

Short Communication

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Residual Effect of Methyl Parathion in Spinach (*Spinacia oleracea* L.)

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The present investigation was carried out to study the residual persistence of methyl parathion used for the control of a wide variety of insects especially those which are biting and sucking in nature on spinach.

The field experiment was conducted on spinach (*Spinacia oleracea* L.) at Agri. Farm, Old Shujabad Road, Multan during 1988-90. Methyl parathion (0.0-dimethyl-*p*-nitrophenyl phosphoro thioate) Richard *et al.* [1], was sprayed at the concentration of 0.1% suspension, 6 ml of methyl parathion mixed with 6 liters of tap water was sprayed on the crop by knap sack sprayer. There were 3 replications and 9 treatments as mentioned in Table 1.

Table 1.

Treatments	Sampling period of spray
T ₁ :	After 1 hr.
T ₂ :	" 6 "
T ₃ :	" 12 "
T ₄ :	" 24 "
T ₅ :	" 36 "
T ₆ :	" 48 "
T ₇ :	" 72 "
T ₈ :	" 96 "
T ₉ :	Control (without insecticide spray)

The pesticide was sprayed on all the vegetables during third week of January and in the morning time. The samples were chemically analysed for pesticide residues of methyl parathion by colorimeter according to the method given by Richard [2]. Pesticide residues of methyl parathion were extracted and digested. After digestion violet colour was developed by using N-1-naphthyl ethylenediamine dihydrochloride indicating the presence of phosphorus in the sample. Then the optical density of the coloured material was measured by colorimeter (Bechman DU-5) at wave length 760 mu.

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Standard curve of methyl parathion 50EC was prepared by using different concentration of 20, 40, 60, 80, 100, 120, 140, 160, 180, 200 ppm and recorded the instrument readings. The residues of methyl parathion were calculated on the basis of regression equation. The experimental values were determined with reference to standard curve.

The data collected during 1988-90 given in Table 2 reveal that residues of methyl parathion sprayed at the rate of 0.1% each year were maximum just after spraying and decreased with the passage of time. After 96 hr. (4 days) methyl parathion residues decreased below the codex maximum limit (1.0 ppm by FAO, 1978). At this stage phosphorus content of treated plants and that of control was nearly equal. The results indicate that methyl parathion residues decreased below the toxic level within 4 days of spray.

Coffin [3] observed that parathion sprayed on lettuce at the rate of 400g a.i. per acre decreased from 1.9 to 0.1 ppm after 15 days of application. Hoelscher *et al.* [4] observed that the residues of parathion and methyl parathion applied to cabbage at the rate of 1.2 and 4 lbs a.i. per acre were determined by gas chromatographic method. The residues of both the insecticides were below tolerance limit of 1 ppm within 14 days of their application. Ahmed and Javed [5] reported that the residues of methyl parathion insecticide sprayed on radish in the concentration of 0.05 and 0.1 % were detected to a level of 3.18- 4.79 ppm within 5-6 days after application. Ajjan [6] reported that emulsion concentrate containing 24.9 % methyl parathion sprayed on lucern, at the rate of 1130 ml/ha, dissipated to 1ppm within a week.

Conclusion. Residues of methyl parathion sprayed at the rate of 0.1% suspension, dissipated to the tolerance limit of

TABLE 2. RESIDUAL EFFECT OF METHYL PARATHION ON SPINACH (*SPINACIA OLERACEA* L.).

Time intervals (hr.)	1988		1989		1990	
	X1	Y1	X2	Y2	X3	Y3
1	119.0	0.144	131.9	0.160	107.0	0.129
6	92.2	0.112	114.4	0.129	78.4	0.094
12	80.0	0.097	98.8	0.120	60.2	0.072
24	56.9	0.068	79.2	0.096	36.2	0.043
36	51.0	0.061	68.2	0.082	35.1	0.041
48	38.6	0.046	55.6	0.067	21.1	0.024
72	31.6	0.037	50.4	0.060	12.8	0.014
96	21.2	0.025	33.9	0.040	9.1	0.001
Control	21.2	0.025	33.4	0.039	9.1	0.001

X1 = Actual quantity (ppm of insecticide in the form of phosphorus + actual phosphorus.; Y1 = Optical density observed on the instrument.

1ppm within 96 hr. (4 days) after insecticide application in spinach (*Spinacea oleracea* L.)

Key words: Residual effect, Methyl parathion, *Spinacia oleracea* L.

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