Bottom up thrips control

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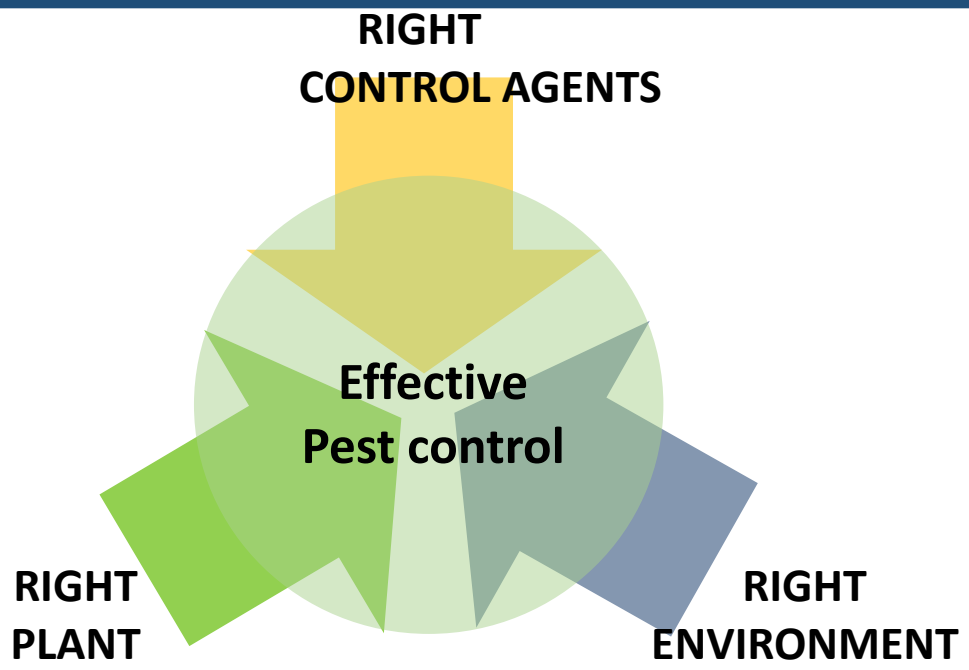
“Bottom up” Thrips Control



- Plant resistance
- Genetic
- Induced
- Production practices
- **Fertilizer**
- **Biostimulants**

Exclusion/sanitation
Clean start
Mass trapping

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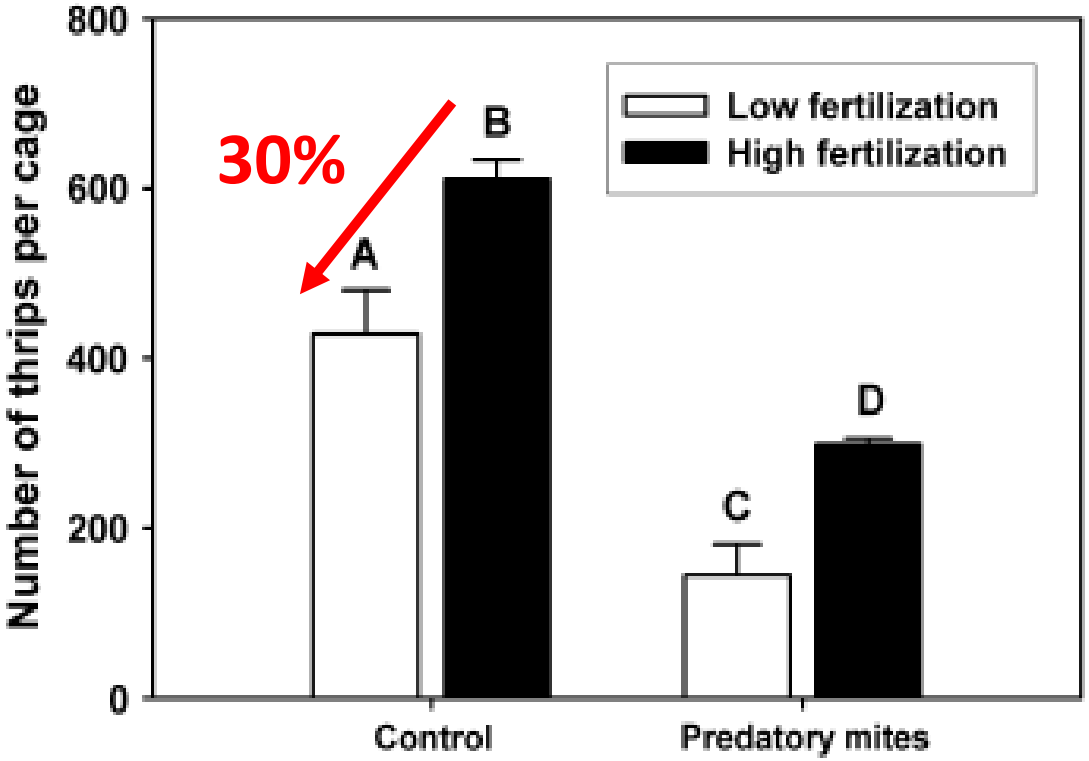
Link between thrips and fertlizer

