for work with very toxic substances and mixtures and toxic substances and mixtures from 2015 to 2020 (Agroinštitút Nitra, š.p.)

| Module/YEAR | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | TOTAL |
|-----------------------|------|------|------|------|------|------|-------|
| Professional training | 206 | 133 | 56 | 85 | 66 | 49 | 595 |
| Updating training | 344 | 89 | 9 | 5 | 22 | 46 | 515 |

In the field of professional training, SAOR has prepared the following documents and made them available to the professional public:

- ✓ manual titled 'Bezpečné používanie prípravkov na ochranu rastlín - ucelený návod ako správne používať prípravky na ochranu rastlín' (*Safe use of plant protection products – comprehensive guidance on how to use plant protection products properly*); the manual includes a DVD with 16 practical video tutorials; the manual was later supplemented by three additional video tutorials;
- ✓ publication titled 'Zásady dobrej praxe v ochrane rastlín na zníženie úletu' (*Principles of best practice in plant protection to reduce drift*);
- ✓ publication titled 'Dobrá prax v ochrane rastlín na zníženie znečistenia vôd prípravkami na ochranu rastlín v dôsledku ich splachu odtokom a eróziou pôdy' (*Best practice in the protection of plants to reduce water pollution by plant protection products resulting from drains via run-off and soil erosion*);
- ✓ publication titled 'Zásady dobrej praxe v ochrane rastlín na zníženie znečisťovania vôd prípravkami na ochranu rastlín z bodových zdrojov' (*Principles of best practice in plant protection products for the reduction of water pollution by plant protection products from point sources*);
- ✓ publication titled 'Dobrá prax v ochrane rastlín I znižovaniu znečistenia prípravkami na ochranu rastlín vyplavovaním cez drenážne sústavy a priesakom' (*Best practice in the protection of plants to reduce pollution by plant protection products resulting from drains via drainage systems and percolation*);
- ✓ publication titled 'Správne postupy pri zaobchádzaní s prípravkami na ochranu rastlín so zreteľom na ochranu čistoty vodných zdrojov' (*Good practices in handling plant protection products with regard to protection of purity of water resources*);
- ✓ information for users of PPPs aimed at eliminating drifts in the application of products on the www.toppps-drift.org website;
- ✓ leaflet titled 'Znižujte únik pesticídov v dôsledku úletu postrekovej hmly' (*Reduce pesticide leakage due to spray mist drift*);
- ✓ leaflet titled 'Kvalitná aplikácia, lepšia ochrana vody' (*Quality application, better water protection*);
- ✓ leaflet titled 'Znižujte únik pesticídov v dôsledku povrchového odtoku a erózie' (*Reduce pesticide leakage due to surface run-off and erosion*).

Agroinštitút Nitra, š. p., in cooperation with the Ministry of Agriculture and Rural Development, has prepared a video titled 'Kalibrácia plošných postrekovačov pred aplikáciou' (*Calibration of broadcast sprayers before application*), which is publicly available on both institutions' websites.

<https://www.mpsr.sk/?navID=47&SID=40&navID2=1468>

In 2019, the Ministry of Agriculture and Rural Development in cooperation with Agroinštitút Nitra, š. p. and ÚKSÚP organised **3 additional training sessions on the topic of 'Zásady dobrej praxe v ochrane rastlín zameranej na princípy integrovanej ochrany proti škodcom'** (*Principles of best practice in plant protection focused on the principles of integrated pest management*). Findings made during BTSF training on IPM, possible uses of basic substances in plant protection and legislation updates were presented during the training. **The training was attended by 163 people. Presentations from the training are made available to the public on the websites of the Ministry of Agriculture and Rural Development and Agroinštitút Nitra, š. p.**

4.6 Storage and handling of plant protection products

Under Act No 405/2011 and Regulation (EC) No 1107/2009, only products authorised or permitted by ÚKSÚP may be placed on the market and used in Slovakia. **For reasons of consumer protection, it is prohibited to place products on the market at marketplaces, in self-service sale and using vending machines.** The conditions for placing products on the market by online sale are laid down by Act No 405/2011 on phytosanitary care.

Details on storage and handling of PPPs are given in **Implementing Decree of the Ministry of Agriculture and Rural Development No 491/2011 on keeping records of plant protection products and reporting data, conditions and procedures for storage and handling of plant protection products and cleaning of used application equipment.** The topic of proper storage and handling of products is also included in professional training under Section 32 of Act No 405/2011.

In 2014, SAOR launched a **pilot project to collect empty packaging from professional users of PPPs, with a view to protecting the environment, especially water. The collection aims at recycling or energy recovery of such packaging in accordance with the circular economy principles.** A practical manual for farmers titled '**Pilotný projekt SAOR ohľadne nakladania s prázdnyimi obalmi z prípravkov na ochranu rastlín'** (*SAOR pilot project for handling empty packaging from plant protection products*) was released to promote collection and raise awareness.

In addition to collecting empty packaging from professional users, a **pilot project for the collection of packaging and waste from non-professional users of plant protection products** was launched under the guidance of SAOR.

The collection of empty packaging is carried out in the districts of Topoľčany, Partizánske, Bánovce nad Bebravou (2014-2015), Trenčín, Stará Ľubovňa, Piešťany, Prešov, Sabinov (2016), Levice (2017), Dunajská Streda (2018), Senec, Pezinok, and Rimavská Sobota (2019), with the prospect of extension to other districts.

SAOR has released the following leaflets in order to raise awareness of empty packaging:

- ✓ 'Vyplachujte obaly z prípravkov na ochranu rastlín' (*Rinse packaging from plant protection products*);
- ✓ 'Viete kam s odpadom z pesticídov?' (*Do you know where pesticide waste belongs?*);
- ✓ 'Prázdne obaly od prípravkov na ochranu rastlín a správne s nimi nakladajte' (*Empty packaging from plant protection products and how to handle it properly*).

In addition, two animations have been created showing the rinsing of empty packaging to promote collection and subsequent recycling, as well as a DVD on manual rinsing and rinsing in proportioners.

PPPs which are classified as waste under Section 32(10) of Act No 405/2011 may not be used or placed on the market.

Section 14 of Act No 79/2015 lays down the duties of waste holders. The basic duties include the classification of waste according to the Waste Catalogue, collection of waste sorted by waste types and securing them against degradation or theft, collecting separately hazardous waste by type, identification of waste in the designated manner and handling of waste in accordance with the applicable legislation, delivery of waste for collection only to a person authorised to handle waste, keeping and maintaining records of waste types and quantities, and reporting data from the records to the governmental authority competent in the area of waste management. Record sheets of waste are kept for a period of 5 years.

Disposal is only permitted in hazardous waste disposal facilities designated and agreed for that purpose by the competent national waste management authorities.

4.7 Application equipment for plant protection products

Under Section 29 of Act No 405/2011, **only such application equipment may be used which has been entered in the list of registered types of application equipment for the application of plant protection products.** Application equipment technically restored beyond the technical parameters of the original type design and put into reuse are also subject to registration, as opposed to application equipment intended for scientific, research and exhibition purposes. Requests for inclusion in the list of application equipment must be accompanied by a document confirming compliance with the technical requirements and phytosanitary requirements on the application equipment under the applicable legislation and the EU declaration of conformity.

The list of application equipment types is kept by ÚKSÚP; the Ministry of Agriculture and Rural Development publishes it annually in a bulletin and also in data sets published on the website of the Ministry of Agriculture and Rural Development.

4.7.1 Structural analysis in terms of representation of individual types of application equipment and its accessories in Slovakia

The term application equipment covers all equipment intended for the application of PPPs including accessories that are essential for their effective functioning, e.g. nozzles, manometers, filters, sieves and tank cleaning tools.

According to the method of application of PPPs, application equipment is divided as follows:

- 1. liquid mixture application equipment, including:**
 - **sprayers for broadcast terrestrial application;**
 - **air-assisted sprayers intended for application on vertical crops;**
 - **aerial application equipment;**
- 2. application equipment for powder or granulated mixtures (spreaders, dusters);**
- 3. seed and planting stock dressers (wet and dry);**
- 4. other equipment for the application of plant protection products (equipment coupled with trains, hand-held and backpack application equipment, equipment connected to seed drills or planters).**

In Slovakia's agriculture, the most represented group of application devices are **broadcast sprayers and air-assisted sprayers coupled with a towing vehicle (tractor)**, which are divided according to the method of aggregation into carried and towed (with own axle(s)), followed by self-propelled sprayers and air-assisted sprayers with own chassis and engine unit.

