

Public research on IPM in Italy

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Plant protection scenario

Modern management of plant protection dates back from the '50s

From '50s to '60s

- Mechanisation of main cultural practices
- Simplification of crop rotations
- Dramatic increase of pest and disease issues
- Spreading of scheduled treatments with high rate contact fungicides and neurotoxic insecticides
- Spreading of chemical weed control for weed

management

in most field crops

Main topics of research

From '50s to '60s

- Biology of insects and application of classical biological control
- Biology and epidemiology of diseases and weeds, and early proposals of rationalization of intervention timings
- Testing of new insecticides, fungicides and herbicides

Plant protection scenario

From '70s to '80s

- After “Silent spring” growing attention of public opinion to environmental and toxicological issues
- Appearance of the limits of classical biological control and negative effects of scheduled programmes
- Spreading of the concept of “intervention threshold” and need of monitoring of harmful species and their antagonists
- Spreading of IPM (collaboration between University and regional plant protection services)

Plant protection scenario

From '70s to '80s (continued)

- Introduction of innovative pesticides (IGR insecticides and systemic fungicides)
- Occurrence of early cases of resistance to pesticides
- New issues in weed management (weed shift, water pollution)
- Spreading of IWM (based on weed biology, cultural practices
herbicide features, environmental conditions)

Main topics of research

From '70s to'80s

- Integration of chemical and biological control
- Insecticides and fungicides selective to beneficials
- Evaluation of “intervention threshold”
- Improvement of IPM programs (IPM national project)
- New and non-conventional strategies of disease management (curative and/or after symptoms appearance)
- Development of studies on weed biology and ecology; weed-crop interactions, herbicide rate reduction and optimisation, herbicide-environment interactions, non-chemical tools for weed management

Plant protection scenario

From the '90s

- Success of IPM involving crop growers in different Italian areas
- Difficulties in conveying the meaning of IPM and getting commercial advantages
- Spreading of resistance issues
- Continuation of the research, but gradual reduction of public fundings

Main topics of research

From the '90s

- Characterization of the functional biodiversity
- Forecast modelling and decision support systems
- Prevention and management of resistance to pesticides
- Pheromones for monitoring and control
- Biology and epidemiology of antagonistic organisms, biological control and self-defence mechanisms of plants from pathogens
- Advanced diagnostics
- Micotoxins
- Pesticide-environment interactions
- Development and testing of crops tolerant to herbicides

Plant protection scenario

Present situation

- Increased area of application of integrated plant protection (integrated production)
- Need to reduce cost of plant protection
- More attention of the large-scale retail trade to low residue levels of pesticides than to integrated production
- Reduction of pesticides available on the market after the introduction of EU pesticide revision system
- Growing importance of alternative means of control (microbiological products, pheromones, etc.)
- Growing importance of environmental issues

Research topics to be continued or developed

- Biology and management of species of new introduction (e.g. *Diabrotica*, *Ambrosia*, etc.) or of new crops
- Integrated management of resistance to pesticides
- Forecast modelling
- Agronomical practices and alternative methods of control (microorganisms, natural products, behaviour modifiers, allelopathic plants, suppressive crops, genetic and induced resistance to pest and pathogens etc.)
- New strategies of control after pesticide withdrawal
- Practical application of induced resistance to herbicides
- Optimisation of pesticide application
- Measures to prevent environmental pollution of pesticides

Development of integrated production

Need of financial support

Research

- Testing of different integrated production options, at cultural system level
- Development of “problem-solving” interdisciplinary projects, related to priority issues

Production

Improvement of professional skill of crops growers on agronomical aspects, pesticide features, pest, diseases and weed biology