- Studies: Reducing fertilizer by 50% can reduce pest abundance by up to 50%



33% of recommended level

Chow et al., 2012. Journal of Applied Entomology 136: 520-529

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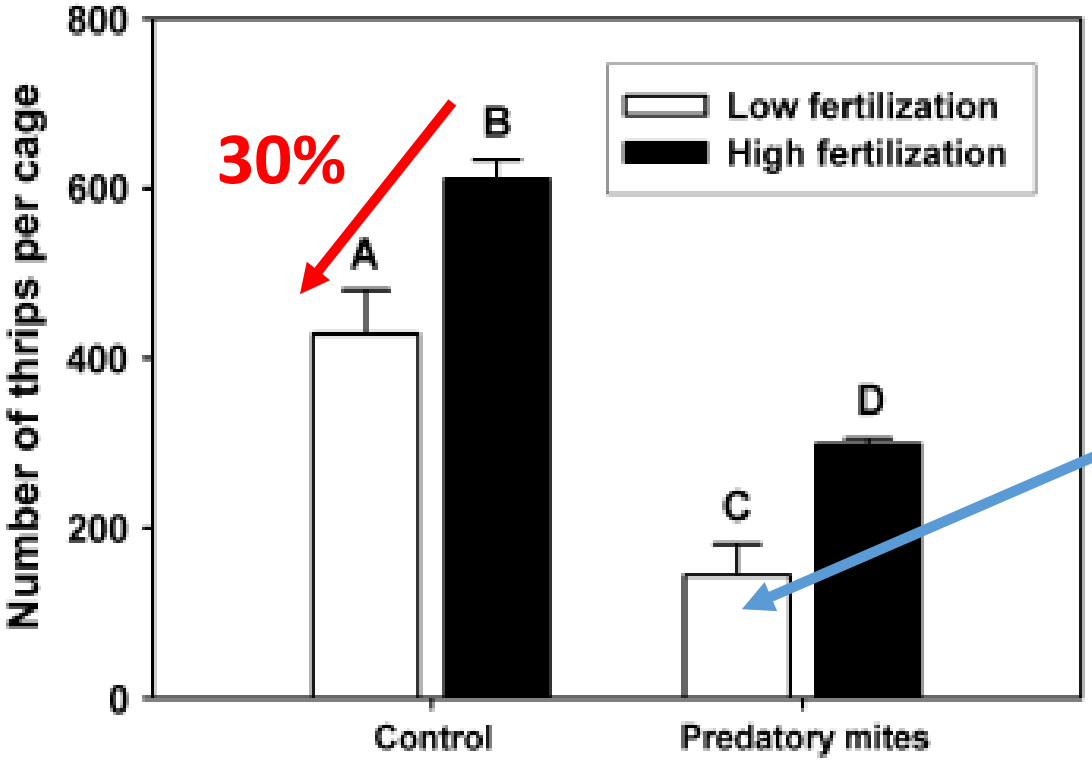

33% of recommended level

Best thrips control was seen when top-down and bottom-up strategies were combined

Chow et al., 2012. Journal of Applied Entomology 136: 520-529

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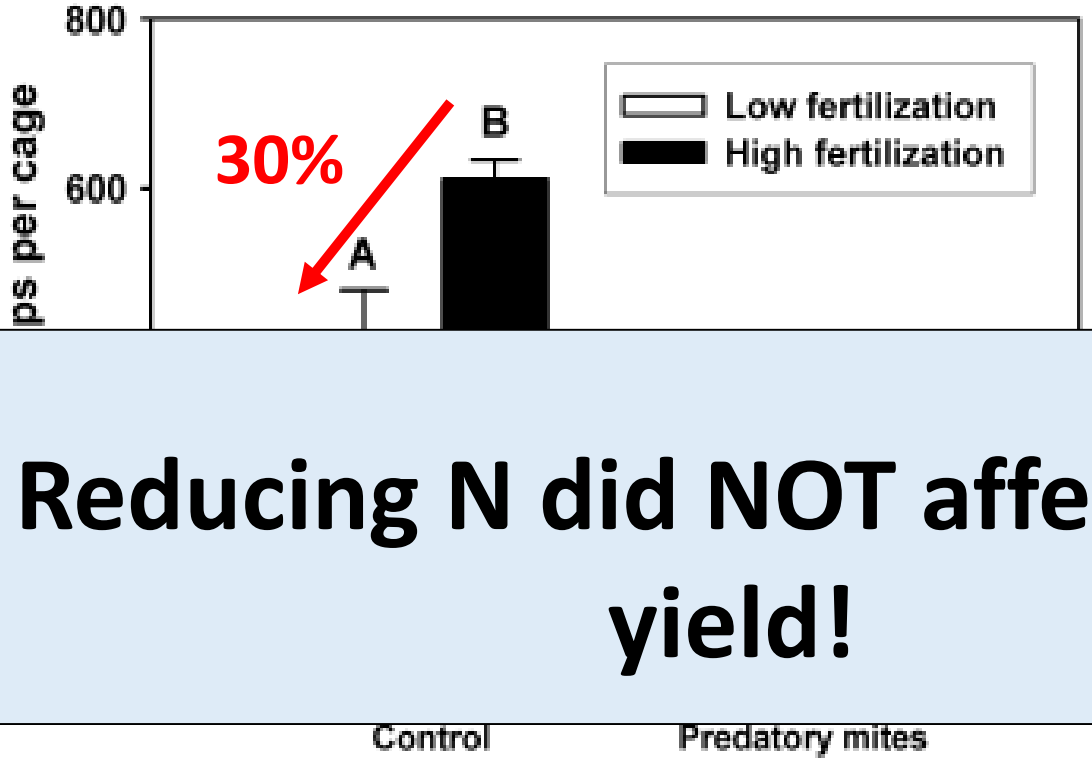

