Globalised free market

> The Commodity Market Player

Farmers ensure food self-sufficiency for Europe. They manage reliable and stable production systems.

General context
- Growing world demand for food
- A globalised and free market

European agriculture
- A basic crop for export
- Large farms, homogeneous cropping systems
- Partition of land use: intensive agriculture / conservation and recreation areas

Crop protection
- Best cost/benefit ratio: chemical control
- Ability to detect, monitor and trace residues and to assess impact
- Legally accountable stakeholders

Challenges for research
- Basic knowledge to develop green chemicals
- Sustained efficacy of chemicals
- Efficient indicators of impact
- Dynamics of controversies on health and the environment

Challenges for policy makers
- Fast-track registration for green chemicals
- Environmental objectives fully integrated into agricultural policy

The Specialised High-tech Grower

Farmers are part of a successful web of economic activities. They concentrate on specialised high-quality export products.

General context
- Growing world demand for food
- A globalised and free market

European agriculture
- Contributes to the knowledge-based bioeconomy
- Diversification: unique food products, green chemistry, top-grade ornamentals, pharmaceuticals...
- Vertical integration: from genotypes to market

Crop protection
- Sophisticated strategies
- Resistant and sanitised plant material
- Controlled conditions
- New technologies for pesticide application

Challenges for research
- Harmonising ecological processes to stabilise agro-ecosystems
- Modelling and assessing redesigned cropping systems
- Breeding approach: adapt cultivars to systems
- Predicting and limiting evolution of pests

Challenges for policy makers
- Support access to alternatives to pesticides
- Encourage GM development controlled and confined high-tech agriculture

The Sustainable Food Provider

Farmers are part of a successful web of economic activities. They concentrate on specialised high-quality export products.

General context
- Growing world demand for food
- A globalised and free market

European agriculture
- Contributes to the knowledge-based bioeconomy
- Diversification: unique food products, green chemistry, top-grade ornamentals, pharmaceuticals...
- Vertical integration: from genotypes to market

Crop protection
- Sophisticated strategies
- Resistant and sanitised plant material
- Controlled conditions
- New technologies for pesticide application

Challenges for research
- Harmonising ecological processes to stabilise agro-ecosystems
- Modelling and assessing redesigned cropping systems
- Breeding approach: adapt cultivars to systems
- Predicting and limiting evolution of pests

Challenges for policy makers
- Support access to alternatives to pesticides
- Encourage GM development controlled and confined high-tech agriculture

The Energy-saving Producer

Farmers produce food for local consumption in cities as well as the countryside.

General context
- Fear of food crises
- Agriculture for domestic consumption

European agriculture
- Europe-wide planned food production
- Crop allocation, minimising pest incidence
- Sustainable management of the resources key to future production

Crop protection
- Systems inherently less vulnerable to pests
- Ecological engineering, exploitation of biodiversity
- Exploitation of synergies between complementary control methods

Challenges for research
- Breeding approach: adapt cultivars to systems
- Modelling and assessing redesigned cropping systems
- Breeding approach: adapt cultivars to systems
- Predicting and limiting evolution of pests

Challenges for policy makers
- Stabilisation policy to promote long-term strategies
- Targeted incentives to support farmers in transition phase

The Community-conscious Farmer

Farmers contribute to the economic attractiveness of territories. Local stakeholders recognise the multiple services they provide.

General context
- Europe is no longer a major food exporter
- Foreign income from non-agricultural sectors
- Agriculture for domestic consumption

European agriculture
- Urban: fruit and vegetable production in micro-farms and industrial units. Vertical agriculture, hydroponic, intensive organic methods
- Rural: arable and bioenergy crops in large farms with livestock integration. Limited use of machinery, no-till practices, reliance on nitrogen fixation

Crop protection
- Urban: semi-pesticides, crop diversity to spread the risk, healthy material and sanitation, resistant varieties, biological control by augmentation
- Rural: targeted use of plant protection products. Rotation, polyculture, relay crops and living mulch against weeds. Resistant varieties against new pests of bioenergy crops

Challenges for research
- Whole-systems approach for an optimal trade-off between minimising energy and reducing pest risk
- Urban: ecological engineering and high-tech
- Rural: development of green pesticides

Challenges for policy makers
- Encourage SMEs developing controlled and confined high-tech agriculture
ENDURE sees IPM as a continuously improving process in which innovative solutions are integrated and locally adapted as they emerge and contribute to reducing reliance on pesticides in agricultural systems.

