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Yields of the Field Experiments 1975

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75/ W/NB/1 - Inoculants, Varieties & N - Navy Beans

Rothamsted Research

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75/W/NB/1

NAVY BEANS

INOCULANTS, VARIETIES AND N

Object: To study the effects of different Rhizobium strains and rates and times of applying nitrogen fertilizer on yield and nodulation of two varieties of navy beans - Woburn, White Horse.

Sponsors: A.R.J. Eaglesham, P.J. Dart.

Design: Single replicate of 2 x 5 x 5 x 2 fully randomised.

Whole plot dimensions: 1.90 x 4.27.

Treatments: All combinations of:-

1. Varieties:	VARIETY
Limelight	LL
Purley King	PK
2. Rhizobium inoculants:	RHIZOBUM
None	0
1	1
2	2
3	3
4	4
3. Rates of nitrogen fertilizer (kg N):	N RATE
None	0
150	150
200	200
250	250
300	300
4. Times of applying nitrogen fertilizer:	N TIME
Early, 29 May	EARLY
Late, 30 July	LATE

Basal applications: Manures: (0:14:28) at 450 kg. Weedkillers: Paraquat at 0.56 kg ion in 280 l. Trifluralin at 1.1 kg in 340 l.

Seed: Varieties: Limelight, sown at 290 kg.
Purley King, sown at 110 kg.

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Cultivations, etc.: - Paraquat applied: 19 Sept, 1974. Subsoiled: Tines 140 cm apart and 56 cm deep: 14 Oct. Ploughed: 18 Dec. Spring-tine cultivated three times, the second time with crumbler: 3 Mar, 1975, 21 Apr, 22 May. PK applied, trifluralin applied, power harrowed twice: 27 May. Spring-tine cultivated, seed sown: 28 May. Hand harvested: 21 Aug, 27 Aug, 2 Sept, 29 Sept.

- NOTES: (1) Assessments were made during the growing season of nodulation and nitrogenase activity.
- (2) Samples were taken of stems, leaves and pods, during the growing season, for dry matter yields.

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NAVY BEANS

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

RHIZOBUM VARIETY	0	1	2	3	4	MEAN
LL	2.54	2.24	2.13	2.12	2.28	2.26
PK	2.68	2.66	2.79	2.14	2.40	2.54
MEAN	2.61	2.45	2.46	2.13	2.34	2.40
RHIZOBUM N RATE	0	1	2	3	4	MEAN
150	2.15	2.07	2.23	2.10	2.19	2.15
200	2.72	2.88	2.74	2.12	2.39	2.57
250	2.72	2.64	2.10	2.25	2.56	2.46
300	2.85	2.22	2.77	2.05	2.22	2.42
MEAN	2.61	2.45	2.46	2.13	2.34	2.40
RHIZOBUM N TIME	0	1	2	3	4	MEAN
EARLY	2.46	2.50	2.53	1.92	2.40	2.37
LATE	2.76	2.40	2.39	2.34	2.27	2.43
MEAN	2.61	2.45	2.46	2.13	2.34	2.40
N RATE VARIETY	150	200	250	300	MEAN	
LL	1.93	2.42	2.38	2.31	2.26	
PK	2.36	2.71	2.53	2.53	2.54	
MEAN	2.15	2.57	2.46	2.42	2.40	
N RATE N TIME	150	200	250	300	MEAN	
EARLY	2.12	2.61	2.30	2.43	2.37	
LATE	2.18	2.53	2.61	2.41	2.43	
MEAN	2.15	2.57	2.46	2.42	2.40	
N TIME VARIETY	EARLY	LATE	MEAN			
LL	2.33	2.19	2.26			
PK	2.40	2.67	2.54			
MEAN	2.37	2.43	2.40			
VARIETY N TIME N RATE	LL	LATE	PK	LATE		
150	1.89	1.97	2.34	2.38		
200	2.60	2.25	2.62	2.81		
250	2.37	2.39	2.23	2.84		
300	2.47	2.15	2.40	2.67		

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NAVY BEANS

GRAIN TONNES/HECTARE

*** TABLE OF MEANS ***

VARIETY	LL		PK	
N TIME	EARLY	LATE	EARLY	LATE
RHIZOBUM				
0	2.58	2.49	2.35	3.02
1	2.24	2.25	2.77	2.55
2	2.28	1.98	2.79	2.80
3	2.15	2.09	1.70	2.59
4	2.41	2.14	2.39	2.41

N RATE	RHIZOBUM	0	1	2	3	4
	N TIME					
150	EARLY	2.05	2.18	2.53	1.86	1.96
	LATE	2.24	1.96	1.93	2.33	2.42
200	EARLY	2.58	3.11	2.68	2.11	2.58
	LATE	2.85	2.65	2.81	2.13	2.20
250	EARLY	2.61	2.43	1.89	1.94	2.63
	LATE	2.83	2.85	2.32	2.57	2.49
300	EARLY	2.61	2.30	3.03	1.78	2.45
	LATE	3.10	2.14	2.50	2.32	1.99

VARIETY	RHIZOBUM	0	1	2	3	4
	N RATE					
LL	150	1.89	2.03	1.58	2.01	2.14
	200	2.57	2.38	2.43	2.15	2.59
	250	2.79	2.38	2.08	2.16	2.48
	300	2.90	2.18	2.42	2.16	1.89
PK	150	2.40	2.11	2.86	2.18	2.23
	200	2.86	3.38	3.05	2.10	2.18
	250	2.65	2.90	2.13	2.35	2.64
	300	2.81	2.26	3.12	1.95	2.54

N RATE 0

RHIZOBUM	0	1	2	3	4	MEAN
VARIETY						
LL	1.68	2.09	1.94	2.15	2.08	1.99
PK	2.18	2.76	2.34	2.86	2.23	2.47
MEAN	1.93	2.43	2.14	2.51	2.15	2.23

GRAND MEAN 2.37

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NAVY BEANS

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	VARIETY	RHIZOBUM	N RATE	N TIME	RHIZOBUM VARIETY
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SED	0.099	0.157	0.141	0.099	0.222
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TABLE	RHIZOBUM N RATE	RHIZOBUM N TIME	N RATE VARIETY	N RATE N TIME	N TIME VARIETY
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SED	0.314	0.222	0.199	0.199	0.141
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TABLE	VARIETY N TIME N RATE	VARIETY N TIME RHIZOBUM	RHIZOBUM N RATE N TIME	RHIZOBUM VARIETY N RATE
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SED	0.281	0.314	0.445	0.445
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TABLE	VARIETY N RATE 0	RHIZOBUM N RATE 0	RHIZOBUM VARIETY N RATE 0
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SED	0.199	0.314	0.445
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***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
WP	20	0.4446	18.8

MEAN DM% 91.1

PLOT AREA HARVESTED 0.00049