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Yields of the Field Experiments 1967

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67/R/B/2 and 67/W/B/2 Reference Plots (Era, Erg, Wera, Werf)

Rothamsted Research

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67/B/2.1

REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV AND HIGHFIELD IX

AND

WOBURN (W) STACKYARD SERIES C, 1967

(ERA, ERG, WERA and WERF)

For details of previous years' results and for rates of fertilisers, etc., see 'Results' 58/Bc/1, 59/Bc/1, 60/B/3, 61/B/2, 62/B/2, 63/B/2, 64/B/2, 65/B/2 and 66/B/2. For conifer seedbeds and transplants see 63/B/2, 64/B/2, 65/B/2 and 66/B/2.

Woburn:

Each plot of the oats was split for a test Ov 3.6 lb Mn as manganese sulphate applied in April, and a test of Ov 45 lb Mg as magnesium sulphate. Each test was made to pairs of quarter plots.

Cultivations, etc.:-

Great Field IV (R):-

Winter wheat: Dug by hand: Sept 23, 1966. P,K,Mg,Ca and S applied: Oct 21, 1966. Seed drilled: Oct 24. First N dressing applied (excluding additional plots): Mar 3, 1967. Second N dressing applied, all N applied to additional plots, trace element spray applied: Apr 17. Harvested: Aug 17.

Kale: FYM applied, plots dug by hand: Nov 11, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. First N dressings applied to additional plots, all plots rotary cultivated, seed sown: Mar 22. N fertiliser applied (excluding additional plots): Apr 17. Second N dressings applied to additional plots: May 26. Trace element spray applied: June 14. Harvested: Oct 23.

Barley: Dug by hand: Nov 16, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. N applied, plots rotary cultivated, seed drilled: Mar 7, additional plots: Mar 14. Trace element spray applied: May 31. Harvested: Aug 10.

Grass-clover ley: Undersown in barley: Apr 12, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. All N applied: Mar 3. Trace element spray applied: Apr 17. Cut four times: Oct 31, 1966, May 22, 1967, July 16, Sept 27.

Potatoes: FYM applied, plots dug by hand: Nov 15, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. First N dressings applied to additional plots, all N applied to

67/B/2.2

remaining plots, plots rotary cultivated twice, potatoes planted: Mar 31. Second N dressing applied to additional plots: May 26. Trace element spray applied: June 14. Sprayed with dimethoate at 5 oz in 50 gals and with fentin acetate at 2.4 oz and maneb at 0.8 oz in 50 gals: June 27. Sprayed with dimethoate at 5 oz in 50 gals: July 21. Sprayed with fentin acetate at 2.4 oz and maneb at 0.8 oz in 50 gals: Aug 3. Lifted: Plots with neither K nor FYM (where haulm died early): Aug 3, remainder: Sept 8.
Permanent grass: FYM, P and K applied: Feb 9, 1967. N applied first dressing: Mar 3, second: May 18, third: July 16. Cut three times: May 18, July 16, Oct 6.

NOTES: (1) Yields of dry matter were obtained from each crop.
(2) The percentages of N, P and K were measured in each crop.

ADDENDUM to 'Results' 66/B/2.2:- Under the heading 'Great Field IV (R): Potatoes', insert 'Second N dressing applied: May 31'.

Stackyard Series C (W):-

Winter oats: Plots dug by hand: Sept 26, 1966. P and K applied, seed drilled: Oct 24. Ground chalk applied at 26 cwt: Jan 13, 1967. First N dressing applied: Mar 16. Second N dressing applied: Apr 19. Manganese sulphate applied: Apr 21. Magnesium sulphate applied: May 2. Harvested: Aug 7.
Sugar beet: FYM applied: Dec 5, 1966. Plots dug by hand: Dec 9. Ground chalk applied at 26 cwt: Jan 13, 1967. P and K applied: Feb 15. First N dressing applied, plots rotary cultivated, seed drilled: Mar 28. First dressing of Mg fertiliser applied to half plots: Apr 3. Sprayed five times with dimethoate at 4.8 fl oz in 50 gals: May 24, June 9, June 23, July 10, July 25. Second N dressing applied: May 25. Singled: June 8. Second dressing of Mg fertiliser applied to same half plots: June 27. Harvested, Mg applied to other half plots: Oct 5.
Barley: Plots dug by hand: Dec 5, 1966. Ground chalk applied at 26 cwt: Jan 13, 1967. P and K applied: Feb 15. First N dressing applied, rotary cultivated, seed drilled: Mar 16. Second N dressing applied: May 2. Harvested: Aug 11.
Grass-clover ley: Undersown in barley: Mar 8, 1966. Ground chalk applied at 26 cwt: Jan 3, 1967. P and K applied: Feb 15. All N applied: Mar 16. Cut four times: Oct 17, 1966, May 25, 1967, July 18, Sept 28.

