HDC Project FV 54a. Bulb Onions and other vegetables:
Control of volunteer potatoes using Fluroxypyr and Clopyralid.

The response of vegetable crops and weeds to herbicide programmes devised for the control of volunteer potatoes in the onion crop.

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Volunteer potatoes have again become a problem in many vegetable crops following a series of mild winters. Herbicide programmes to selectively control volunteer potatoes in the onion crop have been devised at Arthur Rickwood EHF for testing in onions this year. It was considered opportune to evaluate these same treatments in a range of drilled and transplanted vegetable crops to identify any further crops in which the herbicides might prove safe. Potatoes were included in the trial to determine the effectiveness of the treatments.

METHOD

The trial was made in Big Cherry field at IHR - Wellesbourne. The soil a sandy loam with 2% organic matter and pH 6.8, had been cultivated in early spring, marked into beds and allowed to weather. Emerged weeds were killed with paraquat before the seedbed was prepared by power harrow on 12 June. Single rows of sixteen crops (Table 1) were drilled or dibbed at appropriate depths on 12 June and the seedbed rolled. The soil was dry and irrigation was applied to encourage crop emergence. The four transplanted crops (Table 1) were planted in single rows on 3 July. Irrigation was applied after planting. The post-emergence sprays were applied by knapsack sprayer and boom in 300 l/ha water to 3 metre lengths of crop row. The herbicides used were the standard commercial products Starane 2, Dow Shield and Totril. Unsprayed control plots were also included. The crop stages of untreated plants were noted at the time of spraying and are given in the tables of results. The first sprays were applied 11 July (max/min temperature 27.9/11.2° c) the second on 18 July (max/min 29.9/11.2° c) and the final sprays on 27 July (max/min 23.7/13.6° c). The effects on the crops were assessed visually on a scale of 0 (no effect) to 10 (complete kill). Overall weed control was estimated on a similar scale and the effects on individual species in the natural weed flora were also noted. The response of the crops and weeds was recorded shortly after spraying and again before the next sprays were applied. A final growth assessment was made in September. Before the trial was finished the potatoes were lifted to obtain a visual estimate of tuber yield on the treated plots as compared with the untreated.

RESULTS

Final Sprays - applied 12 July (Table 3)

At the first assessment Totril applied alone (treatments 1, 2, 4 and 10) caused only slight scorching but a few days later the damage was much more severe. The expanded leaves of broad bean were blackened and the developing ones became yellow. The leaves of pea were also yellowed while those of dwarf bean were scorched. Carrot, parsley, parsnip, red beet, spinach and lettuce were severely scorched and some plants were killed. Swede, turnip and kohl rabi were also very scorched and plants yellowed or died. The three transplanted brassicas suffered some yellowing and scorch but not as severe as that on the drilled crops. There was only slight scorching and yellowing of the potato leaves and the onions and leeks suffered no injury. Weed control was moderately good. *Capsella-bursa pastoris* and *Stellaria media* were

killed and *Lamium amplexicaule, L. purpureum, Veronica persica, Senecio vulgaris, Papaver rhoeas* and *Matricaria spp.* were severely scorched. The main survivors were *Poa annua* and *Polygonum aviculare.*

The mixtures of Totril with Starane (Treatments 3 and 5) were faster acting than Totril alone. The Starane caused epinasty and twisting of the crop stems and foliage within a few hours of application; the scorching effect of Totril developed later. The leaves and stems of potato were twisted and there was a general yellowing and scorching of the plants. Broad bean was blackened, pea was yellowed, and dwarf bean suffered scorch, but all three were also twisted and distorted. The umbelliferous crops were very susceptible to the mixture and most plants were killed. Red beet, spinach and lettuce were scorched and twisted; many plants died. Turnip, kohl rabi and swede were scorched, yellowed and distorted and some plants were killed. The leaves of the transplanted brassicas were scorched and yellowed and the leaf margins rolled back. The leaves of the onions and the drilled and transplanted leeks were twisted with slight yellowing of the bases. Weed control was very good. Most species were killed, *Polygonum aviculare* was scorched, and *Poa annua* was the main survivor. There was little difference in effect on crops and weeds between the two rates of Starane in the mixtures.