Approximately 4 500 broadcast sprayers with a working width greater than 12 m are used on a professional basis in Slovakia (working width smaller than 12 m is virtually not used in Slovakia), as well as about 850 air-assisted sprayers. More than 90% of broadcast sprayers with a working width exceeding 12 m have electronic spray control. Aerial application equipment can be attached to 10 aircraft fit for this purpose.

For the purposes of detailed mapping of the number and structure of all existing application equipment used professionally in Slovakia, **ÚKSÚP carries out continuous inventory-taking of this equipment** on the basis of its own data obtained during inspections of application facilities and on the basis of data obtained from official controls within the National Control Plan for Plant Health for individual calendar years.

Age structure of application equipment in Slovakia

The age structure evaluation is focused on broadcast sprayers and air-assisted sprayers. As of 31 August 2012, approximately 49% of the stock of application equipment was over 12 years old, where the standard technical lifetime (8 years) for equipment of this kind was exceeded in 64% of the machines actively used in Slovak agriculture. In 2019, about 50% of the stock of application equipment used in Slovakia was older than 9 years.

The teaching materials for professional training in application of PPPs contain instructions and procedures for calibration of the broadcast sprayer and air-assisted sprayer, as well as guidance for optimal setting of dressing evenness and calibration of dressing doses. The teaching texts also include instructions for checking the technical condition of the application devices in question.

As part of professional training, professional users are advised of risk mitigation measures in relation to the protection of human health and protection of the environment in the application of plant protection products, namely:

- ✓ selection and use of drift prevention technology (e.g. correlation between the drift prevention effect of a nozzle and the protection zone from water resources/streams);
- ✓ regular maintenance of application equipment;
- ✓ specific techniques, e.g. application of products by air assistance, application with integrated systems for precision farming, driver-assistance system (e.g. GPS), application using technically adapted application equipment (covers, deflectors);
- ✓ use of equipment for rinsing empty packaging and proportioners.

4.7.2 Inspection of application equipment

The duty to perform periodic inspections of the application equipment used was established in Slovakia already in 1995 through Act No 285/1995 on phytosanitary care, as amended, and applied in practice starting from 1 January 2003, in 2-year intervals. Under Act No 405/2011, the frequency of inspections changed to 5 years by 2019; since 2020 a 3-year interval applies. New pieces of application equipment are also first inspected 5 years following purchase. **All tests of application equipment are accredited in the Slovak National Accreditation Service (SNAS SR) and ILAC MRA systems.**

Within the controls, the entire application equipment as well as its individual functional groups are comprehensively inspected for functioning in accordance with the systematic technical specification of the procedure of controls, testing and evaluation of relevant parameters and recording of test results. Details of the conditions and procedures for recording and inspecting application equipment are laid down in Implementing Decree of the Ministry of Agriculture and Rural Development No 489/2011 and in the Guidance Note of the Agricultural Technical and Testing Institute on controls of application equipment for plant protection.

Sprayers and air-assisted sprayers are inspected under standard STN EN 13 790 Agricultural machinery. Sprayers. Inspection of sprayers in use Part 1: Field crop sprayers, Part 2: Air-assisted sprayers for bush and tree crops.

Seed dressers and aerial application equipment are inspected according to national guidance notes.

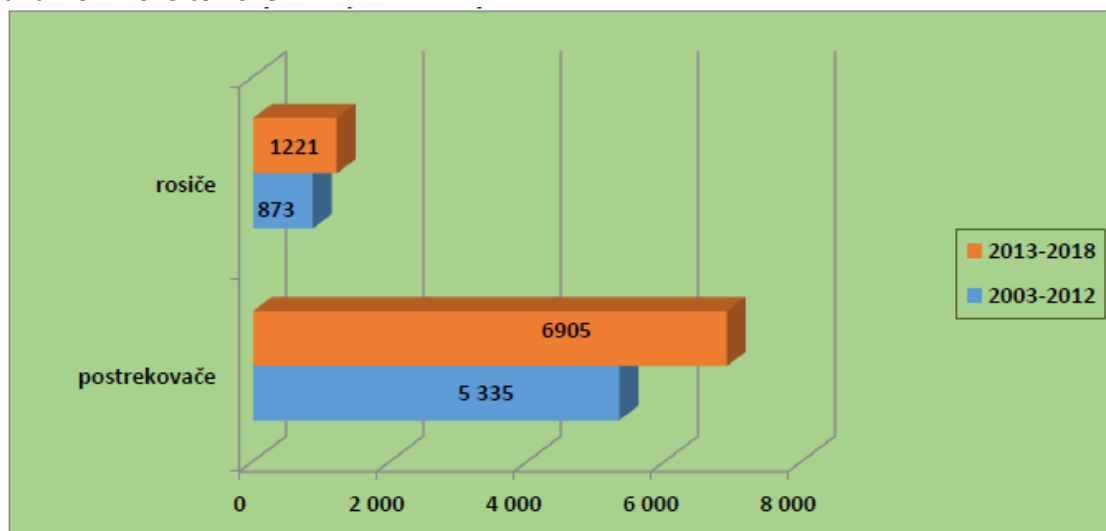
Spreaders and hand-held and backpack application equipment are excluded from the mandatory regular controls; their controls are envisaged from 2025, but the rules of safe use, maintenance and adjustment are subject to professional training under Section 32 of Act No 405/2011.

The number of controls performed by type of application equipment is given in Table 16 below. A summary of the number of inspections of sprayers, air-assisted sprayers, seed and planting stock dressers and aerial application equipment carried out in the 2003-2012 and 2013-2018 periods is shown in Chart 12 and Chart 13.

Table 16 Numbers of controls of individual types of application equipment performed in Slovakia from 2003 to 2018

| Year | Sprayers | Air-assisted | Aerial application equipment | Seed and planting stock dressers | Total |
|--------------|--------------|--------------|------------------------------|----------------------------------|--------------|
| 2003 | 163 | 12 | 0 | 0 | 175 |
| 2004 | 519 | 44 | 0 | 0 | 563 |
| 2005 | 528 | 89 | 0 | 0 | 617 |
| 2006 | 658 | 110 | 22 | 0 | 790 |
| 2007 | 620 | 99 | 6 | 25 | 750 |
| 2008 | 546 | 96 | 19 | 15 | 676 |
| 2009 | 594 | 90 | 5 | 6 | 695 |
| 2010 | 591 | 129 | 14 | 18 | 752 |
| 2011 | 585 | 91 | 4 | 37 | 717 |
| 2012 | 531 | 113 | 12 | 25 | 681 |
| 2013 | 612 | 96 | 5 | 20 | 733 |
| 2014 | 113 | 31 | 1 | 0 | 145 |
| 2015 | 63 | 31 | 0 | 0 | 94 |
| 2016 | 77 | 15 | 0 | 1 | 93 |
| 2017 | 324 | 76 | 9 | 19 | 428 |
| 2018 | 381 | 99 | 1 | 31 | 512 |
| Total | 6 905 | 1 221 | 98 | 197 | 8 421 |

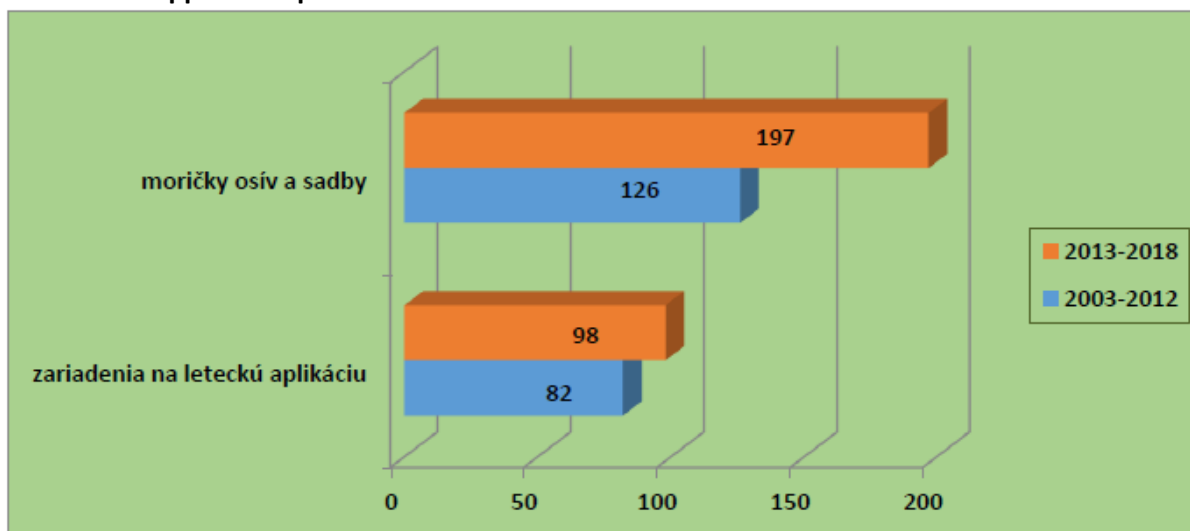
Chart 12 Number of controls of sprayers and air-assisted sprayers performed from 2003 to 2012 and from 2013 to 2018



| Key to graphic | |
|----------------|-----------------------|
| Original text | Translation |
| rosiče | Air-assisted sprayers |
| postrekovače | Sprayers |

On the basis of the control performed, the application equipment holder receives a control certificate and sticker. Official controls of PPPs at a professional user include examination of whether the application equipment has a valid control certificate and sticker.

