

No.22 WEED CONTROL IN CUCUMBERS, PUMPKINS AND ROCKMELONS

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In the last two years, five weed control trials have been carried out on cucumbers, two each on pumpkins and rockmelons.

It may be postulated that with such a vigorous family as the Cucurbitaceae special weed control measures should not be necessary, but this, under many conditions, has not been found so. True it is that, with such widely spaced rows or hills, mechanical cultivation is, in many cases, all that is needed, but true it is also that many crop failures are encountered due to weeds choking out the emerging seedlings.

The aim then in these trials has been to eliminate only the weeds threatening the emerging seedlings. It is considered that at later stages normal cultivation and natural vigour should be sufficient in most cases to see the crop through.

(For details of trials see p.22 - 2)

CUCUMBERS

Of the six varieties used in trials only one (Crystal Apple) has not been of the long green variety. The latter were preferred because they have proved more disease resistant, have germinated better, matured quicker and shown greater apparent resistance to herbicides. For reasons of disease resistance Early Fortune has been replaced by Ashley, Supermarket, Palomar and Palmetto.

Of the five trials involving cucumbers, three gave moderate weed control and two gave excellent. This on comparison with trials on other crops in which the same herbicides were used has been found due to moisture conditions and is discussed in a supporting paper.

CMU - This chemical was fatal to most cucumber seedlings. Of those surviving the seedling stage, most failed to live to maturity while the few doing so were found to give mostly

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DETAILS OF TRIALS

	CROP	VARIETY	HERBICIDE						
			Alanap	DCU	Amitrol	CMU	CDEC	CDA	EPTC
1958 Richmond	Cucumber	Early Fortune	X	X	X				
	Pumpkin	Qld. Blue	X	X	X				
	Squash	Hubbard	X	X	X				
1958-9 Richmond	Cucumber	Early Fortune	X	X	X	X	X		
	Cucumber	Crystal Apple	X	X	X	X	X		
1959 Port Macquarie	Cucumber	Supermarket			X		X	X	X
	Cucumber	Palomar			X		X	X	X
	Cucumber	Palmetto			X		X	X	X
	Pumpkin	Baby Blue			X		X	X	X
	Rockmelon	Butternut			X		X	X	X
	Rockmelon	Hale's Best			X		X		
1959 Wentworth	Rockmelon	Hale's Best			X		X		
1959-60 Richmond	Cucumber	Supermarket			X		X	X	X
	Cucumber	Ashley			X		X	X	X

reject fruit. Reasonable weed control was obtained at the  $\frac{3}{4}$  lb. per acre rate used.

DCU - At 10 lb./acre weed control was 60% while at 20 lb./acre it had improved to 90%. Crop germination did not seem affected, but in most cases plants failed to develop or to set fruit. Plants were stunted, crimped and distorted. Maturity, where it did occur, was very late with 10 lb./acre and extremely so with 20 lb./acre. Numbers too were very poor as was quality. Weed control effects lasted right through to maturity.

ALANAP - at 12 lb./acre gave the best complete weed control results. At 4 lb./acre it was still superior to the higher rate of Amitrol. Total weed reduction of 90% differed little either with grassy or broadleaf weeds.

Fruit numbers were slightly better than for the handweeded controls at both rates, but plants with the 12 lb. rate appeared more stunted and average fruit quality and weight were down a little. Alanap delayed maturity but still gave a very even pick.

CDAA - Results obtained with this chemical are by no means conclusive, mainly due to dry weather after planting in both trials where it was used. No adverse effects, however, were noticed on the crop either at 3 or 4 lb./acre, and actually numbers and yield in all cases did appear slightly above that for the controls.

Further work is needed under more precise planting conditions.

EPTC - As is to be expected with pre-emergence treatments, weed control was excellent especially at the 8 lb./acre rate. 5 lb./acre was much improved where the chemical was incorporated into the soil. Unfortunately, crop emergence was also seriously affected and as a result EPTC could hardly be recommended for pre-emergence weed control in cucumbers.

AMITROL - After CDEC, Amitrol has so far proved to be the next best herbicide for use with cucumbers.

Neither the 2 lb. nor 4 lb./acre has been found strong enough to effectively reduce weed populations, but 6 lb./acre has done this by over 80%, with dicot control amounting to almost 100%.