Starane alone (treatments 6, 7 and 9) caused varying amounts of twisting and distortion to all the crops. The epinastic response developed soon after spraying and remained through to the next spray application. Beans and peas were distorted, as were red beet, spinach, lettuce, the umbelliferous crops and the drilled brassicas. There was leaf rolling in the transplanted brassicas. The leaves of the onions and leeks were twisted. The stems and leaves of potato were twisted and distorted. At this stage no crop plants were killed. Weed control was moderate with seedlings of all species except *Poa annua* distorted but not killed. There was no obvious difference between the rates of Starane.

The response of crops and weeds to the mixture of Starane and Shield (treatment 8) was similar to that with Starane alone. Crops were twisted and distorted with slight yellowing of the leaves but no plant deaths. Potato was twisted and distorted slightly more than with Starane alone. Weed control was similar, with Poa annua the main survivor.

Second sprays - applied 18 July (Table 4)

Totril following Totril (treatments 1 and 2) generally increased the amount of scorch suffered by susceptible crops. The injury was more severe with the higher rate of herbicide(1.4 l/ha). Plants of turnip, swede and the umbelliferous crops were more or less all killed. Red beet, pea, dwarf bean, spinach, lettuce and kohl rabi all suffered varying degrees of additional scorch. Broad bean remained blackened. Onion leaves became scorched at the tips but leek was hardly affected. The transplanted brassicas developed yellow patches on the expanded leaves. The leaves of potato were scorched and yellowed but the effects were not severe. Weed control was good. Species killed by the sequence of sprays included *L. purpureum, L. amplexicaule, P. rhoeas, S. media, Senecio vulgaris, C. bursa-pastoris, Sonchus asper, Urtica urens, Chenopodium album* and the mayweeds. *Poa annua* and *Polygonum aviculare* were not controlled.

Where Totril alone was followed by Starane (treatment 10) crops which had only been scorched by the initial spray became twisted and distorted. The potatoes did not become as distorted as those sprayed with Starane at the earlier stage. Lettuce, swede and turnip were too scorched to develop twisting and

most plants died. The majority of the umbelliferous crops were also killed. Broad bean, pea, dwarf bean and red beet became distorted as well as scorched but spinach and kohl rabi remained only scorched. In the transplanted brassicas there was leaf rolling as well as patchy yellowing. The leaves of onions and leeks were twisted with some tip scorch. *Poa annua* and *Polygonum aviculare* were the only weed species remaining. The effects of Totril followed by the mixture of Totril with Starane (treatment 4) were similar to those of treatment 10.

Plots treated with Starane followed by Starane (treatments 6 and 7) had a flattened appearance. Most plants of lettuce, turnip, pea and broad bean were killed. Potatoes were twisted and distorted but there was very little scorch. The transplanted brassicas exhibited some distortion but the leaves remained green. Leek and onion leaves were twisted. All the other crops suffered severe distortion and some scorching; many plants were killed. Weeds remained distorted rather than being killed and so plots appeared weedy. *Poa annua* was not affected.

Where the mixture of Starane and Totril followed the same mixture (treatments 3 and 5) injury of susceptible crops became more severe. The umbelliferous crops were killed, as were lettuce, swede and turnip. There was severe scorching and death of broad bean, pea, dwarf bean, red beet, spinach and kohl rabi. The transplanted brassicas were scorched and yellowed as was potato. The leaves of the onions and leeks were twisted and the tips scorched. Weed control was very good, *Poa annua* being the main survivor together with odd plants of *Polygonum aviculare* and volunteer cereals.

The effects of Starane plus Shield following either Starane alone (treatment 9) or the mixture (treatment 8) were very similar. Treatment 8 generally caused more distortion, especially to potatoes but appeared less damaging to broad and dwarf bean. Treatment 9 seemed to cause more distortion of the transplanted brassicas. With both treatments, pea, dwarf bean, broad bean, lettuce and parsley were severely scorched and distorted and most plants eventually died. Red beet, parsnip, spinach, carrot, swede and parsley were all distorted to some degree, the effects were severe but most plants were not killed. Kohl rabi and the transplanted brassicas were somewhat less damaged but they could not be described as tolerant. Leeks and onions were twisted and some were pale in colour. Potatoes were twisted and distorted. The broad-leaved weeds were all distorted to some extent but few were killed. Only *Poa annua* was undamaged.

