REPUBLIC OF ESTONIA
MINISTRY OF RURAL AFFAIRS

ORDER

13 May 2019 N° 1.6-1/80

Approval of the Action Plan for the Sustainable Use of Plant Protection Products for 2019-2023

This Order in enacted pursuant to Section 79^3 (3) of the Plant Protection Act.

1. I hereby approve the "Action Plan for the Sustainable Use of Plant Protection Products for 2019 – 2023" (Annex).

2. To publish the "Action Plan for the Sustainable Use of Plant Protection Products for 2019 – 2023" on the website of the Ministry.

Distribution: Secretary General, Deputy Secretary Generals and Departments of the Ministry, the Agricultural Board, the Estonian Crop Research Institute, the Estonian University of Life Science, the Agricultural Research Centre and the Veterinary and Food Board.

Mart Järvik
Minister of Rural Affairs

Approved with Order No. 80 of the Minister of Rural Affairs of 13 May 2019, 'Action Plan for the Sustainable Use of Plant Protection Products for 2019–2023' (Annex)

Action Plan for the Sustainable Use of Plant Protection Products for 2019–2023

Contents

Abbreviations

AB	Agricultural Board
ARC	Agricultural Research Centre
CAP	Common Agricultural Policy of the European Union
CEN	European Committee for Standardisation
ECRI	Estonian Crop Research Institute
EERC	Estonian Environmental Research Centre
EFSA	European Food Safety Authority
EU	European Union
IPP	Integrated Plant Protection
LI	Labour Inspectorate
MRL	Maximum Residue Level
NSA	Nitrate Sensitive Area
RASFF	Food and Feed Safety Alerts
RDF	Rural Development Foundation
VFB	Veterinary and Food Board

Main terms

Integrated Plant Protection (IPP) – weighing the plant protection measures to be used and integrating suitable measures impeding the development of the populations of harmful organisms in such a manner that the use of the plant protection product and other measures would remain at an economically and ecologically reasoned level and the threat to human health and the environment would be reduced or minimised (Plant Protection Act[1]).

Non-chemical methods – alternative methods to chemical pesticides for plant protection and pest management, based on agronomic techniques or physical, mechanical, or biological pest control methods (Directive 2009/128/EC[2] of the European Parliament and of the Council).

Advisor – any person who has acquired adequate knowledge and advises on pest management and the safe use of pesticides, in the context of a professional capacity or commercial service, including

[1] Plant Protection Act (21 April 2004). Riigi Teataja. Retrieved 18 October 2018, https://www.riigiteataja.ee/en/eli/ee/529032019015/consolide/current

[2] Directive 2009/128/EC of the European Parliament and of the Council, establishing a framework for Community action to achieve the sustainable use of pesticides (21 October 2009). EUR-Lex. Retrieved 25 October 2009, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0128

a person to whom the qualifications of an agricultural adviser have been conferred (Directive 2009/128/EC of the European Parliament and of the Council; the Plant Protection Act).

Pesticides – a) plant protection products as referred to in Regulation (EC) No. 1107/2009[3] of the European Parliament and of the Council; b) Biocide as referred to in Regulation (EU) No. 528/2012[4] of the European Parliament and of the Council.

Pesticide residues – residues, including active substances, metabolites, and/or breakdown or reaction products of active substances currently or formerly used in plant protection products, in particular those which may arise as a result of use in plant protection, in veterinary medicine, and as a biocide (Regulation (EC) No. 396/2005[5] of the European Parliament and of the Council).

Professional user – a person, above all, a self-employed person or an employee of their undertaking and a member of the management board of a legal person operating in such field of activity, a person authorised to manage a legal person, or an employee of an undertaking who uses, buys, and decides over the selection and use of a plant protection product in their economic and professional activities (Plant Protection Act).

Plant protection equipment – equipment intended for using a plant protection product, including a part for its effective operation such as a sprayer, manometer, filter, sieve and tank cleaning device (Plant Protection Act).

Plant protection product – a product intended for the following use:

- protecting plants or plant products against all harmful organisms or preventing the action of such organisms, unless the main purpose of these products is considered to be for reasons of hygiene rather than for the protection of plants or plant products;
- influencing the life processes of plants, such as substances influencing their growth, other than as a nutrient;
- preserving plant products, in so far as such substances or products are not subject to special Community provisions on preservatives;
- destroying undesired plants or parts of plants, except algae unless the products are applied on soil or water to protect plants;
- checking or preventing undesired growth of plants, except algae unless the products are applied on soil or water to protect plants
  (Regulation (EC) No. 1107/2009 of the European Parliament and of the Council).

Authorisation of a plant protection product – an administrative act by which the competent authority of a Member State authorises the placing on the market of a plant protection product in its territory (Regulation (EC) No. 1107/2009 of the European Parliament and of the Council).

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[3] Regulation (EC) No. 1107/2009 of the European Parliament and of the Council, concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC (22 October 2009). EUR-Lex. Retrieved 9 October 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009R1107

[4] Regulation (EU) No. 528/2012 of the European Parliament and of the Council, concerning the making available on the market and use of biocidal products (text with EEA relevance) (22 May 2012). EUR-Lex. Retrieved 29 October 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012R0528

[5] Regulation (EC) No. 396/2005 of the European Parliament and of the Council on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC (text with EEA relevance) (23 February 2005). EUR-Lex. Retrieved 1 November 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32005R0396

Placing on the market – holding for the purpose of sale within the Community, including offering for sale or any other form of transfer, whether free of charge or not, and the sale, distribution, and other forms of transfer themselves, but not the return to the previous seller. Release for free circulation into the territory of the Community shall constitute placing on the market for the purposes of Regulation (EC) No. 1107/2009 of the European Parliament and of the Council.

Distributor – a natural or legal person, including a wholesaler, retailer, reseller, or supplier who places the plant protection product on the market (Plant Protection Act).

Aerial spraying – application of pesticides from an aircraft (plane or helicopter) (Directive 2009/128/EC of the European Parliament and of the Council).

Introduction

Directive 2009/128/EC[6] of the European Parliament and of the Council established a number of measures to achieve the sustainable use of pesticides[7] in the European Union, reduce the dangers and impacts that pesticides have on human health and the environment, and develop the use of integrated plant protection (IPP) and alternative approaches or other ways (for example, non-chemical alternatives to pesticides) for the purpose of reducing dependency on plant protection products. According to the Directive, Member States are obligated to prepare relevant National Action Plans. The Directive is adopted with the Plant Protection Act.

The first relevant Action Plan in Estonia was the 'Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017'[8], approved with Order No. 57 of the Minister of Agriculture of 28 February 2013. Concurrently, an implementation plan for 2013–2017[9] was adopted, establishing specific sectoral actions. An overview on the Action Plan and the implementation plan is available at the 'Overview on the 'Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017"[10]. According to Directive 2009/128/EC, National Action Plans must be reviewed and revised at least every five years.

This Action Plan for 2019–2023 helps to implement and develop current legally regulated actions. Already established actions will be continually applied and new activities planned based on the shortcomings described in the overview of the current state, summaries of relevant studies, and the analysis on the Action Plan for the previous period.

The Action Plan was prepared and implemented by the Ministry of Rural Affairs along with the Agricultural Board, the Estonian Crop Research Institute (ECRI), and the Estonian University of Life Sciences. The Action Plan was coordinated and public consultations[11] held in the information system for draft legislation, the draft for the Action Plan was introduced in public discussions, and many interest groups, organisations and specialists were consulted.

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[6] 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. EUR-Lex. Retrieved 25 October 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0128

[7] Although the word 'pesticide' pervades the Directive, it is initially applied only for plant protection products. Because of that, this Action Plan only concerns plant protection products.

[8] Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017 (2013). Retrieved 28.09.2018, https://www.agri.ee/sites/default/files/content/arengukavad/tegevuskava-taimekaitsevahendid-2013.pdf

[9] Implementation Plan for the Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017 (2013). Retrieved 28 September 2018, https://www.agri.ee/sites/default/files/content/arengukavad/tegevuskava-taimekaitsevahendid-2013-rakendus.pdf

[10] An Overview on the Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017 (2018). Retrieved 28 September 2018, https://www.agri.ee/sites/default/files/content/arengukavad/tegevuskava-taimekaitsevahendid-2013-ulevaade-2018.pdf

[11] Proposals made in public discussions are available at the official website of the Ministry of Rural Affairs. Retrieved 10 April 2019, https://www.agri.ee/et/eesmargid-tegevused/taimekasvatus/taimekaitse

1 Legal basis and consistency with other documents concerning development

Decision No. 1600/2002/EC of the European Parliament and of the Council lays down the Sixth Community Environment Action Programme and makes it obligatory for the European Commission to prepare a thematic strategy for each area of the Programme. Pursuant to Article 7 of Decision No. 1600/2002/EC, the general objective of the thematic strategy for the sustainable use of pesticides is to reduce the impact of pesticides on human health and the environment, achieve a more sustainable use of pesticides, and significantly reduce the use of pesticides and relevant risks in accordance with the necessary level for pest management.

Based on the assessment of the thematic strategy impacts, establishing new pieces of legislation was considered the best way to implement the measures of this strategy. Consequently, the following pieces of legislation were adopted in 2009:

- 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 and repealing Council Directives 79/117/EEC and 91/414/EEC;
- 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.

The Seventh Community Environment Action Programme is in force in the European Union until 2020, prioritising, among other things, such use of plant protection products which would not have harmful effects on human health or unwanted impact on the environment, and which would be used in a sustainable manner.

In order to protect the citizens of the European Union from environmental pressure and risks that might endanger their health and well-being, the state must monitor the implementation of pieces of legislation that regulate the sustainable use of biocidal and plant protection products, review their provisions, if necessary, and update in accordance with the newest scientific recoveries.

Pursuant to point 5 of the preamble of Directive 2009/128/EC, Member States must use National Action Plans aimed at setting quantitative objectives, targets, measures, timetables, and indicators to reduce risks and impacts of pesticide use on human health and the environment and at encouraging the development and introduction of integrated pest management and of alternative approaches or techniques to reduce dependency on the use of pesticides. Member States should monitor the use of plant protection products containing active substances of particular concern and establish timetables and targets for the reduction of their use, in particular when it is an appropriate means to achieve risk reduction targets.

The Directive lays down the measures that must be contained in the Action Plans of Member States. They are primarily focused on training users, advisors, and distributors, inspecting the equipment for the application of pesticides, prohibiting aerial spraying, restricting the use of pesticides on

sensitive areas, informing people of the risks that accompany the use of pesticides, and raising awareness on the matter. National Action Plans will elaborate which measures will be applied to achieve the objectives of the Directive.

The Report from the Commission to the European Parliament and the Council on Member State National Action Plans and on progress in the implementation of Directive 2009/128/EC on the sustainable use of pesticides[12] states that the Action Plans of Member States have shortcomings in many areas. The Commission summarises that Member States need to establish specific and measurable targets and indicators for a long-term strategy for reducing the risks and impacts from pesticide use, whereas the progress must be constantly monitored and adjusted upon need. This Action Plan is largely focused on addressing the shortcomings specified by the European Commission.

The Action Plan is prepared pursuant to section 79[3] of the Plant Protection Act, stating that the Ministry of Rural Affairs will draw up an action plan on the sustainable use of plant protection products, setting out measures to be implemented for the purpose of reducing the risk and effect arising from the use of plant protection products on human health and the environment and the timetable of implementation of the measures, and which supports the drafting of the principles of integrated plant protection and other measures.

1.1 Plant Protection Act

The first Plant Protection Act and subsequent implementing provisions were approved by the Riigikogu in 1994. They were the first to regulate land users' obligations in performing plant protection operations and using chemical plant protection substances, applied to reduce the risks that accompany the use of plant protection products. Legislation for plant protection has been amended several times; more extensive changes were applied in 2000 and 2004. The most comprehensive amendments were made in 2004 due to the need to adjust Estonian legislation with that of the EU, including Council Directive 91/414/EEC concerning the placing of plant protection products on the market[13]. The latest extensive amendments were made in 2011, when the Plant Protection Act was adjusted pursuant to Regulation (EC) No. 1107/2009 and Directive 2009/128/EC.

The Plant Protection Act and its implementing provisions were amended to harmonise them with Directive 2009/128/EC as follows.

1. Training the for distributors and users of plant protection products – specifying the principles for organising plant protection trainings, providing the opportunity to prepare specific training programmes pursuant to target groups, establishing the procedure for revoking plant protection certificates, making it obligatory for advisors to undergo training, and upgrading the list for training subjects.
2. Requirements for marketing plant protection products – specifying the details of the information disclosed to buyers upon marketing plant protection products and setting a

[12] Report from the Commission to the European Parliament and the Council on Member State National Action Plans and on progress in the implementation of Directive 2009/128/EC on the sustainable use of pesticides (10 October 2017). EUR-Lex. Retrieved 15 October 2018, https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52017DC0587

[13] Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market (15 July 1991). EUR-Lex. Retrieved 8 October 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0414

new limit, according to which the Agricultural Board authorises the plant protection products classified as toxic, very toxic, carcinogenic, mutagenic, or toxic to reproduction for use only for a professional category of users, and not available for domestic use.

