DPG Spectrum Phytomedizin

F. Feldmann (ed.)

Crop and sector-specific guidelines on integrated plant protection

Collection of presentations of the
4th International Symposium on Plant Protection and Plant Health in Europe

held at the Julius Kühn-Institut, Berlin-Dahlem, Germany, 19-21 May 2011
jointly organised by

the German Phytomedical Society (DPG) and the British Crop Production Council (BCPC)

in co-operation with the
Faculty of Agriculture and Horticulture (LGF), Humboldt University Berlin, the Julius Kühn-Institut (JKI), Berlin, and the Brandenburg State Office of Plant Protection, Cottbus, Germany

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Production: Dr. Falko Feldmann

The symposium topic

The EU and also the OECD have given a great deal of attention to the contents of national strategies to reduce the risks arising from the use of plant protection products resulting in the necessity of crop or sector-specific guidelines on integrated plant protection (CSG). The OECD Strategic Approach in Pesticide Risk Reduction follows the same lines. The Directive 2009/128/EG describes General Principles of Integrated Pest Management and asks public authorities or organisations representing particular professional users of plant protection products to develop crop or sector-specific guidelines on a voluntary basis. These guidelines are core elements of modern risk reduction strategies.

Against this background the intention of the symposium was to develop conclusions and recommendations for future discussions, in particular in the EU and OECD framework

The symposium »Plant Protection and Plant Health in Europe« is organised jointly every two years by the German Phytomedical Society (DPG, www.phytomedizin.org), the Julius Kühn-Institut (JKI, www.jki.bund.de) and the Section Phytomedicine of the Faculty of Agriculture and Horticulture of the Humboldt University Berlin (www.hu-berlin.de). In 2011 it has been supported by the Brandenburg State Office of Plant Protection, Cottbus, Germany.

Acknowledgements

We especially thank Dr. Manfred Lehmann, Brandenburg State Office of Plant Protection, Cottbus, Germany, for his hospitality and for his science based introduction to different sectors of plant protection in Brandenburg.

Presentation collection:

Chambers P (Copa-Cogeca/NFU, UK): Are crop and sector specific guidelines the best way forward for IPM?

Dachbrodt-Saaydeh S (ENDURE): Scientific support to policies – a comparison of six EU member states

Feldmann, F. (a): Crop and Sector Specific Guidelines for Integrated Plant Protection (CSG): Potential Uses and User Groups

Feldmann, F. (b): Crop and Sector Specific Guidelines for Integrated Plant Protection (CSG): Proposal for contents of CSG.

Glavendekic M (Serbia): Differentiation of plant protection measures in the sector "horticulture"

Hommel B (ENDURE): The Endure expert network

Kudsk (Danmark): IPM demonstration farms in Denmark - A "Green Growth" initiative

Kuhlmann, U & Hunt E (CABI Europe-CH): Experiences with the development of general and crop-specific IPP guidelines from CAB International's perspective

Ladewig E (IFZ, Germany): PROJECT GUIDELINES INTEGRATED PEST MANAGEMENT IN SUGAR BEET: Development of guidelines for the Integrated Pest Management in sugar beet and exemplary investigation of ecological and economical impacts of innovative use of Plant Protection Products

Lehmann M (Germany): Characterisation of the sectors "forest", "nursery" and "energy plantations" in the Cottbus area

Lentsch M (BMLFUW, A): Interrelationships between agro-environmental-programmes and crop and sector specific guidelines for integrated plant protection in Austria

Marwitz A. & E. Ladewig (a): PROJECT GUIDELINES INTEGRATED PEST MANAGEMENT IN SUGAR BEET: Environmental fate and risk assessment of herbicide strategies in sugar beet crop in Germany

Marwitz A. & E. Ladewig (b): PROJECT GUIDELINES INTEGRATED PEST MANAGEMENT IN SUGAR BEET: Response of earthworm population on herbicide application intensities within a conventional and a reduced tillage system in sugar beet crop in Germany

Matyjaszczyk E (Poland): IPP guidelines as complementary data pool for zonal plant protection product efficacy assessments?

Meier-Runge F (Syngenta Germany): Do national IPP guidelines fit into zonal registration of plant protection products?

Schepers H (Netherlands): The Endure Information Centre: sharing and disseminating IPM information across Europe

Steinmann H-H (University of Göttingen, Germany): What do we know about crop rotation in current arable farming?

Vasel E.-H & E. Ladewig: PROJECT GUIDELINES INTEGRATED PEST MANAGEMENT IN SUGAR BEET: Derivation of herbicide strategies in sugar beet

Zornbach W (BMELV, D): Integrated Pest Management as Core Element of the OECD -Strategic Approach in Pesticide Risk Reduction and of the new EU-Legislation on the Sustainable Use of Plant Protection Products

Additional abstracts of presentations

Integrated Plant Protection guidelines as a complementary data pool for zonal PPP efficacy assessments.

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Integrated Plant Protection (Integrated Pest Management) will be obligatory in all European Union Member States after the 1st of January 2014. The main EU legal act setting principles for implementation of obligatory Integrated Plant Protection is the Directive 2009/128/EC of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides.
The rules of plant protection products (ppp) registration are also changing. From the 14th of June 2011 new ppp undergo zonal assessment before their registration in Member States on the basis of Regulation 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. Since Integrated Plant Protection will be obligatory and since the Regulation 1107/2009 states that "The authorisation shall set out the requirements relating to the placing on the market and use of the plant protection product. (…) The requirements may include (…) indications for proper use according to the principles of integrated pest management" its principles will be very likely considered in the registration process.
That raises a question which guidelines of Integrated Plant Protection could be considered the complementary data pool for zonal efficacy assessment of ppp. After analysis, several requirements of Integrated Plant Protection were found to be relevant. It means they can be considered in the registration process and influence the registration decision or that the result of the assessment can be reflected on the label of plant protection product in the form of recommendations. These are the following:

- application of ppp on the basis of monitoring results and threshold levels
- specificity of ppp and lack of the side effects
- priority for biological plant protection products
- possibility of doses reduction
- resistance prevention strategy

It is however worth stressing that zonal efficacy assessment of ppp is a complex subject. Inclusion of Integrated Plant Protection principles into it will make it even more complex. Relevant guidelines would be therefore very helpful.

What do we know about crop rotations in current arable farming?

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Crop rotations offer chances to farmers and the public. For farmers, these are inclusion of breaking phases to decrease population dynamics of pests and weeds, providing better nutritional conditions for crop growth due to a suitable pre-crop and optimizing farm income as well as labor allocation. However, statistical data shows an overall trend to simplify rotations over time, since many minor crops are decreasing in abundance whereas some major crops are increasing in their area. In Germany, during the last ten years maize, winter-wheat, and oilseed rape had a strong increase in their land share. Especially maize as a crop for fermentation use became attractive to farmers since national support of bioenergy was established in 2000. In recent German arable farming (2010), the three crops wheat, maize and oilseed rape cover 58 % of arable land. This over-reliance on a few crops might be a reason for short rotations and lack of break phases between cropping the same crop on the same field.
The EU directive 2009/128/EG was launched to establish a “Framework for Community Action to achieve the Sustainable Use of Pesticides”. According to this directive crop rotation is a crucial issue in achieving aims of integrated plant protection in arable farming. In annex III, crop rotations are mentioned on a first place, underlining its fundamental importance for crop protection. Guidelines for integrated plant protection in arable farming therefore have to put special emphasis to implement issues of crop rotation.
Knowledge on current status of real crop rotations is limited due to lack of systematic studies. Also rapid recent land use changes due to market prices and policy incentives hamper analyses, since statistical data is often outdated. Therefore, in a recent study an attempt was undertaken, to visualise crop rotation patterns in Northern Germany on the basis of the official data source, which was generated with the administration of European direct payments for agriculture. Data for the years 2005 – 2008 were available from the federal state Niedersachsen (Lower Saxony). From this database real crop rotations and their share of arable area could be identified. Also combinations of major utilised crops and their individual pre-crops were investigated.
As a result it could be demonstrated that the number of actual rotation patterns is quite high, whereas only a small number of rotations already cover large proportions of arable land. Five out of the 12 most dominant rotations are influenced by maize. About 10 % of arable area is devoted to mono-cropping of maize and wheat. Furthermore a spatial disaggregation of spring and winter sown crops could be identified in the region. According to current crops and their cultivated pre-crops, 27 % of arable area is cropped under unfavourable conditions in terms of plant health. So, the situation of current crop rotations is quite heterogeneous. Diverse and uniform cropping patterns do exist next to each other in a single federal state. For the set-up of guidelines this has to be considered. Recommending specific break phases between repeated growing of the same crop on a single field seem to be more favourable rather than prescribing specific rotation patterns.

Practicing Plant Pathology: Rationale and Ethics

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Widespread occurrence of plant diseases worldwide and the magnitude of losses caused by them have necessitated the need of plant pathology practitioners to assist the growers in mitigating unprecedented losses in crop productivity. Though diagnostic and advisory services are available in several countries yet many growers prefer to avail such services if plant pathology practitioners are in their vicinity and would not mind paying the consultation fee if their problem is promptly attended. The experience of growers has not been very encouraging in getting timely diagnosis and advisory support from government owned plant clinics.

While practicing plant pathology offers self employment to the professionals, their existence may be at stake if they fail to offer desired services to growers and may often may be in trouble due to wrong diagnosis and advisory. The professionals need to be conversant with symptomatology of various ailments and possess competence to suggest suitable prescription not laying sole reliance on pesticides but biological and other means too. They are also required to possess sound knowledge of fungicides, their availability in the region, doses, guidelines for preventing resistance development and compatibility with other pesticides. Even they have to be conversant with insect problem, chemical and environmental injury as sometimes plant diseases may get associated with such problems.

The universities may consider devising specialized programs as is being followed in some US universities, or alternatively a sort term program on diagnostics and advisory. Professional societies of the concerned countries may register themselves as plant Pathology practitioners and their registration may be extended after expiry of the term through testing their knowledge

Contributions of ENDURE European Research Group to support National Action Plans for sustainable use of pesticides in Europe

Antoine Messean, Bernd Hommel, Marco Barzman
JKI, Institute for Strategies and technology Assessment in Plant Protection, Kleinmachnow

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Building on the success of ENDURE from 2007 to 2010 supported by EC funding, fourteen partners from 10 European countries are pooling their resources to create a permanent European Research Group (ERG). In the forthcoming years, ERG's ambition is to become a major resource for three target audiences – advisors, policy makers and researchers – mobilised throughout the 27 member states by the new legislative context. The ERG hopes to become a central point of scientific and technical reference for advisors and a recognised source of scientific advice to inform policies relevant to IPM. For the research community, beyond the research tools that the ERG is making available, it wants to play a leading role in building momentum on IPM-dedicated research at the EU level and create synergies from national efforts. Four types of objectives are therefore pursued: (1) Strategy to help coordinate research applied to crop protection within Europe, (2) Research to develop and connect ENDURE research resources and make them accessible to international research community, (3) Policy to support the development and implementation of policies of relevance to crop protection, and (4) Extension to support extension services on IPM.

Concept of an on-farm assessment of measures to fulfil requirements of crop or sector-specific guidelines for integrated pest management in Germany

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Based on the eight general principles of integrated pest management as stated in Annex III of the directive 2009/128/EC for sustainable use of pesticides, member states shall “encourage professional users to implement crop or sector-specific guidelines for integrated pest management on a voluntary basis” (Article 14). In Germany, such guidelines will be mainly drawn up and promoted by farmers’ organisations supported by federal and Länder authorities. Such a guideline will contain more measures than needed to be applied by the farmer. After a farmer has agreed to use the relevant IPM guideline there is a need to assess all IPM measures implemented in order to put (or delete) the farm in the list: “Farms in Germany implementing crop or sector-specific guidelines for integrated pest management on a voluntary basis”. The list will be part of the National Action Plan and published online. JKI has developed a concept that uses a points-based system to qualify farms as IPM conform or not.

The ENDURE Information Centre: sharing and disseminating IPM information across Europe

Schepers, Huub, Schoorlemmer, Herman
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The ENDURE Information Centre: sharing and disseminating IPM information across Europe
The ENDURE Information Centre (EIC) is an interactive website which disseminates information on crop protection with an emphasis on IPM. It creates an overview of the ways sustainable crop protection can be implemented in European agriculture. The EIC is a central point of reference for extending expert knowledge and gives recommendations concerning all aspects of crop protection. The EIC supports the reduced reliance on pesticides demanded by the new European legislation by offering ready to use IPM measures. The results provided are ready to use, this means scientifically sound, tested in the field, practical to adopt and cost-effective. Furthermore, experimental results, which have the potential to provide a solution for a given problem but cannot yet be recommended as best practice, are also provided. To access the ENDURE Information Centre go to the website: http:// www.endureinformationcentre.eu

Effect of Jasmonic Acid Application on Economically Insect Pests and Yield in Spring Wheat

El-Wakeil, Nabil, Volkmar, Christa
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Field trials were conducted in spring wheat to observe effects of jasmonic acid (JA) on aphids, thrips and wheat blossom midge (WBM)). Two spring wheat varieties (Triso and Kadrilj) were sprayed twice at growth stages (GS) 49 and 61 with two concentrations of JA plus control. Wheat insects and associated natural enemies were surveyed by sweep net before and after JA treatments. Thrips & WBM were estimated by dissecting wheat ears in GS 65&73. Wheat midge larvae were monitored using white traps in treated and untreated plots. Wheat yield was also assessed in treated and control plots.

There was a significant difference in the number of aphids and midges among treatments in both varieties. Plants in control plots had higher numbers of aphids, thrips and midges than in treated plots. There were more numerous of aphids, thrips and midges in the Triso than the Kadrilj variety. This study indicated that JA application enhances the wheat yield in treated plots compared to control plots. The results indicate that JA induced wheat plants and could act as resistance mechanisms of spring wheat against insect herbivores and would help to develop environmentally sound crop management with reduced insecticide applications.

Phytosanitary state of winter wheat and oil-seed rape in Poland in 2010 and prognosis for 2011

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In Poland the harmfulness and occurrence of the agrophages has been monitored from 1950. Such information are the base of the evaluation the tendency of pests and diseases spread as well as their economic value. Pest/diseases monitoring is provided by Plant Protection and Seed Health Inspection Service in collaboration with the Department of Forecasting and Registration Pest and Diseases at the Plant Protection Institute – National Research Institute (PPI-NRI), Poznań, Poland.
Information concerned on the agrophages (pest/diseases) occurrence and harmfulness are collected according to the methods. Methods were published by the Department of Forecasting and Registration Pest and Diseases, PPI-NRI.
Every year at the end of the year, information about pests/diseases occurrence and harmfulness are send to PPI-NRI (to The Department of Forecasting and Registration Pest and Diseases). Then all data are transformed and showed as a maps and graphs. On the maps for the branches within the voivodeships the average percentage of agrophage harmfulness is shown – in the circle the average for voivodeship is presented. On the graphs average percentage pest/disease harmfulness for years is shown.

Effect of Garlic Juice on Seed-borne Fungi of Wheat: Seed Germination, Seedling Health and Vigour Index

Perelló, Analía, Gruhlke, Martín C.H, Noll, Ulrike, Slusarenko, Aklan J.
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Bipolaris sorokiniana and *Drechslera tritici-repentis* are the most frequently occurring wheat pathogens of the *Helminthosporium* genus (*sensu lato*) in Argentina, infecting all parts of the plant, causing spot blotch and tan spot, respectively. These pathogens are carried on or within grain and can reduce germination or seedling emergence. Sowing quality can be improved by treatment of grain with Natural Products that reduce inoculum potential and increase vigour, e.g garlic juice (GJ). Garlic bulb extract inhibits the spore germination and mycelial growth of important seed-borne fungal pathogens and acts as a plant growth regulator with a significant stimulating effect on monocots as well on dicots. The aim of the present work was to assess the effect of seed applications of GJ against the native seed-borne mycoflora of wheat caryopses from three Argentinian cultivars, two target pathogens, *B. sorokiniana* and *D. tritici-repentis* in test inoculations, and to evaluate the range of growth-promoting activities of GJ on seedling emergence and vigour. The GJ applications were standardized to the amount of allicin they contained by HPLC. Wheat caryopses were germinated in moist absorbent paper in the presence or absence of GJ. GJ reduced endogenous fungal contamination of the wheat caryopses and also the degree of disease in *B. sorokiniana* and *D. tritici-repentis* inoculated treatments. Depending on GJ concentration and wheat cultivar, growth-stimulating or growth-inhibiting effects were observed on seedling vigour. On the basis of these results a scale-up to field trials seems justified.

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Race structure of Pyrenophora tritici-repentis prevalent on wheat in Argentina

M. V. Moreno1, 2*, S. A. Stenglein1, 2, & A. E. Perelló1, 3

[1,3]*CONICET.* [2]*BIOLAB-CEBB, Microbiología, Facultad de Agronomía de Azul, Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina.*
[3] *Cátedra de Fitopatología, Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, Argentina.*
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Tan spot caused by Pyrenophora tritici-repentis (Ptr) is a common disease of wheat worldwide that increased in the South Cone region in the last few years. The race structure and Tox genes of 65 monosporic isolates of Ptr collected at different regions of Argentina were analyzed. Virulence tests were conducted on the set of cultivars and lines Glenlea, Salomouni, Katepwa, M-3, 6B365 and 6B662. Based on the reaction types, 33 Ptr isolates were grouped into seven races, The rest of the isolates could not be classified into races. The two most common races were 4 (11 isolates, 16,9%) and 8 (13 isolates, 20%). The presence/absence of the Tox A, Tox B and tox b genes using PCR specific-primers revealed that 57 isolates amplified the fragment that correspond to the Tox A gene, one isolate to the Tox A and Tox B, and the remaining seven isolates lacked these genes. Low association was found between phenotypic races and toxin production genes. Although some isolates amplified for the Tox A gene, they did not express it through the production of necrosis. Most of the isolates produced chlorosis on different cultivars but only one of them amplified for the Tox B gene. These results indicates a diverse races population of Ptr on wheat in Argentina, and suggest novel toxin(s) involved from isolates inducing necrotic-chlorotic tan spot symptoms.

Regional signalization and warning system for pests and diseases in agricultural plants

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One of the most crucial element of plant protection is efficient monitoring of pests and diseases occurred on the agricultural plants. Providing correct signalization and advisory service, one has to remember that in terms of first appearance or in developmental stages of pests/diseases significant differences, sometimes 3 weeks, are observed between different regions of the country. Within voivodeship regions these differences reach 2 weeks, and about 1 week within the county. Moreover, at the same place (one village – different plantations) a few days differences of pests or diseases appearance can be observed. The main purpose of regional signalization is determining the optimal time of chemical control on the specific plantation which gives opportunity to reduce the costs, number of chemical treatments and subsequently risk of environmental pollution.

Taking into consideration the demand of producers for accurate information regarding optimal chemical treatments terms and determining the necessity of their performance at the Plant Protection Institute has been providing the pest and diseases regional monitoring since 2005. The results are published on the Institutes' website (www.ior.poznan.pl) under "Sygnalizacja Agrofagów" (Pests/diseases signalization). Except information about first appearance and next developmental stages the above website provides information regarding pests and diseases biology too. Such information helps the producers estimate their individual situations on the field.

Crop and sector specific guidelines for integrated plant protection

Berlin, 19.-21. May 2011

Deutsche Phytomedizinische Gesellschaft e.V.

Julius Kühn-Institut

Supported by

Words of Welcome

Dr. F Riepert
Julius Kühn-Institut

Dr. B Holtschulte
German Phytomedical Society

Prof. Dr. C Ulrichs,
Humboldt-University Berlin

Dr. W Zornbach
Federal Ministry of Food, Agriculture and Consumer Protection

Session 1 (Chair: Holtschulte B, KWS, GER)

13:30-14:15 Zornbach W (BMELV, GER):

Integrated Pest Management as Core Element of the OECD Strategic Approach in Pesticide Risk Reduction and of the new EU-Legislation on the Sustainable Use of Plant Protection Products

14:15-15:00 Lentsch M (BMLFUW, A):

Interrelationships between agro-environmental programmes and crop and sector specific guidelines for integrated plant protection in Austria

15:00-15:30 Kuhlmann, U & Jenner E (CABI, EU):

Experiences with the development of general and crop specific IPP guidelines from CAB International's perspective

15:30-16:00 Break

Workshop 1 (Chairs: Kuhlmann, U & Jenner, E, CABI, CH)

***16:00-17:00 Which components are discriminating between plant protection* strategies and help to design specific guidelines?**

Glavendekic M (University of Belgrad, SRB):

Differentiation of plant protection measures in the sector »horticulture«

17:00-18.00 Poster Session

18:00- 20:30 Reception

Session 2 and 3 (Chair: Feldmann F, JKI, GER)

08:30-09:00 Matyjaszczyk E (IOR, PL):

IPP guidelines as complementary data pool for zonal plant protection product efficacy assessments?

09:00-09:30 Meier-Runge F (Syngenta, GER):

Do national IPP guidelines fit into zonal registration of plant protection products?

09:30-10:00 Chambers P (Copa-Cogeca/NFU, UK):

Are crop and sector specific guidelines the best way forward for IPM?

10:00-10:30 Break

Session 3 (Chair: Feldmann F, JKI, GER)

10:30-11:00 Steinmann H-H (University of Göttingen,

GER): What do we know about crop rotation in current arable farming?

11:00-11:30 Ladewig E (IFZ, GER):

A crop specific guideline for plant protection of sugar beet

11:30-13:30 Break

13:30-14:00 Dachbrodt-Saaydeh S (ENDURE, EU):

Scientific support to policies – a comparison of six EU member states

14:00-14:30 Hommel B (ENDURE, EU):

The Endure expert network

Workshop 2 (Chair: Schepers H, ENDURE, EU)
14:30-15:30 Data management for crop and sector specific guidelines
Schepers H (ENDURE, EU): The Endure Information Centre: sharing and disseminating IPM information across Europe

Workshop 3 (Chair: Lentsch M, BMLFUW, A)
16:00-17:00 Implementation of crop and sector specific guidelines
Freier B & Beer H (GER): Demonstration farms – highend implementation of IPM guidelines

Session 4 (Chair: Zornbach W (BMELV, GER):
16:30-17:30 Symposium Resume

19:00- ... Get together (costs not included in the registration fee)

08:00-18:00 Excursion (Chair: Lehmann M, Brandenburg State Plant Protection Office, GER)

10:00 - Meeting in the south of city of Cottbus 2 km to city of Spremberg trunk road B 97 crossing the road to Bühlow and Drebkau

10:00 – 12:00 – Recultivated tipper of a former brown coal open-cast mine of Welzow – energycrops with locust-tree – general problems of energy plantations in Brandenburg and region Lausitz (Prof Freese, Brandenburg University of Technology), plant health and pesticide application problems in energy-forest plantations

12:30 – 13:30 – Lunch in a Greek Restaurant "Rhodos" in Gallinchen -

14:00 – 15:00 – Dubrau Tree Nursery Radatz – plant protection and pests in a smaller container nursery with solitary trees, hedge plants, special-form and fruit-trees in open air and glasshouse-cultivation

15:30 – 16:00 (by choice and if there is time) – Cottbus Leichhardt avenue – tests on control of horse-chestnut moth with infusions and injections of insecticides – experiences of an official test of the year 2004.

18:00 Return to Berlin

WELCOME

to the Julius Kühn-Institute
Federal Research Institute for Cultivated Plants

Dr. Frank Riepert

Institute for Pesticide Research in Berlin-Dahlem (1905)

Julius Kühn-Institute

- The Federal Research Centre for Cultivated Plants (JKI), was newly constituted on January 1st, 2008

- The research branch of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) has been reorganized and further concentrated from previously 7 to 4 research centres.

- The JKI is both an independent higher federal authority and a research institution.

  Its tasks are laid down in legal acts such as the
  Plant Protection Act,
  Genetic Engineering Act,
  Chemicals Act
  and in corresponding legal regulations.

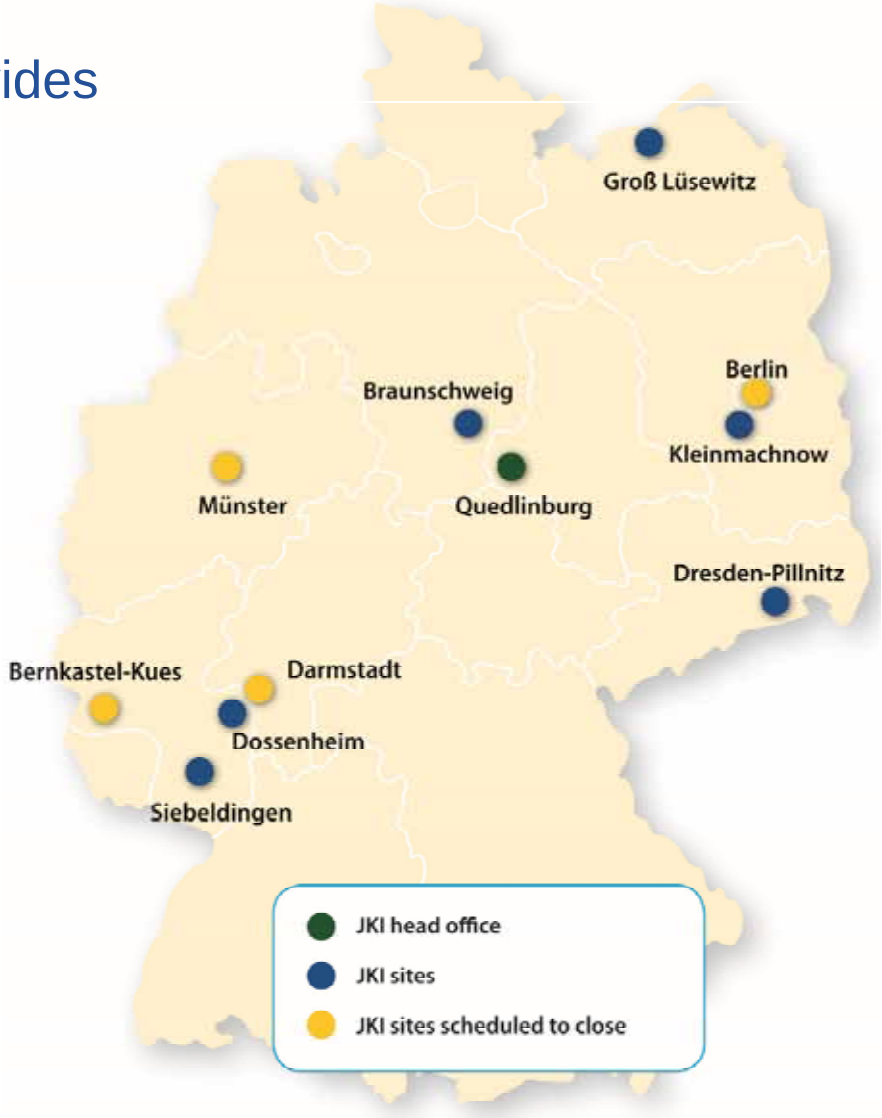
Who was Julius Kühn?

- Julius Kühn lived from 1825 till 1910.
- He established and developed the agrarian sciences as part of university education in Germany in the 19th century.
- He is one of the most prominent founders of modern phytomedicine.
- In 1863 he was given the permission to establish the first independent research institute in agricultural sciences in Germany at the University of Halle.
- Under his leadership during the next 40 years, this institution evolved into the most eminent educational and research institution of agrarian sciences in Germany at that time.
- He published about 300 articles mainly about plant protection.

Organization

The new organizational structure provides research facilities in

- Quedlinburg
- Braunschweig
- Kleinmachnow
- Siebeldingen
- Dossenheim
- Dresden
- Groß Lüsewitz (experimental station)
- as well as facilities in Berlin, Darmstadt, Bernkastel-Kues and Münster, that are scheduled for closure during the next 10 years



Organization

- **Head office**: Quedlinburg (near the Harz mountains)
- 15 specialized institutes + several service units
- **Budget** (1st January 2009)**:**

Federal budget:	70,5 Mio €
Third-party funds:	5,0 Mio €
Total:	**75,5 Mio €**

- **Staff** (1st January 2009)**:**

Permanent posts:	814
Total staff (including third-party funds):	1.186
Scientists	about 250

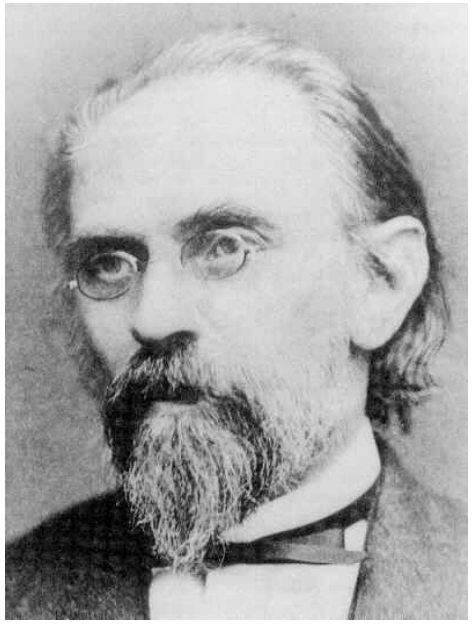
Julius Kühn-Institute
Federal Research Centre for Cultivated Plants

The new name describes the new programme.

Major fields of research are:

- plant genetics, breeding research
- plant nutrition, agronomy and soil science
- plant protection and plant health

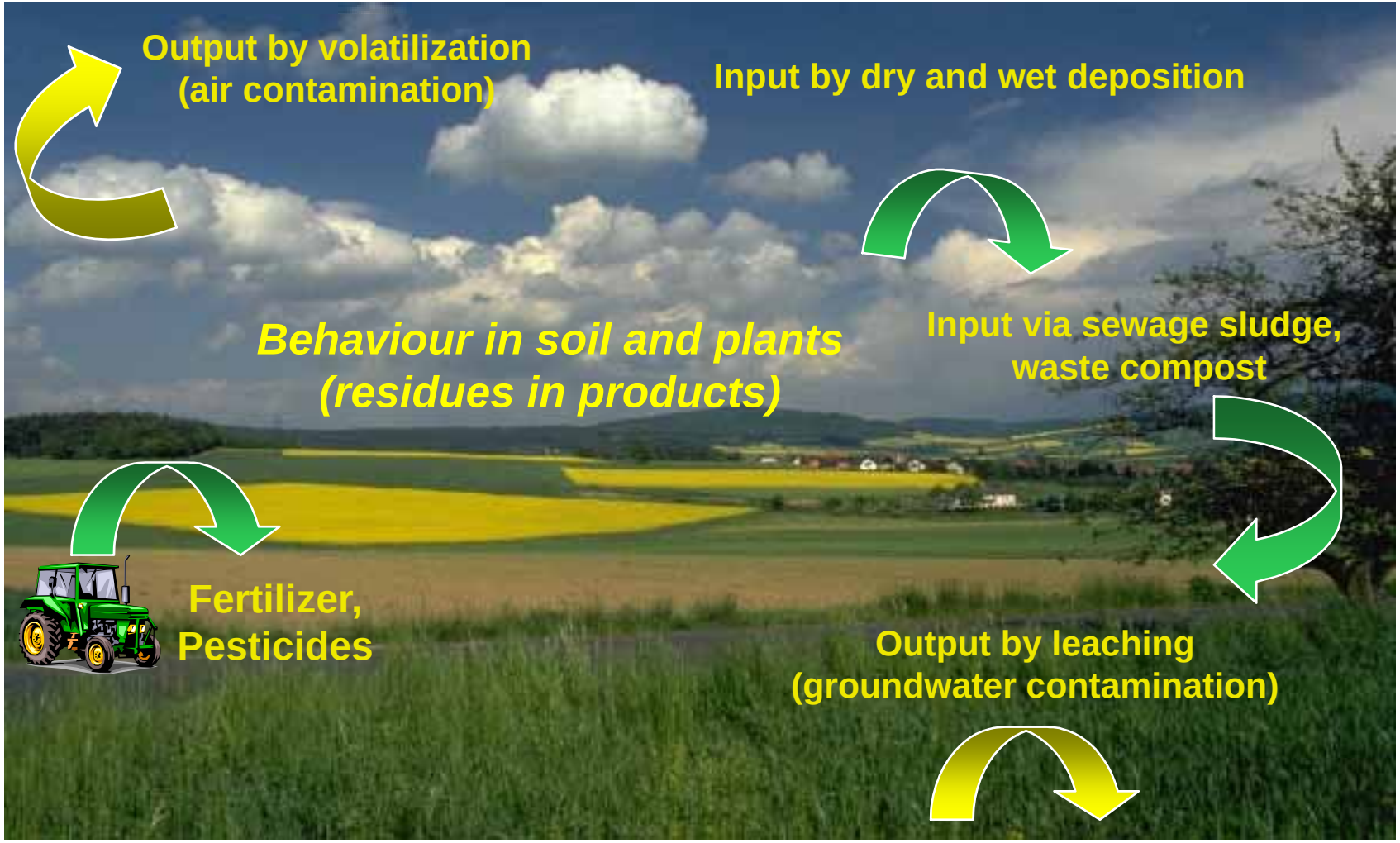
Institute for Pesticide Research in Berlin-Dahlem



Emil Erlenmeyer (1825-1909)

Josef Houben (1875-1940)

Flow Chart for the Flux and Fate of Chemicals in Agriculture

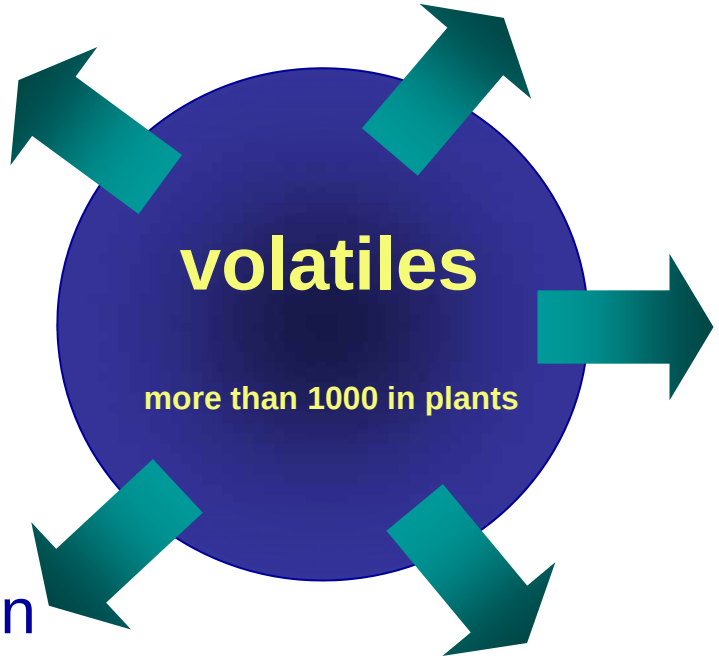


Identification of Damages on Bees…

…caused by registered plant protection products (chemical analysis of numerous samples sent by beemasters)

Research in the area of „bee Toxication“ (e.g. transmission pathways, evaluation of toxicity…)

Tasks of Volatile Plant Substances



defense & competition

herbivores (arthropodes, vertebrates, invertebrates)
pathogenes (viruses, bacteria, fungi)
plants (allelopathy)

abiotic stress

alcohol acyltransferases (AAT's = esters)

aroma

character impact compounds
off-flavour

attraction & stimulation

pollination
seed dispersal
food-plant recognition
oviposition
sequestration
symbiotics (bacteria, fungi)

cues for health & nutrition

antioxydative
antimutagenic
enjoyment value
essential human nutrients

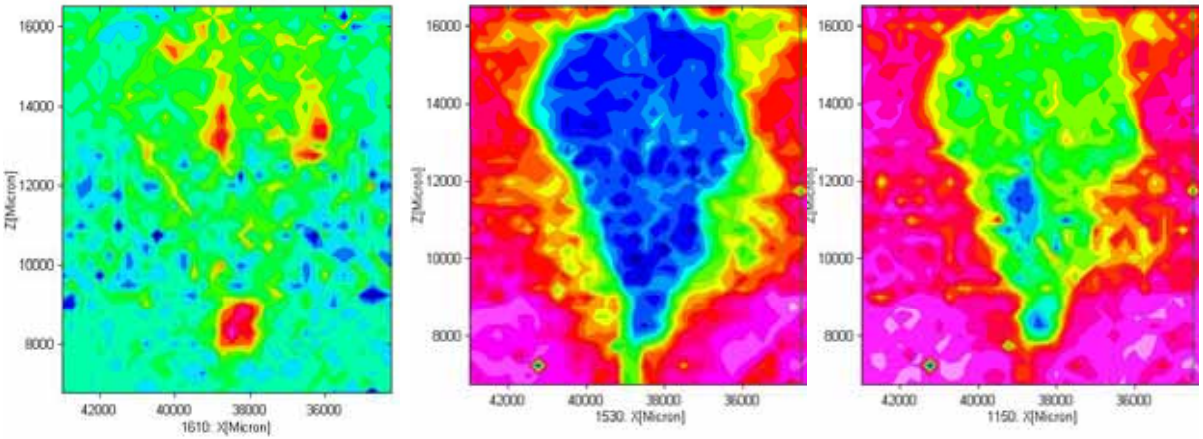
Analysis of Secondary Plant Substances

Development of new efficient methods for selection of improved genotypes (single plants) in breeding processes (health and aroma quality)

Characterization of substance-related biodiversity of wild and cultured species as well as land races

Evaluation of molecular data to get a deeper knowledge with regard to the biosynthesis of secondary plant substances

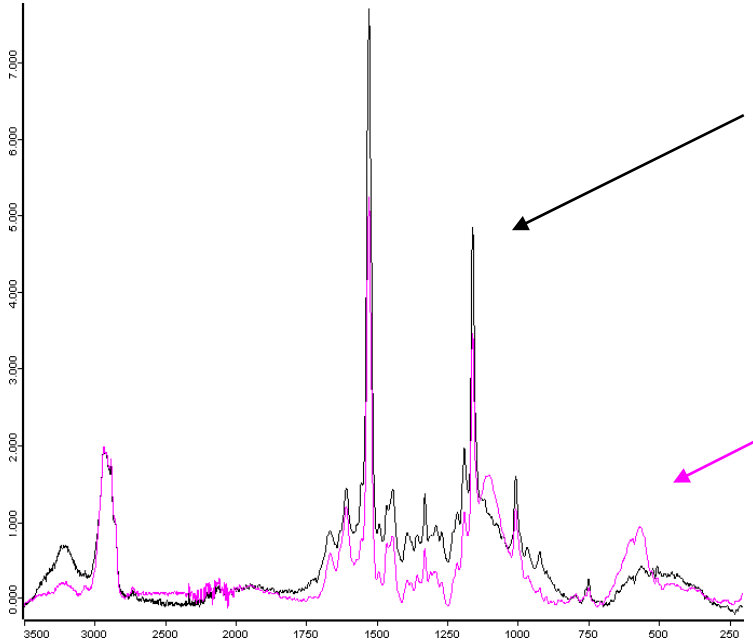
Analysis of Secondary Plant Substances



Range: 1610 cm-1 Range: 1530 cm-1 Range: 1150 cm-1

Application of Micro-spectroscopic Imaging techniques (Mid-Infrared, Raman)

Distribution of phytoalexins and valuable substances

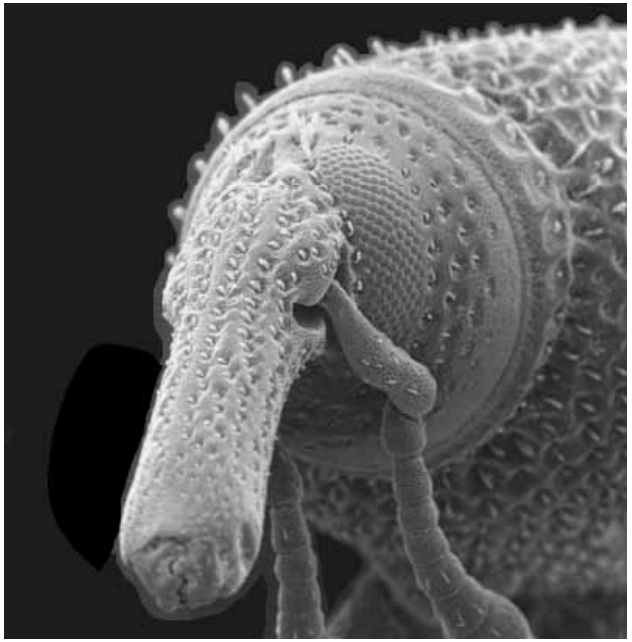


healthy leaf

affected leaf (fungus, bacteria, virus)

Tasks of the Julius Kühn-Institute

Protection of stored products: methods to detect, avoid and control insects and mites preferably by use of methods without adverse effects towards consumers or the environment (application of biological and physical methods)



Granary weevil (*Sitophilus granarius*)

Research facilities at Quedlinburg

- **Institute for Breeding Research on Agricultural Crops** with experimental station at Groß Lüsewitz
- **Institute for Breeding Research on Horticultural and Fruit Crops** (Branch Fruit Crops at Dresden-Pillnitz)
- **Institute for Resistance Research and Stress Tolerance** with experimental station at Groß Lüsewitz
- **Institute for Biosafety of Genetically Modified Plants**

Research facilities at Braunschweig

- **Institute for Crop and Soil Science**
- **Institute for Plant Protection in Field Crops and Grassland**
- **Institute for Plant Protection in Horticulture and Forests**
  (Branch Vertebrate Research at Münster)
- **Institute for Application Techniques in Plant Protection**
- **Institute for National and International Plant Health**
- **Institute for Epidemiology and Pathogen Diagnostics**
  (Branch Plant Nematoloy currently at Münster)
  (at present also at Quedlinburg)

Research facilities at Dossenheim and Siebeldingen

Dossenheim:

- **Institute for Plant Protection in Fruit Crops and Viticulture**
  - Branch Fruit Crops
- **Institute for Biological Control**
  (currently located at Darmstadt)

Siebeldingen :

- **Institute for Grapevine Breeding**
- **Institute for Plant Protection in Fruit Crops and Viticulture**
  - Branch Viticulture (currently located at Bernkastel-Kues)

Thank you
for your attention!




Federal Ministry
of Food, Agriculture and
Consumer Protection

Integrated Pest Management as Core Element of the OECD Strategic Approach in Pesticide Risk Reduction and of the new EU-Legislation on the Sustainable Use of Plant Protection Products

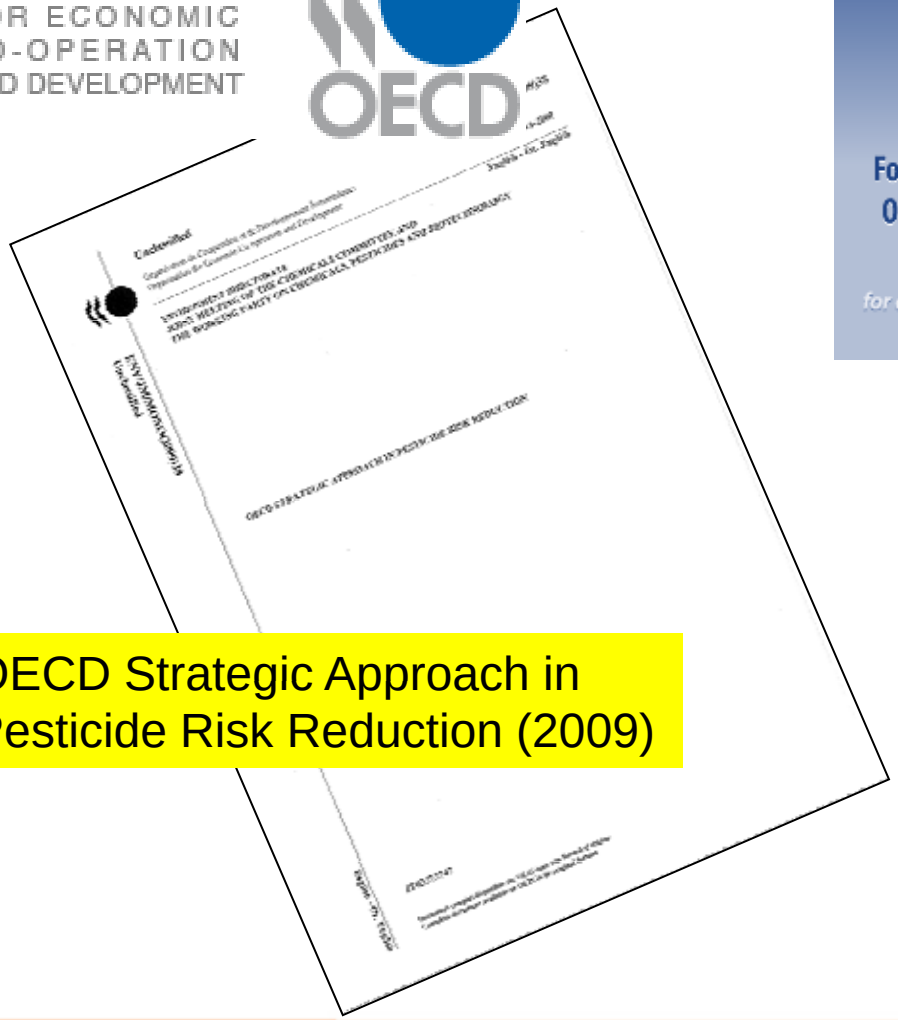
Dr. Wolfgang Zornbach

Federal Ministry of Food, Agriculture and Consumer Protection

4th international Symposium „Plant Protection and Plant Health“
Crop and Sector Specific Guidelines of Integrated Plant Protection

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

OECD



OECD Strategic Approach in Pesticide Risk Reduction (2009)

Food and Agriculture Organization of the United Nations

for a world without hunger

FAO Guidance on Pest and Pesticide Management (2010)

24.11.2009 EN Official Journal of the European Union L 309/71

DIRECTIVES

DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 21 October 2009

establishing a framework for Community action to achieve the sustainable use of pesticides

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee (1),

Having regard to the opinion of the Committee of the Regions (2),

Acting in accordance with the procedure laid down in Article 251 of the Treaty (3),

Whereas:

(1) In line with Articles 2 and 7 of Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme (4), a common legal framework for achieving a sustainable use of pesticides should be established, taking account of precautionary and preventive approaches.

(2) At present, this Directive should apply to pesticides which are plant protection products. However, it is anticipated that the scope of this Directive will be extended to cover biocidal products.

(3) The measures provided for in this Directive should be complementary to, and not affect, measures laid down in other related Community legislation, in particular Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (5), Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (6), Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (7), Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin (8) and Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 on the placing of plant protection products on the market (9). These measures should also not prejudice voluntary measures in the context of Regulations for Structural Funds or of Council Regulation (EC) No 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) (10).

(4) Economic instruments can play a crucial role in the achievement of objectives relating to the sustainable use of pesticides. The use of such instruments at the appropriate level should therefore be encouraged while stressing that individual Member States can decide on their use without prejudice to the applicability of the State aid rules.

(5) National Action Plans aimed at setting quantitative objectives, targets, measures, timetables and indicators to reduce risks and impacts of pesticide use on human health and the environment and at encouraging the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of pesticides should be used by Member States in order to facilitate the implementation of this Directive. Member States should monitor the use of plant protection products containing active substances of particular concern and

(1) OJ C 161, 13.7.2007, p. 48.
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(6) OJ L 206, 22.7.1992, p. 7.
(7) OJ L 327, 22.12.2000, p. 1.
(8) OJ L 70, 16.3.2005, p. 1.
(9) See page 1 of this Official Journal.
(10) OJ L 277, 21.10.2005, p. 1.

DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009

establishing a framework for Community action to achieve the sustainable use of pesticides

Strategic Approach in Pesticide Risk Reduction (2009)

The Organisation for Economic Co-operation and Development

OECD

What is the OECD?

- An intergovernmental organization (Paris-based)
- Born after World War II to coordinate the Marshall Plan
- Today the OECD has **34 member countries** (all committed to democratic government and the market economy)

Strategic Approach in Pesticide Risk Reduction (2009)

Integrated Pest Management (IPM)

Supervised by

OECD
Working Group on Pesticides
Risk Reduction Steering Group

Strategic Approach in Pesticide Risk Reduction (2009)

Instruments for Risk Reduction, e.g.

