



Breeding Invertebrates for Next Generation Biocontrol

Bart Pannebakker – Coordinator
Laboratory of Genetics – Wageningen University
bart.pannebakker@wur.nl

Food security

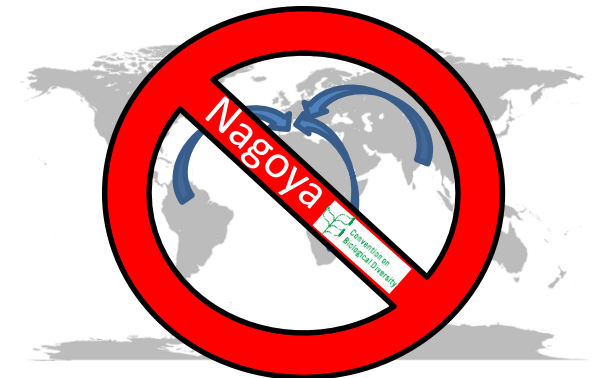
- Food security threatened by current & invasive pests
- Invertebrate pests destroy **20% of world food production** (€73 billion)
- Protection challenging
 - EU pesticide regulations



Biological control

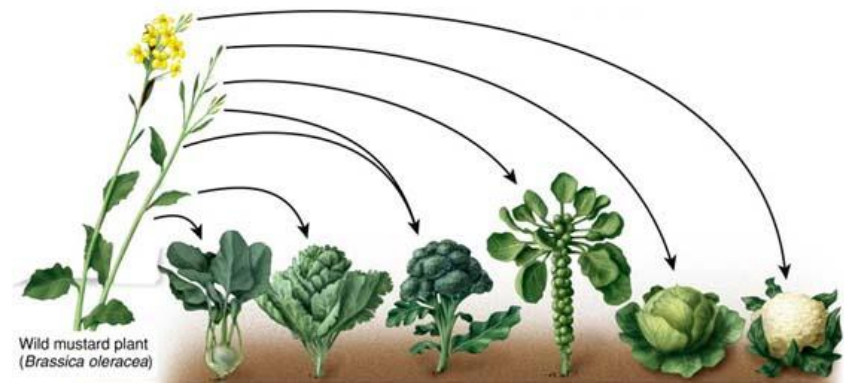


- Biological control: safe solution
- Often relies on imported natural enemies
- Regulations restrict import of exotic biocontrol agents
 - Biosafety concerns
 - Nagoya protocol
 - Access & Benefits Sharing
- Reduce dependency on imported natural enemies



Optimization

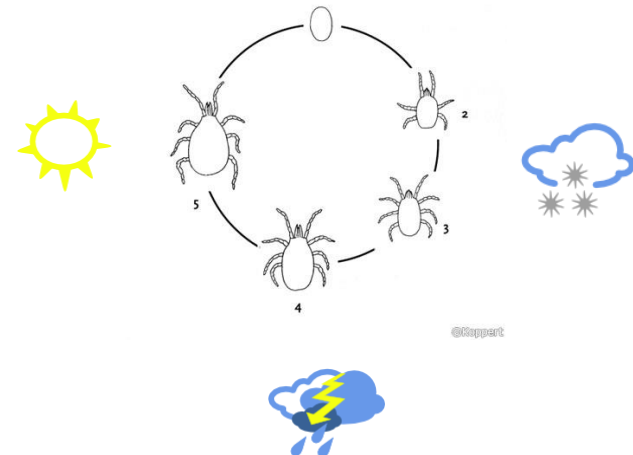
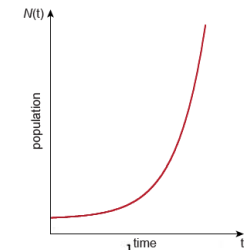
- Optimize existing and native biocontrol agents
- Exploit existing **natural genetic variation** to improve efficiency
 - Selection of strains from nature
 - Selective breeding



