ROTHAMSTED RESEARCH

Yields of the Field Experiments 1971

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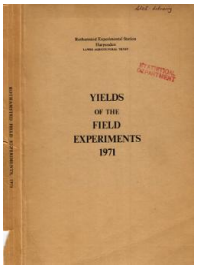

71/R/RN/5 Arable Reference Plots - Barley, Ley, Potatoes, Wheat, Kale

Rothamsted Research

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71/R/RN/5

ARABLE REFERENCE PLOTS

Object: To study the long term effects of FYM and N, P and K fertilisers on the yield and mineral content of crops - Great Field IV.

The sixteenth year of the rotation barley, ley, potatoes, winter wheat, kale. The twelfth year of the same rotation on the additional plots. The fifteenth year of permanent grass.

For previous years see 58/Bc/1(t), 59/Bc/1(t), 60/B/3(t), 61-64/B/2, 65/B/2(t), 66/B/2(t), 67/B/2, 68/B/3(t) and 69-70/R/RN/5.

Whole plot dimensions: 2.13 x 2.44.

Cultivations, etc.: Ground chalk applied at 3.76 tonnes to all plots of the main experiment: 27 Nov, 1970.

Winter wheat: Balancing Mg applied to half plots: 25 Sept, 1970. Plots dug by hand, test Mg applied: 2 Oct. P, K, Ca and S applied, seed drilled: 5 Oct. First half N dressing applied: 9 Mar, 1971. Trace element spray applied: 19 Apr. All N applied to additional plots, second half N dressing applied: 27 Apr. Harvested: 13 Aug. Variety: Maris Nimrod.

Kale: FYM applied, plots dug by hand: 3 Nov, 1970. P, K, Ca, Mg and S applied to additional plots: 29 Jan, 1971. P and K applied to remainder: 19 Feb. First half N dressing applied to additional plots, all N to remainder, plots rotary cultivated, seed drilled: 7 Apr. Trace element spray applied: 11 June. Second half N dressing applied to additional plots: 15 June. Sprayed with menazon ('Saphicol' at 0.7 l in 450 l): 6 July. Harvested: 22 Oct. Variety: Thousand headed.

Barley: Plots dug by hand: 3 Nov, 1970. P, K, Mg, Ca and S applied to additional plots: 29 Jan, 1971. P and K applied to remainder: 19 Feb. N applied, plots rotary cultivated, seed drilled: 31 Mar. Trace element spray applied: 24 May. Sprayed (excluding additional plots) with tridemorph fungicide at 0.53 kg in 450 l): 15 June. Harvested - additional plots: 13 Aug, remainder: 16 Aug. Variety: Deba Abed (Midas on additional plots, seed dressed with ethirimol).

Grass-clover ley: Seed drilled in barley stubble: 14 Aug, 1970. P, K, Ca, Mg and S applied: 17 Dec. N applied: 9 Mar, 1971. Trace element spray applied: 19 Apr. Cut three times: 4 June, 23 July, 20 Sept. Varieties: R.V.P. Italian Ryegrass and Dorset Marl Clover.

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Potatoes: FYM applied and plots dug by hand: 4 Nov, 1970. P, K, Ca, Mg and S applied to additional plots: 29 Jan, 1971. P and K applied to remainder: 19 Feb. First half N dressing applied to additional plots, all N to remainder, plots rotary cultivated, Mg applied to half plots, potatoes planted: 7 Apr. Trace element spray applied: 11 June. Second half N dressing applied to additional plots: 15 June. All plots sprayed on 2 occasions with mancozeb at 1.35 kg plus menazon ('Saphicol' at 0.7 l) in 450 l: 16 June, 28 July. Additional plots only sprayed once as above described: 6 July. Lifted: Plots of main experiment with neither K nor FYM and no fertiliser plots of additional plots: 30 July. Remainder sprayed with captafol fungicide at 1.68 kg plus menazon ('Saphicol' at 0.7 l) in 450 l: 18 Aug. Remaining plots lifted: 14 Sept. Variety: King Edward.

Permanent grass: P and K applied: 17 Dec, 1970. FYM applied: 22 Feb, 1971. N applied: 9 Mar, 20 May, 15 July. Cut three times: 20 May, 15 July, 11 Oct.

