National Action Plan on the Sustainable Use of Plant Protection Products

Helsinki 2011

Working Group
Memorandum
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To the Ministry of Agriculture and Forestry

On 16 June 2009, the Ministry of Agriculture and Forestry appointed a working group tasked with bringing forward a proposal regarding a National Action Plan for the sustainable use of pesticides as well as proposals for amendment of the Finnish Act on Plant Protection Products (1259/2006) and of the regulations issued under this act by the Ministry of Agriculture and Forestry.

The working group was originally to conclude its work by 31 May 2010, but due to the extensive nature of the task, the deadline was extended until 31 December 2010.

Agricultural Counsellor Kirsi Heinonen, Department of Food and Health, Ministry of Agriculture and Forestry, was appointed by the Ministry of Agriculture and Forestry to serve as Chairman of the working group. Members and deputies included: Ministerial Adviser Kirsti Vallinheimo, Ministry of Finance (deputy, Senior Budget Officer Jyri Inha); Ministerial Adviser Pirkko Kivelä, Ministry of the Environment (Senior Engineer Tapani Suomela); Senior Officer Antero Nikander, Ministry of Agriculture and Forestry (Senior Officer Sini Wallenius); Eija-Leena Hynninen, Head of Section, Finnish Food Safety Authority (Evira) (Senior Officer Reijo Vanhanen); Senior Officer Sari Autio, Finnish Environment Institute (Senior Officer Jari Heinonen until 15 November 2009, Senior Officer Virpi Virtanen from 16 November 2009); Senior Officer Paula Haapasola, National Supervisory Authority for Welfare and Health (Valvira) (Senior Officer Sirpa Luomahaara); Researcher Sanni Junnila, MTT Agrifood Research Finland (Principal Research Scientist Kari Tiilikkala); Senior Development Manager Sari Peltonen, ProAgria Association of Rural Advisory Centres (Agricultural Advisor Patrik Erlund, Nylands Svenska Lantbrukssällskap NSL (Advisory association for Swedish-speaking farmers of Uusimaa)); Executive Director Pertti Rajala, Finnish Plant Protection Society (Kasvinsuojeluseura ry) (Vice-Chairman Irmeli Markkula); Mika Virtanen, Secretary for Plant Production, Central Union of Agricultural Producers and Forest Owners (MTK) (Antti Lavonen, Market and Production Secretary, MTK); Ombudsman Rikard Korkman, Central Union of Swedish-speaking Agricultural Producers in Finland (SLC); Professor Risto Tahvonen, Central Organisation for Finnish Horticulture (Puutarhaliitto ry) (Senior Consultant Tuija Tanska); Executive Director Jyri Uimonen, Finnish Association of Landscape Industries (Viherympäristöliitto ry VYL / Taimistoviljelijät ry, registered association of plant nursery growers) (Horticulturist Ilkka Keko); Agronomist Mikko Rahtola, Finnish Association for Organic Farming (Luomuliitto ry); Marleena Tanhuanpää, Branch Manager, Finnish Food and Drinks Industries' Federation (ETL) (Director Seppo Heiskanen); and Technical Manager Johannes Hahl, Finnish Crop Protection Association (KASTE) (Registration Manager Maria Liljeström). The appointed secretaries were Päivi Arvilommi, Senior Officer, Finnish Food Safety Authority (Evira) and Tove Jern, Senior Agricultural Officer, Ministry of Agriculture and Forestry.

The draft programme was circulated for comment and comments were submitted by: The Ministry of Finance; Ministry of Agriculture and Forestry, Department of Agriculture; Ministry of Agriculture and Forestry, Department of Forestry; Ministry of Agriculture and Forestry, Department of General Affairs; Ministry of Social Affairs and Health; Ministry of the Environment; Finnish Food Safety Authority (Evira); Finnish Agency for Rural Affairs; National Supervisory Authority for Welfare and Health (Valvira); Finnish Environment Institute; Centre for Economic Development, Transport and the Environment for Southwest Finland, Rural Development and Energy Unit; MTT Agrifood Research Finland; Finnish Forest Research Institute; ProAgria Association of Rural Advisory Centres; ProAgria Association of Rural Advisory Centres SLF; Central Organisation for Finnish Horticulture (Puutarhaliitto ry) jointly with the Finnish Association of Landscape Industries (Viherympäristöliitto ry VYL), Finnish Glasshouse Growers' Association, Finnish Association of Fruit and Berry Growers and Taimistoviljelijät ry (registered

association of plant nursery growers); Central Union of Agricultural Producers and Forest Owners (MTK); Central Union of Swedish-speaking Agricultural Producers in Finland (SLC); Finnish Food and Drinks Industries' Federation (ETL); Finnish Water and Waste Water Works Association (FIWA); and the Finnish Association for Nature Conservation.

The comments have been taken into consideration as far as possible.

The working group has also participated in the preparation of amendments to the Act on Plant Protection Products. The legislative amendments are necessary due to the new Plant Protection Products Regulation (EC) No 1107/2009 and the Framework Directive on the sustainable use of pesticides (2009/128/EC).

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1 INTRODUCTION

Directive 2009/128/EC of the European Parliament and of the Council establishing a framework for Community action to achieve the sustainable use of pesticides, hereafter the *'Sustainable Use Directive*' entered into force in November 2009. On the same date, Regulation (EC) No 1107/2009 concerning the placing of plant protection products on the market, hereafter '*Plant Protection Products Regulation*', was also approved.

The Sustainable Use Directive aims to ensure that Community policies uphold a high level of environmental protection in accordance with sustainable development principles, as prescribed in Article 37 of the Charter of Fundamental Rights of the European Union (2000/C 364/01 and 2007/C 303/01).

The purpose of the Sustainable Use Directive is to steer Member States towards sustainable use of pesticides, i.e. to reduce the risks and impacts on human health and the environment arising from their use and to promote the use of integrated pest management and alternative methods and practices. In addition, Member States are recommended to use non-chemical alternatives as far as possible.

The Directive requires Member States to draw up a *National Action Plan*. Finland must implement its National Action Plan for the reduction of risks arising from the use of plant protection products by 26 November 2012. The National Action Plan includes objectives, measures and timetables for reducing the health and environmental risks of plant protection products.

On request of the Ministry of Agriculture and Forestry, the ProAgria Association of Rural Advisory Centres and the Finnish Plant Protection Society (Kasvinsuojeluseura ry) drew up in spring 2009 a background report (*Appendix 2*) on the sustainable use of plant protection products in Finland. The report identified and assessed the measures implemented to date to reduce the risks of the use of plant protection products, as well as opportunities for further risk reduction. The background report served as the basis for the preparation of the National Action Plan on the Sustainable Use of Plant Protection Products.

The National Action Plan realises the objectives of the National Programme on Dangerous Chemicals with regard to plant protection products. The overall goal of the National Programme on Dangerous Chemicals is to implement the global objectives of the Johannesburg World Summit on Sustainable Development to ensure that by 2020 chemicals will not cause significant adverse effects on human health or the environment in Finland.

2 LEGAL BASIS

2.1. Applicable legislation

Sustainable Use Directive
On 22 July 2002, the European Parliament and the Council adopted the Sixth Environment Action Programme, which defines thematic strategies concerning the sustainable use of pesticides. This was followed on 12 July 2006 by a Communication from the Commission entitled: A thematic strategy on the sustainable use of pesticides [COM(2006) 372 final - Not published in the Official Journal].

The objective of the thematic strategy is to introduce 'measures to reduce the impact of pesticides on human health and on the environment consistent with the necessary protection of crops'. The proposed measures principally concern the specific use of pesticides as well as increased monitoring and control, research, user training and information.

The objective of the Sustainable Use Directive is to execute those parts of the strategy on the sustainable use of pesticides which apply to the use of pesticides and which require the adoption of new legislation in the Member States.

The acts, decrees and administrative regulations necessary to comply with the Sustainable Use Directive must enter into force in the Member States by 26 November 2011.

Although the title of the Sustainable Use Directive uses the term pesticide, the Directive initially applies only to **plant protection products**. The Directive is to be later extended to also apply to biocides.

Other EU legislation
Other legislation aimed at achieving the objectives of the strategy include the *Plant Protection Products Regulation*, Regulation (EC) No 1185/2009 of the European Parliament and of the Council concerning statistics on pesticides, hereafter '*Pesticide Statistics Regulation*', which concerns the gathering of information on the use and sale of plant protection products, and Directive 2009/127/EC of the European Parliament and of the Council amending Directive 2006/42/EC with regard to machinery for pesticide application, hereafter the '*Machinery Directive Amendment*'.

The Plant Protection Products Regulation also concerns the approval procedures for plant protection products. The Pesticide Statistics Regulation lays down provisions on the gathering of information on the use and sale of plant protection products, and the Machinery Directive Amendment sets out environmental requirements for new application equipment for plant protection products.

Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006, hereafter *CLP Regulation*, entered into force on 20 January 2009. After a transitional period, the CLP Regulation will replace the current EU rules on classification, labelling and packaging. Making the classification and labelling notifications in accordance with the CLP Regulation also applies to plant protection products.

Insofar as no further provisions regarding plant protection products are given in the Act on Plant Protection Products, the general provisions of the Chemicals Act (744/1989) apply. Several obligations of the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation (EC No 1907/2006), such as the drawing up of safety data sheets, apply to plant protection products, although the obligation to register plant protection products is considered to be already met through the current legislation concerning plant protection products, and thus they are not required to be registered separately for plant protection purposes in accordance with the REACH Regulation.