67/B/2.3

Potatoes: FYM applied: Dec 5, 1966. Plots dug by hand: Dec 9.
Ground chalk applied at 26 cwt: Jan 13, 1967. P and K applied: Feb 15. First N dressing applied, plots rotary cultivated, setts planted: Apr 3. Second N dressing applied: May 25. Sprayed with dimethoate at 4.8 fl oz in 50 gals: June 9. Sprayed twice with fentin acetate at 2.4 oz plus maneb at 0.8 oz in 50 gals: June 29, Aug 4. Lifted: Sept 7.

Permanent grass: FYM, P and K applied: Feb 15, 1967. First N dressing applied: Mar 16. Second N dressing applied: May 25. Third N dressing applied: July 18. Cut three times: May 25, July 18, Oct 5.

- NOTES: (1) Samples were taken for determination of dry matter for each crop, and the percentage N, P and K.
(2) The percentage of Mg in the leaves of sugar beet was determined.
(3) Surface soil samples were taken from each block for a determination of soil pH on Nov 3, 1966.

Grazed Reference Plots (Highfield IX (R)):-

Cultivations, etc.: P and K fertilisers applied, ground chalk applied to appropriate plots: Dec 14, 1966. First N dressings applied: Mar 3, 1967. Sample cuts taken four times: May 3, June 20, Aug 30, Nov 2. All plots topped: June 20. Sampling cages moved after each cut. N dressing applied after each cut except the last.

- NOTES: (1) The percentages of N, P and K in the dry grass were measured.
(2) Visual estimates were made of the percentage surface area covered by clover leaves.
(3) The pH and available P and K content of the soil were measured.

Conifer seedbeds and transplants:

Bed 1: Formalin (250 ml. in 4 l. water) applied: Dec 15, 1966. All manures (other than N) dug in: Mar 8, 1967. Seed sown: Mar 17 - 20. T.V.O. pre-emergence spray: Apr 14. N top-dressed: June 15, July 13, Aug 18, Sept 7.
Bed 2: Seedbeds as for Bed 1. Transplants plots lined out: Mar 20. All manures (other than N) as for seedbeds. N topdressed on transplants: May 2, June 1, July 13, Aug 10.

- NOTES: (1) Height assessments and samples for analyses as in 1966.
(2) Plots lacking N, P, K and Mg had typical deficiency symptoms.

67/B/2.4

Standard errors per plot.

Highfield IX (R), Dry matter:

1st cut:	3.87 or 21.0% (39 d.f.)
2nd cut:	5.58 or 11.3% (39 d.f.)
3rd cut:	4.18 or 11.4% (39 d.f.)
4th cut:	5.89 or 23.2% (39 d.f.)
Total of 4 cuts:	9.84 or 7.6% (39 d.f.)

Stackyard Series C (W), Sitka Spruce Bed 1:

Mean height:	0.160 or 7.7% (11 d.f.)
Plant number:	139.7 or 14.7% (11 d.f.)