Third sprays - applied 27 July (Table 5)

The final sprays were Starane (0.5 or 1.0 l/ha) or Shield (0.5 l/ha). Where only Totril had been applied previously (treatment 1 and 2) Starane initially caused distortion of the remaining broad leaved crops. Many had been severely scorched by the Totril but survivors had begun to recover especially with the lower rate of Totril (treatment 1). Most if not all plants of parsnip, parsley, carrot, lettuce, swede and turnip were killed. Pea and broad bean were severely injured but surviving dwarf bean, red beet, spinach and kohl rabi began to exhibit some signs of recovery. The transplanted crops too began to grow away from the damage. The potatoes were twisted, but not greatly, and the early scorch was less noticeable. Weed control remained good with *Poa annua* the main weed surviving. Where Starane followed mixtures of Totril and Starane (treatments 3 and 4) most of the drilled broad leaved crops were killed and only kohl rabi showed the slightest sign of tolerance. The transplanted brassicas were injured too but seemed to be recovering. The stand of onions and leeks appeared less than on the untreated but the plants

only suffered some initial leaf twisting. Potatoes were severely checked but were not killed. Where Starane followed Starane and Shield (treatments 8 and 9) the drilled broad-leaved crops suffered severe damage. Most plants of pea, broad bean, dwarf bean, parsley, carrot, lettuce, swede and turnip were killed. There were a few survivors of red beet and spinach but the majority died. Only parsnip and kohl rabi showed any tolerance. The transplanted brassicas were damaged but appeared to be recovering. Onions and leeks were twisted initially but recovered. Potato was severely distorted and yellowed. These two treatments caused the most stunting of the potato plants. Weed control was poor because *C. bursa-pastoris* and *Chenopodium album* began to recover and grow away. In treatment 10, Starane followed Starane alone and early Totril alone. Pea, broad and dwarf bean, parsnip, parsley, carrot, lettuce, swede and turnip were killed, red beet was severely damaged but kohl rabi again showed some tolerance. The transplanted brassicas were also relatively tolerant. Onions and leeks were only slightly injured. The potatoes were scorched rather than distorted by this sequence. Where Shield followed applications with Starane alone (treatments 6 and 7) there was little scorch of the crops and most of the injury was distortion of plants. Potatoes were very distorted and yellowed. Broad bean, pea, lettuce and turnip were killed but a few dwarf bean, red beet, spinach, carrot, parsley and swede plants survived although severely damaged. Parsnip was somewhat more tolerant and kohl rabi appeared relatively undamaged. The transplanted brassicas were also fairly tolerant. Onion and leek showed little injury. Where Shield followed the mixture of Starane and Totril (treatment 5) most drilled broad leaved crops were killed including pea, broad and dwarf bean, the umbelliferous crops, lettuce, swede and turnip. A few spinach and red beet plants survived. Kohl rabi and the transplanted brassicas again showed some tolerance while onions and leeks were hardly affected. Weed control was good with only *Poa annua* surviving. The potatoes were twisted and scorched but appeared to be recovering.

Final Assessment - (Table 6)

At the final assessment broad bean and pea had senesced naturally and no damage scores were recorded for these crops. All treatments killed or severely damaged lettuce, parsley, turnip, swede, carrot and dwarf bean. Red beet and spinach were also injured by most treatments but there was some recovery from treatments 1 and 2. Parsnip was injured to some extent by all treatments but with those that did not include Totril (treatments 6 - 9) there was good recovery of surviving plants. The most tolerant, drilled broad leaved crop was kohl rabi. As with parsnip the sprays caused initial injury but there was recovery, especially where Totril had not been applied, and with treatments 6 and 7 the crop was growing normally by the final assessment. The transplanted brassica crops also recovered from the initial damage but injury was generally more severe where two sprays of Totril had been applied. The drilled and the transplanted leeks exhibited few injury symptoms and were growing normally. Bulb and salad onions were also tolerant but there was an apparent reduction in stand with some treatments. Potato was not killed by any of the sequences of sprays, the most damaging treatments were 6, 7, 8 and 9 where Starane had been applied both in the early and the later sprays. None of the treatments prevented tuber production (Table 7) but the number and size of the tubers were reduced by the four best treatments.

SUMMARY

The results confirmed the tolerance of onion and leek to the treatments devised by Arthur Rickwood EHF. The transplanted brassica crops also exhibited some tolerance to treatments that did not include Totril. Among the

drilled broad leaved crops only kohl rabi showed any useful tolerance. Further testing of the treatments in drilled and transplanted brassica crops may be merited. Potato was not killed by any treatments but the sequences of early and late Starane caused the most injury. In this relatively late-sown trial the potatoes grew away vigorously and treatments may have been more effective on slower developing plants or at an earlier growth stage relative to the crops.

Table 1.