Pesticide residue limits are prescribed by Regulation (EC) No 396/2005 of the European Parliament and of the Council on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC, hereafter *Regulation on Pesticide Residues*.

National legislation

In Finland, the manufacture, approval, placement on the market, packaging and labelling, storage, use and control of plant protection products are subject to the provisions of the Act on Plant Protection Products (1259/2006) and decrees issued by the Ministry of Agriculture and Forestry.

Prior to approval of a plant protection product, the risks arising from the use of the product are assessed. Approval of the product always requires that the use of the product in accordance with the manufacturer’s instructions does not pose a risk to the environment or to human health.

2.2. Timetable according to the Sustainable Use Directive

Item	Article	Deadline
Transposition of the Directive.	23	26 Nov. 2011
Communication of the National Action Plan to the Commission and to other Member States.	4	26 Nov. 2012
Development by the Commission and Member States of a strategic guidance document on the monitoring and surveying of impacts of pesticide use on human health and the environment.	7	
Member States must notify the Commission of the penalties for the infringement of adopted national provisions.	17	
Aerial spraying; aircraft are to be equipped with accessories that constitute the best available technology to reduce spray drift.	9	1 Jan. 2013
Member States must report to the Commission on the implementation of IPM and, specifically, whether the necessary conditions for IPM implementation are in place.	14	30 Jun. 2013
Training; establishment of certification systems and designation of competent authorities.	5	26 Nov. 2013
Implementation of the general principles of IPM by all professional users.	13	1 Jan. 2014
Commission report to the European Parliament and the Council on the National Action Plans of the Member States. The report shall review the methods used and the implications of the establishment of different types of targets to reduce the risks and use of pesticides.	4	26 Nov. 2014
Sales; distributors must have sufficient staff in their employment holding a certificate. Retailers of pesticides for professional use must hold a certificate. Provision of non-professional users with general information regarding the risks to human health and the environment and low-risk alternatives.	6	26 Nov. 2015
Application equipment; it shall be ensured that pesticide application equipment has been inspected at least once. The interval between inspections shall not exceed five years until 2020 and shall not exceed three years thereafter.	8	26 Nov. 2016
Commission report to the European Parliament and the Council on the experience gained by Member States on the implementation of national targets established in order to achieve the objectives of this Directive. The report may be accompanied, if necessary, by appropriate legislative proposals.	4	26 Nov. 2018

3 OBJECTIVES

The core objective of the National Action Plan is to reduce the risks to human health and to the environment arising from the use of plant protection products. Further objectives are to promote the development and implementation of integrated pest management, alternative cultivation techniques and practices, and indicators. The goal is to reduce the dependence on the use of chemical plant protection products while maintaining a high level of plant health.

The first National Action Plan on the Sustainable Use of Plant Protection Products has been drawn up for the years 2011–2020. The achievement of the objectives will be monitored by an interim evaluation in 2016 on the basis of which the National Action Plan will be focused more closely towards achieving the set objectives.

3.1 Reduced health risks

The objective is to keep the use of plant protection products at a level that does not cause maximum residue levels to be exceeded in plant products that are used for food or feed or in household water or groundwater.

Plant protection products are chemicals subject to pre-approval. A key condition for approval of a plant protection product is that risk assessments conducted on the material indicate that residue levels in foods arising from use of the plant protection product pose no concern for different consumer groups.

Acceptable exposure levels are similarly set for applicators, workers and bystanders. A precondition for approval is that exposure does not exceed the levels assessed as being safe. Maximum residue levels (MRL) are set for the active substances of plant protection products in all areas of use. The MRL is the maximum allowable concentration of an active substance in or on food and feed. The MRL is set at a level that is safe to consumers and corresponds to the intended use of each plant protection product in accordance with good agricultural practice. In addition to food, the general population can be exposed to plant protection products through drinking water.

Strict limits are set on pesticide levels in drinking water in the Decree of the Ministry of Social Affairs and Health relating to the quality and monitoring of water intended for human consumption (461/2000). The limit value for drinking water for an individual pesticide or degradation product is 0.1 micrograms per litre (µg/l), and the combined limit value for more than one plant protection product and their degradation products is 0.5 µg/l. The Decree of the Ministry of Social Affairs and Health is based on the EU Drinking Water Directive (98/83/EC). The new Groundwater Directive (2006/118/EC) prescribes quality standards concerning the level of pesticides and their degradation products in groundwater. The prescribed levels are the same as the limit values set for drinking water. The Groundwater Directive has been incorporated into Finnish law, and the environmental quality standards set for pesticides and their degradation products in groundwater are laid down in the Government Decree on Water Resources Management (1040/2006).

The aim is also to provide sufficient information on the safe handling and application of plant protection products and on ways to reduce risks by increasing training and general awareness and supervision among both professional and non-professional users.

3.2 Reduced environmental risks

The objective is to develop and steer the proper and sustainable use of plant protection products to ensure minimal risk to health and the environment. To achieve this objective, in accordance with the obligation to choose prescribed in Section 16(a) of the Finnish Chemicals Act, operators have the duty, where reasonably possible, to choose from among the existing alternatives those plant protection products or methods that cause the least danger to the environmental.

In the preliminary inspection and approval procedures for plant protection products, comparative assessment is applied as described in the Plant Protection Products Regulation in order to replace the most harmful plant protection products with less harmful products whenever product availability permits.

Water protection

Water protection in the EU is harmonised by the Water Framework Directive (2000/60/EC). In Finland, the Water Framework Directive has been implemented by the Act on Water Resources Management adopted in December 2004. The objective of the Water Framework Directive is to prevent deterioration of the existing state of surface waters and groundwater throughout the European Union. Surface waters and the quantitative and chemical state of groundwater must achieve 'good status' within 15 years of the entry into force of the Directive. On certain conditions, however, these objectives may be reduced or the deadlines extended. With respect to plant protection products, the objectives will be achieved by means of use restrictions, such as buffer distances and groundwater restrictions, which serve as conditions for product approval and which are aimed at preventing the transfer of plant protection products to water bodies.

In order to evaluate the current status and development trends of surface and groundwater quality, continuous monitoring of plant protection product concentrations must be increased to sufficient levels and national environmental quality standards must be set for all plant protection products on the market. These can then be used to assess the adequacy and feasibility with respect to surface and groundwater protection of the restrictions on use that are enforced as conditions for the approval of plant protection products.

In connection with areas requiring water protection and special protection, attention must also be paid to important groundwater areas with respect to water supply (classes I and II) and to areas in the vicinity of wells or springs used for the abstraction of drinking water.

Furthermore, the most efficient application techniques and equipment that minimise off-site contamination must be favoured. In the vicinity of water bodies buffer distances must be observed and other methods of minimising water contamination by plant protection products, such as careful filling and washing of sprayers, must be used.

Crop rotation

The objective is also to favour crop rotation in the next EU programming period. Adequate crop rotation prevents the accumulation of pests in fields, the formation of resistance caused by repeated use of single plant protection products and, in particular, the adverse effects caused by continuous use of persistent and leaching plant protection products. Crop rotation

also assists the farmer in observing the environmental restrictions for plant protection products.

Areas requiring special protection
The aim is to avoid the use of plant protection products in areas requiring special protection. Such areas include, for example, areas coming under the scope of the Habitats and Birds Directives, such as Natura 2000 sites, and areas used by the general public or by sensitive population groups such as children and the elderly, including public parks and gardens, sports and recreation grounds, school grounds and children's playgrounds, and the grounds of healthcare facilities. In some cases the use of plant protection products is, however, justifiable in public areas, as the spread of certain harmful plant species, such as giant hogweed, presents a greater health risk than the controlled use of plant protection products.

Storage and packaging
When handling and storing plant protection products and when handling packaging and surplus materials, care must be taken to prevent hazardous substances from entering the environment. The objective is to tighten controls so that plant protection products that have been removed from use are no longer stored on farms and in commercial warehouses, but are delivered for disposal as hazardous waste in accordance with the Waste Act as soon as possible after removal from use.

3.3. Raised awareness regarding the safe use of plant protection products

The objective is to distribute correct and relevant information to users and consumers on plant protection, plant protection products and their safe use and health and environmental risks through training, advice and increased communication.

The purpose is to further enhance and expand user training on plant protection products. The content of the training is tailored to the needs of different user groups and sales personnel. Training must be available by 26 November 2013. By the year 2021, the aim is to ensure that professional users have taken a user qualification authorising them to use plant protection products. The provision of training and advice will be designed to ensure that all users of plant protection products are skilled in the use of application techniques that minimise risk to health and the environment. The subjects to be covered by the training are listed in Annex I of the Sustainable Use Directive.

The aim is for risks arising from the use of plant protection products to decrease among non-professional users and, as awareness increases, for non-professionals to choose primarily non-chemical plant protection methods. Products intended for non-professional use should pose minimal risk to health and the environment. When approving products, authorities should approve the most harmful products only for professional use.

3.4 Promotion of integrated pest management

The objective is to promote integrated pest management and alternative methods and practices that can be used to further reduce risks to human health and the environment and dependence on the use of plant protection products.

Under the Plant Protection Products Regulation and the Sustainable Use Directive, the application of integrated pest management principles is mandatory for all Member States. Member States are required to report to the Commission on their implementation of IPM by 30 June 2013. The general principles of integrated pest management are set out in Annex III of the Sustainable Use Directive.

The aim is to offer farmers the necessary training, consultation services and information on integrated pest management methods and pest monitoring to enable them to implement the general principles of integrated pest management for specific crop groups.