3. Providing information and raising awareness – establishing a regulation to improve public awareness.
4. Technical inspection of the equipment in use – specifying the concept of plant protection equipment, consequently elongating the list of standard machinery that must undergo technical inspection; intervals between inspections remained the same, but a special longer interval between inspections was set for nebulisers and equipment for processing seeds. Plant protection equipment that is currently in use but did not have to undergo mandatory inspection until now and are not subject to specific requirements had to be inspected before 26 November 2016.
5. Aerial spraying – general prohibition of aerial spraying remains in force and will include no exceptions.
6. Special measures for using plant protection products or reducing their use in specific areas – in addition to the current requirements for plant protection products, plant protection operations in publicly accessible areas are now restricted, along with the obligation to prefer plant production products with a low risk level and relevant biological control measures; other restrictions for using plant protection products now include references to relevant national pieces of legislation.
7. Handling and storing plant protection products and handling the plant protection products that are left over from packaging and usage – all stages of using plant protection products (from purchasing to handling remains) are regulated and include references to relevant national pieces of legislation.
8. Integrated plant protection (IPP) – the recommended application of the principles of IPP is now mandatory, and all professional users had to apply these general principles of IPP as of 1 January 2014; implementing provisions specify the conditions and manner for applying IPP.

1.2 Relevant strategic documentation

The objectives of the Action Plan are primarily related to the following national development and action plans, and other strategic documentation.

1.2.1 National Spatial Plan 'Estonia 2030+'[14]

The objectives of 'Estonia 2030+' include the avoidance of adverse impacts on the environment, which also coincides with one objective of the Action Plan for the Sustainable Use of Plant Protection Products.

[14] National Spatial Plan 'Estonia 2030+' (2012). Retrieved 9 October 2018, https://www.rahandusministeerium.ee/et/ruumiline-planeerimine

1.2.2 Estonian Rural Development Plan 2014–2020[15]

In addition to the requirements established in the Plant Protection Act, environmentally sustainable production will be enhanced with environmental aid as established in the 'Estonian Rural Development Plan 2014–2020'.

1.2.3 The Development Plan for Agriculture and Fisheries until 2030[16] (under development)

The objective for preparing this development plan is to support the development of Estonian agriculture, fisheries, aquaculture, and the food industry, as well as stronger competitiveness, a balanced development of rural and coastal areas, maintaining the health of plants and animals, ensuring food safety, and maintaining a clean environment and diversity of species.

1.2.4 Estonian Agricultural, Food, and Fisheries Science and Knowledge Transfer Development Plan for 2015–2021[17]

This Development Plan is a framework document for planning and coordinating the necessary measures to develop the agricultural, food, and fisheries sciences under the governance of the Ministry of Rural Affairs. It is focused on improving life quality and guaranteeing environmental sustainability by evolving agricultural sciences and applying research.

1.2.5 Estonian Seed Management Development Plan for 2014–2020[18]

One of the objectives of the Estonian Seed Management Development Plan is to increase the importance of certified seed and reproduction materials as well as plants that are resilient to harmful organisms that are adjusted to and spread in the Estonian climate. It corresponds with one of the general principles of IPP, and the 'Action Plan for the Sustainable Use of Plant Protection Products' includes activities that are related to IPP.

1.2.6 Estonian Organic Farming Development Plan 2014–2020[19]

The 'Directive for a Sustainable Use of Plant Protection Products' obligates Member States to enhance agricultural production that uses minimal plant protection products (including organic farming).

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[15] Estonian Rural Development Plan 2014–2020 (2014). Retrieved 9 October 2018, https://www.agri.ee/mak-2014-2020

[16] The Development Plan for Agriculture and Fisheries until 2030 (under development). Retrieved 9 October 2018, https://www.agri.ee/et/pollumajanduse-ja-kalanduse-valdkonna-arengukava-aastani-2030

[17] Estonian Agricultural, Food and Fisheries Science and Knowledge Transfer Development Plan for 2015–2021 (2015). Retrieved 9 October 2018, https://www.agri.ee/sites/default/files/content/arengukavad/arengukava-teadmussiire-2015-2021.pdf

[18] Estonian Seed Management Development Plan for 2014–2020 (2014). Retrieved 9 October 2018, https://www.agri.ee/sites/default/files/content/arengukavad/arengukava-seemnemajandus-2014-2020.pdf

[19] Estonian Organic Farming Development Plan 2014–2020 (2014). Retrieved 9 October 2018, https://www.agri.ee/et/eesti-mahepollumajanduse-arengukava-aastateks-2014-2020

1.2.7 The Estonian National Strategy on Sustainable Development 'Sustainable Estonia 21'[20]

Sustainable development is a long-term coherent and collaborative development of the social, economic, and environmental areas with the purpose of guaranteeing a high living standard for Estonian citizens along with a secure and clean living environment today as well as in the future.

1.2.8 Estonian Environmental Strategy until 2030[21]

The Environmental Strategy defines long-term developments for the maintenance of favourable conditions for the entire living environment.

1.2.9 General Principles of Climate Policy until 2050

The General Principles of Climate Policy define the long-term vision along with sectoral and general economic directions of the Estonian climate policy, laying down a clear path until 2050 for mitigating climate changes, i.e. reducing greenhouse gas emissions, and adapting to their impacts. Due to the fact that climate change involves almost every economic sector, policy directions laid down in this document must be followed when preparing and updating relevant national development strategies. The General Principles of Climate Policy directly impact the planning and developing of energy economy, including transport, agriculture, forestry, and waste management.

1.2.10 Climate Change Adaptation Development Plan until 2030

The strategic objective of the Climate Change Adaptation Development Plan is to strengthen the preparedness and abilities of adapting to climate changes on a national, regional, and local level.

1.2.11 Nature Conservation Development Plan until 2020[22]

The Nature Conservation Development Plan is a strategy for developing nature conservation and sustainable use until 2020. The Natural Conservation Development Plan stresses the importance of following restrictions that are laid down to support nature conservation (including the use of plant protection products) and improve control over the residues of plant protection products.

1.2.12 National Health Development Plan 2020–2030[23] (under development)

The objective of the Development Plan is to maintain and improve the health of citizens, elongate their life, and reduce premature morbidity, death, and health inequality among population groups.

[20] The Estonian National Strategy on Sustainable Development 'Sustainable Estonia 21' (2005). Retrieved 9 October 2018, https://www.riigiteataja.ee/akt/940717

[21] Estonian Environmental Strategy until 2030 (2007). Retrieved 9 October 2018, https://www.riigiteataja.ee/akt/12793848

[22] Nature Conservation Development Plan until 2020 (2012). Retrieved 9 October 2018, https://www.envir.ee/et/looduskaitse#Arengukava

[23] National Health Development Plan 2020–2030 (under development). Retrieved 9 October 2018, https://www.sm.ee/et/rahvastiku-tervise-arengukava-aastani-2030

2 Objectives of the Action Plan

THE GENERAL OBJECTIVE OF THE ACTION PLAN FOR THE SUSTAINABLE USE OF PLANT PROTECTION PRODUCTS IS TO REDUCE THE RISKS OF USING PLANT PROTECTION PRODUCTS ON HEALTH AND THE ENVIRONMENT.

2.1 Indicators[24]

Indicator		Initial level (average level of 2014–2018)	Target level (2023)
Proportion of groundwater monitoring stations on NSAs that exceed pesticide residue limits (%) *Source: Environment Agency*[25]		19.7%	Maintaining the proportion of groundwater monitoring stations that have exceeded the limits under 10%.
Proportion of samples that have exceeded the limits of residues of plant protection products in food of Estonian origin (%) *Source: VFB/AB*[26]		0.5%	Maintaining the proportion of samples taken from food of Estonian origin that have exceeded the limits under 1%
Content of residues of plant protection products in soil *Source: ARC*[27]	Average number of residues of active substances in a sample	4.7 different active substances	Maintaining the average number of residues of active substances in a sample under 5
Number of occupational accidents and diseases in crop production institutions *Source: LI*		0	Preventing all occupational accidents and diseases

* Additional explanations on developing the target levels of indicators is available in Annex 2 to the Action Plan.

The objective of these indicators in the context of this Action Plan is to determine the efficiency of the given activities. The target level of each indicator determines the necessary changes that have to be carried out and the assessment on whether a situation has improved or worsened.

Annex 1 to the Action Plan provides a general overview of the activities for 2019–2023 that are necessary for achieving the objectives.

Indicators are established for the purpose of assessing if the objectives are achieved (general overview is available in Annex 2). Indicators are not established for raising awareness, training, and

[24] The study 'Means for reducing the perishing of pollinators, including honeybees', carried out within the strategic support programme for research and development 'Strengthening of sectoral research and development (RITA)' of the Estonian Research Council, includes a theoretical possibility to use structural changes in the communities of bumblebees (proportion of bumblebee species who are more sensitive to environmental conditions) as an indicator for measuring the performance of the general objectives of the Action Plan.

[25] The data are submitted by the Environment Agency and calculated with the measures provided by national environmental monitoring.

[26] Studies on pollutants in food. VFB. Retrieved 9 April 2019, https://vet.agri.ee/?op=body&id=819

[27] Study reports on assessing the Estonian Rural Development Plan – http://pmk.agri.ee/mak/aruanded-2014-2020/

counselling, because these are supportive fields whose impact is evident in the indicators of other areas.

The European Commission is developing harmonised indicators at the EU level, available in Annex IV to Directive 2009/128/EC. A relevant draft[28] was open to public consultations from 28 November to 26 December 2018, according to which, harmonised risk indicators are necessary to assess the implementation of the main objective of Directive 2009/128/EC: to reduce the risks of pesticide use on human health and the environment. Two risk indicators were established:

- risk indicator on danger, based on the amount of active substances placed on the market as referred to in Regulation (EC) No. 1107/2009;
- risk indicator based on the number of extraordinary authorisations as referred to in Article 53 of Regulation (EC) No. 1107/2009.

Both risk indicators are based on the categories of active substances as referred to in Regulation (EC) No. 1107/2009. Member States submit yearly reports to Eurostat on the plant protection products that are placed on the market. The initial level is the average of the years 2011–2013. Both indicators are calculated according to their hazardousness. The indicators are used to determine the current trends and identify the active substances that require attention to reduce the risks from their use.

Harmonised risk indicators are national indicators used to assess if the objectives of the Action Plan are achieved.

The general objective is supported by three areas of activity that are divided into sub-domains as follows:

1. Raising awareness, training, and counselling
    1.1. Raising awareness
    1.2. Training and counselling
2. Marketing and sustainable use of plant protection products
    2.1. Marketing plant protection products
    2.2. Sustainable use of plant protection products
3. Plant protection equipment and relevant inspection

[28] Public consultations on the risk indicators on the EU level, developed by the European Commission. The European Commission. Retrieved 28 November 2018, https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-1507786_en

3 Area of activity I: raising awareness, training, and counselling

3.1 Sub-domain: raising awareness

3.1.1 Current situation

The field of plant protection products concerns many different interest groups, from importers to neighbouring institutions of the plant protection product users – for example, honey or (organic) food producers with a specific interest in the situation in their region. The process of making plant protection products available for the market and using them is legally regulated to the last detail, but some aspects may still cause problems if communication between different parties is disturbed. In addition to the professional users of plant protection products, information must also reach non-professional users (for example, domestic gardeners) and the general public, who must possess balanced information on the environmental and health risks of plant protection products, but also on the general requirements for marketing and using plant protection products. Lack of awareness on the requirements of plant protection products may result in false interpretations and unreasonable claims to inspection authorities.

According to the amendment of the Plant Protection Act that entered into force on 26 November 2011, the responsible unit for raising public awareness on plant protection products is the Agricultural Board. Distributors also have the right to inform non-professional users on the proper use and storage of plant protection products. On their website, the Agricultural Board has disclosed fact sheets on the plant protection products that are legally marketed and used in Estonia, along with information on safety[29]. General information on plant protection products is available on the following websites:

- https://www.agri.ee/et/eesmargid-tegevused/taimekasvatus/taimekaitse,
- https://www.pma.agri.ee/index.php?id=104&sub=132,
- http://ak.rapina.ee/tairi/Taimekaitsepuuvilja-marjaaias/,
- https://www.etki.ee/index.php/valdkonnad/taimekaitse.

For the purpose of raising public awareness on the use of plant protection products, 53 articles were published in 2013–2017 in popular science publications and blogs on relevant environmental and health risks of plant protection products, and possibilities for reducing these risks, along with several manuals and other informational materials[30], including on illegal plant protection products (detailed information is available on the website of the Ministry of Rural Affairs[31]). This information should always also reach non-professional users of plant protection products and the general

[29] Fact sheets on the website of the Agricultural Board. Retrieved 12 October 2018, https://www.pma.agri.ee/index.php?id=104&sub=132&sub2=520

[30] An overview on the Action Plan for the Sustainable Use of plant protection products for 2013–2017, Annex 1 (2018). Retrieved 12 October 2018, https://www.agri.ee/sites/default/files/content/arengukavad/tegevuskava-taimekaitsevahendid-2013-ulevaade-2018.pdf

[31] An overview on the Action Plan for the Sustainable Use of plant protection products for 2013–2017, Annex 1 (2018). Retrieved 12 October 2018,, https://www.agri.ee/sites/default/files/content/arengukavad/tegevuskava-taimekaitsevahendid-2013-ulevaade-2018.pdf

public. Awareness on the environmental and health risks that accompany the use of plant protection products must be constantly raised.

In 2010, the Agricultural Board along with Estonian beekeepers and farmers issued the good practice of an interactive change of information between the users of plant protection products and beekeepers, or the ten commandments[32]. In 2017, the AB and the VFB approved a cooperation manual to determine the cause of the increased mortality rate of bees[33], which was amended in 2018. The Agricultural Board has also issued a leaflet 'Beekeepers and plant protection – the who, what, and how'[34] for the users of plant protection products and beekeepers.

Compared to professional users, non-professional users are not required to undergo plant protection training, which is why they might not always know the balanced and reasoned use of chemical plant protection products, especially considering the availability of plant protection products in retail stores that often do not include advice on balanced use. Compared to professional users, non-professional users are generally less aware of the IPP requirements and apply them to a significantly lesser extent.

