



Use of *Steinernema feltiae* for control of
Frankliniella occidentalis and *Thrips tabaci*
in chrysanthemum



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Testing foliar application of *S. feltiae* against thrips

1. Experimental glasshouse trial (chrysanthemum)
 - Testing Nemasys F and Mycotal/Addit
 - With or without thrips predator *Amblyseius cucumeris*
2. Testing at commercial chrysanthemum growing
 - Comparing Nemasys F with chemical control
3. Use in IPM schemes at Research Station
 - No controls



1. Experimental glasshouse trial

- Chrysanthemum
Glasshouse of 300 m²
- May - July 2002
- *Frankliniella occidentalis*
- Treatments
(x 8 replicates):
 - Nemasys F
 - Mycotal
 - Spinosad
 - Water



with or without predatory mites



Application of *Steinernema feltiae*

- Nemasy F (Becker Underwood): formulation for foliar application
- 2500 IJs/ml, 125 ml /m² → 320,000 IJs/ m²
- Addition of spreader (Agral 0.03%)
- 9 Weekly applications (2nd week after planting – 11th week)
- Plots with and plots without predatory mites



Application of *Verticillium lecanii*

- Mycotal + Addit (Koppert BV)
- 10^7 conidia/ml, 125 ml /m² → $1.3 * 10^9$ conidia / m²
- 0.25% Addit (spreader)
- 9 Weekly applications (2nd week after planting – 11th week)
- Plots with and plots without predatory mites