Traits to target



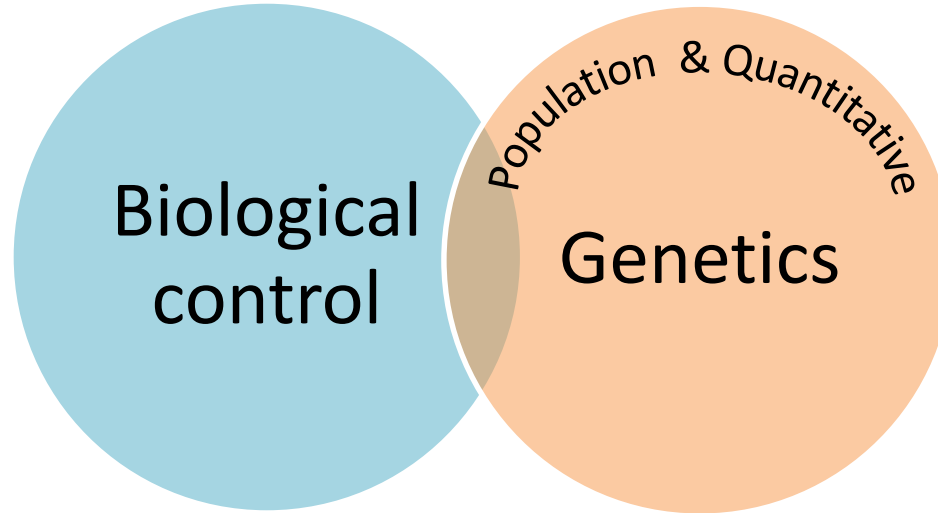
- System specific
 - Crop, pest, natural enemy
- Life-history traits are *key* to biocontrol
 - Reproductive potential
 - Environmental sensitivity
- Modelling studies



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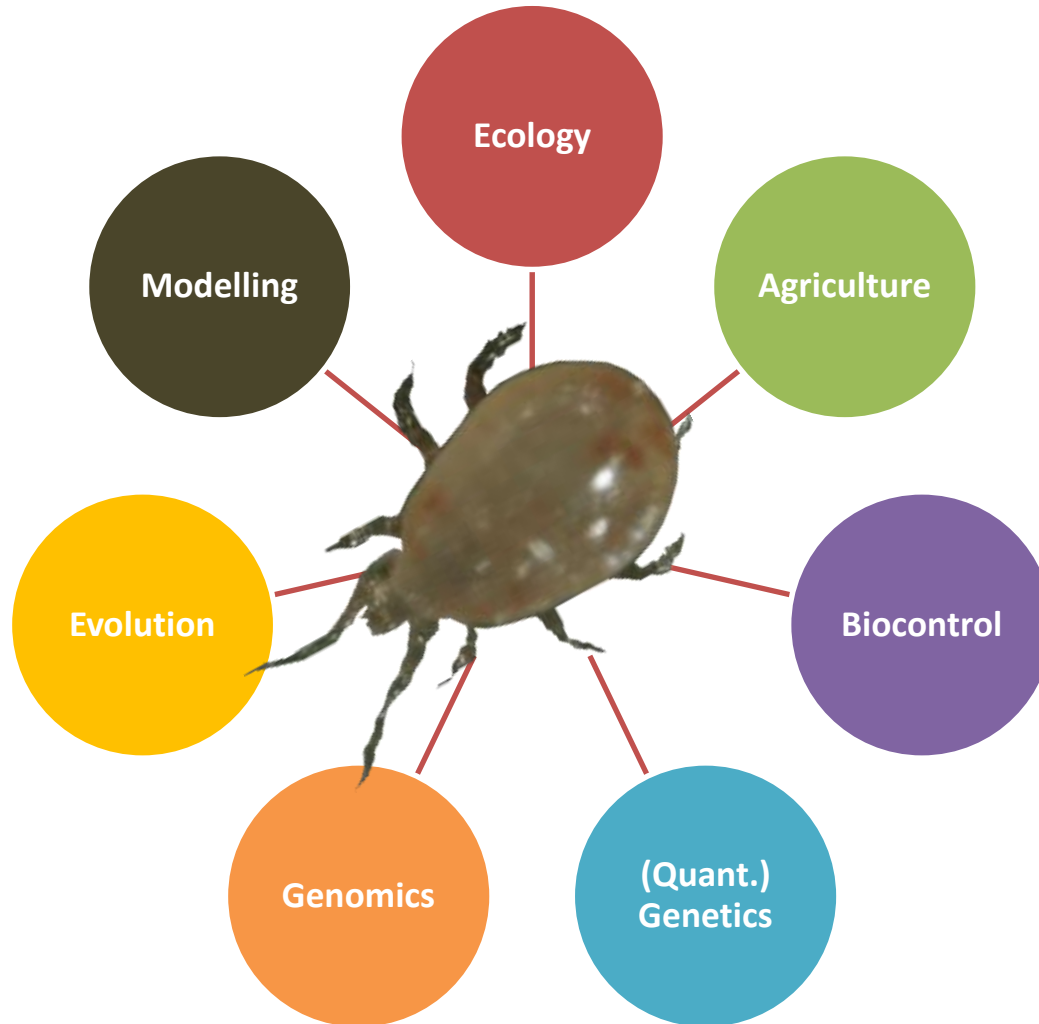
- Innovative Training Network for Early Stage Researchers
- Advance current knowledge on the use of natural genetic variation in biocontrol practice
- Enhance the application of (quantitative) genetic methods to invertebrate biocontrol
- Train young researchers in an extensive suite of interdisciplinary skills

