ENDURE

European Network for Durable Exploitation of crop protection strategies

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PP Restricted to other programme participants (including the Commission Services)	
RE Restricted to a group specified by the consortium (including the Commission Services)	
CO Confidential, only for members of the consortium (including the Commission Services)	

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Glossary

ACTA: Association de Coordination Technique Agricole (France, ENDURE participant)

ARVALIS: Institut du Végétal (France, ACTA)

AU: Aarhus University (Denmark, ENDURE participant)

AVC: Alpha Visa Congrès (France, Subcontracting organising company)

BASF: Badische Anilin und Soda-Fabriken, (Germany chemical company)

CARBAP: Centre Africain de Recherches en Bananiers et Plantains (African Research Centre, based in Cameroon)

CEMAGREF: Centre Machinisme Agricole Génie Rural Eaux et Forêts (France)

CETIOM: Centre technique interprofessionel des oléagineux metropolitains (France, ACTA)

CGIAR: Consultative Group on International Agricultural Research (International)

CIRAD: Centre de coopération internationale en recherche agronomique pour le développement (France, ENDURE participant, conference organiser)

CNR: Consiglio Nazionale delle Ricerche (Italy, ENDURE participant)

COLEACP: Comité de Liaison Europe-Afrique-Caraïbes-Pacifique (France, Network bring together producers and exporters of horticultural products)

ECPA: European Crop Protection Association (Europe)

EPPO: European and Mediterranean Plant protection Organisation (International)

FDGDON: Fédération Départementale des Groupement de Défense contre les Organismes Nuisibles (France)

FOFIFA: Centre National de la Recherche Appliquée au Développement Rural (Madagascar)

IBMA: International Biocontrol Manufacturers Association (International)

ICPC: International Cooperation Partner Countries (Non EU Countries which are listed in the Annex 1 of the Work Programme of FP7)

IITA: International Institute of Tropical Agriculture (Nigeria, research centre member of CGIAR)

IPM: Integrated Pest management

IT: INRA Transfert (France, ENDURE manager)

INRA: Institut National de la Recherche Agronomique (France, ENDURE coordinator)

INRA: Institut National de la Recherche Agronomique (Morocco)

INRIA: Institut National de Recherche en informatique et Automatique (France)

INTA - IFFIVE: Instituto Nacional de Tecnología Agropecuaria - Instituto de Fitopatología y Fisiología Vegetal (Argentina)

IRAD: Institut de Recherche Agricole pour le Développement (Cameroon)

ISIP: web-based Information System on Integrated crop Production (Germany)

JKI: Julius Kühn Institute (Germany, ENDURE participant)

NARO: National Agricultural Research Organisation (Uganda)

PAN Europe: Pesticide Action Network (European section)

PIP: Programme Initiative Pesticides (European Program coordinated by COLEACP)

RRES: Rothamsted Research (UK, Endure participant)

UdL: Universitat de Lleida (Spain, ENDURE participant)

USDA-ARS: United States Department of Agriculture – Research

URP–SCRID: Unité de Recherche en Partenariat - Systèmes de culture et rizicultures durables (Madagascar, Fofifa and Cirad common research unit)

WUR: Wageningen University and Research Centre (the Netherlands, ENDURE participant)

Summary

The ENDURE Network of Excellence staged its first International Conference, 'Diversifying Crop Protection', in La Grande Motte, near Montpellier, southern France, in October 2008.

The two and a half day conference attracted more than 120 presentations (oral and posters) from five continents. These presentations were selected by a scientific committee comprised of both ENDURE activity leaders (AL) and scientific members of ENDURE's External Advisory Board (EAB) – see ANNEX 1.

The conference was organised by a committee composed of members from CIRAD (the organizing body), INRA Transfert (manager of the network) and Alpha Visa Congrès (the subcontracting organising company) – see ANNEX 1.

There were two major aims to the conference: 1) To present to the international community (research and stakeholders) the scientific production and major outputs of the new ENDURE network; 2) To have some presentations on the major results and issues in crop protection strategies worldwide.

Plenary sessions were devoted to major topics such as the issues and challenges for crop protection seen through the eyes of four guest speakers and the presentation of a range of stakeholder perspectives was followed by a round-table debate.

Concurrent sessions focused on key topics including innovative approaches, sustainable strategies and decision support systems to name just three.

To accompany the conference, a 120-page brochure was produced by CIRAD, containing the abstracts of all presentations, both oral and posters. In addition, three newsletters (one for each day of the conference) were produced for attendees and distributed upon their arrival.

More than 220 people attended the conference (more than 300 registered their interest in attending), from 30 different countries – see ANNEXES 2 and 5.

Each accepted author was asked to provide both a ½ page abstract of their presentation, alongside a short text of three pages for an oral presentation, and two pages for a poster presentation. Abstracts of all presentations were made available online prior to the conference (http://www.endure-network.eu/international_conference_2008). Subsequently, the conference proceedings have been made available online on a specific area of ENDURE's public website (http://www.endure-network.eu/international_conference_2008/proceedings).

The compilation and publication of the conference proceedings in the form of a CD-ROM has been planned after all the contributions have been made available online on the conference pages of the website (this is forecast to be July 2009). Each author would be scheduled to receive a copy and additional CD-ROMs would be available on demand.

This deliverable describes in more detail the conference and the subsequent production of the proceedings.

1. About the Conference

The ENDURE Network of Excellence staged its first international conference 'Diversifying Crop Protection' from 12th to 15th October 2008 in La Grande Motte, near Montpellier in southern France. Dedicated to the topic of Diversifying Crop Protection, the two and a half day conference attracted more than 120 presentations (oral and posters) from five continents.

There were two major aims to this conference: 1) To present to the international community (research and stakeholders) the scientific production and major outputs of the new ENDURE network; 2) To have some presentations on the major results and issues in crop protection strategies worldwide.

Plenary sessions were devoted to major topics such as the issues and challenges for crop protection seen through the eyes of four guest speakers and the presentation of a range of stakeholder perspectives was followed by a round-table debate.

Concurrent sessions focused on key topics including innovative approaches, sustainable strategies and decision support systems to name just three.

2. Brochure and newsletters

To accompany the conference, CIRAD produced a 120-page brochure which was given to all attendees. This contained the abstracts of all oral and poster presentations as well as the opening speeches and timetables for the event. All registered participants received a copy.

In addition, three conference newsletters were produced (one for each day of the event) by the web editor (with assistance from INRA Transfert). These were distributed on the morning of each day as attendees arrived at the conference venue.

Example of newsletter:

Welcome to La Grande Motte

After being operational for 18 months, ENDURE is delighted to present its first results to the world's scientific community at this meeting. We also expect to learn from the experiences and achievements you are bringing to us from other institutions and countries. I wish you all a very fruitful and enjoyable conference.

Pierre Ricci, ENDURE coordinator

Today's schedule:

- **08:40-09:20** Opening session
- **09:20-12:30** Issues and challenges for crop protection
- **14:00-16:00** Stakeholder perspectives
- **16:30-18:20** Impact and governance

Interview: lessons learned in California

ENDURE web editor Andrew Lewer speaks to Cliff Ohmart (below), Director of Research and IPM (integrated pest management) at the Lodi Winegrape Commission, California, USA, ahead of this morning's plenary session focusing on *Issues and challenges*

Andrew Lewer: What message will you be sharing with visitors?
Cliff Ohmart: There are several important impediments to growers in California increasing their adoption of IPM programmes, and recognising and addressing them is critical for increasing the use of IPM in the state. There is still a significant gap in many crops between the results of IPM research and what growers implement on their farms. I feel IPM is best viewed as a continuum with one end representing no IPM and the other an ecologically balanced farm requiring no grower intervention. A grower strives to move along this continuum increasing their IPM implementation over time.

AL: What can we in Europe learn from the USA about IPM implementation?
CO: Increasing the level of grower adoption of IPM on Californian farms is a slow and complex process because of the impediments referred to above and those that I will be discussing in my presentation.

AL: How useful is it to share experiences?
CO: Extremely useful. No one person or continent has all the answers. It is only through exchanging information, learning what

works and does not work in different countries that we can all move along the IPM continuum.

Cliff Ohmart's presentation, *What are the impediments to grower adoption of IPM? Why do they exist and what can be done to get around them?* can be heard during this morning's plenary session in the Grand Auditorium.

Message from the European Commission

Recent food and energy price crises, and the related food security issues, are new elements in the challenging world context where climate change and globalisation are strongly influencing the agro-food sector, write **Timothy Hall** and **Jean-François Maljean**, Acting Director and Project Officer respectively of DG Research at the European Commission. These problems are complex but it is widely recognised that research has a major role to play in their alleviation.

Such a context clearly opens a new window for plant health and protection research, pre and post-harvest, particularly for crops which are close to the absolute yield ceiling.

However, with growing awareness of environmental considerations and a food market increasingly led by consumer demand, market and policy orientations are rapidly changing in the sense of a more cautious approach towards pesticides.

These trends clearly indicate that plant health and plant protection need to be addressed with an integrated approach where containment measures, sustainable use of plant protection products, development of more resistant plant varieties, appropriate farming practices and management of biological control agents, in combination with other techniques and new technologies need to be implemented in a coordinated manner at not only the farm level but also at the wider local or regional levels.

ENDURE is a major research project supported by the EC under the FP6 programme to answer such challenges and is now approaching its mid-term. The main findings and achievements reached so far will be presented at this conference and promisingly indicate that ENDURE has the capacity to reach its high ambitions by the end of its mandate, and most importantly, to remain a structured focal point in the longer term.

Read the full article in your conference brochure.

Innovative technologies for IPM implementation

Key contacts:
Per Rydahl Nielsen (Aarhus University, Denmark)
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Carolien Zijlstra (Wageningen University, The Netherlands)
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Adviser guides for major crops

Providing practical advice and readily available solutions to existing problems in some of Europe's major crops has been the focus of ENDURE's *From Science to Field* Guides. Guides available so far include four on late blight in potatoes, plus advice on integrated weed management for maize and using cultivar resistance to reduce fungicide inputs in wheat.

To implement IPM at a European level, farmers need innovative technologies to accompany new crop protection strategies. ENDURE is providing solutions by developing a modelling platform and integrating decision support systems (DSS), by looking for applicable molecular and serological techniques for detection of plant pathogens and examining existing technologies and research prototypes for precision spray application.

A pan-European workshop on DSS brought together 49 experts to review the availability, attributes and implementation of computer programs to guide optimal crop protection strategies and was the starting point of a group working on this topic **(see poster 53)**. One of the objectives is to identify the 'best parts' of DSSs. The first results will be presented tomorrow in the session starting at 16:00 **(oral presentations 24 and 25)**.

