

Short communication

Performance of baby corn genotypes under high rainfall conditions of Goa

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Baby corn (*Zea mays* L.) is a type of maize which is grown exclusively for its tender, fresh and finger-like cobs harvested at the time of silk emergence. It is a delicacy of five star hotels and its nutritive value can be compared with popular vegetables (Thakur, 5). There is a great potential for baby corn production in Goa as it is widely used in hotels and becoming popular even among Goans. It is a short duration crop which completes its life span within 60-75 days, so four crops in a year can easily be taken up. In addition to cobs, baby corn produces lush green and fresh stalks which are nutritious, succulent and highly palatable fodder for cattle. So, there is an ample scope to integrate baby corn with dairy farming which is common in Goa. The information on performance of baby corn on hill slopes/uplands under high rainfall conditions of Konkan region is not available. Hence, there is a great need to evaluate the performance of the crop and identify the most suitable varieties, which can come up well under intensive rainfall conditions of Goa.

A field study was conducted during rainy season from June to August 2005 at ICAR Research Complex for Goa, Ela, Old Goa. The experimental site is located on the latitude 15°29'28" N and longitude 73° 55'14" E with an altitude of 40 m above mean sea level. Amount of rain received during the crop period was 1,830 mm and the temperature was ranged from minimum 23°C to maximum 30°C. The experiment was laid out in randomized block design with 14 treatments and 3 replications. Six hybrids PEHM-2, PEHM-3, PEHM-5, DHM-105, DHM-111, DHM-115, and one open pollinated variety Pop-135 collected from Directorate of Maize Research, New Delhi, COBC-1 (Composite) from TNAU, Coimbatore, VLBC-1 and VL-42 (Hybrids) from Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora, Golden Baby (Hybrid) from Golden Seeds Pvt. Ltd., Bangalore, Mridula (Hybrid) from Unicorn Seeds Pvt. Ltd, Hyderabad, G-5406 (Hybrid) from Syngenta India Ltd and Golden Baby (Hybrid) from Nunhems Seeds Pvt. Ltd., Bangalore were the genotypes used for the study.

The site is located on the slope of hillock and soil is lateritic having pH 5.4 and EC 0.10 mmhos/cm. The available NPK was 85.9, 20 and 171.7 kg/ha,

respectively. Farm yard manure @ 25 t/ha was applied at the time of land preparation. NPK @ 150:80:40 kg/ha were used. Half dose of N, full dose of P and K were applied at the time of seed sowing and remaining dose of N was applied 30 days after sowing. Seeds were sown at a spacing of 50 cm between rows and 30 cm within a row of plants and the number of plants maintained/ replication was 30.

Recommended cultural operations and special practices like detasseling and harvesting of cobs were carried out as and when required. Detasseling was done when the tassel just emerged out of boot leaf to avoid the pollination. Cobs were harvested on second day after emergence of silk from the cob. Five plants were selected randomly from each genotype and observations were recorded on various vegetative parameters, yield attributes, cob and fodder yield. Both the cob and fodder yield were calculated based on the plot yield. The collected data were analyzed statistically.

Results presented in Tables 1 & 2 revealed that there were significant differences among genotypes for all the characters except dehusked cob length. Plants were dwarf in nature in genotype Pop-135, whereas plants were tallest in DHM-105, which was found on par with COBC-1 and DHM-111. Many of the genotypes were found to be medium statured. Short stature is a desirable trait in baby corn varieties. Variation in plant height may be due to varied growth rate among genotypes. Significant differences in plant height among genotypes of baby corn varieties evaluated at various coordinating centers under AICRIP on Maize were reported (Anon, 1). Pandey *et al.* (3) also reported similar results in baby corn grown in *kharif* season. The genotype DHM-111 produced the highest number of leaves per plant and it was on par with PEHM-2, Golden Baby (Golden Seeds), Mridula, PEHM-5, DHM-115 and G-5406. The genotype VL-42, which contained the lowest number of leaves per plant was found on par with Pop-135, COBC-1, DHM-105 and VLBC-1. Being the source of photosynthesis, leaves have significant role in deciding an economic yield of plants. The higher the leaf number, the better is the economic yield. Among the genotypes, the maximum and minimum stem girth was observed in Mridula and

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Table 1. Performance of baby corn genotypes during rainy season in Goa.

