C-IPM Coordinated Integrated Pest Management in Europe

Strategic Research Agenda for IPM in Europe

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Why a SRA for IPM?

To date there is not any comprehensive document that summarises key aspects of IPM R&D in Europe in terms of:

- Overlaps
- Gaps
- Current and future challenges
- Possibilities for transnational coordination

General objectives of the SRA?

- To find out IPM research overlaps and gaps, to avoid duplications and create opportunities for better coordination
- To identify future challenges for European crop protection and to create a joint European vision for IPM in agriculture
- To enhance pre-existing activities and establish new links between research programmes and initiatives towards coordination of IPM R&D in Europe
- To feed emerging research demands that address key challenges through national and European programmes.

How did we construct the document?

- Mapping of existing national research programmes and infrastructures on IPM

- Identification of challenges and future research needs

- Drafting of the SRA
  - ***A long drafting procedure*** (almost a dozen of draft versions) with internal (Ex-Com) and external (public) consultations (inputs from stakeholders and resource groups; 267 in total)

Construction and implementation of the SRA

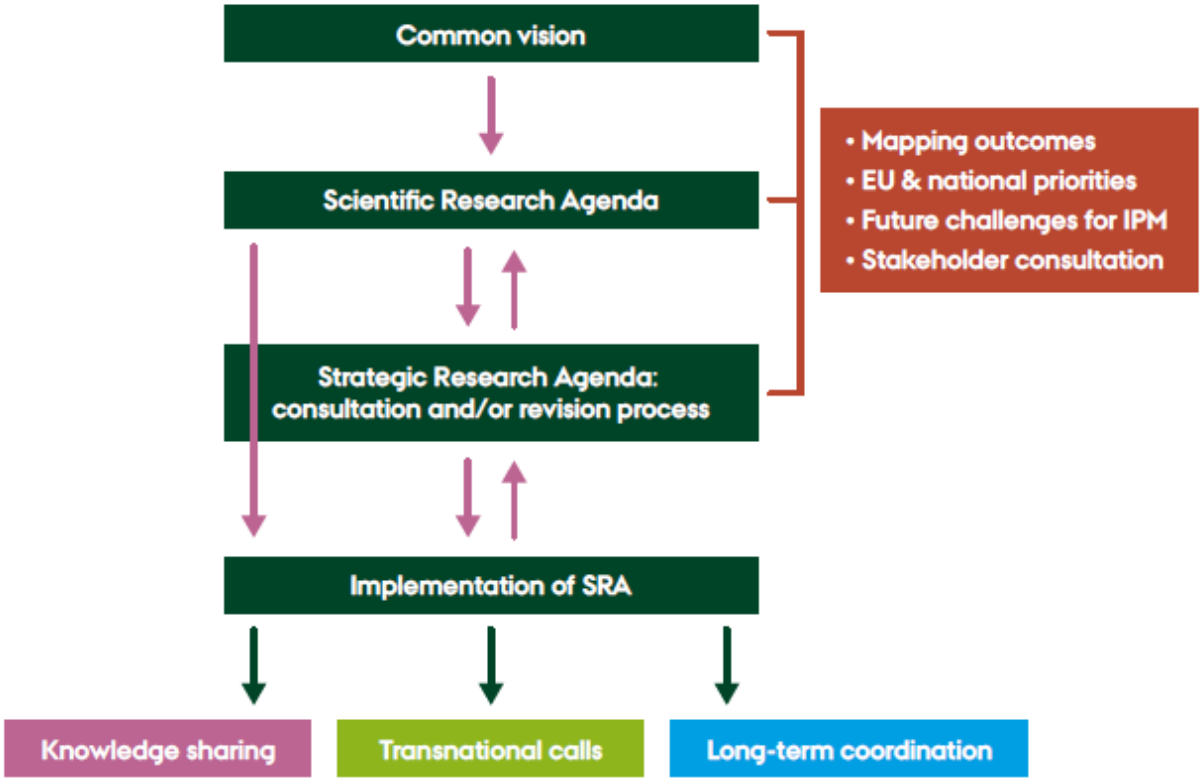


Figure 2. C-IPM activities contributing to the Strategic Research Agenda.

