

# Investigating different application strategies of *Phasmarhabditis hermaphrodita*



# Introduction

- *Phasmarhabditis hermaphrodita* is a lethal parasite of slugs and is sold as Nemaslug®
- When applied nematodes seek out slugs in the soil and enter through the mantle area
- They are then thought to release a bacterium, grow to hermaphroditic adults and reproduce prolifically
- The slug dies between 4 and 21 days
- Signs of infection



# Main aims

- Nematodes are expensive compared to chemical control
- 1) Lower the number of nematodes applied and therefore the cost
  - 2) Investigate using nematodes and chemical control to provide increased slug protection

# 1) Lowering Dose

- 24 plots (1 x 0.5 x 0.2m)
- Half filled with top soil
- 4 treatments
- 1) Control
- 2) *P. hermaphrodita* (recommended rate)
- 3) *P. hermaphrodita* (3 applications at 1/6 recommended rate)
- 50% reduction
- 4) Metarex green (recommended rate)



- 8 Chinese cabbage
- Fluon and copper tape
- 8 slugs
- Covered with fleece
- Damage recorded every week for 6 weeks



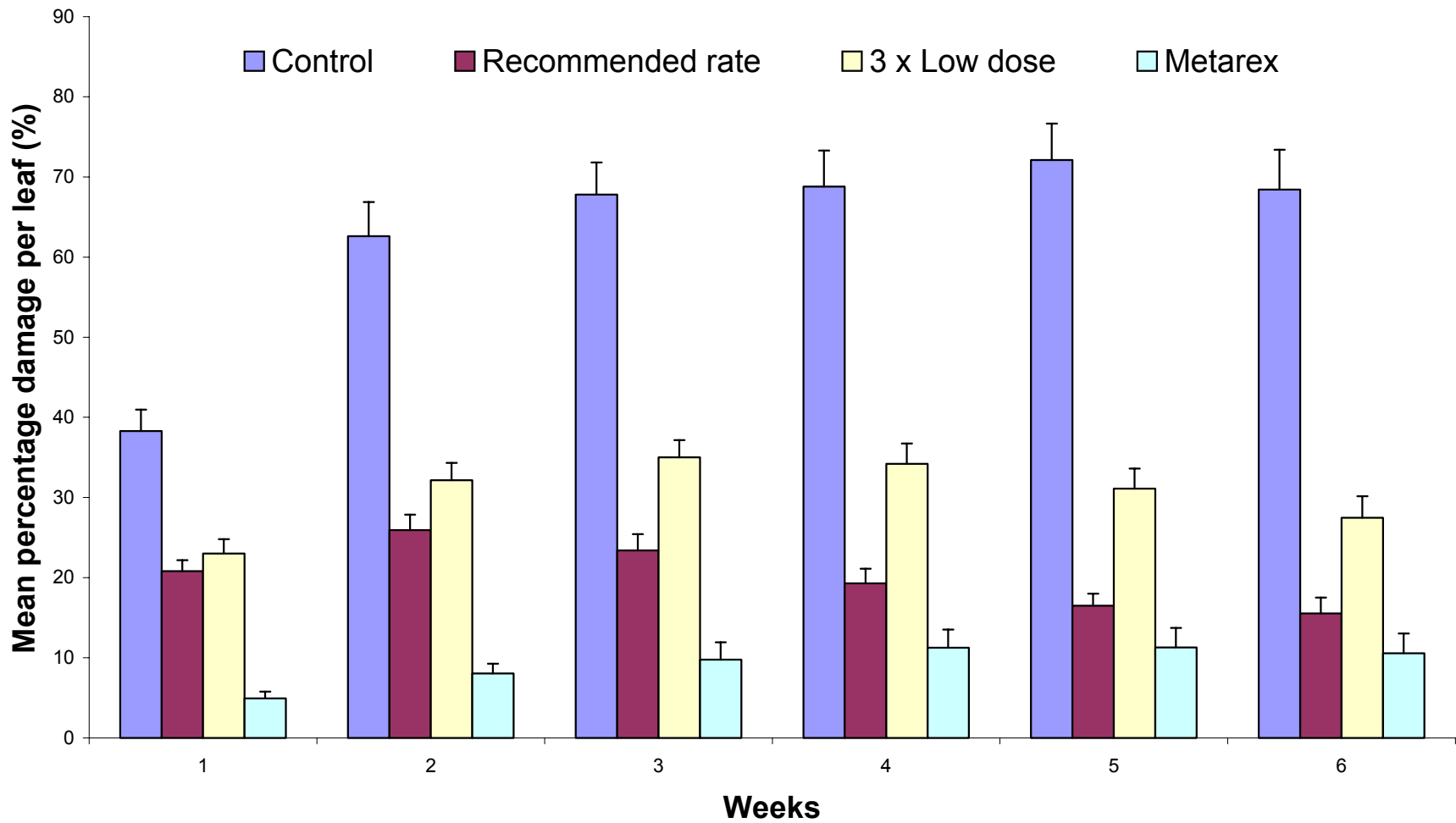


Control



Nematode treated





# Conclusions 1

- *P. hermaphrodita* applied three times at 5 per cm<sup>2</sup> provides good protection against slugs
- However, does it work in the field??????

# 2) Different Application strategies

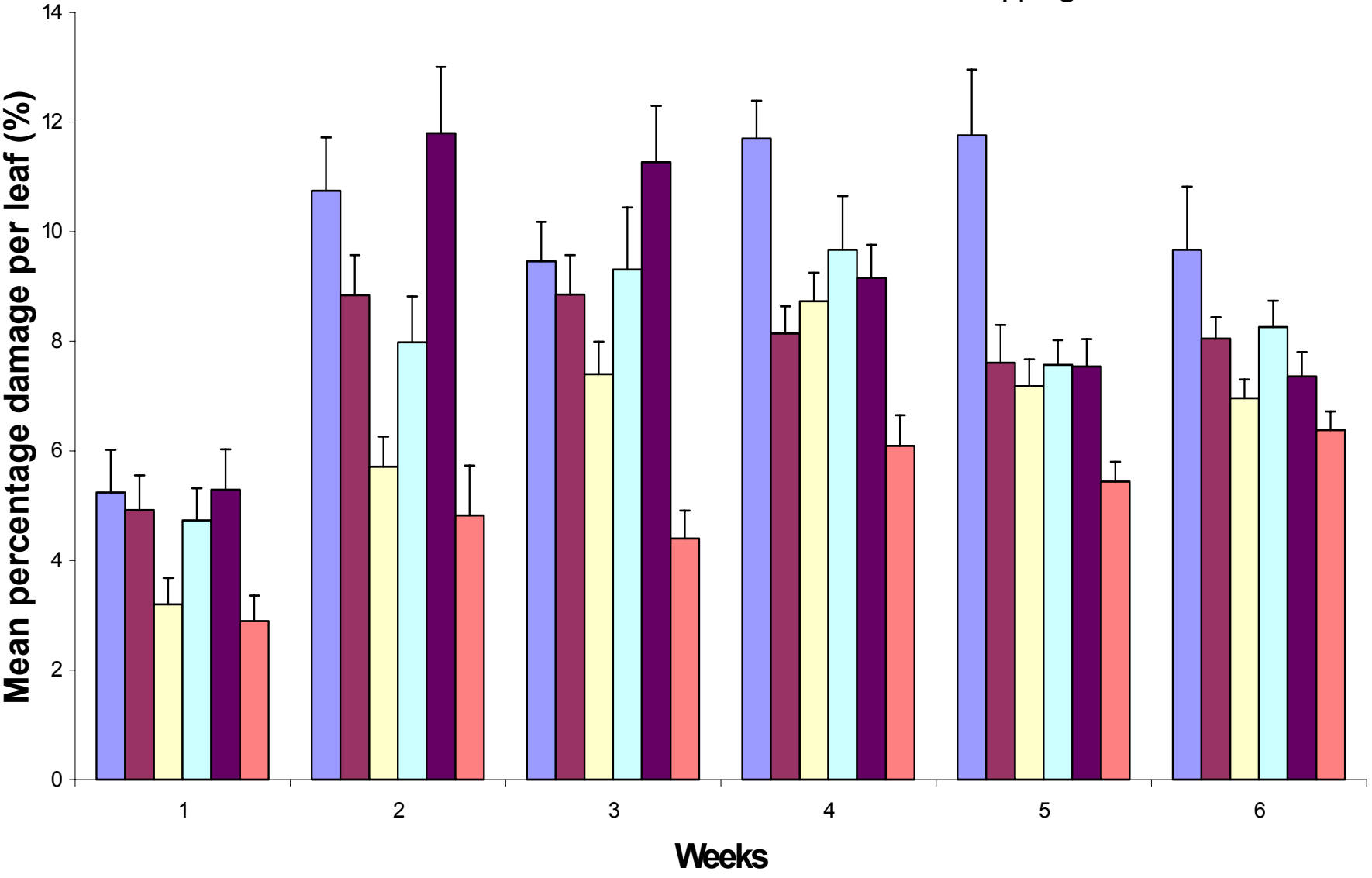
- 30 plots (2 x 1m)
- 24 Chinese cabbage in each
- 5 treatments
- 1) Dipping
- 2) Spray around base
- 3) Recommended rate
- 4) 3 applications of 1/6<sup>th</sup> of the dose
- 5) Metarex (recommended rate)



