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Growth and Yield of Sweet Corn Cultivars under Different Environmental Conditions in Southern Agro-Climatic Zone of Andhra Pradesh

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Abstract A field experiment was conducted to study the performance of sweet corn cultivars under varied times of sowing in Southern Agro-Climatic Zone of Andhra Pradesh during *rabi* 2011. The treatments consisted of combination of two factors viz., three varieties (Madhuri, Sugar 75, Misthi) and four times of sowing (Oct I FN, Oct II FN, Nov I FN and Nov II FN). Among the cultivars, Misthi produced significant higher green cob yield (17910 kg/ha) with maximum values of growth and yield attributes over other cultivars. Sweet corn sown in Oct I FN gives higher cob yield of (18291 kg/ha) with maximum growth attributing characters than the subsequent delayed sowing. Combination results showed that Misthi genotype when sown on Oct first fortnight recorded the maximum cob yield.

Keywords Sweet corn cultivars, Times of sowing, Growth, Yield.

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Introduction

Maize is cultivated in tropical , sub-tropical and temperate countries of the world. India is the seventh largest producer of maize with 22.23 million tonnes of production from 8.71 million hectares, with a productivity of 2552 kg ha^{-1} [1]. In Andhra Pradesh, during the year 2011, it is grown over an area of 1.06 million ha with a production of 4.97 million tonnes and productivity of 4673 kg ha^{-1} [1].

In order to best utilize the moisture, nutrients and solar radiation and for obtaining high seed yield of good quality, optimum time of sowing should be identified.

Since the area under post-rainy season maize crop is increasing in recent years, it is essential to find out an optimum sowing with suitable cultivar for sweet corn crop. Keeping the facts in view, a field experiment entitled performance of sweet corn cultivars under varied times of sowing was conducted during *rabi*, 2011.

Materials and Methods

A field experiment was conducted during *rabi,* 2011-—12 at S. V. Agricultural College wetland farm, Tirupati of Acharya N. G. Ranga Agricultural University. Andhra Pradesh to study the Performanc of sweet corn cultivars under varied times of sowing during *rabi.* The experiment was laid out in a ran-

Table 1. Plant height (cm), leaf area index and dry matter production of sweet corn cultivars as influenced by different times of sowing.

Treatments	Plant height (cm)			Leaf area index			Dry matter production (kg/ha)		
	30 DAS	60 DAS	At harvest	30 DAS	60 DAS	At harvest	30 DAS	60 DAS	At harvest
Cultivars (V)									
Madhuri	61.3	131.4	155.7	0.20	2.01	0.91	561	5484	5850
Sugar 75	59.3	130.5	151.5	0.24	2.18	1.01	612	7060	7902
Misthi	67.5	136.5	158.2	0.37	2.41	1.21	687	7772	8753
CD (p=0.05)	5.5	1.7	2.5	0.20	0.08	0.23	10	123	119
Times of sowing (D)									
Oct I FN	73.5	135.7	159.2	0.46	2.44	1.42	640	7130	8087
Oct II FN	65.5	133.1	155.0	0.41	2.26	0.99	629	6854	7828
Nov I FN	56.2	131.6	153.9	0.10	2.10	0.96	619	6710	7503
Nov II FN	55.7	130.8	152.5	0.09	2.01	0.79	592	6395	6589
CD (p=0.05)	6.4	1.9	2.9	0.06	0.09	0.27	11	142	137

domized block design with factorial concept, replicated thrice. The treatments consisted of combination of two factors viz., three cultivars (Madhuri, Sugar 75 and Misthi) and four times of sowing (Oct I FN, II FN, Nov I FN and Nov II FN). The soil of the experimental field was sandy loam in texture with pH 6.5 and 0.24% OC. The available N, P_2O_5 and K_2O were 213, 29.3 and 281 kg ha^{-1} respectively. All the management practices were adopted for sweet corn cultivation as per the recommendations of Acharya NG Ranga Agricultural University, AP.

Results and Discussion

The sweet corn cultivars differed significantly with regard to growth parameters . At harvest, the highest plant height, leaf area index (LAI) and dry matter production was recorded with cultivar Misthi, which was significantly superior over Sugar 75 and Madhuri (Table 1). The plant height, LAI and dry matter production decreased with delay in sowing at maturity significantly. Higher plant, LAI and dry matter of Misthi was due to delayed senescence of leaves helped this genotype to produce more photosynthates which ultimately led to for more cob yield. Crop sown during first fortnight of Oct I FN resulted in highest growth parameter which might be due to favorable climatic conditions that prevailed during the crop growth period. Similar results were reported earlier [2—3].

Sweet corn cultivars and different times of sowing significantly altered the yield attributes viz., cob length, cob girth, number of kernels row^{-1} and number of kernels cob^{-1} (Table 2). The highest yield attributes were recorded with Misthi cultivar, this might be a genotypic character of the cultivar. Among the times of sowing, Oct I FN recorded the highest yield attributes which was significantly superior to

Table 2. Yield attributes and yield of sweet corn cultivars as influenced by different times of sowing.

Treatments	Cob length (cm)	Cob girth (cm)	No. of kernels row-1	No. of kernels cob-1	Green cob yield (kg ha-$^{-1}$	Green fodder yield (kg ha^{-1}	Biological yield (kg ha^{-1}
Cultivars (v)							
Madhuri	16.11	13.20	38.3	364	12508	16476	28983
Sugar 75	17.65	14.84	39.3	420	16482	20045	36527
Misthi	21.02	15.11	46.3	567	17910	21924	39834
CD (p=0.05)	0.73	0.14	1.0	30	350	381	488
Times of sowing (D)							
Oct I FN	20.99	14.73	42.6	523	18291	21641	39931
Oct II FN	18.76	14.63	42.2	488	16375	19763	36138
Nov I FN	16.86	14.25	40.9	453	14784	18994	33778
Nov II FN	16.43	14.04	39.6	349	13084	17527	30610
CD (p=0.05)	0.85	0.16	1.2	34	404	440	564

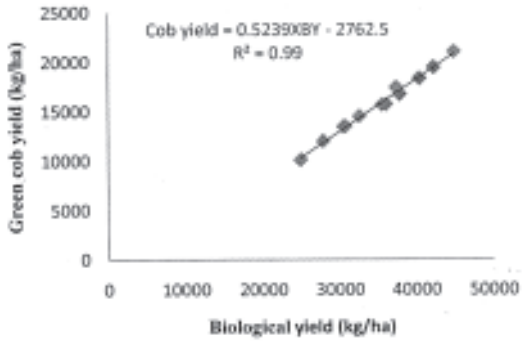

Fig. 1. Regression line showing the relationship of biological yield (kg/ha) with seed yield (kg/ha).

all other times of sowing . This may be attributed to higher assimilatory surface, resulting in higher dry matter accumulation and corresponding quantity of assimilates being diverted to sink, which in turn resulted in highest yield attributes. These results were in line with the earlier findings [3, 4].

Sweet corn cultivars with different times of sowing differed significantly in green cob yield , green fodder yield and biological yield (Table 2). The highest yields were recorded by the Misthi cultivar. With regard to times of sowing, Oct I FN recorded highest yields. Resolving the yield components, the fact that higher yield attributes were responsible for highest green cob yield by Misthi cultivar when sown during Oct I FN. The higher biological yield was found significantly associated with higher green cob yield of sweet corn (r=0.99). The green cob yield of sweet corn can also be estimated through biological yield with the regression equation (Fig. 1. Cob yield = -2762 +0.523 BY, r^2 = 0.99). These results were in agreement with the earlier findings [2, 3].

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