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1978

## Summary of results potassium trials 1978.

W J. Cox

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DEPARTMENT OF AGRICULTURE  
Western Australia

SUMMARY OF RESULTS  
POTASSIUM TRIALS  
1978

W.J. Cox  
Research Officer  
Plant Research Division



78GE3/1616EX RATES, TIMES AND SOURCES OF POTASSIUM  
APPLICATION ON LUPINS

L. Watson Irwin

Soil type : 0-15 cm grey sand  
15-30 cm pale grey sand  
30-60 cm pale yellow sand  
60-100 cm dark yellow sand

Vegetation: Banksia

Soil properties:

| Property            | Depth (cm) |       |       |        |
|---------------------|------------|-------|-------|--------|
|                     | 0-10       | 10-30 | 30-60 | 60-100 |
| % clay              | 1          | 1     | 1     | 1      |
| % total N           | .009       | .008  | .002  | .002   |
| CEC meq %           | 0.6        | 0.4   | 0.2   | 0.6    |
| Extractable K (ppm) | 7          | 5     | 2     | 2      |
| P (ppm)             | 2          | 2     | 2     | <2     |

Growth and Yield:

Sown 18 May 1978, to Marri Lupins at 97 kg/ha<sup>-1</sup> using basal of 190 plain superphosphate and 155 kg/ha<sup>-1</sup> super mn.

Plants grew well with no disease or insect problems. Some brome grass particularly on low potassium plots. Trial harvested 8 Jan 1979, and it was noted that some shattering had occurred. Yields adjusted.

| Time of Application<br>and<br>Source | Rate of KCl kg/ha <sup>-1</sup> |     |      |      |      |      |      |
|--------------------------------------|---------------------------------|-----|------|------|------|------|------|
|                                      | 0                               | 50  | 75   | 100  | 150  | 200  | 300  |
| At seeding - KCl                     | 480                             | 770 | 840  | 980  | 1040 | 1300 | 1340 |
| At 4 weeks - KCl                     | 480                             | 760 | 1040 | 1110 | 960  | 1330 | 1380 |
| At 8 weeks - KCl                     | 480                             | 800 | 1000 | 1060 | 1140 | 1600 | 1460 |
| At seeding - KCl(10)                 | 480                             | 780 | -    | 760  | -    | 1040 | 1326 |
| At seeding - KCl(31)                 | 480                             | 820 | -    | 930  | -    | 1110 | 1240 |

Large significant response with probably no significant effect of time of application or source.

78ES3/1616EX

## RATES OF POTASSIUM ON SUBCLOVER

N. Blumann Gibson

Soil type: 0-10 cm grey organic matter strained sand  
 10-20 cm grey sand  
 20-30 cm pale yellow sand  
 30-40 cm yellow sand  
 >40 cm dark yellow sand with red mottles.

Soil Properties:

| Property            | Depth (cm) |       |       |       |
|---------------------|------------|-------|-------|-------|
|                     | 0-10       | 10-20 | 20-30 | 30-40 |
| % clay              | 1          | 1.5   | 1     | 3.5   |
| % organic carbon    | .33        | .24   | .10   | .13   |
| CEC me %            | 1.1        | .3    | .4    | .5    |
| Extractable K (ppm) | 14         | 10    | 5     | 7     |
| " P (ppm)           | 16         | -     | -     | -     |

Dry Matter Production kg/ha  
 24 October 1978

Rate kg/ha KCl

|     |      |
|-----|------|
| 0   | 520  |
| 25  | 500  |
| 50  | 520  |
| 75  | 900  |
| 100 | 740  |
| 150 | 860  |
| 200 | 1320 |
| 300 | 1400 |

Comment:

All plots showed signs of potassium deficiency. Split applications or delayed application may be better.  
 Fertilizer was all applied in Autumn.

78ES4      RATES OF POTASSIUM ON SUBCLOVER

C. Arthur    Esperance

Soil type: Grey sand over gravel at 40 cm.

Vegetation: Mungi, Chittick

Soil Properties:

| Property      | Depth (cm) |       |       |       |
|---------------|------------|-------|-------|-------|
|               | 0-10       | 10-20 | 20-30 | 30-40 |
| % clay        | 3          | 3.5   | 6     | -     |
| pH            | 5.4        | 5.9   | 6.3   | -     |
| CEC meq %     | 2.2        | 0.8   | 2.2   | -     |
| Extractable K | 51         | 23    | 36    | -     |
| P             | 18         |       |       |       |

Yield:

Trial inspected 11 September and 24 October 1978. No indication of response. Pasture composition 30% clover 70% rye grass.