Precision agriculture also requires state-of-the-art farm machinery, and technology to link operators with the hardware. ENDURE has been working on developing 'task controller' software to act as this interface, leading to discussions on open source software for the task controller and for use in precision agriculture. This group will also propose suitable standards for geo-referenced data for the task controller.

Identifying diseases, pests and weeds at a much earlier stage makes it possible to limit the amount of chemicals applied and also allows growers to use biological controls or other measures. ENDURE's team examining innovative technologies focuses on the optimal combination and integration of innovative diagnostic tools and precision spraying to reduce pesticide use. A review describing techniques for detecting plant pathogens in air, soil, starting material and in the field has been produced, plus another describing existing technologies and research prototypes for precision spraying. Following this, a review describing how diagnostic tools can facilitate the use of precision spraying techniques **(poster 51)** has been written. An innovative crop protection system will now be designed.

For more details see key contacts (above left).

Interview: case studies, results and the future

ENDURE catches up with Per Kudsk, leader of the case study groups

ENDURE: What was the rationale behind the case studies and what has been achieved?
PK: It has brought together researchers who have not previously worked together. The overall goals were to compile information on best practices in different countries, to assess the extent it is possible to extrapolate experiences from one region of Europe to another and to point out needs for future research. A lot of valuable information was collected and been made available to a broader audience through the guides (see story left).

ENDURE: What happens to the case studies now finishing?
PK: Hopefully the networks that now exist will continue to collaborate, either within ENDURE or outside ENDURE. The participants of the wheat, integrated weed management and pomefruit case studies are involved in the system case studies started this year. Furthermore the participants of the wheat case study are developing a EUROWHEAT platform inspired by the EUROBLIGHT platform. Hopefully the participants of the tomato case study could also find a way to continue their collaboration within the new system case study on Mediterranean protected agriculture.

ENDURE: What are the new case studies?
PK: The new ongoing case studies are on maize, field vegetables and banana and next year we will start a case study on grapevine. Maize and grapevine are major crops and the reliance on pesticides is very high. Field vegetables are faced with a decreasing number of pesticides available for farmers which means prompt action is needed. Banana was chosen because it is imported in large quantities and is also grown in the EU. The main focus is to ensure information on protection strategies is made available to INCO countries.

3. Programme

Sunday, October 12

16h00: Registration desk opens

18h00: Welcome cocktails

Monday, October 13

07h40: Late registration

Monday, October 13 (08h40) - Plenary session

Official opening of ENDURE conference. Location: Grand Auditorium

08h40: Welcome Introduction: Etienne Hainzelin, Director of Research and Strategy, CIRAD, France

08h50: Message from the European Commission: Jean-François Maljean, ENDURE Scientific Officer, European Commission

09h05: ENDURE Background and Objectives: Pierre Ricci, ENDURE Coordinator

Monday, October 13 (09h20-12h30) - Plenary session

Theme: Issues and Challenges. Chair: Pierre Ricci
Location: Grand Auditorium

Time	Name	Institution	Country	Title
09h20	Rudy Rabbinge	CGIAR Science Council and Wageningen University and Research centre	The Netherlands	Global challenges: What the near future holds for world agriculture and what it means for research on crop protection
09h55	James Brown	John Innes Centre	UK	Biotechnologies: Breeding for disease resistance as an integral component of crop protection
10h30-11h00	Coffee break			
11h00	Cliff Ohmart	Lodi-Woodbridge Winegrape Commission, California	USA	IPM implementation at field level: What are the impediments to grower adoption of IPM? Why do they exist and what can be done to get around them?
11h35	Irmgard Hoeschle-Zeledon	CGIAR Systemwide IPM Programme, IITA	Nigeria	Southern perspective: IPM research and practice within the CGIAR

Followed by 20-minute discussion

Monday, October 13 (14h00-16h00) - Plenary session

Theme: Stakeholder Perspectives. Chair: Lise N. Jorgensen
Location: Grand Auditorium

Time	Name	Institution	Country	Title
14h00	Claudia Michel	ECPA, Senior Manager Agriculture, Environment & Food Policy	Europe	The crop protection industry: Why we need pesticides in Integrated Crop Protection in Europe
14h15	Agnès Pondaven	Carrefour	France	The food industry: Carrefour Quality Line
14h30	Michel Guillon	International Biocontrol Manufacturers Association	France	The biocontrol industry: The current situation of industrial production and marketing of biological control agents and future perspectives
14h45	Daniel Lesinsky	Pesticide Action Network - Europe, Centre for Sustainable Alternatives	Slovakia	Integrated production: Europe needs an innovative, participative IPM strategy within a holistic integrated production approach

Followed by one-hour round table (moderator: Alexander Percy-Smith)

Monday, October 13 (16h30-18h20) - Plenary session

Theme: Impact and Governance. Chair: Antoine Messéan
Location: Grand Auditorium

Time	Name	Institution	Country	Title
16h30	Jan Buurma	LEI, Wageningen UR	The Netherlands	Policy planning and implementation in crop protection: lessons learned in Denmark and The Netherlands
16h55	Vincent Van Bol	Federal Public Service Health, Food Chain Safety and Environment, Brussels	Belgium	Environmental risks due to pesticide use at a national scale: indicators calculation on the Belgian sales database
17h20	Laurent Parrot	CIRAD	France	Horticulture, livelihoods and pesticides in Africa: evidence from south-west Cameroon
17h45	Claire Lamine	INRA	France	Intensification of winter wheat production: a path-dependency analysis

Twenty-minute presentations followed by five-minute discussions. Session ends with chair's conclusions (10 minutes).

Tuesday, October 14 (8h20-10h10) - Plenary session

Theme: Building Innovative Approaches. Chair: Maurizio Sattin
Location: Grand Auditorium

Time	Name	Institution	Country	Title
08h20	Robert Blackshaw	University of Plymouth	UK	Using population models to develop management tactics for *Tipula paludosa* in organic systems

08h45	Lydia Bousset	INRA	France	Preserving durable resistance to *Phoma* stem canker in oilseed rape: epidemiological key factors
09h10	David Bohan	Rothamsted Research	UK	Modelling management, yield, diversity and abundance in agricultural ecosystems
09h35	Jean-Michel Risède	CIRAD	Guadeloupe	An agroecological approach to alleviate the impact of nematodes in banana cropping systems

Twenty-minute presentations followed by five-minute discussions. Session ends with chair's conclusions (10 minutes).

Tuesday, October 14 (10h40-12h30) - Plenary session

Theme: Sustainable Tactics and Strategies. Chair: Ian Denholm
Location: Grand Auditorium

Time	Name	Institution	Country	Title
10h40	Huub Schepers	Applied Plant Research, Wageningen UR	The Netherlands	ENDURE potato case study
11h05	Lise N. Jorgensen	Danish Agricultural Advisory Service	Denmark	Control of wheat diseases - optimising control strategies
11h30	Soledad Pedras	University of Saskatchewan	Canada	Learning from nature: paldoxins for treatment of plant diseases
11h55	Andrew Ferguson	Rothamsted Research	UK	Trap crops for pollen beetles in oilseed rape: is push-pull compatible with conservation biocontrol?

Twenty-minute presentations followed by five-minute discussions. Session ends with chair's conclusions (10 minutes).

Tuesday, October 14 (14h00-15h30) - Poster session

Poster No.	Name(s)	Country	Title
P.1	Khan, Y. A., Khan, S. H., Akbar, S. W. A., Shuaib, M.	Pakistan	Effect of temperature and relative humidity on population dynamics of insect pests of mungbean
P.2	Shuaib, M., Khan, S. H., Mulghani, N. A.	Pakistan	Effect of temperature and relative humidity on population dynamics of sucking insect pests of cotton (*Gossypium Hirsutum* L.)
P.3	Hiiesaar, K., Metspalu, L., Jogar, K.	Estonia	The impact of low temperature stress on the development of *Leptinotarsa decemlineata* say
P.4	Kivimagi, I., Ploomi, A., Luik, A., Jogar, K., Sibul, I.	Estonia	Cold hardening of some ground beetle species
P.5	Jogar, K., Metspalu, L., Hiiesaar, K., Ploomi, A., Luik, A.	Estonia	Influence of nitrogen on oviposition of *Pieris brassicae* L. on Cabbage
P.6	Paillard, S., Leconte, M., Enjalbert, J., Dedryver, F., Rolland, B., Frederiksen, E., Nielsen, M., Czembor, P.C., Hovmoller,	France	Effect of resistance sources on the infection process and epidemics of *Puccinia striiformis* on wheat

	M.S., de Vallavieille-Pope, C.		
P.7	Kishani Farahani, H., Goldansaz, S.-H., Sabahi, G., Ziaaddini, M., Haghani, S., Poorjavad, N.	Iran	CANCELLED
P.8	Mohandesi A. R., Ashouri A., Allahyari H.	Iran	CANCELLED
P.9	Khodaverdi, H., Sahragard, A., Amir-maafi, M., Mohaghegh, J.	Iran	Demography of *Spodoptera littoralis* (Boisd.) (Lepidoptera: Noctuidae) on artificial diet
P.10	Kishani Farahani, H., Goldansaz, S.H., Sabahi, G.	Iran	CANCELLED
P.11	Benefer, C., Blackshaw, R., Knight, M., Ellis, J.	UK	A molecular tool to investigate the occurrence of Agriotes click beetles and wireworms
P.12	Sokhandan, N., Hooshmand, A.	Iran	RT-PCR amplification and cloning of 2A gene from GFLV isolates from north-west Iran
P.13	Moreno-Grijalba, F., Menendez, C., Carvajal-Montoya, L.D., Hernandez-Alamos, M.M., Marco, V., Pérez-Moreno, I.	Spain	Molecular identification of three populations of *Trichogramma* collected in Spanish vineyards
P.14	Golizadeh, A., Kamali, K., Fathipour, Y., Abbasipour, H.	Iran	CANCELLED
P.15	Mallapur, C.P., Rabindra, R.J., Tippannavar, P.S., Sharanabasappa Kambrekar, D.N.	India	Colonization and establishment of *Encarsia flavoscutellum* in Southern India
P.16	Abd El- Wahab, A.S., El-Sheikh, M.A.K., Elnagar, S.	Egypt	First record in Egypt of Thrips *Frankliniella occidentalis* and impatiens necrotic spot tospovirus
P.17	Robert, C., Lee, W., Gouache, D., Fournier, C., Berthelloot, J., Andrieu, B., Gate, P., Ney, B.	France	How does wheat canopy development influence *Septoria tritici* epidemics?
P.18	Castagnone-Sereno, P., Djian-Caporalino, C., Palloix, A., Molinari, S.	France	Evaluation of the selection pressures exerted by resistant Solanaceous crops on root-knot nematodes
P.19	Le Van, A., Le Cam, B., Lasserre, P., Durel, C.E., Caffier, V.	France	Selection pressures exerted by apple major resistance genes and QTLs on *Venturia inaequalis*
P.20	Wiedemann-Merdinoglu, S., Merdinoglu, D., Delmotte, F., Calonnec, A., Kiss, E.	France	Selection pressures exerted by different combinations of grapevine resistance QTLs on *P. viticola*
P.21	SURE consortium	Europe	Durable management of plant genetic resistance
P.22	Czembor, P.Cz., Radecka-Janusik, M.	Poland	Mapping QTL for resistance to *Mycosphaerella graminicola* in the winter wheat variety Liwilla
P.23	Dintinger, J.	France	Searching for wide spectrum resistance to begomovirus diseases in tomato in Réunion
P.24	Goral, T., Ochodzki, P.	Poland	Resistance of Polish common cultivars and advanced breeding lines of wheat and triticale to *Fusarium* head blight

