

HDC CONTRACT FV/120a

Post-emergence control of annual weeds, volunteer  
potatoes and oilseed rape in onions and leeks.

Field Work  
(YEAR 2)

Part IV Leeks - Sandy loam soil

W. Bond & S. Burston  
HRI - Wellesbourne  
December 1992

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### POST-EMERGENCE CONTROL OF ANNUAL WEEDS, VOLUNTEER POTATOES AND OILSEED RAPE IN ONIONS AND LEEKS - FIELD WORK.

Part IV Leeks - Sandy loam soil type

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#### SUMMARY

In an experiment to control volunteer crops in drilled leeks growing on a sandy loam soil, Starane, alone or in tank mixes, was the most effective herbicide for reducing potato growth, and in tank-mixes with Totril and/or Fortrol controlled seedling oilseed rape (OSR). Starane applied alone or with Shield did not control OSR. Tribunil was effective at reducing potato growth and controlling OSR. Tank-mix combinations of Totril and/or Fortrol with Basagran, Linuron or sodium monochloroacetate caused moderate scorch and yellowing of potato foliage and killed seedling OSR. Gesagard was relatively ineffective against potato and only killed OSR at the cotyledon stage. None of the treatments affected crop stand but the higher rate of Starane reduced crop yield. Crop yield was also reduced by plant competition from the potatoes.

#### INTRODUCTION

Where field vegetables are included in rotations with arable crops, volunteer plants of the arable crops growing among the vegetables are often the most difficult weeds to control. Seed shed during the harvesting of oilseed rape (OSR) can leave vast numbers of seeds on the soil surface. These can form a persistent seed bank once incorporated into the soil, emerging as volunteer weeds in succeeding crops. Small tubers left in the ground after the lifting of a potato crop will remain viable and emerge the following year unless killed by frost in a hard winter. Volunteer weeds are a particular problem in early sown, slow growing, poorly competitive crops such as onions and leeks. Standard herbicide programmes do not always control them and there is a need for treatments that will provide selective control in

onions and leeks. Several treatments have been devised that may control volunteer potatoes and OSR in these crops and the objective of the present experiment was to evaluate the effectiveness of these treatments in drilled leeks on a sandy loam soil.

## METHODS AND MATERIALS

The trial site was Pump Ground West Field at Horticulture Research International, Wellesbourne. The soil was a sandy loam of the Wick series with around 2% organic matter and pH 6.8. The land was prepared in the late winter following a previous cereal crop and allowed to weather before being marked into 1.83 m wide beds and the base fertiliser applied. Shortly before drilling Nitram (120 kg/ha) was applied and a seedbed prepared. Leek Cv. Verina (blue coated seed) was drilled on 2/4/92 in rows 0.61 m apart with three rows per bed. Seed was sown at 5 cm intervals along the row. An overall pre-emergence spray of propachlor + chlorthal-dimethyl (Albrass 9 l+ Dacthal 7 kg product/ha) was applied immediately after drilling. On 7/4/92, tubers of potato Cv. Maris Piper were planted at 0.5 m intervals along the two inter-rows on each bed. Plots were marked out in a randomised block design with three replicates of each spray treatment. There were two untreated plots per replicate. Plots were 6 m long and 1.83 m (1 bed) wide. On 23/4/92 and 6/5/92, 50 seeds of oilseed rape were sown across each plot in a 1 m long row drilled at right angles to the leek rows.

The herbicide treatments are listed in Table 1. The herbicides used were commercial formulations of methabenzthiazuron (Tribunil; 70% WP), fluoroxypryr (Starane 2; 200 g/l EC), sodium monochloroacetate[SMA] (Cromptex Steel; 95% w/w SP), linuron (Linuron Flowable; 450 g/l SC), ioxynil (Totril; 225 g/l EC), cyanazine (Fortrol; 500 g/l SC), bentazone (Basagran; 480 g/l SL), prometryn (Gesagard; 50% w/w WP) and clopyralid (Dow Shield; 200 g/l SL). The herbicides were applied in 250 l/ha water using a compressed air, knapsack sprayer and boom.

The first sprays were applied on 20/5/92 when the leeks were at the full 1-leaf stage, the potatoes were 15 cm tall and the two OSR sowings were at the 2 to 4-leaf and the cotyledon stage respectively. The weather was calm, bright and dry. The treatments were applied again on 4/6/92 when the leeks had 3-4 leaves, the potatoes were 30-45 cm tall and the OSR sowings had 4 and 8 leaves respectively. The weather at spraying was dull with a light breeze. There was some rain later but not within 6 hours of spraying.

Percent injury to leek, potato and OSR in both sowings was assessed visually on 21/5/92, 27/5/92 and 12/6/92. The height of ten potato plants on each plot was recorded on 2/7/92. Percent reduction in potato and OSR was assessed 7/7/92. The potato tops and the remaining plants of OSR were removed on 9/7/92 to allow the leeks to grow better. The number and fresh weight of OSR plants and the fresh weight of six potato tops was recorded for each plot. The leeks were top-dressed with nitrogen (Nitram 80 kg/ha) after removal of the volunteer weeds to improve crop growth. Percent crop injury and the level (%) of overall weed control were assessed visually on 14/7/92. The leeks were harvested on 5/10/92. The centre row only was lifted and the leeks counted, trimmed and weighed.

## RESULTS

The effects of the herbicide treatments on the growth of the potatoes, OSR, leeks and the natural weed population are described separately.

### Effect on potato

The early response of the potatoes to the first sprays was assessed as percent injury on 21/5/92, one day after application (Table 2). The treatments containing Starane (2, 5, 6, 7, 8 & 15) induced severe distortion and twisting of the potato foliage within 24 hr of spraying; the injury was greater with the higher dose of Starane (treatment 15). None of the other treatments produced any early symptoms of damage. Percent injury was assessed again on 27/5/92, one week after spraying (Table 3). Potatoes treated with Starane alone (treatments 2 & 15) were very distorted, whole plants were twisted and stunted but the leaves remained green. The plants also remained green following treatment with Starane + Shield (treatment 7), but deformation was not so severe. Distortion was also less where Starane was in a tank mix with Totril and/or Fortrol (treatments 5, 6 & 8) but the potato leaves exhibited noticeable yellowing. Yellowing of the potato foliage was also conspicuous with treatments 9, 10, 11, 12, 13 & 14; there was some scorch but no leaf distortion. Local scorching, particularly of the older leaves was the main symptom from the tank mixes of SMA and Totril (treatments 3 & 4). The hand-pulled treatment was not scored for injury but there was little regrowth at this stage.