Information on intoxication from plant protection products is available on the website of the Poisoning Information Centre of the Health Board (http://www.16662.ee/). The Poisoning Information Centre was established with the purpose of mediating and collecting general information on intoxication and ensuring its availability to the public as well as to medical workers. Relevant information on intoxication (including incidents that involve plant protection products) is available on the Poisoning Information Centre hotline around the clock. The website of the Poisoning Information Centre discloses information and informative materials[35] on different types of intoxication for the general public. In cases of intoxication from plant protection products, it is important to cooperate with the area of governance of the Ministry of Social Affairs to determine the circumstances of intoxication, most importantly, if a plant protection product was used properly or improperly.

Studies on plant protection awareness and its changing in time have been conducted in domestic gardens and non-agricultural establishments (2017), but also on the subject of IPP[36] in agricultural establishments. The Ministry of Rural Affairs ordered a study from ECRI in 2017 on the use of plant protection products in Estonian domestic gardens and non-agricultural establishments[37].

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[32] The good practices of an interactive change of information between the users of plant protection products and beekeepers, or the ten commandments (2010), prepared by the Agricultural Board along with Estonian beekeepers and farmers. Retrieved 16 October 2018, http://www.mesinikeliit.ee/failid/Taimekaitsetoode_head_tavad.pdf

[33] A cooperation manual to determine the cause of the increased mortality rate of bees, prepared by the AB and the VFB (2017). Retrieved 16 October 2018, https://www.pma.agri.ee/download.php?getfile2=9167

[34] Fact sheet 'Beekeepers and plant protection – the who, what and how?' (2017). Retrieved 16 October 2018, http://www.pma.agri.ee/docs/pics/Mesinikud_ja_tkv.pdf

[35] A poster in A2 and A4 format 'How to act in case of intoxication', including the names of pesticides and disinsection products (2010/2011). Retrieved 16 October 2018, https://www.16662.ee/fileadmin/user_upload/failid/graafik/16662_Plakat_A4_DF20110311.pdf

[36] The 'Applying the principles of integrated plant protection' study (2015). Retrieved 16 October 2018, http://www.pikk.ee/upload/files/ITK%20rakendamine.pdf

[37] 'Using plant protection products in domestic gardens and non-agricultural establishments' study (2017). Retrieved 16 October 2018, https://www.pikk.ee/wp-content/uploads/2018/04/Taimekaitsevahendite-kasutamine-koduaedades-ja-mittep%C3%B5llumajanduslik-kasutamine-1.pdf

Previously, a similar study had been conducted in 2009[38]. The study included surveys for two different target groups: one for non-professional gardeners who use plant protection products in their domestic gardens (61 respondents), the other for non-agricultural establishments (10 respondents). The study revealed that small garden owners and non-agricultural establishments are more aware of the proper use and handling of plant protection products compared to 2009, but some aspects are still not addressed (e.g. the importance of using personal protective equipment). Monitoring of plant protection awareness and its changing in time has been irregular and excluded the general public.

3.1.1.1 Shortcomings

- Non-professional users lack awareness about the environmental and health risks regarding the use of plant protection products, as well as about the possibilities of reducing the use or replacing plant protection products.
- The general public lacks awareness on the environmental and health risks regarding the use of plant protection products, as well as on the necessity, requirements, and circumstances for using plant protection products.
- Lack of a comprehensive overview on plant protection awareness and its changing in time.

3.1.2 Objectives

BALANCED INFORMATION ON THE SAFE USE OF PLANT PROTECTION PRODUCTS AS WELL AS RELEVANT HEALTH AND ENVIRONMENTAL RISKS IS AVAILABLE TO THE GENERAL PUBLIC.

Achieving the objectives is determined with indicators of other areas of activities.

3.1.3 Activities for 2019–2023

1. Developing a long-term communication plan to raise awareness on plant protection, incl. informing the general public on the use of plant protection products and relevant risks, the current situation of plant protection, and the impact on human health and the environment.
2. Improving awareness on IPP, including non-chemical alternatives for pest management.
3. Constantly publishing and updating information on plant protection (including updating the websites of the Ministry of Rural Affairs, the AB, ECRI, ARC, and RDF), including the process and achievements of the Action Plan for the Sustainable Use of Plant Protection Products.
4. Informing local governments about the possibilities of regulating the use of plant protection products at a local level (including joining the network of pesticide-free towns and regions).
5. Conducting a thorough study on the awareness of the general public on plant protection, including professional and non-professional users.

[38] 'Using plant protection products in domestic gardens and non-agricultural establishments', a study by the Estonian Institute of Economic Research (2009). Retrieved 16 October 2018, https://www.agri.ee/sites/default/files/public/juurkataloog/TAIMETERVIS/taimekaitse/Taimekaitsevahendite_kasutamine_koduaedades_ja_mittep_llumajanduslik_kasutamine.pdf

3.2 Sub-domain: training and counselling

3.2.1 Current situation

The target groups of the training and counselling sub-domain are distributors, professional users, and advisors of plant protection products.

3.2.1.1 Training

Before Directive 2009/128/EC entered into force, EU legislation lacked provisions on plant protection training, although they were included in the Plant Protection Act before joining the Union. Consequently, adjusting Directive 2009/128/EC with the Estonian legal system did not bring about any new obligations, but some adjustments were still made in the content of plant protection training.

An important part of plant protection training is reducing the risks that accompany the use of plant protection products. Inept and careless handling of plant protection products may harm people as well as the environment. In addition to health and environmental risks, exceeding or ignoring the limit of use specified in the plant protection product permit might result in a significant loss of harvest.

Before preparing and approving Regulation No. 67 of the Minister of Agriculture of 18 November 2013, entitled 'Requirements for plant protection training programmes, the subjects addressed in plant protection training, and requirements for the duration of training'[39],currently in force, only users and distributors of plant protection products underwent plant protection trainings. As of 26 November 2013, in addition to the users and distributors of plant protection products, advisors must also undergo a plant protection training. By then, plant protection training programmes were also renewed. Subjects of training include the measures for managing the risks of human and animal health and the environment, an overview on relevant pieces of legislation regarding the use of plant protection products, details on the use and maintenance of plant protection equipment, and the principles for choosing appropriate methods. As the uneven level of the trainings (lack of unified training materials, lack of relevant knowledge of instructors) was problematic, necessary training materials were ordered and unified examination questions were prepared. Currently, information days are organised for plant protection instructors to inform them of the newest developments in the field.

As of 2013, professional users of plant protection products must undergo a plant protection training with a duration of 16 hours; for advisors, the duration is 16.75 hours, and for distributors, 6 hours. Persons whose plant protection certificate is about to expire and who wish to apply for a new certificate must undergo a plant protection training as follows: 8 hours for professional users, 10 hours for advisors, and 3.75 hours for distributors. Plant protection certificates are issued by the Agricultural Board and they are valid for five years. Plant protection certificates that were issued before 1 February 2011 are valid until the fixed date (the validity of plant protection certificates issued before 1 February 2011 is ten years).

[39] Regulation No. 67 of the Minister of Agriculture, entitled 'Requirements for plant protection training programmes, the subjects addressed in plant protection training, and requirements for the duration of training' (18 November 2013). Riigi Teataja. Retrieved 23 October 2018, https://www.riigiteataja.ee/akt/120112013005

In 2013–2017, training institutions organised a total of 186 plant protection trainings and issued 3,860 plant protection certificates. In Estonia, plant protection trainings are organised by Harju Taluliidu Nõuandekeskus, MTÜ Abiks Põllumehele, the Räpina School of Horticulture, the Järva County Vocational Training Centre, the Luua Forestry School, the Institute of Agricultural and Environmental Sciences of the Estonian University of Life Sciences, and the Olustvere School of Service and Rural Economics.

The programmes and study materials for plant protection training need constant updating. The programmes and subjects of plant protection training must consider the characteristics of a relevant target group (distributors, professional users, advisors). Complementary programmes of plant protection training must focus on introducing pests and the possibilities of managing them without chemical substances. Although non-professional users of plant protection products (e.g. small garden owners) are not obligated to undergo a plant protection training, they should be encouraged to participate and informed of the possibility.

Currently, plant protection trainings (and relevant certificates) from other Member States are not legally recognised. Although this only concerns individual cases, legal regulating needs to be subject to additional analysis.

3.2.1.2 Counselling

In order to guarantee quality counselling, agricultural advisors are certified according to the qualification framework. Agricultural advisors are certified at the Agricultural Research Centre (ARC). The database of agricultural advisors who possess a valid certification is available on the ARC website. As of 13 November 2018, there were a total of 137 certified agricultural advisors (32 in rural entrepreneurship and financial management, 21 in livestock farming, 17 in crop production, 45 in forestry, and 22 in other areas of rural affairs).

Agricultural advisors who operate in crop production and advise on the safe use of plant protection products must undergo plant protection training. An important part of plant protection training is applying IPP, which is why the training must also focus on the general principles of IPP. An important part of being an agricultural advisor is mediating information between researchers and farmers.

Unfortunately, there are not enough competent agricultural advisors who have undergone plant protection training, and producers often obtain information from, for example, representatives of the distributors of plant protection products, which is why they might not receive balanced information.

3.2.1.2.1 Shortcomings

- Maintaining plant protection training (including study materials) up to date and at an even level.
- Lack of availability of balanced advice.

3.2.2 Objectives

DISTRIBUTORS, PROFESSIONAL USERS, AND ADVISORS OF PLANT PROTECTION PRODUCTS HAVE UNDERGONE PLANT PROTECTION TRAININGS THAT ARE UP TO DATE AND AT AN EVEN LEVEL. THE AVAILABILITY OF COUNSELLING ON THE SUSTAINABLE USE OF PLANT PROTECTION PRODUCTS IS ENSURED.

Achieving the objectives is determined with indicators of other areas of activities.

3.2.3 Activities for 2019–2023

1. Updating the competence of plant protection training organisers, including renewing and updating the study materials that are necessary for organising plant protection trainings.
2. Determining the precise need for training and using the information to organise regular trainings for distributors, professional users, and advisors of plant protection products.
3. Ensuring the availability of independent counselling services (the basis for developing a counselling service).
4. Analysing the possibilities for online training for non-professional users and developing a system, if necessary.

4 Area of activity II: marketing and sustainable use of plant protection products

4.1 Sub-division: marketing plant protection products

4.1.1 Current situation

The list of active substances allowed in plant protection products pursuant to Regulation (EC) No. 1107/2009[40] is laid down in the Annex to Commission Implementing Regulation (EU) No. 541/2011. For safety reasons, the approval period of active substances is limited in time: initial approval is given for up to ten years, after which the active substance is re-evaluated. If the active substance still complies with the requirements, it is approved for up to another 15 years. The criteria for approving active substances are stricter now, and many active substances that are currently approved will not be included in plant protection products that are put on the market in the future. All active substances approved in the European Union are listed in a relevant database[41].

The criteria for proceeding authorisations for plant protection products are fixed at the EU level, allowing six types of approvals. The criteria for granting authorisation were amended with Regulation (EC) No. 1107/2009, adding new possibilities for applying for authorisation. The number of so-called extraordinary authorisations (e.g. expanding the scope of use laid down in an authorisation of a plant protection product, or a 120-day permit under extraordinary circumstances) granted by the Agricultural Board is still small.

As of August 2018, according to the Agricultural Board register of plant protection products[42], a total of 436 types of plant protection products were allowed on the market, 60 of which were freely sold and five classified as very toxic[43]. The list of plant protection products that are cleared for distribution and use in Estonia is constantly changing – some products are added, some removed. The terms of use of a plant protection product or growth regulator might also change[44]. The Agricultural Board has published a fact sheet for distributors of plant protection products, entitled 'Requirements for marketing plant protection products'[45].

The quantities of plant protection products marketed in Europe are available on the Eurostat website[46]. The latest data on pesticide sales in Europe for utilised agricultural area (UAA) per

[40] Regulation (EC) No. 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC (21. October 2009). EUR-Lex. Retrieved 28 August 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009R1107

[41] A database of active ingredients allowed to be put on the market in the European Union, the EU Pesticides database. Retrieved 28 August 2018, http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=homepage&language=EN

[42] The Agricultural Board register of plant protection products. Retrieved 28 August 2018, https://portaal.agri.ee/avalik/#/taimekaitse/taimekaitsevahendid-otsing/et

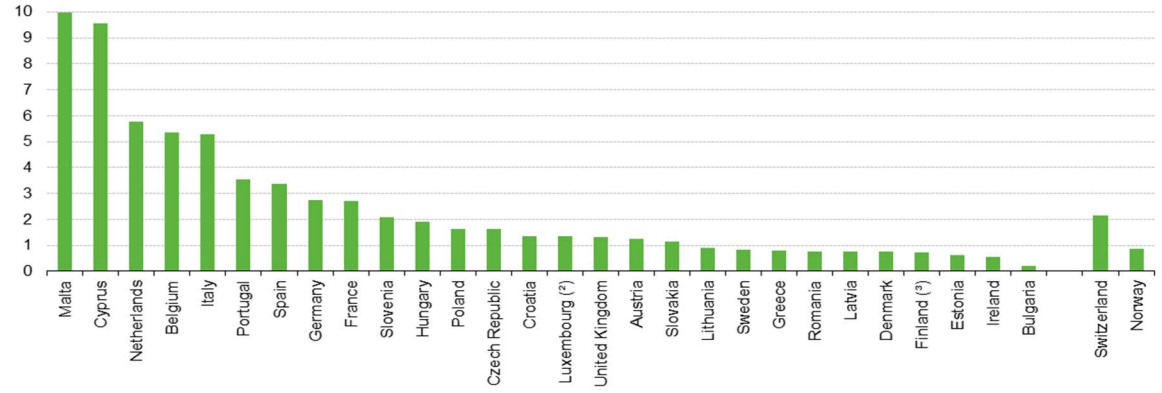
[43] Very toxic plant protection products may only be used by people who have received special training and have been entered into the register of plant protection products as users of very toxic plant protection products.

