

The tolerance of a range of cucurbit varieties to tank mixtures of prefar and alanap

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Hand chipping is an expensive but widely practised method of within-row weed control in cucurbit crops. Herbicides are required that have an acceptable level of crop safety and will control a wide range of weeds under different environmental conditions.

Earlier trials using Prefar²R (460 g L⁻¹ bensulide - Stauffer Chemical Co.,) and Alanap (230 g L⁻¹ naptalam - Uniroyal Chemical Inc.) separately and in mixtures indicated that marked variability in tolerance to these herbicides existed both between and within cucurbit species. Some results of more detailed investigations are reported here.

Methods

A fine seed bed was prepared by discing and rotary-hoeing a recent alluvium (Fluventic haplustoll) at the Queensland Agricultural College, Gatton. Bensulide and naptalam at 5.52 + 2.76 and 11.04 + 5.52 kg ha⁻¹, double this rate were tested against an untreated control. In one set of treatments the herbicides were incorporated by rotary-hoeing to a depth of about 5 cm immediately before sowing and in the other they were sprayed on the surface after planting. Sixteen seeds of each of 22 varieties of pumpkins, squash, zucchini, melons and cucumbers were hand-sown in rows in each plot at a depth of 2-3 cm on 6th October, 1982. All plots were then spray-irrigated with about 20mm irrigation, sufficient to wet the soil to 5-10 cm. Emergence counts (Table 1) and ratings of crop vigour were made at 2, 4 and 7 weeks, and assessments of weed control 4 and 8 weeks after sowing in each of the 3 replicates.

Results and Discussion

Although the rate of emergence and final percentage varied considerably between the different varieties, seedling counts indicated that the control plots had reached a maximum emergence at 4 weeks and there were no losses to 7 weeks. The herbicide mixture delayed emergence of melons, pumpkin and squash. After 4 weeks the stands of pumpkin, squash and zucchini declined, (particularly at the high rate of application) although the reduction was less where the herbicide mixture was incorporated by rotary-hoeing prior to planting.

Table 1. Effect of herbicide rates and incorporation on the emergence (% of control) of cucurbits 7 weeks after sowing.

Herbicides and rates (kg a.i. ha ⁻¹)	Incorporation	bensulide 5.52 + naptalam 2.76		bensulide 11.04 + naptalam 5.52					
		Rotary-hoe		None					
		Mean	Range	Mean	Range				
Cucumber	5 var	84	73- 95	80	67-100	86	77- 95	91	79-100
Rockmelon	5 var	87	81-100	88	50-100	89	66-100	95	75-100
Watermelon	3 var	94	83-100	92	88- 96	94	90- 96	78	64-100
Pumpkin	4 var	58	44- 74	32	8- 43	30	8- 46	13	0- 22
Zucchini	2 var	60	50- 70	29	12- 46	15	12- 18	5	4- 5
Squash	3 var	49	40- 55	51	25- 71	19	14- 26	13	2- 24

Final stands of the cucumber and melon varieties were not affected by the herbicide mixtures and excellent weed control was achieved, indicating considerable potential for their use when applied as pre-emergence treatments.

