# MINISTER FOR AGRICULTURE

# ORDER

Tallinn 28 February 2013, No. 57

**Approval of the Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017 and of its implementation plan**

This Order is 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 2013–2017' (Annex 1) and its implementation plan (Annex 2).

2. To publish the 'Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017' and its implementation plan on the website of the Ministry.

Distribution: Secretary General, deputy secretaries general, departments, the Agricultural Board, the Veterinary and Food Board, the Estonian Research Institute of Agriculture, Jõgeva Plant Breeding Institute, the Estonian University of Life Sciences and the Rural Economy Research Centre.

Helir-Valdor Seeder

Annex 1 to the Order No. 57 of the Minister for Agriculture of 28 February 2013, ‘Approval of the Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017’and of its implementation plan

# ACTION PLAN FOR THE SUSTAINABLE USE OF PLANT PROTECTION PRODUCTS FOR 2013–2017

## Contents

# Introduction

With Decision No 1600/2002/EC of 22 July 2002 (hereinafter '1600/2002/EC'), the European Parliament and the Council laid down the Sixth Community Environment Action Programme, which focuses in particular on climate change, nature and biodiversity, the environment, health, quality of life, natural resources and wastes. With the action programme, the European Commission (hereafter 'the Commission') was obligated to develop thematic strategies for every area in consultation with nongovernmental organisations, industry, other social partners and public authorities. In accordance with Article 7(1) of Decision 1600/2002/EC, the overall objective of the thematic strategy on the sustainable use of pesticides is to reduce the impacts of pesticides on human health and the environment and more generally to achieve a more sustainable use of pesticides as well as a significant overall reduction in risks and of the use of pesticides consistent with the necessary level of pest management.

In the course of preparing the thematic strategy and the impact assessment, the Commission identified the main shortcoming in the European Union's (hereinafter 'the EU') legislation and policy, which is the legal loophole in the usage stage. Based on the findings from assessing the impacts of the thematic strategy on pesticides, it was found that the enforcement of new legal acts would be the most effective way of implementing the measures of the strategy. Although the term 'pesticides' has recurrently been used in the thematic strategy, the Commission initially focused only on plant protection products in its draft legislative acts by postponing the amendments concerning biocides to a later period. The package on plant protection products consisted of four draft legislative acts, which were passed 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 (hereinafter 'Regulation 1107/2009');
- Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides (hereinafter 'Directive 2009/128/EC');
- Directive 2009/127/EC of the European Parliament and of the Council of 21 October 2009 amending Directive 2006/42/EC with regard to machinery for pesticide application; and

- Regulation (EC) No 1185/2009 of the European Parliament and of the Council of 25 November 2009 concerning statistics on pesticides.

In accordance with Article 4(1) of Directive 2009/128/EC, the Member States have the obligation to adopt National Action Plans, which can also be regarded as one of the important measures of the thematic strategy on pesticides.

The European Union protects the quality of food with the help of several measures, including the rules concerning the assessment and approval of active substances contained in plant protection products and the placing of plant protection products on the market (Regulation 1107/2009) as well as the rules concerning the use of plant protection products (Directive 2009/128/EC). The European agricultural sector introduces ever safer and more environment-friendly production methods and through this it offers consumers quality products that meet their needs. This is in line with the expectations of European consumers that their food be safe and healthy.

## Objectives of the action plan

The action plan is prepared pursuant to Section $79^3$(3) of the Plant Protection Act. The act stipulates that the Ministry of Agriculture shall 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 to and effect on human health and the environment arising from the use of plant protection products and the timetable of implementation of the measures, whose plan supports the drafting of the principles of integrated plant protection and other measures, in order to reduce the dependency on the use of plant protection products.

With the approval of the action plan, Directive 2009/128/EC will be fully transposed into Estonian Law. According to recital (5) of the preamble of Directive 2009/128/EC, the Member States should employ National Action Plans for facilitating the implementation of the directive aimed at setting quantitative objectives, targets, measures, timetables and indicators to reduce the risks to and impact on human health and the environment of pesticide use and at encouraging the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of pesticides. Member States should also 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.

According to recital (13) of the preamble, Member States should describe in their National Action Plans how they will ensure the implementation of the requirements set forth in Directive 2006/42/EC of the European Parliament and of the Council, which provide for systems for the regular technical inspection of pesticide application equipment already in use in order to further minimise the adverse impacts of pesticides on human health and the environment caused by such equipment.

In accordance with recital (19) of the preamble, Member States should describe in their National Action Plan how they will ensure the implementation of the principles of integrated pest management, with priority given wherever possible to non-chemical methods of plant protection and pest and crop management pursuant to Regulation (EC) No 1107/2009 and of this Directive.

The requirements as to National Action Plans are set forth in Article 4 of the Directive.

According to subsection (1) of the article, Member States shall define in their National Action Plans quantitative objectives, targets, measures and timetables to reduce the risks to and impacts on human health and the environment of pesticide use and to encourage the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of pesticides. These targets may cover different areas of concern, for example worker protection, protection of the environment, residues, use of specific techniques or use on specific crops.

National Action Plans shall also include indicators to monitor the use of plant protection products containing active substances of particular concern, especially if alternatives are available. Member States shall give particular attention to the plant protection products containing active substances approved in accordance with Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant products on the market which, when subject to renewal of approval under Regulation (EC) No 1107/2009 will not fulfil the criteria relevant for approval laid down in Annex II, points 3.6 to 3.8 of that Regulation.

On the basis of such indicators and taking into account where applicable the risk or use reduction targets achieved already prior to the application of this Directive, timetables and

targets for the reduction of use shall also be established, in particular if the reduction of use constitutes an appropriate means to achieve risk reduction with regard to priority items identified under Article 15(2)(c). These targets may be intermediate or final. Member States shall use all necessary means designed to achieve these targets.

When drawing up and revising their National Action Plans, Member States shall take account of the health, social, economic and environmental impacts of the measures envisaged, of specific national, regional and local conditions and all relevant stakeholder groups. Member States shall describe in their National Action Plans how they will implement measures pursuant to Articles 5 to 15 in order to achieve the objectives referred to in the first subparagraph of this paragraph.

National Action Plans shall take into account plans under other Community legislation on the use of pesticides, such as planned measures under Directive 2000/60/EC.

In addition to the above, based on Article 8(3)(a) of the Directive, National Action Plans should list pesticide application equipment not used for spraying pesticides, handheld pesticide application equipment or knapsack sprayers and additional pesticide application equipment that represent a very low scale of use and to which different timetables and inspection intervals can be applied.

Article 10 further sets out that Member States may include in their National Action Plans provisions on informing persons who could be exposed to the spray drift.

The directive also stipulates the timetable for the implementation of the directive. According to Article 14(4), Member States shall describe in their National Action Plans how they ensure that the general principles of integrated pest management as set out in Annex III are implemented by all professional users by 1 January 2014.

Subsection (5) stipulates the obligation of Member States to establish appropriate incentives to encourage professional users to implement crop or sector-specific guidelines for integrated pest management on a voluntary basis. In addition to public authorities, such guidelines may be also drawn up by organisations representing particular professional users. Member States shall refer to those guidelines that they consider relevant and appropriate in their National Action Plans.

Based on the legal acts set out above, the general objective of the action plan for the sustainable use of plant protection products (hereinafter 'the action plan') is to reduce the risks to human health and the environment associated with the use of plant protection products.

The achievement of the general objective of the action plan is supported by three areas of activity, which address awareness-raising, the practices and techniques of using plant protection products and plant protection equipment. These areas of activity have been divided into sub-domains as follows:

1. Awareness
    - 1.1 Training
    - 1.2 Advice
    - 1.3 Raising public awareness
2. Plant protection
    - 2.1 The sustainable use of plant protection products
    - 2.2 Integrated pest management
3. Equipment
    - 3.1 Inspection of plant protection equipment

The measures necessary for the achievement of the objectives listed above and the actions for 2013–2017 have been envisaged in the implementation plan of the action plan. The five year term of the action plan has been established in accordance with Article 4(2) of Directive 2009/128/EC, which stipulates that National Action Plans shall be reviewed at least every five years. Measures and activities have *inter alia* been planned in order to better legally support regulated activities and further develop the same. The measures and activities of the implementation plan of the action plan were envisaged based on the shortcomings referred to in the descriptions of the current state of sub-domains and the findings of relevant studies ordered by the Ministry of Agriculture.

## Consistency with other documents concerning development

The objectives of the action plan are mainly related to the following national development and actions plans and other strategic documents:

***National Spatial Plan 'Estonia 2030+'***

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'.

The Ministry of Agriculture

• *Estonian Rural Development Plan and Strategy 2007–2013, 2014–2020 (under development)*

The 'Estonian Rural Development Plan and Strategy 2007–2013' is targeted at improving the quality of life in Estonia, including the countryside and rural areas. The development plan takes into account the specifics of rural life in Estonia. In the frame of supporting the agricultural environment, greener production techniques, including pest management are being promoted.

• *The Development Plan of the Administrative Area of the Ministry of Agriculture for 2013–2016*

Under the measure of the development and improvement of monitoring, food safety will be ensured and one of its prerequisites is an effectively functioning monitoring system of plant protection products. The regular updating of necessary data sets will be ensured, based on which risk analysis and appropriate decisions will be made. Within the measure of improving the availability and the quality of information, consumers will be informed of the indicative standards.

• *The Development Plan of Organic Farming in Estonia 2007–2013, 2014–2020 (under development)*

The actions implemented under the 'Development Plan of Organic Farming in Estonia' are *inter alia* targeted at the improvement of the competitiveness of organic farming through green management. The directive on the sustainable use of plant protection products requires that Member States promote farming systems with low input of plant protection products, including organic farming. The 'Action Plan for the Sustainable Use of Plant Protection Products' will first and foremost contribute to the promotion of farming systems with low input of plant protection products.

• *The Development Plan for Agricultural Science 2007–2013*

'The Development Plan for Agricultural Science' will focus on improvement to the quality of life and on the ensuring of the sustainability of the environment through the development of agricultural science and the application of research. Broader objectives include *inter alia* the

production of competitive food and feeding stuffs, the assurance of food safety and quality, the development of rural life and the improvement of the living environment. The sub-domains covered by the action plan for the sustainable use of plant protection products will also focus on the improvement of the living environment and on the assurance of food safety and quality.

- *The Development Plan for the Seed Management in Estonia (under development)*

One objective of 'The Development Plan for Seed Management in Estonia', which is presently being developed, is to increase the relative importance of the use of both certified seeds and propagating material and the varieties that are suitable for the conditions in Estonia and resistant to the pests who spread here. This principle belongs to the general principles of integrated pest management (hereinafter IPM) and the actions related to IPM will be planned for in the 'Action Plan for the Sustainable Use of Plant Protection Products'.

The Ministry of the Environment

- *The Estonian National Strategy on Sustainable Development 'Sustainable Estonia 21'*

Sustainable development is the longstanding coherent and harmonised development of the social, economic and environmental spheres, aimed at providing a high quality of life and a safe and clean living environment for human beings presently and in the future. The measures described in the 'Action Plan for the Sustainable Use of Plant Protection Products' for the reduction of risks associated with the use of plant protection products are indirectly related to the achievement of the same objectives.

