Indian J. Pl. Genet. Resources 5(2): 89-92, 1992
Short Communication

REACTION OF INTERSPECIFIC HYBRIDS OF SUGARCANE TO SHOOT BORER, *CHILO INFUSCATELLUS* SNELLEN INCIDENCE UNDER SALINE CONDITIONS

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Early shoot borer, Chilo infuscatellus Snellen (Crambidea : Lepidoptera) is one of the major pests in all the sugarcane growing areas of sub-tropical India. The pest is more predominent during pre-monsoon period. The problem of soil and irrigation water salinity is on the increase throughout the world. Observations on early shoot borer incidence were recorded in interspecific hybrids (ISH) which were being evaluated for their relative performance under saline water irrigation conditions.

Twenty ISH-clones of sugarcane (involving *Saccharum officinarum, S. robustum, S. barberi* and *S. spontaneum*) along with three standard checks were planted on 23.03.91. at the Regional Centre Of Sugarcane Breeding Institute, Karnal. Irrigation was done with tubewell water alone (E.C. 0.4 dS/m) or 120 meq. salts mixture added per litre of it. The chloride type salts mixture had Na: Ca: Mg as 6:2:2 and Cl:SO_4 as 8:2 on meq. basis. E.Ce. of the soil with saline water irrigation was 12 ± 0.5 dS/m. Split plot design was used taking saline environment in the main plot and hybrids in the sub-plot. Each clone was replicated thrice with a plot and hybrids in the sub-plot. The plot size was 10.2 m^2 each. Shoot borer incidence was recorded after 90 days of planting. Analysis was done using saried 't' test, taking percent incidence as unit and Keeping the replications intact for 69 pairs of observations. Split plot analysis was done to study the interaction amongst various factors (Table 1).

Table 1 **Percent incidence of shoot borer in different inter-specific hybrid (ISH) sugarcane clones under saline and non-saline conditions.**

ISH-clone number	Percentage	Per cent Incidence		Mean	Percent increase
		Saline	Non-saline		
130	H × S	36.8	35.9	36.3	2.5
132	H × S	73.3	36.3	54.8	101.9
134	H × S	73.7	48.6	61.1	51.6
136	H × S	44.6	42.0	43.3	6.2
146	H × S	42.6	33.8	38.2	26.0
147	H × S	66.1	41.5	53.8	59.2
150	H × S	47.8	36.9	42.3	29.5
152	H × B	44.5	22.2	33.3	100.0
153	H × B	53.5	50.1	51.8	6.7
156	H × B	62.7	41.1	51.9	52.5
157	H × B	68.5	54.7	61.6	25.2
164	H × B	54.9	38.6	46.7	42.2
168	H × B	35.5	31.5	33.5	42.7
173	H × B	72.7	52.7	62.7	37.9
175	H × B	67.2	38.5	52.8	74.5
103	H × O	72.0	27.2	49.6	164.7
107	H × O	56.7	38.3	47.5	48.0
120	H × O	61.0	26.7	43.8	128.4
23	H × (O × R	52.7	36.3	44.5	45.1
38	H × (O × R	49.2	42.6	45.9	15.4
Standard checks					
Co-1148		62.9	42.3	52.6	48.7
Co-7717		63.3	46.4	54.8	36.4
Co-J-64		57.2	55.3	56.2	3.4
Mean		57.3	39.9		
L.S.D. at 5%					
	Between saline and non-saline			= 10.59	
	Between varieties			= 18.67	
	Between (one) hybrid in saline and non-saline			= 26.40	
	Between hyrids in saline or non-saline			= 27.33	

* Percent increase in incidence under saline over non-saline control
H-Hybrid; S-*spontaneum*; B-*barberi*; O- *officinarum* and R-*robustum*.

The incidence of shoot borer was significantly higher (t=5.86**) under saline than non-saline conditions as revealed from Paired 't' test. Reduced shoot growth under saline condition may be presumed as one of the factors contributing towards more shoot borer attack. A perusal of the Table 1 shows the following effects of environments and clones.

Main effects : The mean shoot borer incidence was significantly higher under saline conditions (57.3%) compared to non-saline conditions (39.9%). ISH-clones differed amongst themselves in shoot borer incidence. Highest mean incidence of 62.7% was recorded in ISH-173 which was significantly higher than those of the clones ISH-120, 136, 150, 146, 136, 168 and 152; the last two recorded the lowest incidence of 33.5% and 33.3% respectively. Commercial cultivars did not differ significantly amongst themselves.

Effect of clones : In a given environment, hybrids differed significantly from one another in shoot borer incidence. Under saline environment, per cent incidence ranged from a minimum of 35.5% in ISH-168 to a maximum of 73.7% in ISH-134. Clones ISH-130, 136, 146, 152 and 168 recorded incidence lower than 45% while ISH-103, 132, 134 and 173 recorded incidence higher than 72%; the former group differed significantly from the latter.

Under nonsaline conditions, per cent incidence was a highest of 55.3% in the standard Co J-64 while ISH-103, 120 and 152 recorded incidence lower than 27%, the difference being statistically significant (Table 1).

The present studies using ISH-clones thus confirm our earlier work with 40 promising genotypes of sugarcane that early shoot borer attack is generally more under saline than nonsaline conditions (Sardana and Kumar, 1992). ISH-130, 146, 152 and 168 clones had an average incidence of lesser than 40% compared to a maximum of 63% in ISH-173. Further, ISH-130 and 168 had similar incidence under saline and nonsaline conditions. These preliminary observations suggest that these two clones may be used in breeding programmes for resistance to shoot borer.

ACKNOWLEDGEMENTS

Authors are grateful to Dr. K. Mohan Naidu, Director, Sugarcane Breeding Institute, Coimbatore for providing the ISH-clones for testing and Dr. Kripa Shanker, Head Regional Centre

of Sugarcane Breeding Institute, Karnal for providing the necessary facilities.

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