To face the rapid decrease in chemical options, very significant efforts are urgently needed to increase the range of effective and affordable solutions. This requires a coordinated plan to:

> encourage public and private research on new crop protection technologies and facilitate the regulatory conditions for their availability on the market,
> support multidisciplinary research on whole systems - an emerging field - as a way to design truly innovative IPM strategies,
> develop information, education and recognition of these integrated strategies for the benefit of farmers, advisers and other actors of the food chain, including the general public,
> maintain a momentum at the European level to create synergies from national efforts.

ENDURE stresses the fact that the strict stand taken by the EU on pesticide legislation calls for a parallel, sustained and equally determined action to promote the design and implementation of new solutions in order to develop IPM schemes that contribute to sustainable development while preserving the competitiveness of European agriculture.

ENDURE Foresight study

European Crop Protection in 2030

> The European Parliament has approved new European Union pesticides legislation introducing new regulations on the production and licensing of plant production products and introducing new rules on their use.

> ENDURE, the European Network for the Durable Exploitation of Crop Protection Strategies, has conducted a foresight study that seeks to provide crop protection stakeholders with the tools they need to tackle proactively future challenges. The process has enabled ENDURE to draw up five very different scenarios for European crop protection heading towards the year 2030.

> From these scenarios we intend to discuss what scientific knowledge already exists to satisfy their varied demands, which research areas will need to be strengthened further and which additional measures will be needed to accompany ongoing changes.

This foresight exercise was carried out by researchers from:

AU, University of Aarhus > Denmark
INRA, Institut National de la Recherche Agronomique > France
WUR, Wageningen University > The Netherlands
RRES, Rothamsted Research > United Kingdom
with the contribution of all other ENDURE partners.

ENDURE sees IPM as a continuously improving process in which innovative solutions are integrated and locally adapted as they emerge and contribute to reducing reliance on pesticides in agricultural systems.

To face the rapid decrease in chemical options, very significant efforts are urgently needed to increase the range of effective and affordable solutions. This requires a coordinated plan to:

> encourage public and private research on new crop protection technologies and facilitate the regulatory conditions for their availability on the market,
> support multidisciplinary research on whole systems - an emerging field - as a way to design truly innovative IPM strategies,
> develop information, education and recognition of these integrated strategies for the benefit of farmers, advisers and other actors of the food chain, including the general public,
> maintain a momentum at the European level to create synergies from national efforts.

ENDURE stresses the fact that the strict stand taken by the EU on pesticide legislation calls for a parallel, sustained and equally determined action to promote the design and implementation of new solutions in order to develop IPM schemes that contribute to sustainable development while preserving the competitiveness of European agriculture.

ENDURE Foresight study

European Crop Protection in 2030

> The European Parliament has approved new European Union pesticides legislation introducing new regulations on the production and licensing of plant production products and introducing new rules on their use.

> ENDURE, the European Network for the Durable Exploitation of Crop Protection Strategies, has conducted a foresight study that seeks to provide crop protection stakeholders with the tools they need to tackle proactively future challenges. The process has enabled ENDURE to draw up five very different scenarios for European crop protection heading towards the year 2030.

> From these scenarios we intend to discuss what scientific knowledge already exists to satisfy their varied demands, which research areas will need to be strengthened further and which additional measures will be needed to accompany ongoing changes.

This foresight exercise was carried out by researchers from:

AU, University of Aarhus > Denmark
INRA, Institut National de la Recherche Agronomique > France
WUR, Wageningen University > The Netherlands
RRES, Rothamsted Research > United Kingdom
with the contribution of all other ENDURE partners.