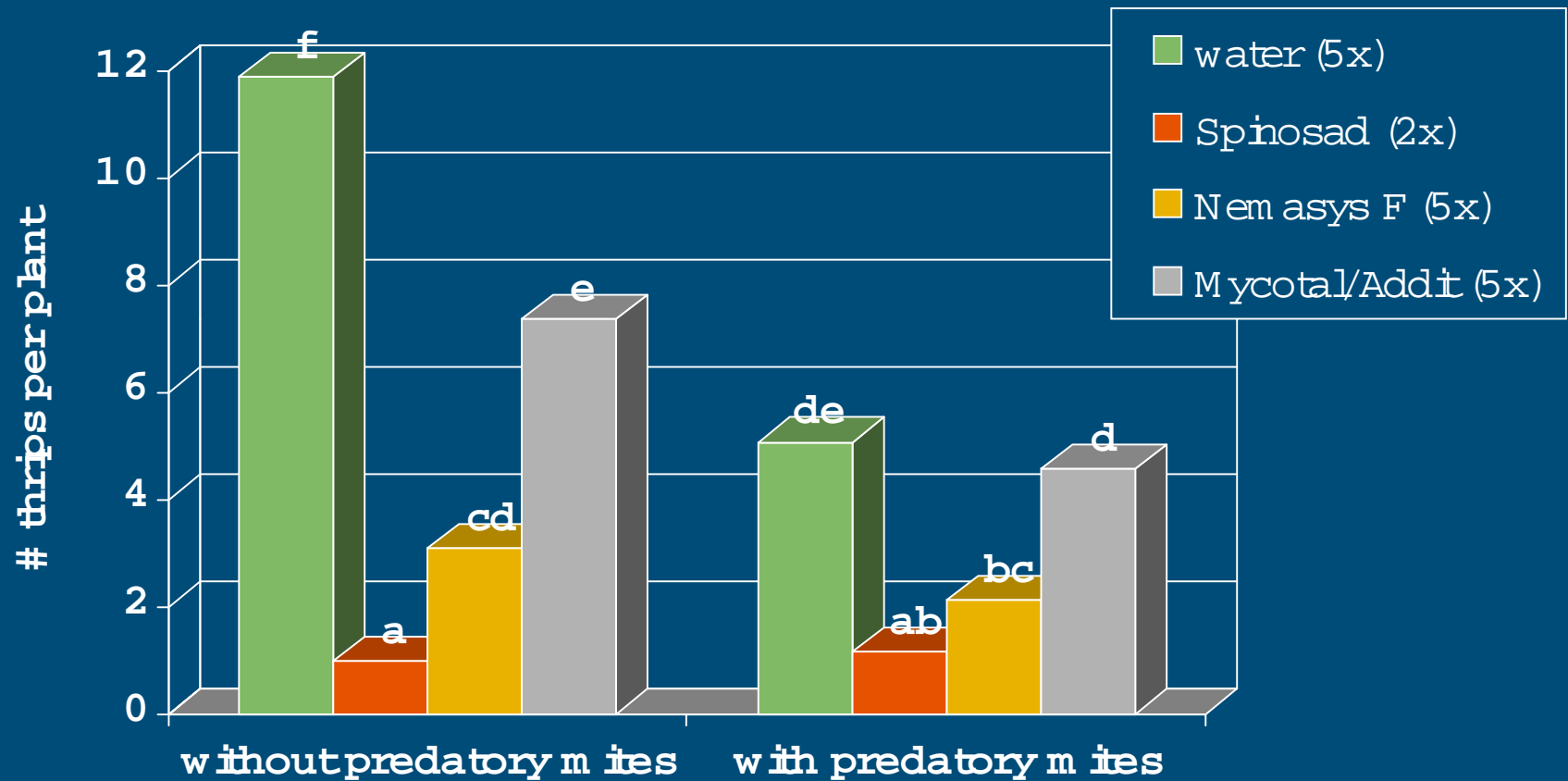
Application of controls

- Spinosad
 - 125 ml / m²
 - Only 2 applications (4th + 5th week after planting)
 - plots with and plots without predatory mites

- Water
 - 125 ml / m²
 - 9 weekly applications (2nd week after planting – 11th week)
 - plots with and plots without predatory mites

