Appendix to the announcement
of the Minister of Agriculture and Rural Development of 6 May 2013
(O.J. of Republic of Poland “Monitor Polski” item 536)

NATIONAL ACTION PLAN
to reduce the risk associated with the use of plant protection products

INTRODUCTION

The national action plan to reduce the risk associated with the use of plant protection products constitutes the fulfilment of the obligations arising from the provisions of the 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 (OJ L 309, 24.11.2009, p. 71).

Directive 2009/128/EC regulates at EU level the principles of marketing and use of plant protection products in order to reduce risks to human health, animals and the environment, posed by these agents.

Pending the adoption of Directive 2009/128/EC, the European Union legislation had not included detailed rules for the application of plant protection products, leaving considerable freedom in this area to individual Member States of the European Union. Community legislation on plant protection products focused on their marketing and testing foods for the presence of residues of the active substances used in those products. However, many Member States of the European Union, including Poland, introduced national legal solutions, as well as non-legislative measures, that reduce the risk associated with the use of plant protection products – the principles of marketing and use of plant protection products in Poland were regulated by the provisions of the Act of 18 December 2003 on plant protection (Dz. U. of 2008, No. 133, item 849, as amended[1)]).

Regardless of the action taken by the Member States of the European Union to reduce the risks associated with the use of plant protection products, due to the importance of the threats posed by these products to human health and the environment, as well as recognizing the need to reduce the use of these products, this area has been harmonized with EU regulations, *inter alia* the provisions of Directive 2009/128/EC.

In accordance with Article 4 of Directive 2009/128/EC, the Member States of the European Union are required to adopt and communicate to the European Commission and other Member States of the European Union the national action plans to mitigate the risks associated with the use of plant protection products. These plans should set quantitative targets for reducing the risks associated with the use of plant protection products, the measures to achieve these targets and timetables for their implementation.

The National Action Plans of the Member States of the European Union should also describe how they will implement the provisions of Articles 5-15 of Directive 2009/128/EC, concerning in particular:

1) establishment of a system of training for professional users of plant protection products, distributors of these preparations and advisors providing services in the field of plant protection;
2) raising awareness among the general public on plant protection products;
3) ensuring the supervision over the technical condition of equipment intended for the application of plant protection products, which is in use;
4) protection of the aquatic environment and drinking water against contamination by plant protection products;
5) restrictions on the use of plant protection products and the risks arising from their use in areas accessible to vulnerable groups of the population and in areas of high natural value;

6) implementation of the principles of integrated pest management by professional users of plant protection products;
7) monitoring the risks associated with the use of plant protection products.

The legal basis to establish the national action plan is Article 47 of the Act of 8 March 2013 on plant protection products (Dz.U. item. 455). Under the provisions of this Act, the plan shall specify:

1) the objectives to be achieved in reducing the risks associated with the use of plant protection products for human health, animals and the environment, including compliance with the requirements of integrated pest management by professional users, promoting the use of non-chemical methods and reducing crop production based on the use of chemical plant protection products, as well as the dissemination of knowledge regarding the safe use of plant protection products;
2) a schedule for achieving the objectives referred to in point 1;
3) the measures to be taken to achieve the objectives referred to in point 1;
4) the bodies responsible for monitoring the achievement of the objectives referred to in point 1, and the methods of monitoring;
5) the indicators to assess the risks associated with the use of plant protection products for human and animal health, and the environment, including concerning the application of plant protection products, and the method of sharing the results of the risk assessment to the public.

Pursuant to the provisions of Article 47 of the Act of 8 March 2013 on plant protection products, the National Action Plan, and all amendments thereto, shall be drawn by the minister in charge of agriculture, in consultation with the minister responsible for health and the minister responsible for the environment, and ensuring the participation of the public in the development of this document.

In accordance with the provisions of Article 47(5) of the Act of 8 March 2013 on plant protection products, the national action plan is to be announced, by an announcement, by the minister responsible for agriculture in the Official Journal of the Republic of Poland, the " Monitor Polski". At the same time, the minister responsible for agriculture communicates the National Action Plan to the European Commission and other Member States of the European Union.

The body responsible for carrying out the monitoring of the achievement of objectives of the National Action Plan is the minister responsible for agriculture, which shall also review the National Action Plan at intervals not longer than five years and in the case of non-execution or risk of non-execution of its objectives, shall make changes to the document.

The objectives and actions referred to in this document and aimed at reducing the risk associated with the use of plant protection products and dependence of agricultural production on their use result from the characteristics and conditions of Polish agriculture and the analysis of actions taken so far in this area, with particular focus on the area of the food safety.

ANALYSIS AND ASSESSMENT OF THE CURRENT STATUS IN THE MARKETING AND USE OF PLANT PROTECTION PRODUCTS

I. SELECTED INFORMATION ABOUT POLISH AGRICULTURE

Poland is a country in Central Europe with an area of 312.7 thousand km^2 and a population of 38.1 million people.

From 1 May 2004, Poland has been a member of the European Union of 27 countries, taking 6th place in terms of total population, and the first in terms of the agricultural population and second place (after Romania) in terms of number of farms - 2.3 million. Employment in agriculture, hunting, forestry and fisheries is 2.5-fold higher than the percentage of workers in these sectors in the EU-27 (respectively - 14.7% and 5.8%). Poland takes up 7.1% of the total EU area, bordering seven countries, including four members of the EU (Germany, Czech Republic, Slovakia and Lithuania) and three non-EU countries (Russia, Belarus, Ukraine).

Poland has a large variety of natural environment. Special protection is given to national parks occupying more than 314.5 thousand ha, there are 1469 nature reserves with total area of over 164 thousand ha, landscape parks have an area of nearly 2 607 thousand ha and there are 36 thousand natural monuments. The share of forest land in the total land area of the country exceeds 30%.

Over 75% of the territory is situated below 200 m a.s.l. and only 3% lies above 500 m a.s.l. The climate in Poland is characterized by large fluctuations in the length of seasons. In the last three years, the average air temperature ranged from 8.6°C to 9.4°C and rainfall between 609 mm and 717 mm. Precipitation is the main source of water and is characterized by large fluctuations in years, months and regions. As a result, there are areas of drought and flooding.

The total area of Poland is 31.3 million hectares, including agricultural land area of 15.5 million hectares, covering 49.6% of the total area of the country. The area of agricultural land in good culture in 2010 was 14.6 million hectares, accounting for 94.2% of the total area of agricultural land.

Quality of agricultural land in Poland is low, lower than the average in the European Union. A large share of poor and acidified soils reduces the usefulness of agricultural land. The share of light soils, characterized in Poland by high sandiness, is twice the average in the EU, in Poland it is 60.8% and in the EU - 31.8%. Soil quality indicator which is a quotient of conversion hectares and agricultural land is 0.82 in Poland. Unfavourable soil conditions and worse weather conditions result in lower productivity of land, compared to the EU average.

Polish agriculture is characterized by high fragmentation - according to the results of the Agricultural Census conducted by the Central Statistical Office in 2010, the average farm size was 6.81 ha of agricultural land (the average size of farms with agricultural activities - 7.95 ha). There is a regional diversity of farm structure, where the south-eastern voivodeships are characterized by a large number of small farms, while in the northern voivodeships the farms are the largest in terms of area (Figure 1 and Chart 1).

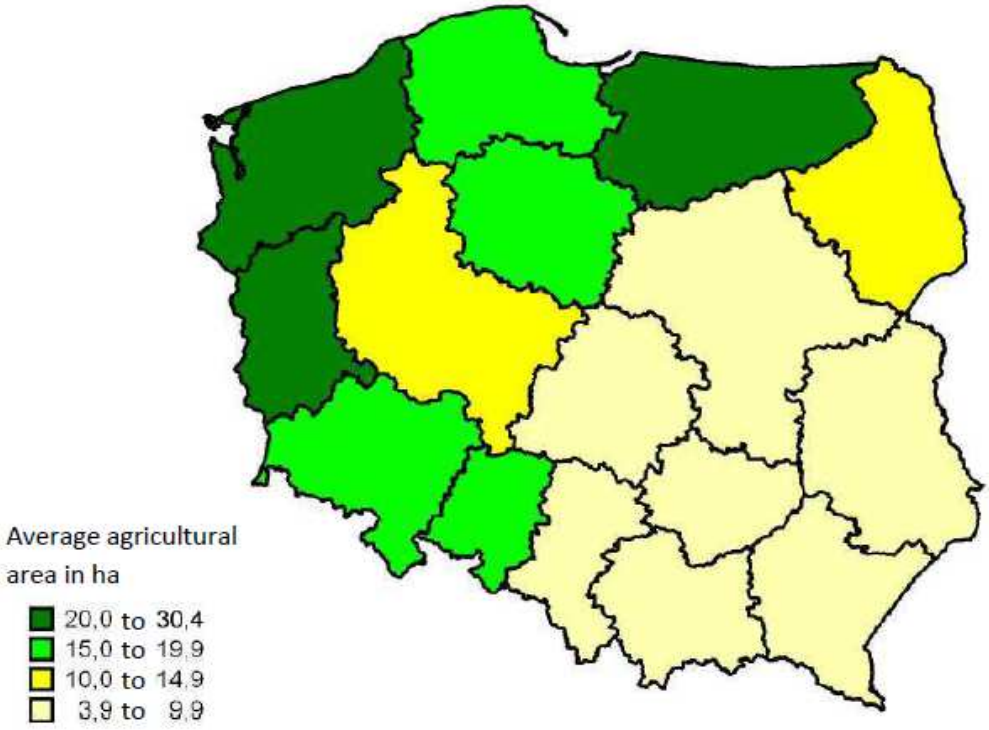

Figure 1. *Average area of arable land in farms conducting agricultural activities with an area exceeding 1 ha of agricultural land (Central Statistical Office, 2011).*

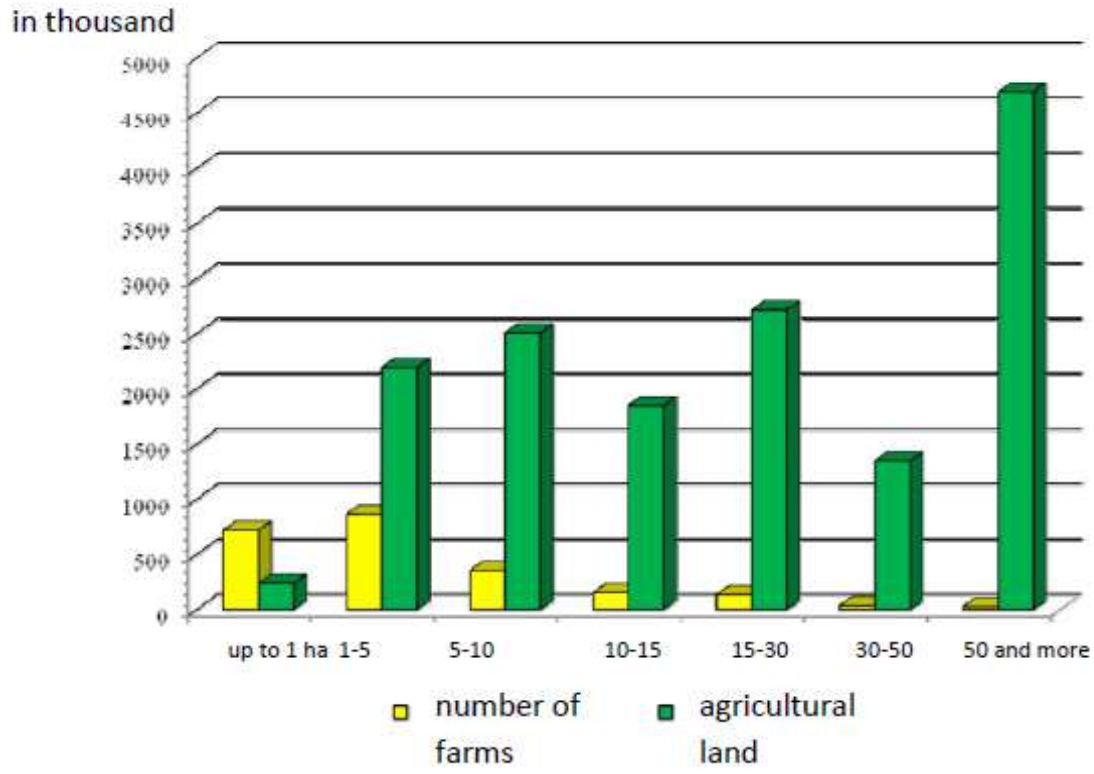

Chart 1. *Number of farms and agricultural area by area groups of agricultural land (Central Statistical Office, 2011).*

At the same time, according to the data of the Central Statistical Office from the Agricultural Census in 2010, 1.9 million farms in 2010 conducted agricultural activities. At the same time 38.3% of all individual farms (Agricultural Census in 2010) produces solely or principally for their own needs, reducing spending on food and family expenses. Many users limit agricultural production, or even give it up. These farms with a relatively small area employ traditional production methods with low use of mineral fertilizers and plant protection products, as well as commercial feed fed to livestock, especially to cattle. One can point to the trend of the production of healthy, high quality food using traditional recipes and environmentally friendly methods. Despite this, as well as the prevalence of soils with low agricultural suitability, Poland is an important manufacturer of products of agricultural, horticultural and animal origin.

The data of the Agricultural Census in 2010 published by the Central Statistical Office show significant changes in crop structure (see Chart 2) compared to 2002, with significant reduction in the total area under cereals from 8.3 million hectares to 7.6 million hectares, the area of potatoes from 0.8 million hectares to less than 0.4 million hectares (by 51.8%), sugar beet from 0.3 million hectares to 0.2 million hectares (by 31.9%). However, the area under rape and agrimony increased compared to crop area recorded in the census of 2002, from 0.4 million hectares to more than 0.9 million hectares (by 115.5%), also the area of fodder crops increased from 0.6 million ha to 0.9 million hectares (by 60.1%), and there was an increase in the area of other crops group on a similar level. In addition, there was an increase in the share of the total orchard area in the total area of agricultural land from 1.6% to 2.4%, i.e. down by 0.8 percentage points and an increase in the area of specialty fruit farms to 374 thousand hectares (38.1%), including the increase in the area of orchards in farms using more than 1 ha of agricultural land to 364 thousand ha (by 44.1%).

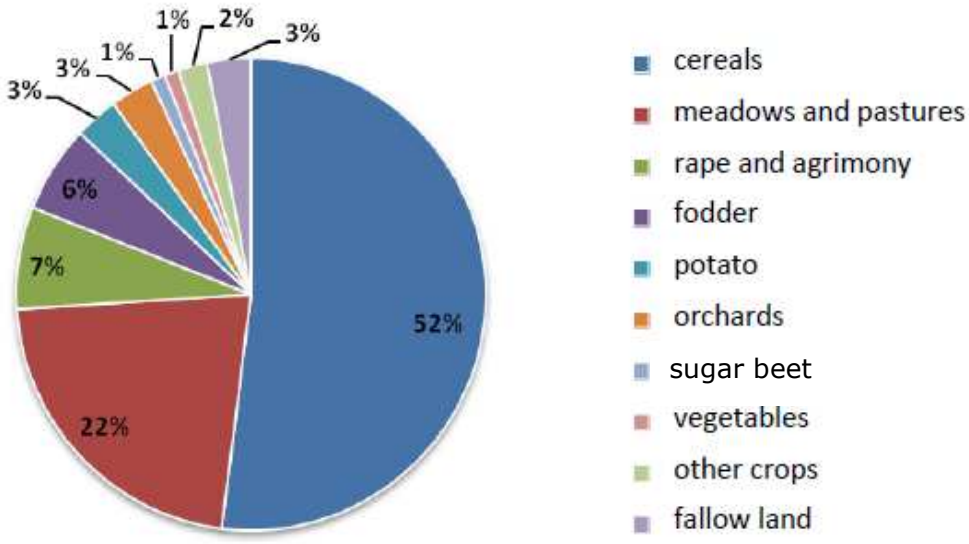

Chart 2. *Use of agricultural land in good culture in 2010 in % [100% = 14.6 million ha]*

In 2010, the gross agricultural output at current prices reached PLN 84.5 billion and was 5.7% higher than in 2009. The plant production reached PLN 44.9 billion and was 7.2% higher compared to the previous year, and livestock production in the amount of PLN 39.6 billion increased by 4.1%. Comparing the data published by the Central Statistical Office on agricultural production in the European Union in 2010, one can observe a large variation among the Member States. Assuming the value of the level of crop production and livestock production of all EU countries as 100%, one can make a comparison of Poland and selected countries. France has the largest share in the EU's agricultural production – it amounts to 19.9% for crop production and 16.3% for livestock production, the smallest share is that of Malta, whose participation in the EU's agricultural production does not exceed 0.1%. Germany's share in crop production stands at 11.6%, and in livestock production at 15.2%. The share of Polish crop production in relation to the EU-27 is 5.2% and that of livestock production is 6.4%. With this level of agricultural production Poland ranks 7th among the 27 countries belonging to the European Union.

Comparing the Eurostat data on expenditures incurred in 2005 for fertilizers and plant protection, it can be noted that Poland is one of the few countries belonging to the European Union where such expenses are at a low level. For example, Belgium spent 156 EUR/ha for fertilization, the Netherlands 126 EUR/ha, France 92 EUR/ha, and Germany and Italy about 75 EUR/ha. In Poland, expenses for fertilization were 40 EUR/ha. The Netherlands spent the most on plant protection (275 EUR/ha), followed by Belgium, about 218 EUR/ha, France and Germany, around 135 EUR/ha, and Italy 65 EUR/ha. In Poland, the expenditure on plant protection in 2005 stood at 28 EUR/ha.

Given the above, it should be noted that, compared with the developed EU countries, Poland steadily increases the efficiency and effectiveness of agricultural production, taking into account the priority of sustainable development. This is favoured *inter alia,* by resources of the structural funds earmarked for instruments intended for financial support for improving the competitiveness of agricultural farms through the modernization of technical infrastructure for production, adjustment of the profile, scale and quality of production to the market needs, increasing food safety, improving animal welfare, environmental protection and occupational safety. Furthermore, through the implementation *inter alia* of cross-compliance principles the level of agricultural culture also increases. Therefore, the consumption of agricultural production products is still expected to grow in Poland, including the overall level of consumption of plant protection products, but taking into account their sustainable use as priority.

The development of agricultural and food economy in Poland from the 1950s is inseparably associated with the use of plant protection products. It should be noted, however, that their use is at a much lower level than in other EU countries with highly developed agriculture. Notwithstanding the overall low consumption of pesticides, in the last two decades there were a number of measures aimed at reducing the risks associated with the use of plant protection products, in particular through legal regulations. In addition to legislative action, in Poland there are also initiatives taken by individuals outside the government, aimed at raising awareness of farmers on the proper use of plant protection products. An example is the action taken by the Institute of Horticulture in Skierniewice,

under the project TOPPS (Training the Operators to Prevent Pollution from Point Sources), to reduce pollution from point sources and contamination of waters by plant protection products. TOPPS primary task is to develop a Code of Good Practice of Plant Protection Organizations and disseminate its principles through advisory services, training and demonstrations, in a coordinated way across Europe. TOPPS activities are conducted involving the Agricultural Advisory Services, using a variety of training materials, including brochures, leaflets, multimedia presentations and films. Currently run project, TOPPS - PROWADIS, expands the scope of training and demonstration activities to issues related to the reduction of dispersed pollution (drift and flow of plant protection products from fields to waters). These activities are aimed at increasing the awareness of users of plant protection products on the implementation of the principles laid down in Directive 2009/128/EC. Legal solutions, as well as the activities carried out by the state administration and cooperating organisational units are presented in the following sections of this document.

Sources of data:

1. Agriculture and food economy in Poland – Ministry of Agriculture and Rural Development, Warsaw 2011
2. Agricultural Census 2010 - "Crops and selected items of plant production methods" - Central Statistical Office, 2012
3. Agricultural Census 2010 - "Land use" - Central Statistical Office, 2011
4. Poland in the European Union, Central Statistical Office, 2011
5. Agricultural Statistics - Main Results 2006-2007, Eurostat, 2008 edition.

