

Evaluation of seed qualitative parameters in *Kharif* and summer grown soybean [*Glycine max* (L.) Merrill] genotypes

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ABSTRACT

An experiment was conducted to evaluate ninety soybean genotypes in two seasons viz., *Kharif* and summer for seed qualitative characters. The *Kharif* season recorded significantly more hundred seed weight (14.09 g), seed length (1.14 cm), seed width (0.79 cm), seed density (1.99 g/cc), husk weight (1.84 g), dehusk seed weight (11.19 g) and embryo weight (1.09 g), compared to summer season (9.97 g, 1.09 cm, 0.74 cm, 1.14 g/cc, 1.54g, 7.52 g, 0.92 g, respectively). Among genotypes, significantly maximum hundred seed weight (15.95g), seed density (1.36g/cc) were recorded in VLSoya 1 and MACS-13, respectively and dehusked seed weight (12.38 g) in MAUS-1 over sowing and seasons.

KEY WORDS : Seed quality, *Kharif*, Summer, Genotypes, Soybean

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INTRODUCTION

Soybean is known as the “golden bean” of the 20th Century. Though, Soybean is a legume crop, yet it is widely used as oilseed. Due to very poor cookability on account of inherent presence of trypsin inhibitor, it can not be utilized as a pulse. It is now the second largest oilseed in India after groundnut. It grows in varied agro-climatic conditions. It has emerged as one of the important commercial crop in many countries. Due to its worldwide popularity, the international trade of soybean is spread globally. Several countries such as Japan, China, Indonesia, Philippines, and European countries are importing soybean to supplement their domestic requirement for human consumption and cattle feed.

Soybean has great potential as an exceptionally nutritive and very rich protein food. It can supply the much

needed protein to human diets, because it contains above 40 per cent protein of superior quality and all the essential amino acids particularly glycine, tryptophan and lysine, similar to cow's milk and animal proteins. Soybean also contains about 20 per cent oil with an important fatty acid, lecithin and vitamin A and D 4 per cent mineral salts of soybeans is fairly rich in phosphorus and calcium.

The season of seed production is one of the important factors which influences the seed yield and quality since the weather conditions such as temperature, relative humidity, photoperiod and wind velocity vary from season to season and region to region resulting in differential seed yield and quality. The environments under which seeds are developed play a decisive role on seed quality. Therefore, selection of optimum season for producing better quality seeds is the most important aspect of soybean seed production programme but, the information on seasonal effect on seed quality is rather scanty in soybean and it needs to be investigated.

MATERIALS AND METHODS

An experiment was conducted at College of agriculture, Dharwad, Karnataka, India during 2009-2010. The field experiment was laid out in the Completely Randomized Block Design with factorial concept and replicated thrice for record of various observations. 90 soybean genotypes were evaluated in two seasons viz.,

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Kharif and summer. The observations on the seed quantitative parameters *viz.*, seed length (cm), seed width (cm), seed density (g/cc), hundred seed weight (g), husk weight (g), dehusk seed weight (g), embryo weight (g), were recorded.

RESULTS AND DISCUSSION

The results obtained from the present study have been presented under following heads :

Effect of sowing seasons on seed quantitative parameters:

All the test soybean genotypes showed marked and variations on seed quantitative parameters in both *Kharif* and summer seasons (Table 1-7). Between the two seasons, the *Kharif* season recorded and significantly more hundred seed weight (14.09 g), seed length (1.14 cm), seed width (0.79 cm), seed density (1.99 g/cc), husk weight (1.84 g), dehusk seed weight (11.19 g) and embryo weight (1.09 g), compared to summer season (9.79 g, 1.09 cm, 0.74 cm, 1.14 g/cc, 1.54g, 7.52 g, 0.22 g, respectively). This increase in seed physical parameters in the *Kharif* season might be attributed to the prevalence of congenial weather conditions like adequate rainfall, moderate day temperature and humidity compared to summer season. Hence, *Kharif* season sown crop performed better by recording higher values for growth and reproductive parameters. On the other hand, summer season crop varieties experienced adverse agroclimatic conditions like receding soil moisture, rising day temperature as well as depleting humidity conditions and hence it performed poorly by recording less values for seed physical parameters as evident from the results of the present study. Similar variable effects of different sowing seasons on seed quantitative parameters were also reported by Dixit *et al.* (1993), Kharag and Malhotra (1997) in chickpea, Singh *et al.* (1997) in chickpea and Merwde (2000) in chickpea.

Effect of genotypes on seed quantitative parameters:

Irrespective of sowing seasons, all the ninety test genotypes exhibited significant variations on the seed quantitative parameters studied (Table 1-7). On an average, 100 seed weight was significantly maximum in VLSoya 1 (G87) (15.95 g) genotype followed by JS-95-60 (G30) (15.42 g), JS-335 (G29) (15.16) genotypes compared to JS97-21 (G31) which recorded the least values (7.81 g). Likewise, seed length was the highest in Alankar (G2) (1.30 cm) followed by Ankur (G3) (1.22 cm), Gujrat soybean (G16) (1.26 cm) and lowest in Type-

49 (G86) (0.95 cm), respectively. The significantly maximum and minimum seed width were seen in genotype Alankar (G2) (0.89 cm) and Type-49 (G86) and Pusa-16 (G70) (0.67 cm). The next higher seed width was noticed in CO-Soya 2 (G7) (0.86 cm) and Birsa Soy 7 (G4) (0.85 cm). Seed density was significantly maximum in MACS-13 (G37) (1.36 g/cc) followed by MAUS-81 (G49) and PK262 (G56) (1.34 g/cc) and JS-95-60 (G30) (1.33 g/cc) and minimum in MAUS-61 (G46) (1.01 g/cc). Likewise, highest husk weight was in VL Soya 7 (G87) (3.04 g) followed by DS-228 (G11) (2.57 g) and Gujrat Soybean 2 (G16) (2.30 g) genotypes compared to Type -49 (G86) (0.98 g). The significantly highest and lowest dehusk weight was seen in Maus-7 (G42) (12.38 g) and Type-49 (G86) (6.36 g), respectively. Next higher dehusk seed weight was recorded in Alankar (G2) (12.05 g) and JS93-05 (G28) (12.18 g) genotypes. Embryo weight was significantly maximum in VL Soya-1 (G87) (2.06 g) followed by DS-228 (G11) (1.78 g) and TAMS-9821 (G85) compared to MAUS-61-2 (G47) (0.38 g).