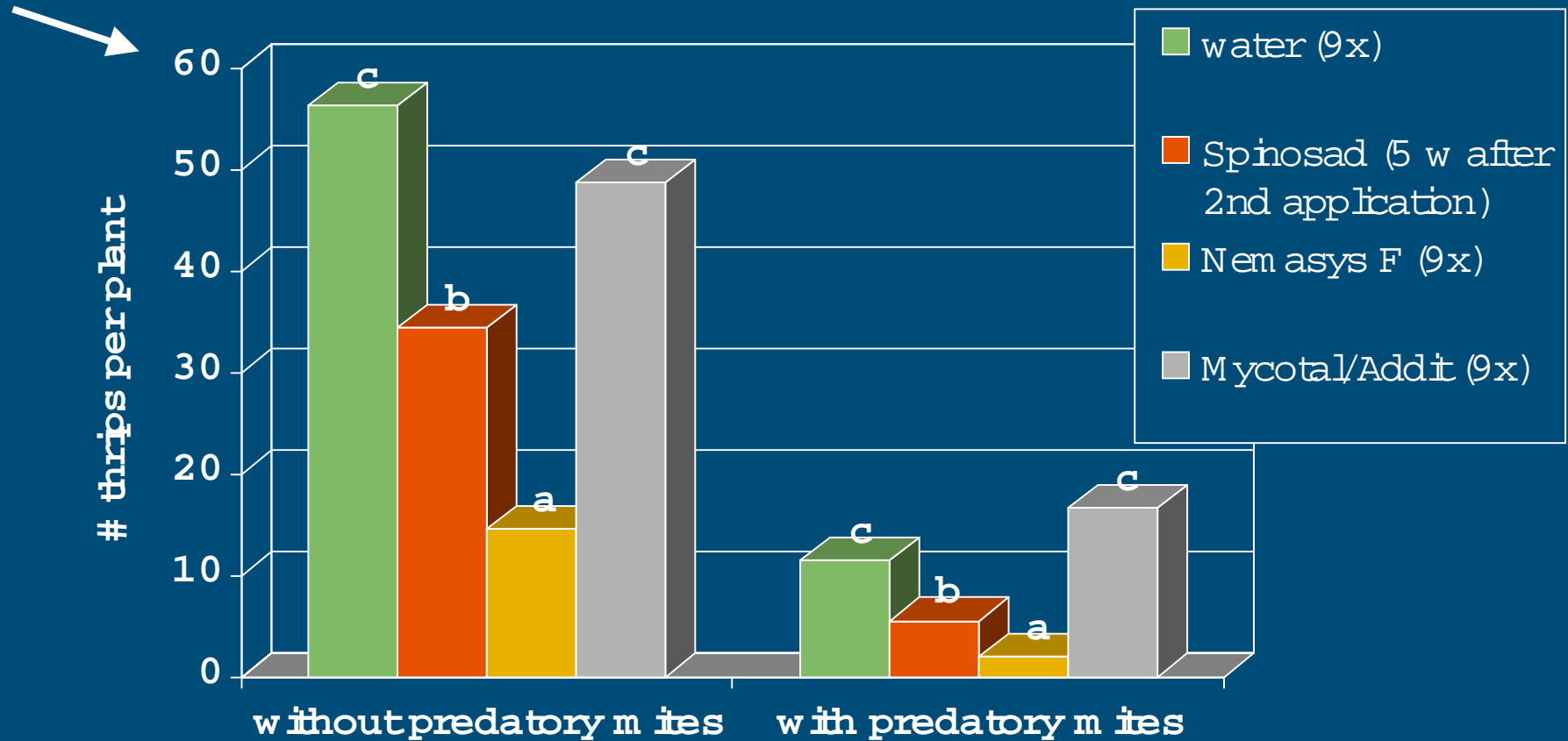


Assessment 7 weeks after planting





Assessment 12 weeks after planting (harvest)





Summary results

- Reduction of thrips compared to water treatment:

| | Nemasys F | Mycotal/Addit | Nemasys F + pred.mites | Mycotal/Addit + pred.mites |
|----------------|-----------|---------------|---------------------------|-------------------------------|
| 3 applications | 13% ns | 19% ns | 21% ns | 20% ns |
| 5 applications | 74% | 38% | 82% | 62% |
| 9 applications | 74% | 14% ns | 96% | 70% |

ns: not statistically



Conclusions experimental glasshouse trial

- Results at high thrips density
 - Weekly applications of Nemasys F: considerable reduction of thrips
 - Weekly applications of Mycotal/Addit: less substantial reduction of thrips
 - reason climate? thrips density? Addit? ... ?
 - Both microbials can be used in combination with thrips predator *Amblyseius cucumeris* for better results



2. Testing at commercial chrysanthemum growing

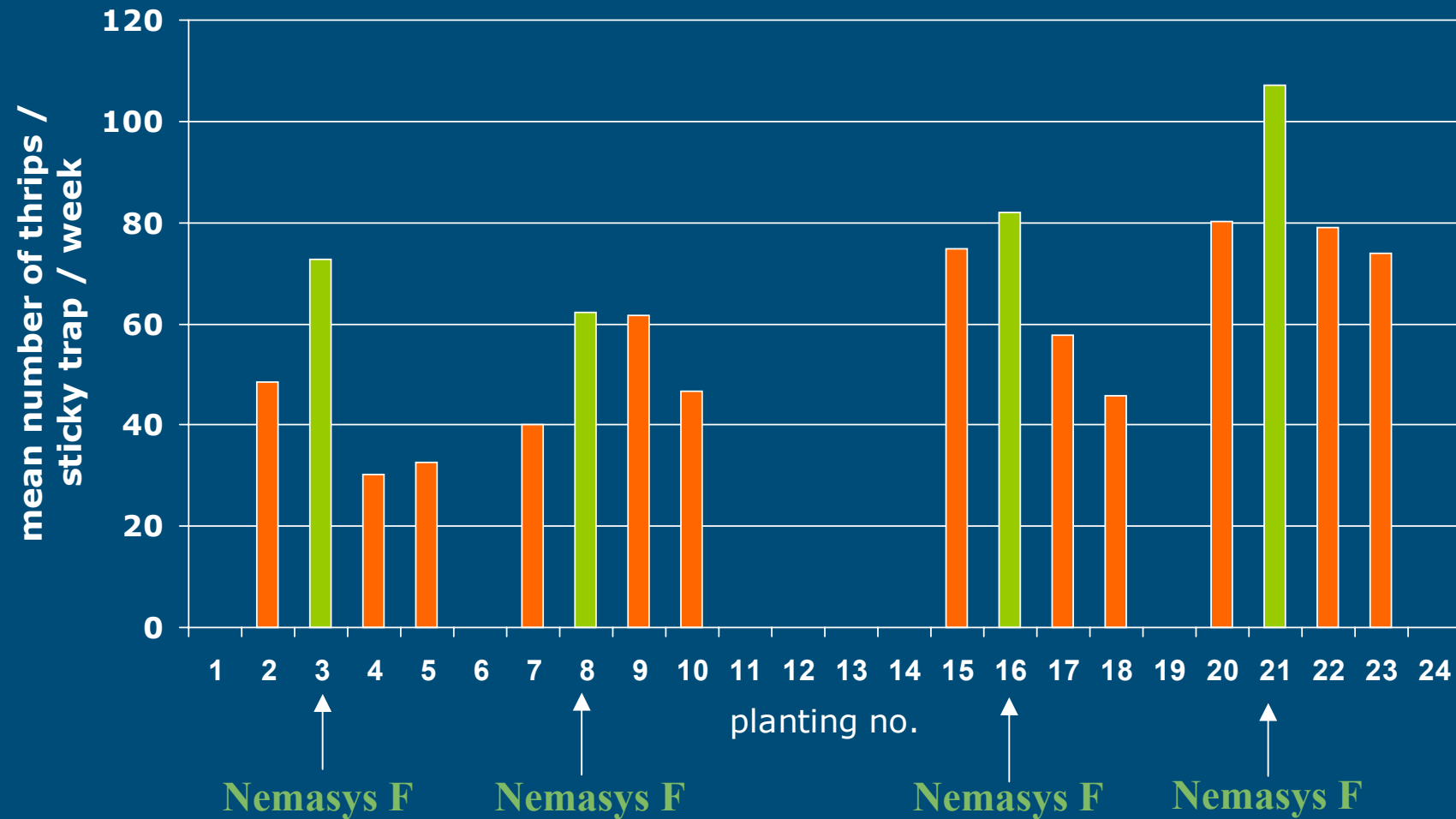
- May – August 2003
- In 4 plantings:
weekly applications of
Nemasys F (250.000 IJs/m²)
- In other 20 plantings:
weekly chemical applications
Curater (carbofuran),
Ypsilon (acefaat),
Mesuro1 (methiocarb),
Methomex (methomyl)

