Asian Journal of Plant Sciences

ISSN 1682-3974

science alert

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Asian Journal of Plant Sciences
Volume 1 Number 6: 636-637, 2002

Seed Yield Performance of Radish Depending on Steckling Size under the Sub-tropical Conditions of Azad Kashmir

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Abstract: The effect of different stecklings size (22.5, 3.0 and 33.75 cm) on the seeds production of radish under sub- tropical climate of Azad Kashmir were studies. It was observed that the number of the leaves, leaf length, secondary branches of plant, number and length of pods per plant, 1000 grains weight and average seeds yield per hectare was highest in plots of larger steckling size 33.75 cm as compared with plots having smaller stecklings size 30.0 and 22.5 cm while non-significant differences were observed in primary branches and number of seeds per pod in all treatments. The larger steckling size 33.75 cm proved best for the better seed plant development and higher seed yield of radish crop under sub-tropical conditions of Azad Kashmir.

Key word: Radish, seeds production, root length, steckling size, seed yield

Introduction

Radish (*Raphanus sativus* L.) Is a popular vegetable crop of Cruciferae family widely grown in both tropical and temperate regions. It is a favourite crop of home gardener's because it is grown easily and become ready for consumption with in 3-6 weeks from its time of sowing. Radish is a good source of vitamin C and also supplies a variety of minerals. It is eaten raw as salad or cooked as vegetable and is considered a good appetizer. It is very specific in its climatic requirements therefore, it is necessary to select the right cultivar for sowing in a particular season. For the seed production the winter cultivars require low temperature for flowering and crop set the seeds at higher altitudes or in hills. However, some cultivars produces seed in plains also.

Root to seed and seed to seed methods are employed for seed production in radish. In root to seed method the selection of desired plants is made and before transplanting proper root and shoot cuts are given which has the significant effect on seed yield. The seed yield was higher on medium and half root cuts as compared with small root cuts (Kanwar, 1984; Bujdos and Hrasko, 1983). The increased seed yield was observed with the increase in steckling size and greater steckling proved better than the smaller size (Singh and Singh, 1985; Paradisi and Montanari, 1985). The steckling size affects the morphological characteristics of carrot that ultimately affect the seed yield. The increase in steckling size affect the yield components. The greater steckling size produced more pods per plant, number of seeds per pod, seed weight per pod and ultimately the average seed yield was increased (Ahmed *et al.*, 1999 and Duczmal, 1998).

In view of importance of size of root cuts for the production of higher seed yield a research study was conducted to know the proper steckling size for the seed production of radish crop under sub-tropical conditions of Azad Kashmir.

Materials and Methods

The study was conducted at the Agricultural Research Nursery, Mangla, Mirpur, Azad Kashmir during the year 2001-2002. The material used for the research work was "Mino white" variety of the radish crop. The average length of radish as steckling was taken 45 cm. Following different steckling sizes were studied: 22.50 (T_1), 30.00 (T_2) and 33.75 cm (T_3).

The experiment was laid out in accordance with randomized complete block design (RCBD) with three treatments (three replications each). The date on the parameters number of leaves per plant, length of branches, number of pods per plant, length of pods, number of seeds per pod, 1000 grains weight and average yield per hectare were collected and statistically analyzed according to Steel and Torrie (1980).

Results and Discussion

Data (Table 1) revealed that different steckling sizes had shown significant effect ($P<0.01$) on the number and length of leaves. Maximum number and leaves per plant were recorded from plots having steckling size 33.75 cm with the number of leaves 19 and leaf length 14.03 cm. While the minimum number and length of leaves were noted from plots having the steckling size 22.50 cm. The plants of the medium steckling size occupied the second position in number and length of leaves.

The steckling size had shown non-significant effect on primary branches of the plant. The plants of maximum and medium steckling size had the same number of branches, 1.6 per plant where as the smallest steckling size had show an increase in primary branches but difference between the treatments were non-significant. Steckling size had shown significant effect ($P<0.01$) on the length of primary branches. The maximum branch length 96.76 cm was recorded from plots with greater root size 33.75 cm while the minimum 83.5 cm from plots with smallest steckling size 22.5 cm. Similarly, the highest number of secondary branches 13 per plant were recorded from the plants of greater root length. With the reduction of root length the number of secondary branches were significantly reduced and minimum branches 8.3 per plant were observed in smallest root length 22.5 cm. Present findings resembled to those of Singh *et al.* (1990) who noted greater primary and secondary branches per plant with larger steckling size. It is to be noted that food material is stored in the roots that plays a vital role for the development of seed plant. The larger roots contain higher quantity of stored food material. The number of leaves, length of leaves and emergence of branches of seed plant depends on the stored food material in roots. The more reserved food material available in the roots will be responsible for better development of seed plants.