[44] Monthly amendments to the Agricultural Board register of plant protection products. Retrieved 28 August 2018, https://www.pma.agri.ee/index.php?id=104&sub=132&sub2=242&sub3=501

[45] Fact sheet 'Requirements for marketing plant protection products' (2018). Retrieved 14 September 2018, https://www.pma.agri.ee/docs/pics/Taimekaitse/PMA%20a65%20Taimekaitsevahendid%20naidis.pdf

[46] Quantities of plant protection products distributed in Europe (2014). Eurostat. Retrieved 14 September 2018, https://ec.europa.eu/eurostat/data/database

hectare is from 2013. The statistics reveals that the highest amount of pesticides were distributed in Malta (10 kg per UAA hectare, Figure 1). In Estonia, the quantity remained under 1 kg, making Estonia one of the three countries of the EU, alongside Ireland and Bulgaria, with the lowest sales quantity.



Notes:
Confidential data have been removed from the sums of pesticides sales. Data on total UAA from 2013.
Fungicides and bactericides': 2012 data , other data: 2013.
Urea is used only in forestry and is excluded from the total pesticide sales.

Figure 1. Pesticide sales for utilised agricultural area (UAA) per hectare (kg) in European countries, 2013.

Source: Eurostat

Active substances allowed on the market are significantly different by regions. In the Northern region, including Estonia, a smaller number of active substances is allowed on the market, compared to the Central and Southern region. As of 25 February 2019, a total of 160 active substances were cleared for distribution in Estonia (Figure 2). The total number of active substances approved in the European Union is 484. The quantity of active substances significantly affects the possibilities that different cultures have for pest management. A limited selection of active substances or lack of suitable alternatives might increase the overall pest resistance.

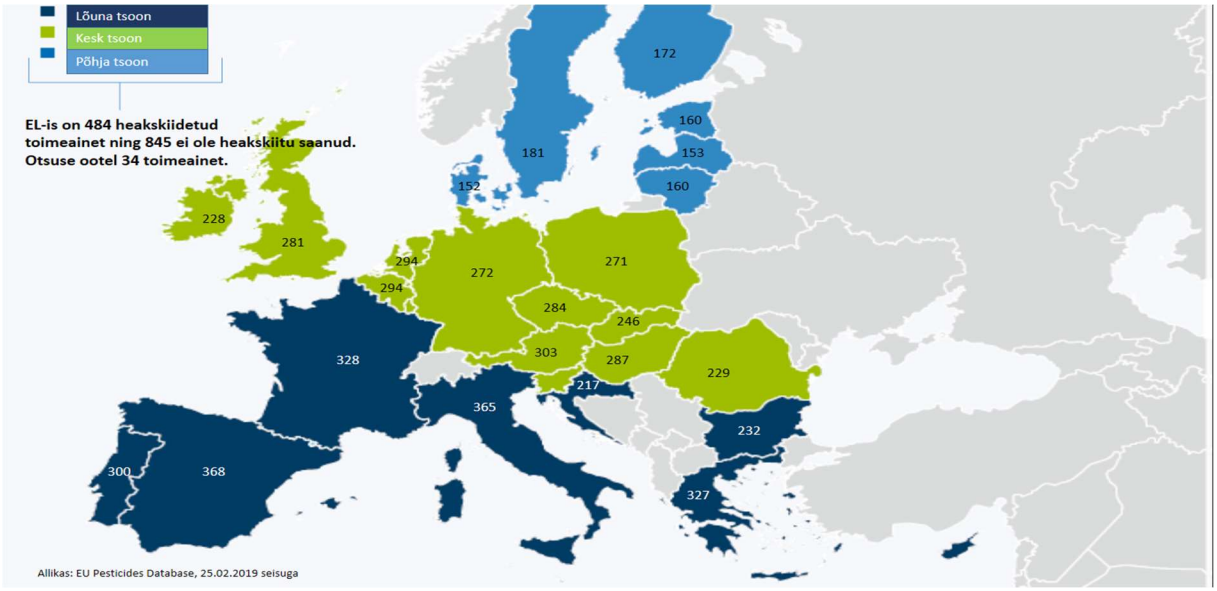


Figure 2. Active substances cleared for distribution in the European Union, 2019.

As of 2011, the data on plant protection products cleared for distribution in Estonia is collected by Statistics Estonia and disclosed in the statistics database[47].

Increasingly higher amounts of plant protection products are distributed in Estonia (Figure 3). Compared to 2012, the quantity of plant protection products distributed in Estonia has increased by 27% in five years (554,209 kg in 2012, compared to 706,411 kg in 2017), whereas a total of 834,328 kg of plant protection products were distributed in Estonia in 2016. The highest increase has been in marketing fungicides (for fungal management) and growth regulators, but also herbicides. Compared to 2017, the distribution of plant protection products has decreased by 15% in the previous year[48].

Of all the plant protection products that were distributed, 66% were herbicides, 17% were fungicides, 13% were growth regulators, and 4% were insecticides (disinsection).

More than half of all distributed herbicides are made of glyphosate: according to Statistics Estonia, 292,057 kg was put on the market in 2016, but already 411,611 kg in 2016. The following year, in 2017, the amount of glyphosate put on the market faced a significant decrease (253,420 kg) compared to 2016. High quantities of plant protection products were distributed in 2016 due to an increase in the amount of herbicide distribution, a large proportion of which was made of glyphosate.

[47] Plant protection products distributed in Estonia, by active substances. Statistics Estonia. Retrieved 14 September 2018, http://pub.stat.ee/px-web.2001/Dialog/varval.asp?ma=KK2085&ti=TURUSTATUD+TAIMEKAITSEVAHENDID+TOIMEAINE+J%C4RGI&path=../Database/Keskkond/07Pollumajanduskeskkond/&lang=2

[48] The quantity of plant protection product distribution decreased by nearly one sixth (2018). Statistics Estonia. Retrieved 5 December 2018, https://www.stat.ee/pressiteade-2018-127

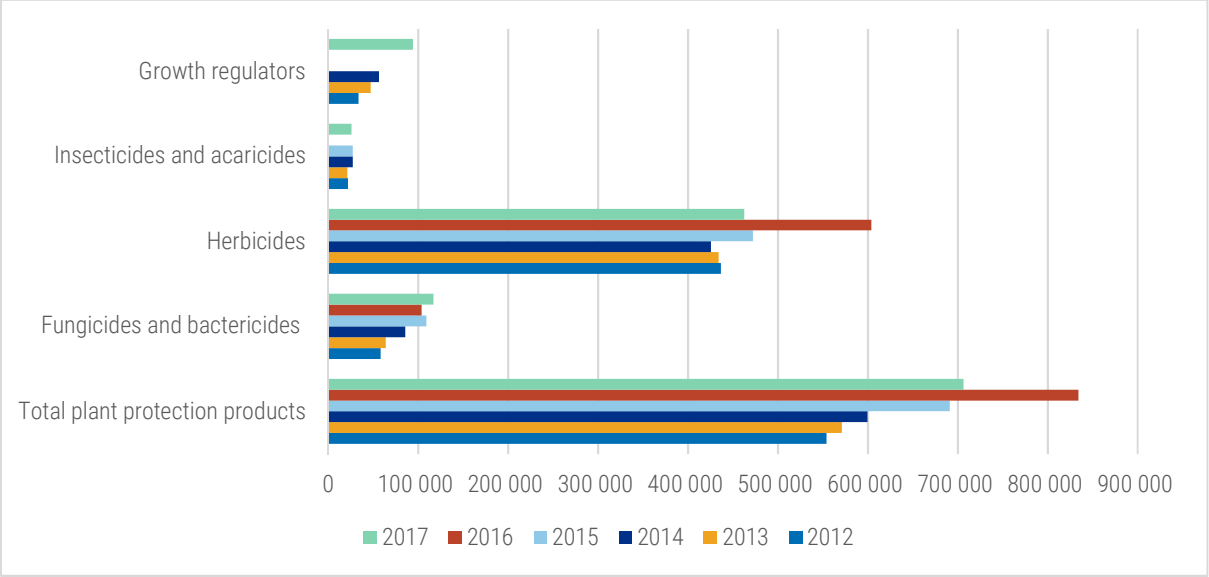


Figure 3. The amounts of plant protection products placed on the market in 2012–2017, by preparation impact (kg).

Source: Statistics Estonia

Natural plant protection products, such as quartz sand, sheep fat, and blood meal, were also distributed. Of all the plant protection products placed on the market in 2017, biological plant protection products and plant protection solutions comprised 0.1%, while the rest were synthetic.

According to the overview report of the European Commission on the sustainable use of plant protection products (2017)[49], the risk of using plant protection products has decreased, for example, in Germany over 50% in 1987–2007, despite the fact that the use of plant protection products has remained the same or even increased. In the Netherlands, in 2017, the impact of plant protection products on surface water had decreased by 85% and on drinking water by 75%, compared to 1998. This decrease is the result of applying toxicologically and environmentally more suitable active substances compared to those used 20 years ago. As active substances are authorised on the EU level, the same decrease in risk levels may be presumed in all Member States.

Despite the fact that, compared to 2016, the quantities of distributed glyphosates were significantly reduced in 2017, this active substance has been closely monitored in recent years. Currently, 34 plant protection products that contain glyphosate are registered in Estonia, the sale and use of all of which was restricted by the Agricultural Board in 2018. In the future, only preparations in packages of up to one litre will be available in free sale. Larger packages are only meant for professional users with a valid plant protection certificate. As of 1 December 2018, only products whose labelling complies with the amended terms of use are cleared for sale. These products may also only be used pursuant to the new terms of use. It is prohibited to use plant protection products that contain active substance glyphosate on school premises, playgrounds, and in close proximity of medical facilities. It is forbidden to use them for enervating or drying of crop before harvesting, which is why several areas of use may have been eliminated from some products, e.g. drying of

[49] The European Commission overview report on the sustainable use of plant protection products (2017). The European Commission. Retrieved 28 September 2018, http://ec.europa.eu/food/audits-analysis/overview_reports/act_getPDF.cfm?PDF_ID=1070

cereals, peas, and beans. The Agricultural Board also amended the information on the labels of all plant protection products that contain glyphosate, stating that it is forbidden to spray them on flourishing crop, and even on flourishing weeds in the processed area.

4.1.1.1 Shortcomings

- Lack of awareness of sellers and distributors on the changes made to the plant protection products that are placed on the market (removal from registers, re-evaluation, extension of authorisation, amendments of authorisation, extension on use, changing authorised persons, new plant protection products).
- The quantities of small packages has increased in retail shops, but they still freely available.
- An increase in the amount of distributed plant protection products.
- Limited selection of plant protection products on the Estonian market.

4.1.2 Objectives

GUARANTEED CONTROL OVER THE QUALITY AND SAFETY OF DISTRIBUTED PLANT PROTECTION PRODUCTS AND PREVENTION OF THE AVAILABILITY OF UNAUTHORISED PLANT PROTECTION PRODUCTS ON THE MARKET.

4.1.2.1 Indicators

Indicator	Initial level (average level of 2017–2018[50])	Target level (2023)
The proportion of violations in the distribution of plant protection products (%) *Source: AB*	4.2%	Maintaining the proportion of violations under 5%

* Additional explanations on developing the target levels of indicators are included in Annex 2 to the Action Plan.

4.1.3 Activities for 2019–2023

1. Assessing and ascertaining the risk level of plant protection products authorised in Estonia.
2. Following up on the conditions laid down in the authorisations of plant protection products (re-evaluating the labels of plant protection products).
3. Encouraging the registration of biological preparations and active substances with a low risk level.
4. Analysing the necessity for limiting the wholesale of plant protection products for non-professional users.
5. Developing cooperation between supervisory authorities.
6. Raising the awareness of sellers and distributors of plant protection products on the amendments made to plant protection products currently on the market.
7. Disclosing information to prevent the dangers that accompany the distribution of illegal or falsified plant protection products and e-commerce.

[50] Recently, a more precise method for calculating the indicators was applied, which is why the initial level on this indicator cannot be based on the average level of the last five years, unlike for general indicators.

4.2 Sub-domain: sustainable use of plant protection products

4.2.1 Current situation

The purpose of plant protection is to use different methods for managing or restricting the impact and development speed of pests, plant diseases, and stunted growth, while ensuring the quality and stability of harvest. Different pests significantly decrease the quantity of harvest and the quality of crop. Plant protection products used for pest management are widely spread because of their efficiency, but the use of chemical substances should not be used for compensating faulty agricultural methods. Inept or excessive use of plant protection products may prevent them from reaching target organisms, increase risks to health and the environment, and cause the residues of plant protection products to spoil surface or groundwater and food.

The objective of pieces of legislation that regulate the use of plant protection products is to ensure that only authorised plant protection products are distributed in Estonia, that the use of plant protection products complies with requirements, and that the residues of plant protection products are within the allowed limits and do not possess any danger. In order to minimise health and environmental risks, it is important to ensure compliance with the requirements of using plant protection products along with national supervision.