Potato injury was next assessed on 12/6/92 (Table 4), almost one week after the treatments were applied for a second time. The hand-pulled plots were not scored for damage but there was some regrowth where tubers had remained in the soil. Potatoes treated with Starane alone (2 & 15) were dark green in colour and severely stunted. Where Starane was tank-mixed with Shield (7) the effects were similar but upright shoots with small distorted leaves grew up from the stunted plants. The growth check was much less severe where Starane was tank mixed with Totril and/or Fortrol (5, 6 & 8) but there was some leaf yellowing and scorch. SMA plus Totril (3 & 4) also caused yellowing and scorch but no stunting of plant growth. Treatments 9, 10, 12 and 13 caused leaf yellowing and scorch, and with treatment 12 (Tribunil) some of the plants were more severely damaged than others. Gesagard (11) and the tank-mix of Fortrol + Linuron (14) had little effect on the growth of the potatoes.

A final assessment of potato injury was made on 7/7/92. The effect of hand-pulling was scored and, although there was some regrowth, plant development was severely disrupted. Among the herbicide treatments, Starane alone (2 & 15) and in a tank mix with Shield (7) caused the greatest injury to the potatoes. The tank-mixes of Starane with Totril and/or Fortrol (5, 6 & 8) were also effective in reducing potato growth. Apart from the treatments that contained Starane, Tribunil (12) appeared to be the most effective herbicide for controlling potatoes. SMA plus Totril (3 & 4) caused moderate damage but the potatoes were able to regrow. The effects of treatments 9, 10, 11, 13 & 14 were also somewhat transient and regrowth of the potatoes occurred.

The height of the potato foliage on each plot was measured on 2/7/92 and the results are given in Table 6. There was no effect on plant height from treatments 3, 4, 9, 10, 11, 12, 13 and 14. Starane at 200 ml/ha, alone (2) or with Shield (7), reduced potato height by around 38% but in mixtures with Totril and or Fortrol the reduction was about 24%. Starane alone at 500 ml/ha (15) caused the greatest reduction of plant height by a herbicide treatment. The

height of the regrown potato stems on the hand-pulled plots was only 25% of that of the untreated controls.

The fresh weight of the potato foliage was recorded on 9/7/92 when the plants were removed to allow the leek crop to develop. Treatments 9, 10, 11 and 14 had no significant effect on plant weight (Table 7). Totril plus Linuron (13) reduced plant weight significantly at the 5% but not the 1% level. All the other treatments reduced potato foliage fresh weight by between 30% and 65%. Starane alone at 500 ml/ha (15) caused the greatest reduction by a herbicide treatment. Hand-pulling reduced plant weight by more than 95%.

No assessment was made of the effect of treatments on tuber formation but during the harvesting of the leeks it was obvious that there were large, well developed tubers on all the plots treated with herbicides.

### Effect on oilseed rape

#### OSR 1

The first assessment of percent injury to OSR 1 was made on, 21/5/92 (Table 8). Treatments containing Starane (2, 5, 6, 7, 8 & 15) caused some leaf distortion but little other injury. With SMA + Totril (3 & 4) there was scorching of older plants and young seedlings were killed. The other treatments did not cause any damage to the OSR at this stage.

A second assessment was made on 27/5/92 (Table 9). By this date, the initial distortion caused by Starane had disappeared and there was very little effect from the chemical applied alone (2 & 15) or with Shield (7). SMA plus Totril (3 & 4) caused some scorch to the OSR, especially the smaller seedlings, but most plants were too well developed to be killed; the higher rate of SMA (2) was a little more damaging. Starane plus Totril (5) or Fortrol (6) also caused severe leaf scorch of larger plants and killed smaller ones, the mixture of all three chemicals (8) was even more effective, as was the tank-mix of Totril + Fortrol (9). The tank mixes of Basagran + Totril + Fortrol (10), Totril + Linuron (13), and Fortrol + Linuron (14) were all equally effective in scorching the leaves of OSR 1, but few plants were killed. OSR treated with Tribunil (12) developed severe scorch but Gesagard treatment (11) only induced slight leaf scorch.

A further assessment of injury to OSR 1 was made on 12/6/92 (Table 10), almost one week after the second sprays had been applied. Starane alone (2 & 15) or with Shield (7) had little effect on the OSR at this stage; Starane plus Fortrol (6), and Gesagard (11) were also ineffective. SMA plus Totril (3 & 4) caused scorch and patchy yellowing of the OSR plants. Starane plus Totril (5) and Totril + Fortrol (9) induced severe scorch but the mixture of all three chemicals was more damaging and many plants were killed. Totril plus Linuron (13), Fortrol + Linuron (14), and Basagran + Totril + Fortrol (10) caused leaf yellowing and scorch but only a few plants died. Tribunil (12) killed many of the OSR plants and survivors were severely scorched.

A final assessment was made on 7/7/92 (Table 11); the scoring was very difficult because some OSR plants were affected by competition from the potatoes. Plants on plots treated with Starane (2 & 15) or Starane + Shield (7) appeared to be growing normally. On most other plots, plants had recovered from the initial injury and only slight scorch or loss of stand

was apparent. Only treatments 9 (Totril + Fortrol), 12 (Tribunil) and 13 (Totril + Linuron) caused injury scores that were significantly greater than the untreated.

The OSR 1 plants from each plot were counted and weighed on 9.7.92. Plant numbers (Table 15) were somewhat variable and only Tribunil (12) significantly reduced the stand of OSR. Plant fresh weight was also variable, mainly due to plant competition from the potatoes. The weights are expressed as a percentage of those from the hand-pulled potato treatment (Table 16). There was little reduction with treatments 2, 15 and 7, where the Starane and Starane + Shield affected potato growth more than OSR development. Other treatments produced low OSR fresh weights but the weights did not differ from the untreated control where plant competition alone reduced OSR growth.

### OSR 2

The first assessment of injury to OSR 2 was made on 27/5/92. Starane (2 & 15) caused some leaf distortion particularly at the higher rate of chemical (15), but the mixture with Shield (7) had no effect at all. SMA plus Totril (3 & 4) killed many OSR seedlings and severely scorched others. Starane plus Totril or Fortrol was also very effective against OSR. Treatments 8 (Totril + Fortrol + Starane), 9 (Totril + Fortrol), 10 (Basagran + Totril + Fortrol) and 12 (Tribunil) were probably the most effective treatments, causing very severe scorch or death of the OSR. Totril plus Linuron (13), Fortrol + Linuron (14) and Gesagard (11) also caused scorch but fewer plants were killed.

A second assessment was made on 12/6/92 (Table 13), following application of the second dose of herbicides. Treatments with Starane alone (2 & 15) or Starane plus Shield (7), again produced few symptoms of injury. Plants on the other treated plots exhibited severe injury except where potato foliage reduced spray penetration. Treatments 8 (Totril + Fortrol + Starane), 9 (Totril + Starane), 10 (Basagran + Totril + Fortrol) and 12 (Tribunil) were again the most effective treatments. Starane plus Fortrol (6) appeared less damaging to OSR than it had been earlier.

