



Ministry of Environment
and Food of Denmark

Danish National Actionplan on Pesticides 2017 - 2021

Facts, caution and consideration

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FOREWORD

In Denmark, we have made a choice to use pesticides with caution and consideration. We must continue this course, always respecting nature, human health, food safety and clean groundwater. Our restrictive authorisation scheme for pesticides originates in a fact-based approach in which we draw on advice and guidance from researchers so that the choices we make with regard to pesticides are based on common sense, facts and documented knowledge. We will continue this approach in the future.

Pesticides are important for Danish agriculture. They help control weeds, fungal diseases and insect pests so that Danish fruit, vegetables and cereal products are on shelves every day. However, pesticides are chemical substances that must be used with care. Consequently, we always need to strike a good balance between use and protection. Furthermore, we must set ambitious goals to reduce pesticide loads. Our objective is to obtain a low level of pesticide use, and to use the pesticides causing lowest load.

In 2014, the parties to the agreement on the Pesticides Strategy 2013-2016 initiated an international assessment of Danish groundwater protection, including the pesticides authorisation scheme. The purpose was to ensure the best possible groundwater protection for Denmark. The Danish EPA has now reviewed recommendations from impartial experts and has investigated how we can adapt the scientific foundation for pesticides authorisation, while at the same time maintaining the same level of protection and observing the precautionary principle of high-level groundwater protection against pesticides. The Danish EPA's review particularly demonstrates that it is possible to allow authorisation of more pesticides without this having a negative effect on protection of our Danish groundwater. Moreover, authorisation of pesticides that apply a new mode of action may help prevent development of resistance against pesticides in weeds, fungi and insect pests. With this new agreement on the Pesticides Strategy, we have opted to follow the recommendations from the Danish EPA.

Furthermore, we want to reinforce groundwater protection against pesticides in well vicinity protection zones by introducing a ban on filling and mixing pesticides and cleaning of pesticide sprayers in well vicinity protection zones.

Knowledge, education and advice are preconditions for being able to use pesticides with care. Consequently, we are providing producers, advisory services and consumers with easy access to information about pesticides. The strategy ensures focussed and risk-based control of users and distributors as well as food products. This will mean that consumers can continue to enjoy the safety to which they are entitled and the opportunity to choose their food products on an informed basis.

We are earmarking funds for research on health effects. Furthermore, we will continue to expand the virtues of good agricultural practice, thus maintaining focus on using as low amounts of pesticides as possible, and as intelligently as possible. The Danish agricultural sector carries an important responsibility. And we are sure that the sector will be able to meet this responsibility.

Using facts, caution and consideration as the benchmarks for our new Pesticides Strategy, we are ensuring the right balance between use and protection, and we will continue to do so.

Yours sincerely,
Minister for Environment and Food
Esben Lunde Larsen

1. Introduction

This Pesticides Strategy is the outcome of the political agreement established on 21 April 2017 between the government, the Danish People's Party, the Social Democratic Party, the Social-Liberal Party and the Socialist People's Party.

The Pesticides Strategy is based on sustained, dedicated efforts to reduce pesticide loads in Denmark. Furthermore, the strategy constitutes Denmark's National Action Plan for Sustainable Use of Pesticides.

The overarching objective remains to limit the use of pesticides as much as possible and to minimise the load of pesticides on nature, the environment and health. With this Pesticides Strategy 2017-2021, Denmark confirms that it will continue with its ambitious goal to reduce pesticide loads. The current ambitious goal of a Pesticide Load Indicator (PLI) of 1.96, calculated on the basis of sales data, must, as a minimum, be met.

This will be achieved by using pesticides reasonably and safely and by using alternative methods to combat unwanted and undesirable weeds, fungal diseases and pests. Pesticides should be used with care and on the basis of scientific and substantiated knowledge.

The overall pesticide load is determined on the basis of the impact of the individual pesticides on human health, nature and groundwater. Read more about the Pesticide Load Indicator (PLI) - the indicator used for pesticide loads on human health, nature and groundwater - in Annex 1.

The strategy includes a large number of different initiatives that will contribute in different ways to curbing consumption of high-load pesticides. The strategy has four main areas:

- Authorisation of pesticides
- Targeted inspection efforts
- Collection of knowledge via the Pesticide Research Programme
- Information, advice and guidance

The specific initiatives are outlined under each main area.

Pesticide taxes are an important instrument in reducing pesticide loads. The tax structure was redesigned in mid-2013. With the new structure, pesticides with a higher load became more expensive in order to encourage users to reduce their use - and thus the load - of pesticides. The higher the load, the more expensive the pesticides.

In 2017, the tax structure will be evaluated to examine whether it has served its purpose. The shift to the new tax structure meant that several pesticides with the highest loads were hoarded during the run-up to introduction of the new structure. It will take some time before the new structure starts to have an effect, and not until then can it be examined whether it has had the desired effect. To ensure the most current data basis, the evaluation cannot be finalised until towards the end of 2017. In 2018 and on the basis of the evaluation, the parties to the agreement will discuss any need to change the goals and the pesticide tax.

2. Authorisation of pesticides

Pesticides must be authorised by the Danish Environmental Protection Agency (Danish EPA) before they may be placed on the market and applied in Denmark. The active substances in the pesticides must have been approved by the EU before this. Authorisation of pesticides must be efficient and ensure a continuously high level of protection for groundwater, the environment and health.

The rules are set out in the Plant Protection Products Regulation (Regulation (EC) No 1107/2009), in the Pesticides Residues Regulation (Regulation (EC) No 396/2005) and in the Danish Chemical Substances and Products Act.

2.1 EU efforts within pesticide approval

This strategy will ensure that Denmark continues to play a dedicated and proactive role in work at EU-level with approval of active substances, to determine maximum residue levels (MRLs) for pesticide residues in food and animal feed, as well as to prepare common guidance for risk assessment.

An effective approval scheme will be maintained through further development of the assessment methods and through harmonisation in the North Zone as well as throughout the EU.

In the EU, focus in coming years will be on 'substances of very high concern', both with respect to active substances and co-formulants. For example safeners or synergists are special co-formulants in pesticides which, today, are not covered by the EU approval scheme. However, the EU is obligated under the Plant Protection Products Regulation to submit a proposal for the requirements to be imposed on these substances. In this connection, it is particularly important to establish requirements for substances of very high concern with regard to their harmfulness to human health and the environment, and to require that safeners and synergists do not entail a risk to the groundwater.

In addition to active substances and co-formulants, work in the EU also focuses on basic substances and biostimulants.

Using basic substances can contribute to reducing pesticide loads and provide new opportunities for treatment for conventional as well as for organic growers. Basic substances include food ingredients which have an effect on pests in plant production, but which are not sold primarily for their plant protection properties and which may not be placed on the market as pesticides.

Basic substances are approved in the EU on the basis of a specific assessment and may be used without national authorisation. They may subsequently be listed under the European Organic Regulation following individual assessment, and may then be used in organic production as well. Fructose (fruit sugar) is one such basic substance which has been approved in the EU.

In future, biostimulants must be approved under the Fertilizer Regulation. Furthermore, the scope of the Fertilizer Regulation and the Plant Protection Products Regulation must be clearly defined and segregated, so that there is no doubt as to how the two regulations apply to biostimulants.

Therefore we will:

- Ensure the development of the scientific and technical knowledge base for assessing the risk to humans and the environment posed by pesticides with the aim of further developing the assessment methods and the basis for harmonising approval/authorisation work in the North Zone and the EU as a whole. This includes guidance documents for assessing the risk to bees.

Substances of very high concern (SVHC):

- Ensure that active substances of very high concern (classified as carcinogenic, mutagenic and toxic for reproduction in the most hazardous classification categories, or meeting the criteria for endocrine disrupting effects) are only approved if there are no alternatives, and if they meet specific restrictive conditions ensuring their safe use.
- Work proactively to add problematic co-formulants to the EU list of co-formulants which may not be used in pesticides, as well as to set out principles for the approval of safeners and synergists in the EU, including that they may not pose a risk to the groundwater.

