

Use of EPN's against *P. horticola* in Denmark - will/can a long term effect be established ?

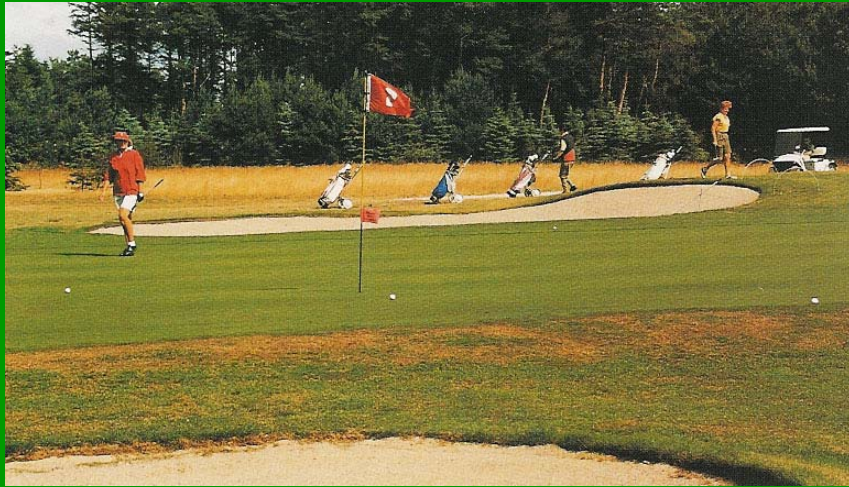
Holger Philipsen, Otto Nielsen
Hans Peter Ravn
Ralf-Udo Ehlers