- *Estonian Environmental Strategy 2030*

The environmental strategy for 2030 defines long term developments for the maintenance of the good condition of the entire living environment. The good condition of the living environment is also an objective of the 'Action Plan for the Sustainable Use of Plant Protection Products', as the activities planned under the action plan are in principle targeted at the improvement of the condition of the living environment.

The Ministry of Social Affairs

- *The National Cancer Strategy for 2007–2015*

The measure of the sub-area of the strategy contributes to the achievement of the general objective of the 'Action Plan for the Sustainable Use of Plant Protection Products' by extending the lifetime of human beings through reducing the rate of premature mortality and illness due to cancer. One of the strategic objectives of the prevention of cancer is to minimise the risks of cancer in the working and living environment. The preventive actions of the

strategy are targeted at raising the awareness of the general public to the risks of cancer resulting from the environment, particularly avoidable factors (including the effect of chemicals).

## *An overview of the current state*

### The Plant Protection Act

The first Plant Protection Act in Estonia was adopted by the *Riigikogu* in 1994 and its implementing provisions were drawn up thereafter. Those legal acts governed for the first time the obligations of land users in relations to performing plant protection work and the use of plant protection products and were a means of reducing the risks associated with the use of plant protection products. Legal acts in the area of plant protection have been amended several times; major amendments were introduced in 2000 and 2004. So, more extensive amendments were made in 2004 and were mostly related to the need to harmonise the legislation in Estonia with the legal acts of the European Union, including Council Directive 91/414/EEC concerning the placing of plant protection products on the market. The last major changes were introduced in 2011, when the Plant Protection Act was amended so as to bring it into conformity with the Regulation No 1107/2009 and Directive 2009/128/EC.

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

1. *training for the distributors and the users of plant protection products* – the principles of organising training in plant protection were specified; the possibility of designing different training programmes for different target groups was provided for; the procedure for the revocation of plant protection certificates, the obligation of carrying out training sessions for advisors and the revised list of training subjects were stipulated;
2. *requirements for marketing plant protection products* – the act specified the details of the information to be provided to the purchasers in the event of marketing plant protection products; a new restriction was added to the effect that in the event of issuing a market authorisation to plant protection products, which have been classified as toxic, very toxic, carcinogenic, mutagenic or toxic to the reproductive

system, the Ministry of Agriculture will restrict the user group only to professional users and thus domestic users will have no access to such products;

3. *information and awareness-raising* – a regulation concerning the improvement of public awareness was stipulated;
4. *technical inspection of plant protection equipment in use* – the definition of plant protection equipment was specified, which resulted in a more extensive list of the types of equipment subject to technical inspection; the period between the inspections remained the same, but by way of exception, a longer period between inspections was established for sprayers and seed treatment equipment. The plant protection equipment in use that was until then not subject to technical inspection or was not exempted from it must undergo technical inspection before 26 November 2016.
5. *aerial spraying* – the general prohibition on spraying from the air will remain effective and no exceptions will be allowed;
6. *special measures for plant protection product use or reducing their use in certain areas* – in addition to the existing requirements for the use of plant protection products, a restriction was set as to the performance of plant protection work in the areas of public use and an obligation to use low-risk plant protection products and the methods for biological pest control in these areas was added; and references to relevant national legal acts were added to the restrictions set on the use of other plant protection products;
7. *handling and storage of plant protection products and the handling of packages and plant protection products left over* – all stages of the use of plant protection products (from the purchase to the handling of packages and leftovers) have been regulated; references to relevant national legal acts were added;
8. *integrated pest management* – the indicative provision on application of the principles of IPM was made mandatory; thus all professional users have to apply the general principles of IPM from 1 January 2014; the conditions and method of IPM will be specified in the implementing provisions;
9. *risk indicators* – relevant risk indicators will be introduced for the first time with this action plan.

## Marketing and use of plant protection products

Until now, the statistics concerning plant protection products in European countries covered data on the quantities of marketed plant protection products only; the collection of data on the quantities of plant protection products used is still ongoing and Eurostat will published the first results in 2014. Hence is it possible to make a comparison between the countries only based on the marketing data of plant protection products. The quantities of plant protection products marketed in Europe are available on the website of Eurostat. The last regular submission of data took place in 2001, when 21 countries out of 22 presented their data on the marketed plant protection products to Eurostat. In 2001, the marketing of plant protection products was the highest in France (99,635 tonnes/year) and Italy (76,346 tonnes/year), while Estonia was one from the bottom, i.e. in the 20$^{th}$ place with regard to the quantities of plant protection products marketed in 2001 (Figure 1).

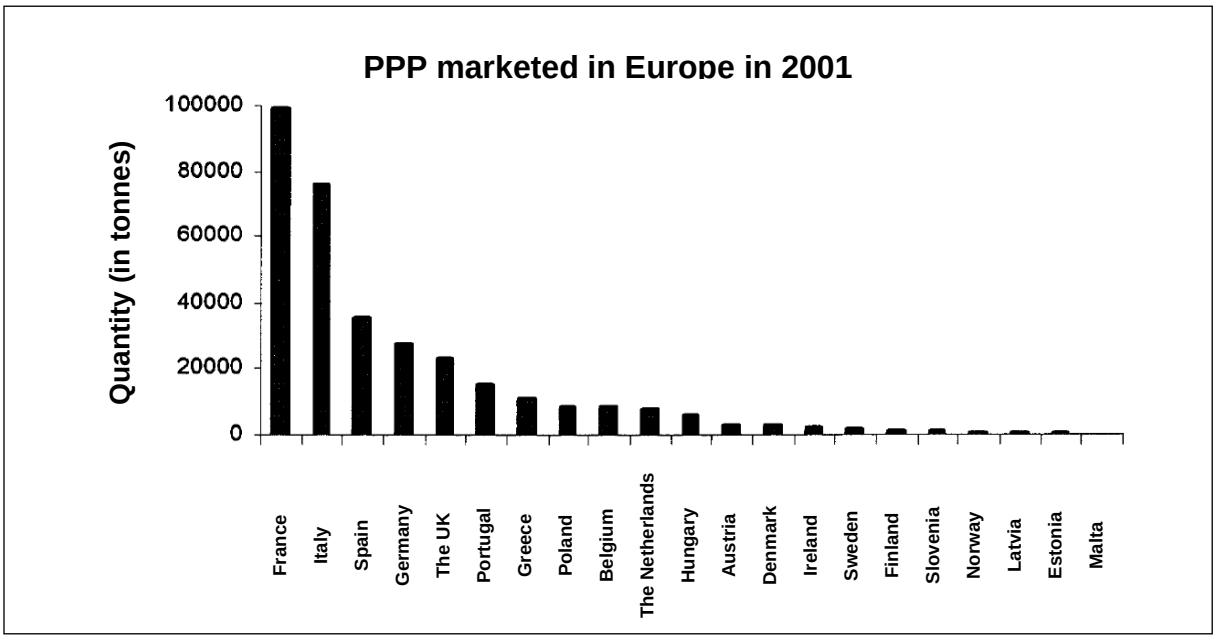



**Figure 1. The quantities of plant production products sold in Europe (the quantity of active ingredients in tonnes)**

*Source: Eurostat*

Between 2002 and 2010, the marketing of plant protection products in general showed a growing trend (Table 1). In 2010, a total of 551.95 tonnes of plant protection products were marketed, which is an increase of 57 % over the 2002 figure.

**Table 1. The quantities of plant protection products (based on active ingredients) marketed in Estonia from 2002 to 2009**

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|
| Quantities marketed in Estonia (in tonnes) | 329.78 | 321.44 | 357.21 | 392.67 | 465.91 | 459.87 | 551.95 | 407.19 | 517.16 |

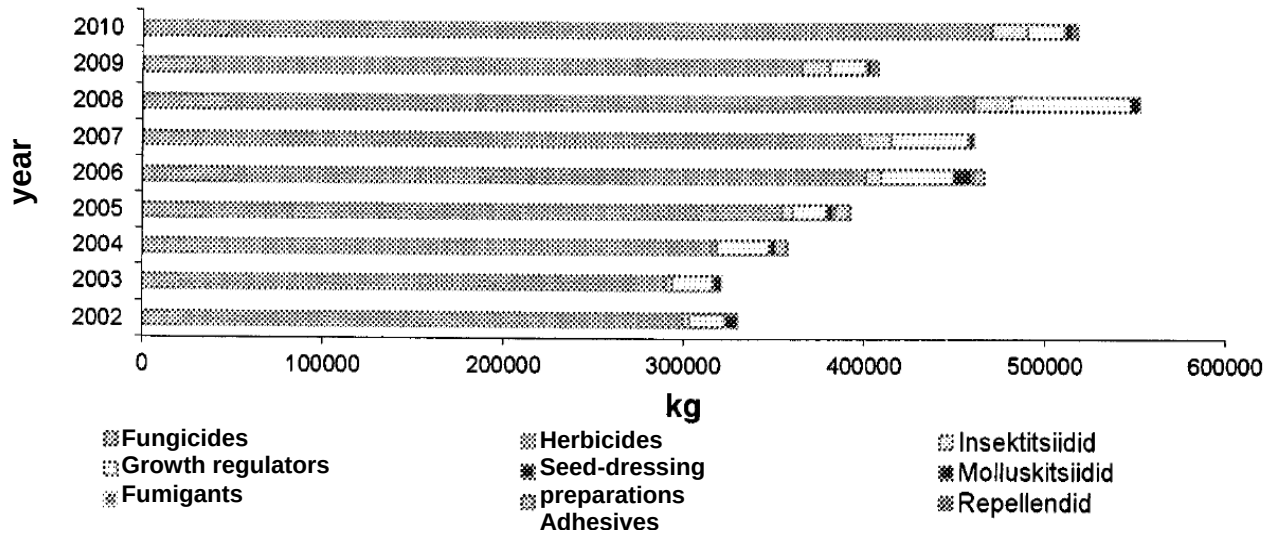
*Source: The Agricultural Board*

If we look at the data on quantities marketed based on the mode of action of the preparation, we can see that from 2002 to 2010, fungicides, herbicides, insecticides, growth regulators, seed-dressing preparations, molluscicides, fumigants, adhesives and repellents were marketed in Estonia (Figure 2.). In 2010, the quantities of herbicides (422,552.98 kg) and fungicides (45,603.50 kg) were the highest, while the quantities of growth regulators and insecticides were the lowest (20,569.80 kg and 19,202.70 kg respectively). The list of active ingredients contained in plant protection products marketed in Estonia has also grown over the years. The plant protection products marketed in Estonia in 2002 contained a total of 103 different active ingredients and by 2010 this number had grown to 113. If we compare the data on the plant protection products marketed in the countries of the so-called Old Europe with the data on Estonia, we can see that this country still has a long way to go, but even so, the quantities marketed in Estonia show a tendency towards continuous growth and it is hence justified that the aspects of the usage of plant protection products are addressed.

