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Research Article

INVESTIGATIONS ON STORAGE POTENTIAL OF DIFFERENT VARIETIES IN FENUGREEK

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Abstract: An experiment was conducted to know the storage potential of different fenugreek cultivars. The seeds which were produced during *rabi,* 2005 and summer, 2006 at Agricultural Research Station, Balajigapade, Chikkaballapura district, Karnataka were packed in cloth bag and stored under ambient conditions of Bengaluru. Samples were drawn at three months intervals (0, 3, 6 and 9) initially and subsequently at monthly intervals (up to the end of 12 months of storage) for seed quality analysis. The results revealed the significant increase in seed moisture over storage under ambient conditions irrespective of season of production. Variety Bangalore-local recorded significantly higher germination (96.71 % and 91.21 %), seedling vigour index-I (1501 and 1651) and lower electrical conductivity (243 and 212 dSm^{-1}) which was produced in both *rabi*, 2005and summer, 2006 respectively. The seeds produced during summer 2006 have better storage potential as compared seeds produced during *rabi* 2005 wherein the percentage reduction in germination was significantly higher.

Keywords: *Seedling vigour index, Storage Potential, Fenugreek*

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Introduction

Fenugreek (*Trigonella foenum-graecum* L.), commonly known as methi, is cultivated for leafy vegetable, spice, medicinal and fodder purposes. It is basically grown as a cool season crop. It belongs to the family leguminosae. It is an annual herb, 40-90 cm tall, leaves are light green, pinnately trifoliate. Flowers are hermophrodite and are self-pollinated. Seeds are small and brownish yellow in colour and they are thick and hard in texture. Fenugreek seeds are endospermic in nature, bitter in taste with a peculiar odour and flavour. Because of its high economic value, much emphasis is being given for increasing area and production under fenugreek which is possible only through the use of sufficient quantity of high quality seeds. In India, fenugreek is the third largest seed spice grown after coriander and cumin and it is now being cultivated commercially on large scale to meet its ever rising demand as a spice, condiment, medicinal and aromatic product. In order to meet our country's domestic as well as export demands; there is a need to evolve a low cost but scientific technology to produce higher quality seeds in fenugreek. The available information on the pattern of seed deterioration in relation to loss of germination and seedling vigour in fenugreek is rather scanty and hence the present study was envisaged with a view to obtain more information on the nature of storage behavior in terms of viability, vigour and its characteristics associated with loss of quality during storage under ambient conditions.

Material and methods

Fresh seeds of five varieties *viz*., Bangalore local (V1), Pusa Early Bunching (V2), Lam Selection-1 (V3), CO-1 (V4) and CO-2 (V5) which were produced during *rabi*, 2005 and summer, 2006 at Agricultural Research Station, Balajigapade, Chikkaballapura district, Karnataka were used for the study. The seeds were cleaned and graded to uniform size. Around 500g seeds of each variety with a moisture content of less than 12 percent were packed in cloth bag and stored under ambient conditions at the Department of Seed Science and Technology, UAS, GKVK, Bangalore. Samples were drawn at three months intervals (0, 3, 6 and 9) initially and subsequently at monthly intervals (up to the end of 12 months of storage). They were evaluated for various quality attributes like moisture content (%), 100 seed weight (g), germination (%), seedling length (cm), seedling dry weight (mg), seedling vigour index (I & II), electrical conductivity (dSm^{-1}) of seed leachate and field emergence (%) by adopting standard methods.

