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## Yields of the Field Experiments 1990

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### 90/R/CS/327 Control of Stem Nematode - Lucerne

#### Rothamsted Research

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90/R/CS/327

**CONTROL OF STEM NEMATODE**

**Object:** To study the effects of rates of carbofuran and row spacings on the incidence of stem nematode (*Ditylenchus dipsaci*) and yield of four varieties of lucerne - Long Hoos IV 3.

**Sponsor:** A.G. Whitehead.

The third year, lucerne.

For previous years see 88-89/R/CS/327.

**Design:** 2 randomised blocks of 20 plots.

**Whole plot dimensions:** 1.22 x 8.84.

**Treatments:** All combinations of:-

1. **VARIETY** Varieties:

EUROPE  
EUVA  
VELA  
VERTUS

2. **CARBRATE** Rates of carbofuran (kg) in first year only:

0.0  
1.5

3. **ROWSPACE** Spacings between rows (cm):

15 15 (6 inches)  
30 30 (12 inches)

plus four extra treatments:

**CA3 R015** Varieties, given 3 kg carbofuran, on 15 cm row spacing, in first year only:

EUROPE  
EUVA  
VELA  
VERTUS

**NOTE:** Carbofuran was applied to lucerne on 7 Apr, 1988 at sowing.

**Basal applications:** Manures: (0:18:36) at 500 kg.

**Cultivations, etc.:-** PK applied: 23 Nov, 1989. Cut: 15 May, 1990, 27 June, 16 Aug and 14 Nov.

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1ST CUT (15/5/90) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

<b>CARBRATE</b>	0.0	1.5	Mean		
<b>VARIETY</b>					
EUROPE	2.69	2.41	2.55		
EUVA	3.72	2.92	3.32		
VELA	1.73	1.88	1.81		
VERTUS	4.60	4.60	4.60		
Mean	3.18	2.95	3.07		
<b>ROWSPACE</b>	15	30	Mean		
<b>VARIETY</b>					
EUROPE	2.85	2.25	2.55		
EUVA	3.38	3.26	3.32		
VELA	1.82	1.79	1.81		
VERTUS	5.12	4.08	4.60		
Mean	3.29	2.85	3.07		
<b>ROWSPACE</b>	15	30	Mean		
<b>CARBRATE</b>					
0.0	3.32	3.05	3.18		
1.5	3.26	2.64	2.95		
Mean	3.29	2.85	3.07		
	<b>ROWSPACE</b>	15	30		
<b>VARIETY</b>	<b>CARBRATE</b>				
EUROPE	0.0	2.72	2.65		
	1.5	2.98	1.85		
EUVA	0.0	3.95	3.48		
	1.5	2.80	3.04		
VELA	0.0	1.40	2.05		
	1.5	2.25	1.52		
VERTUS	0.0	5.20	4.01		
	1.5	5.03	4.16		
<b>CA3 RO15</b>	EUROPE	EUVA	VELA	VERTUS	Mean
	2.51	3.59	2.76	4.70	3.39
<b>GRAND MEAN</b>	3.13				

\*\*\* Standard errors of differences of means \*\*\*

<b>CA3 RO15</b>	<b>VARIETY</b>	<b>CARBRATE</b>	<b>ROWSPACE</b>
0.474	0.237	0.168	0.168
<b>VARIETY</b>	<b>VARIETY</b>	<b>CARBRATE</b>	<b>VARIETY</b>
<b>CARBRATE</b>	<b>ROWSPACE</b>	<b>ROWSPACE</b>	<b>CARBRATE</b>
			<b>ROWSPACE</b>
0.335	0.335	0.237	0.474

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1ST CUT (15/5/90) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.474	15.1
1ST CUT MEAN DM%	17.3		