The wider variations on different seed quantitative parameters in different genotypes noticed in this study may be perhaps attributed to genotypic differences. Similar variations in different seed quantitative parameters in different cultivars were also confirmed by the other workers like Borikar *et al.* (1985) in sorghum, Sharma *et al.* (1991) in green gram, Mohanrao (1993) in soybean, Henshaw (2008) in cowpea and Gnyandev (2009) in chickpea.

Sowing seasons and genotypes interaction (SxG) on seed quantitative parameters:

The interaction effect between sowing seasons and genotypes (SxG) showed marked differences on seed quantitative parameters under study (Table 1-7). The significantly maximum hundred seed weight was observed in interaction of *Kharif* season and VL-Soya (S1G87) (19.95 g) while in summer season it was highest with JS-9305 (S1G28) (16.63 g). Likewise, it was significantly highest for seed length in interactions of *Kharif* season and Durga (S1G9) (1.37 cm) and summer season and Gujarat soybean-2 (S1G9) (1.37 cm), for seed width, in interactions of *Kharif* season and VL-Soya-2 (S1G88) (0.90 cm) and summer season and Alankar (S2G2) (0.91 cm); for seed density, *Kharif* season and PK262 (S1G56) (1.55 g/cc) and summer season and MAUS-13 (S2G37) (1.60 g/cc); for husk weight (S1G87) (3.18 g) and (S2G11) (3.16 g), for embryo weight, *Kharif* season and VL-Soya 1 (S1G87) (2.13 g) and summer season, DS-228 (S2G11) (2.51 g), Whereas, the minimum values were recorded for hundred seed weight in *Kharif* season and ADT-1

Table 1 : Effect of sowing seasons on seed length (cm) in soybean genotypes

Genotypes (G)		Sowing seasons (S)			Genotypes (G)		Sowing seasons (S)		
		S ₁	S ₂	Mean			S ₁	S ₂	Mean
G ₁	ADT-1	1.03	1.01	1.02	G ₄₆	MAUS-61	1.32	1.07	1.20
G ₂	Alankar	1.30	1.30	1.30	G ₄₇	MAUS-61-2	1.26	1.01	1.14
G ₃	Ankur	1.12	1.31	1.22	G ₄₈	MAUS-71	1.25	1.04	1.15
G ₄	Birsa Soy 1	1.18	1.23	1.20	G ₄₉	MAUS-81	1.13	1.00	1.07
G ₅	Bragg	1.11	1.00	1.06	G ₅₀	Monetta	1.22	1.05	1.13
G ₆	CO1	1.07	1.09	1.08	G ₅₁	NRC-2	1.21	0.98	1.09
G ₇	CO Soya 2	1.31	1.15	1.23	G ₅₂	NRC-7	1.25	1.11	1.18
G ₈	CO3	1.21	1.07	1.14	G ₅₃	NRC-12	1.23	1.19	1.21
G ₉	Durga	1.37	0.85	1.11	G ₅₄	NRC-37	1.06	1.23	1.15
G ₁₀	DS-9712	1.17	1.18	1.18	G ₅₅	Palam Soya	1.22	1.11	1.16
G ₁₁	DS-228	1.18	1.02	1.10	G ₅₆	PK 262	1.13	1.10	1.12
G ₁₂	DSb-1	1.19	1.01	1.10	G ₅₇	PK 308	1.15	1.06	1.11
G ₁₃	DSb-8	1.30	1.14	1.22	G ₅₈	PK 327	1.13	1.04	1.09
G ₁₄	Gurav	1.12	1.03	1.08	G ₅₉	PK 416	1.13	1.03	1.08
G ₁₅	Gujarat Soybean 1	1.07	1.04	1.06	G ₆₀	PK 471	1.26	1.12	1.19
G ₁₆	Gujarat Soybean 2	1.16	1.35	1.26	G ₆₁	PK 472	1.16	1.13	1.15
G ₁₇	Hardee	1.16	1.32	1.24	G ₆₂	PS 564	1.09	1.16	1.13
G ₁₈	Hara soya	1.23	1.04	1.14	G ₆₃	PS 1024	1.10	0.94	1.02
G ₁₉	Indira soy 9	1.13	1.07	1.10	G ₆₄	PS 1029	1.22	1.11	1.16
G ₂₀	Improved pelican	1.19	1.06	1.13	G ₆₅	PS 1042	1.15	0.81	0.98
G ₂₁	JS 2	1.06	1.04	1.05	G ₆₆	PS 1092	1.21	1.15	1.18
G ₂₂	JS 71-05	1.12	1.07	1.10	G ₆₇	PS 1241	0.87	1.08	0.98
G ₂₃	JS 75-46	1.15	1.11	1.13	G ₆₈	PS 1347	1.19	1.05	1.12
G ₂₄	JS 76-205	1.08	1.12	1.10	G ₆₉	Punjab-1	1.02	1.10	1.06
G ₂₅	JS 79-81	1.05	1.29	1.17	G ₇₀	Pusa-16	1.05	1.03	1.04
G ₂₆	JS 80-21	1.16	1.10	1.13	G ₇₁	Pusa-20	1.12	0.94	1.03
G ₂₇	JS 90-41	1.07	1.11	1.09	G ₇₂	Pusa-22	1.05	0.94	0.99
G ₂₈	JS 93-05	1.00	1.15	1.08	G ₇₃	Pusa-24	1.03	1.06	1.05
G ₂₉	JS 335	1.06	1.25	1.15	G ₇₄	Pusa-37	1.06	0.96	1.01
G ₃₀	JS 95-60	1.13	1.24	1.19	G ₇₅	Pusa-40	1.02	1.04	1.03
G ₃₁	JS 97-52	0.87	1.05	0.96	G ₇₆	RAUS-5	1.06	1.06	1.06
G ₃₂	Kalitur	1.06	1.12	1.09	G ₇₇	Samrat	1.05	1.11	1.08
G ₃₃	KB-79	1.13	1.07	1.10	G ₇₈	Shilajeet	1.18	1.15	1.17
G ₃₄	KHSb-2	1.03	1.12	1.08	G ₇₉	Shivalik	1.07	1.02	1.05
G ₃₅	Lee	1.15	1.15	1.15	G ₈₀	SL 96	0.95	1.05	1.00
G ₃₆	Lsb-1	1.14	1.06	1.10	G ₈₁	SL 295	1.15	1.15	1.15
G ₃₇	MACS-13	1.09	1.01	1.05	G ₈₂	SL 525	1.06	1.21	1.14
G ₃₈	MACS-57	1.05	1.03	1.04	G ₈₃	SL 688	1.05	1.15	1.10
G ₃₉	MACS-58	1.12	1.07	1.09	G ₈₄	TAMS-38	1.05	1.12	1.08
G ₄₀	MACS-124	1.22	1.03	1.13	G ₈₅	TAMS-9821	1.06	1.11	1.08
G ₄₁	MACS-450	1.19	1.04	1.11	G ₈₆	Type-49	0.95	0.94	0.95
G ₄₂	MAUS-1	1.32	1.15	1.24	G ₈₇	VL Soya1	1.33	1.13	1.23
G ₄₃	MAUS-2	1.24	1.22	1.23	G ₈₈	VL Soya2	1.18	1.19	1.19
G ₄₄	MAUS-32	1.23	1.11	1.17	G ₈₉	VL Soya21	1.15	1.18	1.17
G ₄₅	MAUS-47	1.20	1.04	1.12	G ₉₀	VL Soya47	1.13	1.05	1.09
For comparing the means of					Mean		1.14	1.09	1.11
				S.E.±		C.D. (P=0.01)			
S				0.01		0.02			
G				0.03		0.11			
S x G				0.04		0.15			

