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Study on the Influence of Some Pesticide Application on the Uptake of Nitrogen and Phosphorus 409.

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A study on the effect of pesticides on the availability and uptake of nutrients revealed that the availability of nitrogen was increased with the application of pesticides. Pesticides had no influence on the availability of phosphorus. Increased uptake of nitrogen and phosphorus were observed when pesticides were added with fertilisers.

Pesticides when used for the control of crop pests, enter in to the soil. These chemicals are not only poisonous to crop pests but also to soil organisms. A lot of changes are taking place due to continued use of different pesticides in the soil. In this study an attempt was made to study the influence of some of the soil applied pesticides, on the availability and uptake of nitrogen and phosphorus.

MATERIALS AND METHODS

An experiment based on Neubauer seedling technique with Co. 10 Ragi (*Eleusine coracana*) was carried out to assess the influence of pesticides on the uptake of nitrogen and phosphorus. Four soil types collected from Ooty and Nanjanad representing laterite soil, Irugur and Bhavanisagar representing red soil, Kovilpatty and Coimbatore representing black soil, and Lalgudi and Perur representing alluvial soil were used with the pesticides aldicarb, carbofuran, di-syston and phorate at the rate of one kg active ingredient per hectare. At the end of 17 days, plants were removed, weighed, dried and analysed for nitrogen and phosphorus by standard methods.

RESULTS AND DISCUSSION

Nitrogen:

The uptake of nitrogen ranged from 220 to 12990 μg. minimum with the control in alluvial soil and maximum with the pesticide carbofuran in black soils. While comparing the mean values for pesticides, more uptake was recorded (13,322 μg) in di-syston and low (9902 μ g) in aldicarb. Regarding the mean values for soil, maximum and minimum uptake were recorded (13,520 and 6888 μg) in black and alluvial soils respectively (Table I). However, the data were not statistically significant.

Slight increase in uptake of nitrogen was observed while comparing the mean values for pesticides with that of

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TABLE I. Neubauer experiment

Total nitrogen in Microgram/100 g

Soils	Laterite		Red		Black		Alluvial	
Pesticides	Ooty	Nanja-nad	Irugur	Bhavani-sagar	Coimbatore	Koilpatty	Lalgudi	Perur
Aldicarb	2170	5190	8640	3040	10060	5130	4790	520
Carbofuran	660	8250	9160	5280	2450	12990	3560	4400
Dy-syston	9170	8790	6310	3420	9040	7480	4710	4390
Phorate	600	8960	7590	7480	4540	8060	5170	1680
Control	410	7890	6000	6170	8280	9540	4930	220
			(b) Total phosphorus in Microgram/100 g					
Aldicarb	91	360	402	29	298	99	199	21
Carbofuran	38	471	494	134	94	267	85	113
Di-syston	263	444	176	157	264	179	140	112
Phorate	35	595	320	215	211	196	193	53
Control	29	383	176	227	286	266	117	12

control. Increase in uptake was obser ved with all the pesticides except with aldicarb where reduction in uptake was observed.

The present study agreed with the findings of Kobayashi and Katsura (1968), Khomenko (1969), and Jaiswal and Sharma (1973) that the appiication of pesticides increased nitrogen uptake. But Kulkarni *et al.* (1974) observed no significant effect of pesticides on the uptake of nitrogen.

Phosphorus:

The uptake of phosphorus ranged from 12 to 595 μg. While comparing the mean values for pesticides, numericelly higher uptake was recorded (454 μg) in phorate and low (374 μg) in control. While comparing the mean values for soil, maximum and minimum uptake were recorded (542 and 109 μ g) in laterite and alluvial soils respectively.

Mean N uptake values

Pesticides:	C_1	C_2	C_3	C_4	C_5
	9902	11695	13322	11020	10860
Soils :	Laterite	Red	Black	Alluvial	
	10418	12618	13520	6888	

Mean P uptake values

Pesticides :	C_1	C_2	C_3	C_4	C_5
	375	424	434	454	374
Soils :	Laterite	Red	Black	Alluvial	
	542	466	432	109	

However, the data did not attain the level of significance.

A slight increase in the uptake of phosphorus was observed while comparing the mean values for pesticides with that of control. Numerically higher uptake of phosphorus with the laterite soils and low uptake in alluvial soils were observed. This clearly indicated that the effect of pesticides with fertili-

zers varied with different soil types. No pesticide had registered its superiority on the uptake of phosphorus. But Mortvedt *et.al* (1969)observed reduced phophorus uptake with pesticide combainations.

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