The quantity of plant protection products used in agricultural holdings has increased in 2005–2015, to 963,928 kg in 2015 (Figure 4). During the same period (2005–2015), the value of crop production increased by nearly three times (Figure 7). Use of plant protection products significantly increased in 2005–2007. This may be partially due to the fact that it was the time of fast economic growth and increased incomes. Also, in 2006, Statistics Estonia expanded the methods for sample surveys. As a result of the economic recession that followed, the use of plant protection products underwent a significant decrease by 2012, but has steadily grown ever since.

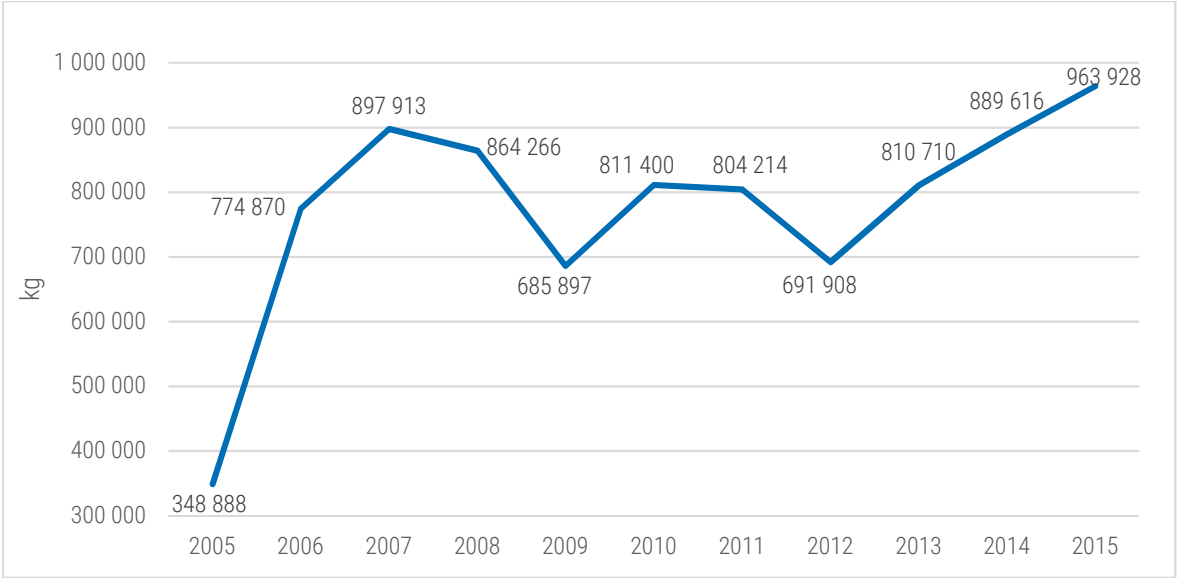


Figure 4. The use of plant protection products (kg) in agricultural holdings in 2005–2015.

Source: Statistics Estonia

Compared to 2005, the quantity of plant protection products used on agricultural areas per hectare has more than doubled: in 2005, a total of 0.4 kg of plant protection products were used per hectare

on agricultural land, in 2015, the relevant indicator was 0.97 kg (Figure 5). In 2015, nearly 66% (640,761 kg) of all plant protection products were for weed management (Figure 6).

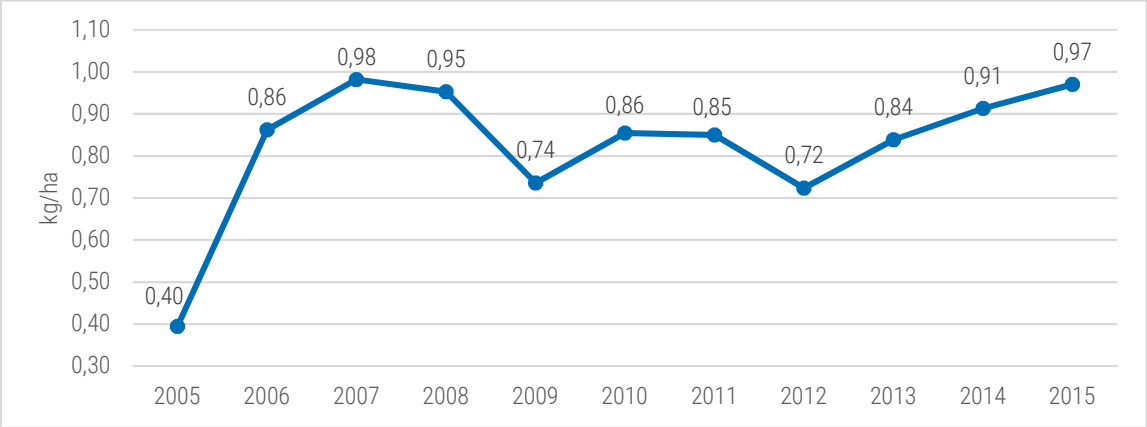


Figure 5. The use of plant protection products (kg) per hectare in agricultural holdings on agricultural land in 2005–2015.

Source: Statistics Estonia

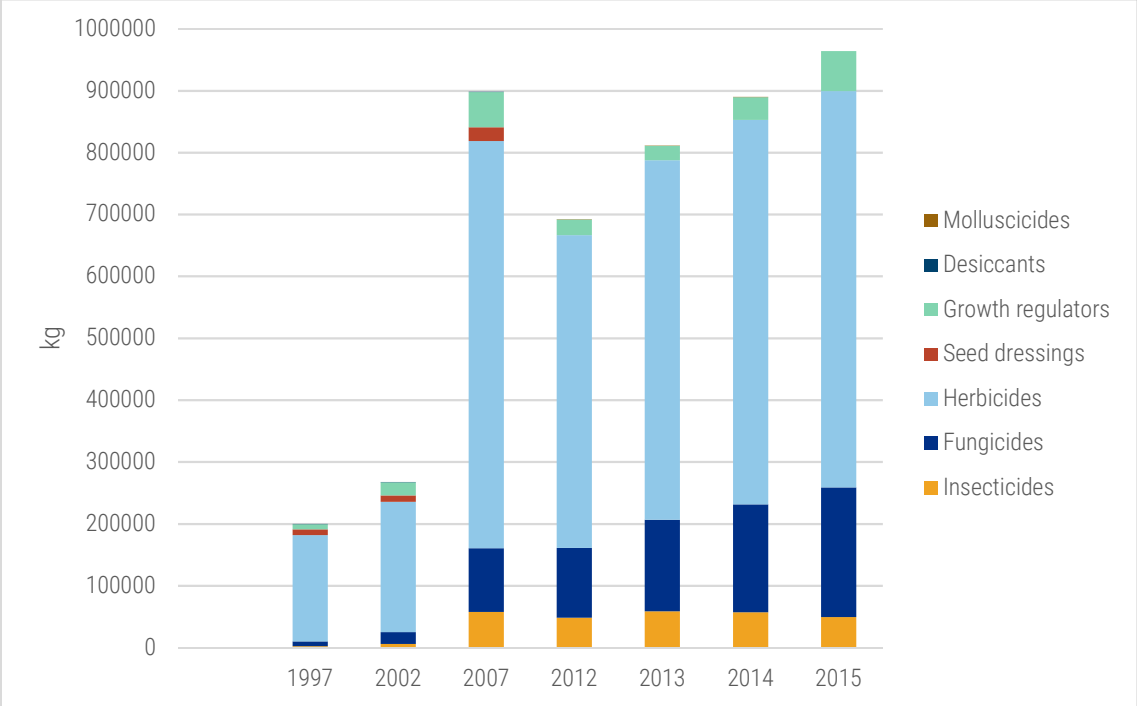


Figure 6. The use of types of plant protection products in agricultural holdings in 1997–2015 (kg).

Source: Statistics Estonia

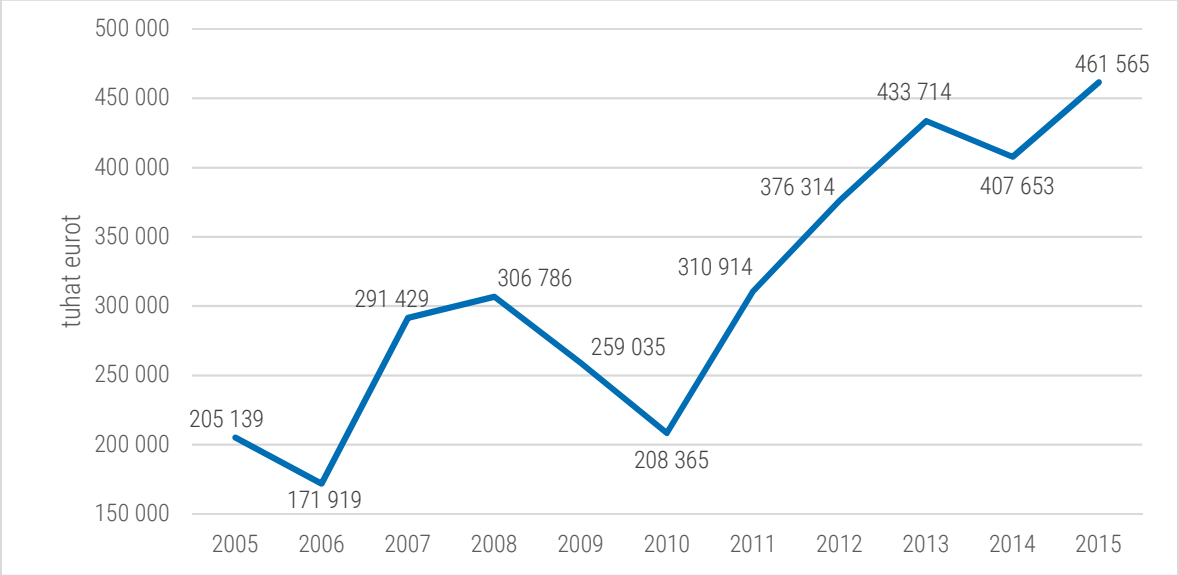


Figure 7. The value of crop production in 2005–2015, in thousands of euros.

Source: Statistics Estonia

Statistics Estonia does not collect data on plant protection products used in agricultural holdings yearly, but every five years, pursuant to Regulation (EC) No. 1185/2009[51]. Statistics Estonia also does not collect data on their use in non-agricultural establishments, although such data would be very necessary for assessing the general use of plant protection products and its changing.

Henceforth, the focus will be on the current situation of the use of plant protection products, according to the topics specified in Directive 2009/128/EC:

- integrated plant protection (IPP);
- storage of plant protection products, disposal of packaging and residues;
- use of plant protection products in public, in close proximity of residential areas, and on forest land;
- aerial spraying;
- use of plant protection products on protected and conservation areas;
- means for protecting the aquatic environment.

4.2.1.1 Integrated plant protection (IPP)

IPP principles are very important for achieving the objectives of Directive 2009/128/EC and this Action Plan: increasing the risks and impacts that pesticides have on human health and the environment and using plant protection products in a more sustainable manner. As of 2014, IPP principles are mandatory for professional users. The conditions and methods for applying the

[51] Regulation (EC) No. 1185/2009 of the European Parliament and of the Council of 25 November 2009, concerning statistics on pesticides (25 November 2009). EUR-Lex. Retrieved 1 October 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009R1185

principles of IPP are established in Regulation No. 62 of the Minister of Agriculture of 5 November 2013[52].

The general principles of IPP are laid down in Annex III to Directive 2009/128/EC, stating that the choice of appropriate measures should be based on the plant culture, local conditions, area of activity, etc. Thus, a professional user must decide on the appropriate measure for plant protection based on the actual situation – if preventative measures of IPP failed to provide the desired result, then control measures will be applied (chemical, mechanical, or biological control measures). An important aspect of the IPP principles is appropriate timing and the optimal use of plant protection measures. Thus, deciding on whether and when to use chemical control measures or decrease application rates might be problematic. The decision-making process is made easier with decision support systems (DSS), where a user can reduce the application rates of plant protection products or discard spraying altogether in real time and based on the current situation. This option is available in, for example, the integrated plant protection advisory system I-Taimekaitse[53] that is created in the example of the Danish computer-based advisory programs PC-Plant Protection, NegFry, and PC-P, in cooperation between Denmark, Poland, and the Baltic States, and whose plant protection models have been tested and developed with field testing by the researchers of ECRI, ARC, and the Estonian University of Life Sciences as of 1999. I-Taimekaitse analyses data and makes suggestions. The availability and possibilities of I-Taimekaitse are, unfortunately, not very widely spread among manufacturers. I-Taimekaitse as well as any other digital solution requires constant upgrading and developing.

The Action Plan for 2013–2017 prioritised the development of supportive measures for applying the IPP principles: establishing the terms for applying IPP and developing crop-based IPP instructions (for oat, potatoes, spring barley, winter barley, winter rape and turnip rape, summer rape, winter rye, field peas, winter wheat, spring wheat, cabbage). In 2016, a survey was carried out within an applied research programme to map the necessity for using plant protection products and developing relevant IPP instructions for rare crop (strawberry, raspberry, plum, blackcurrant, redcurrant, apple, swede, pumpkin, cucumber (field and greenhouse), garlic, onion, beetroot, carrot, and tomato). In addition to crop-based IPP instructions, biological plant protection products[54] that are entered into the register of plant protection products are distinctly specified on the website of the Agricultural Board.

A scoring system on the use of IPP principles was developed to allow manufacturers to self-analyse[55] and determine the extent to which they apply the IPP principles in their establishment, and identify the shortcomings. The general objective of the scoring system is to promote a wider use of IPP.