3.5 Introduction of comparative assessment

The objective is to monitor the applications and methods and related risks of plant protection products containing active substances of particular concern and, in particular, which come within the sphere of comparative assessment, and to set timetables and targets for the reduction in their use, especially if this is an appropriate means to achieve risk reduction objectives and if alternatives are available.

The timetables for comparative assessment of individual active substances depend on the timetable of the Commission’s programme for the evaluation of the candidates for substitution.

4 MEASURES

4.1 Consumer protection and plant protection product residues

4.1.1 Plant protection product residues in plant products

A total of some 2,000 samples are taken each year from both imported and domestic vegetables, from which the residues of more than 250 different active substances are analysed. The Finnish Food Safety Authority (Evira) is responsible for residue monitoring of domestic plant products and products of animal origin, while the Finnish Customs monitors plant product imports from other EU countries and third countries. Samples are analysed by the Customs Laboratory. In addition, each year the City of Helsinki analyses about 150 samples from plant products sold in the metropolitan area at its MetropoliLab, and the National Supervisory Authority for Welfare and Health (Valvira) commissions the analysis of around 20 alcohol samples annually. Many importers and marketers of plant products also commission residue analyses as part of their own checks.

Sampling of plant products is based mainly on random sampling and is targeted particularly at products that have exhibited residue problems in previous analyses or on which information has been obtained via the RASFF system. Sampling also focuses on products that make up a significant part of the Finnish diet. In addition to monitoring, the research results are also used to conduct risk assessments to determine levels of exposure to plant protection product residues in Finland and to assess the health impacts of these exposures. The aim is to exercise effective control to prevent access of non-conforming products to the market. If an existing product in the market is suspected of endangering consumer health, a product recall will be initiated. The occurrence of residue levels that do not comply with EU regulations in domestic products can result in losses of support payments (cross-compliance).

Farmers are responsible for the plant protection products they purchase, which must be approved in Finland and used in accordance with the user instructions. The Finnish Safety and Chemicals Agency (Tukes) directs and advises on the monitoring and control of the use of plant protection products. In addition, Tukes together with Evira supervises the control of cross-compliance. Evira directs and advises other authorities and nationally coordinates the planning, implementation and reporting of residue monitoring. The municipal food control authorities conduct sampling of domestically produced products and products placed on the market, while the Finnish Customs conduct sampling of imported plants.

The occurrence of plant protection product residues in Finland has been monitored based on EU recommendations since the 1990s. Since 2009, participation in an EU harmonised monitoring programme has been mandatory for the Member States. In addition to the harmonised EU programme, the Finnish residue monitoring programme also includes a national monitoring programme, with the results reported together with the EU programme.

Evira is responsible for annually reporting the national monitoring data to the Commission and the European Food Safety Authority (EFSA). The results are also published in Evira's publication series '*Pesticide residue monitoring in Finland*'.

4.1.2. Plant protection product residues in drinking water

Drinking water can pose a risk to consumers through contaminated groundwater. Reduction of the risk of exposure to plant protection products through drinking water is achieved through quality control of drinking water and, above all, through environmental protection measures (Section 4.3.).

Proposed measures:	Monitoring of plant protection product residues is to be continued and it is to be ensured that domestic samples account for a sufficiently large share of the overall sample set. Methods are to be developed to ensure that all relevant plant protection products that have been approved in Finland are included in the analysis set. Evira is to modify the database used for the reporting of plant protection product residues in which results are archived and which enables the comparison, statistics compilation and reporting of results (e.g. to the EFSA). The annual publication on residue results is also to be revised and the consumer guide updated. The adequacy of existing measures is to be assessed. The consumer safety report is to be completed.
Responsible party:	Finnish Food Safety Authority (Evira)
Key tasks:	Joint investigation with the Finnish Customs Laboratory into the potential for including a greater number of plant protection products used in Finland in the analysis set.

4.2 Worker and user protection

The health risks to applicators, other workers and bystanders arising from the use of a plant protection product are assessed in connection with the product approval procedure. Approval of the product requires that the use of the product in accordance with the instructions does not pose a risk to human health.

Common immediate adverse effects for users of plant protection products include irritation of skin, eyes and mucous membranes. Lengthy exposure can lead to skin or respiratory sensitisation. Intake of a plant protection product orally or via the skin or respiratory tract can cause immediate toxic symptoms such as headache, nausea and drowsiness. The chemical's acute toxicity, irritating and sensitising properties and any other serious health dangers are to be indicated on the product package with danger symbols.

Repeated, long-term exposure can affect vital organs and organ systems, causing health problems such as liver and kidney damage or the destruction of the blood-forming tissue in bone marrow. An acceptable operator exposure level (AOEL) is determined based on no observed adverse effect levels (NOAELs) derived from animal tests and by applying safety factors. A plant protection product may be approved for use if worker exposure during use remains below the AOEL.

Special conditions for approval are prescribed by law for substances that are carcinogenic, mutagenic or toxic to reproduction. In principle, a plant protection product is not approved for use if it is classed as carcinogenic, mutagenic or toxic to reproduction to humans based on epidemiological studies or to animals based on laboratory tests in accordance with the Ministry of Social Affairs and Health Decree on chemical classification principles and labelling (807/2001) and the CLP Regulation. Exceptions to the approval of substances classified as carcinogenic or toxic to reproduction to humans or animals may be allowed in cases where the levels of exposure during use, and therefore the risk, are negligible.

Under the Plant Protection Products Regulation, substances that present a risk to human health through endocrine disruption are not approved.

The most dangerous plant protection products can be restricted to professional use, and users can currently be required to complete a special operator qualification.

Even if the operator exposure levels for a plant protection product are calculated to be acceptable, the importance of personal protection must be emphasised through training and information, as the product may have dangerous health effects that are currently unknown.

Promotion of health protection

The health protection of workers and users can be promoted by favouring products that are less harmful to health and by reducing exposure by means of safer formulations (e.g. dissolvable packets, tablet products, low-dose products), adequate use of protective equipment, safe working methods and correct storage of plant protection products.

Instructions on correct dosage, working methods and personal protection are provided on product labels and safety data sheets. For certain plant protection products, occupational exposure limits (OEL) that must be taken into account when assessing exposure to the product in question have been laid down by Decree of the Ministry of Social Affairs and Health.

Employer's obligation
The employer is obliged to ensure the health and safety of the employee by providing appropriate tools and protective equipment. Workers must be provided with training and guidance on the safe use of plant protection products. Before work is started, the employer must make sure that each worker has understood the instructions provided. In addition, the employer must follow all special legislation on occupational safety and health, where applicable, such as the Government Decree on medical examinations in work that presents a special risk of illness (1485/2001).

Importance of training and advice for professional farmers and workers
Training and information play a key role in improving the occupational health and safety of farmers and workers and in raising awareness of safe practices in the use of plant protection products. Preparedness for unexpected situations, such as equipment malfunction during application, is essential with respect to user safety. In order to ensure that the exposure remains as low as possible, operators must be familiar with the correct procedures in such events.

Use of plant protection products in home gardens
The assessment of user exposure, carried out as part of the plant protection product approval procedure, is made based on the assumption that the substance is used professionally, in which case health risks can be reduced through the use of protective equipment. Although home gardeners are able to purchase the same products used by professionals, their level of personal protection is typically much lower. In addition to lacking the necessary personal protection equipment, their working methods are usually below professional standards, placing them at risk of dangerous levels of exposure.

In Finland, exposure among home gardeners will be systematically assessed by the Finnish Safety and Chemicals Agency (Tukes) as part of an exposure assessment covering all products which may be obtained by home gardeners. The aim is to only approve for non-professional use products that do not require special protective equipment. A precondition for approval in such cases is that no approved safer alternatives exist for the same or equivalent purpose of use.

Proposed measures:	Inclusion of home gardener exposure in operator exposure assessments. Only products requiring minimal personal protective equipment are to be approved for non-professional use. Inclusion of occupational health and safety in training aimed at users, retailers and advisors of plant protection products (see Section 4.6).
Responsible parties:	Tukes, operators, employers, employees, retailers, Occupational Safety and Health Divisions of Regional State Administrative Agencies (http://www.avi.fi/fi/Sivut/inenglish.aspx).
Key tasks:	Investigation of means of gathering information on acute poisoning incidents and, as far as possible, chronic poisoning incidents related to plant protection products. Investigation of the potential for developing current techniques of plant protection product use (product dilution, sprayer filling and product application).

4.3 Measures for environmental protection

4.3.1 Adequate and continuous environmental monitoring of plant protection products

The environmental impact can be determined by comparing measured environmental concentrations of plant protection products with the quality standards set for them. The results can be used to assess the functioning and effectiveness of the measures of the National Action Plan. Continuous monitoring thus plays a key role in measuring the achievement of the objectives of the National Action Plan.

4.3.2 Development of risk assessment-based environmental restrictions

Certain restrictions on use are currently enforced as preconditions for approval of plant protection products. The restrictions are intended for the prevention of environmental risks and are strictly enforced. The use restrictions are presented on product labels. The product label information is also available in the Plant Protection Product Register maintained by Tukes (www.tukes.fi/en/).

Buffer distances prescribed for the protection of aquatic organisms
Surface water pollution can be prevented by establishing buffer strips along surface waters to reduce exposure of water bodies to spray drift, leaching and run-off of plant protection products. The following buffer distances from water bodies are stipulated as a precondition for plant protection product approval in Finland: due to toxicity to aquatic organisms, the product may not be used and its application equipment may not be cleaned within a distance from water bodies of 10 m (moderately toxic active substances), 15 m (toxic active substances) or 25 m (highly toxic active substances).

