



Science For A Better Life

Biologics – a key element in integrated crop solutions

Matthias von Erffa

European Parliament, Brussels | 5 December 2013

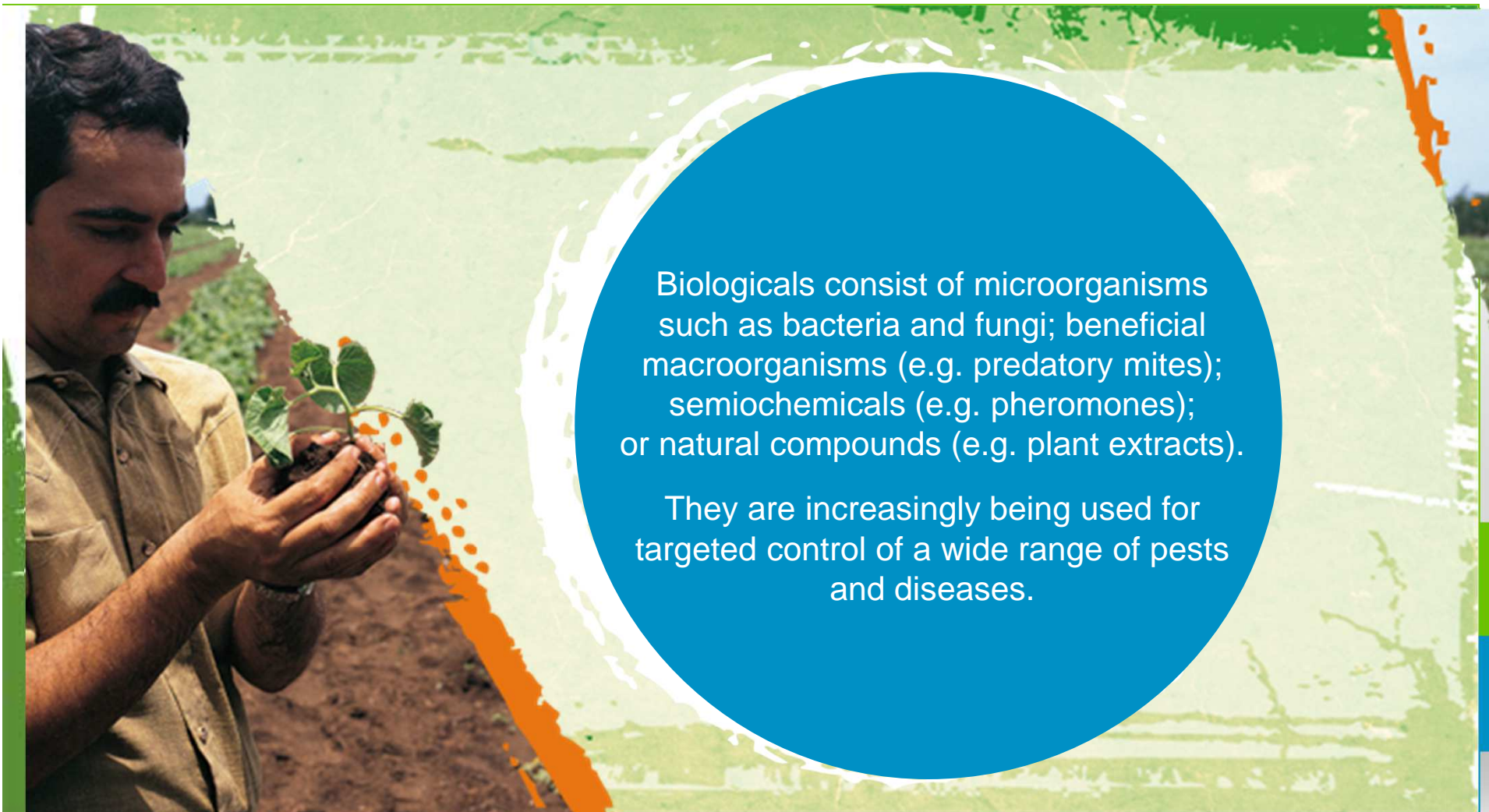


Agenda/ Content

- **What are Biologicals?**
- Integrated Crop Solutions
- Biologicals as part of integrated approach