- Registration / Authorisation
- Compliance
- Training and Certification
- Application technology
- Extension Services
- Integrated Pest Management

Strategic Approach in Pesticide Risk Reduction (2009)

Integrated Pest Management (IPM)

1. Workshop
1998 Neuchatel (Switzerland)

2. Workshop
2011 Berlin (Germany)

Strategic Approach in Pesticide Risk Reduction (2009)

Integrated Pest Management (IPM)

The key strategy for a sustainable use of pesticides worldwide!

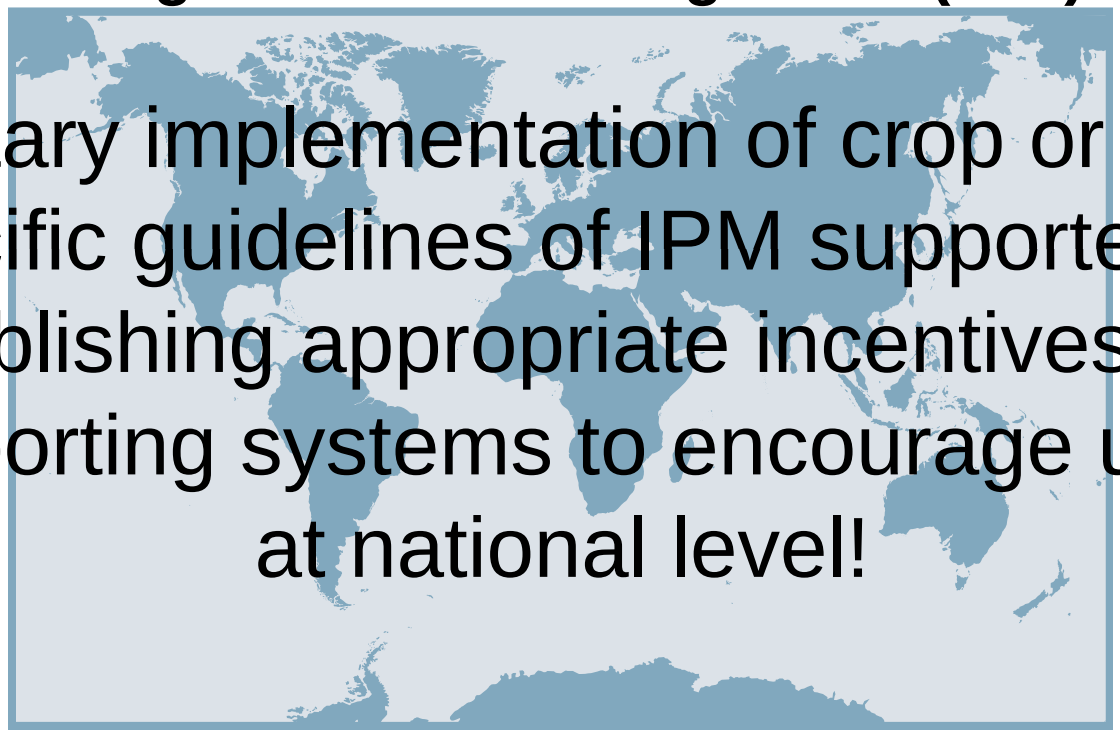
Strategic Approach in Pesticide Risk Reduction (2009)

Integrated Pest Management (IPM)

Implementation of general principles of IPM as minimum requirement!

Strategic Approach in Pesticide Risk Reduction (2009)

Integrated Pest Management (IPM)



Voluntary implementation of crop or sector specific guidelines of IPM supported by establishing appropriate incentives and supporting systems to encourage users at national level!

Strategic Approach in Pesticide Risk Reduction (2009)

Integrated Pest Management (IPM)

Anti-resistance strategies for pesticides are very important part of IPM strategies!

What is Integrated Pest Management?
What is Integrated Plant Protection?
What is Integrated Crop Protection?

Are we talking about the same thing?

24.11.2009 EN Official Journal of the European Union L 309/71

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DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009

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General principles of integrated pest management (EU-Directive 2009/128/EC, SUD)

1. Prevention and/or suppression of harmful organisms;
2. Harmful organisms must be monitored;
3. Based on the results of the monitoring the professional user has to decide whether and when to apply plant protection measures;
4. Sustainable biological, physical and other non-chemical methods must be preferred to chemical methods if they provide satisfactory pest control;

General principles of integrated pest management (EU-Directive 2009/128/EC, SUD)

5. The plant protection products applied shall be as specific as possible for the target and shall have the least side effects on human health, non-target organisms and the environment;
6. The professional user should keep the use of plant protection products and other forms of intervention to levels that are necessary;
7. Anti-resistance strategies should be applied;
8. Check the success of the applied plant protection measures.

Sustainable Use Directive (SUD)

Member States shall

promote low pesticide-input pest management

- integrated pest management

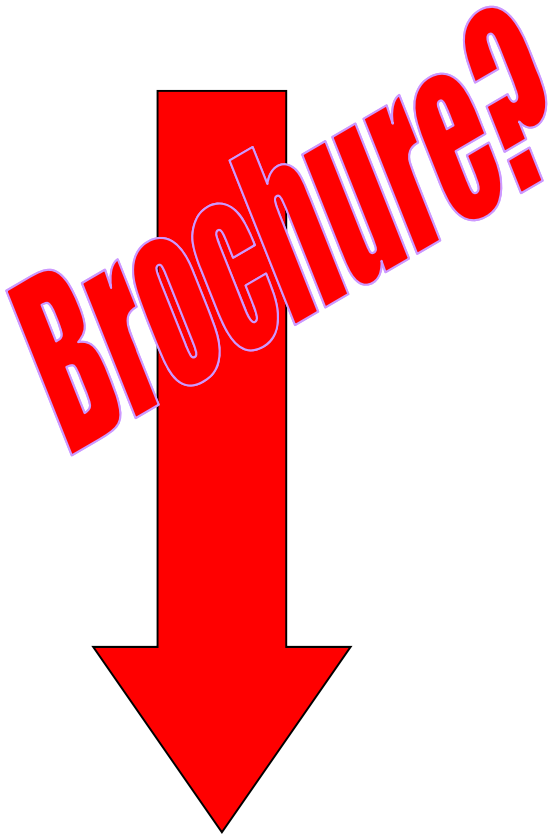
- organic farming

Sustainable Use Directive (SUD)

Member States shall describe in their National Action Plans how they ensure that the **general principles of integrated pest management** as set out in Annex III are implemented by all professional users by **1 January 2014**.

General principles of integrated pest management

1. Prevention
2. Monitoring
3. Decision
4. Preference for non-chemical methods
5. Application of Plant Protection Products
6. Necessary amount
7. Anti-resistance strategies
8. Check of success



Sustainable Use Directive (SUD)

Crop or sector-specific Guidelines!

- Voluntary
- More Details

Public authorities and/or organisations representing particular professional users may draw up such guidelines.

Sustainable Use Directive (SUD)

Crop or sector-specific Guidelines!

Member States shall refer to those guidelines that they consider relevant and appropriate in their national action plans.

→ Harmonisation!!?

The Link between Authorisation and Use

Regulation 1107/2009 – Article 55

Use of plant protection products

Plant protection products shall be used properly.
That includes

- comply with principles of good plant protection practice
- comply with the authorisation
- comply with the provisions of Directive 2009/128/EC
- comply with general principles of integrated pest management

Sustainable Use Directive (SUD)

What does that mean for Germany?

The system of integrated pest management?!

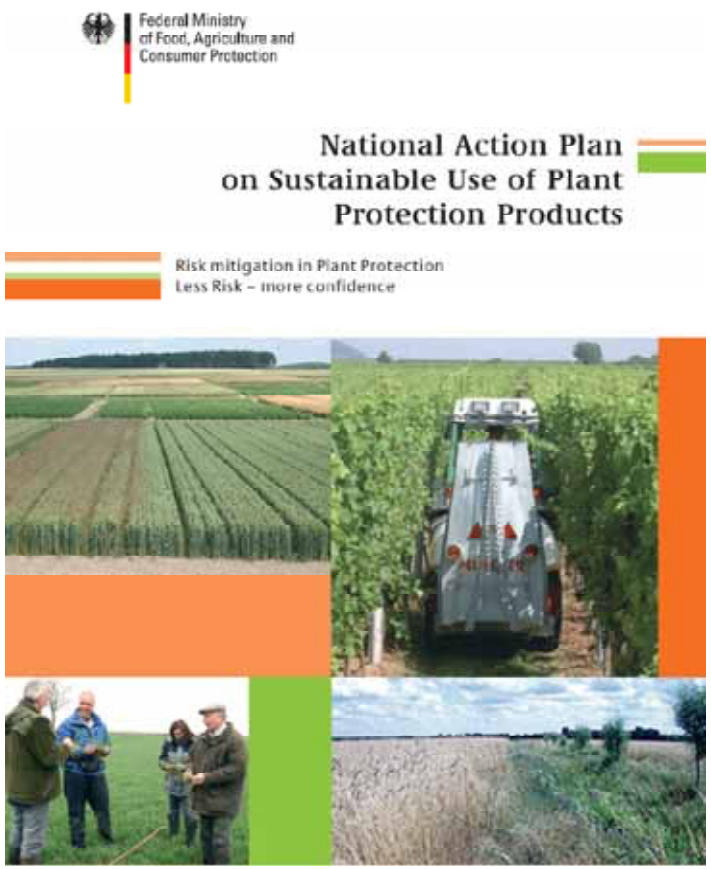
General Principles of integrated pest management (Framework)

Crop- or sectorspecific guidelines (for the whole country)

Specific and detailed production guidelines (for the whole country or for regions)

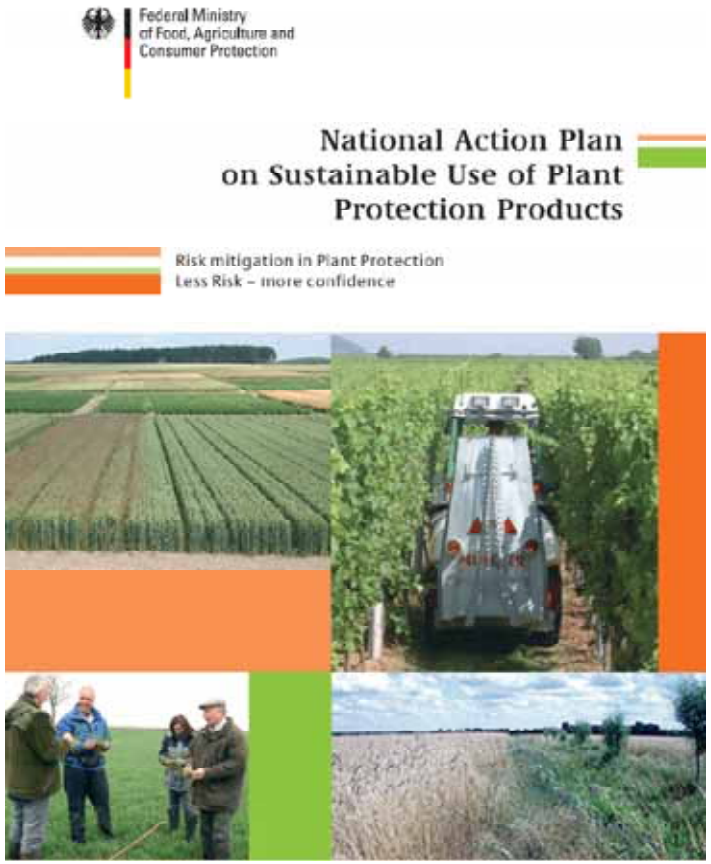
Germany

National Action Plan
on the Sustainable Use
of Plant Protection Products



Germany

Expert Committee
to prepare decision
about reference
in the national action plan?



Integrated Pest Management

Conclusions

1. Integrated Pest Management (IPM) is our core strategy
2. IPM needs good legal background and incentives
3. IPM is dynamic and science based
4. General Principles are the backbone of crop- or sectorspecific guidelines
5. crop- or sectorspecific guidelines should be developed by farmers associations

Thank you very much for your attention!!

Interrelationships between agri-environmental programmes and crop and sector-specific guidelines for integrated plant protection in Austria

lebensministerium.at

lebensministerium.at

4th International Symposium „Plant Protection and Plant Health in Europe“, Berlin, 19 – 21 May 2011

M. Lentsch, 5/2011

Content

- IPM in the Sustainable Use Directive 2009/128/EG (SUD)
- "General principles of IPM" - some aspects
- "Sector or crop-specific guidelines for IPM" – some aspects
- "Austrian AEP" – IPM elements in the current programme
- Conclusions and possible strategies for the future from Austrian point of view

„Integrated Plant Protection"
"Integrated Pest Management" - IPM

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„careful consideration of all available plant protection methods and subsequent integration of appropriate measures that discourage the development of populations of harmful organisms and keep the use of PPPs ….. to levels that are economically and ecologically justified and reduce or minimise risks to human health and the environment. …..”

SUD (Directive 2009/128/EC) - General principles of IPM

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History / origination

- annex III originally not foreseen in the COM proposal
- agreement for a list of elements set out in annex III during negotiations in Council
- avoiding further discussions and different implementation on national level

SUD (Directive 2009/128/EC) - General principles of IPM

Annex III - content

Options for prevention or suppression of harmful organism, especially:

- crop rotation
- use of adequate cultivation techniques
- use, where appropriate, of resistent/tolerant cultivars and standard/certified seeds/plant material
- balanced fertilization and irrigation practises
- hygiene measures
- protection and enhancement of beneficial organisms

SUD (Directive 2009/128/EC) - General principles of IPM

Annex III - content

- **Monitoring of harmful organisms by adequate methods and tools, where available**
  - observations in the field, warning systems, advice

- **Decision about plant protection measures**
  - threshold levels
  - region, crop and particular climate conditions have to be taken into account

SUD (Directive 2009/128/EC) - General principles of IPM

Annex III - content

- biological
- physical and
- other non-chemical methods

must be preferred to chemical methods

Record keeping – checking of the success

SUD (Directive 2009/128/EC) - General principles of IPM

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Annex III list

- very comprehensive list of elements
- some elements would better fit to “Integrated Plant Production” (which is the broader approach)
- most elements are optional
- most elements are flexible designed (not very concrete)

SUD (Directive 2009/128/EC) - General principles of IPM

(Possible) problems with annex III 1/4

optional and very flexible elements

but

obligatory by 1 January 2014 for all professional users

SUD (Directive 2009/128/EC) - General principles of IPM

(Possible) problems with annex III 2/4

legal basis for cross compliance (CC)

but

difficult to set up control parameters for CC and to control in practise

SUD (Directive 2009/128/EC) - General principles of IPM

(Possible) problems with annex III 3/4

very comprehensive
list of elements

but

borderline setting to crop and sector-specific guidelines difficult

SUD (Directive 2009/128/EC) - General principles of IPM

(Possible) problems with annex III 4/4

very comprehensive
list of elements

but

partly elements integrated in current AEP 2007–2013 measures

SUD (Directive 2009/128/EC) - General principles of IPM

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Different approach between general principles and sector and crop-specific guidelines

General principles of IPM → **legally binding**
no subsidies / no financial support

Sector and crop-specific guidelines for of IPM → **voluntary basis**
incentives / subsidies / financial support

SUD (Directive 2009/128/EC) - General principles of IPM

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Implementation into national law in Austria

- according to the **"Austrian Federal Constitution"** → **competence of the 9 "Länder"** (regions)
- annex III will be **implemented as it is set out in the SUD**

SUD (Directive 2009/128/EC) - sector and crop-specific guidelines

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What are the differences in the elements to the general principles ?

- sector and crop-specific guidelines **are not set out in a list of elements** at EU-level → competence of the MS
- elements should be **more specific** → but are these the same elements as in annex III? → (Yes) → borderline?
- are there really (many) **additional elements** in relation to the general principles? → (No / not so many)

Austrian AEP

Austrian programme to promote agricultural production methods compatible with the requirements of environmental protection, extensive production and the maintenance of the countryside.

Four Subjects of Protection
(Soil, Water, Climate, Biodiversity)

Integral/horizontal Approach
(Targeting the majority of the farmers)

Agri-Environmental Programme - AEP

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- promoting **extensive agriculture**
- compatible with the **protection of the environment**
- maintenance of the **countryside**
- encourages farmers contributing to an **ecological balance**

- **most comprehensive** and **most differentiated** programme in EU
- carried out on the **whole territory of Austria**
- **contract with the farmer** for a period of 7 years
- **compensation** for decline in production and add. costs

Austrian AEP – general overview of measures

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alpin pasturage sloping sites

nature conservation projects

water protection

organic farming

environmental production measures

renunciation of inputs

extensive production methods

Austrian AEP – Facts and Figures (2009)

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Annual Payments: ca. 550 Mio. EUR

Holdings: ca. 118.000

Measures: ca. 409.000

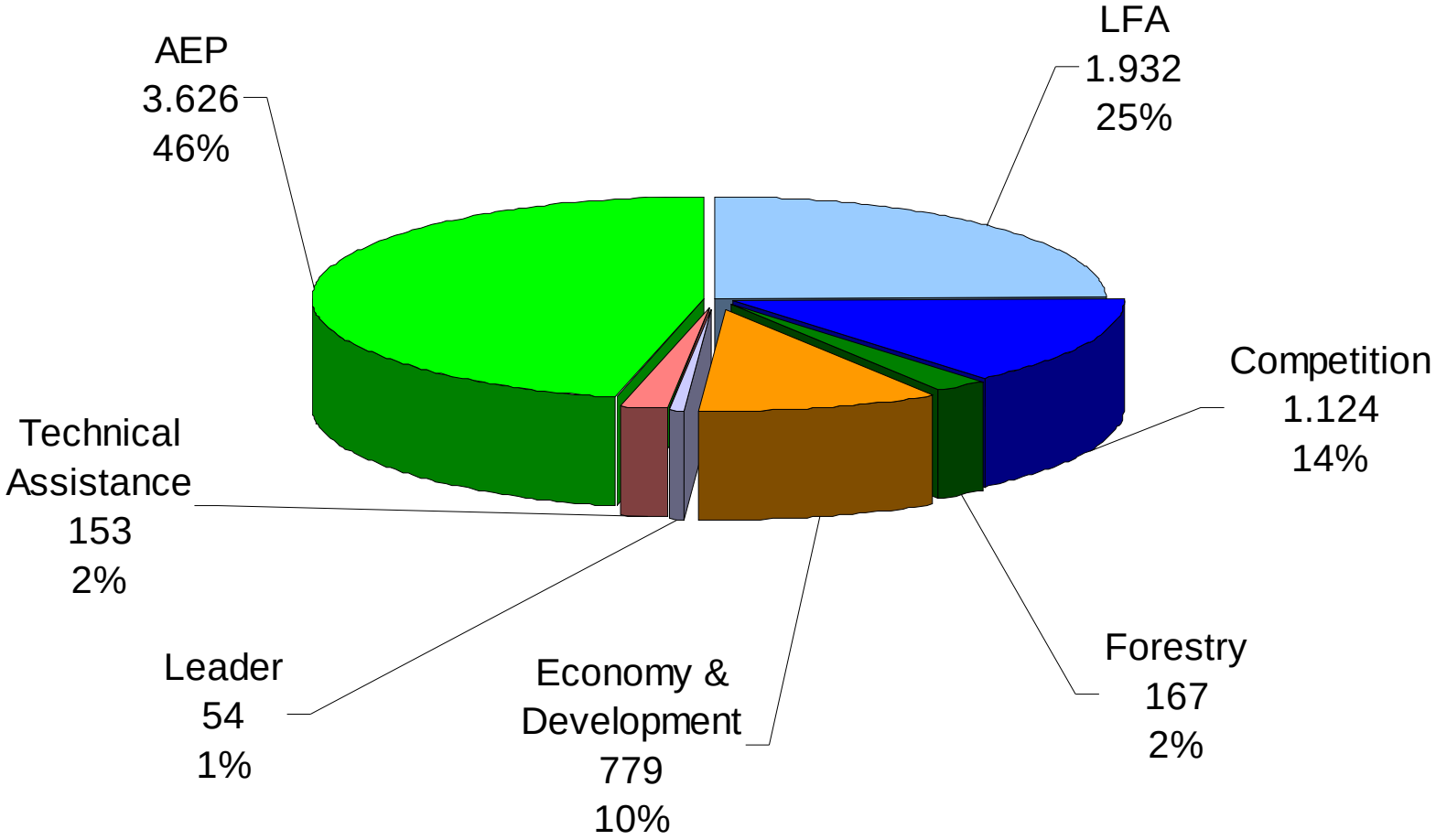
Acceptance: ca. 75 % of all Agricultural Holdings

ca. 2,20 Mio. ha (excl. mountain pastures)

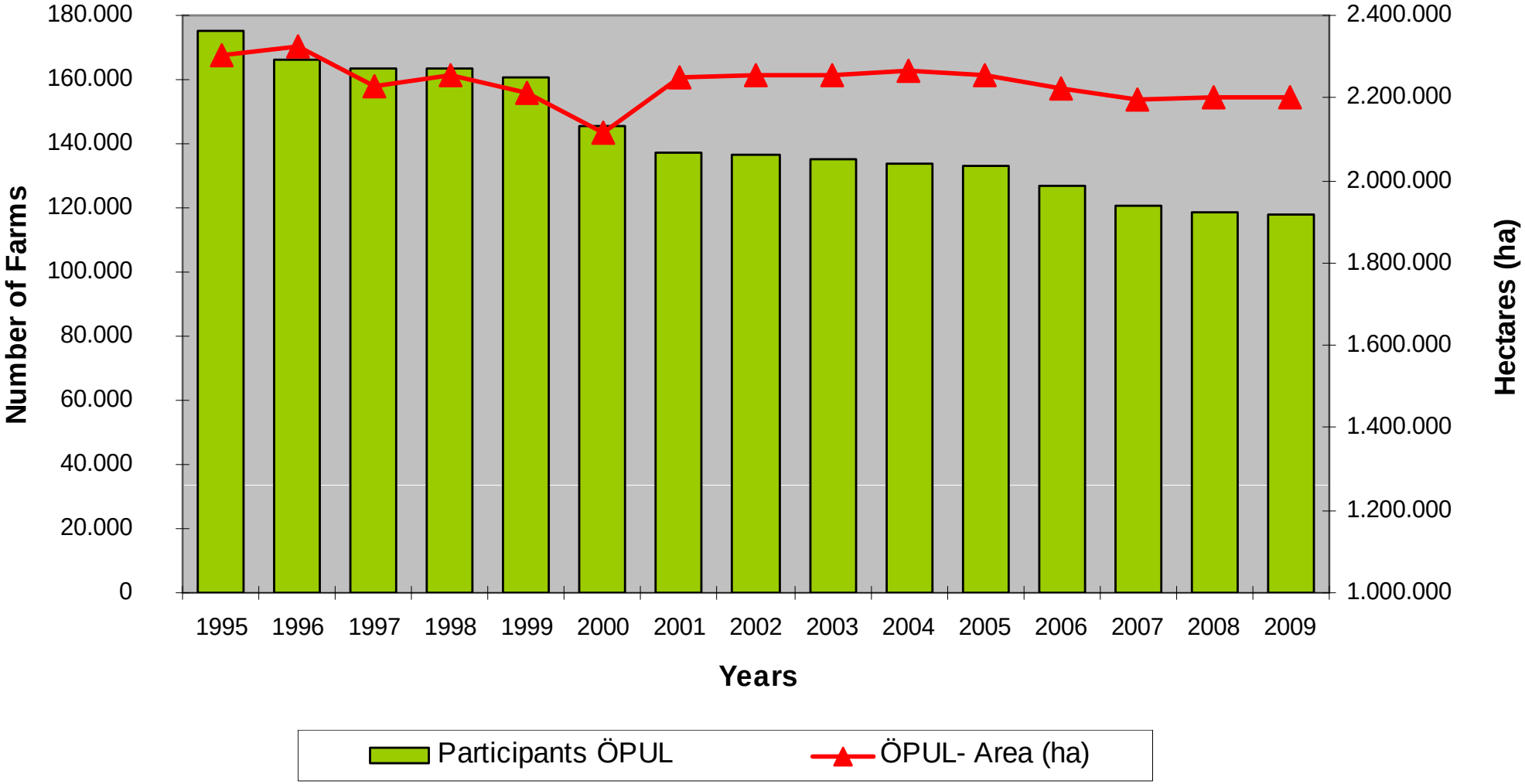
ca. 87 % of the agricultural area of Austria



Financial Volume of Programme RD 2007 – 2013 (Public Transfers in Mio. EUR, Part in %)



Austrian AEP – Facts and Figures (2009)



Austrian AEP

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Measures with influence to plant protection products use and/or IPM

- organic farming
- integrated production measures
- inspection of the plant protection equipment in use
- renunciation of inputs (e.g. grow regulators, fungicides)
- crop rotation

Austrian AEP

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Integrated Production Measures - "IP-Measures"

- Integrated wine growing
- Integrated fruit growing
- Integrated hop growing
- Integrated vegetable growing
- Integrated ornamental growing
- Integrated sugar beet growing
- Integrated potatoes growing

Austrian AEP

lebensministerium.at

Integrated Production Measures ("IP-Measures")
Examples for elements 1/2

- inspection of plant protection equipment in use
- use of PPPs according to the "PPP positive list"
- use of warning systems or monitoring of harmful organisms and where possible threshold levels
- specific training requirements

Austrian AEP

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Integrated Production Measures ("IP-Measures")
Examples for elements 2/2

- restrictions in fertilization
- crop rotation (e.g. potatoes, sugar beets 4 years)
- use of certified seed (e.g. sugar beet)
- record keeping (e.g. ppp, reg.no., amount/ha, dose, specific situation, fertilization etc.)
- etc.

Austrian AEP

„PPP positive list“

- substitution principle and comparative assessment

Criteria were set up in annex K of the Austrian AEP-Directive:

- number of ppps / a.s. available for the intended use
- necessity of the use of the ppp (e.g. economic importance of the harmful organisms)
- efficacy and resistance management
- toxicity, user safety
- environmental behaviour (e.g. persistence, ecotoxicity)
- etc.

Austrian AEP

lebensministerium.at

Inspection of plant protection equipment in use

- requirement for **all IP-measures** and **organic farming**
- **obligation for regular technical inspection** (at least within a period of 3 years) and maintenance
- **standard and essential technical requirements** relating to the inspection **similar** to annex II of SUD

Conclusions – general principles – sector or crop-specific guidelines

- **differentiation between general principals and sector or crop-specific guidelines has not been done up to now in Austria but**
- **will be necessary especially for CC and AEP in the near future (very important for Austria)**
- **common approach / strategy on MS level needed**

Conclusions - IPM measures in AEP

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The current Austrian AEP includes many IPM elements

- **Austrian farmers are compensated for IPM measures**
- **IPM measures are accepted by the Austrian farmers**
- **future legally binding IPM elements cannot be compensated – acceptance by the farmers will degrease**

Austrian strategy for IPM measures in AEP 2014 -2020

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"Evolution instead of revolution"

- **legally binding IPM elements will not be further elements in AEP 2014 - 2020**
- **trying to develop further some existing IPM elements (more restrictive design → higher standard)**
- **creation of new IPM elements**

Experiences with the development of general and crop specific IPP guidelines from CABI's perspective

Ulrich Kuhlmann & Emma Jenner

100 years of scientific endeavour

www.cabi.org

KNOWLEDGE FOR LIFE

Overview

- CABI in brief
- IOBC Commission for Integrated Production
- CABI Europe‘s experiences with the development and implementation of technical guidelines in non EU member countries
- CABI Europe‘s major findings and conclusions

CABI

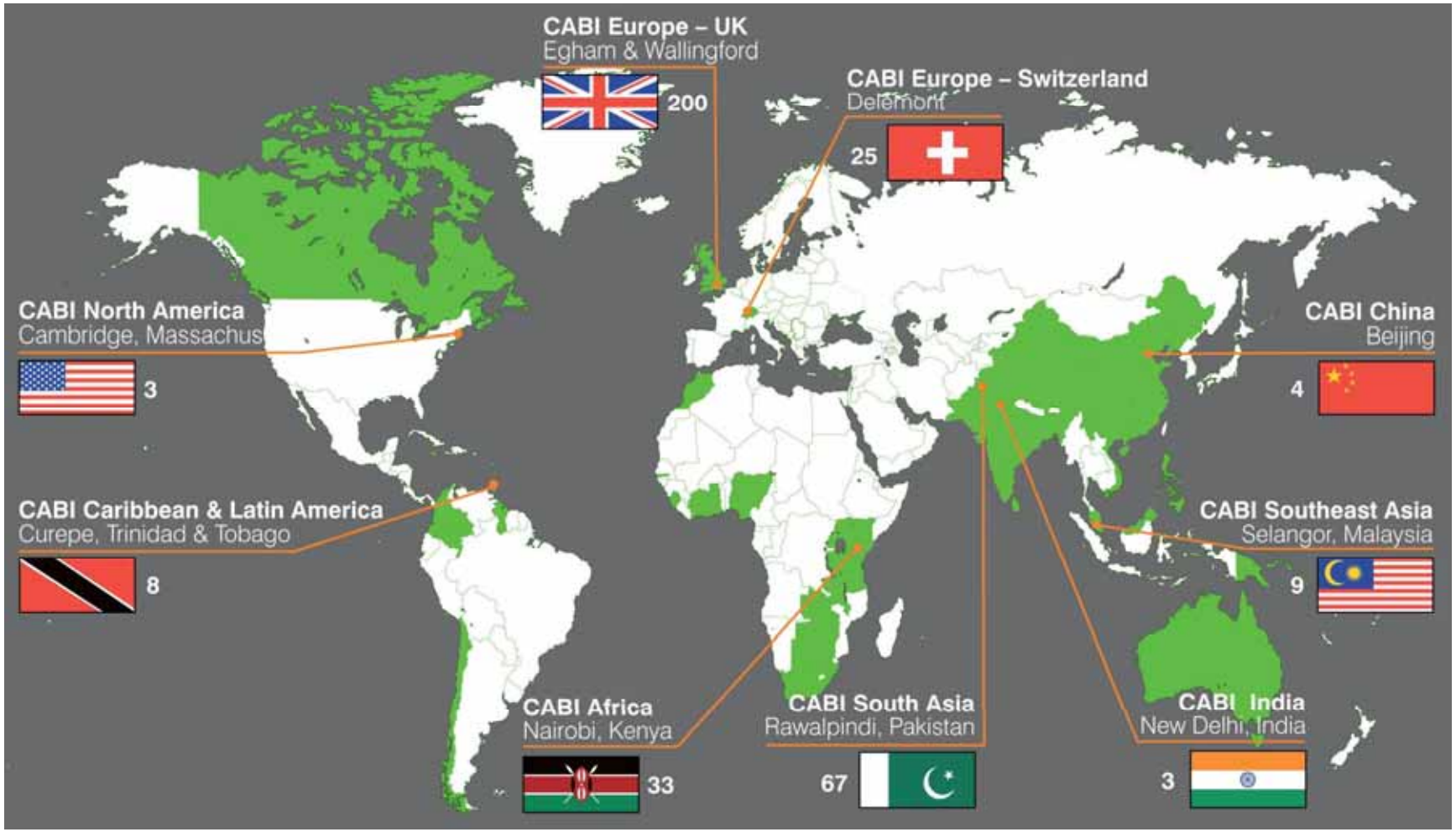
In brief

- CABI provides scientific expertise and information about agriculture and the environment
- Activities include: scientific publishing, development projects and research, and microbial services
- Established in **1910**
- **Not-for-profit**
- Owned by **47 member countries**
- Since 1998, registered with the UN as an international treaty (CAB International)

Our member countries

Global reach

- 9 Centres
- 350+ staff
- 47 Member countries



Who does CABI work for and with?

- Farmers
- Extension workers
- Member country governments
- Non-governmental organizations
- Charities and foundations
- Research agencies
- National donor agencies
- Development agencies
- Universities
- Corporate organizations

We work in partnership with others to achieve our objectives; building the capacity of our local partners is an integral part of all our activities

IOBC

Integrated Production

IOBC Commission on Integrated Production

- In 1977, an International Organisation for Biological Control (IOBC / WPRS) Commission on Integrated Production (IP) was established
- CABI, as an institutional member of IOBC, uses the outputs of this Commission to guide its work in implementing IP together with local partners

IOBC

Integrated Production

IOBC Definition of Integrated Production

"Integrated Production/Farming is a farming system that produces high quality food and other products by using natural resources and regulating mechanisms to replace polluting inputs and to secure sustainable farming."

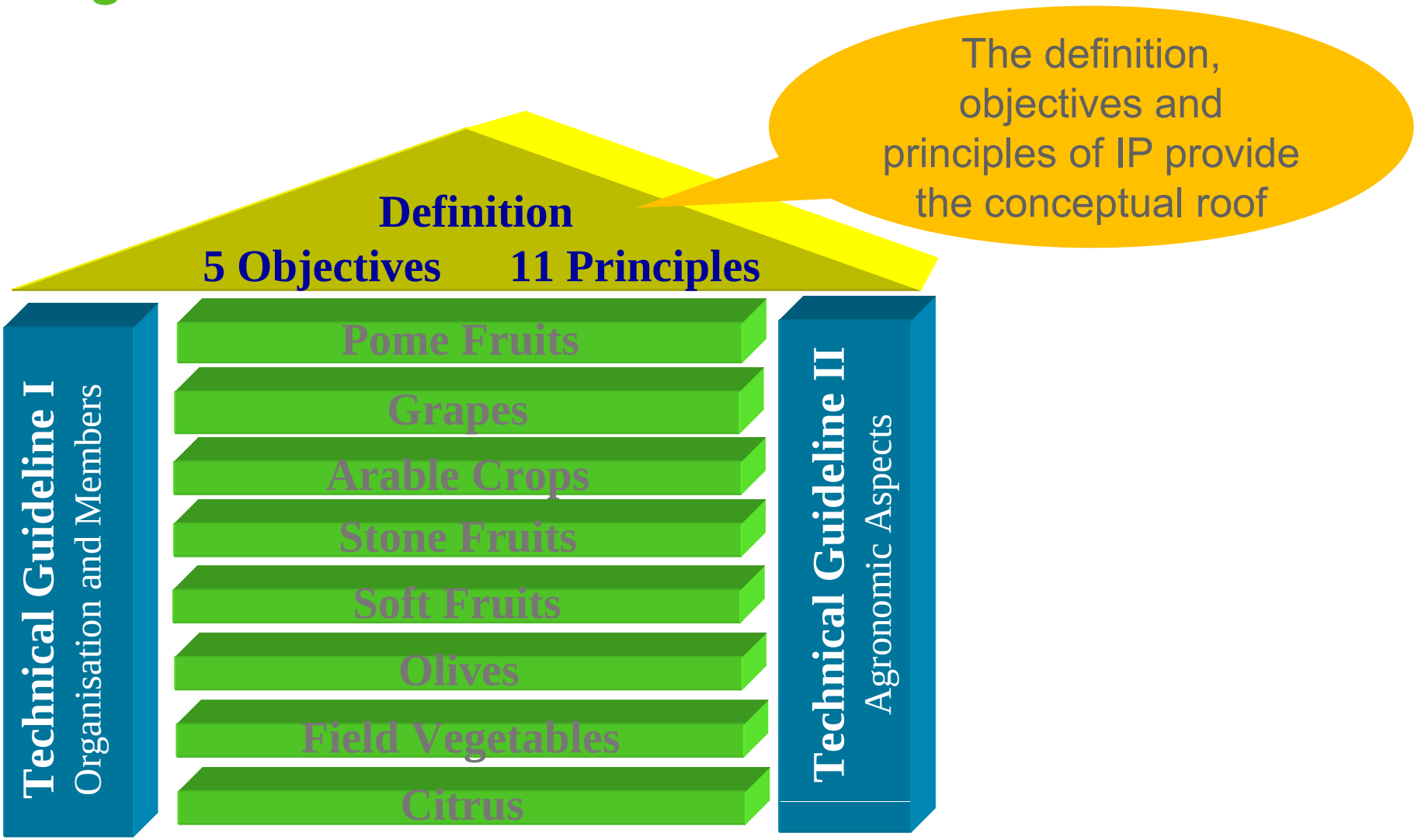
IOBC

Integrated Production

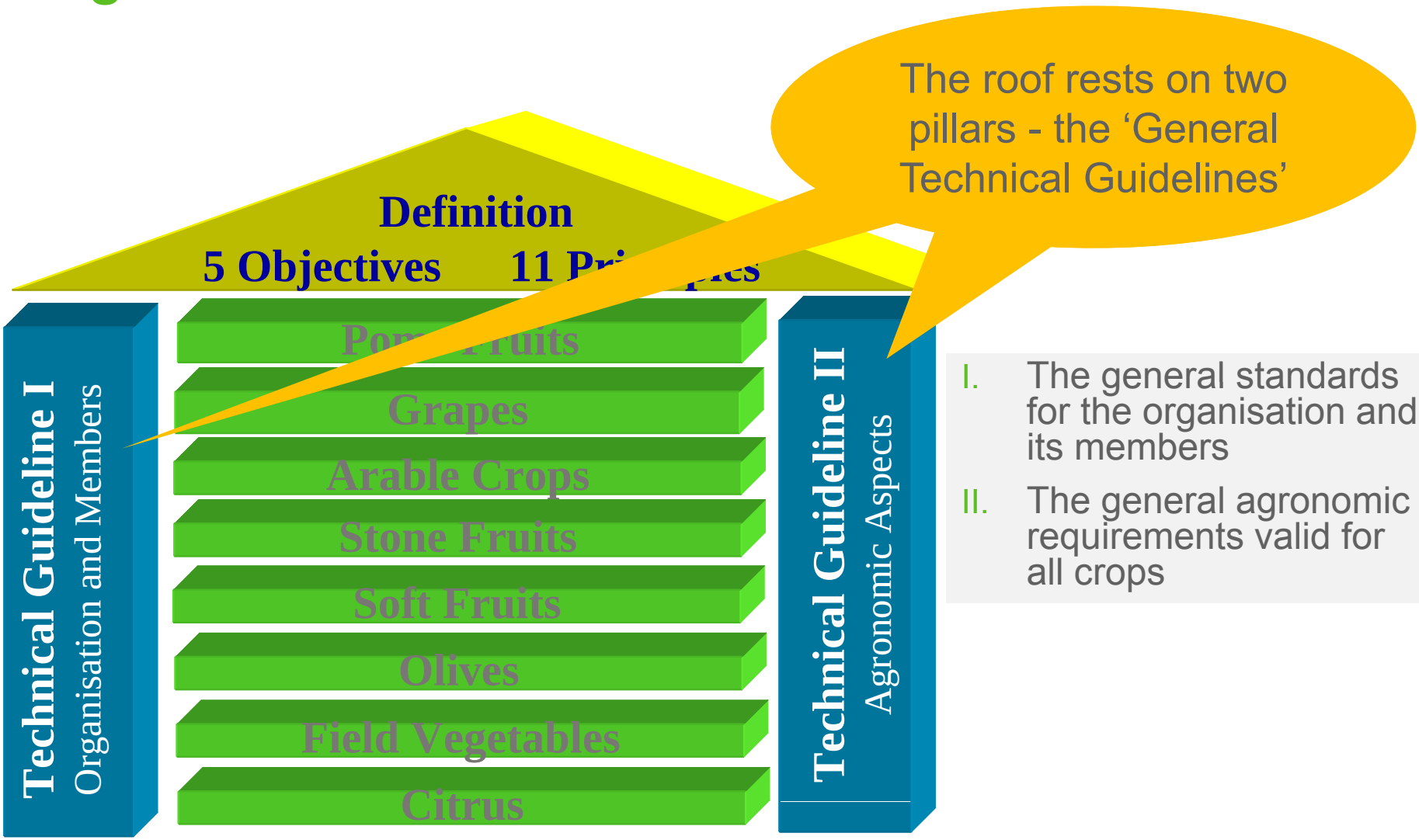
IOBC Commission on Integrated Production

- In 1993, the Commission published a conceptual framework for IP: ‚*Integrated Production: Principles and Technical Guidelines*‘, which:
  - defines Integrated Production/Integrated Farming
  - describes the underlying strategy
  - establishes technical guidelines and standards for implementation.
- The document was updated in 1999 and 2004
- This IP framework raised international interest and recognition, and provided the basis for the development of technical guidelines for IPM / ICM / IP worldwide

The IOBC Conceptual Framework of Integrated Production



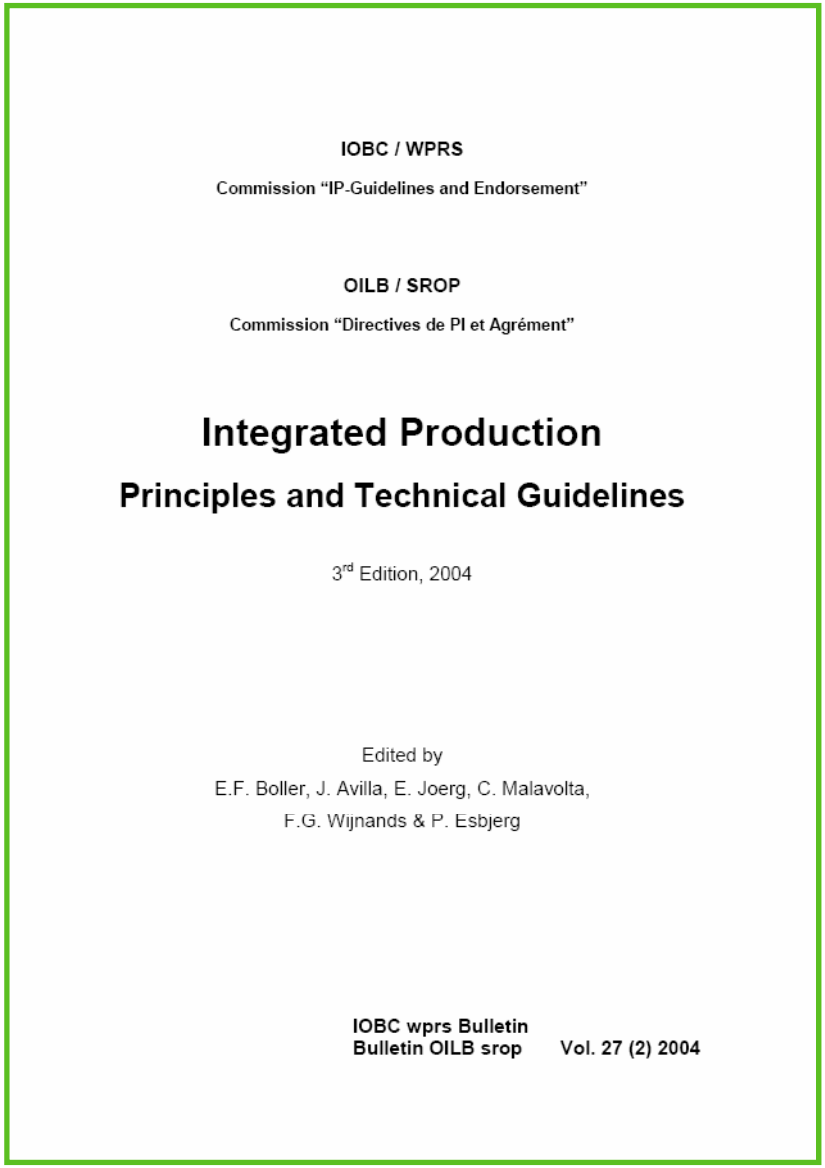
The IOBC Conceptual Framework of Integrated Production



I. The general standards for the organisation and its members

II. The general agronomic requirements valid for all crops

IOBC IP Principles and Technical Guidelines



IOBC / WPRS

Commission "IP-Guidelines and Endorsement"

OILB / SROP

Commission "Directives de PI et Agrément"

Integrated Production

Principles and Technical Guidelines

3rd Edition, 2004

Edited by

E.F. Boller, J. Avilla, E. Joerg, C. Malavolta,

F.G. Wijnands & P. Esbjerg

IOBC wprs Bulletin
Bulletin OILB srop Vol. 27 (2) 2004

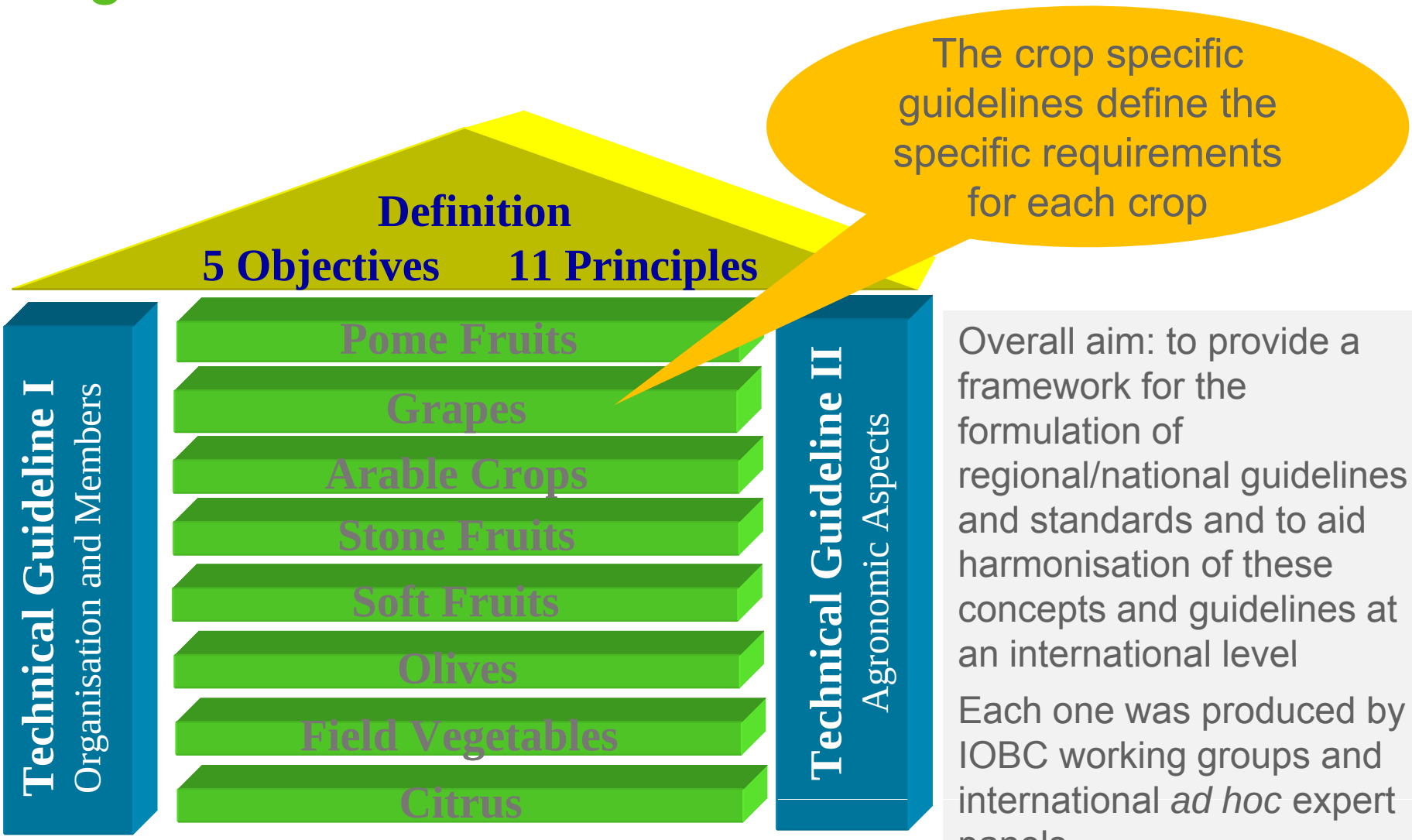
- Provides a framework for the formulation of regional or national guidelines and standards
- Aids harmonisation of these concepts and guidelines at an international level

IOBC IP Technical Guidelines II

Content

1. General Aspects
2. Biological Diversity and Landscape
3. Site Selection
4. Site Management
5. Cultivars, Seeds, Rootstock, and Cultivation Systems
6. Nutrition
7. Irrigation
8. Integrated Plant Protection
9. Harvest
10. Post-harvest Management and Storage
11. Animal Production on Mixed farms
12. Worker‘s Health, Safety and Welfare

The IOBC Conceptual Framework of Integrated Production



Overall aim: to provide a framework for the formulation of regional/national guidelines and standards and to aid harmonisation of these concepts and guidelines at an international level

Each one was produced by IOBC working groups and international *ad hoc* expert panels

Annexes of the IP Technical Guidelines

1. Key Pests and Diseases List (Annex I)
2. Green & Yellow List (Annex II)
3. Positive Pesticide List (Annex III)

These documents provide the necessary tools for the planning and implementation of IP activities at farm level.

