

## NEW VARIETY / GENETIC STOCK

### Cytotype $2n=72$ derived interspecific hybrid- AS 04-2097 of *Saccharum spontaneum* L. tolerant to drought

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Predictions of climate change have indicated an increased variability of rainfall in the next 40 years and an increased risk of high temperature and drought. Sugarcane production and productivity are significantly affected by abiotic stresses. Among the abiotic stresses, drought is an important stress which causes yield loss up to seventy percent (Zhao and Li 2015). Hence development of varieties for drought tolerance becomes crucial in the current scenario of climate change. *Saccharum spontaneum* L. has been utilized in sugarcane breeding since 1912 due to its wider adaptability under biotic and abiotic conditions. A drought tolerant interspecific hybrid AS 04-2097 derived from the interspecific cross involving sugarcane commercial cultivar (Co 8371) and *S. spontaneum* with the cytotype  $2n=72$  (SH 216,  $2n=72$ ) has been identified as a promising genetic stock for both to develop climate resilient varieties and to broaden the genetic base of modern sugarcane varieties. The clone distinguished in semi erect habit with curved canes, moderately thick internodes, prominent node swelling and lanceolate auricle (Fig.1).

Fifteen ISH/IGH hybrids with diverse genetic base were tested for climate resilience at four AICRP(S) centres both in tropical (Padegaon, Anakapalle) and subtropical (Karnal, Faridkot) regions with 2 standards for each region in replicated trials (Alpha design) during 2015-2016.

Drought was imposed by withdrawing irrigation between 60 and 150 days after planting in all four centres. Data on cane yield, juice quality, physiological and agronomical traits contributing to drought tolerance were recorded. Percentage of increase/decrease due to imposition of drought for

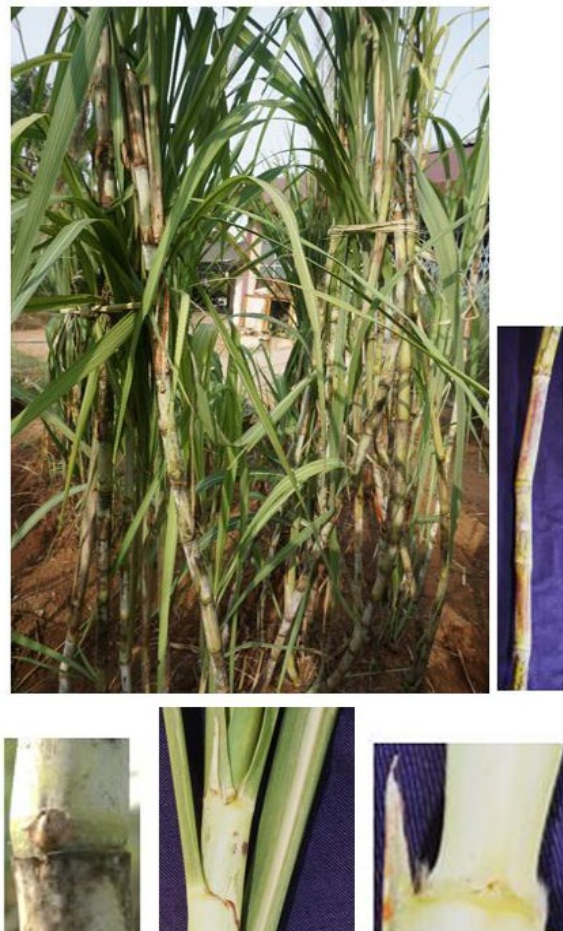


Figure 1. Morphological features of AS 04-2097

**Table 1.** Mean performance of AS 04-2097 under normal and drought conditions at 360 days

Clone Traits	AS 04-2097			Checks*		
	Normal	Drought	% Change	Normal	Drought	% Change
Cane Dia. (cm)	2.41	2.19	-9.13	2.75	2.28	-17.09
Single Cane weight (kg)	1.0	0.97	-3.0	1.14	0.98	-14.03
Cane yield t/h	104.1	90.48	-13.08	93.41	77.42	-17.12

\*CoM 88121, 83 R 23, CoJ 88 (two locations), CoM 0265, CoA 06231, Co 98014 (two locations)

the characters was worked out. The entries which showed less than 15% reduction under drought were identified as tolerant clones.

#### ***Performance of AS 04-2097 under normal and drought conditions***

Among the agronomic traits, AS 04-2097 showed less reduction for cane thickness, single cane weight and cane yield at 360 days at harvest under drought condition. Cane diameter showed 9.13% reduction with the mean value of 2.19 cm. Less reduction in single cane weight (3.0 %) was observed with mean cane weight of 1.0 kg/cane and 0.97 kg/cane under normal and drought conditions respectively. The complex character cane yield (90.48 t/h) had 13.08% of reduction

under drought while the checks exhibited 17.12% reduction (Table 1).

Considering cane yield and yield attributing parameters, the clone AS 04-2097 was found to be one of the tolerant clones to drought. It shows 60% flowering hence readily can be utilized in hybridisation programme. It has been registered as genetic stock as INGR20070 (20112; IC0635053; INGR20070) with NBPGR, New Delhi.

#### **Reference**

Zhao D, Li Y. 2015. Climate Change and Sugarcane Production: Potential Impact and Mitigation Strategies. International Journal of Agronomy, Article ID 547386. <http://dx.doi.org/10.1155/2015/547386>