

## Influence of Storage Containers on Storability of China aster genotypes

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**ABSTRACT:** The storage experiment on storage potential of china aster varieties was conducted in the department of Seed Science and Technology, AC, Dharwad. Among four china aster varieties, Kamini found relatively better in storability with high germination and seedling vigour with low electrical conductivity up to six months of storage. Among containers, seeds stored in aluminium foil and polythene bags maintained higher germination and seedling vigour parameters compared to seeds stored in paper and cloth bag.

### INTRODUCTION

China aster (*Callistephus chinensis* L.) Nees) belongs to the family Asteraceae native of China is an important commercial ornamental annual crop grown in many parts of the world for cut and stock flower. The wide spectrum of colour ranges of flowers viz., pink, blue, violet, purple and white makes people more attractive which are used for garlands bouquets etc. Further, due to long shelf life of cut flowers they are being wider decorative purpose. In India and Karnataka china aster is increasing every year but the availability of high quality seed in adequate quantity has become a major problem for cultivation of china aster crop. Further the China aster seeds are found to have lesser period of viability which also is a limiting factor for availability of quality seeds for sowing. Hence, there is need to extend the longevity of china aster seeds by storing in appropriate storage containers. Storage potential of seed is basically under genetic control and it differs with species and cultivars it is also influenced by number of other environmental factors viz., moisture content, RH, temperature, storage containers, province etc. generally seeds stored in sealed moisture impervious containers store for longer period compared to those stored in moisture pervious containers as they act as effective barriers against moisture fluctuation (Thomson, 1979).

### MATERIAL AND METHODS

The storage experiment was conducted in the department of Seed Science and Technology, College

of Agriculture, UAS, Dharwad involving four china aster varieties viz., Kamini, Phule ganesh white, Phule ganesh purple and phule ganesh violet and four container viz., cloth bag, paper bag, polythene bag and aluminium foil. The fresh seeds of china aster varieties with initial 8.0 per cent moisture content were stored in different containers. The polythene and aluminium foil containers were heat sealed. The seeds are required for months observations were obtained from separate containers. The monthly observation were made on germination, speed of germination, shoot length, seedling dry weight, vigour index, moisture content and electrical conductivity as per ISTA rules (Anon., 1996).

### RESULTS AND DISCUSSION

The present study revealed significant variation among varieties for per cent germination and other seed quality parameters at first and subsequent months of storage. The germination percentage of china aster seeds declined progressively with increase in storage period in all the varieties irrespective of containers. The mean germination gradually decreased from 87.28 to 67.25 per cent, speed of germination from 15.88 to 12.6 seedling length from 4.69 to 4.09, vigour index from 412 to 277, seedling dry weight 16.10 to 14.75 mg and while EC increased from 1.48 to 2.34 dSm<sup>-1</sup>. while, moisture content varied between 8.10 to 8.02 from first month after storage to end of six month of storage respectively. Such varietal differences on storability of seeds and

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**Table 1**  
**Effect of varieties and containers on germination percentage and speed of germination during storage of china aster**