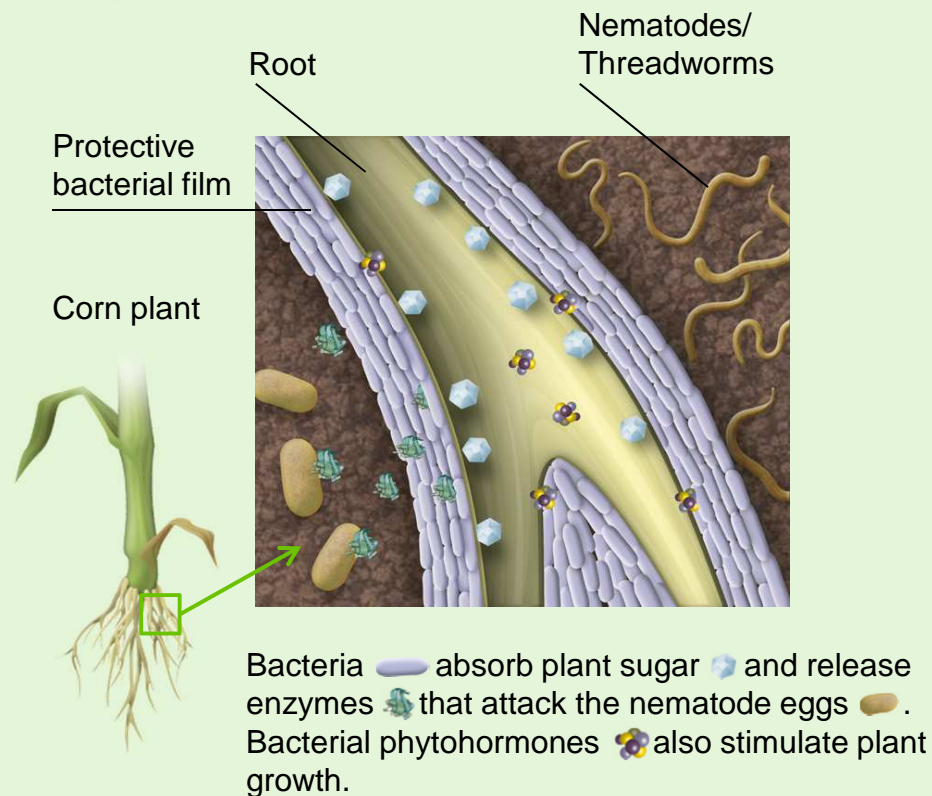
What are Biologicals?



Biologicals consist of microorganisms such as bacteria and fungi; beneficial macroorganisms (e.g. predatory mites); semiochemicals (e.g. pheromones); or natural compounds (e.g. plant extracts).

They are increasingly being used for targeted control of a wide range of pests and diseases.

Example of a mode of action



- Bacteria (*Bacillus firmus*) form a thin film around a young root before voracious threadworms can discover the new source of nutrients.
- As a result, the nematodes have no chance to suck up sugar or amino acids. The bio-protector also forms enzymes and produces phytohormones.



Agenda/ Content

- What are Biologicals?
- **Integrated Crop Solutions**
- Biologicals as part of integrated approach

