

**The estimation of the incidence of
entomopathogenic nematodes**

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Detection of entomopathogenic nematodes

Method	Selective for EPN	Quantitative	Qualitative
Bait	(yes)	yes	yes
Baermann	no	yes	(yes)
Flotation	no	yes	no

General problems: Condition of soil vary (moisture, structure)
Handling/storage of samples could affect nematodes

Bait problems: Phased infectivity ?
Susceptibility of bait larvae ?

Density or incidence ?

Density: Number of nematodes per soil unit

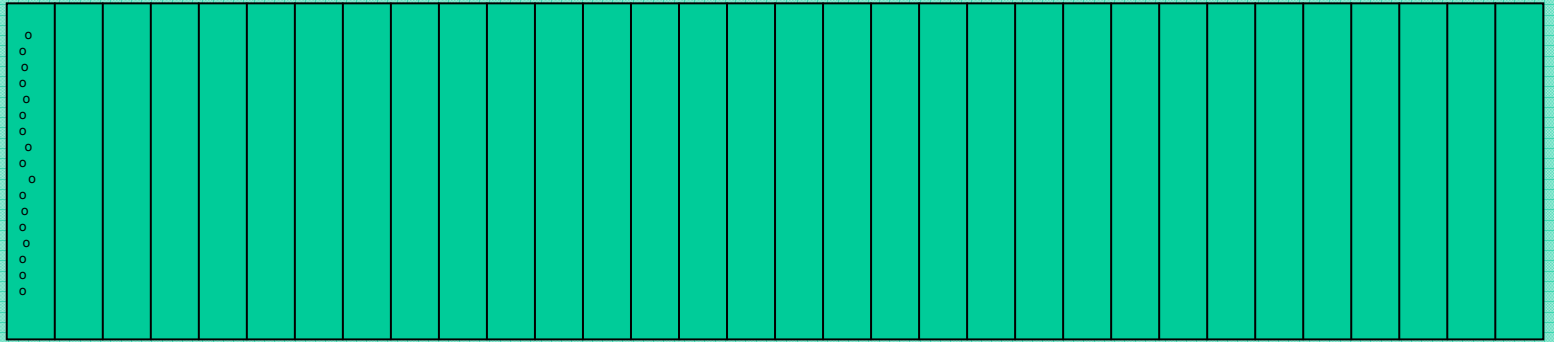
Incidence: Proportion of positive samples

Sampling of soil

Two sites (KVL and DFJ)

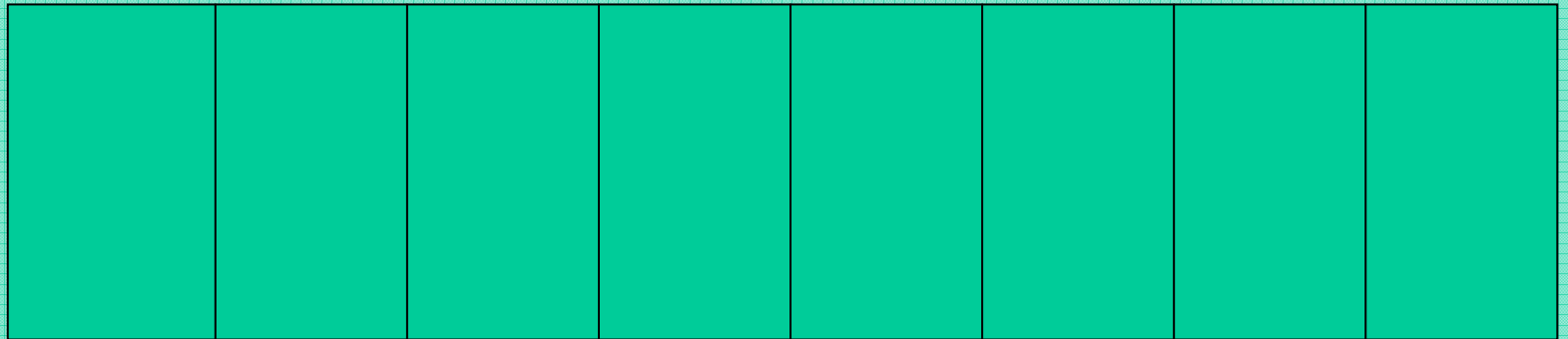
Two years (2001 and 2002)

