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Effect of Planting Dates on the Seed Weight and Seed Yield of Various Varieties of Gram

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Abstract: Investigation was conducted at Northern part of Sindh Province, Dokri, to evaluate the productivity of gram varieties under different sowing dates during 1997-98. The treatments studied were five sowing dates; 15th October, 30th October, 15th November, 30th November and 15th December and four varieties; DG-92, Chhola, DG-89 and Sanyasi. Results revealed highly significant influence on seed weight and seed yield due to planting dates and varieties. The maximum 1000 seed weight (224.83g) and seed yield (2320 kg ha⁻¹) was recorded on 15th November planted crop followed by 30th October. Variety DG-92 responded higher 1000 seed weight (263.93g) and seed yield (2173.60 kg ha⁻¹) followed by DG-89 and Chhola. Among the interactions, the data demonstrated highly significant influence for seed yield per hectare. However, the highest 1000 seed weight (274.33g) and seed yield (3333.33 kg ha⁻¹) was recorded under the interaction of DG-92 x 15th November. It is suggested that early sown DG-92 gram crop on 15th November produces satisfactory seed yield compared to late sown crop during the month of December, thus, for the Northern part of Sindh, the gram cultivation should be performed up to the Mid-November.

Key words: Gram, varieties, sowing dates, seed yield

Introduction

Pulses are considered an excellent and economical source of plant protein and also known as the poor man's meat in the developing world. Among pulses, gram is very important source of protein in Pakistan and used in different ways. Gram can thrive where inputs are inadequate and environment harsh. Gram is grown in winter and planting time ranges from mid October to end of November in different parts of Pakistan. Delay in sowing affects yield of gram crop by affecting its growth and life cycle. Grag (1990) reported higher yield was taken from the crop, which was early sown on 5th October. Afzal *et al.* (1991) observed that late sowing of November sowing decreased seed yield. Nanda and Saini (1992) and Brar *et al.* (1993) also observed that seed yield decreased as sowing date was delayed from mid October to late December. However, Dixit *et al.* (1993) reported that seed yield increased with sowing upto 16th November and then decreased to its lowest value with sowing on 28th December. Keeping in view the above facts, this study was undertaken to evaluate the performance of gram varieties under various sowing dates.

Materials and Methods

The study was conducted at Northern part of Sindh, Dokri, to evaluate the productivity of gram varieties as affected by different sowing dates. The 5x4 factorial experiment was conducted using Randomized Complete Block Design with split plot arrangements having three replications and plot size of 25m². The details of treatments in as under:

Main plots =	Sowing dates
	S1 = 15 th October
	S2 = 30 th October
	S3 = 15 th November
	S4 = 30 th November
	S5 = 15 th December
Sub plots =	Varieties
	V1 = DG-89
	V2 = Chhola
	V3 = DG-92
	V4 = Sanyasi

The crop was harvested on 5th of April by manual method using sickle. A net plot of 24.56 m² was harvested and bundled

separately dried, threshed, cleaned, weighed and grain yield was calculated on the basis of grain yield per plot. A sample of 1000 seeds were counted and weighed to record seed weight. The collected data was statistically analysed according to the method adopted by Gomez and Gomez (1984).

Results and Discussion

Seed weight has the direct effect on final yield per plant. Data on seed index of the gram varieties as affected by different sowing dates are presented in Table 1. The statistical analysis of data showed that 1000 seed weight was significantly affected by the sowing dates. Differences among seed weights of the varieties were significant. However, interactions between the dates of sowing and varieties were not significant. Gram crop sown on 15th November produced significantly (maximum of 224.83g, 1000 seed weight) followed by 222.00 and 217.17g seed weight, which were produced by crop planted on 30th October and 15th October, respectively. Whereas, the minimum seed weight value of 209.67g was noted in case of 15th December sowing. This greater 1000 seed weight value of 15th November sown crop was mainly because of appropriate sowing time of gram crop. In case of varieties, the maximum seed weight value of 263.93g was produced by gram variety DG-92, followed by 226.73 and 207.13g seed weight, produced by varieties DG-89 and Chhola, respectively. The minimum seed weight of 172.00g was produced by variety Sanyasi. The difference in seed weight of the varieties might be due to the results of genetical characteristics of these varieties under particular climatic conditions. These results are further supported by the findings of Gill *et al.* (1993). Maximum seed yield of 2320.00 Kg ha⁻¹ was obtained from 15th November sowing, followed by 1860.67 Kg ha⁻¹ from 30th October sowings and 1643.35 Kg ha⁻¹ from 15th October sowings. Whereas, the lowest seed yield of 1159.33 Kg ha⁻¹ was obtained when gram crop was planted on 15th December (Table 2). The comparison of gram varieties revealed that DG-92 produced significantly maximum seed yield of 2173.60 Kg ha⁻¹, followed by DG-89 which produced 1808 Kg ha⁻¹ (Table 2). The lowest yield of 1134.13 Kg ha⁻¹ was produced by variety Sanyasi. Variation in yield might be due to the genetical character. The results further revealed that the maximum seed yield 3333.33 Kg ha⁻¹ was produced by the treatment interaction between variety DG-92 x 15th November sowing, followed by 2613.33 and 2586.67 Kg ha⁻¹ with DG-89 x 15th November and DG-92 x 15th October sowings, respectively. The minimum seed yield 784

Kazi *et al.*: Gram, varieties, sowing dates, seed yield

Table 1: Mean 1000 seed weight of gram varieties as affected by various sowing dates during 1997-98

Sowing dates	Varieties				Mean
	DG-89	Chhola	DG-92	Sanyasi	
15 th Oct.	264.00	215.33	261.00	168.33	217.17ab
30 th Oct.	235.00	208.67	264.33	180.00	222.00ab
15 th Nov.	235.00	215.00	274.33	175.00	224.83a
30 th Nov.	221.67	197.67	265.00	170.00	213.58ab
15 th Dec.	218.00	199.00	255.00	166.67	209.67b
Mean	226.73b	207.13c	263.93a	172.00d	-
	Sowing dates (S)		Varieties (V)		S x V
S.E.	01.471		01.645		1.2743
Cd1	12.920		12.920		-
Cd2	21.240		21.240		-

Table 2: Mean seed yield (Kg ha⁻¹) of various gram varieties as affected by different sowing dates, during 1997-98.

Sowing dates	Varieties				Mean
	DG-89	Chhola	DG-92	Sanyasi	
15 th Oct.	1346.67	1733.33	2586.67	906.67	1643.33bc
30 th Oct.	2200.00	1701.33	2014.67	1526.67	1860.67ab
15 th Nov.	2613.33	2213.33	3333.33	1120.00	2320.00a
30 th Nov.	1640.00	1293.33	1533.33	1333.33	1450.00bc
15 th Dec.	1240.00	1213.33	1400.00	784.00	1159.33c
Mean	1808.00ab	1630.93ba	2173.60a	1134.13c	-
	Sowing dates (S)		Varieties (V)		S x V
S.E.	058.158		065.023		050.366
Cd1	510.600		510.600		040.700
Cd2	746.800		846.800		561.800

Kg ha⁻¹ were obtained by variety Sanyasi x 15th December sowing (Table 2). The results argue that the first fortnight of November proved to be the appropriate sowing time of gram varieties under local conditions of Dokri. These results are further supported by the findings of Dixit *et al.* (1993) and Nanda and Saini (1992). They all were of the opinion that late October or early November sowing of gram produces higher seed yield. It is concluded that gram varieties DG-92 and DG-89 exhibited outstanding yield performance under agro-climatic conditions of Dokri when sown on first fortnight of November.

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