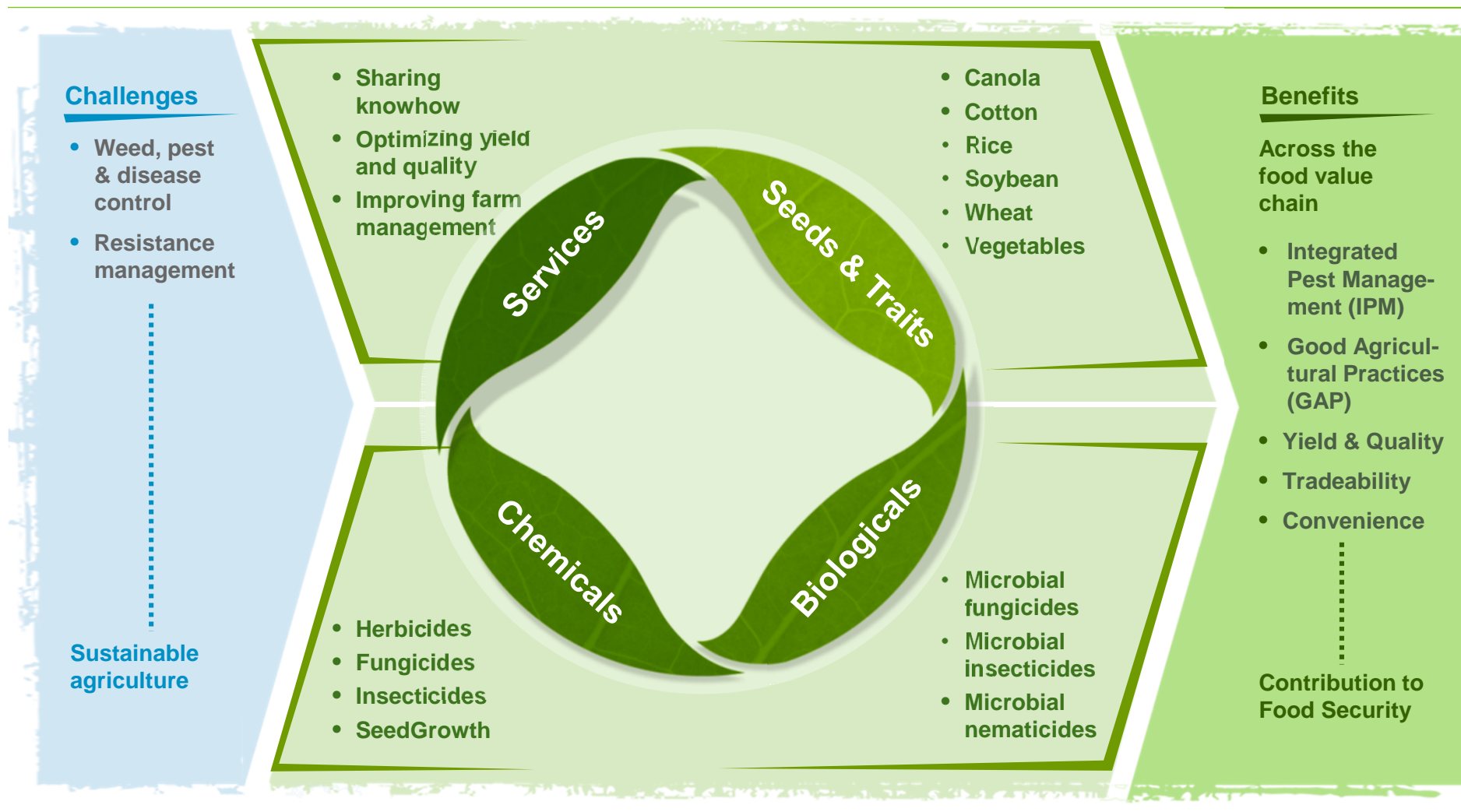
Integrated Crop Solutions: The context of food market trends



- Demand for **safe** and “**sustainably-sourced**” food
- Stronger focus on **food quality, healthy nutrition** and **well-being**
- Year-round **demand** increases global trade of **fresh produce**
- **Global retailers** expect **sustainable agricultural production**
- Rising importance of **partnerships** along **food value chain**
- **Innovation** needed to drive **integrated crop solutions**

