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96/R/HB/2 Hoos Barley - S. Barley

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96/R/HB/2

HOOS BARLEY

Object: To study the effects of organic and inorganic manures on continuous s. barley. From 1968 to 1978 a rotation of potatoes, beans and s. barley was practised. The rotation was discontinued in 1979 and the experiment reverted to continuous s. barley.

The 145th year, s. barley.

For previous years see 'Details' 1967 and 1973, Station Report for 1966 and 74-95/R/HB/2.

Treatments: All combinations of:-

Whole plots

1. **MANURE** Plot Fertilizers and organic manures:

| | | Form of N 1852-1966 | Additional treatments 1852-1979 | Changes since 1980 |
|-------|-----|------------------------|---------------------------------------|--------------------------|
| --- | 11 | None | - | - |
| -P- | 21 | None | P | - |
| --K | 31 | None | K (Na)Mg | - |
| -PK | 41 | None | PK (Na)Mg | - |
| A-- | 12 | A | - | - |
| AP- | 22 | A | P | - |
| A-K | 32 | A | K (Na)Mg | - |
| APK | 42 | A | PK (Na)Mg | - |
| N---- | 131 | N | - | - |
| NP--- | 231 | N | P | - |
| N-K-- | 331 | N | K (Na)Mg | - |
| NPK-- | 431 | N | PK (Na)Mg | - |
| N--S- | 134 | N | Si | Si omitted |
| NP-S- | 234 | N | P Si | " |
| N-KS- | 334 | N | K (Na)MgSi | " |
| NPKS- | 434 | N | PK (Na)MgSi | " |
| N---S | 132 | N | - | Si added |
| NP--S | 232 | N | P | " |
| N-K-S | 332 | N | K (Na)Mg | " |
| NPK-S | 432 | N | PK (Na)Mg | " |
| N--SS | 133 | N | Si | - |
| NP-SS | 233 | N | P Si | - |
| N-KSS | 333 | N | K (Na)MgSi | - |
| NPKSS | 433 | N | PK (Na)MgSi | - |
| C(--) | 14 | C | - | PKMg omitted |
| C(P-) | 24 | C | P | " |
| C(-K) | 34 | C | K (Na)Mg | " |
| C(PK) | 44 | C | PK (Na)Mg | " |
| D | 72 | None | D | - |
| (D) | 71 | None | (D) | - |
| - | | | | |
| (A) | 62 | None | (Ashes) | - |
| - | 61 | None | - | - |

96/R/HB/2

Form of N: A, sulphate of ammonia: N, nitrate of soda - each to supply 48 kg N: C, castor meal to supply 96 kg N
P: 35 kg P as triple superphosphate in 1974 and since 1988, single superphosphate in other years
K: 90 kg K as sulphate of potash
(Na): 16 kg Na as sulphate of soda until 1973
Mg: 35 kg Mg, as kieserite every third year since 1974 (sulphate of magnesia annually until 1973)
Si: Silicate of soda at 450 kg
D: Farmyard manure at 35 t. (D): until 1871 only
(Ashes): Weed ash 1852-1916, furnace ash 1917-1932, none since

Sub-plots

2. N Nitrogen fertilizer (kg N), as 'Nitro-Chalk', since 1968-85, as 34.5% N since 1986 (cumulative N applications until 1973, on a cyclic system since 1974):

0
48
96
144

Plus extra plots testing all combinations of:-

Whole plots

1 MANURE Fertilizers other than magnesium:
55AN2PK Plot 55 AN2PK
56--PK Plot 56 --PK
57NN2-- Plot 57 NN2
58NN2-- Plot 58 NN2

N2: 96 kg N as 'Nitro-Chalk' since 1968-85, as 34.5% N since 1986. Other symbols as above.

Sub-plots

2. MAGNESIUM Magnesium fertilizer (kg Mg) as kieserite every third year since 1974:

0
35

NOTE: For a fuller record see 'Details' etc.

96/R/HB/2

Experimental diary:

06-Aug-95 : B : Straw baled.
02-Nov-95 : T : P applied.
08-Nov-95 : T : K applied.
11-Dec-95 : T : Si applied.
14-Dec-95 : T : Farmyard manure applied.
19-Dec-95 : B : Ploughed.
15-Mar-96 : B : Spring-tine cultivated, rotary harrowed, Cooper, dressed
Baytan Flowable, drilled at 350 seeds per m².
18-Mar-96 : B : Rolled.
30-Apr-96 : T : N applied.
02-Jun-96 : B : Duplosan New System CMPP at 2.0 l with Vindex at 1.4 l
in 200 l.
11-Jul-96 : B : Pulled wild oats by hand.
22-Aug-96 : T : Combine harvested.

NOTE: Samples of grain and straw were taken from selected plots for chemical analysis and some were archived.