Hjørring Golf Course



Symptoms



Wilting grass



Birds activity rooks



Hole 5, Hjørring Golf Course

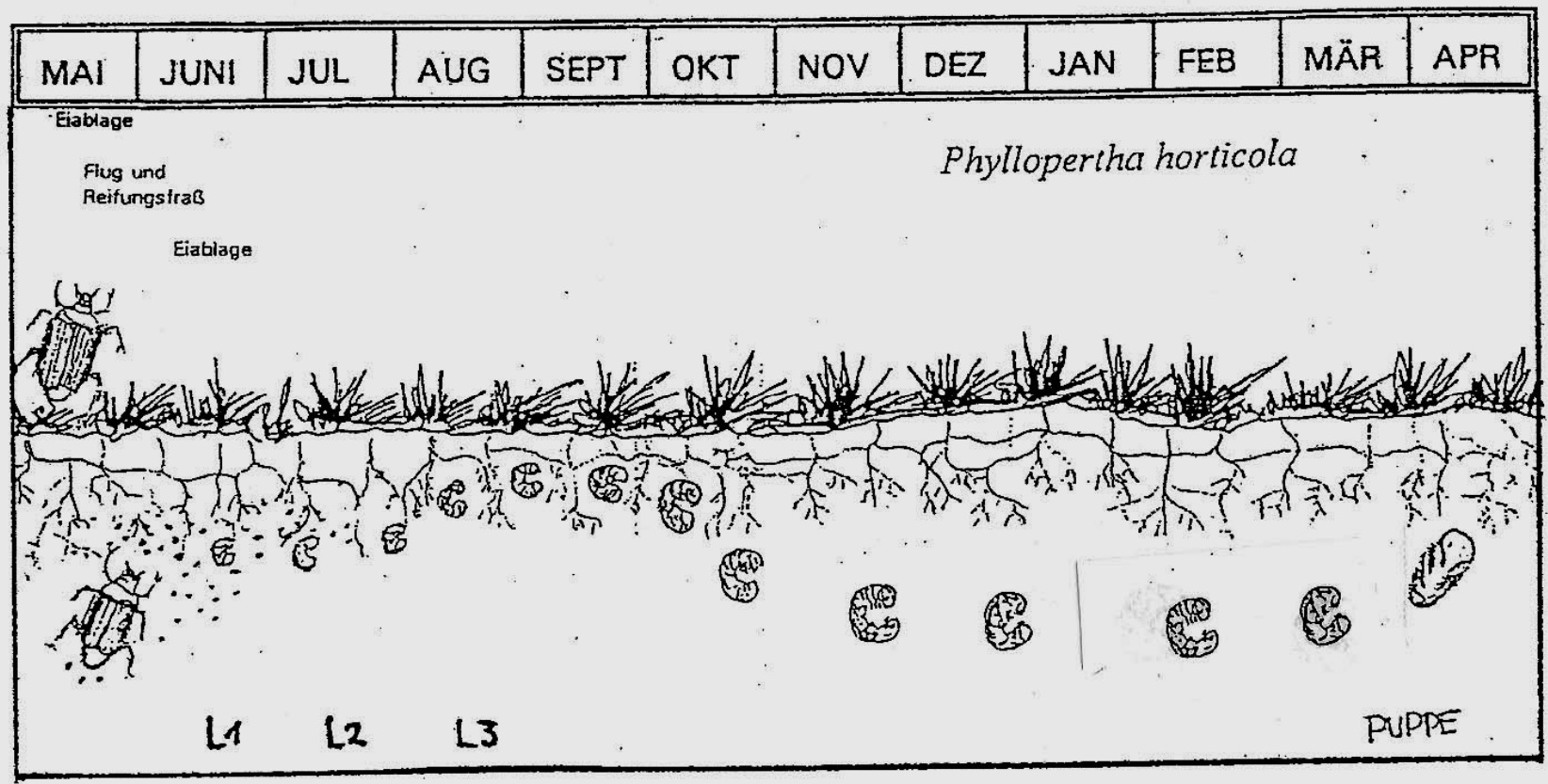




Give golf course 2003