Of the weeds emerging, most became chlorotic at the growing points and died. The cucumbers, on the other hand,

although showing some chlorosis, quickly grew out of it and became vigorous early croppers. In yield trials cucumbers maturing from plants treated pre-emergence with amitrol at 6 lb./acre have produced 40% more fruit both in number and weight than the handweeded controls, and also fruit of very good quality.

Time of maturity, if at all affected, may have been brought forward somewhat.

CDEC - Where the seedbed remained moist CDEC has proved by far the most efficient herbicide for grass control, varying between 95% and 100% of that recorded in the controls. Although dicotyledon control could not be compared with the above, 65-75% has generally been realised.

In the yield trials, cucumbers picked from plants treated pre-emergence with CDEC at 6 lb./acre produced 50% more fruit both in number and weight than the handweeded controls and 20% more than the next best plots (Amitrol 6 lb./acre).

Time of maturity has not been affected by CDEC and uniform yield has been maintained over an extended period of cropping.

#### YIELDS AND MARKET VALUES

In summer 1959 the long green variety, Early Fortune, was used in a yield trial. Below is a summary showing time of harvest and number of cucumbers picked. Weights of fruit picked which are available from all plots ran approximately parallel to the numbers. There were 6 replications each thinned to 3 plants.

(Table on p. 22 - 5)

All through the picking period (2/2/59 to 2/3/59) the average wholesale price for similar long green cucumbers was 1/- each.

Returns for the best treatments from the above trial based on this information were as follows:

<u>CDEC</u> at 6 lb./acre (15,200 cucumbers)	£760/acre.
Amitrol at 6 lb./acre	£630/acre.
<u>Weeded Control</u>	£470/acre.

Total Fruit Numbers per Treatment

Picked on:	2/2/59	6/2	9/2	13/2	16/2	20/2	26/2	2/3	TOTAL
Alanap 4 lb/ac	3	15	16	18	5	10	17	4	88
Alanap 12	4	12	11	16	10	12	17	7	89
Amitrol 2	2	24	12	10	15	1	19	5	88
Amitrol 6	7	30	10	14	9	13	15	8	106
DCU 10	0	0	0	5	4	7	10	1	27
DCU 20	0	0	0	0	0	0	12	2	14
CDEC 6	3	29	18	24	7	12	25	8	126
CMU $\frac{3}{4}$	1	11	4	9	4	3	6	2	40
Weeded Control	3	21	9	13	6	8	12	6	78

The startling conclusion from this trial and under market prices then pertaining was that for a herbicidal cost of £10 per acre for a complete cover spray or of £2/-/- per acre for a 15 inch band spray the increase in income under similar conditions would have been over £300 per acre using CDEC and at least £200 per acre with Amitrol.

It must be added, however, that the differences in profit margins between the above and the summer 1960 trials did not prove nearly as great as those above due to much lower market prices.

### RECOMMENDATIONS

Both CDEC at 6 lb/acre and Amitrol at 6 lb/acre are recommended in N.S.W. for pre-emergence weed control sprayings with cucumbers. Although there is little difference in cost between these two chemicals, CDEC has shown both better residual effects and better grass control as well as less susceptibility to vagaries of the weather. Consequently the following procedure is recommended:-

In a reasonably moist seedbed direct seed as a row crop and spray as soon as possible afterwards, either as a band or complete cover spray, CDEC at 6 lb. per sprayed acre. If no rain occurs and surface soil starts drying out, irrigate lightly (30-50 points) to incorporate the chemical in the surface layer. Then treat the crop as normally done to bring the seed through, to aerate and control the weeds between the rows in the case of band spraying. Give as close a cultivation as possible just before vines start running.

Increased yields with CDEC are apparently mainly due to removal of competition for space, light and nutriment from the crop seedlings and possibly to a growth stimulation effect.

### ROCKMELONS

It was expected that the above results with cucumbers could have been repeated with rockmelons, but in both trials attempted the surface soil was allowed to dry out after application and weed control was poor. There were, however, no detrimental effects observed traceable to either CDEC or Amitrol.

Further work is envisaged with this crop.

PUMPKINS

Although this crop can generally combat weeds on its own merits, trials have shown that here too pre-emergence applications of herbicides and removal of early competing weed has led to definite increases in yield and quality. It has also been noted that Butternut pumpkins, unlike cucumbers and rockmelons, appeared unaffected by pre-emergence applications of EPTC even at 8 lb./acre.