

**EFFECT OF RELATIVE HUMIDITY, INITIAL SEED MOISTURE  
CONTENT AND STORAGE CONTAINER ON SOYBEAN  
(*Glycine max L. Meril.*) SEED QUALITY**

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**Abstract**

To find out the effect of storage relative humidity, seed moisture content and type of storage container on soybean seed quality, an experiment was conducted at the Seed Laboratory, Department of Agronomy, Bangladesh Agricultural University Mymensingh in 2008 and 2009. In 2008, soybean seed has 96% initial germination and in 2009 seed having 98% initial germination was stored at 8% and 12% initial moisture levels in two types of storage containers viz., cloth bag and polythene bag (0.06mm thickness). The final seed moisture content, germination percentage, germination index, and seedling dry matter of the seed under different treatments were measured at 60,120, and 180 days after storage (DAS). The experiment was arranged in a completely randomized design with three replications. In 2008, highest germination percentage (89.33%) of soybean seed was retained at 180 days after storage (DAS) for those stored at 8% initial seed moisture content (SMC) in polythene bag at 50% relative humidity. Germination index and seedling dry matter decreased with increased initial seed moisture content irrespective of storage containers used. In 2009, highest germination percentage (92.67%) of soybean seed was retained at 180 DAS for those stored in polythene bag at 8% initial SMC at 50% of the relative humidity. Those stored in cloth bag at 12% SMC showed rapid germination loss and the value went down to 0.00 in both the years. Vigour index and seedling dry matter decreased with increased initial seed moisture content irrespective of storage containers used.

Keywords: Soybean, relative humidity, seed moisture, container, viability, vigour.

**Introduction**

The problems of maintaining the soybean seed viability in storage have always been an important concern; and retention of high viability over a long period is necessary for crop production. Many factors determine the longevity of seeds during storage. These includes seed moisture content, temperature, relative humidity, initial viability, stage of maturity at harvest, storage gas and initial moisture content of seed entering into storage (Tatipata, 2009). Soybean seed losses its viability in very short period of storage even when stored in good nonporous container (Woodruff, 1998). The seeds with low moisture content and

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stored in any air tight containers could retain viability for a longer period of time. Sealed plastic pot and polythene bag are more effective storage containers than cloth bag or jute bag and earthen pot etc. (Rahman *et al.*, 2010). Soybean seed is rapidly deteriorated by high temperature and high relative humidity during storage (McDonald, 1999). Several factors may affect the quality of seeds in storage, however, the most critical among them is high seed moisture content (O'Hare *et al.*, 2001). High moisture content and presence of oxygen were the main causes for lipids autoxidation in soybean to lead rapidly seed deterioration and the quality decline (Chang, 2004). Seed must be dried to a safe moisture level immediately after harvest and it should be maintained until planting. Seeds stored at low moisture content or at low relative humidity (RH) retain viability for longer period (Miah, 2006). If seed packaged in moisture proof containers and the relative humidity of the air around the seed remains low, then the seed equilibrium moisture remains low and the seed maintains its viability and vigour for a longer time (Agha *et al.*, 2004). Thus it appears that seed being stored in low relative humidity at lower moisture content in air tight containers could retain high viability for a long period of time. However, research work regarding the effect of relative humidity, initial seed moisture content and storage container on soybean seed quality is scarce. Therefore, an experiment was undertaken to find out the effect of relative humidity, initial seed moisture content and storage container on soybean seed quality.