Public consultations

- First public consultation: Until February 2015
- SRA workshop (18 March 2015): 70 people from 20 European countries critically discussed the overall content and the comments received during the first public consultation
- Second public consultation: Until September 2015

The SRA and its executive summary

What the SRA contains?

European legislation and the challenges for sustainable agriculture

- EU agriculture in the transition phase (Directive 2009/128/EC) from conventional crop protection to IPM systems
  - Increasingly higher need of non-chemical solutions
- There are two major concerns:
  - The speed of pesticide withdrawal (Regulation 2009/1107/EC) >>>> the pace of IPM tools' development
  - BUT a wide range of IPM tools are already available although their adoption is not always done

IPM adoption challenges

- Mandatory (IPM general principles) vs. voluntary (crop-specific guidelines) adoption
- Few valid & economically feasible alternatives to chemicals (arable crops)
- The low cost of pesticides, lack of pesticide risk perception & short-term thinking
- A very heterogeneous geographic and climatic conditions across Europe (TFI on wheat in Denmark vs. TFI in the UK or Ireland)
- Difficulty in communicating IPM due to its multifaceted approach
- Lack of proper knowledge transfer between research and practical management (only a few advisory services)

Role of policy

- Mandatory (IPM general principles) vs. voluntary (crop-specific guidelines) adoption: *contradictory to IPM adoption? How to tackle them?*
- Lack of socio-economic research to understand factors hindering IPM adoption
- Development of and simplified registration process for biocontrol products

Consumers and communication

- The purchase behavior of consumers does not always reflect the attitude and concerns of the public on environmental side-effects from agricultural production

- Retail chains establishing their own rule on MRL maybe counterproductive to IPM concept

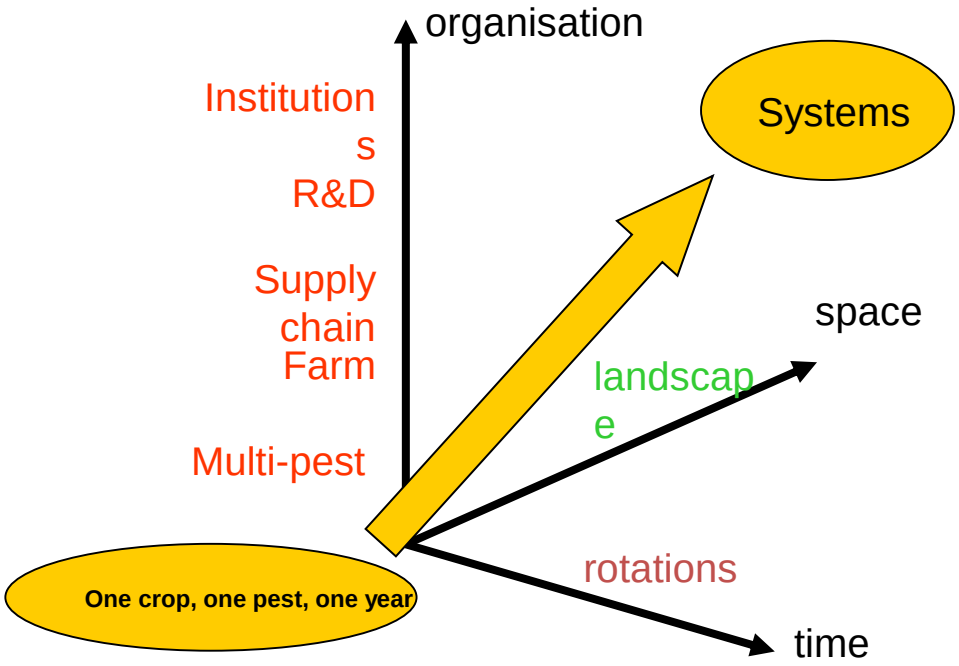
- Better information, training, demonstration and communication, with clear and simple messages help promote IPM