II. NATIONAL REGULATIONS RELATING TO THE REDUCTION OF RISKS ARISING FROM THE USE OF PLANT PROTECTION PRODUCTS, ADOPTED BEFORE THE ENTRY INTO FORCE OF THE PROVISIONS IMPLEMENTING DIRECTIVE 2009/128/EC

Most of the obligations imposed on Poland by the provisions of Directive 2009/128/EC have been implemented through actions arising from legal arrangements that were initially recorded in the Act of 12 July 1995 on the protection of crop plants (Dz.U. of 2002, No. 171, item 1398, as amended[2)]), and subsequently in the Act of 18 December 2003 on the protection of plants. This legislation allowed:

1) development of the system of mandatory, periodic examinations of technical efficiency of tractor and self-propelled field and orchard sprayers;
2) development of the system of compulsory periodic training for users of plant protection products in agriculture and forestry;
3) development of the system of compulsory periodic training for those in contact with plant protection products, in the exercise of duties related to trading or packaging of these products;
4) imposing on the holders of land or storage facilities, where treatments with the use of plant protection products are carried out, the obligation to keep records of plant protection treatments;
5) determination of the minimum distance from certain locations or objects, where plant protection products can be used (roads, water intake protection zones, surface waters, apiaries, nature reserves);
6) determination of weather conditions in which one can perform treatments with plant protection products, including treatments performed using agricultural aviation equipment intended for the application of plant protection products;
7) introduction of an obligation to be entered in the register of regulated activity for businesses operating in the field of marketing or packaging of plant protection products;
8) determination of the rules for the application of plant protection products with agricultural aviation equipment, including a ban on the use of such equipment for herbicides, desiccants and plant protection products that are particularly harmful to human health;
9) development of the system of control of the marketing and use of plant protection products, *inter alia* covering such issues as examination of residues of plant protection products in agricultural crops and the quality of these products on the market;
10) development of the system to monitor the consumption of plant protection products.

Legal solutions that reduce the risk associated with the use of plant protection products are included in other legislative acts on the protection of the environment and human and animal health.

The provisions of the Act of 18 July 2001 – the Water Law (Dz.U. of 2012, item 145, as amended [3)]):

1) make it possible to prohibit or restrict the use in water indirect supplies protection areas of fertilizers and plant protection products, which can reduce the usefulness of water of efficiency or water intake;
2) prescribe:
   a) determination by the minister responsible for water management in consultation with the minister responsible for the environment, of the list of priority substances (substances of particular risk to the aquatic environment, whose elimination should be a priority in the policy of protection of water), having regard to the provisions of European Union law on priority substances in the field of water policy,
   b) the treatment of wastewater released into water or soil to the extent that they do not contain: dichloro-diphenyl-trichloroethane (DDT), polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCT), aldrin, dieldrin, endrin, isodrin, hexachlorocyclohexane (HCH);
3) prohibit:
   a) in the areas of direct protection of groundwater and surface water intakes, the use of land for purposes unrelated to the use of water intake,
   b) collection of water directly from surface water for agricultural sprayers and washing them in these waters.

The Act of 16 April 2004 on environmental protection (Dz.U. of 2009, No. 151, item 1220, as amended[4)]) prohibits the use of chemical and biological plant protection products and fertilizers in national parks and nature reserves.

The provisions of the Act of 28 July 2005 on health resorts, spas and spa conservation areas and on spa gminas (Dz.U. of 2012, item 651 and 742) prohibit agricultural activities, including the use of plant protection products for agricultural purposes in the "A" area of spa conservation.

In addition, pursuant to the provisions of the Act of 26 June 1974 – the Labour Code (Dz.U. of 1998, No 21, item 94, as amended[5)]), the Regulation of the Minister of Agriculture and Rural Development of 24 June 2002 on health and safety at the handling and storage of plant protection products and mineral and organic-mineral fertilizers (Dz.U. No. 99, item 896 and of 2005 No. 88, item 752) defines the principles of safe use and storage of plant protection products, including:

1) requirements to be met by workers engaging in work related to the use and storage of plant protection products;
2) technical requirements for warehouses where these products are stored;
3) the treatment of unused plant protection products and fertilizers, process fluids and empty packaging;
4) the method of washing and cleaning of vehicles and equipment after use.

Based on the provisions of the Regulation of the Minister of National Education of 7 February 2012 on the core curriculum in vocational education (Dz.U. of 2012, item 184), the ability to choose

methods and plant protection products in accordance with the principles of integrated pest management is a part of education in occupations: farmer, farmer technician, agribusiness technician, beekeeper and beekeeper technician.

The national legislation, namely:

1) the Act of 18 December 2003 on the protection of plants,
2) the Act of 14 March 1985 on the State Sanitary Inspection (Dz.U. of 2011, No. 212, item 1263, of 2012, item 460 and 892 and of 2013, item 2),
3) the Act of 29 January 2004 on Veterinary Inspection (Dz.U. of 2010, No. 112, item 744 and of 2011, No. 54, item 278),
4) the Act of 7 June 2001 on the collective water supply and collective sewage reception (Dz.U. of 2006, No. 123, item 858, as amended[6)]),
5) the Act of 27 April 2001 – the Environmental Protection Law (Dz.U. of 2008, No. 25, item 150, as amended[7)]),
6) the Act of 22 July 2006 on feed (Dz.U. No. 144, item 1045, as amended[8)]),
7) the Act of 16 December 2005 on products of animal origin (Dz.U. of 2006, No. 17, item 127, as amended[9)]),
8) the Act of 25 August 2006 on food safety and nutrition (Dz.U. of 2010, No. 136, item 914, as amended[10)]),
9) the Act of 20 July 1991 on the Inspection of Environmental Protection (Dz.U. of 2007, No. 44, item 287, as amended[11)])

- identify the bodies responsible for supervision of the marketing and use of plant protection products, food safety in relation to residues of plant protection products and assessment of the environment in terms of contamination with such preparations as a result of their use.

Poland has also adopted provisions allowing for the collection of data on the sale and use of plant protection products. The legal basis, which sets out the powers of the national authorities in the scope of research of sales and use of plant protection products, is the annually issued regulation of the Council of Ministers on the programme of public statistical surveys for the given year, on the basis of the authorization contained in the Act of 29 June 1995 on public statistics (Dz.U. of 2012, item 591 and of 2013, item 2). These provisions are consistent with the regulations under the Regulation (EC) No 1185/2009 of the European Parliament and of the Council of 25 November 2009 concerning statistics on pesticides (OJ L 324, 10.12.2009, p. 1, as amended), regulating the rules for the conduct and scope of the surveys on plant protection products at the level of the European Union.

Starting from 2011, under the cross-compliance, which makes the obtaining of direct payments and payments under certain actions of the Rural Development Programme (RDP) 2007-2013 dependent on fulfilling certain standards and requirements on, *inter alia,* environmental protection, food safety and animal welfare, there are also controls of the proper application of plant protection products by farmers.

III. MEASURES TO REDUCE THE RISK ASSOCIATED WITH THE USE OF PLANT PROTECTION PRODUCTS, TAKEN BEFORE THE ENTRY INTO FORCE OF THE PROVISIONS IMPLEMENTING DIRECTIVE 2009/128/EC

Measures to reduce the risks associated with the use of plant protection products, including those regarding:

1) compliance with the requirements of integrated pest management by professional users of plant protection products,
2) promoting the use of non-chemical methods of pest management and reducing the dependency of crop production on the use of chemical plant protection products,
3) dissemination of knowledge regarding the safe use of plant protection products

- were taken in Poland before the entry into force of the provisions implementing the Directive 2009/128/EC, on the basis of national legislation referred to in Chapter II.

These measures, taking into account the need to maintain a balance between the social, economic and environmental needs, focused on two main areas:

1) trade in plant protection products;
2) use of plant protection products.

Most of these measures will be continued under the provisions of the Act of 8 March 2013 on plant protection products.

1. MEASURES IMPLEMENTED IN THE AREA OF TRADE IN PLANT PROTECTION PRODUCTS

Measure 1. The introduction of changes in the authorization of plant protection products on the market

Managing the risks associated with the use of plant protection products is done at the stage of placing them on the market - the so-called "registration procedures". The purpose of registration procedures is to establish conditions for the safe use of these preparations, which guarantee the safety of people, animals and the environment. The tasks in this area are in particular the responsibility of the minister in charge of agriculture.

The market of plant protection products in Poland after accession to the European Union had been greatly influenced by implementation of provisions of Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market (OJ L 230, 19.08.1991, p. 1, as amended, Special edition in Polish: Chapter 03 Volume 11 p. 332, as amended), and therefore by review of all authorized plant protection products, taking account of the criteria for approval of active substances under the provisions of this Directive. It should be noted that among more than 1,200

active substances, which were subject to verification, starting from 1991, more than 400 were approved for use in plant protection products. This resulted, also in Poland, in the withdrawal from the market of a number of plant protection products containing active substances not approved for use in those preparations. Furthermore, many preparations were imposed restrictions on the scope and conditions of use. These activities resulted in the withdrawal from the market and use of more than 460 plant protection products since 2004. It should be noted that the withdrawal of such a large number of preparations in the short term (2004-2010) resulted in a negative impact on ensuring effective protection of many plant species, including, in particular, minor crops.

The chart below shows the number of plant protection products introduced and withdrawn from the market in 2004-2011.

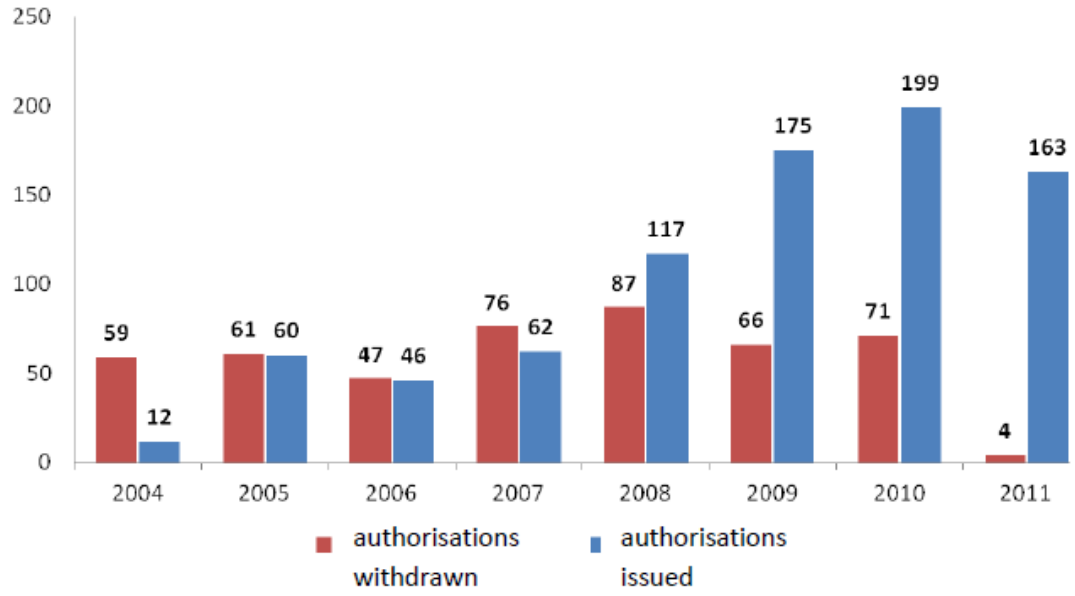

Chart 3. *Number of issued and withdrawn authorizations for placing plant protection products on the market in 2004-2011*

Using harmonized rules and criteria in the process of approval of active substances and authorizing placing of plant protection products on the market is the most effective mechanism contributing to reducing risks that may increase due to the use of these preparations. 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 (OJ L 309, 24.11.2009, p.1, as amended), with effect from 14 June 2011, introduces new mechanisms and criteria significantly affecting the area associated with the marketing and use of plant protection products, including the implementation of the general principles of integrated pest management.

Measure 2. Conducting the system of plant protection products efficacy testing

Adoption in Poland of legal regulations defining the principles of conducting research into the plant protection products efficacy, as well as concerning supervision over bodies responsible for such testing, was aimed at ensuring compliance of the trails with the principles of good experimental practice and the guidelines of the European and Mediterranean Plant Protection Organization (EPPO), mitigating the risks associated with the release of the tested preparations to the environment, as well as their quality.

Permit to conduct experiments involving the release into the environment of an unauthorised plant protection product is issued by the Minister of Agriculture and Rural Development, and the supervision over the units authorized to conduct the research is done by the State Plant Health and Seed Inspection Service. In 2011, 669 permits were issued for conducting experiments and tests for research and development purposes related to the release into the environment of plant protection products for 38 authorized units.

The efficacy trails of plant protection products, carried out by authorized units, took into account, in particular, the elements crucial to establishing conditions for the safe use of these preparations, namely:

1) the effectiveness of a plant protection product in the control or prevention of a harmful organism or in influencing the life processes of plants cultivated in any other way than as a nutrient;
2) phytotoxicity of a plant protection product, taking into account different varieties of plants;
3) the impact of a plant protection products on the yield quality and volume or plant products in phytotoxicity tests, if such tests were carried out, or in studies that examined its effectiveness;
4) the possibility of emergence of resistance to a plant protection product;
5) the possibility of adverse or unexpected side-effect of a plant protection products on beneficial and other organisms, on succeeding crops and neighbours and the impact on plants for seed production.

Supervision of the bodies responsible for testing the efficiency of plant protection products will continue under the provisions of the Act of 8 March 2013 on plant protection products.

Measure 3. Organisation of a training system for dealers of plant protection products

In order to reduce the risks associated with trading and packaging of plant protection products to those directly engaged in activities requiring contact with the preparations and for buyers of these products, the provisions of the Act of 12 July 1995 on the protection of crops introduced mandatory training for persons employed by entities conducting trade or packaging of plant protection products. The training system was maintained in the provisions of the Act of 18 December 2003 on the plant protection. Training was carried out by units registered in the register of regulated activity, within the meaning of the provisions on freedom of economic activity, by the competent voivodeship inspector of plant health and seed inspection, in accordance with the training programmes set out in the

implementing provisions of the act indicated above. Certificates of completion of training were issued for a period of five years - after the expiry date, the people involved in the sale or packaging of plant protection products were required to be trained again.

On 31 December 2011, the records kept by voivodeship inspectors of plant health and seed inspection included 167 units engaged in training in this area. In 2011, the State Plant Health and Seed Inspection Service supervised 226 trainings completed by 3,983 people.

The creation of a system of mandatory training for those employed in the sale or packaging of plant protection products had a significant impact on the health of these workers, as well as providing information on the safe use of these preparations during the sale.

Implementation into the Polish law of the provisions of Directive 2009/128/EC made it necessary to carry out major modifications to the system of training for those involved in sale of plant protection products, introduced in the Act of 8 March 2013 on plant protection products.

Measure 4. Control of marketing and packaging of plant protection products

In accordance with the provisions of the Act of 18 December 2003 on the plant protection, the supervision over trade and packaging of plant protection products is the responsibility of the State Plant Health and Seed Inspection Service. The elimination of violations of legal norms in the field of marketing and packaging of plant protection products has a fundamental impact on reducing the risks associated with their trading, and subsequently with the use of these preparations.

The tasks carried out by the State Plant Health and Seed Inspection Service include in particular:

1) control of the marketing of plant protection products (to prevent introduction and elimination from the market of unauthorised or counterfeit products, which pose unknown risk to humans, animals and the environment);
2) examination of the quality of plant protection products placed on the market;
3) control of the conditions of sales of plant protection products.

The State Plant Health and Seed Inspection Service conducted 6,268 controls in 2011 at places of marketing and packaging of plant protection products and 125 controls to verify the execution of previously issued control recommendations.

In 2011, the irregularities accounted for 2.5% of controls (data relating to the number of control activities performed, not the number of controlled entities). The irregularities mainly related to: no update of labels of plant protection products (43.2% of all irregularities) and the presence on the market of obsolete plant protection products (19.5% of all irregularities).

In addition, in 2011, as part of the quality control of plant protection products placed on the market, the Service collected 308 samples of these preparations for laboratory testing. The tests analyzed the basic quality characteristics of the products, such as active substance content and

physico-chemical properties. The tests also checked the compatibility of results obtained with the requirements set in the registration process.

The results of tests conducted by the State Plant Health and Seed Inspection Service show that trade and packaging of plant protection products in Poland is done in most cases according to the law.

2. MEASURES IMPLEMENTED IN THE AREA OF USE OF PLANT PROTECTION PRODUCTS

Measure 1. Dissemination of the general principles of integrated pest management

Improper or excessive use of chemical plant protection products entails a number of risks, including pressure on the environment, reducing biodiversity of agrocoenosis, the appearance of organisms harmful to plants resistant to their application and the presence of pesticide residues in agricultural crops in quantities that endanger the health of consumers.

In order to ensure proper protection of crops against organisms harmful to plants, while reducing the negative effects of the use of chemical plant protection products and ensuring safety of both the environment and consumer health, the foundations of integrated pest management were developed.

Integrated pest management is a way of protecting plants against harmful organisms, which involves using all available methods of plant protection, in particular non-chemical methods, in a way that minimizes risk to human health, animals and the environment. Integrated pest management uses fully knowledge of organisms harmful to plants (in particular, their biology and harmfulness) in order to determine the optimum time for taking action against these organisms, it uses natural occurrence of natural enemies, including predators and parasites of organisms harmful to plants, and makes use of their introduction. The integrated pest management can reduce the use of these preparations to a minimum, thus minimizing pressure on the environment and protect biodiversity of agricultural environment.

Despite the fact that under the provisions of Article 55 of Regulation No 1107/2009 the professional users of plant protection products are required to apply the general principles of integrated pest management as of 1 January 2014, even before the adoption of this Regulation, pursuant to the provisions of national law, there has been a number of initiatives to disseminate this model of protecting plants.

Task 1. Dissemination of knowledge in the field of integrated pest management

The condition for the implementation of practices and technologies to reduce the risks associated with the use of chemical plant protection products in crop production is the effective transfer of knowledge from scientific units to agricultural producers.

An important role in the transfer of knowledge in the field of integrated pest management is played by trainings, conferences, workshops and publications and information materials prepared and developed as part of the statutory activities of research institutes, academic units, advisory services, local agricultural governments, industry organizations and producer groups, as well as by

manufacturers and distributors of plant protection products. However, in order to increase the efficiency of knowledge transfer, it was necessary to support these activities by the government.

There are a number of initiatives undertaken in this regard in order to disseminate knowledge of integrated pest management. One example would be a multiannual programme called "Crop protection including food safety and reducing yield losses and risks to human health, animals and the environment", in which, starting from 2011, the Institute of Plant Protection - National Research Institute in Poznań conducts the task of "Promoting and implementing the knowledge of integrated pest management". Within the task there are at least three national conferences and trainings on topics on integrated pest management organized every year. In 2011, as part of this task, there were four trainings organized in integrated pest management, completed by 265 people. The main target group of trainings were advisors working in the field of plant protection products, which provide knowledge acquired during the training to agricultural producers. The described task is a continuation of task carried out in 2006-2010 by the Institute of Plant Protection - National Research Institute in Poznań, under the multiannual programme "Crop protection including food safety and reducing yield losses and risks to human health, animals and the environment", entitled "Development of programmes and organization of regular training for plant protection service, agricultural and horticultural producers and advisors". Under the task, in 2006-2010, there were 12 training courses and two workshops on issues such as: good plant protection practice, integrated pest management, integrated crop production, organic production and good experimental practice. The training and workshops were attended by over 1200 people.

Task 2. Developing and providing methodologies for integrated pest management of certain crops

The implementation of the principles of integrated pest management requires providing agricultural producers and other users of plant protection products with tools in the form of methodologies of integrated pest management of certain crops.