Chart 13 Number of controls of seed and planting stock dressers and equipment for aerial application performed from 2003 to 2012 and from 2013 to 2018



| Key to graphic | |
|---------------------------------|----------------------------------|
| Original text | Translation |
| moričky osív a sadby | Seed and planting stock dressers |
| zariadenia na leteckú aplikáciu | Aerial application equipment |

4.8 Aerial application

Under Act No 405/2011, aerial application in the 1st and 2nd zone of protection is permitted only in exceptional cases under the conditions precisely defined in Act No 405/2011 and Implementing Decree No 490/2011; the relevance of the request for PPP application, the nature of the product and the distance from bodies of water, inhabited areas, beekeeping habitats, etc. are assessed. (the request for PPP application must contain maps showing the airport, power lines, watercourses, beehives, etc.). Application conditions are also laid down by law to avoid potential risks to human health and the environment. Data on aerial applications performed in the 1st and 2nd protection zones has been recorded since 2012.

Aerial application is permitted for the following:

- ✓ rapid treatment of large areas due to destruction caused by the spread of a pest;
- ✓ permanent crop treatment – orchards, hop gardens, vineyards, forest stands;
- ✓ treatment of crops where the use of terrestrial machinery could cause major economic damage;
- ✓ treatment of agricultural crops that cannot be treated using terrestrial application in suitable agrotechnical time periods due to unfavourable weather conditions;
- ✓ treatment of crops in inaccessible or difficult to access areas.

The decision authorising aerial application of PPPs is issued by:

- ✓ ÚKSÚP for territories in the 1st level of protection (guidance and form request are published on ÚKSÚP website at www.uksup.sk;
- ✓ competent nature conservation authorities for territories in the 2nd level (over 2 ha) and 3rd level (irrespective of area) of protection.

In the 4th and 5th level of protection, any application of plant protection products is prohibited.

For aerial application, PPPs may be used which have been assessed for this purpose and included in the list of authorised plant protection products in chapter 'Aerial Application', as well as other authorised PPPs classified under Implementing Decree of the Ministry of Agriculture and Rural Development No 488/2011 as Z4 (the risk to domestic farmed and wild animals arising from the use of the product is acceptable provided that the prescribed dose or concentration is observed), VČ3 (the risk to bees arising from the use of the product is acceptable provided that the prescribed dose or concentration is observed), Vo3 (slightly toxic for fish and other aquatic animals), Vo4 (the risk to fish and other aquatic animals arising from the use of the product is acceptable provided that the prescribed dose or concentration is observed).

Only a professional user holding a certificate of professional competence for PPPs, qualified in accordance with Act No 143/1998 (Civil Aviation Act) may apply plant protection products using aerial application methods and the application equipment must have a control certificate under Section 30(6) of Act No 405/2011.

Implementing Decree of the Ministry of Agriculture and Rural Development No 490/2011 lists the requisites of a request for PPP application, e.g. application plan, maps with marked areas to be treated, power lines, water reservoirs and watercourses, protected areas and water protection zones, bee habitats, pastures and populated areas, as well as the conditions for aerial application, including weather conditions.

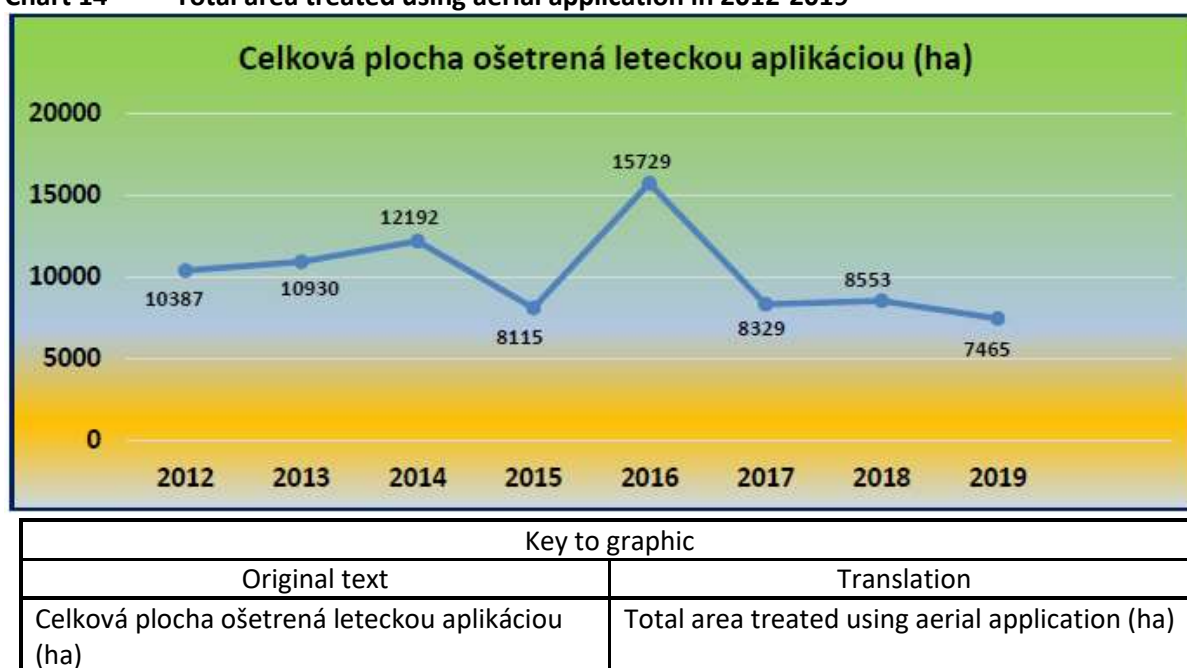
The performance of aerial applications is one of the topics of professional training in plant protection products under Section 32 of Act No 405/2011.

Aerial application for the treatment of field crops is mainly used to treat sunflower, maize, oilseed rape and, to a lesser extent, also wheat and barley; the products applied are mainly insecticides, fungicides and desiccants. The decrease in the number of aerial applications authorised in 2020 is attributed to the exclusion of diquat from the list of authorised active substances.

Aerial applications for the treatment of forest stands were performed in 2012 and 2014 – on 166 ha of spruce stands in 2012 and on 209 ha of pine tree stands in 2014.

The total area treated using aerial application in individual years in the 2012-2019 period is shown in Chart 14, **representing approximately 1-2% of the area sown with the relevant crops (sunflower, maize, oilseed rape, wheat and barley)**. The area of crops treated using aerial application depends mainly on the agroclimatic conditions in the year concerned.

Chart 14 Total area treated using aerial application in 2012-2019



4.9 Integrated pest management

Integrated pest management (IPM) is a careful consideration of all available plant protection methods and the subsequent introduction of appropriate measures to prevent the development of pest populations and to maintain the use of plant protection products and other forms of intervention at levels which are justified from an economic and environmental point of view and reduce or minimise risks to human health and the environment. IPM emphasises the cultivation of healthy crops with the least possible disruption of agro-ecosystems and supports natural mechanisms to regulate pests. Under Section 43 of Act No 405/2011, professional users of plant protection products are obliged to apply IPM provisions from 1 January 2014.

General principles of IPM are laid down in Implementing Decree of the Ministry of Agriculture and Rural Development No 487/2011.

