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EFFECTS OF FERTILIZER AND SPACING ON SEED YIELD AND QUALITY IN SNAKEGOURD cv.PKM.1

VIJAYAKUMAR, A., T. JAYARAJ AND I. IRULAPPAN.

ABSTRACT

An experiment was conducted to find out optimum fertilizer and spacing requirements for the seed crop of snakegourd cv.PKM.1. The three fertilizer treatments were : 6:12:6, 9:15:9 and 12:24:12 g of the NPK/pit and three spacings were : 2 x 2.5m, 3 x 1m and 4 x 0.6m. The results revealed that application of 12:24:12g. of NPK/pit and sowing at a spacing of 2 x 2.5m were optimum for getting higher seed yield (119.87g/pl.). The treatments also recorded high recovery of large size seeds (61.5%), high, 100-seed weight (32.095g), germination (98%), root length (18.6 cm), shoot length (39.6 cm) and vigour index (5692).

Cucurbits are an important group of vegetable crops cultivated extensively in this country. Of these, snake gourd is a popular vegetable particularly in



South India. According to Choudhury (1967), for successful vegetable production, better seeds are the primary requirement. There is seldom any research work on the seed technology aspects in Snakegourd for the production of quality seeds. PKM.1 Snakegourd is a high yielding variety with a vegetable yield of 24.5 t/ha and with a mean fruit length of 160 cm. The fruits are dark green with white stripes and this variety is very popular among the growers. In order to increase the production of quality seeds of this variety for commercial cultivation, a study on nutritional and spacing requirements for the seed crop was taken up at the Horticultural Research Station, Periyakulam and the results are reported in this paper.

MATERIALS AND METHODS

A fertilizer cum spacing trial was laidout in PKM.1 Snakegourd (*Trichosanthes anguina*) with three levels of NPK fertilizers viz., 6:12:6, 9:15:9 and 12:24:12g per pit as basal and with three spacings of 2 x 2.5m, 3 x 1m and 4 x 0.6m. The layout is factorial randomised block design with four replications. In addition to the basal application, three top dressing were given, namely 10g N/pit at first flowering and 8g N + 3g K/pit at 20 and 40 days after first flowering. The observations on number of fruits, fruit weight (g), seed number and seed weight (g) per plant, seed recovery (%), 100 seed weight (g), germination (%), seedling measurement (cm) and vigour index were recovered. The cleaned seeds from each

treatment were size graded using 28/64" round perforated sieve. The seeds retained and passed by the sieve were separately weighed and expressed as percentage of seed recovery. The 100 seed weight was determined by recording the mean weight of 8 samples and expressed in g (Anon, 1985). Germination test was conducted in sand medium and was carried out at 25 °C and at 90-3% RH. After eight days, the normal seedlings produced were expressed as germination percentage (Anon, 1985). In seedling measurement, the length from the collar region to the tip of the longest primary leaf and from the collar region to the tip of the primary root were measured and recorded as shoot and root lengths, respectively. Vigour index was worked out by multiplying germination percentage with total mean length of seedling (Abdul Baki and Anderson, 1973).

RESULTS AND DISCUSSION

The fruit weight (7.865 kg), seed number (373) and seed weight (119.87) were significantly high with the application of 12:24:12 g of NPK/pit in 2 x 2.5m spacing. Though the fruit number was not significant, the highest number of fruits (11) was recorded in the above treatment (Table 1).

It could be explained that the application of 12:24:12g of NPK/pit might have promoted plant metabolism, energy transformation, metabolic processes of plants, maintenance of Cellular organisation and as a catalyst in activating a number of enzymes for the assimilation of nutrients resulting in higher seed

TABLE 1. Effects of fertilizer and spacing on fruit and seed yields

Treatments N:P:K (g/pit)	Spacing (m)	Fruit Number/ vine	Fruit weight kg/vine	Seed Number per vine	Seed weight (g/vine)
6:12:6	2 x 2.5	9	6.3	368	98.53
9:15:9	2 x 2.5	8	6.647	359	105.27
12:24:12	2 x 2.5	11	7.865	373	119.87
6:12:6	3 x 1	6	4.740	229	65.57
9:15:9	3 x 1	6	4.361	207	56.97
12:24:12	3 x 1	7	4.899	190	50.48
6:12:6	4 x 0.6	5	3.317	240	57.76
9:15:9	4 x 0.6	6	4.035	252	64.58
12:24:12	4 x 0.6	16	3.935	252	68.60
CD (P = 0.05)		NS	2.2869	127.2655	24.9346

yield. Thus, this dose of 12:24:12 g of NPK/pit may be the optimum dose of fertilizer requirement for high seed yield.

The percentage recovery of large size seeds (61.5%) and 100 seed weight (32.095 g) were also high for the spacing of 2 x 2.5 m and NPK 12:24:12 g/pit (Table 2). Krishnaswamy and Ramasamy (1986) reported in sorghum, that the weight of seed increased with increase in size. Positive association between seed size and seed weight has been reported in many crops (Sivasubramaniam and Ramakrishnan, 1974). The nutrients applied would have induced the formation of protein and enzymes in adequate quantities which would have acted on the metabolites in the leaves and stems enhancing their conversion, transportation and accumulation in the seeds (Tisdale and Nelson, 1975) for the recovery of large sized seeds.

Significant differences recorded in respect of germination, root length, shoot length and vigour index were due to different treatments. The seeds from the plants fertilized with 12 : 24 : 12g of NPK/pit and sown at a spacing of 2 x 2.5m exhibited higher values. Similar results have been reported in resultant seed quality of sorghum by Krishnaswamy and Ramasamy (1986). It is plausible that increase in seed weight and the influence by the nutrient reserves in the seed might have resulted in higher viability and vigour.

In PKM.1 Snakegourd, sowing at a spacing of 2 x 2.5m and application of 12 : 24 : 12g of NPK/pit as basal and 10g N/Pit at first flowering and 8g N + 3g K/pit at 20 and 40 days after first flowering as top dressing were found to be optimum for getting higher yield of quality seeds.

TABLE 2. Effect of fertilizer and spacing on the resultant seed quality.

Treatments N:P:K (g/plt)	Spacing (m)	Seed recovery (28/64 retained) (%)	100 seed weight (g)	Germinatio n (50)	Root length (cm)	Shoot length (cm)	Vigour Index
6:12:6	2 x 2.5	17.3	29.842	81	15.3	34.8	4055
9:15:9		46.4	28.640	96	17.7	37.8	5329
12:24:12		61.5	32.095	98	18.6	39.6	5692
6:12:6	3 x 1	37.2	29.537	84	16.4	35.6	4361
9:15:9		34.1	30.461	87	16.7	36.9	4645
12:24:12		44.5	29.395	88	16.9	37.6	4795
6:12:6	4 x 0.6	33.2	29.540	81	16.5	36.5	4287
9:15:9		34.5	29.071	87	16.6	36.3	4599
12:24:12		43.6	30.401	92	17.4	39.2	5203
CD (P = 0.05)		7.0768	NS	11.1807	1.6880	2.4130	698.3156

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