## The quantities of active ingredients marketed in Estonia from 2002 to 2010

**Figure 2. The quantities of active ingredients in plant protection products marketed in Estonia from 2002 to 2010**

*Source: The Agricultural Board*



# I Area of activity – Awareness

## *1. Sub-domain – Training*

### 1.1 Description of the current state

Until the entry into force of Directive 2009/128/EC, the legal acts of the European Union did not include any provisions concerning training in plant protection, whereas the Plant Protection Act had stipulated these already in the pre-accession period. Thus the harmonisation of Directive 2009/128/EC (the obligation for undertaking training in plant protection) did not bring along a new obligation to Estonia's judicial area, but some rearrangements in the content of plant protection training still need to be made.

Plant protection training activities play an important role in reducing the risks associated with the use of plant protection products. Inept and careless handling of plant protection products may harm both human beings and the environment. In addition to health and environmental risks, the use in excess of rates specified in the authorisation of the plant protection product may cause significant damage to crop. Training subjects cover the methods of managing the risks to human and animal health and the environment, an overview of relevant legal acts concerning the use of plant protection products, the details of using and servicing plant protection equipment and the principles of selecting appropriate spraying methods.

In accordance with the valid Plant Protection Act, both distributors of plant protection products and, in the events specified in a decision to authorise a plant protection product, also the persons who purchase or use the plant protection product, must have undergone training in plant protection. The persons who have undergone training in plant protection will be issued a plant protection certificate, under which persons can market, buy and use all plant protection products except for very toxic ones. The rights of organising training activities have been granted to adult training organisations which draw up training programmes before organising training sessions and submit these to the Ministry of Agriculture. The list of training subjects has been established by the Government of the Republic Regulation No. 20 of 31 January 2005, entitled 'The training programme in plant protection and the requirements for and the procedure of the issuance of plant protection certificates'.

Between 2001 and 2010 the Ministry of Agriculture issued 5,346 plant protection certificates. (Table 2). By county, the number of plant protection certificates issued between 2001 and 2010 was the greatest in Põlva, Viljandi and Järva counties (Figure 5).

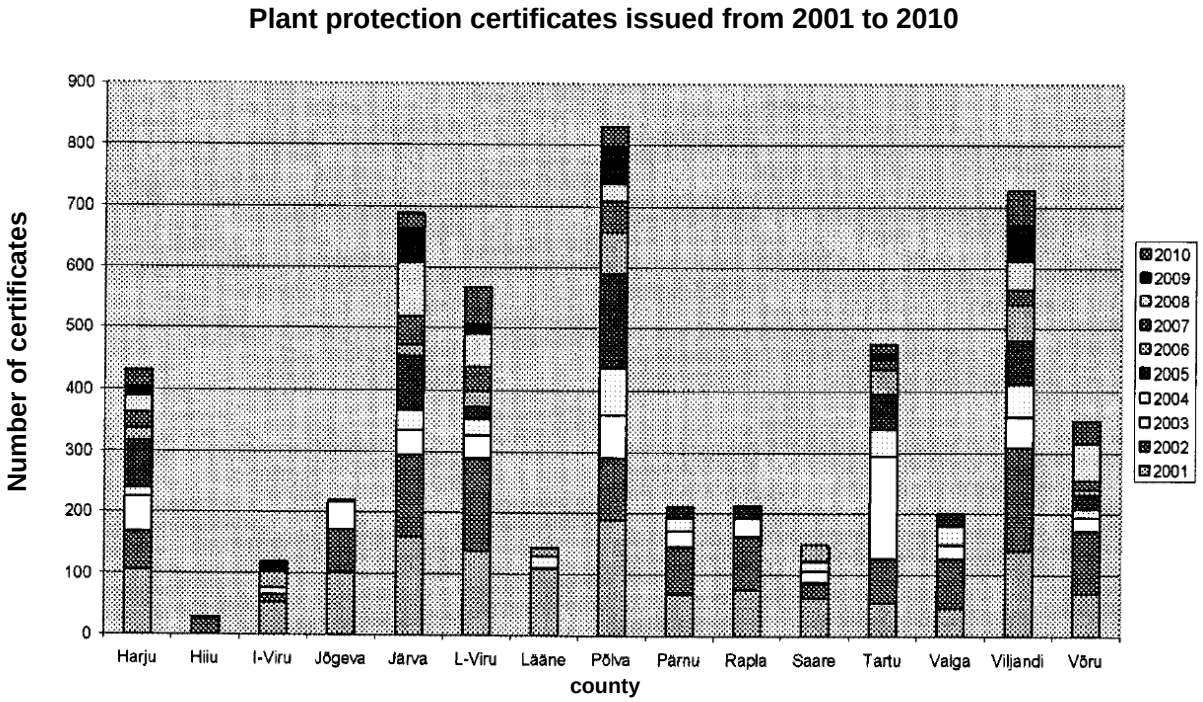



**Figure 5. Plant protection certificates issued from 2001 to 2010**

*Source: The Agricultural Board*

From 2011 onwards, interested persons have to undergo training in plant protection in the scope of 16 hours and those persons whose plant protection certificate has expired, shall undergo training in plant protection in the scope of 8 hours. Plant protection certificates issued before 1 February 2011 will be valid until the date of expiry marked on it. The plant protection certificates to be issued based on certificates that were issued before 1 February 2011 will be valid for ten years.

**Table 2. The number of plant protection certificate holders from 2001 to 2011**

| Number of holders | The year of the issuance of plant protection certificate | The date of expiry of plant protection certificates issued/to be issued |
|---|---|---|
| 1376 | 2001 | 2011 |
| 1168 | 2002 | 2012 |
| 604 | 2003 | 2013 |
| 340 | 2004 | 2014 |
| 548 | 2005 | 2015 |
| 304 | 2006 | 2016 |
| 217 | 2007 | 2017 |

| | | |
|---|---|---|
| 311 | 2008 | 2018 |
| 230 | 2009 | 2019 |
| 250 | 2010 | 2020 |
| 1376 | 2011 | 2016 |

*Source: The Agricultural Board*

As mentioned above, some rearrangements must be made with regard to training in plant protection in order to achieve compliance with the relevant requirements of the EU. The main changes will concern the content and organisation of training activities. A training programme must be designed with the target audience in mind, i.e. in providing training for the users and distributors of plant protection products and advisors, their different roles and responsibilities will be taken into account and the subjects addressed will be approached from different angles. The division of trainees into different target groups is also beneficial for those who attend training sessions, as it allows the angles of addressing different subjects to be determined based on their background, e.g. in training distributors, it is possible to focus more on the attributes of plant protection products and in user training to focus more on the introduction of general principles of the use of plant protection products and plant protection equipment, suitable pest management means and methods, agricultural technology etc. The role of users who are end users of plant protection products is decisive in nature, as during their use, plant protection products are introduced into the environment and their informed actions can prevent damage to health and the environment. The role of advisors is slightly more important as they have to understand both the aspects of marketing and usage and should be able to give advice as to the solving of different situations related to plant protection products. The roles and responsibilities of distributors, advisors and users are different and thus it is not reasonable to organise training activities for them with the same content and standard.

The existing experience in organising training in plant protection indicates that the quality of training activities differs by their organisers. At the same time the programme is supplemented by new training subjects for which necessary training materials are not available and in which the knowledge of training providers needs to be improved. With a view to ensuring the availability of training sessions at a more consistent level, it is essential that uniform training and examination materials be prepared and activities be planned for unifying the professional qualification of training providers. The laying down of the requirement for the training in plant protection at the EU level has raised the need for the

mutual recognition of training undertaken in another Member State; an analysis has to be carried out in order to identify essential considerations and an appropriate procedure prepared.

### 1.2. Main problems in the sub-domain

- Legal acts concerning the training programme need to be updated – so far only users of plant protection products have received training in plant protection products; providing training to the distributors and advisors of plant production has not been a priority. The applicable legal framework does not allow the different roles and responsibilities of the users and distributors of plant protection products and advisors to be taken into account in designing the training programme.
- Differences in the quality of training – there is a lack of uniform training materials and training providers need to update their knowledge in particular with regard to new training subjects.
- The training in plant protection undertaken in other Member States or plant protection certificates issued in other Member States are not recognised in Estonia.

### 1.3 Measure – *development of the system of plant protection training*

The objective of the measure is to ensure the availability of training in plant protection with a consistent quality. The effective training programme in plant protection will be brought into conformity with the requirements of Directive 2009/128/EC. The actions include the timely drafting of the legal act concerning plant protection, the preparing of training and information materials necessary for training session and their updating based on needs. Training sessions for providers of plant protection training will be organised.

## *2. Sub-domain – Advising*

### 2.1 Description of the current state

To ensure the quality of advising, the granting of the qualification of agricultural advisor is organised under the framework of professional qualifications. The qualification of agricultural advisor is granted by the Rural Economy Research Centre. The list of agricultural advisors holding a valid certificate is available at the website of the Rural Economy Research Centre. The representative body of agricultural advisors is the Union of Estonian Agricultural

Advisors. As of 31 December 2011, there were 216 agricultural advisors holding a qualification certificate in Estonia and part of them have acquired qualification in two or more areas. According to the data of the Rural Economy Research Centre, there are 30 plant production advisors in Estonia. Based on their level, every agricultural advisor has to prove their professional qualification after 3, 5 or 8 years. Although the agricultural advisors at advising centres attend training sessions on an average of more than 70 hours instead of the mandatory 18 hours annually, the competence level of advisors can be further improved. The training session designed for advisors last mostly one or two days; there are only a few study cycles lasting for several days that would raise their level of qualification.

The version of the Plant Protection Act that will enter into force on 26 November 2013 will lay down that agricultural advisors active in the area of plant production and providing advice in the safe use of plant protection products will have the obligation to undergo training in plant protection. Among other themes, IPM will also be included in the main subjects of training in plant protection. The successful development of IPM can only be achieved by applying plant pest management solutions that are effective in the climatic conditions of Estonia, which requires the availability of relevant testing and research data. Advisors are seen as important intermediaries in communicating information between research activities and agricultural production and hence their knowledge also plays a decisive role in the promotion of IPM. It is estimated that by 2013, a total of 30 advisors active in the area of plant protection will have to undergo training in plant protection.

## 2.2. Main problems in the sub-domain

- Agricultural advisors have no obligation to undergo training in plant protection;
- agricultural advisors' awareness in the field of the safe use of plant protection products is not updated on a regular basis; and
- agricultural advisors' awareness in the area of IPM is low.

## 2.3 Measure – *raising the awareness of plant production advisors*

The objective of the measure is to ensure the availability of advisory services regarding the safe use of plant protection products in Estonia that are based on updated knowledge. The main activity of the measure is the development of the advisory service in the safe use of plant protection products by raising advisors' awareness and through this to ensure the availability of qualified advisors, including those who have completed training in plant protection.

# *3. Sub-domain – Raising public awareness*

## 3.1 Description of the current state

So far, no special attention has been paid to the distribution of information to the general public on plant protection products. The actions for preventing cases of intoxication related to plant protection products have not been sufficient either. Since the entry into force of the amendment to the Plant Protection Act on 26 November 2011 (RT I 25.11.2011,3), this is the responsibility of the Agricultural Board, who will publish balanced information to the public about the hazards arising from using plant protection products and possible acute and chronic effects on human health, non-target organisms and the environment, and information on using chemical-free alternatives. Relevant information can be made available to the public online, in official publications or on information boards, but also through broadcasting, in print media or in another appropriate manner, e.g. by public campaigns or by distributing relevant information materials. The distributors of plant protection products are also obligated to provide relevant information on plant protection products and their use and storage to 'amateur users'.