KVL 2001



126 m²

0,7 hectare

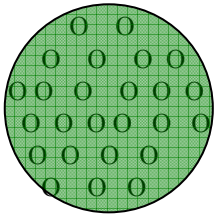


Sandy soil

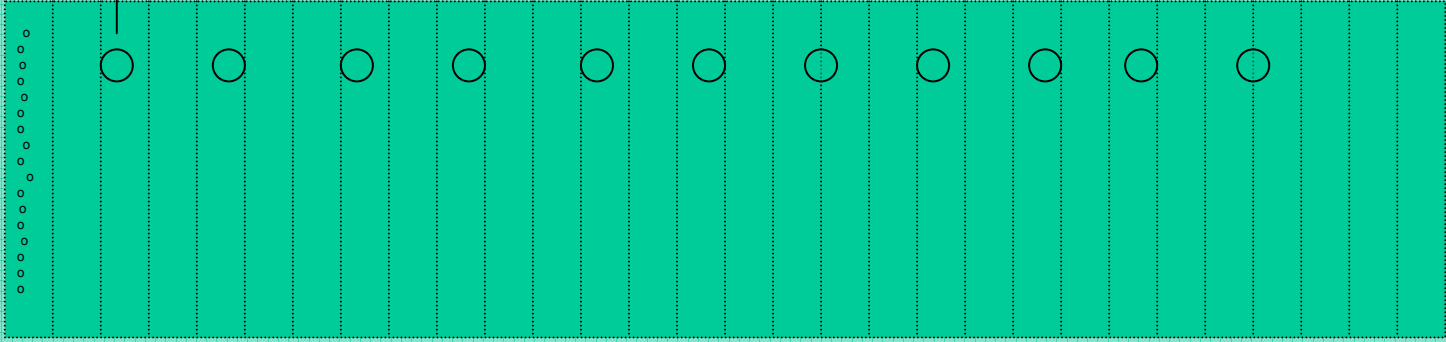
Soil moisture 9-13 %

High level of *S. feltiae*

KVL 2002

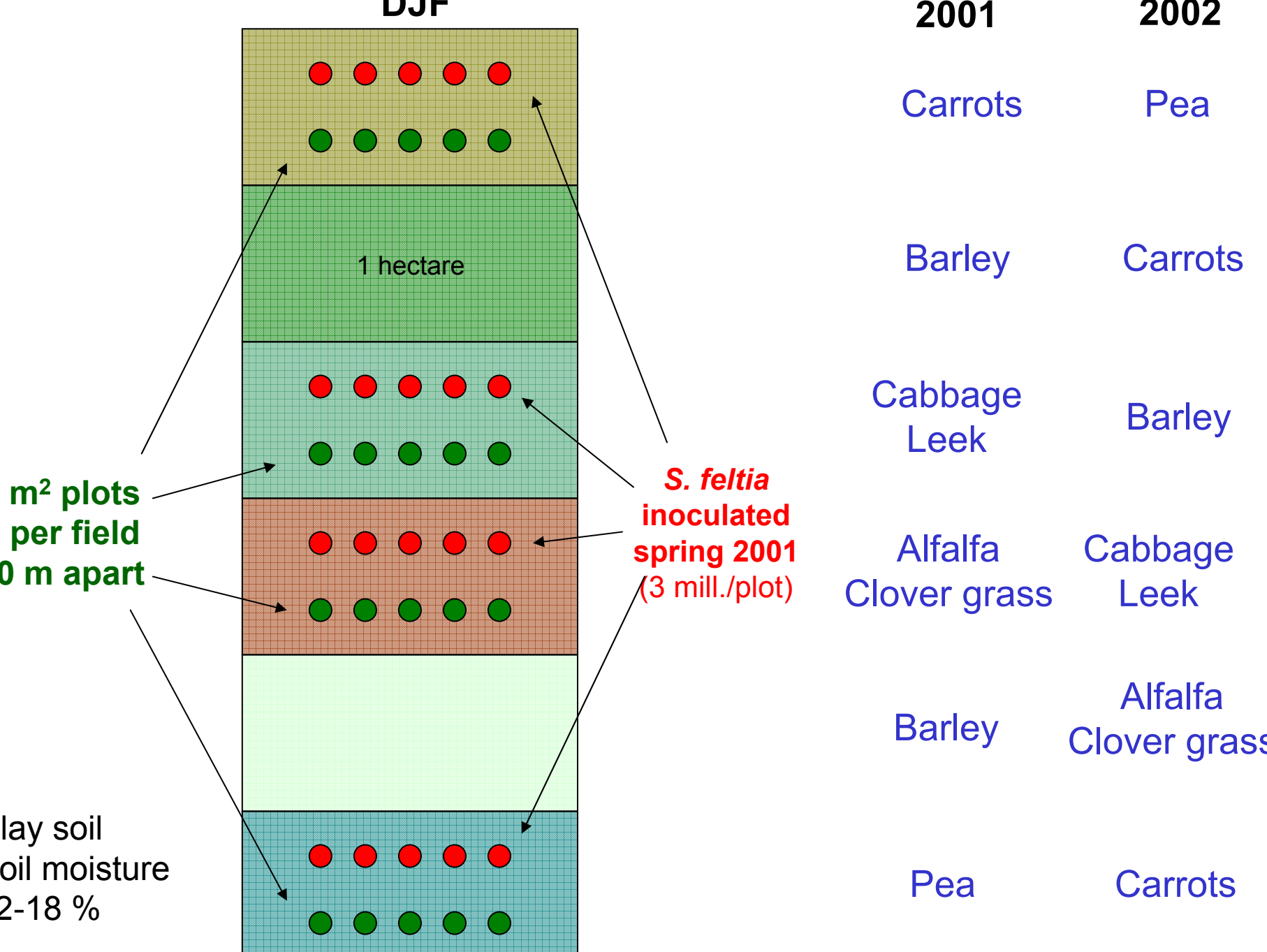


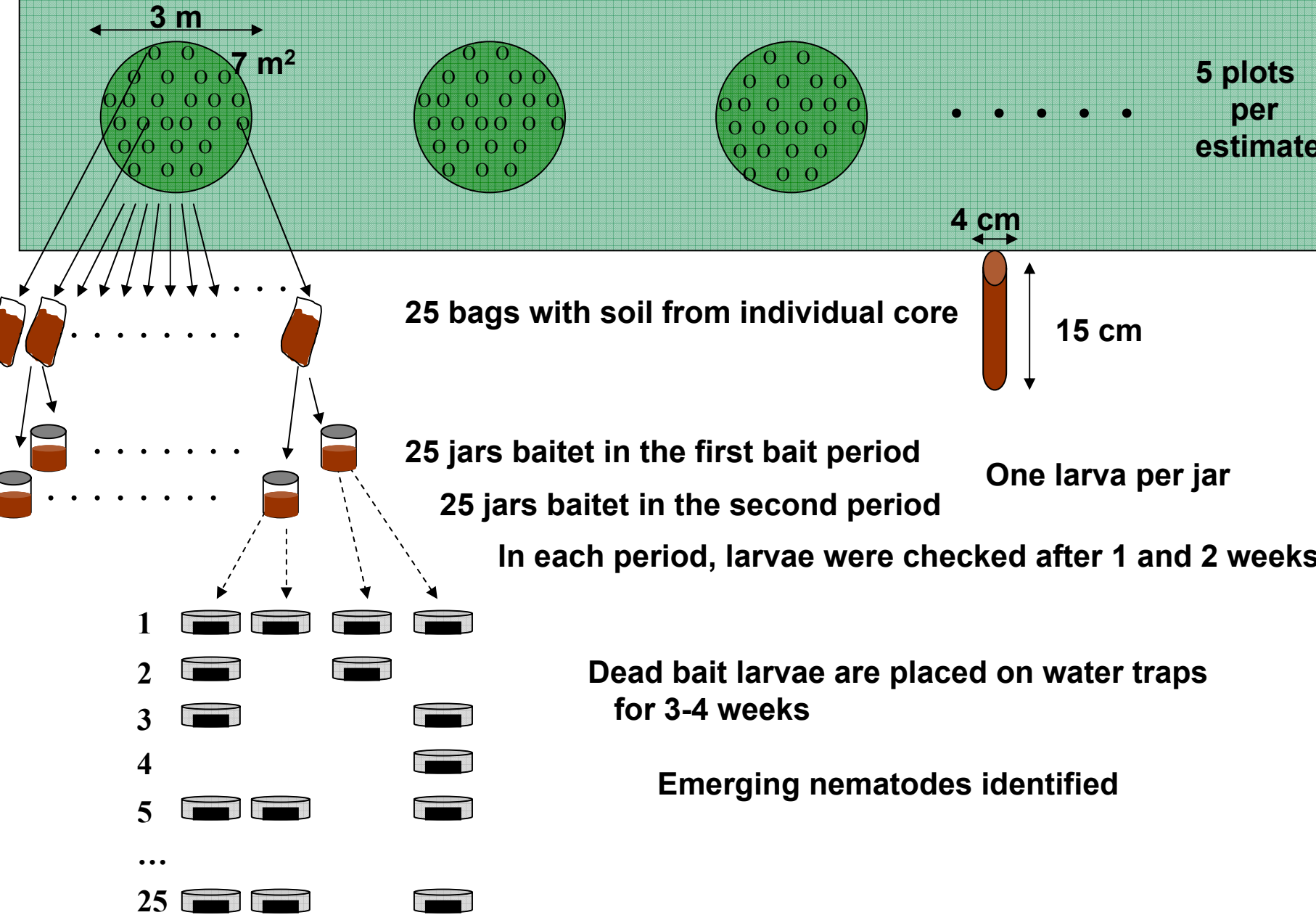
7 m²



0,7 hectare







Sample	Bait result				Incidence	
	A	B	C	D	ABCD	
1	0	0	0	0	0	
2	1	0	1	1	1	
3	0	0	1	0	1	
4	0	0	0	0	0	
5	1	0	1	0	1	
6	0	0	1	0	1	
7	0	0	1	1	1	
8	0	0	0	0	0	
9	0	0	0	0	0	