Drilled crops

Crops	Cultivars	Abbreviation
Broad bean	Minica	BRB
Pea	Kelvedon Wonder	PEA
Dwarf bean	Gresham	DWB
Parsnip	White Gem	PNP
Red beet	Detroit Crimson Globe	RBT
Salad onion	White Lisbon	SON
Bulb onion	Bulldog	BON
Spinach	Medania	SPN
Leek	Musselburgh	LEK
Parsley	Bravour	PLY
Carrot	Chantenay Red-cored	CAR
Lettuce	Saladin	LET
Kohl rabi	Purple Vienna	KLR
Swede	Laurentian	SWD
Turnip	Golden ball	TNP
Potato	Cara	POT

Transplanted crops

Crop	Cultivar	Abbreviation
Cauliflower	White Rock	TCA
Cabbage	January King 3	TCB
Calabrese	Cruiser	TCS
Leek	Cortina	TLK

Table 2. Treatment: Sequence of herbicides (Dose as l product/ha)

T'ment	Spray 1 Applied 11/7	Spray 2 Applied 18/7	Spray 3 Applied 27/7
1	Totril 0.7	Totril 0.7	Staranel.0
2	Totril 0.7	Totril 1.4	Staranel.0
3	Totril 0.7 + Starane 0.5	Totril 0.7 + Starane 0.5	Staranel.0
4	Totril 0.7	Totril 0.7 + Starane 0.5	Staranel.0
5	Totril 0.7 + Starane 0.75	Totril 0.7 + Starane 0.75	Shield 0.5
6	Starane 0.75	Starane 0.75	Shield 0.5
7	Starane 1.0	Starane 1.0	Shield 0.5
8	Starane 0.5 + Shield 0.2	Starane 0.5 + Shield 0.2	Staranel.0
9	Starane 0.75	Starane 0.5 + Shield 0.2	Starane0.5
10	Totril 0.7	Starane 0.75	Staranel.0
Untreat.	Unsprayed	Unsprayed	Unsprayed

Key			
	Totril	Totril	225 g/l ioxyril
	Starane	Starane 2	200 g/l fluroxypyr
	Shield	Dow Shield	200 g/l clopyralid

Table 3. The response (0 - 10) of crops and weeds to the first sprays in each treatment sequence. Applied 11 July.

Crop.....	BRB	PEA	DWB	PNP	RBT	BON	SON
Leaf Stage....	3-4	3-4	Unif	Cotyl	2-4	1	1
Treatment 1	2/5	0/4	2/5	0/8	0/7	0/0	0/0
2	2/5	0/4	2/5	0/8	0/7	0/0	0/0
3	6/8	5/7	4/7	5/9	6/8	3/3	3/3
4	2/5	1/4	3/5	0/9	2/7	0/0	0/0
5	7/8	7/8	4/7	5/10	6/8	4/3	4/3
6	7/6	7/5	4/4	4/7	6/6	4/2	4/2
7	7/7	7/7	4/4	4/7	6/7	4/2	4/2
8	7/8	7/7	5/5	5/7	6/6	5/3	5/3
9	6/7	7/7	4/4	4/6	6/6	4/2	4/2
10	2/6	0/4	2/5	0/9	2/7	0/0	0/0
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Crop.....	SPN	LEK	PLY	CAR	LET	KLR	SWD
Leaf Stage....	4-6	1	Cotyl	1	2-4	2	4
Treatment 1	1/7	0/0	0/9	0/8	0/6	3/7	3/8
2	1/7	0/0	0/9	0/8	0/6	3/7	3/8
3	6/8	2/2	6/9	7/10	6/8	4/8	6/9
4	2/8	0/0	0/9	0/8	0/7	2/7	3/8
5	7/8	4/3	6/9	7/9	6/8	4/8	5/9
6	7/6	4/3	7/7	7/7	7/7	4/5	5/7
7	7/6	4/3	7/7	7/7	7/7	4/5	6/7
8	7/7	4/4	6/8	7/7	7/8	4/5	7/7
9	7/6	4/2	6/7	7/7	7/7	4/5	6/7
10	3/7	0/0	0/9	0/10	1/8	2/7	3/8
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Crop.....	TNP	POT	TCA	TCB	TCS	TLK	WED
Leaf Stage...	4-5	6-8"	4	4	4	2.5	4-6
Treatment 1	3/8	1/4	3/5	3/5	2/5	0/0	2/7
2	3/8	1/4	3/5	3/5	2/5	0/0	2/7
3	5/9	6/6	1/6	4/8	3/8	1/2	5/8
4	3/8	1/4	1/4	4/4	2/5	0/0	2/7
5	7/8	7/6	1/5	3/7	3/7	1/1	2/9
6	6/7	7/6	1/3	3/5	3/5	1/2	5/9
7	7/7	8/6	1/3	3/5	3/5	1/2	5/6
8	7/7	8/7	1/3	2/5	3/5	1/2	5/6
9	6/7	7/6	1/3	2/5	3/5	1/1	5/6
10	3/8	1/4	1/5	2/5	2/5	0/0	2/7
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Assessed 12-7 / 16-7-90.