### Materials and Method

The experiment was conducted at the Seed Laboratory of the Department of Agronomy, Bangladesh Agricultural University, Mymensingh during May to November 2008 and 2009. The seeds were stored at four different levels of relative humidity viz., 50, 60, 70, and 80% in polythene bag and cloth bag with 8.0 and 12.0% initial moisture content. The treatments were arranged in Completely Randomized Design with three replications. The soybean variety Shohag (Pb 1) were collected from Regional Agricultural Research Station, BARI, Jamalpur. Relative humidity in the storage (cleaned and sterilized glass jar of 28.0 cm diameter and 35.6 cm height) were created using table salt ( $\text{NaCl}_2$ ) and water at different ratios. The salt (g) and water (ml) in the ratio 200:0, 100:0, 50:50, and 25:75 to create 50, 60, 70, and 80 % RH were taken in the glass jar. Five hundred grams of seeds were taken in each of cloth or polythene bags. Samples were taken at 60 days interval for 180 days. The relative humidity of storage container was measured with the hygrometer. The moisture content, germination percentages, germination index and seedling dry matter were determined.

**Seed moisture content:** Seed moisture content was measured using high constant temperature oven dry method following ISTA rules (2003). About 5-8 g of soybean seeds were placed in aluminium dish and dried in oven at 130 °C for 2

hours (until constant weight achieved). Then the sample was cooled in a desecrator and weighed. Then the moisture content was calculated as follows:

$$\text{Moisture content (\%)} = \frac{W_1 - W}{W_1 - W_2} \times 100$$

Where, W = Weight of blank aluminium dish with lid

W<sub>1</sub> = Weight of seed plus aluminium dish with lid before drying

W<sub>2</sub> = Weight of seed plus aluminium dish with lid after drying

**Germination test:** Germination test of seed was done in sand petridish method using sterilized sand. Randomly collected 50 seeds in three replicates per bag were used in the test. The sand was moistened to 60% water holding capacity before placing it on the petridish. Seed germination evaluation was done at 8 days after placing the test. The number of normal seedlings, abnormal seedlings and dead seeds were recorded respectively as per ISTA rules (2003). The sum of three replicates per bag was used and the germination was expressed in percentage.

$$\text{Germination (\%)} = \frac{\text{Number of seeds germinated}}{\text{Number of seeds sown}} \times 100$$

**Germination index (GI):** Germination index of seed was estimated from the seed set in the germination test by calculating the germination index following the formula below given by Association of Official Seed Analysts (AOSA, 1983). The number of seedling was counted at each day at the same time from the day after seed set until the last count was made. The seedling emerged each day having plumule length of 2 cm or more was considered as germinated.

$$\text{Germination index} = \frac{\text{No.ofseedling at1stcount}}{\text{Daysto1stcount}} + \dots + \frac{\text{No.ofseedling atfinalcount}}{\text{Daystofinalcount}}$$

**Seedling dry matter:** The normal seedlings from each germination lot were collected and washed with running tap water. After surface drying at room temperature the seedling kept in an oven and dried at 70°C temperature for 72 hours and the weight express seedling<sup>-1</sup> basis.

Data analysis was done statistically following the analysis of variance (ANOVA) technique and the means were compared by Duncan's Multiple Range Test (Gomez and Gomez, 1984).

## Results and Discussion

### Seed moisture content (SMC)

Storage relative humidity, initial seed moisture content and storage container had significant effect on final seed moisture content of soybean seed at 60, 120, and 180 DAS (Table 1). In 2008, the lowest seed moisture content of seeds stored in

polythene bag at 8% initial SMC in 50% RH were 8.14, 8.33, and 8.58% at 60, 120, and 180 DAS, respectively, and percent moisture increased 1.75, 4.13 and 7.25% while those seeds stored in cloth bag at 12% initial SMC in 80% RH were 13.39, 14.14, and 14.91% at 60, 120, and 180 DAS, respectively, and %moisture increased 11.58, 17.83 and 24.25% (Table 1). These results are in agreement with Miah (2005) who reported that soybean seeds stored at 50-60% RH maintained moisture content less than 10% during the storage period of eight months. In 2009, the lowest seed moisture content of seeds stored in polythene bag at 8% initial SMC in 50% RH were 8.33, 8.50, and 8.71% at 60, 120, and 180 DAS, respectively, and percent moisture increased 4.13, 6.25, and 8.87% while those seeds stored in cloth bag with 12% initial SMC at 80% RH were 13.39, 14.03, and 14.87% at 60, 120, and 180 DAS, respectively, and percent moisture increased 11.58, 16.92, and 23.92% (Table 1). Sarmin (2009) and Locher and Bucheli (1998) also reported that seeds stored in polythene bag at lower RH showed the lower seed moisture content. Thus it appears that the moisture content of soybean seed increased with the increase of RH and also with increase of storage duration in both the years.