A study[1] carried out in 2009 by the Estonian Institute of Economic Research at the request of the Ministry of Agriculture indicated that the people who use plant protection products in their domestic gardens are in general aware of safety requirements concerning spraying and follow them. The same study also revealed the circumstances in which domestic users of plant protection products did not follow the safety principles. Shortcomings in the following the principles of the safe use of plant protection products were first and foremost related to the storage of plant protection products, the disposal of empty packages and other similar activities.

In order to mediate poisoning-related information in Estonia, the Poisoning Information Centre was established, which serves as the most reliable source of information on poisonings both to health care professionals and people who need help. The objective of the Poisoning Information Centre is to maintain up-to-date and relevant information on poisoning, and to ensure the availability of the information on poisoning to the general public and medical staff.

[1] Use of plant protection products in domestic gardens and non-agricultural use, 2009 (Taimekaitsevahendite kasutamine koduaedades ja mittepõllumajanduslik kasutamine, 2009). Available online at: *http://wwwMgri.ee/public/juurkataloog/TAIMETERVIS/taimekaitse/Taimekaitsevahendite_kasutamine_koduaedades_ja_jnittep_llumajanduslik_kasutamine.pdf*

The goal is to minimise the number of emergency medical care calls and visits to emergency medicine departments with the help of an operative hotline. According to the statistics of calls to the Poisoning Information Centre, 1 % of all intoxication cases in Estonia in 2009 were caused by weed killers and plant disease control products[2]. In 2010, intoxication in different age groups of sufferers was characterised as follows:

- 19-35 year-olds: insect control and plant disease control products;
- 36-65 year-olds: insect control and plant disease control products and weed killers.

Calls to the Poisoning Information Centre can be made anonymously and thus the names of institutions/job titles of people making the call are not registered. If it is necessary to assess the severity of poisoning, the caller's conditions of exposure will be identified (long exposure, use of concentrated solutions, protection equipment or other relevant details per every individual case).

General information on plant protection products is available online on the following websites: *www.agri.ee*, *www.pma.agri.ee*, *http://ak.rapina.ee/tairi/Taimekaitsepuuvilja-marjaaias/*, *http://www.sordiaretus.ee/Taimekaitse*. Up-to-date information on the safe use of plant protection products is not available.

## 3.2. Main problems in the sub-domain

- People are not sufficiently aware of health risks arising from their living and working environment and the methods for the reduction of same;
- domestic users of plant protection products have problems with the instructions for use of plant protection products;
- domestic users' knowledge of the safe use of plant protection products needs to be updated;
- there is no uniform system that would provide reliable and impartial information on plant protection products; and
- the prevention of intoxication cases related to plant protection products is not directly addressed.

[2] Statistics on calls to the Poisoning Information centre, 2009. Available online at: *http://www.16662. ee/pdf/MTK statistika_J009.pdf*.

### 3.3 Measure – *raising public awareness*

The objective of the measure is to ensure the availability of sufficient information on plant protection products to the general public. The main activity under this measure is raising public awareness with regard to plant protection products; to this effect, awareness-raising campaigns will be organised, relevant information materials will be prepared and distributed and studies will be conducted on information needs.

# II Area of activity – Plant protection

## *4. Sub-domain – The sustainable use of plant protection products*

### 4.1 Description of the current state

The protection of the health and the environment of human beings is an important part of food chain safety, in which plant protection plays a great role, as plant protection work is performed at the start of food chain , i.e. plant protection products are used in growing crops. The role of plant protection is to control or reduce the effect of pests, plant diseases and growth disorders and their development speed and thereby assure the quality and sustainable productivity of agricultural crop products.

Chemical plant protection products used in chemical control are widely spread due to their efficiency. The productivity and quality of crops decreases due to different plant pests, however, chemical control cannot be an objective in itself in order to compensate for the mistakes made in cultivation. The basic ways of using plant protection products are spraying, pollination, seed-dressing, fumigation, aerosol processing and the use of pheromone traps.

The objective of the legal acts concerning the use of plant protection products is to ensure that only plant production products authorised in Estonia will be marketed, that plant protection products will be used appropriately and the content of the residues of plant production products in plant products will not exceed the norms or pose a threat to consumers.

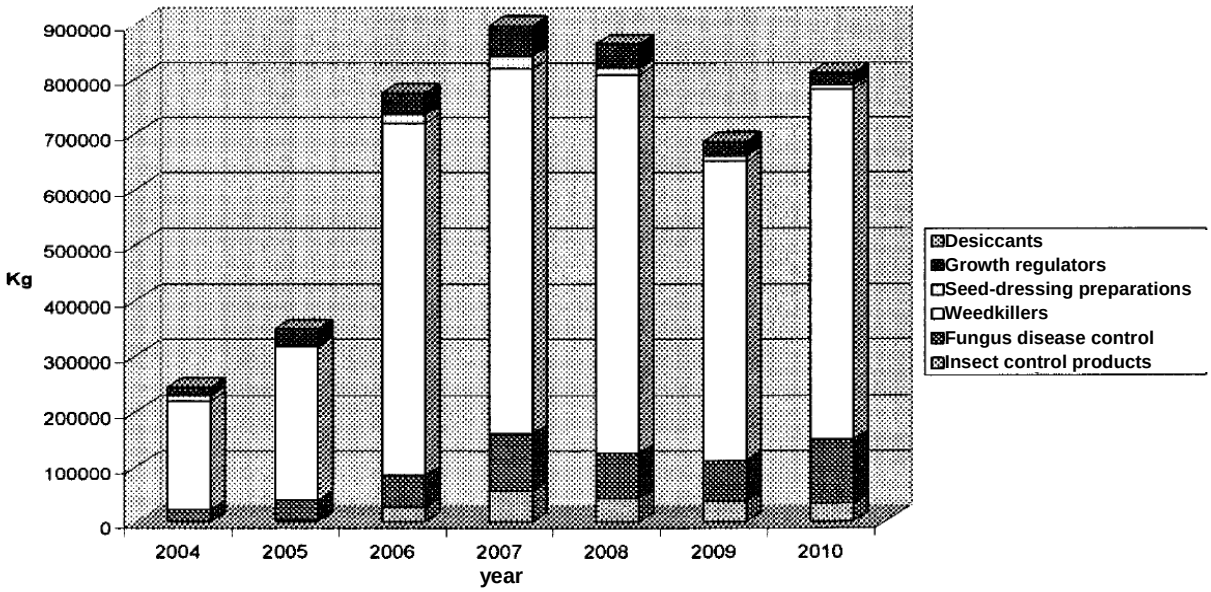



**Figure 6. The quantities of plant protection products used, kg v 1**

In order to minimise the risks to the environment and human and animal health it is important to ensure both the observance of the requirements for the use of plant protection products and state supervision of the activities of their users. The Agricultural Board executes state supervision of the use of plant protection products.

The key factor in reducing the risks associated with the use of plant protection products are the users themselves, i.e. their skills and knowledge in using plant protection products. Hence, special attention is paid to all legal acts concerning the use of plant protection products in the plant protection training programme under preparation and this could be seen as the primary measure in achieving the objectives, which concern the reduction of risks to human health and the environment associated with the use of plant protection products. One key issue underlined in the training of plant protection products users are the principles that help avoid the drift, rain-flow or run-off of a plant protection product from the area treated, which may in turn entail risks to non-target organisms. If problems occur or the results of relevant studies on the after-effects of legal acts so indicate, the establishment of additional requirements for the use of plant protection products can be considered. One option is to promote the

implementation of the most effective ways of using a plant protection product (e.g. by promoting the introduction of special plant protection equipment in the event of tall-growing arable crops). In order to collect necessary benchmark data, prior comparative tests will be performed between plant protection equipment of different types or relevant research data will be aggregated and distributed. If effective technologies for preventing the drift of the working solution of the plant protection product have been identified, then certain exceptions can be established with regard to usage restrictions (e.g. small buffer zone). The techniques of using plant production products vary and depend mostly on the specifics of a plant protection product, a crop treated or a product and in some cases also on specifics of their usage area (e.g. maintenance of roads and railway and public areas). The need for preparing up-to-date guidance material on the safe use of plant protection products is therefore justified. These guidance materials should contain guidelines for all groups of professional users of plant protection products (agriculture, non-agriculture, landscaping, road and railway maintenance) by providing appropriate recommendations based on scientific and technological developments.

Plant protection products and their use bring together the interests of many different concerned parties from distributors to companies from different sectors located in the neighbourhood of plant protection product users, such as producers of honey, drinking water or other foodstuffs who have an immediate interest in what takes place in their surroundings. In general, the chain of plant protection products has been regulated by legal acts in a detailed way from the placing of the product to the market to its use, but there are definitely some aspects that may cause problems, if the communication of information between parties does not function or there is no will for same. Such problems can obviously be resolved by impartial discussions on common grounds, which should involve the representatives of all parties concerned, who should meet at regular intervals.

The criteria for processing the authorisations of plant protection products have been established at the EU level and based on these, six different authorisations can be granted. The criteria for granting the authorisations were amended by Regulation (EC) No 1107/2009 and thus new possibilities for applying for authorisations were added, but the target groups of authorisation receivers are not always aware of all possibilities open to them. This is shown by the small number of special authorisations issued by the Agricultural Board (e.g. the extension of the area of use specified in the plant protection product authorisation or a so-

called emergency situation authorisation for 120 days). It is thus necessary to raise the awareness of potential authorisation receivers with regard to possibilities open to them.

All active substances listed in Annex I to Directive 91/414/EEC (Active substances authorized for incorporation in plant protection products) are also regarded as approved by Regulation 1107/2009 and have been listed in the Annex to Implementing Regulation (EC) No 540/2011. For the sake of safety, the period of the approval of active substances is limited and the initial approval is granted for up to ten years, after which active substances will be re-assessed. More restrictive criteria for the approval of active substances will prevent the substances with carcinogenic, mutagenic properties or those toxic to the reproductive system from entering the market. This will lead to a situation where all plant protection products containing presently approved active substances will not be able to enter the market. According to the 2010 data of the register of plant protection products, 34 plant protection products with potentially carcinogenic, mutagenic properties or those toxic to the reproductive system have been placed on the market in Estonia, of which 30 are fungicides, 3 are herbicides and 1 is an insecticide. Three such plant protection products, which may have the above-mentioned properties, are available to purchase by anyone without a plant protection certificate, or in other words, 'over the counter'. This raises the need to pay attention to the plant protection products that contain such active substances.

