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EFFECT OF COWPEA SEED TREATMENT WITH FUNGICIDES AND INSECTICIDES ON THE SEEDLING VIGOUR

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ABSTRACT

Carbendazim at 2g per kg of seed exerted a profound influence on the root length. Seedlings raised from seeds treated with carbendazim quintozene and TMTD AT 2g per kg of seed produced longer shoots. Carbendazim and quintozene seed treatments increased the quantity of dry matter produced by the seedlings and enhanced the vigour index.

Several of the fungicides and insecticides applied to the seeds have been observed to produce profound biological effects on seedlings. The beneficial effect of seed treatment with pesticides (Kannaiyan *et al., 1975)* and also the adverse effects (Abdulla and Roberts,1969) were reported. The present study reports the influence of seed treatment with pesticides on the seedling vigour.

MATERIALS AND METHODS

Cowpea seeds of cultivar C152 were dried to 8 per cent moisture content and treated with three fungicides @ 2g/kg of seed *viz.,* Carbendazim, quintozene and TMTD as dry seed dressing and four insecticides @ 4ml/kg of seed viz., chlorpyriphos, phosalone, monocrotophos and carbosulfan with 0.125g gum and 5ml water and also combinations. The treated seeds were shade dried for one day. In the combination of seed treatment dry fungicides treatment was given first followed by insecticidal treatment after 24 hours. One lot of seed was left untreated to serve as control. Seeds were stored in gunny bags for five months at laboratory conditions (Temperature of

Table 1. Effect of seed treatment with fungicides on root length of seedling.

Fungicides	Period after treatment (months)						Mean
	0	1	2	3	4	5	
Carbendazim	16.06	15.35	15.99	15.40	15.23	14.48	15.42
Quintozene	12.96	15.72	12.58	16.12	15.20	15.43	14.67
TMTD	13.90	14.79	13.84	13.26	13.34	13.16	13.71
Control	13.98	14.54	13.20	13.75	15.67	13.15	14.05
Mean	14.22	15.09	13.90	14.63	14.86	14.05	

Comparison of significant effects

	C.D (P=0.05)
Fungicides	0.57
Periods	0.70
Fungicides and periods	1.40

Table 2. Effect of seed treatment with insecticides on root length of seedling.

Insecticides	Period after treatment (months)						Mean
	0	1	2	3	4	5	
Chlorpyriphos	14.21	15.40	14.14	15.40	15.56	13.74	14.74
Phosalone	13.94	14.97	13.44	14.20	14.23	13.64	14.07
Monocrotophos	13.51	14.25	12.70	13.76	14.51	14.07	13.80
Carbosulfan	14.41	15.37	14.38	15.75	15.57	15.05	15.10
Control	15.05	15.50	14.90	14.05	14.43	13.78	14.62
Mean	14.22	15.09	13.90	14.63	14.86	14.09	

Comparison of significant effects

	C.D (P=0.05)
Insecticides	0.64
Periods	0.70
Insecticides and periods	1.57

Table 3. Effect of seed treatment with fungicides on the shoot length of seedling.

Fungicide	Period after treatment (months)						Mean
	0	1	2	3	4	5	
Carbendazim	21.38	21.60	21.52	22.02	25.80	25.80	23.02
Quintozene	20.43	20.23	19.76	22.89	25.42	24.94	22.28
TMTD	21.68	21.85	21.63	20.50	25.40	22.92	22.33
Control	20.61	19.59	20.52	20.30	25.68	22.37	21.51
Mean	21.03	20.82	20.86	21.43	25.57	24.81	

Comparison of significant effects

	C.D (P=0.05)
Fungicides	0.63
Periods	0.77
Fungicides and periods	1.54

Table 4. Effect of seed treatment with fungicides on dry matter production.

Fungicide	Period after treatment (months)						Mean
	0	1	2	3	4	5	
Carbendazim	38.00	36.13	33.80	39.60	35.36	37.74	36.77
Quintozene	35.03	34.72	34.08	41.32	37.38	32.36	35.82
TMTD	30.78	32.51	30.06	39.28	34.72	28.82	32.70
Control	32.29	32.19	31.96	41.30	33.23	32.40	33.91
Mean	34.05	33.89	32.48	40.38	35.17	32.83	

Comparison of significant effects

	C.D (P=0.05)
Fungicides	1.62
Periods	1.98
Fungicides and periods	3.96

Table 5. Effect of seed treatment with fungicides on vigour index.