The Ministry of Agriculture and Rural Development commissioned in 2011 the development of methods of integrated pest management, covering agricultural, horticultural, industrial crops and edible mushrooms, which are successively made available on the Ministry's website. This task is implemented, among others, on the basis of the multiannual programme adopted in 2011 and implemented by the Institute of Plant Protection - National Research Institute in Poznań, under the name of "Crop protection including food safety and reducing yield losses and risks to human health, animals and the environment."

Task 3. Maintaining a pests signalling system

In accordance with the provisions of Article 4(2) of the Act of 18 December 2003 on the plant protection, the voivodeship inspector of plant health and seed inspection, in the case of finding the

risk of spreading of a non-quarantine organism or the possibility of causing economic loss by this organism, provides information on the methods and timing for treatments against this organism to interested parties.

These regulations are the basis for the signalling by the State Plant Health and Seed Inspection Service of the dates for combating organisms harmful to plants.

Based on the structure of economically important crops in the area, as determined by individual voivodeship inspectorates of plant health and seed inspection, observations are conducted on randomly selected farms of the occurrence of non-quarantine organisms and the level of damage caused by disease, pests and weeds in these crops is recorded. These observations are used *inter alia,* to indicate the dates of crop protection treatments. Data on expected dates of treatments are provided:

1) through a computerized system for pests signalling, which is widely available on the website of the State Plant Health and Seed Inspection Service;
2) electronically to the gmina offices, places for trading plant protection products, seed treatment, gardening shops, and other entities, including the producers;
3) through direct or phone contact of the manufacturer with an employee of the Service at the entity domicile or in the field.

Maintaining an independent pests signalling system is important when making a decision to carry out treatments using plant protection products.

Task 4. Providing of decision support systems in crop protection

Decision support systems in crop protection are important tools to facilitate the implementation of the principles of integrated pest management. These systems are useful in determining the optimal dates for crop protection treatments, and thus allow for high efficiency of these treatments while reducing the use of chemical plant protection products to a minimum.

Research and dissemination works associated with decision support systems in crop protection are carried out by research institutes, academic units, advisory services, industry organizations and groups of agricultural producers and producers and distributors of plant protection products, examples of which are shown below in Table 1.

Table 1. *Selected decision support systems in plant protection, accessible via the Internet.*

Name of decision support system for plant protection	Implementing body	Description
Online pest signalling system	State Plant Health and Seed Inspection Service	The system covers the whole country and includes a list of economically important crops in the area and a list of pests that can cause significant economic damage. Observations carried out on randomly selected farms

		reported the occurrence of organisms harmful to plants and recorded the level of damage caused by disease, pests and weeds in these crops. These data allow for providing approximate date of the occurrence of pests and how to combat them.
Signalling pests	Institute of Plant Protection - National Research Institute	The system includes the results of monitoring at selected locations of different developmental stages of pests for the purpose of short-term forecasting and complements signalling of pests conducted by the State Plant Health and Seed Inspection Service. If the threshold of economic harm is exceeded, the system indicates the need to perform the treatment. Moreover the system also includes an educational section that allows monitoring of crops and making decisions on the optimal date for treatment. For each pest, the system provides basic information about morphology, biology, and methods of conducting field observations, as well as the threshold of economic harm.
Integrated cultivation of tomato under cover	Institute of Horticulture	The system is a decision tree that step by step helps producers in decisions on integrated production of tomatoes under cover. This programme allows determining: - the causes of growth and development disorders of plants caused by non-infectious causative factors, - the causes of crop damage caused by fungal, bacterial and viral diseases, - causes of crop damage caused by pests.
Monitoring of potato blight	Institute of Plant Protection - National Research Institute	The key elements of the system are three web applications. The first is used to indicate the time of the first treatment against potato late blight based on meteorological data from weather stations of the Institute of Meteorology and Water Management from across Poland. The second is used to indicate the time of the first treatment against potato late blight based on meteorological data transmitted from field meteorological stations located in the following voivodeships: Wielkopolskie Voivodeship, Dolnośląskie Voivodeship, Kujawsko-Pomorskie Voivodeship, Pomorskie Voivodeship, Zachodniopomorskie Voivodeship and Podkarpackie Voivodeship. Based on the results of measurements of temperature, relative humidity and rainfall, the date is indicated for the first treatment against potato late blight. The third application is for the dissemination of information on the results of monitoring of potato cultivation in the whole country. Monitoring results for late blight immediately after their introduction to the system are presented in graphical and tabular form. The results of field observations are entered into the system once a week by trained employees representing academic institutions (Research Centre for Cultivar Testing and Institute of Plant Protection - National Research Institute) and agricultural advisory units.

Monitoring of brown rust of cereals	Institute of Plant Protection - National Research Institute	The system enables the presentation of the development of wheat leaf rust and rye brown rust in selected plantations of wheat, triticale and rye. A key element of the system is the application developed using the CMS (Content Management System) that allows graphical and tabular presentation of information immediately after its introduction. The results of field observations are entered into the system once a week by trained employees of the Research Centre for Cultivar Testing and the Institute of Plant Protection - National Research Institute.
Post-registration Variety Experimenting Recommending varieties	Research Centre for Cultivar Testing	Decision support system for the selection of varieties for cultivation, comprising: - information on the functioning of the Post-registration Variety Experimenting programme, - list of varieties recommended for cultivation within the particular species and in the particular voivodeships, - publication of results of Post-registration Variety Experimenting (in electronic form), - the application "Comparison of varieties in terms of selected features" - helpful when choosing varieties for cultivation, - the application, "Characteristics of varieties" – displaying the characteristics of the economic value of the variety as well as information about its entry into the national register and the data on breeder, plenipotentiary and a maintainer of the variety, - the results of experiments with varieties of horticultural plants conducted by the Research Centre for Cultivar Testing outside the Post-registration Variety Experimenting programme.

Task 5. Development and disseminating of ecological methods of plant protection

Organic farming in Poland has enjoyed steady growth, as indicated by data on the number of farms conducting this type of production. As of 31 December 2011, almost 24 thousand organic farms in Poland were subject to the control of the certifying bodies.

Organic production is a way of obtaining a product, which uses as much as possible the natural methods of production, not disturbing the natural balance. This applies to all types and stages of production - both crop production and animal production, aquaculture and processing. Production in organic farms is carried out in accordance with the principles of sustainable development, activates biological processes through the use of natural means of production and ensures soil fertility, plant health and animal health. This production in particular relies on the use of proper crop rotation and other natural methods for maintaining or increasing the biological activity and soil fertility, selection of species and varieties of plants, taking into account their natural resistance to diseases. An important element is the strict limitation of the use of chemically synthesized products. Detailed rules for management of organic methods are determined by the law of 25 June 2009 on organic farming (Dz.U. No. 116, item 975) and Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.07.2007, p.1, as amended).

The objectives for the further development of organic farming in Poland are determined by the Ministry of Agriculture and Rural Development in the "Action Plan for Food and Organic Farming in Poland in 2011-2014". Support for the development of organic plant protection methods also includes actions described in this document to support research for the improvement of organic production technologies and promoting the best available and proved solutions in non-chemical protection of plants.

Task 6. Dissemination of results of the assessment carried out in the Post-registration Variety Experimenting

Reducing the use of plant protection products can be achieved, *inter alia,* through the use of crop varieties showing resistance or tolerance to harmful organisms or manifesting other resistance features (e.g. resistance to lodging).

In the case of varieties of agricultural plants, the resistance effects of Polish breeding and foreign breeding companies in the first place are assessed at the stage of official tests (before entering the varieties in the national register) and taken into account in the registering decisions of the director of the Research Centre for Cultivar Testing. At this stage, the varieties with unsatisfactory resistance level are eliminated. In addition, the Research Centre for Cultivar Testing is evaluating the resistance of crop varieties to pests in the Post-registration Variety Experimenting in cooperation with voievodship governments and agricultural chambers. The scope of Post-registration Variety Experimenting varies according to the economic importance of individual plant species. For the most

important crops, the tests are conducted in each voivodeship, and on this basis the "Lists of varieties recommended for cultivation in voivodeships" (Listy zalecanych do uprawy odmian na obszarze województw - LZO) are created. Using these recommendations, the agricultural producer can make a proper selection of varieties according to specific economic conditions, including varieties exhibiting greater resistance or tolerance to stress conditions, including pests. LZO and characteristics of registered varieties are available on the website and publications of the Research Centre for Cultivar Testing, and also published in the farming press.

Task 7. Development and dissemination of Integrated Production system

Integrated Production (IP) is a modern national system of food quality using, in a sustainable manner, the technical and biological progress in cultivation, crop protection and fertilization, whose main purpose is particular concern for human health and the environment. Participation in the system is voluntary and allows for obtaining high-quality agricultural products that can be marketed with the mark of Integrated Production.

Basics of IP were developed and disseminated in the early 1990s by the researchers of the Institute of Pomology and Floriculture in Skierniewice. Then, the functioning of IP system was regulated by the Act of 18 December 2003 on the plant protection and the regulations implementing that act. In 2007, IP has been recognized as a national system of food quality. The tasks of monitoring and certification of IP have been entrusted to the State Plant Health and Seed Inspection Service.

The key element of implementing the IP system on farms is the completion of specialist training (separately in respect of fruit plants, vegetable and agricultural plans) and the use of specially developed IP methodologies. Each methodology provides practical information on planting, cultivating and harvesting of the crop. In addition, every two years, the Institute of Plant Protection - National Research Institute in Poznań publishes lists of plant protection products approved for use in integrated production, on paper, in the Recommendations on Plant Protection. The lists of products for integrated production are also included in annually updated plant protection programmes developed or authorized by the Institute of Horticulture in Skierniewice.

Production on the farm is under constant supervision of the State Plant Health and Seed Inspection Service which ensures that agricultural crops have not exceeded permissible levels of pesticide residues, heavy metals, nitrates and other elements and harmful substances. At the same time, environmental resources on farms are used in a sustainable manner. A certificate is the official confirmation that production is based on IP methodologies.

In 2011, the State Plant Health and Seed Inspection Service received notifications of the intention to participate in the system from 2,274 agricultural producers, relating to 2,956 crops. Horticultural and vegetable crops accounted respectively for 93.5% and 4.9% of all crops reported to the system, and most notifications considered apple crops, representing 63.5% of all notifications.

In 2011, 1,482 certificates were issued confirming application of integrated production, of which 1,182 for apple producers (79.8% of issued certificates). In 2011, there was an increase by 38.7% in the number of certificates issued, as compared to the previous year. Overall, certification covered 317,632.5 tonnes of agricultural products, produced on a total area of 10,752.2 ha.

Development of the Integrated Production system contributed to the development and dissemination of the principles of integrated pest management, particularly for species requiring intensive protection. The IP system is now fully compliant with the requirements of Directive 2009/128/EC for integrated pest management.

Task 8. Advice on plant protection

The purpose of advisory services is mainly the dissemination of knowledge and the latest information on pest management, which translates in a decisive manner to the subsequent behaviour of users of plant protection products. The right manner of acting of agricultural producers, using plant protection products, reduces to the greatest extent the risk associated with the use of these preparations.

Advisory services in Poland have a long tradition and at different times actively assisted in changes of the Polish countryside and encouraged the development of agriculture. On 1 January 2005, the Act of 22 October 2004 on the agricultural advisory units (Dz.U. of 2013, item 474) entered into force, which introduced significant changes in the organization of advisory services in Poland. The Act created Agricultural Advisory Centre in Brwinów with branches in Kraków, Poznań and Radom, and 16 voivodeship agricultural advisory services. The Agricultural Advisory Centre and all agricultural advisory units work closely with the institutions of government and local governments, *inter alia,* for the protection of plants, in particular with research institutes, agricultural universities, the State Plant Health and Seed Inspection Service and agricultural chambers, farmers' organizations and other businesses that provide agricultural production means.

The Agricultural Advisory Centre and agricultural advisory bodies are the main institutions that deal with the continuing education of farmers and people living at countryside.

Measure 2. Organisation of training for users of plant protection products in agriculture and forestry

In order to improve the knowledge of good plant protection practice among persons carrying out plant protection products treatments, as well as to reduce the risks associated with such procedures, based on the provisions of the Act of 12 July 1995 on the protection of crops, a system of mandatory training was established for those carrying out treatments with plant protection products in agriculture and forestry, subsequently maintained in the provisions of the Act of 18 December 2003 on the plant protection. The training programmes cover the following topics: legal issues, characteristics and use

of plant protection products, issues related to crop protection, technique of plant protection, prevention of adverse effects of plant protection products on the environment and occupational health and safety in their application. Trainings were conducted in accordance with the training programmes set out in the implementing provisions of the Act indicated above. Since 2010, on the basis of the Act of 4 March 2010 on the provision of services in the territory of the Republic of Poland (Dz.U. No. 47, item 278 and of 2011, No. 112, item 654, No. 227, item 1367 and No. 228, item 1368), the training units are entered by the voivodeship inspector of plant health and seed inspection in the register of regulated activity within the meaning of the provisions on freedom of economic activity. Training was repeated at intervals of not more than five years.

As of 31 December 2011, the records kept by the voivodeship inspectors of plant health and seed inspection included 240 units conducting training in the use of plant protection products with ground equipment, 23 units conducting training in the use of plant protection products by fumigation, and 5 units conducting training in the use of plant protection products by agricultural aviation equipment. In 2011, there were 2,197 trainings conducted in the protection of plants, completed by 62,323 people.

The system of mandatory training under the supervision of the State Plant Health and Seed Inspection Service for persons carrying out treatment with plant protection products was a key element in reducing the risks associated with their use for human health, food safety and environmental protection, in particular with regard to the protection of non-target organisms and waters.

Organisation of training for users of plant protection products has been substantially amended by the provisions of the Act of 8 March 2013 on plant protection products, in connection with the implementation into Polish law of the provisions of Directive 2009/128/EC.

Measure 3. Conducting a system of periodic inspection of field and orchard sprayers

Using a technically defective sprayer can have irreversible negative consequences for human health, animals and the environment. In order to reduce the risks associated with the use of faulty sprayers for crop protection activities, and thus to reduce the risk of incorrect application of plant protection products, a system of mandatory, periodic examinations of technical conditions of tractors and self-propelled field or orchard sprayers was created in Poland.

The studies of technical conditions of sprayers were performed by entities authorized by the voivodeship inspector of plant health and seed inspection on the basis of Article 76(5) of the Act of 18 December 2003 on plant protection. The studies were conducted in strict accordance with the methodologies specified in the regulations implementing the Act. At the same time, the authorized entities ensured testing of sprayers by those, who have completed training in testing of sprayers.

As of 31 December 2011, there were 365 entities authorized to carry out testing of sprayers throughout the country. Among them, 223 entities were authorized to conduct testing of field sprayers,

13 to test orchard sprayers and 129 entities that could perform testing of both field and orchard sprayers.

The mandatory obligation to examine technical conditions of sprayers was introduced in 1999. During eleven years, until 31 December 2011, the authorised entities conducted a total of 542,232 technical performance tests of sprayers. In 2011, the total of 68,819 field and orchard sprayers were tested, with positive results for 68,812 sprayers (99.99%), which is, *inter alia,* related to calibration and modernization of sprayers conducted during testing.

According to data from the Central Statistical Office, in 2010 farms were equipped with 496 thousand field sprayers (4.8% more than in 2002) and 52 thousand orchard sprayers (13.5% more than in 2002).

Measure 4. Conducting control of the use of plant protection products

Official controls on the use of plant protection products are carried out in Poland by the State Plant Health and Seed Inspection Service since 1996. The legal basis for carrying out the control is now Article 80 of the Act of 18 December 2003 on the plant protection. The Inspection carries out controls on farms, *inter alia*, with respect to the possible use of plant protection products not authorised to trading, and contrary to the label, as well as controls of the conditions for safe storage and use of these preparations. The control also covers checks of whether the person carrying out the treatment has a required certificate of completion of the relevant training as well as storage space of the holder of land, where plant protection products are used and records of treatments.

Under the supervision over the proper application of plant protection products, the inspectors conducted 31,352 controls in 2011, including 641 re-controls. Controls of the use of plant protection products were carried out in conventional farms engaged in crop production and in farms participating in the integrated production, in seed treatment sites, fumigation sites, in storage sites for agricultural products, in places where the use of plant protection products may be restricted or prohibited, and also in other places of such applications.

In 2011, the irregularities accounted for 2.2% of controls (data relating to the number of control activity performed, not the number of controlled entities). Irregularities primarily related to evasion of the obligation to check technical condition of equipment intended for use in plant protection products (1,378 irregularities per 28,002 controls), avoiding the requirement of completion of training in the use of plant protection products (1,049 irregularities per 28,143 controls) and the lack of or improper record keeping for treatments with plant protection products (742 irregularities per 27,702 controls).

The official controls on the use of plant protection products also include, in justified cases, testing of residues of plant protection products in agricultural crops. Samples for tests for the presence of residues of plant protection products are collected as part of planned controls, interventions (in the case of suspected misuse of plant protection products) and monitoring. The control plans are

prepared by the Main Inspector of Plant Health and Seed Inspection. About 2,500 samples are collected annually for control.

When analyzing data from official control of use of plant protection products conducted by the State Plant Health and Seed Inspection Service, and in particular the testing of residues of plant protection product in foods, it should be noted that in 2011, the share of samples exceeding maximum levels for residues of plant protection product (MRLs) was low (1%). Moreover, the share of samples containing residues of plant protection products, not exceeding MRLs stood at 28%.

The reasons for the cases of use of plant protection products not authorized in the crop are mostly due to:

1) the use of plant protection products withdrawn from the market, which are still owned by agricultural producers;
2) the lack of availability of plant protection products registered for the protection of particular crops, which leads to the use of preparation not admitted for the crop (the problem exists in particular in minor crops).

Results of control of the use of plant protection products conducted by the State Plant Health and Seed Inspection Service in 2011 indicate that in Poland the number of irregularities concerning the abovementioned violations is systematically being reduced with respect to previous years. Most of those violations of the law do not pose a direct threat to human health, animals or the environment.

Measure 5. Ensuring protection for minor crops

Lack of plant protection products approved for use in minor crops is one of the factors that increase the risk of breaches of provisions on application of these preparations, including their use contrary to the label.

The research work related to ensuring the protection of minor crops involves research institutes, academic units and producers of plant protection products. At the same time, requests for extension of the use of plant protection product for minor crops are files by research institutes, industry organizations and producers groups and producers of plant protection products. However, due to the seriousness of the problem, it was necessary to support the activities of these bodies by the state administration.

In 2011, the Institute of Plant Protection - National Research Institute in Poznań, began the task: "Analysis of the possibility of a comprehensive protection of selected minor crops" under the multiannual programme "Crop protection including food safety and reducing yield losses and risks to human health, animals and the environment".

The purpose of the task is to create comprehensive protection programmes of selected minor agricultural crops, including energy crops for which there are currently no effective methods of protection in Poland. The development of such programmes will reduce the risk of the use of plant protection products contrary to the label or not authorized for use in minor crops.

Measure 6. Gathering and analysis of statistical data related to the use of plant protection products

Proper orientation of control activities in the marketing and use of plant protection products, as well as creation of a national policy in relation to these preparations requires creation of an efficient system for collecting and analysing data related to the risks associated with the use of plant protection products, as well as development of knowledge and behaviour of the users of these preparations.

In Poland, the legal basis for determining the competence of each authority in conduct of statistical studies on the sale and use of plant protection products, is the annually issued regulation of the Council of Ministers on the programme of statistical studies for a particular year.

The following results of studies on plant protection products are the basis for risk management, action planning and policy-making in relation to the use of these preparations.

Task 1. Conducting statistical studies on sales of plant protection products

Statistical studies on the sale of plant protection products are conducted by the Central Statistical Office in cooperation with the Ministry of Agriculture and Rural Development and the Institute of Plant Protection - National Research Institute, since 2005.