Role of research

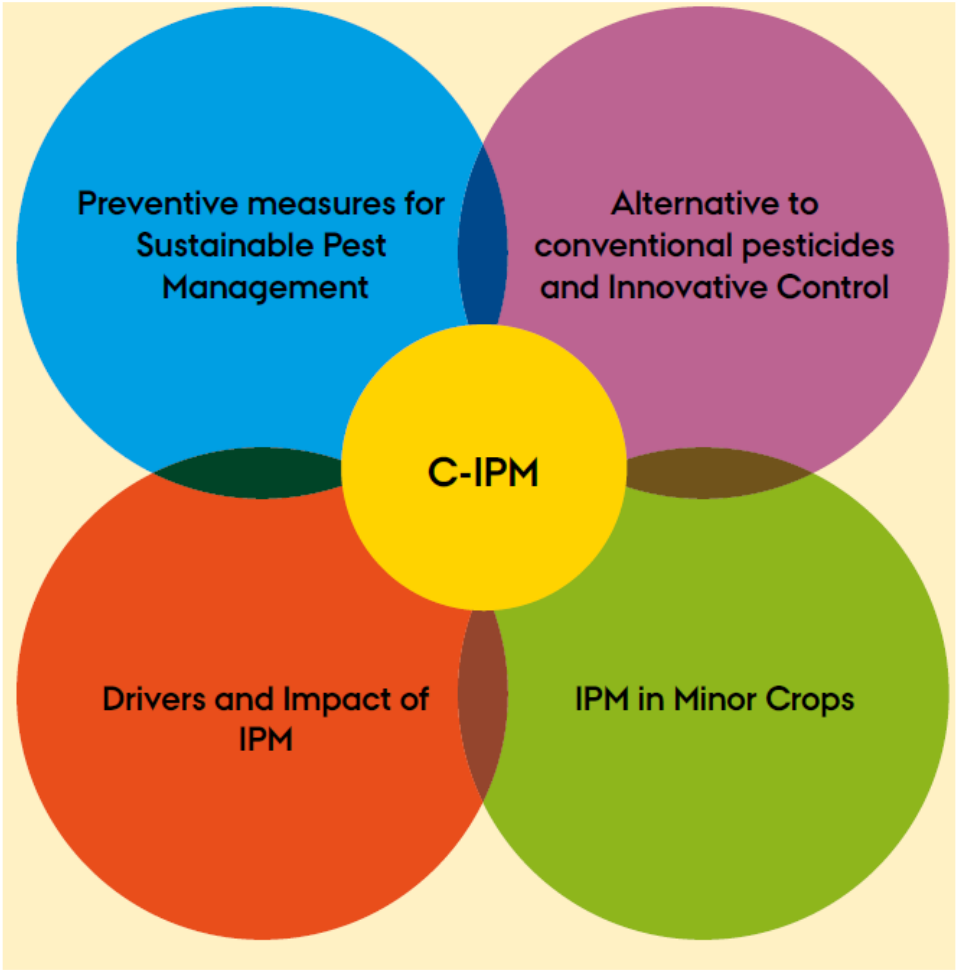
- Development of novel and reliable IPM tools and improvement of those already existing ones
- Focus on socio-economic and multidisciplinary research (consider the systems challenge)
- Advisory services to bridge the gap between research and practice
- Research based on “participatory approach” (co-innovation)

Role of research

The « systems » challenge



Four core-themes of the SRA



Preventive measures for sustainable pest management (core theme A): Background

- Prevention is the core of resilient cropping systems
- Need to design pest suppressive field/landscape that allow to reduce reliance on pesticides (sustainable and durable deployment of genetic materials via best agronomic practices)
- Emphasise any means that allows to reduce potential pest attacks on our cropping systems

Preventive measures for sustainable pest management (core theme A): Research needs

- Develop new phenotyping and screening methods to breed varieties for specific climatic conditions of Europe
- Build strategies that promote durability of crop resistance
- Improve the knowledge on endophytes and their introduction on/into seeds and planting materials (resilience)
- Enhance diversification of cropping systems

Preventive measures for sustainable pest management (core theme A): Research needs

