

# Evaluation of *Saccharum barberi*, *S. sinense* and *Erianthus* spp. Clones of Sugarcane for Susceptibility to Major Borer Pests

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## ABSTRACT

During 1998-99 and 1999-2000, 44 sugarcane clones comprising of *Saccharum barberi*, *Saccharum sinense* and *Erianthus* sp were evaluated for their relative susceptibility to major borer pests under natural conditions. Out of these, Manga, Manga SIC and *Erianthus* spp clones were found to show relatively low incidence of stalk borer and top borer, respectively.

**Key words:** Borers, Clones, Sugarcane, Susceptibility

Various borers cause considerable loss to the quantity and quality of sugarcane in sub-tropical India. Modern day sugarcane complex clones are quite susceptible to these major borer pests. Due to thick stem and canopy of the crop, even the highly toxic chemicals fail to give satisfactory control of the borer pests (Ananthanarayanan & David, 1986). Considering the colossal loss caused *vis-a-vis* the limitation of the insecticides to control these, host plant resistance can be used as one of the methods to keep the borer population below economic injury levels. Besides, varietal resistance/tolerance, has no adverse effect on ecosystem and is easily adopted by farmers. The present studies therefore, deals with field evaluation of *Saccharum barberi*, *Saccharum sinense* and *Erianthus* spp. clones against major borer pests like early shoot borer, top borer and stalk borer.

## Materials and Methods

Thirty sugarcane clones comprising of eighteen *S. barberi* and twelve *S. sinense* clones were planted during 1998-99 while fourteen *Erianthus* sp clones were planted during 1999-2000 in a R.B.D. in two replications in a plot size of 2 x 6 m rows at the Regional Centre of Sugarcane Breeding Institute, Karnal. No insecticides were

applied at any stage of the crop. Incidence of major borer *viz.* early shoot borer, top borer and stalk borer was assessed by recording the number of infested and healthy shoots/plants and % infestation was computed.

## Results and Discussion

During 1998-99 trial, all the eighteen *S. barberi* spp clones recorded very low incidence of early shoot borer which was less than economic threshold level of 16.0% (Sardana, 1998) and hence, these were grouped as less susceptible. Average incidence of top borer was about 15.0%. Eight spp clones had incidence less than 15.0% while ten had incidence ranging from 15.0 to 30.0%. Stalk borer incidence was not very high as it ranged from a minimum of 9.4% in Manga SIC to a maximum of 40.5% in Kewali clone. However, most of the genotypes had incidence less than 30.0% (Table 1). Amongst the various spp clones belonging to *S. sinense* all had recorded very low incidence of early shoot borer and were thus resistant to it. Similarly most of the spp belonging to *S. sinense* had incidence of top borer less than 30.0% and were categorised as resistant. Average incidence of stalk borer was 25.0% in *S. sinense* clones. It ranged from a minimum of

**Table 1.** Incidence of early shoot borer, top borer and stalk borer in *Saccharum barberi* spp. clones

Ssp clone	Early shoot borer (%)	Top borer (%)	Stalk borer (%)
Bourkha	1.5	9.2	38.4
Dark Pindaria	1.5	9.5	27.9
Dhaur Alig	1.6	9.3	23.8
Katha Cbe	0.7	11.1	29.3
Kewali	1.9	18.7	40.5
Kuswar Alig	0.8	20.1	35.3
Kuswar Ottur	1.8	10.3	39.1
Manga	2.8	10.6	10.6
Manga SIC	2.1	15.5	9.4
Mankea	2.8	22.2	31.2
Mungo-237	2.6	15.9	27.9
Nargori	1.3	16.6	17.1
Newra	3.2	20.7	21.1
Parari-N-Gunj	1.9	15.2	23.9
Reha	2.5	35.7	14.4
Rekhra	2.5	7.9	28.9
Saretha	2.3	10.0	25.7
White Pararia	2.2	15.3	27.9

17.0% in IKRI to a maximum of 36.9% in Maneria IMP-1552. None clones out of twelve were categorised as less susceptible as the incidence was less than 30.0% (Table 2).

During 1999-2000 incidence of early shoot borer and top borer recorded was very low in all the *Erianthus* spp clones. However, stalk borer incidence was high and majority of the spp. clones had incidence above 30.0% and were grouped as moderately susceptible. Incidence ranged from a minimum of 23.2% in ERI-2384 to a maximum of 44.6% in IJ76-404. Only two genotypes ERI-2384 and IS76-176 recorded less than 30.0% incidence and were grouped as less susceptible (Table 3). The evaluation of these clones showed relatively low incidence of early shoot borer in all the spp. clones belonging to *S. barberi*, *S. sinense* and *Erianthus* spp. This also indicated that the occurrence of early shoot borer in the nature was very low. However, since the top borer

**Table 2.** Incidence of early shoot borer, top borer and stalk borer in *Saccharum sinense* spp. clones

Ssp clone	Early shoot borer (%)	Top borer (%)	Stalk borer (%)
Tukyu No. 1	1.8	7.9	20.4
Tekcha Ching Cheng	1.6	7.3	31.9
Pansahi	2.2	11.3	25.4
Maneria	2.0	8.7	36.9
IMP 1552			
Kheli	2.7	6.2	20.4
Khakai	2.4	10.6	29.0
Khadya	1.1	5.7	29.2
Kevangire	3.0	24.1	29.4
Kalkya	1.0	16.7	24.7
IKRI	2.3	18.0	17.0
Cayana	3.4	18.9	26.0
Chynia	3.4	22.7	30.9

**Table 3.** Incidence of early shoot borer, top borer and stalk borer in *Erianthus* spp. clones

Ssp clone	Early shoot borer (%)	Top borer (%)	Stalk borer (%)
ERI-2384	1.5	0.0	23.2
IJ76-347	1.7	0.3	32.8
IJ76-364	2.3	0.0	36.9
IJ76-374	3.3	0.3	31.6
IJ76-396	3.4	0.0	37.0
IJ76-400	1.6	0.2	34.2
IJ76-404	1.5	0.5	44.6
IJ76-487	3.5	0.0	36.7
IK76-91	1.0	0.3	39.1
IK76-99	2.1	0.4	30.9
IK76-88	2.9	0.5	43.5
IS76-176	2.2	0.4	24.9
IS76-178	2.0	0.0	30.6
IS76-188	3.2	0.0	30.9

incidence in *Eriarthus* spp. was low as compared to *S. sinense* and *S. barberi*, *Eriarthus* spp. could be used in economic breeding programme for resistance character of top borer. For the stalk borer, against stalk borer Manga, Manga SIC and Reha clones belonging to *S. barberi* and IKRI clone belonging to *S. sinense* could be used as parents for stalk borer resistance breeding programme. Manga and Manga SIC clones had also recorded relatively low incidence of top borer and early shoot borer and thus, could be used as donor parents for resistance character in breeding programme.

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