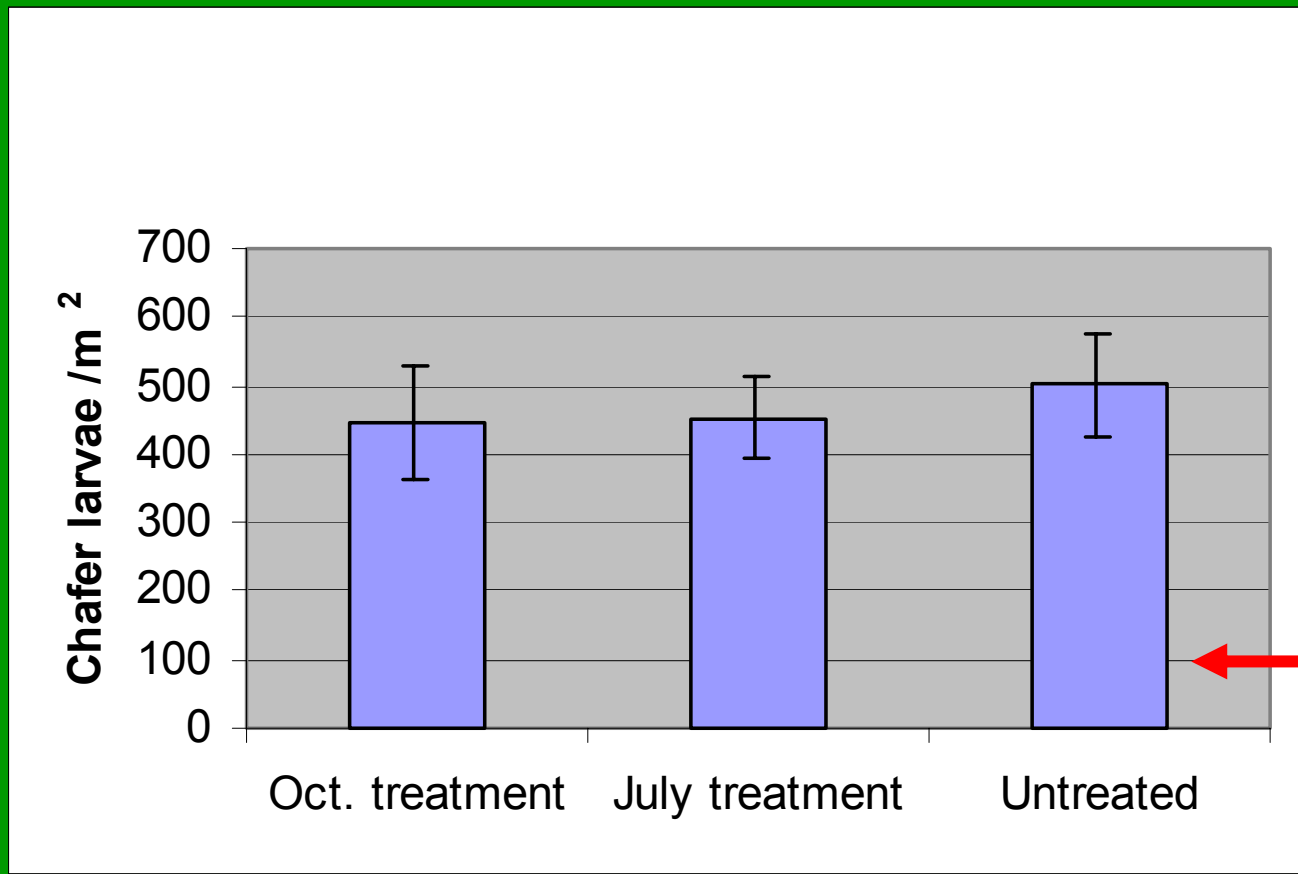


Lifecycle of the Garden Chafer





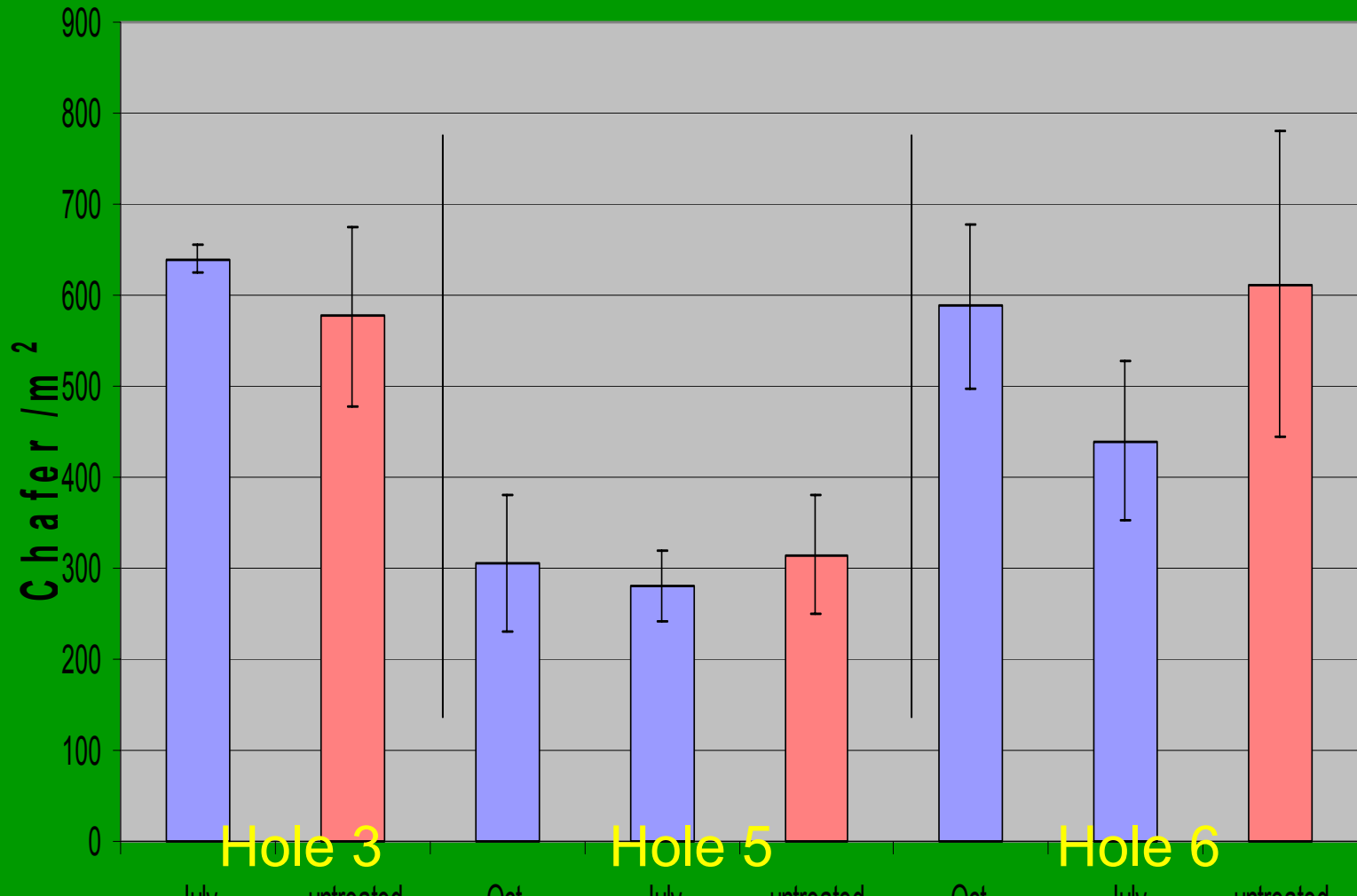
Control experiments with nematodes, Hjørring, 1999-2000