Multiannual inspection plans cover supervision over retail and wholesale points of sale of plant protection products. Agricultural producers and other end users will also be inspected with the aim of ensuring the safe use of plant protection products. In the course of supervision, samples will be taken from marketed plant protection products and the conformity of the results to the specification approved will be analysed. The aim of the national monitoring programme of the residues of plant protection products is to prevent the occurrence of the higher than allowed residue levels of plant protection products in food. In order to prevent potential risks, the European Union has established maximum residue limits to plant protection products. These norms are applied in a way that the residue amount is the lowest and most acceptable toxicologically. During the monitoring programme, samples will be taken based on the principle of random checks by focusing first and foremost on the production in which the residues of plant protection products have previously been detected or in connection with which an alert has been received via the Rapid Alert System for Food and Feed (hereinafter the RASFF). The products consumed in Estonia in sizeable amounts are also under observation.

In order to assess the changes achieved as a result of actions implemented by the users of plant protection products in this sub-domain, regular surveys need to be conducted.

***Storage of plant protection products, the disposal of empty packages and remnants.***

For the sake of safety, users need to pay attention to the remnants, tank mixes and empty packages of plant protection products used. Any storage room for plant protection products must prevent the release of plant production products into the environment. Detailed requirements and the relevant methods of minimising the risks during every stage of the use of plant protection products have been determined in Regulation No. 90 of the Minister for Agriculture of 29 November 2011, entitled 'The detailed requirements for the use of plant protection products and their storage site' and Regulation No. 49 of the Minister for Agriculture of 20 April 2006, entitled 'The safety requirements for the use, cleaning, maintenance and storage of plant protection equipment'.

In Estonia, only plant protection products which have received the authorisation of plant protection product and have been entered into the register of plant protection products may be used. The plant protection products with expired or cancelled authorisation and which are therefore deleted from the register, should be handled as hazardous waste. The remnants of used plant protection or discarded products, including tank mixes and the plant protection products 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 managers of packaging waste. Professional users have to also make sure that the plant protection products they use are in conformity with authorisation, i.e. the authorisation for use of the supplies has not expired and the supplies' end date for use has not been surpassed.

***Use of plant protection products in the non-agricultural sector***

In addition to agriculture, forestry and domestic gardens, plants also need attendance when maintaining roads and green public areas. This work is performed by using both mechanical methods and plant protection products. In their professional activities, Estonian companies and institutions use plant protection products to maintain tram lines, railways, roads, sports and recreation grounds, parks and gardens, and the areas next to healthcare and child-care facilities.

A study[3] commissioned by the Ministry of Agriculture and conducted by the Estonian Institute of Economic Research in 2009 indicated that the average quantities of weed killer used by non-agricultural users in the 2009 growing season were as follows: 15 litres in maintaining tram lines; 6,250 litres in maintaining railways, 66.3 litres in maintaining roads, 2.3 litres in maintaining sports grounds and 10.1 litres in maintaining green areas (average quantities per undertaking in the sector during the growing season).

The improper use of plant protection products might entail risks and hazards to humans, animals and the environment and hence it is justified that in public places only professional users, who have previously undertaken training in plant protection and have acquired sufficient knowledge of risk management associated with the use of plant protection products, have the authority to use plant protection products. Furthermore, when carrying out plant protection work in public areas, low-risk plant protection products are to be preferred and biological control methods applied. This however assumes that sufficient information is available on the methods of using low-risk plant protection products.

***The use of plant protection products in protected and limited-conservation areas***

Restrictions on the use of plant protection products in protected and limited-conservation areas are laid down in the Nature Conservation Act. The use of plant protection products in a land or water area of a protected area is generally prohibited and is allowed only if this is set out in the conservation rules. A limited-conservation area is established with the aim to ensure the favourable conservation status of wild fauna, flora and fungi. Destruction or harming of the habitats for the protection of which a limited-conservation area was formed, significantly disturbing the protected species, and all activities which are likely to endanger the favourable conservation status of the habitats and protected species are prohibited within a limited-conservation area. If the possessor of an immovable located within the boundaries of a limited-conservation area intends to use plant protection products, the possessor of that immovable has 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 and a map of the area in which the work is to be performed, and it must be submitted to the administrative authority of the limited-conservation area at least one month before commencement of the work.

[3] Use of plant protection products in domestic gardens and non-agricultural use, 2009 (Taimekaitsevahendite kasutamine koduaedades ja mittepõllumajanduslik kasutamine, 2009). Available online at: *http://www.agri.ee/public/juurkataloog/TAIMETERVIS/taimekaitse/Taimekaitsevahendite_kasutamine_koduaedades_ja_mittep_llumajanduslik_kasutamine.pdf*

***The methods to protect the aquatic environment*** have been set at national level in the Water Act. The use of plant protection products at a range of less than 10 m from the edge of bodies of water or sinkholes is prohibited. In order to protect water against diffuse pollution, water protection zones are formed on the banks of water bodies. For the Baltic Sea, Lake Peipus, Lake Lämmijärv, Lake Pskov and Lake Võrtsjärv the water protection zone extends 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 m. 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, and the permission of the Environmental Board must be obtained on each separate occasion. An additional buffer zone may be set out in the conditions for using a plant protection product, and the need for this is identified while the Agricultural Board processes the authorisation for the relevant plant protection product.

The list of substances classified as hazardous to the aquatic environment pursuant to Directive 1999/45/EC and as priority substances pursuant to Directive 2000/60/EC has been adopted by Regulation No. 32 of the Minister for the Environment of 21 July 2007, entitled 'Lists I and II of substances and groups of substances hazardous to the aquatic environment, and the lists of priority substances, priority hazardous substances and their groups'[1]. The discharge of hazardous substances and priority hazardous substances that are included in the list into surface water and the discharge of these substances and other pollutants directly into groundwater is prohibited, except in exceptional circumstances on the basis of a permit for the special use of water. Also, the maximum limits for hazardous substances, including priority substances, priority hazardous substances and certain other pollutants, in groundwater, the environmental quality thresholds for priority substances and priority hazardous substances in surface water, the methods of applying the environmental quality thresholds for priority substances and priority hazardous substances in surface water, and the maximum limits of hazardous substance content in the soil are set out in Regulation No. 49 of the Minister for the Environment of 9 September 2010, entitled 'Environmental quality thresholds of surface water, their methods of application and the environmental quality thresholds in aquatic biota'[1]. The aim of these actions is to prevent the condition of surface water and groundwater from deteriorating.

## 4.2. Main problems in the sub-domain

- There is no updated guidance material on the safe use of plant protection products containing recommendations for all professional users of plant protection products based on the way and field in which the plant protection products are used;
- there is no guidance material on the safe use of plant protection products for non-professional users;
- there is no information material on plant protection products authorised in Estonia on the basis of the properties of the active substances contained in them;
- no regular studies are conducted to identify the issues related to the use of plant protection products and plant protection equipment;
- the option to extend different plant protection product authorisations, including their area of use, is not used sufficiently; and
- there is no common ground for discussion that would involve all those who hold a stake in plant protection products and their use.

## 4.3. Measure – *promotion of safer and better targeted use of plant protection products*

The objective of the measure is to ensure that there is a reduction in the health and environmental risks associated with the use of plant protection products and that they are used appropriately. The main activity under this measure is the implementation of measures necessary to achieve safer and better targeted use of plant protection products. This involves preparing information material on the use of plant protection products aimed at different groups of users, updating it as and when necessary, and distributing it. Studies are conducted on the use of plant protection products with the aim of identifying the developments and shortcomings in the sector. Plant protection products authorised in Estonia are classified into groups on the basis of the properties of the active substances contained in them. Research is conducted with the aim of identifying the links between different soil preparation technologies and the use of plant protection products.

## 4.4. Measure – *cooperation and supervision in the field of plant protection products*

The objective of the measure is to promote national cooperation in the field of plant protection products and to improve state supervision. The main activities under this measure are

developing cooperation between the stakeholders of plant protection products and improving the efficiency of the planning and organisation of supervision between different supervisory authorities.

# *5. Sub-domain – Integrated pest management*

## 5.1 Description of the current state

IPM is the combined use of biological, biotechnological, chemical, agronomic and plant breeding methods by which the use of chemical plant protection products is reduced to the extent that is necessary for the retention of pest population at a level that does not cause unwanted economic or crop damage. The principles of IPM play an important role in achieving the objectives of Directive 2009/128/EC and this action plan, i.e. to contribute to the reduction of the risks to human health resulting from the use of plant protection products and to achieve a more sustainable use of plant protection products in the long run. In modern agriculture, the system of IPM is understood as the skilfully integrated use of different methods that are environmentally sustainable and ensure ecologically clean production, which guarantees that pests spread only to an economically justified limit. According to the general principles of IPM, activities can by and large be divided into three stages, which should be implemented in succession: (1) prevention; (2) monitoring; and (3) intervention. Elaborating on the above, this would mean that the methods of preventing the spread of pests should be implemented first, the next step would be to monitor the spread of pests in every single field or area, and pest management methods should be implemented only if the spread of pests seriously endangers the arable crop. The full implementation of IPM thus requires the planning of plant protection work for every single field (on a case by case basis), which complicates the achievement of objectives. The sustainability of the environment would benefit from the observance of crop-specific guidelines for IPM more than from the general principles of IPM, but this choice has to be made by every agricultural producer.

Although modern chemical plant protection products are safe when used skilfully and appropriately, the principles of IPM should be applied for the sake reducing the risks of the contamination of food, feedstuffs or the environment and the risks to human health only if necessary. Normally, this necessity arises when the implementation of preventive techniques and measures is not efficient enough. The fact that the Annex to Directive 2009/128/EC lays

down the general principles of IPM and not standards as proposed in the initial draft, provides significant flexibility for users, i.e. this allows them to take into account arable crops, local conditions, areas of activity, etc. in opting for measures. In other words, professional users make decisions on the plant protection measures used based on the real situation. If the preventive measures of IPM do not deliver expected results, pest management measures (chemical, mechanical or biological control measures) will be implemented. An important aspect with regard to the principles of IPM is the right timing of the use of plant protection products and their optimal usage, i.e. for delivering maximum effect, a sufficient amount of the product has to be used which does not however mean that the allowed maximum rate is exceeded. The application rates recommended by the manufacturer of plant protection products have always been calculated for solving the most complicated and serious situations under the most complex of circumstances. This means that they could often be reduced without significantly compromising the results (effect) of pest management. On the other hand, the pest found in the field may not require that plant protection work in a certain phase of growth or in the event of a certain count be undertaken at all. The problem here is to decide if and when this reduction can exactly be made. IT solutions (known also as DSS - Decision Support System) can be of help here, which enable the application rates of plant protection products to be reduced in real time and based on the real situation or spraying to be abandoned in some exceptional cases. Such possibilities are provided by computer-aided advisory programs PC-Plant Protection and NegFry developed in Denmark and a web-based plant protection advisory system I-Plant Protection developed in cooperation with Denmark, Poland and the Baltic States based on PC-P; the researchers at the Estonia Research Institute of Agriculture, Jõgeva Plant Breeding Institute, Jäneda Training and Advisory centre and the Estonian University of Life Sciences have tested and developed plant protection models in field trials since 1999. This computer-aided advisory system (I-Plant Protection) analyses the data and offers different recommendations based on them. However, it is the user of plant protection products who makes a decision on whether or not to follow these recommendations. There is also an advisory system set up in Estonia with the aim of contributing to the development of agriculture through competent/professional advising. This means that certain conditions required for the implementation of IPM have been created in Estonia, but they need to be regularly improved and developed further.

