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Yields of the Field Experiments 1965

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65/W/WIR/B/6 Irrigation

Rothamsted Research

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65/B/6.1

IRRIGATION EXPERIMENT

(WIR)

Revised 1963

The effects of irrigation and nitrogen - Woburn Butt Close 1965, the 15th year.

For details of previous cropping, treatments etc., see 'Details' 1962 and 'Results' 63/B/6, 64/B/6.

Rotation: The barley crop is now replaced by spring wheat, which receives 0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' to quarter plots.

Lucerne: This is now replaced by Italian ryegrass. A test of 350 (N1K1) v 700 lb (N2K2) (16:0:16) for each cut is applied to half plots.

Basal applications:

Manures: Spring wheat: 240 lb (0:14:28) combine drilled, 40 cwt ground chalk.

Italian Ryegrass: 373 lb superphosphate.

Other crops as before.

Weedkillers: Spring wheat: Ioxynil and mecoprop ('Actril' P at 4 pints in 40 gals).

Italian Ryegrass: 2,4-D butoxyethylester at 7 oz a.e. in 40 gals.

Area harvested (Sub plot): Sugar beet - 0.0042, spring wheat - 0.0076, clover - 0.0058, ryegrass - 0.0058.

65/B/6.2

RAINFALL AND IRRIGATION: INCHES

Week ending	Rain-fall	Sugar beet			Spring wheat	Clover			Grass		
		A	B	C	C	A	B	C	A	B	C
3 May	0.66										
10	0.42										
17	0.12										
24	0.43				0.50	0.50	-	0.50			
31	0.83	0.50	-	0.50					-	-	0.50
7 June	0.24										
14	0.84										
21	0.67										
28	0.37										
5 July	0.13	-	0.50	0.50	0.50	-	0.50	0.50	-	0.50	0.50
12	0.69	-	0.50	0.50	0.50	-	0.50	0.50	-	0.50	0.50
19	0.33										
26	1.86										
2 Aug	0.29										
9	0.81										
16	0.02										
23	0.55										
30	0.85										
Total	10.11	0.50	1.00	1.50	1.50	0.50	1.00	1.50	0.00	1.00	1.50

Cultivations, etc.:

Sugar beet: Ploughed: Oct 9, 1964. Salt applied: Jan 5, 1965. Basal compound and sulphate of ammonia applied: Mar 31. Seed drilled at 5 lb: Apr 2. Singled (early plots): May 17. Singled (late plots): June 2. Lifted: Oct 5.

Spring wheat: Ground chalk applied: Nov 10, 1964. Ploughed: Nov 11. Seed combine drilled at 180 lb: Mar 29, 1965. 'Nitro-Chalk' applied: Mar 30. Sprayed: May 11. Combine harvested: Sept 14. Variety: Opal.

Clover: Seed undersown in barley at 30 lb: Apr 27, 1964. Basal compound fertiliser applied: Feb 3, 1965. Cut 3 times: June 11, Aug 5, Oct 19.

Ryegrass: Ploughed: Nov 4, 1964. Basal P and first dressings of NK compound applied: Mar 16, 1965. Seed drilled at 40 lb: Mar 17. Sprayed: May 10. Cut five times: June 11, July 14, Aug 10, Sept 7, Oct 19. NK compound applied after first 4 cuts. Variety: Italian.

65/B/6.3

Standard errors per plot.

Sugar beet. Roots, Whole plot: 0.574 or 3.3% (6 d.f.)
1/2 plot: 0.613 or 3.5% (8 d.f.)
Row strips: 0.587 or 3.3% (8 d.f.)
Total sugar, Whole plot: 1.87 or 3.0% (6 d.f.)
1/2 plot: 2.65 or 4.3% (8 d.f.)
Row strips: 1.59 or 2.6% (8 d.f.)
Tops, Whole plot: 0.974 or 5.3% (6 d.f.)
1/2 plot: 1.938 or 10.5% (8 d.f.)
Row strips: 0.664 or 3.6% (8 d.f.)

Spring wheat. Grain, Whole plot: 2.32 or 6.3% (5 d.f.)
1/4 plot: 1.93 or 5.2% (30 d.f.)

Clover. Dry matter, 1st cut. Whole plot: 4.24 or 12.8% (6 d.f.)
1/2 plot: 1.96 or 5.9% (8 d.f.)
2nd cut. Whole plot: 1.49 or 9.4% (6 d.f.)
1/2 plot: 1.73 or 10.8% (8 d.f.)
3rd cut. Whole plot: 1.57 or 9.0% (6 d.f.)
1/2 plot: 0.79 or 4.5% (8 d.f.)
Total of 3 cuts. Whole plot: 5.52 or 8.3% (6 d.f.)
1/2 plot: 3.59 or 5.4% (8 d.f.)

