National Action Plan on sustainable use of plant protection products in Germany

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Based on discussions on the further plant protection policy the “Reduction Program Chemical Plant Protection” was launched in Germany in 2004. Considering the expected European Directive 2009/128/EC, the Reduction Program was modified to “National Action Plan on Sustainable Use of Plant Protection Products” (NAP) which has been implemented in 2008 and acts as package of new and existing activities mainly aiming on further risk reduction of pesticide use beyond the legal requirements. This plan is directed at all stakeholders who are involved in plant protection. Furthermore, “Principles of Good Plant Protection Practice” were published in 1997, last revised in 2010. This document is addressed to the professional users of pesticides.

The overall aims of NAP are the further risk reduction in plant protection and stronger orientation to Integrated Pest Management (IPM). The main quantitative targets comprise reduction of (a) environmental risk by 25% and (b) exceeding of Maximum Residue Limits (MRLs) in food under 1% till 2020. Particular emphasis is placed on limiting the use of pesticides to the necessary minimum in order to avoid their unnecessary application and to increase the use of preventive and non-chemical plant protection methods. The set of measures comprises 23 single activities with focus on (a) research and promotion of innovation and (b) improved knowledge and information. Progress is determined with specific indicators, control and monitoring programs, and a network of reference farms. Requirements from environmental stakeholders for indicators like quantitative reduction in pesticide use, permanent buffer zones to water courses or increase of organic farming were not yet included.

After 3 years, the results are promising. Based on the network of reference farms, more than 85% of all pesticide treatments from 2007 to 2010 complied with the necessary minimum. The 25%-target for risk reduction in the aquatic and terrestrial environment has been achieved for herbicides and insecticides but not yet for fungicides. In 2009 and 2010, the 1%-target for MRLs could be achieved in most but still not in all domestic product groups. The revised NAP is in process and will start 2013. The new plan will consider further indicators and corresponding targets such as environmental indicators or share of organic farming or rate of farms which operate according to crop and sector specific IPM guidelines.
Cornerstones of recent plant protection policy toward National Action Plan in Germany

1st Workshop of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), 2002

"Guidelines for the prospective plant protection policy", marked the start of an extensive dialogue on plant protection policy in Germany.

Coalition Agreement of the Federal Government from 2002:

"... aims to develop a mitigation strategy for plant protection products through application, methods, technology and good professional practice."

2nd Workshop of BMELV


more in-depth discussion and identification of possibilities for mitigation of risks associated with plant protection product use

Reduction Programme
Chemical Plant Protection

Published in 2004

Aims

Reduction of risks associated with the application of plant protection products

Reduction of application intensity of plant protection products

Reduction of percentage of domestic products exceeding the maximal residue limits to less than 1 %
Reduction Programme in Denmark

- Bichel Committee, 1998-1999
- Green Growth, 2010 – 2019

- Pesticide tax
- Quantitative reduction aims (Treatment Frequency Index)

National Action Plan on Sustainable Use of Plant Protection Products

Published in 2008

Further development of Reduction Programme against the background of coming EU-directive

General aims

- Further risk reduction and
- Stronger orientation to IPM
National Action Plan on Sustainable Use of Plant Protection Products

Aims
- Reduction of exceeding of MRLs in crop products under 1% till 2020
- Limiting the use of pesticides to the necessary minimum
- Increase in use of preventive and non-chemical methods, IPM and organic farming

Measures

1. Research and Promotion of Innovation Towards IPM
- Innovation Promotion Programme (BMELV)
- Research and development to foster innovation
- Development, testing and transfer of non-chemical plant protection methods
- Advancing computer-aided forecasting methods and decision support systems
- Advancing plant protection equipment and introducing new technologies into practice
- Promoting resistance research and breeding of resistant varieties
- Demonstration of new integrated plant protection methods (e.g. demonstration farms)
- Development and use of crop and sector-specific guidelines on IPM
- Hot spot management
- Promotional programmes to foster IPM methods and organic farming
Measures

2. Improved knowledge and information

- Securing knowledge for users and the retail sector
- Development of online plant protection portals
- Improvement of plant protection advise