Annexes of the IP Technical Guidelines

Annex II - Green & Yellow List

- This document uses a traffic light system to inform farmers of the best methods for prevention, monitoring and control of the most common and problematic pests and diseases (i.e. those listed in Annex I)

Annexes of the IP Technical Guidelines

Annex II - Green & Yellow List

	Green list, preferred options			Yellow options with restrictions	
	1	2	3	4	5
	Prevention	Monitoring	Direct Control	Direct Control	Restrictions
General aspects					
Pest Problem 1					
Pest Problem 2					
Pest Problem 3					
Disease Problem 1					
Disease Problem 2					
Weed Problem 1					

CABI Europe's experiences with the development and implementation of crop-specific guidelines

- Kosovo: Tomatoes, cucumbers, strawberries
- Albania: Apples
- DPRK: Cabbage and maize
- Argentina: Tobacco
- Turkey: Tobacco
- Brazil: Tobacco
- Tanzania: Tomato

Integrated Production in Kosovo

Funded by:
Intercooperation

Crops:

- Indoor tomatoes
- Indoor cucumbers
- Field strawberries

Partners:

- Ministry of Agriculture, Forestry and Rural Development
- Farmers
- Farmer service providers (Intercooperation)
- University

Guidelines developed:

- General Technical Guideline for Integrated Production
- Technical Guideline for Indoor Tomato Integrated Production
- Technical Guideline for Indoor Cucumber Integrated Production
- Technical Guideline for Strawberry Integrated Production

Integrated Production in Albania

Funded by:

Swiss Agency for Development and Cooperation

Swiss National Science Foundation

Crop:

- Apples

Partners:

- Agrinet (local NGO service provider for apple growers)
- Producer club
- Centre for Agricultural Technology Transfer
- University (Agriculture faculty)
- Agrobusiness School
- Ministry of Agriculture (national and regional)

Guideline developed:

- Technical Guideline for Apple Integrated Production

IPM in DPR Korea

Funded by:

Swiss Agency for Development and Cooperation

EuropeAid

Crops:

- Cabbage
- Maize

Partners:

- Ministry of Agriculture (HQ)
- Plant Protection Stations, MoA
- Pyongyang Agricultural University
- Cooperative farms
- Academy of Agricultural Sciences

Guidelines developed:

- Best Practices for Cabbage Production
- Best Practices for Maize Cultivation

IPM in Argentina, Turkey & Brazil

Funded by:
Philip Morris International
Philip Morris Turkey
Philip Morris Brazil
Leaf supplier companies

Crop:

- Tobacco (Oriental tobacco in Turkey)

Partners:

- Leaf supplier companies
- PMI affiliates

Guideline developed:

- Integrated Pest Management Technical Guideline for Tobacco Production*

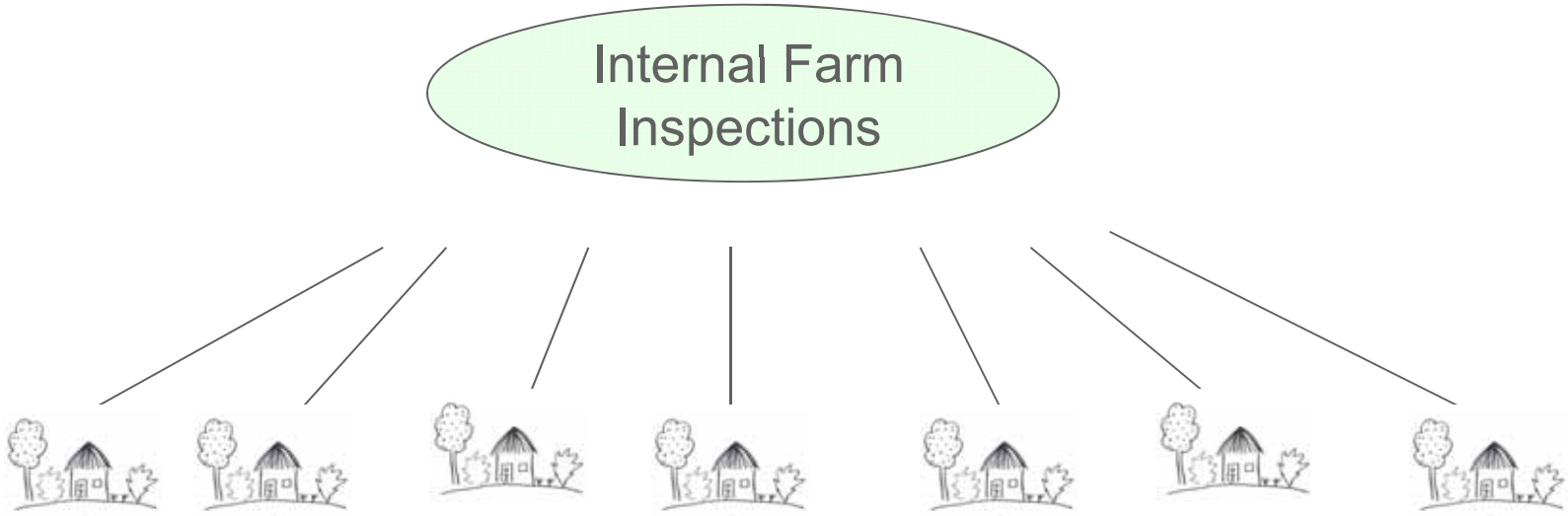
* Based and structured according to IOBC IP Technical Guidelines, but also incorporating PMI's Good Agricultural Practice (GAP) standards

Internal farm inspection system

- A cost effective method of assessing that all farmers belonging to a producer club, or contracted by a company, comply with specific production standards
- Also used to identify particular problems being experienced by farmers
- Farms are inspected using a ‘farm inspection protocol’, which covers virtually all aspects of the Technical Guideline

Internal Farm Inspection System

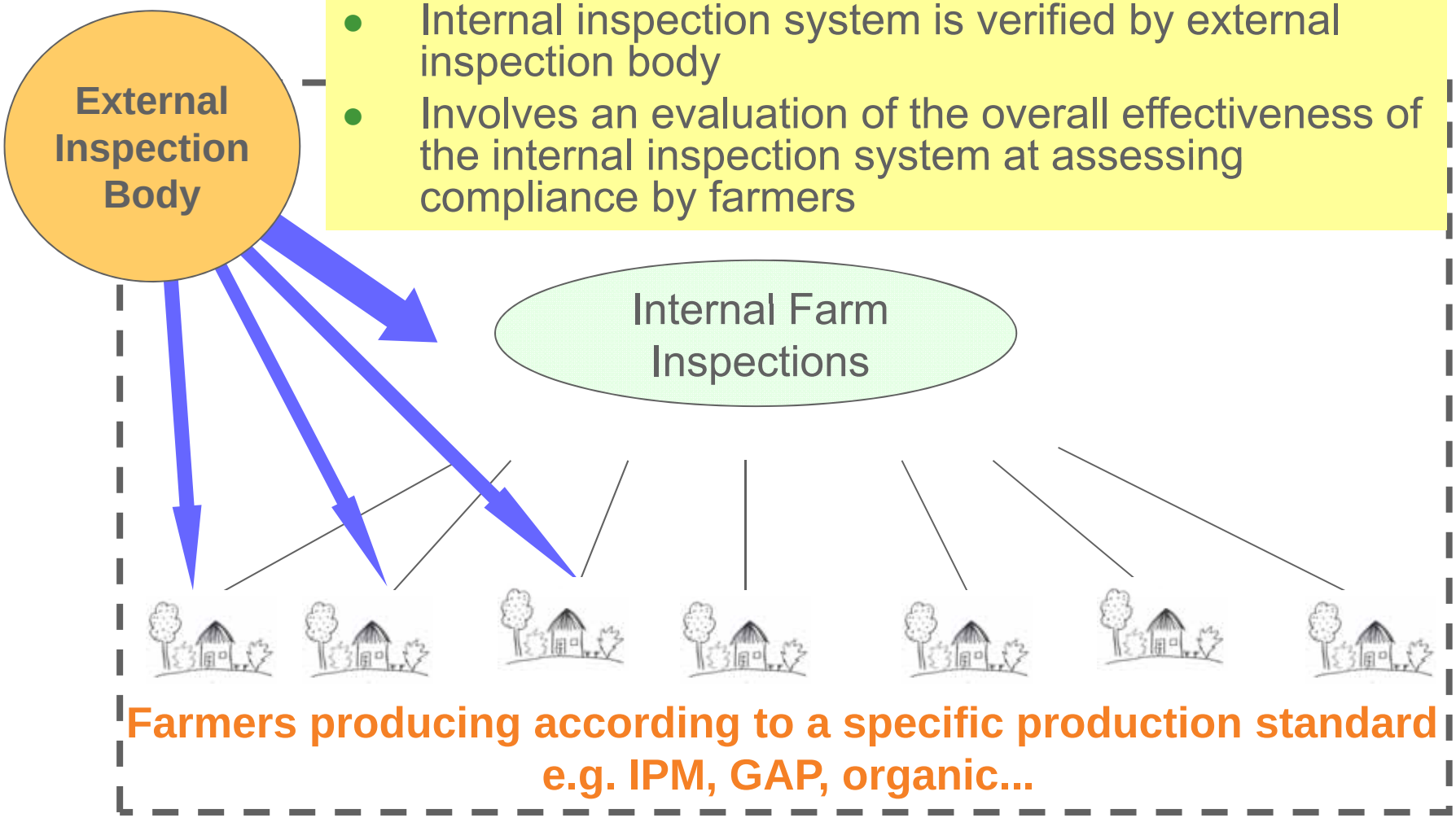
- Farm inspections are conducted by relevant stakeholders (e.g. farmers, extensionists, etc.)
- Farm inspection protocol is filled out during each farm visit



Farmers producing according to a specific production standard e.g. IPM, GAP, organic...

Internal Farm Inspection System

- Internal inspection system is verified by external inspection body
- Involves an evaluation of the overall effectiveness of the internal inspection system at assessing compliance by farmers



CABI Europe's main findings

- General technical guidelines are useful for describing a national-level agriculture policy (policy document)
- Crop- and region-specific technical guidelines are more effective for farm-level implementation of IPM
- Green & Yellow List is a valuable aid for farmers, detailing:
  - Preventive measures
  - Monitoring procedures
  - Non-chemical pest management options
  - Recommended pesticide products
- Crop- and region-specific technical guidelines must be accompanied by an inspection system

Technical challenges

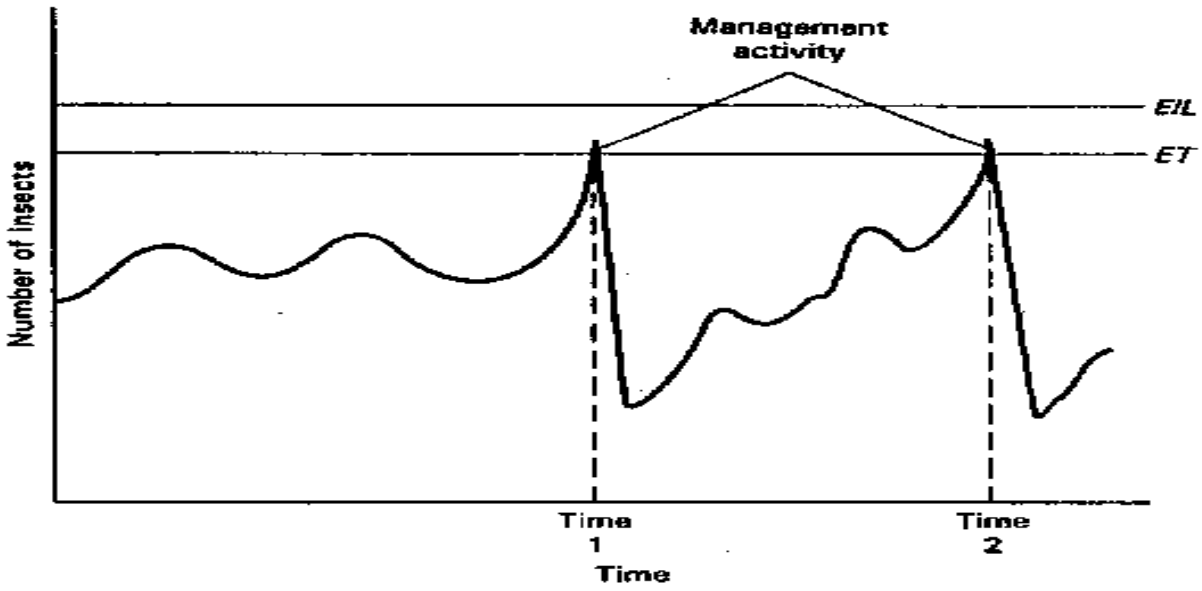
Monitoring

- Farmers often not motivated to conduct pest monitoring
- Pesticides are often cheap and are less labour-intensive in their application in comparison to monitoring

Technical challenges

Threshold values as a basis for decision-making

- Threshold values are often unavailable
- Better defined action threshold levels are important for improving reliable decision making

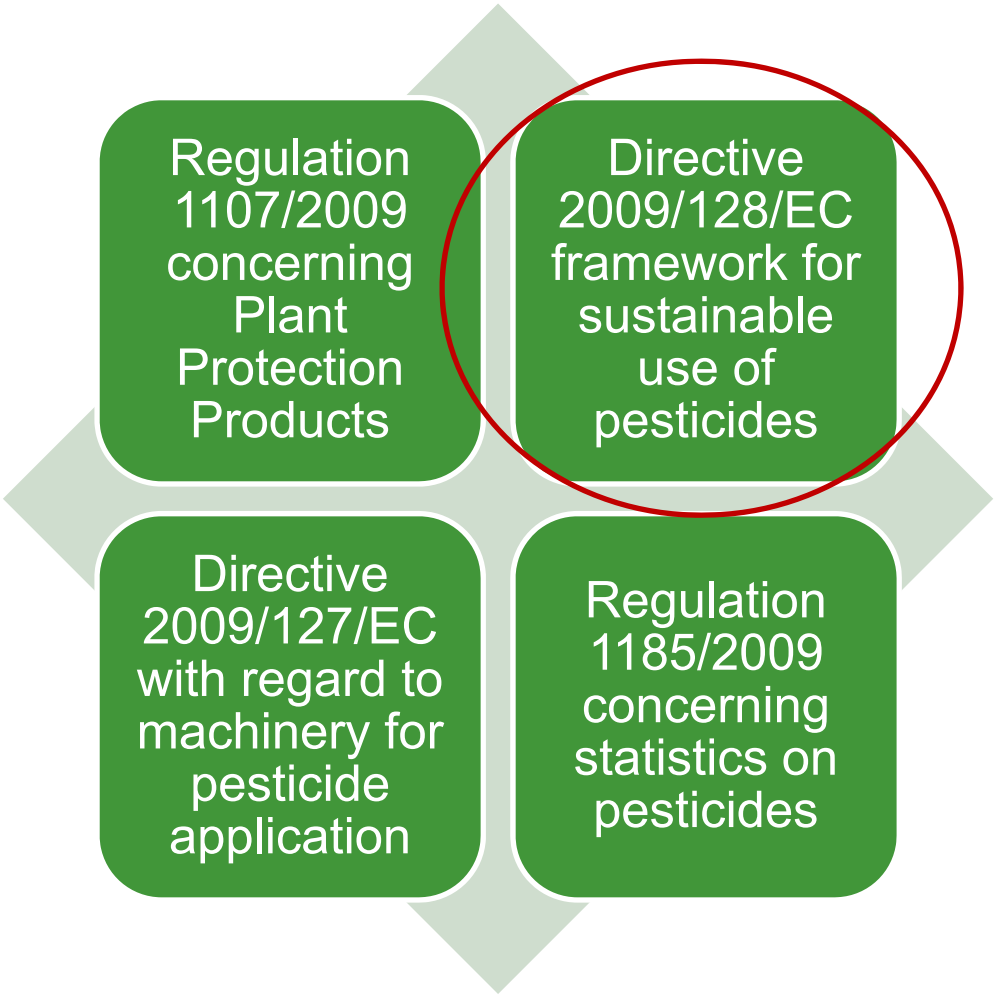


Technical challenges

Measures for prevention and/or suppression of harmful organisms

- Key requirements of IPM may not be compatible with economic realities
- For example, innovative ideas are required for implementing crop rotation and ecological compensation areas on smallholder farms

New EU Pesticide Regulation & Directive



New EU Directive

Directive 2009/128/EC framework for community action to achieve the sustainable use of pesticides

- Article 14 of the Directive promotes low-pesticide input pest management, including IPM
- It also states that general principles of IPM should be implemented by all professional users by 1st January 2014
- The implementation of the principles of IPM as outlined in Annex 3 of the Directive will be a major challenge for the EU member states

New EU Directive Requirements

Main principles of IPM are set out in Annex 3 of the Directive:

1. Measures for prevention and/or suppression of harmful organisms
2. Monitoring and Forecasting
3. Threshold values as basis for decision-making
4. Non-chemical methods to be preferred (if available and efficient)
5. Target-specificity of any pesticide used and minimization of side effects
6. Reduction of pesticide use to necessary levels
7. Application of anti-resistance strategies
8. Records, documentation and check of success

Conclusions

- The development of general technical guidelines is feasible and will facilitate the implementation of IP (certification of operators and distributors, testing of application equipment, special measures to protect water, public and conservation areas, etc.)
- The development of crop- and region-specific technical guidelines is also possible
- However, technical challenges for the implementation of the IPM requirements (Annex 3) will become obvious (monitoring, thresholds, use of low toxic and alternative products)

Thank You

Organisations endorsed by IOBC (2009)

- TRECOOP FRUITES, Spain
  - pome fruits
- TYFLO Association, France
  - grapes & wine
- LIVE (Low Input Viticulture & Enology) USA
  - grapes & wine

- GAWI (Belgian growers' association), also bases its guidelines for Integrated Fruit Production on IOBC guidelines

Vinatura, Black Hills

Vineyard:……..

Green and yellow list of plant protection measures for grapes (vinification) **2006**

	Green List of preferred options			**Yellow List:** Options with restrictions	
	1	**2**	**3**	**4**	**5**
	Preventive measures	**Monitoring:** Justification of direct Measures (Threshold)	**„Green“ direct control measures**	**“Yellow” direct control measures with restrictions**	**Indications and restrictions**
General Aspects	Green cover, alternating mowing, hedges to enhance antagonists; low nitrogen input	Renew suscription of official phytosanitary bulletin (forecasting service)			
Grape moths		operate pheromone traps where not mating disruption (15 moths/trap/week)	Mating disruption	B. thuringiensis + 1% sugar; or IGR 1 or IGR 2	1x one week after start of 2nd flight if > 15 moths/trap/week or 1x 1 week after start 2nd flight 1x at beginning of 2nd flight
Spider mites	release/protect predatory mites, alternating mowing; low nitrogen	check 50 leaves in stage 11-13. > 70% of leaves occupied	Predatory mites	Acaricides 1,2 or 3	1x if over 70% leaves occupied at stage 13
Acariosis	release/protect predatory mites, alternating mowing	check lateral shoots in August for symptoms and decide on spring treatment	Predatory mites	Wettable Sulfur 2% Acaricide 3	1x at Stage 03 -05, only prophylaxis possible 1x Stages 05 - 09, only prophylaxis possible
Green grape leafhopper	green cover in summer, alternating mowing, hedges with roses +bramble	operate yellow sticky traps in June-July. 5 larvae per leaf or 300 – 500* /trap/week (*where parasitoids)	Egg parasitoid *Anagrus*	IGR 3 Insecticide 1	when more than 500/trap/week when more than 300/week/trap 1st generation in highly sensitive varieties only
Downy mildew	tolerant varieties & clones low nitrogen input	first treatment according to forecast	Fungicides 1 or 2 prebloom Fungicides 3 or 4 postbloom	Fungicide 5 Fungicide 6 postbloom Fungicide 7	maximum 3 treatments max. 2 treatments (max. 3kg Cu/ha/year) maximum 2 treatments
Powdery mildew		first treatment according to forecast	Fungicides 9 or 10 prebloom Fungigides 11 or 12 postbloom	Fungicides 13 or 14	maximum 3 treatments of strobilurines maximum 3 treatments of SSH
Botrytis cinerea	tolerant varieties & clones; defoliation/ventilation of grape zone; low nitrogen, grape moth control	restrict 2 treatments to stage 77 and 81	Utilise effect of downy mildew fungicides 3 or 4	Botryticides 1 or 2 or 3 Botryticide 4	maximum 1 treatment maximum 1 treatment
Phomopsis	remove infested prunings	First treatment at stage 03-05 if infested		Wettable Sulfur 2% Fungicides 15, 16	1x stage 03 - 05 maximum 2 treatments stage 05 - 13

Example from IOBC

IPM in Turkey

Funded by:
Philip Morris Turkey
Leaf Supplier Companies

Crop:

- Oriental tobacco

Partners:

- Leaf supplier companies

Guideline developed:

- Integrated Pest Management Technical Guideline for Oriental Tobacco Production*

* Based and structured according to IOBC IP Technical Guidelines, but also incorporating PMI's Good Agricultural Practice (GAP) standards

IPM in Brazil

Funded by:
Philip Morris Brazil

Crop:

- Tobacco

Partners:

- Leaf supplier companies

Guideline to be developed:

- Integrated Pest Management Technical Guideline for Tobacco Production*

* Based and structured according to IOBC IP Technical Guidelines, but also incorporating PMI's Good Agricultural Practice (GAP) standards

Differentiation of plant protection measures in the sector »horticulture«

Prof. Milka Glavendekic, D.Sc.

University of Belgrade – Faculty of Forestry, Belgrade, Serbia

Possible risks from horticulture sector

- Some alien plants cultivated at urban green spaces and in urban forests are invasive species.
- Ornamentals in nurseries
  - Pathway of import of alien pests and diseases.
  - Plants for planting
- Risk from increased trade
- Expansion of Mediterranean pests and diseases following ornamental plants

Ornamental horticulture

Production

of ornamentals in nurseries

Maintenance of urban green:

open spaces, parks, tree rows, green down the roads, green spaces on cemeteries

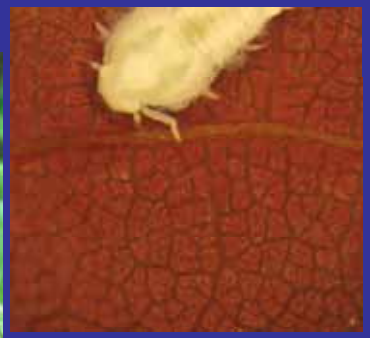
- Pionirski park in Belgrade

Functions of Urban green

- **Esthetic**
- **Ecological (climate change, air pollution, protection of biodiversity, protection of natural stands)**
- **Psychological and social**

  – **More importance with the urban development**







Invasive ornamental trees and shrubs

Acer negundo L.

Ailanthus altissima (Mill.)

Akebia quinata (Hoult.) Dcne.

Albizzia julibrissin Dur.

Amorpha fruticosa L.

Berberis thunbergii DC.

Broussonetia papyrifera L'Herit Vent.,

Buddleia davidii Franch.

Casuarina equisetifoila L.

Eleagnus angustifolia L.

Euonymus fortunei (Turcz.) Hand. Mazz.

Fallopia (=Polygonum) baldschuanica Rgl.

Fallopia x bohemica (Chrtek & Chrtkova) J.P.Bailey

Fallopia japonica (Houtt.) Ronse Decraene

Alien invasive species

***Fallopia* spp.**

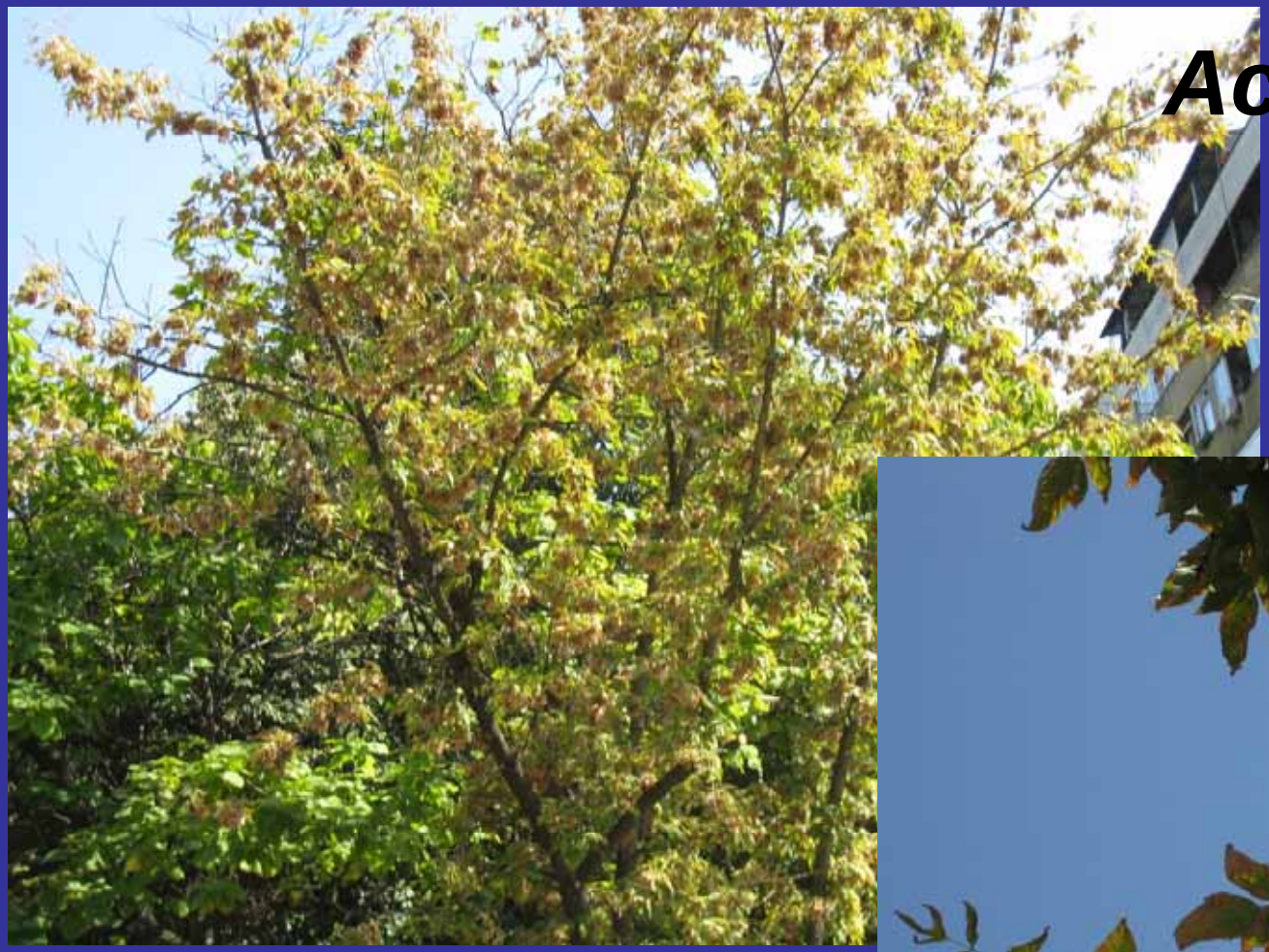
Negative ecological, economical and social effect

Fallopia sp. in urban green in Belgrade

Fallopia sp. in urban green in Belgrade

Fallopia sp. in Montenegro at altitude 1060 m a.s.l.

Acer negundo



Ailanthus altissima –planted in tree rows and unwonted seedling

Invasive ornamental trees and shrubs

Hedera helix L.

Koelreuteria panniculata

Lonicera japonica Thunb.

Paulownia tomentosa (Thunb.) Steud.

Prunus serotina Ehrh.

Rhamnus catharticus L.

Rhus typhina L.

Robinia pseudoacacia L.

Rosa foetida Herrm.

Rosa multiflorae Thunb.

Salix babylonica L.

Spiraea japonica L.

Tamarix pentandra

Ulmus pumila L.

Wisteria floribunda (Willd.)

Wisteria sinensis (Sims.) Sweet

Koelreuteria panniculata in Belgrade

Paulownia tomentosa (Thunb.) Steud. Invasive in Odesa (Ukraine)

Demands on ornamental horticulture

- Increasing plant production of ornamental trees, shrubs and flowers (new assortment, exotic plants are introduced)
- Improvement of esthetic value
  - Main goal is to improve esthetic value of Urban Green
  - Follow the trends in Landscape architecture
- Improvement of ecological functions
- Social and economic impact

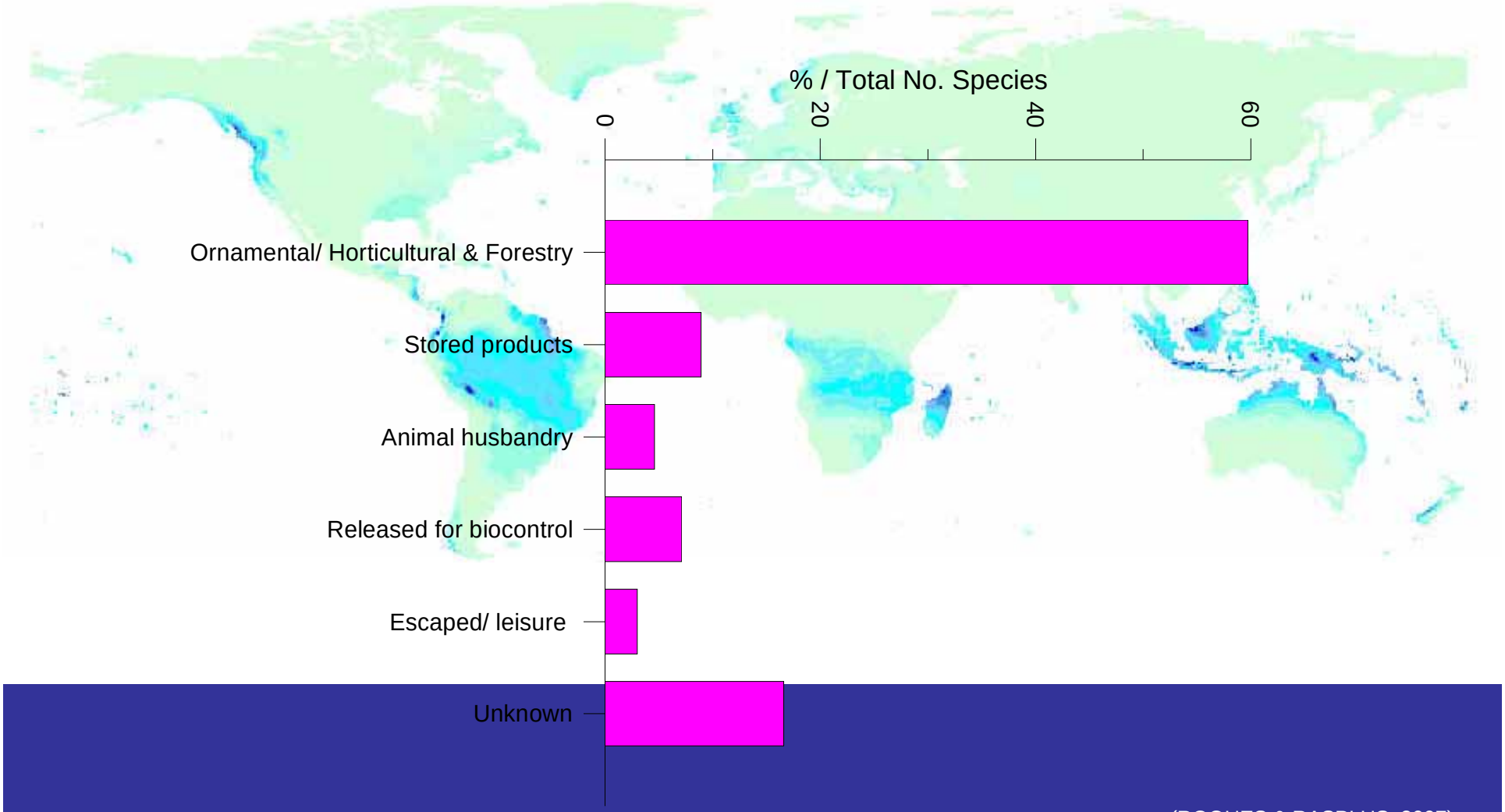
Exotic plants:

- ornamental trees, shrubs, annual flowers, pot plants
  - Phytosanitary risk:
    - Hosts of plant diseases (viruses, bacteria, fungi), Nematodes
    - Gastropods
    - Insects and other arthropods
    - Vertebrates

Pathways of introduction

- Import of reproductive material (e. g. seed, bulbs, cuttings)
- Import of plants for planting
- Import of pot plants
- Import of cut flowers

Plants are probably dominant vectors for import of invasive species



(ROQUES & RASPLUS, 2007)

Invasive insects on ornamental trees and shrubs

- *Dreyfusia nordmannianae*
- *Gilletteella cooleyi*
- *Pineus strobi*
- *Cinara Cinara cedri*
- *Cinara Cinara curvipes*
- *Aphis catalpae*
- *Myzocallis walshii*
- *Prociphilus fraxinifolii*
- *Chaetophorus populifolii*
- *Melanaphis bambusae*
- *Pseudaulacaspis pentagona*

- *Metcalfa pruinosa*
- *Corythucha ciliata*
- *Hyphantria cunea*
- *Coleophora laricella*
- *Cameraria ohridella*
- *Parectopa robiniella*
- *Phyllonorycter robiniella*
- *Obolodiplosis robiniae*
- *Megastigmus spermotrophus*
- *Megastigmus wachtli*

Risk of import of pests in Europe from China

- *Bursaphelenchus xylophillus*

Anoplophora chinensis (Photo F. Hérard)

- ***Anoplophora glabripennis***
- ***Anoplophora chinensis***
- ***Xylotrechus rusticus***
- ***Monohammus urossovi***
- ***Hylobitelus xiaoi***
- ***Monohammus alternatus***
- ***Pissodes yunnanensis***
- ***Agrilus planipennis***

Expansion of Mediterranean pests and diseases following ornamental plants

Thaumetopoea pytiocampa
Cinara cedri
Eriococcus buxi
Planococcus vovae

Possible recommendations

Preventive plant health measures on imports (plants and plant products

Preventive plant health measures on intra-Community trade of seeds and plants for planting

Monitoring, eradication, containment and control of harmful organisms of plants and plant products and protected zones

- Export, transit and re-export
- Research and development
- Scientific advise
- Diagnostic laboratories
- EU financial instruments and contribution

Possible recommendations

- **There is need to shift from single-organism focused risk analysis to pathway analysis** – i.e. less emphasis on the individual pests, and more emphasis on how they move around.
- More emphasis on mitigation options.

Possible recommendations

- Shift science focus towards **pathway risk analysis** (how high-risk organisms move around the world) and mitigation options.
- Study a worldwide ban on the movement of potted plants and plants for planting and develop safer processes for trading in live plants and plant products.

Monitoring and early detection

Improvement of inspection:

- Permanent education of stuff.
- Visual inspection is not sufficient effective in many cases.
- Need to develop methods and procedures for new invaders.
- Cooperation between scientists from origin and invaded areas.

Thank you for your attention

- The research is supported by Ministry of Science and Technologies in Serbia. Grant I I I - 43002

Ewa Matyjaszczyk
Plant Protection Institute –
National Research Institute, Poland

Integrated Plant Protection guidelines as a complementary data pool for zonal PPP efficacy assessments.

Integrated Plant Protection

=

Integrated Pest Management

=

IPM

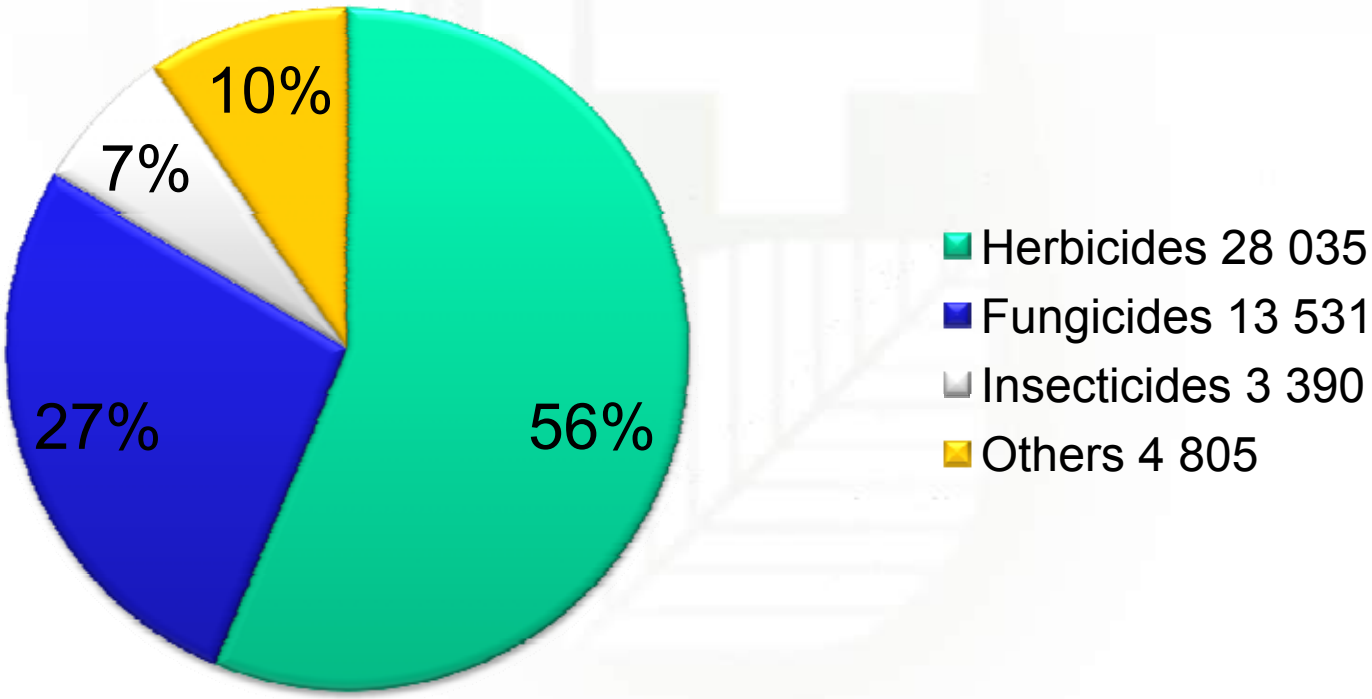
Agenda

- **Polish agriculture and IPM**
- What the Regulation 1107/2009 says about IPM?
- Which IPM guidelines could be implemented into the zonal assessment?
- Conclusions

Poland in 2009
[1.000 000 ha]

Total area	**31,3**
Agriculture land	16,1
Forests	9,2

Sales of PPP ≈50 thousand tonnes of formulation in 2009



Use of plant protection products in forestry

Year	Use [tonnes]	% of total sales
2008	22,0	0,04
2009	3,5	0,007

Use of active substance in Poland

- Eurostat **2003**

0,8 kg AS/ha

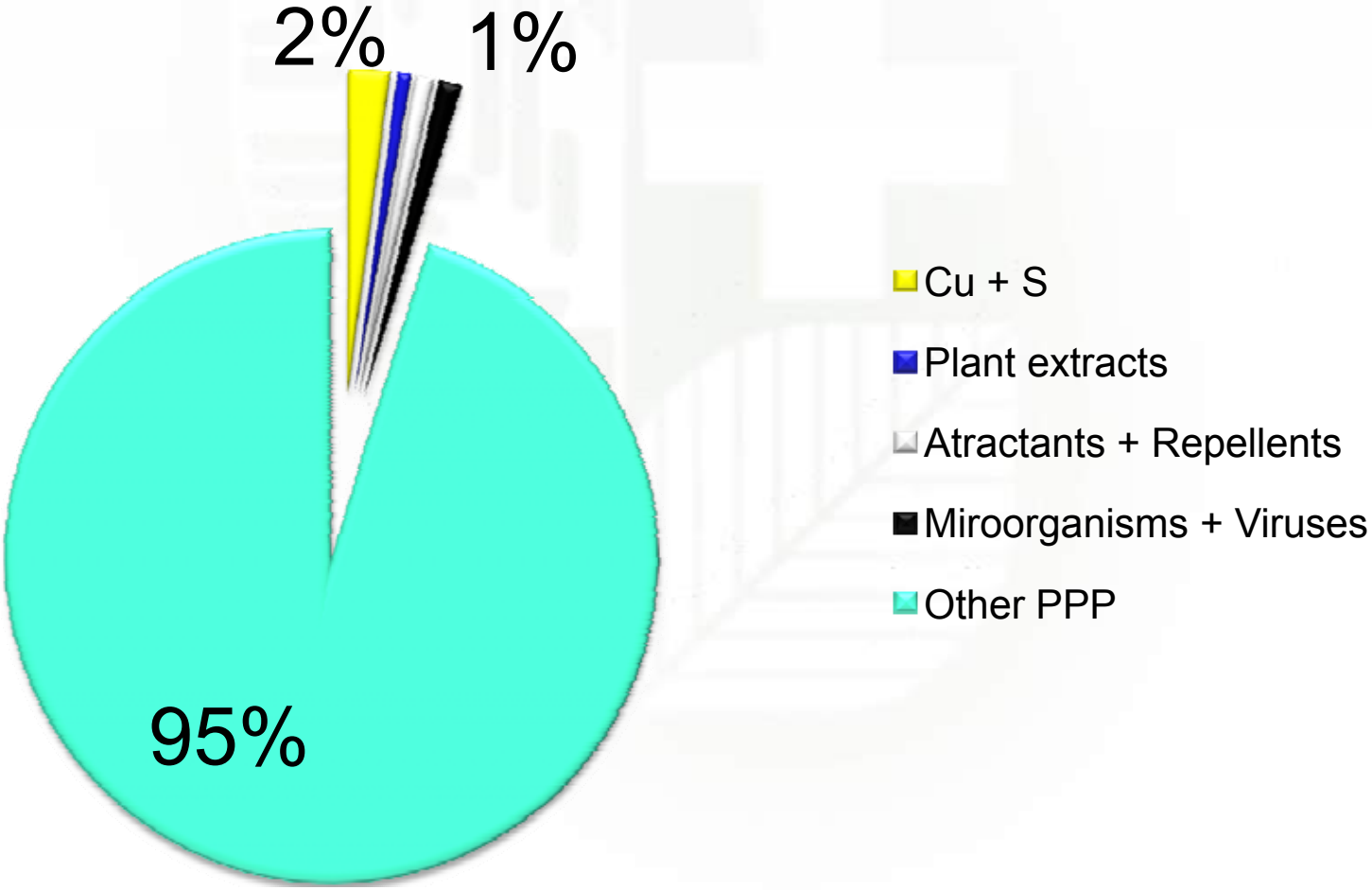
- Polish Ministry of Agriculture **2009** sales /agricultural area

0,87 kg AS/ha

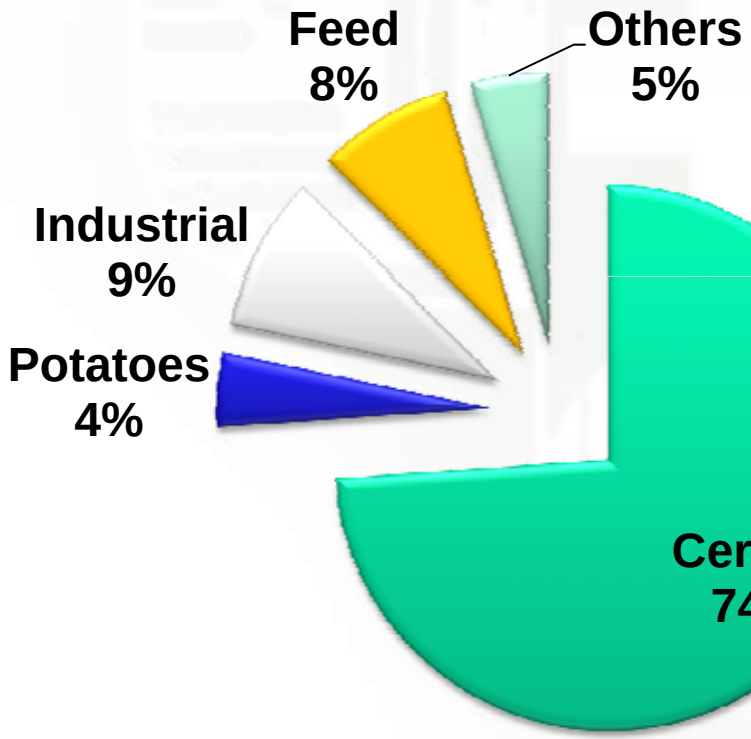
Registration of plant protection products in Poland

- About **870** products registered
- About **280** active substances
- About **230** firms

Availability of PPP of natural origin in Poland



Main crops in Poland 2009



Obligatory IPM
What we have in Poland?

- Low use of plant protection products
- System of trainings, sprayers inspection, packaging collection, supervision of ppp use
- Obligation of documenting the treatments
- Farmers used to depending not only on chemical protection

Obligatory IPM
What we have in Poland?

- Own, resistant varieties (potatoes, sugar beets)
- Tradition of cereal mixture growing (both species and varieties)
- Woodlots on the fields (planted as windbreakers - tool against erosion)
- Prognosis and sygnalisation of agrophags

Obligatory IPM
Difficulties to solve

- Advisory service
- Comprehensive decision support system concerning the requirements of IPM
- Farmers are not used to lower doses of PPP
- Biological PPP availibility
- Training programmes
- Crop rotation

Agenda

- Polish agriculture and IPM
- **What the Regulation 1107/2009 says about IPM?**
- Which IPM guidelines could be implemented into the zonal assessment?
- Conclusions

Regulation 1107/2009 Preamble

„Plant protection products should be used properly, in accordance with their authorisation, having regard to the principles of **integrated pest management** and giving priority to non-chemical and natural alternatives wherever possible”

Regulation 1107/2009
Article 55
Use of plant protection products

„Principles of the **integrated pest management** (…) shall apply at the latest by 1 January 2014”

Regulation 1107/2009
Art. 31 Content of authorisations

Paragraph 2 „The authorisation shall set out the requirements relating to the placing on the market and use of the plant protection product.„

Paragraph 4 „The requirements referred to in paragraph 2 may include the following: (…) indications for proper use according to the principles of **integrated pest management**”

Annex III to Directive 2009/128
General principles of IPM

Pragraph 1. Prevention

- Crop rotation
- Adequate cultivation techniques
- Resistant cultivars and certified seed
- Balanced fertilisation and irrigation
- Harmfull organisms - preventing
- Beneficial organisms - protection

Annex III to Directive 2009/128 General principles of IPM

Paragraph 2 Monitoring of harmful organisms

Paragraph 3 „Based on the results of the monitoring the professional user has to decide whether and when to apply plant protection measures. For harmful organisms threshold levels must be taken into account before treatments (!!!)

Defined for the region, specific areas, crops and particular climatic conditions”

Annex III to Directive 2009/128 General principles of IPM

Paragraph 4 Biological and non-chemical methods must be preferred to chemical methods

Paragraph 5 „The pesticides applied shall be as specific as possible for the target and shall have the least side effects” (!!!)

Annex III to Directive 2009/128 General principles of IPM

- Paragraph 6 „Keep the use of pesticides (…) to levels that are necessary, e.g. by reduced doses, reduced application frequency or partial applications, considering that (…) they do not increase the risk for development of resistance in populations of harmful organisms.”

Annex III to Directive 2009/128 General principles of IPM

Paragraph 7 In case of resistance risk „available anti-resistance strategies should be applied to maintain the effectiveness of the products. This may include the use of multiple pesticides with different modes of action."