A final assessment was made on 7/7/92 (Table 14), but the results were influenced by plant competition from the potatoes. The injury recorded on the untreated plots was solely due to competition. Starane (2 & 15) and Starane + Shield (7) reduced potato growth without damaging the OSR greatly, and consequently injury was very low on these plots. Treatment 6 (Starane + Fortrol) was also less damaging to OSR 2 than most other treatments. SMA plus Totril (3 & 4) killed many of the OSR seedlings although a few plants on one plot appeared to be recovering. Treatments 9 (Totril + Fortrol), 10 (Basagran + Totril + Fortrol), 12 (Tribunil), and 13 (Totril + Linuron) were some of the most effective treatments. Treatments 5 (Starane + Totril), 8 (Totril + Fortrol + Starane), and 14 (Fortrol + Linuron) gave less consistent control and surviving OSR showed some signs of recovery unless competition from potatoes was severe.

The OSR 2 plants from each plot were counted and weighed on 9.7.92. The plant counts are given in Table 17, but the results were very variable due to plant competition from the potatoes. Only treatment 12 (Tribunil) significantly reduced plant stand. Plant weights were also variable (Table 18) and it is difficult to distinguish the effect of the herbicides since plant competition alone reduced OSR fresh weight on the untreated plots to 22% of that on the hand-pulled. Treatment 9 (Totril + Fortrol) appeared to be the most effective treatment for

reducing OSR plant fresh weight.

#### Effect on leek

Crop injury was assessed on 21/5/92, one day after application of the first herbicide sprays. At this early stage only plants treated with Starane alone or in mixtures (treatments 2, 5, 6, 7, 8 & 15) showed any injury. The symptoms were seen as varying amounts of twisting of the crop leaves. On 27/5/92, all the treated plants showed some signs of damage. Where Totril had been applied, alone or in mixtures (2, 5, 6, 7, 8 & 15), there was some twisting of the crop foliage. It was most severe with the high rate of Starane (15), when plant leaves were also slightly yellowed. The main symptom of injury on plots not treated with Starane was scorch of the leaf tips, but none of the treatments caused excessive damage.

Crop damage was assessed again on 12/6/92, almost a week after application of the second herbicide sprays. The leeks on plots treated with Starane, alone or in mixtures, had a slightly yellow appearance, most of the leaf twisting had disappeared except where the mixture with Shield had been applied (7). There was some leaf tip scorch with SMA + Totril (3 & 4), and some damage to late-emerging seedlings with Tribunil (12) but most treatments only caused minor crop injury.

A final assessment of crop injury was made on 14/7/92 (Table 22), after removal of the potato foliage. Most plants exhibited signs of suffering from competition with the potatoes for light and nitrogen, and were top dressed with nitrogen to aid recovery. It was difficult to distinguish between herbicide injury and the effects of plant competition. Most leeks had a thin and yellow appearance but soon recovered following removal of the potatoes, and the application of fertilizer.

At harvest on 6/10/92, the number and weight of trimmed leeks from the centre row of each plot were recorded (Tables 23 & 24). The yields from the herbicide treated plots are expressed as a percentage of those from the hand-pulled plots, since this was the nearest to being a hand-weeded treatment. The potatoes that remained on the untreated plots until removal on 9 July, reduced crop yield by over 55%. Competition from the potatoes was also responsible for most of the yield reductions on the herbicide treated plots. Where the herbicide treatment reduced potato growth the leeks suffered less competition. There was no significant reduction in yield with treatments 2 (Starane), 5 (Starane + Totril), 8 (Totril + Fortrol + Starane) or 12 (Tribunil) but other treatments suffered crop losses of between 25 and 42%. Starane at 500 ml/l (15) was one of the most effective treatments in reducing potato growth but the treatment did not prevent loss of yield. It is therefore likely that the treatment had a phytotoxic effect on leek growth too. Plant stand was not affected by any treatment (Table 24).

#### Effect on natural weed population

The few weeds that remained after application of the pre-emergence herbicide were very patchy in distribution and were unable to compete successfully with the potatoes growing among the leeks. The main survivors were common fumitory (*Fumaria officinalis*), field pansy (*Viola arvensis*), scentless mayweed (*Tripleurospermum inodorum*), fool's parsley (*Aethusa cynapium*), pennycress (*Thlaspi arvense*), knotweed (*Polygonum aviculare*), prickly

sow-thistle (*Sonchus asper*) and common chickweed (*Stellaria media*). All the herbicide treatments caused varying amounts of scorch and twisting of the different weed species but fumitory and field pansy were generally the least affected. Percent overall weed control was assessed visually on 14/7/92 and the results are shown in Table 25. Fewer weeds survived the pre-emergence sprays in block A, and even the hand-pulled treatment appeared relatively weed free. On most other plots the combination of post-emergence herbicide sprays and plant competition from the potatoes prevented the natural weeds from developing fully. Only on some of the plots treated with Starane alone (2 & 15), where the potatoes were stunted and fumitory was present, was there a low score for control of the natural weeds.

## DISCUSSION

In this experiment the potatoes emerged rapidly and grew away without any check due to frost. None of the treatments killed the potatoes and if they had been left in the crop until leek harvest further sprays would have been needed to prevent regrowth and additional crop losses from plant competition. The herbicide treatments did not appear to prevent tuber development. The most effective herbicide for causing foliar damage to potato, and reducing plant height and fresh weight was Starane applied alone. The higher dose reduced growth the most but it also affected crop yield. Starane applied in combination with other chemicals was also very effective in reducing potato growth. SMA plus Totril caused superficial leaf scorch and growth was affected but not permanently. Among the other treatments that did not contain Starane, most tank-mixes induced scorch, leaf yellowing and a check to growth but only Tribunil caused more than superficial injury to the potato foliage. Gesagard was relatively ineffective in controlling potatoes.

The two sowings of OSR emerged reasonably well but suffered competition from the fast growing potatoes. The potato foliage may have hindered penetration of the second herbicide sprays on some plots. Most herbicides were more effective when the OSR was at an early stage of growth. Starane applied alone did not control OSR and only caused early distortion of plant leaves even when the OSR was at the cotyledon stage; the mixture with Shield was also ineffective. Tank-mixes of Starane with Totril and/or Fortrol were more effective on both of the OSR sowings but so were mixtures of Totril + Fortrol, and Basagran + Totril + Fortrol, and Totril + Linuron. SMA plus Totril killed seedling OSR in the second sowing but larger plants in the first sowing were more resistant. Tribunil killed seedling OSR and severely scorched older plants. Gesagard was relatively ineffective in controlling OSR beyond the cotyledon stage.

All the herbicide treatments caused slight yellowing or leaf scorch of the leeks, and Starane, alone or in mixtures caused leaf twisting. None of the damage appeared to be severe and plant stand was not affected. The level of reduction in yield of trimmed leeks was determined mainly by the effectiveness of the herbicide treatments in controlling the potatoes. Plant competition caused most of the crop losses. Only with Starane at 500 ml/ha could the loss be attributed to herbicide damage.

The level of overall weed control was also influenced by the control of potato growth. A relatively few, unevenly distributed weeds survived the pre-emergence herbicides and many of these succumbed to plant competition as well as to the post-emergence treatments.



Table 1.