The IPM is multi-level and based on four basic approaches:

- ✓ prevention;

- ✓ monitoring;
- ✓ identification (observation) and determination of the level of threat;
- ✓ control using an appropriate method;

Integrated production (IP) is a comprehensively economical and controlled cultivation that favours environmentally/agri-environmentally safer practices which minimise undesired side effects by reducing the number of treatments using PPPs, optimal fertilisation, including all other interventions in the agro-ecosystem, thereby reducing the burden on the environment and adverse effects on non-target organisms. **IP follows stricter rules than the IPM rules required in conventional production. However, requirements on IP do not meet the organic farming standard.**

IP requirements include using strictly the products authorised in IP (the annually updated **List of plant protection products authorised in integrated production in fruit growing, vegetable growing and viticulture**). There are several non-mandatory but scientifically based schemes and conditions for such listing worldwide. In Europe, 3 systems are the most widely used and well-known, mainly IOBC (International Organisation for Biological and Integrated Control), whose principles were used in Slovakia to set up IP conditions within the Rural Development Programme. **The listings in 2007/2008 were based on IOBC's underlying documents, requirements for maintaining biodiversity in ecosystems and maintaining sustainable soil fertility. The effect especially on predatory mites (*Typhlodromus pyri*), parasitic wasps (*Trichogramma cacoeciae*) and bees was taken into account.**

IP is not a new cultivation method in Slovakia. The Association of Integrated Grape and Wine Production (IPROVIN) introduced the use of IP for its members, i.e. wine growers as early as 2000, without entitlement to supplementary State payments. After its inclusion in the Agri-Environmental measures of the rural development programme 2007-2013, the subsidised integrated production system was extended to also include fruit and vegetables. As a result, areas on which integrated crops are cultivated and the crop range have increased. Producer associations were established, namely Association of Integrated Fruit Production and the Union of Integrated Vegetable Production, applying the principles of integrated pest management.

The main integrated pest management measures include:

- ✓ preventive measures
- ✓ protection and enhancement of beneficial organisms
- ✓ pest monitoring
- ✓ preference for biological, physical and other non-chemical methods
- ✓ selection of products as specific as possible for the target species, with minimal side effects on human health, non-target organisms and the environment
- ✓ use of products meeting the desired standard
- ✓ checking the success of the measures applied.

ÚKSÚP regularly draws up signalling reports and publishes them on its website at <https://www.uksup.sk/oor-signalizacia/>

The results of risk assessment of PPPs with respect to bees and other non-target arthropods are used in the national classification of products under Implementing Decree of the Ministry of Agriculture and Rural Development No 488/2011, taking into account also **effect on beneficial arthropods. So far, this effect has been assessed for 377 products, including 285 for *Typhlodromus pyri*.**

Effects on the following are assessed:

- ✓ *Typhlodromus pyri*;
- ✓ *Aleochara bilineata*, *Episyrrhus balteatus*, *Folsomia candida*, *Pardosa spp.*, *Poecilus cupreus*;

- ✓ *Biocontrol agents, e.g. Aphidius sp., Aphidius rhopalosiphi, Hypoaspis aculeifer, Chrysoperla carnea, Orius laevigatus, Trichogramma cacoeciae, Typhlodromus pyri;*
- ✓ *Coccinella septempunctata.*

Several general principles of IPM have become a well-established part of good farming practice.

In order to obtain a comprehensive picture of the state of compliance with general IPM principles, an **evaluation questionnaire was prepared in 2019 and completed in 2020 as part of the exercise of official controls of PPPs.** Based on conclusions drawn from the data obtained in the evaluation, measures will be proposed for addressing problem areas.

Within task No 69 of contract No 381/2018/MPRV SR-300 NPPC-VURV titled ‘Tvorba komplexnej informačnej databázy štúdiu, spracúvanie a vyhodnocovanie údajov ako podporný rozhodovací nástroj na zefektívnenie chovateľských a pestovateľských systémov v rámci komplexného mechanizmu rozvoja rastlinnej a živočíšnej výroby v Slovenskej republike’ (*Creating a comprehensive information database, study, processing and evaluation of data as a supporting decision-making tool for streamlining breeding and cultivation systems within the comprehensive mechanism of development of plant and animal production in the Slovak Republic*), **questionnaires were developed to obtain information on the technologies of cultivation of sugar beet, fruit, vegetables, wine grape and potatoes used in practice.**

Task No 37 of the contract, titled ‘**Pestovateľské postupy poľných plodín šetrnejšie k životnému prostrediu**’ (*More environmentally friendly practices in the cultivation of field crops*), **implemented in 2019/2021, is focused on**

- ✓ *streamlining primary agricultural production on the basis of more accurate diagnostics with recommendations of agronomic and agri-technical procedures allowing cost savings in the cultivation of soil;*
- ✓ *innovation in growing technologies for the sustainability and quality of cereal and oilseed production, taking into account the limited portfolio of plant protection products, climate change and environmental protection;*
- ✓ *testing of alternative plant protection products and their efficiency under different nutritional conditions.*

The processed data together with the data obtained from the evaluation questionnaire during official controls as well as the outputs (conclusions) from task No 37 of the contract will serve as underlying materials for developing IPM crop-specific manuals.

Gradual transition from conventional farming to integrated farming implies the following changes or principles:

| Conventional farming | Integrated farming |
|----------------------|--|
| Large plots of land | Smaller areas of land (up to 50 ha) |
| Few crops (up to 3) | More crops (4 or more with at least 10% representation) |
| Monocultures | Proper crop rotation without monocultures (including the possible avoidance of continuous cereals) |
| No animal production | Animal production with ideal livestock units/ha load |

| | |
|---|--|
| Abundant black fallow | Maximum possible year-round soil cover |
| Standardised fertilisation | Fertilisation according to analyses of soil and, if applicable, leaves |
| Standardised selection of products | Selection of products according to the impact on components of the environment |
| Ploughing, minimisation and plough-free systems adapted to local conditions | |

The knowledge gained from the BTSF training in 2018/2019 focused on IPM was further presented to the professional public in the form of 3 training sessions in 2019. All the presentations have been published and are freely available on the website of the Ministry of Agriculture and Rural Development and Agroinštitút Nitra, š. p.

Lectures on the following topics were delivered:

- + IPM in the cultivation of field crops
- + IPM in fruit cultivation
- + IPM in vegetable cultivation
- + Use of basic substances in plant protection.

4.10 Indicators

The effectiveness of measures aimed at managing the risk arising from the use of PPPs and the use of alternative methods of non-chemical protection can be quantified using selected indicators.

4.10.1 Harmonised indicators

Commission Directive (EU) 2019/782 of 15 May 2019 amending Directive 2009/128/EC of the European Parliament and of the Council as regards the establishment of harmonised risk indicators defines the first two harmonised risk indicators and establishes a procedure for their calculation, where each Member State shall calculate harmonised indicators according to the Annex and publish them within 20 months of the end of the year for which the respective harmonised risk indicator is calculated. The procedure for calculating harmonised risk indicators is set out in Annex 3.

Harmonised indicator 1 (HRI 1) is based on statistics of the quantities of active substances placed on the market contained in plant protection products under Regulation (EC) No 1107/2009 provided to the Commission (Eurostat) according to Annex I (Statistics on the placing on the market of pesticides) to Regulation (EC) No 1185/2009.

Harmonised indicator 2 (HRI 2) is based on the number of authorisations granted for plant protection products under Article 53 of Regulation (EC) No 1107/2009 notified to the Commission in accordance with Article 53(1) of that Regulation.

Active substances are divided into 4 groups and 7 categories (Annex 3), with a weight factor applied to each group. Group 1 consists of low-risk substances, while Group 3 is composed of high-risk substances, called candidates for substitution, or substances to be replaced. The last group are non-authorised substances. Reference value is the average value of sales of active substances in the years 2011-2013.

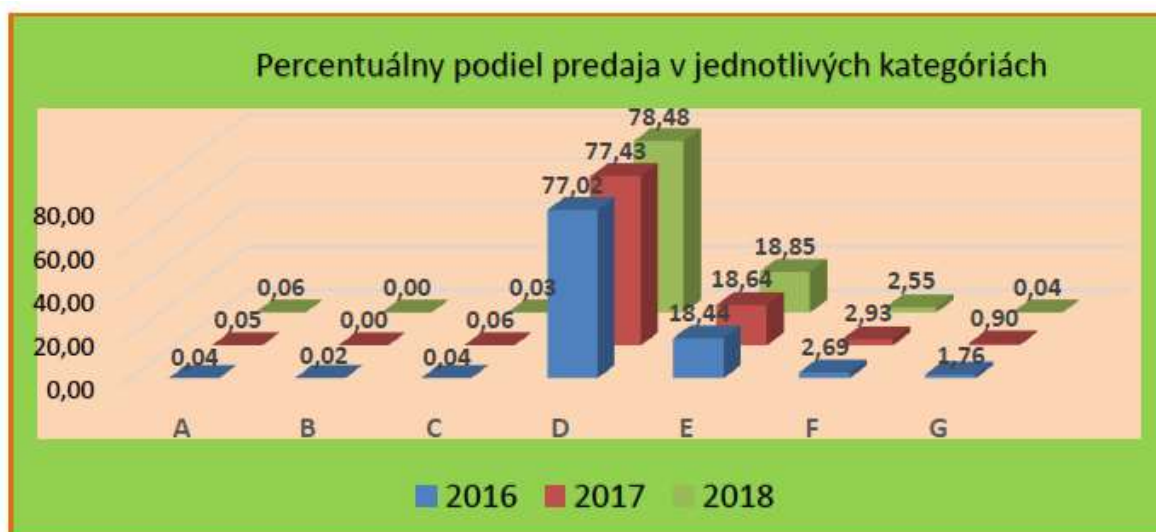
The harmonised indicators for the years 2017 and 2018 presented in Figures 6 and 7 and evaluation of trends are published on the website of the Ministry of Agriculture and Rural Development.