Numbers of advisors

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governmental advisory services</td>
<td>581</td>
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<tr>
<td>Independent advisors</td>
<td>229</td>
</tr>
<tr>
<td>Advisors of Pesticide manufacturers &amp; retailers</td>
<td>465</td>
</tr>
</tbody>
</table>

Measures


see Plant Protection Monitoring Programme

4. Consumer protection: Reducing plant protection product residues in food

see Plant Protection Monitoring Programme
Use of indicators in the National Action Plan

**German Plant Protection Index (PIX)**

- **Treatment Frequency Index**
  - Trends relating to rate of treatments complied with necessary minimum

- **Maximum Residue Limits (MRL)**
  - Trends in the number of samples exceeding MRL
  - Trends in the number of samples with residues

- **Risk Indicators**
  - Trends relating to risks

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**1st Indicator: Rate of treatments complied with the necessary minimum**

Central demand of IPM:
The use of pesticides must be kept to the necessary minimum

In the use of pesticides, the **necessary minimum** describes the amount needed to ensure crops are successful, not least as regards their economic viability.

It includes that all other practicable options to prevent and deter harmful organisms have been exhausted and that consumer, environment and user protection provisions have been adequately taken into account.

As much as necessary and as low as possible.

No unnecessary pesticide uses

The necessary minimum is flexible!
**Treatment frequency index**
Indicator for intensity of pesticide use

First established in Denmark (Kudsk, 1989)

*The treatment frequency index* lists the number of times a pesticide is used on an area, taking account of any dosage reductions and whether only partial areas are treated. Pesticides applied in mixed tanks are listed separately.

- Use of a pesticide in the maximum allowed dosage: 1.0
- Use of a pesticide in half dosage: 0.5
- Use of a pesticide on 50% of area: 0.5

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**Network of Reference Farms for Plant Protection**

Joint project of:
- Ministry for Food, Agriculture and Consumer Protection,
- State Plant Protection Services and
- Julius Kühn-Institut, Federal Research Centre for Cultivated Plants

**Aims**

1. Generation of annual data on *pesticide use intensity* (treatment frequency index) in main crops of farms

2. Expert *evaluation* of treatment intensity in terms of the *necessary minimum* of pesticide use (general principle of IPM)

Approx. 120 experts from German State Plant Protection Services are involved
Network of Reference Farms for Plant Protection

In 2010:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Number of Farms</th>
<th>Number of Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter wheat</td>
<td>86</td>
<td>246</td>
</tr>
<tr>
<td>Winter barley</td>
<td></td>
<td>198</td>
</tr>
<tr>
<td>Winter oil seed rape</td>
<td></td>
<td>168</td>
</tr>
<tr>
<td>Other arable crops</td>
<td></td>
<td>165</td>
</tr>
<tr>
<td>Cabbage</td>
<td>28</td>
<td>68</td>
</tr>
<tr>
<td>Carrots</td>
<td></td>
<td></td>
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<tr>
<td>Asparagus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apples</td>
<td>19</td>
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<td>Viticulture</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Hops</td>
<td>3</td>
<td>14</td>
</tr>
</tbody>
</table>

Distribution of Reference Farms for Arable Crops in Regions of Germany in 2010

19 arable cropping regions

Four main regions:
- North
- East
- South
- West
Network of Reference Farms for Plant Protection - Results of Evaluation of Pesticide Treatments by Experts of Plant Protection Services, Examples

Compliance with necessary minimum (% of pesticide treatments, 2007-2010)

- Winter wheat Herbicides: 94%
- Winter wheat Fungicides: 85%
- Winter wheat Insecticides: 68%
- Winter oil seed rape Insecticides: 78%
- Apples Fungicides: 93%

2nd Indicator: Rate of Samples Exceeding Maximum Residue Limits (MRL)

Annual Reports of Plant Protection and Food Monitoring Programme

Federal Office for Consumer Protection and Food Safety (2011):

2010:
- Samples: 16,373
- Samples with residues: 60.1%

Samples exceeding MRLs:
- 2.9% (products from GER and EC countries) and
- 8.6% (products from non-EC countries)
3rd Indicator: Environmental Risk Potential of Herbicides, Fungicides and Insecticides

Calculations using SYNOPS model (Strasemeyer, 2011)

Cornerstones of Plant Protection Policy in Germany

Act

Good Plant Protection Practise

NAP

EC Regulations