- Improve early detection and identification tools, in terms of sensitivity and specificity
- Support modernisation of the monitoring and regulatory systems for pests (scientific infrastructure and advisory system)
- Develop, improve and implement pest monitoring systems at large scale (landscape level), including non-agricultural areas

Preventive measures for sustainable pest management (core theme A): Research needs

- Put in place EU-regional-wide harmonised monitoring and forecasting systems (for regions facing common pest problems)
- Implement web-based tools and promote data sharing -- coming from the harmonised monitoring activities from different areas of Europe
- Develop quantification methods for pest damage to crops to set up a reliable/robust threshold level
- Investigate sustainable crop protection strategies to address minor use issues on major crops.

Alternatives to conventional pesticides and innovative control (core theme B): Background

- Develop non-chemical tools and complement them with available chemical solutions to ensure a long term durability and sustainability of IPM (substitution is not a priority)
  - Mechanical weeding
  - Robotic weed control,
  - biocontrol etc.

- Focus on precision agriculture to optimise the use of pesticides (site-specific application of pesticides and drift reduction)

Alternatives to conventional pesticides and innovative control (core theme B): Research needs

- Foster development and adoption of biological control in arable crops
- Focus on the role of non-crop habitats on pest development and spread
- Promote co-operation between organic farming and IPM to promote the development of new innovative and biological control tools
- Transfer scientific knowledge into practice, taking into account development of bio-pesticides

Alternatives to conventional pesticides and innovative control (core theme B): Research needs

- Monitor pest resistance development to pesticides and put in place strategies to slow down or prevent it
- Identify and assess parameters that reduce or enhance multi-trophic relationships in order to consider them for IPM programmes
- Develop precision sensing and spraying for optimised use of pesticides
- Evaluate the possible use of nanotechnologies in plant protection

Alternatives to conventional pesticides and innovative control (core theme B): Research needs

- Develop effective application methods of BCAs in order to increase their efficiency in field crops

- Promote knowledge sharing on existing biocontrol research programmes and disseminate information about successfully implemented field application of such methods.

IPM in minor crops (core theme C): Background

- A wide range of crops grown in Europe (often high-value crops) suffer due to the lack of effective plant protection products (high economic impact)
  - Because new crops were introduced
  - Because many previously available pesticides have been withdrawn from the market

- IPM can serve as the basis to develop long-term solutions to reduce the reliance on pesticides also within the context of minor crops

IPM in minor crops (core theme C): Research needs

- Harmonise all ongoing activities related to minor uses (ongoing effort via MU coordination facility)
- Create a European inventory of minor use problems and available solutions and rank them in order of importance
- Encourage knowledge-sharing with stakeholders on a selected number of topics
- Develop alternative solutions to pesticides, based on inventory and interests of international stakeholders

IPM in minor crops (core theme C): Research needs

- Liaise with non-European programmes on minor uses in order to share knowledge and solution-finding
- Foster activities and initiatives related to breeding for resistance for minor crops
- Re-investment in research for minor crops

Drivers and impact of IPM (core theme D): Background

- Farmers' choice to (not)adopt a given practice depends from two major aspects/constraints:
  - Technical
  - Socio-economic (i.e. whether a given practice fits within the entire food chain)

- Socio-economic drivers that lead to a success/failure of a given practice need to be identified in advance in order to take appropriate corrective actions

Drivers and impact of IPM (core theme D): Research needs

- Foster interdisciplinary research to work at the level of the entire food chain
- Develop research programmes based on multi-actor perspectives and transfer stakeholder input and research results to end-users immediately
- Perform multi-criteria assessment to understand how changes from conventional to IPM systems affect environmental, economic and social criteria including farmer behavior and constraints

Drivers and impact of IPM (core theme D): Research needs

- Encourage research on “lock-in” and transition phase to identify possible mechanisms of transition to IPM

- Communicate promptly to stakeholders about success stories of IPM based on local or regional experiences and focus on how IPM can be implemented at scales beyond the farm

- Identify socio-technical and socio-economic impediments behind IPM implementation and means to cope with them

Drivers and impact of IPM (core theme D): Research needs

- Develop quantitative indicators for implementation of IPM principles
- Encourage qualitative research to understand how the process is perceived and what are the success stories or obstacles of adopting new IPM practices
- Involve demonstration farms and open farm days for the dissemination process and convey clear messages to consumers, retailers, advisers, suppliers and NGOs about the added value of IPM practices.