NOTES: (1) Yields of dry matter were obtained for each crop.
(2) The percentages of N, P and K were measured in each crop.
(3) The percentage of Mg was measured in potato tubers on the main experiment.
(4) The percentage of K in potato leaves was measured on the main experiment.

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SUMMARY OF RESULTS

GREAT FIELD IV (R): ORIGINAL PLOTS

TONNES/HECTARE

Treatment	WINTER WHEAT: GRAIN	WINTER WHEAT: STRAW	KALE: FRESH WEIGHT	BARLEY: GRAIN	BARLEY: STRAW	LEY: DRY MATTER 1st cut	LEY: DRY MATTER 2nd cut	LEY: DRY MATTER 3rd cut	Total of 3 cuts	POTATOES TOTAL TUBERS	PERMANENT GRASS: DRY MATTER 1st cut	PERMANENT GRASS: DRY MATTER 2nd cut	PERMANENT GRASS: DRY MATTER 3rd cut	PERMANENT GRASS: DRY MATTER Total of 3 cuts
0	3.22	5.20	15.7	2.25	2.36	2.19	0.81	0.97	3.97	7.1	0.73	1.17	1.00	2.90
N1	1.34	4.62	20.9	2.73	3.42	5.16	1.20	1.34	7.70	8.1	1.14	1.39	1.41	3.94
P	2.78	4.34	27.5	3.40	2.87	2.86	0.67	0.50	4.03	13.4	0.59	0.94	0.67	2.20
N1P	0.88	3.56	37.5	2.56	3.28	5.23	0.93	0.36	6.52	8.0	1.75	1.50	1.66	4.91
K	4.18	5.68	12.6	3.11	2.58	3.72	1.95	1.83	7.50	33.8	0.76	1.05	1.11	2.92
N1K	5.69	7.53	13.1	1.53	2.98	4.78	1.86	2.29	8.93	37.1	2.12	1.90	2.03	6.05
PK	4.41	5.93	27.5	3.76	2.79	4.74	3.43	3.26	11.43	36.3	1.00	1.74	1.17	3.91
N1PK	6.52	9.34	42.7	4.79	5.24	6.35	2.71	2.81	11.87	43.4	2.39	1.98	1.60	5.97
N2PK	8.50	11.48	48.4	5.15	5.55	7.40	2.18	2.20	11.78	51.0	4.12	2.49	2.55	9.16
D	5.02	7.74	34.4	4.49	3.81	5.97	2.29	2.26	10.52	45.9	3.75	1.67	1.54	6.96
N1PKD	7.44	11.75	53.2	5.84	5.80	6.45	2.26	2.26	10.97	58.1	3.68	2.59	2.38	8.65
N2PKD	5.00	13.33	61.0	5.55	7.31	7.72	2.09	1.93	11.74	64.9	4.50	4.33	2.43	11.26
Mean D.M.%:	80.0	65.1		74.7	61.2	27.3	25.8	29.6	27.6		27.8	29.2	33.0	30.0

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GREAT FIELD IV (R): ADDITIONAL PLOTS

TONNES/HECTARE

Treatment	WINTER WHEAT: GRAIN	STRAW	KALE: FRESH WEIGHT	BARLEY: GRAIN	STRAW	LEY: DRY MATTER 1st cut	2nd cut	3rd cut	Total of 3 cuts	POTATOES TOTAL TUBERS
None	3.33	4.73	17.9	2.86	3.36	2.84	0.76	1.02	4.62	7.0
N2 PK	6.38	7.52	57.6	5.87	7.49	7.31	2.28	2.12	11.71	41.8
N2 PK Mg Ca	7.42	8.67	60.2	4.94	7.93	7.39	2.56	1.86	11.81	32.3
N2 PK Mg S	7.38	8.74	59.7	4.89	6.94	6.65	1.76	1.73	10.14	38.4
N2 PK Ca S	7.39	9.25	59.7	5.29	7.39	7.45	2.13	1.98	11.56	34.4
N2 PK Mg Ca S	7.48	9.22	60.6	6.07	7.46	8.91	2.85	2.46	14.22	34.0
N2 PK Mg Ca S TE	6.66	8.84	61.5	5.81	7.34	7.74	2.31	2.24	12.29	31.4
Mean D.M. %:	80.2	67.5		81.1	78.3	28.5	26.1	28.8	27.8	