ABSTRACT

The healthy seeds of radish cv. White Icicle were sown in the first week of May at Vegetable Research Station, Kalpa, District Kinnaur (HP) and the roots replanted in the mid June after 45 days during two consecutive years 2008 and 2009. Radish seed production was done by root to seed method and the true to type roots were grouped into seven classes viz., S1: 25-50g, S2: 50-75g, S3: 75-100g, S4: 100-125g, S5: 125-150g, S6: 150-175g and S7: 175-200g. The experiment was planted in Randomized Block Design with three replications, at a spacing of 60x30 cm having plot size of 2.40x2.40 m with a population of 32 plants per plot. Significant differences were observed for all the traits studied except seed quality and maturity in both the years. The plants from larger roots produced more seed yield, number of branches, pods, seeds per pod, pod length and height, besides, being early in sprouting, flowering and pod formation with low mortality. However, seed quality measured in terms of 1000 seed weight and germination percentage as well as days to maturity not affected by the root size. It was concluded that roots weighing more than 150g should be selected for high seed yield in radish.

MATERIALS AND METHODS

The present investigations were carried out on radish cv. WHITE ICICLE during two consecutive years 2008 and 2009 at Vegetable Research Station, Kalpa, District Kinnaur (HP). The healthy seeds were sown in the first week of May and the roots replanted in the mid June after 45 days. Radish seed production was done by root to seed method and the true to type roots were grouped into seven classes viz., S1: 25-50g, S2: 50-75g, S3: 75-100g, S4: 100-125g, S5: 125-150g, S6: 150-175g and S7: 175-200g. The experiment was planted in Randomized Block Design with three replications every year at a spacing of 60x30 cm having plot size of 2.40x2.40 m with a population of 32 plants per plot. The observations were recorded on seed yield per plant (g), number of branches per plant, pods per plant, seeds per pod, pod length (cm), days to 50% sprouting, flowering, pod formation, maturity, mortality (%), plant height (cm), 1000 seed weight (g) and seed germination (%).

Key words: Radish, Seed yield, Optimum size of roots, Quality of seed

Effect of root size on yield and quality of radish cv. WHITE ICICLE seed crop

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RESULTS AND DISCUSSION

Seed yield, yield components, morphological, maturity and seed quality traits under different root sizes were statistically analyzed and the mean values for two years along with the pooled means are presented in Table 1. Significant differences were observed for all the traits studied except seed quality measured in terms of 1000 seed weight and germination percentage, besides, days to maturity during both the years.

The highest seed yield of 36.00 g per plant was obtained by replanting the roots of 175-200 g size; however, it was at par with roots weighing 125-175 g, whereas, the performance of roots below 125 g was significantly poor. Almost similar trend was observed for branches per plant, pods per plant, seeds per pod, pod length and plant height. The maximum number of branches per plant (34.51), pods per plant (711.65), pod length (6.15 cm) and plant height (157.42 cm) were observed in 175-200 g size, which were at par with the roots larger than 125 g for branches per plant and plant height, whereas, larger than 150 g for pods per plant and pod length; similarly the maximum seeds per pod (10.90) were recorded in 150-175 g, which was at par with all other roots weighing above 150 g, the performance of smaller roots was poor. Radish being a short duration crop it is possible that higher seed yields may be obtained by hastening its growth. One of the important factors which can affect crop growth is the initial vigour in the form of seed or radish root size. Dhesi et al. (1965) observed that bold seeds were significantly better over medium and small in producing greater weight of roots. In the present studies, the initial vigour of the root at the time of replanting appears to have a major role in increasing seed yields. Large sized roots had more storage of food material and water content and as such plants from these roots could withstand more adverse conditions by way of less mortality, more number of branches and a tendency to be taller than plants from smaller roots. These factors led to higher seed yield indicating thereby that plants from large roots had a greater potential for high seed yields. So the superiority of large size roots could be due to their favourable effect on plant height, number of branches per plant and hence, more number of pods per plant and also production of more seeds per pod and pod length. These results are almost in parity with those of Jauhari and Purandare (1959), Kalvi and Nath (1970) and Sharma and Lal (1986) who reported higher seed yields from bigger size of stecklings. In contrast Singh et al. (1971) concluded that root size had no effect on radish seed production.

The roots larger than 150 g sprouted, flowered and came into pod formation stage significantly earlier than the smaller ones and also their mortality percentage was low. The radish seed plants from root size 175-200 g sprouted (11.00 days), those from root size 150-175 g flowered (20.33 days) and from root size 125-150 g came into pod formation stage (27.83 days) at the earliest which was at par with the roots larger than 125 g. The minimum mortality (2.17%) was observed in the plants from root size 175-200 g which was statistically at par with those from root size 150-175 g. These results are in conformity with those of Saini et al. (1971) who reported that mortality of roots was significantly lower in turnip plants with large sized roots. In contrary to earliness of large sized roots Singh et al. (1989) reported that number of days to 50% bolting not influenced by root size.

In order to ascertain the effect of root size on the quality of seed, 1000 seed weight and seed germination percentage were recorded and the differences for both the traits were found non-significant in all the years. A range of 8.52-11.33 g for 1000 seed weight and 92.38-96.42% for seed germination was recorded in all the root sizes used. Seed germination from all root sizes was considerably higher due to low rainfall at seed maturation and harvesting. Saini et al. (1971) also suggested that root size has no effect on the seed size and its viability. However, Singh et al. (1989) observed improved test weight with increasing root size in turnip.

REFERENCES


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