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Effect of Seed Treatments and Containers on Chilli and Brinjal Seed Viability

Sunil Kumar[1*], Suryapal Singh[1] and S. S. Jakhar[1]

[1]Department of Seed Science and Technology, CCS Haryana Agricultural University, Hisar-125004, India.

Authors' contributions

This work was carried out in collaboration among three authors. Author SK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SSJ guided during whole period of study and author SK and SS managed the analyses of the study. Authors SK and SSJ managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

An experiment was conducted to investigate the influence of fungicides and packaging materials on longevity of chilli (variety: RCH-1) and brinjal (variety: Hisar Shyamal) seeds. The seeds were treated with 15 fungicides and were kept in three containers *viz*. Metal box, Cloth bag and Plastic zipling bag up to 12 months under ambient conditions in seed pathology laboratory of Department of Seed Science & Technology, CCSHAU, Hisar, India. The samples were drawn at quarterly intervals for ascertaining the seed quality parameters. The seeds treated with flusilazole and carbendazim (2 g kg^{-1} seed) in case of chilli and brinjal and stored in metal-box were found better for maintenance of higher seed quality parameters [electrical conductivity and dehydrogenase activity] during the study period. The study suggested that use of appropriate packaging material and seed treatment could be useful to prolong the storage life of chilli and brinjal seeds.

Keywords: Chilli; brinjal; containers; fungicides; seed quality; storage.

**Corresponding author: E-mail: maliksunil25@gmail.com;*

1. INTRODUCTION

India's horticulture production with about 305.4 million tons during 2017-18 has not only brought prosperity to small and marginal farmers but also provided food and nutritional security to the Nation. As the second largest producer of Fruits & Vegetables in the world, India's horticulture has today emerged as one of the vibrant parts of Indian agriculture [1]. Chilli and Brinjal are among important vegetable crops and belongs to family Solanaceae. No culinary preparation can be completed without the addition of chilli. Being an indispensable item in the kitchen, it has become the most important spice crop in the world. The purple colour of brinjal is due to the presence of anthocyanin pigment, while white fruit lacks this pigment. Pigments represent a subtype of secondary metabolites that have direct influence on the survivability of a plant [2]. The violet colour is due to anthocyanin pigments, which are flavonoids (polyphenolic compounds), located in the cell vacuoles of the fruit epicarp (skin). The more cell layers contain the pigments and the more pigments, the darker the fruit. For brinjal the main aglycone of anthocyanin is the delphinidol, of bluish-violetish colour [3].

Seed is a miracle of life and the carrier of technology from one generation to another. Serving as the first line of defense, seed treatment can improve germination, seedling emergence, stand establishment and plant vigour. Seed treatment with fungicides not only controls the seed-borne diseases but also improves seed health, plant stand and crop yield [4].

It also reported that the proper storage condition and storage containers can maintain seed health status as well as seed viability and vigour in okra [5]. Therefore the study entitled the “Effect of seed treatments and containers on chilli and brinjal seed viability” was carried out [6].

2. MATERIALS AND METHODS

The present study was carried out on chilli seed (variety: RCH-1) and brinjal seed (variety: Hisar Shyamal-8) having seed germination 79 and 81 per cent, respectively above Indian Minimum Seed Certification Standards (IMSCS). The seeds were treated with fifteen fungicides @ 2 g kg-1 seed and kept in the Metal box, Cloth bag and Plastic zipling bag (40 microns) under ambient conditions in seed pathology laboratory of Department of Seed Science & Technology, CCSHAU, Hisar, India. The study was conducted up to twelve months to assess the effect of fungicides and containers on chilli and brinjal seed quality parameters.

The seeds and fungicide were weighed 21g and 0.042 g, respectively of each crop chilli and brinjal, wearing gloves using the appropriate weighing balance for each treatment. The seeds and fungicides were mixed in beakers and shacked for some time for uniform distribution all over the seeds. All the fungicides were in powder formulation except famoxadone 16.6% + cymoxanil 22.1% SL, which was measured by micro-pipette and mixed thoroughly. Then, the treated seeds were kept in different containers (metal box, cloth bag, and plastic zipling bag) in the laboratory under ambient conditions. The total numbers of treatments were 48 with three replications.