10	1	1	1	1	1	13 negative
11	0	0	0	0	0	12 positive
12	0	0	0	0	0	
13	0	0	0	0	0	Incidence = 52 %
14	0	0	0	0	0	
15	0	0	0	0	0	
16	0	0	0	0	0	Mean incidence based on
17	0	0	1	0	1	5 plots
18	0	0	1	0	1	
19	0	0	0	0	0	
20	1	0	0	0	1	
21	0	1	0	1	1	
22	0	0	1	1	1	
23	0	0	1	0	1	
24	0	0	0	0	0	
25	1	0	0	1	1	

Can life be easier ?

Full method: Incidence based on: 125 samples x 4 larvae

Reduced method - first step 125 samples x n larvae

Bait result**Incidence based on**

Sample	A	B	C	D	ABCD	AC	AB	A
1	0	0	0	0	0	0	0	0
2	1	0	1	1	1	1	1	1
3	0	0	1	0	1	1	0	0
4	0	0	0	0	0	0	0	0
5	1	0	1	0	1	1	1	1
6	0	0	1	0	1	1	0	0
7	0	0	1	1	1	1	0	0
8	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0
10	1	1	1	1	1	1	1	1
11	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0
17	0	0	1	0	1	1	0	0
18	0	0	1	0	1	1	0	0
19	0	0	0	0	0	0	0	0
20	1	0	0	0	1	1	1	1
21	0	1	0	1	1	0	1	0
22	0	0	1	1	1	1	0	0
23	0	0	1	0	1	1	0	0
24	0	0	0	0	0	0	0	0
25	1	0	0	1	1	1	1	1