Chart 15 Sales of individual groups of active substances in 2018 (in %)



| Key to graphic | |
|---|---|
| Original text | Translation |
| Percentuálny podiel predaja v jednotlivých skupinách rok 2018 | Sales of individual groups in 2018 (in %) |
| 0,06 | 0.06 |
| 78,5 | 78.5 |
| 21,5 | 21.5 |
| 0,04 | 0.04 |

Chart 16 Sales of individual categories of active substances in 2018 (in %)



| Key to graphic | |
|--|---------------------------------------|
| Original text | Translation |
| Percentuálny podiel predaja v jednotlivých kategóriách | Sales of individual categories (in %) |
| 0,06 | 0.06 |

| | |
|-------|-------|
| 0,05 | 0.05 |
| 0,04 | 0.04 |
| 0,02 | 0.02 |
| 0,00 | 0.00 |
| 0,00 | 0.00 |
| 0,03 | 0.03 |
| 0,06 | 0.06 |
| 0,04 | 0.04 |
| 77,02 | 77.02 |
| 77,43 | 77.43 |
| 78,48 | 78.48 |
| 18,85 | 18.85 |
| 18,64 | 18.64 |
| 18,44 | 18.44 |
| 2,55 | 2.55 |
| 2,93 | 2.93 |
| 2,69 | 2.69 |
| 0,04 | 0.04 |
| 0,90 | 0.90 |
| 1,76 | 1.76 |
| 80,00 | 80.00 |
| 60,00 | 60.00 |
| 40,00 | 40.00 |
| 20,00 | 20.00 |
| 0,00 | 0.00 |

Figure 6 Harmonisation indicator 1

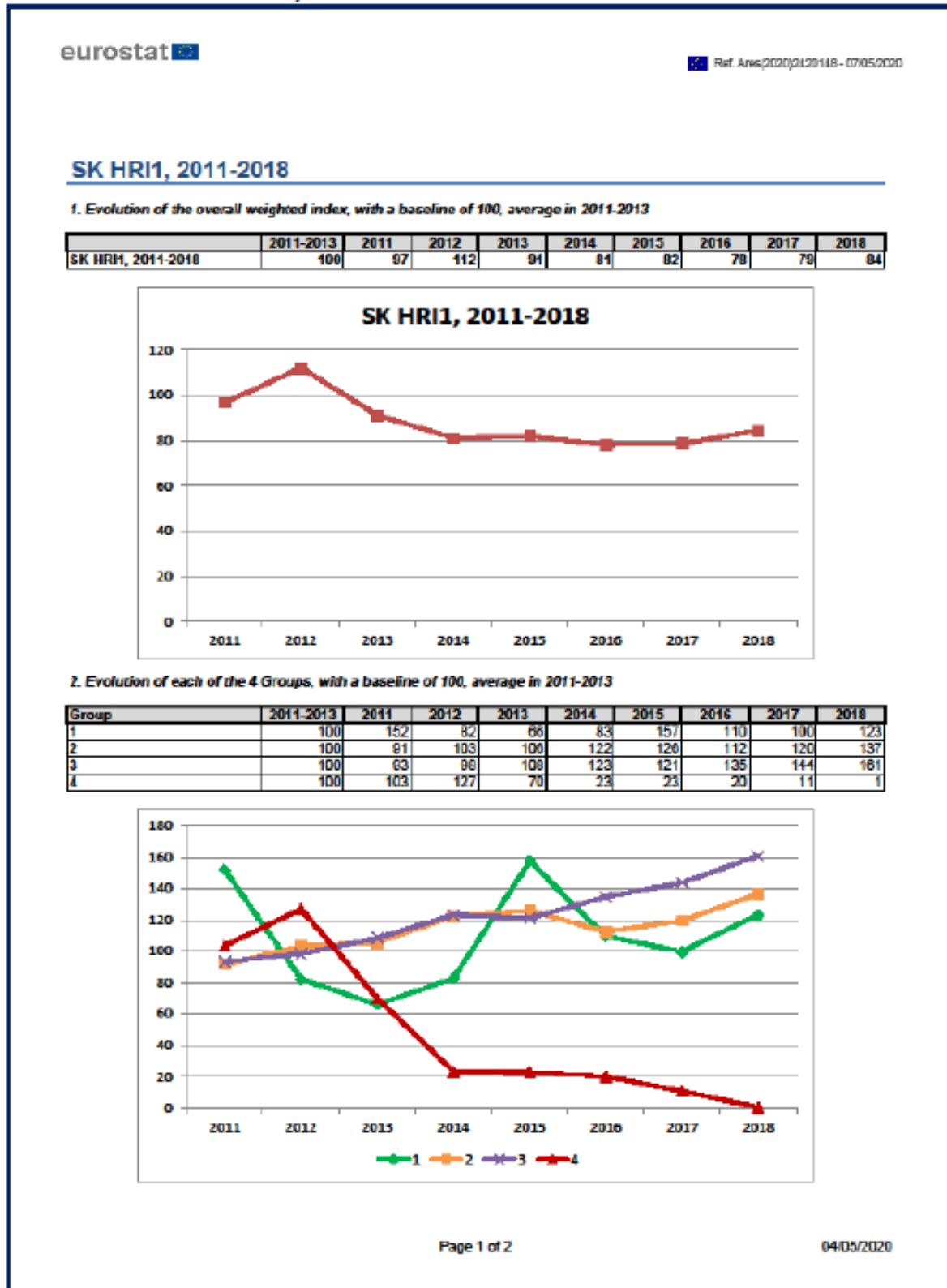
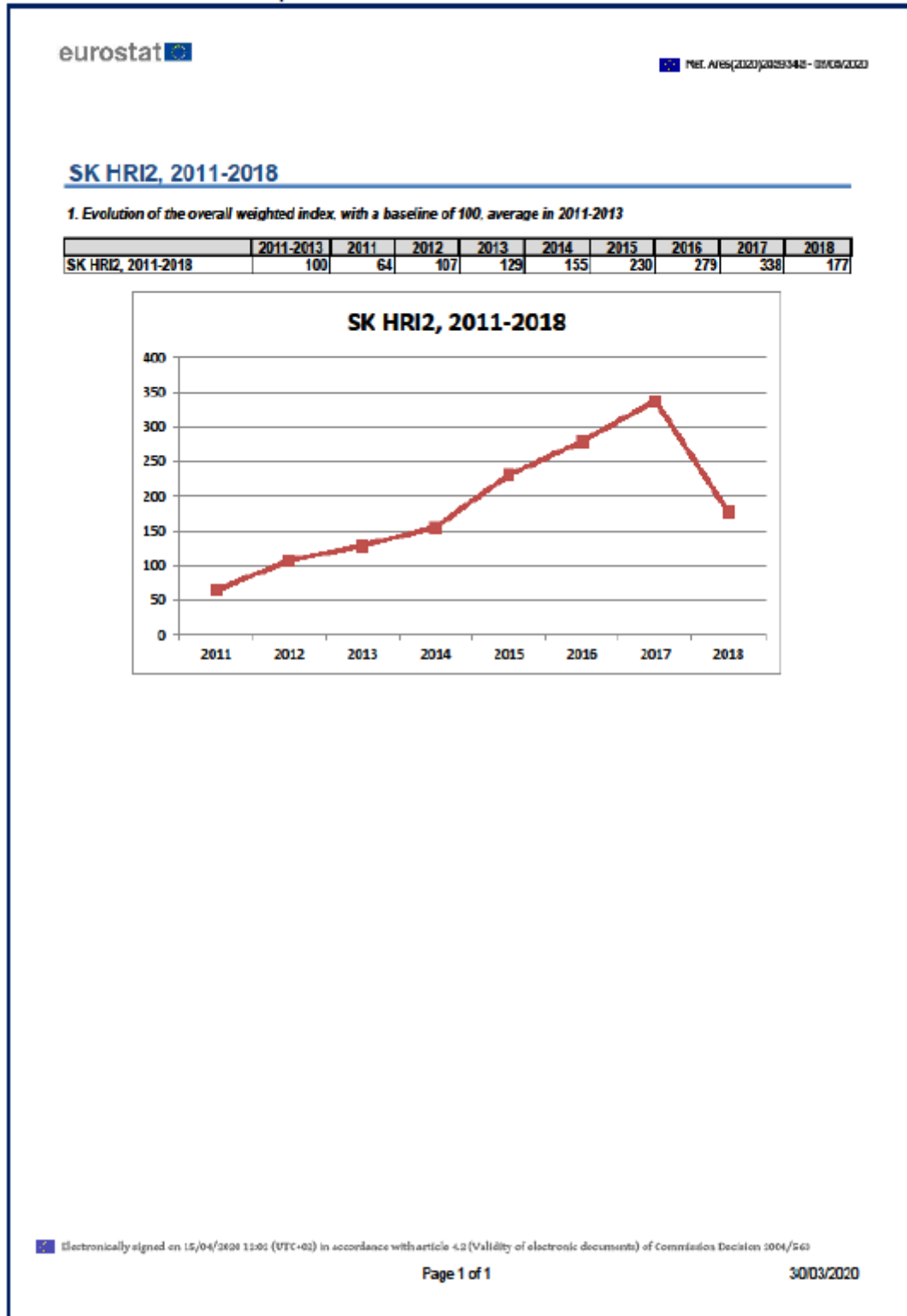