Application conc. 0,5 Mio. nematodes / m²

Evaluated September 2000

Control experiments with nematodes, Hjørring, 1999-2000





2001 Experiment, Hjørring

5 tests strips 6 m wide,
Application conc. 0,5 Mio. nematodes / m²,
Application 17th August 2001,
Evaluation 8th Oct. 2001



- Same disappointing results as in 2000:
- No significant effects on the larval density

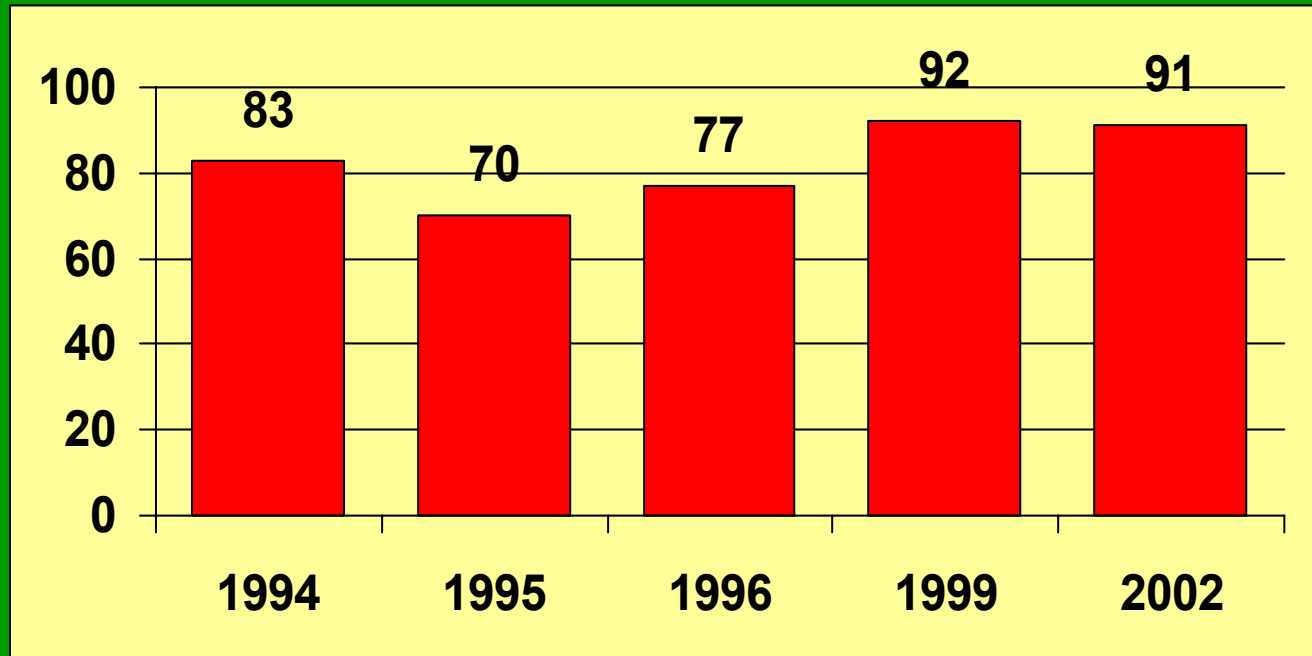
In spite of favourable application conditions: Temperatures <12°C, humid weather under and after application (irrigation)



