The State of integrated Crop and Pest Management in Europe: Institutional framework and prospects for the development

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IPM in Europe

• Historical background

• Status quo and institutional framework

• Prospects

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The Beginning of Integrated Plant Protection (IPM)

Since 1943: Investigations on ecological effects of new insecticides in Northern America (PICKETT and PATTERSON, 1953)
   → Their aim: several instruments must be „integrated“

Since 1954: Similar investigations in Europe (STEINER, 1962)

1959: STERN et al. published „Integrated control concept“ (1st definition)

1959: Foundation of 1st IPM-working group in Europe

„Working Group for Integrated Plant Protection in Orchards“
within the IOBC (Int. Organ. for Biolog. and Integr. Control of Noxious Animals and Plants, established in 1956)

1986: Incorporation of IPM as long-term aim into German Plant Protection Act
IOBC established several working groups which promoted IPM in Western and Eastern Europe in the seventies and eighties

**IOBCwprs** (Western Europe)

Aim: IPM to limit pesticide usage and ecological impact

**IOBCeprs** (Eastern Europe)

Aim: IPM with alternatives to pesticides because of lack of chemical pesticides

2006: 20 wprs and 16 eprs working/study groups
The problem of definition

Compendium of IPM Definitions: A Collection of IPM Definitions and their Citations in Worldwide IPM Literature
BAJWA & KOGAN (1998), Integrated Plant Protection Centre, Oregon State Univ., Corvallis, Oregon, USA

67 definitions particularly from the U.S.

Many well-known, officially published definitions were not considered,
e. g. AGENDA 21, EU, German Plant Protection Act

>100 IPM-definitions!
IPM-Definition in Directive 91/414 EEC

The rational application of a combination of biological, biotechnological, chemical, cultural or plant-breeding measures whereby the use of plant protection products is limited to the strict minimum necessary to maintain the pest population at levels below those causing economically unacceptable damage or loss.

IPM-Definition in German Plant Protection Law

A combination of techniques which, giving precedence to biological, biotechnological, plant breeding, cultivation and cropping methods, restricts the application of chemical pesticides to the necessary minimum.
Elements of Control in IPM System

Necessary minimum

Cultural control
Enhancement natural control
Chemical control
Biological control
Mechanical control

Ecological environment

Plant production
All the numerous definitions and interpretations of IPM contain **general universally valid principles**

- IPM is a system approach
- IPM ensures sustainable plant production at the best level
- IPM preserves agro-ecological state and exploits natural control
- IPM gives precedence to preventive and non-chemical control measures
- IPM limits pesticide use to the necessary minimum
- IPM is a knowledge-intensive system dependent on excellent decision-making
- IPM is open to new ideas, scientific findings and technical advances
First long-term experiences with IPM:

IPM is a sophisticated concept and **difficult to put into practice**

**Main benefit**: pesticide reduction by 20-30%; better ecological situation

Problem: No uniform international IPM standard

Difficulties putting IPM into practice were a reason for creation of lower and practicable-for-all-standard “**Good Plant Protection Practice**” in Europe
IPMEurope (established 1993)

Natural Resources Institute, University of Greenwich, Kent, U.K.


6 Requirements
- Common European IPM guidelines based on a set of agreed principles
- Strengthen partnerships with key stakeholders
- Promote the effective utilisation of European resources
- National IPM Development committees
  ...

Directive 91/414/EEC

9 references to IPM

3 references to „principles of integrated control”

Principles of IPM still have not been published in EC

EC does not have an institutional framework for IPM

Also in Member States no national IPM standards

General guidelines for Good Plant Protection Practice in DK, D, NL, UK and other Member States

IPM is accepted as model in all European countries
Draft of new 414/EEC contains a new and longer definition of IPM:

Careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep plant protection products and other interventions to levels that are economically justified and reduce (?) or minimise risks to human health and the environment. Integrated pest management emphasises the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.

„Necessary minimum“ was deleted!
Thematic strategy (draft)

**General standards** for IPM shall be developed and shall become mandatory

**Crop-specific standards** for IPM shall be developed
But implementation shall remain **voluntary**
General IPM standards must contain more details than principles see EPPO Guidelines on GPP, IOBC Guidelines on IP, Regional guidelines on IP
Publication of Principles of IPM in Germany in 2002

Die Grundsätze des integrierten Pflanzenschutzes

Principles of Integrated Plant Protection

Ulrich Burth¹, Bernd Freier¹, Karl Hurle¹, Manfred Reschke³, Reinhold Schiller⁴, Bernd Stein⁵ und Dieter Westphal⁶

Zusammenfassung

Grundsätze des integrierten Pflanzenschutzes

integrierter Pflanzenschutz: eine Kombination von Verfahren, bei denen unter vorrangiger Berücksichtigung biologischer, biotechnischer, pflanzenzüchterischer sowie anbau- und kulturtechnischer Maßnahmen die Anwendung chemi-

Stichwörter: Integrierter Pflanzenschutz, Grundsätze des integrierten Pflanzenschutzes
General and crop-specific standards for IPM are necessary for:
- Unifying minimum requirements
- Labeling
- Communication between producer, retailer and consumer
- Distinction between GPP and IPM
- Identification of criteria for allocation of EU subsidies
Minimum Requirements on IPM which should be implemented on EU level (Examples)

- Preparation of an operative IPM concept at the farm level
- Usage of specific (predetermined) non-chemical control methods
- Concept defining minimal quantity and quality of ecological structures at the farm level
- Spray equipment with drift reduced nozzles
- Compliance of regionally determined upper limits of treatment frequency index in main crops
- Field-specific pest monitoring and documentation of infestation data and pesticide use
- Usage of all information sources of authorized IPM advisory service
Necessary minimum for use of pesticides in IPM according to statistical data on pesticide use in a crop and region.

Number of farms

Corridor of necessary minimum

Treastment frequency index (TFI)

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