SUMMARY OF RESULTS

GREAT FIELD IV (R): ORIGINAL PLOTS

Treatment	Winter wheat:		Kale:		Ley:				Total Potatoes:		Permanent grass:				
	wheat: GRAIN STRAW	TOTAL WEIGHT GRAIN STRAW	Barley: GRAIN STRAW	1st cut	2nd cut	3rd cut	4th cut	1st cut	2nd cut	3rd cut	1st cut	2nd cut	3rd cut	Total of 3 cuts	
None	34.9	40.5	10.24	31.2	26.8	2.9	19.1	23.8	21.0	66.8	1.82	8.9	13.3	14.9	37.1
N1	41.4	49.9	10.42	37.5	32.6	1.4	23.9	18.9	17.0	61.2	2.38	15.5	13.0	19.6	48.1
P	45.5	58.2	12.50	40.8	34.9	2.8	13.9	14.1	5.5	36.3	2.32	8.1	10.8	14.4	33.3
N1P	31.5	46.9	20.66	38.7	34.5	2.4	24.0	14.1	5.6	46.1	1.34	20.5	13.9	20.5	54.9
K	45.8	57.5	7.12	29.3	24.4	5.3	23.3	36.9	16.6	82.1	10.24	10.9	11.8	14.7	37.4
N1K	54.8	72.8	7.12	38.2	33.5	2.4	28.1	32.5	21.7	84.7	9.03	25.7	19.0	24.4	69.1
PK	45.4	60.0	17.36	37.4	32.0	9.4	31.3	43.8	21.2	105.7	13.80	12.1	17.6	18.5	48.2
N1PK	57.9	83.3	21.36	44.6	40.6	3.2	40.0	35.2	27.3	105.7	13.28	22.2	20.7	21.9	64.8
N2PK	53.3	87.8	24.83	49.8	45.2	3.5	52.6	37.4	34.7	128.2	12.68	40.1	23.2	30.3	93.6
D	58.1	72.2	17.71	42.4	39.3	3.7	37.2	36.2	32.4	109.5	13.72	38.4	16.3	17.8	72.5
N1PKD	55.9	91.6	29.17	53.1	50.1	6.1	41.8	39.8	31.5	119.2	19.44	45.7	22.4	23.9	92.0
N2PKD	50.1	95.9	33.16	58.7	56.2	2.0	47.9	32.8	30.0	112.7	22.57	50.8	23.7	33.3	107.8
Mean D.M. %:	78.1	73.4		77.7	48.4	20.0	21.4	28.1	23.6	23.3		21.3	30.9	22.8	25.0

67/B/2.5

GREAT FIELD IV (R): ADDITIONAL PLOTS

Treatment	Winter wheat: GRAIN STRAW	Kale: TOTAL WEIGHT	Barley: GRAIN STRAW	1st cut	2nd cut	3rd cut	4th cut	Total Potatoes: of 4 cuts	TOTAL TUBERS
None	33.4	14.58	26.4	4.8	29.0	33.3	31.2	98.3	2.68
N2 PK	63.4	24.83	60.4	7.0	51.9	43.3	32.9	135.1	14.32
N2 PK Mg Ca	56.7	32.82	50.8	7.2	52.4	43.1	30.5	133.2	13.80
N2 PK Mg S	59.1	31.78	52.1	9.6	53.4	45.1	32.0	140.1	14.58
N2 PK Ca S	51.8	29.00	66.7	7.8	55.5	46.6	37.3	147.2	14.32
N2 PK Mg Ca S	57.5	30.90	54.9	5.7	51.5	41.9	30.3	129.4	15.62
N2 PK Mg Ca S TE	61.2	27.26	58.8	5.5	47.5	40.1	37.7	130.8	13.37
Mean D.M. %	78.1		80.8	17.9	18.6	24.9	21.8	20.8	

67/B/2.6

STACKYARD SERIES C (W)

