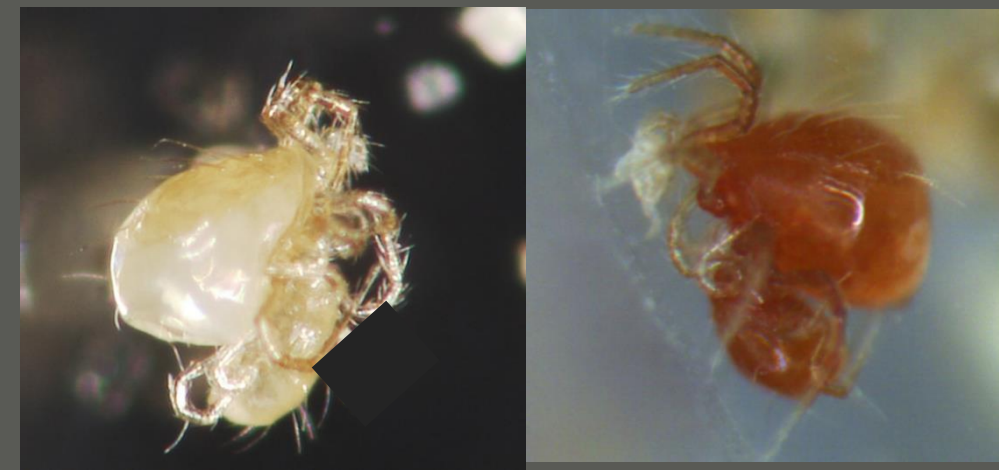


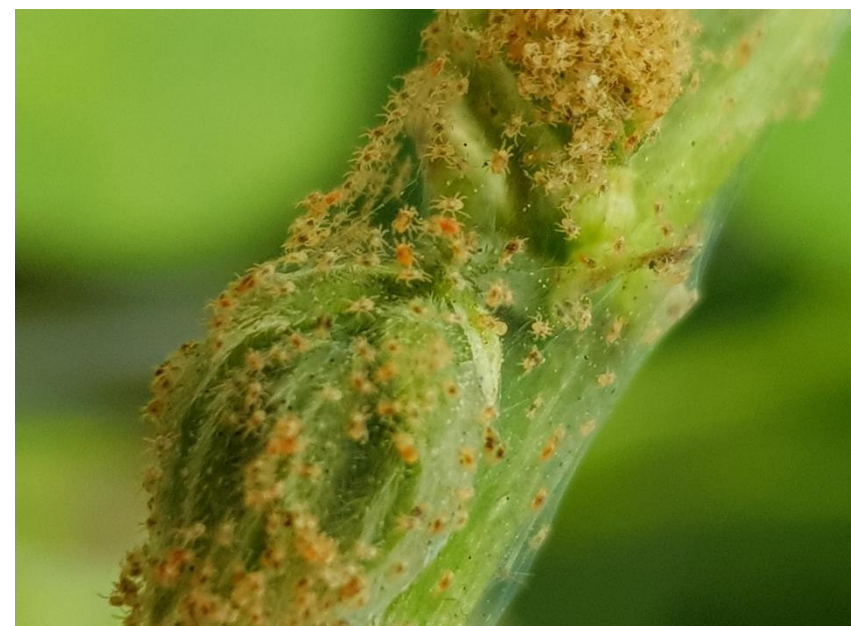


# **A case study of selective breeding in the Biological Control industry**

**Improving mass rearing of a predatory mite, phenotyping, selecting and identifying molecular markers**

# SPIDER MITES

**World-wide pests which attack hundreds of plant species in dozens of botanical families**



# PREDATORY MITE: *Phytoseiulus persimilis*

**The most important commercially-available  
global natural enemy of spider mites.**

