Vol 5 Issue 5 Nov 2015

ISSN No :2231-5063

International Multidisciplinary Research Journal

Golden Research Thoughts

Welcome to GRT

RNI MAHMUL/2011/38595 **ISSN No.2231-5063**

Golden Research Thoughts Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board.Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.oldgrt.lbp.world

Golden Research Thoughts
ISSN 2231-5063

Impact Factor : 3.4052(UIF)
Volume - 5 | Issue - 5 | Nov - 2015

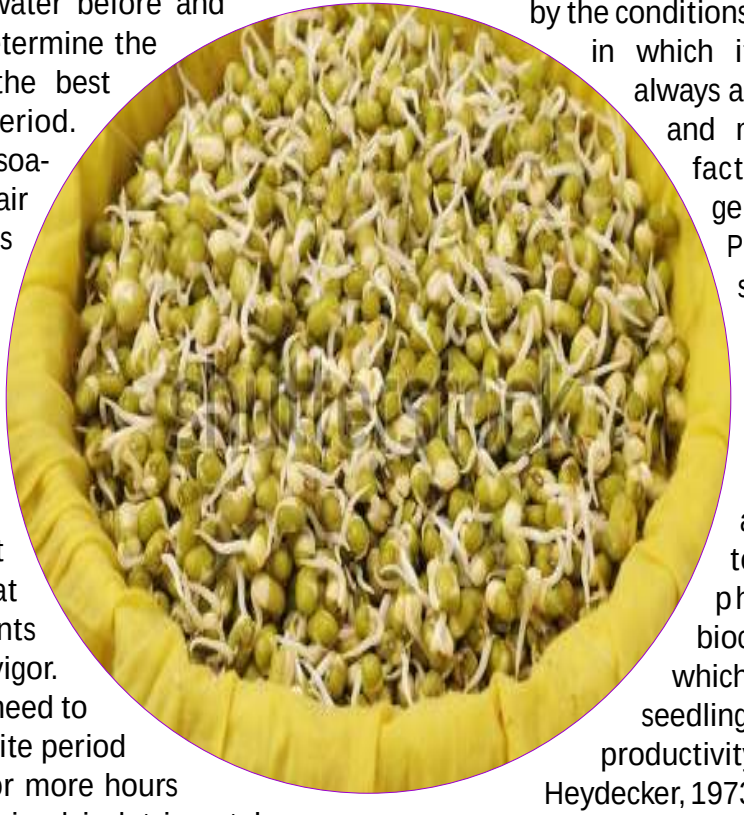
EFFECT OF DIFFERENT OPTIMUM TIME OF PRESOAKING FOR MAXIMUM GERMINATION IN GREEN GRAM & RED GRAM.

Sakdeo Babita Marutirao
Department of Botany , Shardabai Pawar Mahila College,
Affiliated to Savitribai Phule Pune University,
Shardanagar , Tal.Baramati, Dist . Pune.


Sakdeo Babita Marutirao

ABSTRACT:

The experiment were carried out to determine optimum time of presoaking for maximum germination in green gram, Red gram. Physiochemical process is affected by the conditions of the environment in which it occurs. There is always a minimum optimum and maximum for each factor in relation to germination. In this experiment seeds 1 gm each time, were presoaked in 5 ml water before and after air drying to determine the water uptake and the best soaking duration period. The seeds were presoaked before and after air drying for periods from o to 24 hours. The beneficial effects of growth through the presoaking technique have been observed. The data presented in this experiment clearly indicate that presoaking treatme- nts enhance the plant vigor. How ever, the seeds need to be soaked for a definite period of time. Soaking for more hours than optimum determined, is detrimental as found in present experiments.



KEY WORDS:
optimum time , presoaking, germination, green gram, Red gram.

INTRODUCTION:

Evenari (1961) identifies germination as the sum of all the physiological processes occurring inside the seed, which start with the imbibitions of water and end with t h e protrusion of the embryonic root.Germination, like any other physiochemical process, is affected by the conditions of the environment in which it occurs. There is always a minimum optimum and maximum for each factor in relation to germination.

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).