Treatment	Oats:		Sugar beet: ROOTS	Barley: GRAIN STRAW	Ley: DRY MATTER				Total of 4 cuts	Potatoes:		Permanent grass:		
	GRAIN	STRAW			1st cut	2nd cut	3rd cut	4th cut		TOTAL TUBERS	1st cut	2nd cut	3rd cut	Total of 3 cuts
None	17.8	16.7	6.02	17.8	8.3	25.8	21.0	14.5	69.6	2.93	14.8	3.9	6.3	25.0
N1	30.9	42.8	9.26	26.5	5.0	35.3	20.6	13.4	74.3	3.40	21.7	11.2	15.6	48.5
P	19.1	19.8	7.87	17.2	7.9	28.1	17.0	11.0	64.0	2.93	14.0	3.8	5.1	22.9
N1P	34.1	40.1	6.02	19.1	4.3	34.3	15.9	12.6	67.1	2.86	22.7	11.8	16.3	50.8
K	18.4	18.9	7.87	22.4	12.9	31.3	29.9	13.1	87.2	4.32	20.0	10.8	7.0	37.8
N1K	31.9	41.1	9.88	32.4	11.4	41.1	32.0	15.1	99.6	6.72	27.8	13.7	15.0	56.5
PK	19.2	20.6	6.48	18.9	12.6	36.2	28.0	12.8	89.6	5.09	22.9	12.3	8.3	43.5
N1PK	32.6	46.6	12.66	37.5	11.7	44.0	25.8	13.0	94.5	7.18	28.1	12.6	16.5	57.2
N2PK	43.2	66.5	10.80	41.2	8.1	59.2	27.0	17.4	111.7	8.34	34.0	11.8	19.4	65.2
D	24.9	26.5	11.58	29.3	13.7	34.4	31.8	15.3	95.2	10.18	26.4	8.4	8.1	42.9
N1PKD	36.5	50.4	16.05	38.7	14.7	44.0	32.3	16.8	107.8	12.19	38.0	11.9	17.4	67.3
N2PKD	42.2	74.1	18.06	39.2	10.2	57.2	30.9	21.5	119.8	16.74	53.9	16.0	22.1	92.0
Mean D.M. %	82.2	52.0		78.1	15.0	17.0	31.2	23.6	21.7		20.2	38.8	28.9	29.3

67/B/2.7

67/B/2.8

STACKYARD C (W). Bed 1

SITKA SPRUCE

Treatment	MEAN HEIGHT: INCHES	PLANT NUMBER: PER SQ YARD
	(± 0.113)	(± 98.8)
None	1.82 (1)	987 (2)
PK Mg	2.06	999
NK Mg	1.20	924
NP Mg	1.81	1032
NPK	2.09	975
NPK Mg	2.27 (1)	938 (2)
NPK Mg F	2.25	957
C	2.16	642
C NPK Mg	2.72	1002
L NPK Mg	2.55	1017
Mean	2.08	950

(1) (± 0.080) (2) (± 69.8)

Bed 2 plots 1 - 6

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	8.16	9.77	10.45	9.46
NS	6.11	7.29	8.04	7.14

67/B/2.9

Bed 2 PLOTS 7 - 12

	O	A	B	Mean
MEAN HEIGHT: INCHES				
SS	1.68	2.66	3.11	2.48
NS	1.34	2.09	2.38	1.94

PLANT NUMBER: PER SQ YD				
SS	1164	1152	906	1074
NS	1110	1056	1194	1120

67/B/2.10

HIGHFIELD IX (R)

GRASS: DRY MATTER

	1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts
PK	(± 1.94)	(± 2.79)	(± 2.09)	(± 2.95)	(± 4.92)
NO 00	6.6	34.2	26.5	23.1	90.4
N1 00	17.7	48.9	37.2	28.7	132.5
A1 00	15.8	48.3	38.9	26.1	129.2
NO 10	7.2	43.6	27.1	18.5	96.4
N1 10	28.5	52.5	41.3	27.9	150.3
A1 10	22.7	48.1	37.4	27.1	135.4
NO 01	8.2	40.1	29.3	20.0	97.7
N1 01	24.1	51.0	40.1	25.7	141.0
A1 01	20.3	49.8	33.6	28.8	132.5
NO 11	9.8	38.8	34.3	19.2	102.0
N1 11	23.6	55.5	39.1	28.6	146.8
A1 11	22.2	61.2	37.8	30.0	151.2
N2 11	25.9	62.5	44.7	25.3	158.4
A2 11	25.2	60.4	47.5	26.6	159.7
Mean	18.4	49.6	36.8	25.4	130.2

Mean D.M. %: 1st cut: 20.9
 2nd cut: 21.7
 3rd cut: 24.4
 4th cut: 17.8
 Total of 4 cuts: 21.2