*TREATMENTS*  
(*product/ha*)

|    |  |
|----|--|
| 1  | Hand pulled                                      |
| 2  | Starane 200 ml                                   |
| 3  | SMA 20 kg + Totril 250 ml                        |
| 4  | SMA 10 kg + Totril 250 ml                        |
| 5  | Starane 200 ml + Totril 250 ml                   |
| 6  | Starane 200 ml + Fortrol 250 ml                  |
| 7  | Starane 200 ml + Shield 200 ml                   |
| 8  | Totril 250 ml + Fortrol 250 ml + Starane 200 ml  |
| 9  | Totril 250 ml + Fortrol 250 ml                   |
| 10 | Basagran 500 ml + Totril 125 ml + Fortrol 125 ml |
| 11 | Gesagard 575 g                                   |
| 12 | Tribunil 2 kg                                    |
| 13 | Totril 250 ml + Linuron 150 ml                   |
| 14 | Fortrol 250 ml + Linuron 150 ml                  |
| 15 | Starane 500 ml                                   |
| 16 | Untreated  |

Table 2.

*POTATO - PERCENT INJURY*  
(assessed 21.5.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | -  | -  | -  | -      | -                           |
| 2         | 50 | 50 | 70 | 56.7   | 48.9                        |
| 3         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 4         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 5         | 60 | 50 | 40 | 50.0   | 45.0                        |
| 6         | 40 | 60 | 60 | 53.3   | 46.9                        |
| 7         | 20 | 50 | 50 | 40.0   | 38.9                        |
| 8         | 40 | 50 | 40 | 43.3   | 41.2                        |
| 9         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 10        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 11        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 12        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 13        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 14        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 15        | 60 | 70 | 70 | 66.7   | 54.8                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 6.6                         |
|           |    |    |    | LSD 1% | 8.9                         |
|           |    |    |    | CV %   | 22.9                        |

Table 3.

**POTATO - PERCENT INJURY**  
(assessed 27.5.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | -  | -  | -  | -      | -                           |
| 2         | 60 | 60 | 70 | 63.3   | 52.8                        |
| 3         | 45 | 25 | 60 | 43.3   | 41.0                        |
| 4         | 25 | 20 | 20 | 21.7   | 27.7                        |
| 5         | 65 | 45 | 55 | 55.0   | 47.9                        |
| 6         | 50 | 65 | 75 | 63.3   | 52.9                        |
| 7         | 20 | 25 | 35 | 26.7   | 31.0                        |
| 8         | 75 | 70 | 75 | 73.3   | 58.9                        |
| 9         | 40 | 65 | 60 | 55.0   | 47.9                        |
| 10        | 30 | 40 | 65 | 45.0   | 42.1                        |
| 11        | 5  | 0  | 5  | 3.3    | 8.6                         |
| 12        | 65 | 75 | 65 | 68.3   | 55.8                        |
| 13        | 30 | 30 | 45 | 35.0   | 36.2                        |
| 14        | 15 | 25 | 25 | 21.7   | 27.6                        |
| 15        | 80 | 80 | 80 | 80.0   | 63.4                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 8.6                         |
|           |    |    |    | LSD 1% | 11.6                        |
|           |    |    |    | CV %   | 14.0                        |

Table 4.

*POTATO - PERCENT INJURY*  
(assessed 12.6.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | -  | -  | -  | -      | -                           |
| 2         | 75 | 75 | 70 | 73.3   | 58.9                        |
| 3         | 40 | 25 | 30 | 31.7   | 34.2                        |
| 4         | 35 | 30 | 10 | 25.0   | 29.3                        |
| 5         | 55 | 45 | 60 | 53.3   | 46.9                        |
| 6         | 40 | 55 | 60 | 51.7   | 46.0                        |
| 7         | 65 | 70 | 70 | 68.3   | 55.8                        |
| 8         | 55 | 60 | 65 | 60.0   | 50.8                        |
| 9         | 15 | 25 | 10 | 16.7   | 23.7                        |
| 10        | 15 | 10 | 20 | 15.0   | 22.6                        |
| 11        | 10 | 5  | 20 | 11.7   | 19.3                        |
| 12        | 45 | 55 | 65 | 55.0   | 47.9                        |
| 13        | 5  | 15 | 5  | 8.3    | 16.2                        |
| 14        | 10 | 10 | 5  | 8.3    | 16.6                        |
| 15        | 75 | 80 | 75 | 76.7   | 61.1                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 8.2                         |
|           |    |    |    | LSD 1% | 11.0                        |
|           |    |    |    | CV %   | 14.8                        |

Table 5.

*POTATO - PERCENT INJURY*  
(assessed 7.7.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 70 | 70 | 85 | 75.0   | 60.3                        |
| 2         | 75 | 50 | 65 | 63.3   | 52.9                        |
| 3         | 50 | 15 | 25 | 30.0   | 32.6                        |
| 4         | 25 | 20 | 10 | 18.3   | 25.0                        |
| 5         | 40 | 10 | 60 | 36.7   | 36.1                        |
| 6         | 10 | 50 | 70 | 43.3   | 40.1                        |
| 7         | 60 | 70 | 75 | 68.3   | 55.9                        |
| 8         | 40 | 55 | 55 | 50.0   | 45.0                        |
| 9         | 10 | 10 | 15 | 11.7   | 19.9                        |
| 10        | 15 | 15 | 10 | 13.3   | 21.3                        |
| 11        | 20 | 10 | 0  | 10.0   | 15.0                        |
| 12        | 40 | 40 | 45 | 41.7   | 40.2                        |
| 13        | 15 | 15 | 15 | 15.0   | 22.8                        |
| 14        | 10 | 25 | 10 | 15.0   | 22.3                        |
| 15        | 75 | 80 | 75 | 76.7   | 61.1                        |
| 16        | 0  | 5  | 0  | 1.7    | 4.3                         |
|           |    |    |    | LSD 5% | 15.2                        |
|           |    |    |    | LSD 1% | 20.5                        |
|           |    |    |    | CV %   | 26.4                        |

Table 6.

**POTATO - HEIGHT OF FOLIAGE**  
(cm, mean of 10 plants, 2.7.92)

| Treatment | A    | B      | C    | Mean | % of control |
|-----------|------|--------|------|------|--------------|
| 1         | 26.3 | 15.8   | 12.0 | 18.0 | 25.3         |
| 2         | 38.9 | 47.7   | 42.7 | 43.1 | 60.5         |
| 3         | 68.0 | 73.0   | 61.6 | 67.5 | 94.8         |
| 4         | 63.4 | 66.5   | 68.2 | 66.0 | 92.7         |
| 5         | 52.9 | 61.5   | 48.0 | 54.1 | 76.0         |
| 6         | 57.9 | 60.1   | 45.6 | 54.5 | 76.6         |
| 7         | 46.0 | 49.7   | 36.7 | 44.1 | 62.0         |
| 8         | 47.7 | 56.0   | 51.9 | 51.9 | 72.8         |
| 9         | 69.3 | 75.0   | 62.5 | 68.9 | 96.8         |
| 10        | 71.0 | 70.7   | 72.4 | 71.4 | 100.2        |
| 11        | 63.4 | 70.5   | 70.1 | 68.0 | 95.5         |
| 12        | 65.4 | 69.0   | 60.0 | 64.8 | 91.0         |
| 13        | 63.3 | 73.7   | 64.7 | 67.2 | 94.4         |
| 14        | 70.9 | 75.3   | 70.3 | 72.2 | 101.3        |
| 15        | 35.0 | 34.3   | 33.3 | 34.2 | 48.0         |
| 16        | 69.4 | 75.0   | 69.3 | 71.2 | 100.0        |
|           |      | LSD 5% |      | 6.6  | 9.3          |
|           |      | LSD 1% |      | 8.9  | 12.5         |

CV for variate 6.9%

Table 7.

