

Effect of Spacing, Seed Placement and Plant Density on Yield of Baby Corn

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Abstract

Increasing plant density, wider plant spacing and higher seed rate are essential for increased yield of baby corn. Considering baby corn ear yield, fodder yield, barrenness and lodging the plant population of 133,333 plants/ha with plant spacing of 60 cm × 12.5 cm and seed placement of 1 seed per hill are recommended.

Key words : Baby corn, Plant density, Plant spacing, Seed placement.

Baby corn is young ear of corn plant (*Zea mays* L.) harvested just at the time of silk emergence (3—4 cm) (1). The finger-like young ear, dehusked and desilked is served as a specialized vegetable. Its delicacy, sweet flavor and crisp nature have increased its popularity in India and abroad, as a common ingredient of Manchurian (Chinese) and various fancy dishes (2). Its high economic return (3) and value addition are also increasing its popularity in India day by day. Depending on agro-climatic conditions, 3—4 crops of baby corn can be taken from the same field in a year, giving good profit per hectare per season (4). Optimum plant density which is an important factor for high yield of baby corn mainly depends on plant spacing (5). Information regarding spacing of plants and placement of seeds in determining optimum plant density is scanty. The present investigation was undertaken to find out the optimum plant density essential for high yield of baby corn, depending on plant spacing and seed placement.

Methods

The total of six experiments (during *kharif* and *rabi* season in each year) were conducted separately in 2002, 2003 and 2004 at university farm, BCKV, West Bengal and the analysis was made by averaging the data of six experiments. Randomized block design with four replications was followed in each trial consisting of eight treatments with plant spacing, seed placement and plant density (Table 1).

Each plot consisted of 5 rows of 5 m length each.

Row to row distance was 60 cm and plant to plant spacing was based on specification of the respective treatment (viz. 25, 12.5, 8, 6 or 5 cm). Seeds per hill were placed according to the specification of treatments (viz. 1,2,3 or 4 plants/hill).

Baby corn cultivar Early composite was used in each trial. Cultural practices standardized by Prodhhan (6) were followed in each trial. Observations on the following six characters were recorded in each trial : Husked ear yield (ear with husks), dehusked ear yield (ear without husk), standard ear yield (selected ears without husks), fodder yield, barrenness and lodging.

Results and Discussion

Table 2 reveals that with regard to plant spacing, 60 cm × 12.5 cm spacing in treatment T₅ ranked first

Table 1. Treatments including plant spacing, seed placement and plant density in each trial.

Treatments	Spacing (cm × cm)	Seed placement (plant/hill)	Plant density/ha
T ₁	60 × 25	1	66,666
T ₂	60 × 25	2	132,000
T ₃	60 × 25	3	198,000
T ₄	60 × 25	4	264,000
T ₅	60 × 12.5	1	133,333
T ₆	60 × 8	1	208,333
T ₇	60 × 6	1	277,777
T ₈	60 × 5	1	333,333

Table 2. Mean performance of baby corn cultivar for baby corn ear yield and other associated characters with regard to spacing, seed placement and plant density during *kharif* and *rabi* during 2002, 2003 and 2004.

Treatments	Husked yield (kg/ha)	Dehusked yield (kg/ha)	Standard yield (kg/ha)	Fodder yield (q/ha)	Barrenness (%)	Lodging (%)
1. T ₁	3540.400	825.200	436.175	367.250	0.000	0.000
2. T ₂	4220.450	990.275	568.400	410.225	2.100	0.550
3. T ₃	4384.375	1225.225	251.255	440.400	10.075	3.100
4. T ₄	3968.250	985.850	258.425	609.250	25.400	13.375
5. T ₅	4355.400	1245.500	603.300	566.775	0.550	0.000
6. T ₆	4948.475	1321.450	276.250	628.525	6.200	0.000
7. T ₇	4445.325	1050.250	230.200	492.375	24.425	10.175
8. T ₈	4125.300	836.145	205.275	489.275	31.500	24.800
SE	49.589	38.063	21.616	43.998	4.906	3.970
CD 5%	102.250	78.562	44.615	90.810	10.125	8.190
CV %	11.436	35.180	59.886	88.330	-	-

(603.3 kg/ha) for standard yield (the most important baby corn ear yield character) followed by 60 cm × 25 cm (T₁), 60 cm × 8 cm (T₆), 60 cm × 6 cm (T₇) and 60 cm × 5 cm (T₈) with the equal number of seed per hill (1 plant/hill). Thus it could be inferred that wider spacing upto an optimum level (60cm × 12.5 cm) is desirable for higher yield of baby corn, which was in conformity with the observation of Sukanya et al. (7).

With the same plant spacing (60 cm × 25 cm) the seed placement for 2 plants per hill in T₂ gave highest standard baby corn ear yield (568.400 kg/ha) followed by that of 1 plant per hill (T₁), 4 plants per hill (T₄) and 3 plants per hill (T₃), where standard yield of T₃ and T₄ was shown at par. Hence, it could be concluded that higher seed rate is essential for higher yield upto an optimum level, after that it is not effective.

With regard to plant density, standard yield of baby corn with the population of 132,000 plants/ha (T₂) was observed to be significantly higher (568.400 kg/ha) as compared to that with the population of 66,666 plants/ha which was, in general, recommended for field maize. Similar result of increased baby corn ear yield with the increasing plant density from normal plant density of field maize was observed by a number of workers (8–14). It was found that, the yield level of T₂ and T₅ with the same plant populations was more or less same, and similar result was also obtained between T₃ and T₆, and T₄ and T₇. Further, standard yield of T₂ (132,000 plants/ha) and T₅ (133,333 plants/ha) was significantly higher as compared to T₁ (66,666 plants/ha), but lower to T₃ (198,000 plants/ha) and T₆ (208,333 plants/ha). Thus, it could be inferred

that increased plant density upto optimum level is an important criteria in achieving high yield of baby corn, and further increase of it is associated with linear decrease of yield.

The results revealed that with regard to husked yield (ear with husks) T₆ ranked first followed by T₇ and T₃; with regard to dehusked yield (ear without husks) T₆ ranked first followed by T₃; with regard to standard yield (selected ears without husks) T₅ ranked first followed by T₂ and T₁; with regard to fodder yield T₆ stood first followed by T₄ and T₅. Besides, the barrenness was lowest in T₁ followed by T₅ and T₂, whereas lodging was nil in T₁, T₅ and T₆. These indicate that none of the treatments is absolutely superior over all characters studied. However, considering all desirable characteristics T₅ (133,333 plants/ha ; 60 cm × 12.5 cm ; 1 plant/hill) was found to be the best treatment for baby corn production. Though the standard yield of T₅ and T₂ was at par, T₅ was identified as better one due to its less barrenness and lodging. hence, the plant density of 133,333 plants/ha, plant spacing of 60 cm × 12.5 cm and seed placement of 1 plant/hill are recommended for baby corn production.

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