

# Understanding Sprayable biologicals

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Sean Loakes - Technical manager UK&IE

Marcel Hubers - Technical manager EU

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 Ornamentals

## BIOCONTROLS

Products based on naturally occurring materials that are used for biotic stress management; controlling fungal and bacterial diseases, arthropod pests, nematodes and weeds



## BIOSTIMULANTS

Any substance that is applied to plants, seeds or the root environment with the intention to stimulate the plant's natural processes, benefiting nutrient use efficiency, tolerance to abiotic stress or crop quality



DEFINITION OF

# Biologicals



## MICROBIALS

Viruses, Bacteria, Fungi  
and their metabolites



## NATURAL SUBSTANCES

**Botanicals:** Plant extracts  
and/or their metabolites,  
Essential or Vegetal oils, Terpenes

**Metabolites** produced by  
microorganisms and isolated

**Minerals & others:**  
Potassium salts of fatty  
acids, Maltodextrins,  
Diatomaceous earth, Sulfur



## SEMIOCHEMICALS

Natural or synthetic (chemically  
identical to natural)

Chemicals emitted by insects  
that act as messengers  
between individuals of  
the same species



## MACROBIALS

Beneficial insects, parasites,  
predators and pollinators



## NEW TECHNOLOGIES

Proteins & peptides

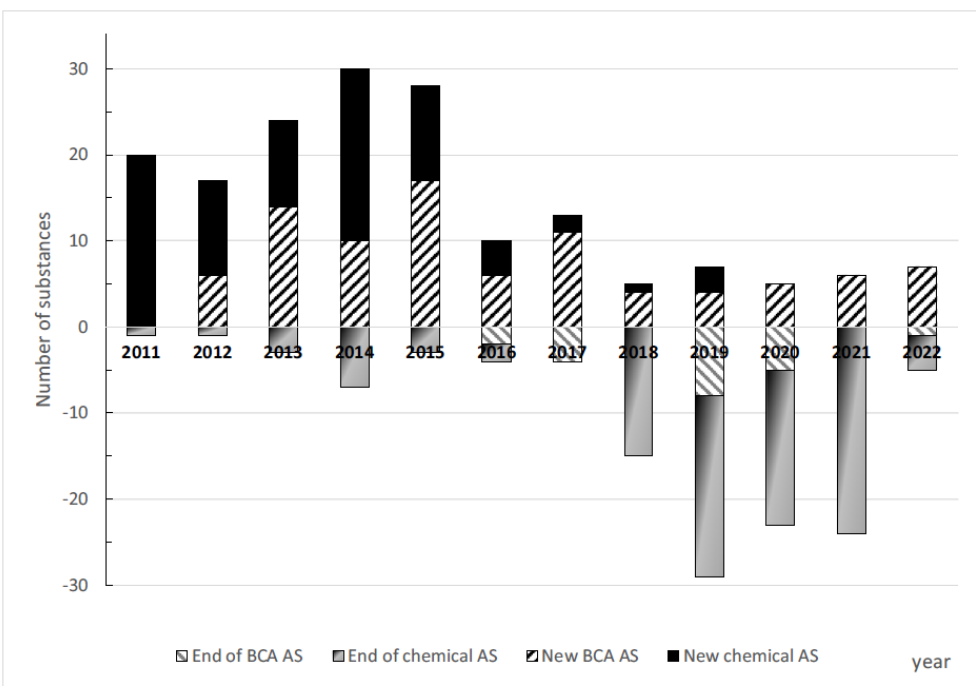
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# Biocontrol

## CLASSIFICATION

According to International Biocontrol  
Manufacturers Association (IBMA)