Treatment	Germination percentage						Speed of germination					
	Storage months						Storage months					
	1	2	3	4	5	6	1	2	3	4	5	6
<b>Varieties (V)</b>												
V <sub>1</sub> - Kamini	90.12 (71.71)*	88.00 (69.76)	84.37 (67.47)	81.62 (64.64)	76.50 (61.03)	70.87 (57.36)	16.17	15.64	14.92	14.12	13.66	12.45
V <sub>2</sub> - PG white	86.37 (68.36)	84.37 (66.74)	80.25 (63.64)	76.87 (61.28)	60.87 (57.36)	66.62 (54.73)	15.78	15.30	14.66	13.70	12.87	11.94
V <sub>3</sub> - PG violet	87.75 (69.54)	85.00 (67.24)	80.87 (64.09)	77.25 (61.54)	71.50 (57.76)	67.12 (55.03)	15.93	15.46	14.88	13.86	13.04	12.15
V <sub>4</sub> - PG purple	84.87 (67.14)	81.87 (64.83)	77.37 (61.62)	74.50 (59.70)	69.25 (56.35)	64.37 (53.37)	15.65	15.14	14.44	13.42	12.66	11.70
Mean	87.28 (69.12)	84.01 (67.05)	80.84 (61.01)	77.56 (61.75)	72.03 (58.05)	67.25 (55.06)	15.88	15.38	14.73	13.78	13.06	12.06
S.Em±	0.36	0.34	0.43	0.36	0.76	0.47	0.05	0.04	0.08	0.04	0.12	0.06
CD at 5%	1.07	1.02	1.28	1.07	1.38	1.41	0.14	0.13	0.25	0.12	0.36	0.18
<b>Containers (C)</b>												
C <sub>1</sub> - Cloth bag	85.62 (67.74)	81.75 (64.74)	76.62 (61.11)	73.00 (58.72)	65.00 (53.75)	59.37 (50.42)	15.70	15.06	14.35	13.20	12.63	11.51
C <sub>2</sub> - Paper bag	86.62 (68.57)	85.72 (67.85)	79.62 (63.19)	75.37 (60.27)	67.75 (55.42)	62.62 (52.36)	15.81	15.25	14.52	13.49	12.81	11.77
C <sub>3</sub> - Polythene	87.62 (69.43)	85.87 (67.95)	82.25 (65.11)	79.62 (63.19)	76.12 (60.77)	71.50 (57.76)	16.00	15.58	14.73	14.20	13.31	12.40
C <sub>4</sub> - Aluminium foil	89.25 (70.89)	86.87 (68.79)	84.87 (67.14)	82.25 (65.11)	79.25 (62.96)	75.50 (60.36)	16.03	15.63	15.30	14.23	13.49	12.55
Mean	87.28 (69.12)	84.01 (67.05)	80.84 (61.01)	77.56 (61.75)	72.03 (58.05)	67.25 (55.06)	15.88	15.38	14.73	13.78	13.06	12.06
S.Em±	0.36	0.34	0.43	0.36	0.76	0.47	0.05	0.04	0.08	0.04	0.12	0.06
CD at 5%	1.07	1.02	1.28	1.07	1.38	1.41	0.14	0.13	0.25	0.12	0.36	0.18
<b>Interactions (VxC)</b>												
V <sub>1</sub> C <sub>1</sub>	88.50 (70.21)	84.50 (66.84)	80.50 (63.82)	76.50 (61.03)	69.50 (56.50)	63.50 (52.87)	16.05	15.37	14.37	13.55	13.80	11.85
V <sub>1</sub> C <sub>2</sub>	89.50 (71.12)	87.50 (69.33)	83.00 (65.68)	79.50 (63.11)	71.50 (57.76)	66.50 (54.66)	16.15	15.55	14.77	13.85	13.45	12.25
V <sub>1</sub> C <sub>3</sub>	91.00 (72.57)	89.50 (71.12)	87.50 (69.33)	84.50 (66.84)	81.50 (64.55)	74.50 (59.70)	16.25	15.75	15.05	14.55	13.65	12.80