Trials from several years by University of Kiel

- nematode control of Garden chafer

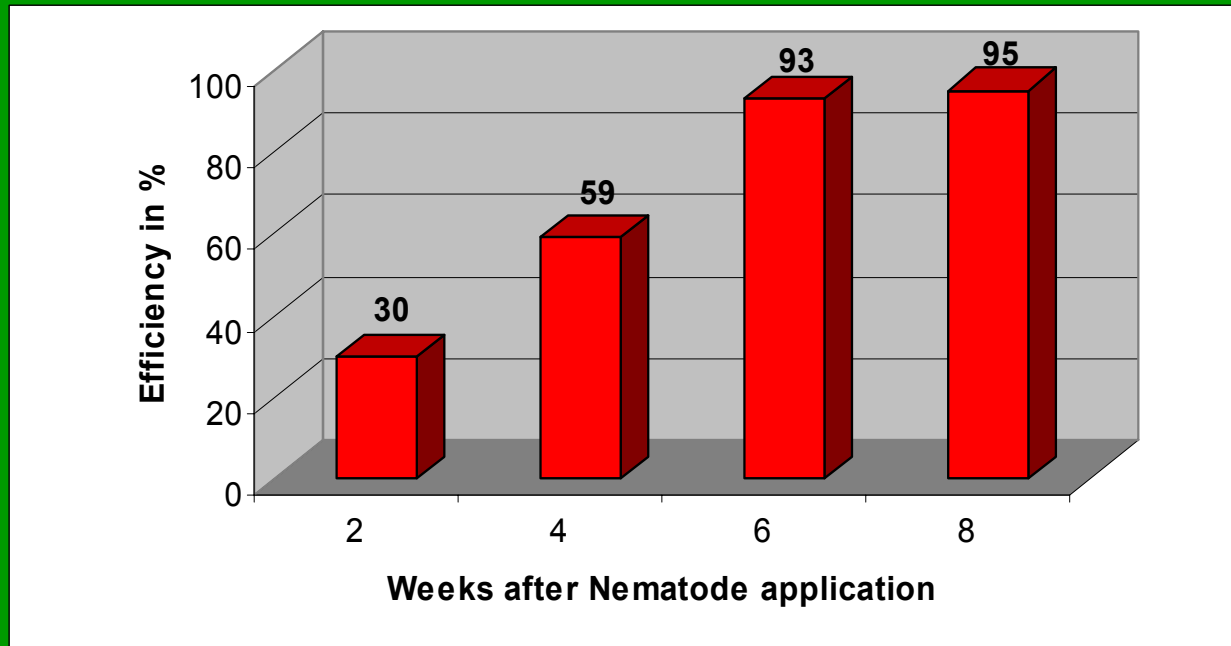
Efficiency (%)