The experiment consisted of two factors (three different packing materials as storage container were used as level factor “C” and the sixteen fungicides treatments were used as the level factor “T”) were laid out in completely randomized design (CRD). Seeds were taken from each of the different containers at quarterly intervals up to twelve months and observations were recorded for seed technological parameters *viz.,* electrical conductivity and dehydrogenase activity test.

2.1 Electrical Conductivity Test

The electrical conductivity of the seed leachates was measured to know the status of membrane permeability as per ISTA [7]. For this, 50 seeds selected randomly replicated thrice from each seed lot were soaked in separate beakers each containing 75 ml of distilled water. The seeds were immersed completely in water and beakers were covered with the foil. Thereafter, these samples were kept in the germinator at 25+1°C for 24 h. The electrical conductivity of seed leachates was measured by 60 (EC) direct reading conductivity meter. The conductivity was expressed in µS/cm.

2.2 Dehydrogenase Activity (DHA) Test (OD g^{-1} ml^{-1})

The method was suggested by Kittock and Law [8]. To conduct the DHA test, the representative seed samples of treatments, replicated thrice were grounded to pass through the 20-mesh screen. The 200 mg flour was soaked in 5 ml of freshly prepared 0.5 percent triphenyl tetrazolium chloride solution having ph 7.0. After shaking, the mixture was incubated at a temperature of 38°C for 2 h. then it was centrifuged at 10,000 rpm for 3 minutes and the supernatant was poured off. The formazan was extracted with 10 ml acetone for 16 h at room temperature. It was then centrifuged for 3 minutes at 10,000 rpm and acetone solution containing formazan was transferred to the cuvette. The absorbance reading of the solution was taken at 480 nm wavelength using systronic spectrophotometer 169. These observations were expressed as change in od g^{-1} ml^{-1}.

The data obtained from the experiments were analyzed as per standard method [9].

3. RESULTS AND DISCUSSION

3.1 Chilli

As indicated in Table 2 that among the fungicides, the lowest electrical conductivity was observed in the treatment with flusilazole and was followed by tebuconazole and among the containers, cloth bag was found better statistically at par with the metal box. Interaction effect of the metal box with flusilazole was found better. The results are in accordance with the earlier findings [10,11,12].

The perusal of data in Table 3 indicates that the dha values were recorded highest when seeds were treated with flusilazole which was statistically at par with tebuconazole. Among containers, plastic zipling bag which was statistically at par with cloth bag. Interaction effect of plastic zipling bag with flusilazole was found better than others. The results are in conformity with the findings [13 and 14].

3.2 Brinjal

As illustrated in Table 4 among the fungicides, the lowest electrical conductivity was found in the treatment with carbendazim and second lowest with tebuconazole. Among containers, plastic zipling bag was found better. Interaction effect of the metal box with carbendazim was found better. The results are similar as in the earlier finding [15].

The data in Table 5 shows that the DHA values were found highest with carbendazim treatment followed by dimethomorph. Among containers, metal box proved better. Interaction effect of

Table 1. Seed and fungicide details

Treatments	Fungicides @ 2 g kg^{-1} seed	Treatments	Fungicides @ 2 g kg^{-1} seed
T_1	Untreated (Control)	T_9	Kitazine 48% EC
T_2	Carbendazim 75% WP	T_{10}	Propineb 70% WP
T_3	Tebuconazole 2 DS	T_{11}	Dimethomorph 50% WP
T_4	Difenoconazole 25% EC	T_{12}	Chlorothalonil 78.2% WP
T_5	Propiconazole 25% EC	T_{13}	Captan 70% + Hexaconazole 5% WP
T_6	Tricyclazole 75% WP	T_{14}	Carbendazim 12% + Mancozeb 63% WP
T_7	Flusilazole 40% EC	*T_{15}	Famoxadone 16.6% + Cymoxanil 22.1% SL
T_8	Azoxystrobin 23% SC	T_{16}	Flusilazole 12.5% + Carbendazim 25% SE

Systemic fungicides from T_2 to T_{12} and Combi-fungicides from T_{13} to T_{16}