78ES5/1616EX

## RATES OF POTASSIUM ON SUBCLOVER

B. Hutchinson Mt. Merivale

Soil type:

Gibson sand. 0-10 cm grey sand; 10-90 cm white sand &gt;90 cm red-brown clay.

Soil Properties:

| Property            | Depth (cm) |       |       |       |
|---------------------|------------|-------|-------|-------|
|                     | 0-10       | 10-20 | 20-30 | 30-40 |
| pH                  | 5.5        | 5.5   | 5.5   | 6.2   |
| % clay              | 2          | 1     | 3     | 5.5   |
| Organic carbon %    | .98        | .41   | .14   | .14   |
| CEC meq %           | 2.3        | 2.0   | 1.7   | 1.4   |
| Extractable K (ppm) | 32         | 18    | 9     | 8     |
| " P (ppm)           | 22         | -     | -     | -     |

## DRY MATTER

| KCl kg/ha <sup>-1</sup> | Total | Clover |
|-------------------------|-------|--------|
| 0                       | 1933  | 638    |
| 25                      | 2074  | 767    |
| 50                      | 2267  | 1133   |
| 75                      | 2867  | 2093   |
| 100                     | 2600  | 1560   |
| 150                     | 2683  | 1798   |
| 200                     | 2683  | 1798   |
| 300                     | 2867  | 2093   |

Comments:

Large increase in clover production although increase in total production is relatively small.

78ES6/1616EX

RATES OF POTASSIUM ON SUBCLOVER

V.H. & A.M. Crouch  
Coomalbidgup

Soil type: 0-10 cm grey sand  
10-30 cm pale yellow sand  
30-60 cm pale yellow sandy loam  
60-90 cm sandy loam  
≥ 90 cm gravelly clay

Soil test >100 ppm. No response evident 10 October or 27 October. Pasture composition 60% clover 40% rye grass and capeweed. Dry matter present 27 October 1978, estimated at 5500 kg/ha<sup>-1</sup>.



78ME2/1616EX

POTASSIUM ON WHEAT

W. Sanderson Koorda

Soil type: 0-10 cm coarse yellow sand  
10-30 cm pale yellow sand  
30-60 cm coarse yellow sand  
60-100 cm coarse loamy yellow sand

Vegetation: Wodgil

History: Paddock continuously cropped for 7 years and showed K deficiency symptoms in 1978.

Yields: Harvested 20 November 1978.  
All plots mildly affected by Septoria and some radish and turnip.

|    | Treatment                      | Mean Yield kg/ha |
|----|--------------------------------|------------------|
| 1. | Nil                            | 257              |
| 2. | 100 kg/ha Agran 34             | 257              |
| 3. | 200 kg/ha Plain superphosphate | 425              |
| 4. | 100 kg/ha KCl                  | 308              |
| 5. | 2 + 4                          | 362              |
| 6. | 3 + 4                          | 603              |
| 7. | 2 + 3 + 4                      | 647              |

Comment: Response to KCl only in presence of adequate superphosphate. Follow up trial will examine response curve in presence of N and P.

78BA16            NUTRITIONAL STATUS ON PHOMOPSIS INCIDENCE IN  
ULTRA AND UNICROP LUPINS

Badgingarra Research Station

Soil type: 0-15 cm grey sand  
             >15 cm gravel

0.5 M NaHCO<sub>3</sub> P 7ppm    0.1 N HCl K 66 ppm

Sown: 8 June 1978    Unicrop 100 kg/ha Ultra 150 kg/ha

Grain  
Yields: Harvested 23 November 1978

|           | tons/ha |         |
|-----------|---------|---------|
| Treatment | Ultra   | Unicrop |
| Nil       | .40     | .65     |
| Complete  | .95     | 1.10    |
| -P        | .35     | .66     |
| -K        | .58     | 1.08    |
| -S        | 1.04    | 1.09    |
| -Mn       | .80     | .94     |
| -CuZn     | .87     | 1.15    |
| -Mo       | .78     | 1.03    |
| -Co       | .98     | 1.09    |

LSD.<sub>.05</sub> = 0.18

Disease Ratings:

% of stems infected with Phomopsis.

| Treatment | Ultra | Unicrop |
|-----------|-------|---------|
| -P        | 14    | 9       |
| -K        | 8     | 22      |
| -Co       | 20    | 20      |
| -Mn       | 17    | 28      |
| -Mo       | 12    | 16      |
| -S        | 16    | 29      |
| -CuZn     | 18    | 28      |
| Nil       | 8     | 19      |
| Complete  | 16    | 24      |

Comment:

There was an obvious yield depression where P was deleted.  
The K effect was only evident in Ultra.