The restrictions on plant protection products relating to water bodies are currently not determined based on risk to aquatic organisms; instead, they are hazard-based, determined using most sensitive aquatic species tests conducted with either the active substance or the product, and calculated per concentration of active substance. If the minimum buffer distance from water bodies is determined in accordance with the EU's surface water risk assessment guidelines (FOCUS SW), the minimum distance varies case-specifically according to the rate of application and number of applications of the product, the plant species at the site of application, and the type of water body concerned, and is thus considerably more complex than the current system. Risk-based determination of water-related restrictions would enable the protection of aquatic organisms from the ditch level, whereas the current system only protects large water bodies, rivers and lakes.

Project proposals
A project is proposed to investigate the potential for introducing risk-based definition of water body restrictions for plant protection products. The project would seek to determine the most suitable alternatives from the user perspective. In order to ensure equal treatment of operators and to facilitate the control of use, simultaneous transfer of all products to the new system is recommended. The task would therefore require considerable labour input and could thus not be feasibly managed in addition to normal official duties, but would require separate project financing.

It must be determined how effective buffer zones with permanent plant cover along water bodies are at reducing the risk to aquatic organisms presented by plant protection products and how wide these zones should be. Such zones have already proven to have a positive impact with respect to nutrient leaching prevention, but the specified width of such field margins and permanent buffer strips in accordance with current requirements for agri-environmental support is often insufficient to prevent the pollution of water bodies by spray drift.

Under the agri-environmental support scheme, a one to three metre wide perennial grass-covered field margin must be left on arable parcels located along main ditches. Buffer strips at least three metres wide on average but not more than 10 metres wide must be established on parcels located along watercourses larger than main ditches, around drinking water wells, and on pond, lake and sea shores.

The spread of weeds can be prevented by cutting of field margins and buffer strips Field margins and buffer strips must not be treated with plant protection products, with the exception of spot control of serious weed problems or control of wild oats, which must be carried out in accordance with the prevention plan. Prior written notice of the use of plant protection products on field margins or buffer strips must be given to the municipal rural business authority.

Groundwater restrictions

Some plant protection products or their degradation products leach readily in soil and their use in groundwater areas (Class I and II groundwater areas) is therefore either totally prohibited or restricted. The prohibitions or restrictions on use are stated on the package label.

Total prohibition on use in groundwater areas is stated on the product label as follows: ‘This plant protection product (and/or its degradation products) can leach in soil and must therefore not be used in groundwater areas that are important or suitable for water supply (class I and II groundwater areas). At least a 30–100 metre wide untreated buffer zone must be established around wells and springs that are used for drinking water. Avoid use of the product on coarse-sandy or coarser soils.’

Use of products approved for the control of certain weeds of sugar beet and certain products containing the active substance glyphosate is restricted in groundwater areas. In addition, a number of products are not recommended for use in groundwater areas.

Tukes also maintains a list of products permitted for use in groundwater areas.

Project proposals

Separate project funding is proposed for investigating the criteria for determining groundwater restrictions in other EU countries. Risk reduction measures in the Member States have not been harmonised and, according to the new Plant Protection Regulation, Member States are able to establish any use restrictions considered necessary for the prevention of environmental hazards. As farming conditions, climatic conditions, hydrogeology and groundwater forming conditions vary between different EU Member States, so do the criteria for determining the prohibitions and restrictions.

As operators have considered the current procedures to be unclear, a two-stage project aimed at clarifying the practices is proposed. In the first stage, a preliminary study would examine the criteria for the determination of groundwater restrictions in the Nordic and Baltic

countries. Based on this, it would then be considered whether changes to current practices in Finland are necessary. In the second stage, product-specific restrictions would be examined and, if necessary, their revision in accordance with the new system would be proposed if changes to the current restrictions are considered necessary.

In order to ensure equal treatment of operators and to facilitate the control of practices, simultaneous transfer of all products to the new system is recommended. The task would thus require separate project financing so that it can be managed besides the regular official duties.

Restriction on successive use
Use of a product in successive years can be restricted if the active substance of the product is found to accumulate in soil and constitutes a risk to soil organisms. An updated list of products carrying a restriction on successive use is available from the Plant Protection Product Register. In certain cases farmers have had difficulties in choosing a plant protection product if the fields in question are cultivated as a monoculture. Achieving adequate crop rotation also reduces the risk to soil organisms due to reduced demand for the same plant protection products in successive years.

Protection of sensitive aquatic environments
Use of plant protection products in areas used for the abstraction of drinking water, on or along transport routes, such as railway lines, or on sealed or very permeable surfaces can lead to higher risks of pollution of the aquatic environment. Their use in such areas should therefore be reduced or, where necessary, eliminated.

'Risk to bees' warning text
'Harmful to honeybees and bumblebees. Do not use for treatment of flowering plants, with the exception of potato and pea. Pea treatment during flowering permitted only between 21.00 and 06.00 hours, i.e. after daily bee flight. Use without beekeeper consent within a distance of 60 m from beehives is strictly prohibited.'

Instructions for informing beekeepers of the use of plant protection products would improve the communication of information between farmers and beekeepers, enabling them to restrict bee flight or to move hives off site during plant protection spraying.

4.3.3 Setting environmental quality standards (EQS) for all plant protection products on the market

The requirements for environmental monitoring of hazardous substances laid down in the Water Framework Directive are set at a minimum level, and environmental quality standards have currently only been established for substances that are regarded as priority substances at the Community level. However, these Community-level priority substances do not reflect the actual use of plant protection products in Finland. Quality standards are therefore needed for all plant protection products on the market.

Cases where quality standard have been exceeded found in environmental monitoring indicate the load level of individual active substances and whether the environmental restrictions enforced as conditions for use of these substances are adequate or excessive. A separate development project is proposed for the setting of quality standards for plant protection products. Quality standards are also set for certain other environmentally hazardous chemical groups, such as biocides and certain industrial chemicals, for which an environmental

monitoring system is being developed. The aim is to set quality standards for plant protection products which serve to harmonise monitoring practices for different groups of chemicals.

Proposed measures:	Organisation of sufficient environmental monitoring of plant protection products. Setting of environmental quality standards for all plant protection products on the market. Promotion of diverse crop rotation to be investigated during preparations for the new programming period beginning in 2014. Organisation by retailers and Tukes of the collection of plant protection products that have been removed from use and from the Plant Protection Product Register.
Responsible parties:	Farmers; Tukes; Ministry of Finance; Ministry of Agriculture and Forestry; Ministry of the Environment/Finnish Environment Institute (SYKE)/Centres for Economic Development, Transport and the Environment; MTT Agrifood Research Finland
Key tasks:	Investigation of the potential for introducing a risk-based approach in the determination of product-specific water body restrictions. Determination of how spraying techniques can be used to reduce spray drift, so that restrictions can be adapted according to the technique employed. Clarification of the criteria used by other EU countries for the determination of groundwater restrictions; plant protection product use vs. groundwater areas. Investigation of the potential for employing the conditions for agri-environmental support to encourage farmers to establish permanently plant-covered buffer zones near water bodies to reduce the risks of plant protection products. Investigation of the potential of agri-environmental support to encourage farmers to protect groundwater more extensively and in different ways during preparations for the new programming period beginning in 2014. Identification of possible nationally problematic plant protection products. Application of comparative assessment to these products as far as possible, with the objective of future replacement of certain environmentally problematic substances. Investigation of the effects of changing cultivation techniques (e.g. direct sowing) on the use and rates of application of plant protection products. Determination of alternative washing methods for different sprayers (e.g. biobed, wash tower).

	Investigation of the feasibility of the use of permanent plant cover and buffer zones of sufficient width in reducing the risk to aquatic organisms caused by plant protection products.

4.4 Reducing the risks caused by plant protection products in green areas

The Sustainable Use Directive requires the use of plant protection products to be avoided in areas used by the general public, such as public parks and gardens, sports and recreation grounds, golf courses, school grounds and children's playgrounds, and in the close vicinity of healthcare facilities.

Use of plant protection products should also be avoided within the buffer zones of water abstraction sites as defined in the Water Framework Directive, and in Natura 2000 areas designated for the purposes of establishing conservation measures in accordance with Directives 79/409/EEC on the conservation of wild birds and 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. The inclusion of any such areas within the scope of agricultural activity is specifically stated in the pre-completed base parcel form for the annual agri-environmental support application (no. 102A). This must be stated (by a cross in the relevant box) even if only a part of the base parcel is located within the area. Detailed definitions of such areas are given by the municipal environmental protection authority.

The use of plant protection products in green areas is minimal in Finland. Use is targeted at the control of certain invasive alien and particularly hazardous plant species. These include allergenic plants such as mugwort and giant hogweed. In such cases plant protection products that cause only minimal risk are to be primarily used, and biological, mechanical and thermal control methods are to be favoured. In addition, all parties concerned must be informed of their use.

In landscaping and green area management, the use of plant protection products is kept to the absolute minimum necessary. In the choice of plants priority is given to species proven to succeed well in the Finnish conditions which require chemical disease or pest control only in highly exceptional cases. Such plants include, for example, those bearing the 'FinE' trademark.

In the establishment and management of green areas, methods resulting in ground cover by ground-covering plants such as perennials, woody ground-covering plants or sown grass are also favoured, in which case chemical weed control is also minimal or unnecessary after the establishment stage. In special cases, such as around the base of trees and shrubs, the ground is covered with a permeable membrane over which, for example, decorative gravel or bark mulch is laid to prevent weeds.

