Table 2. Genotypic correlation coefficients among alochol yield characters

Character	Number of internodes	Girth of stem	Cane yield/ plant	Juice yield/ plant	Extractable percentage	Brix	Total sugars	Reducing sugars	Sucrose (%)	Alcohol yield/ plant
Number of internodes	1	0.4286**	0.2625	0.2789	-0.2427	0.4210**	0.2466	-0.1906	0.2634	0.1778
Girth of stem		1	0.3651**	0.2711	-0.1222	0.4914**	0.3848**	-0.3300*	0.4208**	0.3630*
Cane yield/ plant			1	0.8151**	-0.0058	0.5926**	0.4656**	-0.1287	0.4773**	0.7465**
Juice yield/ plant				1	0.2390	0.4535**	0.3970**	-0.637	0.4005**	0.7454**
Extractable percentage					1	-0.4175**	-0.2291	0.1237	-0.2513	0.1223
Brix						1	0.6923**	-0.1616	0.7140**	0.6055**
Total sugars							1	-0.2352	0.9845**	0.8053**
Reducing sugars								1	-0.3327	-0.1191
Sucrose (%)									1	0.7829**
Alcohol yield										1

** - Significant at 0.01 level. * - Significant at 0.05 level.

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CHARACTER ASSOCIATION FOR GRAIN YIELD IN SWEET SORGHUM

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ABSTRACT

Seven sweet sorghum parental lines and their forty two hybrids were used for studying the genotypic correlation among grain yield and its related characters. The results showed that panicle weight had the highest positive correlation (0.9784) with grain yield followed by panicle length. Hence, for improving grain yield in sweet sorghum, selection should largely depend upon panicle weight and panicle length.

KEY WORDS : Sweet Sorghum, Correlation, Grain Characters.

For selection of an ideal plant type with high grain yield, knowledge of character association between yield and its component characters is essential. The expression of a complex character such as grain yield depends upon the interaction of a number of component attributes. New genotypes of sweet sorghum suitable for energy harvest are being introduced in the country now. These are duel purpose types from which both grain and alcohol can be obtained. In these high energy sweet sorghums, the grain yield is also an important factor for commercial utilisation of alcohol or sugar. This study was undertaken with different sweet sorghum genotypes to find out the intensity of association of dufferent characters with the grain yield.

MATERIALS AND METHODS

Forty two hybrids were obtained by crossing six sweet sorghum varieties and one grain sorghum variety in a 7x7 diallel mating system. The hybrids along with parents were grown in a randomised block design with three replications in summer 1992. Observations were recorded on five random

Table 1. Genotypic correlation coefficients among grain yield characters.

Character	Plant height	Leaf area	No. of internodes	Days to 50% flowering	Panicle length	Panicle weight	100 Grain weight	Grain yield/plant
Plant height	1	0.4598**	0.5584**	0.3987*	0.9718**	-0.1099	0.3686**	-0.0058
Leaf area		1	0.7458**	0.4309*	-0.2415	-0.1826	0.1760	-0.0466
No. of internodes			1	0.4060**	-0.3042*	-0.2427	-0.0639	-0.1346
Days to 50% flowering				1	-0.2643	-0.2083	0.0313	-0.1560
Panicle length					1	0.4207**	0.2280	0.3812**
Panicle weight						1	-0.0379	0.9784**
100 Grain weight							1	0.1086
Grain yield/plant								1

** - Significant at 0.01 level. * - Significant at 0.05 level.

competitive plants in each of the parents and F_1's in each replication. Genotypic correlation coefficients were calculated as per the method suggested by Johnson *et al.*, (1955)

RESULTS AND DISCUSSION

Panicle length and panicle weight showed highly significantly positive correlation with grain yield at genotypic level. Among them panicle weight recorded the highest positive correlation (0.9784) followed by pancile length (0.3812) (Table 1). Earlier Bittingar *et al.*, (1981) have also reported highly significant positive correlation of grain yield with panicle weight. In addition, 100 grain weight also had a positive but non-significant association with grain yield (0.1086) at genotypic level (Table 1). Days to 50 per cent flowering, number of internodes and leaf area were found to be negatively correlated with yield but the values were low and non-significant. These results are in agreement with those of Chauhan and Singh (1975) and Salilkumar and Singhania (1984).

Inter correlation among yield components revealed that plant height had a positive significant association with leaf area (0.4598), number of internodes (0.5584), days to 50 percent flowering (0.3087), panicle length (0.9718) and 100 grain weight (0.3686).

Leaf area recorded positive significant correlation with number of internodes (0.7458) and days to 50 per cent flowering (0.4309). The number of internodes recorded significant positive correlation with days to 50 per cent flowering (0.4060) and significant negative correlation with panicle length, (-0.3042) The correlation of days to 50 per cent flowering was low and non- significant with all the other characters studied. Panicle length showed positive significant correlation with panicle weight (0.4207). Highly significant and positive association of plant height with leaf area, number of internodes, panicle length and 100 grain weight was also observed. The above results indicated that selection for high yield in sweet sorghum can be done by selecting for long panicles with good panicle weight.

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