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Short communication

Recent trends of sugarcane diseases in Assam

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INTRODUCTION

Sugarcane is affected by numbers of diseases causing yield loss of about 10–15% (Viswanathanan 2012). Many sugarcane diseases are reported from Assam. Nath *et al.* (1999) reported the occurrence of red rot, wilt etc.in trace amount in Assam. But there is no systematic study on the incidence and severity of these diseases. To address this present investigation is carried out to get a clear picture of disease occurrence in Assam.

MATERIAL AND METHODS

A survey programme was conducted during 2016–17, 2017–18 and 2018–19 at regular intervals from March to February in four different locations *viz.*, *Khanikor Jutia Krishi Pam*, Sugarcane Research Station, Buralikson, Khokondaguri and Sapori areas of Assam. To record the percent disease incidence, three rows; two from both the sides and one from middle were selected and evaluated as

$$\text{Percent disease incidence (PDI)} = \frac{\text{Number of infected plant}}{\text{Total number of plant observed}} \times 100$$

For calculating disease severity five plants; four from four corners and one from middle were selected and three leaves; one each from top, middle and lower leaves were taken for evaluation.

RESULT AND DISCUSSION

Among the various diseases affecting sugarcane, fungal disease occupiesa major areas followed by viral or phytoplasmal diseases and bacterial diseases. In the present study red rot (Fig. 1A) caused by *Glomerella tucumanensis* (Speg.) Arx & E. Müll., (Fig. 1B) occurred with a percent disease incidence of 8.82% in the cultivar Co 740 in 2016–17, 7.69% in 2017–18 and 10.53% in 2018–19 in the same variety.

Wilt [*Fusarium sacchari* (E.J. Butler & Hafiz Khan) W. Gams] (Fig. 1C, D) is an important disease in Assam. Earlier wilt was recorded in a trace amount (>1) (Nath *et al.* 1999). But it was found upto18.51% in 2016–17 in the cultivar CoBln 9104, 19.23% in 2017–18 in the same variety and 14.38% in 2018–19.

Pokkahboeng [*Fusarium verticillioides* (Sacc.) Nirenberg] (Fig. 1E) is an emerging disease of sugarcane; with an incidence level of 20% in 2016–17 (Fig. 2), 11.42% during 2017–18 in CoBln 9103 and 13.15% in 2018–19 in the same cultivar. In the initial stage of this disease curling, twisting, malformed leaves appearedin the newly planted crop. Later the base of the leaf was chlorotic. In the infected plant, most common symptom observed was malformed or twisted top during the tillering stage of the crop. But the crop did not reach its acute phase *i.e.*, top rot phase during the observation period.

Among the foliar diseases Yellow Leaf Disease (YLD) (Fig. 1F) of sugarcane was observed with a percent disease incidence of 5.66% in 2016–17 in the cultivar Co 997 and with 8.57% and 38.4% in 2017–18 and 2018–19 respectively (Fig. 2). Among other foliar diseases ring spot (*Leptosphaseria sacchari* Breda de Haan), banded sclerotial disease (*Rhizoctonia solani* f. sp. *sasakii* Exner) and curvularia leaf spot, (*Cochliobolus lunatus* R.R. Nelson & Haasis), were recorded in trace amount.

It was found that there is a sharp increase in YLD disease in 2018–19 in comparison to other diseases. The disease is not only increase in Assam condition but also in other states of the country like Uttar Pradesh, the leading sugarcane growing states of India, concerned with the increasing pattern of the disease (Tiwari *et al* 2012). The causative virus of the disease colonizes in phloem tissue of the cane which restricts the movement of

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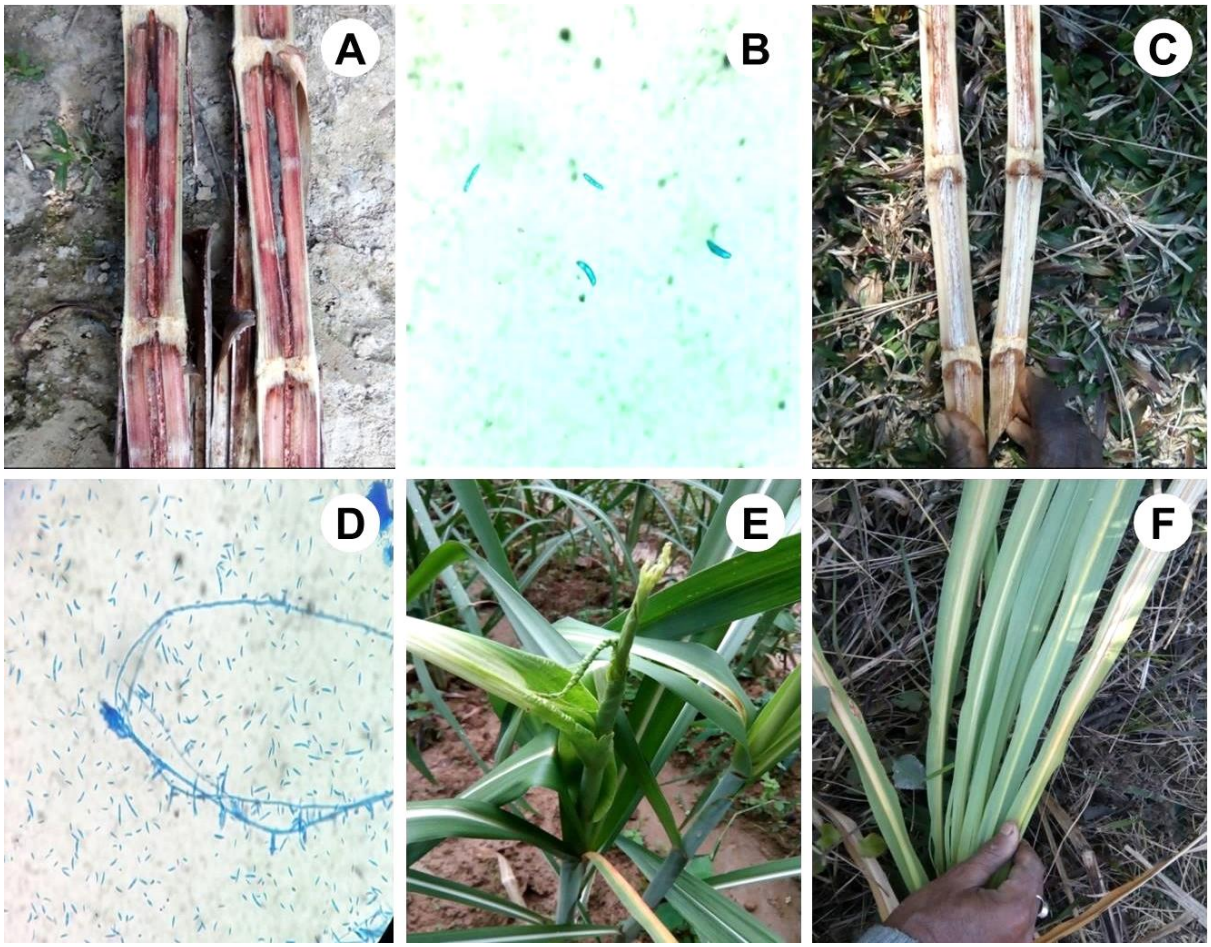