The disease data has not been statistically analysed but given  
the degree of variation present it is unlikely that any of the  
nutrient effects are significant.

78BA17/1616EX

FOLIAR NUTRIENT APPLICATION

Badgingarra Research Station Paddock 2C

Soil type:

0-15 cm grey sand  
>15 cm gravel

0.5 M  $\text{H}_2\text{CO}_3$  P 12 ppm 0.1 N HCl K 94

Results:

|                  |                   | Yield kg/ha           |         |
|------------------|-------------------|-----------------------|---------|
|                  |                   | Spring Nutrient Spray |         |
| Species          | Treatment         | Nil                   | Sprayed |
| Wheat            | Autumn Fertilizer |                       |         |
|                  | Nil               | 933                   | 838     |
|                  | P                 | 919                   | 1195    |
|                  | S                 | 862                   | 766     |
|                  | K                 | 810                   | 1019    |
|                  | N                 | 1952                  | 2100    |
| Lupins (Unicrop) | NPKS              | 2447                  | 2561    |
|                  | Nil               | 1005                  | 861     |
|                  | B                 | 1295                  | 976     |
|                  | S                 | 919                   | 766     |
|                  | K                 | 1157                  | 828     |
|                  | PKS               | 1248                  | 1114    |

Comment:

Spring nutrient spray application caused a marked yield loss in the lupins mainly as a result of lower number of seeds/pod. There was no evidence of "burning-off".

78WH18 FOLIAR NUTRIENT APPLICATION  
Paddock 2HC  
Wongan Hills Research Station

Soil type:

Macardi sand  
0-10 cm grey sand  
10-30 cm pale grey sand  
30-60 cm pale yellow gravelly sand  
>60 cm gravel

Unicrop sown 1 June 1978 at 100 kg/ha Gamenya at 50 kg/ha.  
Plots sprayed for aphids and cutworm 6 June, 10 July and 18  
August. Harvested lupins 17 November 1978 wheat 28 November  
1978.

0.5 M  $\text{NaHCO}_3$  P 33 ppm 0.1 N HCl K 75 ppm

| Treatment |                   | Spring Nutrient Spray |         |
|-----------|-------------------|-----------------------|---------|
| Species   | Autumn Fertiliser | Nil                   | Sprayed |
| Wheat     | Nil               | 1741                  | 1602    |
|           | P                 | 1377                  | 2086    |
|           | S                 | 1662                  | 1454    |
|           | K                 | 1559                  | 1645    |
|           | N                 | 1827                  | 1792    |
|           | NPKS              | 1672                  | 1914    |
| Lupins    | Nil               | 752                   | 788     |
|           | P                 | 500                   | 584     |
|           | S                 | 756                   | 726     |
|           | K                 | 754                   | 576     |
|           | PKS               | 496                   | 592     |

Comment:

No significant effect from spring nutrient spray  
application.

78KA2/1616EX

RATES OF POTASSIUM ON SUBCLOVER - SOIL TEST

R. Barrett  
Broomhill

Soil type: 0-10 cm grey sand  
10-20 cm grey sand  
20-30 cm pale yellow gravelly sand  
>30 cm gravel  
>90 cm red brown clay

Soil Properties:

| Property          | Depth (cm) |       |       |        |
|-------------------|------------|-------|-------|--------|
|                   | 0-10       | 10-30 | 30-60 | 60-100 |
| pH                | 5.3        | 5.4   | 6.3   | 6.8    |
| % clay            | 2.0        | 3.0   | 4.0   | 10.0   |
| Organic Carbon %  | 1.04       | .46   | .21   | .23    |
| CEC meq %         | 2.9        | 1.6   | 1.4   | 1.9    |
| 0.1 M HCl K (ppm) | 22         | 10    | 10    | 12     |

Results:

Trial very weedy and Northam A failed to establish.  
Trial to be repeated 1979 on adjacent site.