Incidence based on			
ABCD	AC	AB	A
52	45	20	20

ABCD: Full method

AC : 2 periods - 1 week

AB : 1 period - 2 weeks

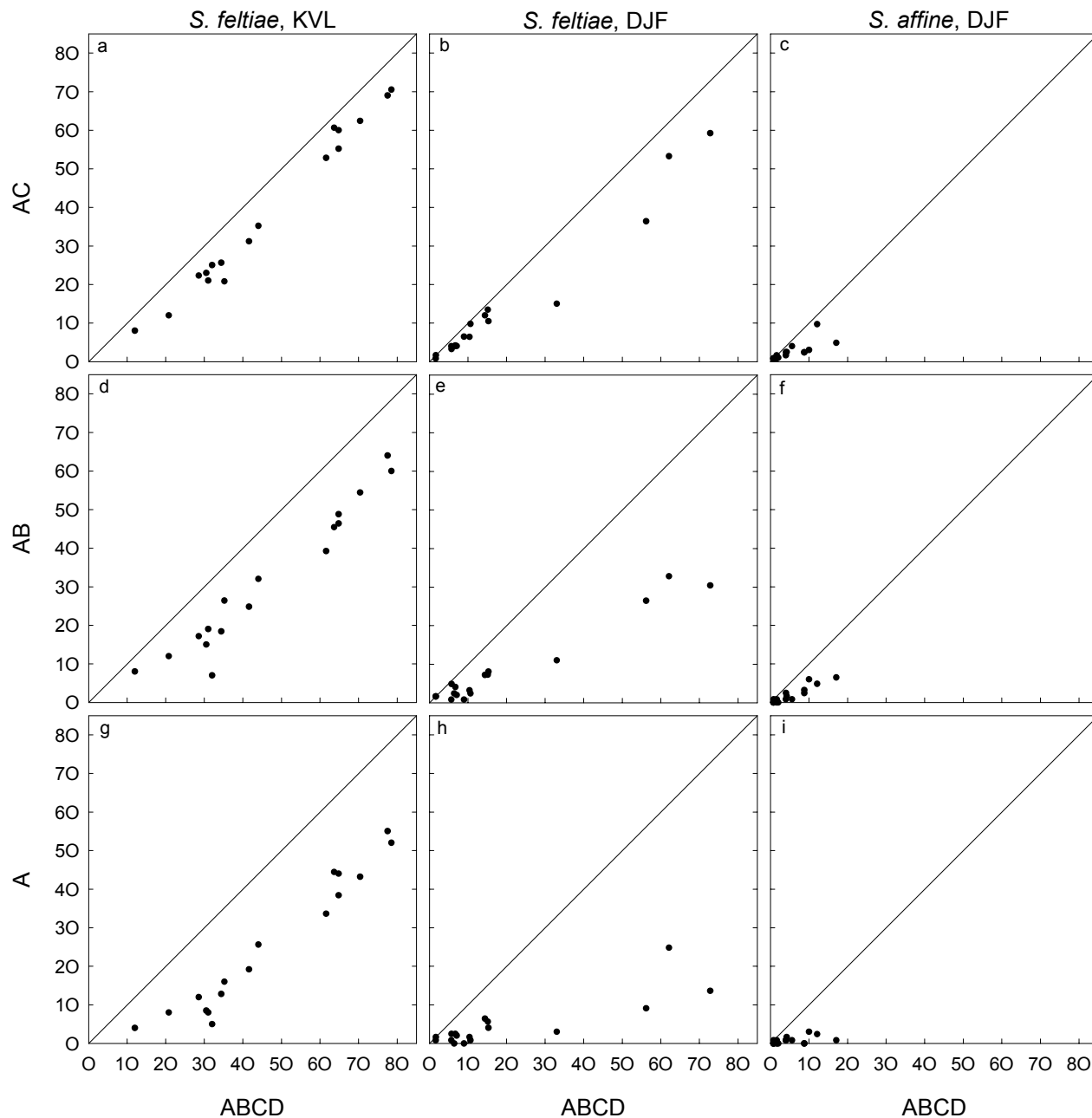
A : 1 period - 1 week

Reductions in bait procedure

Two periods
One week each

One period
Two weeks

One period
One week



Reference

Can life be easier ?