Low-risk active substances:

- Work to have more basic substances approved and included under the European Organic Regulation, and to ensure that basic substances already approved can be used more broadly for the benefit of organic as well as conventional growers.
- Work to ensure that *basic substances* which have been approved under the Plant Protection Products Regulation cannot also be included as *active substances* for the same use, as it increases the cost of using these substances and as the use in question would require an application for national authorisation.
- Work to adapt the data requirements for biopesticides that can be used e.g. in organic production. This would make it possible to have more biopesticides approved to benefit conventional as well as organic growers.

Food:

- Ensure targeted Danish influence on the work conducted in the EU, e.g. in connection with the preparation of guidelines, approval of active substances and establishment of maximum residue levels (MRLs) for food.
- Work proactively to ensure that MRLs for food are as low as possible, without compromising the effectiveness of the pesticides.
- Continue to ensure that the assessment of pesticide residues in food takes into account possible effects of pesticides in combination.

Continue to have animal feed crops incorporated in the Annex to the Pesticides Residues Regulation, in order to be able to set maximum residues levels for fodder crops.



2.2 Authorisation of pesticides at national level

National authorisation of pesticides is financed through fees, and the Danish EPA prioritises meeting case-processing times. An expedient authorisation procedure ensures good conditions for the sector. Furthermore, it allows for quick intervention if new knowledge means that an authorisation has to be amended.

The Danish EPA's criteria for assessing the health and environmental effects of pesticides have been collated as a set of assessment principles. These assessment principles are continuously developed to include new EU guidance and new knowledge, e.g. with regard to the use of pesticides in greenhouses, risk to bees, risk to soil organisms, and endocrine disruptors.

The high level of protection for groundwater will be maintained in accordance with the agreed changes in assessment principles through a restrictive authorisation scheme and through tests under the Danish Pesticide Leaching Assessment Programme (PLAP). The changes in the assessment principles include a simplification of the requirements for degradation in soil, and that the limit value for degradation products with no pesticide effect may be increased from 0.1 microgramme/litre to 0.75 microgramme/litre if a specific assessment of the substance shows that the substance involves no health effect or environmental risk. Furthermore, upon payment of a fee, as a basis for their applications for authorisation of new pesticides, it will be possible for industry to test in the PLAP substances that meet certain criteria. The effect of the changed assessment principles will be evaluated after four years.

Access to alternative pesticides in organic production will be further promoted through a subsidy scheme, which will cover both projects and the costs of fees. Developing alternative pesticides for use in organic production is cost-intensive relative to the returns that businesses can achieve. Therefore, since 2010 it has been possible to obtain support for applications for authorisation, and this possibility will be maintained. The aim is to reduce the barriers to authorisation of alternative, pesticides with reduced load, e.g. biopesticides, which can be used at organic farms.

For minor crops, access and incentives to apply for authorisation of pesticides are limited. Therefore, the fee for minor use application of pesticides that have already been authorised, is reduced. The objective is to improve competitiveness and promote Danish production of e.g. seed, fruit and vegetables.

Recent years have seen focus on the use of illegal pesticides at greenhouses, and studies have shown that wastewater from greenhouses and watercourses close to greenhouses contain pesticides that have not been authorised for outdoor use in Denmark. It is therefore paramount that the regulatory basis be made more clear and that recommendations be prepared for how to manage wastewater and other waste from greenhouses. The horticulture industry has drawn up a voluntary action plan to promote a broad basis for follow-up on action plan initiatives. Whether efforts have worked and have led to fewer reported violations in inspections at greenhouses will be evaluated in 2019.

Therefore we will:

- Give priority to rapid case processing, so that new pesticides that meet the requirements for authorisation can be made available on the Danish market as quickly as possible. This will improve competitive conditions and help prevent the development of resistance.
- Implement necessary changes to existing authorisations quickly.
- Continue to provide support to develop alternative pesticides, e.g. for use in organic production.
- Continue to test authorised pesticides in PLAP and ensure quick follow-up when limit values for groundwater have been exceeded.
- After four years, follow up on the effect of the adjustments to the assessment principles following the international review.
- Regularly adjust the Danish assessment principles in accordance with EU guidance (except for in the area of groundwater) for authorisation of pesticides, so that new knowledge is included to protect the environment and health, and so that the agriculture sector can use pesticides that do not pose a risk.
- Ensure that pesticides used at greenhouses are managed in a way that does not pose a risk to the environment.

Better protection around drinking water wells

This initiative comprises a ban on filling and mixing of pesticides and washing pesticide sprayers within well vicinity protection zones, including on sites for filling and washing of spraying equipment. Compensation will be provided for existing sites. The ban will become effective once the well vicinity protection zones have been designated in a statutory order.s

At present, well vicinity protection zones have been demarcated around all general water supply wells, and pesticide-sensitive extraction areas in sandy soil have been designated. New knowledge about clay soil generated in 2020 from the research projects will show whether pesticide-sensitive clay soil areas can be designated as well. Furthermore, results from the new PLAP field, representing 5-10% of the clay soils in areas with a thin clay layer covering the limestone, will show whether these areas are more sensitive than other PLAP fields.

An action plan will be prepared on possible further initiatives to reduce pesticide loads and achieve better groundwater protection in well vicinity protection zones. These possible further initiatives will be discussed by the parties to the agreement in the autumn of 2017, and will include the following:

- a. As follow-up on one of the recommendations in the international groundwater protection assessment, the parties want to implement special conditions for approval in well vicinity protection zones based on a scientific foundation. Such conditions could be additional safety factors or special requirements on degradation time for certain selected pesticides (differentiated conditions for authorisation). The Danish EPA will consider experience with differentiated authorisation from Germany and the Netherlands.
- b. Identification of any inspection measures in practice in well vicinity protection zones, e.g. in connection with the use of GPS-based spray application equipment and spraying records.
- c. Exploration of the possibility to grant targeted subsidies to special agricultural practices or e.g. afforestation in well vicinity protection zones, drawing on existing funds.
- d. The existing guidance will be supplemented with guidelines for municipal initiatives within well vicinity protection zones. The revised guidance will be discussed by the parties to the agreement prior to publication.

The final action plan will be presented to the parties in early 2018, including the status of updating maps of well vicinity protection zones.

The Ministry of Environment and Food of Denmark will invite Local Government in Denmark to enter into a partnership to promote work on groundwater protection in well vicinity protection zones. The members of the partnership will discuss the basis and objectives for their work. In 2019, the parties to the agreement will evaluate the status of municipal efforts in order to decide on any further initiatives.

Well vicinity protection zones will be designated in a statutory order following a legislative amendment. The amendment is expected to enter into force on 1 January 2018.

Two initiatives to reduce the risk of pesticide residues in food

A **ban** will be introduced on **spraying with glyphosate before harvesting food crops**. Spraying must precede harvesting by at least 30 days. Today, farmers use glyphosate before harvesting for many crops to control difficult root weeds and to achieve uniform ripening. The use of glyphosate prior to harvesting is important to control root weeds and to comply with Danish environmental requirements for catch crops and winter green fields (i.e. requirements that fields be kept under vegetation during winter). Glyphosate is the most commonly used pesticide in Denmark, and use is at the same level as in other EU countries.

To address concerns from consumers, a pre-harvest spraying ban for food crops will be introduced, in the form of a ban on spraying later than 30 days before the date of harvesting. Food crops are defined as: peas for consumption, malting barley, rolled oats and bread-making cereals (rye, wheat, barley, triticale/rye-wheat and spelt).

Furthermore, a requirement will be introduced for **mandatory use of drift-reducing equipment when using prosulfocarb**, which will ensure less spray drift and evaporation. Pesticides containing prosulfocarb are not authorised for use on fruit and vegetables. Despite this, prosulfocarb residues have been found in these crops and fruit growers have had to discard the crops as a consequence. The prosulfocarb residues found could have resulted from spray drift and evaporation. If residues continue to be found leading to losses for individual growers, it will be up to the sector to ensure compensation for these growers, as in previous cases.