78KA3/1616EX

RATES OF POTASSIUM ON SUBCLOVER

B. Vietch  
Tambellup

Soil type: 0-10 cm grey sand  
10-20 cm grey sand  
20-30 cm pale yellow sand  
30 cm gravel

Soil Properties:

| Property         | Depth (cm) |       |       |
|------------------|------------|-------|-------|
|                  | 0-10       | 10-30 | 30-60 |
| pH               | 5.3        | 5.4   | 5.7   |
| % clay           | 3.5        | 3.0   | 4.0   |
| % organic carbon | 0.86       | 0.48  | 0.31  |
| CEC meq %        | 2.5        | 1.7   | 1.5   |
| 0.1 N HCl K      | 11         | 13    | 15    |

Results:

Response to 100 kg/ha of KCl.

78KE2/1616EX

SOURCES OF POTASSIUM ON SUBCLOVER

G. Elliot  
Keysbrook

Soil type:

Soil Properties:

| Property                  | Depth (cm) |       |       |        |
|---------------------------|------------|-------|-------|--------|
|                           | 0-10       | 10-30 | 30-60 | 60-100 |
| pH (1.5 H <sub>2</sub> O) | 5.0        | 5.1   | 4.5   | 5.3    |
| CS + FS                   | 98.0       | 98.4  | 95.1  | 94.2   |
| SiH                       | 2          | 1.5   | 1.5   | 1.5    |
| Clay                      | 1          | 1     | 4     | 5      |
| Organic carbon            | .87        | .20   | .13   | .13    |
| Total N                   | .063       | .015  | .008  | .009   |
| CEC                       | 3.6        | .9    | .5    | 1.8    |
| Exch Ca                   | 1.0        | .2    | .1    | .8     |
| Mg                        | .2         | .1    | 2.1   | .1     |
| K                         | .05        | 2.05  | 2.05  | 2.05   |
| Na                        | .05        | 2.05  | 2.05  | 2.05   |
| H                         | 2.3        | .6    | .4    | .9     |
| Phosphorus                | 12         |       |       |        |
| 0.1 N HCl K               | 22         | 10    | 6     | 7      |

Depth

ppm 0.1 N HCl extractable K

|          |    |
|----------|----|
| 0-10 cm  | 16 |
| 10-20 cm | 7  |
| 20-40 cm | 4  |
| 40-60 cm | 6  |

# DRY MATTER PRODUCTION AND % CLOVER

October 20, 1978

| Treatment                      | Total<br>kg/ha <sup>-1</sup> D.M | % Clover | Clover<br>D.M kg/ha <sup>-1</sup> |
|--------------------------------|----------------------------------|----------|-----------------------------------|
| Nil                            | 2113                             | 19       | 401                               |
| 25 kg/ha <sup>-1</sup> KC1     | 2622                             | 33       | 865                               |
| 37.5 " "                       | 2621                             | 33       | 865                               |
| 50 " "                         | 2886                             | 33       | 952                               |
| 75 " "                         | 3007                             | 32       | 962                               |
| 100 " "                        | 3165                             | 38       | 1203                              |
| 150 " "                        | 3230                             | 42       | 1357                              |
| 25 kg/ha <sup>-1</sup> KC1(10) | 2152                             | 37       | 1195                              |
| 50 " "                         | 3095                             | 38       | 1176                              |
| 100 " "                        | 3139                             | 36       | 1130                              |
| 150 " "                        | 3241                             | 33       | 1070                              |
| 25 kg/ha <sup>-1</sup> KC1(31) | 2694                             | 41       | 1105                              |
| 50 " "                         | 3294                             | 34       | 1120                              |
| 100 " "                        | 3452                             | 42       | 1450                              |
| 150 " "                        | 3550                             | 59       | 2095                              |



78AL2/1616EX

RATES AND TIMES OF POTASSIUM APPLICATION  
ON SUBCLOVER

D. Reed Redmond

Soil Type: 0-10 cm dark grey sand  
10-60 cm grey to white sand  
>60 cm gravel

Soil Properties: 10 cores 3/5/78

|                              | Depth   |          |          |
|------------------------------|---------|----------|----------|
|                              | 0-10 cm | 10-30 cm | 30-60 cm |
| pH                           | 5.0     | 4.8      | 4.8      |
| c + f sand                   | 91.2    | 96.0     | 97.5     |
| Silt                         | 2.0     | 1.5      | 1.0      |
| Clay                         | 1.0     | 1.5      | 1.5      |
| CEC                          | 10.5    | 2.9      | 1.0      |
| Exchangeable Ca              | 5.6     | 1.0      | 0.2      |
| Mg                           | 1.0     | 0.1      | <0.1     |
| K                            | 0.1     | <0.05    | <0.05    |
| Na                           | 0.1     | <0.05    | <0.05    |
| H                            | 3.7     | 1.8      | 0.8      |
| Total K                      | 160.0   | 120.0    | 110.0    |
| 1 M HNO <sub>3</sub> boiling | 94.0    | 17.0     | 14.0     |
| Extractable 0.1 MHC1         | 40.0    | 6.0      | 4.0      |