**Table 1. Interaction effect of storage relative humidity, storage container and initial seed moisture content on seed moisture content of soybean seed at different days after storage in 2008 and 2009.**

Storage RH × Container × Initial SMC	Seed moisture content (%)					
	2008			2009		
	60 DAS	120 DAS	180 DAS	60 DAS	120 DAS	180 DAS
H <sub>1</sub> C <sub>1</sub> M <sub>1</sub>	8.82k	8.98l	9.28l	8.65hi	9.04h	9.30k
H <sub>1</sub> C <sub>1</sub> M <sub>2</sub>	12.50d	13.20d	13.82d	12.48 c	12.94 d	13.73 d
H <sub>1</sub> C <sub>2</sub> M <sub>1</sub>	8.14n	8.33p	8.58p	8.33 j	8.50 j	8.71 l
H <sub>1</sub> C <sub>2</sub> M <sub>2</sub>	12.24h	12.59h	13.00h	12.13 d	12.58 e	12.91 g
H <sub>2</sub> C <sub>1</sub> M <sub>1</sub>	8.97j	9.13k	9.48k	8.93 g	9.15hi	9.43j
H <sub>2</sub> C <sub>1</sub> M <sub>2</sub>	12.63c	13.39c	14.05c	12.64 c	13.26 c	13.95 c
H <sub>2</sub> C <sub>2</sub> M <sub>1</sub>	8.28m	8.54o	8.82o	8.42 ij	8.66 ij	8.87l
H <sub>2</sub> C <sub>2</sub> M <sub>2</sub>	12.34g	12.74g	13.19g	12.35d	12.71e	13.17fg
H <sub>3</sub> C <sub>1</sub> M <sub>1</sub>	9.04ij	9.24j	9.64j	9.14 f	9.35 f	9.96 f
H <sub>3</sub> C <sub>1</sub> M <sub>2</sub>	12.83b	13.67b	14.87b	12.92 b	13.59 b	14.55 b
H <sub>3</sub> C <sub>2</sub> M <sub>1</sub>	8.32m	8.62n	9.00n	8.33 hi	8.69hi	9.06 i
H <sub>3</sub> C <sub>2</sub> M <sub>2</sub>	12.50f	12.95f	13.62f	12.56 c	12.98 d	13.46 e
H <sub>4</sub> C <sub>1</sub> M <sub>1</sub>	9.09i	9.32i	9.82i	9.15e	9.58 e	9.94 e
H <sub>4</sub> C <sub>1</sub> M <sub>2</sub>	13.39a	14.14a	14.91a	13.36 a	14.03 a	14.87 a
H <sub>4</sub> C <sub>2</sub> M <sub>1</sub>	8.35h	8.70m	9.12m	8.87 gh	9.54 g	10.29 h
H <sub>4</sub> C <sub>2</sub> M <sub>2</sub>	12.59e	13.45e	14.01e	12.89 b	13.27 c	13.81 cd
F test	**	**	**	**	**	**
CV (%)	7.37	4.29	6.32	5.51	8.63	7.10

DAS= Days after sowing, CV= Coefficient of variation, \*\*= Significant at 1% level.

In a column, figures having similar letter(s) do not differ significantly.