Seed moisture content was determined by low constant temperature oven method [1]. For 100 seed weight, from each treatment combination, sample of 100 seeds were randomly taken and the average weight of eight replicates was recorded and expressed in grams. The standard germination test was carried out in four replicates of hundred seeds by between paper method. The rolled towels were incubated at germinator maintained at 25±1°C and 90±2 percent RH as per ISTA rules [1]. The number of normal seedlings was counted on fourth and tenth day of germination test as first and final count, respectively and the average of four replications was worked out and expressed as percentage based on normal seedlings. For recording seedling length, ten normal seedlings were selected at random from the germination test on tenth day (final count). Summation of mean shoot and root lengths was considered as mean seedling length. Further seedling dry weight the seedlings used for measuring the length, were dried in a hot air oven at 82±1°C for 24h. The dry weight was recorded and expressed in milligrams per seedling. The seedling vigour indices were calculated as per the formula given by [2]. SVI-I= Germination (%) x Mean seedling length (cm) and SVI-II = Germination (%) x Mean seedling dry weight (mg). For assessing the electrical conductivity of seed leachate, twenty-five seeds of four replicates were washed with acetone for few minutes and soaked in 25 ml of double distilled water and kept in an incubator maintained at 25±1°C for 18h. Then, the steeped water (seed leachate) from the soaked seeds was collected and electrical conductivity (EC) of the leachate was measured in the Digital Conductivity meter.

Table-1 *Seed moisture content (%) and 100 seed weight (g) as influenced by the varieties and storage period during rabi, 2005 and summer, 2006*

Varieties	Seed moisture content (%)															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	9.21	9.28	9.44	9.83	9.72	9.74	9.93	9.59	9.07	9.22	9.42	9.67	9.80	9.73	10.07	9.59
V_2	9.35	9.35	9.52	9.83	9.77	9.94	10.10	9.69	9.56	9.77	10.08	10.02	10.52	10.36	10.78	10.16
V_3	9.25	9.34	9.58	9.92	9.91	10.09	10.24	9.76	9.35	9.49	9.52	9.75	9.75	9.90	10.20	9.71
V_4	9.17	9.25	9.40	9.71	9.71	9.81	9.97	9.57	9.35	9.41	9.54	9.80	10.04	10.26	10.61	9.86
V_5	9.26	9.29	9.55	9.78	9.81	9.93	10.33	9.71	9.34	9.31	9.48	9.81	10.13	10.32	10.41	9.83
Mean	9.25	9.30	9.50	9.81	9.78	9.90	10.11	9.66	9.33	9.44	9.61	9.81	10.05	10.11	10.41	9.82
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	0.006		0.023				CV (%) = 8.23		0.013		0.049				CV (%) = 7.96	
Interaction(Vx S)	0.007		0.024						0.015		0.052					
	0.016		0.046						0.033		0.097					
Varieties	100 seed weight (g)															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	1.580	1.532	1.536	1.523	1.564	1.581	1.621	1.562	1.561	1.572	1.576	1.574	1.586	1.589	1.601	1.580
V_2	1.297	1.361	1.347	1.228	1.389	1.402	1.401	1.346	1.258	1.263	1.268	1.264	1.425	1.284	1.292	1.293
V_3	1.443	1.464	1.396	1.279	1.282	1.291	1.283	1.348	1.311	1.299	1.278	1.268	1.275	1.283	1.283	1.285
V_4	1.147	1.138	1.237	1.239	1.254	1.290	1.291	1.228	1.166	1.143	1.202	1.199	1.199	1.198	1.200	1.187
V_5	1.151	1.152	1.178	1.201	1.208	1.206	1.213	1.187	1.183	1.197	1.198	1.197	1.199	1.200	1.206	1.197
Mean	1.323	1.329	1.338	1.294	1.340	1.354	1.361	1.334	1.296	1.295	1.305	1.300	1.337	1.311	1.316	1.308
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	0.003		0.013				CV (%) = 5.21		0.007		0.026				CV (%) = 6.93	
Interaction(VxS)	0.003		0.012						0.008		0.027					
	0.007		0.022						0.018		0.051					

V1- Bangalore local, V2-PEB, V3-LS-1, V4-CO-1 and V5-CO-2

Table-2 *Seed germination (%) and field emergence (%) as influenced by the varieties and storage period during rabi, 2005 and summer, 2006*

