

Residues of Certain Insecticides in Green Chillies.

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Insecticide residues in green chillies were analysed when carbofuran 3G, Disulfoton 5G, Phosalone 35 EC, monocrotophos and dimethoate were applied. The terminal residues were compared with EPA tolerance level.

in Tamil Nadu, Chilli (*Capsicum annum* L.) is one of the cash crops grown over 83,000 hectares. Among the several pests which affect the crop, the white aphid, *Myzus persicae* (Sulz.), the thrips, *Scirtothrips dorsalis* Hood. and a recently recorded mite *Hemitarsonemus latus* (Banks) occur in severe proportions and cause heavy damage to the crop. Kareem *et al.* (1977 a, b, c) reported that disulfoton 5% G, Carbofuran 3% G and foliar applications of phosalone (Zolone 35 EC), monocrotophos (Nuvacron 40 EC) and dimethoate (Rogor 30 EC) were highly effective in controlling the above pests. The present study was taken up to determine the residues of these insecticides in green chillies harvested at different periods.

MATERIAL AND METHODS

A field trial was conducted during July to December, 1977 in the department of Agricultural Entomology, Tamil Nadu Agricultural University, Coimbatore. The treatments included soil application of carbofuran 3% G and Disulfoton 5% G and foliar application

of Phosalone 0.05%, Dimethoate 0.05% and monocrotophos 0.1%. The granules were applied at the time of transplanting at 1 kg a.i./ha and the sprays were given five times at fortnightly intervals commencing from 15 days after transplanting. Samples of green chillies at each harvest were collected from the respective treatments in each replication and composite samples were analysed for the insecticide residues. The chemical analytical methods followed were those of Gupta and Dewan (1971) for carbofuran, Getz and Watts (1964) for monocrotophos, Schumann and Olson (1964) for disulfoton and Stellar and Curry (1964) for dimethoate. The colorimetric method suggested by Centre Researches Nicolas Grillet was followed to determine the residues of Phosalone. The bioassay method of Sun *et al.* (1965) using *Drosophila melanogaster* Meig. as test insect, was employed to determine the residues of all the above insecticides.

RESULTS AND DISCUSSION

Data on the insecticide residues determined in different pickings are de-

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TABLE. Insecticide residues in green chillies

Insecticide	a.i/ha	Pickings														EPA tolerance level (ppm)							
		I			II			III			IV			V			VI			VII			
		C	B	C	C	B	C	C	B	C	C	B	C	C	B		C	C	B	C	C	B	C
Carbofuran 3G	1 kg	1.46	0.13	1.46	0.13	1.20	0.12	0.96	ND	0.35	ND	0.03	ND	ND	ND	0.2							
Disuffoton 5G	1 kg	0.42	ND	0.38	ND	0.35	ND	0.08	ND	0.06	ND	0.04	ND	ND	0.75								
Phosalone 35EC	0.05%	300 g	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2								
Monocrotophos																							
40EC	0.1%	600 g	0.06	0.23	0.11	0.20	0.07	ND	0.04	ND	0.03	ND	0.015	ND	0.2								
Dimethoate 30EC	0.05%	300 g	0.03	0.10	0.26	ND	0.33	ND	0.12	ND	0.09	ND	0.05	ND	2.0								
Interval between application and the respective harvest (days)			77	67	90	102	118	130	147														
			11	5	18	30	46	58	75														

C — Chemical assay B — Bioassay ND — Non-detectable

picted in the Table. Among the two granular insecticides, carbofuran left toxic residues in the first five pickings (i.e. until 118 days after application) and the residues declined below the tolerance level of 0.2 ppm in the subsequent two pickings. However, the bioassay tests revealed the residues up to three pickings only which were below the tolerance level. In the case of disulfoton, a residue of 0.42 ppm was recorded in the first picking and the residue reached to a non-detectable level in the last picking. Bioassay test did not show detectable amount of residue even in the first picking. Between the two chemicals, soil application of disulfoton 1 kg a.i./ha was found to be safe since there was no toxic residue even in the first picking taken 67 days after application.

Of three foliar sprays, phosalone did not leave detectable residue even in the first picking taken 11 days after spraying. Monocrotophos residue was detected up to six pickings but the residue was well below the tolerance level of 0.2 ppm. In respect of dimethoate, the residue increased from 0.03 ppm (11 days after spraying) to 0.26 ppm (5 days) and 0.33 ppm (18 days) in the second and third pickings. The fifth round of spraying given after the first picking might have contributed for the increase, besides the true systemic nature of the insecticide.

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