Genotype	Plant height (cm)	Leaves/plant	Stem girth (cm)	Days to harvest	Green cob weight (g)	Dehusked cob weight (g)
PEHM-5	118.77	13.40	5.98	47.00	70.78	8.58
PEHM-2	130.26	14.13	6.15	45.33	62.03	10.61
DHM-105	145.86	12.40	7.15	51.33	59.62	9.56
DHM-111	137.72	14.27	6.63	50.00	55.49	5.63
DHM-115	115.64	13.30	6.29	49.33	54.19	8.75
PEHM-3	131.39	13.13	6.15	49.67	74.19	9.47
COBC-1	138.54	12.07	6.04	50.33	61.47	7.58
VLBC-1	121.29	12.60	5.53	41.00	54.60	7.47
Golden Baby*	130.43	13.57	6.26	52.67	66.29	9.71
Mridula	128.07	13.40	7.71	52.67	97.38	9.05
G-5406	125.91	13.20	6.38	51.67	76.42	7.71
VL-42	116.40	11.73	5.94	39.00	70.99	9.79
Golden Baby**	126.52	13.07	6.27	45.67	67.89	12.02
Pop-135	99.17	12.00	6.49	53.00	75.76	12.79
CD _{0.05}	14.39	1.09	0.68	1.46	11.08	1.76

*Golden Seeds **Nunhems

VLBC-1, respectively. The genotypes Mridula and DHM-105 were found on par with each other (Table 1). Actually, stem girth indicates mechanical strength of the stem and amount of food reserves.

Time taken for harvesting of cobs indicates varieties whether they are early or late in maturity. In fact, both the characters help farmers having the supply for longer period of time. Out of 14 genotypes evaluated, VL-42 and VLBC-1 were found early whereas Pop-135, Mridula and Golden Baby (Golden Seeds) as late. Though it is a genotypic character, the variation among the genotypes may be attributed to prevailing weather conditions during the crop growth. Early maturity along with short stature is one of the preferred characters of baby corn varieties. Similarly, Thakur *et al.* (6) and Pandey *et al.* (3) reported the early maturity of the hybrid VL-42. Green cob weight obtained in Mridula was the maximum while it was the minimum in DHM-115 as compared to others. Genotypes G-5406, Pop-135, PEHM-3, PEHM-5, VL-42, Golden Baby (Golden Seeds) and Golden Baby (Nunhems) were found on par with one another. The genotype Pop-135 recorded the maximum dehusked cob weight and it was closely followed by Golden Baby (Nunhems). Dehusked cob weight was the minimum in VLBC-1, COBC-1 and G-5406 and they were found on par with one another. Baby corn is sold in the market on weight basis packed in polythene bags. So, the weight of dehusked cob and number of cobs per plant decide the economic yield of the baby corn variety (Table 1).

The ratio of dehusked cob weight to green cob weight was found (Table 2) higher in Golden Baby (Nunhems), PEHM-2 and Pop-135. Results reflect that there is no relationship between the weight of green cob and dehusked cob weight. Maximum green cob weight was observed in Mridula but the same trend was not noticed in respect of dehusked cob weight. It may be attributed to poor partitioning of photosynthates towards cobs as compared to husk. Results were non significant among genotypes for dehusked cob length. Relatively, Golden Baby (Nunhems) produced lengthy dehusked cobs while the short ones were obtained in COBC-1. Big size dehusked cobs with the maximum diameter were noticed in Golden Baby (Nunhems) which was on par with VL-42 and PEHM-5. Poor size dehusked cobs were observed in COBC-1 and VLBC-1. Significant variation among baby corn genotypes for yield attributes in *kharif* season was also observed (Pandey *et al.*, 3; Anon,1).