96/R/HB/2 MAIN PLOTS

GRAIN TONNES/HECTARE

***** Tables of means *****

| N | 0 | 48 | 96 | 144 | Mean |
|---------------|------|------|------|------|------|
| MANURE | | | | | |
| --- | 1.49 | 1.82 | 1.91 | 1.65 | 1.72 |
| -P- | 1.19 | 2.14 | 3.12 | 3.27 | 2.43 |
| --K | 1.96 | 3.63 | 3.91 | 3.15 | 3.16 |
| -PK | 2.07 | 2.86 | 4.98 | 3.62 | 3.38 |
| A-- | 0.58 | 1.52 | 2.01 | 1.60 | 1.43 |
| AP- | 1.81 | 1.81 | 2.06 | 2.62 | 2.07 |
| A-K | 1.26 | 1.19 | 2.67 | 2.32 | 1.86 |
| APK | 1.01 | 3.95 | 4.40 | 4.61 | 3.49 |
| N---- | 0.53 | 1.04 | 1.39 | 1.64 | 1.15 |
| NP--- | 1.38 | 3.42 | 2.78 | 3.50 | 2.77 |
| N-K-- | 1.77 | 2.31 | 1.91 | 2.18 | 2.04 |
| NPK-- | 1.98 | 3.15 | 4.51 | 4.78 | 3.60 |
| N--S- | 2.19 | 2.06 | 2.46 | 2.92 | 2.41 |
| NP-S- | 1.79 | 2.26 | 3.47 | 4.20 | 2.93 |
| N-KS- | 2.11 | 3.06 | 4.20 | 3.72 | 3.27 |
| NPKS- | 1.65 | 3.59 | 4.99 | 6.35 | 4.15 |
| N---S | 1.24 | 2.25 | 2.77 | 3.38 | 2.41 |
| NP--S | 2.24 | 2.58 | 3.19 | 3.78 | 2.95 |
| N-K-S | 1.12 | 3.10 | 4.57 | 3.12 | 2.98 |
| NPK-S | 1.71 | 3.30 | 4.71 | 4.85 | 3.64 |
| N--SS | 1.31 | 2.12 | 3.33 | 2.91 | 2.42 |
| NP-SS | 1.52 | 2.26 | 3.45 | 4.06 | 2.82 |
| N-KSS | 1.65 | 4.30 | 4.58 | 3.99 | 3.63 |
| NPKSS | 1.65 | 3.84 | 4.45 | 4.98 | 3.73 |
| C(--) | 1.71 | 3.98 | 4.19 | 3.80 | 3.42 |
| C(P-) | 1.47 | 2.91 | 4.24 | 4.32 | 3.24 |
| C(-K) | 1.71 | 2.90 | 4.39 | 4.10 | 3.28 |
| C(PK) | 2.15 | 4.96 | 3.80 | 4.91 | 3.95 |
| D | 7.99 | 9.03 | 8.24 | 9.89 | 8.79 |
| (D) | 3.58 | 3.38 | 4.84 | 3.84 | 3.91 |
| (A) | 0.77 | 3.06 | 2.82 | 4.20 | 2.71 |
| - | 1.70 | 2.27 | 3.21 | 2.61 | 2.45 |
| Mean | 1.82 | 3.00 | 3.67 | 3.78 | 3.07 |

GRAIN MEAN DM% 86.6

96/R/HB/2 MAIN PLOTS

STRAW TONNES/HECTARE

***** Tables of means *****

| N | 0 | 48 | 96 | 144 | Mean |
|---------------|------|------|------|------|------|
| MANURE | | | | | |
| --- | 0.38 | 0.53 | 0.34 | 0.59 | 0.46 |
| -P- | 0.19 | 0.34 | 0.93 | 0.99 | 0.61 |
| --K | 0.47 | 1.44 | 1.06 | 0.66 | 0.91 |
| -PK | 0.38 | 0.42 | 1.68 | 0.67 | 0.79 |
| A-- | 0.15 | 0.23 | 0.48 | 0.15 | 0.25 |
| AP- | 0.38 | 0.30 | 0.50 | 0.91 | 0.52 |
| A-K | 0.17 | 0.11 | 0.84 | 0.51 | 0.41 |
| APK | 0.15 | 0.83 | 1.02 | 0.80 | 0.70 |
| D | 2.45 | 2.26 | 2.41 | 2.57 | 2.42 |
| (D) | 0.75 | 0.65 | 1.68 | 1.36 | 1.11 |
| (A) | 0.15 | 0.80 | 0.55 | 0.71 | 0.55 |
| - | 0.49 | 0.50 | 1.47 | 0.74 | 0.80 |
| Mean | 0.51 | 0.70 | 1.08 | 0.89 | 0.79 |

STRAW MEAN DM% 88.6

EXTRA PLOTS

GRAIN TONNES/HECTARE

***** Tables of means *****

| MANURE | 551AN2PK | 561--PK | 571NN2-- | 581NN2-- | Mean |
|------------------|----------|---------|----------|----------|------|
| MAGNESIUM | | | | | |
| 0 | 5.46 | 0.46 | 3.82 | 1.72 | 2.87 |
| 35 | 5.30 | 0.53 | 3.56 | 1.90 | 2.82 |
| Mean | 5.38 | 0.49 | 3.69 | 1.81 | 2.84 |

GRAIN MEAN DM% 87.4