V <sub>1</sub> C <sub>4</sub>	91.50 (73.08)	90.50 (72.02)	88.50 (70.21)	86.00 (68.06)	83.50 (66.06)	79.00 (62.79)	16.25	15.90	15.50	14.55	13.75	12.90
V <sub>2</sub> C <sub>1</sub>	85.00 (67.24)	81.50 (64.55)	75.50 (60.36)	72.00 (58.08)	63.00 (52.56)	55.88 (50.21)	15.55	14.95	14.40	13.15	12.32	11.37
V <sub>2</sub> C <sub>2</sub>	85.50 (67.65)	85.00 (67.24)	80.50 (63.82)	75.50 (60.36)	68.50 (55.88)	62.50 (52.26)	15.72	14.11	14.42	13.47	12.60	11.65
V <sub>2</sub> C <sub>3</sub>	86.50 (68.47)	85.00 (67.24)	81.00 (64.19)	77.50 (61.71)	73.50 (59.04)	69.50 (56.50)	15.90	15.55	14.60	14.05	13.17	12.27
V <sub>2</sub> C <sub>4</sub>	88.50 (70.21)	86.00 (68.06)	84.00 (66.45)	82.50 (65.30)	78.50 (62.40)	75.50 (60.36)	15.95	15.57	15.22	14.15	13.40	12.47
V <sub>3</sub> C <sub>1</sub>	86.00 (68.06)	82.00 (64.92)	77.00 (61.37)	74.00 (59.37)	65.50 (54.05)	60.50 (51.08)	15.75	15.15	14.60	13.25	12.35	11.65
V <sub>3</sub> C <sub>2</sub>	87.50 (69.33)	85.50 (67.65)	80.50 (63.82)	75.50 (60.36)	67.00 (54.96)	62.00 (51.96)	15.85	15.35	14.62	13.60	12.75	11.90
V <sub>3</sub> C <sub>3</sub>	87.50 (69.33)	85.50 (67.65)	80.50 (63.82)	75.50 (60.36)	67.00 (54.96)	62.00 (51.96)	15.85	15.35	14.62	13.60	12.75	11.90
V <sub>3</sub> C <sub>4</sub>	90.00 (71.60)	86.50 (68.47)	84.50 (66.84)	80.50 (63.82)	77.50 (61.71)	74.50 (59.70)	16.00	15.70	15.42	14.32	13.62	12.60
V <sub>4</sub> C <sub>1</sub>	83.00 (65.68)	79.00 (62.75)	73.50 (59.04)	69.50 (56.50)	62.00 (51.96)	54.50 (47.60)	15.45	15.80	14.05	12.85	12.05	11.17
V <sub>4</sub> C <sub>2</sub>	84.00 (66.45)	80.50 (63.82)	74.50 (59.70)	71.00 (57.44)	64.00 (53.15)	59.50 (50.50)	15.55	15.00	14.27	13.05	12.45	11.30
V <sub>4</sub> C <sub>3</sub>	85.50 (67.65)	83.50 (66.06)	79.00 (62.75)	77.50 (61.71)	73.50 (59.04)	70.50 (57.13)	15.80	15.40	14.40	13.90	12.97	12.07
V <sub>4</sub> C <sub>4</sub>	87.00 (68.90)	84.50 (66.84)	82.50 (65.30)	80.00 (63.46)	77.50 (61.71)	73.00 (58.72)	15.82	15.37	15.05	13.90	13.20	12.25
Mean	87.28 (69.12)	84.01 (67.05)	80.84 (61.01)	77.56 (61.75)	72.03 (58.05)	67.25 (55.06)	15.88	15.38	14.73	13.78	13.49	12.06
S.Em±	0.72	0.68	0.86	0.73	1.52	0.93	0.09	0.08	0.17	0.08	0.24	0.12
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS - Non Significant  
 \* Figures in the parenthesis are arcsine transformed values

