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EFFECT ON THE AMOUNT OF WATER REQUIRED FOR PRESOAKING IN GREEN GRAM, RED GRAM

Sakdeo Babita Marutirao

Department of Botany ,

Shardabai Pawar Mahila Mahavidhalaya, Shardanagar , Tal.Baramati, Dist . Pune.



Sakdeo Babita
Marutirao

ABSTRACT

Seed pretreatments with water needs standardization in each case for the appropriate concentration and application, amount of soaking solutions, soaking dilutions etc. In the present investigations effects of presoaking of seeds of most important crops of the region green gram, Red gram, were studied for

determining the amount of water required for soaking on percentage germination and seedling growth in terms of shoot and root lengths and dry weight distribution.

KEYWORDS: presoaking, pretreatments, amount of water, soaking, percentage germination, seedling growth, Green gram, Red gram.



INTRODUCTION

Presoaking of the seed is described as a treatment preliminary to sowing during which seeds are moistened and dried back (once or a number of times) to activate certain physiological and biochemical processes which will enhance the seedling growth and final productivity (Henckel, 1964; Heydecker, 1973; Saxena, 1985). The results on presowing treatment in different seeds have shown that all the

beneficial effects are not included to the same degree in all the seeds. Different seeds behave differently with respect to number of pretreatment cycles, percent moisture and duration of soaking and these in turn affect greatly the physiological performance of the pretreated seed as compared to untreated control (Saxena, 1981).

MATERIAL & METHOD

Seeds of 2 crops, green gram (cv. Kopergaon) and red gram (local) were studied in this investigation. In each experiment the seeds were divided into 2 lots:

EFFECT ON THE AMOUNT OF WATER REQUIRED FOR PRESOAKING IN GREEN GRAM, RED GRAM

Lot A] was soaked in water

Lot B] was air dried for 24 hours at room temperature and then soaked in water.

In this experiment seeds of Green gram, Red grams were taken from experiment at their optimum soaking period 6 h, 5 h respectively. One gm of seeds was then kept in 50, 100, 150 and 200 ml water. As before, lot A was taken as presoaked seeds before air drying and lot B after air drying.

OBSERVATION

Table 1(a) - Effect of amount of water on % germination, root length, Shoot length and leaf of Green gram.

Amount Water (ml)	% Germination	ROOT			SHOOT			LEAF	
		LN	FW	DW	LN	FW	DW	FW	DW
50	76.67	7.80	123.7	26.00	10.60	114.3	13.00	110.3	18.00
100	100.0	8.20	121.7	30.33	19.47	128.0	23.00	128.7	21.00
150	86.67	7.50	120.7	24.00	17.47	121.0	21.00	112.0	20.33
200	76.67	7.33	113.0	22.00	16.47	118.0	21.67	110.3	20.00
S.E.	4.08	0.35	0.40	0.15	0.83	1.01	0.56	0.53	0.57
C.D. (P = 0.05)	9.40	0.80	0.92	0.34	1.91	2.32	1.29	1.22	1.29

LN - Length, FW- Fresh weight, DW - Dry weight.

Table 1(b) - Effect of amount of water on % germination, root length, Shoot length and leaf of Green gram after air drying.

Amount Water (ml)	% Germination	ROOT			SHOOT			LEAF	
		LN	FW	DW	LN	FW	DW	FW	DW
50	73.33	8.03	115.0	21.00	13.03	108.0	21.00	106.7	13.00
100	100.0	10.30	118.0	27.33	13.30	124.3	28.67	112.3	15.67
150	86.67	8.67	106.3	23.33	12.60	126.7	26.33	105.3	16.67
200	76.67	8.03	101.3	21.33	11.63	108.0	24.00	107.0	11.33
S.E.	1.11	0.15	0.30	1.33	0.02	1.34	0.48	0.63	0.56
C.D. (P = 0.05)	2.55	0.34	0.69	3.06	0.04	3.09	1.10	1.45	1.29

LN - Length, FW- Fresh weight, DW- Dry weight.

Table 2 (a) - Effect of amount of water on % germination, root length, Shoot length and leaf of Red gram.

Amount Water (ml)	of	% Germination	ROOT			SHOOT			LEAF	
			LN	FW	DW	LN	FW	DW	FW	DW
50		76.67	8.73	114.3	21.67	7.53	108.3	21.00	108.3	15.00
100		100.00	9.73	117.3	26.00	9.20	117.0	26.00	113.3	23.67
150		83.33	9.57	112.0	25.33	6.20	114.3	21.33	108.7	20.67
200		76.67	9.47	115.0	88.33	5.47	110.7	19.67	106.7	20.00
S.E.		2.19	0.42	0.58	3.11	0.03	0.65	40.52	0.14	0.56
C.D. (P = 0.05)		5.05	0.96	1.33	7.17	0.06	1.49	93.43	0.92	1.29

LN - Length, FW- Fresh weight, DW - Dry weight.

Table 2 (b) - Effect of amount of water on % germination, root length, Shoot length and leaf of Red gram after air drying.

Amount Water (ml)	of	% Germination	ROOT			SHOOT			LEAF	
			LN	FW	DW	LN	FW	DW	FW	DW
50		90.00	8.60	115.0	21.00	8.13	120.0	21.00	108.3	21.33
100		100.0	8.70	117.3	25.67	8.67	124.3	26.00	106.7	26.00
150		83.33	6.40	115.7	23.33	8.00	121.0	20.67	105.7	20.33
200		73.33	4.13	108.0	20.67	7.27	120.3	13.67	104.3	20.00
S.E.		3.83	3.90	0.10	0.25	0.48	0.03	0.50	3.83	1.19
C.D. (P = 0.05)		8.83	8.99	0.23	0.57	1.10	0.06	1.15	8.83	2.74

RESULT & DISCUSSION

The results on Green gram are included in Tables 1a and 1b. Here again 100 ml water used for soaking 1 gm of Green gram seeds gave the best result; at this water level, 100% germination was recorded and root length reached 10.3 cms in lot B and 8.2 cms in lot A. The maximum shoot length was 19.5 cms in lot A and 13.3 cms in lot B. The maximum dry weight was always recorded in shoots in lot B and roots in lot A.

The results obtained on Red gram are included in Tables 2a and 2b. Seeds soaked for 4 hrs before and after air drying respectively. As in the other seeds, keeping 1 gm of Red gram : seeds in 100 ml water gave the best result. The maximum root length (9.73 cms) and shoot length (9.20 cms) were recorded in lot A. The difference in dry weight yield at 100 ml seed immersion level in both lot A and B was statistically insignificant.

CONCLUSION

From the results obtained in this experiment it can be concluded that for Green gram and Red gram seeds removed at the optimum presoaking period was 4h and 4h respectively. 1 gm seed should be kept in 100 ml distilled water to get the best result for % germination and seedling growth. 1 gm seeds taken at the optimum soaking period and keeping them in 100 ml water gives the best result.

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