Figure 7 Harmonisation indicator 2



Evaluation of trends

HRI 1

For harmonised risk indicator 1, there is a 20% reduction in risk, which remains unchanged at present.

For Group 1, which is composed of low-risk substances that are approved or deemed to be approved under Article 22 of Regulation (EC) No 1107/2009 and are listed in Part D of the Annex to Implementing Regulation (EU) No 540/2011, there are significant fluctuations; their share in the

annual volume of sales of active substances is approximately 0.06%, one of the reasons being the insufficient quantity of authorised substances of this group in Slovakia.

For Group 2, which is composed of active substances approved or deemed to be approved under Regulation (EC) No 1107/2009 which do not belong to other categories and are listed in Parts A and B of the Annex to Implementing Regulation (EU) No 540/2011, there is a slightly increasing trend, with a share of approximately 78.5% in the annual volume of sales of active substances. The upward trend in category D is partly due to increased use of chlorpyrifos as an alternative to soil application due to restrictions on the use of neonicotinoids; the volume of sales of the substance increased by almost 30% in 2018 compared to 2016.

For Group 3, which comprises active substances approved or deemed to be approved under Article 24 of Regulation (EC) No 1107/2009 which are candidates for substitution and are listed in Part E of the Annex to Implementing Regulation (EU) No 540/2011, there is a slightly increasing trend; the sales of these substances accounted for approximately 22% of the total annual sales of active substances in Slovakia (this share remains generally constant between 2016 and 2018), whereas in 2018 the percentage of sales of F-category substances accounted for 2.6%, meaning a 13% year-to-year decrease on 2017.

For Group 4, which is made up of non-approved active substances, there is a significant decrease in risk with the latest year-to-year decrease of almost 95%, reaching almost zero as a result of non-approval of the active substances isoproturon, linuron and picoxystrobin.

HRI2

As for harmonised risk indicator 2, there is a significant reduction in risk in 2018, following a significantly upward trend from 2014 to 2017. The upward trend starting in 2014 was due to the need to promptly introduce alternatives for neonicotinoids into practice, the need to promote organic production suffering from the lack of authorised products suitable for organic farming, as well as the need to address the problems of the minor uses in the fruit and vegetable sector. In 2017, these problems culminated; **40 authorisations were granted** for emergency use, including **13 for organic farming, while 10 applications were rejected.**

In 2018, 23 authorisations were granted, including **9 for organic farming, while 9 applications were rejected.**

The decrease in the number of authorisations granted has been achieved by systematically addressing minor uses and an increased number of applications submitted for products suitable for organic production and prioritising them in the authorisation process.

4.10.2 National risk indicators

National risk indicators are as follows:

- ✚ use of plant protection products per ha;
- ✚ use of plant protection products with active substances in the category of candidates for substitution;
- ✚ exceeding the applicable MRLs for products from domestic production;
- ✚ exceeding limit values for pesticide residues in groundwater, surface and drinking waters;
- ✚ number of cases of human poisoning (by exposure route);
- ✚ number of intoxications of bees due to exposure to plant protection products;
- ✚ Number of people receiving professional competence training
- ✚ Age structure of application equipment
- ✚ volume of empty PPP packaging collected and subsequently recycled or subject to energy recovery.

Figure 8 shows a comparison of pesticide sales in individual EU Member States between 2011 and 2018.

Figure 8 Pesticide sales in agriculture in EU countries in 2011-2018 (EUROSTAT)

| Sales of pesticides, by country, 2011 and 2018 (tonnes) | | | | | | | | | | | | | |
|--|-----------------------------|--------|--|--------|-----------------------------|--------|---------------|------|-------------------------|-------|---------------------------------|--------|--|
| | Fungicides and bactericides | | Herbicides, haulm destructors and moss killers | | Insecticides and acaricides | | Molluscicides | | Plant growth regulators | | Other plant protection products | | |
| | 2011 | 2018 | 2011 | 2018 | 2011 | 2018 | 2011 | 2018 | 2011 | 2018 | 2011 | 2018 | |
| Belgium | 2 452 | 2 458 | 2 611 | 2 648 | 695 | 475 | 14 | 16 | 209 | 209 | 885 | 789 | |
| Bulgaria | (c) | 1 798 | (c) | 2 607 | (c) | 595 | (c) | (c) | (c) | 18 | (c) | 25 | |
| Czechia | 1 527 | 1 755 | 3 473 | 2 572 | 291 | 292 | 13 | 8 | 1 183 | 255 | 452 | 287 | |
| Denmark | 633 | 484 | 3 692 | 1 905 | 45 | 44 | 4 | 15 | 173 | 202 | 3 | 1 | |
| Germany | 10 473 | 11 682 | 17 955 | 14 533 | 11 832 | 15 237 | 255 | 154 | 3 123 | 2 138 | 219 | 181 | |
| Estonia | 51 | 107 | 357 | 428 | 19 | 29 | (c) | (c) | 32 | 73 | (c) | (c) | |
| Ireland | 620 | 802 | 2 612 | 1 833 | 48 | 29 | 4 | 10 | 188 | 161 | 20 | 17 | |
| Greece | 2 256 | 1 729 | 1 455 | 1 833 | 109 | 1 009 | (c) | 2 | 21 | 119 | 733 | 169 | |
| Spain | 31 343 | 38 087 | 13 835 | 15 583 | 8 062 | 6 488 | 229 | (c) | 223 | 195 | 19 421 | (c) | |
| France | 24 496 | 39 087 | 29 252 | 34 392 | 2 190 | 5 728 | 331 | 385 | 2 532 | 3 587 | 2 451 | 1 811 | |
| Croatia | . | 757 | . | 718 | . | 127 | . | 2 | . | 80 | . | 4 | |
| Italy | 43 574 | 31 539 | 8 327 | 6 880 | 2 494 | 1 853 | 97 | 36 | 300 | 475 | 15 443 | 13 465 | |
| Cyprus | 250 | 823 | 170 | 161 | 179 | 151 | 2 | 2 | 3 | 0 | 6 | 47 | |
| Latvia | 148 | 213 | 722 | 955 | 34 | 36 | . | 5 | 164 | 355 | 5 | 14 | |
| Lithuania | 382 | 877 | 1 773 | 1 054 | 26 | 57 | 0 | (c) | 403 | 292 | (c) | (c) | |
| Luxembourg | 92 | (c) | 102 | 54 | (c) | (c) | 1 | 0 | (c) | 8 | (c) | (c) | |
| Hungary | 2 987 | 3 535 | 3 656 | 3 824 | 522 | 787 | 2 | 1 | 224 | 169 | 1 135 | 219 | |
| Malta | 95 | 83 | 6 | 3 | 4 | 3 | 1 | 1 | 0 | 0 | (c) | (c) | |
| Netherlands | 4 250 | 4 286 | 3 025 | 2 976 | 250 | 243 | 20 | 11 | 205 | 385 | 3 170 | 1 476 | |
| Austria | 1 544 | 2 260 | 1 505 | 1 277 | 248 | 1 569 | 33 | 6 | 58 | 84 | 58 | 75 | |
| Poland | 6 081 | 7 992 | 12 408 | 11 371 | 991 | 1 770 | 12 | (c) | 1 593 | 1 609 | 609 | 415 | |
| Portugal | 8 975 | 4 335 | 1 995 | 1 939 | 878 | 675 | 13 | 11 | 4 | 3 | 1 158 | 1 095 | |
| Romania | 3 482 | 4 542 | 6 771 | 5 188 | 808 | 1 012 | 1 | 5 | 335 | 313 | 30 | 48 | |
| Slovenia | 797 | 849 | 264 | 257 | 38 | 55 | 1 | 2 | 1 | 5 | 20 | 4 | |
| Slovakia | 541 | 675 | 1 080 | 1 329 | 54 | 151 | 0 | 1 | 113 | 298 | 8 | 55 | |
| Finland | 185 | 3 814 | 1 452 | 982 | 31 | 21 | (c) | 1 | 58 | 58 | 1 311 | 14 | |
| Sweden | 218 | 223 | 2 136 | 1 483 | 29 | 94 | 1 | (c) | 21 | 50 | 11 | 22 | |
| United Kingdom | 8 203 | 4 492 | 11 604 | 10 882 | 2 871 | 132 | 157 | (c) | 1 574 | (c) | 18 | (c) | |
| Iceland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Norway | 107 | 83 | 679 | 485 | 5 | 10 | 1 | 2 | 38 | 31 | 0 | 10 | |
| Switzerland | 934 | 985 | 917 | 564 | 262 | 273 | 38 | 29 | 32 | 31 | 91 | 118 | |
| Turkey | . | 22 933 | . | 14 828 | . | 13 985 | . | 309 | . | 2 970 | . | 4 798 | |