In 2014, the sector set up a voluntary action plan to promote good spraying practices, including encouraging growers to spray during evenings, nights or early mornings when the temperature is low, humidity is high and wind-speed conditions are calm. This action plan was updated in both 2015 and 2016. However, there have been a few discoveries of prosulfocarb since then in crops for which use of the product is not authorised; most recently in June 2016.

Many farmers are already using drift-reducing nozzles, partly as a consequence of the sector's action plan, and partly as a consequence of the new rules from June 2016, which allow spraying closer to watercourses, etc. when using drift-reducing nozzles.





3. Targeted inspection efforts

3.1 Control of pesticides use

Carrying out inspection of professional use of pesticides helps ensure that pesticides are stored appropriately and used in the right way, thus reducing pesticide loads and protecting users.

Inspections by The Danish Agricultural Agency are carried out at farms, greenhouses, nurseries, agricultural contractors, golf clubs, as well as in public areas. Some of the inspections are selected on the basis of a risk assessment so that highest priority is given to areas with the greatest risk of errors and violations.

Inspection visits are generally conducted on the basis of user dialogue and guidance. Inspection visits have emphasis on dialogue about the rules and about the use of pesticides. Dialogue is supplemented by sanctions if regulations are not being complied with. Inspectors also provide guidance on current and upcoming regulations. Continuous training of inspectors, new inspection tools and inspection methods, as well as supervision and quality assurance, help ensure the quality and consistency of inspections.

Existing regulations ensure that pesticides are used professionally and safely, and all professional users will have to be authorised digitally over the next four years to be able to buy and use pesticides. To be authorised, users have to have a spraying certificate and must attend a follow-up course every four years. A high level of specialist knowledge must be ensured through training and courses to allow the individual user to make sound choices when using pesticides.

All sprayers for professional use must be approved by inspection bodies. This ensures that sprayers are not defective and that they apply pesticides in the correct doses so that accidents and spillage to the environment can be avoided.

All professional use of pesticides must be reported in spraying records and consumption figures must be notified to the Danish EPA. This provides the authorities with an overall picture of pesticides consumption.

Therefore we will:

- Continue the risk-based approach to the control of pesticides use. This will ensure that inspections are carried out where the need for inspection is greatest.
- Ensure cooperation between the authorities and the relevant industries to allow for the best possible dialogue and guidance before, during and after inspection visits.
- Continue to check that pesticides are being stored and used appropriately in terms of the environment and human health, and that no enterprises have illegal Danish or foreign pesticides in their possession.
- Continue to make requirements for authorisation and training of professional users, for inspection of sprayers and for reporting spraying data to the Danish EPA.

3.2 Control of imports and placing on the market of pesticides

Enterprises that import and sell pesticides are subject to regular inspections. Inspections are carried out e.g. at seed and fertilizer stores, building markets, nurseries and garden centres. Inspections by the Danish EPA Chemical Inspection Service help ensure that only authorised and legal pesticides are offered for sale and bought in Denmark.

The Chemical Inspection Service carries out systematic inspections of pesticides distributors that sell pesticides for professional use. Distributors that sell the most toxic products are targeted for inspection more often than others. In addition to this, inspections are prioritised in areas with the greatest probability of violations according to previous experience.

The most frequent violation relates to previously authorised products that are no longer legal on the Danish market because the authorisation or the time limit for sale has lapsed. The sale of pesticides to private citizens makes up less than 1% of overall consumption. Therefore, it makes good sense to focus inspection efforts on distributors that sell pesticides for professional use. As part of control of imports and sales of pesticides, chemical analyses of the contents of different pesticides are sometimes performed. This will reveal any fake pesticides with another content than that declared. This is important because such products can lead to greater risk for the environment and health.

Importers and distributors receive regular guidance on the regulations for making pesticides available on the market. Guidance is followed-up by inspection visits and sanctions if the regulations are not in compliance. Furthermore, there is also guidance about current and upcoming regulations and information about tools that can be helpful with regard to compliance.

The strategy combines targeted information and guidance on pesticides regulations with an increased control effort aimed at distributors selling pesticides for professional use.

The strategy will help clear out any stocks of illegal pesticides at distributors and, thus, prevent the onward sale of these pesticides. The goal is to reduce the percentage of non-compliance with regulations on illegal Danish pesticides by distributors of products for professional use from 30% to 5% by 2019.

The strategy will also help ensure that inspections of importers and distributors of pesticides are based on dialogue. Strong control of pesticides relies on efficient inspection and control procedures. Enforcement and inspection work therefore takes place in close cooperation between the authorities, and cooperation with the Central Customs and Tax Administration (SKAT) helps prevent illegal or fake pesticides from entering Denmark.

Therefore we will:

- Carry out targeted information efforts to increase knowledge about pesticides regulations among distributors and importers.
- For a period of two years, increase inspections at distributors that sell pesticides for professional use. Efforts will be evaluated in 2019 and it will then be decided whether the increased inspection effort should be maintained for the remainder of the strategy period.
- Continue to carry out dialogue-based inspection visits focusing on providing guidance both before and during the inspection visit.
- Optimise cooperation with national and international authorities on the control of imports of fake and illegal pesticides.

3.3 Control of pesticide residues in food

Whenever pesticides are applied in agriculture and horticulture, pesticide residues may be present in the edible crops produced. The strategy will ensure that food offered on the Danish market does not contain undesirable pesticide residues, and it will ensure that any content of pesticide residues is as low as possible.

The strategy outlines control of pesticide residues in animal feed and food, partly through targeted inspection based on sampling and suspicion, and partly through reviewing the internal control procedures at feed and food enterprises, supplemented by guidance. The Danish Veterinary and Food Administration is responsible for inspection and control. Guidance for enterprises on pesticide residues in food and feed will help enterprises comply with the regulations.

Control of pesticide residues in food products relies on effective analysis methods. Therefore, it is necessary to continuously develop methods to analyse for more substances.

The awareness and knowledge of consumers, enterprises and growers must be strengthened through easy-to-access, balanced and up-to-date information about pesticide residues in food products. Reports communicating results will be published, and these will also contain comparisons between Danish and foreign food products.

The strategy will therefore also help ensure that consumers can make decisions on an informed basis.

Therefore we will:

- Focus on food safety through targeted and efficient control, e.g. by focussing on risk products, including samples specially imported from third countries where the risk of exceedance of the maximum residue levels is greater.
- In connection with inspection efforts, increase the knowledge of food enterprises about pesticide residues in food products and support them in their internal control procedures through dedicated guidance on pesticide residues in animal feed and food.
- Increase the knowledge of growers about pesticide residues in food products, to enhance the possibility for them to grow crops with lower levels of pesticide residues in food products.
- Improve the effectiveness of analysis methods for determining pesticide residues in feed and food by developing methods that can analyse for more substances.
- Ensure easy-to-access and up-to-date information about pesticide residues in food products and, thus, ensure an informed decision basis for consumers to choose food products.
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4. Collection of knowledge via the Pesticide Research Programme

New pesticides are continuously being developed along with new possibilities for using existing pesticides. Therefore, regulations of the use of pesticides must be continuously developed and based on the most recent knowledge. Projects supported by the Pesticide Research Program help keep up-to-date and maintain the knowledge that forms the basis for the authorisation and use of pesticides.

These projects focus on unintended and undesirable effects of pesticides on the environment and human health, as well as on the possibilities for using non-chemical methods for controlling weeds, fungal disease, or pests. The results generated from the research improve the possibilities to reduce the collective load of pesticides on the environment, groundwater, and human health, as well as to develop alternative methods to control and prevent plant diseases, weeds, and pests. With this Pesticide Strategy, research into the undesirable effects of pesticides on human health is prioritised. Therefore, an annual DKK 5 million, out of the total annual pool for research of around DKK 17 million, will be earmarked for these issues over the next five years.