The observance of IPM has so far been recommended in Estonia, but from 2014 this will become mandatory for all professional users. The conditions and practice of implementing the

principles of IPM will be stipulated by a regulation of the Minister for Agriculture pursuant to the Plant Protection Act. In 2009, Turu-uuringute AS conducted a survey[4] on the request of the Ministry of Agriculture in order to find out whether agricultural producers engaged in intensive plant production know the principles of IPM and whether they follow them in practice. Another aim of the survey was to determine how aware the users of plant protection products are of the web-based program (I-Plant Protection) that conforms to the principles of IPM and to identify the circumstance that would motivate agricultural producers to implement these principles more actively. The results of the survey indicated that the principles of IPM were to a certain extent already implemented. Certain agricultural producers implemented the principles knowledgably (i.e. they knew the definition of IMP), while some implemented them without knowing the term. It was found that agricultural producers' awareness of the I-Plant Protection program was low and the number of its users therefore even lower. In the general opinion of the respondents, agricultural producers would be motivated to implement the principles if they were more aware of them, had relevant knowledge and the demand for the production cultivated based on these principles were higher and some found that there was a need for support services organised by the state. The activities related to the promotion of IPM are planned based on the shortcomings identified in the course of the above survey and the obligations established to Member States under Directive 2009/128/EC.

[4] Knowledge about integrated pest management, 2009 (Integreeritud taimekaitse tuntus, 2009). Available online at:
*http://www. agri. ee/public/juurkataloog/TAIMETER VlS/taimekaitse/Integreeritud_ja_l-taimekaitse_uuringu_tulemused.pdf*

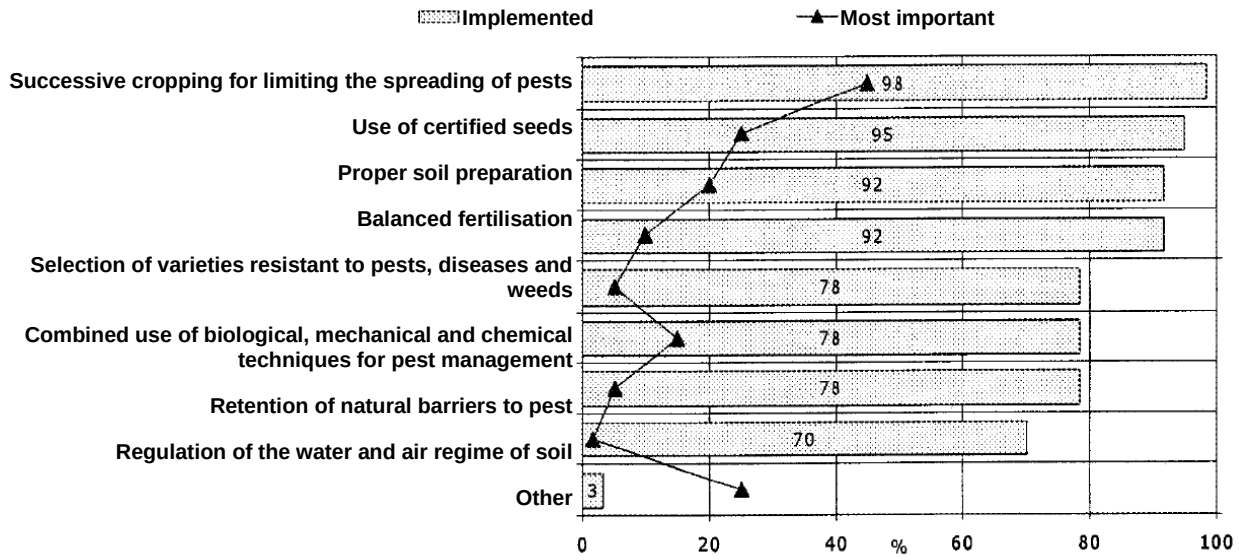



**Figure 7. Overview of the implementation of the principles of integrated pest management**

*Source: Turu-uuringute AS, survey 'Awareness of integrated pest management'*

## 5.2. Main problems in the sub-domain

- The availability of information on IPM is not sufficient;
- the crop-specific IPM guidelines are outdated and are therefore not usable;
- there are no scientifically-proven tolerance thresholds for pests (on arable crops grown in Estonia and the pests which spread on them);
- there is no forecasting and warning system for the spread of pests;
- there are no good case examples for presenting the implementation of IPM (e.g. IPM production unit);
- there are no procedures / principles for the assessment of the implementation of IPM; and
- agricultural producers are not sufficiently interested in implementing the principles of IPM; there are no incentives for them.

## 5.3. Measure – *to create conditions required for the implementation of IPM*

The objective of the measure is to create conditions required for the implementation of IPM and alternative pest management practices or techniques. The first priority will be given to activities that result in creating conditions required for the implementation of IPM and

relevant information will be made available to the parties concerned. Appropriate guidance materials will be prepared and updated on a regular basis.

### 5.4. Measure – *to promote agriculture with low use of plant protection products*

The objective is to develop and make available measures that facilitate the implementation of the principles of IPM and different practices or techniques of pest management. To conduct research on IPM and to communicate the findings of studies. To analyse the implementation of IMP and to introduce the principles of IPM on a regular basis.

### 5.5. Measure – *to encourage the implementation of IPM*

The objective of the measure is to promote agricultural production with low input of plant protection products. Within this measure, activities aimed at encouraging the introduction of plant protection with a low use of plant protection products will be planned.

# III Area of activity – Equipment

## *6. Inspection of plant protection equipment*

### 6.1 Description of the current state

The introduction of the technical inspection system of plant protection equipment was launched in Estonia in 2000. For the first time, the Plant Protection Act stipulated a requirement that plant protection equipment, which were in use, except for spray guns and knapsack sprayers and equipment used in research work or as a sample, had to undergo regular technical inspection once every three years. The procedure of the testing, surveying and technical inspection of plant protection equipment was established by a regulation of the Minister for Agriculture. The Minister for Agriculture named the Estonian Institute of Agriculture Mechanisation, today known as the Estonian Research Institute of Agriculture (hereinafter ERIA) as responsible for conducting technical inspection of plant protection equipment.

The aim of the technical inspection of plant protection equipment was to reduce the risks to human health and the environment and a very important aspect emphasised in particular was

that technically well-functioning plant protection equipment is the key factor in achieving the expected result, i.e. more purposeful use of plant protection products. With the aim of training the persons conducting technical inspection, short courses were organised by the former Estonian Institute of Agriculture Mechanisation from 2000 to 2006, which comprised a two-day seminar and ended with an examination. The persons who passed the examination were issued a respective certificate. The seminars covered relevant legislation, standards, measuring devices and methods, factors that had an impact on the quality of spraying, technical safety and the course included a practical survey and technical inspection of plant protection equipment. The system of technical inspection was difficult to launch, as there were no measuring devices for performing technical inspection, but within a few years, several enthusiasts managed to acquire them. The first inspections of the technical operability of plant protection equipment (i.e. technical inspections) were performed in 2001, totalling 16 inspections. In every subsequent year, the average number doubled (Table 3) and in 2005, a total of 299 plant protection sprays were inspected. All legal acts regulating technical inspection were reviewed again in the period 2004–2005 and in 2008, and some amendments were made in the course by specifying the procedural part of technical inspection and by changing the procedure of technical inspection based on the EVS-EN- 13790-1:2005 standard. The amendments provided the precondition for increasing the number of persons conducting technical inspections by extending this opportunity to private entrepreneurs with whom relevant contracts were entered into. The ERIA retained its right to conduct technical inspections and the obligation to advise persons conducting technical inspection and to check the quality of their performance was also placed on it. The amendment to the act passed in 2008 placed on the ERIA the obligation to organise professional training sessions for persons conducting technical inspections, and persons conducting technical inspections or the persons employed by them (who conducted inspections) were obliged to undertake theoretical and practical training. The principle was set out that persons who had undergone the course and held a certificate had to attend annual further training seminars, where the developments in modern technology were introduced. The grounds for re-delegating state administrative duties, the definition of persons authorised to conduct technical inspection, the requirements for persons applying for the rights of conducting technical inspections and their rights and obligations were also laid down. A person conducting technical inspection is a natural person or a legal person in private law who, pursuant to the procedure provided for in the Plant Protection Act, has been granted authority to conduct technical inspection of plant protection equipment. This authority is granted and the contract under public law for performing

administrative duties is entered into by the Agricultural Board. The list of persons authorised to conduct technical inspection is published on the website of the Agricultural Board.

Directive 2009/128/EC obligates Members States to establish the system of technical inspection of plant protection equipment in professional use, meaning that any plant protection equipment in professional use has to undergo technical inspection for the first time by 26 November 2016, then after every five years until 2020 and further on every three years. From this date onwards, professional users of plant protection equipment are not allowed to use uninspected equipment. By way of derogation, Member States may apply different inspection intervals to certain types of equipment and are granted the right to exempt from inspection handheld or knapsack sprayers. This can be done in the event that the usage scope of such equipment has been assessed and analysed. The exemption for handheld or knapsack sprayers from the obligation regarding inspection is bound to another condition, namely that special attention be paid to the specifics of using such sprayers during training sessions. The necessity of special attention arises from the fact that users are exposed to plant protection products most when they use handheld or knapsack sprayers.

At the request of the Ministry of Agriculture, Turu-uuringute AS conducted a study[5] among the users of plant protection equipment aimed at determining the current situation in Estonia. The study revealed that the most widely used plant protection equipments are boom sprayers (74 % of the sample), handheld sprayers (22 %), knapsack sprayers (18 %) and seed-treatment equipment (16 %). Cannon sprayers, planes with sprayers and onsite equipment for greenhouses are either not used at all or were not included in the sample. Other types of equipment such as motorised handheld sprayers, ventilator sprayers, misting devices, fumigation and land treatment equipment are used only by a few persons. The majority of respondents (66 %) use only one type of equipment; only 51 % of the sample use two types of equipment. It also turned out that the majority of the respondents use newer equipment, while seed-treatment equipment is relatively older. The equipment belonging to the owners of handheld sprayers is the newest – 51 % have handheld sprayers that are less than 2 years old. Of other types of equipment, older equipment, i.e. more than 10 years old, such is more common with regard to boom sprayers (20 %).