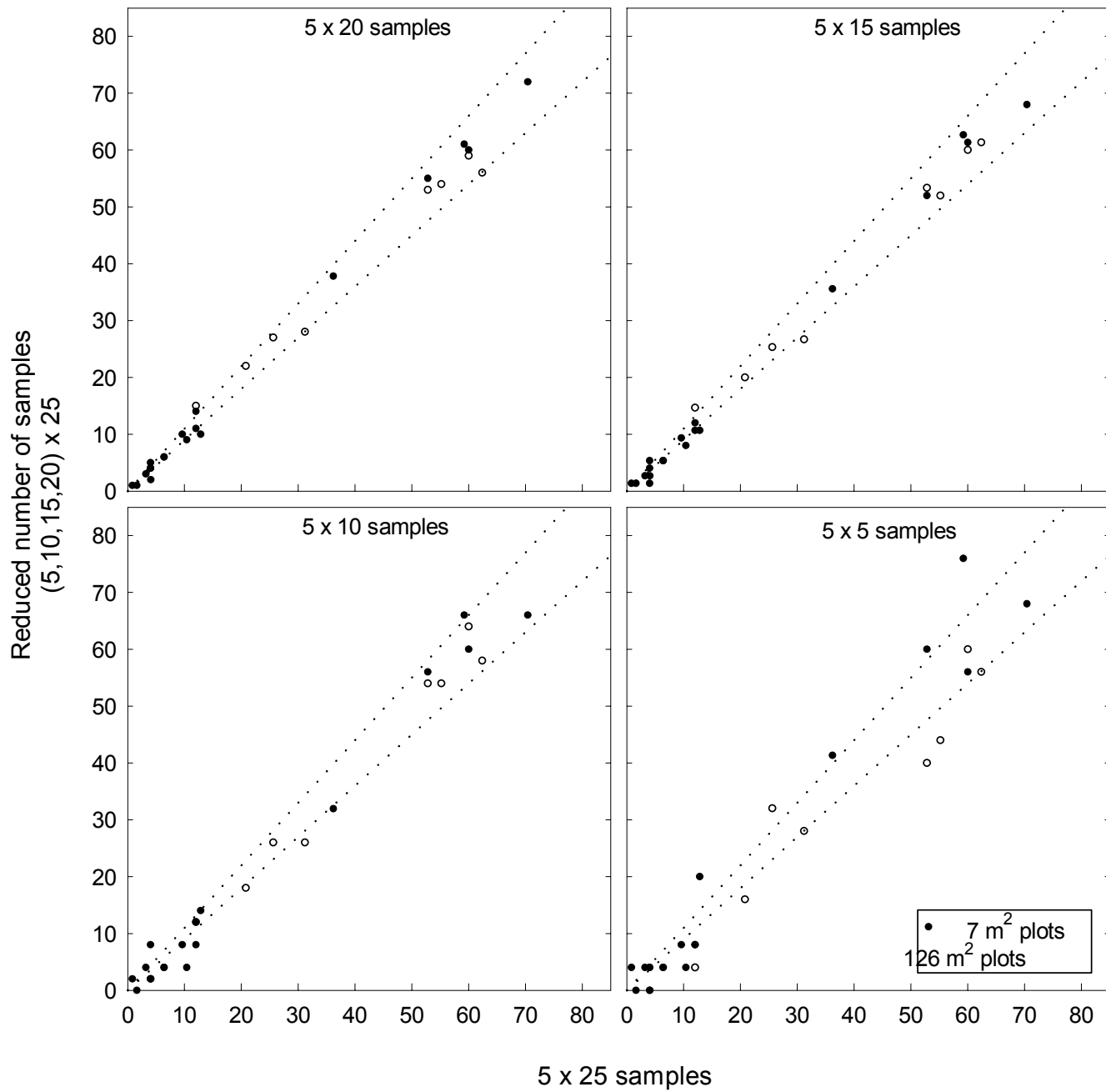
Full method: Incidence based on: 125 samples x 4 larvae

