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Research Notes

Seed pelletization for enhancing seed vigour and storability of chillies Cv. K 1

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Seed pelleting is an important seed quality enhancement technique that improves performance of the crop. This technique is acclaimed to play a vital role in modern agriculture for precision planting and also for supplementary nutrition through which uniform and vigorous field stand is possible. In chillies, the initial germination and subsequent seedling establishment and also the high mortality rate of the seedlings in the nursery are posing a great problem and seed pelleting as a pre-sowing treatment can enhance the initial germination and vigour of the seedlings and thus the enhanced yield can be obtained.

Freshly harvested seeds of chillies cv. K 1 were obtained from Agricultural Research Station,Kovilpatti.After grading ,the seeds were pelleted with the following filler materials

T0 - Control
Tl - Bentonite clay @ 10 g / kg of seed
T2 - Rice husk powder @ 150 g / kg of seed
T3 - Diatameceous earth @ 5 g / kg of seed
T4 - Neem seed kernel powder @ 150 g / kg of seed
T5 - Arappu leaf powder @ 150 g / kg of seed
T6 - Cow dung ash powder @ 150 g / kg of seed

Gum acacia was used as adhesive for pelleting. After pelleting with the above materials, the seeds were shade dried and the following observations *viz.*, efficiency

Table 1. Effect of different filler materials on the efficacy of seed pelleting in chillies cv.Kl

Sl.No	Treatment	No.of pelleted seeds/100 seed	No.of unpelleted seed / 100 seed	No.of pure pellets	No.of loose pellets
1	T0	-	-	-	-
2	Tl	75	24	71	5
3	T2	94	6	88	6
4	T3	88	12	85	3
5	T4	82	18	78	4
6	T5	95	5	90	5
7	T6	93	9	90.	3
	CD(P=0.05)	5.36	5.35	6.75	4.14

Table 2. Effect of seed pelleting on seed quality characters of chillies cv.Kl

Sl.No	Treatment	100 seed weight (g)	Days to emergence	Germination (%)	Seedling length (cm)	Vigour index
1	T0	0.231	15	60	22.0	1276
2	Tl	0.251	19	63	23.4	1427
3	T2	0.257	20	66	25.7	1645
4	T3	0.237	16	65	25.1	1606
5	T4	0.240	18	63	22.9	1374
6	T5	0.261	20	69	28.6	1945
7	T6	0.248	18	68	28.3	1924
	CD(P=0.05)	0.01	1.00	6.68	2.65	56.00

Table 3. Effect of seed pelleting and storage containers on the germination of chillies cv.Kl

		Germination (%)			
		P0	P1	P2	Mean
Cloth bag	T0	60	55	51	55.33
	Tl	63	60	57	60.00
	T2	66	66	61	64.33
	T3	65	62	58	61.67
	T4	63	54	56	57.67
	T5	69	66	64	66.33
	T6	68	65	62	65.00
Mean		60	55	51	61.48
Polythene bag	T0	60	56	52	55.33
	Tl	63	59	57	59.00
	T2	66	63	60	62.33
	T3	65	62	59	61.67
	T4	63	55	54	56.33
	T5	69	65	64	65.67
	T6	68	64	64	65.33
Mean		64.86	64.86	64.86	58.57
Aluminium foil bag	TO	60	57	54	57.00
	Tl	63	63	59	62.67
	T2	66	67	64	66.33
	T3	65	63	59	63.00
	T4	63	57	54	58.67
	T5	69	68	64	67.00
	T6	68	66	62	65.67
Mean		66.29	64.86	59.43	62.91

CD (P=0.05)	T	C	P	TxC	CxP	TxP	TxCxP
	0.22	0.22	0.41	0.12	0.18	0.20	0.28

Table 4. Effect of seed pelleting and storage containers on the seedling length and vigour of chillies cv.Kl

		Seedling length (cm)				Vigour index			
		P0	P1	P2	Mean	P0	P1	P2	Mean
Cloth bag	T0	22.0	21.0	18.6	20.53	1276	1176	967	1139
	Tl	23.4	22.4	19.3	21.70	1427	1322	1100	1283
	T2	25.7	23.8	20.2	23.23	1645	1499	1212	1452
	T3	25.1	23.8	20.3	23.07	1606	1476	1198	1427
	T4	22.9	21.7	17.4	20.67	1374	1194	939	1169
	T5	28.6	26.5	20.8	25.30	1945	1723	1331	1666
	T6	28.3	26.3	20.4	25.00	1924	1683	1306	1638
Mean		25.14	23.64	19.57		1560	1438	1150	
Polythene bag	T0	22.0	21.6	19.4		1320	1188	989	1166
	Tl	23.4	23.0	20.8	21.00	1474	1380	1186	1347
	T2	25.7	24.2	21.0	22.40	1696	1597	1281	1525
	T3	25.1	24.0	22.3	23.63	1632	1488	1293	1471
	T4	22.9	22.2	19.4	23.80	1443	1199	1086	1243
	T5	28.6	26.8	23.7	21.50	1973	1769	1517	1753
	T6	28.3	27.4	23.9	26.37	1924	1781	1482	1729
Mean		25.14	24.17	21.5		1637	1486	1262	
Aluminium foil bag	T0	22.0	21.9	20.5		1320	1248	1107	1225
	Tl	23.4	23.0	21.8	21.47	1544	1449	1286	1426
	T2	25.7	24.9	23.2	22.73	1748	1668	1485	1634
	T3	25.1	24.6	22.6	24.60	1682	1550	1333	1522
	T4	22.9	22.7	20.4	24.10	1489	1294	1102	1295
	T5	28.6	26.8	25.7	22.00	1973	1822	1645	1814
	T6	28.3	27.9	26.9	27.03	1953	1841	1668	1821
Mean		25.14	24.54	23.01		1673	1553	1375	

CD (P=0.05)	T	C	P	TxC	CxP	TxP	TxCxP
	0.22	0.22	0.41	0.12	0.18	0.20	0.28

	T x P	T x C x P			T x P	T x C x P
	0.20	0.28			16.9	26.7

of pelleting, 100 seed weight, days of emergence and germination percentage, seedling length and vigour index were made. After initial evaluation, the seeds were packed in different storage containers *viz.*, cloth bag, 400 gauge polythene bag and aluminium foil bag. Trimonthly observations were made on seed viability, seedling length and vigour. The observed data were statistically analysed.