In India presoaking method was first tried by Chinoy (1947) in wheat, and Parija (1953) in the rice. The process involved a single soaking in

water for about 24 h (30% moisture by weight) at 10 to 250C and drying back to the original weight. Modifications were suggested in repeated cycles of :soaking and drying.

In the present investigations effects of presoaking of seeds of green gram, Red gram were studied for determining the optimum soaking period,

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 :

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 1 gm each time, were presoaked in 5 ml water before and after air drying to determine the water uptake and the best soaking duration period. The seeds were presoaked before and after air drying for periods from o to 24 hours. The seeds were then rolled in filter paper and % germination root length, shoot length, were measured after 5 days. The fresh weight of root, shoot and leaf were determined. The samples were then kept in an oven at 60oC' for 24 hrs for the determination of dry weight.

OBSERVATIONS-

Table 1 (a) -Effect of duration of presoaking of green gram on % germination, root length, shoot length and leaf.

Duration of soaking (Hrs)	% Germi-nation	ROOT			SHOOT			LEAF	
		LN	FW	DW	LN	FW	DW	FW	DW
0	76.67	7.20	113.0	18.67	8.67	111.0	16.67	111.3	22.33
1	90.00	7.23	121.7	21.33	8.87	113.3	18.00	123.0	26.00
2	86.67	7.73	213.7	24.00	10.13	117.0	20.00	125.0	27.33
3	100.00	9.73	215.3	24.33	11.73	118.0	22.00	127.0	26.00
4	100.0	10.47	217.3	25.33	11.63	120.3	25.00	127.0	22.67
5	100.00	10.20	215.0	27.33	11.73	152.3	25.00	126.7	21.67
6	86.67	10.27	110.7	23.67	10.70	117.0	26.00	101.7	36.67
7	70.00	9.93	113.0	21.67	8.80	118.0	27.33	102.0	19.33
8	66.67	7.47	114.3	18.00	8.73	117.0	26.33	96.67	17.67
9	63.33	7.27	116.0	17.67	8.17	108.7	24.67	83.33	13.33
10	60.00	1.53	110.7	15.67	5.07	96.67	20.33	77.33	9.00
24	43.33	0.53	112.7	21.33	2.07	103.7	14.33	113.0	11.00
S.E. C.D. (P=0.05)	1.55 3.21	0.01 0.02	0.63 1.30	0.45 0.93	0.02 0.04	0.36 0.74	0.58 1.20	7.16 14.84	0.45 0.93

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

Table 1(b) -Effect of duration of presoaking of green gram after air drying on % germination, root length, shoot length and leaf.

Duration of soaking (Hrs)	% Germi-nation	ROOT			SHOOT			LEAF	
		LN	FW	DW	LN	FW	DW	FW	DW
0	86.67	10.13	110.3	12.00	12.20	112.3	12.00	110.7	10.00
1	86.67	10.47	211.0	14.67	15.03	130.3	16.00	112.3	11.33
2	86.67	11.23	178.7	15.33	16.20	140.7	14.33	111.3	12.67
3	86.67	11.77	141.0	40.67	16.33	224.7	41.67	110.3	15.00
4	100.00	11.27	196.3	43.00	17.87	223.7	42.00	107.3	17.00
5	100.00	12.87	181.0	44.00	17.93	226.0	40.33	114.7	18.33
6	86.67	5.50	110.3	34.33	10.17	141.0	35.33	111.3	13.00
7	80.00	5.27	121.0	21.67	10.07	123.3	24.67	106.0	11.67
8	76.67	5.23	110.7	21.67	7.03	84.03	21.67	106.0	9.00
9	76.67	5.07	110.7	19.00	9.73	120.0	19.00	105.7	8.67
10	73.33	4.20	102.3	15.67	8.73	113.0	17.67	101.7	8.00
24	73.33	7.13	111.7	18.33	8.53	113.0	17.33	76.67	16.00
S.D. C.D. (P=0.05)	4.04 8.37	0.02 0.04	8.14 16.88	2.01 4.16	0.03 0.06	0.53 1.09	0.55 1.14	0.69 1.43	0.45 0.93

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

Table 2(a) - Effect of duration of presoaking of red gram on % germination, root length, shoot length and leaf.