P.25	Payghami, E., Acrami, M.	Iran	*Trichoderma* species in Mianeh for biocontrol of chickpea *Fusarium*
P.26	Wijesinghe, C., Wilson Wijeratnam, R.S., Wijesundera, R.L.C.	Sri Lanka	Antagonistic effect of *Trichoderma harzianum* on pineapple black rot pathogen *Thielaviopsis paradoxa*
P.27	Dvali, G., Nadiradze, K., Megrelishvili, I., Shamatava, T., Lomtadze, N., Phirosmanashvili, N., Chachanidze, M	Georgia	Antibiotics and the microbe-antagonists as a means for the treatment of plant diseases
P.28	Metspalu, L., Jogar, K., Hiiesaar, K.	Estonia	Effectiveness of the NeemAzal T/S against *Plutella xylostella* (L.)
P.29	Ebanoidze, N., Rekhviashvili, L., Chachkhiani, N., Lortkipanidze, R.	Georgia	Influence of micro-fertilizer 'Lile' on the energy of onion culture germination, skills' breeding and endurance towards diseases
P.30	Kim, S.H., Lim, H.W., Lee, I.S.	Korea	Allelopathic effects of medicinal herbs extracts on the seedling of *Echinochloa crus-galli*
P.31	Migunova, V., Shesteperov, A.	Russia	Efficacy of biological preparations against root knot disease on cucumber plants
P.32	Babay-Ahari, A., Mohammadi, E., Aliasgharzadeh, N.	Iran	Effects of captions on biological control of *Sclerotinia sclerotio*rum by *Psedomonas fluorescens*
P.33	Lemes, E., Mackowiak, C., Datnoff, L., Blount, A., Marois, J.	USA	Effects of soil and foliar silicon fertilization on Asian soybean rust development
P.34	Patil, M.B., Sumangala, K., Nargund, V.B., Uma, N.K.	India	Management of grain discoloration of rice through cow products
P.35	Tabone, E., Roux, E., Marquier, M.-D.,Thi Khanh, H., Clain, C., Goebel, R.	France	Biological control of sugarcane stem borer: inducing diapause or quiescence in *Trichogramma chilonis*
P.36	Carvajal-Montoya, L.D., Moreno- Grijalba, F., Martinez-Villar, M.E., Pease, C., Perez-Moreno, I., Marco, V.	Spain	Side effects of biocides used in grapes on two strains of *Trichogramma cacoeciae* Marchal
P.37	Kambrekar, D.N., Kulkarni, K.A., Giraddi, R.S., Kulkarni, J.H.	India	Identification of virulent isolates of *Helicoverpa armigera* nuclear polyhedral virus (HaNPV)
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P.39	Ndayambaje, J.-C.	Rwanda	With honeybees, they can (a case study in Gasabo, Kicukiro and Bugesera District)
P.40	Paraiso, A., Sossou, A.	Benin	Susceptibility of Hieroglyphus daganensis to *Metarhizium anisopliae* - chemical insecticide mixtures
P.41	Martinez-Villar, E., Moreno-Grijalba, F., Hernandez, M.M., Carvajal-Montoya, L.D., Saenz-de-Cabezon, F.J., Pease, C., Perez-Moreno, I., Marco, V.	Spain	Sublethal exposure to flufenoxuron affects the biological performance of *Tetranychus urticae*
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P.55	Czembor, J.H., Czembor, E., Domeradzka, O., Aubertot, J.N.	Poland	Simulation model for yield losses: WHEATPEST tested in Poland
P.56	Lumini, E., Borriello, R., Alguacil, M.M., Bonfante, P., Bianciotto, V.	Italy	The impact of agricultural practices on arbuscular mycorrhizal fungi
P.57	Boettinger, P., Wilhelm, R., Schmidt, K., Schmidtke, J., Mönkemeyer, W., Schiemann, J.	Germany	CANCELLED
P.58	Musa, T., Bigler, F.	Switzerland	A survey on pesticide use and pest incidence in winter wheat and pomefruit
P.59	Hernandez-Rivera, J., Mack, G., Mann, S.	Switzerland	Classification of crop protection strategies based on pesticide use intensity and innovation
P.60	Barberi, P., Moonen, A.C., Bocci, G.	Italy	First ENDURE summer school, 'Biodiversity supporting crop protection'
P.61	Arseniuk, E., Strzembicka, A.	Poland	Emerging virulences of *Blumeria graminis* sp. on triticale in Poland

Tuesday, October 14 (16h00-18h00) - Concurrent sessions

Theme: Decision Support Systems. Chair: Susannah Bolton
Location: Petit Auditorium

Time	Name	Institution	Country	Title
16h00	Neal Evans	Rothamsted Research	UK	Arable decision support systems - the future of integrated pest management (IPM)?
16h20	Nora Levay	Szent Istvan University, Plant Protection Institute	Hungary	Decision support systems (DSS)for diseases in horticultural crops: tendencies, bottlenecks and next steps
16h40	Olivier Naud	Cemagref - UMR ITAP	France	Formal tools of automation may support the design of decision systems for IPM
17h00	Per Rydahl	Aarhus University, Faculty of Agricultural Sciences	Denmark	Decision support systems for weed control in Europe
17h20	Jozefa Kapsa	IHAR	Poland	Identification of best parts of existing DSSs for unification: late blight in potato
17h40	M. Roehrig	ISIP	Germany	Enabling European DSSs access: weather data exchange

Fifteen-minute presentations followed by five-minute discussions

Theme: Integrated Weed Management. Chair: Per Kudsk
Location: Méditerranée

Time	Name	Institution	Country	Title
16h00	Frank Dayan	USDA-ARS Natural Products Utilization Research Unit	USA	p-Hydroxyphenylpyruvate dioxygenase, a herbicide target site for natural beta-triketones
16h20	Bo Melander	Aarhus University, Faculty of Agricultural Sciences	Denmark	Integrated weed management - strategies developed for silage maize
16h40	Jean Lieven	CETIOM	France	Oilseed rape weed integrated management: concern of mechanical weed control
17h00	Nicolas Munier-Jolain	INRA	France	Consequences of integrated weed management on labour organisation at the farm level
17h20	Maurizio Sattin	Istituto di Biologia Agroambientale e Forestale (IBAF)	Italy	Herbicide resistance in Italy: situation and management
17h40	Kiyotada Hayashi	National Agriculture and Food Research Organisation	Japan	Implications of the second-best decisions in weed control under social constraints

Fifteen-minute presentations followed by five-minute discussions

Theme: Integrated Pest Management. Chair: Bernd Hommel Location: Grand Auditorium

Time	Name	Institution	Country	Title
16h00	Jean-Noël Aubertot	INRA	France	Insights of INRA's integrated pest management/integrated crop management network
16h20	Remco Schreuder	WUR PPO	The Netherlands	Evaluation method for integrated pest management
16h40	Bart Heijne	WUR APR	The Netherlands	State of the art of control strategies of codling moth, apple scab and brown spot in Europe
17h00	Mathilde Sester	Cirad, URP SCRiD	Madagascar	Towards an integrated strategy to limit blast disease in upland rice
17h20	Rommie van der Weide	Applied Plant Research, WUR	The Netherlands	Physical control of weeds, pests and diseases
17h40	Judit Arno	UdL	Spain	Evaluation of tools to manage whiteflies in European tomato crops. The tomato case study

Fifteen-minute presentations followed by five-minute discussions

ICPC workshop: Working together: ENDURE and countries outside Europe. Location: Couchant 1

Time	Theme	Speaker(s)
16h00	Introduction, including ENDURE background and aim of the workshop	Jean-Louis Sarah (CIRAD, France)
16h15	Improving **training and mobility** between ENDURE partners and ICPC	Introduction: Maurizio Sattin (CNR, Italy) Round table discussion, chair: Judy Mann (Rothamsted, UK)
16h45	Strengthening crop protection **research** through collaboration between ENDURE partners and ICPC	Introduction: Ian Denholm (Rothamsted, UK) Round table discussion, chair: Alex Percy-Smith (AU, Denmark)
17h30	Improved **communication** between ENDURE partners and ICPC	Introduction: Christine Nouaille (CIRAD, France) Round table discussion, chair: Andrew Lewer (CIRAD, France)
18h00	Wrap up and close	

Tuesday, October 14 (evening) - Conference dinner. Location: Château du Pouget

Wednesday, October 15 (08h00-10h00) - Concurrent sessions

Theme: Innovations and Alternatives. Chair: Régis Goebel
Location: Grand Auditorium

Time	Name	Institution	Country	Title
08h00	Robert Blackshaw	University of Plymouth	UK	Sex pheromone traps for monitoring wireworm populations: how effective are they?
08h20	Jan van de Zande	Wageningen UR, Plant Research International	The Netherlands	Use reduction of agrochemicals by canopy density spraying of fungicides
08h40	Shashi Bhalla	National Bureau of Plant Genetic Resources	India	Efficacy of various non-chemical methods against pulse beetle, *Callsobruchus maculatus* Fab
09h00	Appolinaire Tagne	Institute of Agricultural Research for Development	Cameroon	Essential oil and plant extracts as substitutes to synthetic fungicides in the control of fungi
09h20	Elise Lô-Pelzer	INRA Grignon	France	SIPPOM-WOSR: Simulator for Integrated Pathogen Population Management for blackleg on canola
09h40	Marie Boillot	CETIOM	France	Sustainable management of rapeseed blackleg by modelling and monitoring of a pilot production area