Design: Randomised block with 3 replications of each of 15 treatments = 45 plots. Each plot 2 m x 10 m.

The trial was rootpicked and raked in mid March and oversown to Lanssa-Trikala at 500 kg/ha of lime pelleted inoculated seed on April 5, 1978. A basal of 200 kg/ha super CuZnMo no 1 on May 2, 1978. An additional 100 kg/ha of plain super was applied 1978. The potash treatments were applied May 2, 1978.

The plots were soil and plant sampled at the following times April 5, May 3, June 20, July 27, September 6, October 4 and November 7.

| <u>Soil Sampled</u> | Tr | <u>Plots</u> |          |
|---------------------|----|--------------|----------|
|                     |    |              |          |
|                     | 1  | 13           | 0-10 cm  |
|                     | 7  | 9,16,40      | 10-20 cm |
|                     | 11 | 14,18,39     | 20-40 cm |
|                     | 15 | 8,23,36      | 40-60 cm |

5 cores/plot

Results

## (a) observations

12/7 Good composition 50% clover, 50% grass, obvious response to KC1 with slow release sources better than KC1.

27/7 Plots good mixture of clover and grass and relatively weed free. Plot 31 not sampled for dry matter. Obvious response. Very few pellets left and then only on KC1(10).

DRY MATTER kg/ha

| Treatment               | 20/6 |     | 26/7 |     | 6/9 |      | 4/10 |      | 7/11 |      |
|-------------------------|------|-----|------|-----|-----|------|------|------|------|------|
|                         | C    | G   | C    | G   | C   | G    | C    | G    | C    | G    |
| Nil                     | 266  | 338 | 498  | 375 | 444 | 229  | 2142 | 1008 | 563  | 480  |
| 25 kg K/ha as KC1 (100) | 286  | 335 | 665  | 408 | 738 | 287  | 2773 | 1133 | 1000 | 563  |
| 37.5 " "                | 288  | 245 | 518  | 233 | 659 | 220  | 2594 | 1060 | 940  | 743  |
| 50 " "                  | 273  | 334 | 532  | 274 | 672 | 288  | 2605 | 1013 | 926  | 757  |
| 75 " "                  | 238  | 304 | 567  | 320 | 598 | 281  | 2757 | 969  | 1083 | 693  |
| 100 " "                 | 206  | 241 | 584  | 368 | 755 | 293  | 2513 | 1238 | 822  | 645  |
| 150 " "                 | 190  | 285 | 386  | 280 | 693 | 243  | 2529 | 1245 | 983  | 629  |
| 25 kg K/ha as KC1 (10)  | 205  | 308 | 400  | 434 | 550 | 310  | 2326 | 1199 | 708  | 1205 |
| 50 " "                  | 328  | 370 | 567  | 378 | 712 | 237  | 3037 | 1013 | 827  | 794  |
| 100 " "                 | 249  | 293 | 601  | 296 | 672 | 1172 | 2536 | 1250 | 844  | 719  |
| 150 " "                 | 304  | 371 | 613  | 426 | 665 | 258  | 3164 | 742  | 1019 | 651  |
| 25 kg K/ha as KC1 (31)  | 194  | 257 | 571  | 467 | 533 | 437  | 2392 | 1466 | 1081 | 998  |
| 50 " "                  | 285  | 364 | 566  | 255 | 647 | 251  | 3114 | 828  | 891  | 645  |
| 100 " "                 | 326  | 246 | 480  | 333 | 587 | 330  | 3060 | 966  | 982  | 654  |
| 150 " "                 | 334  | 321 | 556  | 356 | 567 | 267  | 3035 | 907  | 944  | 604  |

