EFFECT OF NITROGEN LEVELS ON THE INCIDENCE OF STALK BORER
(CHILO AURICILIUS DUDGEON) IN SUGARCANE VARIETIES

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ABSTRACT
The present investigations were carried out to study the influence of nitrogen levels on the incidence of stalk borer, *Chilo auricilius* Dudgeon in sugarcane varieties. The infestation of stalk borer increased significantly with the increase in dose of nitrogen. It increased from an average of 16% at 60 kg N/ha to 22.8% at 240 kg N/ha. The per cent increase in infestation of stalk borer in different sugarcane varieties by 240 kg N over 60 kg N/ha was found to be 28.6% in BO 131, 28.9% in BO 128, 39.9% in BO 133, 40.4% in CoP 9204, 40.6% in BO 129 and 66.8% in BO 132. At higher level of nitrogen application variety BO128 (19.92%) was found more tolerant to stalk borer.

Key words: Chilo auricilius, Influence, Nitrogen levels, Sugarcane, Stalk borer, Variety.

INTRODUCTION
Sugarcane is one of the most important cash crops of India. Stalk borer, *Chilo auricilius* Dudgeon is considered as one of the most destructive pest of sugarcane particularly, under north Indian conditions. It is major pest of sugarcane in Bihar as well was described from Pusa (Bihar) in 1905 by Dudgeon (Chaudhary, 1981). Larvae cause damage by feeding inside the canes lowering cane yields to the extent of around 30% and sugar yield by around 20% (Singh et. al.1973). Introduction of high yielding varieties, increased use of inorganic fertilizers particularly indiscriminate use of nitrogenous fertilizers and intensive mono culture have generally been considered to be responsible for increasing pest population. Singh and Singh (1983) and Chaudhary (1990) have reported positive influence of nitrogen application on the population build up of stalk borer causing heavy losses in yield as well as in sugar recovery. The present investigations were carried out to study the influence of different dosages of urea-N on the incidence of stalk borer and to study its interaction with promising sugarcane varieties identified by Sugarcane Research Institute, Pusa.

MATERIALS AND METHODS
A field trial was conducted at the Research farm of Sugarcane Research Institute, Pusa, Bihar in alluvial soil containing available N 211 kg/ha, P$_2$O$_5$ 31 kg/ha, K$_2$O 97 kg/ha with pH 8.00 (1:1.20), 0.59 EC m mhos/cm (1:1.20) and organic carbon 0.38%. Study of cropping history of the experimental field revealed that no manurial trials had ever been conducted for the last five years. The experiment was carried out in a split plot design having sugarcane varieties viz. BO 128 ($V_1$), BO 129 ($V_2$), BO 131 ($V_3$), BO 132 ($V_4$), BO 133 ($V_5$) and CoP 9204 ($V_6$) in the main plots and four nitrogen levels i.e. 60($N_1$), 120($N_2$), 160($N_3$) and 240 ($N_4$) kg/ha in sub plots. The treatments were replicated thrice and each replicate had a net area of 14.2 m$^2$. The crop was planted during first week of October at row spacing of 90 cms. One fourth of nitrogen as per treatment in the form of urea and full dose of P$_2$O$_5$ (85 kg/ha) and K$_2$O (60 kg/ha) were applied at the time of planting. The remaining dose of N was top dressed in two equal splits at 45 and 90 days after planting. The crop was kept free from insecticidal application. The infestation of stalk borer was recorded by taking

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RESULTS AND DISCUSSION

Stalk borer infestation recorded under different treatment combinations and calculation there of have been presented in Table 1. The results obtained are given below and discussed in the light of literature available. A perusal of the data clearly indicated that plots receiving higher dose of nitrogen experienced higher pest damage. The increase in infestation appeared directly proportionate to the levels of nitrogen. The infestation caused by stalk borer varied from 16.9% in BO 128 to the highest 22.0% in BO 131. Percentage of stalk borer infestation generally increased with progressive increase in dosages of N. It was 16.0% at 60 kg N/ha 18.5% at 120 kg N/ha, 21.1% at 180 kg N/ha and 22.8% at 240 kg N/ha. At 60 kg N, the infestation of stalk borer in different varieties did not vary significantly and was around 14.0%. Variety Bo 132 had the lowest infestation of 14.3% at 60 kg N/ha where as it was a maximum of 18.8% in BO 131. However both the varieties were equally affected at 180 kg N and above. BO 128 showed least increase with N application at higher levels. Higher levels of Nitrogen may increase levels of growth hormone indole acetic acid during formative and grand growth phase of sugarcane (Singh, 1986). Thus luxuriant growth of the crop at higher N levels might have proved conducive for shelter, fecundity, growth and development of the stalk borer (Agarwal, 1981). High levels of nitrogen in the soil of sugarcane fields have been reported to result softening of canes which were susceptible to heavy damage by C. auricilius (Gupta 1958 a and Rajni and nath 1972).

Interactive effect of varieties and nitrogen level (N x V) on the incidence of stalk borer:
The interaction effect of varieties and nitrogen levels was found significant on the incidence of stalk borer in sugarcane crop. At 60 Kg N/ha, variety BO132 (14.31%) showed maximum tolerance for the incidence stalk borer which proved significantly superior over variety BO131 (18.86%) and was at par with other varieties. At higher level of nitrogen application variety BO128 (19.92%) was found more tolerant to stalk borer. The variety BO 131 was found susceptible to stalk borer at all the levels of nitrogen application.
REFERENCES