Data on sales of plant protection products are obligatory transmitted by manufacturers and importers of these preparations to the Central Statistical Office in electronic form (in the case of entities employing up to 5 people it may be paper-reported data).

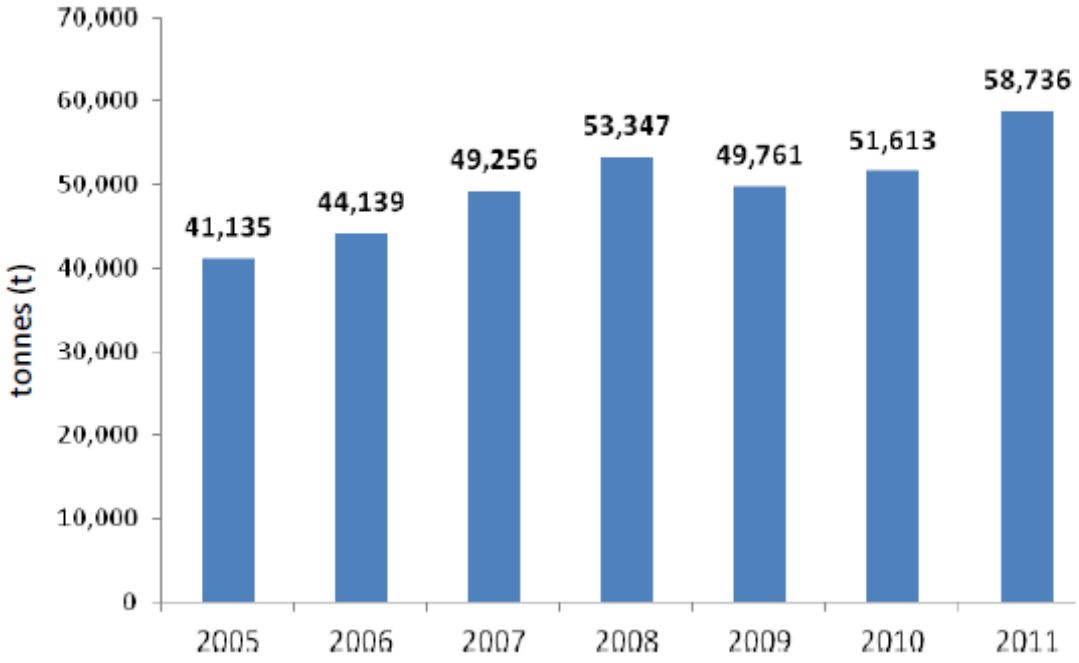

Chart 4. *Sales of plant protection products in 2005-2011*

Comparing the data on sales of plant protection products in 2005-2011, one can observe an increase in sales of these preparations, with periodic decline in sales in 2009 (Chart 4). Most plant protection products were sold in 2011, more than 58 thousand tonnes, and the least in 2005 - about 41 thousand tonnes. In the analyzed period, on average, 50 thousand tonnes of plant protection products were sold per year.

The volume of sales of plant protection products for 2005-2011, broken down by types of preparations, is shown in Chart 5.

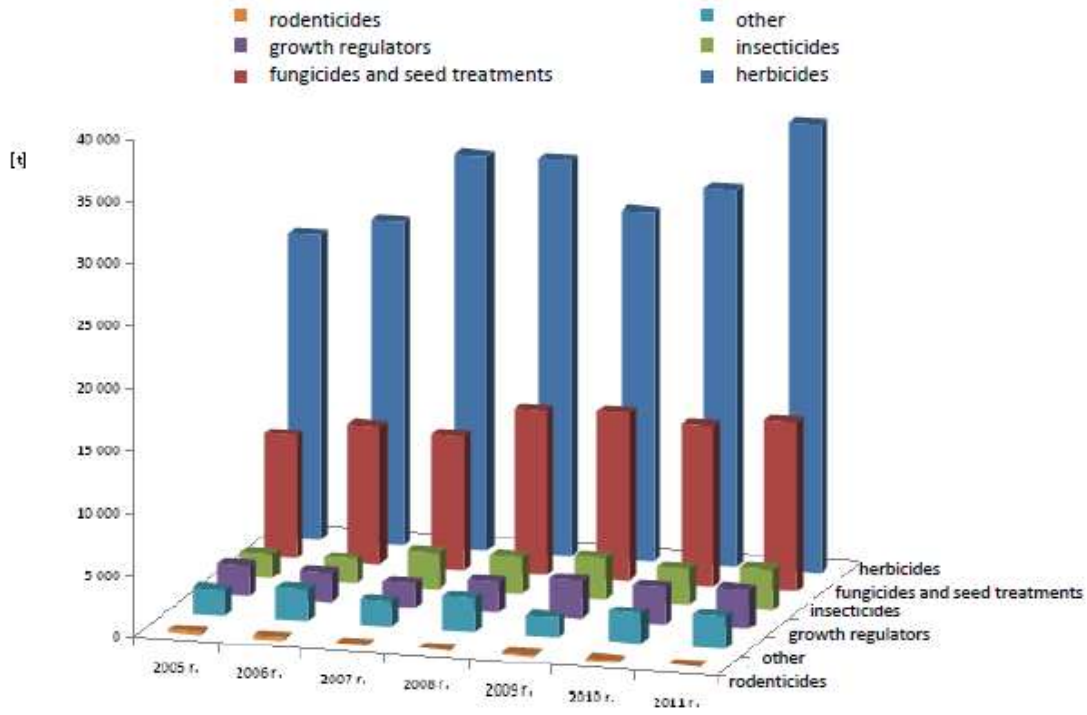

Chart 5. *Volume of sales of plant protection products for 2005-2011, broken down by types of plant protection products*

Herbicides have the largest share in sales of plant protection products, nearly 30 thousand tonnes on average, representing 60% of the sales of all plant protection products. The share of fungicides and seed treatments is 24%, while the share of other plant protection products is small and does not exceed 10%.

The results collected to date show a lower level of sales of plant protection products in comparison with other European Union Member States with high-cost agriculture.

Task 2. Conducting statistical studies of use of plant protection products

The aim of the study conducted since 2002 is to determine the average consumption of the active substance expressed in kg/ha for each crop species. The survey is conducted taking into account the

structure of crops and production volumes and sales of plant protection products in randomly selected farms.

Based on data from 2002-2005, the average consumption of plant protection products in Poland was 1.86 kg a.s./ha (kg of active substance/ha).

From 2007 onwards, the task is implemented in the framework of statistical studies, in accordance with the methodology set out in the provisions of the Regulation (EC) No 1185/2009 of the European Parliament and of the Council of 25 November 2009 concerning statistics on pesticides, by the State Plant Health and Seed Inspection Service in collaboration with the Ministry of Agriculture and Rural Development, the Central Statistical Office and the Institute of Plant Protection - National Research Institute.

Data on the use of plant protection products are collected by inspectors of the State Plant Health and Seed Inspection Service in the course of direct visits on farms and data collection is based on records kept by the farmer with regard to performed crop protection treatments. These studies are conducted in five-year cycles.

In 2010, a new five-year cycle concerning consumption of plant protection products was launched. In accordance with the timetable set out in 2010, the studies covered the following crops: onion - 4.33 kg a.s/ha, pear - 4.48 kg a.s./ha, Chinese cabbage - 0.64 kg a.s./ha, maize - 1.18 kg a.s./ha and triticale - 0.74 kg a.s./ha.

In 2011, a study on the consumption of plant protection products provided the following results for each crop: winter wheat - 1.49 kg a.s./ha, sugar beet - 2.76 kg a.s./ha, tomato - 9.69 kg a.s./ha, cucumber - 3.76 kg a.s./ha and carrots - 2.05 kg a.s./ha. In subsequent years, the study will cover crop species with the largest share of area in the structure of crops.

Results collected to date show a wide variation of consumption of plant protection products for each species, with the highest consumption recorded in fruit and vegetable crops. Nevertheless, it can be concluded on the basis of the study that the average consumption of plant protection products in Poland is relatively low.

Measure 7. Collection and analysis of control and monitoring results associated with the use of plant protection products

In Poland, control activities are carried out by the designated official bodies in accordance with applicable law. There are also monitoring tests that relate to the phenomena associated with plant protection products, in particular their use. One can highlight areas of safety of humans (including food safety), animals and the environment. Most are the tests on the level of residues of plant protection products and their metabolites, and often these are among the many performed on the sample of the test material.

The results of control and monitoring activities presented below are the basis for risk management and planning action in relation to the use of plant protection products.

The State Plant Health and Seed Inspection Service is an entity that supervises the use of plant protection products, *inter alia,* through testing of residues of plant protection products in agricultural crops. However, monitoring and control of risks posed by plant protection products are also carried out by other authorities, particularly with regard to the monitoring of residue tests for these preparations.

Task 1. Control of contamination of food of plant origin with plant protection products

The State Sanitary Inspection conducts official controls on food of plant origin produced and marketed, and food of animal origin put on the market - in accordance with the powers set out in the Act of 25 August 2006 on food safety and nutrition, and in the Act of 14 March 1985 on the State Sanitary Inspection.

Controls are carried out in an integrated multi-annual national control plan, which was developed by the Chief Sanitary Inspector, in accordance with Article 41-43 of Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules (OJ L 165, 30.04.2004, p.1, as amended., Special edition in Polish: Chapter 03 Volume 45 p. 200).

The implementation of the control of pesticide residues in food is done by 16 voivodeship sanitary-epidemiological stations. The test samples are taken by employees of sanitary-epidemiological stations at the poviat level in accordance with the rules set out in the regulation of the Minister of Health of 17 October 2007 on collecting food samples for the determination of pesticide residues (Dz.U. No. 207, item 1502). The tests of pesticide residues in food are carried out in the laboratories of five sanitary-epidemiological stations.

In Poland, the monitoring studies and official food control for pesticide residues involve collecting and testing of about 2,000 samples per year, mainly from the places of food marketing. Of all the tested samples the largest group is that of fruits and vegetables (approx. 70%). In addition, samples are also taken for testing cereals, processed foods and foods for infants and young children, as well as products of animal origin.

The tests carried out in 2011 concluded that the proportion of food samples in which pesticide residues were found was 17.3%, while proportion of the samples where maximum levels for pesticide residues were exceeded was less than 0.5%.

On the basis of the studies it can be concluded that the excess of pesticide residues occurs sporadically and is not a significant threat to human and animal health.

Task 2. Control of contamination of animal feed with plant protection products

Veterinary Inspection, as part of the Official Feed Control Plan, monitors feed for the presence of residues of organochlorine and organophosphorus pesticides. The supervision of the feed and the powers and responsibilities of the competent authorities are specified in the Act of 22 July 2006 on feed. A supervisory body which supervises the whole feed sector is the poviat veterinarian, excluding the production and marketing of medicinal feed, which is supervised by the voivodeship veterinarian. Samples are taken from the feed material of plant origin and animal feed mixtures. Veterinary border control of products of plant origin used in animal nutrition is carried out by the border veterinarian.

As part of the above mentioned feed control, about 450 samples per year are collected on average for the analysis. In 2011, there were 193 samples of feed collected for the determination of organophosphorus pesticide residues and 193 samples for the determination of organochlorine pesticide residues. No exceedances mentioned above were found in any sample of feed materials and feed mixtures.

On the basis of the conducted monitoring programme, it can be concluded that the excess of pesticide residues is not a serious problem and occurs sporadically in animal feed.

Task 3. Control of contamination of food of animal origin with plant protection products

In Poland, the task of control of pesticide residues in food of animal origin, including organochlorine pesticides, polychlorinated biphenyls and organophosphate pesticides, is the responsibility of the Veterinary Inspection. The legal basis for the conduct of controls is the regulation of the Minister of Agriculture and Rural Development of 28 July 2006 on dealing with prohibited substances, chemical and biological residues, medicinal and radioactive contamination of animals and products of animal origin (Dz.U. No. 147, item 1067 and No. 155, item 1113), implementing the Council Directive 96/23/EC of 29 April 1996 on measures to monitor certain substances and residues thereof in live animals and animal products and repealing Directives 85/358/EEC and 86/469/EEC and Decisions 89/187/EEC and 91/664/EEC (OJ L 125, 23.05.1996, p. 10, as amended; Special edition in Polish: Chapter 03 Volume 19 p. 71) into the Polish law. The implementation of the residue testing programme is the responsibility of the Veterinary Inspection. The assumptions of the residue testing programme, its plan and the results of those tests are developed by the National Veterinary Research Institute - National Research Institute in Puławy, approved by the Chief Veterinary Officer and accepted by the European Commission.

As part of the national screening programme for pesticide residues, about 1500 samples have been tested annually since 2004. Samples are collected from pigs, cattle, horses, sheeps, poultry (hens, chickens, turkeys, ducks, geese), fishes, rabbits, wild game and cow's milk, eggs and honey.

Evaluation of the results of research on environmental pollution in 2006-2010, including pesticides and polychlorinated biphenyls (PCBs), indicates the presence of low concentrations of these compounds, often at the level of detection of the applied analytical methods. Despite the common

determination of organochlorine pesticides (> 70%) and PCBs (> 50%), their concentrations are usually at the hundredths and thousandths of mg/kg, which is only a few percent of limit values for these compounds.

In 2011, there were 1538 samples collected for the presence of plant protection products residues in food of animal origin. There was no excess in relation to the limits of organochlorine and organophosphate compounds. A thorough evaluation of the tests on environmental pollutants (pesticides, polychlorinated bisphenols-PCBs, toxic elements) indicated low levels of these compounds, often at the level of detection of the applied analytical methods. The presence of organochlorine pesticides and PCBs (> 50%) was commonly identified, but the concentrations of these compounds were mostly at the level of hundredths and thousandths of a mg/kg, which is only a few percent of the limit value for these compounds.

As a result of the study it can be concluded that exceeded limits of pesticides are rarely found in animal products and do not constitute a serious threat to human health.

Task 4. Monitoring of water intended for human consumption

Monitoring of water intended for human consumption is carried out by the State Sanitary Inspection. Rules for conducting this monitoring are set out in the Act of 7 June 2001 on the collective water supply and collective sewage reception, the regulation of the Minister of Environment of 27 November 2002 on the requirements to be met by surface water used for public supply of water for human consumption (Dz.U. No. 204, item 1728) and the regulation of the Minister of Health of 29 March 2007 on the quality of water intended for human consumption (Dz.U. No. 61, item 417 and of 2010 No. 72, item 466).

Samples are collected according to the schedule for the year with a specified frequency. The minimum frequency of sampling for analysis depends on the volume of water distributed or produced in a particular area of supply. The average number of samples collected every year by sanitary-epidemiological stations is around 90 thousand.

The State Sanitary Inspection units test plant protection products in water intended for human consumption only in areas where their presence is highly probable. The presence of plant protection products, that can be expected in water, is being marked. The scope of testing water quality is determined by appropriate national poviat or border sanitary inspector after taking into account various factors, such as the quality and type of water, the use of methods of water treatment, materials used in the construction of water supply and pollution in the environment.

In 2011, the State Sanitary Inspection bodies did not issue any derogation in respect of pesticides in water intended for human consumption.

Task 5. Monitoring of surface water, groundwater and sediments

State Environmental Monitoring (SEM) is a system set up under the Act of 27 April 2001 – the Environmental Protection Law. In accordance with Article 25(2) of the Act, the State Environmental Monitoring is a system of measurements, assessments and forecasts of the environment and of collection, processing and dissemination of environmental information. The information collected is supporting efforts to protect the environment by systematically providing information to the authorities and the public about:

1) the quality of the natural elements, keeping environmental quality standards or other levels prescribed by the regulations, and areas exceeding these standards or other requirements;
2) changes in the quality of natural elements, the reasons for these changes, including causal relationships that exist between emissions and the state of the natural elements.

The State Environmental Monitoring, in accordance with the Act of 20 July 1991 on the Inspection of Environmental Protection, is being carried out by the Inspectorate for Environmental Protection.

This system provides for monitoring of surface water and groundwater. Regulations on monitoring studies are included in the regulation of the Minister of the Environment of 15 November 2011 on the forms and methods of monitoring surface water bodies and groundwater bodies (Dz.U. No. 258, item 1550), and the detailed rules for the assessment of the status of groundwater are contained in the regulation of the Minister of the Environment of 23 July 2008 on the criteria and methods of evaluation of groundwater (Dz.U. No. 143, item 896).

Water quality monitoring is carried out taking into account the requirements of the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p. 1, as amended, Special edition in Polish: Chapter 15 Volume 05 p. 275, as amended), the so called Water Framework Directive and the Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (OJ EU L 372, 27.12.2006, p. 19).

Monitoring of flowing surface water is conducted since 2007, according to the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

The monitoring of surface water and groundwater is being implemented within the framework of:

1) surveillance monitoring, which includes all water bodies;
2) operational monitoring, which covers water bodies at risk of failing to achieve good status;
3) research monitoring, which scope and frequency is determined in each case depending on the needs.

The different types of monitoring involve studies of biological, physico-chemical and chemical indicators made by voivodeship inspectorates for environment protection, and of hydromorphological indicators made by hydrological - meteorological services.

Studies of sediments of rivers and lakes are made in the monitoring of surface waters and are governed by the same law. Research is performed by the Polish Geological Institute - National Research Institute since 1990. Direct supervision of the research programme is done by the Inspection of Environmental Protection.

The State Environmental Monitoring involves research of priority substances, among which there are 15 substances that are or were present in plant protection products.

Surface water

Surface water monitoring studies are included in the six-year cycle of water management. The SEM involves research in the surveillance and operational monitoring. Both systems are carried out in a differentiated manner. In the case of river water bodies, in 2010 operational monitoring covered 793 water bodies, while in 2011-2012 both surveillance and operational monitoring were carried out. In 2011, the surveillance monitoring covered 233 water bodies, operational monitoring covered 594 water bodies and research monitoring additionally covered 28 water bodies. In the case of lakes in 2010-2012, the studies will examine about 241 lakes, and every year studies cover 22 benchmark lakes.

2011 was the first year of the second cycle of surveillance monitoring (first cycle covered 2007-2009). The data obtained as a result of this monitoring were used to perform an assessment of 220 bodies of flowing water. For 15 of water bodies (all of the Odra river basin) there was an excess of endosulfan and in quality standards for total DDT, and for two water bodies – excess of DDT para-para isomer. It was also found that the limits for the sum of pesticides (aldrin, dieldrin, endrin and isodrin) for the river basin were exceeded for eight water bodies, and excess of HCB for one.

In the case of the Vistula river basin, monitoring results indicated excess of the permissible concentrations of the sum of aldrin, dieldrin, endrin and isodrin for four water bodies, including additionally, chlorfenvinphos, hexachlorocyclohexane, DDT - para-para isomer and total DDT for one water body.

Groundwater

In the case of groundwater, chemical tests are carried out in 161 underground water bodies, based on the measurement network consisting of approximately 1,000 measurement points, of which 800 points are used for surveillance monitoring (conducted in 2007, 2010 and 2012), and 300 points for the operational monitoring (conducted in 2009 and 2011).

In 2009-2011, as part of the state groundwater quality monitoring, the analyses of the content of organic compounds, including pesticides, were carried out in the 382 measurement points, which together collected and tested 457 water samples. The analytical work carried out 13,701 determinations of the following compounds from the group of pesticides:

- organochlorine pesticides and polychlorinated biphenyls: a-Chlordane, a-HCH, b-HCH, d-HCH, endrin aldehyde, aldrin, dieldrin, endosulfan I, endosulfan II, endrin, heptachlor epoxide, g-Chlordane, g-HCH, heptachlor, heton endrin, methoxychlor, endosulfan sulphate, p,p'-DDD, p,p'-DDE, p,p'-DDT,
- organophosphorus pesticides: chlorfenvinphos, diazinon, dichlorvos, fenitrothion, fenthion, malathion, mevinphos, ethyl parathion, methyl parathion, thiometon.