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[52] Regulation No. 62 of the Minister of Agriculture of 5 November 2013, entitled 'The conditions and means for applying the principles of integrated pest management' (5 November 2013). Riigi Teataja. Retrieved 1 October 2018, https://www.riigiteataja.ee/akt/107112013006

[53] I-Taimekaitse, the online advisory system for plant protection. Retrieved 4 October 2018, http://itk.etki.ee/

[54] Biological plant protection products entered into the register for plant protection products on the website of the Agricultural Board. Retrieved 4 October 2018, https://www.pma.agri.ee/index.php?id=104&sub=132&sub2=242

[55] A scoring system on integrated plant protection for self-analysing, available on the website of the Ministry of Rural Affairs. Retrieved 4 October 2018, https://www.agri.ee/sites/default/files/public/juurkataloog/TAIMETERVIS/i-taimekaitse-punktisysteem.xls

In 2014, for the purpose of simplifying plant protection planning, ECRI began to monitor pest spreading to collect information on the occurrence of plant diseases and pests. Data is collected weekly in May and June in different regions of Estonia and the information is disclosed in interactive maps on the website of ECRI (pest monitoring[56]). A warning and prognosing system of pest distribution enables timely managing, increases the efficiency of plant protection, and helps to decrease the use of plant protection products. The warning and prognosing system is constantly developed.

Fact sheets compiled to improve the availability of information on IPP were published on the websites of the Ministry of Rural Affairs[57], ECRI, and the Agricultural Board[58].

IPP is also one of the areas of activity of the long-term programme for knowledge transferring: for example, in 2017, a presentation day was organised at a sample field, focusing on precision agriculture of cereals and oil cultures and applying IPP measures. Other presentation days on IPP will be organised within the programme at crop production enterprises[59]. Implementation of IPP is also supported by the advisory system[60].

In 2015, ECRI carried out a research among farmers[61], which reveals that most of Estonian manufacturers apply the IPP principles at least to some extent, and the general state of the use of IPP measures is considered quite good. The state of preventative measures (e.g. crop rotation) was the best. Regarding a more extensive implementation of IPP measures, most manufacturers have room for development; most attention is needed in developing advisory systems, applying monitoring data and weather prognosis to decide on the necessity of using plant protection products, choosing efficient plant protection products with the lowest impact on human health and the environment, avoiding pesticide resistance, and assessing the necessity and efficiency of using plant protection products after the growth period.

All aforementioned measures need constant monitoring and developing, regardless of the fact that IPP is favoured, and simplified measures are available for the use of IPP principles and alternative pest management. An efficient use of IPP also requires complementary scientific and applied research that would also support the advisory system.

4.2.1.2 Storage of plant protection products, disposal of packaging and residues

Users must organise the disposal of the remnants of plant protection products, tank mixes, and empty packaging. Storage rooms of plant protection products must prevent the products from being exposed to the environment. Detailed requirements and methods for reducing the risks in all

[56] Pest monitoring on the website of the Estonian Crop Research Institute (ECRI). Retrieved 4 October 2018, http://monitooring.etki.ee/

[57] 'Integrated plant protection', a fact sheet of the Ministry of Rural Affairs. Retrieved 11 October 2018, https://www.agri.ee/sites/default/files/content/taimekasvatus/integreeritud-taimekaitse-pohimotted.jpg

[58] 'Integrated plant protection', a fact sheet of the Agricultural Board. Retrieved 11 October 2018, https://www.pma.agri.ee/docs/pics/PMA%20Integreeritud%20taimekaitse.pdf

[59] List of activities organised in the area of crop production within the long-term programme for knowledge transferring. Retrieved 11 October 2018, http://taim.etki.ee/tegevustekava

[60] RDF advisory service. Retrieved 11 November 2018, https://www.pikk.ee/

[61] 'Applying integrated plant protection among farmers' study (2015). ECRI. Retrieved 11 October 2018, http://www.pikk.ee/upload/files/ITK%20rakendamine.pdf

stages of using plant protection products are laid down in Regulation No. 90 of the Minister of Agriculture of 29 November 2011, entitled 'Detailed requirements for the use of plant protection products and their storage on site'[62], and Regulation No. 49 of the Minister of Agriculture of 20 April 2006, entitled 'Safety requirements for the use, cleaning, maintenance and storage of plant protection equipment'[63]. The amendments made to Regulation No. 90 on 24 September 2018 specified the requirements for handling empty packages of plant protection products, allowing to treat these packages as regular waste and simplifying waste management.

In Estonia, it is only allowed to use plant protection products with proper authorisation that have been entered into the register of plant protection products. Plant protection products with expired or cancelled authorisation, which are therefore deleted from the register, should be treated as hazardous waste. The residues of used plant protection or discarded products, including tank mixes and plant protection products that have been deleted from the register, should be handed over to hazardous waste handlers. Empty packages of plant protection products will be collected and returned to distributors, if possible, or taken to packaging waste managers.

The ARIB conducted a compliance inspection in 2013–2017 and identified no violations regarding storage rooms or storing of plant protection products; compliance with requirements was verified for 144–184 applicants of agricultural aid on various years.

4.2.1.3 Use of plant protection products in public, in close proximity of residential areas, and on forest land

Plant protection products are not only used in agriculture, but also in forestry, domestic gardens and public areas (tramways, railways, highways, areas for sports and leisure, parks and gardens), and in close proximity of residential areas and public buildings.

In public areas, plant protection products may only be applied by professional users who have completed plant protection training and obtained sufficient knowledge for managing the risks of using plant protection products, because using non-compliant plant protection products may endanger people and the environment.

In 2018, Regulation No. 90 of the Minister of Agriculture of 29 November 2011, entitled 'Detailed requirements for the use of plant protection products and their storage on site'[64] was amended, laying down that in the case of carrying out plant protection operations in public, in close proximity of apartment buildings, or on forest land, warning signs must be displayed for plant protection products that take effect in delayed time in order to avoid polluting nearby establishments or other objects and perform the necessary operations without bystanders. Plant protection operations may only be carried out in cities and other settlements, or in close proximity of these settlements, if

[62] Regulation No. 90 of the Minister of Agriculture of 29 November 2011, entitled 'Detailed requirements for the use of plant protection products and their storage on site' (29 November 2011). Retrieved 11 October 2018, https://www.riigiteataja.ee/akt/119052015002?leiaKehtiv

[63] Regulation No. 49 of the Minister of Agriculture of 20 April 2006, entitled 'Safety requirements for the use, cleaning, maintenance and storage of plant protection equipment' (20 April 2006). Retrieved 11 October 2018, https://www.riigiteataja.ee/akt/103052013005?leiaKehtiv

[64] Regulation No. 90 of the Minister of Agriculture of 29 November 2011, entitled 'Detailed requirements for the use of plant protection products and their storage on site' (29 November 2011). Retrieved 11 October 2018, https://www.riigiteataja.ee/akt/119052015002?leiaKehtiv

plant diseases, pest and weed cannot be managed with agronomic techniques or other alternative measures. Among other things, this requires a sufficient amount of information on low-risk plant protection products and biological control methods. The Agricultural Board has compiled and distributed many fact sheets[65] for non-professional users.

4.2.1.4 Aerial spraying

Aerial spraying is prohibited in Estonia without any current or future exceptions.

4.2.1.5 Use of plant protection products on protected and conservation areas

Restrictions on the use of plant protection products in limited management zones of protected areas and on conservation areas are laid down in the Nature Conservation Act[66]. It is forbidden to carry out economic activities in conservation zones of protected areas. It is generally forbidden to use plant protection products or biocides in a limited management zone of a protected area. Exceptions are only allowed with a distinct provision in protection rules. It is forbidden to destroy or harm the hibernation sites or habitats of fauna, flora, and fungi in a special conservation area established to ensure their favourable state; it is forbidden to disturb the species under protection or carry out any other activities that are likely to endanger the favourable conservation status of the habitats and protected species. If the possessor of an immovable located on a special conservation area intends to use plant protection products, they have to submit a notice to the administrator of the limited conservation area. The notice should include the description, volume, and schedule of the planned work, along with a map of the area in which the work is to be performed, and it must be submitted to the administrative authority of the special conservation area at least one month before commencement of the work.

The ARIB carried out a compliance monitoring on protected and conservation areas in 2013–2017 and identified two violations (in 2015 and in 2016), where a plant protection product was used on a field in a special conservation or limited management zone where the use of such products was prohibited (Table 1).

Table 1. The results of the compliance inspections on protected and conservation areas in 2013–2017.

Year	Inspected applicants	Violations
2013	241	0
2014	219	0
2015	215	1
2016	193	1
2017	184	0

Source: ARIB

[65] Fact sheets for non-professional users of plant protection products on domestic plant protection 'Plant protection in your garden',' on chemicals 'Know the chemicals around you', and on relevant products 'Plant protection products – what to choose?' – Retrieved 12 October 2018.

[66] Nature Conservation Act (21 April 2004). Riigi Teataja. Retrieved 19 October 2018, https://www.riigiteataja.ee/en/eli/ee/515112018002/consolide/current

4.2.1.6 Means for protecting the aquatic environment

A goal of ensuring the good ecological state of surface water and the quality of water by 2015[67] was set with the EU Water Framework Directive (2000/60/EC)[68]. Directive 2013/39/EU establishes the limits of content of not only hazardous substances, but also some plant protection products in the water.

The methods for protecting the aquatic environment have been set on national level in the Water Act[69]. It is prohibited to use plant protection products at a range of less than 10 metres from the edge of springs or sinkholes (50 metres for nitrate sensitive areas). In order to protect water against diffuse pollution, water protection zones are formed on the banks of water bodies. The water protection zone for the Baltic Sea, Lake Peipus, Lake Lämmijärv, Lake Pskov, and Lake Võrtsjärv extends to 20 m; for other lakes, reservoirs, rivers, brooks, springs, main ditches, and channels, and for artificial recipients of land improvement systems, the figure is 10 m; and for artificial recipients of land improvement systems with a catchment area of less than 10 km^2, it is 1 metre. The general rule is that the use of plant protection products is permitted only for the purpose of clearing an outbreak site in the event of a plant disease or pest outbreak in the water protection zone, whereas the permission of the Environmental Board must be obtained on each separate occasion. An additional buffer zone may be set out for using plant protection products, and the need for this is identified while the Agricultural Board processes the authorisation for the relevant plant protection product.

Regulation No. 75 of the Minister of the Environment of 26 December 2009, entitled 'The procedure for forming bodies of groundwater and the list of bodies of groundwater that require a status class, the status classes of bodies of groundwater, the values of chemical indicators and conditions for quantitative indicators concerning the status classes of bodies of groundwater, the limit values for the quality of groundwater, and the procedure for establishing a status class for bodies of groundwater'[70] sets out to protect groundwater by assessing its state, and establishes the procedure for determining the status classes of groundwater in a manner that enables an efficient planning and implementation of water protection measures. Pursuant to the regulation, the limit values of pollutants are as follows:

Table 2. Limit values for pollutants that endanger the quality of groundwater

Active substances of pesticides, including their metabolites, and breakdown and reaction products*	0,1 0,5 µg/l (in total**)	µg/l

** Pesticides include plant protection products and biocides as referred to in Article 2 of Council Directive 91/414/EEC, concerning the placing of plant protection products on the market (OJ L 230, 19 August 1991, pp. 1–32), and Article 2 of*

[67] Extended until 2027.

[68] 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 (23 October 2000). EUR-Lex. Retrieved 19 October 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060

[69] The Water Act (11 May 1994). Riigi Teataja. Retrieved 19 October 2018, https://www.riigiteataja.ee/en/eli/ee/526022019001/consolide/current

[70] Regulation No. 75 of the Minister of the Environment of 26 December 2009, entitled 'The procedure for forming bodies of groundwater and the list of bodies of groundwater that require a status class, the status classes of bodies of groundwater, the values of chemical indicators and conditions for quantitative indicators concerning the status classes of bodies of groundwater, the limit values for the quality of ground water, and the procedure for establishing a status class for bodies of groundwater' (29 December 2009). Riigi Teataja. Retrieved 19 October 2018, https://www.riigiteataja.ee/akt/112072016002?leiaKehtiv

Directive 98/8/EC of the European Parliament and of the Council, concerning the placing of biocidal products on the market (OJ L 123, 24 April 1998, pp. 1–63).
*** 'In total' means all pesticides identified and quantified during monitoring, including the sum of their metabolites, and breakdown and reaction products.*

Regulation No. 77 of the Minister of the Environment of 30 December 2015, entitled 'List of priority substances and priority hazardous substances, limit values for the quality of priority substances, priority hazardous substances and other pollutants, relevant methods of application, limit values for the quality of pollutants that are specific to bodies of water, and the monitoring list of substances'[71] lays down the lists of priority substances and priority hazardous substances, limit values for the quality of priority substances, priority hazardous substances and other pollutants, and relevant methods of application to evaluate the chemical state of bodies of surface water. Among other things, the regulation specifies the limit values for pollutants in surface water that are specific to bodies of water, including 11 plant protection products (0,1 µg/l).

The limit value for residues of plant protection products in groundwater is 0,5 µg/l; the limit value for residues of plant protection products in surface water has not been specified.

In 2016–2017, the Estonian Environmental Research Centre conducted a study[72] ordered by the Ministry of the Environment to determine and map the occurrence and content of residues of plant protection products in bodies of groundwater and surface water that would represent the agricultural burden of all counties. The limit values used to interpret the study results were from the aforementioned regulations of the Minister of the Environment.

A total of 137 samples were collected; residues were detected in 39 sampling points, identifying residues from 49 substances. Residues of chloridazon-desphenyl, AMPA, glyphosate, metazachlor, and tebuconazole were of highest occurrence. The origin of chloridazon-desphenyl is unclear, because no plant protection products authorised or sold on the Estonian market contain chloridazon, whereas it was allowed on the European market under Commission Implementing Regulation (EU) No. 540/2011 until 31 December 2018. The origin and cause for the occurrence of chloridazon-desphenyl must be additionally studied.