A special area of focus for the upcoming period will therefore be to develop methods and strategies for testing the effects of pesticides on brain development in children, e.g., in the context of increased incidences of autism and ADHD. Another area of focus will be research projects on endocrine disrupting effects which directly support the regulation of pesticides, e.g., endocrine disrupting effects on issues other than the reproductive system. Furthermore, a special research topic in the Pesticide Research Programme is the environmental impact if potentially persistent active substances accumulate in the soil.

If no applications that meet the scientific and technical standards to merit funding are submitted for the topics of human health or persistent active substances, procedures will ensure that the funds are allocated to other prioritised areas within the Pesticide Research Programme.

Therefore we will:

- Fund research projects that yield the best possible knowledge base for authorisation of pesticides and that focus on improving possibilities for curbing the overall load of pesticides on the environment and human health.
- Following annual public announcements, fund research projects which help ensure that the regulation of pesticides is based on the most recent scientific knowledge.
- Fund research projects that contribute to the development of alternative pest control and pest prevention methods, pesticide resistance prevention and the further development of Integrated Pest Management (IPM).
- Annually set aside a special pool under the Pesticide Research Programme to focus on the impact of pesticides on brain development in children and on the endocrine disrupting effects of pesticides.
- Identify the accumulation of persistent active substances in soil as a topic under the Pesticide Research Programme.



5. Information, advice and guidance

5.1 Integrated Pest Management (IPM)

Agriculture and horticulture account for the major part of pesticide consumption in Denmark. Therefore, it is especially important that professional plant production focuses on using as few pesticides as possible and on using them in the correct way; i.e. it is important to promote good agriculture practices.

One of the tools to help minimise pesticides use is Integrated Pest Management (IPM), which includes eight principles. Briefly explained, IPM is about agriculture, horticulture and forestry doing whatever they can to prevent and control weeds, fungal disease and pests without the use of pesticides. This will reduce the need to apply pesticides. Furthermore, it will help prevent the development of resistance, which is a challenge for agriculture with regard to certain crops.

The IPM principles, which are common for the EU, mean that growers must try to replace pesticides with other measures or to shift from pesticides to other prevention or control methods. For example,

by using harrows or other machinery to combat weeds, using utility animals to combat insects in greenhouses, and healthier and more varied crop rotation, e.g. including both spring and winter crops. To avoid or to reduce the use of pesticides, growers can also change the time of sowing and the quantity of seeds, as well as ensure that resilient and competitive seed varieties are used. Read more about principles in Annex 2.

To ensure broad backing for the IPM principles among stakeholders, and efficient, well-consolidated efforts, a one-year IPM task force will be set up with representatives from key stakeholders, research institutions and relevant authorities. Among other things, the task force will examine how IPM has been implemented in other countries, as well as establish an overview of existing and emerging alternative pest control methods, including microbiological control methods. Building on the work of the task force, in 2018 a decision will be made on future IPM efforts.

Use of new technologies in the application of pesticides will also be a priority area. Use of pesticides can be minimised and targeted using GPS, drones, tractor cameras, and other devices as well as data collected on fields and crops.

Therefore, a partnership for spraying and precision technology will be set up, the objective of which will be to map existing technologies that help reduce pesticide loads, as well as the barriers for their implementation. This partnership will also be able to assist in relevant knowledge-sharing and exploitation of existing research and development, as well as gather experience on the use of the technology. The aim is to provide support to implement existing technologies.

The partnership may also launch 'bottom-line analyses' outlining the opportunities associated with optimal use of existing technologies, and fund perennial field trials of new technologies. This could be e.g. smart spray technologies/precision spraying, other technology, IT technology, etc. applied in the field, including both mechanical control using precision equipment and combined mechanical and chemical weed control. The work of the partnership will support exports of Danish environmental technology solutions.

Furthermore, the development of resistance will be monitored, and a follow-up survey of developments in herbicide resistance since 2013-2015 will be launched in 2020, prior to negotiations on the next pesticides strategy. An action plan will be drawn up to address resistance based on the IPM principles.

Therefore we will:

- Set up a one-year IPM task force which will contribute to the decision basis for IPM efforts from 2018 and onwards. The parties to the agreement will negotiate this contribution.
- Establish a Partnership for Spraying and Precision Technology, the objective of which will be to map existing technologies and contribute to their implementation, e.g. with the use of GPS, drones and camera technology.
- Launch a follow-up survey in 2020 of developments in herbicide resistance since the period 2013-2015. The result of the survey will be available before expiry of this strategy period in 2021.
- Prepare an action plan based on the IPM principles to address resistance.
- Examine the possibilities for combining data in the area in order to prevent resistance and enhance knowledge about its extent.

- Continue to develop, test and provide advice about IPM tools that prevent the development of resistance and contribute to implementation of the IPM principles in agriculture and horticulture, e.g. in locally-embedded projects.
- Continue efforts to train professionals at farms and horticulture, greenhouses, nurseries etc., as well as teachers and consultants, in the IPM principles.

Development of resistance

Pesticides resistance is a challenge within plant production. Repeated application of plant protection products with the same mode of action increases the risk of development of resistance e.g. in pests and weeds.

Integrated Pest Management (IPM) is an important element in preventing resistance. Continued IPM-based efforts to curtail the development of resistance will include a broad range of tools to combat resistant pests.

All other things being equal, the way to prevent pesticide resistance is through the continuous introduction of new pesticides to the market.

5.2 Use of pesticides in public areas

Responsibility for a large number of public areas lies at local, regional and other authority levels. Many Danes enjoy public forests, natural areas and parks. Roads, pavements and railways, etc. need to be kept clear of weeds. Similarly, there must be efforts to control invasive species in public areas.

As early as in 1998, a voluntary agreement was established between central, regional and local governments on phasing out the use of pesticides in public areas. The objective is to minimise the risk of groundwater contamination and to protect nature and human health. Following a municipal reform, the agreement was updated in 2007 with an objective of continued phase-out of pesticide use. The agreement allows for using pesticides to control giant hogweed if a specific plan is in place for phasing out the use of pesticides.

Pesticide consumption in public areas has been reduced by more than 90% over the period 1995 to 2013.

However, in certain situations, the control of invasive plants and weeds is financially and technically challenging without the use of pesticides. Therefore, it may be necessary to prepare an addendum to the agreement allowing for the use of new technological spraying techniques to apply pesticides to control weeds and invasive species in special situations, provided overall pesticide consumption is still reduced.

Therefore we will:

- Continue the long-standing agreement on the use of pesticides in public areas to protect the environment and the people who frequent these areas.
- The Minister for Environment and Food will invite the parties to the agreement to negotiate the possibility of preparing an addendum to the agreement on continued phasing out of the use of pesticides in public areas. The negotiations will be conducted on the background of a report of consumption in 2016 and an evaluation of the challenges facing municipalities. Among other things, negotiations will cover whether, in special cases, pesticides may be used to control invasive species and in paved areas to a limited extent, provided overall pesticide consumption is still reduced, e.g. through the use of new spray technologies and specific control plans. The objective to keep pesticide consumption at a low level and to possibly reduce consumption further will be maintained.
- Secure continued dialogue, development of specific solutions, knowledge sharing and advice on pesticide reduction, the control of invasive species, e.g. through experience exchange groups, online information, and an advisory group with broad stakeholder representation.
- Continue to monitor developments in the use of pesticides in public areas via consumption statistics every three years. The upcoming 2016 report of consumption will be prepared in 2017.





5.3 Less pesticide use on golf courses

The golf sector must be able to operate golf courses of good quality for players, without impacting negatively on the environment, groundwater and human health.

In 2013, regulations were established for thresholds on the pesticide load on golf courses. These thresholds have now been successfully implemented on Danish golf courses. They have contributed to increased focus on the possibilities for reducing pesticide loads, e.g. by implementing the IPM principles.

This is a positive development which must be continued.

Therefore we will:

- Maintain low pesticide loads on Danish golf courses to the benefit of golfers and the environment, and without this negatively affecting the playing quality of golf courses, e.g. by continuing our focus on integrated pest management (IPM).
- Continue to enhance knowledge and knowledge-sharing of actors in the golf sector, and in particular among green keepers.
- Continue our dialogue-based inspections of golf courses.
- Follow developments in pesticide consumption on golf courses through annual statistics on pesticide loads in accordance with the political agreement in this area.