Note: H<sub>1</sub>= 50% relative humidity (RH), H<sub>2</sub>= 60% RH, H<sub>3</sub>=70% RH, H<sub>4</sub>= 80% RH,  
C<sub>1</sub>= Cloth bag, C<sub>2</sub>= Polythene bag, M<sub>1</sub>= 8% Seed moisture content (SMC), M<sub>2</sub>= 12% SMC.

### Germination percentage

Storage relative humidity, initial seed moisture content and storage container had significant effect on germination percentage of soybean seed at 60, 120, and 180 DAS (Table 2). When the seed was stored, the germination was 96 and 98% in 2008 and 2009, respectively. In 2008, the highest germination percentage of seeds stored in polythene bag at 8% initial SMC with 50% RH were 93.33, 91.33, and 89.33% at 60, 120, and 180 DAS, respectively, and germination (%) decreased

**Table 2. Interaction effect of storage relative humidity, storage container and initial seed moisture content (SMC) on germination of soybean seed at different days after storage and field emergence in 2008 and 2009.**

Storage RH × container × Initial SMC	Germination (%)					
	2008			2009		
	60 DAS	120 DAS	180 DAS	60 DAS	120 DAS	180 DAS
H <sub>1</sub> C <sub>1</sub> M <sub>1</sub>	85.33	76.67c	73.33c	89.33a	82.67b	76.67b
H <sub>1</sub> C <sub>1</sub> M <sub>2</sub>	72.00	62.00d	34.00h	72.67b	55.33cd	41.33fg
H <sub>1</sub> C <sub>2</sub> M <sub>1</sub>	93.33	91.33a	89.33a	96.00a	94.00a	92.67a
H <sub>1</sub> C <sub>2</sub> M <sub>2</sub>	84.00	75.33c	48.00g	90.00a	73.33b	57.33de
H <sub>2</sub> C <sub>1</sub> M <sub>1</sub>	81.33	74.67c	68.00d	92.67a	83.33b	73.33bc
H <sub>2</sub> C <sub>1</sub> M <sub>2</sub>	70.00	54.67e	26.67i	63.33bc	43.33de	30.67g
H <sub>2</sub> C <sub>2</sub> M <sub>1</sub>	90.67	87.33b	85.33b	97.33a	94.67a	91.67a
H <sub>2</sub> C <sub>2</sub> M <sub>2</sub>	76.67	62.00d	44.00g	77.33b	60.67c	46.00ef
H <sub>3</sub> C <sub>1</sub> M <sub>1</sub>	70.00	62.00d	52.67f	68.67bc	30.67ef	0.00i
H <sub>3</sub> C <sub>1</sub> M <sub>2</sub>	56.00	26.00h	0.00j	66.67bc	32.00ef	0.00i
H <sub>3</sub> C <sub>2</sub> M <sub>1</sub>	81.33	74.00c	66.00d	92.67a	74.67b	65.33cd
H <sub>3</sub> C <sub>2</sub> M <sub>2</sub>	69.33	48.00f	0.00j	66.00bc	39.33e	4.00h
H <sub>4</sub> C <sub>1</sub> M <sub>1</sub>	66.00	52.00ef	36.00h	54.67cd	19.33g	0.00i
H <sub>4</sub> C <sub>1</sub> M <sub>2</sub>	48.67	20.00i	0.00j	46.00d	10.00h	0.00i
H <sub>4</sub> C <sub>2</sub> M <sub>1</sub>	78.67	66.67d	58.00e	94.67a	73.33b	61.33d
H <sub>4</sub> C <sub>2</sub> M <sub>2</sub>	62.67	38.00g	0.00j	62.00bcd	23.33fg	2.67h
F test	ns	**	**	**	**	**
CV (%)	5.67	7.84	4.04	6.46	6.41	8.41

DAS= Days after sowing, CV= Coefficient of variation, ns= Non-significant, \*\*= Significant at 1% level.

In a column, figures having similar letter(s) do not differ significantly.