The authors of the study state that the negative impact of plant protection products on the quality of water cannot be minimised only by restricting their use: we must also consider the wider geomorphology (including protection, inclination, and texture of surface water) for agricultural as well as non-agricultural use of plant protection products. They also believe that the limits currently in force with the Water Act are sufficient to minimise agricultural pollution, but we must ensure that they are followed.

[71] Regulation No. 77 of the Minister of the Environment of 30 December 2015, entitled 'List of priority substances and priority hazardous substances, limit values for the quality of priority substances, priority hazardous substances and other pollutants, relevant methods of application, limit values for the quality of pollutants that are specific to bodies of water, and the monitoring list of substances' (30 December 2015). Riigi Teataja. Retrieved 19 October 2018, https://www.riigiteataja.ee/akt/108012016010?leiaKehtiv

[72] 'The content and Dynamics of plant protection products in surface water and groundwater' study (2018). EERC. Retrieved 19 October 2018, https://www.envir.ee/sites/default/files/taimekaitsevahendite_jaakide_sisalduse_ja_dunaamika_uuring_pinna-_ja_pohjavees_2018.pdf

4.2.1.7 Supervision

National supervision is the responsibility of the Agricultural Board and the Veterinary and Food Board.

The multiannual inspection plans of the Agricultural Board involve supervision of plant protection products in retail and wholesale stores. Samples are collected from plant protection products on the market, and their compliance with requirements is analysed upon necessity. Farmers and other final users are also inspected. As of 2014, the Agricultural Board has based the inspection of the use of plant protection products on the actual situation. A relevant measure is the monitoring of plant protection activities on active periods, determining if plant protection operations comply with requirements. Inspection is conducted on active periods (weed management and flea beetle management on rapeseed in May–June; plant protection operations on flourishing flora in July; the use of glyphosate on early mornings and late nights in September–October). Overviews on the supervision and proceedings of previous years is available in the action plan reports of the Agricultural Board[73].

In the last five years, the AB has conducted nearly 1,000 inspections a year on average, regarding the distribution and use of plant protection products. The proportion of violations of that period remained between 1% and 4.8%, while in 2017, the proportion of violations was 3%[74]. Primary violations in marketing have been as follows:

- defective labelling or misinformation on labelling;
- seller at a distribution spot without a plant protection certificate;
- false information about a distribution spot in the register;
- selling plant protection products with expired labels;
- selling plant protection products that are not allowed on the market.

Primary violations regarding use are incorrect filling of the field book, spraying flourishing plants, spraying in strong wind, using plant protection products on plants that are not cleared for use, and absence of a plant protection certificate.

The objective of the national monitoring programme of the residues of plant protection products is to avoid the excessive occurrence of the residues in food. For the purpose of avoiding potential risks, the EU has established maximum residue levels for plant protection products, available in the EU database of plant protection product residues[75]. Samples are collected by the principle of random choice, focussing mostly on products that have previously tested positive for residues of plant protection products or that are included in the Food and Feed Safety Alerts (RASFF) system. An additional focus is on widely used products in Estonia.

[73] Website of the Agricultural Board, yearly reports on action plans. Retrieved 4 April 2019 https://www.pma.agri.ee/index.php?id=102&sub=973

[74] An overview on the 'Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017' (2018). Retrieved 12 October 2018, https://www.agri.ee/sites/default/files/content/arengukavad/tegevuskava-taimekaitsevahendid-2013-ulevaade-2018.pdf

[75] The European Union database for plant protection residues. Retrieved 12 October 2018, http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=pesticide.residue.selection&language=EN

According to the data by the VFB[76], 52% of all samples collected from Estonian food in 2007–2014 did not contain residues of plant protection products. 46.6% of samples contained residues below maximum limit, and 1.6% above maximum limit. In 2016, no samples collected from Estonian food revealed violations[77]. In comparison, the 2016 overview of the European Food Safety Authority entitled 'The 2016 European Union report on pesticide residues in food'[78], analysing over 12,000 samples for 165 active substances, revealed that 46% of samples contained residues of plant protection products within the allowed limits, but 1.7% of samples exceeded the limits.

In 2017, the VFB analysed 334 samples for over 400 different plant protection product residues[79]. The proportion of samples from Estonian-origin food was 64% (214 items). There were a total of three (0.9%) samples that did not comply with the requirements and contained residues from at least one plant protection product above the maximum limit, one of which (0.47%) was of Estonian origin (a tomato that contained residues of tau-fluvalinate above the maximum limit).

4.2.1.8 Shortcomings

- Improper use of plant protection products.
- Plant protection products impacting non-target organisms; occurrence of residues of plant protection products (especially AMPA and chloridazon-desphenyl) in surface water and groundwater above maximum limits.
- Digital services that advise on plant protection are not developed or accessible enough.
- Knowledge on IPP needs constant updating; the principles of IPP are not applied to a sufficient extent, for example, in domestic gardens.
- Lack of efficient methods to assess the implementation of IPP.

4.2.2 Objectives

THE RISKS TO HEALTH AND THE ENVIRONMENT FROM THE USE OF PLANT PROTECTION PRODUCTS HAVE DECREASED. THE COMPLIANT USE OF PLANT PROTECTION PRODUCTS AND AN EFFICIENT SUPERVISION IS ENSURED. THE IMPLEMENTATION OF IPP PRINCIPLES IS EXPANDED.

[76] The level of residues of plant protection products in food: a summary of 2007–2014. (2015). VFB. Retrieved 12 October 2018, https://vet.agri.ee/static/files/1680.TKVJ%20toidus%202007%20-%202014%20seire%20tulemused_2016.pdf

[77] 'Most food consumed in Europe does not contain residues of active substances of pesticides', a blog post (10 August 2018). Maablogi. Retrieved 12 October 2018, https://maablogi.wordpress.com/2018/08/10/enamik-euroopas-tarbitavast-toidust-ei-sisalda-pestitsiidide-toimeainete-jaake/

[78] 'The 2016 European Union report on pesticide residues in food', an overview by the European Food Safety Authority (21 June 2018). EFSA. Retrieved 12 October 2018, https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2018.5348

[79] 'Samples collected during inspection from distributed, imported, and domestic fruit, vegetables and cereals, and baby and child food in 2017, to search for residues of plant protection products,' a report by the Veterinary and Food Board (23 April 2018). VFB. Retrieved 12 October 2018, https://vet.agri.ee/static/files/2138.TKVJ%202017.a%20proovide%20koondaruanne.pdf

4.2.2.1 Indicators

Indicator	Initial level	Target level (2023)
Proportion of violations on the use of plant protection products detected in the inspections (%) (%) *Source: AB*	3.9%[80]	Maintaining the proportion of violations under 5%
Compliance with the IPP principles *Source: AB*	100% of professional users of plant protection products apply IPP[81]	95% of professional users of plant protection products apply IPP[82]

* Additional explanations on developing the target levels of indicators are available in Annex 2.

4.2.3 Activities for 2019–2023

1. Enhancing the safe and optimal use of plant protection products: developing safer ways for biological management and the use of plant protection products, analysing the measures for encouraging the use of biological preparations and low-risk active substances.
2. Developing a strategy for restricting the use of active substances of particular concern[83] (e.g. glyphosate): finding different alternatives and directing their use through environmental measures.
3. Updating and spreading instructions for the sustainable use of plant protection products (including management criteria based on the threshold values of pests and practical information regarding IPP).
4. Developing digital solutions that support sustainable plant protection.
5. Improving supervision: conducting more unannounced inspections, developing the capabilities of ARC laboratories for analysing residues and pollutants, increasing the number of samples to determine the content of plant protection product residues, improving cooperation between supervisory authorities.
6. Analysing the measures for reducing the risks of the use of plant protection products on aquatic environment protection; reviewing the maximum limits of plant protection product residues in surface water.
7. Encouraging agricultural practices that reduce the negative impact of plant protection products on the environment, e.g. with the measures specified in the CAP strategy.
8. Encouraging organic production, most importantly in regions with active agriculture, e.g. with the measures of organic production specified in the CAP strategy.
9. Conducting scientific research on the impact of using plant protection products.
10. Collecting statistical data on the use of plant protection products, including separately for agricultural and non-agricultural use.
11. Developing systems for alerting and prognosing pest spreading.
12. Developing and implementing a system for controlling the implementation of IPP.
13. Solving the needs of plant protection for rare crop or crop with a limited growth area.

[80] Recently, a more precise method for calculating the indicators was applied, which is why the initial level on this indicator cannot be based on the average level of the last five years, unlike for general indicators.

[81] Regarding compliance with the IPP principles, the initial level is based on the average level of 2014–2018.

[82] The target level of IPP principles is 95%, because a more precise method is developed, which is expected to make the inspection more accurate.

[83] Active substances used in large quantities or having higher risks to the environment or health.

5 Area of activity III: equipment and relevant inspection

5.1 Current situation

It is important to conduct plant protection operations pursuant to the current limits of use and without damaging areas that are not part of the target group. In order to achieve the maximum impact of plant protection products and minimise the risks to human health and the environment, it is important to ensure that plant protection equipment is in order.

Pursuant to Directive 2009/128/EC, Member States are obligated to establish a technical inspection system for plant protection equipment in professional use. The first obligatory inspections had to be carried out for plant protection equipment in professional use by 26 November 2016 at the latest. As of this date, professional users of plant protection products are not allowed to use uninspected equipment. Member States can make exceptions in inspection intervals for specific types of equipment and may exclude manual or knapsack sprayers from the inspection obligation.

Plant protection equipment in use must be inspected every three years, with one exception: manual and knapsack sprayers do not need to be inspected, seed dressing and nebuliser machines are to be inspected with longer intervals (five years)[84]. The reason for excluding manual sprayers from the obligation of inspection is that most of them are up to two years old and, thus, not subject to inspection pursuant to the intervals currently in force. Finding spare parts for these devices is also problematic. Regarding the management of health and environmental risks, responsibilities lay on the user and individual regular inspection on the device, along with the necessary fix.

The technical inspection system for plant protection equipment has been implemented in Estonia as of 2000. The new procedure for testing, reviewing, and inspecting plant protection equipment that is currently in force was established with a regulation of the Minister of Agriculture of 29 April 2005[85]. Technical inspection on plant protection equipment may be carried out by a natural person or legal person governed by private law who has been properly authorised under the order established in the Plant Protection Act. Authorisation is granted by the Agricultural Board. Additional technical inspections and relevant complementary trainings are organised by ECRI. The list of persons authorised to conduct technical inspections is available on the website of the Agricultural Board[86]. As at 2018, 11 enterprises and 18 persons conducted the technical inspection.

The current technical inspection on plant protection equipment is conducted in compliance with standard EVS-EN 13790-1:2005: Agricultural Machinery. Sprayers. Inspection of Sprayers in use (parts 1 and 2), which were revoked as of 2 April 2015. These were replaced by other standards, effectuated as Estonian standards in English:

- EVS-EN ISO 16122-1:2015. Agricultural and forestry machinery. Inspection of sprayers in use. Part 1: General;

[84] Section 87 of the Plant Protection Act (21 April 2004). Riigi Teataja. Retrieved 6 November 2018, https://www.riigiteataja.ee/en/eli/ee/529032019015/consolide/current

[85] Regulation of the Minister of Agriculture, entitled 'The procedure for regular inspections of plant protection equipment' (29.04.2005). Riigi Teataja. Retrieved 6 November 2018, https://www.riigiteataja.ee/akt/13243297?leiaKehtiv

[86] Enterprises and people authorised to perform the technical inspection of plant protection equipment. Retrieved 6 November 2018, https://www.pma.agri.ee/index.php?id=104&sub=132&sub2=249

- EVS-EN ISO 16122-2:2015. Agricultural and forestry machinery. Inspection of sprayers in use. Part 2: Horizontal boom sprayers;
- EVS-EN ISO 16122-3:2015. Agricultural and forestry machinery. Inspection of sprayers in use. Part 3: Sprayers for bush and tree crops;
- EVS-EN ISO 16122-4:2015. Agricultural and forestry machines. Inspection of sprayers in use. Part 4: Fixed and semi-mobile sprayers.

These standards only concern regular sprayers (boom sprayers). The European Commission authorised the European Committee for Standardisation (CEN) to establish the necessary standards for other types of equipment as well, for example, nebuliser machines, but relevant inspection standards are still absent.

The EU legislation does not require training for technical inspectors, but such requirement is in force in Estonia at a national level. This requirement is necessary to ensure the availability of high-quality inspection. A total of 36 persons have undergone training and obtained certification in 2001–2015. Training materials are compiled for technical inspection, but their updating is an ongoing process.

Directive 2009/128/EC encourages Member States to acknowledge technical inspections conducted in other Member States (if they comply with local intervals and other conditions), but there are no precise instructions. Currently, inspections conducted in other Member States cannot be legally recognised. Although these are single cases, their legal regulation requires additional analysis.

In 2016, ECRI compiled an analysis for the inspection system of plant protection equipment, revealing that 3,183 technical inspections were conducted on plant protection sprayers in 2001–2015 (Figure 8). As of 2005, the number of sprayers inspected yearly (with three-year periods of rising and falling) has remained around 270, on average. According to ECRI, there are nearly 800 sprayers of over three years old in Estonia, whereas the total number of plant protection sprayers is approximately 1,100–1,200.