** Combi-fungicide T_{15} was used @ 2 ml kg^{-1} seed*

Table 2. Effect of seed treatments with fungicides and containers on electrical conductivity (µS/cm) in chilli seeds

Treatment	3 Months				6 Months				9 Months				12 Months			
	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean
T1	0.768	0.801	0.790	0.786	0.896	0.921	0.872	0.896	1.436	1.534	1.471	1.480	2.134	2.012	2.212	2.119
T2	0.629	0.688	0.643	0.653	0.767	0.596	0.723	0.695	0.942	1.211	0.988	1.047	1.638	1.721	1.726	1.695
T3	0.470	0.506	0.501	0.492	0.522	0.563	0.635	0.573	0.714	0.772	0.779	0.755	1.306	1.374	1.336	1.339
T4	0.529	0.543	0.578	0.550	0.734	0.735	0.716	0.728	0.883	0.972	0.921	0.925	1.627	1.724	1.624	1.658
T5	0.553	0.552	0.573	0.560	0.890	0.668	0.582	0.713	1.306	0.987	1.123	1.139	1.289	1.338	1.435	1.354
T6	0.727	0.741	0.740	0.736	0.892	0.584	0.666	0.714	1.023	0.865	0.874	0.921	1.586	1.451	1.424	1.487
T7	0.426	0.418	0.436	0.427	0.499	0.537	0.581	0.539	0.707	0.749	0.751	0.736	1.230	1.233	1.289	1.251
T8	0.643	0.608	0.585	0.612	0.595	0.653	0.755	0.668	0.768	1.321	0.883	0.991	1.339	1.449	1.344	1.377
T9	0.574	0.602	0.647	0.608	0.798	0.725	0.611	0.711	0.983	1.265	0.963	1.070	1.889	1.764	1.675	1.776
T10	0.549	0.588	0.593	0.577	0.735	0.893	0.862	0.830	0.943	0.936	1.121	1.000	1.697	1.764	1.765	1.742
T11	0.493	0.621	0.577	0.564	0.668	0.765	0.882	0.772	0.846	0.956	0.965	0.922	1.368	1.517	1.423	1.436
T12	0.426	0.668	0.618	0.571	0.584	0.752	0.898	0.745	0.780	0.894	0.972	0.882	1.993	1.901	1.987	1.960
T13	0.562	0.570	0.697	0.610	0.750	0.732	0.798	0.760	0.952	0.957	0.823	0.911	1.425	1.542	1.651	1.539
T14	0.483	0.490	0.544	0.506	0.653	0.896	0.732	0.760	0.832	0.823	0.971	0.875	1.321	1.423	1.421	1.388
T15	0.533	0.542	0.482	0.519	0.725	0.792	0.755	0.757	0.937	0.932	1.129	0.999	1.661	1.786	1.678	1.708
T16	0.488	0.490	0.438	0.472	0.602	0.874	0.767	0.748	1.098	0.956	0.998	1.017	1.424	1.543	1.423	1.463
Mean	0.553	0.589	0.590		0.707	0.730	0.740		0.947	1.008	0.983		1.558	1.596	1.588	
CD (P=0.05)		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**
		0.012	0.028	0.048		0.007	0.016	0.028		0.007	0.017	0.029		0.018	0.041	0.071

C1: Metal box; C2: Cloth bag; C3: Plastic zipling bag (40 microns)

T1: Untreated (Control); T2: Carbendazim 75% WP; T3: Tebuconazole 2 DS; T4: Difenoconazole 25% EC; T5: Propiconazole 25% EC; T6: Tricyclazole 75% WP; T7: Flusilazole 40% EC; T8: Azoxystrobin 23% SC; T9: Kitazine 48% EC; T10: Propineb 70% WP; T11: Dimethomorph 50% WP;T12: Chlorothalonil 78.2% WP; T13: Captan 70% + Hexaconazole 5% WP; T14: Carbendazim 12% + Mancozeb 63 % WP; T15: Famoxadone 16.6 % + Cymoxanil 22.1% SL; T16: Flusilazole 12.5% + Carbendazim 25% SE

Table 3. Effect of seed treatments with fungicides and containers on dehydrogenase activity (OD g^{-1} ml^{-1}) in chilli seeds