Duration of soaking (Hrs)	% Germi-nation	ROOT			SHOOT			LEAF	
		LN	FW	DW	LN	FW	DW	FW	DW
0	53.33	0.73	115.0	25.00	2.33	108.7	17.00	116.0	11.33
1	53.33	3.73	118.0	27.00	2.53	103.0	18.00	118.7	13.33
2	70.00	3.83	120.7	28.67	2.67	105.0	19.33	119.3	16.00
3	100.0	4.40	129.0	34.00	3.90	110.3	25.00	129.0	21.00
4	100.0	4.47	131.0	37.67	4.43	116.7	29.00	142.0	29.00
5	90.00	4.37	130.7	35.67	4.03	108.3	29.33	140.7	29.00
6	66.67	4.33	127.0	25.00	3.93	104.0	27.00	136.0	27.33
7	30.00	4.00	124.7	23.33	3.57	102.7	25.67	528.0	24.67
8	26.67	3.27	121.3	21.33	3.07	101.7	28.00	130.7	21.67
9	13.33	2.17	118.7	19.33	2.40	97.67	21.00	130.3	19.00
10	66.67	0.80	113.7	18.33	1.23	107.7	14.00	102.7	11.67
24	73.33	0.90	119.0	21.00	1.23	109.3	16.33	104.3	13.33
S.E. C.D. (P=0.05)	3.05 6.32	0.02 0.04	0.55 1.14	0.46 0.95	6.39 13.25	8.02 16.63	7.59 15.74	11.23 23.29	2.76 5.72

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

Table 2 (b) - Effect of duration of presoaking of red gram on % germination, root length, shoot length and leaf after air drying.

Duration of soaking (Hrs)	% Germi-nation	ROOT			SHOOT			LEAF	
		LN	FW	DW	LN	FW	DW	FW	DW
0	80.00	0.97	123.3	22.67	2.5	112.3	19.00	107.7	16.00
1	86.67	1.17	124.7	24.33	3.1	115.0	21.00	109.3	18.00
2	90.00	2.67	128.7	31.00	4.9	118.0	23.00	115.0	21.00
3	96.67	2.70	136.0	41.00	7.8	126.0	30.33	123.7	27.33
4	86.67	2.47	134.3	40.33	7.5	121.3	30.33	121.0	21.00
5	76.67	2.33	130.7	39.33	7.1	118.0	30.33	120.3	24.00
6	66.67	2.33	129.3	35.67	6.2	127.0	28.67	117.0	21.00
7	66.67	2.17	126.7	31.33	6.1	126.7	26.67	112.7	21.00
8	53.33	2.10	124.7	29.67	6.0	120.7	25.67	112.0	20.33
9	23.33	1.60	120.7	27.33	5.2	114.7	23.33	109.0	18.00
10	100.00	3.97	125.3	31.00	3.67	108.7	21.33	122.7	18.00
24	70.00	0.90	110.0	20.10	4.00	110.0	20.00	109.0	10.00
S.E. C.D. (P=0.05)	1.77 3.67	0.03 0.06	0.80 1.65	0.43 0.89	0.11 0.22	2.29 4.74	0.28 0.58	0.66 1.36	0.27 0.55

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

RESULT& DISSCUSION

Of all the 2 crops studied in this investigation, green gram gave the best results. It is interesting to note that 100% germination was possible in seeds soaked before and after air drying for a period of 4 to 5 hrs. The seeds soaked in water for 4 hrs gave slightly better results than those soaked for 5 hrs (Tables 1a and 1b). At 4 hrs, the root Length was as high as 10.47 cms and shoot length 11.6 cms in lot (A) and 11.27 cm and 17.87 in lot (B) respectively.The percent germination in green gram seeds soaked for 24 hour after air drying was as high as 73 (Table 1b). The dry weights in lot (A) and lot (B) for root, shoot and leaf in Seeds soaked for 5 hrs were 27.3 and 47.0, 25.0 and 40.3 and 21.67 and 18.33 respectively. These data show that the percent dry weight in both roots and shoots increased significantly when seeds were kept for germination after air drying.