Fifteen-minute presentations followed by five-minute discussions

Theme: Pest Distribution and Incidence. Chair: Richard Bélanger.
Location: Petit Auditorium

Time	Name	Institution	Country	Title
08h00	Mi-Ok Woo	Seoul National University	Korea	Regional distribution of BYDV in Korea and identification of the resistant wheat
08h20	Crystel Olivier	Agriculture and AgriFood Canada	Canada	Phytoplasma diseases in Canadian vineyards
08h40	Crystel Olivier	Agriculture and AgriFood Canada	Canada	Consequences of phytoplasma infection on canola crop production in the Canadian prairies
09h00	N.U. Khan	NWFP Agricultural University, Peshawar	Pakistan	CANCELLED
09h20	Jean-Noël Aubertot	INRA	France	WHEATPEST, a simulation model of yield losses caused by multiple injuries for wheat in Europe
09h40	Vincent Martin	INRIA Sophia Antipolis Méditerrannée	France	Towards a video camera network for early pest detection in greenhouses

Fifteen-minute presentations followed by five-minute discussions

Theme: Multicriteria Assessment. Chair: Franz Bigler. Location: Méditerranée

Time	Name	Institution	Country	Title
08h00	Frank Hayer	Agroscope Reckenholz-Tänikon	Switzerland	Multicriteria comparison of risk assessment and life cycle assessment ecotoxicity methods
08h20	Christian Gary	INRA	France	A multiple criteria evaluation of the sustainability of cropping systems with low pesticide use
08h40	Frank Hayer	Agroscope Reckenholz-Tänikon	Switzerland	Lifecycle assessment of wheat and apple production systems within the ENDURE project
09h00	Joern Strassemeyer	Julius Kühn Institute, Federal Reserch Center for Cultivated Plants	Germany	The GIS-based tool SYNOPS is used to analyse regional environmental risk in fruit growing regions
09h20	Claire Lamine	INRA	France	Crop protection in changing agro-food systems. A sociological approach

Fifteen-minute presentations followed by five-minute discussions

Wednesday, October 15 (10h20-11h40) - Concurrent sessions

Theme: Pesticide Risk Management. Chair: Stephanie Williamson Location: Grand Auditorium

Time	Name	Institution	Country	Title
10h20	Isabelle Haynes	INRA EcoInnov	France	Rising concerns on the impact of pesticides: an analysis of the public controversies about pesticides.
10h40	Manfred Krautter	Greenpeace Germany	Germany	CANCELLED
11h00	Claire Lamine	INRA	France	A categorisation of the social sciences approaches on crop protection issues
11h20	Francis Saenz-de-Cabezon	Universidad de La Rioja	Spain	Terrestrial bioaccumulation: experimental approaches on an arthropod prey-predatory mite system

Fifteen-minute presentations followed by five-minute discussions

Theme: Durable Management of Plant Genetic Resistance. Chair: Charles-Eric Durel. Location: Méditerranée

Time	Name	Institution	Country	Title
10h20	Natalia Sapoukhina	INRA Angers	France	A mathematical approach towards durable deployment of host resistance
10h40	Hortense Brun	INRA Rennes	France	Combination of resistance factors increases the resistance durability of oilseed rape to blackleg
11h00	Lydia Bousset	INRA	France	The CEDRE project: a multidisciplinary evaluation of durable management of plant resistance
11h20	Eric Grenier	INRA	France	Risk assessment of cyst nematode evolution and durability of potato cyst nematode resistance

Fifteen-minute presentations followed by five-minute discussions

Theme: Pest Populations and Antagonists. Chair: Jozsef Kiss
Location: Petit Auditorium

Time	Name	Institution	Country	Title
10h20	Jabraeil Razmjou	University of Mohaghegh Ardabili	Iran	Life history traits of *Tetranychus urticae* Koch (Acari: Tetranychidae) on three legumes
10h40	Dodelys Andriantsimialona	FOFIFA URP SCRID	Madagascar	Evolution and adaptation of *Magnaporthe grisea* populations in upland rice in Madagascar
11h00	Jurgen Kohl	Plant Research International	The Netherlands	*Cladosporium cladosporioides* H39: a new antagonist for biological control of apple scab
11h20	Temesgen Belayneh	Technology University of Vienna	Austria	CANCELLED

Fifteen-minute presentations followed by five-minute discussions

Wednesday, October 15 (11h40-12h30) - Plenary session

Chair: Jean-Louis Sarah. Location: Grand Auditorium

11h40: Closing session: Niels Roling, Emeritus Professor, Communication and Innovation Studies, Wageningen University, The Netherlands. A social scientist's point of view: *What social learning process might ensure that IPM becomes reality in European agriculture?*

12h15: Concluding points: Pierre Ricci, ENDURE Coordinator

12h25: Farewell words: Jean-Louis Sarah, CIRAD

12h30: Conference closes

4. Publication of proceedings

4.1. Publication online

Each accepted author was asked to provide both a ½ page abstract of their presentation, alongside a short text of three pages for an oral presentation, and two pages for a poster presentation. Abstracts of all presentations were made available online prior to the conference.
Online publication of full texts was somewhat delayed due to three factors:

- Obtaining texts from those authors who had not supplied them prior to the conference took some time
- Editing of some texts took longer than could be anticipated as the English was of insufficient standard
- The legal obligation to obtain the author(s) permission to use the material online took some time.

Prior to the event, a new area was created on the main ENDURE website www.endure-network.eu:

Dedicated to the conference:
http://www.endure-network.eu/international_conference_2008

This was used to attract submissions and encourage participation in the event.
Subsequently a new section has been created in which the proceedings can be browsed
http://www.endure-network.eu/international_conference_2008/proceedings

Once the steps outlined above have been completed (editing of texts, authority of the author obtained for any changes and permission to publish the material), full texts have been made available online. The first full texts were made available online from April 2009. From June 2009 authors have been informed that in the absence of any response from them we will publish the material supplied to ENDURE prior to the conference (full texts).

Examples of how abstracts and full text appear on the site:

Abstract

O.10 - Environmental risks due to pesticide use at a national scale: indicators calculation on the Belgian sales database

Van Bol, V., Ruelle, P., Fontier, H.

Belgian pesticide sales statistics are analysed on a period from 1991 to 2005. Risk indicators are calculated in order to compare the effect of pesticides used in agriculture on earthworms, birds, bees and aquatic organisms. These indicators are considered along with the Frequency of Application indicator and a pesticides sales indicator. In general, the risk decreases except for bees. The sales for pesticides used in agriculture are slightly decreasing while the application frequency has increased by 20%. It appears very clearly that the risk pattern is very much influenced by a few active substances. Single risk indicators generally provide divergent analysis of the statistics. The comparison of pesticides sales and the Frequency of Application indicator shows that the reference dose (maximum dose allowed for each application) was reduced about 15% over the analysed period.

Full text

O.10 - Environmental risks due to pesticide use at a national scale: indicators calculation on the Belgian pesticide sales database

Van Bol, V.[1], Ruelle, P.[2], Fontier, H.[3]

[1] Federal public service, health, food chain safety environment, Victor Hortaplein 40, bus 10, 1060 Brussels, Belgium
[2] Federal public service, health, food chain safety and environment; EUROSTATION BLOC II – 2th floor, Victor Hortaplein 40/10, 1060 Brussels, Belgium
[3] Federal public service, health, food chain safety and environment; EUROSTATION BLOC II – 7th floor, Victor Hortaplein 40/10, 1060 Brussels, Belgium

Contact: vincent.vanbol@health.fgov.be

Abstract

Belgian pesticide sales statistics are analysed on a period from 1991 to 2005. Risk indicators are calculated in order to compare the effect of pesticides used in agriculture on earthworms, birds, bees and aquatic organisms. These indicators are considered along with the Frequency of Application indicator and a pesticides sales indicator. In general, the risk decreases except for bees. The sales for pesticides used in agriculture are slightly decreasing while the application frequency has increased by 20%. It appears very clearly that the risk pattern is very much influenced by a few active substances. Single risk indicators generally provide divergent analysis of the statistics. The comparison of pesticides sales and the Frequency of Application indicator shows that the reference dose (maximum dose allowed for each application) was reduced about 15% over the analysed period.

Introduction

A Directive of the European Parliament and of the Council establishing a framework for Community action to achieve a sustainable use of pesticides was proposed by the Commission in July 2006. This proposal is presently discussed both at the Council level and at the Parliament level. It is expected this proposal will be adopted for 2009.
In the article 14 of this proposal it is asked that Member states establish harmonised risk indicators as referred into one of the annexes of the proposal. However, due to the fact that

these harmonised risk indicators are still in development and that some Member States already have their own indicators, Member States may continue to use existing national indicators or adopt other appropriate indicators in addition to the harmonised ones.
The objective of this paper is to present and analyse the outputs of simple indicators for the Belgian Programme for Reduction of Pesticides and Biocides.

Method

For each pesticide, the total amounts of pesticide used in agriculture are derived from the Belgian official statistics on sales of pesticide from 1991 to 2005.
Pesticides were grouped into categories: herbicides, fungicides, insecticides, and soil disinfectants. On the basis of the packaging of Plant Protection Products (PPP) and their sales in Belgium in 2001, the partition between professional and non-professional use was calculated in order to restrain the analysis of the latter category. The reference doses are based on the maximum authorised dose for each active substance in Belgium. The following indicators were calculated: Frequency of Application (Gravesen, 2000), bees risk, birds risk and earthworms risk based on Index of Load (Gravesen, 2000), aquatic organism risk based on Spread Equivalent Global (Buyck and Coelus, 1996). For each indicator, active substances responsible for min. 5 % impact on the indicator output, on average, for the 15 year period were identified as major contributors. The active substance chemical, physical and (eco)toxicological values were taken from the PRIBEL compendium edited in 2006 by Vergucht et al.

Results and discussion

Quantity used

When analysing the data for the years from 1991 and 2005 for all the categories of PPP it appears that, on average the agricultural usage is 71 % of the total sales that are about 9,400 tonnes of active substances per year. When these results are combined to the Utilizable Agricultural Area1 it appears that, on average over the period, there is 4.8 kg of active substances applied per hectare every year. Mancozeb alone accounts for 15 % of the sales for agriculture.

Frequency of Application

The averaged Frequency of Application (FA) for Belgium was 6.552 thousand of ha-dose on a yearly basis. This means that there were about 6,550,000 applications of the reference doses registered in the Belgian national authorisations. On average, there were 4.7 applications/ha during the 1991-2005 period. We nevertheless have to mention that FA is calculated, for each active substance, on a reference dose based on the maximum dose authorised in Belgium for agricultural crops. Due to the fact that the real doses are probably lower than these values, the FA indication might be an underestimation.