Paragraph 8 Check the success of the application

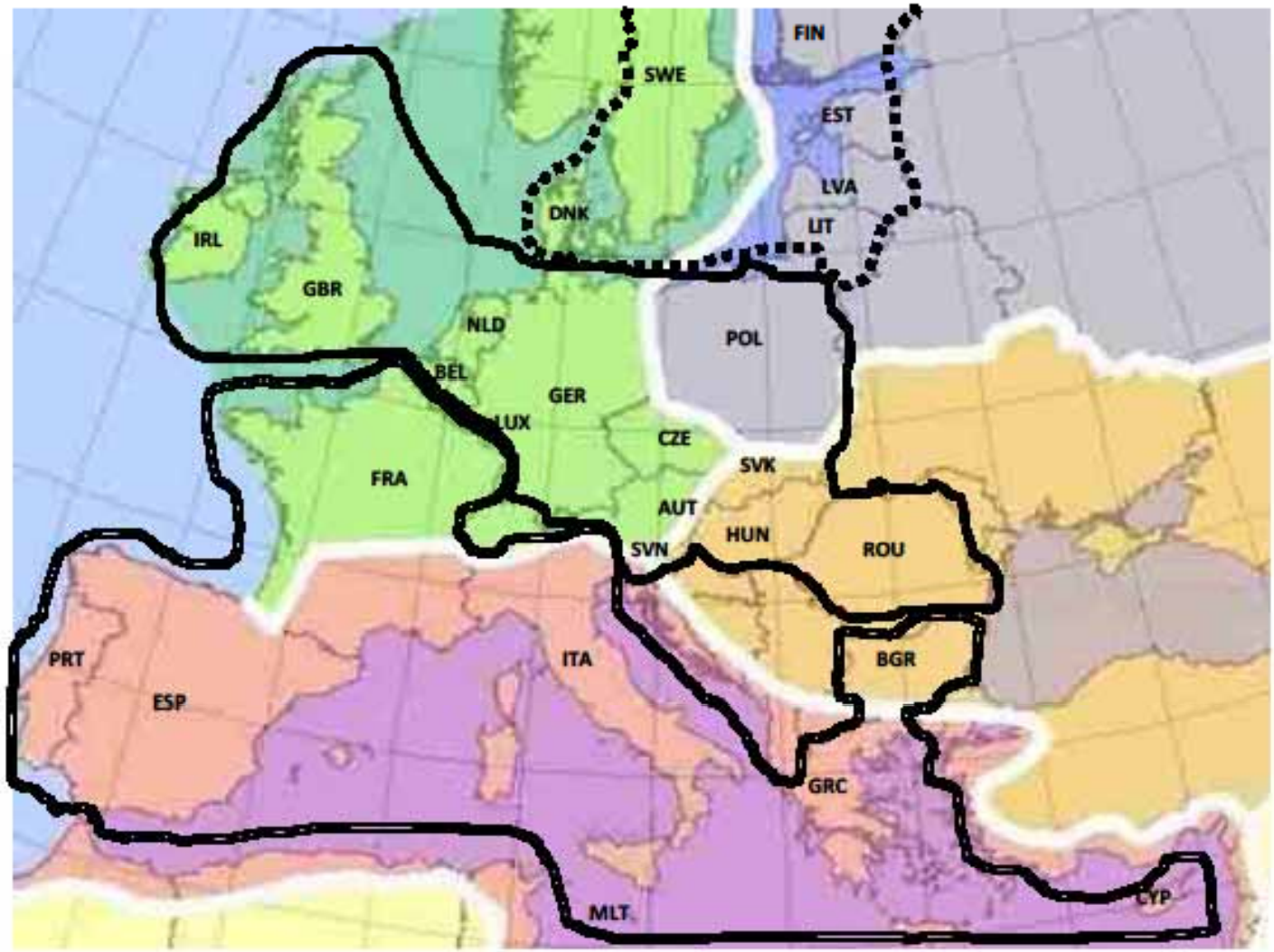
Agenda

- Polish agriculture and IPM
- What the Regulation 1107/2009 says about IPM?
- Which IPM guidelines could be implemented into the zonal assessment?
- Conclusions

Which requirements of IPM to be considered during registration?

1. Application on the basis of monitoring results and threshold levels
2. The product is to be as specific as possible and have no side effects
3. Priority for biological plant protection products
4. Possibility of doses reduction
5. Resistance risk

Representation of EPPO climatic zones (in colour: EPPO Standard PP1/241, *Guidance on comparable climates*) superimposed with the three European zones (EC Regulation 1107/2009).



Problems

- Reccomended doses
- How to establish threshold levels for specific areas, crops and particular climatic conditions?
- How to put them on the label without making it illegible?
- If product is not sufficiently specific and is withdrawn - how to replace it?

Problems

- Few biological plant protection products on the market
- For most problems no biological metods available
- The resistance risk is different for different places, crops, organisms etc. and the information about resitance often not up-to-date

Problems

- How can the farmer (or advisor) get the full information about resistance?
- For many crops „multiple pesticides with different modes of action” are not available

EPPO activities

Workshop on Zonal Efficacy Assessment Berlin 2011-04-05/06

need for a number of new standards among others:

- Guidance + on-label recommendations for IPM compatibility
- Update or develop the EPPO standars for Good Plant Protection Practice

EPPO activities

Planned modification of a number of standards, among others:

- PP 1/239 Dose expression for plant protection products
- PP 1/225 Minimum effective dose

Agenda

- Polish agriculture and IPM
- What the Regulation 1107/2009 says about IPM?
- Which IPM guidelines could be implemented into the zonal assessment?
- **Conclusions**

Conclusions

- In the light of Regulation 1107/2009 IPM gudelines should be considered for zonal efficacy assessment
- The main source of problems: the zones are huge and in IPM the decisions are individually taken for very small areas
- National Addenda?

Thank you for your attention

Do national IPP guidelines fit into zonal registration of plant protection products?

Dr. Frank Meier-Runge
Product Biologist Europe Central, Syngenta Crop Protection

A variety of existing Guidelines: Grower associations, Regions, Countries, Europe, World

Landeskuratorium für pflanzliche Erzeugung in Bayern e.V.

Vegetables

Fruits

Bundesausschuss Obst und Gemüse

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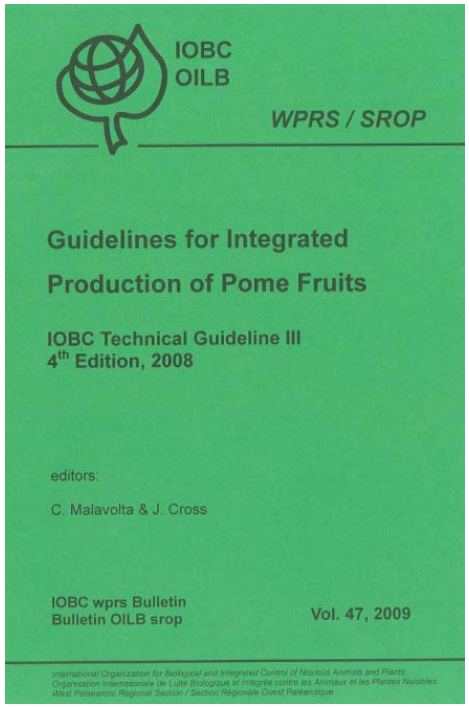

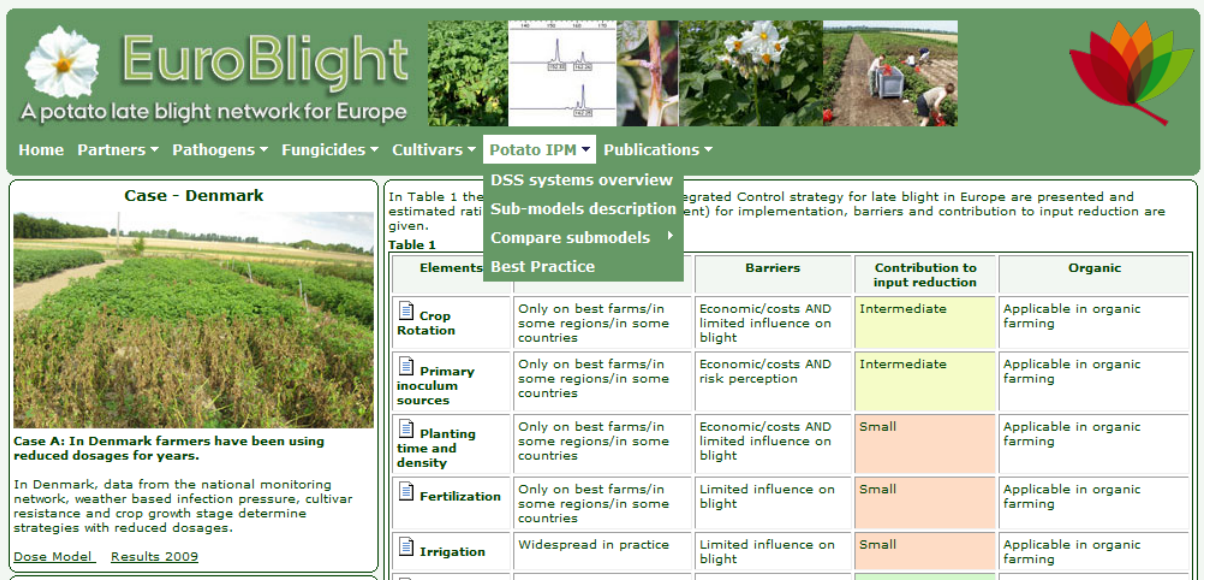

AGRIOS

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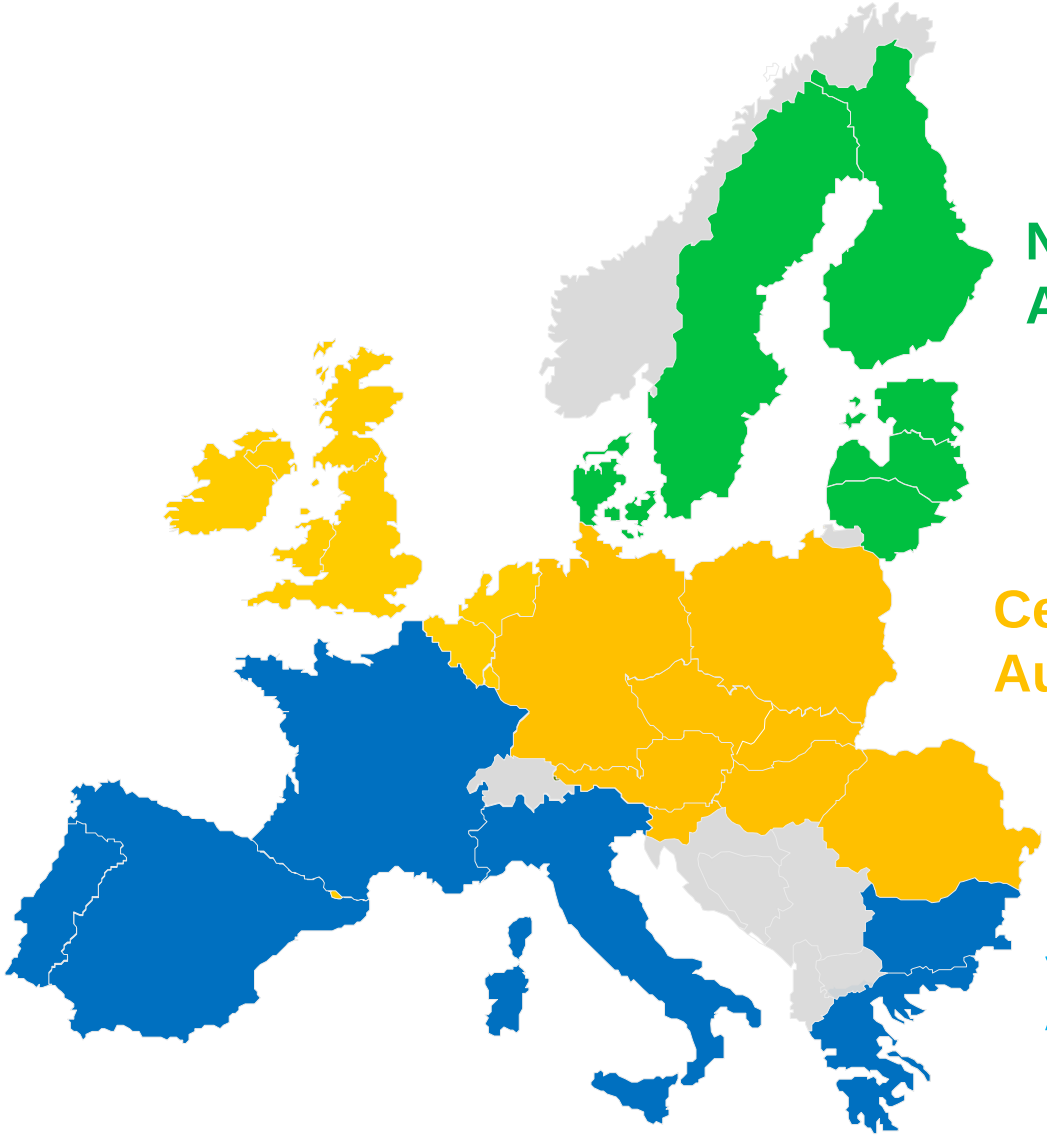
But for PPM it all comes down to….

- 1. Use non PPP options (crop rotation, cultivation, beneficials, ...) for prevention and/or suppression first.
- 2. Monitor the harmful organisms (forecasting and diagnosis systems).
- 3. Decide whether and when to apply PPP using threshold values if existing.
- 4. Prefer sustainable biological, physical and other non-chemical methods to chemical methods if they provide satisfactory pest control.
- 5. Apply pesticides as specific as possible for the target which have the least side effects.
- 6. Adapt the action to levels that are necessary, e.g. by reduced doses, reduced application frequency or partial applications.
- 7. Apply available anti-resistance strategies to maintain the effectiveness of the products. This may include the use of multiple pesticides with different modes of action.
- 8. Check the success of the applied plant protection measures.

Source: DIRECTIVE 2009/128/EC ANNEX III, adapted

Evaluation by zones – but registrations still by country!



Northern Authorisation Zone

Central Authorisation Zone

Southern Authorisation Zone

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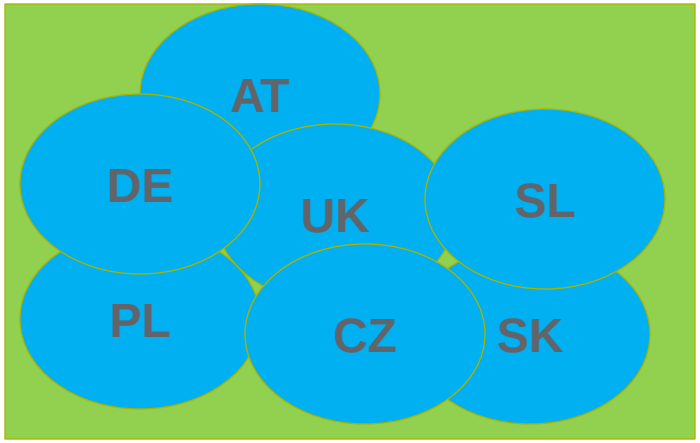
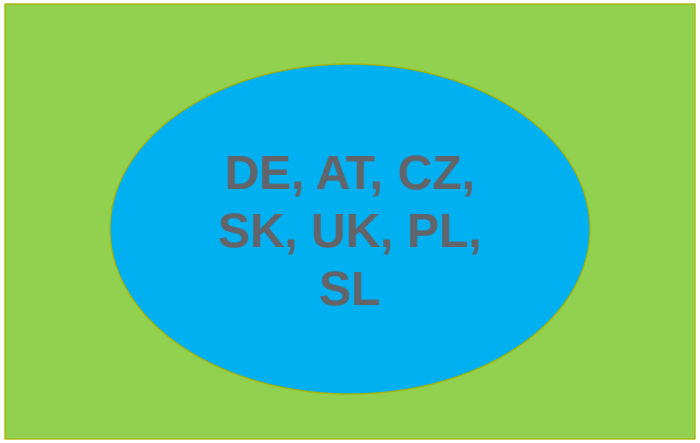
Core dossier (zonal) versus local addendum (national)

- Mutual agreement that national addendums should be kept to a minimum (eg. Local label)
- For Sections 1-6 this is possible by using the so called „risk-envelope“ approach (critical GAP)
- However, for Section 7 (Biological efficacy assessment) the data presented has to be equal to the national registration GAP



versus



Fruit case study – different dose expressions across the zone

- regarding the harmonization of the European registration of PPPs, there is still no agreement on dose expression in some crops as fruits and protected vegetables

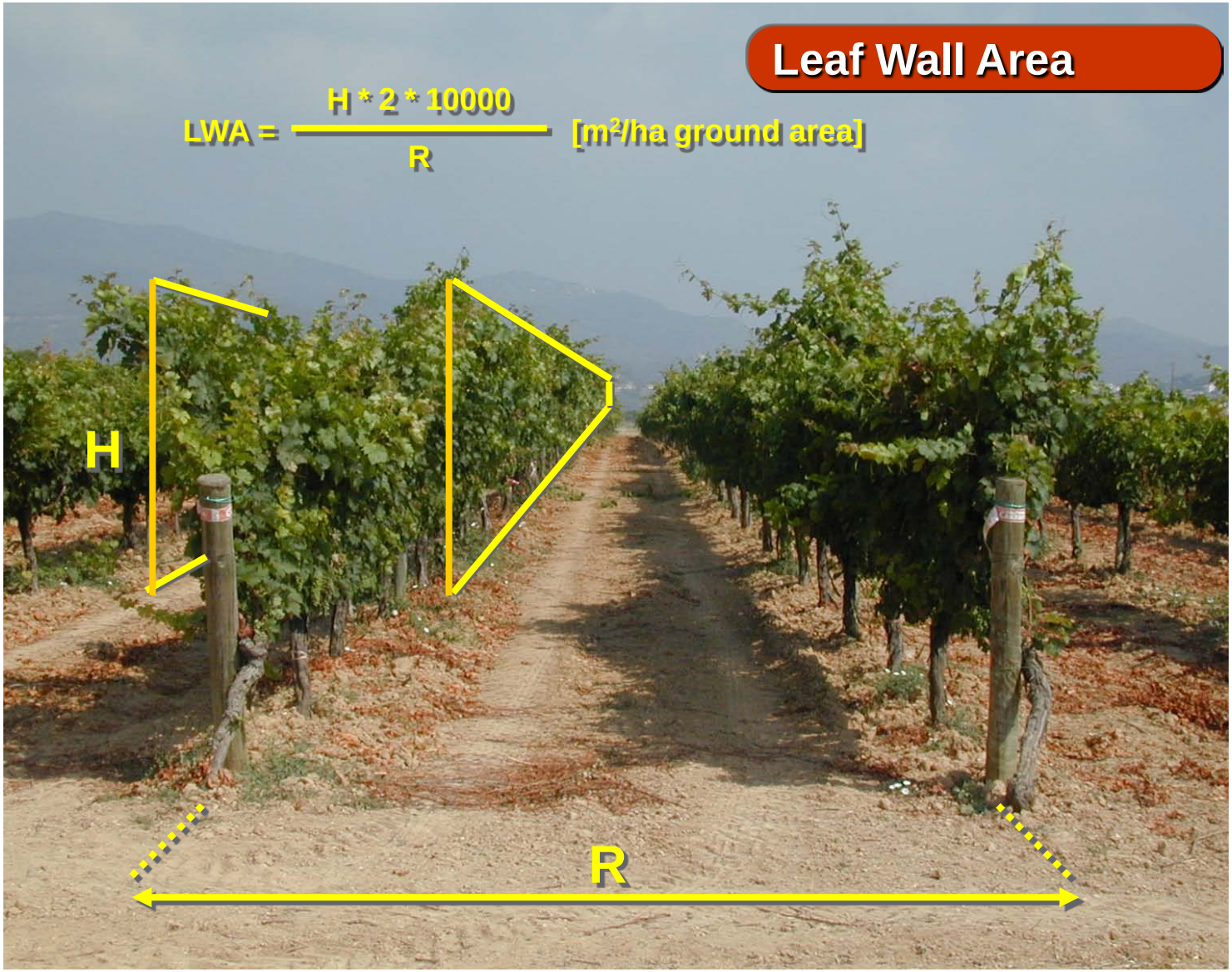
	Dose Expression
Austria	Kg/ha per m foliage height
Belgium	Kg/10.000m^2 LWA
Czech Republic	Kg/ha
Germany	Kg/ha per m foliage height
Netherlands	%, max. spray vol / ha
Poland	Kg/ha
Slovakia	Kg/ha
Slovenia	Kg/ha

- How to fit this into one core dossier?
- Mutual agreement between industry to focus on LWA in their submissions -> adaption of EPPO guideline

- But how to integrate susceptibilities of different varieties, different regional cropping systems, differences in regional climate, ...

Leaf Wall Area

$$LWA = \frac{H * 2 * 10000}{R} \quad [m^2/ha \text{ ground area}]$$



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Can national IPM guidelines help?

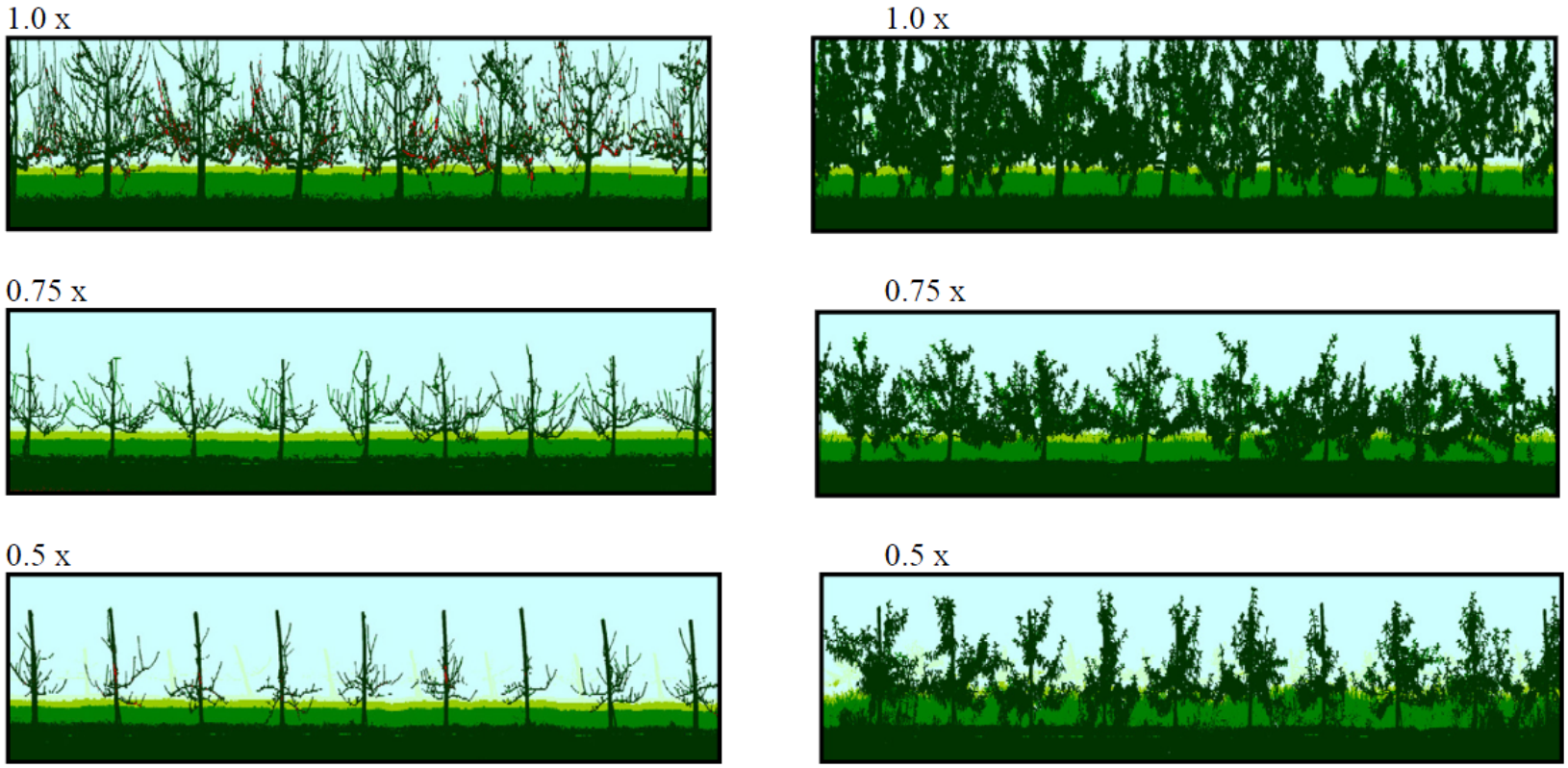

Figure 3. Pictograms indicating dose reduction factors for canopy density in dwarf and semi dwarf dessert and culinary apple orchards used in step 4 of the PACE dose adjustment scheme.

Source: J. V. Cross and P. J. Walklate. “The UK PACE Scheme for Adjusting the Dose to Suit Apple Crops”. Agricultural Engineering International: the CIGR EJournal. Manuscript ALNARP 08 003. Vol. X. May, 2008.

And national/regional IPM guidelines can also do more

- They are far beond the use of PPP
- They can give detailed guidance on many IPM aspects

a) Prevention

The entire cultivation program should be aimed at maintaining the trees' natural **resistance** against diseases and pests so that no additional spraying is necessary. Trees with too vigorous growth, for example, are especially susceptible to scab, mildew, aphids, mites, and codling moths.

Integrated crop protection means further protecting and promoting **natural enemies** of pests.
In the interest of **natural protection of species** and to promote the settlement and reproduction of beneficial animals in the orchards, we recommend the following measures:

- At the edges of the orchards, **hedges and bushes** should be left as shelter and breeding places for many species.
- Dry walls are welcome **shelter** for weasels, hedgehogs, shrews, various snakes and other beneficial animals. The same is true for rock piles, wood piles, and similar hiding places.
- To attract **birds of prey** (buzzards, falcons, owls, etc.), perches should be installed in the orchards above the trees. Birds of prey keep the orchard clean of mice.

PEST	CRITERIA FOR INTERVENTION
Codling Moth *(Cydia pomonella)*	Give preference to disruption methods for treatment. **Intervention level** **After checking at least 500 fruits per hectare, count the number of boreholes:** **June - 3 bored fruits/1.000** **July - 5 bored fruits/1.000** **August - 8 bored fruits/1.000**

Source: AGRIOS - Guidelines for Integrated Pome Cultivation 2011

Summary

- A lot of IPM guidelines already exist on regional, national and cross-country levels, currently difficult for the grower to find „the right one“
- PPP authorisation zones cover a huge variablity in terms of climate, soil, crops, pests, diseases, weeds
- To enable zonal worksharing it will be necessary to harmonise the use descriptions (dose expression, grouping of pests/weeds) across the zone
- The use (and registration) of PPP covers only one aspect of IPM, there are a lot more as crop rotation, beneficials, ...

Summary

- National IPM guidelines will probably become even more important in the new „zonal“ world of PPP authorisation
- If regional guidelines are needed they should fully integrate/refer to the national guidelines and only focus on the region specific parts (see AGRIOS as a good example)
- However, these national guidelines should adress specific points and give real „guidance“ and help for the grower
- The guidelines should be created in co-work by all the important stakeholders – growers, advisors, scientists, regulatory authorities
- These guidelines should allow the growers to be competitive both inter- and intra-zonal (pan-european alignment of some aspects?)

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Are crop and sector specific guidelines the best way forward for IPM?

Paul Chambers – vice-chair of the Working Party on Phytosanitary issues

Berlin 20th May 2011

Outline

1. Who are Copa and Cogeca?
2. Is IPM a new concept?
3. Common framework for IPM
4. What does IPM mean for EU farmers and agri-coops?
5. Implementing IPM at farm level
6. Crop and sector specific IPM guidelines
7. Conclusions

Who are Copa and Cogeca?

Copa – European farmers
Bringing together 60 EU farmers' organisations

Cogeca – European agri-cooperatives
Bringing together 35 EU agricultural cooperative organisations

- represents 13 million farmers and their families
- as well as around 38,000 cooperatives
- among the biggest and most active interest representations in Brussels

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european farmers european agri-cooperatives

Is IPM a new concept ?

IPM is not a new concept and but is based on good farming practice that has evolved over time

Its techniques are widely used all around the world

What is new in Europe is that following general IPM principles becomes mandatory for all farmers by 1 January 2014 as provided by the Framework Directive on the Sustainable Use of Pesticides

Common framework for integrated pest management (IPM)

Directive 2009/128/EC (art.14)

Member States shall establish or support the establishment of necessary conditions for the implementation of integrated pest management. In particular, they shall **ensure that professional users have at their disposal information and tools** for pest monitoring and decision making, as well as advisory services on integrated pest management.

What does IPM mean to European farmers and agricooperatives ?

There are many definitions of IPM e.g. FAO:

IPM means managing, in a given situation, populations of plant pests, diseases and weeds by the **combination of all appropriate agricultural practices** (preventive measures, cultural, mechanical, biological and chemical practices), with a **holistic approach** that reduces the impact of pests and damage to an acceptable level and at the same time ensures the protection of human health and the environment.

Implementing IPM at farm level

IPM is an on-farm management tool which is implemented by the farmer

IPM is part of integrated crop management (ICM) and is advocated by farmers' organisations.

IPM/ICM are the cornerstone of sustainable farming systems, as long as both are based on **economic viability**, **social acceptance** and **environmental friendliness**.

IPM is not about definitions but practical interpretation in the field taking into account economics, risks and labour costs.

What does IPM mean to European farmers and agricooperatives ?

As the FAO definition shows, the objective of IPM is not to minimise pesticide use, but to minimise the risks to human health and the environment.

The skills required for IPM are high and ensuring that qualified advice and extension services are available and accessible is important to allow support for the decision-making process.

Some of the measures for prevention and/or suppression of harmful organisms such as rotation, variety choice, sowing date and even planting density, are out of the control of the farmer as they are often dictated by the buyer.
There must be market for the crop.

Important to remember

The market dictates a lot of the requirements which restricts the farmers options e.g. the market is usually looking for zero tolerance, on areas like skin quality, in the interest of product quality.

The economic threshold for certain products is often zero. The market allows no room for manoeuvre. Failure to meet this can result in a much lower price

Hence it is unfeasible to expect farmers to wait for even slight visual damages before spraying if it reduces crop value.

Important to remember

Solutions for growers must be available at all times for all problems. This must be:

- A range of control options are needed.
- Resistance management is at risk due to the limited availability of PPPs on the market.
- The number of active substances available to farmers has fallen from over 1000 in 1991 to only around 400 actives currently authorised in the EU
- It is not just the number that is important but also a range of modes of action

There is real concern for the implementation of IPM principles if tools are unavailable or missing. This could lead to distortion of competition at EU level and vis-à-vis third country imports

Crop and sector specific guidelines on IPM

Defining general IPM principles and provision of general guidance is possible as long as these allow for adaptation to the specific situation and provide flexibility for site specific management decisions.

Decisions on which tools to use must be made at farm level and not dictated by fixed rules.

IPM approach has to be adapted to the production system and can only be effective if the decision is made on the ground.

Crop and sector specific guidelines on IPM

Guidelines may be difficult to use if they are impractical at the field level

Measures suggested must be cost effective and not subject farmers to uneccessary additional paperwork

Farmers need regularly updated information on local best practice for each crop and for each pest

Crop and sector specific guidelines on IPM

The **role of National authorities** should be **to provide** relevant **information** and **not to approve specific rotations** or cultivation methods based on specific guidelines

A more practical approach is needed:

1. Demonstration trials and fields,

1. on-farm research and experimentation,

2. extension services,

3. practical applied research on preventive measures.

(1) Conclusions

Farmers and growers rarely make the decision to use a crop protection product without first weighing up the various options available.

IPM has to be economically sustainable. IPM needs to consider the economics of pest management and the economic viability of the crop, as the crop has to remain profitable.

Squeezed economic margins for crop production are in conflict with the aims of the thematic strategy and the growers' priority to remain competitive.

(2) Conclusions

Guideline must be developed together with farmers' organisations since farmers are the final users

Guidelines are useful if practical, not restrictive, easily adaptable to the specific situation and provide flexibility for site specific management decisions

Ensuring a common playing field at EU where farmers can compete with equal tools, while avoiding extra costs and distortion of competition;

As long as imports from third countries do not meet EU environmental, plant protection and consumer protection standards, this will further reduce the competitiveness of EU Farmers

Copa-Cogeca: Defending and developing the European Model of Agriculture

THANK YOU !!!

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Implementing good practice within the Sustainable Use Directive for Plant Protection Products: the farmer's perspective

March 2011

Implementing good practice within the Sustainable Use Directive for Plant Protection Products: the farmer's perspective

◇ Introduction

The Directive on the sustainable use of plant protection products (PPPs) (Dir. 2009/128), adopted on 21st October 2009, aims to reduce the risk of PPPs to human health and the environment, whilst also seeking to streamline proper use in the field.

In order to achieve these objectives, all MSs must set up national action plans by 14th December 2012 in which they set 'quantitative objectives, targets, measures, timetables and indicators to reduce risks and impacts of pesticide use on human health and the environment and to encourage the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of pesticides by when and how they intend to achieve them' (Dir 2009/128/EC).

Although the drafts, or even finalised versions, of some Member States' national action plans are already available, others have only just started discussions or will soon be starting them.

Copa-Cogeca would like to highlight the fact that in most Member States, measures are already in place to reduce the risks and impacts associated with the use of PPPs. This needs to be acknowledged as discussions continue at national level regarding the development of national action plans.

Through this document, Copa-Cogeca would like to present some examples of best practice and sound principles for the sustainable use of PPPs which are already carried out in several MSs. Particular attention has been given to:

1. Training and certification of users
2. Systematic data collection on the use of PPPs
3. Information and awareness raising
4. Technical checks of spraying equipment
5. Aerial spraying
6. Specific measures to protect the aquatic environment and drinking water
7. Reduced or PPP-free zones
8. Handling and storage of PPPs
9. Common framework for integrated pest management (IPM)
10. Quantitative use reduction

◇ General comments on national action plans

Agriculture and plant protection products are going through a period of thorough readjustment following the adoption of the plant protection package. A significant number of active substances (ASs) had to be phased out of the market as they did not comply with the new legislative requirements[1]. At the same time, changes to the EU MRL (maximum residue level) system have accelerated the decline in the number of AS authorisations for the agricultural sector as a whole.

Gap analyses conducted in several Member States have already highlighted that crop protection in some agricultural sectors is very much under threat. In view of these constraints, the implementation of national action plans must not further exacerbate the existing vulnerability of many crops or jeopardise the sustainability and multi-functionality of European agriculture. On the contrary, they should ensure that while reducing the risk posed by PPPs to human health and the environment, a wide range of instruments is also offered to meet consumers' expectations without compromising the EU's level playing field.

It is evident that novel strategies (i.e. those not already adopted) to allow growers to produce using alternative pest and disease strategies will not be immediately available and considerable investment will be required to achieve progress across the various agricultural sectors.

Within the EU, the specific nature of the farming sector and its infrastructure vary widely between Member States and the proposed measures will need to take this into account. European standards must be met by all Members States. European derogations should only cover specific areas and must be financially compensated. Copa-Cogeca is of the opinion that national authorities are best placed to identify the appropriate measures to be taken and adapted to national, regional or local situations, provided that these are developed in an accurate manner without endangering the EU's level playing field. Therefore, Copa-Cogeca requests that the European Commission carefully monitors the implementation of the national action plans, ensuring that distortion of competition between Member States is avoided and that all operators in the European Union, including consumers, are provided with clear benchmarks.

National action plans should only focus on risk reduction and not on volume reduction, as this would be incompatible with the continuously declining number of PPPs available on the market and would consequently lead to the development of a resistance to certain active substances by harmful organisms.

Consultation and sharing of information and expertise with relevant representatives from industry, distributors and users is of central importance. In particular, the development of national action plans has to be done with the involvement of all stakeholders.

Access to specific knowledge on application needs and spraying schemes and to a broad diversity of control mechanisms (including chemical, non-chemical and cultural methods used routinely in IPM/ICM[2] programmes), to encourage farmers and growers to 'ring the changes' by using a combination of protectant and systemic eradicant products from different modes of action group, forms the backbone of any resistance management strategy. This concept is of fundamental importance and plays a key role in the goal of sustainable agricultural production.

It is important to raise the profile of environmental issues during the decision-making process prior to crop protection application. Greater attention must be paid to effective training especially in improving environmental awareness and the potential impact of PPPs in the wider environment. Knowledge of the individual products and their environmental performance relative to each other would help to enable framers to make informed choices. This must be the starting point for any concerted action to reduce environmental pollution.

More attention should be paid to the provision of training and information for farmers, technicians and agricultural advisors. Proper knowledge of the products themselves and their appropriate application is the starting point for any concerted action aimed at reducing health and pollution risks. In the various national action plans, the need for more intensive farm advice should be recognised, with particular emphasis on the importance of advice on plant protection. In addition to this, further efforts are needed to improve the transfer of scientific knowledge, taking into account new approaches such as the development of bio-pesticides or biological pest control through appropriate advisory measures or through support for voluntary additional training. The development of cost-effective low-risk plant protection schemes is of the utmost importance.

Farmers, growers and/or their advisors rarely make the decision to use a crop protection product without first weighing up the various options available. However, as economic margins for crop production continue to be squeezed this will highlight the apparent conflict between the aims of the thematic strategy and the growers' priority to remain competitive. In addition to this, as long as imports from third countries do not meet EU environmental, plant protection and consumer protection standards, this will further reduce the competitiveness of EU farmers.

(1) From over 1000 active substances available in 1991, there are now only around 250 actives substances authorised on the market.

(2) Integrated Crop Management

◇ Specific comments on examples of good practice

Training and certification of users

Directive 2009/128/EC (art.5)

Member States shall ensure that all professional users, distributors and advisors have access to appropriate training by bodies designated by the competent authorities. This shall consist of both initial and additional training to acquire and update knowledge as appropriate.

- **Copa-Cogeca position**

  Basic training and continued information is crucial for everyone applying PPPs, including farmers. Basic training has to be accessible to all professional users. Several farmers' unions and cooperatives are already involved in such programmes and in some Member States there is already a legislative framework in place. Furthermore, training should be mandatory for advisors, distributors and local authorities. When certifying users, practical experience, regional variations and differing farm sizes need to be taken into account. Copa-Cogeca is in favour of a device that certifies the skills of users whether they are acquired through appropriate training or verified by a test. Financial instruments are crucial for achieving the prerequisite for good agricultural practice.

- **Examples of good practice:**

  Hungary – Training and certification are in place. The certificate issued by the Central Agricultural Office permits professional users to sell, purchase and use PPPs. Different levels of training give farmers the opportunity to use any kind of Plant Protections Product, or only those belonging to certain categories (e.g. category II and III). A training programme needs to be attended on a regular basis in order to keep the certificate.

  Germany - A system of proficiency certification has been in place for some time. Proof of necessary technical skills and understanding is regulated through 'proficiency in matters of plant protection'. A special legal directive sets the rules for achieving the proficiency certification for users and distributors separately. This ensures that all professional users and handlers of plant protection products are fully competent.

  Latvia - Only persons who have received a certificate attesting the acquisition of basic knowledge about plant protection can use PPPs classified as class one or two. In addition to this, there is always a certified employee at points of sale to provide sound advice to buyers on the proper use of PPPs.

  Portugal - Training sessions are required for all professional users and handlers of plant protection products. Moreover, practical training and workshops are also provided for trainers of professional users in order to harmonise and improve the training process at national level.

Systematic data collection on use of PPPs

Directive 2009/128/EC (art. 6)

Mandatory collection of data on sales, distribution and use (participation to be defined) and creation of a Member State quality control procedure is recommended.

- **Copa-Cogeca position**

  The administrative burden for farmers needs to be reduced to a minimum. Record keeping can be an important management tool. Knowledge of what, where, when and how much PPP has been applied to a field or crop can help to develop suitable plant protection strategies at farm level. Special consideration should be given to existing data/ information collection systems and requirements, e.g. in the food hygiene[3] requirements, in order to avoid duplicate work being carried out.

(3) Regulation 852/2004 of 29 April 2004 (OJ 226/3 of 25th June 2004) – in particular Annex I Part A § 9

For Copa-Cogeca, record keeping of PPP use at farm level must be kept to a minimum (e.g. need to specify which PPPs are used, when, where and how much). Existing certification schemes should be considered as well as insurance companies' requirements. National data collection must correspond with standard recordkeeping on farms and should certainly not require information from more than 3 years ago.

- **Examples of good practice:**

Austria - A data collection system is in place as part of an integrated production system within the Austrian environmental programme. The amount of funding used for this project is repaid through rural development programmes.

France - Since 2008, distributors have kept records of sales, which are the basis for calculating the NODU (Nombre de Doses Unitaires spécifiques à la substance active); an indicator used for plant protection products for all crops which is calculated on an annual basis. Within the ECOPHYTO plan, registration of plant treatment is mandatory at farm level as part of the regional and national data collection system.

Italy - A data collection system has been in place for many years. In the future, it will also include data on the status and outcome of pest monitoring. Thereby ensuring a good flow of information and optimising the use and efficiency of plant protection products at farm level.

Latvia – In addition to recordkeeping by certified holders of PPPs, professional users also have to register data on the PPPs they acquire, the plants they treat, the area treated, the date of treatment and the name and dosage of the PPP used.

Portugal - Pesticide distributors maintain registers on PPPs, specifying the name of the buyer, the commercial name of the PPP, the quantity sold and the date on which it was sold. Farmers record data for the PPPs applied (the type of PPP used as well as where, when and how much).

Information and awareness-raising

Directive 2009/128/EC (art. 7)

Member States shall take measures to inform the general public and to promote and facilitate information and awareness-raising programmes and the availability of accurate and balanced information relating to PPPs for the general public, in particular regarding the risks and the potential acute and chronic effects for human health, non-target organisms and the environment arising from their use and the use of non-chemical alternatives.

- **Copa-Cogeca position**

Information given to the general public should be objective, balanced and science-based. It should not only cover environmental and health aspects relating to the use of plant protection products, but should also include messages explaining why they are used and what their benefits are.

- **Examples of good practice:**

Austria – The Chambers of Agriculture regularly inform the general public and farmers about the responsible use of PPPs and their effects by publishing press releases and through their relevant websites.

France - The "Ecophyto 2018 project" aims to provide the general public with information. Each year, indicators on the use of PPPs are published and publically discussed.

Hungary – Every year, the Central Agricultural Office publishes a PPP catalogue containing all certified PPPs, their main characteristics, safety instructions, applications, etc. Several different sources of information are available: the official "green book" and "white book", articles in agricultural magazines, relevant websites and the advisory services of the Hungarian Chamber of Agriculture or the Hungarian Chamber of Plant Protection Engineers and Plant Doctors.

UK - As part of the Voluntary Initiative Programme, environmental information sheets have been produced for the majority of PPPs on the market in the UK.

Technical check of spraying equipment

Directive 2009/128/EC (art.8)

Member States shall ensure that pesticide application equipment in professional use shall be subject to inspections at regular intervals. The interval between inspections shall not exceed five years until 2020 and shall not exceed three years thereafter.

- **Copa-Cogeca position**

  It is essential that equipment used for spraying agrochemicals is inspected on a regular basis, whether by the farmer themselves (or their staff) or at a special station.

  The development, implementation and timescale for low-cost testing schemes need to be discussed and agreed upon with the stakeholders involved at national level. Putting new application equipment and technology into practice for reducing spray drift and PPP use should be given particular support.

- **Examples of good practice:**

  Austria - Technical checks of spraying equipment take place at regular intervals as part of ad-hoc workshops. Financial contributions are made within the rural development programmes.

  Belgium - Legal requirements are already in place for the mandatory inspection of spraying equipment by an official body and handling and storage of PPPs, including the need for a warning sticker on the entrance of storage rooms.

  France – Since 2009, a technical inspection by an officially approved institution is periodically required. Anti-drift material and equipment for wastewater treatment are also controlled by the competent authorities.

  Germany - Mandatory inspections take place periodically within a network of test centres. There are several examples of efficient use of PPPs through directed nozzles, controlled sensors and assay techniques. Directed nozzles enable the percentage of drift to be reduced and avoid reaching fishing areas and non-targeted areas.

  Hungary – All spraying equipment, within a certain cubic capacity must be certified by a competent authority. A Certified Pest Protection Machinery Catalogue of all machinery is published on a regular basis to inform all professional users of available and approved machinery.

  UK - The National Sprayer Testing Scheme (NSTS) was set up in 2001 as a voluntary sprayer testing scheme and in 2009-2010 sprayers accounting for the majority of the sprayed area in the UK were tested under this scheme. Tests are carried out on farm by approved testers. For smaller pesticide users a self-test option is available.

Aerial spraying

Directive 2009/128/EC (art. 9)

Aerial spraying should generally be prohibited with derogations possible where it represents clear advantages in terms of reduced impacts on human health and the environment in comparison with other spraying methods, or where there are no viable alternatives, provided that the best available technology to reduce drift is used.

- **Copa-Cogeca position**

  In several cases, aerial spraying cannot be replaced by other crop protection techniques because of local constraints and regional conditions. Minimum requirements for aerial spraying must be included as part of good and responsible agricultural practice which respects the environment and biodiversity, including bees located in the area. Discussion is needed on the types of requirement which should be created, taking into account the economic and environmental value. A risk-based approach should be taken when considering aerial spraying requirements so that use of this technique is not prohibited per se for non-synthetic PPPs (e.g. bio-pesticides or biological pest control).

- **Examples of good practice:**

  France - Operators are obliged to declare any kind of treatment in advance to local authorities. Treatment using PPPs which are classified as toxic (T) or very toxic (T+) are prohibited. It is compulsory to respect a minimum safety distance from gardens, houses, water supply pipes, parks, etc. For example, within the sweet corn supply chain, where aerial spraying is used to treat Mediterranean corn borer and European corn borer, a trapping network managed by competent authorities together with a technical institute provides valuable information to ascertain the optimum treatment day and the geographical areas where the harmful threshold has been exceeded. All information provided is double checked by field observations.

  Hungry – Operators must meet very strict conditions before any kind of aerial treatment is permitted. A target map is needed in order to identify the affected area and all relevant issues within neighbouring areas: presence of urban areas, sensitive crops, livestock production units, environmental protected areas, national parks, grazing or feed production areas, sensitive areas covered by water, presence of public roads, etc. Operators must register all relevant data on weather conditions within a 5km radius in a flight book.

  UK - Existing legislation for aerial spraying requires consultation with any relevant authorities including any residents within 25m of the boundary of the land to be treated and for notification signs to be put in place.

Specific measures to protect the aquatic environment and drinking water

Directive 2009/128/EC (art. 11)

Member States shall ensure that appropriate measures to protect the aquatic environment and drinking water supplies from the impact of PPPs are adopted. Those measures shall support and be compatible with the relevant provisions of Directive 2000/60/EC[4] and Regulation (EC) No 1107/2009[5].

- **Copa-Cogeca position**

  Extra precautions or restrictions on the use of PPPs must be justified and farmers need to be compensated.

  The implementation of the Water Framework Directive at river basin level, managed by the competent authorities, offers the opportunity for cost-effective and proportionate local approaches, provided that they do not become an alternative authorisation process. Harmonised legislation is crucial and duplication of legislative requirements must be avoided.

- **Existing best practice:**

  Hungry – The government regulates the protection of aquatic environment and drinking water and also regulates the size of safety zones. There are three types of zones: A, B and C where the application of certain types of PPPs may be prohibited or restricted.

  Latvia - Buffer zones within a certain minimum distance from water courses cannot be treated with any PPPs. Strict conditions of use are often placed on products to ensure that any risks associated with their use are reduced to an acceptable level.

  Netherlands - Buffer zones and/or spray drift reducing techniques are compulsory along waterways.

  Portugal – Buffer zones along underground water sources used for human consumption are mandatory. The immediate buffer zone forbids any kind of activity, while the larger buffer zone restricts certain activities, including the use of PPPs.

(4) Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

(5) Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC.

Reduced or PPP-free zones

Directive 2009/128/EC (art.12)

Member States shall, having due regard for the necessary hygiene and public health requirements and biodiversity, or the results of relevant risk assessments, ensure that the use of PPPs is minimised or prohibited in certain specific areas. Appropriate risk management measures shall be taken and the use of low-risk plant protection products as defined in Regulation (EC) No 1107/2009 and biological control measures shall be considered in the first place.

- **Copa-Cogeca position**

  The environmental impact of PPPs is already regulated by the authorisation process. Extra precautions or restrictions on the use of PPPs must be justified at national level. Moreover, farmers need to be compensated for the repercussions of restricted use. Farmers with fields in NATURA 2000 areas should still be allowed to continue to farm properly.

  Creating reduced or PPP-free zones can have a huge impact on the local farming sector. Additional requirements leading to reduced or zero use, based on scientific evidence, should be adequately compensated. This compensation needs to be extended to cover extra labour, investment in equipment and possible income and crop loss.