Table 4 The response (0 - 10) of crops and weeds to the second sprays in the treatment sequence. Applied 18 July.

Crop.....	BRB	PEA	DWB	PNP	RBT	BON	SON
Leaf Stage...	7	7	1-2	2	4-6	1.5	1.5
Treatment 1	6/7	4/6	5/7	9/9	7/7	1/2	1/3
2	6/8	4/7	5/7	9/10	7/7	1/3	1/3
3	8/9	9/9	8/9	10/10	9/9	3/4	4/4
4	8/8	6/8	7/8	10/10	8/8	2/2	3/3
5	9/9	10/10	8/9	10/10	9/9	2/2	3/3
6	8/9	8/9	7/7	7/7	7/8	4/2	3/3
7	8/8	7/9	6/7	7/7	6/7	3/2	3/3
8	8/9	9/10	8/9	8/8	6/7	4/3	3/3
9	8/8	9/10	7/8	8/7	6/7	3/2	2/2
10	8/8	6/8	7/7	9/10	8/7	4/3	3/3
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Crop.....	SPN	LEK	PLY	CAR	LET	KLR	SWD
Leaf Stage...	8	1.5	2	3	6	4	6
Treatment 1	7/8	1/2	9/9	9/9	6/8	8/8	9/9
2	7/8	1/2	9/9	10/10	7/9	8/8	9/10
3	8/9	2/3	10/10	10/10	9/10	8/9	9/10
4	8/9	2/3	9/10	9/9	8/9	7/8	9/10
5	8/9	3/4	9/10	9/9	9/10	8/9	9/10
6	7/8	3/4	8/8	8/8	8/9	7/6	7/8
7	7/8	3/2	7/8	7/8	8/9	7/6	7/8
8	7/8	4/4	8/9	8/8	9/9	7/6	8/7
9	6/8	2/3	8/9	8/8	9/9	7/7	8/8
10	6/6	2/3	9/9	10/10	9/9	8/8	9/9
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Crop.....	TNP	POT	TCA	TCB	TCS	TLK	WED
Leaf Stage...	6-7	Bud*	7	6	7	3-4	Y.P**
Treatment 1	9/10	4/5	6/6	6/6	6/6	0/1	8/7
2	9/10	5/6	6/7	6/7	6/7	0/1	8/8
3	9/10	7/7	7/8	8/9	8/9	2/3	9/9
4	9/10	7/7	6/7	7/8	7/8	0/2	9/8
5	9/10	7/8	6/7	7/8	7/8	0/2	9/9
6	7/9	6/7	5/6	6/6	6/6	2/3	6/6
7	7/9	6/7	5/6	6/6	6/6	2/3	6/6
8	7/8	7/8	5/5	6/6	6/6	2/3	7/7
9	8/9	6/7	5/6	6/7	6/7	2/2	7/7
10	9/9	5/5	6/5	6/5	6/5	2/2	8/8
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Assessed 20-7 / 25-7-90

* Potatoes with flower buds initiated
** Weeds at young plant stage.

Table 5. The response (0 - 10) of crops and weed to the third sprays in the treatment sequence. Applied 27 July.