5.4 Reduced pesticide loads in private gardens

Pesticides are also used in gardens of private homes, e.g. on lawns, in greenhouses and to control weeds in driveways and on paved surfaces. Garden owners and other private users of pesticides must be able to make an informed decision on whether and how to control weeds, plant diseases, pests, etc.

Consequently, private consumers must have easy access to information about correct use of pesticides as well as information about alternative methods to replace the use of pesticides in private gardens. Advice on pesticides and alternative methods to control weeds etc. must be available at places where pesticides are sold. Alternative methods include establishment of ground cover vegetation, use of non-woody plants and mechanical control.

Shops that sell pesticides to private consumers must employ a person with special training in the use of pesticides so that customers can be offered advice. Moreover, only products with the lowest pesticide loads can be purchased via self-service. Stronger products must be supplied by personnel so that when buying the products, customers are offered advice on how to use them, e.g. with regard to dilution and safe use to protect the environment as well as people using the garden.

Consumption is monitored through annual statistics on the sale of pesticides for private use.

Therefore we will:

- Enhance private consumers' knowledge on correct use of pesticides, and support that private consumers use pesticides with due consideration for health and the environment.
- Enhance private consumers' knowledge about alternative methods to control weeds etc., e.g. through the "think before you spray" campaign (www.tænkførdusprøjter.dk)
- Ensure a good framework for the sale of pesticides and advice on their use by conducting an evaluation in 2019 of the regulations on training distributors, segregation of pesticides into products for professional and non-professional use, and storage behind the counter of concentrated products
- Monitor developments in the sale of pesticides for non-professional use so that initiatives in the area can be appropriately adapted.



Annex 1: Pesticide use and load

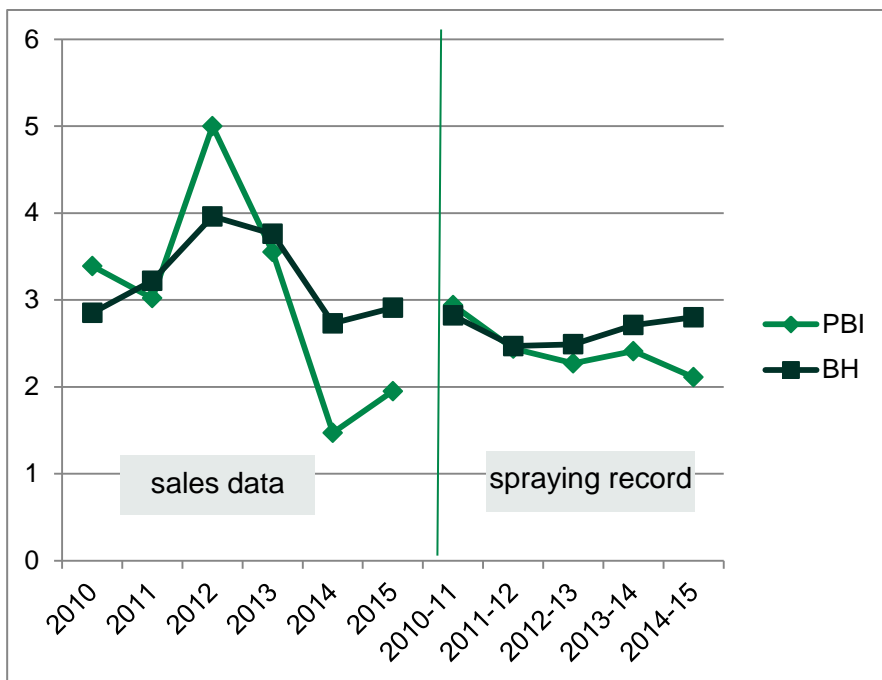
In the Pesticides Strategy 2013-2016, the objective regarding pesticide use was for the Pesticide Load Indicator (PLI), which is based on sales data, to fall to 1.96 in 2015, which corresponds to a 40% reduction relative to the level calculated for 2011. The PLI is an indicator for the potential total load on health and the environment based on the environmental and health characteristics of the pesticides.

Previously, the *treatment frequency index (TFI)* was used as the sole indicator. Treatment frequency indicates how many times on average a conventionally utilised agricultural area can be sprayed with the amount of pesticides sold, and applied in standard dosages. Treatment frequency is now only used as a supplement to the PLI.

Pesticide loads and treatment frequency can move in different directions during the same year. If farmers choose to use pesticides causing lower loads, the load will decline, even if the farmers still spray their fields just as frequently, or even more often, to eliminate e.g. new pests.

The pesticide tax was changed in July 2013 so that pesticides causing the highest load became more expensive. As expected, the changed tax led to substantial fluctuations in sales of pesticides because, prior to the entry into force of the new tax, users stockpiled supplies of pesticides causing the highest load and thus subject to the highest price increases after introduction of the higher tax. As a result of this stockpiling, the sale of pesticides in both 2012 and 2013 increased prior to entry into force of the tax rise, while sales were significantly lower in 2014 than in previous years. In 2014, sales measured in terms of load decreased by 55% compared with the calculated level for 2011, which is the reference year for the target. However, this decline in sales was not reflected in the consumption of pesticides which saw a decline of 18% in the period 2013-2014.

In 2015, the figures for sales and consumption approached each other. Load measured in terms of sales figures declined by 40% in 2015 compared with the level for 2011, whereas load measured in terms of consumption declined by 28%. In 2015, TFI based on sales figures approached the level prior to the tax restructuring in 2013, indicating that the effect of the stockpiling in 2012 and 2013 had declined. The development in pesticide loads and treatment frequency for sales (left-hand side) and consumption (right-hand side) of pesticides can be seen in Figure 1 below.



The long-term effect of the pesticide tax cannot be assessed until stocks have been fully used. When introducing the pesticide tax, it was decided that the tax would be evaluated four years after its entry into force, i.e. in 2017. At the end of 2017, the sales data for 2016 and the consumption data for 2015-2016 will be available. Consequently, it will be possible to estimate consumption three years after the entry into force of the tax, and there is likely to be more consistency between sales and consumption data. This will enable an evaluation of the effect of the pesticide tax with regard to load.

Pesticide Load Indicator

The Pesticide Load Indicator (PLI) is a measure of the load on human health, nature and groundwater. PLI expresses the calculated load in terms of the total utilised and treated agricultural area in 2007. Pesticide loads are calculated for three main indicators:

- Human health: Provides a measure for the load to which the operator is exposed when handling and applying pesticides.
- Environmental behaviour: Expresses how fast the pesticides degrade in soil, their risk of accumulation in food chains and the risk of leaching to groundwater.
- Environmental toxicity: Provides a measure of the toxicity for pesticides to animals and plants in the field (e.g. earthworms and bees) and the surrounding nature (e.g. fish and birds).

Annex 2: IPM principles

The IPM principles are stated in EU Framework Directive 2009/128/EC on the sustainable use of pesticides, see Article 14 and Annex III.

The IPM principles are as follows:

1. The prevention and control of pests should be by several methods, especially by:
 - having varied and healthy crop rotation
 - using adequate cultivation techniques
 - using, where appropriate, resistant or tolerant cultivars and using seed material of high quality
 - using appropriate fertilisation, liming, irrigation and drainage practices
 - preventing the spreading of weeds, diseases and pests
 - protection and enhancement of important beneficial organisms inside and around the area cultivated.
2. Pests in crops should be monitored by adequate methods and tools and by using warning, forecasting and diagnosis systems, where feasible, as well as by seeking advice from professionally qualified advisors.
3. Warnings, forecasts and threshold values should be included in decisions on plant protection.
4. Biological, physical and other non-chemical methods to control pests should be chosen, if they provide satisfactory pest control.
5. The pesticides applied should be the most suitable for the task and have the least side-effects on human health, other organisms in nature and the environment.
6. The correct dosage should be used; as far as possible reduced doses. Treat with reduced application frequency or partial application, and prevent pests from developing resistance to products.
7. Where there is a risk of development of resistance, anti-resistance strategies should be applied to maintain the effectiveness of the products. For example by using multiple pesticides with different modes of action.
8. Check the success of the measures applied. The point of departure is regular monitoring of pests in the field and registrations in spraying records.