Table 1: Effect of steckling size on the growth parameters of radish

Steckling sizes (cm)	Number of leaves per plant	Length of leaves per plant (cm)	Number of primary branches per plant	Length of primary branches (cm)	Number of secondary branches per plant
22.50	10.00c	08.56c	2.00	83.5c	08.3c
30.00	14.6b	11.63b	1.6	89.33b	11.00b
33.75	19.00a	14.03a	1.6	96.76a	13.00a

Means with different latter's in a column differ significantly at $P<0.01$

Table 2: Effect of steckling size on the yield and yield parameters in radish

Steckling sizes (cm)	Number of pods/plant	Length of pods/plant (cm)	Number of seeds/pod	Weight of 1000 grain seeds (g)	Seed yield/hectare (kg)
22.50	114.6c	5.93c	5.3	10.02c	487.65c
30.00	138.6b	6.33b	5.3	12.14b	709.87b
33.75	243.00a	7.13a	5.6	16.75a	927.15a

Mean with different latter's differ significantly at $p < 0.01$

Different root sizes had shown significant ($P < 0.01$) effect on the number of pods per plant (Table 2). Larger steckling sized plants formed the highest number of pods 243 per plant and smallest size had given the poorest performance 114.6 pods per plant. Similar trend was observed in the length of pods. Greater length of pods was noted with larger root size which was decreased with the reduction of root length. However, it did not effect on seed setting in different treatments and non-significant difference was observed in this parameter. The number of seeds with smallest steckling size was at par with the medium steckling size (T_2) 5.3 seeds per pod and larger steckling size had shown only 0.3 % increase in seed setting with 5.6 seeds per pod as compared to smaller stecklings.

There was a significant difference in 100-grains weight. The highest seed grain weight 16.75 g of 1000 seeds was observed from the plants of larger steckling size 33.75 cm which was decreased with steckling size reduction and minimum weight of 10.02 g from smallest steckling size 22.5 cm was noted. Different steckling sizes had shown the significant effect on the average seed yield per hectare. Greater seed yield 927.15 kg per hectare was obtained from plants of larger root size 33.75 cm as compared to the plants having 30 and 22.5 cm root length with seed yield of 709.87 and 487.65 kg per hectare, respectively. Present findings were similar to those of Bujdoso and Harsko (1983), Nautiyal and Lal (1982) and Duczmal (1989) who observed that larger sized stecklings were economical for seed production. The seed yield from smaller steckling sized plants is un-economical for the farmers.

So, it is concluded that greater root length with more root hairs and stored food material effects the seed plant development. It increases the number, length of leaves and branches of seed plant. In photosynthetic process abundant food formation and supply to plant due to greater number of leaves and size help to boost up the growth process of plant. It also increases the flowering, pod formation, quality seed setting and ultimately the seed yield of crop.

References

Ahmed, B., J. Mohammad., H. Khan and S. Z. Iqbal, 1999. Seed production and yield as effected by age, size and spacing of stecklings in turnip. J. Agric., 15: 399-404

Bujdoso, G. and I. Hrasko, 1983. Evaluation of carrot stecklings raised in the growing room and in the field for seed production. Zoldsegtermesztes- Kutato-Intezet-Bulletimje, 16: 109-114

Duczmal, K.W., 1989. Carrot seed production as affected by steckling size. Roczniki-Akademii-Rolniczej-W-Poznamin-Ogrodnictwo, 194: 27-45

Kanwar, J.S., 1984. Studied the effect of steckling size on seed production of radish. Punjab Vegetable Grower, 19: 26-29

Nautiyal, M.C. and H. Lal, 1982. Effect of steckling size on seed production of Radish. Veg. Sci., 9: 290-293

Paradisi, U. and M. Montanari, 1985. The effect of plant density and steckling size on the yield of carrot seed. Sementi-Elette, 31: 19-21

Singh, K. and A.K. Singh, 1985. Effect of steckling size and spacing on seed yield in radish. South-Indian Hort., 33: 206-208.

Steel, R.G.D. and J.H. Torrie, 1980. Principles and procedures of statistics, 2nd ed. McGraw Hill Book Company Inc. Newyark.

Singh, A.P., M.K. Singh, J.P. Singh and S.B. Singh, 1990. Effect of steckling size and spacing on seed production of radish. Veg. Sci., 17: 210-212.