**POTATO - FRESH WEIGHT OF FOLIAGE**  
(kg / 6 plants 9.7.92)

| Treatment | A    | B      | C    | Mean | % of control |
|-----------|------|--------|------|------|--------------|
| 1         | 0.13 | 0.14   | 0.26 | 0.18 | 2.7          |
| 2         | 3.48 | 3.74   | 3.05 | 3.42 | 51.4         |
| 3         | 3.31 | 4.88   | 3.68 | 3.96 | 59.4         |
| 4         | 4.73 | 4.68   | 4.50 | 4.64 | 69.6         |
| 5         | 3.13 | 5.24   | 3.42 | 3.93 | 59.0         |
| 6         | 4.47 | 3.48   | 2.84 | 3.60 | 54.0         |
| 7         | 4.64 | 3.47   | 2.06 | 3.39 | 50.9         |
| 8         | 3.86 | 3.36   | 3.89 | 3.70 | 55.5         |
| 9         | 5.96 | 6.16   | 4.92 | 5.68 | 85.2         |
| 10        | 5.98 | 6.20   | 4.57 | 5.58 | 83.8         |
| 11        | 4.20 | 6.54   | 6.39 | 5.71 | 85.7         |
| 12        | 4.20 | 4.60   | 2.92 | 3.91 | 58.6         |
| 13        | 3.64 | 6.32   | 5.16 | 5.04 | 75.6         |
| 14        | 5.03 | 6.13   | 6.37 | 5.84 | 87.7         |
| 15        | 2.62 | 2.28   | 2.11 | 2.34 | 35.1         |
| 16        | 6.18 | 7.52   | 6.30 | 6.67 | 100.0        |
|           |      | LSD 5% |      | 1.27 | 19.0         |
|           |      | LSD 1% |      | 1.71 | 25.6         |

CV for variate 18.0%

Table 8.

*OSR 1 - PERCENT INJURY*  
(assessed 21.5.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 25 | 25 | 25 | 25.0   | 30.0                        |
| 3         | 25 | 40 | 40 | 35.0   | 36.2                        |
| 4         | 10 | 10 | 25 | 15.0   | 22.3                        |
| 5         | 10 | 15 | 15 | 13.3   | 21.3                        |
| 6         | 10 | 10 | 15 | 11.7   | 19.9                        |
| 7         | 20 | 5  | 10 | 11.7   | 19.3                        |
| 8         | 10 | 5  | 10 | 8.3    | 16.6                        |
| 9         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 10        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 11        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 12        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 13        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 14        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 15        | 15 | 15 | 20 | 16.7   | 24.1                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 4.9                         |
|           |    |    |    | LSD 1% | 6.6                         |
|           |    |    |    | CV %   | 24.9                        |



Table 9.

*OSR 1 - PERCENT INJURY*  
(assessed 27.5.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 0  | 10 | 0  | 3.3    | 6.1                         |
| 3         | 40 | 10 | 40 | 30.0   | 32.3                        |
| 4         | 10 | 25 | 15 | 16.7   | 23.7                        |
| 5         | 60 | 45 | 40 | 48.3   | 44.0                        |
| 6         | 45 | 40 | 40 | 41.7   | 40.2                        |
| 7         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 8         | 40 | 70 | 85 | 65.0   | 54.4                        |
| 9         | 50 | 75 | 80 | 68.3   | 56.1                        |
| 10        | 40 | 40 | 40 | 40.0   | 39.2                        |
| 11        | 20 | 20 | 15 | 18.3   | 25.3                        |
| 12        | 45 | 85 | 90 | 73.3   | 60.3                        |
| 13        | 30 | 65 | 40 | 45.0   | 42.1                        |
| 14        | 20 | 40 | 35 | 31.7   | 34.0                        |
| 15        | 0  | 10 | 0  | 3.3    | 6.1                         |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 13.3                        |
|           |    |    |    | LSD 1% | 18.0                        |
|           |    |    |    | CV %   | 27.6                        |

Table 10.

*OSR 1 - PERCENT INJURY*  
(assessed 12.6.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 3         | 30 | 35 | 30 | 31.7   | 34.2                        |
| 4         | 20 | 40 | 15 | 25.0   | 29.5                        |
| 5         | 55 | 30 | 45 | 43.3   | 41.1                        |
| 6         | 0  | 15 | 5  | 6.7    | 11.9                        |
| 7         | 5  | 0  | 0  | 1.7    | 4.3                         |
| 8         | 65 | 75 | 75 | 71.7   | 57.9                        |
| 9         | 30 | 60 | 45 | 45.0   | 42.0                        |
| 10        | 30 | 25 | 15 | 23.3   | 28.7                        |
| 11        | 5  | 0  | 15 | 6.7    | 11.9                        |
| 12        | 20 | 85 | 90 | 65.0   | 55.1                        |
| 13        | 30 | 50 | 20 | 33.3   | 34.9                        |
| 14        | 45 | 25 | 10 | 26.7   | 30.2                        |
| 15        | 0  | 10 | 0  | 3.3    | 6.1                         |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 16.2                        |
|           |    |    |    | LSD 1% | 21.9                        |
|           |    |    |    | CV %   | 40.2                        |

Table 11.

*OSR 1 - PERCENT INJURY*  
(assessed 7.7.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 0  | 10 | 0  | 3.3    | 6.1                         |
| 3         | 20 | 5  | 10 | 11.7   | 19.3                        |
| 4         | 0  | 0  | 40 | 13.3   | 13.1                        |
| 5         | 20 | 0  | 15 | 11.7   | 16.5                        |
| 6         | 0  | 10 | 10 | 6.7    | 12.3                        |
| 7         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 8         | 0  | 10 | 20 | 10.0   | 15.0                        |
| 9         | 40 | 10 | 15 | 21.7   | 26.8                        |
| 10        | 25 | 10 | 5  | 13.3   | 20.5                        |
| 11        | 10 | 10 | 10 | 10.0   | 18.4                        |
| 12        | 20 | 80 | 50 | 50.0   | 45.0                        |
| 13        | 10 | 40 | 30 | 26.7   | 30.3                        |
| 14        | 0  | 70 | 0  | 23.3   | 18.9                        |
| 15        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 22.6                        |
|           |    |    |    | LSD 1% | 30.4                        |
|           |    |    |    | CV %   | 89.4                        |

Table 12.