Data from Ralf-Udo Ehlers



White grub control experiment - University of Kiel



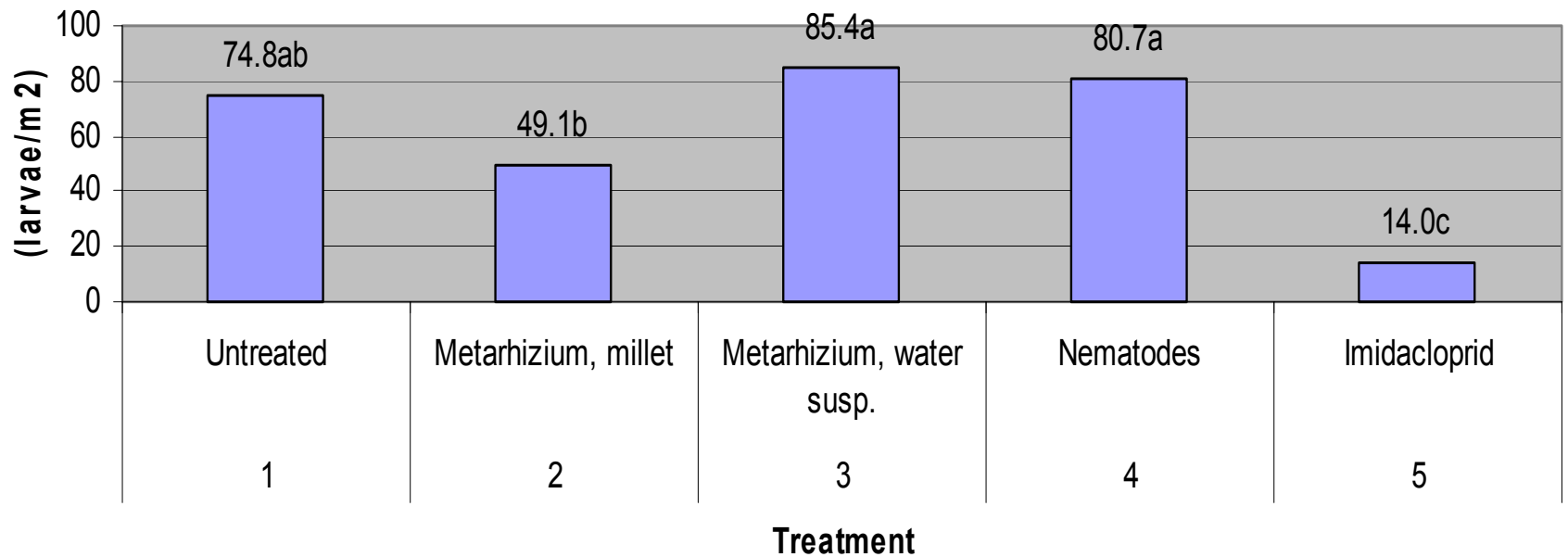
Data from Ralf-Udo Ehlers, Univ. Kiel

**30 tests areas 2 x 2 m,
Application conc. 0,5 Mio. nematodes / m²,