Treatment	3 Months				6 Months				9 Months				12 Months			
	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean
T1	0.340	0.329	0.331	0.333	0.271	0.232	0.262	0.255	0.218	0.210	0.230	0.219	0.104	0.101	0.107	0.104
T2	0.351	0.320	0.307	0.326	0.267	0.278	0.265	0.27	0.229	0.222	0.165	0.205	0.127	0.121	0.121	0.123
T3	0.378	0.364	0.370	0.371	0.298	0.273	0.276	0.282	0.253	0.261	0.253	0.256	0.163	0.179	0.190	0.177
T4	0.317	0.314	0.340	0.324	0.278	0.271	0.267	0.272	0.235	0.240	0.245	0.240	0.112	0.114	0.132	0.119
T5	0.347	0.345	0.360	0.351	0.281	0.268	0.298	0.282	0.218	0.231	0.251	0.233	0.133	0.135	0.143	0.137
T6	0.299	0.309	0.300	0.303	0.267	0.265	0.251	0.261	0.202	0.241	0.192	0.212	0.127	0.129	0.114	0.123
T7	0.396	0.379	0.384	0.386	0.296	0.289	0.288	0.291	0.276	0.270	0.271	0.272	0.182	0.197	0.198	0.192
T8	0.337	0.324	0.312	0.324	0.259	0.276	0.271	0.269	0.198	0.213	0.231	0.214	0.113	0.139	0.120	0.124
T9	0.343	0.319	0.341	0.334	0.267	0.261	0.267	0.265	0.195	0.199	0.234	0.209	0.109	0.131	0.110	0.117
T10	0.302	0.309	0.321	0.311	0.268	0.257	0.269	0.265	0.237	0.221	0.215	0.224	0.107	0.129	0.146	0.127
T11	0.358	0.304	0.353	0.338	0.272	0.275	0.251	0.266	0.221	0.219	0.237	0.226	0.119	0.121	0.118	0.119
T12	0.315	0.299	0.327	0.314	0.273	0.28	0.266	0.273	0.231	0.227	0.219	0.226	0.108	0.112	0.112	0.111
T13	0.298	0.320	0.301	0.306	0.274	0.277	0.278	0.276	0.229	0.211	0.211	0.217	0.079	0.117	0.132	0.109
T14	0.295	0.354	0.348	0.332	0.263	0.244	0.261	0.256	0.203	0.205	0.201	0.203	0.097	0.127	0.110	0.111
T15	0.317	0.355	0.311	0.328	0.275	0.269	0.245	0.263	0.212	0.209	0.199	0.207	0.109	0.102	0.143	0.118
T16	0.313	0.316	0.302	0.310	0.267	0.278	0.277	0.274	0.219	0.229	0.213	0.220	0.119	0.105	0.113	0.112
Mean	0.332	0.329	0.332		0.273	0.268	0.268		0.224	0.226	0.223		0.119	0.129	0.132	
CD (P=0.05)		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**
		0.006	0.015	0.026		0.007	0.018	0.021		0.008	0.018	0.002		0.007	0.016	0.002

C1: Metal box; C2: Cloth bag; C3: Plastic zipling bag (40 microns)

T1: Untreated (Control); T2: Carbendazim 75% WP; T3: Tebuconazole 2 DS; T4: Difenoconazole 25% EC; T5: Propiconazole 25% EC; T6: Tricyclazole 75% WP; T7: Flusilazole 40% EC; T8: Azoxystrobin 23% SC; T9: Kitazine 48% EC; T10: Propineb 70% WP; T11: Dimethomorph 50% WP;T12: Chlorothalonil 78.2% WP; T13: Captan 70% + Hexaconazole 5% WP; T14: Carbendazim 12% + Mancozeb 63% WP; T15: Famoxadone 16.6% + Cymoxanil 22.1% SL; T16: Flusilazole 12.5% + Carbendazim 25% SE

Table 4. Effect of seed treatments with fungicides and containers on electrical conductivity (µS/cm/g) in brinjal seeds