Note: Definition differs for the 2011 values of the following countries: Estonia, Greece, Spain, Latvia, Luxembourg, Hungary, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, United Kingdom and Norway. See main article.
 Note: Reference year 2017 data used as 2018 for Denmark.
 Note: (c) confidential value.
 Note: (.) data not available.
 Source: Eurostat (online data code: ae1_fm_salpest09)

A comparison of the use of plant protection products and adjuvants in plant protection in Slovakia for the years 2014-2018 by FAO groups from agricultural land in kilograms or litres is shown in Table 17. The majority of the use is made up of herbicides (up to 50%), fungicides including treatments (about 25%) and insecticides including treatments (about 13%).

Table 18 gives an overview of the use of active substances (or PPPs) per ha of agricultural land between 2002 and 2019.

Table 17 Use of plant protection products and adjuvants in plant protection in the years 2014 to 2018 by FAO groups (kg or L)

| FAO groups | 2018 | 2017 | 2016 | 2015 | 2014 |
|-------------------------------|------------------|------------------|------------------|------------------|------------------|
| Total pesticides | 5 403 099 | 5 212 107 | 4 595 581 | 4 773 094 | 5 196 912 |
| Total insecticides | 456 843 | 390 391 | 318 168 | 322 351 | 303 087 |
| Organic phosphorous compounds | 226 740 | 183 741 | 149 866 | 164 461 | 143 735 |
| Carbamate insecticides | 3 497 | 3 447 | 3 893 | 6 089 | 5 896 |
| Pyrethroids | 109 224 | 95 870 | 87 655 | 82 001 | 88 900 |
| Insecticidal mineral oils | 0 | 0 | 0 | 0 | 268 |
| Other insecticides | 114 587 | 103 775 | 74 096 | 67 229 | 62 637 |
| Biological products | 2 611 | 2 910 | 2 659 | 2 571 | 1 651 |
| Biocontrol agents | 184 | 648 | 0 | 0 | 0 |
| Total herbicides | 2 650 592 | 2 545 643 | 2 310 440 | 2 344 861 | 2 777 835 |

| | | | | | |
|---|------------------|------------------|----------------|----------------|------------------|
| Phenoxy acids | 264 042 | 240 148 | 204 249 | 220 064 | 325 317 |
| Triazines | 105 759 | 112 411 | 110 414 | 126 395 | 122 518 |
| Amides | 405 898 | 386 605 | 365 919 | 379 764 | 419 269 |
| Carbamate herbicides | 133 962 | 121 968 | 91 916 | 108 275 | 123 263 |
| Dinitroanillines | 209 219 | 187 660 | 151 892 | 167 909 | 157 749 |
| Herbicidal mineral oils | 16 827 | 12 194 | 15 460 | 37 392 | 119 204 |
| Other herbicides | 1 315 570 | 1 268 849 | 1 169 981 | 1 160 002 | 1 344 616 |
| Substituted ureas | 44 140 | 58 670 | 73 439 | 71 854 | 71 488 |
| Sulphonylureas | 144 656 | 148 616 | 123 040 | 67 831 | 88 847 |
| Bipiridyls | 4 548 | 3 210 | 239 | 1 746 | 1 742 |
| Uracils | 5 971 | 5 311 | 3 892 | 3 630 | 3 822 |
| Total fungicides | 1 235 713 | 1 168 646 | 997 643 | 937 902 | 1 022 309 |
| Inorganic fungicides | 94 575 | 90 445 | 65 433 | 72 627 | 103 763 |
| Dithiocarbamates | 36 869 | 30 951 | 25 337 | 27 867 | 38 115 |
| Benzimidazoles | 106 945 | 81 321 | 39 811 | 35 425 | 32 196 |
| Triazoles, diazoles | 654 068 | 625 168 | 569 407 | 506 118 | 532 335 |
| Diazines, morpholines | 60 918 | 57 741 | 53 111 | 50 642 | 54 584 |
| Other fungicides | 282 338 | 283 019 | 244 545 | 245 222 | 261 316 |
| Other products in total | 691 081 | 687 702 | 563 824 | 537 926 | 539 190 |
| Desiccants and defoliants | 144 791 | 148 018 | 138 430 | 113 101 | 118 143 |
| Morphoregulatory products | 391 311 | 386 221 | 300 120 | 308 525 | 299 234 |
| Products for limiting harvesting losses | 48 172 | 37 823 | 31 882 | 20 175 | 24 624 |
| insect repellents | 2 008 | 1 557 | 1 124 | 967 | 261 |
| Surfactants | 21 753 | 20 384 | 20 317 | 14 519 | 15 790 |
| Additives, special substances | 60 638 | 73 643 | 61 060 | 61 631 | 73 709 |
| Warehouse protection products | 1 040 | 1 601 | 1 352 | 2 595 | 2 078 |
| Insect attractants | 13 | 0 | 133 | 0 | 0 |
| Glues | 1 | 1 | 9 | 0 | 0 |
| Grafting waxes | 0 | 10 | 0 | 0 | 0 |
| Disinfectants and preservatives | 1 | 50 | 120 | 61 | 20 |
| Resistance activators | 14 722 | 12 799 | 3 425 | 5 977 | 4 551 |
| Treatment adjuvants | 1 195 | 1 453 | 1 903 | 51 | 2 |
| Adjuvants | 5 436 | 4 142 | 3 949 | 10 324 | 778 |
| Total fungicidal treatments | 137 126 | 133 469 | 140 954 | 143 903 | 145 911 |
| Dithiocarbamates | 6 148 | 6 606 | 8 665 | 11 507 | 18 145 |
| Benzimidazoles | 263 | 14 | 86 | 7 | 179 |
| Triazoles, diazoles | 47 834 | 46 605 | 46 971 | 47 495 | 50 897 |
| Biological fungicidal treatments | 69 | 2 305 | 1 017 | 1 068 | 1 052 |
| Other fungicidal treatments | 82 812 | 77 939 | 84 214 | 83 826 | 75 638 |

| | | | | | |
|--------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Total insecticidal treatments | 218 521 | 266 558 | 236 476 | 375 146 | 362 188 |
| Organic phosphorous compounds | 0 | 11 903 | 0 | 36 | 33 |
| Pyrethroid treatments | 210 472 | 244 754 | 230 285 | 369 758 | 358 081 |
| Other insecticidal treatments | 8 049 | 9 901 | 6 190 | 5 353 | 4 074 |
| Total rodenticides | 13 223 | 19 699 | 28 075 | 111 005 | 46 392 |
| Anticoagulants | 0 | 0 | 6 | 0 | 0 |
| Other rodenticides | 13 225 | 19 699 | 28 069 | 111 005 | 46 392 |