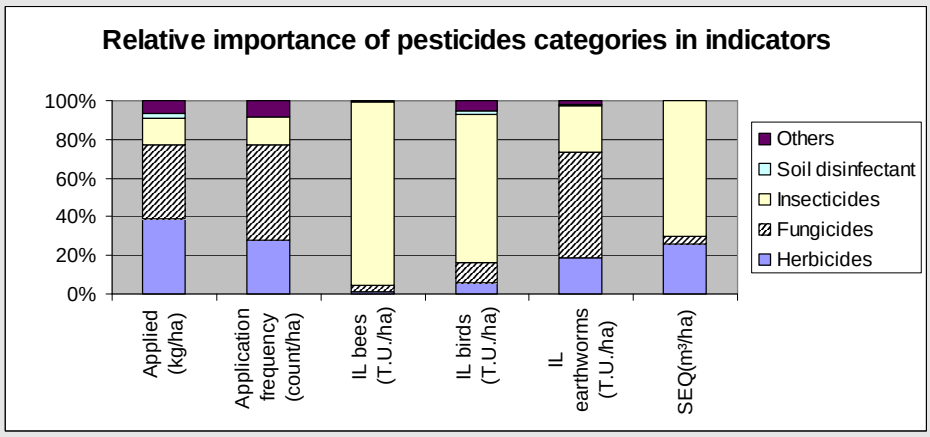
Aquatic risk

The Spread Equivalent Global (SEG) for Belgium was calculated to be 40.3 m^3 per ha on average. This represents the quantity of water that is yearly required to reduce by dilution the PPP concentration in the water to an acceptable level. This is about 0.5% of the yearly rainfalls. This indicator is for 32% explained by the evolution of Lindane use.

Contribution of each PPP category to the indicators

Figure 1 - Contribution of PPP categories to indicators during the period 1991-2005

1 including the grasslands

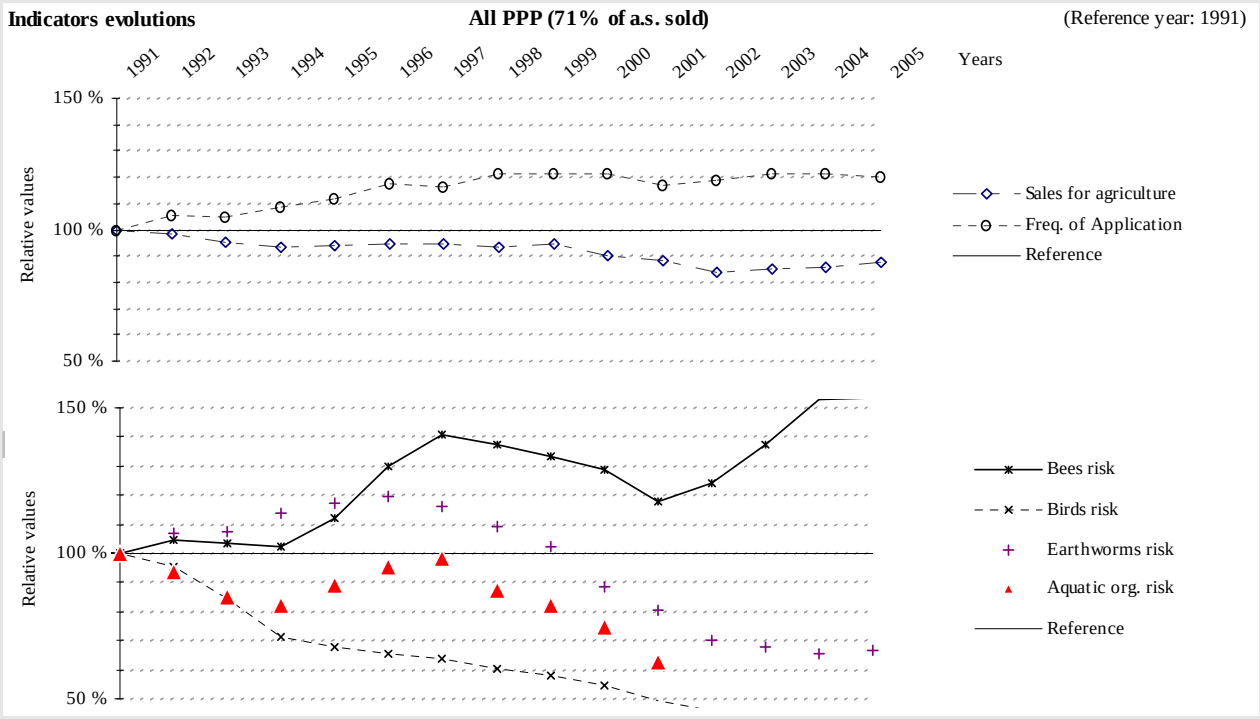


The Belgian market of PPP is concerned for 80 % (of a.s. mass) by fungicides and herbicides (each about 40 % of the market). The FA indicator shows that fungicides are much more frequently applied than other categories of PPPs. The risk indicators show a very big effect of insecticides for bees, birds and aquatic organisms. For earthworms, more than 50% of the impact would be due to fungicides.

Any risk management policy only based on one indicator would probably be engaged in a wrong way. It is interesting to notice that a reduction in PPP sales and/or in FA would be preferentially achieved with a lower fungicide use, which would have a significant impact on earthworms risk only. On the contrary, a general reduction of insecticides use, by the way of various tools (e.g. biological control), would have potentially an important impact on every living organism.

Evolution of the indicators from 1991 to 2005

Figure 2 - Trends of indicators for all PPP



rem : values are averaged on three years (x ±1) except for 2005 where the average is calculated only on 2004 and 2005

From the analysis of the differences between indicators during the period 1991-2005 it appears that major risks evolutions are due to insecticides. For earthworms only, it appears that the main modifications in the risk pattern are due to fungicides. A relatively large increase is observed for bees risk while a large decrease is observed for birds and aquatic organism risks. Herbicides also have a significant impact on the indicators and a regular decrease is observed for aquatic

organisms.
When looking in detail in the database for the reasons for such trends, it appears that the indicators evolution is sometimes only due to few major active substances. For example, Imidacloprid explains alone 40 % of the ILbees indicator and, more, the single evolution of Imidacloprid is highly correlated to the trend of the indicator for all pesticides. We have then to be careful with such a result because, the ILbees indicator is designed for spraying application. In the case of Imidacloprid, only a very small part of the uses is directly sprayed onto the crops, the major part being devoted to seed dressing. Then here, it may be possible that the risk is overestimated.
Another example is given by the analysis of detailed results for herbicides, where the aquatic organisms risk indicator is highly decreased between 1991 and 2005. Paraquat accounts for 63% of this result, and for most of its variations in time. A major limitation in these risk assessment approaches is the exposure parameter, which is only based on the pesticide dose independently of the context of application. This assumption implies that pesticides effects are considered as equivalent everywhere, whenever and, especially for FA, for every not-targeted organism. The case of Paraquat is a good illustration of the caution that must be taken with these indicators. This cationic molecule, which influences 63 % of aquatic risk indicator, is quasi non-bio-available due to its specific physico-chemical properties and consequently does not present any risk for aquatic organisms in the environment.
There is no general correlation between all indicators (Figure 2). At the farm level a reduction of the use of pesticides and a change of the pesticides selected was observed. Pesticides were less used in terms of quantity but not in terms of application frequency. It can be concluded that pesticides were used more frequently in 2005 than in 1991 but with lower doses. A reduction of the risk indicators should then be related to the use of less dangerous active substances for birds, earthworms and aquatic organisms, but not for bees. It seems that FA is not related to any risk consideration.

Conclusions

In Belgium, FA of the agricultural sector is about 4.7 applications per hectare for the 1991-2005 period. Due to the calculation parameters for the FA indicator, this value is probably an underestimation of what occurred really. Major contributors to environmental risks are insecticides and fungicides. From the point of view of the quantity sold, herbicides are in first place.
When taking into account all PPP sold in Belgium during the period, we observe a decrease of about 0.5% of the mass of the active substances in average every year and an increase of about 20% of the application frequency.
IL and SEG risk indicators studied in the 1991-2005 period give the information of a lower impact of pesticides on earthworms, birds and aquatic organisms. Bees would have been more endangered during the same period. A detailed analysis of the results for each category of pesticides shows that risk patterns are often due to only few active substances that can be identified. On the basis of these identifications, it can be then concluded that risk is probably overestimated for bees and aquatic organisms.
Large divergences exist between various approaches and each indicator explains a specific aspect of the problem. None of them alone is sufficient to understand the situation and results are complementary. It appears very clearly that FA and sales indicators are not related to any specific risk indicator. All indicators have limitations due to the oversimplification of the exposure model or the calculation procedure.
Results are to be analysed by experts in order to compensate the limitations and bias of the indicators.
For example, exposure approaches in such “global” indicators are very simple and could be improved by an expert judgment in order to avoid some big overestimations of the risk as can be the case for *Paraquat* and *Imidacloprid*.

References

Buyck, C., and K. Coelus. 1996. Evaluatiemethoden voor de risicobepaling van bestrijdingsmiddelen. Projectontwikkeling, Universiteit Gent, Gent.

Gravesen, L. 2000. OECD Survey of National Pesticide Risk Indicators, 1999-2000 / Denmark. Danish Environmental Protection Agency, Copenhagen, DK.

Vergucht, S.; Claeys, S.; Harcz, P.; Piñeros, J.; Delouvroy, O.; Steurbaut, W.; Pussemier, L., 2006. Belgian Pesticide Risk and Use Indicators Methodology. FPS Health, Food chain safety and Environment, Brussel. 150 pp.

4.2. CD-ROM

The compilation and publication of the conference proceedings in the form of a CD-ROM has been planned. Each author would be scheduled to receive a copy and additional CD-ROMs would be available on demand.

The CD-ROM will not be produced until after all the contributions have been made available online on the conference pages of the website (this is forecast to be July 2009).