Note: H<sub>1</sub>= 50% relative humidity (RH), H<sub>2</sub>= 60% RH, H<sub>3</sub>=70% RH, H<sub>4</sub>= 80% RH, C<sub>1</sub>= Cloth bag, C<sub>2</sub>= Polythene bag, M<sub>1</sub>= 8% Seed moisture content (SMC), M<sub>2</sub>= 12% SMC.

3.47, 5.55, and 6.95% while those stored in cloth bag with 12% initial SMC at 80% RH were 48.67, 20.00, and 0.00% at 60, 120, and 180 DAS, respectively, and germination (%) decreased 51.38, 79.17, and 100.00% (Table 2). In 2009, the highest germination percentage of seeds stored in polythene bag with 8% initial SMC at 50% RH were 96.00, 94.00, and 92.67% at 60, 120, and 180 DAS, respectively, and germination (%) decreased 2.04, 4.08, and 5.48% while those seeds stored in cloth bag at 12% initial SMC in 80% RH were 46.00, 10.00, and 0.00% at 60, 120, and 180 DAS, respectively, and germination (%) decreased 53.06, 89.80, and 100.00% (Table 2). Similar decrease of soybean seedling emergence performance with increase of storage RH was also reported by Sarmin (2009).

**Table 3. Interaction effect of storage relative humidity, storage container and initial seed moisture content on germination index of soybean seed at different days after storage in 2008 and 2009.**

Storage RH × Container × Initial SMC	Germination index					
	2008			2009		
	60 DAS	120 DAS	180 DAS	60 DAS	120 DAS	180 DAS
H <sub>1</sub> C <sub>1</sub> M <sub>1</sub>	25.28c	22.40ab	13.80bc	30.25ab	23.13ab	15.02b
H <sub>1</sub> C <sub>1</sub> M <sub>2</sub>	18.44g	8.84cd	4.86d	20.99de	8.63cde	5.83d
H <sub>1</sub> C <sub>2</sub> M <sub>1</sub>	29.53a	25.04a	17.81a	33.25a	26.04a	19.10a
H <sub>1</sub> C <sub>2</sub> M <sub>2</sub>	23.56d	19.02b	12.35c	27.93bc	21.35b	13.30bc
H <sub>2</sub> C <sub>1</sub> M <sub>1</sub>	23.50d	18.75b	14.06bc	27.43bc	23.27ab	15.32b
H <sub>2</sub> C <sub>1</sub> M <sub>2</sub>	17.37h	11.51c	4.81d	18.96ef	8.86cd	4.37d
H <sub>2</sub> C <sub>2</sub> M <sub>1</sub>	27.30b	25.78a	16.96ab	31.35ab	26.85a	18.59a
H <sub>2</sub> C <sub>2</sub> M <sub>2</sub>	22.91de	10.94c	11.72c	25.29cd	11.35c	12.26c
H <sub>3</sub> C <sub>1</sub> M <sub>1</sub>	22.78de	8.53cd	4.20de	16.88ef	6.69d-g	1.65e
H <sub>3</sub> C <sub>1</sub> M <sub>2</sub>	15.19i	3.36de	0.00f	16.53ef	4.50fgh	0.00f
H <sub>3</sub> C <sub>2</sub> M <sub>1</sub>	25.18c	20.81ab	10.97c	30.04abc	20.27b	12.83bc
H <sub>3</sub> C <sub>2</sub> M <sub>2</sub>	19.76f	7.28cd	1.28ef	17.86ef	8.00c-f	1.65e
H <sub>4</sub> C <sub>1</sub> M <sub>1</sub>	20.19f	6.39cd	2.86def	15.88fg	3.60gh	0.00e
H <sub>4</sub> C <sub>1</sub> M <sub>2</sub>	13.89j	0.700e	0.00f	11.34g	1.51h	0.00e
H <sub>4</sub> C <sub>2</sub> M <sub>1</sub>	22.53e	18.79b	11.31c	28.98abc	20.19b	12.71bc
H <sub>4</sub> C <sub>2</sub> M <sub>2</sub>	17.95gh	7.01cd	0.00f	15.86fg	4.86e-h	0.00e
F test	**	**	**	**	**	**
CV (%)	5.61	7.10	7.35	8.49	4.68	6.04

