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Yields of the Field Experiments 1959

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59/W/BG/1 Irrigation

Rothamsted Research

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59/Bg/1.2

Cultivations, etc.:

Sugar beet. Ploughed: Oct 30 and Dec 6, 1958. Ground chalk applied: Dec 4. Salt applied: Mar 12, 1959. Basal fertilizer and 'Nitra-Shell' applied: Apr 1. Seed drilled at 10 lb per acre: Apr 3. Singled: May 19 - 22. Sprayed with dieldrin at 2 pints in 40 gallons per acre: May 26. Sprayed with demeton methyl (50% active ingredients) at 12 fluid oz in 40 gallons per acre: June 4 and June 22. Lifted: Oct 19 - 22. Variety: Klein E.

Spring wheat. Ploughed: Nov 18, 1958. Fertilizers applied: Mar 13, 1959. Seed drilled at 3 bushels per acre: Mar 17. Combine harvested: Aug 21. Variety: Peko.

Spring beans. Ploughed: Sept 15 and Dec 3, 1958. Dung applied: Dec 2. Seed combine drilled at 200 lb per acre: Feb 26, 1959. Combine harvested: Aug 7 and 22. Variety: Garton's Spring Tick.

Grass. Basal fertilizers applied: Nov 24, 1958. 'Nitra-Shell' and 0.6 cwt muriate of potash per acre applied: Mar 24, 1959. Cut six times (all plots): May 6 and 27, June 22, July 14, Aug 11, Sept 9. 'Nitra-Shell' applied after each cut, except the last. 2nd dressing of 0.6 cwt muriate of potash per acre applied after the third cut. Variety: Cocksfoot S37.

Standard errors per plot.

| | | |
|---------------------|---------------------------------------|----------------------------------------|
| Sugar beet. | Total sugar, whole plot: | 5.88 cwt per acre or 8.0% |
| | | (6 d.f.) |
| | sub plot: | 4.23 cwt per acre or 5.7% |
| | | (8 d.f.) |
| Tops, | whole plot: | 1.467 cwt per acre or 16.5% |
| | | (6 d.f.) |
| | sub plot: | 0.870 cwt per acre or 9.8% |
| | | (8 d.f.) |
| Spring wheat. | Grain (at 85% D.M.), | whole plot: 2.55 cwt per acre or 11.3% |
| | | (6 d.f.) |
| | sub plot: | 2.74 cwt per acre or 12.1% |
| | | (8 d.f.) |
| Cut grass. | Dry matter, Total of cuts 1 - 3 | whole plot: 2.10 cwt per acre or 8.0% |
| | | (6 d.f.) |
| | sub plot: | 1.37 cwt per acre or 5.2% |
| | | (8 d.f.) |
| | Total of cuts 4 - 6 | whole plot: 2.23 cwt per acre or 10.1% |
| | | (6 d.f.) |
| sub plot: | 1.95 cwt per acre or 8.8% | |
| | (8 d.f.) | |
| Total of cuts 1 - 6 | whole plot: 3.36 cwt per acre or 7.0% | |
| | (6 d.f.) | |
| sub plot: | 3.18 cwt per acre or 6.6% | |
| | (8 d.f.) | |

Summary of Results

Sugar beet

Roots washed: tons per acre

| Spray | Irrigation | | | | |
|-----------------|------------|-------|-------|-------------------------|-------|
| | 0 | C | | | |
| None | 14.64 | 21.91 | | | |
| Demeton methyl | 14.81 | 22.40 | | | |
| N: cwt per acre | | | None | Spray Demeton methyl | Mean |
| 0.6 | 14.90 | 21.70 | 18.06 | 18.54 | 18.30 |
| 1.2 | 14.55 | 22.61 | 18.50 | 18.67 | 18.58 |
| Mean | 14.73 | 22.16 | 18.28 | 18.61 | 18.44 |
| Difference | -0.35 | +0.91 | +0.44 | +0.13 | +0.28 |

Sugar percentage

| Spray | Irrigation | | | | |
|-----------------|------------|------|------|-------------------------|------|
| | 0 | C | | | |
| None | 20.1 | 19.7 | | | |
| Demeton methyl | 20.5 | 19.9 | | | |
| N: cwt per acre | | | None | Spray Demeton methyl | Mean |
| 0.6 | 20.8 | 20.3 | 20.3 | 20.8 | 20.5 |
| 1.2 | 19.8 | 19.4 | 19.6 | 19.6 | 19.6 |
| Mean | 20.3 | 19.8 | 19.9 | 20.2 | 20.1 |
| Difference | -1.0 | -0.9 | -0.7 | -1.2 | -0.9 |