Application in August 1999**

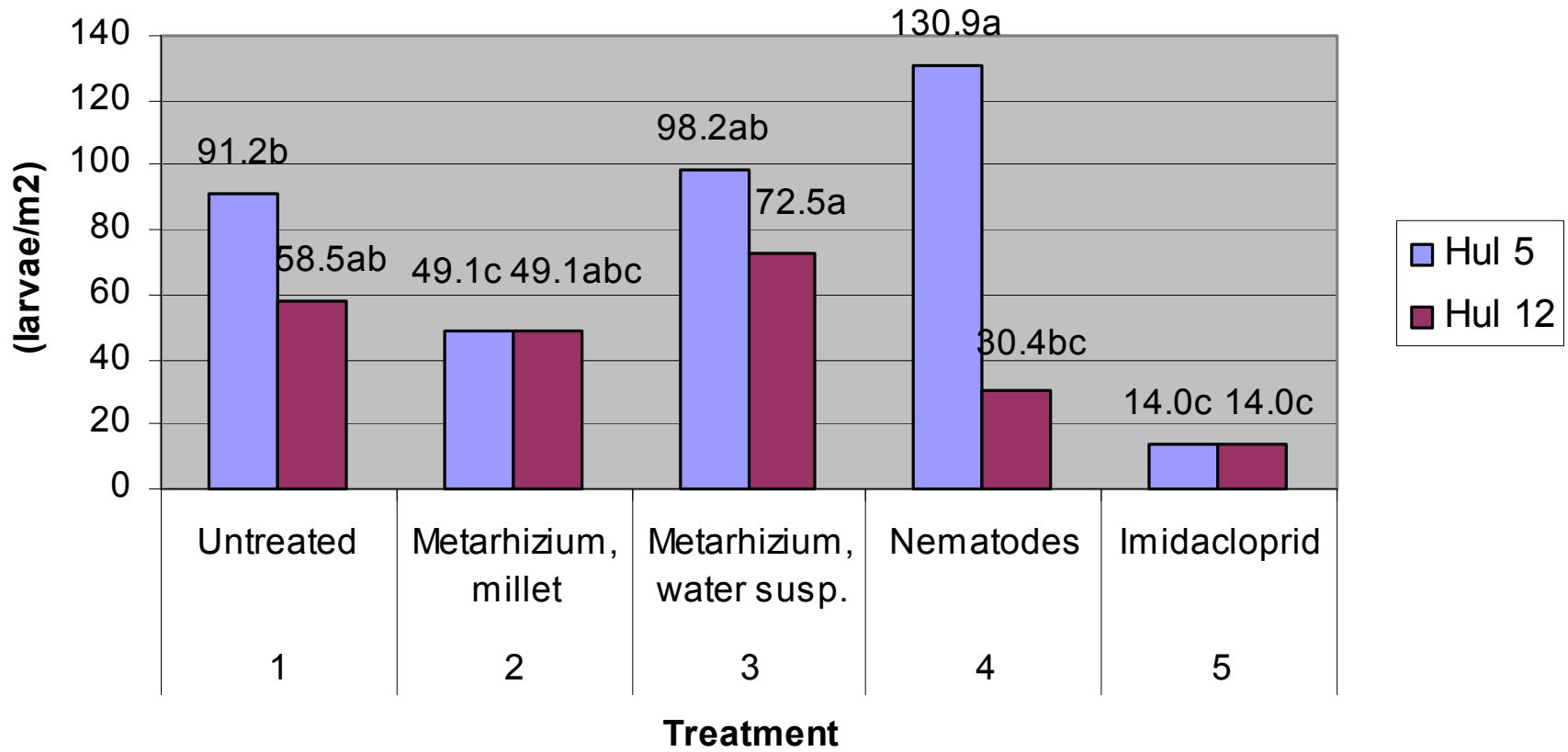
Give golf course 2003



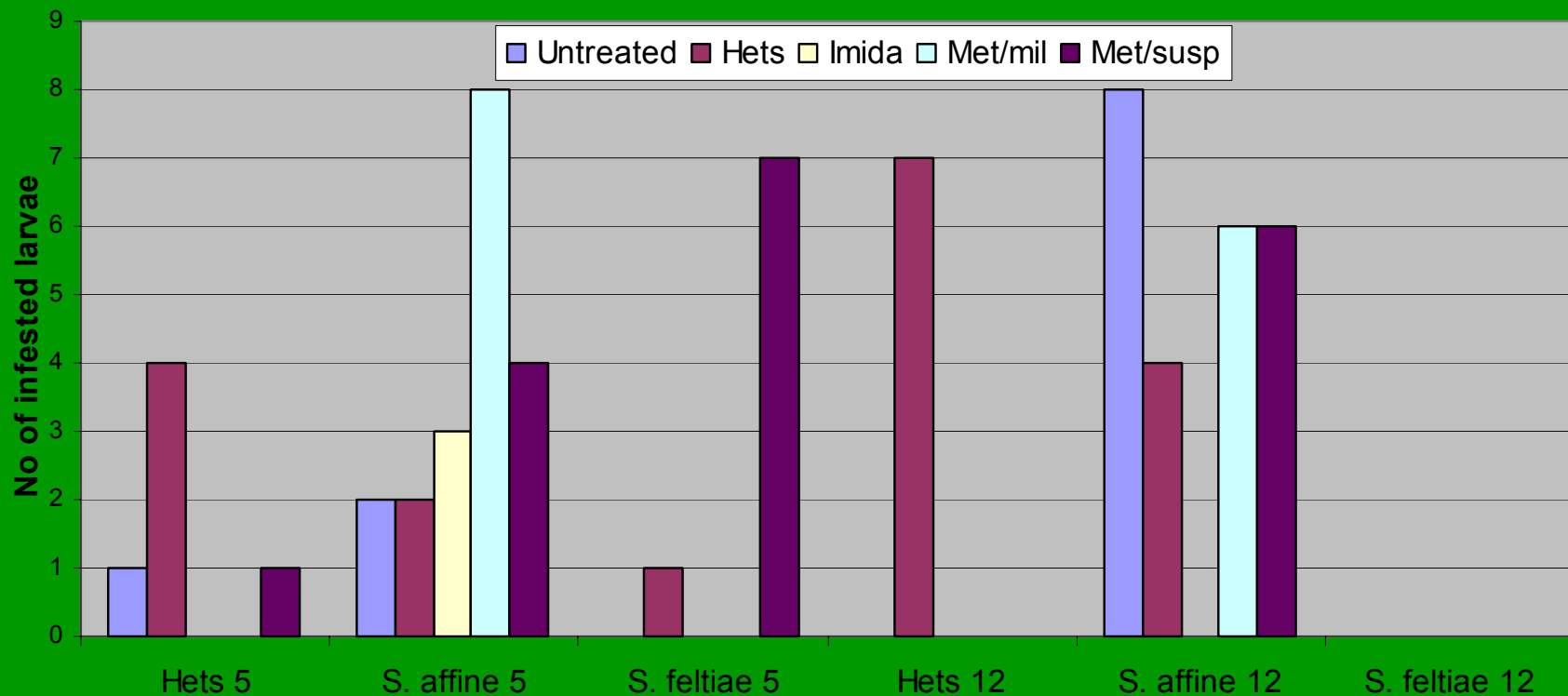
Larval density 2/10-03, mean hole 5 and 12



