Crown Top Mealy Bug, *Phenacoccus saccharifolii* (Green): An Emerging Threat to Sugarcane

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ABSTRACT

Sugarcane, a long-duration crop of 12–14 months. At least 220 species of insects occur on sugarcane at different growth stages, generally shoot borers and root grubs are significantly destructive, sucking pests are sporadic, seldom a problem of serious consequence necessitating intense monitoring and alacritous management. However, lately, sucking pests have undergone a major shift in pest status in sugarcane. Reports of change from minor to major pest status and occurrence in newer, previously unknown areas of incidence are on the rise. Recently, Phenacoccus saccharifolii (Green), a mealybug affecting the sugarcane's crown region, has appeared in areas of sugarcane cultivation. This pest has now become a major threat to sugarcane cultivation as it can often kill the infested canes with or without the association of the fungal disease, Pokkah boeng. Ratoon crop was affected more than the plant crop. This species was found in large colonies, primarily between the –2 and +1 leaf of the sugarcane plant and hence, named as crown mealybug. Infestation leads to severe mottling in the leaf whorl and death of the central shoot.

Key Words : Crown top mealy bug, Infestation, Sugarcane, Sucking pests and Pokkah boeng.

INTRODUCTION

Sugarcane (Saccharum officinarum L.) is a tropical plant in the Poaceae family. It is also known as "Wonder cane" because of its versatile utility and ability to grow in almost all agro-ecological situations. It is a long-duration crop of 12–14 months. At least 220 species of insects occur on sugarcane at different growth stages, In India, the high incidence of insect pests and diseases is a critical issue in achieving higher sugarcane production. In general, cane borers and root grubs are significantly destructive, sucking pests are sporadic, seldom a problem of serious consequence necessitating intense monitoring and alacritous management. In India, the high incidence of insect pests and diseases is a critical issue in achieving higher sugarcane production. Their damage is often viewed as a corollary of either climatic vagary or poor crop husbandry and rarely of both. However, lately, sucking pests have undergone a major shift in pest status in sugarcane. Reports of change from minor to major pest status and occurrence in newer, previously unknown areas of incidence are on the rise. For example, the invasion of southern India by woolly aphid Ceratovacuna lanigera Zehtner on a substantial scale and the subsequent serious losses in 2004–2012. Likewise Recently, Phenacoccus saccharifolii (Green), a mealybug affecting the sugarcane's crown region, has appeared in areas of sugarcane cultivation. This pest has now become a major threat to sugarcane cultivation as it can often kill the infested canes with or without the association of the fungal disease, Pokkah boeng..

Brief History of Phenacoccus saccharfolii

P. saccharifolii was observed on sugarcane (hybrid cv Co 06022) plants for the first time in India, Pugalur at Tamil Nadu. P. saccharifolii has been observed on Erianthus arundinaceus in Andhra Pradesh.

Alternate hosts : E. arundinaceus and Sorghum halepense.

Life cycle:

This species was found in large colonies, primarily between the –2 and +1 leaf of the sugarcane plant and hence, named as crown mealybug. eggs were laid in batches in ovisac ,the prolifically emerging crawlers were yellow, highly active, Two pairs of long waxy filaments in the caudal region flanked by another pair of

filaments were observed at the base of the abdomen and The mature inactive females spun ovisacs. Infestation leads to severe mottling in the leaf whorl and death of the central shoot. On S. officinarum cultivars, profuse honeydew produced by the mealybugs due to continuous and gregarious feeding, patronized ants.