Fungicide	Period after treatment (months)						Mean
	0	1	2	3	4	5	
Carbendazim	1457.83	1411.24	1418.79	1210.43	1341.69	1335.48	1362.58
Quintozene	1183.48	1431.55	1068.04	1533.53	1359.56	1359.40	1322.59
TMTD	1172.41	1288.79	1068.00	1179.38	1154.55	1053.78	1141.59
Control	1258.03	1264.59	1178.85	1167.46	1391.80	999.54	1210.05
Mean	1267.94	1349.04	1166.59	1272.70	1311.90	1187.05	

Comparison of significant effects

	C.D (P=0.05)
Fungicides	74.23
Periods	90.91
Fungicides and periods	181.83

30° ± 2° C and relative humidity 60- 90%). The root length, shoot length, drymatter production and vigour index of the seedlings were evaluated as per the procedure of International Seed Testing Association (1976). The seeds were allowed to germinate at 25 ± 5° C temperature and 90 ± 3 per cent relative humidity in the germination room. The vigour index was calculated by the method of Abdul-Baki and Anderson (1973).

RESULTS AND DISCUSSION

Among the fungicides seeds treated with Carbendazim was superior to other treatments, in producing seedlings with longer roots while the untreated seeds and TMTD treatments produced shorter roots (Table 1). Among the insecticides the seeds treated with monocrotophos produces shorter roots while carbosulphan produced the longer roots

(Table 2). Seedlings raised from seeds treated with carbendazim, TMTD and quintozene produced longer shoots in the control (Table 3). Seedlings raised from seeds treated with Carbendazim and quintozene produced large quantities of dry matter, than in the control treatment (Table 4). The vigour index values were maximum in the seedlings obtained from seeds treated with carbendazim and quintozene than from other treatments (Table 5).

Increased shoot length of rice seedlings was seen in the seeds treated with TMTD (Kannaiyan *et al* ., 1975). Brown *et al* ., (1962) observed that the application of either calcium arsenate or toxaphene + DDT had not influenced the dry weight of cotton, but methyl parathion had inreased it. Ventaka Rao *et al* ., (1970) reported that the seedling weight was higher in fungicide treatment than in untreated seeds.

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CHANGES IN N,P,K,Ca, AND Mg CONTENTS IN TOMATOES AS INFLUENCED BY DIFFERENT NUTRIENT REGIMES

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ABSTRACT

Field experiments conducted to study the effect of N (0,40,80,120 and 160 kg/ha) K (0,50 and 100 kg K_2 o/ha) and $CaCl_2$ sprays (0.0% and 0.5% $CaCl_2$) on N,P,K,Ca and Mg contents in fruits of CO.1 and CO.3 tomatoes grown in vertisol indicated that N,P,K,Ca and Mg contents were altered by the added N,K, and $CaCl_2$ sprays.

Mineral content of tomato fruits is very important from the nutritional point of view. Mineral content in tomato varied with year of cultivation (Klein et al. 1982). In this paper an attmept was made to study the effect of N,K and $CaCl_2$ sprays on the ,Ca and Mg contents in fruits of CO.1 and CO.3 tomatoes.

MATERIALS AND METHODS

Field experimetnts were conducted employing CO.1 and CO.3 tomatoes during July, 1982 and January, 1983 in vertisol. The soil of the experimental field was low in available N (200.0 kg/ha) medium in available P(16.0 kg/ha) and high in available K(120 kg/ha). Ca (11270.0 kg/ha) and Mg (8232.0 kg/ha). The soil was neutral in pH and free from salinity. The treatment details are furnished elsewhere. The crop was raised by adopting the normal package of practices. Oven dried samples of fruits collected between second and fourth pickings were analysed for the contents of N,P,K, Ca and Mg by adopting standard procedures prescribed by Piper (1966).

RESULTS AND DISCUSSION

N content

Individual as well as combined application of N and K significantly increased the N content of tomato fruits in both the years. 160kg N/ha alone in the first year and in combination with 50 or 100 kg K_2O/ha in the second year recorded the highest N content in fruit. This is in line with the work of Hanger (1979). The variety CO.3 was found to contain more N in the absence of 0.5 per cent $CaCl_2$ sprays while CO.1 . cultivar behaved differently. The variation might be due to their genetic make up.