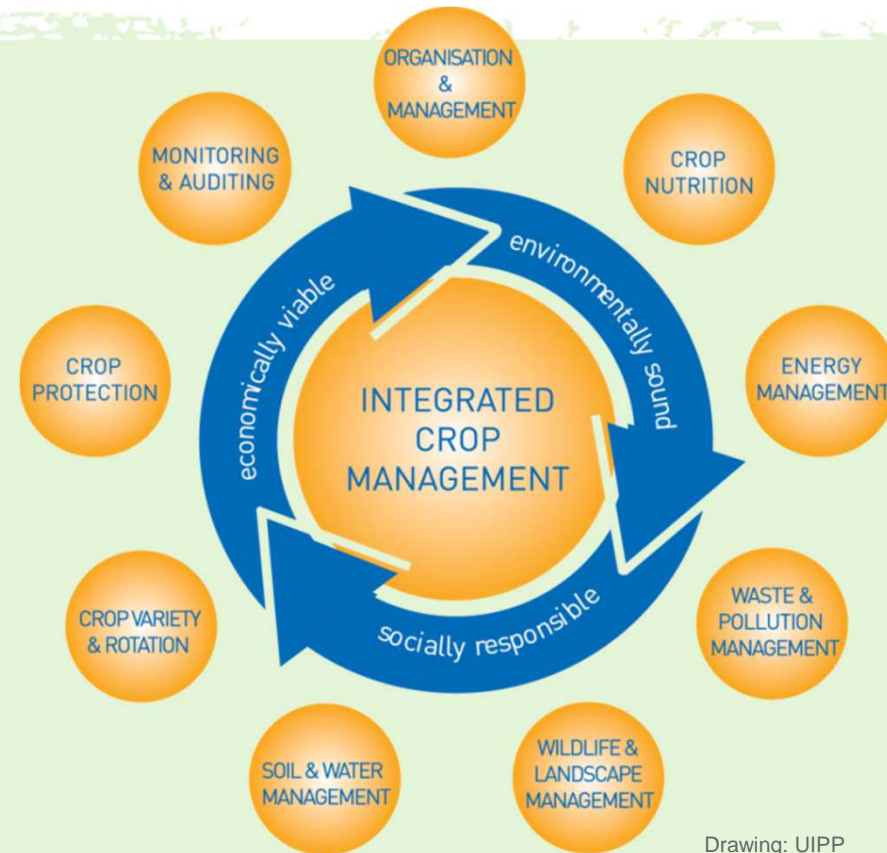


Integrated Crop Solutions meet the challenges of today



Integrated Crop Management

- Integrated Crop Management **relies on non-chemical methods as first resort**, but it is not necessarily a low pesticide-input system.
- Growing healthy crops goes **beyond fighting weeds, pests and diseases** (general farm management, choice of crop/variety, crop nutrition, tillage...).
- Taking into **account interdependencies between different farming practices**.



A holistic approach is needed to understand and shape crop management adequately and in a sustainable manner.