The study shows that in the vast majority of measurement points the contents of individual pesticides was below the limit of quantification (LOQ). However, in just 12 measuring points, the values were above the LOQ, but not exceeding concentration levels for class I quality of groundwater indicative of a very good quality of water. The compounds from the group of pesticides, for which the observed values were above the LOQ are: p,p'<DDE, p,p'<DDD, endrin aldehyde, p,p'<DDT, Dichlorvos, Malathion. Comparison of concentrations of individual pesticides showed that at no point of measurement the threshold of good groundwater chemical status was exceeded. The comparison of the concentrations of individual pesticides with an acceptable range of values to which water for human consumption should correspond, shows that there have been no exceedances.

In summary, this analysis of pesticide content in groundwater shows no exceedances of the threshold of good groundwater chemical status and the acceptable range of values to which water for human consumption should correspond, both in terms of individual pesticides, as well as for the sum of 30 tested indicators of the group of pesticides.

Bottom sediments

Monitoring of the bottom sediments of rivers and lakes is carried out in measurement-control points. The observation network of river sediments is divided into basic monitoring points where sediment samples are collected annually (about 250 points) and operational monitoring network, where the sediments are tested every three years (in 2011 - 113 points). The study of bottom sediments of lakes are performed in lakes belonging to the regional monitoring network and in 22 benchmark lakes of the state monitoring network. Studies in lakes belonging to the regional network are carried out every few years, usually five, and studies in benchmark lakes are performed every two years. In 2011, 112 lakes were selected for the studies, within which 155 samples were collected (from lakes with an area greater than 250 ha two to five samples are taken according to the size of the surface of the lake). Since 2010, the sediments of river channels are also tested. In 2011, the test sediments were collected in 18 sites located in 14 channels.

In 2010 the studies also covered sediments accumulating in reservoirs backwater. In the first year of the study, 25 samples of sediments were collected in tributaries to 24 reservoirs.

The studies conducted in 2010-2012 confirmed the presence of high content of organochlorine pesticides in sediments of the Upper Vistula River and some of its tributaries. Particularly high levels of isomers of HCH and DDT and its metabolites were found in the sediments of the Vistula River in Grabie and Auschwitz. High or significantly enhanced levels of organochlorine pesticides are also

observed in the sediments of the Vistula in other locations. In addition, there are very high concentrations of DDT in Ner sediments in Mirosławice.

Monitoring studies of lake sediments in 2010-2012 showed that DDT, DDE and DDD, endosulfan I and heptachlor have the largest share in pollution of sediments. Other compounds were found in concentrations below the detection limit.

The studies of pesticides in river channels conducted in 2012 showed the presence of the following compounds: α-HCH isomer, aldrin, DDT and its metabolites and endrin aldehyde. None of the analyzed sediment samples collected from the river channels had higher than the detection limit content of β-HCH, γ-HCH and δ-HCH, heptachlor, heptachlor epoxide, γ-chlordane, α-chlordane, dieldrin, endrin, endrin ketone, endosulfan I, endosulfan II, endosulfan sulfate and p,p'-methoxychlor. In the case of α-HCH isomer, the content in a concentration above the limit of quantification was found in one sample, aldrin in three samples. The presence of DDT and its metabolites was found in the sediments of all channels. In all of these samples, compounds from the group of DDT were at concentrations lower than their PEC values (Consensus-Based Sediment Quality Guidelines). The presence of endrin aldehyde was observed in sediments collected from one of the channels. Compounds in these sediments were, however, at a concentration lower than the PEC.

Monitoring studies conducted in 2012 revealed the presence of only DDT and its metabolites in sediments of reservoirs. None of the samples tested showed presence of α-HCH, β-HCH, γ-HCH, δ-HCH, heptachlor, aldrin, heptachlor epoxide, γ-chlordane, α-chlordane, dieldrin, endrin, endrin aldehyde, endrin ketone, endosulfan I, endosulfan II, endosulfan sulfate and p,p'-methoxychlor at concentrations above the limit of quantification. The presence of compounds from the group DDT was observed in 19 samples, p,p'-DDE was found in 19 samples, p,p'-DDD - in 14 samples, and p,p'-DDT – in 2 samples.

The overall conclusion is that the results of research carried out in the framework of the state environmental monitoring programme show the presence of active substances in the aquatic environment that are or were part of plant protection products (mostly in the range of permissible concentrations), however the source of their origin may be either the process of release from bottom sediments, where they accumulated in the past years, as well as ongoing pressure from agriculture.

Measure 8. Promoting good practice for safe use of plant protection products

Activities related to the preparation of plant protection treatments, their carrying out and conducting after the treatment involve a risk of hazards such as to human health and the environment, including local pollution, which can be avoided by proper handling of such preparations.

Reducing these risks is done through development and dissemination of good practices related to appropriate protection of the operator, storage of plant protection products, preparing spray liquid, technique of treatment, bioremediation of chemicals, management of packaging and protection of

beneficial organisms. Among the many activities in this area the attention should be paid to the following initiatives:

1. Implementation of the project TOPPS (Training the Operators to Prevent Pollution from Point Sources). The project is implemented in 15 European countries by 13 organizations and research centres, including by the Institute of Horticulture. The chief task of the project was to develop a "Guide of Best Management Practices for the use of plant protection products to prevent water pollution through pesticides.", a "Guide - Cleaning of sprayers" and a "Guide - Organization of BMP shows", as well as dissemination of these principles through advisory services, training and demonstrations, in a coordinated manner on European scale, in order to reduce emissions of plant protection products to water. The scope of the materials includes technical and organizational aspects of the use of pesticides at all stages of the chain of operations with plant protection products, such as:
   - transport of plant protection products to the farm (means of transportation, unloading, handling emergency situations)
   - storage of plant protection products (storage organization, rules of storage, emergency handling)
   - activities before treatment (planning, sprayer calibration, preparation of liquid spray, handling emergency situations)
   - the course of treatment (weather conditions, manner of driving and operating a sprayer, preventing the lifting of liquid, emergency handling)
   - activities after treatment (management of residues of spray liquid, sprayer cleaning, emergency handling)
   - management of residues contaminated with plant protection products (packaging, liquid and solid residues, bioremediation).
2. Carrying out of the collection system for packaging of plant protection products in order to reduce risks to the environment and to comply with the obligations arising from the law. The provisions on packaging and packaging waste require the sellers, importers and producers of plant protection products to collect and dispose of unit packaging of plant protection products. The Polish Crop Protection Association estimates that in 2010, the system gathered and disposed of 64% of the packaging. Disposal of packaging of plant protection products prevents penetration of residues of these preparations to the environment and thereby limits their impact on the environment as well as human and animal health.
3. Promoting, in cooperation with industry beekeeping organizations, best practices for the protection of pollinators, especially honey bees, due to the important role they play in increasing the yield and quality of many crops.

Given the importance of the dissemination and promotion of best practices in plant protection to ensure the safe use of plant protection products, the Ministry of Agriculture and Rural Development commissioned development of guides for good plant protection practice, covering such issues as health and safety rules during plant protection treatments, protection of pollinators, calibration of

equipment intended for use of plant protection products. These guides are gradually being made available on the website of the Ministry and updated along with the development of knowledge in this field. They are directed to the farmers and advisors, as well as individuals engaged in mandatory training for users of plant protection products.

Measure 9. Organization and use of research for integrated pest management and reduction of risk associated with the use of plant protection products

All efforts to reduce the risks associated with the use of plant protection products and the implementation of the principles of integrated pest management are based on the results of research made so far and implemented in practice on methods of organic and integrated production and other alternative techniques of plant protection with low consumption of chemical plant protection products reducing the risks associated with their use.

Research in this field are performed largely within the statutory activities of research institutions, based on national and European Union funds allocated to scientific and research activity.

In order to make the best use of scientific achievements of national research institutes in the implementation of the principles of integrated pest management, the tasks in this field are also included in multi-annual programmes executed for the Ministry of Agriculture and Rural Development:

1. Crop protection including food safety and reducing yield losses and risks to human health, animals and the environment, carried out by the Institute of Plant Protection - National Research Institute in Poznań,
2. Development of sustainable methods of horticultural production to provide gardening products of high biological and nutritional quality and to preserve biodiversity of the environment and protect its resources, carried out by the Institute of Horticulture in Skierniewice.
3. Support for action in the development of the agricultural environment and the sustainable development of agricultural production in Poland, carried out by the Institute of Soil Science and Plant Cultivation - National Research Institute in Puławy.
4. Improvement of plants for sustainable agro-ecosystems, high-quality food and crop production for non-food purposes, carried out by the Plant Breeding and Acclimatization Institute - National Research Institute in Radzików.
5. Improvement of domestic sources of vegetable protein, their production, trading and use in animal feed, carried out by the Institute of Soil Science and Plant Cultivation - National Research Institute in Puławy, Institute of Plant Genetics, Polish Academy of Sciences in Poznań, Poznań University of Life Sciences and the Institute of Technology and Life Sciences in Falenty.

The scientific results are the basis for the development and updating of the methodologies of integrated pest management, protection programmes, the development and dissemination of decision support systems in crop protection and the development of principles for safe use of pesticides.

IV. NEW REGULATIONS FOR LIMITING THE RISKS RELATED TO THE USE OF PLANT PROTECTION PRODUCTS

Much of the obligations imposed on Member States of the European Union by provisions of Directive 2009/128/EC in Poland is carried out on the basis of national provisions adopted earlier. However, in order to ensure full compatibility of national legislation with the provisions of this directive, it was necessary to complement the current legal framework with new regulations to further reduce the risks associated with the use of plant protection products. Solutions included in the Act of 8 March 2013 on plant protection products, refer to:

1) establishing a system of mandatory training for advisers providing services in the field of plant protection;
2) covering professional users of plant protection products using these preparations outside agriculture and forestry with mandatory training;
3) restricting the sales of plant protection products intended for professional users to persons with appropriate training;
4) extending the scope of equipment for application of plant protection products, subject to mandatory testing of technical efficiency, particularly with equipment mounted on rail vehicles or aircraft;
5) determining the rules for conducting crop protection treatments using agricultural aviation equipment;
6) determining the minimum distances from certain places, objects or areas, where one can use plant protection products (such rules, which are modifications of regulations under the Act of 18 December 2003 on the protection of plants, will be particularly important for protection of aquatic environment), the detailed arrangements will be set out in the implementing provisions of the Act;
7) prohibiting the use of plant protection products that pose a particular threat to human health in areas of playgrounds, nurseries, kindergartens, parks, schools, hospitals and "A" safeguard zones separated in spa areas or health resort areas;
8) defining the rules of carrying out of plant protection treatments, in order to reduce the risk of hazards during these operations, in particular in performing such tasks as:
   a) storage of plant protection products,
   b) preparation of plant protection products for use,
   c) handling of liquid residues after treatment with the use of plant protection products,
   d) procedures for cleaning equipment intended for use of plant protection products

   – detailed arrangements will be set out in the implementing provisions of the Act;
9) prohibiting application of plant protection products that are particularly harmful to health by non-professional users;
10) establishing the obligation to apply the general principles of integrated pest management by professional users of plant protection products; detailed arrangements will be set out in the implementing provisions of the Act;

11) defining the requirements for facilities intended for storage of plant protection products; detailed arrangements will be set out in the implementing provisions of the Act.

These regulations will significantly reduce the risks associated with the trade and use of plant protection products.

Full implementation of the provisions of Directive 2009/128/EC, as well as achieving the main objectives set out in the National Action Plan will require the support of legislative solutions through non-legislative measures, especially educational.

OBJECTIVES AND MEASURES TO REDUCE RISKS ARISING FROM THE USE OF PLANT PROTECTION PRODUCTS

I. MAIN OBJECTIVES OF THE NATIONAL ACTION PLAN

The main objectives of the national action plan are:

1) **dissemination of general principles of integrated pest management;**
2) **prevention of risks associated with the use of plant protection products.**

The following measures will be used for monitoring the achievement of these objectives:

1. The application of the general principles of integrated pest management by professional users of plant protection products - in 2017 the value of the meter should be at least 90% (according to data of the State Plant Health and Seed Inspection Service).
2. Percentage share of exceeded maximum permissible residue levels of pesticides in food of plant origin - in the course of implementation of the national action plan, the value of the meter should be maintained at less than 1% (according to the State Sanitary Inspection).
3. The percentage of exceedances of maximum levels for pesticide residues in feed and food of animal origin - in the course of implementation of the national action plan, the value of the meter should be maintained at less than 0.1% (according to the data of the Veterinary Inspection).

The provisions of Directive 2009/128/EC offer the possibility for Member States of the European Union to determine priority issues, such as: active substances, crops, regions or practices that require special attention, or good practices that should be promoted in order to achieve the objectives of this directive.

A key objective for Poland in the implementation of the national action plan is to promote the general principles of integrated pest management. Full implementation of these principles, in particular by promoting non-chemical plant protection methods, will reduce the dependence of crop production on chemical plant protection products. As a result of the implementation of best practices on the use of plant protection products, the risks associated with their use will be limited to a minimum. Therefore, the objectives of the national action plan will contribute to the overarching idea of Directive 2009/128/EC, i.e. the sustainable use of pesticides, and thus sustainable development of Polish agriculture.

In order to achieve the main objectives of the national action plan, the measures to reduce the risks associated with the use of plant protection products will continue, although some of these measure will be modified accordingly, as well as new measures will be taken, the scope of which is shown later in this document. All measures have separate targets, timetables for their implementation, as well as measures to monitor their implementation.

The provisions of Article 15 of Directive 2009/128/EC require Member States of the European Union to monitor the risks associated with the use of plant protection products. Until the adoption of harmonized risk indicators at the level of the European Union, the Member States should use national

indicators. The national indicators, however, could be use even after the adoption of harmonized indicators.

Therefore, the following indicators will be used to assess the risks associated with the use of plant protection products:

1) percentage of the food samples of plant origin with residues of plant protection products in excess of the maximum permissible levels of residues;
2) percentage of food samples of animal origin with residues of plant protection products in excess of the maximum permissible levels of residues;
3) percentage of feed samples of with residues of plant protection products in excess of the maximum permissible levels of residues;
4) percentage of the plant samples, taken under the control of the correct application of plant protection products, with residues of plant protection products in excess of the maximum permissible levels of residues;
5) level of pesticide residues in surface water and groundwater;
6) level of pesticide residues in samples of drinking water;
7) statistics on the use of plant protection products;
8) statistics on the sale of plant protection products;
9) number and type of violations of the law in the area of marketing and use of plant protection products;
10) data on poisoning of people with plant protection products;
11) data on poisoning of bees with plant protection products;
12) data on the behaviour of professional users of plant protection products when making a decision on the use of chemical plant protection products and during such treatment.

The authority monitoring the objectives of the national action plan is the minister responsible for agriculture.

Results of monitoring of the objectives of the national action plan, including a risk assessment associated with the use of plant protection products, the minister responsible for agriculture shall make available annually on a website administered by the office supporting it.

II. MEASURES TO REDUCE THE RISK ASSOCIATED WITH THE USE OF PLANT PROTECTION PRODUCTS FOR HUMAN HEALTH, ANIMALS AND THE ENVIRONMENT

Measure 1. Dissemination of the general principles of integrated pest management*

Availability of chemical pesticides has created the impression of easy control of organisms harmful to plants and easy crop protection. Excessive use of pesticides, not always justified, entails a number of risks, such as:

1) pressures on the environment and reduction of biodiversity of agrocoenosis;
2) emergence of harmful organisms resistant to plant protection products;
3) the presence of pesticide residues in agricultural crops in quantities that endanger the health of consumers.

The need to find solutions that would ensure the protection of crops against organisms harmful to plants at an appropriate level in order to maintain the economic viability of agricultural production while reducing the negative effects described above, led to the development of basics of integrated pest management.

Integrated pest management is a way of protecting plants against harmful organisms, which involves using all available methods of plant protection, in particular non-chemical methods, in a way that minimizes risk to human health, animals and the environment. Integrated pest management uses the full knowledge of organisms harmful to plants (in particular, their biology and harmfulness) in order to determine the optimum time limits for taking action against these organisms, and it uses natural occurrence of natural enemies, including predators and parasites of organisms harmful to plants, and makes use of their introduction. Thus, the integrated pest management can reduce the use of chemical plant protection products to a minimum and thus reduce pressure on the environment and protect biodiversity of the agricultural environment.

Important tools used in integrated plant protection are:

1) methodologies of integrated pest management of individual crops;
2) thresholds of economic harmfulness of pathogens - those thresholds determine when the use of chemical plant protection becomes economically viable, i.e. at what size of population of organisms harmful to plants the losses that may result outweigh the cost of chemical control;
3) decision support systems in crop protection - these systems, based on the biology of pests, indicate the optimal time for carrying out of chemical crop protection.

The obligation to apply the principles of integrated pest management by all professional users of plant protection products as of 1 January 2014 is the result of the provisions of Article 14 of Directive 2009/128/EC and Regulation No 1107/2009. Article 55 of Regulation No 1107/2009 stipulates that plant protection products must be used properly. Proper use of plant protection products is meant to include, among others, compliance with the provisions of Directive 2009/128/EC, and as of January 1, 2014, compliance with the general principles of integrated pest management, as referred to in Article 14 and Annex III of the Directive.

In compliance with Article 14(4) of Directive 2009/128/EC, Member States of the European Union should describe in their National Action Plans, how to ensure that the general principles of integrated pest management are implemented by all professional users of plant protection products on 1 January 2014. In addition, pursuant to Article 14(3) of the Directive, Member States of the European Union shall submit to the European Commission by 30 June 2013, a report on the creation of necessary conditions for professional users of plant protection products for the implementation of the principles of integrated pest management.

In accordance with the general principles of integrated pest management set out in Annex III to Directive 2009/128/EC:

1) the biological, physical and other non-chemical methods must be preferred to chemical pest control methods if they provide protection against harmful organisms;
2) prevention of harmful organisms should be achieved, among others by:
   a) the use of crop rotation,
   b) the use of appropriate agricultural technology,
   c) the use of resistant or tolerant varieties and seed and planting material subjected to an assessment in accordance with the provisions on seed,
   d) the use of balanced fertilization, liming, irrigation and drainage,
   e) the application of measures to prevent introduction of harmful organisms,
   f) the protection and creation of conditions conducive to the occurrence of beneficial organisms,
   g) the use of phytosanitary hygiene (such as regular cleaning of machinery and equipment used in the cultivation of plants) to prevent the spread of harmful organisms,
   h) the use of plant protection products in a way that minimizes the risk of resistance in pests.

Decisions on the carrying out of plant protection treatments should be made based on the monitoring of harmful organisms, including the thresholds of economic harmfulness. The selection of plant protection products should take into account their selectivity. In addition, the use of plant protection products should be limited to the minimum necessary, in particular by reducing the dose or reduced number of treatments.

The implementation of integrated pest management will include both legislative and non-legislative measures. This will be the work of educating and informing people, and providing farmers with the right tools, such as methodologies, including the monitoring of harmful organisms, thresholds of their economic harmfulness and decision support programmes in plant protection.

With regard to legislative measures, it should be emphasized that the obligation to comply with the general principles of integrated pest management stems directly from the provisions of Article 55 of Regulation No 1107/2009/WE. The obligation to apply the general requirements of integrated pest management by professional users of plant protection products is also included in Article 35(3) point 1 of the Act of 8 March 2013 on plant protection products. In accordance with Article 35(3) point 2 of the Act, professional users of plant protection products are also required to keep records, which should indicate the manner of implementing the requirements of integrated pest management, by giving at least the cause of application of plant protection products. Compliance with these requirements will be

controlled by the State Plant Health and Seed Inspection Service, failure to meet them will result in the imposition of sanctions in the form of a fine declared based on the provisions on offenses.