Sowing seasons (S) : S₁ – Kharif S₂ – Summer

Table 2 : Effect of sowing seasons on seed width (cm) in soybean genotypes

Genotypes (G)		Sowing seasons (S)			Genotypes (G)		Sowing seasons (S)		
		S ₁	S ₂	Mean			S ₁	S ₂	Mean
G ₁	ADT-1	0.72	0.70	0.71	G ₄₆	MAUS-61	0.82	0.70	0.76
G ₂	Alankar	0.86	0.91	0.89	G ₄₇	MAUS-61-2	0.89	0.73	0.81
G ₃	Ankur	0.78	0.76	0.77	G ₄₈	MAUS-71	0.82	0.68	0.75
G ₄	Birsa Soy 1	0.85	0.85	0.85	G ₄₉	MAUS-81	0.86	0.65	0.76
G ₅	Bragg	0.80	0.70	0.75	G ₅₀	Monetta	0.81	0.70	0.76
G ₆	CO1	0.79	0.78	0.79	G ₅₁	NRC-2	0.78	0.72	0.75
G ₇	CO Soya 2	0.88	0.83	0.86	G ₅₂	NRC-7	0.84	0.74	0.79
G ₈	CO3	0.81	0.71	0.76	G ₅₃	NRC-12	0.90	0.76	0.83
G ₉	Durga	0.72	0.73	0.73	G ₅₄	NRC-37	0.74	0.87	0.81
G ₁₀	DS-9712	0.76	0.80	0.78	G ₅₅	Palam Soya	0.85	0.73	0.79
G ₁₁	DS-228	0.84	0.83	0.84	G ₅₆	PK 262	0.77	0.70	0.74
G ₁₂	DSb-1	0.75	0.70	0.73	G ₅₇	PK 308	0.83	0.81	0.82
G ₁₃	DSb-8	0.83	0.79	0.81	G ₅₈	PK 327	0.98	0.73	0.85
G ₁₄	Gurav	0.83	0.69	0.76	G ₅₉	PK 416	0.83	0.73	0.78
G ₁₅	Gujarat Soybean 1	0.76	0.71	0.74	G ₆₀	PK 471	0.82	0.70	0.76
G ₁₆	Gujarat Soybean 2	0.88	0.76	0.82	G ₆₁	PK 472	0.82	0.73	0.78
G ₁₇	Hardee	0.84	0.81	0.83	G ₆₂	PS 564	0.80	0.79	0.79
G ₁₈	Hara soya	0.86	0.70	0.78	G ₆₃	PS 1024	0.74	0.64	0.69
G ₁₉	Indira soy 9	0.88	0.73	0.80	G ₆₄	PS 1029	0.82	0.75	0.79
G ₂₀	Improved pelican	0.84	0.63	0.73	G ₆₅	PS 1042	0.85	0.74	0.79
G ₂₁	JS 2	0.72	0.73	0.73	G ₆₆	PS 1092	0.82	0.78	0.80
G ₂₂	JS 71-05	0.76	0.76	0.76	G ₆₇	PS 1241	0.74	0.74	0.74
G ₂₃	JS 75-46	0.83	0.80	0.81	G ₆₈	PS 1347	0.83	0.76	0.80
G ₂₄	JS 76-205	0.76	0.75	0.76	G ₆₉	Punjab-1	0.72	0.77	0.74
G ₂₅	JS 79-81	0.80	0.87	0.84	G ₇₀	Pusa-16	0.70	0.63	0.67
G ₂₆	JS 80-21	0.83	0.71	0.77	G ₇₁	Pusa-20	0.79	0.70	0.75
G ₂₇	JS 90-41	0.72	0.73	0.73	G ₇₂	Pusa-22	0.71	0.72	0.72
G ₂₈	JS 93-05	0.72	0.87	0.80	G ₇₃	Pusa-24	0.74	0.69	0.72
G ₂₉	JS 335	0.75	0.83	0.79	G ₇₄	Pusa-37	0.80	0.69	0.75
G ₃₀	JS 95-60	0.74	0.84	0.79	G ₇₅	Pusa-40	0.73	0.67	0.70
G ₃₁	JS 97-52	0.65	0.71	0.68	G ₇₆	RAUS-5	0.73	0.71	0.72
G ₃₂	Kalitur	0.72	0.71	0.72	G ₇₇	Samrat	0.74	0.69	0.71
G ₃₃	KB-79	0.80	0.80	0.80	G ₇₈	Shilajeet	0.73	0.75	0.74
G ₃₄	KHSb-2	0.73	0.73	0.73	G ₇₉	Shivalik	0.74	0.79	0.77
G ₃₅	Lee	0.73	0.74	0.74	G ₈₀	SL 96	0.71	0.67	0.69
G ₃₆	Lsb-1	0.82	0.73	0.77	G ₈₁	SL 295	0.84	0.77	0.80
G ₃₇	MACS-13	0.73	0.70	0.72	G ₈₂	SL 525	0.76	0.74	0.75
G ₃₈	MACS-57	0.72	0.75	0.74	G ₈₃	SL 688	0.81	0.84	0.83
G ₃₉	MACS-58	0.74	0.73	0.73	G ₈₄	TAMS-38	0.76	0.77	0.77
G ₄₀	MACS-124	0.76	0.72	0.74	G ₈₅	TAMS-9821	0.84	0.69	0.77
G ₄₁	MACS-450	0.72	0.72	0.72	G ₈₆	Type-49	0.64	0.70	0.67
G ₄₂	MAUS-1	0.89	0.75	0.82	G ₈₇	VL Soya1	0.89	0.80	0.85
G ₄₃	MAUS-2	0.83	0.75	0.79	G ₈₈	VL Soya2	0.90	0.76	0.83
G ₄₄	MAUS-32	0.83	0.70	0.77	G ₈₉	VL Soya21	0.83	0.82	0.83
G ₄₅	MAUS-47	0.78	0.72	0.75	G ₉₀	VL Soya47	0.77	0.71	0.74
For comparing the means of					Mean	0.79	0.74	0.77	
						C.D. (P=0.01)			
						S			
						0.002			
						G			
						0.012			
						SxG			
						0.016			