Varieties	Seed germination (%)															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	98.00	94.50	90.50	89.00	86.00	81.50	79.00	96.71	99.00	97.00	96.50	90.50	88.00	85.00	82.50	91.21
V_2	98.00	94.50	92.00	91.00	91.00	84.00	77.00	91.57	98.00	98.00	99.00	91.00	89.50	85.00	82.50	91.86
V_3	97.50	95.00	88.50	90.50	90.00	81.00	78.50	88.50	97.50	99.00	95.00	88.00	87.50	84.00	80.50	90.21
V_4	96.50	92.50	90.50	88.50	84.00	81.00	78.00	85.14	97.00	96.50	96.00	85.00	85.50	84.50	79.00	89.07
V_5	98.00	92.00	89.50	85.00	84.50	82.50	79.00	79.29	97.00	95.00	95.00	85.50	85.50	84.00	81.50	89.07
Mean	90.90	90.40	88.70	87.80	87.70	86.00	86.20	88.24	97.70	97.10	96.30	88.00	87.20	84.50	81.20	90.29
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	0.283		1.111				CV (%) = 6.93		0.249		0.976				CV (%) = 8.51	
Interaction(Vx S)	0.335		1.158						0.294		1.018					
	0.749		2.185						0.658		1.921					
Varieties	Field emergence (%)															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	93.00	90.50	84.00	81.00	78.00	75.50	69.00	81.57	94.50	92.00	89.00	84.00	79.00	76.50	74.00	84.14
V_2	92.50	91.00	86.00	81.00	75.50	75.50	69.00	81.50	93.00	90.50	87.00	84.00	78.50	77.00	74,50	83.50
V_3	94.50	89.00	86.00	80.00	76.50	75.00	70.50	81.64	95.50	91.00	87.00	79.00	77.00	77.00	75.00	83.07
V_4	95.00	90.00	86.50	80.00	76.00	75.00	64.50	81.00	95.50	92.00	89.00	76.50	76.50	76.00	75.00	82.93
V_5	94.00	89.50	84.50	80.50	75.50	73.00	68.00	80.71	95.00	93.00	89.00	81.50	77.50	76.00	75.50	83.93
Mean	93.80	90.00	85.40	80.50	76.30	74.80	68.20	81.29	94.70	91.70	88.20	81.00	77.70	76.50	74.80	83.51
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	0.24		NS				CV (%) = 9.55		0.21		NS				CV (%) = 13.54	
Interaction(VxS)	0.29		1.00						0.25		0.87					
	0.65		1.89						0.56		1.65					

V1- Bangalore local, V2-PEB, V3-LS-1, V4-CO-1 and V5-CO-2

The EC values due to electrolytes were expressed in dSm^{-1} [3]. The field emergence was conducted on a well-prepared raised seed bed in the field with two hundred seeds from each treatment obtained randomly. They were sown in four replications of 50 seeds each and optimum soil moisture was maintained by watering regularly. The number of seedlings emerged on 15th day of sowing were counted and expressed in percentage considering the normal seedlings.

Results and discussion

Moisture content (%) of the seeds produced during both the seasons and stored in cloth bag under ambient conditions for a period of twelve months differed significantly between the varieties and storage months. Irrespective of varieties it increased with the advance in storage period in both *rabi*, 2005 and summer, 2006 produced seeds. At the end of storage period, lower moisture content was recorded in V4 and V1 (9.57 and 9.59 %) and higher in V3 and V2 (9.76 and 10.16 %) in *rabi*, 2005 and summer, 2006, respectively. Initially, the seed moisture content was 9.25 and 9.33 percent and it increased thereafter, till the end of storage period. However, at the end of twelve months of storage, the moisture content increased to 10.11 and 10.41 percent in the seeds of *rabi*, 2005 and summer, 2006, respectively. These results agree with the findings of [4], [5] in soybean and [6] in summer groundnut. 100 seed weight was significantly higher in V1 in both the seasons (1.562 and 1.580 g, respectively) and it was lower in V5 (1.187 g) in *rabi*, 2005 and in V4 (1.187 g) in summer, 2006. There was slight increase in 100 seed weight towards the end of storage during *rabi*, 2005.