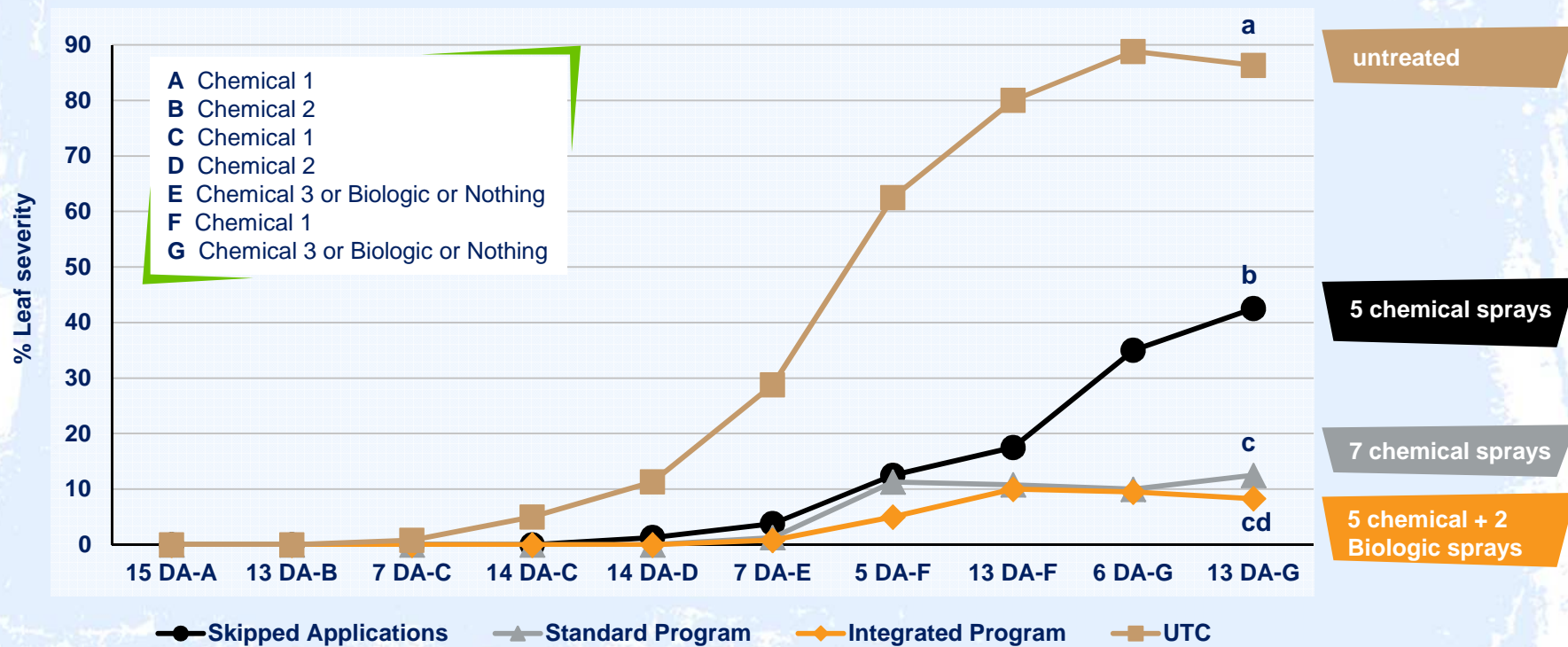
Agenda/ Content

- Integrated Crop Solutions
- What are Biologicals?
- **Biologicals as part of integrated approach**