- **Examples of good practice:**

  UK - Existing schemes (e.g. Sites of Special Scientific Interest) already have restrictions in place which are site specific and allow problems to be controlled if necessary. This is far more appropriate than a total ban.

Handling and storage of PPPs

Directive 2009/128/EC (art.13)

Member States shall adopt the necessary measures to ensure that the following operations by professional users and where applicable by distributors do not endanger human health or the environment: (a) storage, handling, dilution and mixing of PPPs before application; (b) handling of packaging and remnants of PPPs; (c) disposal of tank mixtures remaining after application; (d) cleaning of the equipment used after application; (e) recovery or disposal of pesticide remnants and their packaging in accordance with Community legislation on waste.

- **Copa-Cogeca position**

  Farmers must ensure that authorised PPPs are handled and stored in a responsible way. This is also in their interest. Any PPP used according to its instructions should not be harmful to public health, but should instead only provide a plant with a solution for a specific pest problem.

- **Examples of good practice:**

  Belgium – PPPs should be stored in a secure, dry and well-ventilated place. They should also be far away from residential areas and inaccessible to children. They need to be labelled with warnings. Farmers are actively involved in the collection of empty PPP packages via the collection system established by Phytofar-recover.

  France - Promotion of best practices is available at farm level, particularly through the training scheme "certiphyto". A regular system is in place for the disposal of obsolete, empty or unused PPPs.

Latvia - Professional operators are responsible for handling and storing PPPs. Places where PPPs are stored need to be lockable, inaccessible to children and animals and separated from food products and fodders. It is the responsibility of the PPP user to comply with PPP label requirements.

Portugal – Strict conditions are in place for the storage of PPPs on farm, in storage before sale and in distribution storage. Twice a year farmers can deliver empty or unused packs of PPPs in transparent plastic bags which are distributed beforehand.

As part of cross-compliance measures, farmers must comply with proper storage and disposal measures for PPPs at reception centres. It is strictly forbidden to abandon, burn or bury PPPs outside these centres.

Common framework for integrated pest management (IPM)

Directive 2009/128/EC (art.14)

Member States shall establish or support the establishment of necessary conditions for the implementation of integrated pest management. In particular, they shall ensure that professional users have at their disposal information and tools for pest monitoring and decision making, as well as advisory services on integrated pest management.

By 30th June 2013, Member States shall report to the Commission on the implementation of paragraphs 1 and 2 and, in particular, whether the necessary conditions for implementation of integrated pest management are in place.

- **Copa-Cogeca position**

Integrated pest management is part of integrated crop management and is advocated by farmers' organisations. Integrated crop management is the cornerstone of sustainable farming systems, as long as both are based on economic viability, social acceptance and environmental friendliness.

Amending definitions to clarify and specify IPM is not the solution to the absence of a common understanding of the concept. If real, economically viable solutions were presented to farmers, 90% would put them into practice. IPM is not about definitions, but economics, risks and labour costs.

According to Copa-Cogeca, "IPM means managing, in a given situation, populations of plant pests, diseases and weeds by the combination of all appropriate agricultural practices (preventive measures, cultural, mechanical, biological and chemical practices), with a holistic approach that reduces the impact of pests and damage to an acceptable level and at the same time ensures the protection of human health and the environment"[6].

We must accept that the market is looking for zero tolerance, in the interest of product quality. For example, apples with slight skin defects would struggle to find a market and if they did they would obtain a much lower price (for processing). They would not normally be bought by consumers. In other words, the economic threshold for certain products is often zero. The market allows no room for manoeuvre.

Solutions for growers must be available at all times for all problems. Several options are needed within multiple modes of action. Anti-resistance management is at risk due to the limited availability of PPPs on the market. Therefore, further improvements are needed. Decisions on which tools to use must be made at farm level and not dictated by fixed rules. The IPM approach has to be adapted to the production system and can only be effective if the decision is made on the ground.

A more practical approach is needed: demo fields, on-farm experimentation, extension services, and practical applied research.

(6) Integrated Pest Management: the perspective of partners in the food value chain (2010)

- **Examples of good practice:**

Belgium - IPM guidelines are already in place as an initial part of private production schemes for good agricultural practice. The horticultural-vegetable production scheme includes IPM as the primary mode of action. Advisory cards are available for vegetable crops and fruit based on IPM which permit biological control, environmental protection and the protection of the health of professional users. Each advisory card has a specific colour (white, green, yellow or red) indicating the environmental impact of those control methods applied by calculating the pesticide risk indicator POCER (Pesticide Occupational and Environmental Risk).

Germany - Integrated pest management is already part of national legislation. Crop and/or sector-specific guidelines on integrated pest management are also being developed and used by growers. For example, many IPM techniques have been in place for hops and it is only when cultural practices are not sufficient that plant protection products are considered. There are also two warning services, for peronospora and powdery mildew, to inform farmers about the emergency levels. Implementation of the guidelines is included in quality programmes or agri-environmental programmes.

Italy –National guidelines on IPM are in place for 117 crops. These guidelines provide a good basis for on-farm IPM application. Several projects have been implemented on the ground which aim at optimising the management of pests and reducing their environmental impact (e.g. FIORIBIO, Life + Sumflower - Sustainable Management of Floriculture in Western Coast)

Netherlands - IPM guidelines are part of private production schemes for good agricultural practice. At the start of the growing season, each grower is obliged to complete a crop protection plan for each crop grown. For field crops, information is based on certified and guaranteed disease-free seeds, starting material, seed treatment if available, decision support systems voluntarily used to support the control of fungal diseases and control measures for aphids, based on scouting and thresholds. For greenhouse crops, information is based on scouting and thresholds used to support the control of various harmful pests and natural predators used alongside PPPs and finally hygiene measures to prevent infestations and the spread of bacterial diseases and viruses.

Spain - Important developments have taken in recent years in alternative pest and disease control systems, such as the use of biological pheromones and sexual confusion controls. IPM techniques are in place in Seville for rice crops. Such techniques enable better pesticide use and a systematic reduction of PPPs (60-65%). The high cost of IPM is supported in part by the agri-environmental measures available in Spain.

Sweden – It has been suggested that IPM be implemented as part of a training programme. All PPP users shall attend a proper course for the current implementation of IPM and the eight principles[7].

Slovakia - IPM has a long tradition of IPM guidelines especially as regards fruit, vegetables and grapes.

(7) (1) Measures for prevention and/or suppression of harmful organisms
(2) Tools for monitoring
(3) Threshold values as basis for decision-making
(4) Non-chemical methods to be preferred
(5) Target-specificity and minimization of side effects
(6) Reduction of use to necessary levels
(7) Application of anti-resistance strategies
(8) Records, monitoring, documentation and check of success

Quantitative use reduction

Directive 2009/128/EC

Member States shall adopt national action plans to set up their quantitative objectives, targets, measures and timetables to reduce risks and impacts of pesticide use on human health and the environment and to encourage the development and introduction of integrated pest management and of alternative approaches or techniques in order to reduce dependency on the use of PPPs.

- **Copa-Cogeca position**

  Copa-Cogeca strongly believes that the focus should be on risk reduction and is opposed to the idea of a quantitative approach as such. Farmers should be able to make their own management decisions and ensure that authorised PPPs are used in a responsible way.

  A quantitative approach would not take into account the fact that two applications of a substance targeting a specific problem could have a considerably reduced effect on the environment as compared to one application of a heavy "all purpose" product.

- **Examples of good practice:**

  Germany - The 'handling index' defines the intensity of PPP use. Plant protection risk indicators are based first and foremost on risks to natural ecosystems. Using computer-based models, such as SYNOPS, relative changes in risks to aquatic and land-based ecosystems owing to PPP use can be calculated. The SYNOPS model is currently being developed to increase the scope to also take into consideration risks to users and the public.

  UK – The examples of voluntary measures to promote best practice mentioned in this document have all focussed on risk reduction, not use reduction. Arbitrary use reduction targets do not take into account the importance of PPPs or the risks of alternative options, both chemical and particularly non-chemical control options.

Maximum residue levels (MRLs) are not an issue for national action plans (NAPs)

Copa-Cogeca strongly believes that maximum residue levels should not be regulated as an additional constraint on NAPs. MRLs are not a result of food safety measures but a result of good agricultural practice (cropping practices including rotation, choice of variety, sowing date, etc). MRLs are already covered by Regulation (EC) No. 396/2005 of the European Parliament and the Council of 23rd February 2005 on maximum residue levels of PPPs in or on food and feed of plant and animal origin. Here again, doubling up of regulations should be avoided.

COPA AND COGECA:

THE VOICE OF EUROPEAN FARMERS AND EUROPEAN AGRI-COOPERATIVES

Copa-Cogeca is the united voice of farmers and agri-cooperatives in the EU. Together, they ensure that EU agriculture is sustainable, innovative and competitive, guaranteeing food security to half a billion people throughout Europe. Copa represents over 13 million farmers and their families whilst Cogeca represents the interests of 38,000 agricultural cooperatives. They have 77 member organisations from the EU member states.

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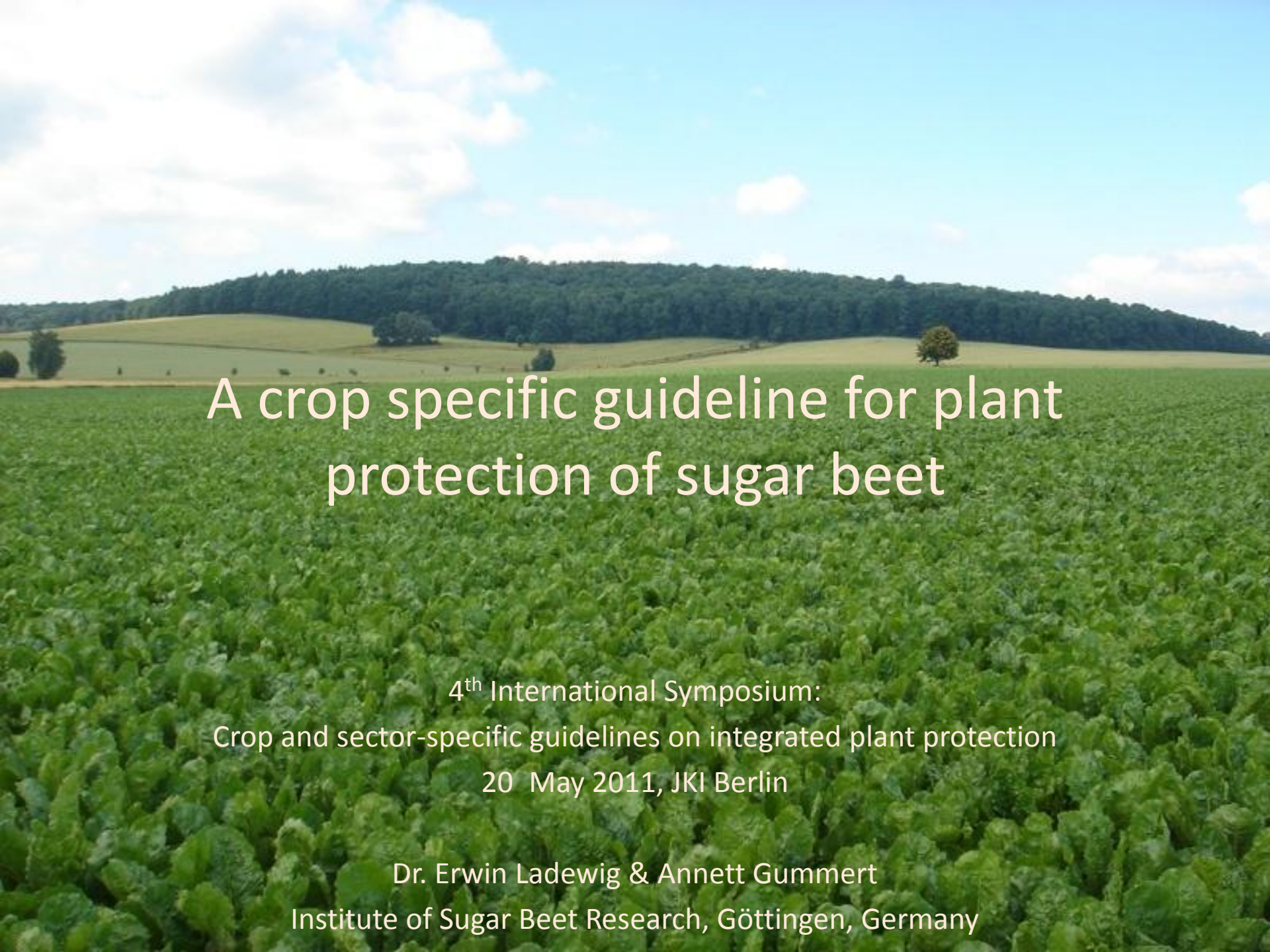


A crop specific guideline for plant protection of sugar beet

4th International Symposium:

Crop and sector-specific guidelines on integrated plant protection

20 May 2011, JKI Berlin

Dr. Erwin Ladewig & Annett Gummert

Institute of Sugar Beet Research, Göttingen, Germany

Directive 2009/128/EC: sustainable use of pesticides

Article 14

(5) Member States shall establish appropriate incentives to encourage professional users to implement **crop or sector-specific guidelines** for integrated pest management on a voluntary basis. Public authorities and/or organisations representing particular professional users may draw up such guidelines. Member States shall refer to those guidelines that they consider relevant and appropriate in their National Action Plans.

<u>Joint Research Project at the Institute of Sugar Beet Research</u>

Development of a proposal for guidelines of Integrated Pest Management in Sugar Beet

first draft in 2007

BLE-funding (Federal Office for Agriculture and Food) 2008-2011

=> Poster Session…

Proceeding I

Literature overview

- research on relevant pests and diseases of sugar beet and suitable integrated control strategies
- collection of the state of knowledge from:
  - scientific journals
  - farmers´ magazines
  - recommendations from advisory services
  - reference books
  - internet services on plant protection
- source-specific documentation
- in case of conformity: summary of the main points, otherwise further discussion necessary

IPM in sugar beet (Germany)

harmful organism	control strategy			forecasting system/ threshold values
	indirect (preventive)	direct		
		non-chemical	chemical	
I. foliar diseases				
Cercospora and Ramularia leaf spot, Powdery mildew, Rust	✓		✓	✓
II. soil-borne diseases				
Rhizomania (BNYVV)	✓			
Rhizoctonia	✓			
III. seedling diseases				
Blackleg	✓		✓	
IV. nematodes				
Beet cyst nematode	✓	✓		
V. pests				
Insects	✓		✓	✓
VI. weeds				
Dicots and Grasses	✓	✓	✓	*
Bolter	✓	✓	✓	✓

Proceeding II

Literature overview

↓

First draft of sugar beet specific principles of IPM

pathogen specific principles:

- foliar diseases
- soil-borne diseases
- seedling diseases
- nematodes
- pests
- weeds

from subproject 2

- results field trials
- results SYNOPS

two parts:

a. superior principles

   JKI proposal adapted to sugar beet

b. specific principles

   pathogen specific recommendations

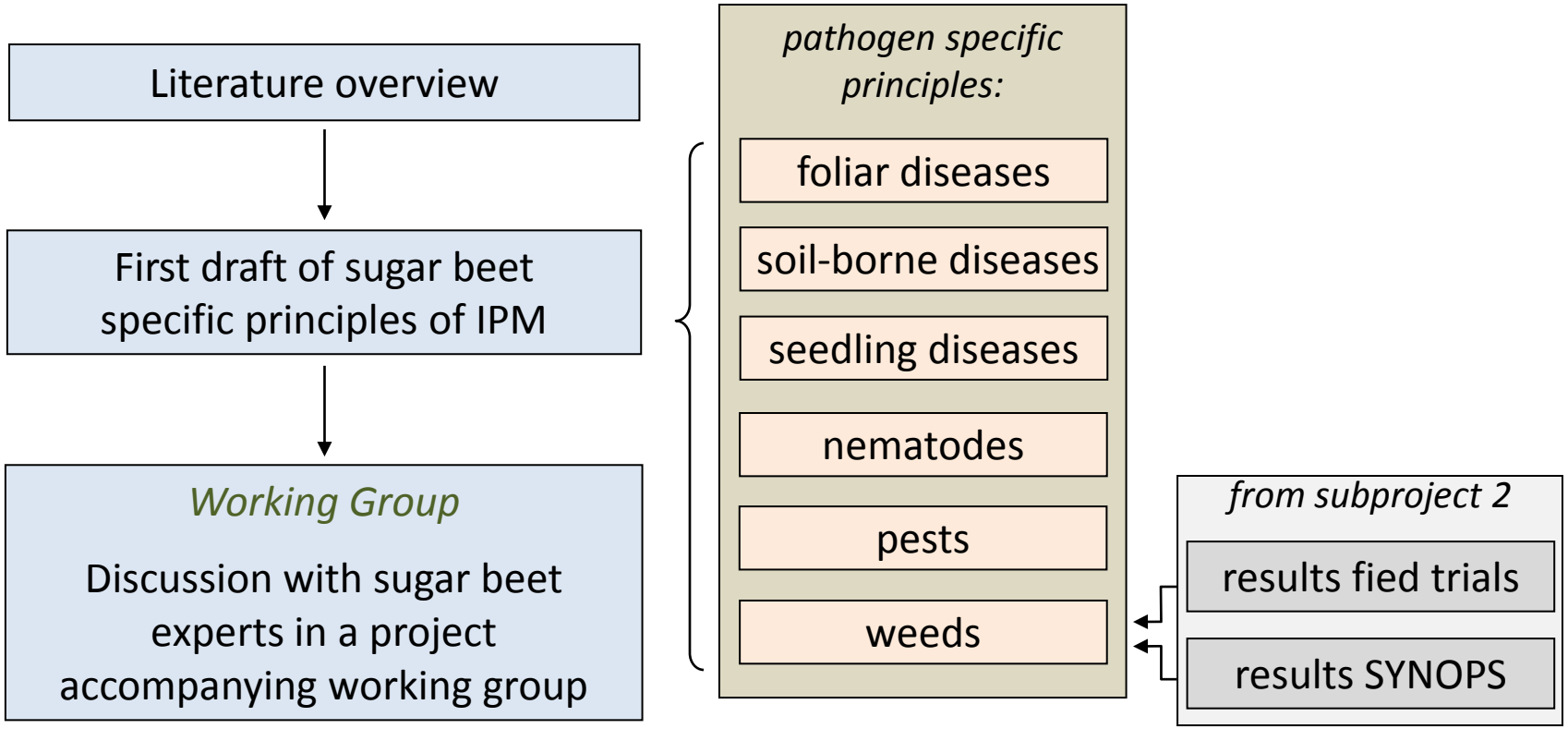
=> content and structure in accordance to the 8 IPM principles (EU)

EU Directive: sustainable use of pesticides

Annex III: 8 general principles

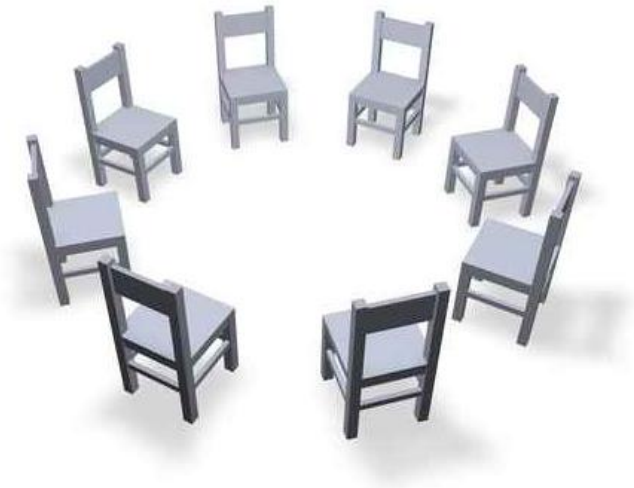
(1) measures for prevention/suppression of harmful organisms
(2) methods and tools for monitoring
(3) decision making => threshold values
(4) non-chemical methods to be preferred
(5) pesticide application => target-specificity and minimization of side-effects
(6) reduction of the use of pesticides to necessary minimum
(7) anti-resistance strategies
(8) records on the use of pesticides , check of success

Proceeding III



working group

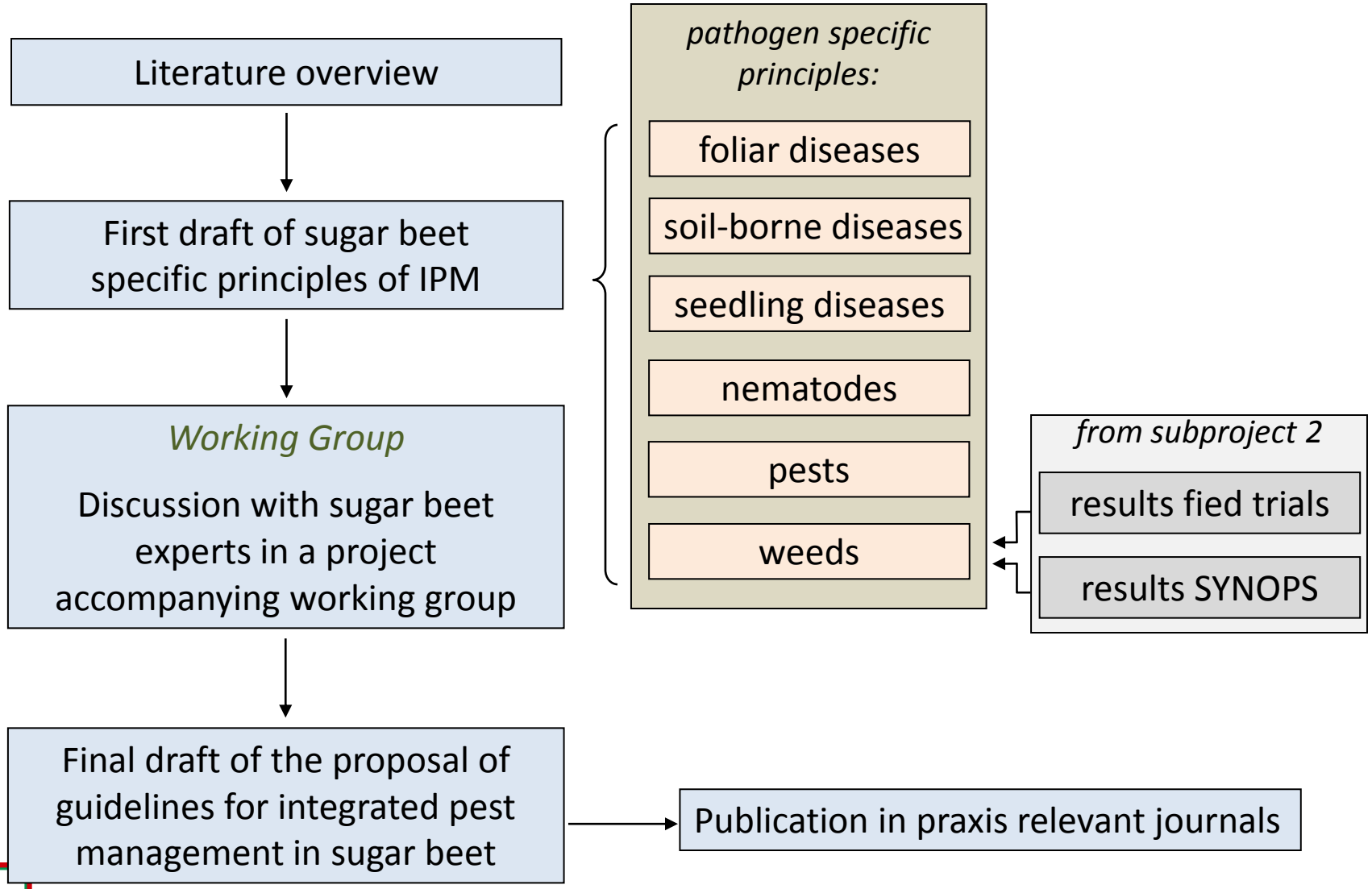
participating institutions



www.netzwerk.li/.../Stuhlkreis%20Gruppe.JPG

- sugar beet growers and growers associations
- sugar industry
- official advisory service
- breeding companies
- companies of the plant protection industry
- Julius Kuehn-Institute JKI
- Federal Office of Consumer Protection and Food Safety (BVL)
- internet based advisory systems (BISZ, ISIP, LIZ)

Proceeding IV



examples from superior and pathogen specific IPM-principles

RHIZOCTONIA

preventive measures	Explanation
Crop rotations including a high proportion of host plants (sugar beet, fodder beet, corn, cabbage, beans) should be avoided. In areas with known infection potential corn is not to be grown as a previous crop to sugar beet.	Propagation of *Rhizoctonia solani* in the soil is enhanced by frequent cultivation of host plants which increases the infection potential. A wide distance of sugar beet in crop rotation to other hosts and itself lowers the infestation risk. Corn as a previous crop can be the reason for a stronger disease incidence of *Rhizoctonia solani* in the following sugar beet crop.

superior principles: preventive measures

The time of sowing has to be chosen in a way that infestation by pests and diseases is prevented. An early sowing date, adapted to the local situation, which enhances rapid and homogeneous field emergence of more than 80 % has to be aspired. The amount of seed per area unit should, in respect to the expected level of field emergence, enable a plant density of more than 80.000 plants/ha. Chemical seed coating against emergence pests and damping-off diseases has to be used. In regions with frequent occurrence of pests, higher concentrations of insecticides in the seed coating should preferably be used to avoid spraying.

INSECTS

preventive measures	Explanation
All measures that enhance rapid emergence and youth development, reduce the risk of insect attacks. Therefore, sowing should be done as early as possible so that a rapid field emergence and evenly canopy closure is likely to be expected.	A rapid emergence of sugar beets prevents relevant damages (e. g. *atomaria lineatus*) on root, leaves and hypocotyl. Because aphids prefer to fly to unhomogeneous plant stands and unclosed canopies, all measures are positive, which enhance homogeneous plant stands and early canopy closure. More developed plants often show less damages at infestation (e. g. *pegomyia betae*, aphids). … If an infestation risk by *Ditylenchus dipsaci* is present, early sowing increases the infestation level.

superior principles: preventive measures

On fields with frequent or expected serious occurrence of pests/diseases no varieties have to be chosen which are described to be susceptible, if resistant or less susceptible varieties are available for an economic cultivation. …

The choice of resistant or tolerant varieties is in the case of rhizomania and rhizoctonia the only option for an economic cultivation of sugar beet. For nematodes and foliar diseases as well the choice of resistant, less susceptible or tolerant varieties is an effective, preventive measure.

RHIZOMANIA

preventive measures	explanation
On Rhizomania infected fields a tolerant variety must be grown.	Die Übertragung des Virus (BNYVV) erfolgt mit Hilfe des Protisten *Polymyxa betae*, der an Boden-partikeln haftet. Eine indirekte Bekämpfung über die Fruchtfolge ist nicht möglich, da die Dauerorgane des Pilzes bis zu 20 Jahre im Boden lebensfähig sind. Cultivation of tolerant varieties is the only effective measure to avoid damages on sugar beets.

FOLIAR DISEASES

threshold values	explanation
The decision on the necessity of a fungicide application is made on the basis time-dependent threshold-values taking into consideration the recommendations of authorized advisory services.	Im Zuckerrübenanbau sind seit Jahren Schwellenwerte zur Bekämpfung von Blattkrankheiten bundesweit erfolgreich in der Anwendung. Diese ermöglichen es den Anbauern, den Einsatz von Fungiziden auf das notwendige Maß zu begrenzen. Commonly used is the summarized threshold system (5-15-45 %). Furthermore regionally adapted threshold systems are available.

Experiences throughout the project on IPM guidelines in sugar beet

- guidelines can‘t be too strict because growers have to respond to various environmental situations
- guidelines have to consider conflict goals (e. g. seeding time)

- measures which optimise sugar beet growth minimise the need of PPP (high yield does not correspond to high input of PPP)
- to control a competitive factor early needs less PPP but does not enhance the use of thresholds (e.g. weeds)

future action

- dynamic guidelines: continuous adaptation to current state of research

Die Förderung des Vorhabens erfolgt aus Mitteln des Bundesministeriums für Ernährung, Landwirtschaft und Verbraucherschutz (BMELV) über die Bundesanstalt für Landwirtschaft und Ernährung (BLE) im Rahmen des Programms zur Innovationsförderung.

Thank you for your attention!

Institute of Sugar Beet Research

PROJECT GUIDELINES INTEGRATED PEST MANAGEMENT IN SUGAR BEET

Development of guidelines for the Integrated Pest Management in sugar beet and exemplary investigation of ecological and economical impacts of innovative use of Plant Protection Products

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Introduction

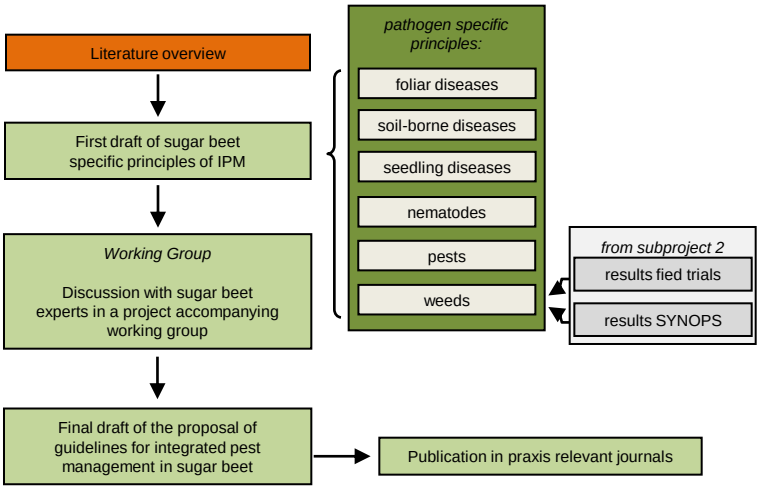
Aim of the project is the development of harmonized guidelines for the integrated pest management in sugar beet in Germany. Environmental effects of herbicide use (different strategies) in splitted application are measured exemplarily and compared with modelled environmental risks.

Project conduction

Measurement of environmental effects takes place in cooperation with Julius Kühn-Institute (JKI) Braunschweig at 20 sites. The industry partners model the fate of active ingredients, while the modelling of environmental risks is done at JKI Kleinmachnow, based on data of field trials.

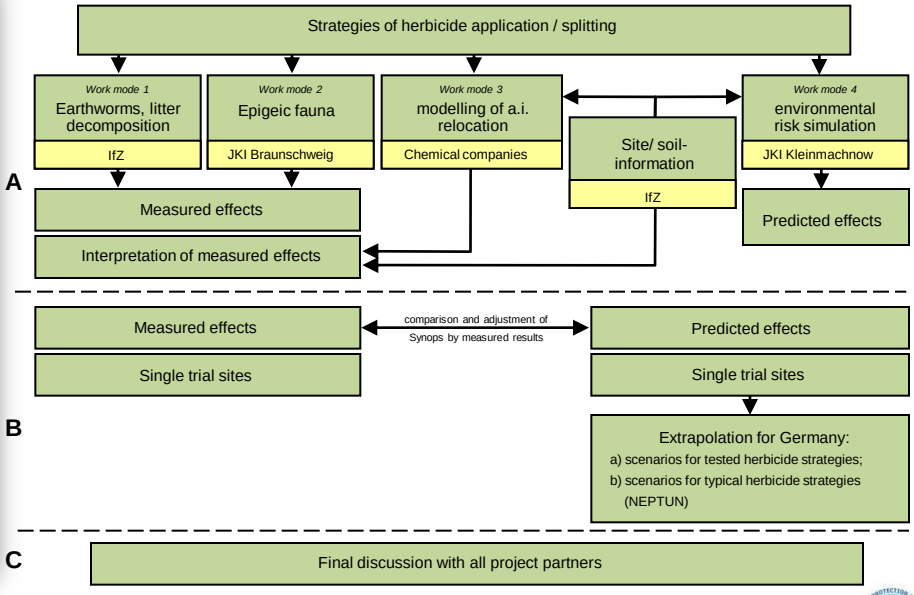
The results are used for the improvement of competitiveness of farms. Knowledge is quickly transferred to advisory services and agricultural practice.

Subproject 1: development of sugar beet specific IPM-guidelines



The joint research project is of utmost importance for agricultural policy concerning the implementation of the EU Directive on Sustainable Use of Plant Protection Products and the therein contained need for National Action Plans.

Subproject 2: Environmental impact of plant protection strategies



This project is financially supported by the Federal Ministry of Food, Agriculture and Consumer Protection as part of the innovation funding of The Federal Office for Agriculture and Food.

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Derivation of herbicide strategies in sugar beet

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Institute of Sugar Beet Research

Introduction

The use of herbicides for weed control in sugar beet was continuously developed and optimized in the last decades. Splitting-applications and weed specifically adjusted application rates led to specific herbicide use in sugar beet in Germany. With the development of the NEPTUN-Surveys, treatment index (TI) for pesticide use was introduced in Germany. The TI allowed a comparison of the pesticide intensity among regions. Thus, differing pesticide strategies could be identified.

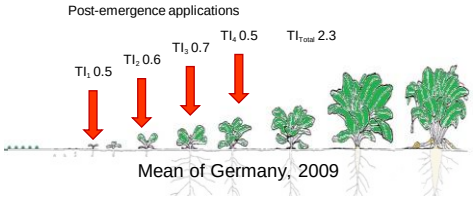
ERA: Survey Regions Agriculture; ROßBERG ET AL., (2010): NEPTUN 2009 – Sugar beet

Material & Methods

For the evaluation of strategies concerning herbicide use, data from the NEPTUN-Survey 2009 were taken (**N**etwork for the d**e**termination of the use of crop **p**rotection chemicals in differen**t** agric**u**ltural relevant **n**atural habitats in Germany). The calculation of the treatment index was done field- and treatment-specific. TI_{Total} represents the mean value on a regional scale called ERA.

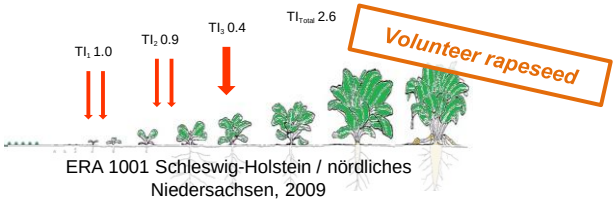
$$TI : \sum \frac{\text{Application rate [l kg}^{-1}\text{]}}{\text{Allowable rate [l kg}^{-1}\text{]}} \times \frac{\text{Treated area [ha]}}{\text{Area [ha]}}$$

Results



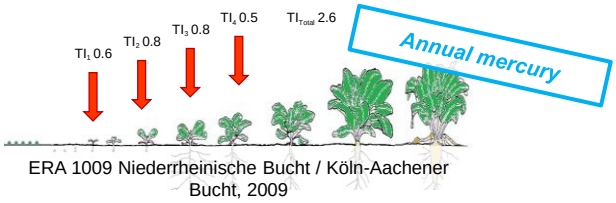
Mean of Germany, 2009

In Germany weed control in sugar beet is focused on post-emergence applications. On average, 3.7 herbicide treatments were applied with a TI_{Total} of 2.3 in 2009. The intensity of the treatments increased from the 1st application with a TI of 0.5 to 0.7 in the 3rd application. The 1st treatment was applied15 days after sowing with a mean treatment interval of 12 days.



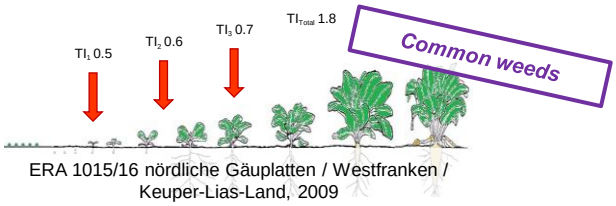
ERA 1001 Schleswig-Holstein / nördliches Niedersachsen, 2009

In ERA 1001 the TI was higher than the average. Overall, approximately 5 treatments were applied. On average, the 1st treatment was applied15 days after sowing, but the treatment interval was 8 days. This was mainly influenced by the first two treatments which were split up again. The treatment interval between these treatments was relatively short.



ERA 1009 Niederrheinische Bucht / Köln-Aachener Bucht, 2009

ERA 1009 showed a relatively similar herbicide intensity as observed in ERA 1001. The treatment frequency (TF) was 3.7 on average and the 1st treatment was applied 16 days after sowing. The treatment interval was 12 days. The relatively high TI_{Total} resulted from a high number of pesticide products and active ingredients.



ERA 1015/16 nördliche Gäuplatten / Westfranken / Keuper-Lias-Land, 2009

In ERA 1015/16 the lowest herbicide intensity with 1.8 was observed. 1st herbicide treatment was applied on average 17 days after sowing with a treatment interval of 13 days. A moderate herbicide input per treatment and the low TF resulted in the lowest TI_{Total} which was calculated in 2009.

Discussion

Herbicide strategies differed in the factors treatment index, treatment frequency, treatment interval, number of used pesticides and active ingredients per treatment. It turns out, that difficult to control weeds had a major influence on weed control strategies in sugar beet. Regions with weed infestations focused on annual mercury as in ERA 1009 required a higher number of pesticides and active ingredients per treatment at a mean level of the treatment frequency, which resulted in a higher treatment index. Weed infestations dominated by volunteer rapeseed as in ERA 1001 required a high treatment frequency in combination with a short treatment interval and less active ingredients per treatment, which also resulted in a higher treatment index. Regions with a lower proportion of difficult to control weeds had a lower treatment index, which arose by a lower treatment frequency, longer treatment interval and a mean number of pesticides and active ingredients as in ERA 1015/16.

This project is financially supported by the Federal Ministry of Food, Agriculture and Consumer Protection as part of the innovation funding of The Federal Office for Agriculture and Food.

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PROJECT GUIDELINES INTEGRATED PEST MANAGEMENT IN SUGAR BEET

Response of earthworm population on herbicide application intensities within a conventional and a reduced tillage system in sugar beet crop in Germany

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Introduction

The application of low dosage herbicide rates is a new herbicide strategy in sugar beet crop. This strategy implies high numbers of ingredients and strongly reduced application rates. However, the environmental effects of this strategy are still poorly understood.

Materials & Methods

- 19 field trials in 2008 and 2009 (Fig. 1), resulting in a high variation of soil types and weather conditions of representative sugar beet growing regions in Germany
- half of each field trial (yellow mustard as intercrop) was conventionally ploughed, the other half was conservatively tilled (ploughing and mulching system)
- three herbicide strategies with different intensities (Table 1), randomomized completely in four replicates in each tillage system (Fig. 2)
- earthworms were expelled in spring and autumn using the formalin extraction method

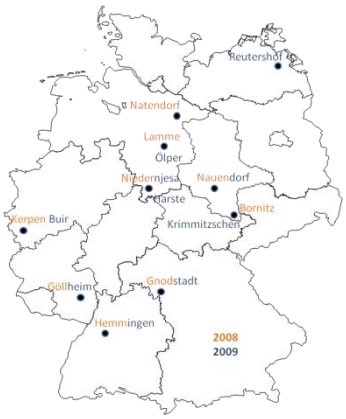

Fig. 1: Field trial sites.

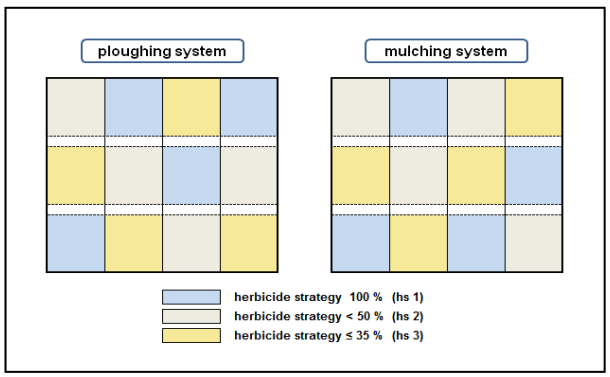

Fig. 2: Field trial design.

Table 1: Herbicide strategies (hs).

hs	herbicide	pet[1] 1	pet[1] 2	pet[1] 3	total application rate	share of authorized application rate	active ingredient: trivialname	active ingredient: share	active ingredient: total rate	ti[2]
		(kg ha-1 or l ha-1)			(kg ha^{-1} or l ha^{-1})	(%)		(%)	(kg ha^{-1} or l ha^{-1})	
1	Goltix 700 SC	1	2	2	5	100	metamitron	0.70	3.5	2
	Betanal Expert	1.75	1.75	1.75	5.25	100	desmedipham ethofumesate phenmedipham	0.025 0.15 0.75	0.13 0.79 0.39	
2	Goltix 700 SC	0.8	0.8	0.8	2.4	48	metamitron	0.70	1.68	1.42
	Betanal Expert	0.8	0.8	0.8	2.4	46	desmedipham ethofumesate phenmedipham	0.025 0.15 0.75	0.06 0.36 0.18	
	Rebell	0.8	1	1.2	3	48	chloridazon quinmerac	0.40 0.05	1.2 0.14	
3	Goltix 700 SC	0.35	0.7	0.7	1.75	35	metamitron	0.70	1.23	1.87
	Betanal Expert	0.61	0.61	0.61	1.83	35	desmedipham ethofumesate phenmedipham	0.025 0.15 0.75	0.05 0.28 0.14	
	Rebell	0.29	0.58	0.88	1.75	35	chloridazon quinmerac	0.40 0.05	0.70 0.09	
	Spectrum	0.05	0.11	0.16	0.32	35	dimethenamid-p	0.72	0.23	
	Debut	*0.01*	*0.01*	*0.01*	*0.03*	35	triflusulfuron-methyl	0.48	*0.01*	
	Lontrel 100	0.14	0.14	0.14	0.42	11.7	clopyralid	0.10	0.04	
	Oleo FC[3]	0.35	0.35	0.35	1.05	35				

[1] post-emergence treatment; [2] treatment index; [3] additive consisting of paraffin oil and emulsifiers

Results & Discussion

Environments (year x site) led to the major effect in variability of earthworm population which is assumed to correspond with differing regional specific soil and weather conditions resp. cultivation histories. In spring, the **tillage effect** was consistent between all 19 environments with 80 % lower mean earthworm abundance in the ploughing compared to the mulching system. This reflected the deleterious effect using the plough which disturbed their habitat more intensive than mulching technique. In the ploughing system, an increase of earthworm abundance during vegetation period was observed at 17 environments with a mean growth rate of 360 %, whereas in the mulching system changes showed a non-uniform development. The re-building capability demonstrated the high resilience and adaptability of the earthworm population. Earthworm abundance did not reveal detrimental effects among **herbicide strategies**. Actually, earthworm response was expected considering that herbicides are intentionally designed to eliminate competition from weeds and not to affect earthworms.

Table 2: Statistical results.

factor	d.f.	parameters (age level) abundance: total	juvenile	adult
spring (n = 380)				
environment[a]	18	***	***	***
tillage system[b]	1	***	***	***
environment x tillage system	18	***	***	***
autumn (n = 1824)				
environment	18	***	***	***
tillage system	1	***	***	***
hs[c]	2	n.s.	n.s.	n.s.
environment x hs	36	n.s.	n.s.	n.s.
environment x tillage system	18	***	***	***
hs x tillage system	2	n.s.	n.s.	n.s.
environment x hs x tillage system	36	n.s.	n.s.	n.s.

[a] environment = site x year; [b] tillage system = ploughing system x mulching system;
significance: * at p ≤ 0.05, ** at p ≤ 0.01 , and *** at p ≤ 0.001, n.s. = non significant;
Mixed Model with post hoc test Tukey and Kramer adjustment; total sample size in parenthesis

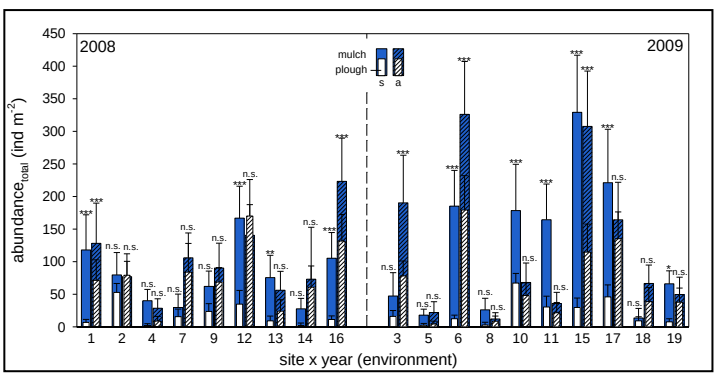

Fig. 3: The total abundance of earthworm in sugar beet crop as affected by tillage system and season (spring (s) and autumn (a)) in 2008 and 2009. Means and standard deviations for samples: spring n = 10 and autumn n = 48. Environments are arranged alphabetically. Detailed information of statistical analysis see legend table 2.

Acknowledgements: This project is financially supported through founds of the Federal Ministry of Food, Agriculture and Consumer Protection as part of the innovation funding of the Federal Agency for Agriculture and Food. Additionally, we thank the sugar beet growers and grower associations for their contributions in preparing the field trials and helpful supports in managing project.

Institute of Sugar Beet Research

PROJECT GUIDELINES INTEGRATED PEST MANAGEMENT IN SUGAR BEET

Environmental fate and risk assessment of herbicide strategies in sugar beet crop in Germany

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Introduction

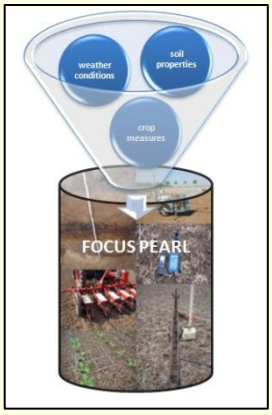
The aim of this study was to model the concentration of the active ingredients of formulations in different herbicide strategies in representative soil horizons in sugar beet crop based on measured agronomic and environmental conditions. Furthermore, the ecological risk of each herbicide strategy was calculated for the indicator 'earthworm' by the parameter Toxic Unit.

Materials & Methods

- modelling of three herbicide strategies (Table 1) with 100 %, < 50 % and ≤ 35 % of authorized application rate was conducted with FOCUS PEARL for 0.01, 0.025 and 0.1 m soil depth in a ploughing and mulching tillage system at 19 field trials in 2008 and 2009
- time frame of modelling: day of 1st post-emergence treatment (pet) until the end of the year
- input data: measured site conditions and cultivation practices (e.g., precipitation, global radiation, soil texture, pH, bulk density, coverage of sugar beet and weeds)
- ecological risk assessment for indictor 'earthworm' by Toxic Unit (TU)

$$TU = \frac{\text{concentration of active ingredient}_{(in\ situ)}}{LC_{50}\ \text{of active ingredient}_{(laboratory)}}$$

→ if 1, lethal effect arises for 50 % of organisms



Results & Discussion

Firstly, environmental fate of active ingredients was similar in the tillage systems. The shown results represent only the mulching system. Generally, active ingredient concentrations increased with each herbicidal treatment with a maximum after the third post-emergence treatment (> 300 µg/kg) in 0.01 m soil depth and strongly decreased until the end of the year (Fig. 1). There was a obvious pattern of penetration of herbicide strategies within given soil depth. The main share of concentrations (< 95 %) over modelled time frame and among herbicide strategies was computed for 0.01 m and 0.025 m soil depth, respectively (Table 1). The distribution of active ingredient concentrations in 0.1 m soil depth was low with < 5 %.

The TU was highest at the days of herbicide treatments and showed increased values from 1st pet to 2nd and 3rd pet (Fig. 2A). In addition, differences in TU between herbicide strategies were observed independent of pet with lowest values for the strategy with low dosage rates (hs 3), whereas all TU are minor in respect to the threshold of lethal effects for earthworms (Fig. 2B). Consequently, the ecological risk of the tested herbicide strategies in sugar beet crop is negligible small.

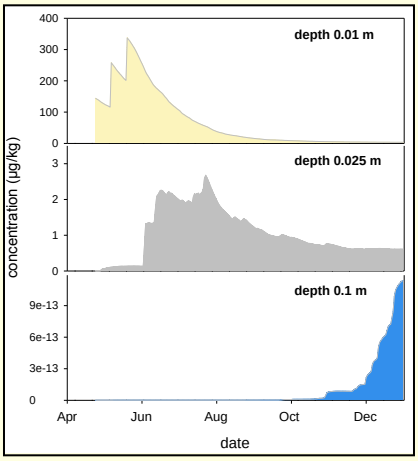


Fig. 1: Distribution of desmedipham (hs 1) in soil for an examplary site.

