ENDURE

European Network for Durable Exploitation of crop protection strategies

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FOOD and Quality and Safety

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Position paper identifying research priorities for future calls at the national and EC levels

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Dissemination Level	
PU Public	**X**
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)	

Message to JF Maljean for FP7 further calls

Major research topic identified by ENDURE in the crop protection field:
"Providing IPM solutions for reducing pesticide reliance in major arable crops"

Rationale:

- IPM has not yet much developed in major arable crops (fewer incentives from consumers than in fresh food production, less long-term vision from farmers than in perennial crops…)
- The very large acreage throughout Europe means that the expected environmental benefit from pesticide use reduction is enormous, plus a large market for innovative solutions.

Focus:

- The challenge with IPM is in the integration between components. Projects should call for multiple disciplines (bringing biological, agronomical and ecological knowledge) to work together on integration rather than separately improving individual components.
- Novel solutions will emerge from enlarging scales to multi-pest, multi-year and landscape dimensions.
- Solutions durability is challenged by the evolution of pest populations and communities under the selective pressure of management methods (whether chemical ones or not). Approaches to predict, monitor and limit these evolutions are needed.

Considering the context and involving the actors in order to come to realistic solutions

- Innovative strategies will imply changes at the cropping system level. They should be conceived in the more general context of the evolution towards high environmental quality integrated production.
- Combined modelling and experimentation are required to elaborate and assess these strategies. Farmers and advisors should be associated to the process and be given a perception of the benefits on a multi-year scale.
- The possible regulatory, social and economics bottlenecks to implementation should be considered all along the project.
- Economical actors who can contribute to several of the IPM components (seed, agrochemical, biocontrol, precision farming… industries) should be associated.

Relation to ENDURE
What ENDURE will do in system case studies:

- explore a range of scenarios of innovative systems;
- based on expert knowledge, make a qualitative *ex ante* assessment, comparing these systems between them and with the existing ones for multiple criteria (including of course the effect on multiple pests' incidence);
- identify more specifically knowledge gaps and additional research required for a given scenario.

What ENDURE will not do: actually develop the most promising systems that will have emerged from the above scenario building and assessment phase. This development will need additional effort from the European research community.

Additional topic identified in ENDURE:

Exploring IPM solutions for controlling pests and diseases in greenhouse productions under warm climate facing energy crisis and global changes.

Greenhouses represent a widespread production system worldwide whose acreage is rapidly increasing and which contributes to a significant part of the fresh food production. There is a strong pressure for reducing or eliminating pesticide use in these cropping systems.

Greenhouse systems offer the possibility to better control the crop environment, which can be exploited for pest management. It is also a system where biological control has proved to be most successful. Taking advantage of this situation, quite satisfactory solutions have been devised under cool temperate climate.

In contrast, under Mediterranean conditions, high amounts of pesticides are still used and achieving sustainable IPM schemes has often proved problematic. Invading pests, often coming from southern regions, can rapidly disrupt existing schemes[1].

Furthermore, evolutions in greenhouse technologies are currently discussed to address plant physiology and energy issues. These evolutions will have strong implications for pest control, which have not yet been much considered.

ENDURE had planned to use the systems approach to explore the challenges that invading pests, climate change and low-energy technologies will address to crop protection under greenhouses. Unfortunately, because of funding limitations, the Executive Committee had to make the decision not to implement this additional system case study.

[1] Inappropriate control of invading pests in greenhouses may facilitate their acclimatization and further diffusion under European conditions