2ND CUT (27/6/90) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

<b>CARBRATE</b>	0.0	1.5	Mean		
<b>VARIETY</b>					
EUROPE	2.70	2.42	2.56		
EUVA	3.57	3.48	3.52		
VELA	1.72	1.78	1.75		
VERTUS	4.45	4.64	4.55		
Mean	3.11	3.08	3.10		
<b>ROWSPACE</b>	15	30	Mean		
<b>VARIETY</b>					
EUROPE	2.79	2.33	2.56		
EUVA	3.87	3.17	3.52		
VELA	1.92	1.58	1.75		
VERTUS	4.88	4.21	4.55		
Mean	3.37	2.82	3.10		
<b>ROWSPACE</b>	15	30	Mean		
<b>CARBRATE</b>					
0.0	3.21	3.01	3.11		
1.5	3.52	2.64	3.08		
Mean	3.37	2.82	3.10		
<b>VARIETY</b>	<b>ROWSPACE</b>	15	30		
	<b>CARBRATE</b>				
EUROPE	0.0	2.74	2.66		
	1.5	2.84	2.00		
EUVA	0.0	3.65	3.48		
	1.5	4.09	2.87		
VELA	0.0	1.76	1.68		
	1.5	2.09	1.48		
VERTUS	0.0	4.71	4.20		
	1.5	5.05	4.23		
<b>CA3 RO15</b>	EUROPE	EUVA	VELA	VERTUS	Mean
	2.45	3.68	2.45	4.31	3.22
GRAND MEAN	3.12				

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2ND CUT (27/6/90) DRY MATTER TONNES/HECTARE

\*\*\* Standard errors of differences of means \*\*\*

CA3 RO15	VARIETY	CARBRATE	ROWSPACE
0.383	0.191	0.135	0.135
VARIETY	VARIETY	CARBRATE	VARIETY
CARBRATE	ROWSPACE	ROWSPACE	CARBRATE
			ROWSPACE
0.271	0.271	0.191	0.383

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.383	12.3
2ND CUT MEAN DM%	19.2		

3RD CUT (16/8/90) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

CARBRATE	0.0	1.5	Mean
VARIETY			
EUROPE	3.36	2.75	3.05
EUVA	3.86	4.01	3.94
VELA	2.01	1.90	1.96
VERTUS	4.27	4.71	4.49
Mean	3.38	3.34	3.36
ROWSPACE	15	30	Mean
VARIETY			
EUROPE	3.31	2.80	3.05
EUVA	4.20	3.67	3.94
VELA	1.91	2.00	1.96
VERTUS	4.58	4.40	4.49
Mean	3.50	3.22	3.36
ROWSPACE	15	30	Mean
CARBRATE			
0.0	3.50	3.26	3.38
1.5	3.51	3.18	3.34
Mean	3.50	3.22	3.36

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3RD CUT (16/8/90) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

VARIETY	ROWSpace	15	30		
	CARBRATE				
EUROPE	0.0	3.31	3.42		
	1.5	3.31	2.18		
EUVA	0.0	4.49	3.24		
	1.5	3.91	4.11		
VELA	0.0	1.85	2.18		
	1.5	1.98	1.82		
VERTUS	0.0	4.34	4.21		
	1.5	4.82	4.59		
CA3 RO15	EUROPE	EUVA	VELA	VERTUS	Mean
	3.85	4.54	2.71	3.72	3.70
GRAND MEAN	3.43				

\*\*\* Standard errors of differences of means \*\*\*

CA3 RO15	VARIETY	CARBRATE	ROWSpace
0.603	0.301	0.213	0.213
VARIETY	VARIETY	CARBRATE	VARIETY
CARBRATE	ROWSpace	ROWSpace	CARBRATE
			ROWSpace
0.426	0.426	0.301	0.603

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.603	17.6
3RD CUT MEAN DM%	27.5		

4TH CUT (14/11/90) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

CARBRATE	0.0	1.5	Mean
VARIETY			
EUROPE	0.63	0.39	0.51
EUVA	0.66	0.70	0.68
VELA	0.19	0.14	0.17
VERTUS	0.72	0.82	0.77
Mean	0.55	0.51	0.53

