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## Yields of the Field Experiments 1989

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

#### Rothamsted Research

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89/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 second year, lucerne.

For previous year see 88/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. **CARBURATE** 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 RO15** Varieties, given 3 kg carbofuran, on 15 cm row spacing, in first year only:

EUROPE  
EUVA  
VELA  
VERTUS

**NOTES:** (1) Carbofuran was applied to lucerne on 7 Apr, 1988 at sowing.  
(2) Two additional blocks were sown in autumn 1988 but they failed to establish. These blocks were sown to Progreeta peas on 20 Apr, 1989, no treatments, no yields, to maintain the population of *D. dipsaci*.

**Basal applications:** Manures: (0:18:36) at 500 kg. Weedkiller: 2,4-DB at 2.1 kg in 220 l.

**Cultivations, etc.:-** Weedkiller applied: 11 Nov, 1988. PK applied: 16 Nov. Cut: 25 May, 1989, 25 July and 2 Oct.

89/R/CS/327

1ST CUT (25/5/89) DRY MATTER TONNES/HECTARE

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

CARBRATE	0.0	1.5	Mean
<b>VARIETY</b>			
EUROPE	1.88	5.02	3.45
EUVA	2.32	5.31	3.81
VELA	1.78	4.27	3.02
VERTUS	3.80	5.33	4.56
Mean	2.44	4.98	3.71

ROWSpace	15	30	Mean
<b>VARIETY</b>			
EUROPE	3.64	3.26	3.45
EUVA	3.90	3.72	3.81
VELA	3.05	3.00	3.02
VERTUS	5.05	4.08	4.56
Mean	3.91	3.51	3.71

ROWSpace	15	30	Mean
<b>CARBRATE</b>			
0.0	2.73	2.15	2.44
1.5	5.09	4.87	4.98
Mean	3.91	3.51	3.71

VARIETY	ROWSpace		Mean
	15	30	
<b>CARBRATE</b>			
EUROPE	0.0	2.05	1.71
	1.5	5.23	4.81
EUVA	0.0	2.59	2.05
	1.5	5.22	5.39
VELA	0.0	2.19	1.37
	1.5	3.91	4.63
VERTUS	0.0	4.12	3.48
	1.5	5.98	4.67

CA3 RO15	EUROPE	EUVA	VELA	VERTUS	Mean
	6.08	5.90	5.64	5.80	5.86

GRAND MEAN 4.14

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

CA3 RO15	VARIETY	CARBRATE	ROWSpace
0.363	0.181	0.128	0.128
<b>VARIETY</b>			
<b>CARBRATE</b>			
0.256	0.256	0.181	0.363

89/R/CS/327

1ST CUT (25/5/89) DRY MATTER TONNES/HECTARE

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.363	8.8

1ST CUT MEAN DM% 16.5

2ND CUT (25/7/89) DRY MATTER TONNES/HECTARE

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

<b>CARBRATE</b>	0.0	1.5	Mean		
<b>VARIETY</b>					
EUROPE	3.87	5.40	4.63		
EUVA	4.89	6.31	5.60		
VELA	3.04	3.80	3.42		
VERTUS	5.45	6.07	5.76		
Mean	4.31	5.39	4.85		
<b>ROWSPACE</b>	15	30	Mean		
<b>VARIETY</b>					
EUROPE	4.93	4.33	4.63		
EUVA	6.05	5.15	5.60		
VELA	3.24	3.61	3.42		
VERTUS	6.26	5.27	5.76		
Mean	5.12	4.59	4.85		
<b>ROWSPACE</b>	15	30	Mean		
<b>CARBRATE</b>					
0.0	4.70	3.93	4.31		
1.5	5.54	5.25	5.39		
Mean	5.12	4.59	4.85		
<b>VARIETY</b>	<b>ROWSPACE</b>	15	30		
	<b>CARBRATE</b>				
EUROPE	0.0	3.62	4.11		
	1.5	6.24	4.55		
EUVA	0.0	6.14	3.64		
	1.5	5.96	6.65		
VELA	0.0	2.96	3.13		
	1.5	3.51	4.09		
VERTUS	0.0	6.07	4.83		
	1.5	6.44	5.70		
<b>CA3 RO15</b>	EUROPE	EUVA	VELA	VERTUS	Mean
	7.72	6.11	5.81	6.13	6.44
GRAND MEAN	5.17				