Genetic improvement

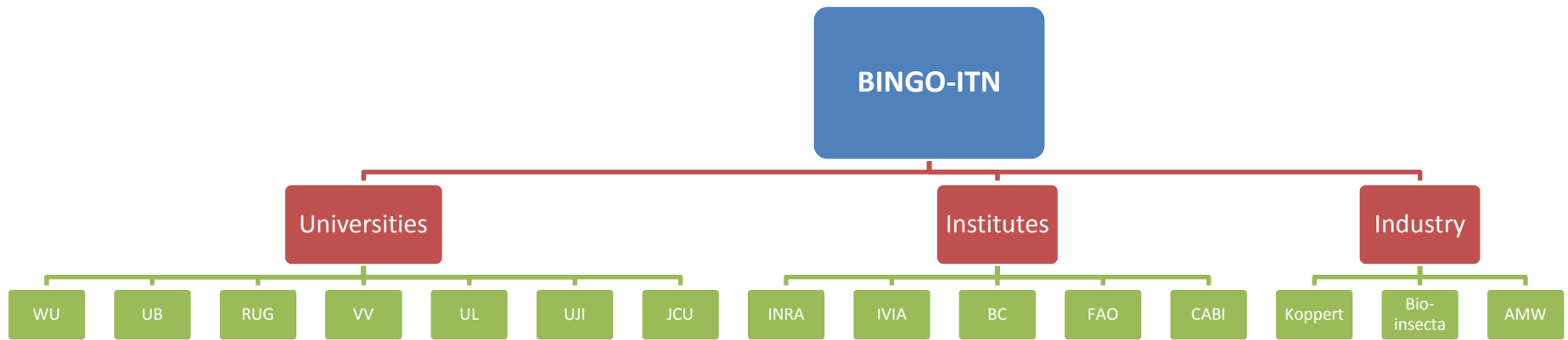


- Not a new idea, but... *timely!*
- Stricter legislation
- Advances in genomics and next-generation sequencing technologies

Interdisciplinary by nature



BINGO - participants



BINGO - participants



Natural genetic variation

Challenges in Integrated Pest Management (IPM)

Develop breeding tools

RP1

Genetic markers

WP4: Rearing & Storage

RP2

RP4

RP8

RP12

WP5: Monitoring & Risk Assessment

RP6

RP5

Strains/
populations

RP3

RP7

RP10

RP11

WP6: Performance

RP9

Reproductive Potential

Environmental Sensitivity

RP13

Trait-associated genetic markers

WP7: Natural genetic variation, genomes & application

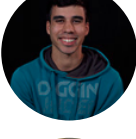
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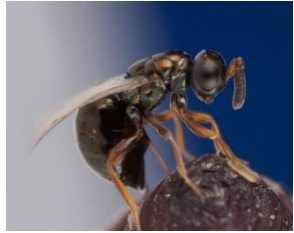
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BINGO –Training & Dissemination

- BINGO Summer Schools:
 - Research skills, Professional skills & Careers
- BINGO Workshops:
 - Integrating genetics & biocontrol: from lab to market. Part of European Congress of Entomology - Napoli (2018)
- Outreach:
 - Professionals
 - Public
 - High school students



More information?

Visit BINGO website:

- <http://www.bingo-itn.eu/>
- Sign up for BINGO newsletter



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Contact BINGO: info@bingo-itn.eu



Margreet Bruins



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