[5] Use of plant protection equipment, 2010 (Taimekaitseseadmete kasutamine, 2010). Available online at: *http://www.agri.ee/public/juurkataloog/TAIMETERVIS/taimekaitse/Taimekaitseseadmete_kasutamine_2010.PDF*

Estonia applies the exemption both from the obligation of technical inspection and the interval of technical inspection, i.e. handheld and knapsack sprayers are not subject to inspection and a longer inspection interval has been established for seed-treatment equipment and misting devices. The exemption for handheld sprayers from the obligation regarding inspection was based upon the fact that the majority of equipment of this type in use is less than 2 years old and would not be subject to inspection under the interval applied in this country. The availability of spare parts of this kind of equipment is also a problem. In practice, it would be more cost-effective to buy a new sprayer than spend money or time on purchasing or searching for expensive spare parts. It was also found that the key factor in managing the health and environmental risks is the user rather than the equipment. In the course of currently valid and also new training sessions in plant protection, the issues of preparing plant protection equipment for operation are addressed and this will ensure that equipment users are aware of the specifics of using different types of equipment. Users of plant protection equipment also obliged to perform self-inspections, i.e. they have to regularly check the functioning of the equipment in use and adjust it if necessary. This is in principle a very important aspect, as technical inspection alone does not guarantee the proper functioning of the equipment during the intervening period between technical inspections. The need for regular inspection and adjustment of any equipment depends first and foremost on the work load of the equipment. The effect as regards pest management performed by equipment which functions irregularly is lower and may bring along both economic damage (harvest loss or excessive quantities of plant production products) and environmental risks. The aforementioned study also indicated that 50 % of questioned users of plant protection equipment service their equipment regularly; 27 % service their equipment based on its work load and 20 % do so only in the event of failures. Thus it can be assumed that the majority of equipment users are aware of the need to regularly inspect and of the consequences arising from ignoring this requirement. The results of the study revealed that the rate of satisfaction with the effective system of technical inspection is relatively high (average grades on a 5-score scale ranged between 4.45 and 4.73). The study also identified some shortcomings related to the organisation of technical inspection, which are sought to be resolved within the frame of this action plan. The problems highlighted included the insufficient availability of technical inspection as a service and of relevant information. As the owners of equipment have to bear the expenses related to technical inspection, i.e. the transport costs of the person conducting the inspection, the insufficient availability of the service increases expenses related to the service for the owner of equipment. The technical inspection of plant protection

equipment conducted at present is based on the European EVS-EN 13790-1 standard, which has been transposed into national law in a simplified form. Annex II to Directive 2009/128/EC, establishing the requirements as to the technical inspection of plant protection equipment is also based on the same standard. The problem arises from the fact that the above standard includes inspection principles only with regard to common sprayers (boom sprayers), excluding all other types of equipment. As Directive 2009/128/EC extends the obligation of technical inspection to all equipment in use regardless of its type, the European Commission delegated the mandate for the development of required standards to the European Committee for Standardisation (hereinafter CEN). As the deadline set for Member States for the creation of systems of technical inspection is 26 November 2016, it will hopefully provide a sufficient timeframe for the development of necessary standards. After that national legal acts governing the conducting of technical inspection could be brought into conformity with the standards. The details of technical inspection have been stipulated in Regulation No. 51 of the Minister for Agriculture of 29 April 2005, 'The procedure for regular technical inspection of plant protection equipment'.

As of 2012, 22 persons have undertaken courses in technical inspection organised by the ERIA and have obtained a respective certificate; 14 of them have the possibility to use equipment required for technical inspection. These specialists conduct technical inspection of plant protection sprayers at eight companies. From 2001 to 2011 they have conducted 2,072 technical inspections. The legal acts of the EU do not require that persons conducting technical inspection be trained, but this requirement has been established in the national law of Estonia. This requirement was established based on the need to ensure the availability of quality technical inspection. The existing experience shows that the quality of the activities of different persons conducting technical inspection varies. With an expectation as regards the development of modern technology and taking into account the need to simplify the activities (necessary data transfer etc.) of persons conducting technical inspection, it is appropriate to seek different solutions for supporting this kind of activity, including IT solutions. Directive 2009/128/EC calls on Members States to recognise technical inspections conducted in other Member States (in the event that the interval and the conditions are the same), but on the other hand there are no specific guidelines for this. As Estonia has a well-functioning maritime connection with Finland and it borders Latvia to the south, the provision of cross-border service may lead to the need that technical inspection conducted in another country be recognised. This problem can be bilateral, i.e. the plant protection equipment inspected in a

neighbouring country moves to Estonia and vice versa. Therefore it is appropriate to implement activities that simplify and support this situation. Overview of technical inspections of plant protection equipment conducted from 2001 to 2011 by counties (Figure 8).

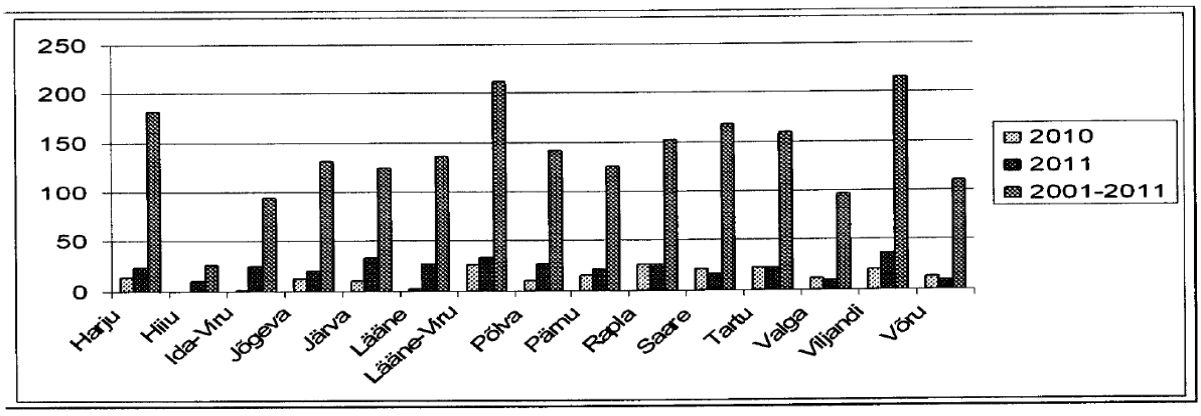
**Figure 8. The number of technical inspections of plant protection equipment conducted from 2001 to 2011 by county**

*Source: The Agricultural Board*

## 6.2. Main problems in the sub-domain

- the effective system of the technical inspection of plant protection equipment does not entirely conform to the requirements of Directive 2009/128/EC;
- the system of technical inspection requires up-to-date solutions in order to function speedily;
- the quality of technical inspection as service provided by the state is uneven;
- the training of persons conducting technical inspection is not sufficiently ensured; and
- there are no conditions /incentives that would provide a prerequisite for the increase in the number of persons conducting technical inspection.

## 6.3. Measure – development of the technical inspection of plant protection equipment and ensuring its sustainability




The objective of the measure is to improve and update the existing system of the technical inspection of plant protection equipment and to ensure the availability of a technical inspection service. The main activity within this measure is the upgrading of the system of technical inspection based on the obligations assigned to Members States by Directive

2009/128/EC, the promotion of the activities of persons conducting technical inspection and the unification of the quality of technical inspection.

# Assessment of the achievement of objectives, financing of activities and their implementation

## *Assessment of achieving the objectives*

The achievement of the objectives set in the action plan will be assessed based on relevant risk indicators. The Commission will develop harmonised risk indicators at the EU level and they will be listed in Annex IV to Directive 2009/128/EC. After that Member States have to apply harmonised EU indicators for the management of risks associated with the use of plant protection products and for the exchange of relevant information. There are several projects in progress in the EU which are aimed at developing the risk indicators of plant protection products. When these activities have been completed and Member States have agreed on stipulating the most appropriate indicator to be applied at the EU level in Annex IV of the Directive, everyone has to start using it. In order to apply this indicator in Estonia, it would be necessary to collect relevant knowledge and experience beforehand by analysing the projects concerned and to test the use of these indicators. The calculation of appropriate indicators is a new task for the sector and its performance requires relevant expertise, and for this the availability of necessary resources has to be ensured.

In addition, Members States can use national indicators, which would make it possible to identify the progress achieved with the help of measures applied for reaching the objective of the action plan and to assess the aptness of the measure chosen. In order to obtain data necessary for assessing the success rate of the implementation of the action plan, relevant studies will be conducted. For a social indicator, the data collected in the course of daily activities of the supervision agency can be used. The prudent and sustainable use of plant protection products includes three components: social, environmental and economic aspects and thus the indicators have to cover all of them.

**1. Social indicator**

1.1. Increase in the number of persons who have undertaken training in plant protection and hold a certificate;

1.2. Decrease in the percentage of samples in which the maximum residue level of a plant protection product is exceeded (from domestic production);

1.3. Decrease in the percentage of samples containing residues of plant protection products (from domestic production).

**2. Environmental indicator**

2.1. Reduction of risks associated with the use of plant protection equipment:

(a) increase in the percentage of agricultural producers who use plant protection equipment with accessories that reduce the drift of plant protection products or that enable lower rates to be used;

(b) increase in the percentage of agricultural producers who can use special wash lots of plant protection equipment, including bio pillows;

2.2. Increase in the scope of implementing the principles of IPM (increase in the percentage of the area of the entire arable land used by the production unit where the principles of IPM are implemented).

**3. Economic indicator**

3.1. The availability of viable and adequate pest management measures for the management of widespread pests and the control of diseases:

(a) descriptions of pest management techniques published;

(b) guidance materials published on IPM and alternative approaches or techniques for pest management;

(c) measures made available for simplifying the application of the principles of IPM;

(d) crop-based IPM guidelines published.

3.2. Increase in the percentage of users who apply biological plant protection products and alternative pest management techniques.

## *Financing and implementation*

The implementation of the action plan will be financed through different sources based on the strategic development plan and legal acts. The action plan will be implemented according to the implementation plan of the ‘Action Plan for the Sustainable Use of Plant Protection Products from 2013 to 2017’. The expenses associated with the implementation of activities will be within the check sum agreed in the national budget strategy and the limit approved in

the state budget. In addition, it is possible to execute the activities set out in the implementation plan within the framework of projects co-financed by the EU or financed from other funds or ‘The Estonian Rural Development Plan’. Certain activities can be implemented administratively in everyday work and without additional expenses.