**Table 2**  
**Effect of varieties and containers on seedling length, seedling vigour index and seedling dry weight during storage of china aster**

Treatment	Seedling length (cm)						Seedling vigour index						Seedling dry weight (mg)					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
<b>Varieties (V)</b>																		
V <sub>1</sub> - Kamini	4.82	4.80	4.71	4.50	4.42	4.23	4.34	4.24	4.00	3.64	3.38	3.01	16.89	16.75	16.57	16.38	16.01	15.65
V <sub>2</sub> - PG white	4.65	4.61	4.51	4.30	4.17	4.03	4.08	3.88	3.62	3.38	2.96	2.70	15.81	15.61	15.44	15.15	14.73	14.42
V <sub>3</sub> - PG violet	4.67	4.63	4.57	4.40	4.30	4.10	4.10	3.94	3.69	3.42	3.10	2.76	16.08	15.89	15.75	15.49	15.05	14.71
V <sub>4</sub> - PG purple	4.64	4.53	4.44	4.26	4.16	4.01	3.94	3.72	3.43	3.21	2.89	2.61	15.63	15.35	15.15	14.95	14.58	14.20
Mean	4.69	4.64	4.56	4.37	4.26	4.09	4.12	3.94	3.69	3.41	3.08	2.77	16.10	15.90	15.73	15.49	15.09	14.75
S.Em±	0.03	0.03	0.03	0.03	0.03	0.02	2.36	2.10	2.63	3.00	4.43	2.54	0.06	0.07	0.06	0.06	0.06	0.06
CD at 5%	0.08	0.10	0.08	0.08	0.07	0.07	7.07	6.30	7.90	9.00	13.58	7.58	0.17	0.18	0.19	0.18	0.19	0.18
<b>Containers (C)</b>																		
C <sub>1</sub> - Cloth bag	4.50	4.44	4.32	4.09	3.95	3.76	3.91	3.62	3.30	3.00	2.60	2.24	15.14	14.95	14.73	14.47	13.98	13.53
C <sub>2</sub> - Paper bag	4.66	4.56	4.44	4.25	4.10	3.87	4.04	3.89	3.53	3.21	2.76	2.42	15.43	15.16	14.92	14.63	14.12	13.72
C <sub>3</sub> - Polythene	4.75	4.71	4.66	4.44	4.40	4.25	4.16	4.05	3.84	3.61	3.35	3.04	16.40	16.21	16.06	15.84	15.51	15.24
C <sub>4</sub> - Aluminium foil	4.87	4.86	4.81	4.70	4.61	4.49	4.36	4.21	4.08	3.84	3.61	3.39	17.43	17.28	17.18	17.02	16.76	16.49
Mean	4.69	4.64	4.56	4.37	4.26	4.09	4.12	3.94	3.69	3.41	3.08	2.77	16.10	15.90	15.73	15.49	15.09	14.75
S.Em±	0.03	0.03	0.03	0.03	0.03	0.02	2.36	2.10	2.63	3.00	4.53	2.54	0.06	0.06	0.06	0.06	0.06	0.06
CD at 5%	0.08	0.10	0.08	0.08	0.07	0.07	7.07	6.30	7.90	9.00	13.58	7.58	0.17	0.18	0.19	0.18	0.19	0.18
<b>Interactions (VxC)</b>																		
V <sub>1</sub> C <sub>1</sub>	4.72	4.71	4.57	4.22	4.15	3.95	4.18	3.99	3.68	3.23	2.88	2.50	16.33	16.05	15.80	15.55	15.05	14.45
V <sub>1</sub> C <sub>2</sub>	4.75	4.72	4.62	4.45	4.32	4.05	4.25	4.15	3.83	3.53	3.03	2.69	16.37	16.15	15.85	15.67	15.17	14.70
V <sub>1</sub> C <sub>3</sub>	4.85	4.82	4.77	4.57	4.47	4.35	4.41	4.31	4.17	3.82	3.64	3.24	17.32	17.32	17.17	17.05	16.85	16.62
V <sub>1</sub> C <sub>4</sub>	4.97	4.97	4.90	4.77	4.75	4.60	4.55	4.50	4.33	3.97	3.96	3.63	17.52	17.50	17.47	17.25	17.00	16.85
V <sub>2</sub> C <sub>1</sub>	4.36	4.37	4.17	4.05	3.90	3.75	3.93	3.51	3.09	3.07	2.47	2.21	14.52	14.42	14.25	13.95	13.55	13.25
V <sub>2</sub> C <sub>2</sub>	4.65	4.52	4.42	4.22	4.00	3.82	3.99	3.86	3.57	3.22	2.76	2.39	15.15	14.90	14.70	14.25	13.67	13.32
V <sub>2</sub> C <sub>3</sub>	4.77	4.75	4.65	4.30	4.27	4.12	4.10	4.03	3.79	3.53	3.16	2.86	16.10	15.90	15.70	15.45	15.05	14.75
V <sub>2</sub> C <sub>4</sub>	4.82	4.82	4.80	4.65	4.52	4.45	4.31	4.12	4.02	3.70	3.46	3.36	17.47	17.22	17.12	16.95	16.67	16.37
V <sub>3</sub> C <sub>1</sub>	4.52	4.47	4.40	4.15	4.00	3.77	3.89	3.66	3.38	2.95	2.72	2.28	15.27	15.15	14.95	14.65	14.05	13.60
V <sub>3</sub> C <sub>2</sub>	4.62	4.57	4.50	4.27	4.17	3.85	4.04	3.95	3.60	3.20	2.78	2.38	15.55	15.22	15.07	14.75	14.20	13.82
V <sub>3</sub> C <sub>3</sub>	4.67	4.62	4.60	4.47	4.42	4.27	4.09	3.95	3.72	3.58	3.36	3.05	16.05	15.85	15.75	15.52	15.12	14.85
V <sub>3</sub> C <sub>4</sub>	4.87	4.85	4.80	4.72	4.60	4.50	4.38	4.19	4.05	3.93	3.56	3.35	17.45	17.35	17.22	17.05	16.82	16.57
V <sub>4</sub> C <sub>1</sub>	4.40	4.22	4.15	3.95	3.75	3.60	3.65	3.33	3.04	2.74	2.32	1.96	14.45	14.17	13.95	13.75	13.30	12.85
V <sub>4</sub> C <sub>2</sub>	4.62	4.42	4.22	4.05	3.90	3.77	3.88	3.58	3.11	2.87	2.50	2.24	14.65	14.40	14.07	13.85	13.45	13.05
V <sub>4</sub> C <sub>3</sub>	4.72	4.67	4.65	4.42	4.42	4.27	4.04	3.90	3.67	3.50	3.25	3.01	16.15	15.80	15.65	15.35	15.05	14.75
V <sub>4</sub> C <sub>4</sub>	4.82	4.80	4.75	4.65	4.57	4.42	4.19	4.05	3.91	3.74	3.47	3.23	17.30	17.05	16.92	16.85	16.55	16.17
Mean	4.69	4.64	4.56	4.37	4.26	4.09	4.12	3.94	3.69	3.41	3.08	2.77	16.10	15.90	15.73	15.49	15.09	14.75
S.Em±	0.03	0.07	0.06	0.05	0.05	0.05	4.72	4.20	5.27	6.01	9.06	5.08	0.12	0.12	0.13	0.12	0.13	0.12
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS - Non Significant