Proposed measures:	Design of information and training, particularly for the needs of landscape workers (see Section 4.6). In the selection of plants, species and varieties that are hardy and successful in Finnish conditions are to be favoured. Methods resulting in ground cover with ground-covering plants are to be favoured in the establishment and management of green areas.

Responsible parties:	Users of plant protection products, authorities
Key tasks:	Assessment of viable biological pest management methods for the eradication of invasive alien species such as hogweed. Proposals from the forthcoming National Strategy on Invasive Alien Species will be taken into consideration. Identification of effective weed control methods for green areas, e.g. assessment of alternative ground cover materials. Investigation of non-chemical pest management alternatives. In particular, knowledge of natural enemies of pests is to be improved and suitable conditions for promoting their use are to be created.

4.5 Communication and awareness-raising

The Sustainable Use Directive requires that the general public be informed of the risks arising from the use of plant protection products, their effect on human health and the environment, and alternative pest management methods.

A considerable amount of information on plant protection products is currently available on the Internet. Information is provided by Finnish authorities (www.tukes.fi, www.evira.fi, www.mmm.fi, www.ymparisto.fi, www.tulli.fi,), expert organisations (www.mtt.fi, www.ttl.fi, www.thl.fi), stakeholders (www.proagria.fi, www.kasvinsuojeluseura.fi), industry (www.kaste.net) and numerous companies related to the plant protection industry.

Information on plant protection products is disseminated via agricultural trade journals (e.g. *Maaseudun Tulevaisuus, Käytännön Maamies, Maatilan Pellervo, Maatilan Pirkka, Landsbygdens Folk, Puutarha & Kauppa*). In addition, information is distributed at trade fairs and agricultural exhibitions.

The objective is for plant protection products intended for home garden use to constitute minimal potential risk to the user and the environment, and for more hazardous products to be approved only for professional use. Non-professional home users must also be informed about the available non-chemical plant protection methods.

Information on plant protection products must be disseminated in a form that is easily understandable to the general public. The main instrument for communication is the Internet. Other key channels include magazines, radio and television, brochures, fairs and exhibitions and training materials. Professionals in fields involving plant protection products are reached the most effectively over the Internet, through trade journals, at professional trade fairs and training events and through training material targeted at educational institutions.

Where necessary, farmers are to be provided with guidance on the procedures for notifying others in the vicinity, including beekeepers, of the use of plant protection products to enable them to take any necessary protective measures against spray drift.

Proposed measures:	Preparation of an action plan for the provision of information, guidance, advice and training on plant protection products. Information campaign: more effective use of residue monitoring results in communications. Monitoring and control and provision of information on counterfeit products and other illegal plant protection products. Improved monitoring and control and provision of information on origin labelling of plant protection products. Determination and preparation of guidelines for farmers on procedures for notification to their neighbours, for example to beekeepers, of the use of plant protection products.
Responsible parties:	Tukes, Evira, expert organisations, advisory organisations (Finnish Plant Protection Society (Kasvinsuojeluseura ry, KSS), ProAgria)

4.6 Education and training

Current qualifications and training programmes
The provision of **training in the use of plant protection products** is a minimum requirement for granting agri-environmental support. According to the conditions for agri-environmental support in force since 1998, plant protection products may by applied only by persons who have completed operator training in the use of plant protection products. The operator qualification is valid for five years. A special qualification in the use of plant protection products, also valid for five years, is accepted as a valid operator qualification.

Section 18 of the current Finnish Act on Plant Protection Products lays down provisions regarding a **special qualification** in the use of substances that present a special risk to health or the environment. Tukes monitors and maintains a record of holders of the qualification. The qualification is valid for 10 years. An examination fee is charged for the special qualification.

Retailers train their sales personnel by means of in-house training events held several times each year. At least the biggest commercial enterprises provide such training on a regular basis.

At present there is comprehensive training within the landscape construction and green decoration sector, but the content needs to be revised. The training material used in the sector has also become outdated with respect to the requirements of the new Directive. Information on the core aspects of the new legislation remains insufficient, and provision of training and advice regarding the new legislation poses its own challenges for the sector.

In the forest sector the Finnish Forest Research Institute (METLA) has been responsible for the provision of training for forest tree nursery workers. Training of forest machine contractors has been organised by the Forestry Development Centre Tapio and the forest industry research and development company Metsäteho Oy.

Training currently available in Finland covers users of plant protection products in agriculture and sales personnel of the biggest agricultural businesses selling plant protection products. The training system works quite well. In connection with the implementation of the National Action Plan, Tukes will provide clear guidelines regarding the division of labour. Further investment in the training of sales personnel of smaller enterprises is also needed.

Training under the Sustainable Use Directive

According to Article 5 of the Framework Directive on the sustainable use of pesticides, Member States are required to set up systems of both initial and additional training for distributors, advisors and professional users of pesticides. In addition, certification systems must be established to ensure that users of pesticides are aware of the potential risks to human health and the environment. Users must also be made aware of the appropriate measures to reduce these risks. The certification systems must include requirements and procedures for the granting, renewal and withdrawal of certificates. The training supply can be tailored to the needs of different user categories, such as arable farming, greenhouse production, nurseries or forestry. According to the Directive, professional user training can be combined with the training specified in Council Regulation (EC) No 1698/2005 (agri-environment scheme).

The training must be designed to ensure that professional users, distributors and advisors acquire sufficient knowledge regarding the training subjects listed in Annex I of the Sustainable Use Directive.

In addition, the potential risk arising from spray drift of plant protection products is to be taken into consideration in the training. The user of plant protection products must, as appropriate, inform neighbours and neighbouring farms or facilities, such as apiaries, of spraying operations.

Certificates under the established certification system to be established must provide evidence of sufficient knowledge of the subjects listed in Annex I acquired by professional users, distributors and advisors either by undergoing training or by other means.

The training system under the Sustainable Use Directive must be in place four years after the entry into force of the Directive, i.e. by 26 November 2013.

Proposal for future practice

Overall responsibility for training is held by Tukes, which may delegate responsibility for training provision to different organisations.

Professional users, distributors and advisors can acquire the necessary knowledge either through training or by other means.

User training in plant protection products aimed at farmers will retain its current form. In the horticulture and landscaping sector, tailored training designed and implemented together with organisations in the field will be provided. The training of sales personnel provided by

retailers will also be continued, with Tukes involved in the training design. The aim is for closer cooperation between retailers and the authorities.

Training aimed at forest tree nurseries will be provided in cooperation with the Finnish Forest Research Institute (METLA), which will provide training for forest tree nursery workers. Training of forest workers, such as harvesting contractors, will be provided in cooperation with the Forestry Development Centre Tapio and Metsäteho Oy.

Seed dressing chemicals training will continue to be provided for seed packagers in connection with training related to seed packaging plant permit procedures. Evira is responsible for the training in cooperation with Tukes.

The training includes an examination. The plant protection products qualification covers the appropriate and safe handling and use of plant protection products, integrated pest management, risks related to the use of plant protection products and their control, the use and maintenance of application equipment, and record keeping of plant protection product use. In order to be able to ensure that the user, distributor and advisor knowledge is up to date with the latest developments in the industry, it is proposed that the qualification be granted for a limited period (5 years). A certificate is awarded for completing the qualification.

Requirements for sales of plant protection products

It must be ensured that distributors have sufficient staff in their employment holding a plant protection products training certificate. Such persons shall be available at the time of sale to provide adequate information to customers as regards plant protection product use, health and environmental risks and safety instructions, especially in the case of plant protection products intended for professional use.

Distributors are required to provide non-professional users with general information regarding the risks to human health and the environment of plant protection product use, their safe handling and storage, and proper disposal of packaging. They are also required to provide information regarding low-risk alternatives.

Distributors selling only products for non-professional use may be exempted from the training provision requirement if they do not offer for sale plant protection products classified as toxic, very toxic, carcinogenic, mutagenic or toxic to reproduction. Such products should not be approved for home garden use.

The producers, i.e. suppliers to the market, of plant protection products are required to provide distributors and retailers with this information.

Sales of plant protection products intended for professional use

The Sustainable Use Directive prescribes that plant protection products intended for professional use can only be sold to persons holding a certificate of proficiency in the use of plant protection products. This ensures that the buyer has sufficient knowledge regarding the proper, sustainable and safe use of the plant protection product.

All requirements concerning sales apply also to sales via the Internet.

Proposed	Preparation of a training programme and training material for users,

measures:	distributors and advisors of plant protection products, taking into account the subjects listed in Annex I of the Sustainable Use Directive. Account shall be taken of the following: - Training is required for a wider group than at present and must be differentiated for different production sectors. - Training of sales personnel: • Personnel must be available at the time of sale to provide adequate information to customers as regards use, risks and safety instructions to manage those risks. • Sufficient information and/or guidance should be provided to all buyers of plant protection products. Retailers play a key role. In the sales situation, it should be possible to clarify for home gardeners the risks of using plant protection products and to steer consumer choices towards safe products or alternative methods. The above should also apply to online sales. - Development of tailored training for landscape workers. - Adequate trainer competence is to be ensured. Demonstration of competence by means of training/educational background or qualifications, or by means of online training resources followed by a competence-based examination (e.g. online examination). - Inclusion of IPM in the training. - Inclusion of occupational health and safety in training aimed at users, retailers and advisers of plant protection products. - Training supervision. - Control/auditing of inspections by spraying inspectors. Addition of the above measure to the Tukes monitoring plan.
Responsible parties:	Tukes in cooperation with other authorities and industrial and advisory organisations in the sector; retailers' training personnel.