Treatment	3 Months				6 Months				9 Months				12 Months			
	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean
T1	0.321	0.303	0.319	0.314	0.536	0.602	0.587	0.575	0.834	0.927	0.865	0.875	1.040	0.998	1.090	1.043
T2	0.196	0.190	0.200	0.195	0.394	0.395	0.389	0.392	0.458	0.493	0.457	0.470	0.712	0.702	0.690	0.701
T3	0.288	0.301	0.293	0.294	0.446	0.502	0.482	0.477	0.544	0.596	0.597	0.579	0.743	0.756	0.842	0.780
T4	0.311	0.246	0.237	0.265	0.390	0.410	0.401	0.400	0.591	0.574	0.658	0.608	0.844	0.843	0.919	0.869
T5	0.233	0.222	0.377	0.277	0.394	0.455	0.435	0.428	0.640	0.621	0.762	0.674	0.932	0.931	0.994	0.952
T6	0.298	0.231	0.271	0.267	0.471	0.501	0.492	0.488	0.584	0.576	0.721	0.627	0.783	0.782	0.839	0.801
T7	0.206	0.253	0.248	0.236	0.415	0.434	0.415	0.421	0.613	0.612	0.546	0.590	0.834	0.838	0.798	0.823
T8	0.305	0.282	0.201	0.263	0.490	0.515	0.498	0.501	0.498	0.509	0.578	0.528	0.896	0.894	0.884	0.891
T9	0.219	0.219	0.244	0.227	0.433	0.466	0.470	0.456	0.508	0.578	0.509	0.532	0.772	0.771	0.913	0.819
T10	0.282	0.299	0.288	0.290	0.358	0.411	0.398	0.389	0.572	0.546	0.612	0.577	0.843	0.842	0.897	0.861
T11	0.253	0.302	0.311	0.289	0.393	0.434	0.414	0.414	0.516	0.721	0.576	0.604	0.921	0.919	0.837	0.892
T12	0.300	0.288	0.300	0.296	0.423	0.456	0.426	0.435	0.730	0.762	0.621	0.704	0.994	0.965	0.784	0.914
T13	0.222	0.261	0.212	0.232	0.419	0.554	0.504	0.492	0.742	0.658	0.574	0.658	0.838	0.837	0.932	0.869
T14	0.246	0.219	0.264	0.243	0.444	0.496	0.462	0.467	0.688	0.723	0.964	0.792	0.798	0.799	0.844	0.814
T15	0.301	0.206	0.200	0.236	0.476	0.432	0.402	0.437	0.701	0.598	0.672	0.657	0.884	0.885	0.743	0.837
T16	0.277	0.233	0.291	0.267	0.418	0.546	0.455	0.473	0.586	0.645	0.821	0.684	0.912	0.913	0.986	0.937
Mean	0.266	0.253	0.266		0.431	0.476	0.452		0.613	0.634	0.658		0.859	0.855	0.875	
CD (P=0.05)		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**
		0.007	0.004	0.002		0.013	0.03	0.052		0.007	0.016	0.028		0.007	0.015	0.026

C1: Metal box; C2: Cloth bag; C3: Plastic zipling bag (40 microns)

T1: Untreated (Control); T2: Carbendazim 75% WP; T3: Tebuconazole 2 DS; T4: Difenoconazole 25% EC; T5: Propiconazole 25% EC; T6: Tricyclazole 75% WP; T7: Flusilazole 40% EC; T8: Azoxystrobin 23% SC; T9: Kitazine 48% EC; T10: Propineb 70% WP; T11: Dimethomorph 50% WP;T12: Chlorothalonil 78.2% WP; T13: Captan 70% + Hexaconazole 5% WP; T14: Carbendazim 12% + Mancozeb 63 % WP; T15: Famoxadone 16.6% + Cymoxanil 22.1% SL; T16: Flusilazole 12.5% + Carbendazim 25% SE

Table 5. Effect of seed treatments with fungicides and containers on dehydrogenase activity (OD g^{-1} ml^{-1}) in brinjal seeds