Collaboration with other ERA-Nets/JPIs

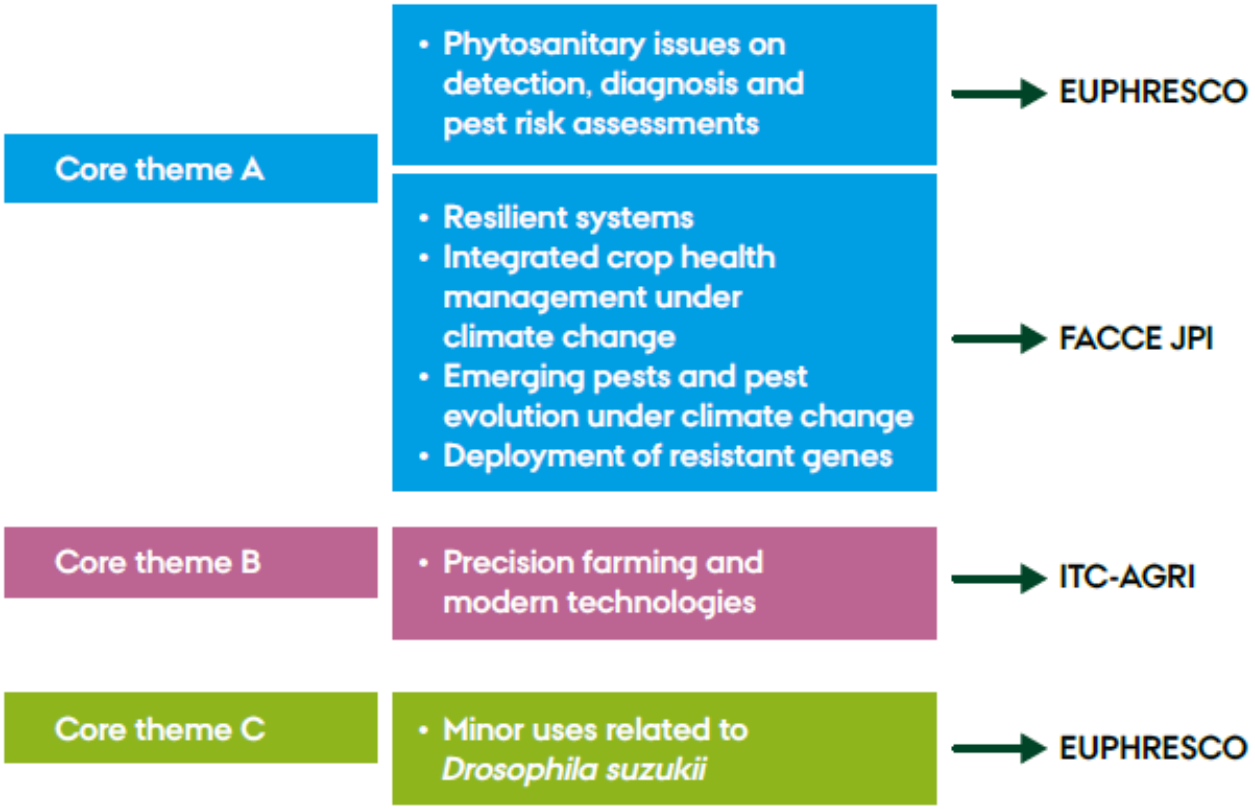


Figure 4. Main thematic complementarities between C-IPM and other ERA-Nets and JPIs.

International collaboration

- IPM covers a broad range of topics and many challenges in this field are common on a global scale
  - Resistance development problems
  - Obstacles to IPM adoption
  - Minor Uses

THANK YOU

FOR YOUR ATTENTION

ANY QUESTIONS...?