Ants Noot
Secretary General

Annex 2 to Order No. … of the Minister for Agriculture of … February 2013, ‘Approval of the action plan for the sustainable use of plant protection products for 2013–2017’ and of its implementation plan

The implementation plan of the ‘Action Plan for the Sustainable Use of Plant Protection Products for 2013–2017’

| Sub-domain and the objective of activities | Activities | Implementation deadlines | Responsible agency |
|---|---|---|---|
| **1. Training**<br>The objective of activities is to ensure training in plant protection with even quality. The effective training programme of plant protection will be brought into conformity with the requirements of Directive 2009/128/EC. | 1.1. Training programmes of plant protection based on the requirements of Directive 2009/128/EC will be developed separately for advisors, distributors and users. | 2013 | MoA |
| | 1.2. Preparation and distribution (availability) of learning materials necessary for the organisation of training in plant protection. | 2013 | MoA; adult education institution |
| | 1.3. Harmonisation of the quality of training in plant protection: 1.3.1. training sessions for the organisers of training in plant protection; 1.3.2. preparing uniform examination questions for training in plant protection. | on a regular basis | MoA; AB; adult education institution |
| | 1.4. Financing of further training projects of organisers of training in plant protection. | 2013-2017 | MoA |
| | 1.5. Analysing of the opportunities for the mutual recognition of training in plant protection undertaken in another Member State. | 2014-2015 | MoA; AB |
| | 1.6. Establishment of the procedure for the mutual recognition of training in plant protection undertaken in another Member State. | 2016-2017 | MoA |
| **2. Advising** | 2.1. Training of advisors in plant protection in the area of | 2013 | MoA; adult education institution |

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| The objective of the activity is to ensure the availability of advisory service in the safe use of plant protection products in Estonia that is based on updated knowledge. | effective and safe use of plant protection products. | | |
| | 2.2. Training of advisors in crop farming in the area of integrated pest management. | 2013 | MoA; adult education institution |
| | 2.3. Raising the awareness of advisors in crop farming in the area of developments in research and technology with regard to plant protection. | 2013-2017 | MoA |
| **3. Raising public awareness** The objective of activities is to ensure the availability of sufficient information on plant protection products to the general public. | 3.1. Information on plant protection product targeted at the general public – overviews of the effects of plant protection products will be prepared and published. | 2013-2017 | AB |
| | 3.2. Outsourcing of campaigns targeted at the general public with the aim of raising their awareness with regard to plant protection products. | 2014-2017 | MoA |
| | 3.3 Conducting of regular studies on the quality of information on plant protection and changes thereof. | 2015; 2017 | MoA; market research company |
| | 3.4. Publishing of information materials on plant protection products (articles, printed matter) targeted at the general public. | 2014-2017 | MoA |
| **4. Use of plant protection products** The objective of activities is: to reduce the health and environmental risks associated with the use of plant protection products; to ensure the proper use of plant protection products; to promote cooperation in plant protection in the country; to improve state supervision of | 4.1. Preparation and distribution of instructions for the safe use of plant protection products for professional users of plant protection products. | 2013-2015 | MoA, AB |
| | 4.2 Preparation of instructions for the safe use of plant protection products for non-professional users of plant protection products. | 2013-2015 | AB, JPBI, ERIA; EULS |
| | 4.3. The assessment and identification of the risk level of plant protection products authorised in Estonia. The activity will result in the lists of plant protection products containing both problematic active substances and low-risk active substances. | 2013-2017 | AB, JPBI, ERIA |
| | 4.4 Promotion of biological control and safer techniques | 2014-2017 | MoA |

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| plant protection activities. | of using plant protection products. | | |
| | 4.5. Conducting of studies with the aim of identifying the issues related to the use of plant protection products. | 2014; 2017 | MoA; market research company |
| | 4.6. Conducting of studies with the aim of identifying the issues related to the use of plant protection equipment. | 2014; 2017 | MoA; market research company |
| | 4.7. Promotion of optimised use of plant protection products (e.g. I-Plant Protection will continue to be available free of charge). | 2013-2017 | MoA, ERIA; JPBI |
| | 4.8. Comparisons of plant protection equipment preventing the drift of spraying solution *vs.* regular equipment – data collection and analysis and preparation of overviews. | 2014-2015 | MoA; ERIA |
| | 4.9. Promotion of the increased use of plant protection equipment with special functions for drift prevention. | 2016-2017 | MoA |
| | 4.10.Promotion of the increased use of special plant protection wash lots (including biological pillows). | 2014-2017 | MoA |
| | 4.11. Preparation of lists of basic arable crops, arable crops with small growing area and crops not commonly used. The promotion of the development of opportunities for the use of effective plant production products by informing the parties of the possibilities of extending the usage areas defined in the plant protection product authorisation and by simplifying the relevant procedure. | 2013-2014 | MoA; AB |
| | 4.12. Research work – examination of connections between different soil preparation technologies and the use of plant protection products. | 2014-2017 | ERIA; JPBI; EULS |
| | 4.13. Improvement of the measures and principles of protecting non-target organisms (including bees). Preparing a short checklist (printed) for users of plant protection products and beekeepers. | 2014 | ERIA; JPBI; EULS |

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| | 4.14 Setting up and administering of a plant protection forum. | 2014-2017 | MoA; AB; ERIA; JPBI; EULS; representatives of companies active in the distribution chain of plant protection products; representatives of users of plant protection products. |
| | 4.15 Development of cooperation between supervision agencies. | | AB; VFB |
| | 4.16. Development of the analysis capability of labs. | | MoA |
| | 4.17. Follow-up checks of conditions specified in plant protection product authorisation (resources for monitoring the conditions of use). | 2014-2017 | MoA; AB |
| | 4.18. Development of supervision based on the checks of the use of plant protection products. | 2014-2017 | MoA; AB |
| **5. Integrated pest management**<br>The objective of activities is: to create conditions necessary for the implementation of integrated pest management and alternative approaches or techniques of pest management; to develop and to make available measures that simplify the implementation of the principles of integrated pest management and alternative approaches or techniques of pest management; to promote | 5.1 The creation of conditions for implementing integrated pest management. | 2013-2017 | MoA; AB; ERIA; JPBI; EULS |
| | The establishment of the procedure for the implementation of integrated pest management. | 2013 | MoA |
| | 5.2. Preparation and distribution of guidance materials on integrated pest management. | 2013-2017 | ERIA; JPBI; EULS |
| | 5.3. Developing and making available guidelines on integrated pest management based on arable crops and sectors. | 2013-2014 | ERIA; JPBI |
| | 5.4. Revising of guidelines on integrated pest management (by adding recommendations based on the threshold values of pests) and development of additional guidelines. | 2014-2017 | ERIA; JPBI; EULS |
| | 5.5. Analysis of the general principles of integrated pest management and assessment of their implementation. The hierarchy of the principles of integrated pest management will be analysed and a measurable value will be assigned to every principle – as a result, agricultural producers will | 2013 | MoA; JPBI; ERIA |

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| agricultural production with low input of plant protection products. | obtain a supportive tool for the implementation of the principles of integrated pest management. | | |
| | 5.6 The creation and administration of a warning and forecast system of the spread of pests. | 2014-2017 | MoA; AB; ERIA; JPBI; EULS |
| | 5.7. Distribution of knowledge and practical information on integrated pest management. Specific briefing/field days will be organised for professional users of plant production products; special attention will be paid to professional users in the non-agricultural sector. | on a regular basis | ERIA; JPBI; EULS; the Rural Economy Research Centre (advisors) |
| | 5.8. Implementation of computer-aided measures (I-Plant Protection). Updating and upgrading of computer applications by giving recommendations based on the situation in fields. | 2013-2017 | ERIA; JPBI; EULS |
| | 5.9. Establishing of demonstration farms. Production units will be set up with the production technology that is fully based on the principles of integrated pest management. This kind of model is a good opportunity for promoting this production principle. | 2014-2017 | ERIA; JPBI; EULS; farmers' organisation |
| | 5.10. Research on integrated pest management. Testing of the suitability of plant protection methods conforming to the principles of integrated pest management in local conditions and the promotion of more effective methods. | 2014-2017 | ERIA; JPBI; EULS |
| | 5.11. Conducting of studies with the aim of identifying the development trends related to the implementation of integrated pest management. | 2014; 2017 | MoA; market research company |
| | 5.12. Promotion of the implementation of integrated pest management based on arable crops and sectors. | 2014-2017 | MoA |
| | 5.13. Promotion of more environment-friendly plant production, including that with a low use of plant protection products. | 2014-2017 | MoA |

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| | 5.14. Promotion of organic farming within the framework of 'The Development Plan of Organic Farming in Estonia'. | 2007-2013; 2014-2020 | MoA |
| **6. Inspection of plant protection equipment**<br>The objective of activities is to improve and update the existing system of the technical inspection of plant protection equipment and to ensure the availability of technical inspection service. | 6.1 Analysis of the system of technical inspection of plant protection equipment. | 2013-2016 | MoA; ERIA |
| | 6.2. A system of the technical inspection of plant protection equipment conforming to the requirements of Directive 2009/128/EC will be set up. | 2016 | MoA |
| | 6.3 Training of persons conducting technical inspection of plant protection equipment. The availability of training sessions necessary for conducting technical inspection and the organisation of annual professional training sessions for persons who have undertaken the training will be ensured. | 2013-2017 | MoA |
| | 6.4. Preparation of training materials necessary for the organisation of technical inspection. Uniform training materials will be prepared/translated for the training of persons conducting technical inspection by aligning the training with the principles in use in other Member States. | 2014-2017 | ERIA |
| | 6.5. Updating of the system of technical inspection. An electronic system of technical inspection will be introduced – a web-based program in which persons conducting technical inspection can enter the results of inspections performed directly in the system and the data will be aggregated to AB. | 2014-2017 | MoA; AB |
| | 6.6. List of plant production equipment that have undergone technical inspection – a list will be prepared and disclosed with data on the plant production equipment that have undergone technical inspection. | 2013-2014 | AB |
| | 6.7. Enhancement of the activities of persons conducting technical inspection with the aim of creating conditions for | 2014-2017 | MoA |

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| | increasing the number of new providers of the service. | | |
| | 6.8. Financing of projects for the professional training of specialists involved in technical inspection. | 2014-2017 | MoA |
| | 6.9. Analysing the opportunities for the mutual recognition of technical inspection conducted in another Member State. | 2015-2016 | MoA; AB; ERIA |
| | 6.10. Establishment of the procedure for the mutual recognition of technical inspection conducted in another Member State. | 2016-2017 | MoA |
| **7. Assessment as to achievement of the objectives - risk indicators** | 7.1. Implementation of activities related to the introduction of harmonised EU indicators. | 2013-2017 | MoA |
| | 7.2. Collection of data necessary for assessing the success rate of the implementation of the action plan; to that effect, relevant studies will be conducted. | 2014-2017 | MoA; market research company |
| | ***Social indicator*** | | |
| | •..Increase in the number of persons who have undertaken training in plant protection and hold a certificate | Reference period 2013-2017 | AB |
| | •..Decrease in the percentage of samples in which the maximum residue level of a plant protection product is exceeded (from domestic production). | Reference period 2013-2017 | MoA |
| | •..Decrease in the percentage of samples containing residues of plant protection products (from domestic production). | Reference period 2013-2017 | MoA |
| | ***Environmental indicator*** | | |
| | •..Reduction of risks associated with the use of plant protection equipment:<br>a) increase in the percentage of agricultural producers who use plant protection equipment with accessories that reduce the drift of plant protection products or that enable lower rates to be used; | Reference period 2014-2017 | AB |

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| | b) increase in the percentage of agricultural producers who can use special wash lots of plant protection equipment, including bio pillows. | | |
| | •.. Increase in the scope of implementing the principles of IPM (increase in the percentage of the area of the entire arable land used by the production unit where the principles of IPM are implemented). | Reference period 2014; 2017 | MoA |
| | ***Economic indicator*** | | |
| | •.. The availability of viable and adequate pest management measures for the management of widespread pests and the control of diseases:<br>a) descriptions of pest management techniques published;<br>b) guidance materials published on IPM and alternative approaches or techniques of pest management;<br>c) measures made available for simplifying the application of the principles of IPM;<br>d) crop-based IPM guidelines published. | Reference period 2015-2017 | MoA; ERIA; JPBI; EULS |
| | •.. Increase in the percentage of users who apply biological plant protection products and alternative pest management techniques. | Reference period 2015-2017 | MoA; AB |

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