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## METEOROLOGICAL ASPECTS OF SUGARCANE STEM BORER INFESTATION AT RUDRUR

In tropical regions where climatic conditions are mild, various generations of stem borers (*Chilo-infuscatellus* Shellen, *Chilo auriculus* Dudgeon) overlap each other and all stages of the pest are seen throughout the year (Butani 1961, Rao 1969). Because of internal feeding habit of larva, the chemical treatment are effective only at a critical time of its application. Keeping this in view an attempt is made in this study to find out the best possible relation between pest infestation and more influential weather parameters. This can help in issuing forewarning of the pest outbreak making an economic and effective use of control measures.

The data of Suru crop (ekkali) of sugarcane at Rudrur ( $18^{\circ}13'N, 77^{\circ}50'E$ ) generally planted in January-February and harvested in December-February (next year) is utilised. The entomological data recorded fortnightly was available as monthly average. The pest population was estimated qualitatively for 13 years (1965-1977) under three categories, light, moderate and heavy representing the ratio of sugarcane plants infested to the total number of plants in sampling unit as 25, 50 and 75 per cent respectively. The meteorological observations were recorded in the nearby observatory at 0700 and 1400 LMT. The yearly univariate seasonal index of pest attack is worked out as the average percentage of incidence throughout the crop life as per method adopted by Dubey *et al.* (1985). The simple correlation coefficient (CC) between yearly percentage infestation and weekly values of maximum temperature ( $T_{max}$ ), minimum temperature ( $T_{min}$ ), morning relative humidity (RH-I) and evening relative humidity (RH-II) were calculated for every weeks during full crop period. The statistical significance of the highest CC values was estimated applying Student's 't' test and only those parameters were chosen for discussion which were significant at 5 and 10 per cent level.

The average percentage infestation calculated from 13 years data were plotted in Fig. 1, against weekly  $T_{max}$ ,  $T_{min}$ , RH-I and RH-II in the corresponding weeks of highest CC values. The monthwise, percentage frequency of attack counting all categories and average intensity of incidence were worked out and plotted in Fig. 2. The highest and significant correlation coefficients 0.86, 0.70, -0.41 -0.66 for  $T_{max}$  in standard week 31 (30 July-5 August),  $T_{min}$  in standard week 20 (14-20 May), RH-II in standard week 31 and RH-I in standard week 6 (5-11 Feb) respectively indicate that these are the most influential meteorological parameters.

In general, it is seen that the higher relative humidities are not favourable for attack and morning relative humidity between 55 and 65% (RH-I) in first week of February, is most congenial (Fig. 1). It means in the early stage of sugarcane, moths are more active to cause damage seen in later stage of the crop. During middle of May when the crop is in shoot formation and tillering stage the higher  $T_{min}$  are more favourable with optimum at  $26.7^{\circ}$ . In July-August the crop is generally in node formation stage. The  $T_{max}$  above  $30.5^{\circ}C$  in last week of July is quite helpful in increasing the damage.

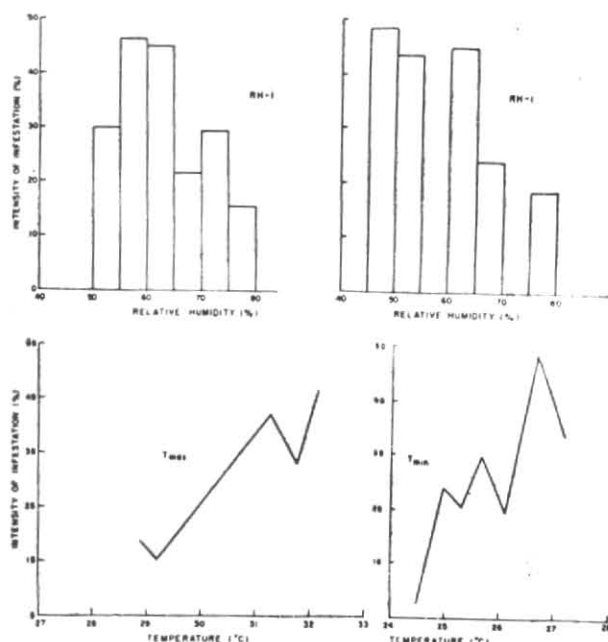


Fig. 1. Variation of average percentage infestation of sugarcane stem borer with meteorological factors : RH-I (Std. week 6), RH-II (Std. week 31)  $T_{max}$  (Std. week 31) and  $T_{min}$  (Std. week 20) at Rudrur in the weeks of highest CC values

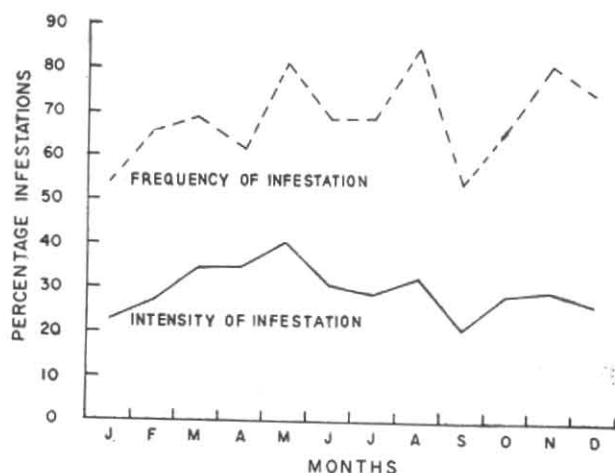


Fig. 2. Seasonal intensity and frequency of infestation of sugarcane stem borer at Rudrur

It is clear in Fig. 2 that the changes of attack are more in May, August and November but the intensity is highest in May. It means possibilities of attack are more in shoot formation and maturity stages where as the intensity is more in shoot formation stage.

The results are quite comparable with the results obtained by Dubey *et al.* (1987) for the sugarcane stem borer incidences at Anakapalli, except the only difference that the most probable months of attack at Anakapalli was found to be in April. It may be due to the fact that although Anakapalli is in the same belt but near the coast. Rudrur is in the interior part of Andhra Pradesh. The continental effect on the climate might be the reason for this difference.

The limitation of this study is that the data is qualitative and not for longer period which is necessary for any statistical analysis. Therefore, the similar work is required for more stations in the belt for longer period to draw a concrete result which can be used in forewarning of pest infestation on operational basis.

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