**Table 3**  
Effect of varieties and containers on electrical conductivity and moisture content during storage of china aster

Treatment	Electrical conductivity (dSm <sup>-1</sup> )						Moisture content (%)					
	1	2	3	4	5	6	1	2	3	4	5	6
<b>Varieties (V)</b>												
V <sub>1</sub> - Kamini	1.38	1.50	1.65	1.83	2.02	2.17	8.08	8.03	7.86	7.79	7.82	8.00
V <sub>2</sub> - PG white	1.46	1.56	1.78	2.04	2.20	2.43	8.10	8.05	7.90	7.80	7.78	8.06
V <sub>3</sub> - PG violet	1.44	1.55	1.69	1.91	2.10	2.25	8.11	8.10	7.98	7.91	7.85	8.01
V <sub>4</sub> - PG purple	1.66	1.67	1.81	2.13	2.37	2.53	8.18	8.13	8.01	7.91	7.86	8.01
Mean	1.48	1.57	1.73	1.98	2.17	2.34	8.14	8.08	7.90	7.89	8.03	8.02
S.Em±	0.02	0.02	0.02	0.01	0.02	0.03	0.02	0.01	0.02	0.02	0.01	1.02
CD at 5%	0.05	0.06	0.07	0.04	0.06	0.08	0.06	0.03	0.06	0.06	0.03	NS
<b>Containers (C)</b>												
C <sub>1</sub> - Cloth bag	1.58	1.72	1.93	2.19	2.41	2.62	8.20	8.18	7.95	7.85	7.82	8.24
C <sub>2</sub> - Paper bag	1.52	1.63	1.81	2.06	2.25	2.48	8.17	8.09	7.94	7.84	7.83	8.21
C <sub>3</sub> - Polythene	1.44	1.50	1.66	1.89	2.16	2.25	8.06	8.02	7.90	7.83	7.78	7.87
C <sub>4</sub> - Aluminium foil	1.39	1.44	1.53	1.77	1.87	2.03	8.02	8.01	7.96	7.90	7.87	7.80
Mean	1.48	1.57	1.73	1.98	2.17	2.34	8.10	8.06	7.94	7.85	7.83	8.01
S.Em±	0.02	0.02	0.02	0.01	0.02	0.03	0.02	0.01	0.02	0.02	0.01	0.02
CD at 5%	0.05	0.06	0.07	0.04	0.06	0.08	0.06	0.03	NS	NS	0.03	0.06
<b>Interactions (VxC)</b>												
V <sub>1</sub> C <sub>1</sub>	1.47	1.67	1.87	2.05	2.27	2.47	8.21	8.17	7.87	7.77	7.90	8.25
V <sub>1</sub> C <sub>2</sub>	1.37	1.55	1.77	1.87	2.10	2.22	8.12	7.99	7.85	7.77	7.85	8.22
V <sub>1</sub> C <sub>3</sub>	1.37	1.42	1.55	1.77	2.00	2.12	8.00	7.98	7.80	7.72	7.67	7.87
V <sub>1</sub> C <sub>4</sub>	1.30	1.36	1.43	1.62	1.72	1.87	8.00	8.00	7.95	7.90	7.87	7.89
V <sub>2</sub> C <sub>1</sub>	1.35	1.72	1.95	2.27	2.45	2.70	8.22	8.17	7.82	7.72	7.67	8.27
V <sub>2</sub> C <sub>2</sub>	1.50	1.62	1.85	2.15	2.27	2.65	8.15	8.05	7.85	7.77	7.77	8.30
V <sub>2</sub> C <sub>3</sub>	1.42	1.47	1.75	1.92	2.22	2.27	8.05	7.97	7.92	7.85	7.82	7.88
V <sub>2</sub> C <sub>4</sub>	1.37	1.45	1.57	1.82	1.87	2.10	8.00	8.00	8.00	7.87	7.85	7.87
V <sub>3</sub> C <sub>1</sub>	1.57	1.67	1.87	2.12	2.37	2.55	8.20	8.17	8.07	8.00	7.87	8.20
V <sub>3</sub> C <sub>2</sub>	1.50	1.62	1.77	2.00	2.15	2.35	8.17	8.12	8.00	7.87	7.82	8.15
V <sub>3</sub> C <sub>3</sub>	1.37	1.50	1.62	1.82	2.12	2.17	8.05	8.05	7.95	7.87	7.82	7.91
V <sub>3</sub> C <sub>4</sub>	1.32	1.42	1.50	1.72	1.77	1.95	8.05	8.05	7.92	7.90	7.87	7.88
V <sub>4</sub> C <sub>1</sub>	1.75	1.82	2.02	2.32	2.57	2.77	8.027	8.22	8.06	7.92	7.85	8.25
V <sub>4</sub> C <sub>2</sub>	1.72	1.75	1.87	2.22	2.47	2.70	8.25	8.00	8.07	7.95	7.90	8.17
V <sub>4</sub> C <sub>3</sub>	1.60	1.60	1.72	2.05	2.32	2.42	8.15	8.10	7.95	7.85	7.90	7.83
V <sub>4</sub> C <sub>4</sub>	1.57	1.52	1.62	1.92	2.12	2.22	8.05	8.00	8.00	7.92	7.90	7.90
Mean	1.48	1.57	1.73	1.98	2.17	2.34	8.12	8.07	7.94	7.85	7.83	8.02
S.Em±	0.04	0.04	0.04	0.03	0.04	0.05	0.03	0.03	0.04	0.04	0.03	0.04
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS - Non Significant  
\* Figures in the parenthesis are arcsine transformed values