METHOD OF IMPLEMENTING MEASURE 1 AND ASSESSMENT OF ITS EFFECTS

The implementation of integrated pest management will be done by providing users of plant protection products with right tools and the dissemination of knowledge. In particular, this will include the following tasks (in brackets is the time limit of a given task):

1) dissemination of knowledge in the field of integrated pest management (2013-2017);
2) developing and providing methodologies for integrated pest management for individual crops (2013-2015);
3) modification of pest signalling system (2013-2017);
4) provision of decision support systems in plant protection (2013-2017);
5) creation and maintenance of a web-based platform dedicated to integrated crop protection (2013-2017);
6) dissemination of results of the assessment carried out in the Post-registration Variety Experimenting (2013-2017);
7) promotion of integrated crop production system (2013-2017);
8) development of professional advice for plant protection (2013-2017).

OBJECTIVES OF MEASURE 1, TIMETABLES FOR THEIR IMPLEMENTATION, INDICATORS FOR MONITORING THEIR IMPLEMENTATION AND ENTITIES RESPONSIBLE FOR THEIR IMPLEMENTATION

The effectiveness will be measured based on the method of taking decisions for plant protection by professional users of plant protection products (data will be collected in surveys - Polish countryside and agriculture, carried out by the Ministry of Agriculture and Rural Development and research on the structure of agricultural farms carried out by the Central Statistical Office and also will be received as a result of the controls carried out by the State Plant Health and Seed Inspection Service).

It is expected an increase in the percentage of farmers using directly or indirectly (through counselling) decision support systems for plant protection, monitoring harmful organisms, and also taking into account economic harm thresholds in plant protection, by 10% until 2016 compared to the data for 2013. Evaluation activities will also involve the assessment of the prevalence of the use of food quality systems by farmers (expected increase in the number of farmers who have implemented such systems by 10% until 2017 compared to 2013) and a 10% reduction by 2017 of irregularities in the application of principles of integrated pest management found during controls of the State Plant Health and Seed Inspection Service, as compared with the data for 2014.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the budgetary spending limits, including through the tasks carried out for the Ministry of the supervised bodies and subsidiaries, as well as voivodeship agricultural advisory centres. Tasks related to the supervision of the integrated production system will be implemented by the State Plant Health and Seed Inspection Service within the limits of budgetary expenditure of the Main Inspector of Plant Health and Seed Inspection and the voivodes.
In addition, the implementation of the task will require cooperation with the voivodeship agricultural advisory centres, local agriculture government, agricultural schools and universities, and industry agricultural organizations.
The scope of the various tasks carried out in the framework of the measure is as follows:

Task 1. Dissemination of knowledge in the field of integrated pest management*

The first priority for the implementation of integrated pest management is to disseminate knowledge on how to protect plants against harmful organisms. Issues related to integrated pest management will be included in the mandatory training for professional users of plant protection products, persons engaged in the sale of these preparations and advisors providing services in the field of plant protection. Notwithstanding the above, in order to achieve the desired result, additional measures may be necessary, such as conducting enhanced training in integrated pest management (including the use of decision support systems in crop protection), held mainly for personnel providing advisory services - they will then communicate their knowledge to professional users of plant protection products (mainly farmers).

These assumptions will be possible to achieve, *inter alia,* by:

1) conducting specialized training, demonstrations, seminars and conferences, demonstrations of best practices and field experiments and other activities in the plant protection;
2) preparing and disseminating research results, information and training materials, and publishing information in the field of plant protection products in the trade press;
3) creating a web-based information platform devoted to integrated pest management, which will make available the methodologies of integrated pest management, decision support systems and scientific studies on plant protection.

Task 2. Developing, updating and providing methodologies for integrated pest management for individual crops*

One of the key non-legislative measures to implement the general principles of integrated pest management will be to provide professional users of plant protection with methodologies for integrated pest management. These methodologies will include recommendations for plant protection methods for different crops, including agronomic, biological and chemical methods, with particular emphasis on supporting natural processes of self-regulation occurring in agrocoenosis. Non-chemical methods, i.e. the agronomic and biological methods, will play a more important role than in traditional

systems of protection of plants against pests. One of the components used in integrated plant protection is the use of proper crop rotation. Also important is the cultivation of resistant and tolerant varieties and introduction of alternative forms of cultivation to the agricultural practice, such as sowing mixtures of varieties and species, allowing for better use of agricultural environment, without interfering with its biological balance. These methodologies should also indicate the most effective and safe techniques of application of plant protection products.

Methodologies of integrated pest management will also include guidance on the selection and use of plant protection products in such a way as to minimize the risk of hazards to human health and the environment.

These methodologies will also take into account the following obligations imposed on Member States of the European Union by Directive 2009/128/EC, namely:

1) Article 11(2) point a) of the directive that obliges EU Member States to give priority to plant protection products that are not classified as hazardous to the aquatic environment (in accordance with Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations (OJ L 200, 30.07.1999, p.1, as amended; Special edition in Polish: Chapter 13 Volume 24 p. 109, as amended)), nor do they contain priority hazardous substances as defined in Article 16(3) of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p.1, as amended; Special edition in Polish: Chapter 15 Volume 05 p. 275, as amended).;
2) Article 11(2) point b) of the Directive, which obliges EU Member States to give priority to the most effective techniques of applying plant protection products, such as the use of low-drift devices;
3) Article 10 of the Directive, according to which EU Member States may include in their national action plans the provisions on informing about the planned plant protection treatments persons who could be exposed to the plant protection products as a result of drifting of the spray liquid outside the treatment area.

These methodologies will be voluntary guidelines, the implementation of which will ensure that professional users of plant protection products act in accordance with the applicable regulations. Methodologies will be revised and supplemented as new scientific findings come into light.

Task 3. Modification of pest signalling system*

One important element of integrated pest management is limiting crop protection treatments to cases where it is justified by the presence of these organisms in the intensity that poses a threat to crops and the selection of the optimum date of applying plant protection products. This allows, by increasing the efficiency of crop protection treatments, to reduce the amount of pesticides used and selecting the most effective preparations.

In order to meet the provisions of Directive 2009/128/EC, there must be a generally available system of advising farmers and supporting decision-making in crop protection. Currently, this aim is pursued by a web-based pest signalling system run by the State Plant Health and Seed Inspection Service.

Tasks previously performed by the State Plant Health and Seed Inspection Service will be taken over gradually by advising units - both agricultural advisory units and commercial units, or professional agricultural organizations or groups of producers.

The measure is expected to include specific, voluntary training for advisers conducting observations of harmful organisms, and later also for professional users. The training will also include the provision of new materials, i.e. keys to determine pests, programmes to support decisions in determining the risk of spreading non-quarantine organisms, possibilities of economic loss, and the ways and time to treat these organisms. It will be necessary also to establish close cooperation with research institutes, agricultural universities and advisory bodies in expanding the pest signalling system.

Task 4. Providing decision support systems in crop protection*

An important element of the monitoring of harmful organisms and signalling their presence is the use of advanced decision support systems in crop protection. However, this requires considerable knowledge (in particular the biology of organisms harmful to plants and optimum time for inspections of their occurrence) and the availability of decision support systems and the ability to use them. These systems allow limiting the number of treatments while safeguarding the effective protection of crops, which contributes to the safety of consumers of agricultural products and the environment, and reduces production costs.

In accordance with Article 14(2) of Directive 2009/128/EC, the European Union Member States shall establish or support the establishment of necessary conditions for the implementation of integrated pest management. In particular, they shall ensure that professional users have at their disposal information and tools for pest monitoring and decision making.

The implementation of the principles of integrated pest management will be supported, in addition to the signalling system of pests, by making available some decision support systems for plant protection to professional users of plant protection products, updating and expanding them with new elements and functions, and providing scientific studies in this area.

This task will identify areas for commissioning decision support systems in crop protection. At the same time, selected systems will be expanded to include new features and made available electronically.

These activities are aimed at raising the level of knowledge about plant protection products among professional users of plant protection products and providing them with decision support programmes in plant protection. It should be borne in mind that this process will be long-lasting, just

like the process of developing guidance for the plant protection. This results in the need to support farmers in this regard by the public services.

Task 5. Creation and maintenance of a web-based platform dedicated to integrated crop protection*

The creation and maintenance of a web-based platform dedicated to integrated crop protection will provide a platform for sharing experience and knowledge transfer between science and practice in the implementation of integrated pest management.

The aim of creating the platform is to support the competitiveness of agricultural holdings, which in today's management conditions is determined by the speed and access to accurate information. Given the rapid growth of wireless Internet access in Poland, and in particular its development in rural areas, special attention should be paid to the development of electronic means of communication, including allowing rural people access to modern information and communication technologies.

Also important will be the ability to use computer platforms as an objective tool in counselling and to provide training to farmers and teaching in agricultural schools. Current and comprehensive disseminating of information and guidance necessary for the application of integrated pest management for individual crops and sectors undoubtedly will affect the achievement of the objectives of Directive 2009/128/EC with regard to the sustainable use of plant protection products, and thus to improve the safety of humans, animals and the environment. At the same time, via the Internet platform dedicated to integrated crop protection, it will be possible to inform the general public about plant protection products and the rules for their use. The task will be carried out by the Ministry of Agriculture and Rural Development and the State Plant Health and Seed Inspection Service in cooperation with research institutes and advisory bodies.

Task 6. Dissemination of results of the assessment carried out in the Post-registration Variety Experimenting*

The use of crop varieties showing resistance or tolerance to harmful organisms is one of the factors that contribute to reducing the use of plant protection products.

The task will be carried out by the Research Centre for Cultivar Testing, using the assessment of resistance of crop varieties to pests in the Post-registration Variety Experimenting, on the basis of which the "Lists of varieties recommended for cultivation in the voivodeships" (Listy zalecanych do uprawy odmian na obszarze województw - LZO) will be created. The above "Lists of varieties recommended for cultivation in the voivodeships" (LZO) will be one of the key elements of decision support systems in crop protection available on the online platform dedicated to the problems of integrated pest management.

Task 7. Promotion of integrated crop production system*

Under the current provisions of Article 5 of the Act of 18 December 2003 on the protection of plants, a voluntary system of food quality - Integrated Production is supervised by the State Plant Health and Seed Inspection Service. It should be emphasized that the system of Integrated Production (IP) is consistent with the principles of integrated pest management. Implementation of IP currently provides for meeting the requirement of the introduction of general principles of integrated pest management in crop production, mandatory from 2014. Therefore, producers who fear the new requirements for integrated pest management can implement the national IP system on their farms, which guarantees fulfilment of those standards.

The implementation of the IP system allows for the reimbursement of costs incurred in connection with participation in the system and the promotion of products as part of the Rural Development Programme for 2007-2013. The use of IP rules allows meeting the requirements set by the system of cross-compliance under the direct payments, which are applicable for plant protection and food safety from 1 January 2011.

Given the above, further action will be taken to disseminate information about this food quality system.

After 2014, it will be necessary to change the way the integrated production system is functioning; the change will be introduced by the act of 8 March 2013 on plant protection products. From 2014, the duties related to the supervision of farms participating in the Integrated Production system and issuing certificates attesting its use, currently carried out by the State Plant Health and Seed Inspection Service, will be entrusted with the certification bodies, according to solutions used in organic farming. More emphasis will also be put on adhering to the principles of hygiene on farms. It will be also necessary to update the current IP methodologies.

Task 8. Development of professional advice for plant protection*

An important element in the implementation and correct application of the general principles of integrated pest management is a professional and independent advice. The Act of 8 March 2013 on plant protection products for the first time provides detailed regulatory requirements for advisory services relating to plant protection measures in the implementation of the requirements of integrated pest management and the use of plant protection products, including activities carried out within the framework of marketing.

The development of professional advice in crop protection will be supported primarily through specialized training for advisers. This task will be carried out by the Agricultural Advisory Centre, together with research institutes and agricultural universities. In particular, the following actions are envisaged:

1) creating a system of periodic specialized training for advisers and organizing a series of seminars, conferences, demonstrations of best practices and field experiences in plant protection;

2) preparing and forwarding research results, information and training materials to advisers;
3) developing and maintaining systems for decision support, signalling pests and databases for advice on plant protection.

Measure 2. Modification of the training system for professional users of plant protection products, sellers of these preparations and advisers*

The safe use of plant protection products requires the right knowledge from the user. Such a person should be able to properly evaluate the need for treatment, select plant protection products so that they pose the least threat to the environment (in particular the aquatic environment), properly carry out the treatment, take care of the technical condition of the equipment for use of plant protection products, as well as be able to react appropriately in the events hazardous to human health, animals or the environment.

With this in mind, in accordance with Article 41 of the Act of 8 March 2013 on plant protection products, persons performing professional treatments using plant protection products should be properly prepared through training on the use of plant protection products. Mandatory training will cover both professional users of plant protection products in agriculture and forestry, as well as outside these areas (entities maintaining urban greenery, gardening service providers and operators carrying out treatments with plant protection products for sports facilities, railways and roads).

Furthermore, in accordance with Article 42 of the Act of 8 March 2013 on plant protection products, mandatory training will also cover professional advisers involved in providing guidance for the protection of plants. The requirement under the provisions of the Act of 18 December 2003 on the plant protection to complete such training for persons engaged in the sale of pesticides was maintained. An operator carrying out business activities in the marketing of plant protection products shall ensure that such persons have completed the relevant training and will provide the buyer of plant protection products, on request, with information regarding the risks associated with the use of plant protection products purchased and their proper and safe use. These people have a direct impact on the behaviour of users of plant protection products, and their knowledge should effectively contribute to the reduction of risks arising during transport, storage and use of plant protection products.

In Poland, the system of mandatory training for users of plant protection products in agriculture and forestry as well as for those in contact with plant protection products in works related to trade or packing of these preparations, involving a network of training centres, supervised by the State Plant Health and Seed Inspection Service was created before the entry into force of the provisions of Directive 2009/128/EC, which are implemented into national law by the Act of 8 March 2013 on plant protection products.

Organisation of training on plant protection products is set out in section 7 of the Act of 8 March 2013 on plant protection products. The training system distinguishes between basic training and

supplementary training. Training should be repeated at intervals of not more than five years. Training is carried out by entities registered by the voivodeship inspector of plant health and seed inspection. A certificate of completion of training in the field of plant protection products is issued by an entity providing such training, after the trainee passes an exam designed to test knowledge of the issues covered by the training programme.

METHOD OF IMPLEMENTING MEASURE 2 AND ASSESSMENT OF ITS EFFECTS

Modification of the training system in the implementation of the obligatory training of all professional users of plant protection products, persons engaged in the sale of those preparations and advisers will require (in brackets is the term given for the task):

1) developing uniform training materials, corresponding to the current risks associated with the use of plant protection products and preparing training providers to cover new professional groups with trainings (2013-2014);
2) conducting an information campaign among the new occupational groups covered by the obligation of training (2013-2015);
3) covering new professional groups with mandatory training (2013-2015);
4) conducting control activities among the new occupational groups covered by the obligation of training (2015-2017);

OBJECTIVES OF MEASURE 2, TIMETABLES FOR THEIR IMPLEMENTATION, INDICATORS FOR MONITORING THEIR IMPLEMENTATION AND ENTITIES RESPONSIBLE FOR THEIR IMPLEMENTATION

The effectiveness will be assessed on the basis of the farmers' knowledge of the principles of integrated pest management and correct behaviour during the preparation of treatment for plant protection, during the treatment itself, and immediately after the treatment (data will be collected in the survey - Polish countryside and agriculture implemented by the Ministry of Agriculture and Rural Development and research on the structure of agricultural farms carried out by the Central Statistical Office, and also obtained as a result of the controls carried out by the State Plant Health and Seed Inspection Service).

Efficiency of measures will be assessed on the basis of the percentage of people covered by the obligation of training to the number of people who have met this requirement. It is desirable to achieve a result of 90% in 2017.

In addition, in order to evaluate the effectiveness of training in reducing behaviour resulting in risks among users of plant protection products, the survey will focus on the behaviour of users of plant protection products such as:

1) correct procedure when cleaning equipment for the application of plant protection products;
2) use of protective clothing during plant protection treatments;

3) preventing contamination of water sources while filling the sprayer tank;
4) knowledge of the scope of label of a plant protection product;
5) providing information about the planned plant protection treatment to persons who may be exposed to the plant protection product;
6) frequency of calibration of equipment for the use of plant protection products.

It is desirable to achieve in 2017 an increase of 10% in the proportion of correct answers to survey questions on this topic, as compared with the data for 2013.

It is also desirable to increase by 10% until 2016 the percentage of farmers who take into account in the selection of a plant protection product its harm to humans, bees and aquatic environment, as compared with the data for 2013.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the scope of budgetary spending limits, including through the tasks carried out for the Ministry by supervised bodies and subsidiaries. Tasks related to the supervision of marketing, packaging and use of plant protection products, as well as supervision of the training system in plant protection will be implemented by the State Plant Health and Seed Inspection Service within the limits of budgetary expenditure of the Main Inspector of Plant Health and Seed Inspection and the voivodes.

The implementation of the task will require cooperation with the voivodeship agricultural advisory centres, local agriculture government, agricultural schools and universities, and industry agricultural organizations.

Measure 3. Modification of the system for testing the equipment intended for use of plant protection products*

The key element for the correct plant protection treatment and safety of this treatment is the technical condition of equipment for the use of plant protection products. Uneven distribution of plant protection products on the sprayed surface carries with it the risk, that in the area where the amount of preparation used is lower than intended the effectiveness of the operation will be limited, which can lead to the need of a larger number of spraying. At the same time, in places where the quantity of a plant protection product is excessive, there is a risk of accumulation of residues in the environment and in agricultural crops. In turn, the use of plant protection products in a sprayer with a leaky liquid or spraying system, whose components become contaminated with plant protection products during the operation, increases the risk of injury to the operator of such equipment or occurrence of contamination points.

These risks mean that care for the environment, and the health of producers and consumers of agricultural products requires official surveillance of the equipment used to apply plant protection products.

Poland, before the entry into force of the provisions of Directive 2009/128/EC, the provisions of which are implemented into national law by the Act of 8 March 2013 on plant protection products, will

establish a system of compulsory periodic testing of technical condition for tractor and self-propelled field or orchard sprayers, including a network of diagnostic units, supervised by the State Plant Health and Seed Inspection Service. In accordance with the provisions of the Act of 8 March 2013 on plant protection products, mandatory testing will also cover other types of equipment for applying plant protection products, such as equipment mounted on aircraft and rail vehicles. In this case, it will be necessary to develop the technical requirements for the equipment, control methodologies and training materials for diagnosticians. Types of equipment intended for applying plant protection products, which shall be examined for technical efficiency, as well as technical performance requirements for this equipment, will be specified in the regulation of the Minister responsible for agriculture.

In 2011, the Ministry of Agriculture and Rural Development commissioned expertise on technical requirements for equipment mounted on aircraft and rail vehicles used for the application of plant protection products and the principles of its control. According to this expertise, in Poland there are 64 aircrafts with mounted equipment intended for application of plant protection products and about 20 sprayers mounted on railway vehicles and 15 trains for chemical weed control of rails (CHOT type). At the same time, according to the Central Statistical Office, in 2011, 325 801 farms (14% of the total number of individual farms) used a non-standard equipment for crop protection, i.e. seed treatment equipment (42,641), manual or knapsack sprayers (303,235), barrow sprayers (8,284), special equipment to carry out spraying in greenhouses or plastic tunnels (1,394) and other specialized equipment (2,736).

It is also necessary to carry out an information campaign about the new obligations for holders of equipment intended for application of plant protection products and the extension of the control exercised by the State Plant Health and Seed Inspection Service.

METHOD OF IMPLEMENTING MEASURE 3 AND ASSESSMENT OF ITS EFFECTS

The implementation of the obligation to cover the equipment designed for application of plant protection products with technical testing, will require (in brackets is the term given for the task):

1) developing common research methodologies of such equipment, including new types of equipment for application of plant protection products (2013-2014);
2) conducting an information campaign among users of equipment for application of plant protection products, which has so far not been subject to such testing (2013-2016);
3) conducting specialized training and workshops for diagnosticians (2013-2016);
4) testing of equipment for application of plant protection products, which has so far not been subject to the obligation of such testing (2013-2016);
5) carrying out inspection activities, in particular among the entities covered by the new requirements (2016-2017).

