

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

Freier, B.; Hommel, B.

Julius Kühn-Institut (JKI), Federal Research Centre for Cultivated Plants, Institute for Strategies and Technology Assessment, 14532 Kleinmachnow, Germany
DOI 10.5073/jka.2012.439.001

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

“Guidelines for Plant Protection Policy – Reduction Programme, Communication and Transparency”, 2003

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

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

2

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 %



Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

3

Reduction Programme in Denmark



Pesticide Action Plan I, 1987 - 1996

Bichel –Committee, 1998-1999

Pesticide Action Plan II, 2000 - 2003

Pesticide Action Plan III, 2004 - 2009


Green Growth, 2010 – 2019

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

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

4

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**



Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

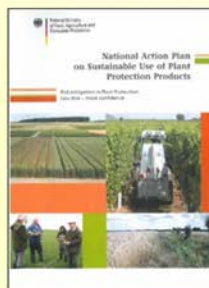
5

National Action Plan on Sustainable Use of Plant Protection Products



Aims

- Reduction of environmental risk by 25% till 2020 (base line 1996–2005)
- 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



Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

6

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

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

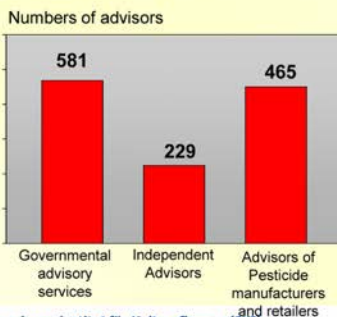
7

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



Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

8

Measures



3. Compliance with Plant Protection Provisions

see Plant Protection Monitoring Programme

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

see Plant Protection Monitoring Programme

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

9

Use of indicators in the National Action Plan

German Plant Protection Index (PIX)

Treatment Frequency Index

Maximum Residue Limits (MRL)

Risk Indicators

Trends relating to rate of treatments complied with necessary minimum

Trends in the number of samples exceeding MRL

Trends in the number of samples with residues

Trends relating to risks

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachow 10

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!

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachow 11

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**

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

12

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

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachnow

13

Network of Reference Farms for Plant Protection



In 2010:

Crop	Number of Farms	Number of Fields
Winter wheat	86	246
Winter barley		198
Winter oil seed rape		168
Other arable crops		165
Cabbage	28	68
Carrots		
Asparagus		
Onions		
Apples	19	56
Viticulture	9	24
Hops	3	14

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)

Institut für Strategien und Folgenabschätzung Kleinmachow

14

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



19 arable cropping regions

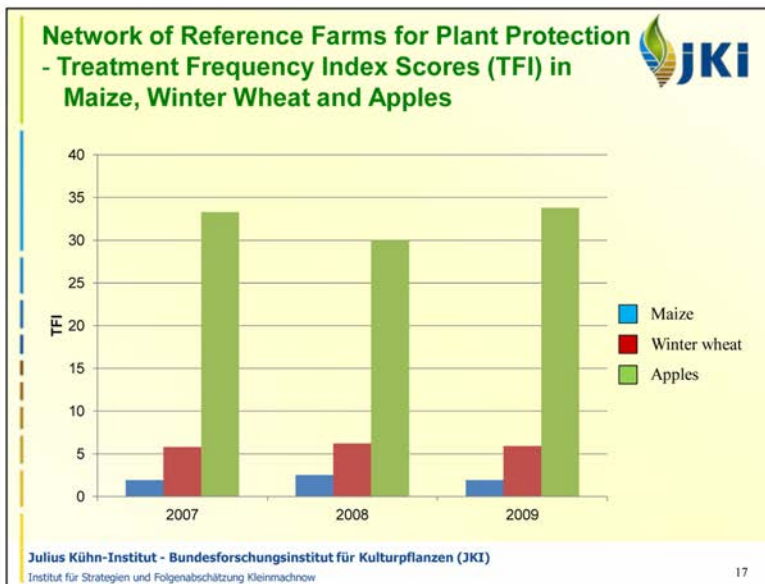
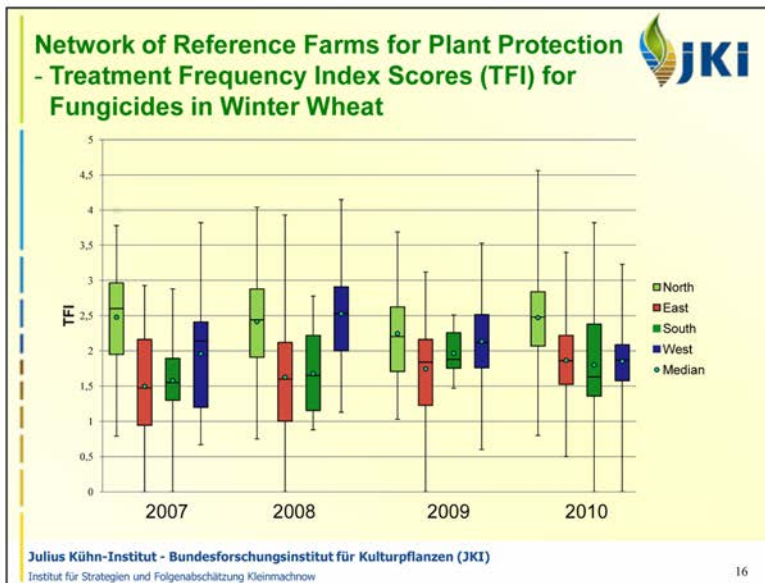
Four main regions:

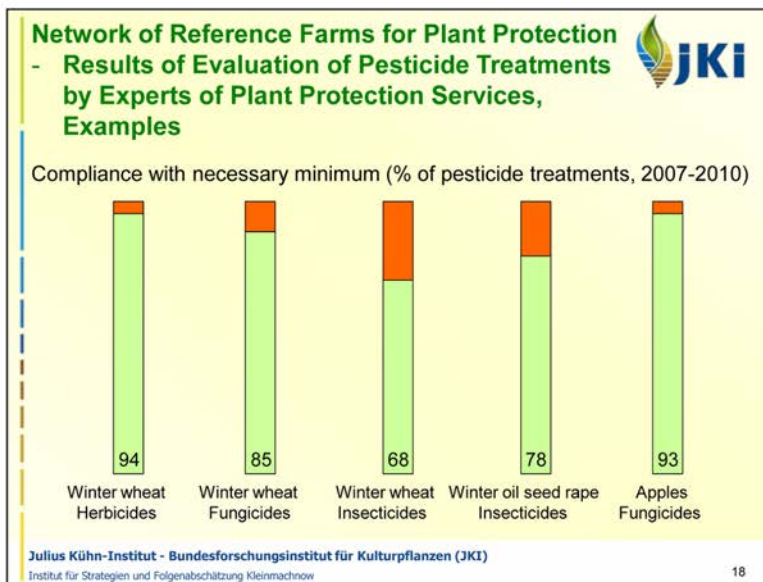
- North
- East
- South
- West

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)

Institut für Strategien und Folgenabschätzung Kleinmachow

15





18

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):

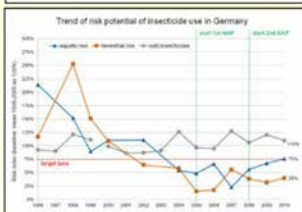
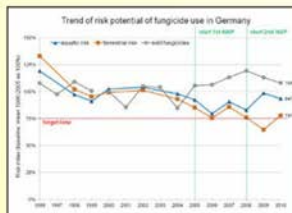
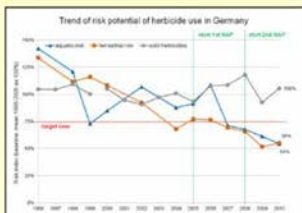
2010:
Samples: 16,373
Samples with residues: 60.1%

Samples exceeding MRLs:
2.9% (products from GER and EC countries) and
8.6% (products from non-EC countries)

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleinmachow

19

3rd Indicator: Environmental Risk Potential of Herbicides, Fungicides and Insecticides

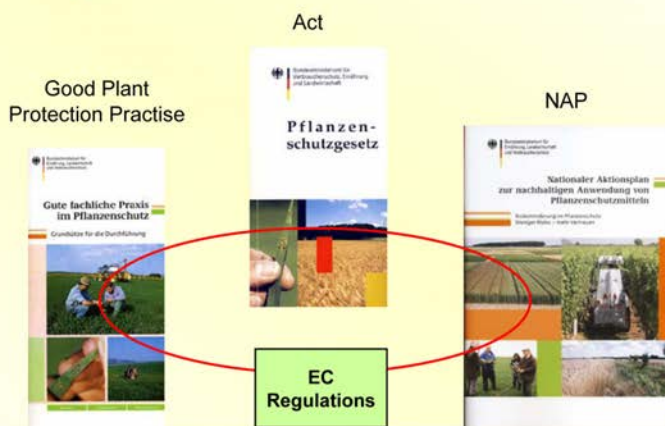


Calculations using SYNOPSIS model (Strassemeyer, 2011)

Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleintierbau

20

Cornerstones of Plant Protection Policy in Germany



Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen (JKI)
Institut für Strategien und Folgenabschätzung Kleintierbau

21