4.7 Handling and storage of plant protection products

In Finland, only the products listed in the Plant Protection Product Register maintained by the Finnish Safety and Chemicals Agency (Tukes) may be used for plant protection. Products that have been removed from the Plant Protection Product Register or that have become unfit for use, for example due to freezing, are classified under section 3 of the Finnish Act on Plant Protection Products (1259/2006) as hazardous waste and are therefore covered by the Waste Act (1072/1993). The objective is to clarify the provisions of the Waste Act with respect to control measures so that farmers can be required to dispose of any plant protection products removed from use held in storage within a set period.

Plant protection products that have been removed from use must not be disposed of together with ordinary household waste or released into the environment, but they must be delivered to hazardous waste collection points or management facilities. The Act on Plant Protection Products (section 37) requires control authorities to inform the municipal environmental protection authority of any findings of plant protection products that have been removed from the register.

The handling and storage of plant protection products are included in the training subjects.

Professional users and distributors of plant protection products are especially required to ensure proper:

- storage, handling, dilution and mixing of plant protection products prior to application
- handling of packaging and remnants of plant protection products
- disposal of tank mixtures remaining after application
- cleaning of the equipment used after application
- construction of storage areas in such a way as to prevent unwanted releases.

Products for non-professional users should be available in ready-to-use forms and in suitably small package sizes, and should pose the least possible risk to health and the environment.

Further information is available on the Tukes website (www.tukes.fi).

Proposed measures:	Provisions obliging operators to deliver plant protection products that have been removed from use to hazardous waste collection within a set time period are to be included in legislation concerning waste. Regular information campaigns on the storage and disposal of plant protection products are to be implemented. (An awareness-raising campaign on responsible disposal of plant protection products removed from use was launched by Evira in spring 2008. Information on the campaign is available at Evira/Tukes websites and in brochure format.) Preparation of plant protection product storage guidelines for farms.
Responsible parties:	Tukes, control bodies

4.8 Plant protection product application equipment and its inspection

A testing system for plant protection product application equipment has been employed in Finland since 1995, and it has proven effective. Testing of tractor-mounted and self-propelled sprayers is carried out by testers of plant protection product sprayers authorised by the Finnish Safety and Chemicals Agency (Tukes) and in accordance with the testing guidelines drawn up by Tukes. Tukes maintains an up-to-date register of authorised testers. The testing guidelines were updated in autumn 2010 as commissioned and financed by the Finnish Agency for Rural Affairs. The update was carried out by MTT Agrifood Research Finland's Agricultural Engineering Research Unit (MTT/Vakola). Preparation of the guidelines was based on the EN 13790-1 standard.

Two of the current minimum requirements for agri-environmental support payments are that new plant protection product sprayers must comply with the requirements of standard EN 12761 and sprayers in use must be tested every five years.

The revised Machinery Directive (2006/42/EC) lays down provisions on the placing of plant protection product application equipment on the market. The revised Machinery Directive was published on 9 June 2006 and entered into force on 29 December 2009.

The Machinery Directive Amendment (2009/127/EC) was published on 25 November 2009 and a new section on machinery for pesticide application was added to its Annex. The Machinery Directive Amendment sets down environmental requirements for pesticide application equipment. This amendment entered into force at the end of 2010.

Inspection of application equipment
Plant protection product application equipment in professional use must be inspected at regular intervals. The Sustainable Use Directive requires inspections to be conducted at intervals not exceeding five years until 2020 and not exceeding three years thereafter. New equipment must be inspected at least once within a period of five years after purchase.

Application equipment must be inspected at least once by 26 November 2016. After this date only application equipment having successfully passed inspection is permitted for professional use.

The inspections must verify that the application equipment satisfies the requirements listed in Annex II of the Sustainable Use Directive.

Handheld application equipment and knapsack sprayers may be exempted from inspection. However, operators (professional users, advisors, distributors) of such devices must be informed of the need for the regular maintenance of equipment and of the specific risks linked to the equipment.

Proposal for future practice
The present inspection system for plant protection product sprayers will remain in place and will be further refined, with inspectors authorised for limited periods. The objective is to extend the scope of testing beyond tractor-mounted sprayers to also include other equipment types. The responsible authority is Tukes, which grants authorisation to testers of plant protection product sprayers and maintains a record of authorised testers.

The sprayer tester qualification covers the material jointly drawn up and updated by Tukes and MTT Vakola, on which candidates are examined. The provision of the basic and further training and examinations may be managed by organisations authorised by Tukes.

Proposed measures:	As agri-environmental support only covers tractor-mounted sprayers and self-propelled sprayers, an investigation of the other sprayer types and test methods should be conducted, and an inspection programme/procedures should be developed for sprayers and for test methods. Control/auditing of inspections by spraying inspectors. The above measure must be added to the Tukes monitoring plan.
Responsible parties:	Tukes, MTT Vakola

4.9 Aerial spraying

Aerial spraying is prohibited as a rule, as the method has the potential to cause significant adverse impacts on human health and the environment, in particular due to spray drift. Derogations are possible where no viable alternatives exist and where aerial spraying offers clear advantages as compared with land-based application.

Each aerial spraying application is considered on a case-by-case basis. An aerial spraying permit is required from the Finnish Food Safety Authority (Evira) or, in the case of forest pest management, from the Ministry of Agriculture and Forestry.

Persons performing aerial spraying must possess sufficient knowledge regarding the aerial spraying of plant protection products and sufficient skills to carry out aerial spraying. They must also use duly inspected aerial spraying equipment.

According to the Decree of Ministry of Agriculture and Forestry Decree No 60/2007 and sections 20-21 of the Act on Plant Protection Products, Evira or the Ministry of Agriculture and Forestry may, in certain cases and upon application, grant permits for aerial spraying. Aerial spraying permits have been granted in Finland for pine sawfly control in the years 1981, 1991 and 2008.

Proposed measures:	Case-by-case risk assessments to determine the need for aerial spraying.
Responsible parties:	Evira, Ministry of Agriculture and Forestry, regional forestry centres

4.10 Integrated pest management (IPM)

The Finnish IPM approach is based on ‘balanced plant protection’ guidelines. The Sustainable Use Directive requires that the general principles of integrated pest management (Annex III of the Sustainable Use Directive) are implemented by all professional users by 1 January 2014. Professional farmers are requested to use methods that present the least risk to human health and the environment.

Integrated pest management is based on a four-tiered approach: prevention, monitoring and identification (observation), determination of control requirement (level of threat), and actual control using an appropriate control method.

IPM is a plant protection decision-making process. The process involves the following key considerations:

1) Selection and combination of compatible plant protection methods.
2) The choice of control measures is based, for example, on the use of qualified advisors, field observations, forecasting methods and threshold values.
3) IPM takes into consideration the benefits arising from plant protection with respect to the farmer, society and the environment. Benefits considered include economic benefits as well as benefits that are not easily measurable in monetary terms, such as reduced plant protection product pollution, improved working conditions, and enhanced end product quality due to reduced resistance to plant protection products.

4) IPM considers the crop to be protected with respect to the biotic community as a whole since, instead of targeting individual pest species, it also takes other pest species as well as beneficial organisms into account.

The Integrated Pest Management in Floriculture project conducted by MTT Agrifood Research Finland and Agropolis (INTO Project 2004–2007), proposes the following combination of IPM components:

1) plan, avert and prevent
2) identify and monitor
3) set action thresholds
4) consider and combine different control methods.

The use of biological disease and pest control methods, particularly in greenhouse production, has achieved significant results in recent decades. Use of these methods has enabled the production of vegetables (e.g. tomato, cucumber, potted vegetables) in Finland using minimal plant protection products.

New, effective cultivation methods have reduced and even eradicated major categories of pests; one example is the use of new growing media (grow bags in grow gutter) in greenhouse production, with extremely low occurrence of, for instance, wilt diseases, black root rot and root nematodes.

The use of hardy, resistant varieties offers the best means of reducing the use of plant protection products for disease and pest control. Prime examples include wilt disease-resistant tomato, mildew-resistant currant and disease-resistant cereal varieties. Scab-resistant apple varieties will also be introduced in the near future.

Proposed measures:	Inclusion of IPM in plant protection product training. National research and development efforts should support plant breeding and variety development aimed at placing on the market of disease- and pest-resistant varieties of the most important and most widely cultivated garden plants and arable crops. Ensuring the continuation of national IPM information services as an integral part of the performance guidance of expert institutions.
Responsible parties:	Tukes, MTT, advisory organisations
Key tasks:	Preparation of crop group-specific IPM guidelines by updating the current ‘balanced plant protection’ guidelines, and awareness raising among farmers regarding the new guidelines. Promotion of research projects targeted at biological pest management (cf. key tasks for organic farming). Development of farming methods and systems that minimise pest occurrence, e.g. use of natural enemies (cf. key tasks for organic

	farming). Determination of threshold values (action thresholds) for pest control, the viability of forecasting systems, and decision criteria for weed control.

4.11 Plant protection in organic production

The greatest advances in the reduction of plant protection products have been made in organic farming which, as an increasingly common production method, also offers the possibilities to further reduce their use. Although just 7% of Finland's total production area is farmed in accordance with organic production guidelines, regional differences are considerable: in Kainuu in north-eastern Finland and the Province of Åland more than 20% of arable land is under organic production. The progress made in organic production has also contributed to the development of more eco-friendly pest control methods in conventional production.