Sowing seasons (S) : S₁ – Kharif S₂ – Summer

Table 3 : Effect of sowing seasons on seed density (g/cc) in soybean genotypes

Genotypes (G)	Sowing seasons (S)			Genotypes (G)	Sowing seasons (S)				
	S ₁	S ₂	Mean		S ₁	S ₂	Mean		
G ₁	ADT-1	1.54	1.04	1.29	G ₄₆	MAUS-61	1.31	0.70	1.01
G ₂	Alankar	1.19	1.12	1.16	G ₄₇	MAUS-61-2	1.05	1.13	1.09
G ₃	Ankur	1.07	1.01	1.04	G ₄₈	MAUS-71	1.14	1.44	1.29
G ₄	Birsa Soy 1	1.11	0.97	1.04	G ₄₉	MAUS-81	1.28	1.39	1.34
G ₅	Bragg	1.12	1.08	1.10	G ₅₀	Monetta	1.11	1.17	1.14
G ₆	CO1	1.33	0.86	1.10	G ₅₁	NRC-2	1.44	1.12	1.28
G ₇	CO Soya 2	1.31	1.14	1.23	G ₅₂	NRC-7	1.04	1.08	1.06
G ₈	CO3	0.99	0.99	0.99	G ₅₃	NRC-12	1.23	1.21	1.22
G ₉	Durga	1.02	1.03	1.03	G ₅₄	NRC-37	1.11	1.19	1.15
G ₁₀	DS-9712	1.11	1.08	1.10	G ₅₅	Palam Soya	1.22	1.17	1.20
G ₁₁	DS-228	1.23	1.08	1.15	G ₅₆	PK 262	1.55	1.12	1.34
G ₁₂	DSb-1	1.12	1.01	1.06	G ₅₇	PK 308	1.13	1.12	1.13
G ₁₃	DSb-8	1.04	1.16	1.10	G ₅₈	PK 327	1.12	1.17	1.14
G ₁₄	Gurav	1.31	1.02	1.16	G ₅₉	PK 416	1.32	1.03	1.18
G ₁₅	Gujarat Soybean 1	0.93	1.16	1.04	G ₆₀	PK 471	1.28	1.27	1.27
G ₁₆	Gujarat Soybean 2	1.28	1.10	1.19	G ₆₁	PK 472	1.21	1.15	1.18
G ₁₇	Hardee	1.11	1.26	1.19	G ₆₂	PS 564	1.12	1.48	1.30
G ₁₈	Hara soya	1.14	1.22	1.18	G ₆₃	PS 1024	1.33	1.16	1.25
G ₁₉	Indira soy 9	1.33	1.22	1.28	G ₆₄	PS 1029	1.35	1.25	1.30
G ₂₀	Improved pelican	1.33	1.09	1.21	G ₆₅	PS 1042	1.34	1.19	1.26
G ₂₁	JS 2	1.16	1.06	1.11	G ₆₆	PS 1092	1.32	1.12	1.22
G ₂₂	JS 71-05	1.12	1.21	1.17	G ₆₇	PS 1241	1.16	1.13	1.15
G ₂₃	JS 75-46	1.12	1.19	1.16	G ₆₈	PS 1347	1.18	1.21	1.20
G ₂₄	JS 76-205	1.31	1.14	1.23	G ₆₉	Punjab-1	1.17	1.31	1.24
G ₂₅	JS 79-81	1.11	1.10	1.11	G ₇₀	Pusa-16	1.08	1.30	1.19
G ₂₆	JS 80-21	1.15	0.99	1.07	G ₇₁	Pusa-20	1.22	0.88	1.05
G ₂₇	JS 90-41	1.05	1.25	1.15	G ₇₂	Pusa-22	1.01	1.19	1.10
G ₂₈	JS 93-05	1.20	1.14	1.17	G ₇₃	Pusa-24	1.11	0.97	1.04
G ₂₉	JS 335	1.12	1.21	1.17	G ₇₄	Pusa-37	1.21	1.24	1.22
G ₃₀	JS 95-60	1.38	1.28	1.33	G ₇₅	Pusa-40	1.20	1.29	1.24
G ₃₁	JS 97-52	1.09	1.05	1.07	G ₇₆	RAUS-5	1.13	1.51	1.32
G ₃₂	Kalitur	1.10	1.24	1.17	G ₇₇	Samrat	1.25	1.26	1.25
G ₃₃	KB-79	1.20	1.03	1.12	G ₇₈	Shilajeet	1.16	0.92	1.04
G ₃₄	KHSb-2	1.23	1.09	1.16	G ₇₉	Shivalik	1.13	1.20	1.16
G ₃₅	Lee	1.29	1.32	1.31	G ₈₀	SL 96	1.13	1.07	1.10
G ₃₆	Lsb-1	1.24	1.19	1.21	G ₈₁	SL 295	1.22	1.09	1.15
G ₃₇	MACS-13	1.12	1.60	1.36	G ₈₂	SL 525	1.30	1.05	1.18
G ₃₈	MACS-57	1.16	1.12	1.14	G ₈₃	SL 688	1.28	0.68	0.98
G ₃₉	MACS-58	1.24	1.00	1.12	G ₈₄	TAMS-38	1.06	1.12	1.09
G ₄₀	MACS-124	1.07	1.08	1.08	G ₈₅	TAMS-9821	1.20	1.43	1.32
G ₄₁	MACS-450	1.36	1.23	1.29	G ₈₆	Type-49	1.02	1.23	1.12
G ₄₂	MAUS-1	1.34	0.98	1.16	G ₈₇	VL Soya1	1.14	1.03	1.09
G ₄₃	MAUS-2	1.12	1.27	1.19	G ₈₈	VL Soya2	1.24	1.03	1.14
G ₄₄	MAUS-32	0.88	0.99	0.94	G ₈₉	VL Soya21	1.30	1.03	1.17
G ₄₅	MAUS-47	1.21	0.92	1.06	G ₉₀	VL Soya47	1.28	1.00	1.14
For comparing the means of					Mean		1.19	1.14	1.163
				S.E _±			C.D. (P=0.01)		
S				0.003			0.012		
G				0.022			0.082		
SxG				0.031			0.116		

