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Numerical Results of the Field Experiments 1969

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69/R&W/M/2 - Inocula & N - Beans and Spring Wheat - Mixed Crop

Rothamsted Research

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INOCULA AND N

(69/R/M/2 and 69/W/M/2)

Beans and spring wheat - Rothamsted (R) Stackyard and Woburn (W)
Horsepool.

Design: 4 blocks of 4 plots split into 4 sub plots with confounding.

Area of each sub plot: 0.0011. Area harvested Stackyard (R): 0.0003.
Horsepool (W): 0.0003.

Treatments: All combinations of:-

- Whole plots: 1. Beans, seed inoculum (*Rhizobium leguminosarum*): None (O), ineffective strain 1019 (I), effective strain 1038 (E). Spring wheat (SW).
- Sub plots: 2. Fertiliser: Unmanured (U), 360 lb of compound fertiliser (0:14:28) plus 1 ton ground chalk Stackyard (R) 1.5 tons Horsepool (W), (M).
3. Nitrogen: None (O), 1.0 (N1), 2.0 (N2), 3.0 (N3) cwt N as 'Nitro-Chalk', half in the seedbed, and half top dressed.

Standard applications: Weedkiller: Simazine to beans at 1 lb in 40 gals.
Insecticide: Dimethoate to beans at 0.4 fl oz in 3 gals.

Cultivations, etc.:

Stackyard (R): Ploughed: 25 Oct, 1968. Ground chalk, PK and first half N applied: 27 Mar, 1969. Beans drilled at 200 lb, spring wheat drilled at 180 lb: 2 Apr. Weedkiller applied: 11 Apr. Remaining half N applied: 5 May. First harvest: 7 July. Insecticide applied: 30 July. Second harvest: 4 Aug. Varieties: Spring beans - Tarvin, spring wheat - Kolibri. Previous crops: Barley 1967, fallow 1968.

Horsepool (W): Ploughed: 4 Dec, 1968. Ground chalk, PK, and first half N applied: 8 Apr, 1969. Beans drilled at 200 lb, spring wheat drilled at 180 lb: 9 Apr. Weedkiller applied: 11 Apr. Remaining half N applied: 8 May. First harvest: 8 July. Insecticide applied: 30 July. Second harvest: 7 Aug. Varieties: Spring beans - Tarvin, spring wheat - Kolibri. Previous crops: Potatoes 1967, winter wheat 1968.

- NOTES: (1) Soil samples were taken for pH determination in February, and *Rhizobium* counts in February and June.
- (2) Grain yields were not taken - separate part plots were harvested green on two occasions.
- (3) Dry matter and % N determinations were made on crop produce.

Standard errors per plot: Dry matter, cwt:

Stackyard (R):	1st cut:	Whole plot:	1.22 or 3.2% (6 d.f.)
		Sub plot:	5.20 or 13.4% (24 d.f.)
	2nd cut:	Whole plot:	5.33 or 9.3% (6 d.f.)
		Sub plot:	6.76 or 11.8% (24 d.f.)
Horsepool (W):	1st cut:	Whole plot:	3.66 or 7.6% (6 d.f.)
		Sub plot:	5.88 or 12.3% (24 d.f.)
	2nd cut:	Whole plot:	5.04 or 7.5% (6 d.f.)

SUMMARY OF RESULTS

STACKYARD (R)

DRY MATTER: CWT

	O	I	E	SW	Mean
1ST CUT					
(1) and (2)					
U	27.4	24.9	27.0	70.3	37.4
M	29.2	28.1	24.0	78.8	40.0
(3) and (4)					
NO	29.4	23.7	24.5	47.4	31.2
N1	28.1	27.9	25.9	80.5	40.6
N2	27.0	26.5	26.1	84.8	41.1
N3	28.8	28.0	25.3	85.6	41.9
Mean (± 0.61)	28.3	26.5	25.5	74.6	38.7

(1) (± 1.44) (3) (± 2.33) For use in horizontal and diagonal comparisons only

(2) (± 1.84) (4) (± 2.60) For use in vertical and interaction comparisons only

Mean D.M. %: 18.7

STACKYARD (R)					
DRY MATTER: CWT					
	O	I	E	SW	Mean
2ND CUT					
	(1) and (2)				(± 1.19)
U	47.7	42.2	40.5	101.1	57.9
M	39.7	43.9	40.8	102.7	56.8
	(3) and (4)				(± 1.69)
NO	41.8	35.6	39.6	74.5	47.9
N1	46.3	47.0	41.6	111.8	61.6
N2	42.9	48.7	39.5	105.6	59.2
N3	43.9	40.9	42.0	115.7	60.6
Mean (± 2.67)	43.7	43.1	40.7	101.9	57.3

(1) (± 3.16) (3) (± 3.96) For use in horizontal and diagonal comparisons only

(2) (± 2.39) (4) (± 3.38) For use in vertical and interaction comparisons only

Mean D.M. %: 26.8

HORSEPOOL (W)

DRY MATTER: CWT

	O	I	E	SW	Mean
1ST CUT					
(1) and (2)					
U	38.3	38.4	37.6	74.2	47.1
M	39.7	39.6	37.2	78.7	48.8
(3) and (4)					
N0	35.8	36.9	35.0	59.4	41.8
N1	43.4	41.0	36.4	80.5	50.3
N2	37.0	37.1	38.2	82.2	48.6
N3	39.8	41.0	40.1	84.0	51.2
Mean (± 1.83)	39.0	39.0	37.4	76.5	48.0

(1) (± 2.35) (3) (± 3.14) For use in horizontal and diagonal comparisons only

(2) (± 2.08) (4) (± 2.94) For use in vertical and interaction comparisons only

Mean D.M. %: 18.5

HORSEPOOL (W)					
DRY MATTER: CWT					
	O	I	E	SW	Mean
2ND CUT					
(1) and (2)					
U	60.8	60.2	58.1	87.2	66.6
M	60.5	57.9	56.0	97.4	67.9
(3) and (4)					
NO	56.3	58.8	52.3	65.2	58.2
N1	65.0	61.1	56.4	97.4	70.0
N2	59.2	60.9	59.7	93.5	68.3
N3	62.3	55.3	59.6	113.1	72.6
Mean (± 2.52)	60.7	59.0	57.0	92.3	67.3

(1) (± 3.11) (3) (± 4.05) For use in horizontal and diagonal comparisons only

(2) (± 2.58) (4) (± 3.65) For use in vertical and interaction comparisons only

Mean D.M. %: 30.8