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Agronomic evaluation of maize (*Zea mays* L.) cultivars for baby corn production under mid hills of Himachal Pradesh

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Abstract

Out of 28 maize (*Zea mays* L.) cultivars evaluated for baby corn production at HAREC, Bajaura for consecutive five crop seasons, composite 'VL-78' and hybrid 'VL-42' produced 47 and 35 per cent higher marketable yield over the recommended 'Early Composite'. Former two cultivars remained statistically at par with each other in respect of number of cobs per plant. Per cent husk and barrenness were significantly lower in hybrid than composite cultivars, whereas fodder yield was more in 'Early Composite' than hybrid 'VL-42' and composite 'VL-78'.

Key words: *Zea mays*, baby corn, cultivars.

Introduction

Growing of suitable maize cultivars is the most critical input in baby corn cultivation. Early maturity, short duration, synchronized flowering and prolificacy are some of the important criteria in the selection of cultivars for baby corn purpose. A cultivar that flowers early can give 2 or 3 crops in a maize growing season in hills. Short plant height is a desirable character to attain lodging resistance under high population density of 120-180 thousand plants/ha is required to obtain higher baby corn yield per unit area by efficient utilization of solar radiation at such a high plant density. Synchronized flowering will require less harvesting time, hence less duration for the complete harvest of the baby corn crop.

Baby corn cultivation in Himachal Pradesh is becoming popular among the maize growers near to the vicinity of processing units. In the absence of suitable baby corn cultivar, the farmers in these areas are growing maize cultivars recommended for grain purpose, resulting in poor yields, hence are unable to derive maximum benefit form this crop. Keeping this in view, 28 cultivars of maize having above-mentioned characters were evaluated for baby corn production.

Material and Methods

A field experiment was conducted at the research farm of Hill Agricultural Research and Extension Centre, Bajaura (1090 m amsl) during rainy seasons of 1998-2002. The soil was sandy loam in texture with neutral pH (6.9). The available N (265 kg/ha), P (15.2 kg/ha) were medium, while available K (293 kg/ha) was high in this soil. The normal annual rainfall of Bajaura is 943 mm, only 44 % of which is received during rainy season (June to September) in 45 days. In all 28 hybrid/composite cultivars of maize with entries varying from 6 to 10 every year were evaluated and data pertaining to 3 best cultivars have been reported here. The experiment was conducted in a randomized block design with 3 replications. On-farm trials on these cultivars were also conducted at farmers' field at different locations in Kullu and Mandi districts during 2001 and 2002.

The crop was sown in the first fortnight of June during each season with a spacing of 40 cm x 20 cm from plant to plant under irrigated conditions with 2-3 irrigations each season.. Fertilizers were applied @ 150 kg N, 26 kg P and 33 kg K/ha. One-thirds dose of N and whole P and K were applied as basal and remaining two-thirds N was side dressed in 2 equal splits each at knee high (25 days after sowing) and tassel emergence (40 days after sowing) stages of the crop. Young cobs were handpicked during August in 7-8 pickings and picking was done every third day when about 2-3 cm long silk had emerged out of the cob husk. The criteria for marketable baby corn were 4.5-10 cm length and 0.7 to 1.7 cm diameter of de-husked cobs having regular row arrangement (Bar-Zur and Saadi, 1990).

Results and Discussion

Marketable baby corn yield

The composite 'VL-78' remaining at par with 'VL-42' gave significantly higher mean marketable baby corn yield over 'Early Composite', which was significantly lower than

above two cultivars over the years. Cultivar 'VL-78' produced 47 and 9 per cent higher marketable baby corn yield over 'Early Composite' and 'VL-42', respectively. Similarly; 'VL-42' out yielded 'Early Composite' by 35 per cent. The higher baby corn yield of composite 'VL-78' can be ascribed to higher number of cobs/plant and cob diameter of de-husked young cobs. Similar results were reported in the eleventh Thai National Corn and Sorghum Reporting Programme (Anonymous 1979) and Thakur (2000). Almost similar performance of these cultivars with respect to marketable baby corn yield was recorded in on-farm trials conducted at farmers' field at different locations in Kullu and Mandi districts (Table 2).

Table 1. Performance of maize cultivars grown for baby corn purpose over years at Bajaura

Cultivars	Marketable baby corn yield (q/ha)					
	1998	1999	2000	2001	2002	Mean
VL-78 (Composite)	20.3	16.1	17.2	15.2	18.2	17.40
VL-42 (Hybrid)	18.8	16.2	16.6	14.2	14.3	16.02
Early Composite (Composite)	13.8	13.0	11.6	11.6	9.1	11.82
CD (P=0.05)	2.7	2.9	3.9	1.0	1.9	

Table 2. Performance of maize cultivars grown for baby corn purpose in On-farm trials at different locations in Kullu and Mandi districts (Mean of 2 years)

Cultivars	Marketable baby corn yield (q/ha)		
	Kullu	Mandi	Mean
VL-78 (Composite)	13.7	16.8	15.3
VL-42 (Hybrid)	12.6	16.2	14.4
Early Composite	8.1	8.8	8.5

Fodder yield and agronomic characteristics

Composite cultivar 'Early Composite' gave significantly higher fodder yield than other cultivars due to its higher plant height (Table 3). Cultivar 'VL-78' remaining at par with hybrid 'VL-42' produced significantly higher cobs/plant than 'Early composite'. Percentage of husk and barrenness were less in hybrid than composite cultivars. Hybrid 'VL-42' took less number of days to harvest initiation than composite cultivars, however among composite cultivars, 'VL-78' took significantly less days than 'Early Composite'.

Table 3. Agronomic characteristics of selected cultivars for baby corn production at Bajaura (Mean of 1998 to 2002)

Cultivars	Cob yield with husk (q/ha)	Fodder yield (q/ha)	Size of de-husked young cob (cm)		No. of Cobs/ plant	Plant height (cm)	Days to harvest initiation	Husk (%)	Barren-ness (%)
			Length	Diameter					
VL-78 (Composite)	86.0	304	8.1	1.31	2.86	186	50	80.5	6.06
VL-42 (Hybrid)	80.8	266	8.3	1.25	2.52	164	47	77.7	4.47
Early Composite	74.9	388	9.4	1.18	1.70	200	54	81.9	10.00
CD (P=0.05)	5.1	28	NS	NS	0.40	18	2.4	2.13	1.42

Data in table 3 clearly indicated that composite 'VL-78' and hybrid 'VL-42' have all the desirable characteristics for their suitability for baby corn purpose as both are early flowering, short to medium in plant stature and prolific in cob bearing. Further, size of young cob from these cultivars was of proper length and diameter, which are desirable characters from cannery point of view (Bar-Zur and Saadi, 1990). Thus, it is concluded that composite 'VL-78' and 'VL-42' cultivars of maize have almost all the desirable characters required over for high marketable baby corn yield and should be preferred over 'Early Composite' under mid-hill conditions of Himachal Pradesh.

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