Sowing seasons (S) : S₁ – Kharif S₂ – Summer

Table 4 : Effect of sowing seasons on hundred seed weight in soybean genotypes

Genotypes (G)	Sowing seasons (S)			Genotypes (G)	Sowing seasons (S)				
	S ₁	S ₂	Mean		S ₁	S ₂	Mean		
G ₁	ADT-1	8.13	7.94	8.03	G ₄₆	MAUS-61	16.15	7.94	12.04
G ₂	Alankar	15.07	14.19	14.63	G ₄₇	MAUS-61-2	15.47	8.23	11.85
G ₃	Ankur	13.17	11.45	12.31	G ₄₈	MAUS-71	15.63	8.09	11.86
G ₄	Birsa Soy 1	12.57	11.31	11.94	G ₄₉	MAUS-81	14.88	9.23	12.06
G ₅	Bragg	13.43	9.36	11.40	G ₅₀	Monetta	15.18	8.55	11.87
G ₆	CO1	13.70	9.59	11.65	G ₅₁	NRC-2	11.91	8.23	10.07
G ₇	CO Soya 2	17.00	12.98	14.99	G ₅₂	NRC-7	15.20	10.02	12.61
G ₈	CO3	11.47	7.55	9.51	G ₅₃	NRC-12	17.16	12.91	15.04
G ₉	Durga	10.53	10.61	10.57	G ₅₄	NRC-37	12.13	14.13	13.13
G ₁₀	DS-9712	14.07	12.24	13.16	G ₅₅	Palam Soya	15.80	10.17	12.99
G ₁₁	DS-228	16.34	12.07	14.20	G ₅₆	PK 262	13.41	8.21	10.81
G ₁₂	DSb-1	12.67	8.67	10.67	G ₅₇	PK 308	13.17	7.75	10.46
G ₁₃	DSb-8	14.23	10.80	12.52	G ₅₈	PK 327	14.17	8.55	11.36
G ₁₄	Gurav	9.60	7.43	8.51	G ₅₉	PK 416	16.61	7.23	11.92
G ₁₅	Gujarat Soybean 1	9.60	7.68	8.64	G ₆₀	PK 471	16.22	10.14	13.18
G ₁₆	Gujarat Soybean 2	16.23	11.36	13.79	G ₆₁	PK 472	13.67	9.91	11.79
G ₁₇	Hardee	13.55	10.49	12.02	G ₆₂	PS 564	14.14	11.30	12.72
G ₁₈	Hara soya	15.51	12.33	13.92	G ₆₃	PS 1024	15.50	8.48	11.99
G ₁₉	Indira soy 9	13.73	9.32	11.53	G ₆₄	PS 1029	17.49	9.10	13.29
G ₂₀	Improved pelican	14.19	7.23	10.71	G ₆₅	PS 1042	17.28	10.24	13.76
G ₂₁	JS 2	12.69	8.43	10.56	G ₆₆	PS 1092	16.15	11.52	13.83
G ₂₂	JS 71-05	14.19	9.23	11.71	G ₆₇	PS 1241	13.52	12.02	12.77
G ₂₃	JS 75-46	14.47	11.10	12.78	G ₆₈	PS 1347	16.53	10.38	13.45
G ₂₄	JS 76-205	13.50	12.13	12.82	G ₆₉	Punjab-1	12.03	13.03	12.53
G ₂₅	JS 79-81	12.23	16.19	14.21	G ₇₀	Pusa-16	11.48	7.35	9.41
G ₂₆	JS 80-21	15.67	8.22	11.95	G ₇₁	Pusa-20	14.20	6.43	10.32
G ₂₇	JS 90-41	12.16	9.15	10.66	G ₇₂	Pusa-22	11.44	7.16	9.30
G ₂₈	JS 93-05	12.83	16.63	14.73	G ₇₃	Pusa-24	12.54	9.06	10.80
G ₂₉	JS 335	14.15	16.17	15.16	G ₇₄	Pusa-37	14.47	9.01	11.74
G ₃₀	JS 95-60	14.70	16.14	15.42	G ₇₅	Pusa-40	12.33	8.12	10.23
G ₃₁	JS 97-52	9.43	6.18	7.81	G ₇₆	RAUS-5	13.54	9.51	11.53
G ₃₂	Kalitur	11.36	9.43	10.40	G ₇₇	Samrat	14.14	8.82	11.48
G ₃₃	KB-79	15.16	11.18	13.17	G ₇₈	Shilajeet	18.22	10.41	14.32
G ₃₄	KHSb-2	10.22	7.97	9.09	G ₇₉	Shivalik	13.48	9.93	11.71
G ₃₅	Lee	16.33	13.62	14.97	G ₈₀	SL 96	13.44	7.83	10.63
G ₃₆	Lsb-1	15.15	10.28	12.71	G ₈₁	SL 295	16.63	11.55	14.09
G ₃₇	MACS-13	13.10	8.98	11.04	G ₈₂	SL 525	15.18	11.15	13.16
G ₃₈	MACS-57	11.93	8.15	10.04	G ₈₃	SL 688	16.47	7.71	12.09
G ₃₉	MACS-58	15.70	10.30	13.00	G ₈₄	TAMS-38	12.63	11.56	12.10
G ₄₀	MACS-124	11.33	7.94	9.64	G ₈₅	TAMS-9821	15.16	10.90	13.03
G ₄₁	MACS-450	11.73	7.73	9.73	G ₈₆	Type-49	8.81	6.90	7.85
G ₄₂	MAUS-1	19.70	11.02	15.36	G ₈₇	VL Soya1	19.95	11.95	15.95
G ₄₃	MAUS-2	13.76	9.72	11.74	G ₈₈	VL Soya2	18.17	11.68	14.92
G ₄₄	MAUS-32	14.70	8.18	11.44	G ₈₉	VL Soya21	16.52	10.23	13.38
G ₄₅	MAUS-47	12.87	7.23	10.05	G ₉₀	VL Soya47	16.15	8.63	12.39
For comparing the means of				Mean	Mean				
				S.E.±	C.D. (P=0.01)				
S				0.01	0.04				
G				0.08	0.28				
SxG				0.11	0.39				