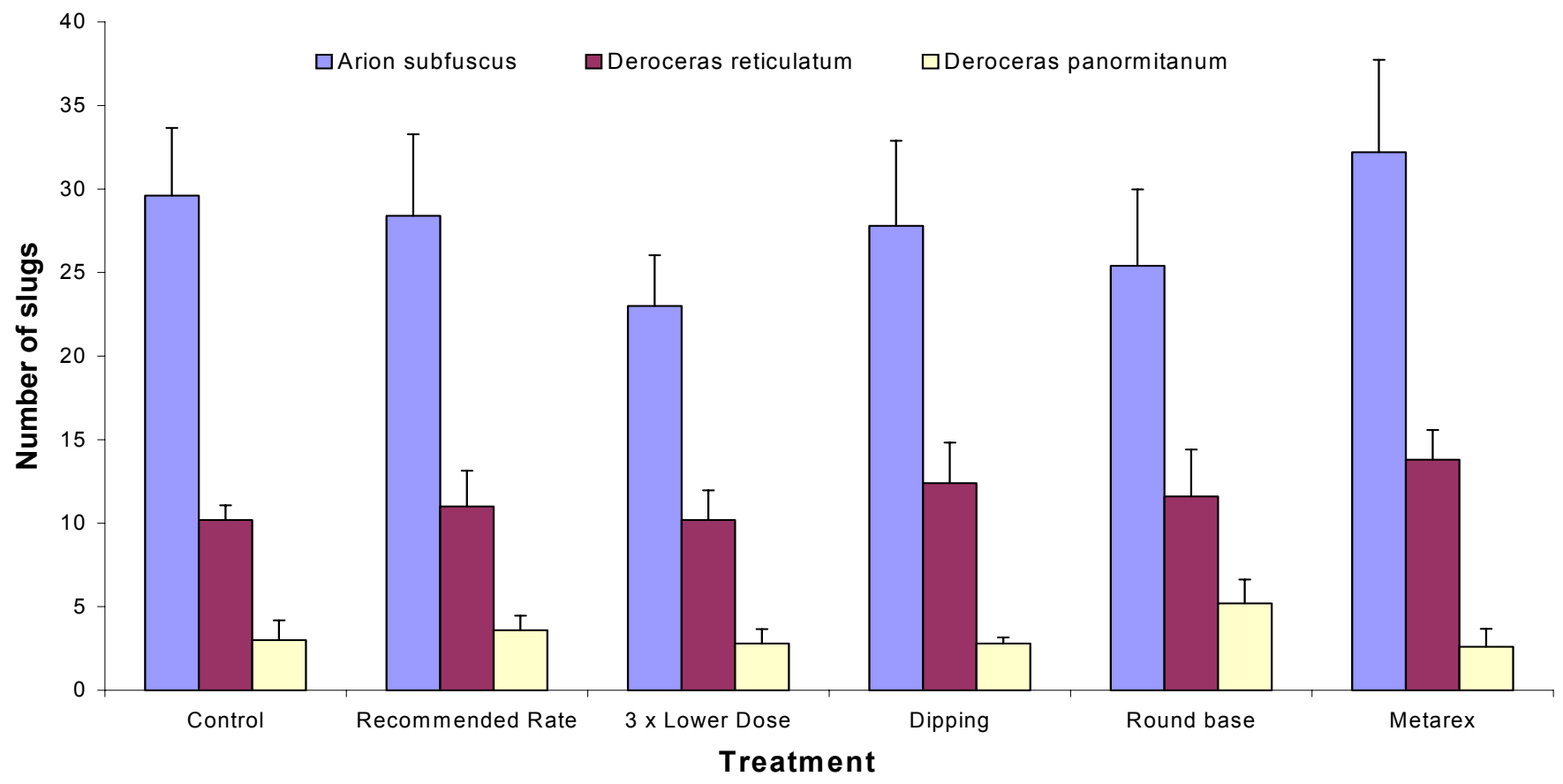




Control RR Nematodes 3 x LD Round Base Dipping Metarex







# Conclusions 2

- Poor results for nematodes used in the field
- Only on week 5 did all nematode treatments provide significant slug protection
- Dipping and spraying round plant bases provided poor protection possibly because nematode numbers decreased below level of repellency
- High presence of the non-susceptible slug *Arion subfuscus*
- A number of studies have also reported poor results using *P. hermaphrodita* could possibly be due to presence of non-host species

# 6) Combining *P. hermaphrodita* with chemical treatments

- Slugs commonly controlled with chemical pellets
- New “organic” pellet available in U.K. called Ferramol
- **Main aim:** to discover whether *P. hermaphrodita* and Ferramol can provide better slug protection
- Nematodes will seek out susceptible subterranean slugs present in soil and larger species will be attracted to pellets on soil surface
- Significant protection has been reported with methiocarb and the recommended rate of *P. hermaphrodita* in sugar beet