OBJECTIVES OF MEASURE 3, TIMETABLES FOR THEIR IMPLEMENTATION, INDICATORS FOR MONITORING THEIR IMPLEMENTATION AND ENTITIES RESPONSIBLE FOR THEIR IMPLEMENTATION

The effectiveness will be assessed on the basis of the percentage of equipment for application of plant protection products being in use, which is regularly subjected to mandatory testing. It is desirable to maintain in 2017 the percentage of equipment intended for application of plant protection products being in use, faulty or without current technical efficiency certificate, at the level of 20%, as ascertained during controls performed by the State Inspectorate of Plant Health and Seed Inspection.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the scope of budgetary spending limits, including through the tasks carried out for the Ministry by supervised bodies and subsidiaries. Tasks related to the supervision of technical efficiency testing for sprayers will be carried out by the State Plant Health and Seed Inspection Service within the limits of budgetary expenditure of the Main Inspector of Plant Health and Seed Inspection and the voivodes.
The implementation of the task will require cooperation with the voivodeship agricultural advisory centres, local agriculture government, agricultural schools and universities, and industry agricultural organizations.

Measure 4. Raising public awareness on plant protection products**

Directive 2009/128/EC stresses the need to raise awareness among the general public on plant protection products and their role in modern agriculture and the risks that may be associated with their use. In accordance with Article 7 of the Directive, Member States of the European Union should ensure public access to accurate and balanced information on plant protection products.

The implementation of the national action plan therefore needs an information campaign aimed at raising awareness of selected social groups on plant protection products. The campaign will include organization of conferences approximating the scope of the national action plan, and the publication of information in the press and distribution of information material.

General principles of integrated pest management, including the obligations imposed on the users of plant protection products by the provisions of the Act of 8 March 2013 on plant protection products, will be included in the curricula of agricultural schools and universities and other higher education institutions that provide education at faculties covering issues related to crop cultivation or protection.

Furthermore, in accordance with the provisions of Article 74 of the Act of 8 March 2013 on plant protection products, the information on minimizing the risks of plant protection products on human health, animals and the environment will be made available on the website of the Ministry responsible for agriculture.

METHOD OF IMPLEMENTING MEASURE 4 AND ASSESSMENT OF ITS EFFECTS

Raising public awareness on plant protection products will be achieved by (in brackets is the term given for the task):

1) information campaign on plant protection products (2013-2017);
2) a change in curricula of agricultural high schools and colleges and other institutions that provide courses covering issues of plant protection products (2013-2014).

Due to the nature of the action, with a view to increasing the effectiveness of other measures included in the national action plan, no individual meters had been established for it.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the scope of budgetary spending limits, including through the tasks carried out for the Ministry by supervised bodies and subsidiaries.
The implementation of the tasks will require cooperation from voivodeship agricultural advisory centres and agricultural schools and universities.

Measure 5. Ensuring protection for minor crops*

Problems in the protection of minor crops, often resulting from the lack of plant protection products authorized to control pests, the occurrence of which is not possible with non-chemical methods, affect the economics of production, or even abandonment of such plant species. At the same time, unauthorized use of plant protection products on minor crops poses a serious threat to human health, animals and the environment. Given the problems in minor crop protection, measures will be taken to supplement programmes to protect these crops.

New capabilities in this scope are given in particular by provisions of Regulation No 1107/2009, where the authorization procedures for putting plant protection products on the market make it possible to use such mechanisms as the registration zone, the mutual recognition of authorizations (including for minor use), or the extension of the authorization for minor use. However, in addition to streamlining the registration procedures in this regard, the effective implementation of this task requires establishing a permanent cooperation between the representatives of professional agricultural organizations, producer groups, scientists and producers of plant protection products. This will be done through cyclic meetings and thematic conferences and scientific and research support.

A comprehensive approach to the issue of protection of minor crops, in particular with regard to the principles of integrated pest management, will have a significant impact on reducing the risks to food safety and the environment associated with the unauthorized use of plant protection products in these crops.

METHOD OF IMPLEMENTING MEASURE 5 AND ASSESSMENT OF ITS EFFECTS

Solving problems in the protection of minor crops will require the following tasks (in brackets is the term given for the task):

1) coordination of research and analysis for the protection of minor crops (2013-2017);
2) organization of consultations with representatives of industry agricultural organizations, producer groups, scientific groups, counselling groups and producers of plant protection products (2013-2017).

OBJECTIVES OF MEASURE 5, TIMETABLES FOR THEIR IMPLEMENTATION, INDICATORS FOR MONITORING THEIR IMPLEMENTATION AND ENTITIES RESPONSIBLE FOR THEIR IMPLEMENTATION

1. Extending the scope of at least 15 permits for minor use each year.
2. Reducing by 20% until 2017, as compared with 2013, of irregularities noted during inspections by the State Inspectorate of Plant Health and Seed Inspection for unauthorized uses of plant protection products.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the scope of budgetary spending limits, including through the tasks carried out for the Ministry by supervised bodies and subsidiaries.
The implementation of the tasks will require cooperation from industry agricultural organizations and manufacturers of plant protection products.

Measure 6. Ensuring effective supervision of trading and use of plant protection products*

Reducing the risks associated with the use of plant protection products is done not only through legislative and non-legislative activity, which consists in providing professional users of these agents with knowledge and tools to limit the use of these preparations to a necessary minimum. Control activities of state services designed to eliminate the irregularities are also required in this field. These activities, in order to ensure the efficiency, should be based on risk analysis that allows the targeting of controls to areas with the greatest likelihood of irregularities. This will successfully eliminate irregularities and allow for effective management of the funds allocated to the services responsible for controls of the marketing and use of plant protection products.

In order to ensure the effectiveness of activities of the State Plant Health and Seed Inspection Service in the control of the use and marketing of plant protection products, statistical basis for such controls will be developed. The statistical basis will help to determine the optimal number of controls

carried out by the State Plant Health and Seed Inspection Service, and to identify areas of high risk, on which control activities should focus.

The statistical basis will cover the main tasks of the State Plant Health and Seed Inspection Service in the handling and use of plant protection products, namely:

1) conducting quality control of plant protection products in relation to the type and number of samples. The primary objective is to determine the number of samples taken, apart from intervention control, so as to ensure high detection rate of deviations from the quality requirements specified in the authorization of a plant protection product. A variety of factors must be subjected to mathematical analysis, such as: the type of the quality parameter, type of formulation, intensity of distribution network of plant protection products, sales of plant protection products and track record of many years of inspection;
2) maintaining control of pesticide residues in plant material. The main objective is to determine the compliance with the existing legislation on the use of plant protection products, and the most important parameter of reference is the maximum residue level of pesticides in products of plant origin. Control of pesticide residues in agricultural crops is directly related to food safety. Mathematical analysis, performed separately for field crops and crops under protection, will be applied to a set of factors, such as: the type of crops, regions, taking into account the specificity of cultivation, the type of active substances or mode of application. Control assumption is based on the intention to achieve high detection of irregularities in the form of exceedances of the maximum pesticide residues or unauthorized use of certain substances in certain crops;
3) conducting control of the use of plant protection products on farms and in businesses that apply plant protection products in the production of goods. Statistical analysis will take into account various parameters, such as: type of crop, type of plant protection products used in the region, region, type of farm, size: of the growing area and the area of application, and more.

Although the State Plant Health and Seed Inspection Service is an authority that supervises the use of plant protection products, the monitoring and control of hazards created by plant protection products are also carried out by other entities. Supervision over safety of food of plant origin put on the market, including in relation to pesticide residues, is performed by the State Sanitary Inspection. Notwithstanding the foregoing, the provisions of Article 46 of the Act of 8 March 2013 on plant protection products extend the competence of the State Plant Health and Seed Inspection Service in this regard. If the provincial inspector finds, based on the results of laboratory tests of samples of crops, that these crops contain residues of plant protection products in quantities hazardous to the health of consumers, he may forbid the allocation of these crops for human consumption and their trading, including to third countries. However, if these crops were introduced to the market, the inspector shall follow the procedure of notification under the rapid alert system for food and feed under the provisions on food safety and nutrition.

To ensure effectiveness of the measure, it is necessary to ensure sufficient cooperation between national authorities responsible for overseeing marketing and use of plant protection products with authorities of the other Member States of the European Union.

METHOD OF IMPLEMENTING MEASURE 6 AND ASSESSMENT OF ITS EFFECTS

Providing effective supervision over trade and use of plant protection products will require development of the statistical basis for control plans for (in brackets is the term given for the task):

1) quality of plant protection products (2013-2015);
2) pesticide residues in agricultural crops (2013-2015);
3) use of plant protection products (2013-2015).

Due to the nature of the action, with a view to increasing the effectiveness of other measures included in the national action plan, no individual meters had been established for assessment of its implementation.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the scope of budgetary spending limits, including through the tasks carried out for the Ministry by supervised bodies and subsidiaries. Supervisory tasks in marketing, packaging and use of plant protection products will be implemented by the State Plant Health and Seed Inspection Service within the budget expenditure of Main Inspector of Plant Health and Seed Inspection and the voivodes.

Measure 7. Analysis of risk associated with the use of plant protection products*

Policy of the State with regard to plant protection products, in particular the adoption of legal solutions for their marketing and use, requires knowledge about the risks arising in this area. For this purpose, it is necessary to conduct regular, periodic analysis of data from surveys and monitoring related to plant protection products, carried out in the unit that coordinates matters related to marketing and use of plant protection products.

The implementation of the national action plan will use data from projects based on existing provisions of the surveys and monitoring systems, and will create additional data collection systems.

The data obtained in the course of audits, surveys and monitoring systems will be forwarded to the office supporting the minister in charge of agriculture and analysed. Data on plant protection products derived from monitoring activities and statistical and control activities will be made public on the website administered by the office supporting the Minister of Agriculture and Rural Development.

METHOD OF IMPLEMENTING MEASURE 7 AND ASSESSMENT OF ITS EFFECTS

The following tasks will be completed for the purpose of analyzing the risks associated with the use of plant protection products (in brackets is the term given for the task):

1) collection and analysis of data obtained in the course of audits, surveys on the marketing and use of plant protection products and systems for monitoring the phenomena associated with plant protection products (2013-2017);
2) development of indicators and analysis of the risks associated with the use of plant protection products (2013-2015);
3) establishing a system to collect information about poisoning of people with plant protection products (2013);
4) establishing a system to collect information about poisoning of bees with plant protection products (2013-2014);
5) supervision of plant protection products containing active substances which should be covered by special monitoring (2013-2017).

Due to the nature of the measure, with a view to increasing the effectiveness of other measures included in the national action plan, no individual meters had been established for assessment of its implementation.

This measure will be coordinated by the Ministry of Agriculture and Rural Development. The measure will be implemented by the Ministry of Agriculture and Rural Development, the Ministry of Health, the Ministry of the Environment and the Central Statistical Office, including through the following tasks performed on their behalf by the supervised entities and subsidiaries, within the scope of budgetary spending limits of individual public sector entities involved in the implementation of this measure.

Task 1. ***Collection and analysis of data obtained in the course of controls, statistical surveys on the marketing and use of plant protection products and systems for monitoring the phenomena associated with plant protection products*****

It is essential that the data obtained in the course of controls, statistical surveys on the marketing and use of plant protection products and systems for monitoring the phenomena associated with plant protection products was transferred to a single authority that coordinates activities related to the implementation of the national action plan – the Ministry of Agriculture and Rural Development, where it will be subject to analysis. Results of the analysis will be the basis for assessing the degree of achievement of the objectives of this plan, and, if necessary, changes to the scope of activities specified in the plan, the scope of official controls, as well as amendments to the rules on risk management related to marketing and use of plant protection products.

At the same time, EU Member States have been obliged to submit to the European Commission and other Member States of the European Union the results of the assessments of the risks associated with the use of plant protection products and to make this information public. The minister in charge of agriculture will be in charge of these responsibilities.

*Task 2. Development of indicators and analysis of the risks associated with the use of plant protection products**

Pursuant to Annex IV of Directive 2009/128/EC, harmonized risk indicators shall be set. Until now, these indicators have not been established. In this case, the Member States of the European Union should use national indicators.

Based on the data obtained in the course of controls, statistical surveys on the marketing and use of plant protection products and systems for monitoring the phenomena associated with plant protection products, the Member States will develop the national indicators of risk associated with the use of plant protection products, as well as the appropriate databases. These indicators will allow for an analysis of the risks associated with the use of plant protection products, providing a basis for risk management and policy of the state in relation to plant protection products, including legislative action.

*Task 3. Establishing a system for gathering information on poisoning of people with plant protection products**

The obligation to establish a system of registration of pesticides poisoning results from Article 7(2) of Directive 2009/128/EC. This provision states that "Member States shall put in place systems for gathering information on pesticide acute poisoning incidents, as well as chronic poisoning developments where available, among groups that may be exposed regularly to pesticides such as operators, agricultural workers or persons living close to pesticide application areas".

So far, Poland has not collected information on poisoning of people with plant protection products in an organized and complete manner, for purposes of the state policy in relation to plant protection products.

The organization of the system for gathering information on poisoning of people with plant protection products will be the responsibility of the minister in charge of agriculture.

*Task 4. Establishing a system for gathering information on poisoning of bees with plant protection products***

Bees are beneficial organisms that are particularly vulnerable to negative effects of improper use of plant protection products. Information about poisoning of bees can be an important indicator of the

risk associated with the use of plant protection products. In extreme cases, poisoning caused by the use of these preparations at the wrong time (at the time of bee flight) or in the presence of flowering plants can lead to falls of these insects.

To properly assess the risk to bees posed by pesticides a system will be created to gather and analyze data about confirmed poisoning of these insects.

This action is new, because now in Poland there is no system for collecting data on bee poisoning with pesticides.

Lack of the system for collecting information about the poisoning of bees with plant protection products in Poland means that there is no complete picture of the phenomenon. The State Plant Health and Seed Inspection Service reported that in 2007-2009 there were 17 confirmed cases of poisoning of these insects with plant protection products. In further six cases of suspected poisoning of insects with plant protection products, it was not possible to determine the cause of their downfall. In addition, the Field Station in Białystok of Institute of Plant Protection - National Research Institute in Poznań informed about 23 confirmed cases of poisoning of bees with plant protection products in 2009-2010. It should be noted that these figures should be treated as a partial input.

In cases of suspected poisoning of bees with plant protection products the beekeeper notifies the competent authority of the gmina or town, which can establish a relevant commission to investigate the case. The Commission consists of representatives of the particular gmina or town, the poviat veterinary inspectorate and the voivodeship inspectorate of plant health and seed inspection. In order to harmonize the activities of such commissions, the Polish Association of Beekeeping and the Veterinary Inspection developed the "*Protocol on the poisoning of bees"* as an attachment to the "*Code of Good Manufacturing Practice in beekeeping*".

Set up of the system to collect information about the poisoning of bees will allow learning of the full scale of this phenomenon and taking action to limit it.

*Task 5. Supervision of plant protection products containing active substances which should be covered by special monitoring**

In accordance with Article 1 of the Commission Implementing Regulation (EU) No 540/2011 of 25 May 2011 implementing Regulation (EC) No 1107/2009 of the European Parliament and of the Council as regards the list of approved active substances (OJ L 153, 11.06 .2011, p. 1, as amended), the active substances listed in the Annex to this Regulation are approved for use in plant protection products. This document also presents the specific requirements for the active substances. It specifies, *inter alia*, whether the active substance should be included in the specific monitoring programme and how the active substance can increase the risk associated with the use of plant protection products.

On the basis of this document, supervision will be carried out of plant protection products authorized on the market and containing the active substances which should be subject to specific monitoring programme.

Measure 8. Promoting good practice for safe use of plant protection products*

Safe use of plant protection products is conditional to the greatest degree on awareness, knowledge and skills of people performing chemical treatments, who proceed correctly using appropriate equipment and infrastructure to minimize the risk associated with the use of these preparations. The objective of the task will be to expand existing activities carried out in the interest of safety for all activities related to the use of plant protection products. Good practice relating to protection of the operator, proper preparation of facilities and storage of plant protection products, preparation of the spray liquid and disposal of its remains, treatment technique, bioremediation of chemicals, management of packaging and obsolete pesticides and protection of beneficial organisms will be promoted. At the same time, creating awareness in this regard among the users of pesticides requires conduct of inspection activities by the competent authorities.

METHOD OF IMPLEMENTING MEASURE 8 AND ASSESSMENT OF ITS EFFECTS

The following tasks will be carried out for the purpose of promoting good practice for the use of pesticides (in brackets is the term given for the task):

1) development of the Code of good plant protection practice (2013-2014);
2) preparation of information and training materials about system solutions in the field of good practices for application of plant protection products (2013-2015);
3) conduct of an information campaign among professional and non-professional users (2013-2017);
4) conduct of control activities (2013-2017).

OBJECTIVES OF MEASURE 8, TIMETABLES FOR THEIR IMPLEMENTATION, INDICATORS FOR MONITORING THEIR IMPLEMENTATION AND ENTITIES RESPONSIBLE FOR THEIR IMPLEMENTATION

It is desirable to maintain the level of less than 5% of irregularities ascertained during controls conducted by the State Plant Health and Seed Inspection Service and the State Inspectorate of Environmental Protection in 2017 in the scope of: protection of an operator of equipment intended for application of plant protection products during the treatment, storage of plant protection products, preparation of spray liquid, techniques of crop protection treatments, management of packaging and obsolete plant protection products, protection of non-target organisms during the treatment and preservation of buffer zones during crop protection treatments.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the scope of budgetary spending limits, including through the tasks carried out for the Ministry by supervised bodies and subsidiaries. Supervisory tasks in marketing and use of plant protection products will be implemented by the State Plant Health and Seed Inspection Service within the budget expenditure of the Main Inspector of Plant Health and Seed Inspection and the voivodes.
The implementation of the task will require cooperation with the voivodeship agricultural advisory centres, local agriculture government, agricultural schools and universities, and industry agricultural organizations.

Measure 9. Use of research for integrated pest management and reduction of risk associated with the use of plant protection products*

The rational and proper implementation of the above activities and individual tasks requires the use of research results and scientific publications. The aim of the measure is to stimulate the areas of scientific research related to the area of integrated pest management and to reduce the risks associated with the use of plant protection products.

The research activities are carried out largely within the statutory activities of departmental institutes, and with national and EU funds allocated for study and research, including for thematic multi-annual programmes.

The purpose of the government is to guide research activities, by commenting on statutory activities of institutes and through multi-annual programmes implemented for the administration, taking into account the needs for the implementation of integrated pest management and reduction of risk associated with the use of plant protection products, including by seeking alternative methods of crop protection and reducing dependence of crop production on chemical plant protection products.

METHOD OF IMPLEMENTING MEASURE 9 AND ASSESSMENT OF ITS EFFECTS

The following task will be implemented for the purposes of using and stimulating research on integrated pest management and reducing the risks associated with the use of plant protection products (in brackets is the term given for the task):

guiding the work of research institutions, carried out under the statutory activities of departmental institutes and multi-annual programmes, in accordance with the needs for the implementation of principles of integrated pest management and the national action plan (2013-2017).

Due to the nature of the measure, with a view to increasing the effectiveness of other measures included in the national action plan, no individual meters had been established for assessment of its implementation.

The measure will be implemented by the Ministry of Agriculture and Rural Development within the scope of budgetary spending limits.

* Measure or task is a continuation of a measure or task carried out before the adoption of the national action plan.
** The measure or task was not implemented before the adoption of the national action plan.