It is evident from Table 2 that all the genotypes differed significantly for cob yield per plant, cob and fodder yield per hectare. Prolificacy i.e., number of cobs per plant is a distinguishing character of baby corn varieties. Ideal plant ideotype should bear at least three cobs per plant without losing quality, size and shape. Genotypes such as PEHM-2 and DHM-111 followed by PEHM-5, PEHM-3, Mridula, Golden Baby (Golden Seeds), Golden Baby (Nunhems) and G-5406 produced more number of cobs per plant, whereas

Table 2. Performance of baby corn genotypes during rainy season in Goa.

Genotype	Ratio of dehusked cob weight to green cob weight	Dehusked cob length (cm)	Dehusked cob diameter (cm)	Cobs/ plant	Dehusked cob yield (t/ha)	Fodder yield (t/ha)
PEHM-5	0.12	8.61	1.50	3.33	1.90	26.10
PEHM-2	0.17	9.67	1.47	3.47	2.46	25.56
DHM-105	0.16	9.44	1.40	2.53	1.61	36.84
DHM-111	0.16	8.61	1.40	3.40	1.95	33.93
DHM-115	0.15	9.57	1.37	3.07	1.79	28.44
PEHM-3	0.13	9.24	1.53	3.20	2.01	26.47
COBC-1	0.12	8.13	1.30	2.67	1.35	25.15
VLBC-1	0.14	8.76	1.30	3.07	1.53	16.08
Golden Baby*	0.15	9.68	1.47	3.20	2.07	34.82
Mridula	0.09	8.77	1.37	3.20	1.93	37.99
G-5406	0.10	8.39	1.47	3.20	1.66	28.22
VL-42	0.14	9.19	1.50	3.07	1.97	18.11
Golden Baby**	0.18	10.24	1.57	3.20	2.54	26.23
Pop-135	0.17	9.97	1.47	2.93	2.50	24.43
CD (0.05)	0.02	NS	0.14	0.49	0.46	4.07

*Golden Seeds **Nunhems

less number of cobs were recorded in DHM-105 and COBC-1. Most of the genotypes yielded more than three cobs per plant. But the best yield per plant (3.5 cobs) was recorded in PEHM-2, which was significantly superior to others. So, better yield in PEHM-2 may be attributed to better partitioning efficiency. Genotypes VL-42, VLBC-1 and DHM-115 were found on par with one another. However, the same trend was not observed in respect of dehusked cob yield per hectare. Among the genotypes, Golden Baby (Nunhems) was found as the best yielder and closely followed by Pop-135 and PEHM-2. Increased yield might be due to inherent genetic potential and good source-sink relationship. Genotypes Golden Baby (Golden Seeds), PEHM-3, VL-42, DHM-111, Mridula and PEHM-5 were found on par with one another. Poor yield was estimated in genotypes COBC-1, VLBC-1, DHM-105 and G-5406 and the differences found among them were non significant. Though DHM-111 produced good number of cobs per plant but the overall cob yield per hectare on weight basis was poor. This was due to less weight of dehusked cobs. This indicates that number of cobs per plant as well as dehusked cob weight are the key characters, which decide the yield level. The fodder yield was found the maximum in Mridula which

was found on par with DHM-105, Golden Baby (Golden Seeds) and DHM-111 whereas the minimum was recorded in VLBC-1 followed by VL-42. More fodder production may be due to better vegetative growth and accumulation of more dry matter. Anon (2) and Pandey *et al.* (3) reported similar variation among baby corn genotypes for cob and fodder yield during rainy season.

It can be concluded from the study that genotypes Golden Baby (Nunhems), Pop-135 and PEHM-2 were identified as the best dehusked cob yielders. However, the performance of the hybrid Golden Baby (Nunhems) has been found as the most promising for key characters like dehusked cob weight, dehusked cob length, dehusked cob diameter, ratio of dehusked cob weight to green cob weight and dehusked cob yield per hectare. Therefore, the hybrid Golden Baby (Nunhems) is recommended for commercial cultivation during rainy season in Goa.

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