Within the European Community there are common rules for organic production (Council Regulation (EC) No 834/2007 and Commission Regulation (EC) No 889/2008).

The provisions of the Council Regulation concerning the control of organic production are implemented in Finland by the Decree of the Ministry of Agriculture and Forestry No 846/2008 concerning the production, labelling and control of organic products, issued under the Act on Implementation of the Common Agricultural Policy of the European Community (1100/1994).

Plant protection products allowed in organic production
In organic production, weeds, plant diseases and pests are controlled primarily by mechanical, biological and physical methods.

Annex II of the Commission Regulation specifies the plant protection products that may be used in organic production if the control threshold set in accordance with plant protection guidelines is exceeded. The plant protection product must also be registered in Finland in accordance with the Finnish Act on Plant Protection Products for the same purpose of use as specified in Annex II.

Farmers are required to keep parcel-specific records of the use of plant protection products and of the grounds for their use.

A list of the plant protection products suitable for organic production is available at the Evira website (www.evira.fi).

Proposed measures:	The advancement of national basic and applied research into organic production in order to develop sufficiently reliable organic protection methods to address more challenging plant protection problems and to advance current knowledge of preventive methods in organic production.
Responsible parties:	Research organisations, advisory organisations, Finnish Association for Organic Farming (Luomuliitto ry)

Key tasks:	Determination of the potential for better harmonisation within the Baltic Sea region of substances covered by Annex II (Pesticides — plant protection products) of the Organic Regulation and of substances included in the Finnish Plant Protection Product Register. Promotion of research projects targeted at biological pest management (cf. key tasks for IPM). Further development of farming methods and systems that have preventive effects on pest occurrence (cf. key tasks for IPM).

4.12 Indicators

The progress of risk reduction efforts is monitored using risk indicators. Harmonised risk indicators will be established at the Community level, and these will be included in Annex IV of the Sustainable Use Directive. Member States would be required to use the indicators for risk management at the national level and for reporting purposes, while the Commission should calculate indicators to evaluate progress at the Community level. To this end, statistical data collected in accordance with the Community legislation concerning statistics on plant protection products should be used.

In addition to the harmonised indicators, Member States will also be entitled to use their own national indicators.

Statistics on plant protection product sales volume
In Finland, data on plant protection product sales volumes has been gathered since 1953. This data can be considered as an indicator when the uses of plant protection products have been assessed. According to the sales statistics, on average 0.66 kg of active substance were used per cultivated hectare, including fallow, in Finland in 2000–2008.

Although Finnish sales statistics on plant protection products are comprehensive, according to a Ministry of Agriculture and Forestry background report, they are not considered good indicators for the measurement of risk reduction measures. It is important to develop the collection of data on plant protection product use for risk assessment purposes in accordance with the Pesticide Statistics Regulation.

SYKE risk indicator calculation model
The Finnish Environment Institute (SYKE) has developed a risk indicator calculation model for the environmental load of plant protection products. The risk indicator, i.e. pesticide risk index, is calculated based on sales volume data for plant protection products in 1985–2006 (http://www.biodiversity.fi/en/indicators/farmlands/fa4-pesticide-use and http://www.ymparisto.fi/default.asp?contentid=249462&lan=fi&clan=fi#a0).

In addition to the sales volume of substances, the risk indicator takes into account data on each plant protection product regarding persistence in soil, bioaccumulation, toxicity to aquatic organisms and groundwater contamination (leaching). In the selection of key characteristics, the objective has been to take Finland’s cold climate and special soil characteristics into account. In accordance with the precautionary principle, the analyses therefore represent the

worst possible outcomes (e.g. longest half-life of a substance or most toxic test result). The risk indicator does not, however, take the degradation products of plant protection products or the properties of degradation products into account. This is a significant omission in cases where the degradation products are more environmentally hazardous than the actual active substance.

The indicator also does not take into account risk reduction measures, such as use restrictions, which can significantly reduce the adverse effects of substances.

The above-mentioned risk indicator is currently not in use because Community-level indicators are being developed in the EU and will be brought into use in the near future also in Finland as part of the implementation of the Framework Directive on the sustainable use of pesticides. Finnish authorities do not currently have sufficient resources to develop a national risk indicator.

Harmonisation of indicators at the EU level

EU projects aimed at the implementation of risk indicators for plant protection products are under way. Finland aims to study the results of these projects and to gather knowledge, test and learn to use these indicators and to implement the Community-level indicators once the EU Member States have reached an agreement on the most viable indicators for use at the Community level. Until that stage, national indicators such as the above-mentioned sales volume statistics will be used.

Information on the environmental load of plant protection products will also be obtained from monitoring results and cases where quality standards have been exceeded once continuous monitoring has been established and quality standards have been set. The calculation of indicators is a new public authority task requiring special expertise for which sufficient resources must be secured in the future. This will also ensure that Finland is able to meet the EU reporting obligations required under the Sustainable Use Directive.

Plant protection product statistics in the EU

The Pesticide Statistics Regulation establishes a common framework for the production of Community statistics on the placing on the market and use of authorised pesticides. Member States may, based on statistics and other related information, draw up National Action Plans that lay down quantitative objectives, targets, measures and timetables for the reduction of the risks and impacts of pesticide use on human health and the environment.

The objectives and targets may cover different areas of concern, such as worker protection, protection of the environment, residues, use of specific techniques or use in specific crops. Statistics are also used to establish harmonised risk indicators as set out in Annex IV of the Sustainable Use Directive.

The Pesticide Statistics Regulation requires the regular collection of information. Member States must collect the data necessary for the specification of the characteristics listed in Annex I of the Regulation on an annual basis and for the specification of the characteristics listed in Annex II in five-year periods.

According to the Pesticide Statistics Regulation, sales volume data is to be reported to the EU for the first time in 2012 and use data in 2015. Tukes is responsible for the collection of sales

volume data and the Information Centre of the Ministry of Agriculture and Forestry (Tike) for the collection of use data.

Based on its pilot studies, Tike is developing a use data collection system that is specifically designed to be sufficiently comprehensive and interlinked with other data collection methods targeted to farmers to minimise the burden of data collection on farmers.

Monitoring of plant protection product residues in domestic foods
Annual residue monitoring is carried out by Evira to ensure that no residues are present in foods due to the use of plant protection products in Finland.

Around 250 domestic vegetables are examined annually to verify the compliance with the rules of plant protection product residues. The residue analyses indicate whether authorised plant protection products have been used and whether they have been used correctly.

Proposed measures:	Development of means for transferring parcel-specific data on the use of plant protection products by holdings to a common database, and clarification of right of use principles concerning holding-specific information. Analysis and preparation for implementation of EU risk indicators. Implementation of Community-level indicators once an agreement is reached on the most viable indicators for use. Until this, the existing national indicators will be used. Monitoring of plant protection product residues in domestic foods will be continued.
Responsible parties:	MTT, Tukes, Tike, Evira

5 Cost of proposed measures and key tasks

This National Action Plan is the first of its kind drawn up in Finland. There is no clear view at this stage as to the actual costs of the measures and tasks proposed.

Some measures and tasks proposed in the National Action Plan can be carried out as part of normal office duties and thus will not generate direct costs. These include measures related, for example, to training, advisory work and statistics. In addition, Tukes has been granted two person-years that will be allocated to carrying out the additional tasks required by the new Plant Protection Product Regulation and the Directive on the sustainable use of pesticides (legislative proposal HE 132/2010 p.15).

Other measures and key tasks, such as adequate environmental monitoring of plant protection products (surface and groundwater surveys), will generate costs and require separate project financing.

Based on a rough estimate, the total costs over the first 10-year period of the National Action Plan (2011-2020) will be in the region of 7.9 million euros. In addition to the public authorities (Tukes, Syke, Evira), a proportion of the costs will be divided among other

stakeholders such as MTT Agrifood Research Finland, ProAgria and the Central Organisation for Finnish Horticulture (Puutarhaliitto ry).

The National Action Plan will be implemented within central government spending limits, government budgets and central government productivity programmes.

6 Timetables, monitoring and reporting

6.1 Timetables and responsibilities for proposed measures and key tasks

Phase 1, 2011–2014

Priority area	Measures/Key tasks	Responsible parties
IPM	Preparation of crop group-specific IPM guidelines by updating the current 'balanced plant protection' guidelines, and awareness raising among farmers regarding the new guidelines. Investigation of non-chemical pest management alternatives. In particular, knowledge of natural enemies of pests is to be improved and suitable conditions created to promote their use. Promotion of research projects targeted at biological pest management. Development of farming methods and systems that minimise pest occurrence, e.g. use of natural enemies. Determination of threshold values (action thresholds) for pest control, the viability of forecasting systems, and decision criteria for weed control. Ensuring the continuation of national IPM information services as an integral part of the performance guidance of expert institutions.	Tukes, MTT, KSS
Training	Preparation of a training programme and training material for users, retailers and advisors of plant protection products, taking into account the subjects listed in Annex I of the Sustainable Use Directive. Account shall be taken of the following: - Training is required for a wider group than at present and must be differentiated for different production sectors. - Training of sales personnel: • Personnel must be available at the time of sale	Tukes in cooperation with other authorities, industrial organisations, retailers, NGOs and advisory organisations in the sector.