Reduced method - first step 125 samples x 2 larvae

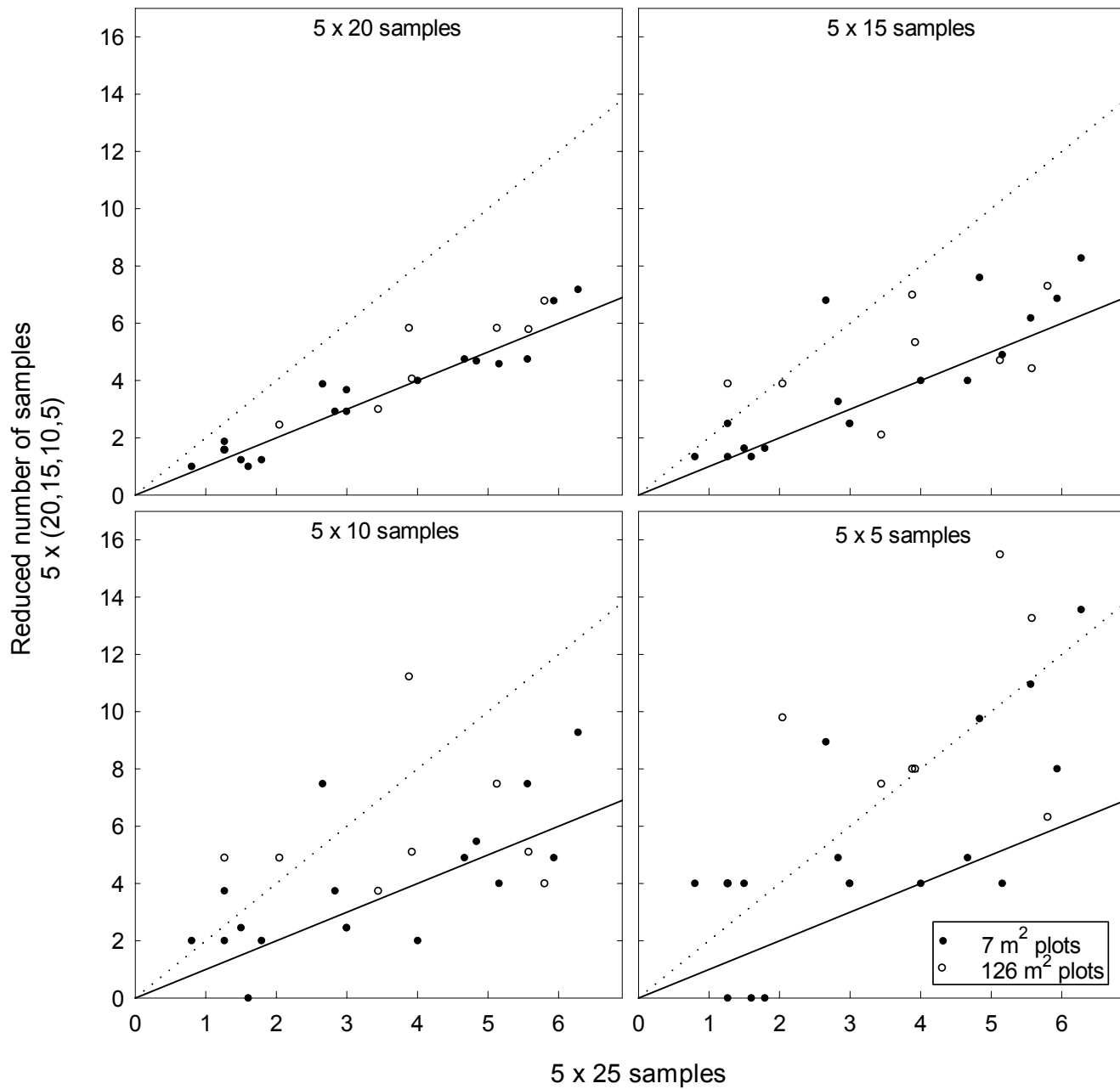
Reduced method - second step n samples x 2 larvae

n	Incidence based on			
	ABCD	AC	AB	A
25	52	45	20	20
20		45		
15		40		
10		60		
5		60		

Incidence in relation to reduced number of samples



Standard error in relation to reduced number of samples



Conclusions

Life can be easier (but not easy)

Bait results improved with more than one bait period

Extension of bait period from one to two week has limited value

Samples should not be too wet or too dry

Incidence can be estimated with few samples

Good precision will require more samples
and depend on variation between plots and incidence level

Samples and isolated nematodes can be stored for many weeks at 5°C

Isolates obtained from DJF and KVL

Site	Year	Period	No. of samples	<u><i>Steinernema feltiae</i> isolates</u>					<u><i>Steinernema affine</i> isolates</u>				
				A	B	C	D	Total	A	B	C	D	Total
DJF	2001	Autumn	1025	23	46	93	83	245	5	16	13	20	54
	2002	Spring	625	9	8	24	7	48	3	3	13	1	20
		Autumn	1275	67	51	145	86	349	6	3	12	17	38
KVL	2001	Autumn	500	70	47	72	55	244	2	2	3	5	12
	2002	Spring	825	200	88	197	89	574	1	1	0	0	2
		Autumn	1050 ²	349	169	345	206	1069
Total			5300	718	409	876	526	2529	17	25	41	43	126

A: First bait period - first week

B: First bait period - second week

C: Second bait period - first week

D: Second bait period - second week