**Since 1968**

**Billions of predatory mites are sold on an annual basis**



# PREDATORY MITE: *Phytoseiulus persimilis*

**Tri-trophic system:**

**Under greenhouse conditions**





# BioBee's Production Facility (partial view)



# Can you be less specific?





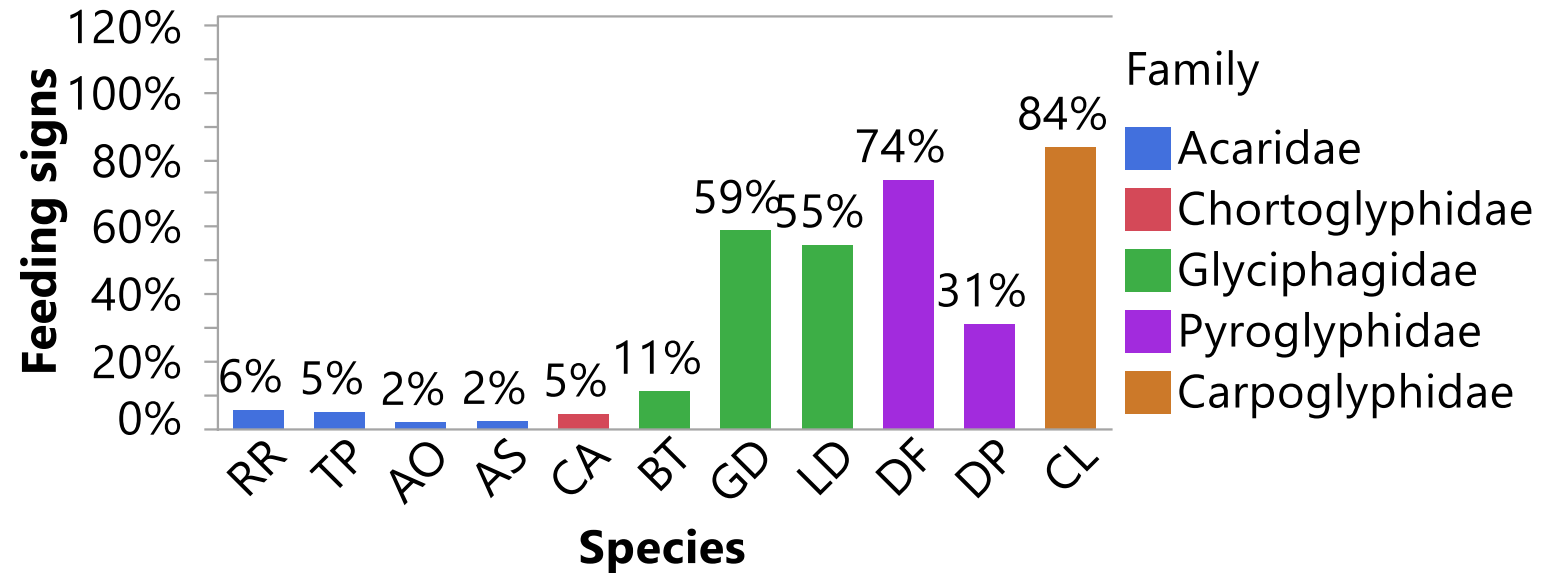
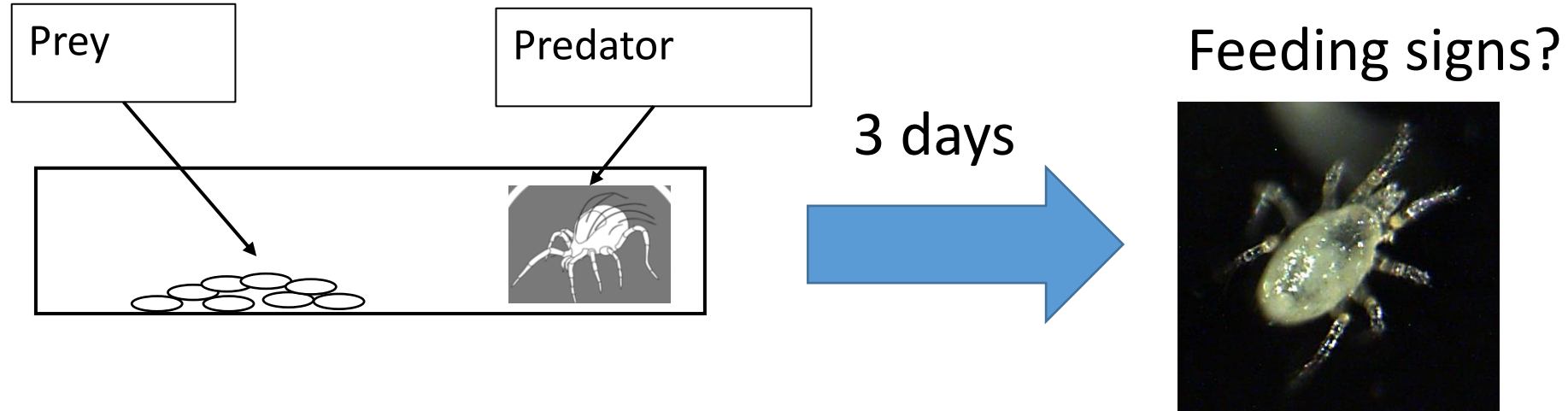
# Can you be less specific?