Sowing seasons (S) : S₁ – Kharif S₂ – Summer

Table 5 : Effect of sowing seasons on husk weight (g) in soybean genotypes

Genotypes (G)		Sowing seasons (S)			Genotypes (G)		Sowing seasons (S)		
		S ₁	S ₂	Mean			S ₁	S ₂	Mean
G ₁	ADT-1	1.07	1.08	1.08	G ₄₆	MAUS-61	2.70	1.46	2.08
G ₂	Alankar	1.74	1.63	1.68	G ₄₇	MAUS-61-2	1.30	0.87	1.09
G ₃	Ankur	1.80	1.28	1.54	G ₄₈	MAUS-71	1.88	1.36	1.62
G ₄	Birsa Soy 1	1.41	1.40	1.40	G ₄₉	MAUS-81	2.22	1.87	2.05
G ₅	Bragg	1.33	1.19	1.26	G ₅₀	Monetta	1.46	1.28	1.37
G ₆	CO1	1.74	1.18	1.46	G ₅₁	NRC-2	1.65	1.16	1.41
G ₇	CO Soya 2	2.03	1.69	1.86	G ₅₂	NRC-7	1.86	1.04	1.45
G ₈	CO3	1.76	1.18	1.47	G ₅₃	NRC-12	1.99	1.82	1.90
G ₉	Durga	1.74	1.48	1.61	G ₅₄	NRC-37	1.49	2.30	1.89
G ₁₀	DS-9712	1.87	1.59	1.73	G ₅₅	Palam Soya	1.79	1.70	1.75
G ₁₁	DS-228	1.97	3.16	2.57	G ₅₆	PK 262	2.06	1.52	1.79
G ₁₂	DSb-1	1.61	1.35	1.48	G ₅₇	PK 308	1.24	1.92	1.58
G ₁₃	DSb-8	1.54	2.03	1.79	G ₅₈	PK 327	2.60	1.50	2.05
G ₁₄	Gurav	1.10	1.01	1.06	G ₅₉	PK 416	2.75	1.48	2.12
G ₁₅	Gujarat Soybean 1	1.08	0.94	1.01	G ₆₀	PK 471	1.95	2.11	2.03
G ₁₆	Gujarat Soybean 2	2.42	2.18	2.30	G ₆₁	PK 472	2.05	1.57	1.81
G ₁₇	Hardee	1.53	1.78	1.65	G ₆₂	PS 564	2.15	1.75	1.95
G ₁₈	Hara soya	1.92	2.30	2.11	G ₆₃	PS 1024	2.39	1.21	1.80
G ₁₉	Indira soy 9	1.73	1.14	1.44	G ₆₄	PS 1029	2.20	1.60	1.90
G ₂₀	Improved pelican	2.02	1.03	1.52	G ₆₅	PS 1042	2.19	1.52	1.86
G ₂₁	JS 2	1.67	1.50	1.58	G ₆₆	PS 1092	2.14	1.87	2.01
G ₂₂	JS 71-05	1.47	1.38	1.43	G ₆₇	PS 1241	1.87	1.70	1.78
G ₂₃	JS 75-46	1.79	1.35	1.57	G ₆₈	PS 1347	2.18	1.48	1.83
G ₂₄	JS 76-205	1.35	2.53	1.94	G ₆₉	Punjab-1	1.85	1.86	1.86
G ₂₅	JS 79-81	1.24	1.88	1.56	G ₇₀	Pusa-16	1.37	1.19	1.28
G ₂₆	JS 80-21	2.12	0.89	1.51	G ₇₁	Pusa-20	1.56	1.11	1.33
G ₂₇	JS 90-41	1.44	1.32	1.38	G ₇₂	Pusa-22	0.99	1.11	1.05
G ₂₈	JS 93-05	1.52	1.83	1.67	G ₇₃	Pusa-24	1.36	1.27	1.32
G ₂₉	JS 335	1.64	2.43	2.04	G ₇₄	Pusa-37	1.76	1.39	1.58
G ₃₀	JS 95-60	1.91	2.55	2.23	G ₇₅	Pusa-40	1.98	1.25	1.62
G ₃₁	JS 97-52	1.51	1.01	1.26	G ₇₆	RAUS-5	1.37	1.38	1.38
G ₃₂	Kalitur	1.95	1.14	1.55	G ₇₇	Samrat	2.22	1.44	1.83
G ₃₃	KB-79	1.86	1.57	1.72	G ₇₈	Shilajeet	2.35	1.49	1.92
G ₃₄	KHSb-2	1.59	1.09	1.34	G ₇₉	Shivalik	2.25	1.43	1.84
G ₃₅	Lee	2.08	1.90	1.99	G ₈₀	SL 96	2.00	1.38	1.69
G ₃₆	Lsb-1	2.00	1.71	1.86	G ₈₁	SL 295	2.30	2.09	2.19
G ₃₇	MACS-13	1.92	1.54	1.73	G ₈₂	SL 525	1.98	1.70	1.84
G ₃₈	MACS-57	1.96	1.47	1.71	G ₈₃	SL 688	1.64	1.03	1.34
G ₃₉	MACS-58	1.91	1.65	1.78	G ₈₄	TAMS-38	2.00	1.63	1.81
G ₄₀	MACS-124	1.34	1.32	1.33	G ₈₅	TAMS-9821	2.22	2.18	2.20
G ₄₁	MACS-450	1.59	1.12	1.36	G ₈₆	Type-49	1.28	0.69	0.98
G ₄₂	MAUS-1	2.28	1.38	1.83	G ₈₇	VL Soya1	3.18	2.89	3.04
G ₄₃	MAUS-2	1.90	1.45	1.67	G ₈₈	VL Soya2	1.86	1.92	1.89
G ₄₄	MAUS-32	1.67	1.38	1.53	G ₈₉	VL Soya21	2.74	1.54	2.14
G ₄₅	MAUS-47	1.55	0.81	1.18	G ₉₀	VL Soya47	2.14	1.26	1.70
For comparing the means of					Mean		17.84	16.26	17.04
							C.D. (P=0.01)		
							S.E.±		
							S		
							G		
							SxG		
Sowing seasons (S) : S ₁ – Kharif							S ₂ – Summer		

Table 6 : Effect of sowing seasons on dehusk seed weight (g) in soybean genotypes