# The trend in EU



Annual net balance of AS

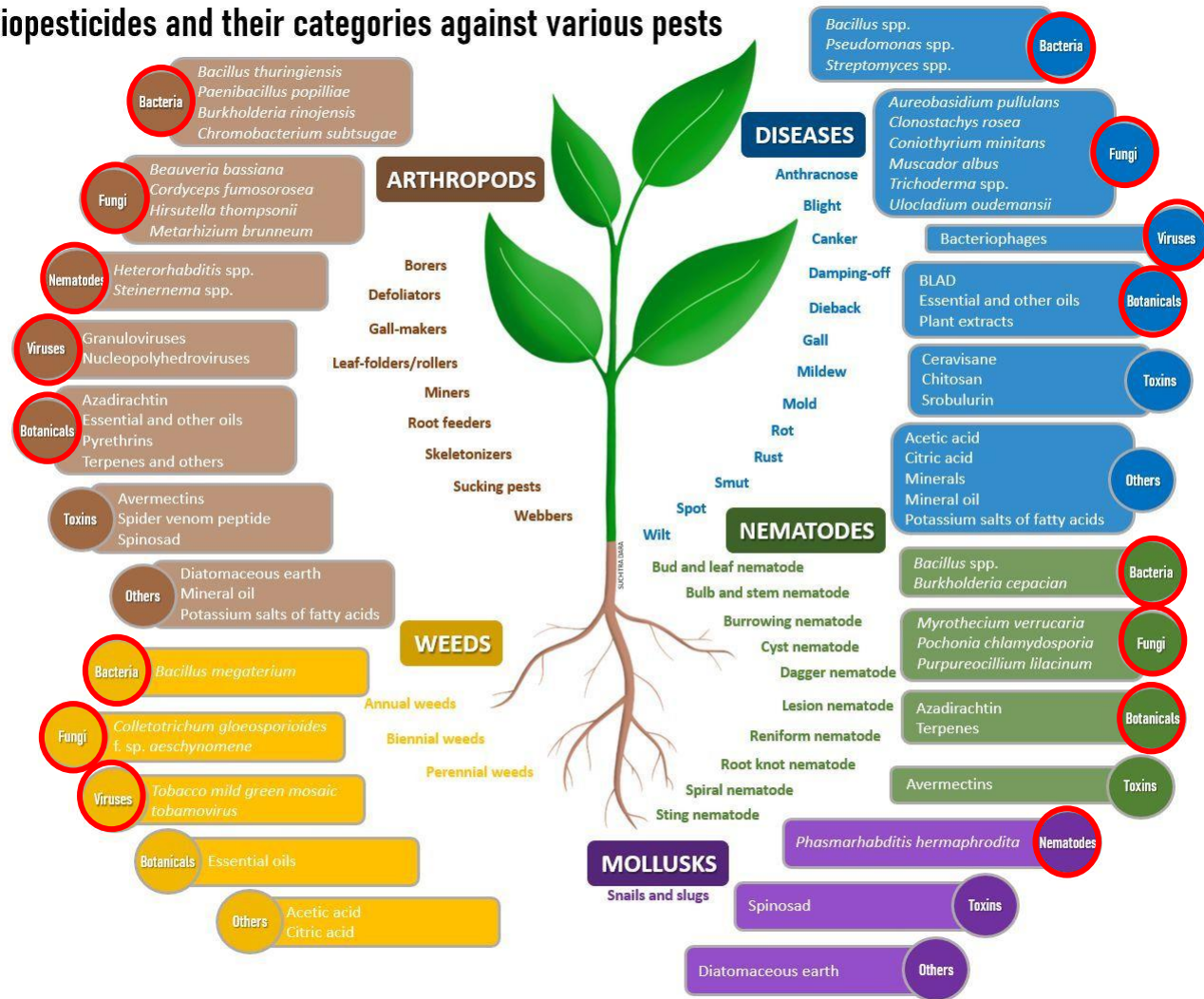
- Deep change in crop protection → shift to BCA AS
- But: substances are not replaced use by use
- Other ways of protecting crops is needed

Source: <https://link.springer.com/article/10.1007/s11356-022-24057-7>

# Challenges with biocontrols

- Most bio controls are based on micro-organisms:
  - (Climate) conditions influence **performance** (T, RH, UV)
  - Optimal conditions often the same as for disease
  - Often **preventative**
  - Non systemic → **application** technology is key!
  - Tank mixing not always possible
- Biocontrols are more specialized
  - **Knowledge** of pest/disease important
  - More applications or (tank)mixes needed
- Short residual effects

## Biopesticides and their categories against various pests



# Sprayable formulations

For **mass adoption** into grower programs, biologicals need:

Adequate **shelf life**

Superiour **formulation** (*blocked nozzles hurt coverage*)

To tolerate tank **agitation** and **forces** of spraying  
(*shere force a product of pressure at the nozzle tip*)