Annex 3: Glossary

Meanings of words

Alternative products - Products containing substances causing reduced loads or low-risk substances or basic substances. Many of these products have been approved for use in organic farming.

Active substance – The substance actively controlling the pest.

TFI - The treatment frequency index shows the average number of times farmers spray their fields per annum with so-called standard dosages.

Biostimulants - Micro-organisms or chemical substances which are not pesticides, with the ability to improve nutrient utilisation of plants, their tolerance to abiotic stress or their crop quality characteristics.

Co-formulants - Additives found in formulated pesticide products.

IPM – Integrated Pest Management refers to common EU principles on how to prevent and reduce the spread of weeds, fungi and insects, without using pesticides.

North Zone - The Plant Protection Products Regulation divides the EU into three zones collaborating on authorisation of pesticides. Denmark is part of the North Zone, along with Sweden, Finland, Norway, Estonia, Latvia and Lithuania.

PLI - The Pesticide Load Indicator is an indicator of pesticide loads on human health, nature and groundwater.

Safener – Additive protecting sprayed plants against the toxic effect of pesticides.

Synergist - Additive that can make active substances more active against pests.

Substances of very high concern (SVHCs) - Substances that are carcinogenic, mutagenic or toxic for reproduction and are classified in the most hazardous classification categories, as well as endocrine disruptors and persistent, bioaccumulating and toxic substances.

PLAP - The Pesticide Leaching Assessment Programme in Denmark.

Assessment principles - Guidance setting up environmental and health requirements for authorisation of pesticides in Denmark.

Annex 4: Agreement

Agreement on the Pesticides Strategy 2017-2021

With this agreement on the Pesticides Strategy 2017-2021, the Danish Government (Denmark's Liberal Party, Liberal Alliance and the Conservative People's Party), the Danish People's Party, the Danish Social Democrats, the Danish Social-Liberal Party and the Socialist People's Party agree to maintain the level of protection and observe the precautionary principle with the same high level of groundwater protection against pesticides and a high standard of food safety, as well as to minimise the pesticide load on human health and the environment.

With this pesticide strategy, the parties to the agreement lay down the framework for reducing loads and ensuring sensible and safe use of pesticides in Denmark.

The Pesticides Strategy 2017 – 2021 is based on sustained, targeted efforts to reduce pesticide use and pesticide loads in Denmark. Our objective remains to use as few pesticides as possible, and to use the pesticides causing lowest load. Furthermore, pesticide residues in food must be as low as possible, and our groundwater must continue to be usable as drinking water in unprocessed form.

The strategy will offer stability to the agricultural sector in terms of their production terms, without compromising protection of groundwater, the environment, human health and food safety.

Furthermore, to enhance groundwater protection against pesticides in well vicinity protection zones, bans will be imposed on filling and mixing pesticides and washing pesticides sprayers within well vicinity protection zones, including on sites for filling and washing of spraying equipment. The strategy continues to cover all users of pesticides, including the agricultural sector, golf courses, public authorities and private garden owners as well as consumers, food enterprises and distributors of pesticides.

The parties agree that:

1. Denmark should continue to have an ambitious goal for pesticide loads in the future, and the current Pesticide Load Indicator (PLI) target of 1.96 measured on the basis of sales data must be reached as a minimum. The pesticide tax will be evaluated in 2017, and on this basis, at the beginning of 2018 the parties to the agreement will be invited to discuss the evaluation and the need to possibly adjust the tax and the goal.
2. An action plan will be drawn up to address resistance based on the IPM principles. The draft action plan will be discussed by the parties to the agreement in the autumn of 2017. The assessment principles for authorisation of pesticides will be adjusted on the basis of an international review. This will allow for authorisation of pesticides with other modes of action to prevent resistance as an instrument in the overall approach. Pesticides authorised with respect to the new threshold value for degradation products that have no pesticide effect and that are not assessed to have any negative health effects or entail environmental risks will be tested in PLAP. If the pesticides do not pass the test, the authorisation will lapse. Following a four-year trial period, the effect of the adjusted assessment principles will be evaluated. This evaluation will encompass new pesticides authorised according to the changed assessment principles. For substances with an adjusted threshold value, the evaluation will include a summary of the assessments conducted by the Danish EPA in the specific authorisation cases, including assessments of the potential cocktail effects of substances and their degradation products. For the period 2013-2015, a baseline survey has been conducted of the spread of herbicide resistance in Denmark. This survey will be repeated in 2020 with a view to monitoring developments in resistance. This survey as well as the evaluation of adjusted assessment principles will precede negotiations on the next

pesticides strategy.

3. Groundwater monitoring has been enhanced. The monitoring-station network will be expanded by another approx. 100 wells, and during the current programme period (2017-2021) investigations will be conducted to identify more pesticides. Furthermore, an emergency preparedness service has been established to screen for selected substances, as needed, in the course of the period.
4. Enhancement of targeted area protection to protect the groundwater from pesticides in well vicinity protection zones by imposing bans on filling and mixing pesticides and washing pesticide sprayers within well vicinity protection zones, including on sites for filling and washing of spraying equipment.
5. An action plan will be prepared on possible further initiatives to reduce pesticide loads and achieve better groundwater protection in well vicinity protection zones. These possible further initiatives will be discussed by the parties to the agreement in the autumn of 2017, and will include the following:
 - a. As follow-up on one of the recommendations in the international groundwater protection assessment, the parties want to implement special conditions for authorisation in well vicinity protection zones based on a scientific foundation. Such conditions could be additional safety factors or special requirements on degradation time for certain selected pesticides (differentiated conditions for authorisation). A proposal will be presented to the parties to the agreement before they make a decision in this regard.
 - b. Identification of any control measures for differentiated authorisations in practice in well vicinity protection zones, e.g. use of spray application equipment with GPS and spraying records.
 - c. Exploration of the possibility to grant targeted subsidies to special agricultural practices or afforestation, for example, in well vicinity protection zones, drawing on existing funds.
 - d. The existing guidance will be supplemented with guidelines for municipal initiatives within well vicinity protection zones.

The final action plan will be presented to the parties in early 2018, including the status of updating well vicinity protection zone maps. Well vicinity protection zones will be designated in a Statutory Order following a legislative amendment.

The parties to the agreement will invite Local Government Denmark to enter into a partnership to promote work on groundwater protection in well vicinity protection zones. The members of the partnership will discuss the basis and objectives for their work. In 2019, the parties to the agreement will evaluate the status of municipal efforts in order to decide on any further initiatives.

6. An enhanced effort targeted at distributors of pesticides for professional use will ensure that stocks of pesticides that are no longer legal are not sold to professional users. An information campaign will be conducted to ensure awareness of the regulations, and controls will be intensified for a two-year period. Subsequently, the effort will be evaluated in 2019, and it will be decided whether the increased control burden should be maintained for the remainder of the strategy period. The goal is to reduce the rate of non-compliance with regulations on illegal Danish pesticides by distributors of products for professional use from 30% to 5% in 2019. Furthermore, focus on inspection and control at farms will continue.
7. Research into the effects of pesticides on human health will be given higher priority in the Pesticide Research Programme, which will continue to ensure update and development of

the knowledge base required to authorise and use pesticides. A research project will be announced under the pesticide research programme, focussing on the impact on the environment of accumulation in the soil of potentially persistent substances.