ANNEX 1: Scientific and organising committees

Scientific committee

The Scientific Committee was composed of both Activity Leaders (AL) and Scientific members of the External Advisory Board (EAB)

Composition:

- Pierre Ricci - Chairman, INRA, France (Coordinator Of ENDURE)
- Richard Bélanger, Laval University, Canada (EAB)
- Franz Bigler, Agroscope, Switzerland (AL)
- Piet Boonekamp, WUR, The Netherlands (AL)
- Ian Denholm, RRES, UK (AL)
- Stephen O. Duke, USDA/ARS, USA (EAB)
- Bernd Hommel, JKI, Germany (AL)
- Jozsef Kiss, SZIE, Hungary (AL)
- Per Kudsk, AU, Denmark
- Antoine Messéan, INRA, France (AL)
- Jean Louis Sarah, CIRAD, France (AL)
- Maurizio Sattin, CNR, Italy (AL)
- Richard Smiley, Oregon State University, USA. (EAB)

Organising committee

The Organising Committee was composed locally by CIRAD (C - Organising body), INRA Transfert (IT - Manager of the Network) and Alpha Visa Congrès (AVC - Subcontracting Organising Company)

Composition:

- Jean-Louis Sarah (Coordinator) (C)
- Bénédicte Bard, (IT)
- Delphine Dominique (AVC)
- Nathalie Curiallet, (C)
- Michel Ginestet (AVC)
- Andrew Lewer, (C)
- Christine Nouaille, (C)
- Hélène Quinonéro (C)
- Vincent Troillard (IT)

ANNEX 2: List of participants and nationality

ACHBANI El hassan	INRA Maroc / Meknès / Maroc
AEBI Alex	Agroscope Reckenholz-Tänikon / Zürich / Switzerland
ALABOUVETTE Claude	INRA / Dijon / France
ALFORD David	EC Reviewer / Dry Drayton / UK
ALLOUB Hala	University of Gezira / Medani / Sudan
ANDRIANTSIMIALONA Dodelys	FOFIFA URP SCRID / Antsirabe / Madagascar
ANTICHI Daniele	Scuela Superiore Sant'Anna / San Frediano a Settimo / Italy
ARNO Judit	Universitat de Lleida / Lleida / Spain
ARSENIUK Edward	Plant Breeding & Acclimatization Inst. / Blonie / Poland
AUBERTOT Jean-Noël	INRA / Castanet-Tolosan / France
AVILLA Jesus	Universitat de Lleida / Lleida / Spain
BABAY-AHARI Assodollah	University of Tabriz / Tabriz / Iran
BARBERI Paolo	Scuela Superiore Sant'Anna / Pisa / Italy
BARBET Alain	RID/Institut des régions chaudes / Montpellier / France
BARBIER Pascale	INRA / Sophia Antipolis / France
BARBIER Jean-Marc	INRA / Montpellier / France
BARD Bénédicte	INRA Transfert / Paris / France
BARZMAN Marco	INRA / Sophia Antipolis / France
BAUER Marie	University Burgundy / Etival Clairefontaine /
BELANGER Richard	Université de Laval / Quebec / Canada
BENEFER Carly	University of Plymouth / Plymouth / UK
BERTI Antonio	University of Padova / Legnaro / Italy
BHALLA Shashi	National Bureau of Plant Genetic Resources / New Delhi / India
BIGDELI Ali Akbar	Andish New Town / Karaj / Iran
BIGLER Franz	Agroscope Reckenholz-Tänikon / Zurich / Switzerland
BILTON Amy	University of Newcastle / Newcastle upon Tyne / UK
BLACKSHAW Rod	University of Plymouth / Plymouth / UK
BLUM Bernard	IBMA / Basel / Switzerland
BOCKSTALLER Christian	INRA / Colmar / France
BOETTINGER Petra	Julius Kühn Institute / Braunschweig / Germany
BOHAN David	Rothamsted Research / Harpenden / UK
BOILLOT Marie	CETIOM / Thiverval-Grignon / France
BOLTON Susannah	Rothamsted Research / Harpenden / UK
BOUSSET Lydia	INRA / Le Rheu / France
BROWN James	John Innes Centre / / UK
BRUN Hortense	INRA / Le Rheu / France
BUI Sibylle	INRA / Sophia Antipolis / France
BUURMA Jan	LEI Wageningen UR / The Hague / The Netherlands
CALONNEC Agnes	INRA / Villenave d'Ornon / France
CARLIER Jean	CIRAD / Montpellier / France
CARON Daniel	ARVALIS - Institut du Végétal / Baziège / France
CARON-LORMIER Geoffrey	Rothamsted Research / Harpenden / UK
CARTOLARO Philippe	INRA / Villenave d'Ornon / France
CARVAJAL-MONTOYA Luz Dary	University of La Rioja / Logroño / Spain
CASTAGNONE Philippe	INRA / Sophia Antipolis / France
CELLIER Vincent	INRA / Bretenière / France
CHRISTENSEN Henriette	Pesticide Action Network Europe / Brussels / Belgium
CIANCIO Aurelio	Consiglio Nazionale delle Ricerche / Bari / Italy
COTE François	CIRAD / Montpellier / France
CURIALLET Nathalie	CIRAD / Montpellier / France

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DANTI Roberto	Consiglio Nazionale delle Ricerche / Sesto Fiorentino / Italy
DAYAN Frank	USDA-ARS / University, MS / USA
DE LAPEYRE DE BELLAIRE Luc	CIRAD / Montpellier / France
DEBRET Bertrand	BASF Agro / Ecully / France
DEGUINE Jean Philippe	CIRAD / St Pierre de la Réunion / France
DELHOVE Gilles	COLEACP/PIP / Brussels / Belgium
DELOURME Régine	INRA / Le Rheu / France
DELVAL Philippe	ACTA / Marcy l'étoile / France
DENHOLM Ian	Rothamsted Research / Harpenden / UK
DENHOLM Colin	Rothamsted Research / Harpenden / UK
DEYTIEUX Violaine	INRA / Bretenière / France
DINTINGER Jacques	CIRAD / St Pierre de la Réunion / France
DJIAN-CAPORALINO Caroline	INRA / Sophia Antipolis / France
DO Hong	INRA / Valbonne / France
DOIG Roger	ECPA / / UK
DONGMO Clovis	CIRAD / Montpellier / France
DUCASSE Daniel Adrian	INTA-IFFIVE / Cordoba / Argentina
DUFOUR Bernard Pierre	CIRAD / Montpellier / France
DUREL Charles-Eric	INRA / Beaucouzé / France
EL GUILLI Mohamed	INRA Maroc / Kenitra / Morocco
EVANS Neal	Rothamsted Research / Harpenden / UK
FERGUSON Andrew	Rothamsted Research / Harpenden / UK
FORTINO Gabriele	INRA Grignon / Thiverval-Grignon / France
FOUAD Abbad Andaloussi	INRA Maroc / Rabbat / Maroc
GABA Sabrina	INRA / Dijon / France
GARY Christian	INRA / Montpellier / France
GOEBEL Regis	CIRAD / Montpellier / France
GORAL Tomasz	Plant Breeding & Acclimatisation Instit. / Blonie / Poland
GOSME Marie	INRA - Agro ParisTech / Thiverval-Grignon / France
GOUACHE David	ARVALIS-Institut du Végétal / Guyancourt / France
GRENIER Eric	INRA / Le Rheu / France
GUILLON Jean-Claude	Copa-Cogeca/Limagrain / Chappes / France
GUILLON Michel	IBMA / / France
HABIB Robert	CIRAD / Montpellier / France
HAKIZA Georgina	NARO / Mukono / Uganda
HANSEN Janne	Aarhus University / Tjele / Denmark
HAYASHI Kiyotada	National Agriculture & Food Research Org / Tsukuba / Japan
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HEIMBACH Udo	Julius Kühn Institute / Braunschweig / Germany
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HIIESAAR Kylli	University of Life Sciences / Tartu / Estonia
HOESCHLE-ZELEDON Irmgard	IITA / / Nigeria
HOMMEL Bernard	Julius Kühn Institute / Kleinmachnow / Germany
HOMMES Martin	Julius Kühn Institute / Brunswick / Germany
HUGON Rémy	CIRAD / Montpellier / France
JENSEN Jens Erik	Danish Agricultural Advisory Service / Aarhus N / Denmark
JOGAR Katrin	University of Life Sciences / Tartu / Estonia
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KHODAVERDI Haleh	Guilan University / Tehran / Iran
KIM Sung-Hyun	Ewha Womans University / Seoul / Korea

KING Lawrence	Bayer CropScience / Lyon / France
KISS Jozsef	Szent Istvan University / Godollo / Hungary
KISS Erzsebet	Szent Istvan University / Godollo / Hungary
KNOL Jouke	Ministry for Agriculture, Nature & Quality / The Hague / Netherlands
KOCHANSKA-CZEMBOR Elzbieta	Plant Breedind & Acclimatization Inst. / Blonie / Poland
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KUDSK Per	Aarhus University / Slagelse / Denmark
LAABS Volker	BASF SE / Limburgerhof / Germany
LAMINE Claire	INRA / Thiverval-Grignon / France
LANEN Catherine	INRA / Thiverval-Grignon / France
LATXAGUE Emilie	INRA / Paris / France
LE CAM Bruno	INRA / Beaucouzé / France
LE VAN Amandine	INRA / Beaucouzé / France
LEGER Bertrand	Cemagref / Montpellier / France
LEMARIE Stéphane	INRA-GAEL / Grenoble / France
LEMES Ernane	University of Florida / Quincy, FL / USA
LESINSKY Daniel	Pesticide Action Network Europe / / Slovakia
LEVAY Nora	Szent Istvan University / Godollo / Hungary
LEWER Andrew	CIRAD / Montpellier / France
LIEVEN Jean	CETIOM / Thiverval-Grignon / France
LO-PELZER Elise	INRA / Thiverval-Grignon / France
LU Yaobin	Zhejiang Academy of Agriculture Science / Hangzhou / China
LUCAS Philippe	INRA / Le Rheu / France
LUMINI Erica	Universita degli Studi di Torino / Torino / Italy
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MALJEAN Jean-François	European Commission / Bruxelles / Belgium
MALLAPUR Chanabasappa	University of Agricultural Sciences / Dharwad / India
MANN Judy	Rothamsted Research / Harpenden / UK
MARCO-MANCEBON Vincente	University of La Rioja / Logroño / Spain
MARQUIE Catherine	CIRAD / Montpellier / France
MARTIN Vincent	INRIA / Sophia-Antipolis / France
MARTINEZ-VILLAR Elena	University of La Rioja / Logroño / Spain
MELANDER Bo	Aarhus University / Slagelse / Denmark
MENENDEZ MENENDEZ Cristina	University of La Rioja / Logroño / Spain
MERDINOGLU Sabine	INRA / Colmar / France
MESSEAN Antoine	INRA / Thiverval-Grignon / France
METSPALU Luule	University of Life Sciences / Tartu / Estonia
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MICHEL Claudia	ECPA / Brussels / Belgium
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MOISAN Sabine	INRIA / Sophia-Antipolis / France
MONTFORT Françoise	INRA / Le Rheu / France
MOURICHON Xavier	CIRAD / Montpellier / France
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MUNIER-JOLAIN Nicolas	INRA / Dijon / France
NAUD Olivier	Cemagref / Montpellier / France
NIBOUCHE Samuel	CIRAD / St Pierre de la Réunion / France
NICOT Philippe	INRA / Montfavet / France
NIELSEN Bent J.	Aarhus University / Slagelse / Denmark
NOUAILLE Christine	CIRAD / Montpellier / France
OHMART Cliff	Lodi Winegrape Commission / Lodi, CA / USA
OLIVIER Christel	Agriculture & Agrifood Canada / Saskatoon / Canada
OTTO Stefan	Consiglio Nazionale delle Ricerche / Legnaro / Italy
PAILLARD Sophie	INRA / Le Rheu / France
PALINKAS Zoltan	Szent Istvan University / Godollo / Hungary