Genotypes (G)		Sowing seasons (S)			Genotypes (G)		Sowing seasons (S)		
		S ₁	S ₂	Mean			S ₁	S ₂	Mean
G ₁	ADT-1	6.52	6.25	6.39	G ₄₆	MAUS-61	11.87	5.51	8.69
G ₂	Alankar	12.40	11.70	12.05	G ₄₇	MAUS-61-2	13.66	7.12	10.39
G ₃	Ankur	10.30	9.58	9.94	G ₄₈	MAUS-71	12.60	5.86	9.23
G ₄	Birsa Soy 1	10.55	9.36	9.96	G ₄₉	MAUS-81	11.15	6.01	8.58
G ₅	Bragg	11.54	7.52	9.53	G ₅₀	Monetta	13.07	6.61	9.84
G ₆	CO1	10.92	7.74	9.33	G ₅₁	NRC-2	9.33	6.39	7.86
G ₇	CO Soya 2	13.75	10.31	12.03	G ₅₂	NRC-7	12.25	8.63	10.44
G ₈	CO3	8.53	5.67	7.10	G ₅₃	NRC-12	14.11	10.02	12.06
G ₉	Durga	7.58	8.28	7.93	G ₅₄	NRC-37	9.75	10.33	10.04
G ₁₀	DS-9712	11.07	9.73	10.40	G ₅₅	Palam Soya	13.20	7.47	10.33
G ₁₁	DS-228	13.32	6.39	9.86	G ₅₆	PK 262	10.05	5.85	7.95
G ₁₂	DSb-1	10.07	6.47	8.27	G ₅₇	PK 308	11.37	4.34	7.85
G ₁₃	DSb-8	12.02	7.80	9.91	G ₅₈	PK 327	9.77	6.07	7.92
G ₁₄	Gurav	8.02	5.94	6.98	G ₅₉	PK 416	12.03	4.90	8.47
G ₁₅	Gujarat Soybean 1	8.09	6.40	7.24	G ₆₀	PK 471	13.08	6.49	9.78
G ₁₆	Gujarat Soybean 2	12.24	7.60	9.92	G ₆₁	PK 472	10.36	7.54	8.95
G ₁₇	Hardee	11.26	7.58	9.42	G ₆₂	PS 564	10.56	8.49	9.53
G ₁₈	Hara soya	12.63	8.36	10.50	G ₆₃	PS 1024	11.92	6.59	9.26
G ₁₉	Indira soy 9	11.08	7.60	9.34	G ₆₄	PS 1029	13.80	6.53	10.16
G ₂₀	Improved pelican	10.90	5.69	8.29	G ₆₅	PS 1042	13.76	7.84	10.80
G ₂₁	JS 2	10.17	5.96	8.07	G ₆₆	PS 1092	12.88	8.45	10.66
G ₂₂	JS 71-05	12.02	6.98	9.50	G ₆₇	PS 1241	10.40	9.33	9.87
G ₂₃	JS 75-46	11.66	9.05	10.36	G ₆₈	PS 1347	13.01	8.52	10.76
G ₂₄	JS 76-205	11.64	7.75	9.70	G ₆₉	Punjab-1	8.94	10.04	9.49
G ₂₅	JS 79-81	10.50	13.43	11.97	G ₇₀	Pusa-16	9.31	5.43	7.37
G ₂₆	JS 80-21	12.11	7.00	9.55	G ₇₁	Pusa-20	11.86	4.66	8.26
G ₂₇	JS 90-41	9.93	7.13	8.53	G ₇₂	Pusa-22	10.02	5.39	7.70
G ₂₈	JS 93-05	10.52	13.84	12.18	G ₇₃	Pusa-24	10.45	6.84	8.65
G ₂₉	JS 335	11.59	12.20	11.90	G ₇₄	Pusa-37	11.64	6.73	9.18
G ₃₀	JS 95-60	11.65	11.74	11.70	G ₇₅	Pusa-40	8.92	6.12	7.52
G ₃₁	JS 97-52	8.00	4.74	6.37	G ₇₆	RAUS-5	11.50	7.09	9.29
G ₃₂	Kalitur	8.07	7.85	7.96	G ₇₇	Samrat	10.39	6.51	8.45
G ₃₃	KB-79	12.25	8.72	10.49	G ₇₈	Shilajeet	14.43	8.07	11.25
G ₃₄	KHSb-2	7.52	6.26	6.89	G ₇₉	Shivalik	9.63	7.64	8.64
G ₃₅	Lee	12.85	10.56	11.71	G ₈₀	SL 96	9.99	5.56	7.78
G ₃₆	Lsb-1	11.95	7.57	9.76	G ₈₁	SL 295	12.98	8.04	10.51
G ₃₇	MACS-13	9.94	6.44	8.19	G ₈₂	SL 525	11.99	8.43	10.21
G ₃₈	MACS-57	8.75	5.72	7.23	G ₈₃	SL 688	14.05	6.36	10.21
G ₃₉	MACS-58	12.75	7.61	10.18	G ₈₄	TAMS-38	9.31	9.06	9.19
G ₄₀	MACS-124	9.48	5.82	7.65	G ₈₅	TAMS-9821	11.50	7.13	9.32
G ₄₁	MACS-450	9.20	5.97	7.58	G ₈₆	Type-49	6.71	6.01	6.36
G ₄₂	MAUS-1	15.95	8.81	12.38	G ₈₇	VL Soya1	14.64	7.07	10.86
G ₄₃	MAUS-2	10.74	7.61	9.18	G ₈₈	VL Soya2	15.44	8.53	11.98
G ₄₄	MAUS-32	12.24	6.00	9.12	G ₈₉	VL Soya21	11.88	7.81	9.85
G ₄₅	MAUS-47	10.35	6.12	8.23	G ₉₀	VL Soya47	12.72	6.74	9.73
For comparing the means of					Mean		1.04	0.78	0.91
							C.D. (P=0.01)		
							S.E.±		
							S		
							G		
							SxG		
Sowing seasons (S) : S ₁ – Kharif		S ₂ – Summer							