Figure 1. Some diseases of sugarcane observed during the survey: **A**, Red Rot infected sugarcane set; **B,** Conidia of *Glomerella tucumanensis* (Speg.) Arx & E. Müll.; **C**, Wilt infected sugarcane set; **D**, Conidia of *Fusarium verticillioides* (Sacc.) Nirenberg; **E**, Pokkah boeng at tillering stage; **F**, YLD infected cane.

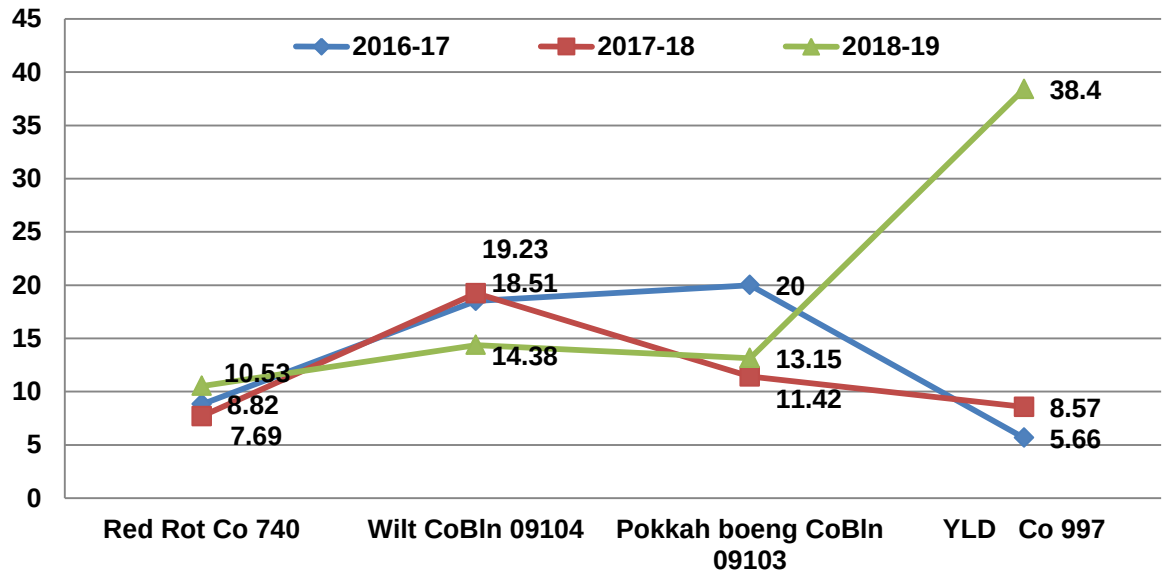

Figure 2. PDI of sugarcane diseases in 2016–17, 2017–18, 2018–19.

photosynthates from leave to stalk. Moreover, the two aphid species *Melanaphis sacchari* Zehntner and corn leaf aphid- *Rhopalosiphum maidis* Fitch are associated in the transmission of the disease (Anuradha *et al* 2019). Red rot and pokkah boeng was found to be slightly increased in 2018–19 in comparison to 2017–18. Increasing trend of pokkah boeng disease is also observed by Ranjan *et al.* (2018) in Bihar. Viswanathanan *et al.* (2012) reported the increase intensity of pokah boeng disease in almost all the sugarcane cultivars of different agro climatic conditions during the last few years' survey from 2007 to 2013. He reported up to 90% and 5-30% infection of pokkah boeng in the cultivar S. 224/10 and CoSe 01434 at Sugarcane Research Institute,

Shahjahanpur. Being an important cash crop there is an ample scope for better crop management practices for improves productivity. Though there is disease pressure in cane agriculture of Assam there is also a need to further investigation to control spreading of diseases to sustain better productivity.

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