The germination (%) of seeds stored in cloth bag under ambient conditions for 12 months differed significantly between the varieties, storage months and their interactions. At the end of storage period, higher germination was recorded in V1 (96.71 %) and lower in V5 (79.29 %) in *rabi*, 2005. During summer, 2006, V2 recorded higher germination (91.86 %) but it was lower in V4 and V5 (89.07 %). Significant differences were observed on germination percentage of seeds among the storage months.

Table-3 *Seedling length (cm) and seedling dry weight (mg) as influenced by the varieties and storage period during rabi, 2005 and summer, 2006*

Varieties	Seedling length (cm)															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	25.40	24.37	22.83	21.23	20.19	19.56	19.00	21.80	25.61	24.63	22.94	21.72	20.95	20.80	20.01	22.38
V_2	22.03	21.61	18.86	21.06	21.00	20.35	20.18	20.73	23.29	23.08	21.48	21.07	20.88	19.79	19.28	21.26
V_3	21.88	21.88	19.95	19.59	18.23	18.14	18.26	19.70	22.86	22.18	21.14	21.19	20.90	20.16	19.19	21.09
V_4	21.58	20.62	18.06	19.23	17.42	17.35	17.09	18.76	22.70	22.59	22.46	21.40	21.10	21.00	19.28	21.50
V_5	22.52	22.38	18.63	20.34	19.74	19.77	19.12	20.36	23.02	22.01	21.53	21.56	21.04	20.09	18.95	21.17
Mean	22.68	22.17	19.67	20.29	19.32	19.03	18.73	20.27	23.50	22.90	21.91	21.39	20.97	20.37	19.34	21.48
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	0.080		0.314				CV (%) = 8.26		0.074		0.291				CV (%) = 8.69	
Interaction(Vx S)	0.095		0.327						0.088		0.303					
	0.211		0.617						0.196		0.572					

Varieties	Seedling dry weight (mg)															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	20.28	19.53	11.68	11.55	10.25	9.30	8.83	13.06	19.23	18.80	17.80	16.75	14.03	12.03	9.60	15.46
V_2	15.80	15.43	13.88	9.08	7.90	7.65	7.13	10.98	15.73	16.00	15.75	14.83	12.88	9.88	7.65	13.24
V_3	15.28	15.40	12.53	8.45	7.80	6.83	7.23	10.50	16.75	16.55	16.18	14.98	13.18	10.98	8.28	13.84
V_4	16.63	14.30	13.68	9.50	7.60	7.23	7.20	10.88	17.05	16.75	16.28	16.65	13.40	10.30	7.90	13.90
V_5	16.13	14.50	12.35	8.63	6.58	6.80	6.78	10.25	16.95	16.65	16.40	15.55	12.93	9.98	7.58	13.72
Mean	16.82	15.83	12.82	9.44	8.03	7.56	7.43	11.14	17.14	16.95	16.48	15.55	13.28	10.63	8.20	14.03
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	0.062		0.243				CV (%) = 9.32		0.059		0.276				CV (%) = 6.22	
Interaction(VxS)	0.073		0.253						0.070		0.243					
	0.164		0.478						0.157		0.459					

V1- Bangalore local, V2-PEB, V3-LS-1, V4-CO-1 and V5-CO-2

Table-4 *Seedling vigour indices as influenced by the varieties and storage period during rabi, 2005 and summer, 2006*

Varieties	Seedling vigour index I															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	2490	2303	2066	1889	1736	1594	1501	1940	2536	2389	2214	1966	1844	1768	1651	2053
V_2	2159	2042	1735	1916	1911	1709	1554	1861	2282	2262	2126	1917	1869	1682	1590	1961
V_3	2134	2079	1766	1773	1641	1469	1434	1756	2229	2195	2008	1865	1829	1693	1545	1909
V_4	2082	1907	1635	1702	1463	1405	1333	1647	2202	2180	2156	1819	1804	1774	1523	1923
V_5	2206	2060	1667	1729	1668	1631	1510	1781	2233	2091	2045	1843	1799	1687	1545	1892
Mean	2214	2078	1774	1802	1684	1562	1466	1797	2296	2223	2110	1882	1829	1721	1571	1947
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	9.89		38.81				CV (%) = 11.92		9.25		36.33				CV (%) = 12.55	
Interaction(Vx S)	11.70		40.48						10.95		37.89					
	26.15		76.34						24.49		71.47					