K UPTAKE kg/ha

| Treatment              | 20/6 |       |       | 26/7  |       |       | 6/9   |       |       | Progre-ssive T |
|------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
|                        | C    | G     | T     | C     | G     | T     | C     | G     | T     |                |
| Nil                    | 4.95 | 8.86  | 13.81 | 7.72  | 2.40  | 16.12 | 5.24  | 5.15  | 10.39 | 40.32          |
| 25 kg K/ha as KC1(100) | 6.78 | 10.75 | 17.53 | 12.70 | 10.32 | 23.02 | 11.73 | 7.63  | 19.36 | 59.91          |
| 37.5 " "               | 8.32 | 7.67  | 15.99 | 9.48  | 5.85  | 15.33 | 12.32 | 6.62  | 18.94 | 50.26          |
| 50 " "                 | 6.22 | 10.09 | 16.31 | 11.23 | 6.93  | 18.16 | 12.97 | 8.67  | 21.64 | 56.11          |
| 75 " "                 | 6.76 | 9.30  | 16.06 | 11.57 | 8.70  | 20.27 | 13.34 | 9.13  | 22.47 | 58.80          |
| 100 " "                | 6.32 | 7.83  | 14.15 | 14.60 | 10.56 | 25.16 | 17.59 | 8.64  | 26.23 | 65.54          |
| 150 " "                | 5.78 | 8.38  | 14.16 | 9.84  | 7.76  | 17.60 | 14.97 | 7.29  | 22.26 | 54.02          |
| 25 kg K/ha as KC1(10)  | 3.36 | 9.42  | 12.78 | 5.72  | 9.81  | 15.53 | 7.64  | 7.78  | 15.42 | 43.73          |
| 50 " "                 | 6.23 | 11.58 | 17.81 | 9.47  | 9.60  | 19.07 | 11.53 | 6.07  | 17.60 | 54.48          |
| 100 " "                | 6.08 | 8.61  | 14.69 | 12.20 | 7.34  | 19.54 | 13.24 | 5.07  | 18.31 | 52.54          |
| 150 " "                | 7.20 | 10.42 | 17.62 | 13.67 | 11.25 | 24.92 | 14.83 | 7.61  | 22.44 | 65.08          |
| 25 kg K/ha as KC1(31)  | 3.69 | 6.83  | 12.52 | 9.71  | 11.58 | 21.29 | 10.13 | 11.93 | 22.06 | 55.87          |
| 50 " "                 | 5.41 | 11.07 | 16.48 | 8.83  | 5.92  | 14.75 | 11.19 | 7.58  | 18.77 | 50.00          |
| 100 " "                | 8.41 | 8.31  | 16.72 | 9.41  | 8.32  | 17.73 | 13.56 | 9.93  | 23.49 | 57.94          |
| 150 " "                | 7.82 | 9.79  | 17.61 | 12.90 | 9.15  | 22.05 | 11.96 | 7.58  | 19.54 | 59.20          |

78AL1/1616EX

COMPARATIVE POTASSIUM REQUIREMENT OF BARLEY,  
RAPE, LUPINS AND CLOVER

C. Reed      Redmond

Soil Type:      0-20 cm dark grey sand  
                  20-40 cm grey sand  
                  40-60 cm white sand  
                  >60 cm white sand over gravel

Vegetation:      mixed Jarrah - Banksia

Profile Properties 4/4/78

|                                |       | Depth cm |       |                  |                  |        |
|--------------------------------|-------|----------|-------|------------------|------------------|--------|
|                                |       | 0-20     | 20-40 | <del>40-60</del> | <del>60-80</del> | 80-100 |
| pH                             |       | 4.7      | 4.7   | 4.8              | 4.9              | 5.0    |
| C + F sand                     | %     | 95.4     | 97.6  | 98.4             | 98.9             | 99.1   |
| Silt                           | %     | 0.5      | 0.5   | 1.0              | 0.5              | <0.5   |
| Clay                           | %     | 1.0      | 1.5   | 1.0              | 1.5              | 1.0    |
| Total N                        | %     | 0.07     | 0.032 | 0.016            | 0.014            | 0.011  |
| Organic carbon C               | %     | 1.94     | 0.91  | 0.35             | 0.35             | 0.24   |
| C E C                          | meq % | 3.7      | 2.0   | 0.0              | 1.3              | 0.6    |
| Ca                             | "     | 1.6      | 0.5   | 0.2              | 0.2              | 0.2    |
| Mg                             | "     | 0.2      | 0.1   | <0.1             | <0.1             | 0.1    |
| K                              | "     | 0.05     | 0.05  | <0.05            | <0.05            | <0.05  |
| Na                             | "     | 0.05     | <0.05 | <0.05            | <0.05            | <0.05  |
| H                              | "     | 1.8      | 1.4   | 0.6              | 1.1              | 0.3    |
| Total K ppm                    |       | 66.0     | 73.0  | 71.0             | 67.0             | 55.0   |
| 0.1 M boiling HNO <sub>3</sub> | ppm   | 29.0     | 13.0  | 7.0              | 15.0             | 5.0    |