Ryegrass. Dry matter, 1st cut. Whole plot: 1.25 or 6.3% (6 d.f.)
1/2 plot: 0.99 or 5.0% (8 d.f.)
2nd cut. Whole plot: 2.10 or 7.0% (6 d.f.)
1/2 plot: 1.76 or 5.8% (8 d.f.)
3rd cut. Whole plot: 1.09 or 5.6% (6 d.f.)
1/2 plot: 2.27 or 11.7% (8 d.f.)
4th cut. Whole plot: 0.44 or 4.5% (6 d.f.)
1/2 plot: 1.20 or 12.3% (8 d.f.)
5th cut. Whole plot: 1.13 or 8.0% (6 d.f.)
1/2 plot: 1.27 or 9.0% (8 d.f.)
Total of 5 cuts. Whole plot: 3.34 or 3.6% (6 d.f.)
1/2 plot: 3.63 or 3.9% (8 d.f.)

Errata to Results 64/B/6.1, 'Area harvested'. These were all sub plots and not as stated.

65/B/6.4

SUMMARY OF RESULTS

SUGAR BEET

	O	A	B	C	Mean
ROOTS					
Mean (± 0.331)	18.35	17.67	17.48	16.84	17.59
	(1) and (2)				(± 0.177)
N1	18.46	17.08	16.98	16.06	17.15
N2	18.25	18.26	17.98	17.62	18.03
	(3) and (4)				(± 0.170)
E	18.41	17.96	17.89	17.18	17.86
L	18.30	17.38	17.07	16.50	17.31

SUGAR %

Mean	17.7	17.5	17.8	17.6	17.6
N1	17.6	17.6	17.8	17.5	17.6
N2	17.8	17.4	17.7	17.6	17.6
E	17.5	17.6	17.8	17.6	17.6
L	17.8	17.3	17.7	17.5	17.6

(1) (± 0.415) (3) (± 0.409) For use in horizontal and diagonal comparisons
 (2) (± 0.354) (4) (± 0.339) For use in vertical and interaction comparisons

65/B/6.5

SUGAR BEET					
	O	A	B	C	Mean
TOTAL SUGAR					
Mean (± 1.08)	64.9	61.8	62.0	59.2	62.0
		(1) and (2)			(± 0.76)
N1	65.0	60.0	60.6	56.4	60.5
N2	64.8	63.6	63.5	62.1	63.5
		(3) and (4)			(± 0.46)
E	64.5	63.3	63.7	60.5	63.0
L	65.3	60.3	60.4	57.9	61.0

(1) (± 1.53) (3) (± 1.26) For use in horizontal and diagonal comparisons
 (2) (± 1.53) (4) (± 0.92) For use in vertical and interaction comparisons

TOPS					
Mean (± 0.563)	18.60	18.12	18.89	18.34	18.49
		(1) and (2)			(± 0.559)
N1	16.99	15.56	16.35	15.45	16.09
N2	20.21	20.69	21.43	21.22	20.89
		(3) and (4)			(± 0.192)
E	18.41	18.68	18.84	19.00	18.73
L	18.79	17.57	18.94	17.67	18.24

(1) (± 0.971) (3) (± 0.624) For use in horizontal and diagonal comparisons
 (2) (± 1.119) (4) (± 0.383) For use in vertical and interaction comparisons

65/B/6.6

SPRING WHEAT

N

	1	2	3	4	Mean
GRAIN					
	(1) and (2)				(± 0.95)
D	32.8	38.1	36.8	35.8	35.9
C	34.8	42.0	38.7	35.2	37.7
Mean (± 0.56)	33.8	40.1	37.8	35.5	36.8

Mean D.M. %: 76.7

STRAW

D	26.5	32.6	29.7	31.4	30.0
C	32.3	35.1	36.3	31.9	33.9
Mean	29.4	33.8	33.0	31.6	32.0

Mean D.M. %: 68.5

(1) (± 1.17) For use in horizontal and diagonal comparisons

(2) (± 0.79) For use in vertical and interaction comparisons

65/B/6.7

CLOVER

	O	A	B	C	Mean
1ST CUT*					
	(1) and (2)				(±0.57)
N1	8.0	32.0	31.9	34.6	34.1
N2	33.6	33.9	28.8	30.9	31.8
Mean (±2.45)	35.8	32.9	30.4	32.7	33.0

