

GENETIC STOCK**GU 08 SSH 66: A SUGARCANE X SWEET SORGHUM INTERGENERIC HYBRID WITH HIGH EARLY SUGAR ACCUMULATION AND RED ROT RESISTANCE**

Sorghum is considered a potential genetic resource for imparting earliness and drought tolerance to sugarcane varieties and attempts were made to cross sugarcane with sorghum to introgress these traits (Thomas and Venkataraman 1930; Janaki Ammal and Singh 1936; Nair 1999). During 2008, three sugarcane varieties, viz. CoLk 8102, Co 89029 and Co 0238 were crossed with the sweet sorghum lines SSV 84 and SOS 250 at ICAR-Sugarcane Breeding Institute, Coimbatore, India, to develop hybrids with earliness and drought tolerance. Twenty four progenies obtained from these crosses were characterized for agromorphological traits.

Morphological characterization of GU 08 SSH 66

Morphologically, the progenies were closer to the sugarcane parent. However, some of the sorghum traits like shorter internodes, thicker and shorter leaves, and aerial roots were present in some progenies. Molecular characterization of these 24 putative hybrids carried out using sorghum-specific SSR markers to establish their true hybridity confirmed nine of them as true hybrids based on the presence of markers from both the parents (Anonymous 2010). GU 08 SSH 66, one of the true hybrids from the cross between the commercial variety Co 0238 and sweet sorghum SOS 250, showed erect habit, greenish purple canes with corky patches and heavy wax, bobbin shaped internodes and small roundish bud (Fig. 1.). Leaf sheath is green, devoid of spines and with a brown dewlap.

Sugar accumulation in GU 08 SSH 66

Eight of the sugarcane x sorghum hybrids were evaluated for juice quality during 2010-2012 in



Fig. 1. Sugarcane x *Sorghum* hybrid GU 08 SSH 66: (a) habit of the hybrid (b) internodes and buds (c) leaf sheaths with wax

a replicated layout with two replications and a plot size of 3 m x 0.9 m. Hand refractometer brix (HR brix) was recorded on five random stalks as an indirect estimate of sucrose content in juice at

Table 1. Mean HR Brix% in *Saccharum* x *Sorghum* hybrids at three stages

Hybrid	Parentage	6 th month	7 th Month	8 th month
GU 08SSH 3	Co 89029 x SSV 84	15.20	16.00	16.30
GU 08 SSH 9	Co 89029 x SSV 84	10.20	14.00	15.20
GU 08SSH 27	CoLk 8102 x SSV 84	16.00	19.60	22.40
GU 08SSH 28	CoLk 8102 x SSV 84	14.80	19.40	20.80
GU 08 SSH 32	CoLk 8102 x SSV 84	16.20	17.40	19.20
GU 08 SSH 66	Co 0238 xSOS 250	20.80	22.50	23.50
GU 08 SSH 68	Co 0238 xSOS 250	19.80	19.40	19.40
GU 08 SSH 71	Co 0238 xSOS 250	16.70	19.00	18.30
CoC 671	Q 63 x Co 775	18.20	20.30	21.20
Mean		16.43	18.62	19.58

Source: Anonymous 2013; Mohanraj et al. 2013

6th, 7th and 8th months after planting (Table 1). The hybrid GU 08 SSH 66 recorded the highest HR brix of 20.80% at 6th month which indicated early sucrose accumulation. There was a progressive increase in HR brix in all the hybrids and the hybrid GU 08 SSH 66 had the maximum of 23.50% at 8th month which was more than two units recorded by the commercial standard CoC 671 (Anonymous 2013; Mohanraj et al. 2013).

Evaluation for red rot resistance

Seven of the sugarcane x sorghum intergeneric hybrids were evaluated for red rot under controlled condition testing using *cf*671 isolate. Of these seven hybrids tested, GU 08 SSH 66 was identified as red rot resistant (Anonymous 2014).

GU 08 SSH 66 is a unique hybrid involving sweet

sorghum combining early high sugar accumulation and red rot resistance, two very important traits in sugarcane breeding, and could serve as a potential genetic stock to develop short duration varieties of sugarcane. The hybrid was registered as a genetic stock (IC0612060; INGR15034) for earliness with the National Bureau of Plant Genetic Resources, ICAR, New Delhi, during August 2015.

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