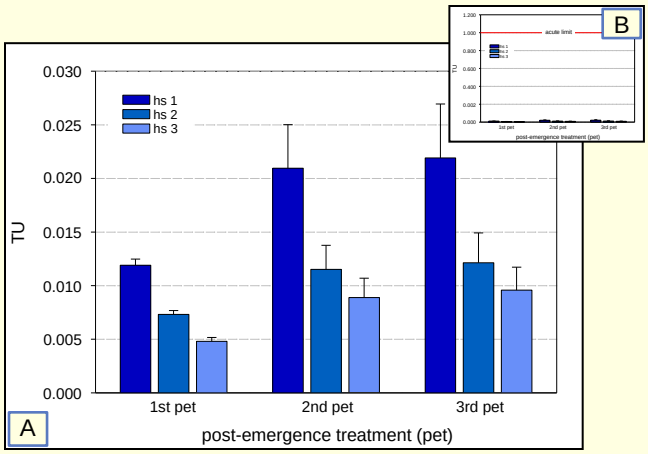


Fig. 2: Toxic Unit (TU) for the herbicide strategies (hs) on three dates of post-emergence treatment (A) and additionally with threshold of TU = 1 (B) (n = 19).

Table 1: Distribution of active ingredients and herbicide strategies in different soil depths.

hs	herbicide	active ingredient	share in soil depth (%)*			mean share (%)		
			0.01 m	0.025 m	0.1 m			
1	Betanal Expert	desmedipham	96.38	3.62	3.58e-09	69.87	26.53	3.60
		ethofumesate	53.75	37.11	9.14			
		phenmedipham	67.85	31.95	0.21			
	Goltix 700 SC	metamitron	61.51	33.43	5.06			
2	Betanal Expert	desmedipham	96.80	3.20	1.31e-09	72.25	23.43	4.32
		ethofumesate	54.24	37.28	8.47			
		phenmedipham	69.23	30.65	0.12			
	Goltix 700 SC	metamitron	62.09	33.55	4.36			
	Rebell	chloridazon	77.21	18.88	3.91			
		quinmerac	73.94	16.99	9.07			
3	Betanal Expert	desmedipham	96.94	3.05	9.01e-10	74.48	21.38	4.13
		ethofumesate	54.43	37.33	8.23			
		phenmedipham	69.76	30.14	0.09			
	Goltix 700 SC	metamitron	62.78	33.19	4.02			
	Rebell	chloridazon	77.79	18.83	3.37			
		quinmerac	75.41	16.03	8.55			
	Spectrum	dimethenamid-p	81.54	15.57	2.88			
	Debut	triflusulfuron-methyl	70.79	25.39	3.82			
	Lontrel 100	clopyralid	80.92	12.91	6.17			

* for the time frame of the first post-emergence treatment until the end of the year

Acknowledgements: This project is financially supported through founds of the Federal Ministry of Food, Agriculture and Consumer Protection as part of the innovation funding of the Federal Agency for Agriculture and Food. Additionally, we thank the plant protection companies for the provision of modelled data.

What do we know about crop rotations in current arable farming?

Horst-Henning Steinmann

Centre for Biodiversity and Sustainable Land Use

Outline

Why talking about rotations?

How to study current rotation practice?

Analysing current patterns in Niedersachsen (lower saxony)

Possible applications for research, policy and farming systems

Why working on Crop Rotations?

- major agronomical instrument
- many implications on crop protection
- recently being discussed as a matter of regulation in EU (a mandatory requirement in cross-compliance and an element in annex III of directive 2009/128)
- basis for research and extension
- basis for further scenarios of land-use and land use change (e. g. under climate change)
- element of guidelines

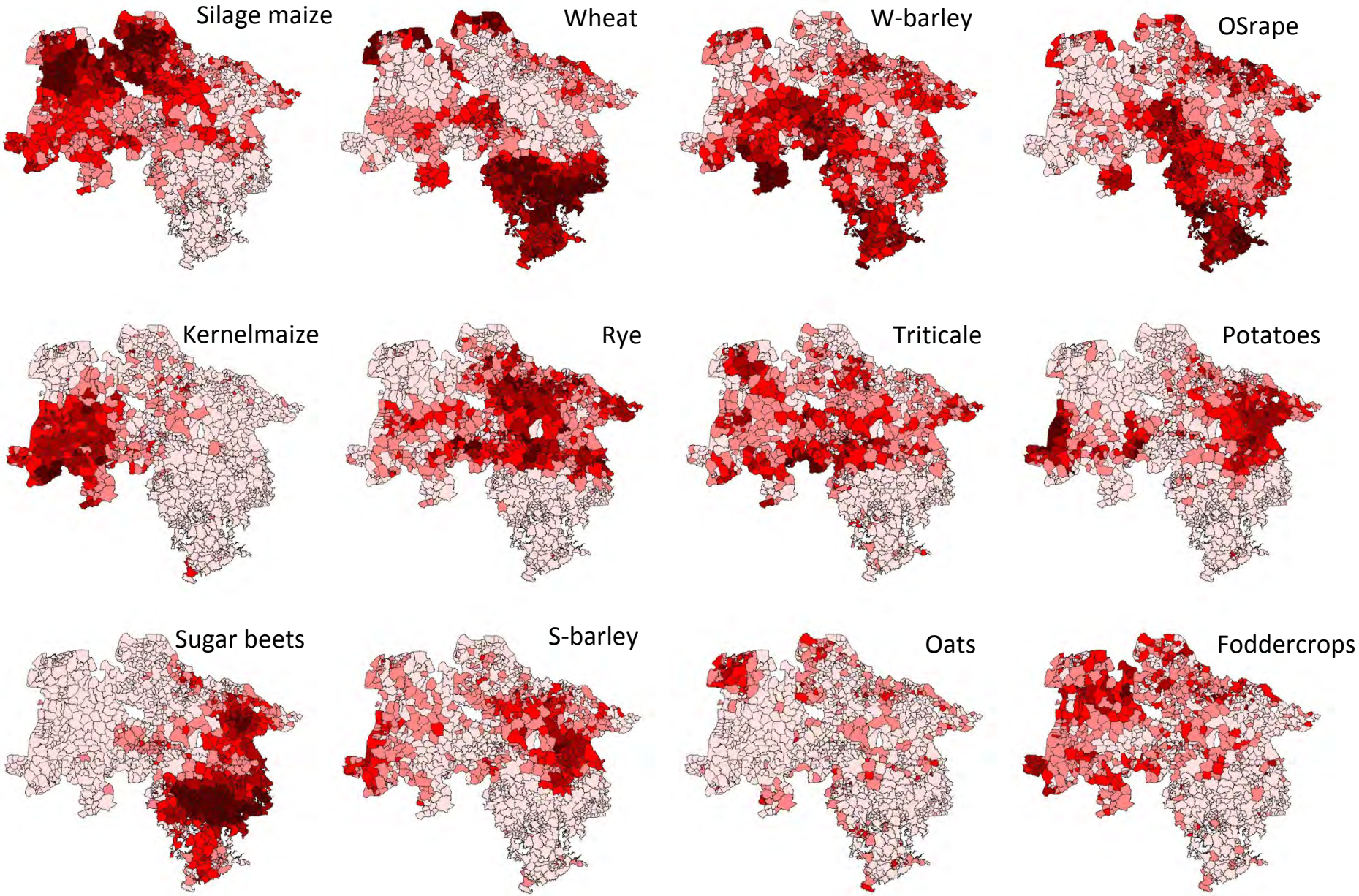
Studies on Crop Rotations (Cropping Patterns)

Field experiments

Land Use Data

Farm data

Regional Occurrence of Crops (2007, relative, each from 0 bis max.)



GIS: E.S. Dobers

Current Status of relevant Crops

- poor diversity of relevant crops
- regional heterogeneity
- regionally limited potential for crop rotations

Current Status of relevant Crops in Farms

- broad spectrum from diverse to extreme simplified
- enormous heterogeneity (single farm level and regional level)

- however: all we can see are patterns
- how can we study rotations?

EU - INVEKOS Data, field blocks (Landwirtschaftskammer Niedersachsen)

GÖTTINGEN

„Cropping density“ on fields (4 yrs.)

	share 2008 (%)	area* (%)	factor
wheat	23,1	51	2,2
maize	25,7	43	1,7
OS-rape	6,0	24	4,0
s-beets	5,4	21	3,8
potatoes	4,7	15	3,2

*area: fields with presence of respective crop (min. 1x/4 yrs)

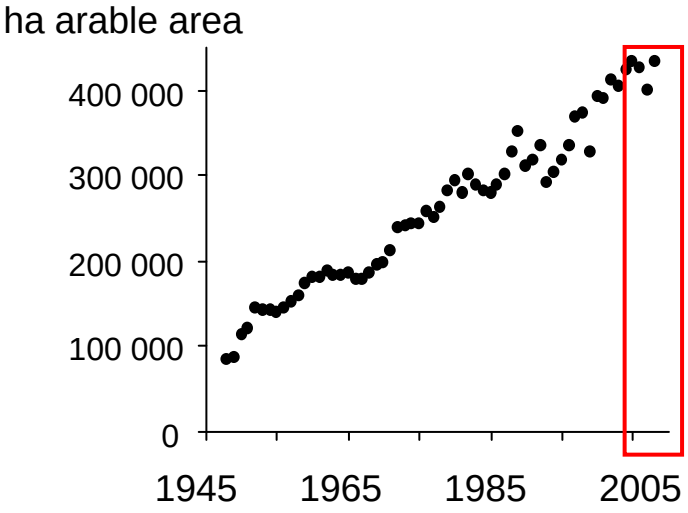
Continuous Cropping (2005-2008)

	area (ha)	% of arable area	cumulated %
contin. maize	79 412	9	9
forage gras	26 875	3	12
rye/triticale	8 793	1	13
winter wheat	8 747	1	14

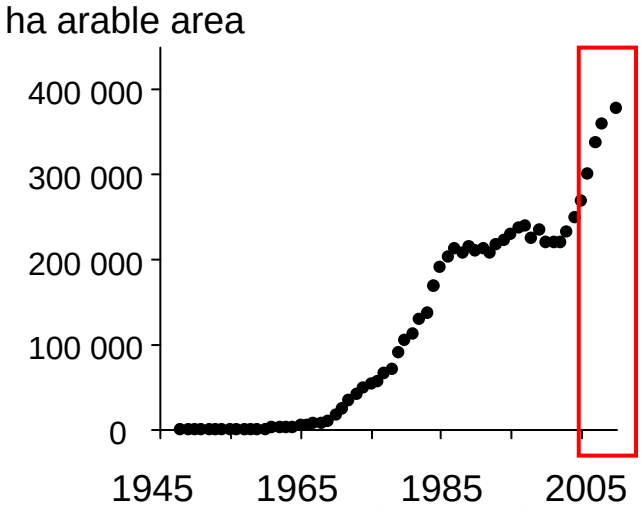
Crop Rotations in a Region

- 50 % of arable area = devoted to small number of rotations
- 50 % extreme diverse
- are rotations stable?
- what is about land in transition?

Area cropped with wheat



and silage maize



Crop Rotation or Cropping Pattern?

- crop rotation: what is meant?
- is continuous cropping a rotation?
- isn´t the break crop more important than a „nice“ rotation?
- what is about fields in transition (land use shift)?
- who really runs a rotation sensu strictu?
- suggestion: better talking about „cropping patterns“
- task: elaborating a scale for more or less beneficial cropping patterns

Conclusion: What do we know about Cropping Patterns?

- overall trend towards simplification
- area of concern (alternatively, basis 2008):
  - 10 % continuous cropping
  - 27 % „problematic“ sequences
  - 22 % wintercropping plus 14 % spring cropping
- eventually to be addressed in guidelines:
  - farm level proportion of crops (not ideal)
  - proportion of continuous cropping (better)
  - cropping sequences (better)
  - break phases required (better)
- but: is so much regulation needed?
- and: is so much regulation feasible?

DPG Symposium, Berlin, 19-21 May 2011

ENDURE scientific support to policies

Silke Dachbrodt-Saaydeh, JKI

FOOD QUALITY AND SAFETY

Overview

- Background
- Comparison of pesticide action plans in five European countries
- Research initiatives supporting current policies
- Possible reasons for differences in pesticide use in wheat in some EU countries
- EU project PURE

ENDURE

- Background, goal and products
  - Societal expectations for safe food and environmentally friendly agriculture
  - Crop protection: de-fragmentation of scientific knowledge and R&D community
    - Case studies in various crops (wheat, maize, orchards, vine grapes, …)
    - Platforms for knowledge transfer
    - Dissemination activities

➢ Research

- Resource Centre
- ENDURE Information Centre
- Networks of
- Scientific su

➢ **Scientific support to p**

- Facilitating exchange across EU
- Creating a dialogue between policy makers and researchers
- Acting as a resource in the implementation process of the EU Framework Directive

➢ Extension

- Acting as a resource in the implementation process of the EU Framework Directive

➢ EUROWHEAT policy support

http://www.eurowheat.org

- ENDURE Network of advisers

endure
diversifying crop protection

Scientific support to policies

- ENDURE analysis of existing national plans for pesticide use reduction
  - Countries: DE, DK, FR, NL, UK, IT
  - Retrospective comparison
    - Goal setting
    - Stakeholder involvement
    - Research & Extension

Goals – a few examples

Volume → Dose - Frequency → Risk / Impact

- DK: Pesticide Action Plan I 50% volume reduction by 1997 relative to 1981- 85
- NL: Multi-Year Crop Protection Plan included a target of 50% overall volume reduction by 2000 relative to the 1984-1988 reference period

- Both examples based on phasing out of critical *active ingredients*
- Substitution to low-dose, more potent pesticides not reflected
  - certain water problems persisted (DK)
  - Insignificant reduction of the treatment frequency index

- **Research:**
  - Bichel Committee evaluation and to clarify alternative options
  - NL: rejection of next reduction plan – missing tools

Goals (2)

Volume → **Dose - Frequency** → Risk / Impact

- DK: Pesticide Action Plan II – TFI from 2.5 (1997) to TFI 2.0 (2003) achieved
  Pesticide Action Plan III - TFI from 2.0 (2003) to TFI 1.7 (2009) not achieved
- FR: Ecophyto 2018 - 50% reduction of NODU (No. of Unit Dosages), if possible

➢ **Shortcomings:**

- limits of voluntary approach
- increasing farm size
- pesticide use in weed management

➢ **Linked research activities**

- DK targeted TFI = 1.7 scenario -studies showed no economic losses for farmers
- Ecophyto R&D evaluation in different sectors - 30% overall reduction attainable

Goals (3)

Volume → Dose - Frequency → **Risk / Impact**

- NL: 2003 National Agreement on Crop Protection 95% reduction environmental burden by 2010 (rel. to 1998)
- DE: National Action Plan on Sustainable Use of Plant Protection Products (2008) 25% risk reduction by 2020 (rel.1996-2005 values)
- DK: Green Growth (2010) adopted a Pesticide Impact Index (combines use, untreated area, pressure on environment & health)

➢ **Linked activities:**

- NL: *Convenant* on crop protection and stakeholder networks
- DE: Network of reference farms and new demonstration farms
- FR: Ecophyto R&D and Demonstration farms
- DK: Demonstration farms and advisory programme

Current Initiatives: Research & Extension

FRANCE - Ecophyto R&D

- **Scenarios**
  - "Reasonable Agriculture": Pesticide use based on thresholds
  - "Integrated Protection": additional use of preventive and alternative methods for each crop in annual management plan
  - "Integrated Production": additional multi-year perspective and management of the whole rotation

- **Results possible TFI reduction**
  - Cereals: 50% in "Integrated Production" system
  - Potato and pea: not achievable
  - Oil seed rape and potato: yield reductions of 15% and 20% respectively
  - Viticulture: yield reductions expected in integrated levels
  - Apple orchards: 6% in "Integrated Production"
    20% TFI reduction in "Integrated Production"
  - Vegetable crops: divers production and insufficient data

Current Initiatives: Research & Extension

FRANCE - Supportive actions for IPM implementation

- **Demonstration farms**
  - 1,000 pilot demonstration farms set up in 2010, and
  - 2,000 farms planned by end 2011
  - involvement of 37 agricultural school teaching farms

- **Training, education and information**
  - Training in safe use and knowledge of IPM (30 000 users 2008 - end 2010)
  - Crop protection bulletins on a regional basis and tailored to each commodity
    - ✓ designed to help avoid systematic preventive use of sprays

- **Research & innovation**
  - New institutional arrangements: Mixed Technological networks
  - Research funding for “Evaluation and reduction of risks“

    - calls for applied research, breeding and genetic resources, NODU

Current Initiatives: Research & Extension

GERMANY - Model and Demonstration project

- Demonstration farms (27) supporting IPM uptake and reduction of pesticide use
- Broad funding initiative for research, technology development and knowledge transfer to promote the sustainable use of pesticides and IPM implementation

UNITED KINGDOM - Sustainable Agriculture and Food Innovation Platform

- Funding "New Approaches to Crop Protection"
  - focusing on crop productivity
  - investments in the development of highly innovative tools
  - research and development of weed mapping, precision farming, biofumigation, improved breeding for disease resistance

Current Initiatives: Research & Extension

DENMARK – initiatives supporting Green Growth

- New “pesticide impact index”
- Re-structuring of the pesticide tax
- 10 meter permanent spraying-free, fertilizer-free and cultivation-free buffer zones along all watercourses and lakes
- Increase the spray-free buffer zones around public water supply facilities from 10 to 25 meters
- **Framework for plant production in accordance with IPM guidelines and a system of dedicated advice IPM**
  - IPM guidelines
  - Demonstration farms
  - Focus on IPM advice
  - Impact: reduced dependence on pesticides
    on-field implementation of IPM/ targeted solutions

Differences in pesticide use in wheat

"Possible reasons for differences in pesticide use in wheat in some EU countries participating in ENDURE"

- Joint effort of several ENDURE activities (wheat CS, winter crop CS)

- Information on pesticide consumption in winter wheat (DK, DE, FR, UK)
  - Comparison of TFI values

	England (2006)	France (2006)	Germany (2007)	Denmark (2007)
Herbicides	2.43	1,4	1.9	1.32
Glyphosate	***	0,1	***	0,39
Fungicides	2.26	1.6	1.9	0.56
Insecticides	1,08*	0.3*	1.2**	0.15*
Growth regulators	0.97	0.7	0.8	0.2
Total	6.74	4.1	5.8	2.62
Yield t/ha	8.0	6.9	7.3	7.3

Pesticide consumption in wheat as TFI.

  - Analysis of differences of the use of fungicides, insecticides, herbicides

Differences in pesticide use in wheat

Comparison of TFI

- TFI is calculated differently in the countries
  - **Sales data - Use data**
    - DK: the theoretical number of pesticide treatments per hectare divided by sales data of active ingredients
    - FR: dividing the amount of pesticides (products) applied on field by the minimal standard approved dosages.
    - DE, UK: the application of pesticides (a.i.) in relation to the approved dosages based on common practices assessed at official surveys or monitoring
  - **Calculation standard dose**
    - FR: the lower standard dose for TFI
    - DK: most widely applied standard/maximum dose
    - DE, UK, DK: the TFI is calculated using the applied dose in relation to the approved/maximum dose and frequency of the application
- **The TFI differences are greater than the scale that could be accounted for by differences in methods of TFI calculation.**

Differences in pesticide use in wheat

Analysis of differences of the use of fungicides, insecticides, herbicides

- Usage in Denmark is generally much lower than in the other countries.
- UK :use of pesticides high for all segments
- Germany between France and UK.

	England (2006)	France (2006)	Germany (2007)	Denmark (2007)
Herbicides	2.43	1,4	1.9	1.32
Glyphosate	***	0,1	***	0,39
Fungicides	2.26	1.6	1.9	0.56
Insecticides	1,08*	0.3*	1.2**	0.15*
Growth regulators	0.97	0.7	0.8	0.2
Total	6.74	4.1	5.8	2.62
Yield t/ha	8.0	6.9	7.3	7.3

- Regional differences in large countries: not reflected in national averages.
  - Northern France TFI 4.8- 5.4 vs. Southern France TFI 2.2-3.3

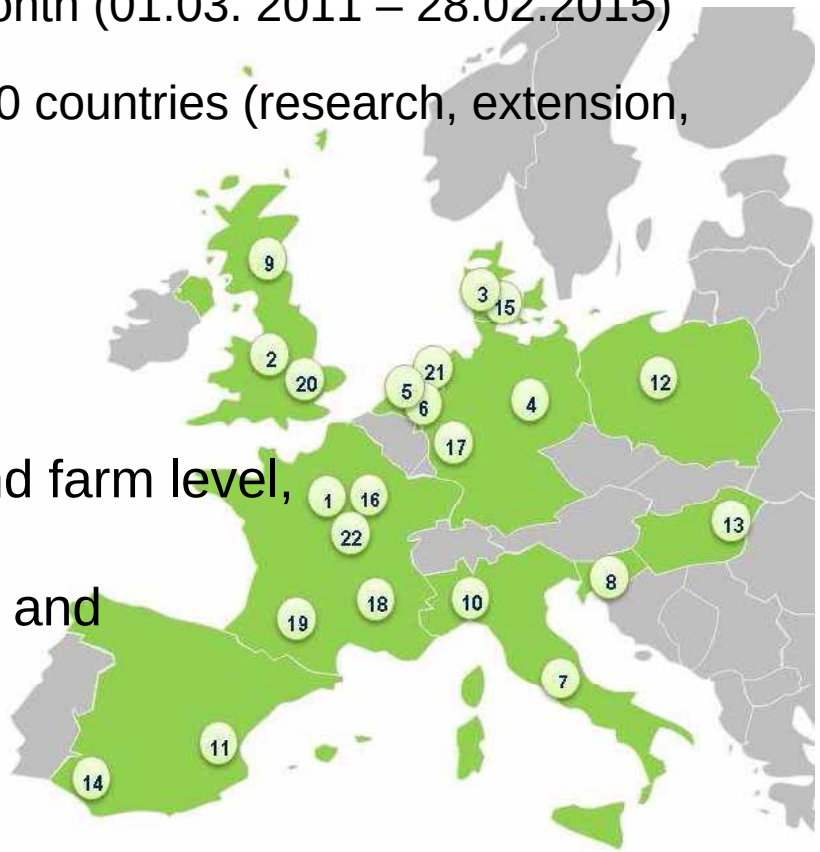
Differences in pesticide use in wheat

- **Differences in TFI are likely to be due to a combination of different cropping systems, climatic differences and socio-economic factors**

- Differences in climatic conditions
- Differences in pest and disease infestations
  - ✓ resistant varieties, yield potential
- Differences in the organisation of advice to farmers and the proportion of farmers relying on company-based advice
- Differences in operating policy action plans that focus on reducing the use of pesticides
- Differences in pesticide prices

PURE –
Pesticide Use-and-risk Reduction in European farming systems with Integrated Pest Management

- **Collaborative project** EC 7th Framework Programme
- **Coordinator:** INRA (FR)
- **Duration** 48 month (01.03. 2011 – 28.02.2015)
- **22 Partner** in 10 countries (research, extension, industry)



Goal

- Take stock of existing technologies,
- Enhance their implementation at field and farm level,
- Feed in new and emerging technologies and
- Ensure economic feasibility for farmers

Contributions

ENDURE "Scientific support to policies" – team

Silke Dachbrodt-Saaydeh (JKI), Marco Barzman (INRA), Pierre Ricci (INRA), Per Kudsk (AU), Maurizio Sattin (CNR), Piet Boonekamp (WUR), Jan Buurma (WUR), Bill Clark (RRES)

The ENDURE Network

[www.endure-network.eu]

Scientific support to policy, extension and research

Bernd HOMMEL

Julius Kühn-Institut (JKI), Federal Research Centre for Cultivated Plants

Institute for Strategies and Technology Assessment

Kleinmachnow

bernd.hommel@jki.bund.de

4th International Symposium "Plant Protection and Plant Health in Europe"
Crop and sector-specific guidelines on IPM. Berlin, 19-21 May 2011

History of the network ENDURE began in 2007

Societal expectations for safe food and environmentally friendly agriculture

Area 5.4.6 - Safer and environmentally friendly production methods and technologies and healthier foodstuffs.
Topic 1 - Reducing the use of plant protection products.

Crop protection: fragmented scientific knowledge and R&D community

EC Contribution 2007 - 2010
11,2 M €

endure
diversifying crop protection

European **N**etwork for **DUR**able **E**xploitation of crop protection strategies

End-users (farmers & advisers) + industry, policy-makers, society)

18 Partners from 10 European countries from 2007

Research

- INRA - FR
- JKI - DE
- RRes - UK
- CIRAD - FR
- CNR - IT
- AGROSCOPE - CH
- WUR: PRI-PPO-LEI - NL
- IHAR - PL

Education

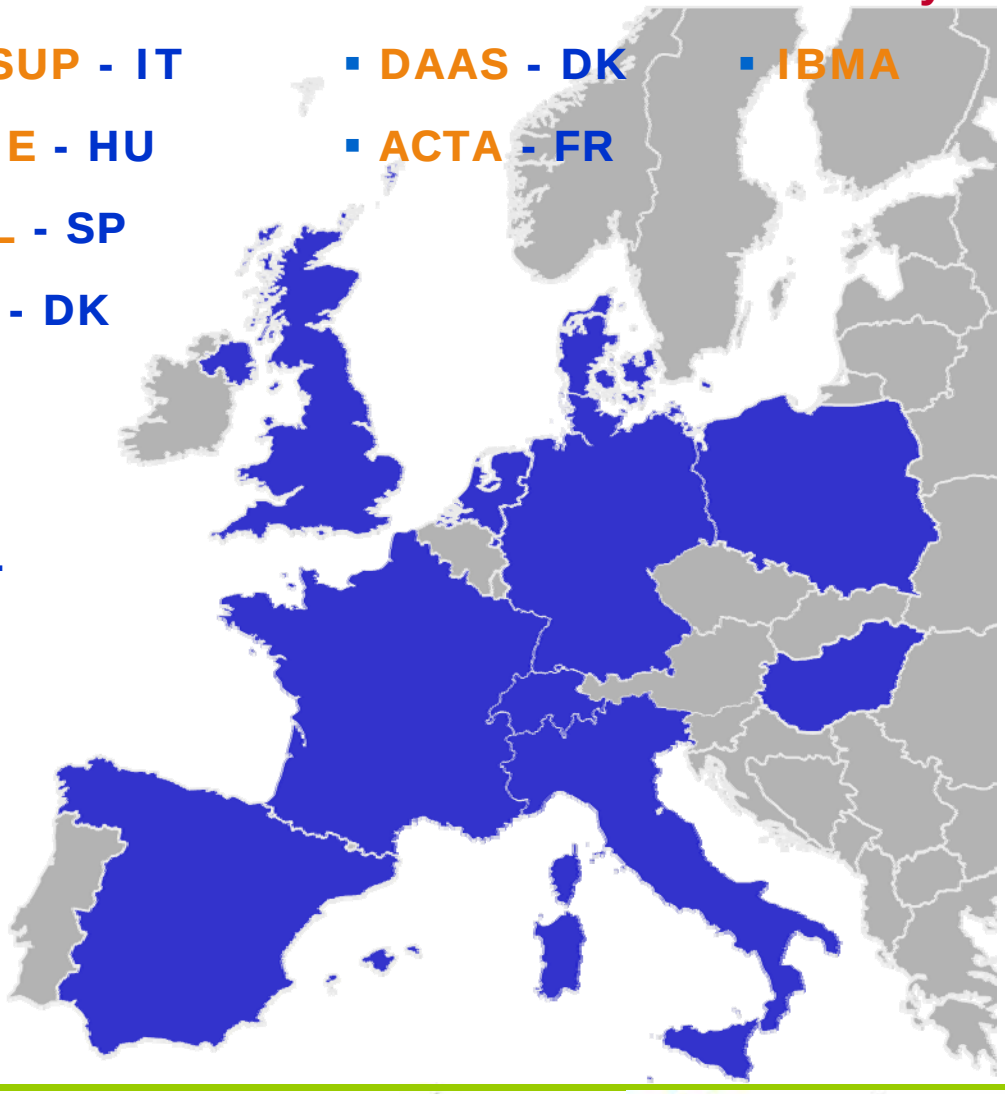
- SSSUP - IT
- SZIE - HU
- UdL - SP
- AU - DK

Extension

- DAAS - DK
- ACTA - FR

Industry

- IBMA



Management

- INRA IT - FR

Collaboration with

- INCO countries

16 Partners from 10 European countries from 2011

Research

- INRA - FR
- JKI - DE
- RRes - UK
- CIRAD - FR
- CNR - IT
- AGROSCOPE - CH
- WUR: PRI-PPO-LEI - NL
- IHAR - PL

Education

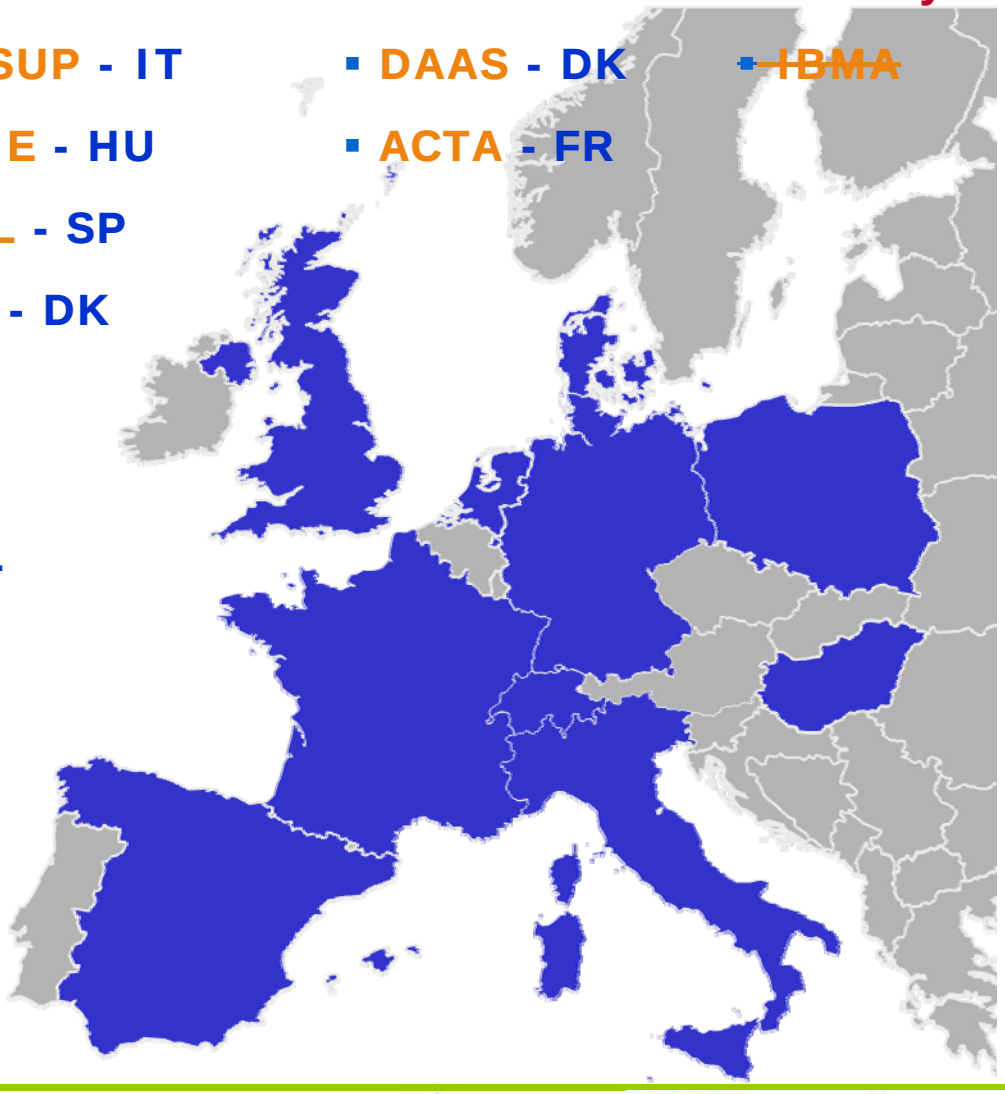
- SSSUP - IT
- SZIE - HU
- UdL - SP
- AU - DK

Extension

- DAAS - DK
- ACTA - FR

~~Industry~~

- ~~IBMA~~



~~Management~~

- ~~INRA IT - FR~~

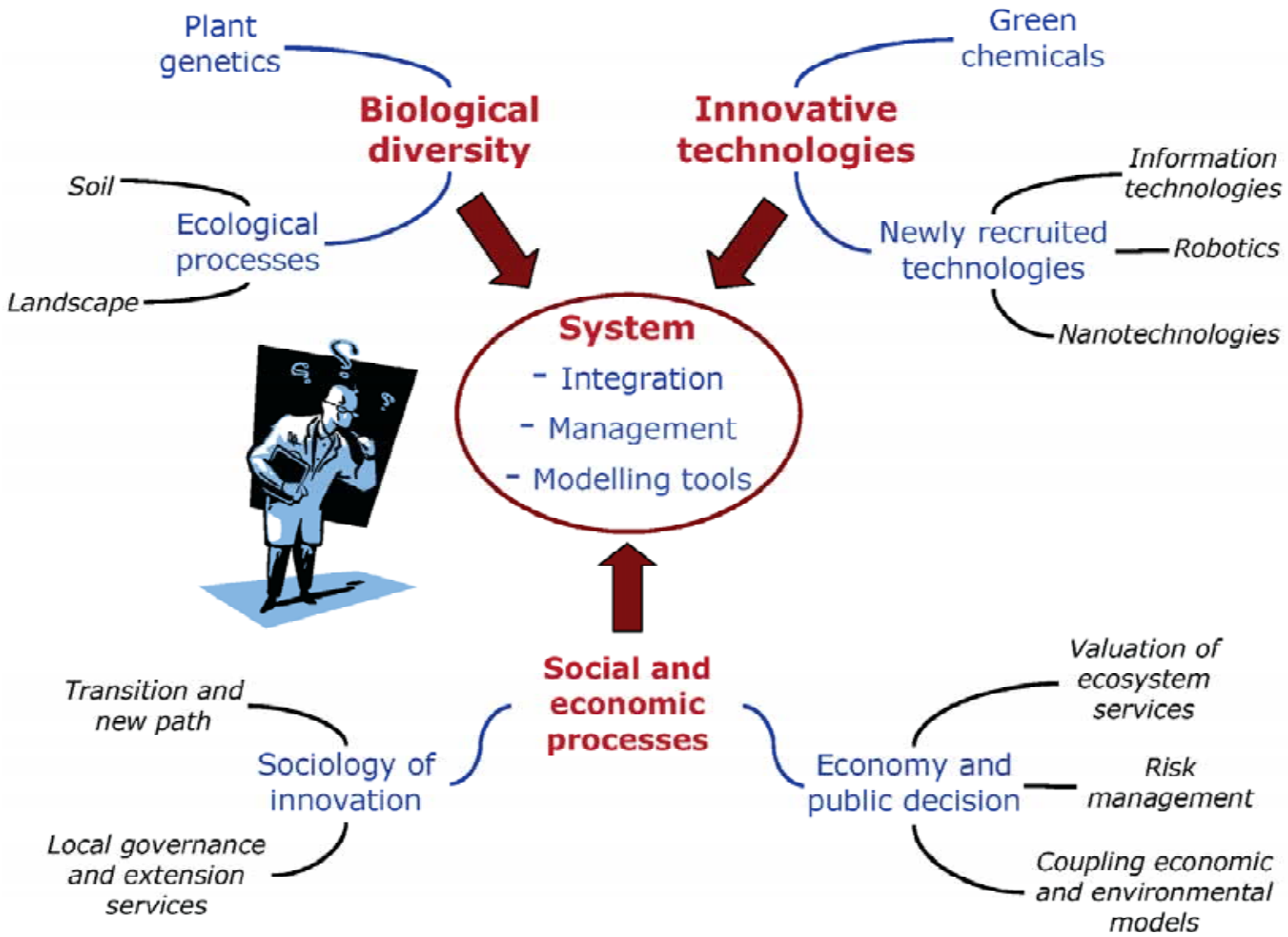
Collaboration with

- INCO countries

Status after 4 years of collaboration ... in general

- ENDURE contributes in diversifying crop protection
- ENDURE acts as a transnational and multidisciplinary network
- ENDURE represents a transnational standpoint
- IPM is ENDURE's central concept
- ENDURE provides insights into major aspects of IPM strategies
- Advisers are a major target audience for ENDURE
- ENDURE brings scientific support to policy makers
- ENDURE has gained worldwide visibility
- ENDURE adopts a holistic approach
- ENDURE remains as a reference point in IPM beyond 2010

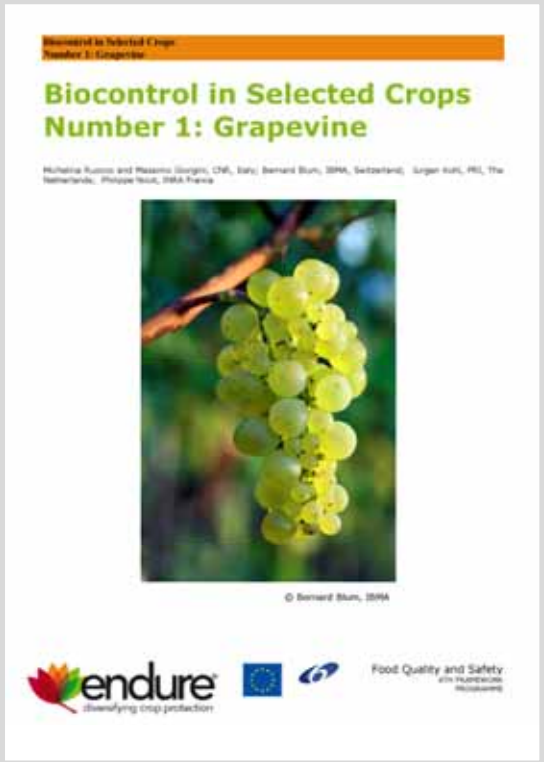
ENDURE adopts a holistic approach for durable strategies

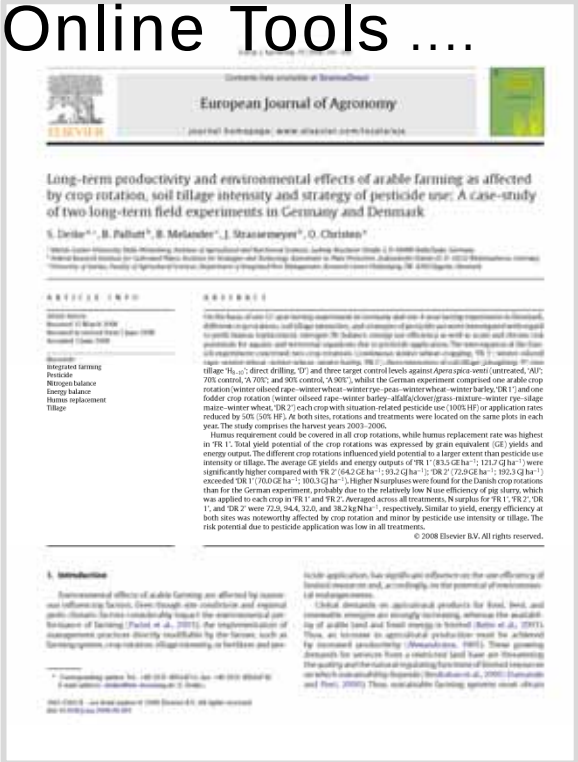


Source: ENDURE Foresight study European Crop Protection in 2030

Results after 4 years of collaboration …

about 180 deliverables, PUBLICATIONS AND POSTERS, presentations, Leaflets And Brochures, training guide, IPM card game, INTERNATIONAL CONFERENCES, meetings with the EC and EP, *field days*, summer schools for PhD students, MOBILITY BETWEEN PARTNERS, *databases*, **h o m e p a g e** , a new project (PURE), and Online Tools ….





The ENDURE Resource Centre or Virtual Laboratory

ENDURE's EuroWheat platform

ENDURE's Network of Advisors (ENA): Homepage & Registration

endure® diversifying crop protection

Contact ENDURE
Site map
Go

Sign up for ENDURE newsletter
Partners only
Rss

Information for... | What is ENDURE? | About crop protection | ENDURE publications | All the news

You are here : Home > What is ENDURE? > ENDURE Tools and Services > ENDURE Network of Advisers .

What is ENDURE?

ENDURE Tools and Services
Scientific support to policy
ENDURE Network of Advisers

ENDURE Workplan

ENDURE Contacts

ENDURE Partner Organisations

The ENDURE 2007-2010 Network of Excellence

ENDURE Network of Advisers

A key task for ENDURE is the creation of the ENDURE Network of Advisers (ENA), a forum for sharing knowledge on issues relating to crop production in general and plant protection in particular all over Europe. The forum is being supported by the ENDURE Information Centre (ENDURE IC), the online database which contains a variety of ready-to-use information and experimental results related to Integrated Pest Management (IPM).

Membership of ENA is free of charge and membership is open not only to advisers connected to the ENDURE network but to any advisers (state, private and company) who are directly involved in advising farmers on a daily basis and are interested in sharing their knowledge and experiences with colleagues across Europe.

ENA membership provides advisers with the opportunity to gather knowledge about IPM from international colleagues, thus improving the quality of advice they can offer to farmers. Members will also play an integral part in improving ENDURE IC and through the connection with ENDURE will have a direct link to European pesticide policy.

"One of the main objectives of ENDURE is to ensure that advisers and growers in Europe are able to practically implement any IPM-related recommendations," explained ENA coordinators Jens-Erik Jensen and Rolf Thostrup Poulsen, from the Danish Agricultural Advisory Service (DAAS). "This underlines the need for a group of advisers willing and able to test these recommendations under 'real life' conditions."

ENDURE will be generating an online directory of ENA members and it is expected advisers themselves will become responsible for sustaining the network. It is believed advisers will form smaller networks of specialised advisers, for example those working on potato or fruit production, thus streamlining the work of the network and making it even more relevant for members. DAAS will represent ENDURE in the ENA and ensure that ENDURE's outputs are disseminated to the relevant ENA members.

How to register

Registration for the ENA is simple. First click here, which will open a web page in your internet browser enabling you to enter your e-mail address. When you have done this, click the X to close the window. You will shortly receive an automatic e-mail message giving you a new and personal link which you can use to register as a member of the ENA. This personal link will also allow you to change your registration details should the need arise.

ENA newsletters

- In March 2011, ENA produced its second newsletter for advisers. Download your copy here: ENDURE Network of Advisers Newsletter 2 March 2011 [pdf - 1.10 MB]
- In September 2010, ENA produced its first newsletter for advisers. Download your copy here: ENDURE Network of Advisers Newsletter 1 Sept 2010 [pdf - 667.38 kB]

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JKI Julius Kühn-Institut

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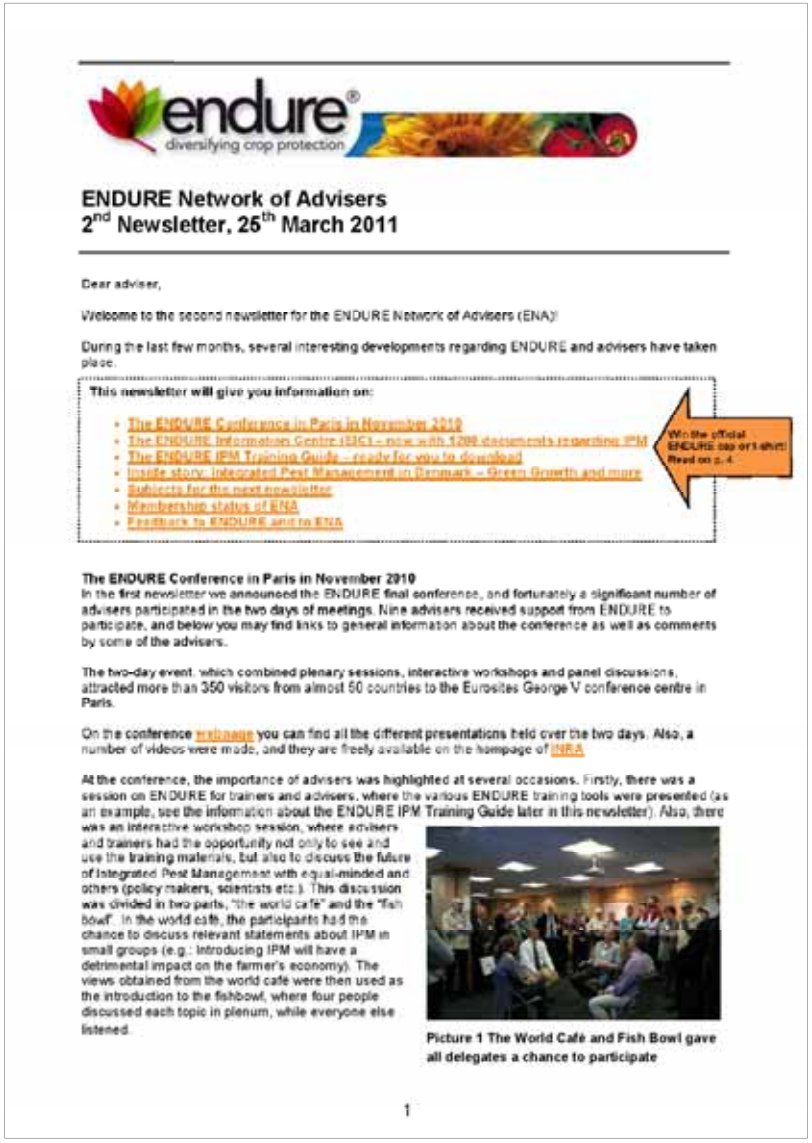
ENDURE's Network of Advisors (ENA): Tools & Communication



endure diversifying crop protection

ENDURE Network of Advisers
2nd Newsletter, 25th March 2011

Dear adviser,

Welcome to the second newsletter for the ENDURE Network of Advisers (ENA)!

During the last few months, several interesting developments regarding ENDURE and advisers have taken place.

This newsletter will give you information on:

- The ENDURE Conference in Paris in November 2010
- The ENDURE Information Centre (EIC) – now with 1200 documents regarding IPM
- The ENDURE IPM Training Guide – ready for you to download
- Inside story: Integrated Pest Management in Denmark – Green Growth and more
- Subjects for the next newsletter
- Membership status of ENA
- Feedback to ENDURE and to ENA

Win the official ENDURE cap or t-shirt! Read on p. 4

The ENDURE Conference in Paris in November 2010

In the first newsletter we announced the ENDURE final conference, and fortunately a significant number of advisers participated in the two days of meetings. Nine advisers received support from ENDURE to participate, and below you may find links to general information about the conference as well as comments by some of the advisers.

The two-day event, which combined plenary sessions, interactive workshops and panel discussions, attracted more than 350 visitors from almost 50 countries to the Eurosites George V conference centre in Paris.

On the conference webpage you can find all the different presentations held over the two days. Also, a number of videos were made, and they are freely available on the homepage of INRA

At the conference, the importance of advisers was highlighted at several occasions. Firstly, there was a session on ENDURE for trainers and advisers, where the various ENDURE training tools were presented (as an example, see the information about the ENDURE IPM Training Guide later in this newsletter). Also, there was an interactive workshop session, where advisers and trainers had the opportunity not only to see and use the training materials, but also to discuss the future of Integrated Pest Management with equal-minded and others (policy makers, scientists etc.). This discussion was divided in two parts, "the world café" and the "fish bowl". In the world café, the participants had the chance to discuss relevant statements about IPM in small groups (e.g.: Introducing IPM will have a detrimental impact on the farmer's economy). The views obtained from the world café were then used as the introduction to the fishbowl, where four people discussed each topic in plenum, while everyone else listened.