➤ **Results of Matthijs Blind**
(private extension service DLV)





Numbers of thrips on sticky traps



- Results of Matthijs Blind
(private extension service DLV)



Results & conclusions commercial glasshouse trial

- Chrysanthemum cultivar with high thrips damage threshold
- Higher numbers of thrips on sticky traps above Nemasy plots
- Slightly higher thrips damage to leaves in Nemasy plots
- At harvest no difference in quality chrysanthemums from Nemasy or chemical plots (assessed by grower and auction master)

- **Results of Matthijs Blind**
(private extension service DLV)



3. Use in IPM schemes at Research Station

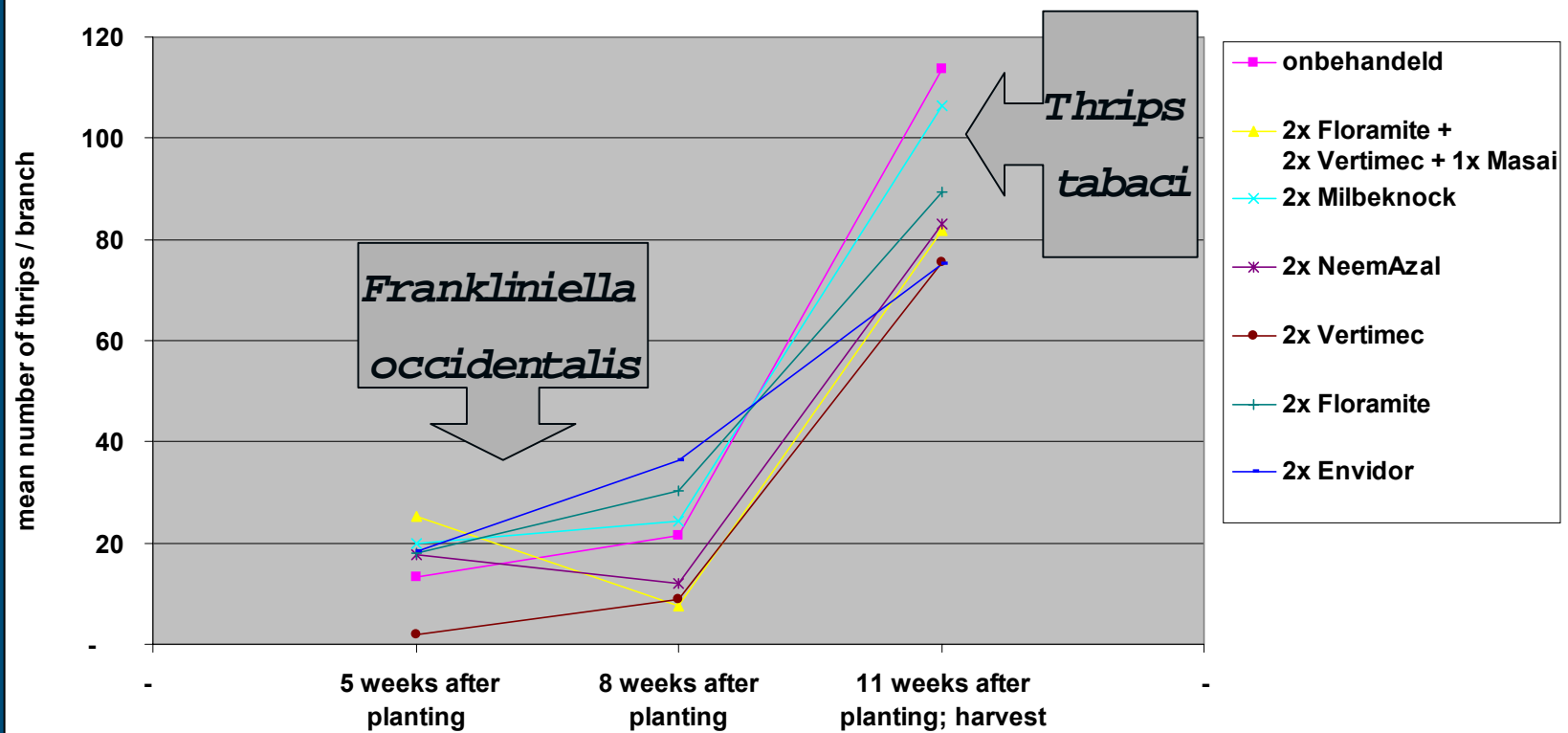
- Testing Nemasys F is not the aim of trials
- Thrips control in spider-mite trial
- Comparison of control strategies 1
- Comparison of control strategies 2