Larval density 2/10-03

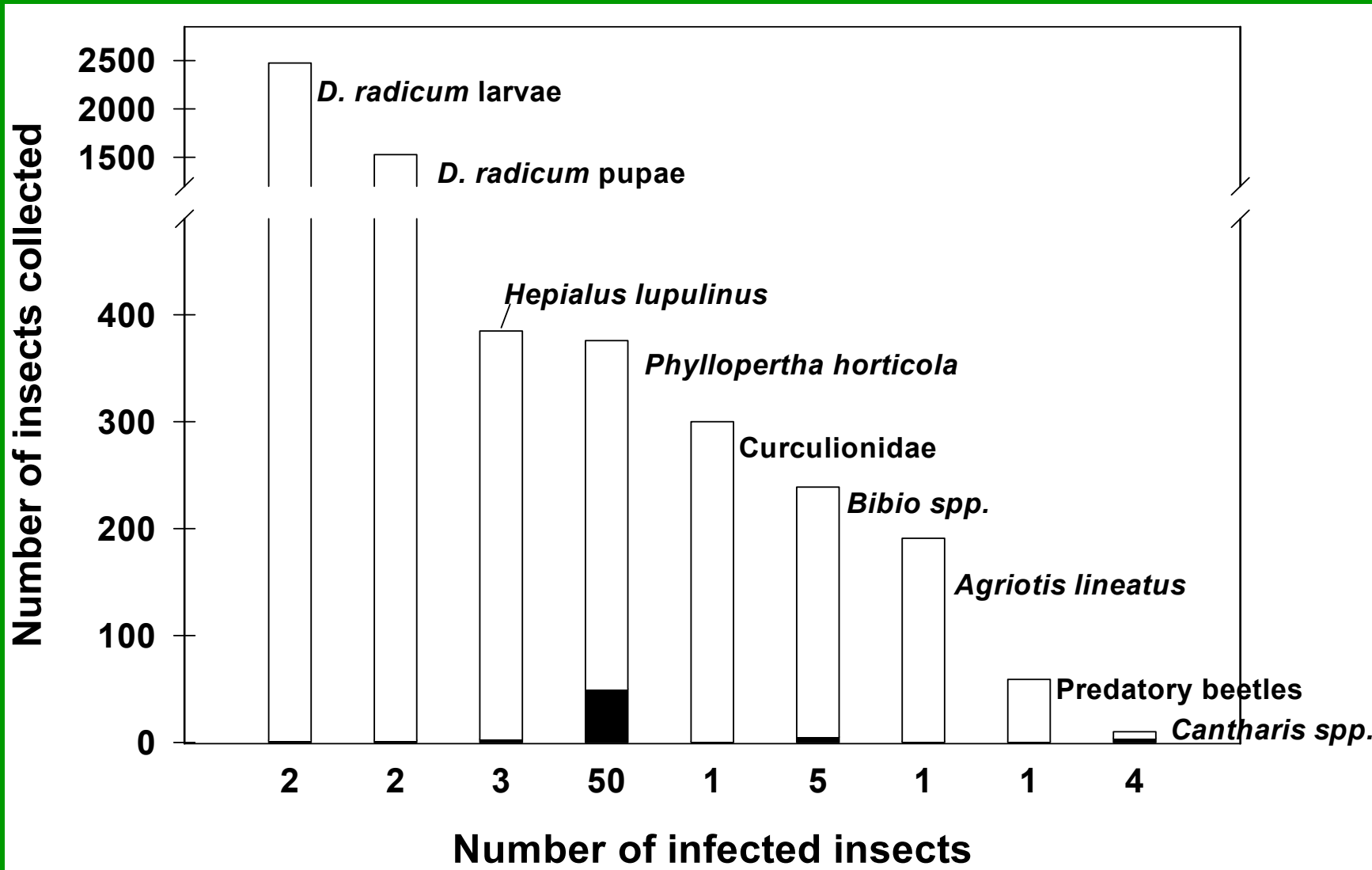


Baiting experiment - hole 5 and 12



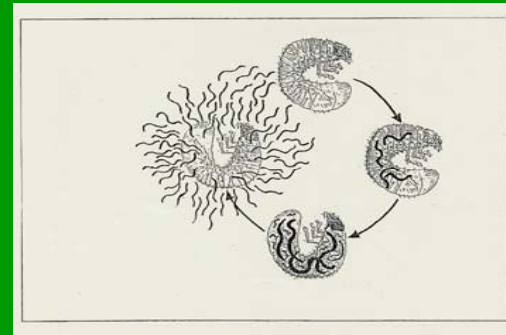
Nematode species	Insect order or family	Insect species	stage(s)
<i>Steinernema feltiae</i>	Curculionidae	Not identified	L
	Diptera	<i>Delia radicum</i>	L*, P
	Diptera	<i>Bibio</i> sp.	L
	Elateridae	<i>Agriotes lineatus</i>	L*
	Hepialidae	<i>Hepialus lupulinus</i>	L
	Scarabaeidae	<i>Phyllopertha horticola</i>	L
<i>Steinernema affine</i>	Cantharidae	<i>Cantharis</i> sp.	A
	Scarabaeidae	<i>Phyllopertha horticola</i>	L
		<i>Pterostichus nigrita</i>	L
<i>Steinernema intermedium</i>	Cantharidae	<i>Cantharis</i> sp.	P

**S. feltiae* had been supplied to the plants approximately three month prior to collection of infected insects.



- Long term effects are uncertain. However, nematodes have been found in treated plots in years following application. Most likely they have propagated in Garden chafer larvae.

- Can this situation be established with population levels fluctuating below the damage threshold?



Acknowledgement



Thanks to:

Danish Golf Federation,
Hjørring and Give Golf Course,
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Jan Martin, KVL



kov & Landskab

