

EFFECT OF SEED SIZE ON SEED YIELD AND ITS ATTRIBUTES IN SOYBEAN (*Glycine max* (L.) MERRIL)

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Studies conducted to compare 15/64", 14/64" and 13/64" retained seeds against ungraded bulk on the performance of the resultant crop indicated that the crop raised from 14/64" retained seed recorded significantly higher values for number of pods, seeds and seed yield per plant, number of pods with double locule, pod and seed yield per plant and shelling percentage than those retained by 15/64" and 13/64" sieves as well as ungraded bulk seed.

Seed size is one of the major factors that decides seed quality. Seed size indicates the quantity of reserve food available for the emerging seedling. Small and shrivelled seeds do not contain as much stored food to give the young plants a vigorous start as the bold and plump ones. The effect of size of seed upon the subsequent growth and ultimate yield of the plant was examined by Hays as early as 1893. Evidences of seed size effect on the various aspects of plant growth has been reported by many workers for a number of crop species of economic importance. However, the available reports are conflicting regarding the relationship between seed size and growth and yield of the resultant crops. In the present study an attempt has been made to study the effect of seed size on growth and production potential of the resulting crop in soybean cv. CO 1.

MATERIALS AND METHODS

A field trial was carried out during June 1984. The details of the experiment are as follows :

1. Design : Randomised Block Design
2. Replications : Five
3. Treatments : T₁ - 15/64" retained seed (large)
T₂ - 14/64" retained seed (medium)
T₃ - 13/64" retained seed (small)
T₄ - Ungraded bulk seed (control)
4. Plot size : 5m x 3m
5. Variety : CO 1
6. Spacing : 30 cm x 10 cm
7. Fertilizer : N : P : K
(kg/ha) 40 : 80 : 40

The following observations were recorded in respect to the produce obtained from ten randomly selected plants in each replication of each treatment.

1. Number of pods per plant
2. Pods with single locule
3. Pods with double locule
4. Pods with triple locule

Table 1: Influence of seed size treatments on the seed yield and its attributes in soybean cv. CO 1.

Parameters	Seed size treatments				SE(d)	CD
	T ₁	T ₂	T ₃	T ₄		
Number of pods per plant	35.62	39.44	24.86	33.16	4.20	9.15*
Pods with single locule	4.78	4.78	3.48	5.52	—	NS
Pods with double locule	26.78	29.24	17.64	24.50	3.59	7.83*
Pods with triple locule	4.04	5.42	3.74	3.88	—	NS
Seed yield per plant (g)	5.47	6.27	4.43	4.97	0.43	0.94**
Shelling percentage	51.26 (45.73)	57.32 (49.22)	45.87 (42.65)	47.77 (43.74)	1.17	2.55**
Number of seeds per plant	70.60	76.00	48.00	64.00	7.33	15.97*
Pod yield per plot (kg)	2.037	2.084	1.981	2.145	0.15	0.32**
Seed yield per plot (kg)	1.044	1.187	0.948	0.984	0.08	0.18**

(Figures in parentheses are arcsine values)

5. Seed yield per plant
6. Shelling outturn
7. Mean number of seeds per plant
8. Pod yield per plot
9. Seed yield per plot

RESULTS AND DISCUSSIONS

The differences in the number of pods per plant, number of pods with double locule and seed yield per plant were significant due to seed size (Table 1). Medium size (T₂) seed recorded the highest seed yield. Smith and Camper (1975) and Chekhov (1979) in soybean have reported positive relationship between seed size and seed yield. The medium size (14/64"R) seed could

have contributed for increased yields through total number of pods per plant, number of pods with double locule and number of seeds per plant. Number of pods per plant Vadivelu and Ramakrishnan, 1983; and Ponnu-swamy, 1975); number of seeds per plant (Dhillon *et al.*, 1977; and Vadivelu and Ramakrishnan, 1983) have contributed towards increase in seed yield.

In the present study, shelling outturn was more in medium size seed. Similar results were reported by Paul (1976) in cowpea. Significant differences were also observed for seed recovery due to seed size. The recovery percentage of small seeds was minimum in T₁ and maximum in T₂. This may be due to the

production of more of immature and shrivelled seeds by the plants raised from small seeds. Similar results were reported by Paul (1976) in cowpea. "The large seed produced a higher percentage of large size seeds" as reported by Taylor (1928) holds good in the present study also.

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REFERENCES

- CHEKHOV, I. K. 1979. The influence of size and density of soybean seeds on their sowing quality and yield. *Sibirskij Vestnik Sel'skikhozyaistvennoi Nauki*, 54 (6): 69-73.
- DHILLON, G. S., D. S. KLER and A. S. WALIA, 1977. Effect of seed size on the growth yield and quality of mung bean (*Vigna aurea* var. ML. 1) *Seed Res.* 5: 37-43.
- PAUL, S. R. 1976. Studies on the influence of seed size on the seed quality, crop growth, yield and storability in cowpea (*Vigna sinensis* (L.) Savi). M.Sc. (Ag.). Thesis Tamil Nadu Agricultural University, Coimbatore-3.
- PONNUSWAMY, A. S. 1975. Influence of seed size on seed quality, Crop growth and yield in groundnut (*Arachis hypogaea* L.). M.Sc. (Ag.) Thesis, TNAU, Coimbatore-3.
- SMITH, T. J. and H. M. CAMPER. 1975. Effect of seed size on soybean performance. *Agron J.* 67: 681-685.
- TAYLOR, J. W., 1928. Effect of the continuous selection of large and small wheat seed on yield, bushel weight, varietal purity and loose smut infection. *J. Am. Soc. Agron.* 20: 856-867.
- VADIVELU, K. K. and V. RAMAKRISHNAN, 1983. Effect of seed size on quality attributes and yield of seeds in bengal gram (*Cicer arietinum* L.) *Seed Res.* 11(2): 177-181.