



# endure<sup>®</sup>

diversifying crop protection

## Dealing with national targets in pesticide reduction programmes

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  - Marco Barzman, INRA
- Radzików, Sept. 5, 2011

*Providing information, tools and services to scientists, policy and farm advisers, and trainers concerned with Integrated Pest Management*



## ENDURE analysis of national plans for pesticide use or risk reduction in 5 countries

### 🌿 Types of targets

- Volume reduction
- Dose-frequency
- Risk and impact
- No quantified target

### 🌿 Associated research and extension



## Denmark

### 🌻 1986-1997 Pesticide Action Plan I

- 50% volume reduction by 1997 relative to 1981-85
- Success... but 8% TFI reduction + water quality problems

### 🌻 2000-2003 Pesticide Action Plan II

- Reduce TFI from 2.5 in 1997 to 2.0 in 2003
- Success... but decision to do more

### 🌻 2004-2009 Pesticide Action Plan III

- Reduce TFI from 2.0 in 2003 to 1.7 in 2009
- Target not reached

### 🌻 Present-2013 Green Growth

- Reduce 'Pesticide impact index' to 1.4 (=TFI 1.7) by 2013



## Denmark

### 🌱 Lessons learned - challenges

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

### 🌱 General observation

Volume → Dose - Frequency → Risk / Impact



## The Netherlands

- 🌻 **1990-2000 Multi-year Crop Protection Plan**
  - 50% volume reduction by 2000
  - Success... but high starting point
- 🌻 **2003 National Agreement on Crop Protection**
  - Reduce environmental burden by 95% by 2010 relative to 1998 using Predicted Exposure Concentration / No-Effect Concentration

Volume → Dose - Frequency → Risk / Impact



## Germany

- 🌻 **2004 Plant Protection Product Reduction Plan**
  - No quantified time-bound target
- 🌻 **2008 National Action Plan on Sustainable Use of Plant Protection Products**
  - 25% risks by 2020 relative to 1996-2005 evaluated via SYNOPS (Synoptic Assessment Model for Pesticides)

Volume



Dose - Frequency



Risk / Impact



## France

### 🌱 2008-2018 Ecophyto 2018

- 50% reduction in number of unit dosages ( $\approx$ TFI) between 2008 and 2018, if possible
- but... already working on environmental and health and impact indicator (at least to interpret results)

Volume



Dose - Frequency



Risk / Impact



## No target...

### 🌻 UK 2006 National Pesticides Strategy

No single quantified target  
but... have a suite of qualitative goals for each of 6  
action plans.

Can communicate and educate public on:

- Biodiversity (birds)
- MRL exceedances
- Frequency of incidents
- Complexities of the problem





## *To have or not to have a single target?*

- ✿ **Having a target helps to rally a diversity of stakeholders around a common goal**
- ✿ **Not having a target may help to communicate more subtle information**

## *What kind of target to adopt?*

- ✿ **Kind of target adopted depends on resources available**

# How to achieve the targets?



## *...Measures to achieving the targets*

- **Research and Extension**
  - Technological development
  - Knowledge transfer participatory approaches targeting farmers

# Demonstration farms



## ➤ FRANCE

- 1,000 pilot demonstration farms set up in 2010, and 2,000 farms planned by end 2011
  - Cropping system redesign
  - Diversification of crop rotations
  - Improvement of farmer knowledge

## ➤ DENMARK

- Demonstration farms (7)
  - implementation of specific PM-principles in practice (e.g. rotation, weed mapping)
  - Close collaboration with local advisor
- Focus on IPM advice (450 farms)

# Demonstration farms



## ➤ GERMANY

- Network of Reference farms (100)
- Demonstration farms (27) supporting IPM uptake and reduction of pesticide use
  - Close collaboration with advisory services

## ➤ UNITED KINGDOM

- Crop assurance schemes with extended IPM/ICM protocols for on-farm IPM plans
  - Annual IPM plan considering new approaches



## ➤ FRANCE

- New institutional arrangements: Mixed Technological networks
- Research funding for “Evaluation and reduction of risks” (applied research, breeding and genetic resources, NODU)

## ➤ GERMANY

- Broad funding initiative for research, technology development and knowledge transfer to promote the sustainable use of pesticides and IPM implementation

## ➤ DENMARK

- Additional resources allocated for evaluation and authorisation of pesticides.
- Focus on the authorisation of alternative plant protection products

## ➤ 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, bio-fumigation, improved breeding for disease resistance



## *How to achieve the targets?*

- Objectives of research differ between countries
- Demonstration farms and dissemination activities help to implement new technologies provided by research
- Initiatives include technological development and participatory approaches targeting farmers