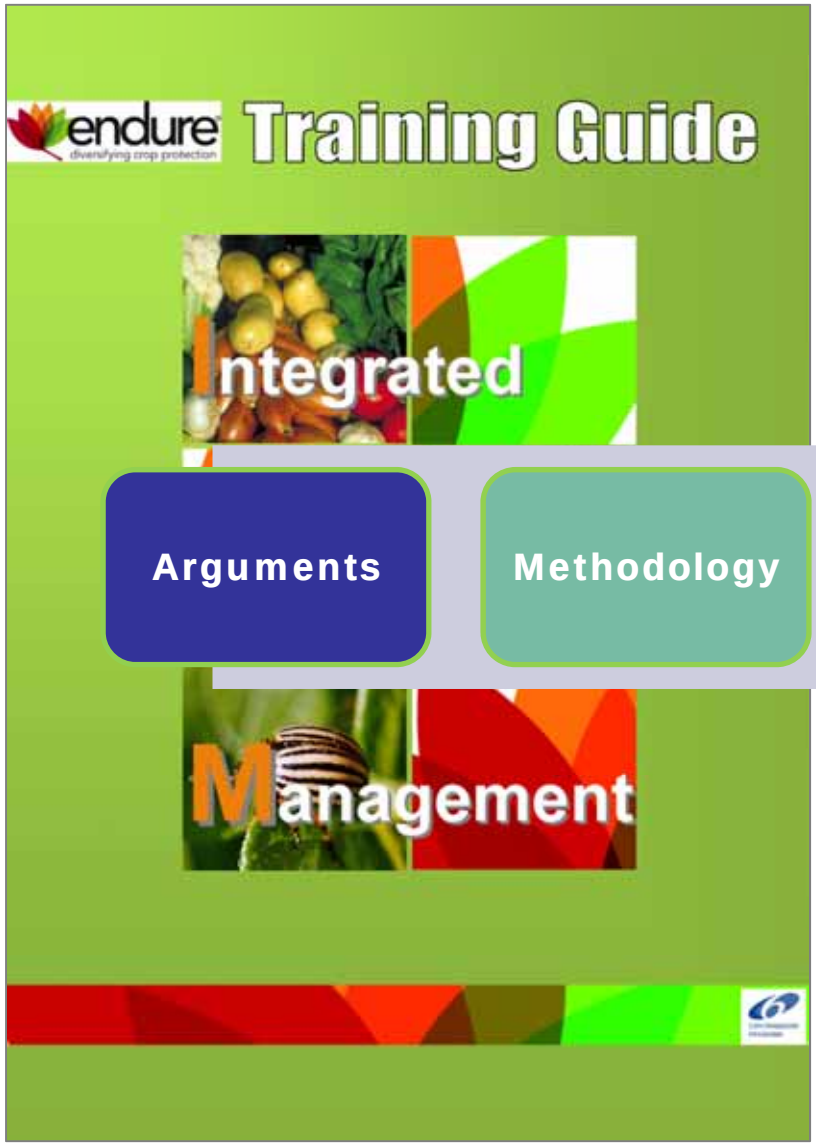
Picture 1 The World Café and Fish Bowl gave all delegates a chance to participate

1

JKI Julius Kühn-Institut

endure diversifying crop protection

ENDURE's Network of Advisors (ENA): Tools & Communication



Arguments → **Methodology** → **Tools** → **Contents & Modules**

Members in ENA on March 2011: 150 registrations from 9 countries, of which 9 from DE, 38 UK, 14 FR, 17 DK, 16 NL, 15 ES

ENDURE's www.endureinformationcentre.eu

ENDURE will remain as a reference point in IPM beyond 2010

Objectives of ENDURE

- Strategy
- Research
- Scientific support to poliy
- Extension

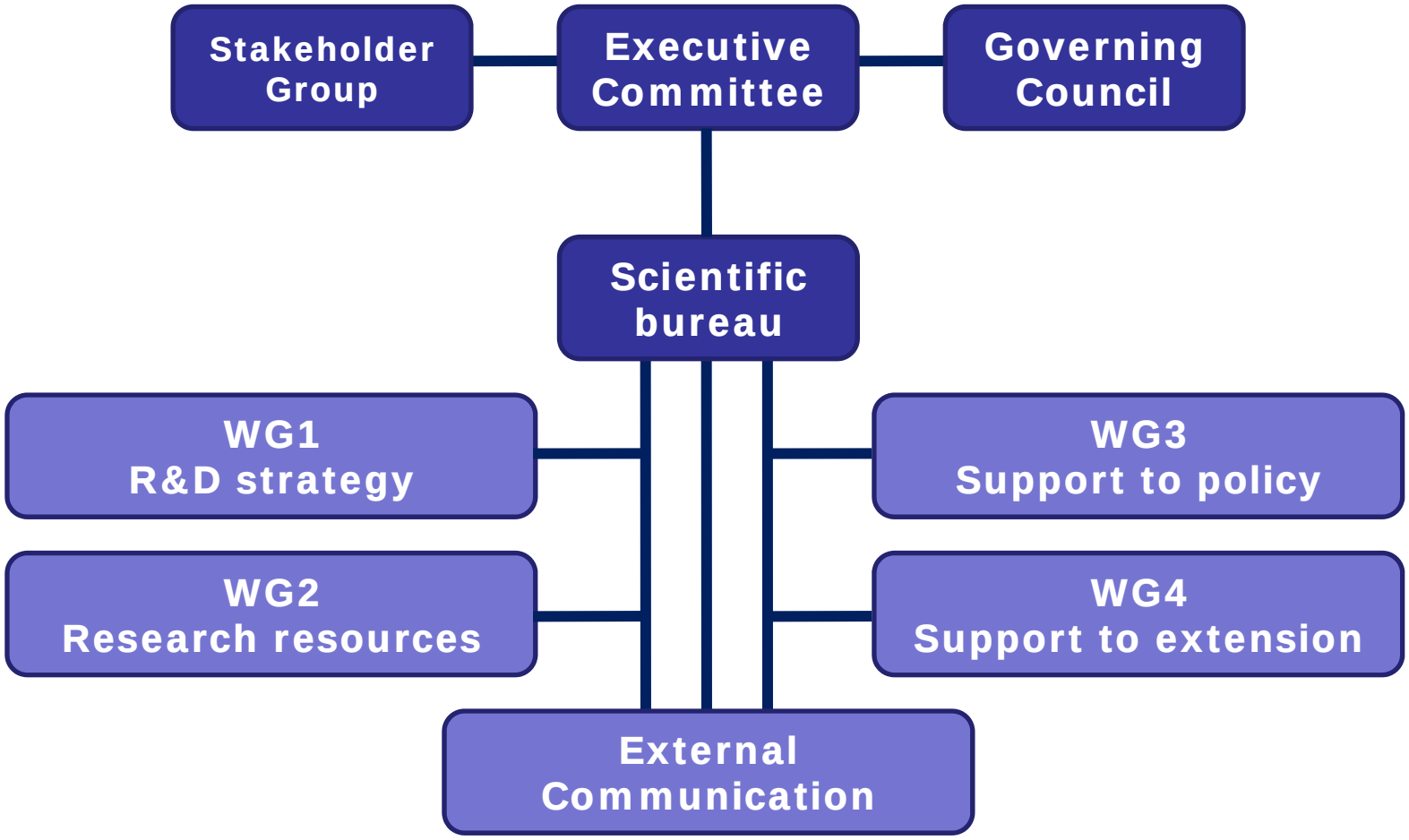
- Keeping alive partnership & creating synergies from national efforts.
- Maintaining and updating/ upgrading existing tools.
- Acting as a central point of scientific and technical reference in IPM.
- Providing European-level support to extension, policy and research.
- Inviting new partners to join the network.

ENDURE's potential target groups

- EU-level clients (DGs, EPs) → particularly regarding the implementation of the parts of the Framework Directive that relate to IPM (article 14).
- National authorities managing the implementation of the Framework Directive.
- National level advisory services → members of ENA.
- European level stakeholders.
- Each partner in ENDURE.

ENDURE will remain as a reference point in IPM beyond 2010

Structure & governance



Meetings in 2011 with main contributions of ENDURE

"Sustainable use of pesticides and integrated pest management in East-Central Europe and the Baltics". A conference under the aegis of the Polish presidency of the EU and financially supported by Ministry of Agriculture and Rural Development of Poland.

Radzików, Poland, 4-6 September 2011

"Robustness of cropping systems and anticipation strategies vis-à-vis important pest species and climate change: research and policy implications". A collaboration with the Institute for Prospective Technological Studies (IPTS) of the European Commission's Joint Research Centre

Seville, End of 2011

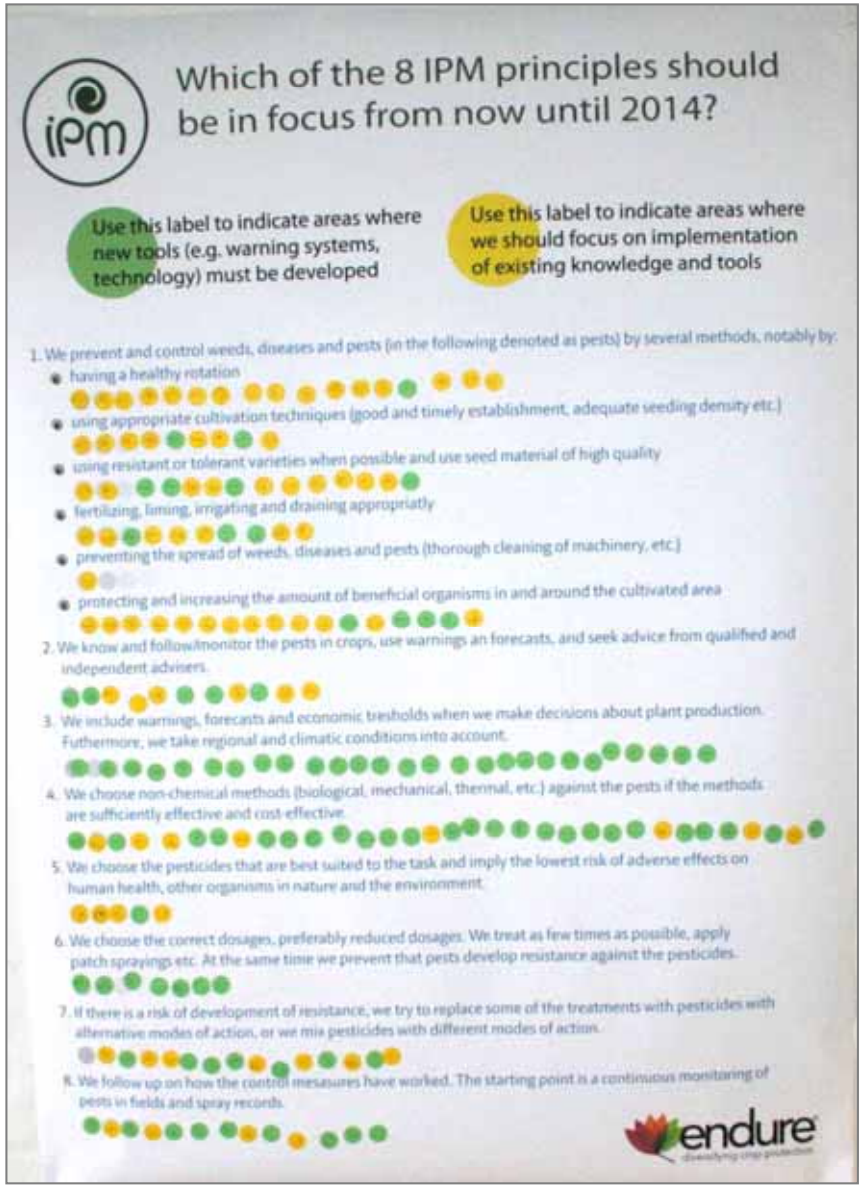
SCAR Collaborative Working Group on IPM for reduction of pesticide risks and use.

Brussels, May and November 2011

DG SANCO's Thematic Strategy Expert Group

IPM principles: More research or only implementation?

Source: The ENDURE Conference in Paris, 11-2010



83x yellow, 95x green

Top 3

New tools needed:

- Principle 3: warnings, forecasts, thresholds
- Principle 6: correct dosages, reduced dosages
- Principle 4: non-chemical alternatives

Implementation needed:

- Principle 1: crop rotation
- Principle 1: resistant cultivars
- Principle 1: protecting beneficials

Thank you very much

and

welcome at

www.endure-network.eu

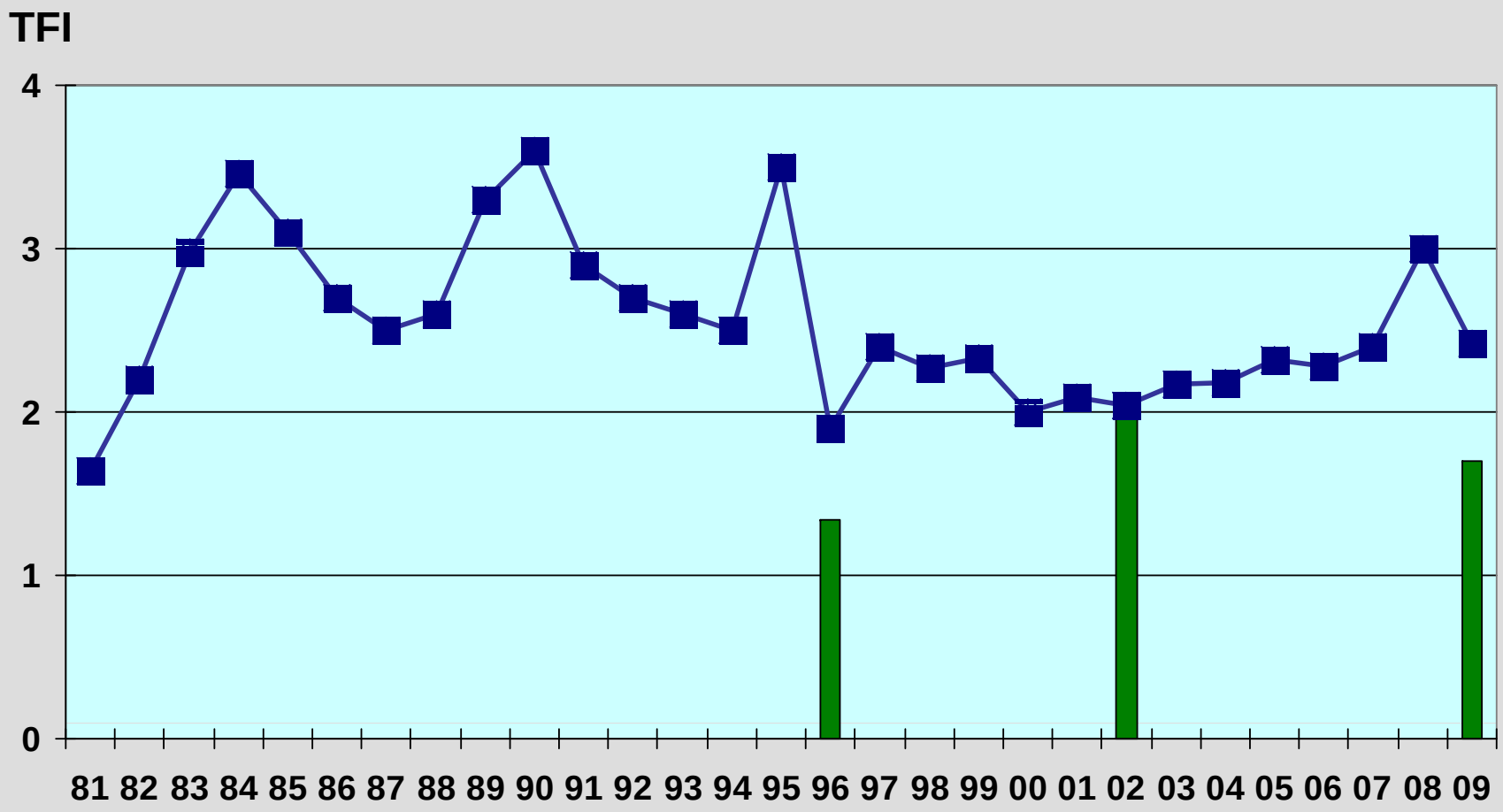
IPM demonstration farms in Denmark
A ”Green Growth” initiative

Per Kudsk
Dept. of Integrated Pest Management
Aarhus University
Denmark

Goals concerning pesticides

- Former goal: TFI of 1.7
  New goal: TFI of 1.4 by 2013 (GAP: 2.0)
- Development of a new indicator reflecting the adverse impacts of each pesticide (human health, ecotox and fate)
- Double the area of organic farming by 2020.
- More focus on reduction of the health and environmental risk of pesticide use in fruit and vegetable production
- More focus on reducing pesticide residues in Danish produced crops/feed
- More focus on leaching of pesticides and their metabolites to the ground water
- Implementing the general principles of IPM

Pesticide use in DK



Instruments

- **Legislation**
  - New pesticide tax system
    - Pesticide tax should reflect the risk to human health and the environment
    - Total tax revenue will double but be refunded to the farming industry
    - A colour code, e.g. green, yellow and red, shall help farmers choose the pesticide with the lowest risk
  - 25 m buffer zone around drinking water drillings
  - 10 m uncultivated buffer zone along all waterways and lakes (grass and perennial energy crops can be grown)
  - Additional resources allocated for evaluation and authorisation of pesticides.
  - Warning-system for risk of groundwater contamination will be further developed
  - Focus on the authorisation of alternative plant protection products
  - Compulsory submission of spray records

Instruments

- **Control / inspection**
  - Establishing an inspection system of pesticide application equipment
  - Continuing the present control activities of the pesticide stock at farms as well as the pesticide use.
  - Control of new rules on where and how to clean the pesticide spraying equipment.
  - Control of illegal import of pesticides
  - Control of pesticide residues in food

Instruments

- **Raising awareness**
  - Information campaigns to reduce pesticide use in private gardens
  - Raising consumers awareness of the risks of pesticides
  - Establishing a compulsory course for pesticide distributors.

Instruments

- **Extension and research**
  - Strengthening the activities of the extension service on IPM advise to farmers
  - Establishing 7 demonstration farms
  - IPM point system
  - Development crop specific IPM guidelines
  - Research on new or improved monitoring and warning systems
  - More research on IPM, pesticide risks etc…(other sources)

Extension

- Open call
- Intensive advise on IPM to selected farmers (450 arable farmers per year (average size 100 ha), 50% of the costs covered by Green Growth) and ERFA groups
  - Each farmer receives 3 visits (planning, field visit, evaluation)
- Advisors offered IPM courses
- Similar activities within the horticultural sector

Demonstration farms

- Open call
- Farmers represent different sectors
- Limited amount of money available for compensating the farmers
- Each demonstration farm has a focus area
- “Kitchen table” meeting
- “Field strips” demonstrating the effect of IPM measures and innovative approaches will be established
- Demonstration farms will host PURE on-farm trials
- Dissemination

Planteavl
Afgrøder
Biavl
Dræning
GlobalGAP
Gødskning
Havebrug
Jordbearbejdning
Jordbund
Landsforsøg og resultater
Miljø
Plantekongres
Planteværn
Behandlingsindeks
Bekæmpelsesmidler
Integreret plantebeskyttelse - IPM
IPM - Demobrug
Nedsæt pesticidforbruget i gartneri og frugtavl
Opfølgningskursus til sprøjtebevis/-certifikat
Pesticidhåndtering
Pesticidplan
Plantesygdomme
Planteværn Online
Skadedyr
Sprøjteteknik
Ukrudt
Varsling/registreringsnet
Vækstregulering
Produktionsrådgivning - mark
Produktionsøkonomi - planteavl
Præcisionsjordbrug og GIS
Tilskud - planteavl
Vanding
Vejret
Økologi

Du er her: Landbrugsinfo > Planteavl > Planteværn > Integreret plantebeskyttelse - IPM

Integreret plantebeskyttelse - IPM

Nyheder

Se videoer med IPM værter

Hør og se IPM--værterne fortælle om deres bedrifter og tanker om IPM. IPM-værterne skal de kommende fem år være at dyrke efter principperne integreret plantebeskyttelse.

- Se video med Peter Michaelsen, Hjallerup
- Se video med Lars Andersen og Jørn Willumsen, Ikast
- Se video med Jeppe Mouritsen, Horsens
- Se video med Torben Thomsen, Ebberup
- Se video med Lars Korsholm Hansen, St. Heddinge

Følg IPM-aktiviter på bloggen

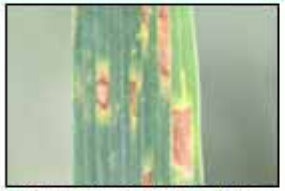
Planteavlskonsulent Lars Olsen skriver løbende om, hvad der sker hos demonstrationsvært Lars Korsholm Hansen.

- Læs mere
- Se bloggen

Bliv et hak bedre til svampesygdomme i korn

Svampesygdomme i korn
Kend svampesygdommene i korn

Kend Septoria



Forebyg resistens mod svampemidler i korn

Sådan tjekker du markerne for Septoria

Brug meget vand mod svampe

Bekæmpelsestærskler for svampesygdomme
Svampemidler i korn

Inspirationsark	Test din viden	IPM-værktøjskassen
Radrensning	Radrensning	På tværs af afgrøder

Log ind

BrugerID
Kodeord
Log ind

Glemt kodeord?
Ny bruger

Nye artikler

Septoria-timer beregner risiko for angreb af Septoria i marken 16-05-11

Følg afprøvningen af Septoria-timeren live 16-05-11

Demonstrationsbrug

Fem landbrug og to gartnerier arbejder aktivt med at udvikle IPM.
Læs mere

Tilbud om rådgivning

400-500 landmænd og gartnere får netop nu rådgivning om IPM Vil du med på næste hold, som starter i 2012.

- Kontakt dit landbrugscenter

Hvad er IPM?

Integreret plantebeskyttelse – IPM - skal sikre en bæredygtig anvendelse af pesticider.Landmændene fokuserer bl.a. på:

IPM - demonstrationsbrug

1. Peter Michaelsen, Hjallerup

Tema: Brug af GPS og sensorer til mere præcise sprøjtninger
Vi skal afprøve, om vi kan spare kemikalier ved at bruge GPS og sensorer. Sensorer kan måske registrere, hvor der er kvik og rodukrudt i marken.
▸ Læs mere om Peter

2. Lars Andersen, Ikast

Tema: Varsling for kartoffelskimmel
Vi skal være med til at afprøve og udvikle en ny varslingsmodel for kartoffelskimmel og undersøge, om varslingen kan spare os for nogle sprøjtninger.
▸ Læs mere om Lars

3. Jeppe Mouritsen, Horsens

Tema: Brug af lokale klimadata til bedre varslinger
Vi skal teste, om vi ved at bruge lokale klimadata, kan få en mere præcis varsling for sygdomme og skadedyr.
▸ Læs mere om Jeppe

4. Torben Thomsen, Ebberup

Tema: Ukrudtskort
Målet er at finde en nem måde at oprette og vedligeholde ukrudtskort på og teste, om de giver en bedre bekæmpelse og en besparelse på kemikontoen.
▸ Læs mere om Torben

5. Lars Korsholm Hansen, St. Heddinge

Tema: Sædskifte og græsukrudt
Målet er at udvikle sædskiftet, så der opnås en bedre kontrol af græsukrudtet og vi afprøver forskellige metoder til at kontrollere græsukrudtet.
▸ Læs mere om Lars

Demonstrationsbrugene

5 landbrug og **2 gartnerier** er med til at udvikle principperne for IPM til praksis.
Læs her om bedrifterne, og hvordan de arbejder med IPM.

Temaer
På hvert af demobrugene vil vi i løbet af den seks års projektperiode sætte fokus på forskellige temaer.
Formålet er at demonstrere og afprøve, hvordan forskellige metoder virker i praksis.

Nye artikler

Septoria-timer beregner risiko for angreb af Septoria i marken 16-05-11

Følg afprøvningen af Septoria-timeren

Focus areas on demonstration farms

- ✓ Use of GPS and sensors for spraying
- ✓ Potato late blight warning
- ✓ Use of local climatic data to improve warning and forecasting models
- ✓ Weed mappping
- ✓ Crop rotation and grass seed production
- ✓ Use of warning and forecasting models, reducing pesticide residues (pomefruit)
- ✓ Biological control (ornamentals in glasshouse)

TIRSDAG DEN 17. MAJ 2011

Vinterrapsen blomstre

Jeg tror fortsat på rapsen kan give et fornuftigt udbytte. Den er nu begyndt at blomstre og i forhold til mange andre rapsmarker jeg har set danner denne mange sideskud med fin blomstersætning.

Den er dog stadig tynd men den gode plads omkring planterne udnyttes til at sætte side skud. Andre steder jeg har set på rapsmarker har der været stor mangel på sideskud og blomstersætning, hvilket jeg vil tilskrive nattefrosten lige før Påske, vandmangel og kraftig angreb af glimmerbøsser. Lars´ markerne er blevet sprøjtet en enkeltgang mod glimmerbøsser, hvilket har holdt dem på afstand. I andre tilfælde har vi oplevet at landmænd måtte sprøjte både 2 og 3 gange for at komme dem til livs. Ukrudtbehandlingen med Command og Stomp lige efter såning har virket rigtig godt og måske også lidt for godt. Vi har snakket om at en medvirkene årsag til det lave plantetal kunne være det meget fugtige vejr

DLBR

LARS OLSEN, ØSTDANSK LANDBRUGSRÅDGIVNING

Jeg er planteavlskonsulent og rådgiver Lars Korsholm Hansen i planteproduktion.

LANDMAND LARS KORSHOLM HANSEN, STEVNS

Jeg er 35 år og driver Egedesgård, hvor jeg bor sammen med min kæreste Eva.

SE VIDEO

Connecting European Researchers and Advisors

IPM knowledge, networks, tools and training

Huub Schepers

FOOD QUALITY AND SAFETY

6TH FRAMEWORK PROGRAMME

endure
diversifying crop protection

Content

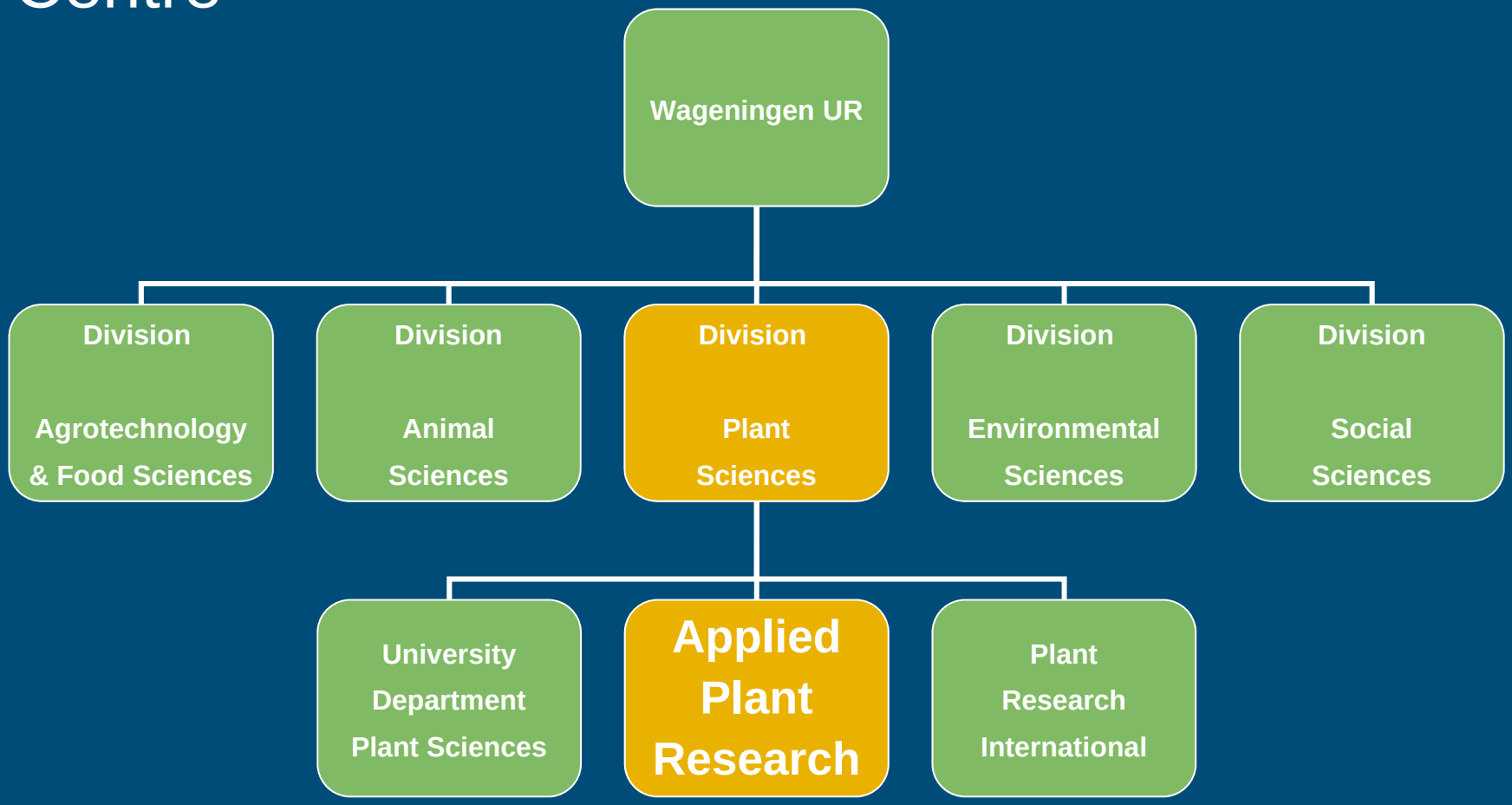
- Introduction
- ENDURE Information Centre
- ENDURE Network of Advisors
- IPM training guide
- The follow up

Applied plant research: profile and position

PPO-AGV,
Partner for research and co-innovation!

APPLIED PLANT RESEARCH
WAGENINGEN UR

Unit of Wageningen University and Research Centre



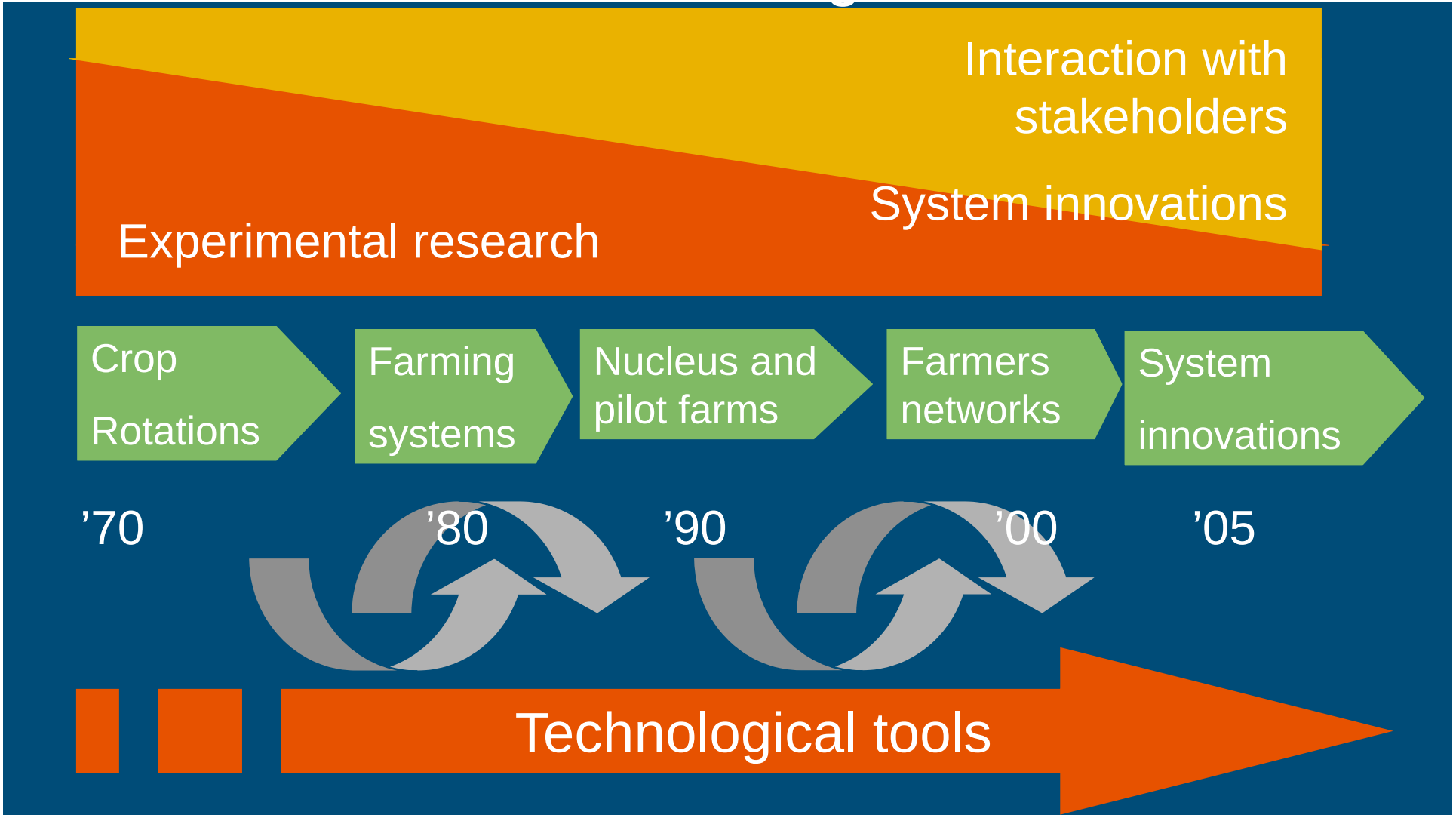
APPLIED PLANT RESEARCH
WAGENINGEN UR

Organisation structure PPO-agv

Bu-Manager
A.T.J. van Scheppingen

- **Multifunctional agriculture**
  Management,
  Nematodes
  E.K. Pinxterhuis
- **Crop protection**
  Fungi
  Weeds
  Pests
  P.M. Spoorenberg
- **Farm system research**
  B.J.M. Meijer
- **International**
  Nutrient Management
  Product and crop innovations
  C.L.M. de Visser
- **Experimental**
  Farms
  Laboratory
  T.A. Brouwer

Transition to sustainable agriculture



APPLIED PLANT RESEARCH
WAGENINGEN UR

EuroBlight

A potato late blight network for Europe

Case - Denmark

Case A: In Denmark farmers have been using reduced dosages for years.

In Denmark, data from the national monitoring network, weather based infection pressure, cultivar resistance and crop growth stage determine strategies with reduced dosages.

Dose Model Results 2009

Cases - the Netherlands

Case A: Test of strategies with reduced dose rates.

Test of control stategies including use of a DSS to recommend reduced dose rates and rules on

ents of an Integrated Control strategy for late blight in Europe are presented and expert judgement) for implementation, barriers and contribution to input reduction are

	mentation	Barriers	Contribution to input reduction	Organic
Crop Rotation	Only on best farms/in some regions/in some countries	Economic/costs AND limited influence on blight	Intermediate	Applicable in organic farming
Primary inoculum sources	Only on best farms/in some regions/in some countries	Economic/costs AND risk perception	Intermediate	Applicable in organic farming
Planting time and density	Only on best farms/in some regions/in some countries	Economic/costs AND limited influence on blight	Small	Applicable in organic farming
Fertilization	Only on best farms/in some regions/in some countries	Limited influence on blight	Small	Applicable in organic farming
Irrigation	Widespread in practice	Limited influence on blight	Small	Applicable in organic farming
Cultivar resistance	Only on best farms/in some regions/in some countries	Economic/costs AND risks AND risk perception	Lower dependency on chemicals AND Large	Applicable in organic farming
Fungicides	Widespread in practice	Economic/costs AND risk perception	Intermediate	Not applicable in organic farming, except that some countries allow use of Copper
DSS	Only on best farms/in some regions/in some countries	Economic/costs AND risk perception	Intermediate	Applicable in organic farming, excluding fungicide modules etc.
Desiccation	Widespread in practice	Risk perception	Small	Applicable in organic farming, excluding dessication by applying chemicals
Harvest	Widespread in practice	Economic/costs		Applicable in organic farming

English (United States)

Introduction

- IPM as standard in EU
- Science for impact
- Connection between research and advisors
- Why tools needed?
- Participating organizations

ENDURE Information Centre

FOOD QUALITY AND SAFETY

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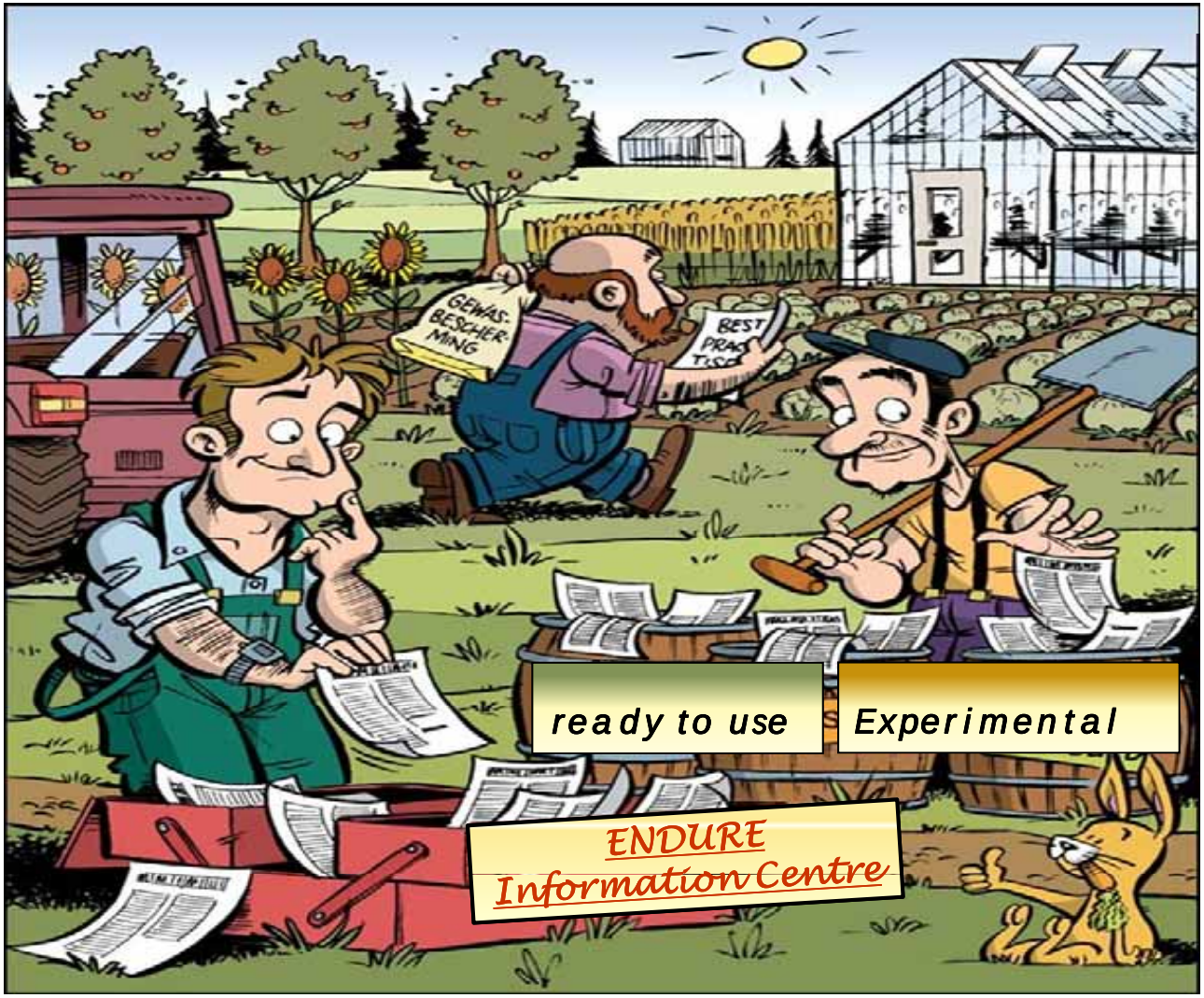
http://www.ENDUREinformationcentre.eu/



Modified Farming with future, NL

- for advisers & extension service
- Linking between researchers & crop protection advisors
- Access to practical IPM-relevant information from
- a wide range of European countries
- Validated by ENDURE scientists.

ENDURE IC - content 1200 entries

- **Ready-to-use information about integrated crop protection**
  - scientifically sound,
  - tested in field,
  - practical to adopt,
  - cost-effective
- **ENDURE and national sources summarized in English**
- **Role of the scientists**
  - Identification, collection and validation of content
  - Description with keywords and writing English abstracts

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ENDURE INFORMATION CENTRE

English | German | French | Spanish | Dutch | Danish | Polish | Italian

About Search Login

septoria tritici Search

Crop

Wheat

wheat

Wheat

- Brassica (68)
- Grasses (6)
- Common sunflower (18)
- Root crops (197)
- Fodder legumes plants (15)
- Cereals (210)
  - Oats (6)
  - Six-rowed barley (56)
  - Rye (19)
  - Wheat (146)
  - Triticale (17)
- Maize (80)
- Fruit plants (135)
- Vegetable plants (169)
- Mixed forest plants (3)

Triticum sp.

TRZSS

Clear

Pests

Common Name

Scientific Name

septoria

Septoria
Septoria glumarum
Septoria nodorum
Septoria sp.
Septoria tritici

- Fungi (94)
  - Ascomycota (54)
  - Basidiomycota (30)
- Protozoa (2)
- Pseudomonas (1)
- Tilletia (1)
- Viruses and viroids (10)
- Weed Plants (34)
- Disease complex, different pathogenic fungi (5)

EPPO Code

Clear

Measure

Common Name

- Preventive measures (11)
  - crop rotation (2)
  - cultivation technique (5)
  - variety/cultivar choice (8)
  - fertilisation/nutrient supply (1)
  - hygiene measures (1)
  - other preventive measures (1)
- Decision support/ control (13)
  - thresholds (4)
  - decision support systems (8)
- Chemical control (8)
  - pesticide timing (1)
  - pesticide mixtures (1)
  - Pesticide efficacy (2)
  - disease control (7)
    - resistance management (5)
- Training material (1)

Clear

Country

Common Name

- Belgium (4)
- Switzerland (5)
- Germany (3)
- Denmark (2)
- Spain (1)
- France (16)
- The Netherlands (1)
- Poland (3)
- Sweden (1)
- United Kingdom (7)

NUTS Code

Clear

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About Search Login

Search

Reports (7), Projects (1) found

Crop
Whea
Tritic
TRZS

Reports Projects

7 Reports found, displaying from 1 to 7

First Previous Next Last

Crop	Pests	Measure	Country	Title	Practicability	Language	
Wheat	Septoria	variety/c ...	BE	EuroWheat.org: a new research-based websi ...	ready to use		Read more
Wheat	Septoria	disease r ...	BE	Using Cultivar Resistance to Reduce Fungi ...	ready to use		Read more
Wheat	Septoria	variety/c ...	BE	Report on Best control practices of disea ...	ready to use		Read more
Wheat	Septoria	disease r ...	DE	EUROWHEAT Platform	experimental		Read more
Winter wheat	Speckled ...	Tolerant ...	ES	Diseases of winter cereals	ready to use		Read
Wheat	Septoria	variety/c ...	FR	A NEW INDICATOR TO EVALUATE WHEAT CULTIVA			
Wheat	Speckled ...	variety/c ...	UK	Wheat seed health & seed-borne diseases – ...			more

Wheat seed health & seed-borne diseases – a guide

This guide aims to help farmers make more informed decisions on using seed treatments in wheat.

7 Reports found, displaying from 1 to 7

First Previous Next Last

Wheat seed health & seed-borne diseases – a guide

summarized by Bill Clark

last update: 28-Feb-2010

This guide aims to help farmers make more informed decisions on using seed treatments in wheat.

Practicability: ready to use

Wheat / Triticum sp. (TRZSS)

Microdochium / Microdochium (anamorphic genus (1MICDG)
Ergot of cereals / Claviceps purpurea (CLAVPU)
Fusarium spp. / Fusarium sp. (FUSASP)
Speckled leaf blotch of wheat / Mycosphaerella graminicola (SEPTTR)
Common bunt of wheat / Tilletia tritici (TILLCA)

variety/cultivar choice
certification

United Kingdom

By understanding the principles of seed testing and processing, the nature of the diseases that threaten seed and the products now available, farmers can:

- make informed decisions
- reduce their costs
- achieve high standards of seed health
- improve profitability
- reduce environmental impact

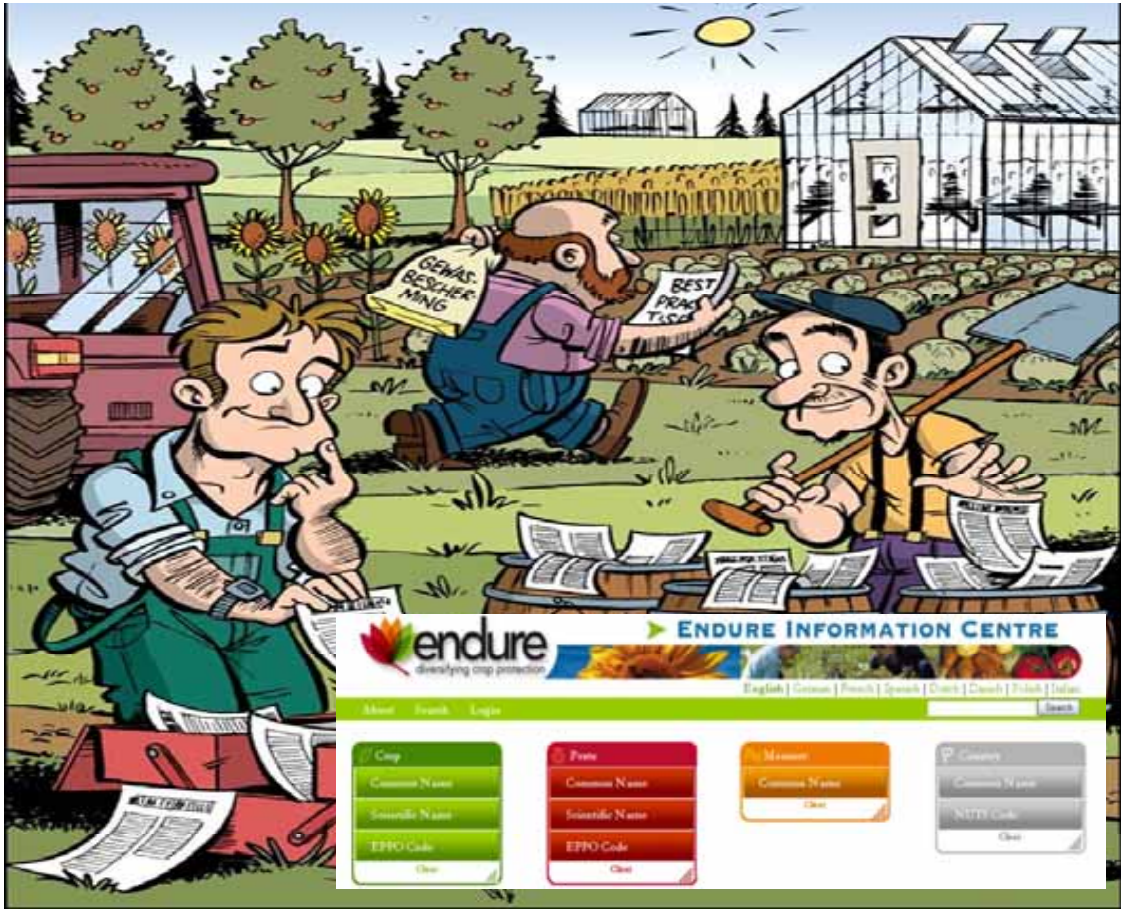
Certified seed
Modern seed treatments offer very high levels of efficacy and have become an integral part of the seed production process. Thus, most seed bought by farmers is already treated. Seed treatment cost varies from £40/t to £150/t. On a cost/hectare this is less than foliar sprays. Nevertheless it is a significant cost. Seed loading (active ingredient/kg seed) and uniformity of application are important. Many seed treatment manufacturers have developed quality assurance schemes for operators to ensure high application standards. This has not only led to improvements in quality of treatment, but also to increased operator and user safety.

Farm-saved seed
The term 'farm-saved' can imply taking grain from a heap in the barn for sowing. This is bad practice. Producing seed from home-grown grain should be planned as meticulously as if it were seed grown for certification. Field history, rotation, weed burden, seed source and treatment of the parent crop should all be taken into account. The crop should be carefully managed and monitored regularly through the season. Seed should be kept separate at harvest. Farmers who choose to save their own seed need to consider whether or not to treat. However, decisions should be based on results of tests for seed-borne diseases. Potential seed lots should be tested after harvest. Decisions on whether or not to treat should be based on thresholds. Whether treated or not, seed should be cleaned before sowing. This should be the case whether the seed is grown by a specialist seed grower or by a farmer for his own use.