**The right food**

**The right genotype**

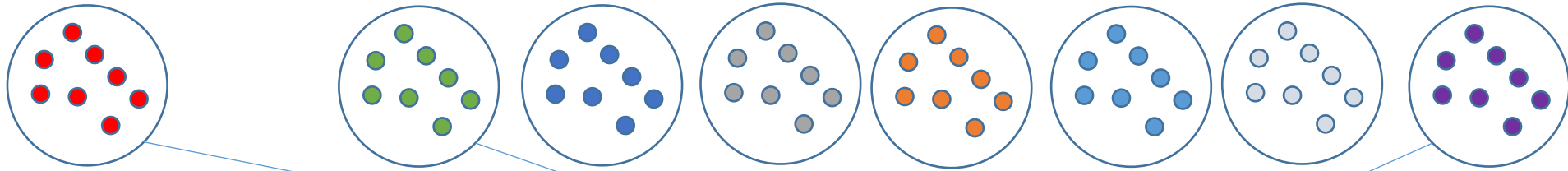
# SCREENING FOR ALTERNATIVE FOOD



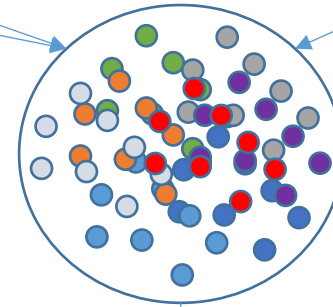


# BREEDING SCHEME

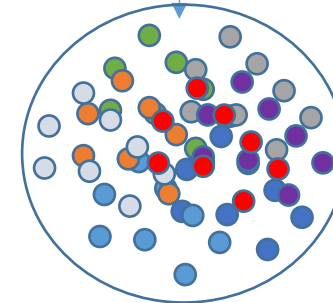
**Narrow**



**Broad**

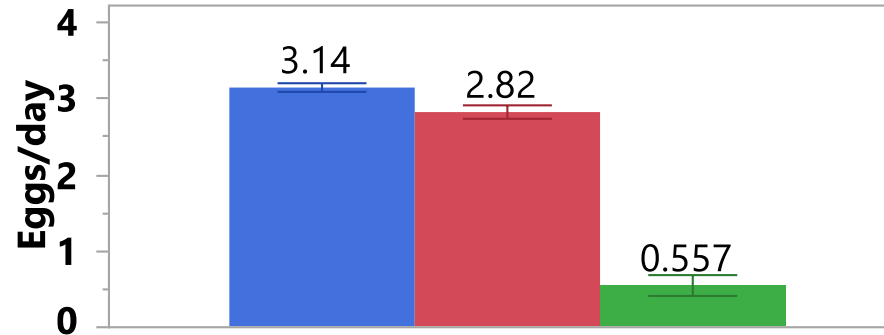
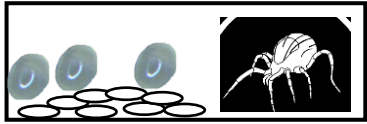


