Biocontrol in Organic Agriculture and its influence on Conventional Agriculture

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Biocontrol Products

- Sourced from nature
- Have a low impact on human health and the environment
- Effective for management of plant pest and disease
What “innovative green tools” are currently available from the Biocontrol industry?

**Microbials**
- Viruses, Bacteria & Fungal Pathogens
- Found naturally in soil, used in food, feed & and unregulated uses

**Macrobials**
- Predators, parasites & nematodes
- Living organisms found to naturally protect crops

**Semiaochemicals**
- Pheromones, Plant volatiles
- Communication tools found in nature with no killing effect

**Natural & Biochemical Products**
- Botanicals & Other Natural substances
- Products derived from nature

*Not usually regulated as PPPs*   
*Regulated as PPPs*
European Biocontrol market split
Where do biological inputs fit within regulation?

Organic Regulation

Sources of similar substances
- Biofertilisers
- Biostimulants
- Plant Strentheners
- Soil Conditioners
- Probiotics
- Natural remedies
- Food & feed additives
- Food

PPP Regulation
- Biopesticides
- Predators
- Parasites
- Nematodes
- Endophytes
- Mass trapping
- Monitoring
- Fermentation products
- Biosimilars
- Biostimulants
- for biotic stress

Innovations
Safety of inputs sourced from nature

• It is natural therefore it is safe
• Just because it is natural does not mean it is safe
• Proportionate assessment of the risks of introducing something into the environment needs to be assessed for human and environmental effects
• However coming from nature means we already possess some relevant historical knowledge and this is better than any models and should be used
• A level of confidence in those observed compartments can be established
• Problematic natural substances are avoided
Factors affecting adoption: Macro factors

• Political and societal needs favour the use of bioprotection (environment, biodiversity, food safety)
• Increased legislation of chemicals will stimulate development of alternative solutions
• Increased demand for organic agriculture is also an opportunity for bioprotection
• A major driving force is the requirement of retailers and consumers for residue-free food
• The biocontrol industry has reached a sufficient level of maturity enabling solid growth in the near future
The value of biocontrol to policy makers, regulators, and food value chain including society and farmers

Seen as favourable crop protection solutions
Learning from successful agricultural systems

**Organic**
- Holistic Systems based
- Use of IPM principles
- In harmony
- Trust
- Certification

**Conventional**
- Yield focus
- Redefinition of IPM
- Constant correction
- Silver bullets
- Resistance

Movement forced
Policy changes
External influences
Unsustainable in current form

Unsustainable in current form
Vital to Organic & Modern Conventional Agriculture:

Integrated Pest Management

working with and not against nature
Role of Biocontrol Products

Modern Agriculture
- Satisfy food security issues
- Reduced impact on the environment
- Reduced risk for human health

Biocontrol Products
- Increasing role in modern agriculture
- Regulation should not preclude these products from being available to growers
- Regulation should be proportionate to the risks posed
- If low-risk appropriate incentives should be implemented
- Are needed to allow IPM to be implemented
- Are needed to prevent development of resistance
- Satisfy increasing societal scrutiny of inputs
Rate of growth of biocontrol market in Europe

- 22.8% for 2014 vs 2013
- 14.0% for 2015 vs 2014
- 20.0% for 2 years Average
Future Crop protection led by Organic Agriculture

- Founded on prevention and monitoring
- Intervention only when needed
- New tools all nature-based solutions
- Biopesticides, biostimulants, biofertilisers
- Resilient soils and resilient plants (microorganisms, seed treatments)
- Automation, ICT tools and intelligent equipment minimise use of products and exposure
- Holistic approach
- Interventions upon a licensed PCA written recommendation when and if required
Threats to Organic use of Biocontrol

- Flow of information
  - General principles
  - Local tailoring to be fit for purpose

- Lack of harmonisation and functioning of regulations
  - Global and Regional harmonisation required
  - Cross sector harmonisation
  - Agricultural input harmonisation
  - Smart integration of regulations eg 1107/2009 & 834/2007
Examples of registered products being avoidably delayed to organic producers

- Laminarine
- Sheep fat
- Diatomaceous Earth
- Garlic Extract

- Microbials
- Plant extracts
- Compromise needed

Application for organic use at time of Annex 1 listing in 1107/2009
How will the Biocontrol industry of the future look?

- SMEs
- Large multinational and consolidated bio companies
- University Spin-off companies
- Management buy-out companies
- Co-operatives
Responsibilities of Biocontrol industry

- Ensure product quality and performance
- Disseminate information
- Engage with the entire food chain
- Satisfy farmer needs
Concluding remarks

Growth of bioprotection market

Growth areas:

• Microbials
  - Bacteria, for disease control, for nematode control
  - Antagonistic fungi, for disease control
  - Entomopathogenic fungi: slow growth
  - Baculoviruses: increased use in orchards and vegetables

• Macrobials
  - EPNs: orchard, vegetables, amenity areas
  - Improved application techniques

• Semiochemicals & Natural Products
  - More specific niche solutions
  - Fermented products including Metabolites
  - Mixtures

• Annual growth will continue with 15-20%

• Bioprotection will become a major part of crop protection means: 50% in 2030 and of course for organic even higher
From nature with confidence

Thank you