Total sugar: cwt per acre

| Spray | Irrigation | | | | |
|-----------------|------------|------|------|-------------------------|-----------------|
| | 0 | C | | | |
| None | (±3.40) | | | | |
| Demeton methyl | 58.5 | 86.4 | | | |
| | 60.8 | 89.0 | | | |
| N: cwt per acre | | | None | Spray Demeton methyl | Mean |
| 0.6 | (±2.69)* | | | (±2.69)* | |
| | 61.8 | 87.8 | 72.8 | 76.8 | 74.8 |
| 1.2 | 57.5 | 87.6 | 72.1 | 73.0 | 72.6 |
| Mean | (±2.40) | 59.7 | 72.5 | 74.9 | 73.7 |
| Difference | (±2.44) | -4.3 | -0.7 | -3.8 | -2.2 (±1.73) |

* for use in horizontal and diagonal comparisons only.

59/Bg/1.4

Sugar beet
Tops: tons per acre

| Spray | Irrigation | | Spray | | |
|---------------------|------------|-------|-----------|----------------|-------------------|
| | 0 | C | None | Demeton methyl | Mean |
| | (±0.847) | | | | |
| None | 7.79 | 10.23 | | | |
| Demeton methyl | 6.78 | 10.67 | | | |
| N: cwt per acre | | | | | |
| | (±0.649)* | | (±0.649)* | | |
| 0.6 | 6.65 | 9.05 | 7.91 | 7.79 | 7.85 |
| 1.2 | 7.92 | 11.84 | 10.11 | 9.66 | 9.88 |
| Mean (±0.599) | 7.29 | 10.45 | 9.01 | 8.73 | 8.87 |
| Difference (±0.503) | +1.27 | +2.79 | +2.20 | +1.87 | +2.03 (±0.355) |

Spring wheat

Grain (at 85% dry matter): cwt per acre

| N: cwt per acre | 0 | Irrigation | | | Mean |
|--------------------|------|------------|------|------|-----------------|
| | | A | B | C | |
| | | (±1.85)* | | | (±0.79) |
| 0.4 | 18.2 | 18.9 | 23.9 | 28.7 | 22.4 |
| 0.8 | 17.0 | 16.4 | 27.8 | 30.0 | 22.8 |
| Mean (±1.48) | 17.6 | 17.6 | 25.9 | 29.4 | 22.6 |
| Difference (±2.24) | -1.2 | -2.5 | +3.9 | +1.3 | +0.4 (±1.12) |

Spring beans

Grain (at 85% dry matter): cwt per acre

| Dung: tons per acre | Treatment | | | | | | | | Mean |
|--------------------------------------|-------------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|------|
| | 0 | OS | C ₁ | C ₁ S | C ₂ | C ₂ S | C ₃ | C ₃ S | |
| None | 10.3 ⁺ | 8.9 ⁺ | 28.5 | 25.6 | 25.3 | 23.6 | 23.0 | 23.1 | 17.2 |
| 12 | 11.9 ⁺ | 9.2 ⁺ | 24.6 | 26.3 | 23.5 | 26.4 | 22.4 | 24.8 | 17.6 |
| Mean | 11.1 | 9.1 | 26.6 | 26.0 | 24.4 | 25.0 | 22.7 | 24.0 | 17.4 |
| Difference | +1.6 | +0.3 | -3.9 | +0.7 | -1.8 | +2.8 | -0.6 | +1.7 | +0.4 |
| Mean dry matter % as harvested: 84.9 | | | | | | | | | |

* for use in horizontal and diagonal comparisons only.

⁺ means of 3 sub plots. All other values in body of table are based on 1 sub plot only.

Cut grass

Total of cuts 1 - 3. Dry matter: cwt per acre

| K ₂ O: cwt per acre including basal | Irrigation | | K ₂ O: cwt per acre including basal | | Mean |
|------------------------------------------------|------------|------|------------------------------------------------|------|-----------------|
| | 0 | C | | | |
| | (±1.21) | | | | |
| 1.2 | 19.8 | 32.5 | | | |
| 1.8 | 16.6 | 35.3 | | | |
| N: cwt per acre ⁺ | | | 1.2 | 1.8 | |
| | (±0.94)* | | ← (±0.94)* | | |
| 0.3 | 15.4 | 29.3 | 22.6 | 22.1 | 22.4 |
| 0.6 | 20.9 | 38.5 | 29.6 | 29.8 | 29.8 |
| Mean (±0.86) | 18.2 | 33.9 | 26.1 | 26.0 | 26.1 |
| Difference (±0.79) | +5.5 | +9.2 | +7.0 | +7.7 | +7.4 (±0.56) |