**Broad + selection**



# PHENOTYPIC EFFECT OF POPULATION SOURCE

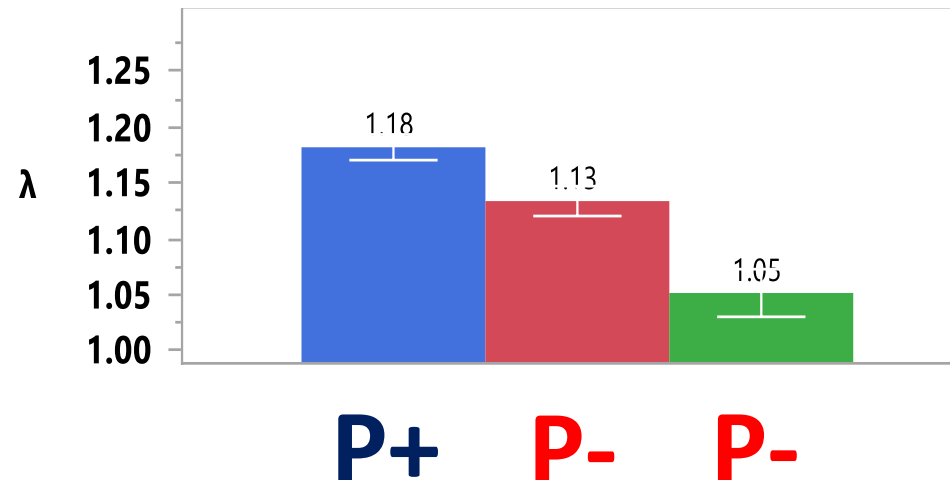
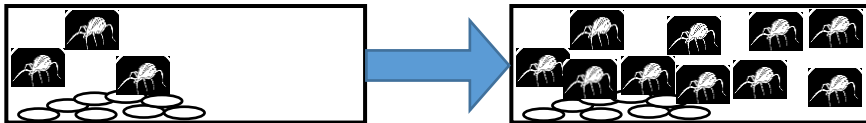
## Measuring Individuals