Mean D.M. %: 15.5

(1) (±2.57) For use in horizontal and diagonal comparisons

(2) (±1.13) For use in vertical and interaction comparisons

2ND CUT

	(1) and (2)				(±0.50)
N1	14.6	16.1	14.8	17.4	15.7
N2	15.8	13.6	16.5	18.8	16.1
Mean (±0.86)	15.2	14.8	15.6	18.1	15.9

Mean D.M. %: 16.8

(1) (±1.11) For use in horizontal and diagonal comparisons

(2) (±1.00) For use in vertical and interaction comparisons

65/B/6.8

CLOVER

	O	A	B	C	Mean
3RD CUT					
	(1) and (2)				(±0.23)
N1	17.2	16.8	17.2	17.4	17.1
N2	17.0	19.0	17.7	17.4	17.8
Mean (±0.91)	17.1	17.9	17.4	17.4	17.5

Mean D.M. %: 15.9

(1) (±0.96) For use in horizontal and diagonal comparisons

(2) (±0.46) For use in vertical and interaction comparisons

TOTAL OF 3 CUTS

	(1) and (2)				(±1.04)
N1	69.7	64.8	63.9	69.4	66.9
N2	66.5	66.5	63.0	67.0	65.7
Mean (±3.19)	68.1	65.7	63.4	68.2	66.3

Mean D.M. %: 16.1

(1) (±3.51) For use in horizontal and diagonal comparisons

(2) (±2.07) For use in vertical and interaction comparisons

65/B/6.9

RYEGRASS				
	O & A	B	C	Mean
1ST CUT				
	(1) and (2)	(3) and (4)		(±0.28)
N1K1	17.2	14.8	16.6	16.4
N2K2	22.9	23.2	23.2	23.0
Mean	20.0 (±0.51)	19.0 (±0.72)	19.9	19.7

Mean D.M. %: 15.0

(1) (±0.58) (3) (±0.82) For use in horizontal and diagonal comparisons

(2) (±0.40) (4) (±0.57) For use in vertical and interaction comparisons

2ND CUT				
	(1) and (2)	(3) and (4)		(±0.51)
N1K1	28.8	27.5	28.8	28.5
N2K2	31.6	31.2	32.7	31.8
Mean	30.2 (±0.86)	29.3 (±1.21)	30.8	30.1

Mean D.M. %: 12.1

(1) (±0.99) (3) (±1.41) For use in horizontal and diagonal comparisons

(2) (±0.72) (4) (±1.02) For use in vertical and interaction comparisons

NOTE: All cuts O = A
1st cut O = A = B

65/B/6.10

RYEGRASS				
	O & A	B	C	Mean
3RD CUT				
	(1) and (2)	(3) and (4)		(±0.66)
N1K1	20.5	19.4	18.4	19.7
N2K2	20.2	19.7	17.0	19.3
Mean	20.4 (±0.44)	19.5 (±0.63)	17.7	19.5

Mean D.M. %: 12.8

(1) (±0.79) (3) (±1.12) For use in horizontal and diagonal comparisons

(2) (±0.93) (4) (±1.31) For use in vertical and interaction comparisons

4TH CUT				
	(1) and (2)	(3) and (4)		(±0.35)
N1K1	11.0	11.3	11.1	11.1
N2K2	8.2	8.7	8.3	8.4
Mean	9.6 (±0.18)	10.0 (±0.25)	9.7	9.7

Mean D.M. %: 13.1

(1) (±0.39) (3) (±0.55) For use in horizontal and diagonal comparisons

(2) (±0.49) (4) (±0.69) For use in vertical and interaction comparisons

NOTE: All cuts O = A
1st cut O = A = B

65/B/6.11

RYEGRASS				
	O & A	B	C	Mean
5TH CUT				
	(1) and (2)	(3) and (4)		(±0.37)
N1K1	14.8	15.5	13.8	14.7
N2K2	12.8	13.9	14.5	13.5
Mean	13.8 (±0.46)	14.7 (±0.65)	14.2	14.1

Mean D.M. %: 12.8

(1) (±0.59) (3) (±0.83) For use in horizontal and diagonal comparisons

(2) (±0.52) (4) (±0.73) For use in vertical and interaction comparisons

TOTAL OF 5 CUTS				
	(1) and (2)	(3) and (4)		(±1.05)
N1K1	92.3	88.6	88.7	90.5
N2K2	95.9	96.7	95.6	96.0
Mean	94.1 (±1.36)	92.7 (±1.93)	92.2	93.2

Mean D.M. %: 13.2

(1) (±1.72) (3) (±2.43) For use in horizontal and diagonal comparisons

(2) (±1.48) (4) (±2.10) For use in vertical and interaction comparisons

NOTE: All cuts O = A
1st cut O = A = B