*OSR 2 - PERCENT INJURY*  
(assessed 27.5.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 15 | 10 | 15 | 13.3   | 21.3                        |
| 3         | 50 | 50 | 90 | 63.3   | 53.9                        |
| 4         | 60 | 50 | 70 | 60.0   | 50.9                        |
| 5         | 75 | 70 | 70 | 71.7   | 57.9                        |
| 6         | 60 | 65 | 55 | 60.0   | 50.8                        |
| 7         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 8         | 80 | 80 | 95 | 85.0   | 68.0                        |
| 9         | 80 | 85 | 85 | 83.3   | 66.0                        |
| 10        | 90 | 95 | 80 | 88.3   | 70.7                        |
| 11        | 55 | 50 | 80 | 61.7   | 52.1                        |
| 12        | 60 | 85 | 95 | 80.0   | 65.0                        |
| 13        | 60 | 85 | 70 | 71.7   | 58.3                        |
| 14        | 40 | 70 | 60 | 56.7   | 48.9                        |
| 15        | 20 | 60 | 20 | 33.3   | 34.6                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 12.7                        |
|           |    |    |    | LSD 1% | 17.1                        |
|           |    |    |    | CV %   | 17.4                        |

Table 13.

*OSR 2 - PERCENT INJURY*  
(assessed 12.6.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 5  | 0  | 10 | 5.0    | 10.5                        |
| 3         | 80 | 55 | 90 | 75.0   | 61.0                        |
| 4         | 65 | 80 | 75 | 73.3   | 59.1                        |
| 5         | 85 | 60 | 75 | 73.3   | 59.3                        |
| 6         | 30 | 30 | 30 | 30.0   | 33.2                        |
| 7         | 5  | 0  | 0  | 1.7    | 4.3                         |
| 8         | 90 | 80 | 90 | 86.7   | 68.9                        |
| 9         | 95 | 85 | 95 | 91.7   | 73.8                        |
| 10        | 90 | 90 | 95 | 91.7   | 73.4                        |
| 11        | 75 | 50 | 95 | 73.3   | 60.7                        |
| 12        | 30 | 95 | 99 | 89.7   | 73.8                        |
| 13        | 90 | 85 | 70 | 81.7   | 65.2                        |
| 14        | 80 | 65 | 70 | 71.7   | 58.0                        |
| 15        | 5  | 20 | 5  | 10.0   | 17.5                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 13.7                        |
|           |    |    |    | LSD 1% | 17.1                        |
|           |    |    |    | CV %   | 17.0                        |

Table 14.

*OSR 2 - PERCENT INJURY*  
(assessed 7.7.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 20 | 0  | 0  | 6.7    | 8.9                         |
| 2         | 0  | 10 | 0  | 3.3    | 6.1                         |
| 3         | 85 | 90 | 95 | 90.0   | 72.0                        |
| 4         | 40 | 80 | 90 | 70.0   | 58.1                        |
| 5         | 80 | 30 | 30 | 46.7   | 43.3                        |
| 6         | 40 | 20 | 20 | 26.7   | 30.8                        |
| 7         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 8         | 90 | 20 | 60 | 56.7   | 49.6                        |
| 9         | 90 | 90 | 90 | 90.0   | 71.6                        |
| 10        | 90 | 90 | 60 | 80.0   | 64.6                        |
| 11        | 85 | 30 | 30 | 48.3   | 44.5                        |
| 12        | 75 | 95 | 99 | 89.7   | 73.8                        |
| 13        | 90 | 90 | 90 | 90.0   | 71.6                        |
| 14        | 90 | 90 | 40 | 73.3   | 60.8                        |
| 15        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 16        | 90 | 0  | 30 | 40.0   | 34.9                        |
|           |    |    |    | LSD 5% | 27.6                        |
|           |    |    |    | LSD 1% | 37.2                        |
|           |    |    |    | CV %   | 38.9                        |

Table 15.

*OSR 1 - PLANT COUNT*  
(plants / m row 9.7.92)

| Treatment | A  | B      | C  | Mean | % of control |
|-----------|----|--------|----|------|--------------|
| 1         | 10 | 22     | 10 | 14.0 | 82.4         |
| 2         | 21 | 18     | 18 | 19.0 | 111.8        |
| 3         | 14 | 20     | 19 | 17.7 | 103.9        |
| 4         | 18 | 25     | 13 | 18.7 | 109.8        |
| 5         | 17 | 14     | 21 | 17.3 | 102.0        |
| 6         | 21 | 19     | 10 | 16.7 | 98.0         |
| 7         | 14 | 18     | 21 | 17.7 | 103.9        |
| 8         | 22 | 14     | 9  | 15.0 | 88.2         |
| 9         | 11 | 15     | 6  | 10.7 | 62.8         |
| 10        | 15 | 13     | 16 | 14.7 | 86.3         |
| 11        | 17 | 22     | 9  | 16.0 | 94.1         |
| 12        | 9  | 5      | 6  | 6.7  | 39.2         |
| 13        | 18 | 15     | 10 | 14.3 | 84.3         |
| 14        | 16 | 13     | 12 | 13.7 | 80.4         |
| 15        | 14 | 20     | 14 | 16.0 | 94.1         |
| 16        | 21 | 14     | 16 | 17.0 | 100.0        |
|           |    | LSD 5% |    | 6.9  | 40.4         |
|           |    | LSD 1% |    | 9.2  | 54.4         |

CV for variate 26.9%

Table 16.

*OSR 1 - PLANT FRESH WEIGHT*  
(kg / m row 9.7.92)

| Treatment | A    | B      | C    | Mean | % hand-pulled |
|-----------|------|--------|------|------|---------------|
| 1         | 2.96 | 3.68   | 2.96 | 3.20 | 100.0         |
| 2         | 2.44 | 2.77   | 2.65 | 2.62 | 81.9          |
| 3         | 1.12 | 1.17   | 0.86 | 1.05 | 32.8          |
| 4         | 2.08 | 1.24   | 0.78 | 1.37 | 42.7          |
| 5         | 1.14 | 1.95   | 1.52 | 1.54 | 48.0          |
| 6         | 2.86 | 1.07   | 2.39 | 2.11 | 65.8          |
| 7         | 1.44 | 2.26   | 4.08 | 2.59 | 81.0          |
| 8         | 0.92 | 0.53   | 0.50 | 0.65 | 20.3          |
| 9         | 0.50 | 0.36   | 0.70 | 0.52 | 16.3          |
| 10        | 0.54 | 0.50   | 1.74 | 0.93 | 29.0          |
| 11        | 1.50 | 0.72   | 0.51 | 0.91 | 28.4          |
| 12        | 1.58 | 0.37   | 0.53 | 0.83 | 25.8          |
| 13        | 1.00 | 0.67   | 0.58 | 0.75 | 23.4          |
| 14        | 2.18 | 0.33   | 1.12 | 1.21 | 37.8          |
| 15        | 2.22 | 2.22   | 2.75 | 2.40 | 74.9          |
| 16        | 2.40 | 0.67   | 1.36 | 1.48 | 46.2          |
|           |      | LSD 5% |      | 1.04 | 32.7          |
|           |      | LSD 1% |      | 1.41 | 44.0          |

CV for variate 41.5%



Table 17.

