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INFLUENCE OF COWPEA SEED PROTECTANTS ON THE SEEDLINGS VIGOUR

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ABSTRACT

Quitozene at 2g, carbosulfan at 4ml and TMTD at 2g + carbosulfan at 4 ml per kg of seed produced larger roots while quintozene and carbendazim and carbosulfan treatments produced longer shoots. Carbendazim, quintozene and TMTD treatments at 2g per kg of seed recorded larger quantities of dry matter of seedling. Quintozene carbosulfan and carbendazim seed treatments were superior as seed dressing agents in enhancing the vigour index.

Seedling vigour as estimated by length of root and shoot dry matter production and vigour index has clearly brought out the importance of seed treatment with fungicides and insecticides (Dakshinamoorthy, 1987., Venkata Rao *et al* ., 1970). With a view to findout the effect of seed treatment with pesticides on the seedling vigour, the present study was taken up in cowpea.

MATERIALS AND METHODS

Freshly harvested cowpea seeds of C 152 were well dried to 8 per cent moisture content and treated at 2 g/kg of seed as dry seed dressing with three fungicides *viz.,* Carbendazim, quintozene and TMTD and four insecticides *viz.,* Chlorpyriphos, phosalone, monocrotophos and Carbosulfan and also combinations. The seeds were shaken. Another lot of seeds was treated with different insecticides at the rate of 4 ml per kg of seed in a flask in which 0.125g of gum and 5 ml of water were added to form a pellet. The treated seeds were shade dried for one day. Combinations of treatment with insecticides and fungicides were done as detailed before. One lot of seed was left untreated to serve as control. Seeds were treated at monthly intervals for five months and stored under identical conditions so that the treated seeds were ready for testing on the same date. Seedlings vigour as estimated by root length, shoot length, dry matter production and vigour index value based on germination and root length was assessed following the procedure proposed by International Seed Testing Association (1976).

RESULTS AND DISCUSSION

Seeds treated with quintozene produced seedlings with longer which were superior to seeds from other treatments. Among the insecticides, seeds treated with Carbosulfan were superior in producing maximum root length to those from other treatments. Seeds treated with TMTD + Carbosulfan produced longer roots than in TMTD treatment (Table 1 and 2). Seeds treated with quintozene and carbendazim were produced seedling with longer shoot length than in the untreated control. Among the insecticides, Carbosulfan treatment produced longer shoots (Table 3 and 4). Seedlings raised from seeds treated with Carbendazim, quintozene and TMTD produced large quantities of dry matter as against untreated control.

Table 1. Effect of cowpea seed treatment with fungicides on root length (cm) at different periods after treatment

Fungicide	Period after treatment (months)						Mean
	5	4	3	2	1	0	
Carbendazim	13.16	14.67	15.34	15.56	15.83	15.32	14.98
Quintozene	15.14	15.46	15.12	16.14	15.37	15.82	15.51
TMTD	13.99	14.01	13.71	13.64	13.55	14.91	13.97
Control	14.61	13.79	15.46	14.02	15.35	14.52	14.62
Mean	14.22	14.28	14.91	14.84	15.02	15.14	

Table 2. Effect of cowpea seed treatment with different insecticides on root length (cm)

Insecticides	Period after treatment (months)						Mean
	5	4	3	2	1	0	
Chlorpyriphos	14.09	14.14	15.45	14.87	14.88	15.56	14.83
Phosalone	13.89	14.10	14.39	14.61	14.85	15.11	14.49
Monocrotophos	14.13	14.48	14.69	14.61	15.46	14.09	14.57
Carbosulfan	14.59	15.61	15.64	15.94	15.73	15.40	15.48
Control	14.42	14.09	14.37	14.18	14.21	15.56	14.47
Mean	14.22	14.48	14.91	14.84	15.03	15.14	

Table 3. Effect of cowpea seed treatment with different fungicides on shoot length (cm)

Fungicide	Period after treatment (months)						Mean
	5	4	3	2	1	0	
Carbendazim	26.22	25.53	25.88	22.64	25.13	21.22	24.44
Quintozene	26.12	24.22	25.82	25.54	26.95	20.25	24.82
TMTD	26.13	23.36	25.26	13.39	25.58	21.38	22.52
Control	26.40	22.38	24.97	13.93	25.59	19.19	22.08
Mean	26.22	23.87	25.48	18.88	25.82	20.51	

Seeds treated with quintozene, Carbosulfan and carbendazim had higher vigour index than that of other treatments and control.

Loss in seed vigour during storage was reported by Agarwal (1974) in maize. Increased shoot length and vigour of rice seedlings were seen in the seeds treated with TMTD (Kannaiyan *et al.*, 1975). Dhandapani and Jayaraj (1982) observed increased seedling height of chillies in Carbosulfan treatment. Venkata Rao *et al.*, (1970) reported that the seedling weight was higher in fungicide treated than in untreated seeds. Captan in the presence of aldicarb granule was conducive to seedling vigour though the vigour index values did not differ significantly from those of untreated seeds (Jayaraj, 1977).

Table 4. Effect of cowpea seed treatment with different insecticides on shoot length (cm)

Insecticides	Period after treatment (months)						Mean
	5	4	3	2	1	0	
Chlorpyriphos	25.24	24.03	24.53	18.38	25.04	18.57	22.63
Phosalone	26.01	23.73	26.48	18.92	25.99	20.85	22.66
Monocrotophos	26.16	23.77	24.83	18.40	26.59	20.98	23.45
Carbosulfan	27.27	23.98	26.32	20.38	26.43	20.98	24.23
Control	26.41	23.86	25.26	18.30	25.03	21.17	23.34
Mean	26.22	23.87	25.48	18.88	25.82	20.51	

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CLASSIFICATION OF PADDY GENOTYPES

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ABSTRACT

Paddy genotypes numbering thousand were classified based on colour and types of kernel, length/breadth ratio of grain, glume colour, grain hardness and phenol reaction. These types fell into 202 descriptor states. The most commonly (13%) occurring type was with bold grains having a L/B ratio of 2-3 and possessing straw coloured glumes. The kernels in these types were white and glutinous. The grains were medium hard and positive to phenol reaction.

As new varieties are being continuously evolved, maintenance of varietal purity becomes vital in quality seed production. There are at present about 10,000 paddy varieties in the world and identification keys have to be formulated to classify them on a scientific basis. Rosta (1975) proposed that such classification could help in two ways (1) in determination of examination methods enabling seed test institutes to apply and interpret them the same way and 2) systematisation of characteristic features on the basis of which rice varieties can be exactly described and distinguished.

Earlier attempts were made to classify the genotypes based on grain size (Rosta, 1975) and L/B ratio (Katayama, 1985). Glume colour was