Thrips control in spider-mite trial (Aug - Oct '03)

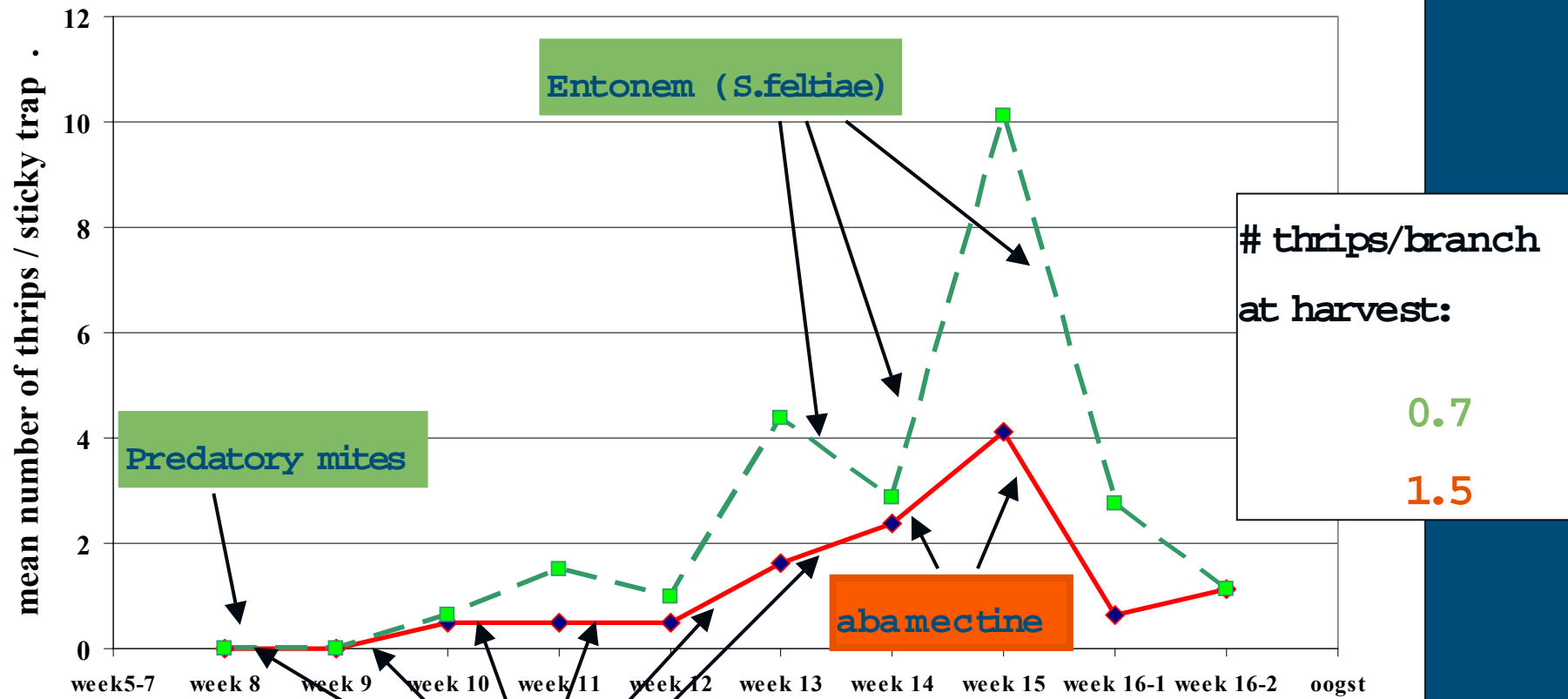
Thrips control: A. cucumeris & 7 weekly applications of Nemasys F