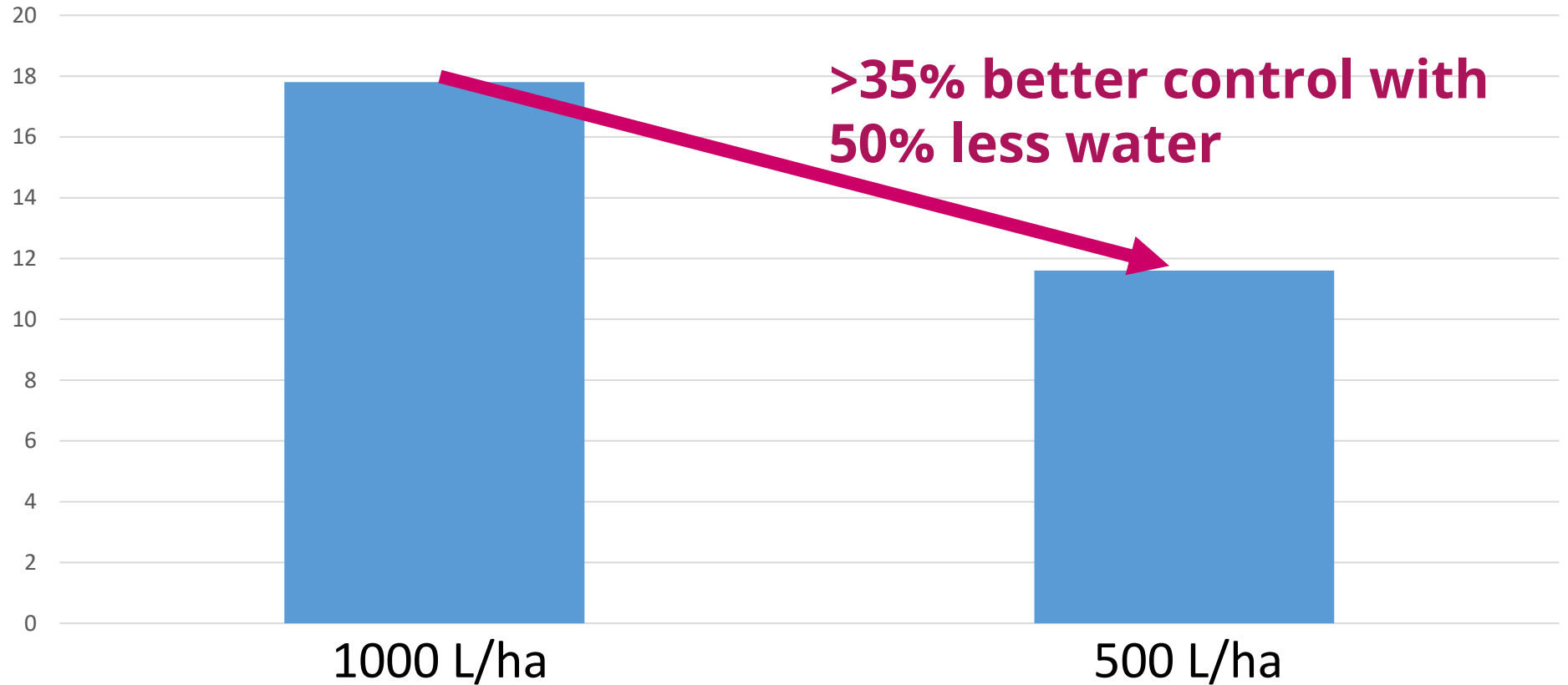
Physical and biological **tank mix compatability**



# Example: Effect of watervolume on performance of Taegro

% Severity powdery mildew in potted rose (7 days after last application)

1x Topas  
3x Taegro (370 g/ha)  
1 week interval



# Gaps in IPM systems – Current challenges

IPM system against Aphids not effective yet



Mealy bugs in Mandevilla



Cicadas




Weak performance of biofungicides against Botrytis



Virus????




**In which area do  
you need effective  
solutions?**



# What Biologicals do you need for Peat-free growing?



**Biggest barrier to  
YOU adopting  
biological solutions?**



**What is the next  
major threat  
– Pest or disease to  
your business?**

# Thank you for listening!

**Sean Loakes** – Technical manager UK&IE

[Sean.loakes@syngenta.com](mailto:Sean.loakes@syngenta.com)

**Marcel Hubers** – Technical manager EU

Watch out for the **Syngenta Industry survey** later this year to help support UK Ornamental growers

[www.syngentaornamentals.co.uk](http://www.syngentaornamentals.co.uk)