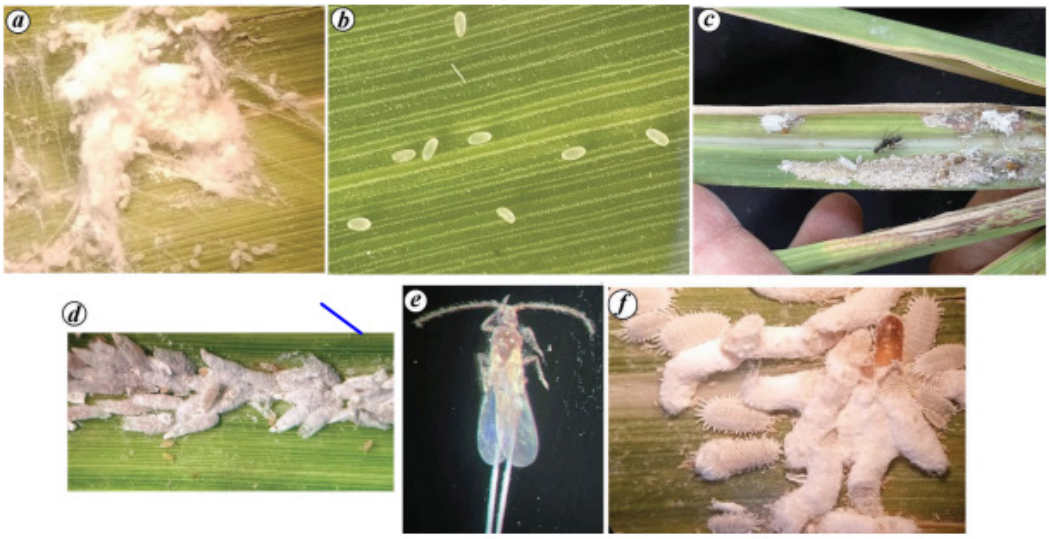

Fig. 1 Different Life stages of the mealybug. A. Eggs teased out of the ovisac. B. Freshly laid eggs of crown mealybug. C. Crawlers of P. saccharifolii. D. Male cocoons. E. Male adults. F. Females with overlapping ovisacs. (Geetha et al. 2022)

Nature of Damage:

This species was found in large colonies, primarily at top leaf of the sugarcane plant and hence, named as crown mealybug. Crinkling, necrosis and rotting of +1 to +3 leaves were observed due to the high infestation of young plants (Figure 2 a–d). Further attack lead to rotting of up to –2 leaf. Desapped leaves turned pale orange, yellow and subsequently became dry. Due to feeding, necrotic spots or mottling developed on the leaves. As the population increased, the entire crown was affected; thus, the name crown mealybug. Intense attack on the leaf whorl led to rotting of the central culm and/or meristem, which is also known as dead heart. Loss of apical dominance induces tillering in young plants (tillering phase) or sprouting of aerial tillers in the case of a grand growth phase. Often, leaves of the new tillers, whether sprouted aerially or from the nodes at the ground level, were also infested and the whole sprouts withered away. The affected young plants seldom formed canes. Young crops, more specifically ratoons were vulnerable to this pest.

Scale of damage (Geetha et al., 2022)

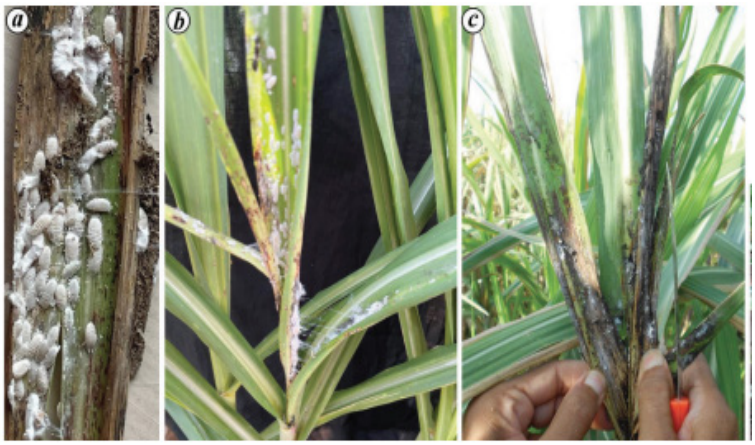

Fig. 2 Symptoms of mealybug infestation and pokkah boeng. A. Leaf blade harbouring a leaf large number of mealybugs. B. Mealybug infestation in the whorl. C. sooty mould and dead heart D. Necrotic spot of feeding by the female. (Geetha et al. 2022)

Grade 1. Bare infestation
Grade 2. Visible infestation
Grade 3. Prominent infestation
Grade 4. Population peak

CONCLUSIONS:

the crown mealybug P. saccharifolii occurrence and infestation in devastating proportions on sugarcane in Tamil Nadu, though previous records of occurrence and sporadic outbreaks of this pest elsewhere in India six decades ago are available. Since then, till recently this pest has not been recorded in previously reported areas. Therefore, it is essential to constantly monitor the P. saccharifolii population as the homeostatic mechanisms to maintain the ecological or natural balance are yet to be attained by this pest. Hence outbreaks are to be expected and effective management measures must be followed on a war footing as the possibility of its immediate spread is imminent to virgin lands. Though there are no specific recommendations for use against this mealybug, curative or prophylactic application of chemicals that are currently being used for sucking pests provide the required population containment. Ratoons need additional surveillance, as they are intensely affected.

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