

EVALUATION OF BABY CORN VARIETIES FOR FORAGE YIELD AND VARIOUS OTHER TRAITS IN MAIZE

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SUMMARY

Six varieties viz., FH-3438, VL Baby Corn, Vivek Hybrid-17, HIM-129, Parkash and HM-4 were evaluated for forage yield in addition to their picking yield and yield attributes of baby corn (*Zea mays* L.). Parkash gave the maximum green fodder yield (266.93 q/ha) which was significantly higher than all the varieties. Vivek Hybrid-17 (16.04 q/ha), gave significantly higher total baby corn yield without husk than all the varieties but it was at par with VL Baby Corn (15.26 q/ha). In first picking, Vivek Hybrid-17 also showed significantly higher baby corn yield without husk (6.51 q/ha) than other varieties. However, in the second picking, VL Baby Corn produced baby corn yield (5.26 q/ha) which was statistically at par with Vivek Hybrid-17 (5.15 q/ha) but higher than other varieties. In third picking, Parkash recorded slightly more baby corn yield without husk (4.58 q/ha), which was statistically at par with VL Baby Corn and Vivek Hybrid-17 but higher than all the varieties.

Key words : Baby corn, *Zea mays*, varieties, yield and yield attributes, fodder yield

Maize (*Zea mays* L.) is the third most important cereal crop next to rice and wheat and has the highest production potential among the cereals. Baby corn is good option for crop diversification and the value addition of maize as well as growth of food processing industries (Muthukumar *et al.*, 2005). An interesting recent development is of growing maize for vegetable purpose (Dass *et al.*, 2008). Baby corn is a young finger like unfertilized cob of maize harvested early within 1-3 days of silk emergence depending upon the growing season (Chauhan and Mohan, 2010). It has high nutritive value as compared to many other vegetables. The tender, crispy, finger like baby corns are consumed as salad and vegetable due to its sweet flavour and crispiness as favoured by urbanites. Importantly baby corn is free from insect-pests and diseases and its nutritional value is comparable with other several high priced vegetables (Pandey *et al.*, 2000). It is considered to be an ideal fodder crop on account of its high succulence, palatability and digestibility, and it is devoid of toxins and it can be used at any stage of its growth (Singh *et al.*, 2006). Its green fodder is specially suited for milch cattle as it has lactogenic properties (Singh and Katiyar, 1999). Additionally, the leftover maize stalks provide

nutritionally good maize fodder for the cattle after harvesting of baby corn. Genotype is an the important factor determining quality and yield of baby corn. Maize varieties with high degree of prolificacy producing baby corn ears of uniform size having regular row arrangement have maximum customer appeal and market value (Sharma *et al.*, 2002). Keeping this in view, the present investigation was carried out to study the fodder yield potential in addition to their picking yield and yield attributes of different baby corn varieties.

Six varieties (FH-3438, VL Baby Corn, Vivek Hybrid-17, HIM-129, Parkash and HM-4) were evaluated in a randomized complete block design (RBD) with four replications at the experimental farm of Department of Plant Breeding and Genetics, PAU, Ludhiana. The sowing was done in rows 60 cm apart having plant to plant spacing of 20 cm. The net plot size was 9.6 square metre. The soil of the experimental field was loamy sand in texture, low in available nitrogen and phosphorus and medium in potassium. The nutrients were applied @ 60 kg N, 30 kg P₂O₅, 20 kg K₂O and 25 kg zinc sulphate per ha as per university recommendation (Anonymous, 2010). Whole of the P₂O₅ and K₂O nutrients were applied at sowing time except nitrogen

which was applied in two equal splits, one at sowing and the second at knee high stage. The tassels were pulled out on their emergence to prevent pollination. The picking of baby corn ears was initiated within 1-2 days after emergence of silks. Two or three ears of good quality (crispy, tender and without pith) were picked from the same plant. Harvesting of baby corn ears was completed in three picks. Data were recorded on plant height (cm), number of baby corn ears, ear length (cm), ear girth (cm), pick-wise weight of baby corn ears with husk and without husk, green fodder yield and barren plants. The recovery percentage for baby corn was calculated as :

$$\text{Recovery \%} = \frac{\text{Yield without husk}}{\text{Yield with husk}} \times 100$$

The data were analyzed using two-way analysis of variance (ANOVA) and significance of critical differences was tested ($P \leq 0.05$).

Highly significant differences for baby corn yield with and without husk were observed among varieties for all the pickings as well as for total baby corn yield (Table 1). Vivek Hybrid-17 significantly outyielded all other varieties with respect to baby corn yield with and without husk for total yield and individual picking-wise yield except in case of 2nd picking where Parkash recorded higher baby corn yield with husk. Vivek Hybrid-17 showed 5.9, 26.9, 33.5, 54.6 and 59.3 per cent superiority over Parkash, VL Baby Corn, HIM-129, FH-3438 and HM-4, respectively, for total baby corn yield with husk (Table 1). In the first picking Vivek Hybrid-17 showed significantly higher ($P=0.05$) baby corn yield without husk than other varieties. In the second picking,

VL Baby Corn produced highest baby corn yield without husk (5.26 q/ha). However, it was statistically at par with Vivek Hybrid-17. In third picking, Parkash recorded significantly more baby corn yield without husk (4.58 q/ha) as compared to other varieties, but, it was statistically at par with VL Baby Corn (4.53 q/ha) and Vivek Hybrid-17 (4.38 q/ha). The highest total baby corn yield without husk was given by Vivek Hybrid-17 (16.04 q/ha) which was significantly higher than all other varieties. For baby corn yield without husk Vivek Hybrid-17 showed 5.1, 9.6, 21.7, 83.3 and 88.9 per cent superiority over VL Baby Corn, Parkash, HIM-129, FH-3438 and HM-4, respectively. Higher baby corn yields in Vivek Hybrid-17, VL Baby Corn and Parkash were directly related to their yield attributes correlation studies may be cited in support and these varieties had significantly less number of barren plants as compared to HM-4, FH-3438 and HIM-129.