# Ferramol and *P. hermaphrodita*

**15 propagators**

**5 treatments**

**1) Control**

**2) 30 cm<sup>2</sup> *P. hermaphrodita*  
(RR)**

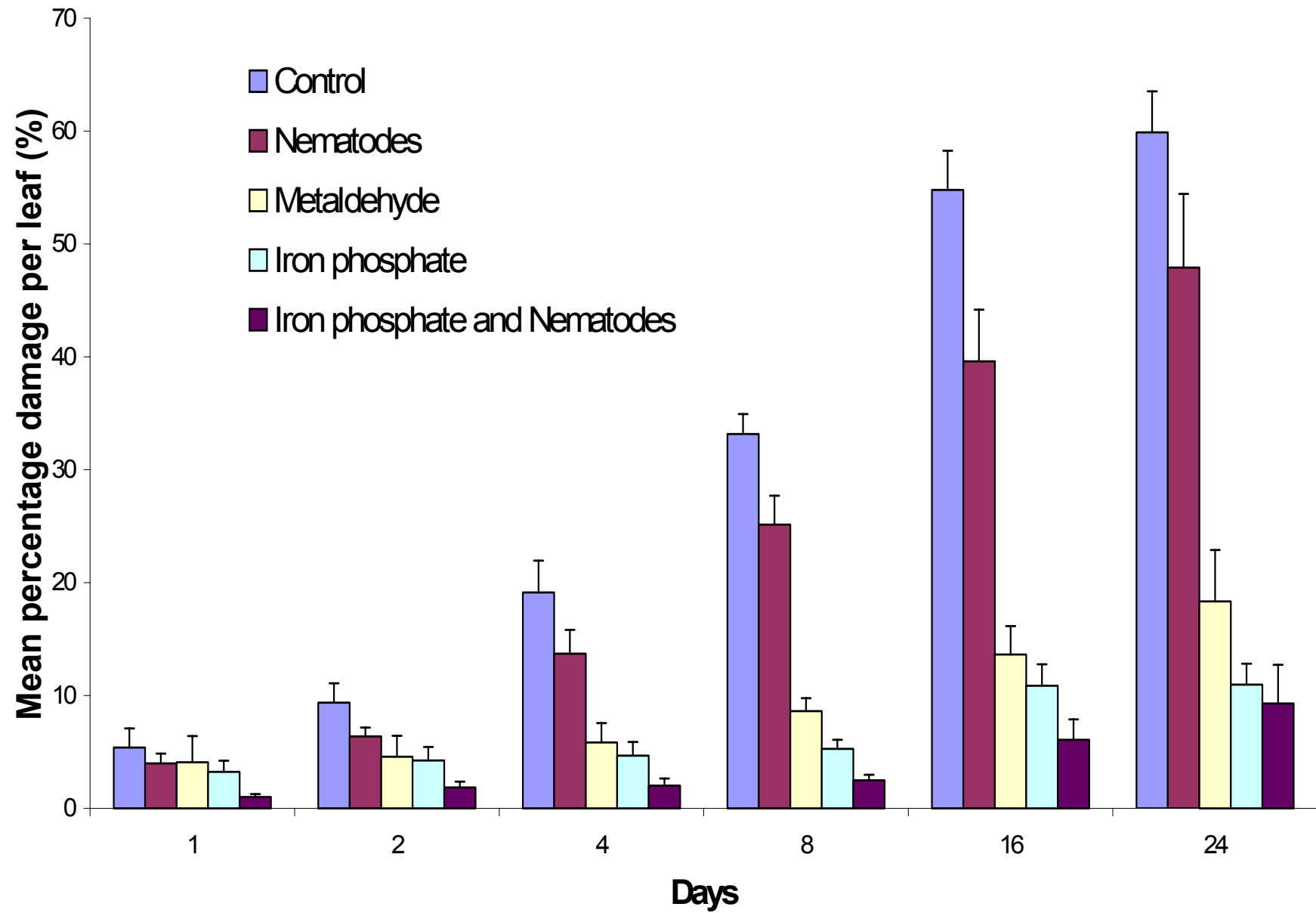
**3) Metarex**

**4) Ferramol**

**5) Ferramol and *P.*  
*hermaphrodita* (RR)**







# Conclusions 3

- Nematodes performed poorly
- Due to slugs escaping infection and climbing into cabbage leaves
- All chemical treatments and Ferramol and *P. hermaphrodita* provided significant protection against slug damage
- Ferramol and *P. hermaphrodita* were not significantly different from the chemical treatments
- Therefore this combination provides little advantage over chemical control
- However this experiment needs to be tested in the field with mixed populations of slugs

# What have we learnt?

- Smaller applications of *P. hermaphrodita* applied more frequently shows promise for controlling slugs
- New forms of application strategies (dipping, round bases) yields little potential for controlling slugs with *P. hermaphrodita*
- In controlling slugs buyers of *P. hermaphrodita* should be aware of what slug species are present on site
- Combing new chemical formulations of slug pellets with *P. hermaphrodita* also offers few advantages
- Although this needs to be clarified in the field

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