ENDURE IC - numbers

crops	entries
arable	600
cereals	220
maize	85
potato	180
oil seed rape	70
pome- and stonefruit	110
vegetables	170
vine grapes	67

measures	entries
preventive measures	380
decision support/ control	185
non-chemical control	310
chemical control	340
legislation	93
training material	80
assessment of crop protection strategies	6



Source: Farming with Future, NL (modified)

It is up to you to!

Share, adapt and combine existing knowledge and tools in IPM

Visit the ENDURE IC!

http://www.endureinformationcentre.eu/

Come and join the ENDURE Network of Advisors

FOOD QUALITY AND SAFETY

6TH FRAMEWORK PROGRAMME

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Fragmented advisory systems

- **Advisers**
  - instrumental in implementation of IPM
  - have expertise in training and extension
  - useful test persons for ENDURE tools
- **No formal European networks today**
- **More linkages with research than among advisers**
  - small advisory companies
  - local competition for customers
  - lack of R & D budgets etc.
- **Language barriers – a major constraint**

Benefits of advisory network

Level of engagement

- Receive information about IPM tools
- Receive results from ENDURE and ENDURE ERG
- Receive newsletters

- Test new tools
- Share experiences regarding IPM
- Share methods of interaction with farmers

- Engage in discussions with colleagues
- Propose new documents for the ENDURE IC
- Identify future research challenges

ENDURE Network of Advisers - State of the art

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ENDURE Network of Advisers
1st Newsletter, 10th September 2010

Dear adviser,

Welcome to the first newsletter for the ENDURE network of Advisers (ENA)!

Some time ago you signed up for membership of the ENA. You have not heard from us until now, but from now on we will be in regular contact with the network.

This newsletter will give you information on:

- The ENDURE Network website
- The ENDURE Information Centre (EIC)
- Leaflets and information from selected ENDURE activities
- Subjects for the first meeting in Paris in November. Mind, please join us!
- Subjects for the next newsletter
- Feedback to ENDURE and to ENA

Free trip to Paris? Read on p. 3

The ENDURE Network website – Have you paid it a visit lately?

Have you visited the ENDURE website yet? It is well worth a visit, and its contents are improving continually. The website may be found here:
www.endure-network.eu

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Diversifying crop protection

1

- Slow start, but we are getting there!
- First newsletter has been issued
- A group of delegates supported by ENDURE / ENA
- Second newsletter has been issued recently
- Welcome to ~~our~~ your network!

Number of advisers from European countries

- **As per 1st November**
  - 129 members in total
- **Strong northern and western European bias**
- **Job categories**
  - 62 advisers
  - 22 senior advisers
  - 8 managers
  - 6 directors
  - 5 product managers
  - 26 others (primarily scientists)

Please register

- Go via www.endure-network.eu > Information for Advisers and Extension Services > ENDURE Network of Advisers
- Or use direct link from newsletter

- Enter your email address
- Await registration email
- Fill out online form (takes 5-10 minutes) – small investment for potentially high return!!

ENA - The outlook is good!!

ENDURE IPM Training Guide :

Resources and tools for successful IPM training

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Background

- IPM is a continuously improving process
- IPM needs a more participatory approach

- Trainers need tools to adapt their trainings
- ENDURE brings a lot of outputs

Facilitation

- **The Guide has been adapted to the needs and wishes of agricultural advisers and trainers**

- **A lot of links with ENDURE publications**
- **Experiences and status**

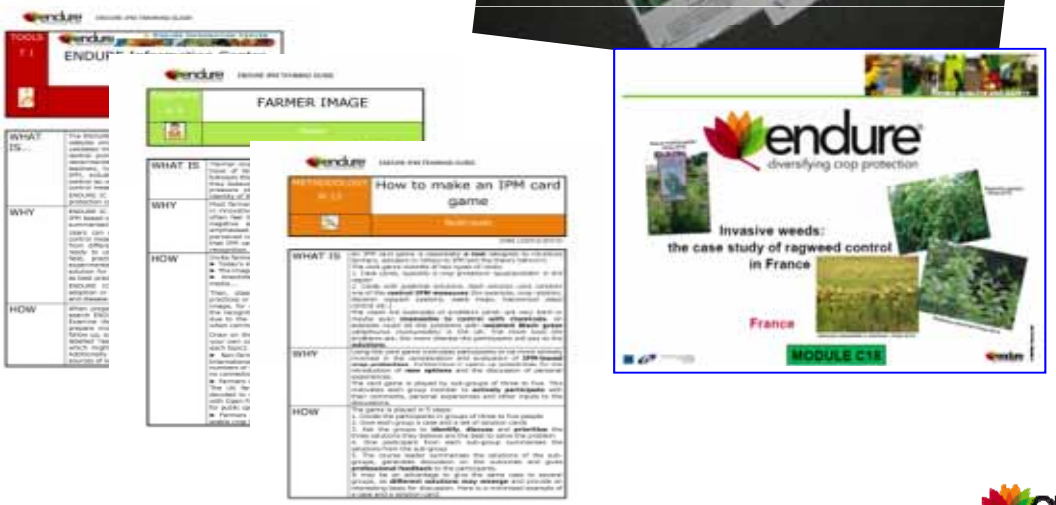
Objectives

- To allow users to adapt ENDURE's outputs to their plant protection systems
- To help trainers create their own training modules

ENDURE IPM training guide

- **The guide is composed of:**
  - sheets,
  - leaflets,
  - recommendations and links,

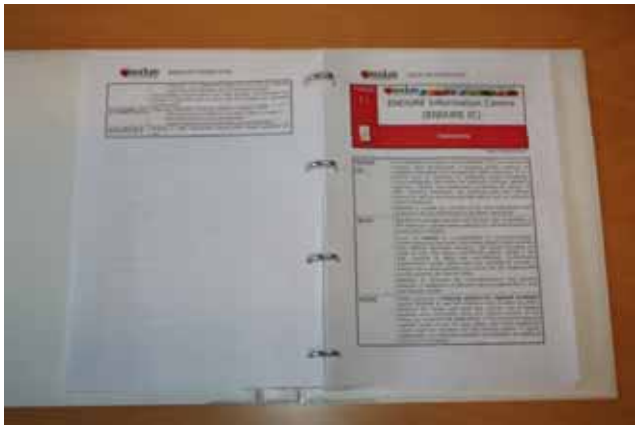
- **following four main topics requested by trainers:**
  - arguments,
  - methodology,
  - tools,
  - contents



ENDURE IPM training guide

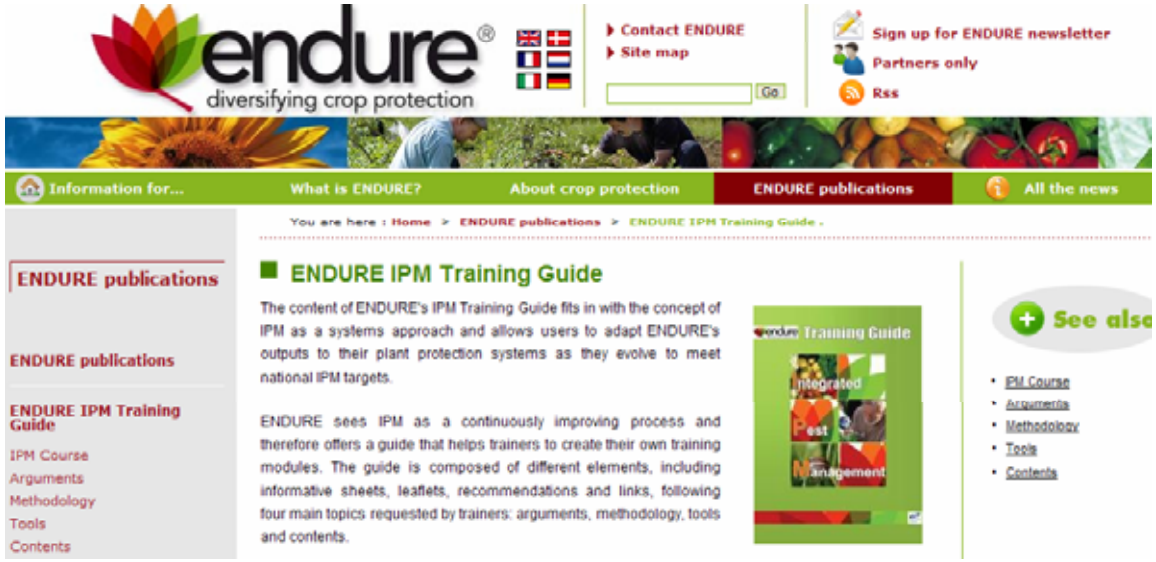
Each sheet provides:

- **The definition of the subject (What is?)**
- **The principle (Why?)**
- **How to use it (How?)**
- **The tools you need to implement the concept (What I need to?)**
- **Links or other sources to additional information that may be useful (Source).**



Access

- **On the ENDURE website:**
  - www.endure-network.eu/ endure_publications/endure_ipm_training_guide



- **For the ENDURE training contact in your country, go to:**
  - www.endure-network.eu/ what_is_endure/endure_training_contacts

The follow up

FOOD QUALITY AND SAFETY

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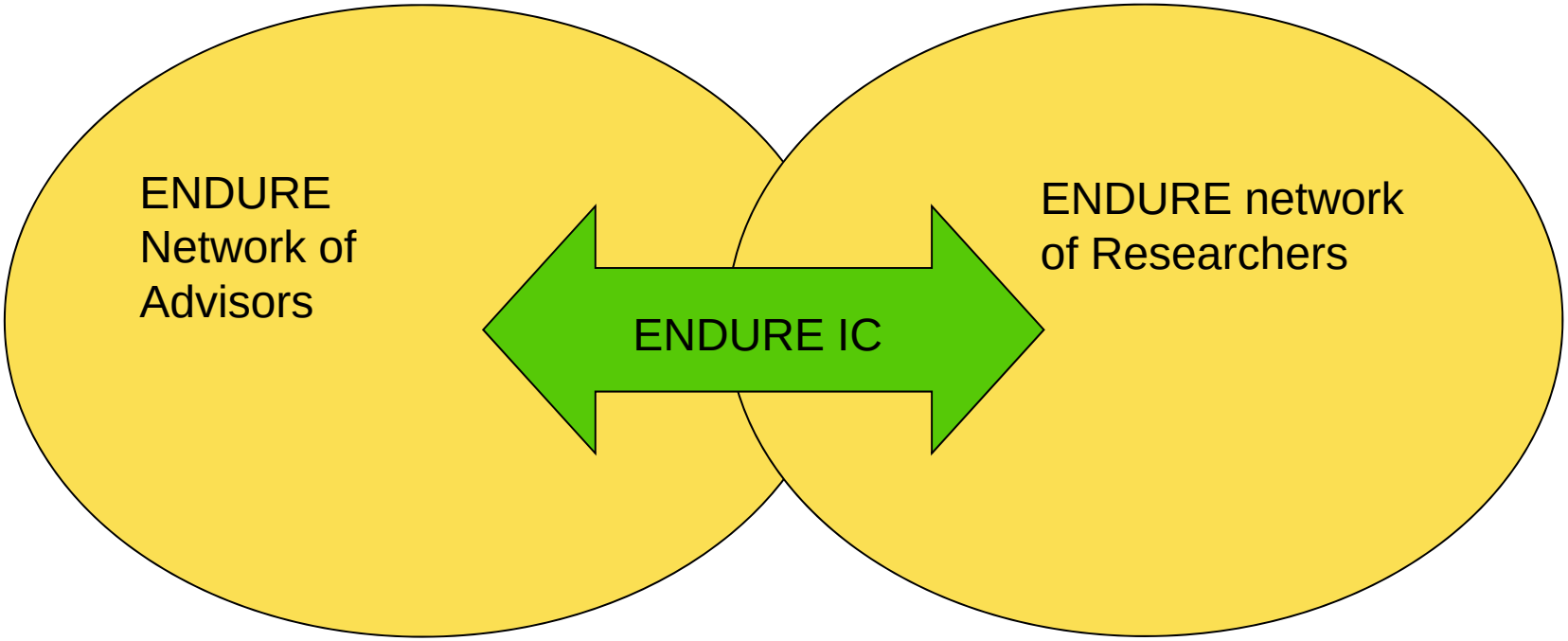
Ambition

- The point of reference for IPM and non chemical alternatives in Europe
- Leading in European transnational knowledge exchange about IPM
- For advisors: The place to get access to validated practices and expertise and to address questions for research and advice
- For researchers: The place to get feedback from practice. Publication at ENDURE IC is a sign of success

Empowering knowledge exchange



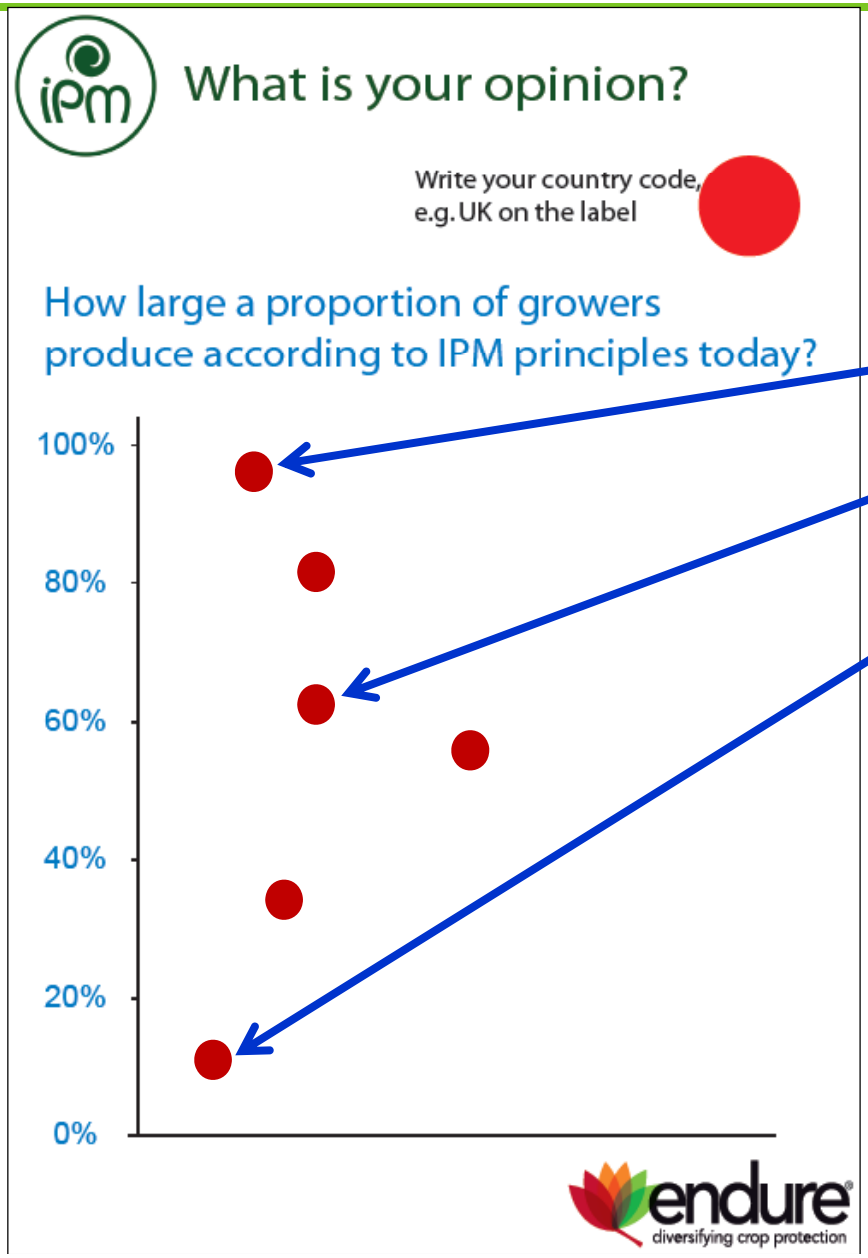
Follow up

- **ENDURE Partners signed for follow up**
- Maintenance of tools and network is guaranteed
- Selection, validation and uploading of new documents and experiences
- Increase number of participating advisors and research organisations
- Improve the infrastructure for easy communication and feedback
- Stimulate learning and reflection on IPM and non chemical control measures

Join us

- **Strengthen base for ENDURE Network of Advisors by:**
  - Knowing each other
  - Knowing how to use and reflect on ENDURE tools
  - Share ideas, needs and bottlenecks to realise IPM in practice

Your turn: IPM status



Please place a red label to indicate your opinion regarding present state of IPM implementation in your country (add country code)

IPM future focus areas

Which of the 8 IPM principles should be in focus from now until 2014?

Use this label to indicate areas where new tools (e.g. warning systems, technology) must be developed

Use this label to indicate areas where we should focus on implementation of existing knowledge and tools

1. We prevent and control weeds, diseases and pests (in the following denoted as pests) by several methods, notably by:
   - having a healthy rotation
   - preventing the spread of weeds, diseases and pests (through cleaning of machinery), etc.
   - protecting and increasing the amount of beneficial organisms in and around the cultivated area
2. We know and follow/monitor the pests in crops, use warnings an forecasts, and seek advice from qualified and independent advisers.
3. We include warnings, forecasts and economic tresholds when we make decisions about plant production. Futhermore, we take regional and climatic conditions into account.
4. We choose non-chemical methods (biological, mechanical, thermal, etc.) against the pests if the methods are sufficiently effective and cost-effective.
5. We choose the pesticides that are best suited to the task and imply the lowest risk of adverse effects on human health, other organisms in nature and the environment.
6. We choose the correct dosages, preferably reduced dosages. We treat as few times as possible, apply patch sprayings etc. At the same time we prevent that pests develop resistance against the pesticides.
7. If there is a risk of development of resistance, we try to replace some of the treatments with pesticides with alternative modes of action, or we mix pesticides with different modes of action.
8. We follow up on how the control mesasures have worked. The starting point is a continuous monitoring of pests in fields and spray records.

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Use a green label to indicate where you think new tools must be developed

NL

2. We know and follow/monitor the pests in crops, use warnings an forecasts, and seek advice from qualified and independent advisers.

Use a yellow label to indicate where you think we should implement existing knowledge and tools

DE

One set of labels/votes per delegate, first come – first served basis

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Thank you for your attention

FOOD QUALITY AND SAFETY

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Julius Kühn-Institut
Bundesforschungsinstitut für Kulturpflanzen
Federal Research Centre for Cultivated Plants

Crop and Sector Specific Guidelines for Integrated Plant Protection (CSG)

Report of the 4th International Symposium Plant Protection and Plant Health in Europe
19. - 21. May 2011 Berlin

Dr. Falko Feldmann
Coordinator - Risk Assessment of Plant Protection Products

National Action Plans base on Dir 2009/128/EC…

24.11.2009 EN Official Journal of the European Union L 309/71

DIRECTIVES

DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 21 October 2009

establishing a framework for Community action to achieve the sustainable use of pesticides

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

other related Community legislation, in particular Council Directive 79/409/EEC of 2 April 1979 on the

… Article 14 is related to Integrated Pest Management

Article 14:
Integrated Pest Management

1. Member States ensure that **general principles of IPM** are implemented by all professional users by 1 January 2014**.**

2. Member States encourage professional users to implement **crop and sector specific guidelines for IPP** (CSG) **on a voluntary basis**.

International Workshop Report

1. Who is interested in descriptions of IPP procedures?
2. What should Crop and Sector specific Guidelines (CSG) contain?
3. How should CSG be designed?
4. Who should develop CSG?
5. How could we start?
6. How could we implement CSG?

www.ppphe.phytomedizin.org

1. Who is interested in descriptions of IPP procedures?

Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz

Bundesministerium für Gesundheit

Bundesministerium für Wirtschaft und Technologie

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

Bundesamt für Verbraucherschutz und Lebensmittelsicherheit

JKI

BfR – Risiken erkennen – Gesundheit schützen

Umwelt Bundes Amt

AgrarMinisterKonferenz

BHB – Bundesverband Deutscher Heimwerker-, Bau- und Gartenfachmärkte e.V.

Industrieverband Agrar

verbraucherzentrale Bundesverband

HOPFEN

BdB

BIOPARK

GARTEN CENTER

AbL

BDG Bundesverband Deutscher Gartenfreunde e.V.

SDW

B·G·A

ZWIEBEL

DEUTSCHER HOPFENWIRTSCHAFTS VERBAND E.V. – DHWV

BDP Lebensraum Pflanze

BLL Bund für Lebensmittelrecht und Lebensmittelkunde e.V.

Spitzenverbände der Landwirtschaftlichen Sozialversicherung

GREENPEACE

BDI

Bioland

WWF

VDF

online DVGW

DSV

BOLW

FiBL

PAN

DPG

DWA

DNR Deutscher Naturschutzring

IVG

drv

ECOVIN

BGW

BVA ONLINE

Zentralverband Gartenbau e.V. (ZVG)

Deutscher Stadtetag

BGDP-ONLINE

DBV

DLG e.V.

demeter

BUND

Deutscher Forstverein e.V.

NABU

dwv

FNL Fördergemeinschaft Nachhaltige Landwirtschaft e.V.

DMK

golf.de

DBB

DEUTSCHER IMKERBUND E.V.

Verband der Landwirtschaftskammern

FORSCHUNGSRING e.V.

Deutscher Mälzer Bund e.V.

GOs and NGOs involved in the German National Action Plan „Sustainable use of PPP“

JKI

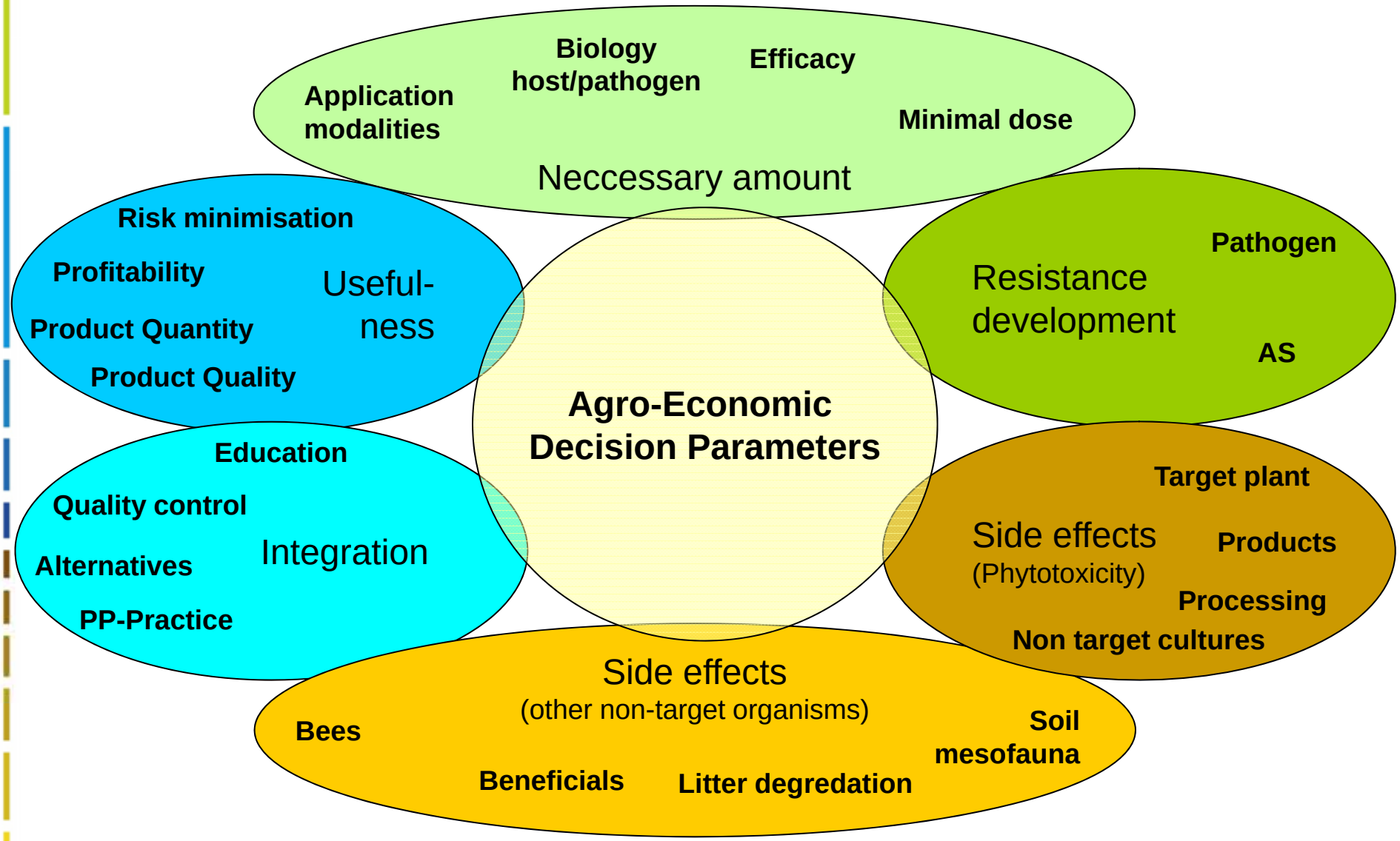
1. Who is interested in descriptions of IPP procedures?

IPP descriptions:

- are a support for practice
- help extension services
- are reference for administrative decisions
- connect practice and science
- are reference for PPP development in industry
- are basis for retailer certification systems

Chance 1:
CSG could become a standard
to ease communication between all interest groups

2. What should Crop and Sector Specific Guidelines contain?



Data requirement for adequate decisions in plant production

2. What should Crop and Sector Specific Guidelines contain?

1. Prevention and/or suppression of harmful organisms by preventive measures, e. g. crop rotation, resistant varieties, protection of beneficial organisms
2. Usage of tools for monitoring
3. Usage of threshold values and decision-making systems
4. Non-chemical methods to be preferred
5. Pesticides applied as target-specific as possible and with least side effects (to human, environment)
6. Reduction of use to necessary levels
7. Application of anti-resistance strategies
8. Check of success based on records and monitoring

Chance 2:

CSG should be more than these mandatory General Principles of IPP!

They should show *Best* Agricultural Practice!

3. How should CSG be designed?
(Proposal of Ladewig, IFZ, 2011)

- Modular design: „superior“ and „specific“ measures

- Combination of „measures“ and „explanations“

This system offers the possibility to enhance the process quality continuously through understanding

INSECTS

preventive measures	Explanation
All measures that enhance rapid emergence and youth development, reduce the risk of insect attacks. Therefore, sowing should be done as early as possible so that a rapid field emergence and evenly canopy closure is likely to be expected.	A rapid emergence of sugar beets prevents relevant damages (e. g. *atomaria lineatus*) on root, leaves and hypocotyl. Because aphids prefer to fly to unhomogeneous plant stands and unclosed canopies, all measures are positive, which enhance homogeneous plant stands and early canopy closure. More developed plants often show less damages at infestation (e. g. *pegomyia betae*, aphids). … If an infestation risk by *Ditylenchus dipsaci* is present, early sowing increases the infestation level.

13

Chance 3:
Combination of guidance (“how”) and understanding (“why”)

4. Who should develop CSG?

(case of sugar beet guideline, Ladewig, IFZ, 2011)

- General management : IFZ
- IFZ is a research institute at the University of Göttingen
- IFZ is financed by the Sugar Industry Association
- The CSG for sugar beet was supported by the German government

working group

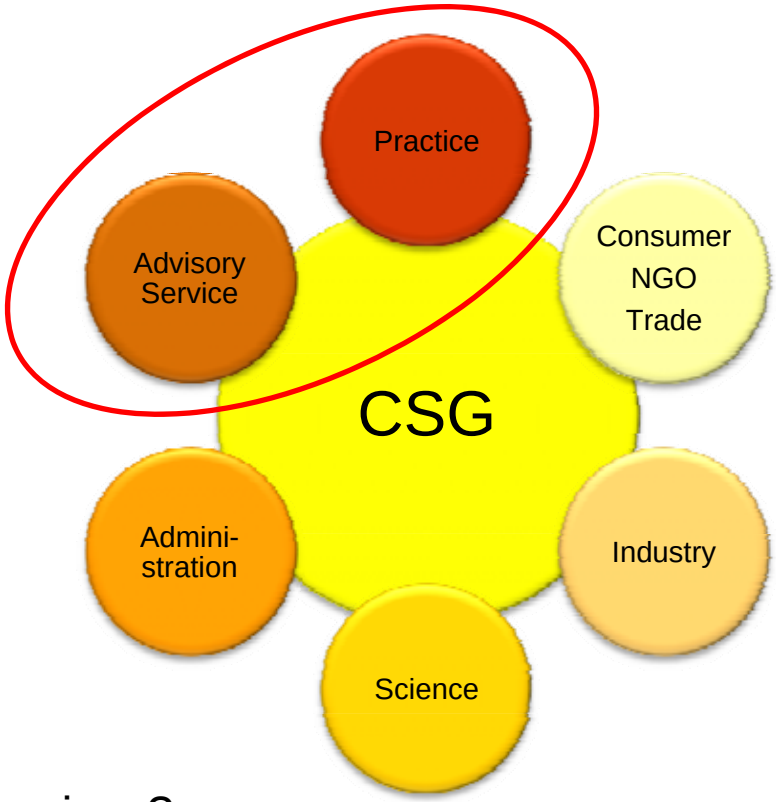
participating institutions

- sugar beet growers and growers associations
- sugar industry
- official advisory service
- breeding companies
- companies of the plant protection industry
- Julius Kuehn-Institute JKI
- Federal Office of Consumer Protection and Food Safety (BVL)
- internet based advisory systems (BISZ, ISIP, LIZ)

8

Will this system based on a major crop be applicable to e. g. horticulture with hundreds of plants species?

4. Who should develop CSG?



- General management : Plant Protection Services?
- Main partners: Growers, Growers Associations, Scientific Associations?
- Financial support by government for travel expenses?

Chance 4:
Acceptance of CSG through farmer´s ownership and impartial background of national scientific societies

5. How could we start?

- Develop CSG for major crops following Ladewig (www.ppphe.phytomedizin.org)
- Start to define „Sectors“ as CSG modul containing more than plant species
- Inform other countries about national CSG through scientific meetings and publications
- Make the results available in national (e.g. scientific associations) and international data bases (e.g. ENDURE)

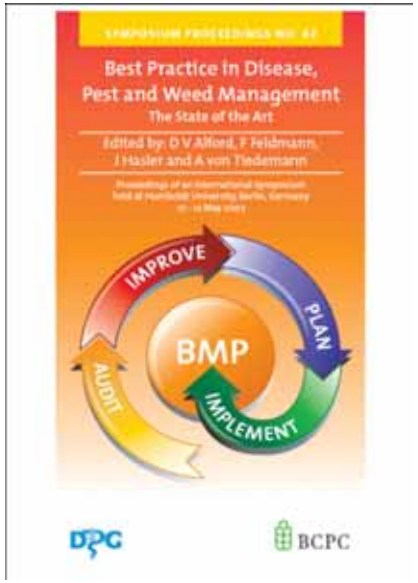
Chance 5:
Definition of sectors in an international context (“harmonized”)

6. How could we implement CSG?

- **Implementation of CSG will be easy:**
  they are not restrictive, are developed with their participation and are advantageous for growers!

- CSG should be discussed on demonstration farms, meetings and be spread in publications

- **The challenge is to install a self-optimising audit system:**
  Recently it seems that only the extension services have the right position to manage this demand.



Chance 6:
We should implement CSG within a self-optimising audit system

Conclusion and outlook

1. CSG give growers orientation about the direction of future agriculture
2. CSG are flexible, not restrictive, pro-active and future oriented
3. CSG could be critallisation point for data pool management approaches
4. CSG give information about plant production to all stakeholders
5. Approved CSGs could be used for positiv incentives and awards
6. If national CSG would be provided internationally maximum use could be made of them

We should develop CSG *now* and *together* because they help all stakeholders including farmers as well as costumers

The organisers of the

4th International Symposium on Plant Protection and Plant Health in Europe

Berlin, 19. - 21. May 2011

thank for your participation!

Julius Kühn-Institut

LAND BRANDENBURG

HUMBOLDT-UNIVERSITÄT ZU BERLIN

DPG Deutsche Phytomedizinische Gesellschaft e.V.

www.ppphe.phytomedizin.org

Crop and Sector Specific Guidelines for Integrated Plant Protection (CSG)

here: Proposal for contents of CSG

Falko Feldmann

Institute for Plant Protection in Horticulture and Forest

Various private certification systems exist which check plant production procedures in detail. They define standards which have to be met in order to guarantee „clean“ products. The idea of these certification systems is to audit farms on the basis of record keeping, visiual control and chemical analysis. Audits together with consultation and education service induce a development of agricultural practices in direction of satisfaction of consumer´s demands. CSG have different aims. Integrated Plant Protection is much more than safe use of pesticides: CSG should reflect which criteria are fulfilled at a certain moment to reach the best way of producing plants and plant products.

CSG Contents

according to Dir 2009/128/EC

General, not „specifying“ contents

- Record keeping and self-assessment
- Workers Health, safety and welfare
- Waste and pollution management
- Environment and conservation
- Traceability and segregation

Local adaptations, „too“ specific contents

- Site history and management
- Soil and substrate management
- Fertilizer application
- Irrigation/Fertigation

Specifying contents

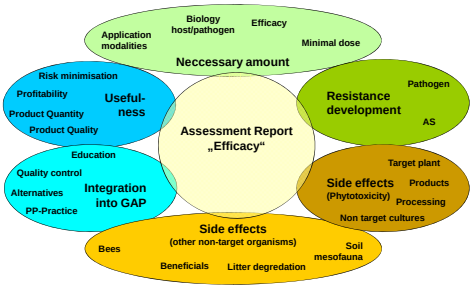
- Plant material
- Disease and pest management
- Undesired side effects
- Plant production products and alternatives
- Machinery and equipment
- Pre- and Post harvest treatments
- Storage and transport treatments

Main CSG Criteria

related to specifying contents

- Plant protection modalities and host/ pathogen development should be highlighted
- Focal point should be set on necessary amount and minimal dose of pesticide uses
- Resistance management should be described
- Avoidance of undesired side effects to the target plant, products or the processing and non target cultures should be demonstrated
- Harmlessness to soil microbes, mesofauna, beneficials, symbionts and pollinators should be shown
- Alternatives for chemical control should be cited
- Usefulness of procedures for product quantity and quality should be proven
- Eventual risk minimisation effect or other advantages are pointed out

CSG might have special importance for registration purpose



Guidelines as Best Practice Descriptions

- *Guidelines for sustainable use of pesticides* should contain criteria based standards
- The *Plant Protection Guidelines* should be embedded in standards for entire integrated production systems
- *Sectors* should cover more than one cultivated plant species. A guideline should be called *sector-specific* if the criteria can be applied to all covered plant species
- A modular design of the standards should lead to different plant sub-groups and finally to *plant specific* measures within sectors

CSG should be process descriptions on the way to Best Practice

CSG should show best ways to achieve healthy plants

Institut für Pflanzenschutz in Gartenbau und Forst, Messeweg 11/12, 38104 Braunschweig
Tel.: (0531) 299-4601/-4401, E-Mail: forst@jki.bund.de oder gartenbau@jki.bund.de
www.jki.bund.de

Crop and Sector Specific Guidelines for Integrated Plant Protection (CSG)

here: Potential Uses and User Groups

Falko Feldmann

Institute for Plant Protection in Horticulture and Forest

CSG are embedded into the National Action Plans for Sustainable Use of Pesticides, (NAP) fixed in Directive 2009/128 . Initially planned as one of different tools for putting the concept of sustainable use of pesticides into future plant production practices, more and more it is recognized that the might become the most powerful tool interconnecting several uses and user groups.

Uses

- Definition and harmonization of GAPs for registration purpose of Plant Protection Products (PPP)
- Grouping of pathogens and GAPs („extrapolation“) for registration purpose (industry and administration)
- Clustering of integrated plant protection procedures
- Information and transparency related to plant protection procedures for different interest groups
- Guidance on aims of agricultural sustainability mediated by Best Agricultural Practice (BAP) orientation
- Benchmarking of plant production procedures with Integrated Plant Protection Procedures

User groups

- Industry
- Administration

- Producers

- Extension services
- Retailers

- Consumers
- Science

Open questions

- Should CSG be developed on national or international level?
- How are interest groups are included into the process?
- Who will direct the process?
- Who will accredit CSG?
- How could a general information system be constructed?
- How could the implementation be supported by the interest groups?

Challenges

- Integration of existing experience and standards
- Data mining/fusion of data bases
- Creation of joined data pools or search engines
- Agreement on aims, milestones and evaluation schemes of progress

Challenges

- Definition of science based, transparent, comprehensible, modular, flexible, practicable and affordable guidelines
- Integration of CSG into existing evaluation schemes (certification systems)

CSG can be an interface for information exchange along the product chain

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The German Phytomedical Society r.S. (DPG) at a glance

Dr. Falko Feldmann

Deutsche Phytomedizinische Gesellschaft e.V.

German Phytomedical Society r.S.

Organisation structure of DPG

DPG-Working Groups:

DPG-Board:

Dr. B. Holtschulte (KWS)
Dr. K. Stenzel (BayerCropScience)
Prof. A. v. Tiedemann (U Göttingen)

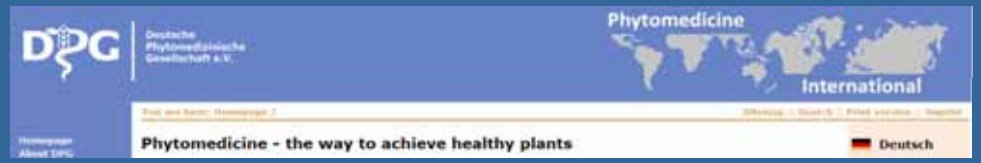
Dr. Falko Feldmann (JKI)

Dr. M. Heupel (PPS Bonn)
C. Gattermann (JKI)

Prof. F. Klingauf (JKI)
Prof. R. Heitefuß (U Göttingen)

K. Doell (U Göttingen)

www.phytomedizin.org



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DPG-Publishing (since 2007)

Flyer and Posters

Phytomedizin and special issues

Spectrum Phytomedizin

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Messeweg 11/12 – D-38104 Braunschweig –
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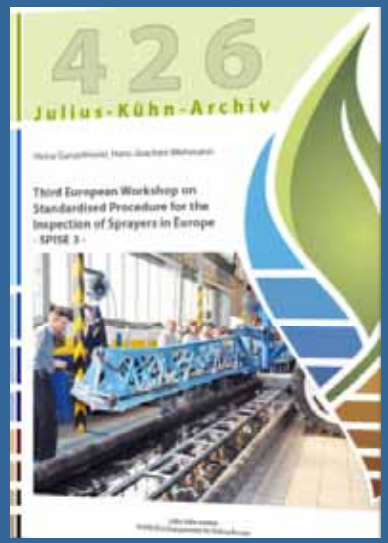
Co-operation with other publishing houses:



International JPDP

Cost-free for DPG-members

→ 6x per year

→ english

→ for full papers and WG-abstracts

Complementary publications of partner Julius Kühn Institut

→ 12x per year

→ German/English

→ for German WG-abstracts

→ for joint proceedings

Scientific Symposia

12 Working group meetings per year (2 day events)

German Plant Protection Congress (every second year)

Plant Protection and Plant Health in Europe („Berlin Symp.“, every 2nd year)

Further national and international symposia (irregularly)

2010


2009



2008



Every year 1200-2200 scientists meet in DPG symposia

4th International Symposium
Plant Protection and Plant Health in Europe:

Crop- and Sector-specific Guidelines for Integrated Plant Protection

Berlin, 19-21 May 2011

We welcome you in Berlin every second year

Recent forum of GO & NGO in Germany working on aspects of NAP

Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz

Bundesministerium für Gesundheit

Bundesministerium für Wirtschaft und Technologie

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

Bundesamt für Verbraucherschutz und Lebensmittelsicherheit

JKI Julius Kühn-Institut

BfR Risiken erkennen – Gesundheit schützen

Umwelt Bundes Amt

AgrarMinisterKonferenz

BHB Bundesverband Deutscher Heimwerker-, Bau- und Gartenfachmärkte e.V.

Industrieverband Agrar

verbraucherzentrale Bundesverband

HOPFEN

BdB

BIOPARK

GARTEN CENTER

AbL

BDG Bundesverband Deutscher Gartenfreunde e.V.

SDW

B·G·A

ZWIEBEL

DEUTSCHER HOPFENWIRTSCHAFTS VERBAND E.V. – DHWV

BDP Lebensbild Pflanze

BLL Bund für Lebensmittelrecht und Lebensmittelkunde e.V.

Spitzenverbände der Landwirtschaftlichen Sozialversicherung

GREENPEACE

BDI

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WWF

VDF

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DSV

DPG

BOLW

FiBL

PAN

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DNR Deutscher Naturschutzring

IVG

drv

ECOVIN

BGW

BVA ONLINE

Zentralverband Gartenbau e.V. (ZVG) – der Dachverband der grünen Berufe

Maschinenringe die Profis vom Land

BGDP-ONLINE

Deutscher Stadtetag

DLG e.V.

DBV

demeter

BUND

Deutscher Forstverein e.V.

NABU

dwv

FNL Fördergemeinschaft Nachhaltige Landwirtschaft e.V.

DMK

golf.de

DBB

DEUTSCHER IMKERBUND E.V.

Verband der Landwirtschafts-kammern

FORSCHUNGSRING e.V.

Deutscher Mälzer Bund e.V.

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Messeweg 11/12 – D-38104 Braunschweig – www.phytomedizin.org

DPG

DPG invites you to define an adequate role of the
European Foundation for Plant Pathology
in the

XVIII International Plant Protection Congress

Berlin

2015

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Messeweg 11/12 – D-38104 Braunschweig –
www.phytomedizin.org

The Deutsche Phytomedizinische Gesellschaft e.V. (German Phytomedical Society r. S.)

thanks for your attention

Dr. Falko Feldmann

Deutsche Phytomedizinische Gesellschaft e.V.
Messeweg 11/12 – D-38104 Braunschweig – www.phytomedizin.org

Registration fees

Regular participants: 140 Euro

The fee includes free entrance to the reception, lunch on Friday and complementary coffee or tea during the symposium.

Students: 50 Euro

DPG junior members: free

Field excursion: 50 Euro

Payments:
All payments should be addressed to

Bank name:	Deutsche Bank
Account holder:	DPG
Account number:	3518487
BLZ:	500 700 10
BIC:	DEUTDEFF
IBAN:	DE 79 5007 0010 0351 8487 00

Further payment details are given on the symposium website.

Please notice that payments less a processing fee of EUR 30 will be refunded provided a written cancellation is received by DPG until 1 April 2011. Please note that there will be no refund for cancellation after 1 April 2011.

The conference language will be English.

Programme information:
Further details (e.g. about the symposium committees) will be given on the symposium website or by email:

Feldmann@phytomedizin.org

www.ppphe.phytomedizin.org

The Venue

The symposium »Plant Protection and Plant Health in Europe« is organised jointly every two years by the *German Phytomedical Society* (DPG, www.phytomedizin.org), the *Julius Kühn-Institut* (JKI, www.jki.bund.de) and the Section Phytomedicine of the Faculty of Agriculture and Horticulture of the Humboldt University Berlin (www.hu-berlin.de). This three-day symposium will be held at the traditional building of the Julius Kühn-Institut, *Königin-Luise-Straße 19, 14195 Berlin (Dahlem), Germany.*

Accommodation: Berlin offers a large number of hotels. Please contact the Berlin tourist information.

Cultural programme: A number of opportunities will be available for you to explore the German capital on your own (see Berlin tourist information).

The conference bureau will be open throughout the symposium. Registration is possible on 19 May, from 10:00 to 12:00 am.

Symposium Committee

Bernd Holtschulte & Falko Feldmann
German Phytomedical Society (DPG), Germany

Wolfgang Zornbach
Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), Germany

Georg F. Backhaus & Hartwig Schulz
Julius Kühn-Institut (JKI), Quedlinburg & Berlin, Germany

Carmen Büttner & Christian Ulrichs
Humboldt University (HU), Berlin, Germany

Manfred Lehmann
Brandenburg State Office of Plant Protection, Germany

Plant Protection and Plant Health in Europe

Crop and sector-specific guidelines on integrated plant protection

4th International Symposium
jointly organised by DPG, JKI and HU-Berlin

19 – 21 May 2011 Berlin, Germany

Julius Kühn-Institut
Federal Research Centre for Cultivated Plants

Programme
www.ppphe.phytomedizin.org

The Symposium Topic

The EU and also the OECD have given a great deal of attention to the contents of national strategies to reduce the risks arising from the use of plant protection products resulting in the necessity of crop or sector-specific guidelines on integrated pest management. The OECD Strategic Approach in Pesticide Risk Reduction follows the same lines.

The Directive 2009/128/EG describes General Principles of Integrated Pest Management and asks public authorities or organisations representing particular professional users of plant protection products to develop crop or sector-specific guidelines on a voluntary basis. Nevertheless these guidelines are core elements of modern risk reduction strategies.

Against this background the intention of the symposium is the following:

- to identify components which are successful plant protection strategies and help to design crop or sector-specific guidelines
- to compare the strategies of EU-Member States to integrate stakeholders in the process of guideline development
- to develop conclusions and recommendations for future discussions, in particular in the EU and OECD framework

www.ppphe.phytomedizin.org

The symposium is designed as a meeting of all relevant stakeholders (government, civil societies and private sector). Invited speakers will introduce the workshops. Registration of Short Statements and posters is welcome until

25 April 2011

The symposium language is English.

Programme

Short Statements will be presented during the workshops.

Thursday 2011-05-19

13:00-13:30 Opening ceremony

Session 1 (Chair: Holtschulte B, KWS, GER)

13:30-14:15 Zornbach W (BMELV, GER): Integrated Pest Management as Core Element of the OECD Strategic Approach in Pesticide Risk Reduction and of the new EU-Legislation on the Sustainable Use of Plant Protection Products

14:15-15:00 Lentsch M (BMLFUW, A): Interrelationships between agro-environmental programmes and crop and sector specific guidelines for integrated plant protection in Austria

15:00-15:30 Kuhlmann, U & Hunt E (CABI, EU): Experiences with the development of general and crop-specific IPP guidelines from CAB International's perspective

16:00-17:00 **Workshop 1 (Chair: Kuhlmann, U & Hunt E, CABI, EU)**
Which components are discriminating between plant protection strategies and help to design specific guidelines?
Glavendekic M (University of Belgrad, SRB): Differentiation of plant protection measures in the sector »horticulture«

17:00-18.00 Poster Session

18:00- ... **Reception**

Friday 2011-05-20

Session 2 (Chair: Feldmann F, JKI, GER)

08:30-09:00 Matyjaszczyk E (IOR, PL): IPP guidelines as complementary data pool for zonal plant protection product efficacy assessments?

09:00-09:30 Meier-Runge F (Syngenta, GER): Do national IPP guidelines fit into zonal registration of plant protection products?

09:30-10:00 Chambers P (Copa-Cogeca/NFU, UK): Are crop and sector specific guidelines the best way forward for IPM?

Session 3
(Chair: Büttner C, Humboldt University of Berlin, GER)

10:30-11:00 Steinmann H-H (University of Göttingen, GER): What do we know about crop rotation in current arable farming?

11:00-11:30 Ladewig E (IFZ, GER): A crop specific guideline for plant protection of sugar beet

11:30-12:00 Srivastava M P (Haryana Agricultural University, IND): Rationale and ethics of practicing plant pathology worldwide

13:30-14:00 Dachbrodt-Saaydeh S (ENDURE, EU): Scientific support to policies – a comparison of six EU member states

14:00-14:30 Hommel B (ENDURE, EU): The Endure expert network

14:30-15:30 **Workshop 2**
(Chair: Schepers H, ENDURE, EU)
Data management for crop and sector specific guidelines
Schepers H (ENDURE, EU): The Endure Information Centre: sharing and disseminating IPM information across Europe

16:00-17:00 **Workshop 3**
(Chair: Lentsch M, BMLFUW, A)
Implementation of crop and sector specific guidelines
Freier B & Beer H (GER): Demonstration farms – high-end implementation of IPM guidelines

16:30-17:30 **Zornbach W (BMELV, GER): Symposium Resume**

19:00- ... Get together (optional, costs not included in the registration fee)

Saturday 2011-05-21

08:00-18:00 **Chair: Lehmann M (Brandenburg State Office of Plant Protection, GER)**
Sectors »forest«, »nursery« and »energy plantations«: Excursion to the Cottbus area