From 97 to 100% germination was recorded in seeds of red gram soaked in water for 4 hrs (Tables 2a and 2b).The best results were obtained when seeds were air dried and then soaked in water for 4 or 3 hrs and then kept for germination. The root length and shoot length increased steadily with hourly soaking in both lots A and B and similar trend was visible with regard to the shoot length. The dry weight of the root was always found to be significantly higher in both lots A and B than the shoot length. The dry weight of the leaf increased in both the lots with increase in the soaking period from 0 to 5 hrs.

CONCLUSION

The present study and the available literature reviewed in the paper lead to the conclusion that, the effects of growth through the presoaking technique is beneficial .The data presented in this experiment clearly indicate that presoaking treatments enhance the plant vigor. However, the seeds need to be soaked for a definite period of time. Soaking for more hours than optimum determined, is

detrimental as found in present experiments.

REFERENCES

1.Aralkar-Tiwari, S. Ph.D. Thesis "Productivity of LPC from green foliage".Dr.B.A.M. University, Aurangabad. 1996: 25-26
2.Bewley,JD,M.Black, "Physiology and Biochemistry of Seeds in Relation to Germination." Springer-Verlag, Berlin. 1982:2-3
3.Chinoy,JJ, PG, Abraham , RB Pandya , OP Saxena, IC Dave. "Current Advances in Plant physiology". Indian J. Plant Physiol. 1970: 40-41
4.Dubash, PJ, RNJoshi,. " Cottonseed and its Byproducts."Proc. of the Symp. held at Hyderabad. Regional Res. Lab. Publication, Hyderabad. 1959:1-2
5.Harrington, JE, "Panel discussion on presowing seed treatments.". Seed Ecology , Butterworths, London. 1973: 525-526.
6.Joshi, RN. "M.Sc. Dissertation" University of Bombay. 1959:45-48
7.Joshi, RN J. Indian Bot. Soc., Platinum Jubilee Vol. 74(A) 1995: 357-358
8.Joshi, RN " Botany towards 2000 A.D." Conference in Nagpur. 1995: 253-254.
9.Joshi, RN, S Aralkar-Tiwari, Abstracts of the XVI International Vitamin A Consultative Group Committee Meeting, Chiang Rai, Thailand. IVACG Secretariat, Washington . 1994:10-11
10.Malik,C.P., P.Single, R.,Setia, , Setia, N.. "Hormonal control of Plant Growth and Development." , Agro-Botanical Publications, Bikaner1987: 371-416
11.Mayer, AM Poljakoff-Mayber "The Germination of Seeds." 2nd ed . Pergamon Press, Oxford. 1975:2-3
12.Pathak, S. Ph.D. Thesis, "Effect of Bioenzymes in vitro culture of some economic important plant " Dr. B.A.M. University, Aurangabad. 1994:57-58
13.Sachs,J.. "Physiology of Plants."Oxford (English translation published in 1882). 1887:2-3
14.Sankhla, N."Recent Advances in Plant Growth Regulator Research" Proc. National Seminar Abst. 5. 1988:5-6
15.Saxena,OP "Widening Horizons of Plant Sciences". CP Malik, (Ed.) Cosmo Publications, New Delhi. 9,1985: 199-216.
16.Schopfer, P,"Phytochrome control of enzymes."Ann. Rev. Plant Physiol. 28 1977: 223-224.
17.Senebier, J. H.Smith ,"Phytochrome and Phytomorphogenesis." McGraw Hill, London. 1788:2-3
18.Sreenivasan, E. Ph.D. Thesis, "Tissue studies in some legume". Dr. B.A.M. University, Aurangabad, 1994:28-29
19.Sreenivasan, E. RN Joshi "Recent Advances in Biotechnological Applications of Plant Tissue & Cell Culture."C.F.T.R.I., Mysore Publications. Proc. of All India Symp . 1995:5-6

Publish Research Article
International Level Multidisciplinary Research Journal
For All Subjects

Dear Sir/Mam,

We invite unpublished Research Paper,Summary of Research Project,Theses,Books and Book Review for publication,you will be pleased to know that our journals are

Associated and Indexed,India

- International Scientific Journal Consortium
- OPEN J-GATE

Associated and Indexed,USA

- EBSCO
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Databse
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database
- Directory Of Research Journal Indexing

Golden Research Thoughts
258/34 Raviwar Peth Solapur-413005,Maharashtra
Contact-9595359435
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com
Website : www.oldgrt.lbp.world