PARAISO Armand	University of Parakou / Parakou / Benin
PARROT Laurent	CIRAD / Montpellier / France
PATIL Mahantesh	University of Agricultural Sciences / Raichur - Karnataka / India
PAULEN Oleg	Slovak Agriculture University / Nitra / Slovak Republic
PEASE Christina	University of La Rioja / Logroño / Spain
PEDRAS Soledad	University of Saskatchewan / Saskatoon / Canada
PERCY-SMITH Alex	Aarhus University / Slagelse / Denmark
PEREZ-MORENO Ignacio	University of La Rioja / Logroño / Spain
PERRYMAN Sarah	Rothamsted Research / Harpenden / UK
PETERSCHMITT Michel	CIRAD / Montpellier / France
PINOCHET Xavier	CETIOM-ACTA / Thiverval-Grignon / France
PLOOMI Angela	University of Life Sciences / Tartu / Estonia
PONDAVEN Agnès	Carrefour Quality Line / / France
PONS Xavier	Universitat de Lleida / Lleida / Spain
PORTER John	EC Reviewer / Taastrup / Denmark
POULSEN Rolf Thostrup	Danish Agricultural Advisory Service / Aarhus N / Denmark
PRADO VILLAR Eduardo	University of La Rioja / Logroño / Spain
QUINONERO Hélène	CIRAD / Montpellier / France
RABBINGE Rudy	CGIAR / The Netherlands
RADDI Paolo	Consiglio Nazionale delle Ricerche / Sesto Fiorentino / Italy
RATNADASS Alain	CIRAD / Montpellier / France
RAZMJOU Jabaeil	Mohaghegh Ardabili University / Ardabil / Iran
REDLICH Stefan	BASF SE / Ludwigshafen / Germany
RICCI Pierre	INRA / Sophia Antipolis / France
RIS Nicolas	INRA Sophia Antipolis / Sophia Antipolis / France
RISEDE Jean-Michel	CIRAD / Capesterre Belle-Eau / France
ROLING Niels	WUR LEI / / The Netherlands
ROUX Estelle	FDGDON - Réunion / Saint-Paul, La Réunion / France
RYDAHL Per	Aarhus University / Slagelse / Denmark
SAENZ-DE-CABEZON Francisco Javier	University of la Rioja / Logroño / Spain
SANDER Reinhard	ISIP e.V / Bad Kreuznach / Germany
SAPOUKHINA Natalia	INRA / Beaucouzé / France
SARAH Jean Louis	CIRAD / Montpellier / France
SARTORATO Ivan	Consiglio Nazionale delle Ricerche / Legnaro / Italy
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SCHEPERS Huub	WUR PPO-AGV / Lelystad / The Netherlands
SCHERER-HAYNES Isabelle	INRA / Thiverval-Grignon / France
SCHREUDER Remco	WUR Applied Plant Research / Lelystad / The Netherlands
SESTER Mathilde	CIRAD / Antsirabe / Madagascar
SIMON Sylvaine	INRA / st Marcel les Valence / France
SOLE Joan	Universitat de Lleida / Lleida / Spain
STRASSEMEYER Joern	Julius Kühn Institute / Kleinmachnow / Germany
TABONE Elisabeth	INRA / Valbonne / France
TAGNE Appolinaire	IRAD / Yaounde / Cameroon
TIXIER Philippe	CIRAD / Le Lamentin / France
TOMEKPE Kodjo	CARBAP / Douala / Cameroon
TOPCHII Natalia	University of Kyiv / Kyiv / Ukraine
TROILLARD Vincent	INRA Transfert / Paris / France
VALANTIN-MORISON Muriel	INRA / Thiverval-Grignon / France
VAN BOL Vincent	Federal Public Health Service / Brussels / Belgium
VAN DE WEIDE Rommie	WUR Applied Plant Research / Lelystad / The Netherlands
VAN DE ZANDE Jan	WUR Plant Research International / Wageningen / The Netherlands
VERES Andrea	Szent Istvan University / Godollo / Hungary
VINOTTI Valerio	IBMA-Agrifutur / Alfianello / Italy

VOOLMA Kaljo	University of Life Sciences / Tartu / Estonia
WILLIAMSON Stephanie	Pesticide Action Network Europe / London / UK
WILSON Shanthi	Industrial Technology Institute / Colombo / Sri Lanka
WOHLERS Wohlert	Julius Kühn Institute / Brunswick / Germany
WOO Mi-Ok	Seoul National University / Seoul / Korea
WOZNIAK-STRZEMBICKA Anna	Plant Breeding & Acclimatization Inst. / Krakow / Poland
ZHEN Li	Zhejiang Academy of Agriculture Science / Hangzhou / China
ZIJLSTRA Caroline	WUR Plant Research International / Wageningen / The Netherlands
ZIMMERMANN Olaf	Julius Kühn Institute / Darmstadt / Germany
ZLOF Vlasta	EPPO / Paris / France

Statistics

The number of participants by nationality is presented below, taking into account ENDURE participants (END), external participants (EXT) and the total (TOT) from each country.

There were 220 attendees (in fact the total was a little higher but there were 220 registered attendees). The forecast was for an attendance of 250 people and more than 300 people registered their interest in attending the event. The fact that only 220 were able to make it reflected, to a large degree, the number of people from ICPCs who were not able to come. We provided financial help for some[2] of them (with priority given to authors and ICPC workshop participants) from the SA3.2 budget, but were not able to satisfy all demands.

	END	EXT	TOT
FRANCE	77	6	83
UK	10	5	15
SPAIN	4	8	12
THENETHERLANDS	9	2	11
GERMANY	8	2	10
DENMARK	9	1	10
ITALY	10	0	10
POLAND	8	0	8
SWITZERLAND	8	0	8
BELGIUM	0	6	6
ESTONIA	0	5	5
INDIA	0	4	4
IRAN	0	4	4
USA	0	4	4
CAMEROON	0	3	3
CANADA	0	3	3
HUNGARY	3	0	3
MOROCCO	0	3	3
SLOVAKIA	0	3	3
CHINA	0	2	2
KOREA	0	2	2
MADAGASCAR	0	2	2
RUSSIA	0	2	2
ARGENTINA	0	1	1
AUSTRALIA	0	1	1
BENIN	0	1	1
JAPAN	0	1	1
SRI LANKA	0	1	1
SUDAN	0	1	1
UGANDA	0	1	1
TOTAL	146	74	220

Approximately two-thirds of participants came from ENDURE partners and one-third were from 'external' organisations.

Europe accounted for 187 participants (85%). However, people from external organisations came from many countries of the world, showing after only 18 months of operation (registrations closed in July) ENDURE had become internationally known.

[2] Nine of them were helped (travel and/or local accommodation) at a total cost of €7,521. Total cost of invitees including key-note speakers totalled €18,180.

ANNEX 3: Opening speeches

Welcome introduction

Etienne Hainzelin
Director of Research and Strategy
Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)

It's a real pleasure for me to welcome you to La Grande Motte for this first ever ENDURE International Conference, 'Diversifying Crop Protection'. The fact that the ENDURE partners have agreed to entrust Cirad with its organisation is highly meaningful for me.
Cirad is involved in agronomic research for the sustainable development of tropical and subtropical countries, including the Mediterranean regions. Many of these countries have developed diversified agro-ecosystems and are facing high pest and disease pressure (much higher than in temperate countries) and this is obviously a source of knowledge that has not yet been exploited. Our world is global, and Europe is not isolated in that world. Therefore the responses of countries outside Europe towards their crop protection problems may impact significantly on Europe through importation of produce and possible introductions of new pests. On the other hand, the knowledge they gain from their own crop-pest systems may benefit European agriculture. Through its involvement in the ENDURE network, Cirad wishes primarily to facilitate a two-way dialogue and develop a fair scientific and technological partnership with these countries and, primarily, developing countries.
That is why I am very pleased to see that many colleagues from the 'south' wanted and were able to attend this meeting, and will be presenting some 25 reviewed communications (both oral and posters) out of 125 in total. Many other participants are present just to hear the presentations, look at the posters and meet colleagues in the worldwide crop protection community. I have no doubt they will have fruitful exchanges with their ENDURE colleagues, and will attentively follow the results and conclusions of Tuesday's workshop on 'Fostering the links between ENDURE and countries outside Europe'.
You are all gathered here to contribute to resolving the 21st century challenge of sustainable agriculture: 'How to ensure enduring food production with less impact on the environment and human health'. And, for sure, crop protection is one key element of that. Obviously the answer is not as simple as to ban all pesticides without any palliative or alternative solutions. That is why we have to work together around the concept of 'Ecological Intensification' developed by our colleagues Michel Griffon and Bernard Chevassus-au-Louis. This concept assumes than rather than fight against the ecological mechanisms, we have to use them for a more natural and smooth production. This is linked to an increase of investment in knowledge so as to understand the basic mechanisms of interactions in agro-ecosystems.
However, this ecological and biological knowledge is simply not sufficient to ensure the implementation of alternative crop protection strategies. Many solutions have been proposed over the past decades, but few of them have been actually implemented successfully. And in most cases it has been simply because either the scale of study was limited to the field (and even the plot) and simply ignored the landscape all around, or socio-economics parameters were simply not considered (or both!). To enlarge the scales of studies and to bring together plant protection specialists with economists and sociologists is, for sure, one key point ensuring the relevance of this network.
This integrated approach of ecological intensification is one of the six priorities of our institution and we actively invest in these fields.
In this respect the place of Cirad in the network is not limited to making a link with countries outside Europe but - and I have not even mentioned external communication which is contributing to ENDURE's visibility in the scientific community - Cirad contributes actively through its research units to the building of knowledge. And sharing its experience in extra-

European countries and overseas regions of Europe with mainland situations will be highly fruitful for the network.
I would just take one example: banana crops. I have heard that it was not so natural for all ENDURE partners to accept banana as a case study, since for most people bananas are not a European crop. But they are! Not on the mainland, of course, but it is a major crop in Martinique, Guadeloupe, Canaries and Madeira. In addition, it is a highly relevant case study. Not so long ago, banana was identified as one of the crops with the most negative impact on the environment, because of the amount of pesticide which was applied. And, unfortunately, it was true. However, as a result of the intensification of research and the increase in knowledge, the amount of applied pesticides in banana cropping systems in Martinique and Guadeloupe has been cut by two-thirds (10kg per year and per Ha to 3) over the past decade. Meanwhile, overall production has increased by 16% over the past seven years. This definitely proves that more environmental friendly crop protection strategies may coincide with improved productivity.
I am quite sure that cropping systems on the European mainland may profit from the experience of what has been done in bananas. Conversely our banana team may learn from the experience of their ENDURE colleagues.
Cirad research has made many contributions to ENDURE, and I won't detail them here. But you will hear or see here in La Grande Motte some other Cirad contributions bringing together partners from extra-European countries (rice in Madagascar, Periurban agriculture in Cameroon, Coffee in Salvador etc).
Therefore, I wish you a very constructive conference, and hope you will have a very enjoyable memory of your stay here in La Grande Motte.