Varieties	Seedling vigour index II															
	Rabi, 2005 produced seeds (Storage months)								Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean	0	3	6	9	10	11	12	Mean
V_1	1986	1845	1057	1028	881	758	697	1179	1904	1824	1718	1516	1234	1022	792	1430
V_2	1549	1458	1276	826	719	643	549	1003	1541	1568	1559	1349	1152	840	631	1234
V_3	1509	1462	1109	765	702	553	567	952	1633	1638	1537	1318	1153	922	666	1267
V_4	1604	1323	1238	841	638	585	562	970	1654	1616	1563	1330	1146	871	624	1258
V_5	1580	1334	1105	733	556	561	535	915	1644	1582	1558	1330	1105	838	618	1239
Mean	1646	1484	1157	838	699	620	582	1004	1675	1646	1587	1369	1158	898	666	1286
Varieties(V)	S.Em±		CD (0.05P)						S.Em±		CD (0.05P)					
Storage period(S)	5.96		23.40				CV (%) = 12.43		6.90		27.08				CV (%) = 9.83	
Interaction(VxS)	7.05		24.40						8.16		28.24					
	15.77		46.03						18.25		53.27					

V1- Bangalore local, V2-PEB, V3-LS-1, V4-CO-1 and V5-CO-2, Seedling vigour index I - Germination x Mean seedling length
Seedling vigour index II - Germination x Mean seedling dry weight

Irrespective of the varieties, germination percentage declined with the advance in storage months in both the seasons. Initially the germination was 90.90 and 97.70 percent which declined to 86.20 and 81.20 percent, during *rabi*, 2005 and summer, 2006, respectively. Varietal differences for germination in storage is also reported by [5-11] in soybean and [12] in mungbean. The decrease in germination percentage was more (16.50%) in seeds produced in summer, 2005 Similar results of decrease in germination were also reported by [13, 14, 11] in soybean, [15] in rice bean and [16] in fenugreek. Although, germinability of seeds of fenugreek decreased, it was well above seed certification standard (>70%) at the end of twelve months of storage. At the end of one year of storage, V1 recorded higher seedling length (21.80 and 22.38 cm) during *rabi*, 2005 and summer, 2006, respectively. Lower seedling length was recorded in V4 (18.76 cm) during *rabi*, 2005 and V3 (21.09 cm) during summer, 2006.There was a drastic reduction in seedling length over storage. Initially higher seedling length was recorded (22.68 cm and 23.50 cm) which declined to 18.73 cm and 19.34 cm after 12 months of storage from the seeds of *rabi*, 2005 and summer, 2006, respectively. Varietal differences during storage have been reported by [13] in soybean and [17] in black gram. The decline in seedling length during storage was from 22.68cm to 18.73cm and 23.50cm to 20.97cm in seeds produced during *rabi*, 2005 and summer, 2006, respectively. Similar trend was also noticed for seedling dry weight. The reduction in seedling dry weight was from 16.82mg to 7.43mg and 17.14mg to 8.20mg in seeds produced during *rabi*, 2005 and summer, 2006, respectively. Similar findings were also reported by [13] in soybean, [17] in black gram and [16] in fenugreek.

Seedling vigour index is one of the important seed quality attributes. Generally, it decreased in the seeds produced during both the seasons in all varieties tested with increase in storage period. But the extent of reduction varied with the varieties.