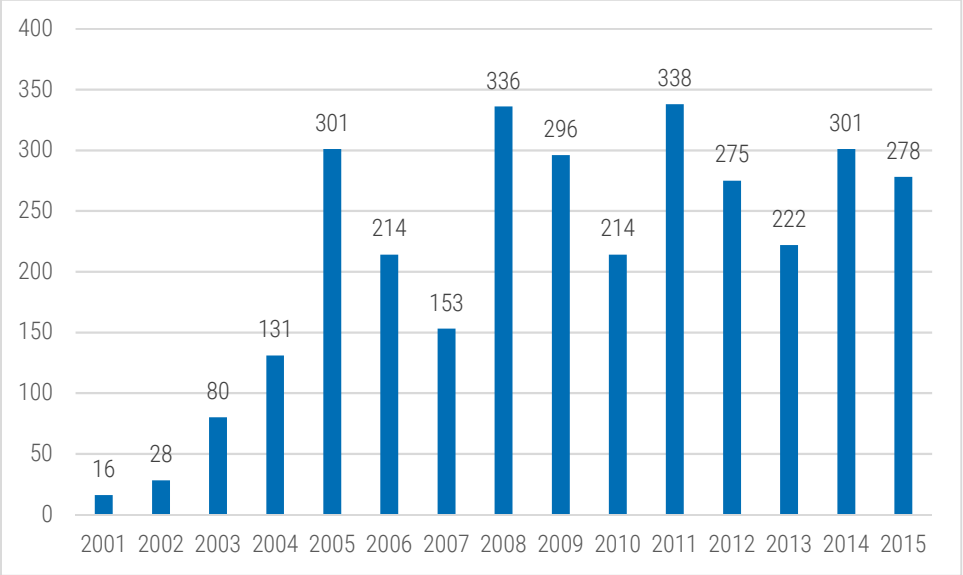

Figure 8. Number of inspected plant protection devices in 2001 – 2015.

Source: ECRI

88.3% of devices were recognised as in order or containing insignificant deficiencies (Table 3). The proportion has remained stable over the years, although the compilers of the study noted that the people who performed the technical inspection as well as plant protection inspectors have detected an improvement in the technical state of the equipment. 9.7% of devices contained deficiencies that needed fixing and 2% of the inspected devices require re-inspection.

Table 3. The state of plant protection equipment, 2001–2015.

Indicator	Number	%
Sprayers in order or with insignificant deficiencies	2,810	88.3
Sprayers with deficiencies that require fixing	309	9.7
Sprayers that require re-inspection	64	2.0
Total	3,183	100

Source: ECRI

Detected deficiencies were mainly related to the technical state of nozzles, booms, pipes, and hoses. According to the compiler of the study, the current system and procedures for technical inspection should stay in force but be adjusted to the requirements of the new standards that are in force as of April of 2015.

5.1.1 Shortcomings

- The procedure for the technical inspection of plant protection equipment is out of date.

5.2 Objectives

A MODERN TECHNICAL INSPECTION FOR PLANT PROTECTION EQUIPMENT IS ENSURED.

5.2.1 Indicators

Indicator	Initial level (average of 2014–2018)	Target level (2023)
Instructions for the use on uninspected plant protection equipment (proportion of the instructions in the conducted inspections, %) *Source: AB*	1.6%	Maintaining the proportion of instructions on the use of uninspected plant protection equipment under 5%

* Additional explanations on developing the target levels of indicators are available in Annex 2.

5.3 Activities for 2019–2023

1. Improving and updating the system for the technical inspection of plant protection equipment and updating the procedure for technical inspection; adjusting the system to current standards.
2. Offering constant complementary training for the conductors of technical inspection, updating unified training materials.
3. Finding an opportunity to provide the conductors of technical inspection with the necessary modern measuring equipment, e.g. by applying the measures in the CAP strategy
4. Analysing the possibilities for mutually recognising the technical inspection conducted in another Member State.

6 Applying the Action Plan and assessing the achievement of objectives

Monitoring the implementation of the Action Plan, planning activities, and achieving objectives is the responsibility of a committee assembled by the Ministry of Rural Affairs, containing representatives of organisations and enterprises of the field. The committee has an advisory role.

The committee meets at least twice a year to overview the activities carried out for applying the Action Plan (an overview on applying the Action Plan) and makes suggestions for planning other activities. The committee follows the achievement of the objectives and makes suggestions to complement or amend the Action Plan based on the established indicators.

6.1 Main assignments of the committee and the organisation of work

- The committee meets at least twice a year.
- The committee makes suggestions for applying specific activities for a relevant year.
- The committee monitors the implementation of the Action Plan and the achievement of objectives and makes relevant suggestions for amending the Action Plan.
- The committee makes suggestions to organise studies and collect data that is necessary to assess the implementation of the Action Plan.
- The operations of the committee are organised and meetings led by the Chairman. When the Chairman is absent, their duties are performed by the Vice Chairman or an authorised representative.
- The form of work of the committee is a meeting or, if necessary, carrying out a written procedure (via e-mail).
- The Chairman of the committee has the right to involve representatives of relevant organisations and establishments in the meeting; a relevant and reasoned suggestion may be submitted by any member of the committee.

For the purpose of achieving the objectives, resources are separated from the operational expenditures of the Ministry of Rural Affairs every year according to the possibilities of the state budget; it is also possible to use the resources from various supportive measures (the CAP strategy). Many operations for achieving the objectives may be carried out administratively while performing routine work assignments without additional costs.

Annex 1. General overview on the activities of the Action Plan

Area of activity	Sub-domain	Activities
I: raising awareness, training, and counselling	3.1.3. Raising awareness *Objective: balanced information on the safe use of plant protection products as well as relevant health and environmental risks is available for the general public.*	3.1.3.1. Developing a long-term communication plan to raise awareness on plant protection, informing the general public on the use of plant protection products and relevant risks, circumstances for plant protection, and their impact on human health and the environment.
		3.1.3.2. Improving awareness of the IPP, including non-chemical alternatives for pest management.
		3.1.3.3. Constantly publishing and updating information on plant protection (including updating the websites of the Ministry of Rural Affairs, the AB, ECRI, ARC, and RDF), including the process and achievements of the Action Plan for the Sustainable Use of Plant Protection Products.
		3.1.3.4. Informing local governments on the possibilities to regulate the use of plant protection products at a local level (including joining the network of pesticide-free towns and regions).
		3.1.3.5. Conducting a thorough study on the awareness of the general public on plant protection, including professional and non-professional users.
	3.2.3. Training and counselling *Objective: distributors, professional users, and advisors of plant protection products gave undergone plant protection trainings that are up to date and at an even level. The availability of counselling on the sustainable use of plant protection products is ensured.*	3.2.3.1. Updating the competence of plant protection training organisers, including renewing and updating the study materials that are necessary for organising plant protection trainings.
		3.2.3.2. Determining the precise need for training and using the information to organise regular trainings for distributors, professional users, and advisors of plant protection products.
		3.2.3.3. Ensuring the availability of independent advising services (the basis for developing a counselling service).
		3.2.3.4. Analysing the possibilities for online training for non-professional users and developing a system, if necessary.
II: marketing and sustainable use of plant protection products	4.1.3. Marketing plant protection products *Objective: guaranteed control over the quality and safety of distributed plant protection products and prevention of the availability of unauthorised plant protection products on the market.*	4.1.3.1. Assessing and ascertaining the risk level of plant protection products authorised in Estonia.
		4.1.3.2. Following up on the conditions laid down in the authorisations of plant protection products (re-evaluating the labels of plant protection products).
		4.1.3.3. Encouraging the registration of biological preparations and active substances with a low risk level.
		4.1.3.4. Analysing the necessity for limiting the wholesale of plant protection products for non-professional users.
		4.1.3.5. Developing cooperation between supervisory authorities.
		4.1.3.6. Raising the awareness of sellers and distributors of plant protection products on the amendments made to plant protection products currently on the market.

Area of activity	Sub-domain	Activities
		4.1.3.7. Disclosing information to prevent the dangers that accompany the distribution of illegal or falsified plant protection products and e-commerce.
	4.2.3. Sustainable use of plant protection products *Objective: the risks to health and the environment from the use of plant protection products have decreased. The compliant use of plant protection products and an efficient supervision is ensured. The implementation of IPP principles is expanded.*	**4.2.3.1.** Enhancing a safe and optimal use of plant protection products: developing safer ways for biological management and the use of plant protection products, analysing the measures for encouraging the use of biological preparations and low-risk active substances.
		4.2.3.2. Developing a strategy for restricting the use of active substances of particular concern (e.g. glyphosate): finding different alternatives and directing their use through environmental measures.
		4.2.3.3. Updating and spreading instructions for the sustainable use of plant protection products (including management criteria based on the threshold values of pest management and practical information regarding IPP).
		4.2.3.4. Developing digital solutions that support sustainable plant protection.
		4.2.3.5. Improving supervision: conducting more unannounced inspections, developing the capabilities of ARC laboratories for analysing residues and pollutants, increasing the number of samples to determine the content of plant protection product residues, improving cooperation between supervisory authorities.
		4.2.3.6. Analysing the measures for reducing the risks of the use of plant protection products on aquatic environment protection; reviewing the maximum limits of plant protection product residues in surface water.
		4.2.3.7. Encouraging agricultural practices that reduce the negative impact of plant protection products on the environment, e.g. with the measures specified in the CAP strategy.
		4.2.3.8. Encouraging organic production, most importantly in regions with active agriculture, e.g. with the measures of organic production specified in the common agricultural policy strategy.
		4.2.3.9. Conducting scientific research on the impacts of using plant protection products.
		4.2.3.10. Collecting statistical data on the use of plant protection products, including separately for agricultural and non-agricultural use.
		4.2.3.11 Developing systems for alerting and prognosing pest spreading.
		4.2.3.12. Developing and implementing a system for controlling the implementation of IPP.
		4.2.3.13. Solving the needs of plant protection for rare crops or crops with limited growth area.

Area of activity	Sub-domain		Activities
III: plant protection equipment and relevant inspection *Objective: ensuring a modern technical inspection for plant protection equipment.*		–	**5.3.3.1.** Improving and updating the system for the technical inspection of plant protection equipment and updating the procedure for technical inspection; adjusting the system to current standards.
			5.3.3.2. Offering constant complementary training for the conductors of technical inspection, updating unified training materials.
			5.3.3.3. Finding an opportunity to provide the conductors of technical inspection with the necessary modern measuring equipment, e.g. by applying the measures in the CAP strategy.
			5.3.3.4. Analysing the possibilities for mutually recognising the technical inspection conducted in another Member State.

Annex 2. Indicators for assessing the objectives of the Action Plan[87]

Objective	Indicator	Initial level	Target level (2023)
General objective: reduce the risks of using plant protection products on health and the environment	Proportion of groundwater monitoring stations in NSAs that exceed pesticide residue limits (%) *Source: Environment Agency*[88]	19.7%	Maintaining the proportion of groundwater monitoring stations that have exceeded the limits under 10%.
	Proportion of samples that have exceeded the limits of residues of plant protection products in food of Estonian origin (%) *Source: VFB/AB*[89]	0.5%	Maintaining the proportion of samples taken from food of Estonian origin that have exceeded the limits under 1%
	Content of residues of plant protection products in soil (average number of residues of active substances in a sample) *Source: ARC*[90]	4.7 different active substances	Maintaining the average number of residues of active substances in a sample under 5
	Number of occupational accidents and diseases in crop production institutions *Source: LI*	0	Preventing all occupational accidents and diseases
Sub-domain: marketing plant protection products Guaranteed control over the quality and safety of distributed plant protection products and prevention of the availability of unauthorised plant protection products on the market.	The proportion of violations in the distribution of plant protection products (%) *Source: AB*	4.2%	Maintaining the proportion of violations under 5%

[87] Indicators are not established for raising awareness, training, and counselling because these are supportive fields whose impact is evident in the indicators of other areas.

[88] The data are submitted by the Environment Agency and calculated with the measures provided by national environmental monitoring.

[89] Studies on pollutants in food. VFB. Retrieved 9 April 2019, https://vet.agri.ee/?op=body&id=819

[90] Study reports on assessing the Estonian Rural Development Plan – http://pmk.agri.ee/mak/aruanded-2014-2020/

Objective	Indicator	Initial level	Target level (2023)
Sub-domain: sustainable use of plant protection products The risks to health and the environment from the use of plant protection products have decreased. The compliant use of plant protection products and an efficient supervision is ensured. The implementation of IPP principles is expanded.	Proportion of violations on the use of plant protection products detected in the inspections (%) *Source: AB*	3.9%	Maintaining the proportion of violations under 5%
	Compliance with the IPP principles *Source: AB*	100%	95% of professional users of plant protection products apply IPP[91]
Sub-domain: plant protection equipment and relevant inspection Ensuring a modern technical inspection for plant protection products.	Instructions for the use of uninspected plant protection equipment (proportion of the instructions in the conducted inspections, %) *Source: AB*	1.6%	Maintaining the proportion of instructions on the use of uninspected plant protection equipment under 5%

It is important to remember that a fluctuation of the indicators within three or four percentage points shows neither an improvement nor worsening. For example, an interval between 2% and 5% of the equipment inspection indicator (depending on the number of devices inspected on a relevant year) only involves three to four plant protection devices. In essence, adding or reducing the violations in such a small amount does not reflect on the efficiency of the activities in the area. For that reason, the target level of some indicators exceeds the initial level, expressing the efficiency of the planned activities and a possible necessity for planning additional activities that would improve the situation.

Recently, a more precise method for calculating the indicators for 'proportion of violations in the distribution of plant protection products' and 'proportion for violations on the use of plant protection products' was applied, which is why the initial level on this indicator cannot be based on the average level of the last five years, unlike for other indicators. The initial level of these indicators is the average for 2017–2018.

[91] The target level of IPP principles is 95%, because a more precise method is developed, which is expected to make the inspection more accurate.