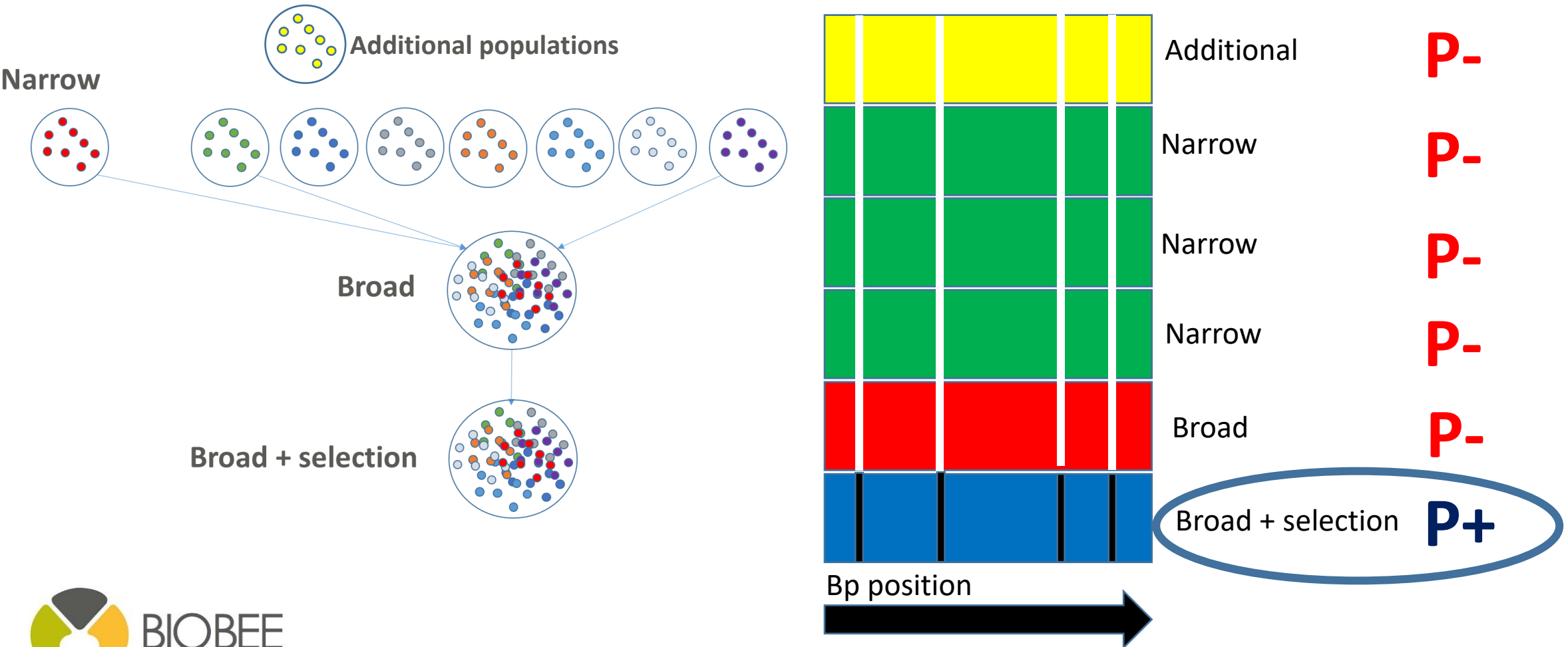
Source

- Broad + selection
- Broad
- Narrow

## Measuring populations



# MAPPING GENETIC MARKERS



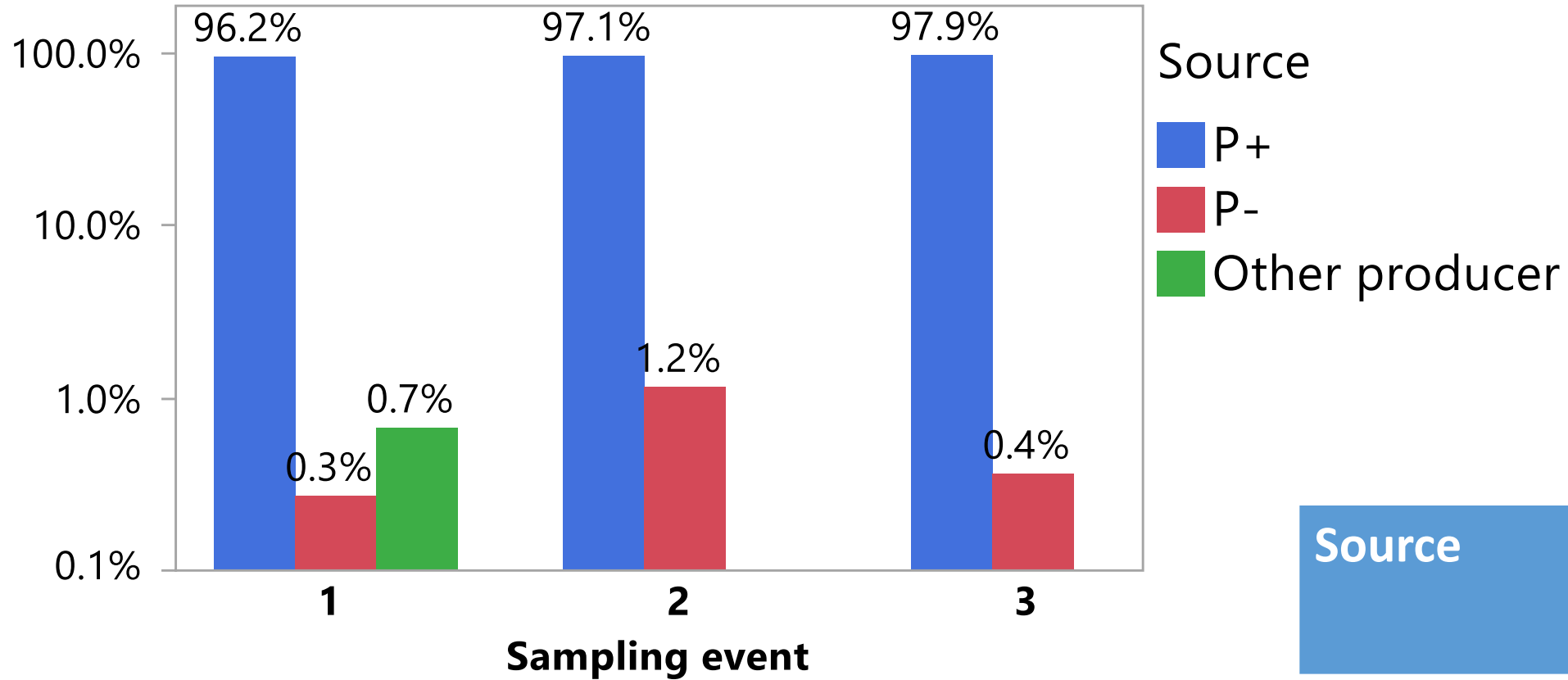


# MAPPING GENETIC MARKERS

- **Results – 34 markers distinguishing P+ from P-**
- **Primer design for PCR reactions**
- **Validating results with new samples – PCR + NGS**

# GENETIC MARKERS – VALIDATION RESULTS

## NGS



## PCR

| Source    | Similarity to P+ |
|-----------|------------------|
| P+ (n=27) | 100%             |
| P- (n=33) | 0%               |

# A NEW PRODUCT: BioPersi+

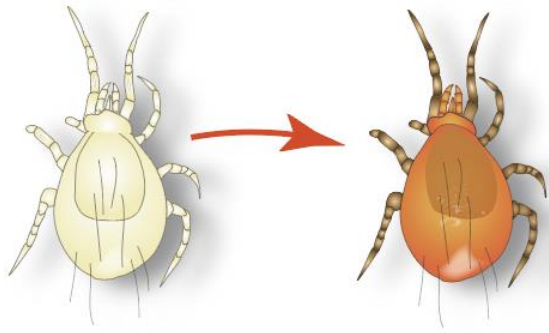
**A novel production  
method**

**Reared in climate rooms**

**Different product**



# BioPERSI+: COLOR



1-2 days





# A TRUE REVOLUTION IN SPIDER MITE CONTROL

## Slow-Release Sachets of *Phytoseiulus persimilis*



**“Classic” - Preventive**



**“Speed” - Curative**

# Take home message

- **Balancing between work with individuals and populations**
- **Selective breeding results are already implemented at the commercial level in the field of Biological Control.**

# THE TEAM BEHIND THE SCENE

Tom Katz



The Feed

Amit Sade



Field R&D

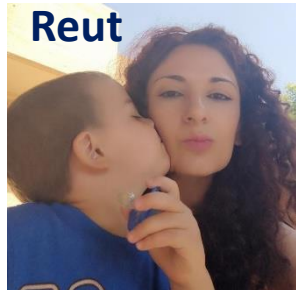


Yael

Hadassa

Joshua

Reut



Yelena

Nataly

Yariv

Zohar

Maya and Tal





# SPIDER MITE CONTROL ENTERS A NEW ERA