Table 7 : Effect of sowing seasons on embryo weight (g) in soybean genotypes

Genotypes (G)		Sowing seasons (S)			Genotypes (G)		Sowing seasons (S)		
		S ₁	S ₂	Mean			S ₁	S ₂	Mean
G ₁	ADT-1	0.54	0.61	0.57	G ₄₆	MAUS-61	1.93	0.97	1.45
G ₂	Alankar	0.94	0.86	0.90	G ₄₇	MAUS-61-2	0.52	0.24	0.38
G ₃	Ankur	1.07	0.59	0.83	G ₄₈	MAUS-71	1.16	0.87	1.01
G ₄	Birsa Soy 1	0.62	0.56	0.59	G ₄₉	MAUS-81	1.52	1.36	1.44
G ₅	Bragg	0.57	0.66	0.62	G ₅₀	Monetta	0.65	0.67	0.66
G ₆	CO1	1.04	0.68	0.86	G ₅₁	NRC-2	0.93	0.69	0.81
G ₇	CO Soya 2	1.23	0.98	1.11	G ₅₂	NRC-7	1.09	0.36	0.73
G ₈	CO3	1.19	0.71	0.95	G ₅₃	NRC-12	1.07	1.08	1.07
G ₉	Durga	1.22	0.85	1.03	G ₅₄	NRC-37	0.90	1.50	1.20
G ₁₀	DS-9712	1.12	0.93	1.03	G ₅₅	Palam Soya	0.82	1.00	0.91
G ₁₁	DS-228	1.05	2.51	1.78	G ₅₆	PK 262	1.30	0.83	1.07
G ₁₂	DSb-1	1.00	0.86	0.93	G ₅₇	PK 308	0.56	1.50	1.03
G ₁₃	DSb-8	0.68	0.98	0.83	G ₅₈	PK 327	1.81	0.98	1.40
G ₁₄	Gurav	0.48	0.49	0.49	G ₅₉	PK 416	1.84	0.84	1.34
G ₁₅	Gujarat Soybean 1	0.43	0.34	0.39	G ₆₀	PK 471	1.19	1.54	1.37
G ₁₆	Gujarat Soybean 2	1.58	1.58	1.58	G ₆₁	PK 472	1.25	0.81	1.03
G ₁₇	Hardee	0.77	1.14	0.96	G ₆₂	PS 564	1.43	1.05	1.24
G ₁₈	Hara soya	0.97	1.68	1.32	G ₆₃	PS 1024	1.18	0.68	0.93
G ₁₉	Indira soy 9	0.93	0.58	0.76	G ₆₄	PS 1029	1.49	0.97	1.23
G ₂₀	Improved pelican	1.28	0.52	0.90	G ₆₅	PS 1042	1.33	0.89	1.11
G ₂₁	JS 2	0.85	0.97	0.91	G ₆₆	PS 1092	1.13	1.20	1.17
G ₂₂	JS 71-05	0.69	0.87	0.78	G ₆₇	PS 1241	1.26	0.99	1.13
G ₂₃	JS 75-46	1.02	0.69	0.86	G ₆₈	PS 1347	1.34	0.38	0.86
G ₂₄	JS 76-205	0.52	1.85	1.19	G ₆₉	Punjab-1	1.23	1.13	1.18
G ₂₅	JS 79-81	0.50	0.87	0.68	G ₇₀	Pusa-16	0.80	0.73	0.77
G ₂₆	JS 80-21	1.45	0.32	0.88	G ₇₁	Pusa-20	0.79	0.67	0.73
G ₂₇	JS 90-41	0.79	0.71	0.75	G ₇₂	Pusa-22	0.43	0.67	0.55
G ₂₈	JS 93-05	0.79	0.96	0.88	G ₇₃	Pusa-24	0.73	0.95	0.84
G ₂₉	JS 335	0.92	1.54	1.23	G ₇₄	Pusa-37	1.09	0.89	0.99
G ₃₀	JS 95-60	1.14	1.85	1.50	G ₇₅	Pusa-40	1.43	0.75	1.09
G ₃₁	JS 97-52	1.05	0.43	0.74	G ₇₆	RAUS-5	0.67	1.04	0.86
G ₃₂	Kalitur	1.34	0.44	0.89	G ₇₇	Samrat	1.53	0.88	1.20
G ₃₃	KB-79	1.05	0.89	0.97	G ₇₈	Shilajeet	1.44	0.86	1.15
G ₃₄	KHSb-2	1.11	0.62	0.87	G ₇₉	Shivalik	1.60	0.87	1.23
G ₃₅	Lee	1.40	1.17	1.28	G ₈₀	SL 96	1.45	0.89	1.17
G ₃₆	Lsb-1	1.19	1.00	1.10	G ₈₁	SL 295	1.35	1.43	1.39
G ₃₇	MACS-13	1.25	1.00	1.12	G ₈₂	SL 525	1.21	1.03	1.12
G ₃₈	MACS-57	1.23	0.97	1.10	G ₈₃	SL 688	0.79	0.32	0.56
G ₃₉	MACS-58	1.04	1.04	1.04	G ₈₄	TAMS-38	1.33	0.87	1.10
G ₄₀	MACS-124	0.52	0.82	0.67	G ₈₅	TAMS-9821	1.45	1.59	1.52
G ₄₁	MACS-450	0.94	0.65	0.79	G ₈₆	Type-49	0.82	0.21	0.51
G ₄₂	MAUS-1	1.47	0.83	1.15	G ₈₇	VL Soya1	2.13	1.99	2.06
G ₄₃	MAUS-2	1.13	0.66	0.89	G ₈₈	VL Soya2	0.88	1.23	1.06
G ₄₄	MAUS-32	0.80	0.81	0.80	G ₈₉	VL Soya21	1.90	0.89	1.39
G ₄₅	MAUS-47	0.96	0.30	0.63	G ₉₀	VL Soya47	1.29	0.63	0.96
For comparing the means of					Mean	1.09 0.92 1.00			
					S.E.±	C.D. (P=0.01)			
S						0.01			
G						0.04			
SxG						0.06			
Sowing seasons (S) : S ₁ – Kharif					S ₂ – Summer				

(S1G1) and better performance by recording higher values for the various seed quantitative parameters as against those genotypes sown in summer season. The genotypes VL Soya 1 (G87) (19.95 g), Durga (G9) (1.37 cm) and MAUS-1(G42) (15.95 g) sown in *Kharif* season have consistently recorded more hundred seed weight, seed length, dehusk seed weight etc. over the genotypes JS-9305 (G28) (16.63g), soybean 2 (G16) and JS-9305 (G28) (13.84 g) sown in summer season, respectively. The marked variations noticed in the seed quantitative parameters amongst the genotypes and sowing seasons interaction may be related to differential response of genotypes to the dynamic changes in the agroclimatic conditions under different sowing seasons of *Kharif* and summer. These results are in agreement with those of Sharma *et al.* (1991) green gram, Mohanrao (1993) in soybean, Dixit *et al.* (1993), Kharag *et al.* (1997), Singh *et al.* (1997), Merwade (2000) and Gnyandev (2009) in chickpea, Henshaw (2008) in cowpea.

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