

Control of Top shoot borer and Stem borer through Alternate Row Planting Practice

T. Ahmed, M. Abdullah, M. A. Alam and M. N. A. Siddiquee

Bangladesh Sugarcane Research Institute,
Ishurdi, Pabna, Bangladesh.

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ABSTRACT

Sugarcane borers specially top shoot borer and stem borer are the most serious pests of the crop inflicting a major damage every year. Due to their infestation, losses in yield incurred every year are estimated to be 21-48% by top shoot borer (Karim and Islam, 1977) and 8.2-12.6% by stem borer, *Chilo tumidicostalis* Hampson (Khanna et al., 1957). Mechanical control and chemical control measures are widely used to keep the pest population below Economic Injury Level (EIL). Moreover, those methods are difficult and expensive. Insecticides have been used to combat the insect menace. However, their indiscriminate use has resulted in adverse effects like resistance (Saxena et al. 1992; Armes et al., 1992), ecological imbalance, health hazards and resurgence of secondary pest. Agronomical control approach like planting time, detashing of standing cane etc reduce pest infestation to some extent. Alternate row planting system may help to save the crop from their attack. Alternate row planting is a cultural practice for controlling sugarcane borers through changing of plantation technique where no extra cost is involved. No work on alternate row planting practice for controlling borer pest was performed in Bangladesh. If the technology provide control of borer pests then it can contribute in the Integrated Pest Management (IPM) programme. Hence the trial was undertaken to save the crop from the incidence of top shoot borer and stem borer with cheaper method of borer pest control.

The trial was conducted at two locations viz. Carew and Co. (Bangladesh) Ltd., Darsana, Chuadanga and Mobarakgonj Sugar Mills, Naldanga, Jhenaidah (MKSM) during the cropping Season 2004-2005. Plantation was done in the first week of December, 2004. Sugarcane variety Isd 34 was planted in 2 plots each 1500 sq. m (50 x 30m). In one, plantation was done only in one direction (North-South) each line 50 m long (30 rows) i.e. check plot. In the other plot, plantation was done in two directions 40 m long 30 rows (North-South) at the middle and 4 rows (East-West) at the borders of those 30 rows each 30 m long. Fertilizer application, irrigation, weeding, mulching and earthing-up were done as per normal cultural practices (Anon., 1998). No pest control measures were applied. Data on top shoot borer and stem borer infestation were recorded in the month of July and December, 2005. Data were collected from every alternate cane row of both plots where the total number of canes along with infested canes were recorded. Collected data were analyzed using pair t-test.

The results showed significant differences between alternative row practice and normal practice (check) for top shoot borer incidence at MKSM (Table 1). Data recorded in July showed that alternative row practice had 2.42% top shoot borer infestation whereas normal practice (check) had 3.88% infestation of the same pest. Data collected at harvest (December) showed 2.8% top shoot borer infestation in plot with alternative row practice whereas normal practice plots received 5.52% top shoot borer infestation which were highly significant (Table 1). Stem borer infestation was nil to negligible in July at MKSM. At harvest significant differences between alternative row practice and normal practice (check) was observed for stem borer incidence at MKSM. At that time alternative row practice had 0.82% stem borer infestation whereas normal practice (check) had 1.84% infestation of the same pest (Table 1).

Table 1. Effect of alternate row practice in controlling sugarcane Top shoot borer and Stem borer, Mubarakgonj Sugar Mills Ltd., Jhenaidah, 2005

Treatments	% infestation (mean)			
	Top shoot borer		Stem borer	
	(12.07.05)	(01.12.05)	(12.07.05)	(01.12.05)
Alternative row practice	2.42	2.8	0.00	0.82
Normal practice (Check)	3.88	5.52	0.05	1.84
t-test	1.46**	2.72**	-	1.02**

** Highly significant

No significant difference was observed between alternative row practice and normal practice (check) for top shoot borer and stem borer incidence at Carew and Co. (Table 2). Data recorded in July showed that alternative row practice had 3.64% top shoot borer infestation whereas normal practice (check) had 4.34% infestation of the same pest. Data collected at harvest (December) showed 0.76% top shoot borer infestation in plot with alternative row practice whereas normal practiced plot received 1.08% top shoot borer infestation which were non-significant (Table 2). Stem borer infestation was nil in July at Carew and Co. At harvest no significant differences between alternative row practice and normal practice (check) were observed for stem borer incidence. At that time plot practice with alternative row had 0.68% stem borer infestation whereas plot with normal practice (check) had 0.71% infestation of the same pest (Table 2). More research is needed on alternative row planting practice for conclusive results.

Table 2. Effect of alternate row practice in controlling sugarcane Top shoot borer and Stem borer, Carew and Co. Ltd., Darsana, Chuadanga, 2005

Treatments	% infestation (mean)			
	Top shoot borer		Stem borer	
	(21.07.05)	(10.12.05)	(21.07.05)	(10.12.05)
Alternative row practice	3.64	0.76	0.00	0.68
Normal practice (Check)	4.34	1.08	0.00	0.71
t-test	NS	NS	-	NS

NS- non-significant

REFERENCES

- BARC, 2005, Fertilizer Recommendation Guide-2005, Bangladesh Agricultural Research Council, Farmgate, New Airport Road, Dhaka.
- Banger, K.S. and Sharma, S.R. 1991. Response of sugarcane (*Saccharum officinarum* L.) varieties to nitrogen fertilization. Indian J. Agro, 536: 440-445.
- Chaudhry, B.A. and Corpuz, I.T. 1984. Profitability of fertilizers and dolomite application to sugarcane in Philippines. Sugar-Y-Azucar, 79:21-44.
- Pal, B.P. 1971. Fertilizer use and strategy. Indian Farming. 20:5.
- Majid, M.A.; Rahman, M.H.; Khondaker, M. and Barma, A.C. 1992. Effect of nitrogen and spacing on transplanted sugarcane. Pro. Inter-Congress Conference of Commission IV International Society of Soil Science, Dhaka. pp.29-33.
- Majid, M.A.; Alam, F.; Islam, M.J.; Ghafur, M.A. and Chowdhury, S.N.A. 1999. Effect of nitrogen and inter-plant spacing on the production of seed cane and germination of buds. Bangladesh J. Sugarcane, 21: 61-66.
- Mutanda, P.P. 1980. Response of sugarcane to nitrogen fertilizer and climate on two major soils in W. Kenya. Proc. ISSCT, 21: 200-211.
- Rahman, M.H.; Khondaker, M.; Pal, S.K.; Majid, M.A.; Zaman, M.W. and Ali, M.Y. 1999. Effect of nitrogen on growth, yield and sucrose content of sugarcane. Bangladesh J. Sugarcane, 11: 83-86
- Samuels, G. 1995. The response of sugarcane to fertilizer application as influenced by irrigation. Proc. ISSCT, 12: 222-226.
- Sing, O. and Sing, B.P. 1972. Response of mid season and late varieties of sugarcane to nitrogen. Indian Sugar, 21: 10-14.