Total of cuts 4 - 6. Dry matter: cwt per acre

| K ₂ O: cwt per acre including basal | Irrigation | | K ₂ O: cwt per acre including basal | | Mean |
|------------------------------------------------|------------|------|------------------------------------------------|------|-----------------|
| | 0 | C | | | |
| | (±1.29) | | | | |
| 1.2 | 13.0 | 27.5 | | | |
| 2.4 | 13.8 | 34.6 | | | |
| N: cwt per acre ⁺ | | | 1.2 | 2.4 | |
| | (±1.07)* | | ← (±1.07)* | | |
| 0.3 | 12.4 | 27.8 | 18.6 | 21.6 | 20.1 |
| 0.6 | 14.5 | 34.3 | 22.0 | 26.8 | 24.4 |
| Mean (±0.91) | 13.4 | 31.1 | 20.3 | 24.2 | 22.2 |
| Difference (±1.12) | +2.1 | +6.5 | +3.4 | +5.2 | +4.3 (±0.79) |

* for use in horizontal and diagonal comparisons only.

⁺ for each cut.

Mean dry matter \bar{x} as cut:

Total of cuts 1 - 3: 23.6

Total of cuts 4 - 6: 24.7

Cut grass

Total of cuts 1 - 6. Dry matter: cwt per acre

| K ₂ O: cwt per acre including basal | Irrigation | | K ₂ O: cwt per acre including basal | | Mean |
|---------------------------------------------------|------------|-------|---------------------------------------------------|------------|------------------|
| | 0 | C | | | |
| | (±1.94) | | | | |
| 1.2 | 32.8 | 60.1 | | | |
| 2.4 | 30.4 | 69.9 | | | |
| N: cwt per acre ⁺ | | | 1.2 | 2.4 | |
| | (±1.65)* | | | ← (±1.65)* | |
| 0.3 | 27.8 | 57.1 | 41.2 | 43.7 | 42.5 |
| 0.6 | 35.4 | 72.9 | 51.7 | 56.6 | 54.2 |
| Mean (±1.37) | 31.6 | 65.0 | 46.4 | 50.2 | 48.3 |
| Difference (±1.83) | +7.6 | +15.8 | +10.5 | +12.9 | +11.7 (±1.30) |

* for use in horizontal and diagonal comparisons only.

⁺ for each cut.

Mean dry matter % as cut:

Total of cuts 1 - 6: 24.2

WINTER WHEAT

Seed rates, sowing dates and levels of nitrogen (after non-cereal crop) - Great Field I 1959.

Design: 3 randomized blocks of 9 plots each, plots being split into 2 for the application of nitrogen.

Area of each sub plot: 0.0148 acres. Area harvested: 0.0096 acres.

Treatments. All combinations of:-

Whole plots. Seed rates: 2; 3; 4 bushels per acre.
Sowing dates: Oct 16; Nov 21, 1958; Jan 8*, 1959.

Sub plots. Nitrogen (in addition to basal): 0.47; 0.93 cwt N per acre applied as 'Nitro-Chalk' in two equal parts in February and April.

*Note. Sowing on one block delayed by bad weather until Jan 24, 1959.

Basal dressing: 3 cwt compound fertilizer (10% P₂O₅, 20% K₂O) per acre broadcast in seed bed, 3 cwt compound fertilizer (5% N, 12½% P₂O₅, 12½% K₂O) per acre combine drilled with seed.

Cultivations, etc.: Ploughed: Sept 12, 1958. Compound fertilizer applied: First sowing - Oct 16; second sowing - Nov 21; third sowing - Jan 8, 1959 (plots 2, 4 and 5 - Jan 26). First dressing of N applied: Feb 16. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: Apr 21. Second dressing of N applied: Apr 22. Combine harvested: Aug 17. Variety: Cappelle. Previous crop: Potatoes.

Note. Counts of plant shoot and ear number, and estimates of plant height and % area lodged were made. Severe lodging occurred in early July and the mean % areas lodged at harvest were:

| Sowing date | % | Seed rate | | N | |
|-------------|----|-----------|----|--------|----|
| | | bu. p.a. | % | c.p.a. | % |
| Oct 16 | 94 | 2 | 46 | 0.6 | 42 |
| Nov 21 | 66 | 3 | 57 | 1.1 | 73 |
| Jan 8 | 14 | 4 | 70 | | |

Standard errors per plot, Grain (at 85% dry matter):

Whole plot: 2.48 cwt per acre or 4.9% (16 d.f.)

Sub plot: 3.38 cwt per acre or 6.7% (18 d.f.)

Errata to 'Results of the Field Experiments' 1958 page 58/Ca/1.2

Rates of N cwt per acre should read '0.6' and '1.2' not '0.4' and '0.8'.

S.E. of means of seed rates and sowing dates should read '0.79' not '0.56'.