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4TH CUT (14/11/90) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

ROWSPACE	15	30	Mean
<b>VARIETY</b>			
EUROPE	0.63	0.40	0.51
EUVA	0.81	0.54	0.68
VELA	0.14	0.19	0.17
VERTUS	0.73	0.80	0.77
Mean	0.58	0.48	0.53

ROWSPACE	15	30	Mean
<b>CARBRATE</b>			
0.0	0.60	0.51	0.55
1.5	0.56	0.46	0.51
Mean	0.58	0.48	0.53

	ROWSPACE	15	30
<b>VARIETY</b>	<b>CARBRATE</b>		
EUROPE	0.0	0.68	0.59
	1.5	0.58	0.20
EUVA	0.0	0.95	0.37
	1.5	0.68	0.71
VELA	0.0	0.15	0.24
	1.5	0.13	0.14
VERTUS	0.0	0.61	0.82
	1.5	0.85	0.78

CA3 RO15	EUROPE	EUVA	VELA	VERTUS	Mean
	0.70	0.89	0.23	0.54	0.59

GRAND MEAN 0.54

\*\*\* Standard errors of differences of means \*\*\*

CA3 RO15	VARIETY	CARBRATE	ROWSPACE
0.287	0.144	0.101	0.101

VARIETY	VARIETY	CARBRATE	VARIETY
CARBRATE	ROWSPACE	ROWSPACE	CARBRATE
			ROWSPACE
0.203	0.203	0.144	0.287

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.287	52.9
4TH CUT MEAN DM%	24.4		

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TOTAL OF 4 CUTS DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

CARBRATE	0.0	1.5	Mean
<b>VARIETY</b>			
EUROPE	9.38	7.97	8.68
EUVA	11.81	11.11	11.46
VELA	5.65	5.70	5.68
VERTUS	14.05	14.76	14.40
Mean	10.22	9.89	10.05

ROWSPACE	15	30	Mean
<b>VARIETY</b>			
EUROPE	9.57	7.78	8.68
EUVA	12.26	10.65	11.46
VELA	5.80	5.55	5.68
VERTUS	15.31	13.50	14.40
Mean	10.74	9.37	10.05

ROWSPACE	15	30	Mean
<b>CARBRATE</b>			
0.0	10.63	9.82	10.22
1.5	10.85	8.92	9.89
Mean	10.74	9.37	10.05

<b>VARIETY</b>	<b>ROWSPACE</b>		<b>Mean</b>
	15	30	
<b>EUROPE</b>	<b>CARBRATE</b> 0.0	9.44	9.33
	1.5	9.71	6.24
<b>EUVA</b>	0.0	13.04	10.57
	1.5	11.49	10.73
<b>VELA</b>	0.0	5.16	6.14
	1.5	6.44	4.97
<b>VERTUS</b>	0.0	14.86	13.24
	1.5	15.75	13.76

CA3 RO15	EUROPE	EUVA	VELA	VERTUS	Mean
	9.50	12.70	8.16	13.27	10.91

GRAND MEAN 10.22

\*\*\* Standard errors of differences of means \*\*\*

<b>CA3 RO15</b>	<b>VARIETY</b>	<b>CARBRATE</b>	<b>ROWSPACE</b>
1.532	0.766	0.542	0.542
<b>VARIETY</b>	<b>VARIETY</b>	<b>CARBRATE</b>	<b>VARIETY</b>
<b>CARBRATE</b>	<b>ROWSPACE</b>	<b>ROWSPACE</b>	<b>CARBRATE</b>
			<b>ROWSPACE</b>
1.083	1.083	0.766	1.532



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TOTAL OF 4 CUTS DRY MATTER TONNES/HECTARE

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	1.532	15.0
TOTAL OF 4 CUTS MEAN DM%	22.1		
PLOT AREA HARVESTED	0.00045		