33% of recommended level

Reducing N did NOT affect crop yield!

Chow et al., 2012. Journal of Applied Entomology 136: 520-529

Food for thought…

- Most greenhouse crops are on high-fertilizer regimes
- Research suggests nutrient concentrations **can be reduced 50-75% without affecting the quality** of the finished crop (Zheng *et al.*, 2004; Zheng *et al.*, 2010)
- **Other considerations:**
  - **Climbing costs of fertilizers**
  - **Potential legislation regulating N and P runoff**

Biostimulants

- compounds, substances and micro-organisms that are applied to plants or soils to improve crop vigour, yields, quality and tolerance of abiotic stresses.

Microbial fungicides that can also act as biostimulants

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Effects of biostimulants on insect pests???

- **May** help with insect pest management via:
  - better signaling to natural enemies
  - Priming leaves for defense against insects

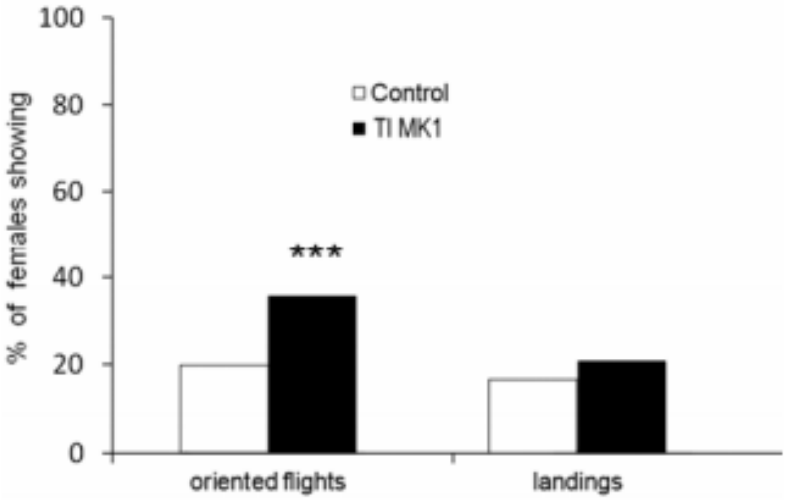
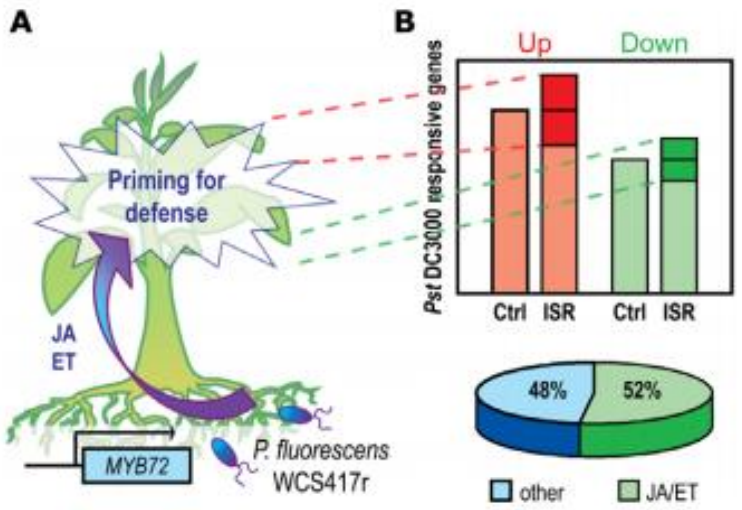


Fig. 1. Behavioral response of *Aphidius ervi* toward tomato plants uncolonized (control) and colonized by *Trichoderma longibrachiatum* MK1 (Tl MK1) in wind-tunnel bioassay. Asterisks indicate a significant difference ($P < 0.001$).



Battaglia et al. 2013

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