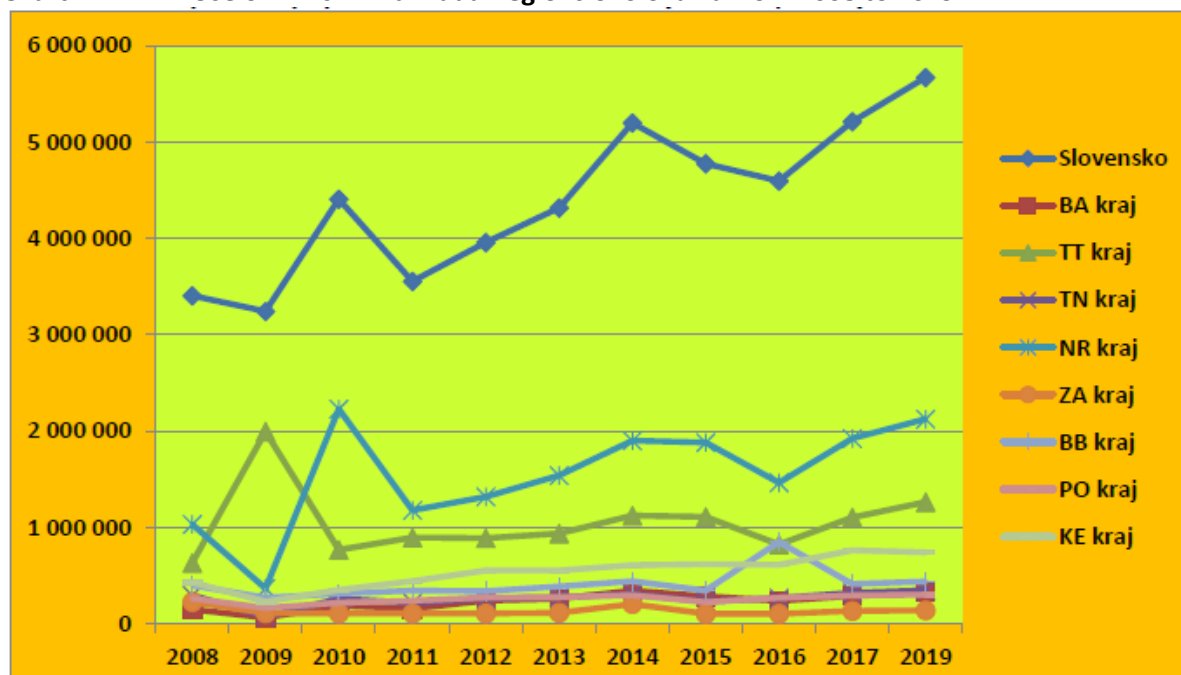
Table 18 Overview of the use of active substances (or PPPs) per ha of agricultural land between 2002 and 2019

| Year | Use | |
|----------------|-------------------------------|----------------------|
| | Kg of active substance per ha | Kg of product per ha |
| 2002 | 2.76 | 6.00 |
| 2003 | 2.52 | 5.02 |
| 2004 | 2.11 | 4.46 |
| 2005 | 2.12 | 4.67 |
| 2006 | 2.02 | 4.31 |
| 2007 | 2.02 | 4.33 |
| 2008 | 2.00 | 3.93 |
| 2009 | 1.63 | 2.97 |
| 2010 | 2.22 | 4.76 |
| 2011 | 1.31 | 3.17 |
| 2012 | 1.52 | 3.66 |
| 2013 | 1.37 | 3.46 |
| 2014 | 1.27 | 3.50 |
| 2015 | 1.14 | 3.28 |
| 2016 | 1.52 | 4.34 |
| 2017 | 1.80 | 5.14 |
| 2018 | 1.78 | 6.11 |
| 2019 | 1.92 | 5.89 |
| AVERAGE | 1.84 | 4.39 |

The increase in the use of PPPs, or their active substances, per ha of agricultural land is also due to exclusion of the most hazardous active substances which showed a high biological efficacy already at low dose levels, where some alternative products must be applied in larger doses or repeatedly.

Chart 17 shows that in a regional comparison, the Nitra and Trnava Regions, and in recent years also the Košice Region, are the most burdened with the use of plant protection products.

Chart 17 Use of PPPs in individual regions of Slovakia from 2008 to 2019



| Key to graphic | |
|----------------|------------------------|
| Original text | Translation |
| Slovensko | Slovakia |
| BA kraj | Bratislava Region |
| TT kraj | Trnava Region |
| TN kraj | Trenčín Region |
| NR kraj | Nitra Region |
| ZA kraj | Žilina Region |
| BB kraj | Banská Bystrica Region |
| PO kraj | Prešov Region |
| KE kraj | Košice Region |

Residues of atrazine and its metabolites metazachlor and glyphosate are monitored as an indicator of the development of surface water pollution. For groundwater, atrazine and its metabolites metazachlor and chloridazon are monitored as pesticide pollution indicators.

The submitted National Action Plan provides information on the expected costs of implementation of the measures listed in Annex 2.

Some of the measures can be implemented using the existing capacity of the State administration, which is, however, questionable given the existing workforce reduction trend.

At the same time, measures such as monitoring costs, increasing numbers of controls etc. will be impossible to implement without sufficient staff and funding.

In order to implement the measures set out in the presented National Action Plan as much as possible and hence to reduce the risk arising from the use of plant protection products, it is proposed to earmark funds during the 2021-2025 period as indicated in Annex 2, with individual measures supported in terms of funding and staff from the approved financial resources in individual chapters.

| | |
|---|--|
| CEHZ | Farm Animal Central Register |
| CfS | candidate for substitution |
| EAPCCT | European Association of Poisons Centres and Clinical Toxicologists |
| EFSA | European Food Safety Authority |
| Commission | European Commission |
| EC | European Community |
| EU | European Union |
| EUMUCF | EU Minor Uses Coordination Facility |
| FS SR | Financial Administration of the Slovak Republic |
| IOBC | International Organisation for Biological and Integrated Control of Noxious Animals and Plants |
| IPM | integrated pest management |
| IPROVIN | Association of Integrated Grape and Wine Production |
| SDS | safety data sheet |
| LOS | Forest Protection Service Centre |
| LPIS | Land Parcel Identification System |
| LVÚ | Forest Research Institute |
| Ministry of Agriculture and Rural Development | Ministry of Agriculture and Rural Development of the Slovak Republic |
| Ministry of Agriculture | Ministry of Agriculture of the Slovak Republic |
| MRL | maximum residue limit |
| Ministry of Education | Ministry of Education, Science, Research and Sport of the Slovak Republic |
| Ministry of Health | Ministry of Health of the Slovak Republic |
| Ministry of the Environment | Ministry of the Environment of the Slovak Republic |
| NIP | National Labour Inspectorate |
| NLC | National Forest Centre |
| NPPC | National Agricultural and Food Centre |
| NPPC/VÚA | National Agricultural and Food Centre – Agroecology Research Institute |
| NPPC/VÚRV | National Agricultural and Food Centre – Research Institute of Plant Production |
| NPPC/VÚTPHP | National Agricultural and Food Centre – Grassland and Mountain Agriculture Research Institute |
| NPPC/ÚVč | National Agricultural and Food Centre, Institute of Apiculture |
| NRL | national reference laboratory |
| National Council | National Council of the Slovak Republic |
| NTIC | National Toxicological Information Centre |
| PPE | personal protective equipment |
| PBT | persistent, bioaccumulative and toxic |
| PPP | plant protection product |
| PPA | Agricultural Paying Agency |
| PPZ SR | Presidium of the Police Force of the Slovak Republic |
| RDP | Rural Development Programme |
| RASFF | Rapid Alert System for Food and Feed |
| RÚVZ | regional public health authorities of the Slovak Republic |
| RVPS | regional veterinary and food administrations |

| | |
|---------|--|
| SAOR | Slovak Crop Protection Association |
| SHMÚ | Slovak Hydrometeorological Institute |
| SPPK | Slovak Agricultural and Food Chamber |
| SPU | Slovak University of Agriculture |
| SRS | Slovak Phytosanitary Association |
| ŠOP | State Nature Conservancy of the Slovak Republic |
| ŠVPS SR | State Veterinary and Food Administration of the Slovak Republic |
| TSÚP | Agricultural Technical and Testing Institute |
| ÚKSÚP | Central Control and Testing Institute in Agriculture in Bratislava |
| ÚVČ | Institute of Apiculture |
| ÚVLaF | University of Veterinary Medicine and Pharmacy in Košice |
| ÚVZ SR | Public Health Authority of the Slovak Republic |
| VPÚ | Veterinary and Food Institute |
| VÚP | Food Research Institute |
| VÚRV | Research Institute of Plant Production – NPPC |
| VÚVH | Water Research Institute |
| WHO | World Health Organization |
| ZMOS | Association of Towns and Communities of Slovakia |