Significantly higher green fodder yield was given by Parkash (266.9 q/ha) as compared to all other varieties. It seems that its fodder yield was directly related to its plant height. Parkash produced taller plants (176.25 cm) as compared to all the varieties, while HIM-129 (141.75 cm) had the lowest plant height (Table 2). Similar results were obtained by other workers (Pandey *et al.*, 2002; Anonymous, 2003).

HM-4 showed highest baby corn length (8.50 cm) and similar trend was observed in girth (4.30 cm) as compared to all other varieties except Vivek Hybrid-17 where it was at par (Table 2). For all the varieties, baby corn length and girth were in acceptable range (6-9 cm length and 3.1-4.7 cm girth) as reported by Chutkaew and Paroda (1994). Significantly more baby corn ears per plant were produced by VL Baby Corn (2.65) as compared to other genotypes. However, it was

TABLE 1
Baby corn yield of maize varieties in different pickings

| Varieties | Yield with husk (q/ha) | | | Total yield (q/ha) | Baby corn yield without husk (q/ha) | | | Total baby corn yield (q/ha) | Total no. of baby corn ears/ha |
|--------------------|------------------------|-------|-------|--------------------|-------------------------------------|------|------|------------------------------|--------------------------------|
| | 1st | 2nd | 3rd | | 1st | 2nd | 3rd | | |
| FH-3438 | 22.85 | 12.54 | 7.42 | 42.81 | 4.75 | 2.18 | 1.82 | 8.75 | 158854 |
| VL Baby Corn | 20.13 | 16.25 | 15.75 | 52.13 | 5.47 | 5.26 | 4.53 | 15.26 | 199739 |
| Vivek Hybrid-17 | 25.08 | 20.78 | 20.30 | 66.17 | 6.51 | 5.15 | 4.38 | 16.04 | 197136 |
| HIM-129 | 21.18 | 17.20 | 11.18 | 49.56 | 5.00 | 4.40 | 3.78 | 13.18 | 168750 |
| Parkash | 23.54 | 22.40 | 16.56 | 62.50 | 5.37 | 4.68 | 4.58 | 14.63 | 211198 |
| HM-4 | 21.07 | 17.14 | 3.33 | 41.54 | 4.75 | 2.83 | 0.91 | 8.49 | 173698 |
| C. D. ($P=0.05$) | 1.22 | 0.70 | 0.86 | 1.94 | 0.47 | 0.45 | 0.43 | 0.83 | 23012 |

TABLE 2
Plant attributes and fodder yield of different maize varieties in baby corn varieties

| Varieties | Plant height (cm) | Size of baby corn ears (cm) | | No. of baby corn ears/plant | Days to harvest initiation (1st pick) | Recovery (%) | No. of barren plants/ha | Fodder yield (q/ha) |
|-----------------|-------------------|-----------------------------|-------|-----------------------------|---------------------------------------|--------------|-------------------------|---------------------|
| | | Length | Girth | | | | | |
| FH-3438 | 158.75 | 8.05 | 4.10 | 1.92 | 48.25 | 20.37 | 8073 | 182.29 |
| VL Baby Corn | 148.25 | 7.30 | 3.92 | 2.65 | 46.75 | 29.25 | 4167 | 107.55 |
| Vivek Hybrid-17 | 148.00 | 8.05 | 4.27 | 2.40 | 44.75 | 24.20 | 4427 | 186.72 |
| HIM-129 | 141.75 | 7.50 | 4.15 | 2.25 | 45.00 | 26.52 | 5208 | 136.72 |
| Parkash | 176.25 | 7.92 | 4.10 | 2.52 | 48.25 | 23.40 | 3646 | 266.93 |
| HM-4 | 145.50 | 8.50 | 4.30 | 2.10 | 52.25 | 20.45 | 8333 | 198.70 |
| C. D. (P=0.05) | 7.29 | 0.18 | 0.19 | 0.26 | 1.86 | 0.84 | 1281 | 40.33 |

at par with Parkash (2.52) and Vivek Hybrid-17 (2.40). However, Parkash recorded more number of baby corn ears per ha than other varieties except VL Baby Corn and Vivek Hybrid-17 where it was at par. The variety VL Baby Corn gave significantly higher recovery of baby corn (29.25%) as compared to other all varieties.

The days to first pick initiation were more in case of HM-4 (52.3 days), however, Vivek Hybrid-17 took less number of days for harvest initiation (44.8 days). There were more number of barren plants in case of HM-4 and FH-3438, which resulted in reduction in baby corn yield.

On the basis of results obtained from the present study, it was concluded that variety Vivek Hybrid-17 was a promising genotype for baby corn production as it produced significantly higher baby corn yield with husk (66.17 q/ha) and without husk (16.04 q/ha). Besides yield of baby corn in first picking was also high and it took less time to begin harvesting. Parkash was another promising hybrid for baby corn production and it also recorded highest green fodder yield (266.93 q/ha).

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