Planted: lupins unicroop @ 100 kg/ha ) superphosphate No 1 @  
 Barley clipper @ 45 kg/ha ) 200 kg/ha  
 Larissa - Tinkala @ 50 kg/ha)

Date Planted: May 2 Date Harvested: November 22, 1978

YIELD DATA GRAIN YIELD OR DM 22/11/78 kg/ha

Treatment

| <u>Species</u>   | <u>KC1 kg/ha</u> | <u>Mean Yield kg/ha</u> |
|------------------|------------------|-------------------------|
| L. angustifolius | 0                | 308                     |
|                  | 50               | 651                     |
|                  | 100              | 931                     |
|                  | 150              | 1134                    |
|                  | 200              | 1296                    |
|                  | 300              | 1330                    |
| H. vulgare       | 0                | 322                     |
|                  | 50               | 448                     |
|                  | 100              | 350                     |
|                  | 150              | 686                     |
|                  | 200              | 896                     |
|                  | 300              | 882                     |
| T. subterraneum  | 0                | 387*                    |
|                  | 50               | 906                     |
|                  | 100              | 991                     |
|                  | 150              | 1198                    |
|                  | 200              | 1185                    |
|                  | 300              | 1078                    |

\* Final cut only

Rape plots abandoned due to poor establishment and weed problems.

## 78MO4/1616EX RATES, TIMES, SOURCES OF POTASSIUM ON LUPINS

R. Huxley Badgingarra

Soil Type: 0-10 cm grey sand  
 10-30 cm pale yellow sand  
 30-100 cm dark yellow sand

Unicrop lupins planted at 100 kg/ha on June 6, 1978. Establishment poor, heavy home grass infestation. Trial harvested 29/11/78.

| Treatment                   | Yield kg/ha |      |               |     |      |      |
|-----------------------------|-------------|------|---------------|-----|------|------|
|                             | 25          | 37.5 | kg K/ha<br>50 | 75  | 100  | 150  |
| KC1(100) applied at seeding | 408         | 608  | 710           | 752 | 832  | 908  |
| KC1(100) applied at 4 weeks | 510         | 715  | 760           | 837 | 873  | 915  |
| KC1(100) applied at 8 weeks | 637         | 710  | 850           | 860 | 1015 | 1088 |
| KC1(10) applied at sowing   | 530         |      | 582           |     | 755  | 845  |
| KC1(31) applied at sowing   | 558         |      | 720           |     | 735  | 885  |
| Nil = 393                   |             |      |               |     |      |      |

78M06/1616EX FATE OF APPLIED P,K AND S

R. Huxley Badgingarra

Soil Type: 0-10 cm grey sand  
10-30 cm grey sand  
30-60 cm yellow sand  
>60 cm gravel

Planted 31.5.78 Darkan 50 kg/ha; unicrop Lupins 103 kg/ha;  
Nungarin clover 31 kg/ha.

| Treatment | Yields Kg/ha |               |               |
|-----------|--------------|---------------|---------------|
|           | Nil          | 100 kg/ha KC1 | 200 kg/ha KC1 |
| Wheat     | 269          | 351           | 350           |
| Lupins    | 157          | 250           | 296           |

## FATE OF OTHER TRIALS

76 TS 3 Rates, times and sources of Potassium application

Daisy Downs      Three Springs

Drought affected and very weedy. Inspection indicated small response to KC1 with 4 weeks after seeding application best. Slow release sources very poor. Trial not harvested.

78N7      Foliar nutrient application on wheat and barley.  
Newdegate Research Station. Trial destroyed by bush-fire.

78KA4      Potassium on subclover - soil test.  
J. Bushell      Kdjonup  
  
Northam A failed to establish. Severe infestation of Guildford grass.

78M05      Rates, times and sources of K on subclover.  
R. Notley      Dandaragen  
  
Severe moisture stress after planting resulted in very poor clover establishment. Trial discarded.