8. The most efficient methods and technological options will be in focus when disseminating the IPM (Integrated Pest Management) principles. This may also support exports of Danish technology solutions. In 2017, a one-year IPM task force as well as a partnership for spraying and precision technology will be set up. A list of partners invited to participate in the taskforce and the partnership, respectively, will be presented to the parties prior to set-up.
9. Drift from prosulfocarb will be reduced by introducing requirements for drift-reducing nozzles, and these will enter into force before the spraying season in the autumn of 2017. If, in spite of these requirements, residues are found that result in losses for individual growers, it will remain the responsibility of the sector to ensure compensation.
10. A ban will be introduced on spraying with glyphosate before harvesting food crops.
11. The fee for authorisation of pesticides for minor crops and minor use is reduced to ensure availability of more pesticides in order to improve the conditions for Danish production of seeds, fruit and vegetables, etc.
12. A special effort will be conducted in relation to nurseries in order to reduce discharges into the environment and the use of illegal products. The horticulture industry has drawn up a voluntary action plan to promote a broad basis for follow-up on action plan initiatives. The plan includes efforts in the areas of waste and waste water as well as initiatives to significantly reduce the occurrence of illegal substances found during inspections at nurseries. Based on a mid-term evaluation of the voluntary action plan in 2019, the parties to the agreement will decide on whether further initiatives are required.
13. The possibility to apply for subsidies for development and authorisation of alternative plant protection products will continue in order to support organic production in Denmark, among other things.
14. The voluntary agreement on the use of pesticides in public areas will be evaluated to ensure efficient control of invasive plant species and weeds on pavements, roads, etc. As previously, the primary aim of the agreement is to phase out consumption.
15. Denmark will play a targeted offensive role in EU work on pesticides. Use of active substances of very high concern must be limited as far as possible, and EU work concerning these substances must therefore be given high priority. There will also be focus on low-risk substances and substances that may be harmful to bees.

Furthermore, the parties agree to continue the effort aimed at controlling pesticide residues in food to ensure a high level of food safety and to provide information and guidance for consumers and food enterprises concerning pesticide residues in food.

Furthermore, the golf industry and garden owners will continue to receive information, advice and guidance on the use of pesticides and alternative methods to control pests, e.g. through information campaigns on how to reduce the use of pesticides.

Every year, the parties to the agreement will be briefed about the status of the initiatives, including developments in pesticide loads.

A new pesticides strategy is planned from the end of 2020.

Annex on agreement on the Pesticides Strategy 2017-2021

1. Revision of pesticide tax

The parties agree to maintain the current objective that the use of pesticides must follow the principles on integrated pest management (IPM) while continuing to prevent resistance. This corresponds to maintaining the current target of a Pesticide Load Indicator (PLI) of 1.96, calculated on the basis of sales data.

The essential instrument to achieve this objective is the change in the pesticide tax that was implemented in 2013. As users hoarded supplies of pesticides prior to entry into force of the pesticide tax, it will not be possible to evaluate whether the tax had the intended effect until the end of 2017. A realistic assessment of the effect of the pesticide tax with regard to load can then be made.

The parties agree that evaluation of the pesticide tax and assessment of the objective must be conducted on the basis of adequate knowledge. Based on this, the parties have agreed to meet again in early 2018 to assess attainment of the objective and discuss the evaluation of the pesticide tax conducted in 2017. The intention is to continue to have an ambitious goal for pesticide loads in the future, and to maintain the current minimum Pesticide Load Indicator (PLI) target of 1.96, measured on the basis of sales data.

2. Change/adjustment of assessment principles for authorisation of pesticides

Danish work in connection with approving active substances in the EU will continue in order to promote a high level of protection of the environment and health, while at the same time supporting the need for options for pest treatment in the sector.

The strategy ensures continuation of the effective authorisation scheme and the special Danish groundwater protection via the Pesticide Leaching Assessment Programme (PLAP) to prevent groundwater contamination by pesticides exceeding the politically determined limit value.

The parties agree to change the assessment frameworks for authorisation of pesticides in the following three areas:

- 1) Requirements on degradation in soil is simplified in three areas to ensure a higher degree of compliance with EU requirements. The three areas are as follows: a) the cut-off criterion of a 180-day half-life is to be maintained for active substances and relevant degradation products, but it will be possible to assess a robust dataset comprising laboratory and field data, and to apply normalised field data for the assessment; b) the 180-day half-life requirement will be removed for non-relevant degradation products that are non-toxic, that cannot leach into the groundwater and that, consequently, do not pose a risk to the groundwater; c) if the degradation time is between 90 and 180 days, the requirement for a long-term study of effects on soil organisms will be removed. The long-term study is superfluous because sufficient information is already available from the other studies accompanying an application.
- 2) The limit value for degradation products with no pesticide effect can be increased from 0.1 microgramme/litre to 0.75 microgramme/litre if a specific assessment of the substance shows that the substance involves no health effect or environmental risk. Pesticides authorised with respect to the new threshold value for degradation products that have no pesticide effect and that are not assessed to have negative health effects or entail environmental risks will be tested in PLAP. If the pesticides do not pass the test, the

authorisation will lapse.

- 3) It will be possible for new pesticides to be authorised on the basis of field trials by allowing industry to pay for tests of non-authorised pesticides in PLAP using specific criteria.

An evaluation of the changed assessment principles will be carried out in 2020. This evaluation will include an assessment of which new pesticides have been authorised according to the new assessment principles, and their impact with regard to total load and with regard to delaying the development of resistance.

The proposed changes will ensure a continued high level of groundwater protection applying exclusively in Denmark and not in the rest of the EU. Furthermore, it is the Danish EPA's clear assessment that the proposed changes in threshold values will not affect groundwater protection.

The parties to the agreement thus wish to continue the high level of groundwater protection. Consequently, Denmark will maintain a more restrictive assessment of pesticides than the rest of the EU with respect to the model calculations for groundwater applied in the assessment of applications. Furthermore, the development of resistance will be monitored, and a follow-up survey of developments in herbicide resistance since 2013-2015 will be launched in 2020, prior to negotiations on the next pesticides strategy.

3. Groundwater monitoring has been enhanced

Groundwater monitoring has been enhanced. The monitoring-station network will be expanded by another approx. 100 wells, and during the current programme period (2017-21), investigations will be conducted to identify more pesticides. Furthermore, an emergency preparedness service has been established to screen for selected substances, as needed, in the course of the period.

4. Targeted area protection

This effort comprises a ban on filling and mixing of pesticides and washing pesticide sprayers within well vicinity protection zones, including on sites for filling and washing of spraying equipment. Compensation will be granted for sites that have already been established with financing covered by water charges. There is an estimated maximum of 100 farms with sites for filling and washing of spraying equipment located within a well vicinity protection zone, and the one-off compensation is estimated at less than DKK 10 million. Since the number of sites for filling and washing of spraying equipment has been estimated with great uncertainty, the preparatory legislative work will include a mapping of the specific number of sites and the level of water charges in different areas. A draft bill will be presented to the parties to the agreement prior to external consultation.

At present, delineated well vicinity protection zones have been established around all general water supply wells, and pesticide-sensitive extraction areas in sandy soil have been designated. New knowledge about clay soil generated in research projects in 2020 will show whether pesticide-sensitive clay soil areas can be designated as well. Furthermore, results from the new PLAP field, representing 5-10% of the clay soil in areas with a thin clay layer covering the limestone, will show whether these areas are more sensitive than other the PLAP fields. The ban will become effective once a well vicinity protection zone has been designated.

5. Action plan for further initiatives for protection in well vicinity protection zones, including survey on differentiated authorisation conditions and inspection

An action plan will be prepared on possible further initiatives to reduce pesticide loads and achieve better groundwater protection in well vicinity protection zones. These possible further initiatives will be discussed by the parties to the agreement in the autumn of 2017, and will include the following:

- a. As follow-up on one of the recommendations in the international groundwater protection

assessment, the parties want to implement special conditions for approval in well vicinity protection zones based on a scientific foundation. Such conditions could be additional safety factors or special requirements on degradation time for certain selected pesticides (differentiated conditions for authorisation). A proposal will be presented to the parties to the agreement before they make a decision in this regard. The Danish EPA will include experience with differentiated authorisation conditions from Germany and the Netherlands.