*OSR 2 - PLANT COUNT*  
(plants / m row 9.7.92)

| Treatment | A  | B      | C  | Mean | % of control |
|-----------|----|--------|----|------|--------------|
| 1         | 18 | 24     | 18 | 20.0 | 125.0        |
| 2         | 17 | 42     | 24 | 27.7 | 172.9        |
| 3         | 13 | 14     | 10 | 12.3 | 77.1         |
| 4         | 14 | 9      | 22 | 15.0 | 93.8         |
| 5         | 10 | 21     | 20 | 17.0 | 106.3        |
| 6         | 10 | 18     | 32 | 20.0 | 125.0        |
| 7         | 10 | 22     | 39 | 23.7 | 147.9        |
| 8         | 6  | 9      | 11 | 8.7  | 54.2         |
| 9         | 16 | 7      | 7  | 10.0 | 62.5         |
| 10        | 9  | 8      | 8  | 8.3  | 52.1         |
| 11        | 17 | 16     | 16 | 16.3 | 102.1        |
| 12        | 9  | 5      | 0  | 4.7  | 29.2         |
| 13        | 10 | 6      | 10 | 8.7  | 54.2         |
| 14        | 11 | 17     | 23 | 17.0 | 106.3        |
| 15        | 19 | 19     | 26 | 21.3 | 133.3        |
| 16        | 11 | 21     | 16 | 16.0 | 100.0        |
|           |    | LSD 5% |    | 10.8 | 67.3         |
|           |    | LSD 1% |    | 14.5 | 90.6         |

CV for variate 41.9%

Table 18.

*OSR 2 - PLANT FRESH WEIGHT*  
(kg / m row 9.7.92)

| Treatment | A     | B      | C     | Mean  | % hand pulled |
|-----------|-------|--------|-------|-------|---------------|
| 1         | 1.180 | 1.180  | 1.340 | 1.233 | 100.0         |
| 2         | 0.820 | 1.090  | 1.270 | 1.060 | 86.0          |
| 3         | 0.025 | 0.120  | 0.020 | 0.055 | 4.5           |
| 4         | 0.120 | 0.090  | 0.140 | 0.117 | 9.5           |
| 5         | 0.160 | 0.350  | 0.260 | 0.257 | 20.8          |
| 6         | 0.280 | 0.250  | 1.020 | 0.517 | 41.9          |
| 7         | 1.170 | 1.240  | 1.680 | 1.363 | 110.5         |
| 8         | 0.007 | 0.420  | 0.175 | 0.201 | 16.3          |
| 9         | 0.003 | 0.005  | 0.010 | 0.006 | 0.5           |
| 10        | 0.070 | 0.003  | 0.020 | 0.031 | 2.5           |
| 11        | 0.200 | 0.260  | 0.460 | 0.307 | 24.9          |
| 12        | 0.500 | 0.001  | 0.000 | 0.167 | 13.5          |
| 13        | 0.110 | 0.015  | 0.005 | 0.043 | 3.5           |
| 14        | 0.020 | 0.120  | 0.200 | 0.113 | 9.2           |
| 15        | 0.550 | 0.550  | 0.760 | 0.620 | 50.3          |
| 16        | 0.070 | 0.300  | 0.440 | 0.270 | 21.9          |
|           |       | LSD 5% |       | 0.286 | 23.2          |
|           |       | LSD 1% |       | 0.385 | 31.2          |

CV for variate 43.2%

Table 19.

*LEEK - PERCENT CROP INJURY*  
(assessed 21.5.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 10 | 10 | 30 | 16.7   | 23.4                        |
| 3         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 4         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 5         | 10 | 10 | 10 | 10.0   | 18.4                        |
| 6         | 15 | 10 | 10 | 11.7   | 19.9                        |
| 7         | 10 | 10 | 10 | 10.0   | 18.4                        |
| 8         | 10 | 10 | 5  | 8.3    | 16.6                        |
| 9         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 10        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 11        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 12        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 13        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 14        | 0  | 0  | 0  | 0.0    | 0.0                         |
| 15        | 15 | 20 | 15 | 16.7   | 24.1                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 4.2                         |
|           |    |    |    | LSD 1% | 5.6                         |
|           |    |    |    | CV %   | 33.1                        |

Table 20.

*LEEK - PERCENT CROP INJURY*  
(assessed 27.5.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 15 | 5  | 25 | 15.0   | 21.9                        |
| 3         | 0  | 0  | 15 | 5.0    | 7.6                         |
| 4         | 5  | 5  | 5  | 5.0    | 12.9                        |
| 5         | 10 | 0  | 15 | 8.3    | 13.7                        |
| 6         | 20 | 5  | 10 | 11.7   | 19.3                        |
| 7         | 0  | 15 | 10 | 8.3    | 13.7                        |
| 8         | 10 | 25 | 15 | 16.7   | 23.7                        |
| 9         | 0  | 15 | 10 | 8.3    | 13.7                        |
| 10        | 10 | 0  | 5  | 5.0    | 10.5                        |
| 11        | 10 | 15 | 5  | 10.0   | 18.0                        |
| 12        | 15 | 15 | 5  | 11.7   | 19.5                        |
| 13        | 10 | 10 | 20 | 13.3   | 21.1                        |
| 14        | 10 | 10 | 10 | 10.0   | 18.4                        |
| 15        | 30 | 30 | 35 | 31.7   | 34.2                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 12.7                        |
|           |    |    |    | LSD 1% | 17.1                        |
|           |    |    |    | CV %   | 49.0                        |

Table 21.

*LEEK - PERCENT CROP INJURY*  
(assessed 12.6.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 0  | 0  | 0  | 0.0    | 0.0                         |
| 2         | 10 | 5  | 5  | 6.7    | 14.8                        |
| 3         | 15 | 0  | 10 | 8.3    | 13.7                        |
| 4         | 10 | 10 | 10 | 10.0   | 18.4                        |
| 5         | 10 | 5  | 0  | 5.0    | 10.5                        |
| 6         | 0  | 5  | 10 | 5.0    | 10.5                        |
| 7         | 10 | 25 | 25 | 20.0   | 26.1                        |
| 8         | 10 | 5  | 0  | 5.0    | 10.5                        |
| 9         | 0  | 0  | 10 | 3.3    | 6.1                         |
| 10        | 0  | 0  | 10 | 3.3    | 6.1                         |
| 11        | 10 | 0  | 10 | 6.7    | 12.3                        |
| 12        | 15 | 5  | 5  | 8.3    | 16.2                        |
| 13        | 5  | 0  | 10 | 5.0    | 10.5                        |
| 14        | 5  | 0  | 0  | 1.7    | 4.3                         |
| 15        | 10 | 10 | 10 | 10.0   | 18.4                        |
| 16        | 0  | 0  | 0  | 0.0    | 0.0                         |
|           |    |    |    | LSD 5% | 12.8                        |
|           |    |    |    | LSD 1% | 17.2                        |
|           |    |    |    | CV %   | 68.8                        |

Table 22.