Priority area	Measures/Key tasks	Responsible parties
	to provide adequate information to customers as regards use, risks and safety instructions to manage those risks. • Sufficient information and/or guidance should be provided to all buyers of plant protection products. Retailers play a key role. In the sales situation, it should be possible to clarify for home gardeners the risks of using plant protection products and to steer consumer choices towards safe products or alternative methods. The above also applies to online sales. - Development of tailored training for landscape workers. - Adequate trainer competency is to be ensured. Demonstration of competence by means of training/educational background or qualifications, or by means of online training resources followed by a competence-based examination (e.g. online examination). - Inclusion of IPM in the training. - Training supervision. - Inclusion of occupational health and safety in training aimed at users, retailers and advisers of plant protection products. - Control/auditing of inspections by spraying inspectors. Addition of this measure to the TUKES monitoring plan.	
Spraying technique	Determination of how spraying techniques can be used to reduce spray drift, so that restrictions can be adapted according to the technique employed. Determination of alternative washing methods for different sprayers (e.g. biobed, wash tower). As agri-environmental support only covers tractor-mounted sprayers and self-propelled sprayers, an investigation of other existing sprayer types and test methods should be conducted, and an inspection programme/procedures should be developed for sprayers and for test methods.	Tukes, MTT
Information	Preparation of an action plan for the provision of information, guidance, advice and training on plant protection products.	Tukes, Evira, cooperation partners

Priority area	Measures/Key tasks	Responsible parties
	Monitoring and control and provision of information on counterfeit products and other illegal plant protection products. Improved monitoring and control and provision of information on origin labelling of plant protection products. Organisation by retailers and Tukes of the collection of plant protection products that have been removed from use and from the Plant Protection Product Register. Regular information campaigns on the storage and disposal of plant protection products are to be implemented. (An awareness-raising campaign on responsible disposal of plant protection products removed from use was launched by Evira in spring 2008. Information on the campaign is available at the Evira/Tukes websites and in brochure format.) Preparation of plant protection product storage guidelines for farms. Information campaign: more effective use of residue monitoring results in communications. Determination and preparation of guidelines for farmers on procedures for notification to their neighbours, for example to beekeepers, of the use of plant protection products.	
Worker and user protection	Inclusion of home gardener exposure in operator exposure assessments. Only products requiring minimal personal protective equipment are to be approved for non-professional use.	Tukes
Environmental protection	Adequate environmental monitoring of plant protection products. Setting of environmental quality standards (EQS) for all plant protection products on the market. Investigation of the potential for a transition to a risk-based approach in the determination of product-specific water body restrictions.	SYKE Tukes, SYKE Tukes, SYKE
Agri-environment support	Investigation of the potential for the use of conditions for agri-environmental support to encourage farmers to adopt the use of buffer zones with permanent plant cover near water bodies in order to reduce the risks of	Tukes, SYKE, Ministry of Agriculture and Forestry

Priority area	Measures/Key tasks	Responsible parties
	plant protection products. In addition, investigation during preparations for the new programming period beginning in 2014 of the potential of agri-environmental support to encourage farmers to protect groundwater more extensively and in different ways. Investigation of the feasibility of the use of permanent plant cover and buffer zones of sufficient width in reducing the risk to aquatic organisms of plant protection products. Promotion of diverse crop rotation to be investigated during preparations for the new programming period beginning in 2014.	

Phase 2, 2015–2017

Priority area	Measures/Key tasks	Responsible parties
Organic production	The advancement of national basic and applied research into organic production in order to develop sufficiently reliable organic protection methods to address more challenging plant protection problems and to advance current knowledge of preventive methods in organic production. Determination of the potential for better harmonisation within the Baltic Sea region of substances covered by Annex II (Pesticides — plant protection products) of the Organic Regulation and of substances included in the Finnish Plant Protection Product Register.	Research organisations, advisory organisations, Finnish Association for Organic Farming (Luomuliitto ry)
Environmental protection	Adequate environmental monitoring of plant protection products. Identification of possible nationally problematic plant protection products. Application of comparative assessment to these products as far as possible, with the objective of future replacement of certain environmentally problematic substances. Investigation of the effects of changing cultivation techniques (e.g. direct sowing) on the use and rates of application of plant protection products.	SYKE Tukes MTT

Phase 3, 2018–2020

Priority area	Measures/Key tasks	Responsible parties
Indicators	Development of means for transferring parcel-specific data on the use of plant protection products by holdings to a common database, and clarification of right of use principles concerning holding-specific information. Analysis and preparation for implementation of EU risk indicators. Implementation of Community-level indicators once an agreement is reached on the most viable indicators for use. Until this, existing national indicators will be used. Monitoring of plant protection product residues in domestic foods will be continued.	MTT Tukes, Tike Evira
Worker and user protection	Investigation of means of gathering information on acute poisoning incidents and, as far as possible, chronic poisoning incidents related to plant protection products. Investigation of the development potential of current techniques of plant protection product use (product dilution, sprayer filling and product application).	Tukes Tukes, MTT
Green areas	Assessment of viable biological pest management methods for the eradication of invasive species such as hogweed. Identification of effective weed control methods for green areas, e.g. assessment of alternative ground cover materials.	MTT
Environmental protection	Adequate environmental monitoring of plant protection products. Clarification of the criteria used by other EU countries for the determination of groundwater restrictions; plant protection product use vs. groundwater areas.	SYKE Tukes, SYKE

6.2 Reporting nationally and to the Commission and other Member States

The implementation of the National Action Plans and the results and experiences obtained are regularly reported nationally, to the Commission and to other Member States. The first National Action Plan on the Sustainable Use of Plant Protection Products is to be implemented by 2021.

The implementation of proposed national measures and key tasks is evaluated on an annual basis together with the responsible parties specified in the National Action Plan.

A written evaluation of the implementation and achievement of the objectives of the National Action Plan is drawn up at least every five years, and any changes in the content of the plan are notified immediately to the Commission. A mid-term evaluation of the action plan implementation will be drawn up in 2015, on the basis of which the plan will be updated and its objectives reviewed. The results of the mid-term evaluation will be reported nationally.

Tukes is responsible for drawing up both the mid-term evaluation and the final report.

Based on information provided by the Member States, the Commission submits relevant reports to the European Parliament and the Council, accompanied, if necessary, by appropriate legislative proposals.

7 Penalties

Specific provisions regarding penalties in case of infringements are issued in the Finnish Act on Plant Protection Products.

GLOSSARY ***Appendix 1***

AOEL	**A**cceptable **O**perator **E**xposure **L**evel. The maximum amount of active substance to which the operator may be exposed without any adverse health effects.
Biological control	Biological control refers to the eradication or suppression of pest or weed populations using natural methods without the use of synthetic chemical pesticides. Methods of biological control include, e.g. utilisation of pests' natural pathogens, such as viruses, bacteria and parasites, and pheromone traps into which pests are lured. Natural enemies of pests can also be used as an effective means of biological control. For example, on cucumber farms, spider mites are commonly controlled by predatory mites. Biological control of plant diseases is based largely on the use of biological control microorganisms such as bacteria, actinobacteria and fungi. Such microorganisms typically function either in a similar manner to antibiotics or by fundamentally weakening pathogen populations by competing with them.
Biocidal products	Active substances and preparations containing one or more active substances, put up in the form in which they are supplied to the user, intended to destroy, deter, render harmless, prevent the action of or otherwise exert a controlling effect on any harmful organism by *chemical or biological* means.
CLP Regulation	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
Evira	Finnish Food Safety Authority (Evira)
Integrated pest management (IPM)	The careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and minimise risks to human health and the environment. IPM emphasises the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages the widest possible use of natural pest control mechanisms (FAO 2002).
Drinking Water Directive	Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.
Regulation on Pesticide Residues	Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council

	Directive 91/414/EEC.
Plant protection product	Active substances and preparations containing one or more active substances, put up in the form in which they are supplied to the user, intended to: a) protect plants or plant products against harmful organisms; b) influence the life processes of plants, other than as a nutrient; c) preserve plant products, in so far as such substances or products are not subject to special provisions on preservatives; d) destroy undesirable plants; or e) destroy parts of plants or prevent undesirable growth of plants
Plant Protection Products Regulation (new)	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.
Chemical control	Plant protection products used in chemical plant protection include herbicides for weed control, insecticides for pest control and fungicides for plant disease control. Only plant protection products registered in Finland may be used for chemical plant protection.
Machinery Directive Amendment	Directive 2009/127/EC of the European Parliament and of the Council of 21 October 2009 amending Directive 2006/42/EC with regard to machinery for pesticide application.
Aerial spraying	The application of pesticides from an aircraft (aeroplane or helicopter).
Non-chemical alternatives	Alternative methods to chemical pesticides for plant protection and pest management, based on agronomic techniques such as those referred to in point 1 of Annex III, or physical, mechanical or biological pest control methods.
Sustainable Use Directive	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.
RASFF	**R**apid **A**lert **S**ystem for **F**ood and **F**eed.
REACH Regulation	Regulation No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), which came into force on 1 June 2007.
Risk indicator	The result of a method of calculation that is used to evaluate risks of pesticides on human health and/or the environment.
Tike	Information Centre of the Ministry of Agriculture and Forestry (Tike).

Pesticide Statistics Regulation	Regulation (EC) No 1185/2009 of the European Parliament and of the Council of 25 November 2009 concerning statistics on pesticides.
Pesticide	'Pesticide' means: a) a ***plant protection product*** as defined in Regulation (EC) No 1107/2009; (b) a ***biocidal product*** as defined in Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing on the market of biocidal products (2).
Tukes	Finnish Safety and Chemicals Agency (Tukes)
Water Framework Directive	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.
Environmental quality standard (EQS)	Standard set by the environmental authority concerning chemical, physical or biological properties which an environment must meet.

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