- b. Identification of any inspection measures in practice in well vicinity protection zones, e.g. use of spray application equipment with GPS and spraying records.
- c. Exploration of the possibility to grant targeted subsidies to special agricultural practices or afforestation, for example, in well vicinity protection zones, drawing on existing funds.
- d. The existing guidance will be supplemented with guidelines for municipal initiatives within well vicinity protection zones. The revised guidance will be discussed by the parties to the agreement prior to publication.

The final action plan will be presented to the parties in early 2018, including the status of updating well vicinity protection zones on maps.

The Ministry of Environment and Food has invited Local Government Denmark to enter into a partnership to promote work on groundwater protection in well vicinity protection zones. The members of the partnership will discuss the basis and objectives for their work. In 2019, the parties to the agreement will evaluate the status of municipal efforts in order to decide on any further initiatives.

The delineation of well vicinity protection zones will be stipulated in a Statutory Order following a legislative amendment. The amendment is expected to enter into force on 1 January 2018.

6. Enhanced targeted control of trade in pesticides

Control efforts against sale, storage and use of illegal pesticides will be enhanced.

An information campaign will be conducted to ensure awareness of regulations, and controls aimed at distributors of pesticides will be intensified for a two-year period. These efforts will be evaluated in 2019, and it will be decided whether the increased control burden should be maintained for the remainder of the strategy period.

The goal is to reduce the rate of non-compliance with regulations on illegal Danish pesticides by distributors of products for professional use from 30% to 5% in 2019.

The parties agree to continue the control efforts aimed at distributors and their collaboration on controls of fruit and vegetables from third countries.

This strategy will ensure continued systematic, supportive and efficient controls for distributors, and risk-based controls for users of pesticides and pesticide residues in food.

The control efforts aimed at users and distributors will continue to be based on dialogue and to focus on guidance. Consumers will still have the option to make a conscious choice of food on an informed basis.

7. Research into the effect of pesticides on human health

The Danish EPA Pesticide Research Programme has earmarked DKK 5 million annually for research in development of strategies for testing neurotoxic effects of substances on children's brains (e.g. development of autism and ADHD), and possibly for research projects on endocrine disrupting effects, which provide targeted support for the regulation of pesticides. The allocation of Pesticide Research Programme funds will be based on public announcement. If the applications received are not sufficiently relevant or not of a scientific quality that makes them eligible for funding, the funds will

be allocated to other prioritised areas within the Pesticide Research Programme.

A research project will be announced under the pesticide research programme, focussing on the impact on the environment of accumulation in the soil of potentially persistent substances.

8. Focussed IPM effort

In addition to an advisory initiative, an IPM task force will be established in 2017. Furthermore, a partnership for spraying and precision technology will be set up.

The task force will complete its work at the beginning of 2018 by informing the decision-making basis for continued work on implementing the IPM principles, so that it will be possible to make an overall political decision concerning the IPM effort when, in 2018, follow-up actions after the evaluation of the pesticide tax are to be discussed, together with a possible new goal.

The partnership will support the use of pesticide-reducing technology to underpin the potential for exports of Danish technology solutions. Furthermore, the development of resistance will be monitored, and in this connection, in 2020 a follow-up survey of developments in herbicide resistance since 2013-2015 will be launched.

9. Drift when using prosulfocarb

To address challenges associated with drift when using prosulfocarb, regulations on mandatory use of drift-reducing nozzles when using prosulfocarb will be introduced. A draft Statutory Order implementing nozzle requirements will be submitted for consultation immediately after concluding an agreement, with the aim of entry into force in the autumn of 2017. If, in spite of these requirements, residues are found that result in losses for individual growers, it will remain the responsibility of the sector to ensure compensation.

10. Ban on spraying with glyphosate before harvesting food crops

Today, farmers use glyphosate before harvesting for many crops to control difficult root weeds and to achieve uniform ripening. The use of glyphosate prior to harvesting is important to control root weeds and to comply with Danish environmental requirements for catch crops and winter green fields (i.e. requirements that fields be kept under vegetation during winter). Glyphosate is the most commonly used pesticide in Denmark, but consumption is at the same level as in other EU countries.

To address concerns from consumers, a pre-harvest spraying ban for food crops will be introduced. Spraying must precede harvesting by at least 30 days.

The ban comprises the following crops: peas for consumption, malting barley, oats and bread-making cereals (rye, wheat, barley, triticale/rye-wheat and spelt).

11. Reduction of fee for authorisation of pesticides for minor uses

The sector has argued that reducing the fee will increase the access and incentive to pursue minor uses, e.g. for special crops in small areas, and this may enhance competitiveness and promote Danish production of e.g. seeds, fruit and vegetables, which generally have lower residue content of pesticides than imported fruit and vegetables. The reduction concerns fees for authorisation of pesticides already authorised for other uses.

12. Focus on use of pesticides in horticulture - waste and waste water management

Studies have shown that waste water from nurseries and in a number of small watercourses close to nurseries contains pesticides that have not been authorised for outdoor use in Denmark.

Several projects have been launched that will serve as a basis for assessments related to authorisation of pesticides and for recommendations on how to manage discharges of waste water and waste disposal. In recent years, there has also been a focus on the use of illegal products in nurseries due to several instances of violations in this area. The horticulture industry has drawn up a voluntary action plan to promote a broad basis for follow-up on action plan initiatives. The plan includes efforts in the areas of waste and waste water as well as initiatives to significantly reduce the occurrence of illegal substances found during inspections at nurseries. The Danish EPA clarifies the regulatory basis and prepares recommendations for how to manage waste water and waste from greenhouses. Municipalities and the sector are involved in this process.

In 2019, the effect of the effort will be evaluated, including whether it has led to fewer violations identified in inspections at nurseries.

13. Subsidies for alternative plant protection products

The possibility to apply for subsidies for development and authorisation of alternative plant protection products will continue to be available to benefit organic production in Denmark.

14. Agreement on continued phasing out of the use of pesticides in public areas

The parties agree that the Minister for Environment and Food should work to draw up an addendum to the "Agreement on continued phasing out of plant protection products in public areas" ("*Aftale om fortsat afvikling af brugen af plantebeskyttelsesmidler på offentlige arealer*") from 2007 between the Minister for the Environment, Danish Regions, and Local Government Denmark to allow the use of pesticides, if necessary, to control invasive species and, to a limited extent, to allow use in paved areas, provided that the quantity of pesticides is kept at a minimum. The objective to keep pesticide consumption at a low level and to possibly reduce consumption further will be maintained. The discussions will be based on the 2017 calculation of consumption in public areas for 2016.

15. Focus on EU work on pesticides

In the EU, the focus in upcoming years will be on "substances of very high concern" (classified as carcinogenic, mutagenic, toxic for reproduction or which comply with the criteria for endocrine disruptors). The parties agree that the Danish government must give priority to this work in order to ensure that active substances of very high concern are only approved if there are no alternatives, and if they meet specific restrictive conditions ensuring their safe use. There will also be focus on low-risk substances and substances that may be harmful to bees.

Annex 5: Financing

Pesticides Strategy 2017 – 2021

Expenses	2017	2018	2019	2020	2021
Authorisation of pesticides	43.7	39.4	36.3	36.7	35.6
Targeted inspection efforts	18.0	17.4	15.8	15.0	14.8
Collection of knowledge via the Pesticide Research Programme	18.9	16.6	17.9	18.2	19.4
Information, advice and guidance	11.5	13.3	12.3	12.3	12.2
Total	92.1	86.7	82.3	82.2	82.0
Financing	2017	2018	2019	2020	2021
Section 24.51.01 Danish EPA	26.6	26.3	23.4	22.6	21.8
Section 24.51.31 Activities addressing pesticides	49.3	49.4	47.9	48.6	49.2
Section 24.54.31 Use of savings, activities addressing pesticides	5.2	0.0	0.0	0.0	0.0
Section 09.51.01 SKAT (Central Customs and Tax Administration)	1.0	1.0	1.0	1.0	1.0
Fees	10.0	10.0	10.0	10.0	10.0
Total	92.1	86.7	82.3	82.2	82.0