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2ND CUT (25/7/89) DRY MATTER TONNES/HECTARE

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

CA3 RO15	VARIETY	CARBRATE	ROWSPACE
0.908	0.454	0.321	0.321
VARIETY	VARIETY	CARBRATE	VARIETY
CARBRATE	ROWSPACE	ROWSPACE	CARBRATE
			ROWSPACE
0.642	0.642	0.454	0.908

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.908	17.6
2ND CUT MEAN DM%	29.3		

3RD CUT (2/10/89) DRY MATTER TONNES/HECTARE

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

CARBRATE	0.0	1.5	Mean
VARIETY			
EUROPE	1.41	1.63	1.52
EUVA	1.79	2.16	1.97
VELA	0.78	0.68	0.73
VERTUS	1.26	1.86	1.56
Mean	1.31	1.58	1.44
ROWSPACE	15	30	Mean
VARIETY			
EUROPE	1.96	1.08	1.52
EUVA	2.17	1.78	1.97
VELA	0.60	0.86	0.73
VERTUS	1.64	1.47	1.56
Mean	1.59	1.30	1.44
ROWSPACE	15	30	Mean
CARBRATE			
0.0	1.49	1.13	1.31
1.5	1.69	1.47	1.58
Mean	1.59	1.30	1.44

89/R/CS/327

3RD CUT (2/10/89) DRY MATTER TONNES/HECTARE

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

VARIETY	ROWSPACE	15	30		
	CARBRATE				
EUROPE	0.0	1.35	1.47		
	1.5	2.56	0.70		
EUVA	0.0	2.71	0.87		
	1.5	1.63	2.69		
VELA	0.0	0.48	1.09		
	1.5	0.72	0.63		
VERTUS	0.0	1.44	1.08		
	1.5	1.84	1.87		
CA3 RO15	EUROPE	EUVA	VELA	VERTUS	Mean
	2.94	2.86	1.73	1.58	2.28
GRAND MEAN	1.61				

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

CA3 RO15	VARIETY	CARBRATE	ROWSPACE
0.710	0.355	0.251	0.251
VARIETY	VARIETY	CARBRATE	VARIETY
CARBRATE	ROWSPACE	ROWSPACE	CARBRATE
			ROWSPACE
0.502	0.502	0.355	0.710

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.710	44.1
3RD CUT MEAN DM%	27.3		

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

CARBRATE	0.0	1.5	Mean
VARIETY			
EUROPE	7.15	12.04	9.60
EUVA	9.00	13.77	11.38
VELA	5.60	8.75	7.18
VERTUS	10.51	13.25	11.88
Mean	8.07	11.95	10.01

89/R/CS/327

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTRE

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

ROWSPACE	15	30	Mean
<b>VARIETY</b>			
EUROPE	10.52	8.67	9.60
EUVA	12.12	10.64	11.38
VELA	6.88	7.47	7.18
VERTUS	12.95	10.81	11.88
Mean	10.62	9.40	10.01

ROWSPACE	15	30	Mean
<b>CARBRATE</b>			
0.0	8.93	7.21	8.07
1.5	12.31	11.59	11.95
Mean	10.62	9.40	10.01

	ROWSPACE	15	30
<b>VARIETY</b>			
EUROPE	0.0	7.02	7.29
	1.5	14.03	10.06
EUVA	0.0	11.43	6.56
	1.5	12.81	14.73
VELA	0.0	5.62	5.59
	1.5	8.15	9.35
VERTUS	0.0	11.63	9.39
	1.5	14.27	12.24

CA3 RO15	EUROPE	EUVA	VELA	VERTUS	Mean
	16.74	14.88	13.17	13.51	14.57

GRAND MEAN 10.92

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

CA3 RO15	VARIETY	CARBRATE	ROWSPACE
1.748	0.874	0.618	0.618
VARIETY	VARIETY	CARBRATE	VARIETY
CARBRATE	ROWSPACE	ROWSPACE	CARBRATE
ROWSPACE	1.236	1.236	0.874
			ROWSPACE
			1.748

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	1.748	16.0

TOTAL OF 3 CUTS MEAN DM% 24.4

PLOT AREA HARVESTED	ROW SPACE 30CM	0.00045
	ALL OTHER PLOTS	0.00039