Message from the European Commission

Jean François Maljean
Project Officer

Timothy Hall
Acting Director

European Commission – DG Research
Biotechnology, Agriculture and Food Directorate

The recent food and energy price crises, and the related food security issues, are new elements in the already challenging world context where climate change and globalisation are strongly influencing the agro-food sector. These problems are very complex but it is widely recognised that research has a major role to play in their alleviation. In fact the Presidency Conclusions from the European Council, 19/20 June 2008, clearly state that "*there is a need to pursue work on innovation, research and development of agricultural production, notably to enhance its energy efficiency, productivity growth and ability to adapt to climate change*."
Such a context clearly opens a new window for plant health and protection research, pre- and post-harvest, particularly for crops which are close to the absolute yield ceiling and for which reducing losses represents an essential way forward.
However, with growing popular awareness of environmental considerations and a food market increasingly led by consumers' demand, market and policy orientations are rapidly changing in the sense of a more cautious approach towards pesticides. This explains why Council Directive 91/414/EEC concerning the placing of plant protection products on the market is currently under revision, while the new EU Thematic Strategy on the Sustainable Use of Pesticides (COM2006-372) is about to be translated into legally binding instruments at the Community level.
These trends clearly indicate that plant health and plant protection need to be addressed with an integrated approach where containment measures, sustainable use of plant protection

products, development of more resistant plant varieties, appropriate farming practices and management of biological control agents, in combination with other techniques, including decision support systems, precision agriculture and other new technologies are implemented in a coordinated manner at the farm level but also at the wider local or regional levels.
ENDURE is a major research project supported by the European Commission to answer such challenges. This Network of Excellence, which has four years of financing under FP6*, started on 1st January 2007; it comprises a large consortium of universities, research institutes, farmers' organisations, biological control companies and other stakeholders in Europe and beyond. The Commission has high expectations for ENDURE and it is hoped that the project will establish itself as a world leader for the development and implementation of durable pest control strategies, and will be recognised as the first point of reference in Europe not only for scientists but also for legislators and users.
ENDURE is now approaching its mid-term. The main project's findings and achievements reached so far will be presented during this International Conference. They promisingly indicate that the consortium has the capacity to reach its high ambitions by the end of its mandate, and most importantly, to remain an operating structured focal point in the longer term. This perspective will require a careful preparation and the maintenance of a strong momentum at all levels, involving not only scientists but also a genuine institutional will to pool resources and share a common vision between partners.

ENDURE background and objectives

Pierre Ricci
ENDURE coordinator

For decades, innovation in crop protection has been largely in the hands of agrochemists. But, as European Union policy is rapidly moving towards a more restrictive approach on the use of plant protection products, other fields of research must come into play and contribute innovative solutions to construct new strategies. The goal is to meet the requirements of sustainability in advance of increasing demand for agricultural products.
Pooling forces at the EU level is obviously needed to meet this challenge. This was the motivation for creating the ENDURE Network of Excellence, which brings together 18 major players in research, education, extension and industry from 10 European countries. Our priorities are based on the real issues identified at the field level and we seek to address them by mobilising the vast basic knowledge on crop-pest systems which has been accumulated in recent years but has had little impact as yet on how crop protection is performed. At the same time, we actively involve the extension and advisory systems, which are in close contact with farmers, to consider the factors affecting the adoption and implementation of new methods.
Given the rapid changes in the sphere of crop protection, farmers are in urgent need of new solutions. ENDURE has selected the most important specific problems and pooled its expertise to identify in each of these ‘Case Studies’ what is at hand or could be made available in the short term. Thanks to its international reach, ENDURE is in a position to compare solutions devised at the national level, consider their transferability between countries, identify their performance and shortcomings, explore their potential for combination and detect the gaps and needs for additional knowledge. Five of these studies have just been completed and their conclusions will be presented at this conference.
In the longer term, new technologies and new alternative methods will increase the possibilities for reducing the risks posed by pesticides and for reducing their use. ENDURE is assessing the potential of these methods and seeks to identify the factors that might speed up their availability.
We must also realise that cropping systems have evolved in Europe under the assumption that pesticides will provide a solution to most crop protection problems, which in turn has made European systems more vulnerable to these problems. It is a basic assumption in ENDURE’s programme that the need for using pesticides can be further reduced by

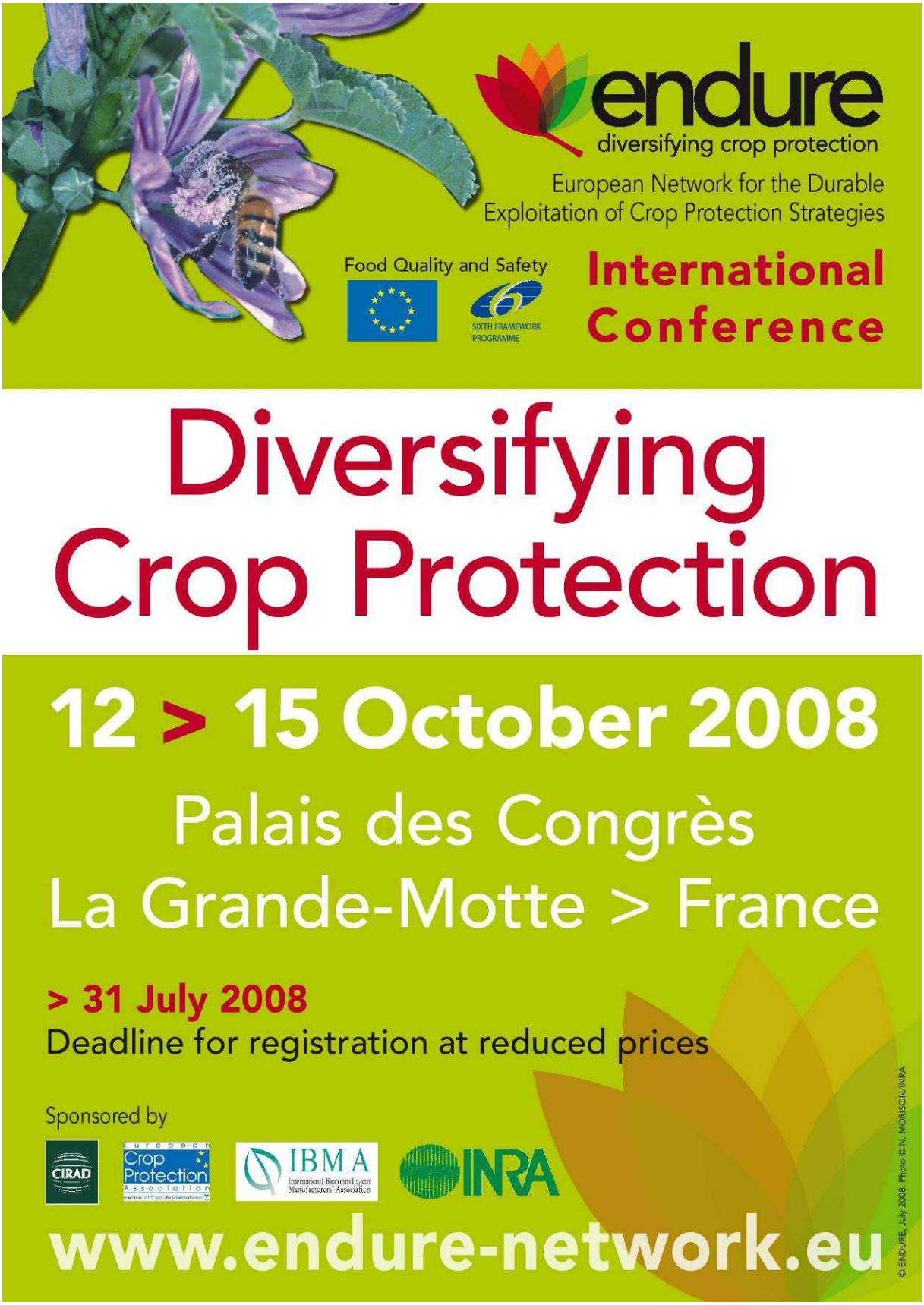
modifications at these system levels. The exceptionally wide range of disciplines brought together in ENDURE allows us to consider pests, diseases and weeds all together, exploiting the combination of a multiplicity of methods, devising strategies over larger time and space scales, and taking into account the interactions between agronomical, ecological and landscape factors as well as the socio-economic framework in which these strategies will be implemented.

This holistic approach is particularly relevant when one considers the factors affecting the success or failure of implementing integrated pest management schemes. By taking this approach, ENDURE is exploring promising avenues for 'Diversifying Crop Protection'. At the same time ENDURE can offer scientific support to policy makers and other stakeholders in the implementation phase of the EU Thematic Strategy on the Sustainable Use of Pesticides, which largely relies on IPM concepts.

After being operational for 18 months, ENDURE is delighted to present its first results to the world's scientific community attending this meeting. But we also expect to learn from the experiences and achievements that you are bringing to us from other institutions, countries and continents. We are grateful to everyone who has accepted our invitation for allowing us to benefit from your wide-ranging visions on this subject.

On behalf of ENDURE's scientific community, let me wish you all a very fruitful and enjoyable conference in La Grande Motte.

ANNEX 4: Conference poster



ANNEX 5: Conference participants