Example 1: Integrated Spray Program on Grapes

Biologic program performs as well as all-chemical program on grapes



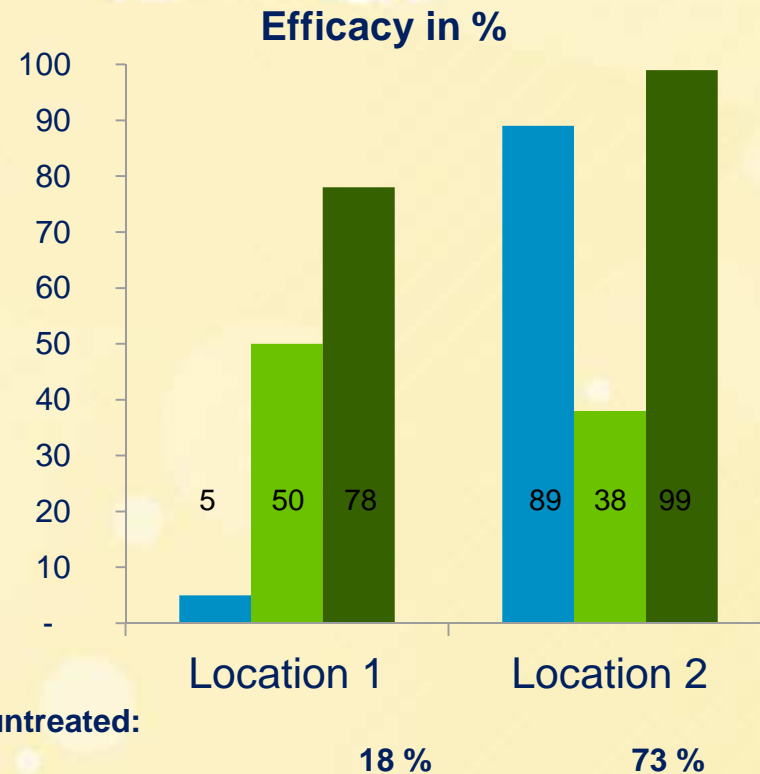
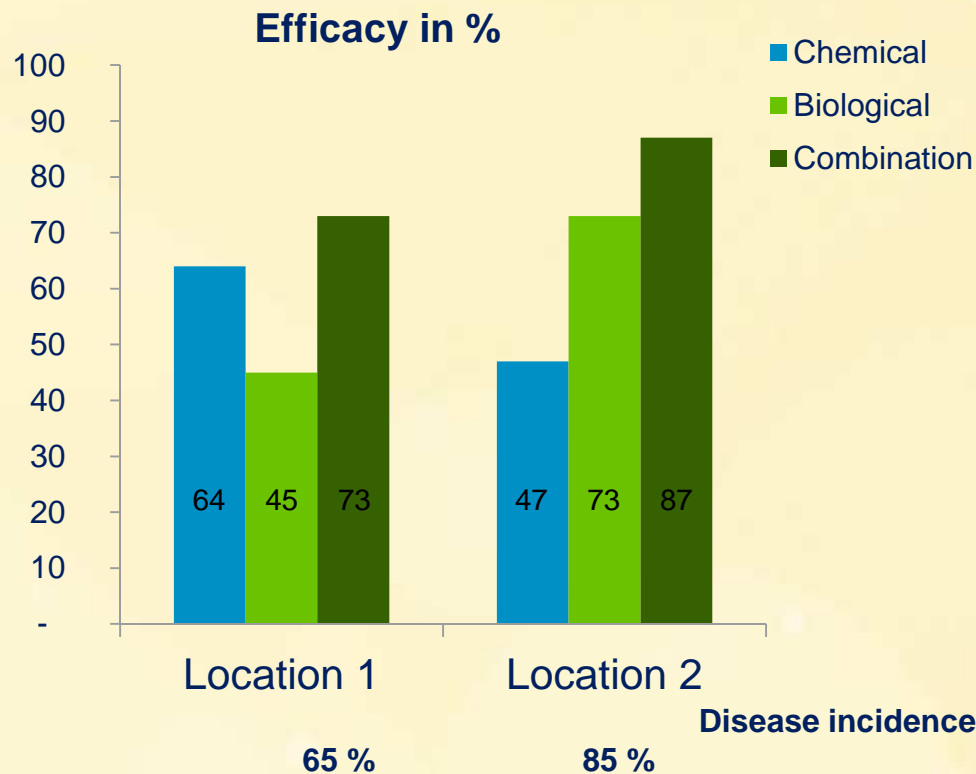
V. Fischer, Columbia Ag Research, Hood River, OR – 2010. Materials were applied using a CO2 handgun sprayer equipped with one D6 hollow cone nozzle per row delivering 70-180 GPA at 100 psi. Skipped Applications: no app at timings E & G. A = 5/19, B = 6/3, C = 6/16, D = 6/30, E = 7/15, F = 7/29 and G = 8/12. **Erysiphe necator*.(10-06-509)

Example 2: Integrated approach for control of white mold



Control of *S. sclerotiorum*: Carrots

Control of *S. sclerotiorum*: Green bean



Trials conducted by UNILET in France in 2006. The biological was applied soil directed at sowing; the chemical was a foliar spray.

Biologicals are becoming an additional tool in sustainable agriculture



Benefits for Growers, Consumers and the Food Value Chain

- Enhance integrated pest management (IPM)
- Improve resistance management
- Increase efficacy of spray programs
- Flexibility in use – short re-entry and pre-harvest intervals
- Properties that help increase yield, improve quality and tradeability of fresh produce





Conclusions

- Integrated Crop Management focusses on complementarity of solutions (chemical, biologics, decision support tools etc.).
- Targeted spray programs combining chemicals and biologics improve quality, market access and tradeability of fresh produce.
- Biologics form part of Integrated Crop Solutions and Management that contribute to sustainable agriculture by providing environmentally sound solutions and meeting high-quality and health requirements.
- Growing R&D efforts in this segment by Bayer CropScience and the whole industry-

Integrated crop solutions allow to offer differentiated solutions