SUMMARY

The national action plan presents the results of the analysis on measures taken so far to reduce the risks associated with the use of plant protection products. It is worth mentioning that Poland, prior to the entry into force of Directive 2009/128/EC, adopted national provisions aimed at reducing the risks associated with the trade and use of plant protection products, covering all the areas governed by the provisions of this directive. To this end scientific research and solutions implemented in other Member States of the European Union were used. In particular, it should be noted the functioning of technical performance testing systems for equipment intended for application of plant protection products, training in the scope of plant protection products and developing and implementing a voluntary system of food quality of integrated production, which now completely covers the general principles of integrated pest management. The result is that the implementation of the provisions of Directive 2009/128/EC is based on many years of practical experience.

The national action plan defines the objectives to be achieved in reducing the risks associated with the use of plant protection products for human health, animals and the environment, including compliance with the requirements of integrated pest management by professional users, promoting the use of non-chemical methods and reducing crop production based on the use of chemical plant protection products, as well as the dissemination of knowledge regarding the safe use of plant protection products.

It was assumed that the key objective for Poland in the implementation of the national action plan is to promote the general principles of integrated pest management. While striving to implement best practices related to the use of plant protection products Poland will limit to a minimum the risks associated with their use. Therefore, applying the principles of integrated pest management and good practice in crop protection contributes to the overarching idea of Directive 2009/128/EC, i.e. the sustainable use of pesticides, and thus sustainable development of Polish agriculture.

The results obtained on the basis of statistical surveys on plant protection products and systems for monitoring the phenomena associated with plant protection products indicate that in Poland, the risk associated with these preparations is low. The EFSA's Annual Report on Pesticide Residues for 2008 shows that the percentage of food and feed samples where residues of pesticides exceed maximum allowable limits is going down in the European Union. In 2006, 5% of the samples had pesticide residues that exceeded the maximum levels, while in 2008 – it was 3.5% of samples. In Poland, in 2006-2009, both in food of plant and animal origin and in feed, the percentage of samples with exceedance of maximum levels for pesticide residues remained at very low levels. For food of plant origin this percentage ranged from 4% in 2006 to 0.5% in 2009 (data of the State Sanitary Inspectorate), while in the case of food of animal origin, this percentage during the period did not exceed 0.2% of samples. As a result of analyses of feed, it was found that during the relevant period only 0.1% of the samples contained pesticide residues.

Given the above, it can be noted that in the analysed period, Poland reached a low level of exceedances of pesticide residues in comparison to other EU countries. Exceedances of pesticide residues are therefore not a serious problem and occur sporadically, in particular in products of animal origin. However, with the modernization and intensification of crop production in recent years,

there was an increase in consumption of these products in production. Therefore, further efforts to enhance the understanding of reduction of risk associated with the use of plant protection products are essential in order to minimize the risks from the use of these preparations and ensure the safety of people, animals and the environment.

The provisions of Directive 2009/128/EC provide the basis for a comprehensive inclusion of the area associated with marketing and use of plant protection products in legal framework and non-legislative measures to further reduce the risks associated with their use on human health, animals and the environment. The national action plan implements this task, *inter alia,* by identifying objectives in this regard, measures to determine the progress in achieving the goals, and above all by indicating appropriate measures to achieve the goals. It includes above all the analysis of the area and start of a comprehensive analysis of the results of the surveys and monitoring studies, resulting in modification of existing measures. The national action plan for the sustainable use of plant protection products will be carried out taking into account the balance of the social and environmental needs and competitiveness of Polish agriculture. The national action plan was developed with broad public participation. The scientific community, industry organizations, and public administration all provided their opinions.

Also, the national action plan defines the indicators to assess the risks associated with the use of plant protection products on human health, animals and the environment, including those relating to the consumption of plant protection products. It also defines a way to share the results of a risk assessment with the public and entities responsible for carrying out tasks under the national action plan and conduct of monitoring its objectives.

COMPLIANCE OF THE NATIONAL ACTION PLAN WITH THE NATIONAL DEVELOPMENT STRATEGY AND STRATEGIC OBJECTIVES OF THE STATE

Sustainable use of plant protection products has become one of the priorities of environmental policy at the national level and at European level. The processes of restructuring and modernization of the economy contributed to a reduction in the level of pressure on the environment. This document responds to the environmental policy in the area of agricultural crops. Protection of beneficial organisms in the area of field crops is one of the most important elements of biological protection, which is a priority in the search for non-chemical methods of crop protection.

The national action plan is in line with the *National Development Strategy 2020*, adopted by resolution No 157 of the Council of Ministers of 25 September 2012 on the adoption of the National Development Strategy 2020 (O. J. of Republic of Poland “Monitor Polski” item 882) and meets the objectives set out in the Strategy. According to the strategic objective referred to in this document and areas of intervention "*the main objective of medium-term strategy is to strengthen and use economic, social and institutional capabilities to ensure rapid and sustainable development of the country and improve the quality of life of the population*". Implementation of the national action plan objectives will achieve better use of the potential of administrative units responsible for overseeing the marketing and use of plant protection products and monitoring the developments related to the use of these preparations. This objective will be achieved through rationalization of expenditure for the tasks carried out by these units, and better use of the results of these tasks, without causing any increase in spending. This will be possible, *inter alia,* through developing a statistical basis for planning control in the area of marketing and use of plant protection products. The national action plan focuses on the transfer of knowledge from scientific units to the users of plant protection products, especially farmers. The use of the latest scientific achievements in the field of crop protection and implementation of new technologies of crop protection against harmful organisms will allow for better use of the potential of Polish agriculture. It is also a prerequisite for sustainable rural development, preserving the qualities of the environment. By limiting the risks associated with the use of plant protection products, in particular for consumers of agricultural products, the national action plan will also positively impact the quality of life of the population.

According to the Strategy, an efficient state should be: transparent, friendly, supporting and participating. Therefore, the tasks described in the national action plan focus on supporting farmers and other users of plant protection products in the implementation of obligations under the new EU regulations. At the same time, according to the Strategy "*the limited budgetary resources should focus on specific areas that contribute most to increasing the competitiveness of the economy*". Under these assumptions, the national action plan will not result in additional costs to the state budget, but guide the expenses incurred within the available limits to tasks which will contribute to maintaining the competitiveness of Polish agriculture in the common market of the European Union.

According to the objective I.1.2. of the Strategy "*Increasing the efficiency of public institutions*", indicating that the focus should be on improving the performance of the administrative units, the national action plan includes the tasks to increase the effectiveness of control measures implemented in the area of marketing and use of plant protection products. These tasks should ensure effective

elimination of irregularities and threats that may arise in this area, while maintaining current levels of funding.

Support through the national action plan for integrated pest management is part of the implementation of tasks to increase the competitiveness of the agri-food sector referred to in objective II.2.3 of the Strategy "*Increasing the competitiveness and modernization of the agri-food sector*". The implementation of the general principles of integrated pest management, by rationalizing the use of plant protection products, will enhance the efficiency of agriculture. Moreover, it is a condition for maintaining the competitiveness of Polish agriculture in the European Union.

In line with this objective of the Strategy, "*the rational management of resources in agriculture and fisheries requires above all the continuing dissemination of good agricultural practices and support for such forms and methods of managing production space that promote environmental protection and the development of integrated agriculture*".

The national action plan attaches great importance to the dissemination of good practice, in particular the principles of integrated pest management, through education and information activities and the development of tools for farmers in the implementation of these principles, which include methods of integrated pest management for individual crops, the code of good practice in crop protection, decision support systems in crop protection indicating the optimum time of applying plant protection products, as well as the development of guidance in this area. Dissemination of good practices will be also implemented by promoting the system of integrated crop production - a voluntary system of food quality and certification.

Reducing the risks associated with the use of plant protection products is a prerequisite for the development of sustainable agriculture and contributes to environmental protection. Implementation of the general principles of integrated pest management and reducing dependence of crop protection on chemicals will help to meet the economic needs of rural areas while preserving natural resources in rural areas.

In addition, in accordance with the stated objective of the Strategy, it is also important to encourage the development of research and implementation, and disseminate information on modern technical and organizational solutions, including through professional advising, among agricultural producers. The national action plan provides for the widest possible use of the potential of scientific institutions in the implementation of the principles of integrated pest management and good crop protection practice, and focuses on the effective transfer of knowledge from science to practice, including through the development of guidance.

The processing of information, its quality and speed of delivery are key factors in the information society for growth and competitiveness of industry and services. As has been highlighted in the Strategy "*Digital Poland cannot be reduced to receiving content and services generated outside our country*". The objective II.5.3. of the Strategy "*Ensuring the quality of digital content and services*" stated that "*the low level of Internet use is not only the result of the problems of infrastructure and skill*

level, but also the deficit of relevant content and services tailored to the needs of users. *As a result, some people, in spite of the declared access to the Internet, do not see the need to use it".*

Tasks included in the national action plan therefore contribute to the achievement of the objective II.5. of the Strategy "*Increasing the use of digital technologies*", which is to promote literacy and the use of ICT in the development of the information society. This is achieved by either creating an Internet platform devoted to integrated pest management, as well as by electronic access to scientific publications relating to integrated pest management and integrated crop production. The task is part of the development and implementation of decision support systems in crop protection. Decision support systems designed for agriculture gather and generate information and recommendations based on weather data and field observations. They help farmers or advisers to make decisions on the necessity of applying plant protection products in a given situation. The use of such systems leads to accelerated flow of information and communication, as well as has a positive influence on the environment.

According to objective II.3.4. of the Strategy "*Increasing the use of innovative solutions*" "*an effort will be made to promote the development of products and services in the areas in which Poland can become a leader on the European and global scale. This applies to industries with potentially high demand. One of these specialties can be eco-innovations".* Agriculture is a sector of the economy, which has high export potential. The development of sustainable agriculture, competitive both on the internal market of the European Union and on third-country markets, based on eco-friendly technologies, therefore contributes to the achievement of that objective of the Strategy.

The national action plan is also part of the main objectives of Europe 2020 - A strategy for smart, sustainable and inclusive growth (European Commission Communication No COM (2010) 2020 of 3 March 2010), such as innovation, climate change and education. Actions to be implemented in the above plan are consistent with the three cross-related priorities of the strategy:

- smart growth: developing an economy based on knowledge and innovation,
- sustainable growth: promoting a more resource efficient, greener and more competitive economy,
- inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

In accordance with these priorities, the national action plan provides for broadening the awareness of producers, traders and consumers in the field of risk posed by the use of plant protection products through the organization of conferences, seminars and lectures on the topics of integrated pest management and sustainable use of plant protection products and the development of methodologies and training materials in this regard. The implementation of these priorities also includes the development of innovative programmes of integrated pest management, based on a modern approach to crop protection, that offer methods that are safe for the environment and reduce the use of chemical plant protection products.

Actions to be implemented in the national action plan are also connected to the cohesion policy of the Europe 2020 Strategy through investments in smart and sustainable growth.

Development of integrated pest management in agriculture, based on decision support systems, hazard thresholds and biological methods of crop protection and testing of residues of pesticides in agricultural crops, guarantees the sustainable development of agriculture and production of safe food free from chemical residues of plant protection products and environmental protection.

The overall objective of the renewed *EU Sustainable Development Strategy*, adopted by the European Council in June 2006, is to identify and develop actions through which the European Union will be able to ensure steady increase for present and future generations in the quality of life by creating a community based on the principles of sustainable development - the community efficiently managing and using resources and drawing on the potential of the economy in the environmental and social innovation, and thus ensuring prosperity, environmental protection and social cohesion. The national action plan is linked to the main objectives of the strategy through the execution of tasks for the protection of the environment. The tasks of the plan relate, *inter alia,* to combating pollution with chemical plant protection products and promoting the sustainable use of plant protection products and safe food free from chemical residues of plant protection products.

The national action plan, however, is primarily the direct implementation of the objectives adopted in the *Strategy for sustainable development of rural areas, agriculture and fisheries for 2012-2020*, adopted by the Council of Ministers on 25 April 2012. The Strategy is consistent with the strategic objectives at EU level and with the Europe 2020 Strategy. Activities of the strategy meet the new challenges of civilization, including aging population, climate change, replacement of generations, development of information technology, occupational and territorial mobility. It is a document which designates courses of action financed or co-financed with public funds, both national and EU. These activities were defined in the view of resources and functions of rural areas, agriculture and fisheries in Poland and in the world, and based on five key issues, i.e. the human capital, quality of life, safety, competitiveness and the environment. This strategy directly points to the need to develop a national action plan aimed at reducing the risks associated with the use of plant protection products.

The national action plan is in particular an element of the activities included in the Strategy in:

1) Priority 3 Food safety;
2) Priority 4 Increase in productivity and competitiveness of the agri-food sector;
3) Priority 5 Environmental protection and adaptation to climate change in rural areas.

Priority 3 of the Strategy indicates the need for food production with unique quality, in response to growing consumer demand, as a way to improve the competitiveness and income of producers. The strategy states that "it is relevant in this respect to implement and comply with principles of sustainable use of plant protection products, in particular the principles of integrated crop protection and integrated production". Thus, the main objectives of the national action plan fully fit into the priorities of the Strategy.

The basic elements of Priority 3 of the Strategy are the steps that ensure that food on the market is safe for consumers, in particular control of food quality and safety. These demands are met by measures included in the national action plan to increase the effectiveness of inspections carried out by the State Plant Health and Seed Inspection Service, and the development of the system of technical performance testing of equipment designed for application of plant protection products. Since the strategy emphasizes the importance of coordination and effective cooperation between the services appointed to supervise food safety, the national action plan includes measures to facilitate the analysis and use of data obtained from different control units.

Priority 3 of the Strategy also emphasizes the need for the dissemination of knowledge in the field of nutrition and raising awareness of producers of agricultural and food products, which requires training and advisory action, including the training of farmers in the principles of food safety. These objectives of the strategy will be implemented through solutions included in the national action plan for the development of advisory in crop protection, as well as training for farmers - both mandatory and voluntary.

The national action plan also implements Priority 4 of the Strategy, emphasizing the importance of promoting environment-friendly technical solutions in agricultural production and dissemination of information in the field of modern technical and organizational solutions, and providing professional advice. It implements objectives of the Strategy included in this Priority, i.e. to promote and implement innovations that will foster the growth of productivity in terms of sustainable agricultural production.

The national action plan also fits into the Priority 5 of the Strategy, which points to the need to:

„1) *establish a system of training for professional users of plant protection products, distributors of these preparations and consultants providing services in the field of plant protection;*

1) raise awareness among the general public on plant protection products;

2) ensure the supervision over the technical condition of equipment intended for the application of plant protection products, which is in use;

3) protect the aquatic environment and drinking water against contamination by pesticides;

4) limit the use of plant protection products and the risks arising from their use in areas accessible to vulnerable groups of the population and in areas of high natural value;

5) implement the principles of integrated pest management by professional users of plant protection products;

6) *monitor the risks associated with the use of plant protection products."*

Thus, the national action plan is consistent with the strategic objectives set at the national level and at the European Union level.

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1) Amendments to the consolidated text of the Act were published in Dz.U. of 2008, No. 227, item 1505, of 2009, No. 20, item 106, No. 31, item 206, No. 98, item 817, of 2010 No. 47, item 278, of 2011 No. 54, item 278, No. 63, item 322, No. 106, item 622 and No. 171, item 1016, of 2012 item 1512 and 1529 and of 2013 item 455.

2) Amendments to the consolidated text of the Act were published in Dz.U. of 2002, No. 238, item 2019 and of 2003 No. 130, item 1188, No. 137, item 1299 and No. 208, item 2020.
3) Amendments to the consolidated text of the Act were published in Dz.U. of 2012, item 951 and 1513 and of 2013, item 21 and 165.
4) Amendments to the consolidated text of the Act were published in Dz.U. of 2009, No. 157, item 1241 and No. 215, item 1664, of 2010, No. 76, item 489 and No. 119, item 804, of 2011, No. 34, item 170, No. 94, item 549, No. 208, item 1241 and No. 224, item 1337, of 2012, item 985 and of 2013 item 7, 73 and 165.
5) The amendments to the consolidated text of the Act were published in Dz.U. of 1998, No. 106, item 668 and No. 113, item 717, of 1999, No. 99, item 1152, of 2000, No. 19, item 239, No. 43, item 489, No. 107, item 1127 and No. 120, item 1268, of 2001, No. 11, item 84, No. 28, item 301, No. 52, item 538, No. 99, item 1075, No. 111, item 1194, No. 123, item 1354, No. 128, item 1405 and No. 154, item 1805, of 2002, No. 74, item 676, No. 135, item 1146, No. 196, item 1660, No. 199, item 1673 and No. 200, item 1679, of 2003, No. 166, item 1608 and No. 213, item 2081, of 2004, No. 96, item 959, No. 99, item 1001, No. 120, item 1252 and No. 240, item 2407, of 2005, No. 10, item 71, No. 68, item 610, No. 86, item 732 and No. 167, item 1398, of 2006, No. 104, item 708 and 711, No. 133, item 935, No. 217, item 1587 and No. 221, item 1615, of 2007, No. 64, item 426, No. 89, item 589, No. 176, item 1239, No. 181, item 1288 and No. 225, item 1672, of 2008, No. 93, item 586, No. 116, item 740, No. 223, item 1460 and No. 237, item 1654, of 2009, No. 6, item 33, No. 56, item 458, No. 58, item 485, No. 98, item 817, No. 99, item 825, No. 115, item 958, No. 157, item 1241 and No. 219, item 1704, of 2010, No. 105, item 655, No. 135, item 912, No. 182, item 1228, No. 224, item 1459, No. 249, item 1655 and No. 254, item 1700, of 2011 No. 36, item 181, No. 63, item 322, No. 80, item 432, No. 144, item 855, No. 149, item 887 and No. 232, item 1378, of 2012, item 908 and 1110 and of 2013, item 2.
6) Amendments to the consolidated text of the Act were published in Dz.U. of 2007, No. 147, item 1033, of 2009, No. 18, item 97, of 2010, No. 47, item 278 and No. 238, item 1578 and of 2012, item 951 and 1513.
7) Amendments to the consolidated text of the Act were published in Dz.U. of 2008, No. 111, item 708, No. 138, item 865, No. 154, item 958, No. 171, item 1056, No. 199, item 1227, No. 223, item 1464 and No. 227, item 1505, of 2009, No. 19, item 100, No. 20, item 106, No. 79, item 666, No. 130, item 1070, No. 215, item 1664, of 2010, No. 21, item 104, No. 28, item 145, No. 40, item 227, No. 76, item 489, No. 119, item 804, No. 152, item 1018 and 1019, No. 182, item 1228, No. 229, item 1498, No. 249, item 1657, of 2011, No. 32, item 159, No. 63, item 322, No. 94, item 551, No. 99, item 569, No. 122, item 695, No. 152, item 897, No. 178, item 1060 and No. 224, item 1341, of 2012, item 460, 951, 1342 and 1513 and of 2013, item 21, 139 and 165.
8) Amendments to the Act were published in Dz.U. of 2008, No. 144, item 899, of 2009, No. 18, item 97, of 2010, No. 47, item 278, No. 60, item 372 and No. 230, item 1511, of 2011, No. 106, item 622 and of 2012, item 1007.
9) Amendments to the Act were published in Dz.U. of 2006, No. 171, item 1225, of 2007, No. 64, item 429, of 2008, No. 145, item 916 and No. 214, item 1346, of 2010, No. 47, item 278, No. 81, item 528 and of 2011, No. 106, item 622.
10) Amendments to the consolidated text of the Act were published in Dz.U. of 2010, No. 182, item 1228 and No. 230, item 1511 and of 2011, No. 106, item 622, No. 122, item 696 and No. 171, item 1016.
11) Amendments to the consolidated text of the Act were published in Dz.U. of 2007, No. 75, item 493, No. 88, item 587 and No. 124, item 859, of 2008, No. 138, item 865, No. 199, item 1227 and No. 227, item 1505, of 2009, No. 18, item 97, No. 31, item 206, No. 79, item 666 and No. 130, item 1070, of 2010, No. 182, item 1228 and No. 239, item 1592, of 2011, No. 63, item 322, No. 122, item 695 and No. 152, item 897 and of 2013, item 165.