DAS= Days after sowing, CV= Coefficient of variation, \*\*= Significant at 1% level

In a column, figures having similar letter(s) do not differ significantly

Note: H<sub>1</sub>= 50% relative humidity (RH), H<sub>2</sub>= 60% RH, H<sub>3</sub>=70% RH, H<sub>4</sub>= 80% RH.

C<sub>1</sub>= Cloth bag, C<sub>2</sub>= Polythene bag, M<sub>1</sub>= 8% Seed moisture content (SMC), M<sub>2</sub>= 12% SMC

### Germination index

Storage relative humidity, initial seed moisture content and storage container had significant effect on germination index of soybean seed at 60, 120, and 180 DAS (Table 3). When the seed was stored, the germination index was 31.25 and 34.80 in 2008 and 2009, respectively. In 2008, the highest germination index of seeds stored in polythene bag at 8% initial SMC in 50% RH were 29.53, 25.04, and 17.81% at 60, 120 and 180 DAS, respectively, and germination index decreased 5.50, 19.87, and 43.00% while those stored in cloth bag at 12% initial SMC in 80% RH were 13.89, 0.70, and 0.00 at 60, 120, and 180 DAS, respectively and germination index decreased 55.55, 97.76, and 100.00% (Table 3). In 2009, the highest germination index of seeds stored in polythene bag at 8% initial SMC in 50% RH were 33.25, 26.04, and 19.10 at 60, 120, and 180 DAS, respectively, and germination index decreased 4.45, 25.17, and 45.11% while those stored in cloth bag at 12% initial SMC in 80% RH were 11.34, 1.51, and 0.00% at 60, 120, and 180 DAS, respectively, and germination index decreased 67.41, 95.66, and 100.00% (Table 3). Rahman *et al.* (2010) found similar result who reported that highest vigour index was obtained from 50% RH and lowest from 80% RH.

### 3.1.5 Seedling dry matter

Storage relative humidity, initial seed moisture content and storage container had significant effect on seedling dry matter of soybean seed at 180 DAS (Table 4). When the seed was stored, the seedling dry matter was 0.1280 and 0.1269/g seedling in 2008 and 2009, respectively. In 2008, the highest seedling dry matter of seeds stored in polythene bag at 8% initial SMC in 50% RH were 1269, 0.1201, and 0.1135 at 60, 120, and 180 DAS, respectively, and seedling dry matter decreased 0.86, 6.17, and 11.33% while those stored in cloth bag at 12% initial SMC in 80% RH were 0.0907 and 0.0860 at 60 and 120 DAS, respectively, and seedling dry matter decreased 29.14 and 32.81% (Table 4). At 180 DAS, no seedling was found in those seeds stored at 80% RH in cloth at 12% SMC. In 2009, the highest seedling dry matter of seeds stored in polythene bag at 8% initial SMC in 50% RH were .1260, 0.1190, and 0.1131 at 60, 120, and 180 DAS, respectively, and seedling dry matter decreased 0.71, 6.22, and 10.87% while those stored in cloth bag at 12% initial SMC in 80% RH were 0.0900 and 0.0850 at 60 and 120 DAS, respectively, and seedling dry matter decreased 29.08 and 33.02% (Table 4). At 180 DAS, no seedling was found in those seeds stored at 80% RH in cloth at 12% SMC. The seedling dry matter decreased with the increase of relative humidity and initial SMC for both the years. Rahman *et al.* (2010) found similar result who reported that highest seedling dry matter was obtained from 50% RH and the lowest from 80% RH.