other seedling parameters may be attributed mainly to genetic differences of china aster varieties and due to storage environments (Roberts, 1972; Agarwal, 1974 and Bharati, 2002).

Among china aster varieties Kamini recorded significantly maximum (70.87%) germination while it was less (64.37%) in PG purple irrespective of container. All the varieties found to maintain satisfactory germination (60%) above the minimum seed certification standards up to end of six months of storage. Most of the previous studies on influence of containers on storage potential have indicated the beneficial influence of moisture impervious containers over pervious containers in the present study also. Among the containers significantly maximum germination (75.5%) was seen in aluminium foil followed by polythene bag (71.50%) and was minimum (59.37%) in cloth bag at the end of six months of storage. The seed viability was maintained as per seeds standards in all the containers except in cloth bag. The results of the present study are in conformity with the reports of Kumbar (1999) and Bharati (2002). Likewise, containers also showed significant differences on speed of germination, seedling length, seedling vigour index, seedling dry weight which were found to decrease with the increase in storage period except electrical conductivity on account of age induced deterioration (Roberts, 1972 and Delouche, 1973).

The interaction effect due to varieties and containers though not differed significantly all the

china aster varieties stored in different containers maintained satisfactory germination (60%) except PG white and PG purple stored in cloth bag and P.G purple stored in paper bag.

Likewise, the various seedling parameters such as speed of germination. Seedling length, seedling dry weight, seedling vigour index also did not show any significant differences due to the interaction effects based on the results of the study it may be concluded that china aster seeds may be stored in aluminium foil or polythene bag containers satisfactorily above six months of storage without any loss of germination and seedling vigour parameters.

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