*LEEK - PERCENT CROP INJURY*  
(assessed 14.7.92)

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 45 | 0  | 15 | 20.0   | 21.6                        |
| 2         | 25 | 25 | 15 | 21.7   | 27.6                        |
| 3         | 30 | 35 | 40 | 35.0   | 36.2                        |
| 4         | 30 | 35 | 35 | 33.3   | 35.3                        |
| 5         | 20 | 30 | 20 | 23.3   | 28.8                        |
| 6         | 40 | 30 | 30 | 33.3   | 35.2                        |
| 7         | 30 | 30 | 20 | 26.7   | 31.0                        |
| 8         | 30 | 15 | 20 | 21.7   | 27.5                        |
| 9         | 40 | 35 | 35 | 36.7   | 37.3                        |
| 10        | 40 | 35 | 35 | 36.7   | 37.3                        |
| 11        | 40 | 40 | 45 | 41.7   | 40.2                        |
| 12        | 20 | 20 | 25 | 21.7   | 27.7                        |
| 13        | 50 | 45 | 40 | 45.0   | 42.1                        |
| 14        | 40 | 45 | 35 | 40.0   | 39.2                        |
| 15        | 10 | 25 | 25 | 20.0   | 26.1                        |
| 16        | 70 | 45 | 50 | 55.0   | 47.9                        |
|           |    |    |    | LSD 5% | 10.8                        |
|           |    |    |    | LSD 1% | 14.5                        |
|           |    |    |    | CV %   | 19.1                        |

Table 23.

**YIELD OF TRIMMED LEEKS**  
(kg / 6 m row, 6.10.92)

| Treatment | A     | B      | C     | Mean  | % hand pulled |
|-----------|-------|--------|-------|-------|---------------|
| 1         | 12.05 | 13.05  | 7.75  | 10.95 | 100.0         |
| 2         | 9.95  | 8.95   | 11.15 | 10.02 | 91.5          |
| 3         | 8.25  | 7.15   | 7.15  | 7.52  | 68.7          |
| 4         | 8.15  | 7.80   | 7.75  | 7.90  | 72.2          |
| 5         | 9.95  | 8.85   | 11.20 | 10.00 | 91.3          |
| 6         | 8.05  | 8.60   | 7.30  | 7.98  | 72.9          |
| 7         | 7.90  | 8.50   | 9.00  | 8.47  | 77.3          |
| 8         | 7.50  | 8.60   | 11.30 | 9.13  | 83.4          |
| 9         | 8.45  | 7.25   | 6.20  | 7.30  | 66.7          |
| 10        | 8.50  | 9.20   | 7.00  | 8.23  | 75.2          |
| 11        | 6.90  | 6.70   | 5.90  | 6.50  | 59.4          |
| 12        | 10.50 | 11.15  | 10.15 | 10.60 | 96.8          |
| 13        | 6.60  | 5.95   | 6.20  | 6.25  | 57.1          |
| 14        | 6.95  | 6.75   | 5.90  | 6.53  | 59.7          |
| 15        | 6.30  | 8.10   | 10.20 | 8.20  | 74.9          |
| 16        | 5.30  | 4.10   | 4.85  | 4.75  | 43.4          |
|           |       | LSD 5% |       | 2.07  | 18.9          |
|           |       | LSD 1% |       | 2.79  | 25.5          |

CV for variate 15.2%

Table 24.

*LEEK - PLANT NUMBERS AT HARVEST*  
(plants / 6 m row, 6.10.92)

| Treatment | A  | B  | C  | Mean | % of control |
|-----------|----|----|----|------|--------------|
| 1         | 46 | 57 | 42 | 48.3 | 91.8         |
| 2         | 57 | 45 | 50 | 50.7 | 96.2         |
| 3         | 66 | 50 | 47 | 54.3 | 103.2        |
| 4         | 63 | 54 | 61 | 59.3 | 112.7        |
| 5         | 64 | 63 | 59 | 62.0 | 117.2        |
| 6         | 68 | 54 | 38 | 53.3 | 101.3        |
| 7         | 42 | 54 | 43 | 46.3 | 88.0         |
| 8         | 43 | 54 | 52 | 49.7 | 94.3         |
| 9         | 54 | 53 | 56 | 54.3 | 103.2        |
| 10        | 56 | 56 | 55 | 55.7 | 105.7        |
| 11        | 52 | 58 | 52 | 54.0 | 102.5        |
| 12        | 60 | 54 | 55 | 56.3 | 107.0        |
| 13        | 46 | 48 | 52 | 48.7 | 92.4         |
| 14        | 47 | 62 | 44 | 51.0 | 96.8         |
| 15        | 48 | 46 | 49 | 47.7 | 90.5         |
| 16        | 56 | 54 | 48 | 52.7 | 100.0        |

LSD 5%            10.6            20.0

LSD 1%            14.2            27.0

CV for variate 12.0%



Table 25.

*WEEDS - PERCENT OVERALL WEED CONTROL  
(assessed 14.7.92)*

| Treatment | A  | B  | C  | Mean   | Mean angular<br>trans. data |
|-----------|----|----|----|--------|-----------------------------|
| 1         | 90 | 10 | 20 | 40.0   | 38.9                        |
| 2         | 70 | 60 | 20 | 50.0   | 44.7                        |
| 3         | 80 | 70 | 65 | 71.6   | 58.0                        |
| 4         | 85 | 50 | 75 | 70.0   | 57.4                        |
| 5         | 70 | 60 | 65 | 65.0   | 53.8                        |
| 6         | 90 | 70 | 40 | 66.6   | 55.9                        |
| 7         | 70 | 65 | 55 | 63.3   | 52.8                        |
| 8         | 75 | 70 | 70 | 71.6   | 57.9                        |
| 9         | 90 | 65 | 60 | 71.6   | 58.7                        |
| 10        | 90 | 80 | 65 | 78.3   | 62.9                        |
| 11        | 95 | 85 | 70 | 83.3   | 67.0                        |
| 12        | 85 | 80 | 70 | 78.3   | 62.5                        |
| 13        | 80 | 60 | 60 | 66.6   | 55.0                        |
| 14        | 80 | 70 | 60 | 70.0   | 57.0                        |
| 15        | 70 | 40 | 35 | 48.3   | 44.1                        |
| 16        | 70 | 65 | 60 | 65.0   | 53.8                        |
|           |    |    |    | LSD 5% | 13.2                        |
|           |    |    |    | LSD 1% | 17.7                        |
|           |    |    |    | CV %   | 14.4                        |