**Table 4. Interaction effect of relative humidity, initial seed moisture content and container on soybean seeding dry matter of soybean at different days after storage in 2008 and 2009.**

Storage RH × Container × Initial SMC	Seeding dry matter (g/seedling)					
	2008			2009		
	60 DAS	120 DAS	180 DAS	60 DAS	120 DAS	180 DAS
H <sub>1</sub> C <sub>1</sub> M <sub>1</sub>	0.1155bc	0.1145ab	0.1104a	0.1146bc	0.1070cd	0.1000c
H <sub>1</sub> C <sub>1</sub> M <sub>2</sub>	0.1099cd	0.1040de	0.0974cd	0.1091cd	0.1032de	0.0966cd
H <sub>1</sub> C <sub>2</sub> M <sub>1</sub>	0.1269a	0.1201a	0.1135a	0.1260a	0.1190a	0.1131a
H <sub>1</sub> C <sub>2</sub> M <sub>2</sub>	0.1146bc	0.1070cd	0.1000c	0.1155bc	0.1073cde	0.1030c
H <sub>2</sub> C <sub>1</sub> M <sub>1</sub>	0.1097cd	0.1050cde	0.1010c	0.1113def	0.1040de	0.0970cd
H <sub>2</sub> C <sub>1</sub> M <sub>2</sub>	0.1040def	0.1000e	0.0930de	0.1031bcd	0.0991e	0.0921de
H <sub>2</sub> C <sub>2</sub> M <sub>1</sub>	0.1208ab	0.1163ab	0.1076ab	0.1200a	0.1155ab	0.1065ab
H <sub>2</sub> C <sub>2</sub> M <sub>2</sub>	0.1113bcd	0.1040de	0.0970cd	0.1097cd	0.1050cde	0.1010c
H <sub>3</sub> C <sub>1</sub> M <sub>1</sub>	0.1030def	0.1000e	0.0968cd	0.1156fg	0.1040de	0.0952bc
H <sub>3</sub> C <sub>1</sub> M <sub>2</sub>	0.0950fg	0.0905fg	-	0.0943bc	0.0891fg	-
H <sub>3</sub> C <sub>2</sub> M <sub>1</sub>	0.1158bc	0.1108bc	0.1022bc	0.1150fg	0.1100bc	0.1014bc
H <sub>3</sub> C <sub>2</sub> M <sub>2</sub>	0.1156bc	0.1040de	-	0.1030bc	0.1000e	0.0968cd
H <sub>4</sub> C <sub>1</sub> M <sub>1</sub>	0.0960fg	0.0930f	0.0901e	0.0951cde	0.0920f	0.0891e
H <sub>4</sub> C <sub>1</sub> M <sub>2</sub>	0.0907g	0.0860g	-	0.0900ef	0.0850g	-
H <sub>4</sub> C <sub>2</sub> M <sub>1</sub>	0.1069cde	0.1000e	0.0930de	0.1059g	0.0990e	0.0921de
H <sub>4</sub> C <sub>2</sub> M <sub>2</sub>	0.1000ef	0.0921fg	-	0.0991	0.0912fg	-
F test	**	**	**	**	**	**
CV (%)	4.70	6.51	4.68	4.70	7.51	4.68

DAS= Days after sowing, CV= Coefficient of variation, \*\*= Significant at 1% level.

In a column, figures having similar letter(s) do not differ significantly.

Note: H<sub>1</sub>= 50% relative humidity (RH), H<sub>2</sub>= 60% RH, H<sub>3</sub>=70% RH, H<sub>4</sub>= 80% RH, C<sub>1</sub>= Cloth bag, C<sub>2</sub>= Polythene bag, M<sub>1</sub>= 8% Seed moisture content (SMC), M<sub>2</sub>= 12% SMC.

### Conclusion

From the result of the study, it was concluded that soybean seed could be stored with above 80% germination for at least six months under a range of relative humidities (50 to 60%) if stored in polythene bag after drying to 8% initial seed moisture content.

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