Effect of planting dates on early shoot borer incidence in sugarcane*

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Abstract

The studies on the effects of planting dates on the incidence of early shoot borer were undertaken at the Sugarcane Research Station (O.U.A.T.), during 1991-92 and 1992-93. It was observed from the discourse that the planting of sugarcane from January to April recorded 13.04 - 24.84% dead hearts at 105 DAP (days after planting) and subsequent planting from June to October drastically reduced pest infestation at 105 DAP. Again, there was a rising trend from November planting date.

Introduction

Production of sugarcane in India has been rising gradually during the last three decades. As per 1993-94 statistics, in India, the sugarcane is cultivated in an area of 3.386 million ha with a production of 227.059 million tonnes and a productivity of 67.60 tonnes/ha (Anonymous, 1995) whereas, in Indonesia, it is cultivated in an area of 0.30 million ha with production of 25.50 million tonnes and productivity of 85.00 tonnes/ha. One of the constraints in lowering down the production and productivity in India is the attack of different insect pests, most preferably the borers. No part of the plant is free from damage (David and Nandagopal, 1986; David and Sithanatham, 1986). Among the serious pests, mention may be made on shoot borers, pyrilla, mealy bugs and scales. The insect induced crop loss extended to the tune of 10.0% (Srivastava, 1983). In Orissa, the early shoot borer, *Chilotraea infuscatellus* Snell. (Lepidoptera : Pyralidae) is a serious pest in sugarcane (Jena *et al.*, 1994). The pest attacks the crops in tillering stage and produces dead hearts. David (1986) reported that planting of sugarcane during December to February reduced the early shoot borer infestation. Heavy incidence of shoot borer occurred in late season planted crop which was exposed to hot and dry condition in summer (David and Alexander, 1988).

Materials and Methods

To study the effect of planting dates on the incidence of early shoot borer in sugarcane, two experiments were laid out during 1991-92 and 1992-93 in randomized block design with three replications each. Co 62175 a popular sugarcane variety in Nayagarh district was planted sequentially at monthly intervals starting from first of January in both the years and continued upto December. Thus, there were 12 planting dates. State recommended package of practices were followed for raising the crop in the field. To record the early shoot borer infestation, the total number of shoots showing dead heart symptoms were counted 20 spots of 1.0 m^2 each randomly selected from each sub-plot of each treatment (from each planting date). On 105 DAP, the peak infestation of early shoot borer was observed. The data of peak activity were converted into percentage of infestation. Square root transformations were employed as the percentage of infestation ranged between 0 and 30.0% (Snedecor and Cochran, 1967). The cane yield (t/ha) was recorded at harvest.

Results and Discussion

The pooled data of the studies on the effect of planting dates on the incidence of early shoot borer at Nayagarh revealed that the planting of sugarcane during January, February, March and April recorded 3.04 - 24.84% dead heart at 105 DAP. Subsequent planting from June drastically reduced the dead heart incidence at 105 DAP. Further, there was a rising trend from November planting date. Thus, it was observed that the canes planted from January upto the end of March were the most vulnerable ones to early shoot borer attack (Table 1). Our findings were in full agreement with the findings of David and Alexander (1988) who observed that late season planted crops harboured high infestation. Canes planted from May to October recorded very low (1.8 - 10.6% dead heart) incidence.

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Table 1. Effect of planting dates on incidence (D.H.%) of early shoot borer at 105 DAP during 1991-92 and 1992-93 at Nayagarh

Sl. No.	Planting dates	Dead heart (D.H.%)			Cane yield (t/ha)		
		1991-92	1992-93	Pooled mean	1991-92	1992-93	Pooled mean
1.	Jan. 1	13.04 (3.67)^{e}	14.07 (3.83)^{e}	13.55(3.75)^{e}	186.86^{i}	138.28^{h}	137.57^{h}
2.	Feb. 1	22.59 (4.80)^{f}	18.93 (4.40)^{f}	20.76(4.60)^{f}	135.37^{h}	135.38^{fg}	135.37^{g}
3.	Mar. 1	29.05 (5.43)^{h}	26.23 (5.16)^{g}	27.64(5.29)^{h}	134.42^{g}	135.74^{g}	135.08^{g}
4.	Apr. 1	24.84 (5.03)^{g}	24.50 (4.99)^{g}	24.67(5.01)^{g}	133.69^{f}	132.50^{d}	133.09^{e}
5.	May 1	10.60 (3.33)^{d}	9.45 (3.16)^{d}	10.27(3.25)^{d}	132.90^{e}	134.76^{f}	133.83^{f}
6.	Jun. 1	6.09 (2.56)^{c}	4.82 (2.29)^{c}	5.45(2.42)^{c}	130.41^{b}	125.53^{a}	127.97^{a}
7.	Jul. 1	3.41 (1.97)^{b}	3.73 (2.03)^{b}	3.57(2.00)^{b}	131.74^{c}	133.62^{e}	132.68^{e}
8.	Aug. 1	1.81 (1.51)^{a}	1.27 (1.32)^{a}	1.54(1.41)^{a}	129.86^{a}	130.22^{c}	130.04^{b}
9.	Sep. 1	2.18 (1.62)^{a}	1.30 (1.33)^{a}	1.74(1.47)^{a}	130.48^{b}	129.62^{bc}	130.05^{b}
10.	Oct. 1	1.83 (1.51)^{a}	1.86 (1.51)^{a}	1.84(1.51)^{a}	131.66^{c}	129.29^{b}	130.47^{b}
11.	Nov. 1	5.85 (2.51)^{c}	4.32 (2.15)^{bc}	5.08(2.33)^{c}	132.42^{d}	129.41^{bc}	130.91^{cd}
12.	Dec. 1	10.16 (3.26)^{d}	10.97 (3.38)^{d}	10.56(3.32)^{d}	134.15^{g}	129.23^{b}	131.69^{d}
C.D. (P=0.05)		(0.117)	(0.245)	(0.185)	(0.308)	(0.885)	(0.641)
Mean		11.55(3.10)	10.87(2.71)	10.55(2.64)	132.83	131.96	132.39

Mean of three replications

Figures in parentheses are $\sqrt{x + 0.5}$

Similar superscripts in a column indicate that their differences are not statistically significant at P=0.05