Comparison of control strategies 1

Chrysanthemum growing 1 (Feb. - April '04)

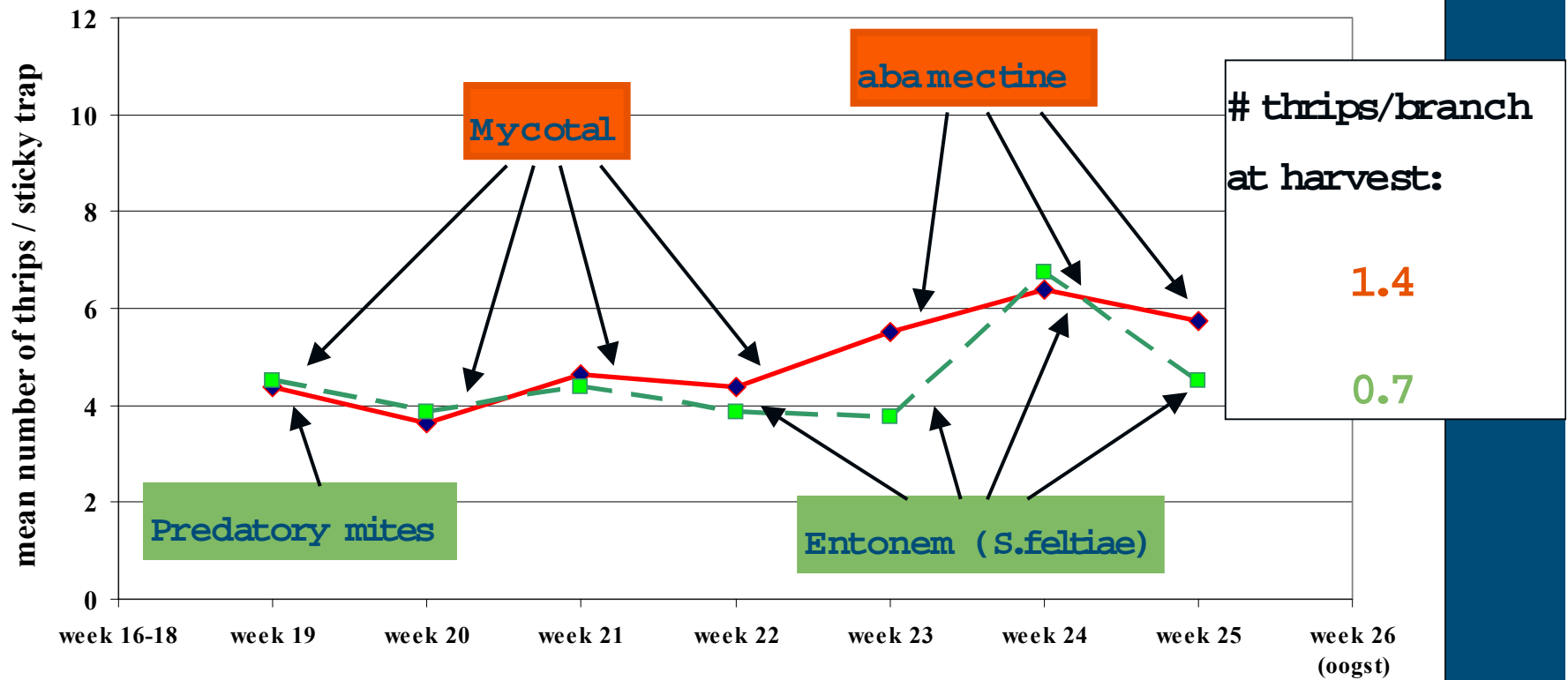


Mycotal



Comparison of control strategies 2

Chrysanthemum growing 2 (April - June '04)





Thank you

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