The efficiency of seed pelleting in terms of pellet firmness,no.of pelleted seeds for 100 seeds and no.of pure pellets were recorded more in the arappu leaf powder pelleted seeds followed by rice husk powder pelleted seeds. The no. of pelleted seed recorded in arappu leaf powder pelleting was 95 for 100 seeds and in rice husk powder pelting, it was 94 for 100 seeds. The arappu leaf powder pelleted seeds recorded 15 per cent more germination when compared to control.

Storage conditions have direct effect on seed quality. Information on storage of seeds to serve the vigour and viability from harvest to next planting season and for carryover purposes is of prime importance in any seed production programme. The storage study was carried out to elucidate information on the storage performance of pelleted seeds by using the above mentioned filler materials which may influence the seed shelf life. In the present investigation, different filler materials *viz.*, Bentonite clay @ 10 g, rice husk powder @ 150 g, diatameceous earth @ 5 g, neem seed kernel powder @ 150 g, arappu leaf powder @ 150 g and cow dung ash powder @ 150 g per kg of seeds were used for pelleting the seeds and they were stored in cloth bag, 400 gauge polyethylene bag and alumunium foil bag for a period of six months. The observations *viz.*, germination, seedling length and vigour index were .recorded at trimonthly intervals. From the results, it was understood that pelleting of seeds of chillies with arappu leaf powder @ 150 g kg^{-1} of seeds improved the storage potential of seeds. This was followed by rice husk powder @ 150 kg^{-1} of seeds. This was in conformity with Sabir Ahamed (1989) and Nargis (1995). The increased performance of arappu leaf powder might be due to the presence of saponin that may act as a growth regulator.The variation in the performance of different pelleting treatment might be due to the differential nature of hygroscopicity among the different pelleting materials. This was also confirmed by Viswanatha Reddy (1995) who opined that brinjal seeds pelleted with arappu and pungam leaf powders maintained its superiority in germinability than the untreated control even after 8 months of storage. In India, the seeds are generally stored in cloth bag or gunny bags or other porous materials under ambient conditions, thus giving free access to the environmental moisture to the seed. In polyethylene bag, the polyethylene layer permits less moisture at high temperature whereas in cloth bag the moisture exchange is quite frequent and the seeds stored in it are subjected to fluctuations in seed moisture leading to an increase in seed moisture content and favoured harbouring of fungus which are responsible for the deterioration of seeds. In the present study,the aluminium foil bag registered the highest values for seed quality characters followed by 400 gauge polythene bag and cloth bag. The results in these aspects had been reported by Jayabharathi (1982) and Jegathambal (1992) in soybean and Arul Prabhu (1998) in pole bean.

References

Arulprabhu, C. (1998). Studies on certain aspects of seed production and storage in pole bean *(Phaseolus vulgaris* L.). M.Sc. (Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore-3.

Jayabharathi, M. (1982). A study on seed development and maturation, production and storage in soybean *(Glycine max* L.). M.Sc.(Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore.

Jegathambal, R. (1992). Studies on seed production techniques and phosphorus fertilization in soybean. M.Sc.(Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore -3.

Nargis, S. (1995). Influence of pelleting, magnetic treatment and radiation on the performance of differentially aged seeds in tomato *(Lycopersicon esculentum* Nill.) cv. PKM 1. M.Sc.(Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore -3.

Sabir-Ahamed, A. (1989). Studies on the production of quality seed and storage in soybean *(Glycine max* (L.) Merrill). M.Sc.(Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore -3.

Viswanatha Reddy, K. (1995). Studies on pre-sowing seed treatment in differentially aged seeds of Brinjal *(Solarium melongena* L.) cv. PKM-1. M.Sc.(Ag.) Thesis, Tamil Nadu Agricultural University, Coimbatore-3.

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Research Notes

Nursery Management of rice root knot nematode *Meloidogyne graminicola*

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Meloidogyne graminicola Golden et Birchfield, a nematode pest of rice causes serious damage in nurseries, upland rice and rainfed lowland rice (Prot *et al.,* 1994). The nematode infestation was noticed for the first time in Tamil Nadu in rice nurseries of Cauvery delta areas during the year 2000. The nematode is also found to cocur subsequently in the main field of irrigated rice in other parts of Tamil Nadu as reported earlier by Prot (1994) from Phillipines (Unpubl. Data). Considering the yield losses due to this nematode attempts were made for the management of nematode using pesticides (Krishna Prasad and Rao, 1976a and 1976b), vegetable oil (Prasad, botanicals and Goswamy and Vijayalaksjjmi, 1981) through identifying nematode resistant varieties (Kalita and Phukan, 1995). So far very limited work has been made on the biological control of *M.graminicola.* Therefore the present study has been carried out to evaluate the biocontrol potential of *Pseudomonas fluorescens* in comparison with neem cake and currently recommended chemical