Treatment	3 Months				6 Months				9 Months				12 Months			
	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean	C1	C2	C3	Mean
T1	0.410	0.400	0.390	0.400	0.35	0.33	0.34	0.34	0.296	0.240	0.210	0.249	0.160	0.154	0.149	0.154
T2	0.488	0.496	0.484	0.489	0.379	0.404	0.419	0.401	0.283	0.294	0.284	0.287	0.198	0.190	0.204	0.197
T3	0.460	0.431	0.457	0.449	0.35	0.342	0.3	0.331	0.230	0.230	0.267	0.242	0.155	0.118	0.163	0.145
T4	0.430	0.421	0.428	0.426	0.309	0.302	0.342	0.318	0.238	0.220	0.230	0.229	0.142	0.140	0.159	0.147
T5	0.420	0.450	0.420	0.430	0.324	0.318	0.323	0.322	0.258	0.240	0.272	0.257	0.174	0.172	0.148	0.165
T6	0.452	0.420	0.410	0.427	0.341	0.332	0.341	0.338	0.212	0.243	0.212	0.222	0.166	0.161	0.139	0.155
T7	0.432	0.410	0.387	0.410	0.328	0.343	0.327	0.333	0.202	0.238	0.251	0.230	0.170	0.166	0.162	0.166
T8	0.452	0.460	0.389	0.434	0.31	0.311	0.314	0.312	0.198	0.241	0.236	0.225	0.172	0.152	0.154	0.159
T9	0.450	0.420	0.419	0.430	0.312	0.361	0.302	0.325	0.190	0.213	0.229	0.211	0.147	0.147	0.172	0.155
T10	0.432	0.430	0.399	0.420	0.329	0.347	0.312	0.329	0.228	0.267	0.251	0.249	0.167	0.166	0.159	0.164
T11	0.416	0.430	0.466	0.437	0.348	0.311	0.321	0.327	0.230	0.238	0.221	0.230	0.162	0.186	0.168	0.172
T12	0.451	0.421	0.405	0.426	0.36	0.323	0.315	0.333	0.240	0.271	0.243	0.251	0.171	0.181	0.157	0.170
T13	0.412	0.394	0.387	0.398	0.317	0.322	0.325	0.321	0.242	0.278	0.231	0.250	0.168	0.154	0.175	0.166
T14	0.420	0.387	0.433	0.413	0.301	0.328	0.349	0.326	0.251	0.268	0.254	0.258	0.151	0.167	0.158	0.159
T15	0.418	0.412	0.437	0.422	0.309	0.356	0.337	0.334	0.238	0.271	0.211	0.240	0.162	0.159	0.156	0.159
T16	0.420	0.456	0.401	0.426	0.342	0.329	0.317	0.329	0.222	0.217	0.198	0.212	0.149	0.170	0.167	0.162
Mean	0.435	0.427	0.420		0.332	0.335	0.330		0.235	0.248	0.238		0.163	0.160	0.162	
CD (P=0.05)		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**		**C**	**T**	**C×T**
		0.009	0.02	0.035		0.008	0.012	0.021		0.009	0.022	0.038		0.007	0.019	0.021

C1: Metal box; C2: Cloth bag; C3: Plastic zipling bag (40 microns)

T1: Untreated (Control); T2: Carbendazim 75% WP; T3: Tebuconazole 2 DS; T4: Difenoconazole 25% EC; T5: Propiconazole 25% EC; T6: Tricyclazole 75% WP; T7: Flusilazole 40% EC; T8: Azoxystrobin 23% SC; T9: Kitazine 48% EC; T10: Propineb 70% WP; T11: Dimethomorph 50% WP;T12: Chlorothalonil 78.2% WP; T13: Captan 70% + Hexaconazole 5% WP; T14: Carbendazim 12% + Mancozeb 63 % WP; T15: Famoxadone 16.6% + Cymoxanil 22.1% SL; T16: Flusilazole 12.5% + Carbendazim 25% SE

plastic zipling bag with carbendazim was found better than others. The results are in accordance with the findings [16,17].

4. CONCLUSION

On the basis of present investigation, it is concluded that the electrical conductivity of seeds increases and dehydrogenase activity of seeds decreases with the passage of time respectively. The seeds treated with flusilazole and carbendazim (2g kg^{-1} seed) in case of chilli and brinjal and stored in metal-box were found better for maintenance of higher seed quality parameters [electrical conductivity and dehydro-genase activity]. The study also suggested that use of appropriate packaging material and seed treatment could be useful to prolong the storage life of chilli and brinjal seeds.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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