Crop.....	BRB	PEA	DWB	PNP	RBT	BON	SON
Leaf Stage...	Bud*	Bud*	2-3	3	7-8	2.5	2.5
Treatment 1	7/8	7/8	7/7	9/9	8/6	4/1	5/2
2	9/9	8/9	7/7	10/10	8/7	4/2	5/2
3	9/10	10/10	9/10	10/10	10/10	5/4	5/4
4	9/9	9/10	8/9	10/10	9/9	4/2	5/3
5	10/10	10/10	9/10	10/10	9/9	3/2	3/3
6	9/10	10/10	8/9	7/4	9/9	5/2	4/3
7	9/10	10/10	7/8	6/5	8/8	3/2	3/2
8	10/10	10/10	9/9	7/6	8/9	4/2	4/3
9	9/10	10/10	9/9	7/4	8/8	3/2	3/2
10	9/10	9/10	9/9	10/10	8/8	5/3	5/2
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Crop.....	SPN	LEK	PLY	CAR	LET	KLR	SWD
Leaf Stage...	12	2.5	4	5	12	6	6-8
Treatment 1	8/6	4/1	9/9	9/10	8/9	8/6	10/10
2	8/7	4/1	10/10	10/10	9/10	9/6	10/10
3	9/9	4/2	10/10	10/10	10/10	9/8	10/10
4	9/9	5/3	10/10	9/10	9/10	9/7	10/10
5	9/9	3/2	10/10	10/10	10/10	9/7	10/10
6	8/9	4/3	9/9	8/8	10/10	5/2	9/9
7	8/8	2/2	8/9	8/8	10/10	5/2	9/9
8	9/9	3/0	9/10	9/9	10/10	8/7	9/9
9	9/8	3/0	10/10	9/9	10/10	6/4	9/9
10	8/7	4/0	10/10	10/10	10/10	8/6	9/10
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Crop.....	TNP	POT	TCA	TCB	TCS	TLK	WED
Leaf Stage...	6-8	Bud*	10	8	10	4	YP**
Treatment 1	10/10	7/5	7/7	7/7	7/7	2/0	8/8
2	10/10	7/6	8/7	8/6	8/6	2/0	8/8
3	10/10	8/7	8/6	9/8	9/7	5/2	9/8
4	10/10	8/7	7/5	8/7	8/6	4/1	9/8
5	10/10	8/7	6/4	7/6	7/5	2/2	9/8
6	9/10	7/8	5/4	6/5	5/5	1/1	7/6
7	9/9	7/8	5/5	5/3	5/4	1/2	7/6
8	9/10	8/9	6/6	6/5	6/5	2/2	8/7
9	9/10	7/7	6/5	6/5	6/5	2/3	6/6
10	10/10	7/6	5/5	5/5	5/5	2/3	8/7
Untreated	0/0	0/0	0/0	0/0	0/0	0/0	0/0

Assessed 1-8 / 21-8-90

* Flowers formed ** Weeds at least young plant stage

Table 6 Final assessment of crop and weed response (0 - 10) to the sequence of herbicide sprays.

Crop.....		BRB	PEA	DWB	PNP	RBT	BON	SON
Treatment	1	*-	*-	8	9	6	0	0
	2	-	-	8	9	5	0	0
	3	-	-	10	10	10	3	3
	4	-	-	10	10	9	1	2
	5	-	-	10	10	9	0	2
	6	-	-	10	1	9	1	2
	7	-	-	9	1	9	0	0
	8	-	-	10	4	10	0	0
	9	-	-	10	4	7	0	0
	10	-	-	9	10	8	0	0
Untreated		-	-	0	0	0	0	0

Crop.....		SPN	LEK	PLY	CAR	LET	KLR	SWD
Treatment	1	6	0	9	10	9	3	10
	2	6	0	10	10	10	5	10
	3	9	0	10	10	10	5	10
	4	9	1	10	10	10	5	10
	5	10	0	10	10	10	5	10
	6	9	1	10	9	10	1	8
	7	8	0	9	8	10	0	8
	8	9	0	10	9	10	4	9
	9	8	0	10	9	10	2	8
	10	8	0	10	10	10	3	10
Untreated		0	0	0	0	0	0	0

Crop.....		TNP	POT	TCA	TCB	TCS	TLK	WED
Treatment	1	10	3	4	4	5	0	9
	2	10	3	4	4	4	0	9
	3	10	5	4	7	6	0	9
	4	10	4	2	3	5	0	9
	5	10	5	2	2	3	0	9
	6	10	7	2	2	2	0	6
	7	9	7	3	2	3	1	7
	8	9	8	3	3	3	0	8
	9	10	8	2	3	3	0	7
	10	10	4	3	2	2	0	8
Untreated		0	0	0	0	0	0	0

Assessed 10-9-90

*(-) crop senescing naturally by this date.

Table 7. Visual assessment of tuber yield as % of untreated (12-9-90)

	% of untreated	Comments
Treatment 1	80	
2	80	
3	70	smaller tubers
4	90	
5	80	
6	60	smaller and fewer tubers
7	60	smaller and fewer tubers
8	40	smaller and fewer tubers
9	50	smaller and fewer tubers
10	70	smaller tubers
Untreated	100	