Table-5 *Electrical conductivity (dSm^{-1}) of seed leachate as influenced by the varieties and storage period during rabi, 2005 and summer, 2006.*

Varieties	*Rabi*, 2005 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean
V_1	138	138	151	177	195	212	243	179
V_2	185	189	192	212	241	245	267	219
V_3	168	177	187	222	230	231	267	212
V_4	149	151	160	185	210	237	258	192
V_5	176	179	194	206	223	244	269	213
Mean	163	167	177	200	220	234	260	203
	S.Em±		CD (0.05P)					
Varieties (V)	0.39		1.53				CV (%) = 7.10	
Storage period (S)	0.46		1.60					
Interaction (V x S)	1.03		3.01					
Varieties	Summer, 2006 produced seeds (Storage months)							
	0	3	6	9	10	11	12	Mean
V_1	150	154	167	185	199	208	212	182
V_2	169	173	188	193	208	215	223	195
V_3	154	152	171	193	204	218	219	187
V_4	165	165	178	193	205	213	215	190
V_5	161	162	177	192	208	214	221	190
Mean	160	161	176	191	205	213	218	189
	S.Em±		CD (0.05P)					
Varieties (V)	0.26		1.03				CV (%) = 7.83	
Storage period (S)	0.31		1.08					
Interaction (V x S)	0.70		2.04					

V1- Bangalore local, V2-PEB, V3-LS-1, V4-CO-1 and V5-CO-2

Superiority of Bangalore local was observed over other varieties in both the seasons for seedling vigour index-I (1940 and 2053) and respectively for seedling vigour index-II (1179 and 1430). It was lower in CO-1 (1647 for seedling vigour index-I) and CO-2 (915 for seedling vigour index-II) in seeds produced in *rabi*, 2005 and in summer, 2006. Further, CO-2 (1892 for seedling vigour index-I) and Pusa Early Bunching (1234 for seedling vigour index-II) also recorded considerable seedling vigour. Similar findings were reported by [18] in French bean, [15] in rice bean and [16] in fenugreek.

Another aspect which is related to vigour and viability of seed is the electrical conductivity of seed leachates. This is attributed to the loss of membrane integrity and the extent of leakage, which is directly proportional to the conductivity of solution [19]. Many research workers reported significant but negative correlation between germination and electrical conductivity of leachates. In the present investigation also, a progressive but tremendous increase in the electrical conductivity of seed leachates over storage, irrespective of varieties. Among varieties, Bangalore local recorded lower electrical conductivity (179dSm^{-1} and 182dSm^{-1}) and it was higher in Pusa Early Bunching (219dSm^{-1} and 195dSm^{-1}) in both the seasons, respectively at the end of storage period. The increase in electrical conductivity was significant (163dSm^{-1} to 260dSm^{-1} and 160dSm^{-1} to 218dSm^{-1}) in both *rabi*, 2005 and summer, 2006, respectively. Similar trend in increased electrical conductivity was also observed by [20] in crimson clover, [13] in soybean and [16] in fenugreek. Varieties did not differ significantly for field emergence but the storage months and interactions of V x S, differed considerably in both the seasons. With the advance in storage period, there was a decline in field emergence of seeds produced in *rabi*, 2005 and summer, 2006 and it was well corroborated with the laboratory germination. The decline in field emergence was lower (93.80 to 68.20%) in *rabi*, 2005 compared to higher (94.70 to 74.80%) recorded in the seeds of summer, 2006. These results are in conformity with the findings of [21] and [22] in soybean who had also observed similar decline in field emergence over storage.

Conclusion

Moisture content increased with storage period under ambient conditions in the seeds of both *rabi*, 2005 and summer, 2006. Variety Bangalore-local recorded significantly higher germination (96.71% and 91.21%) in both the seasons. Germination declined gradually over storage (90.90 to 86.20%) in the seeds of both *rabi*, 2005 and summer, 2006 (97.70 to 81.20%), but it was well above the minimum certification standard (>70%) at the end of 12 months of storage. Correspondingly, seedling vigour indices also declined significantly with increase in storage period in the seeds of both the seasons and varieties.

Application of research: Fenugreek seeds with moisture content of around 9 percent and packed in cloth bag could be stored under ambient conditions for a period of at least 12 months to maintain minimum seed certification standard (>70%) of germination.

Research Category: Seed Science and Technology

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Study area / Sample Collection: Agricultural Research Station, Balajigapade, Chikkaballapura district, Karnataka

Cultivar / Variety / Breed name: Fenugreek (*Trigonella foenum-graecum* L.)

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