INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
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www.vmsindia.org

Banana root borer-*Cosmopolites sordidus*

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Abstract
Banana also occupy an important position in the agricultural economies of India, Australia, Malaysia, Taiwan, Sri Lanka, and southern China. Banana agriculture is subject to many natural calamities, but diseases constitute a major problem. Biotic factors caused by pests and diseases present constant threats to banana farmers. Our main aim is not only to detection of bio-aggressors on plant leaves but as early as possible major & minor problem in field. Banana (*Musa* sp.) is the most important fruit crop in India next to mango. Its year round availability, affordability, varietal range, taste, nutritive and medicinal value makes it the favourite fruit among all classes of people. It has also good export potential. Cultivation of the crop is an economically viable enterprise leading to increase in productivity, improvement in produce quality .One of the most serious insect pest of banana root borer, *Cosmopolites sordidus*.
In fertile soils and with good crop husbandry it is seldom serious. Banana weevil numbers are often low in newly planted fields. Population build-up is slow and weevil problems are most often encountered in ratoon crops. The banana weevil damage is more serious in low altitude areas that in highland areas as a result of the influence of temperature.

Keywords- Early pest detection, Cosmopolites sordidus, Banana fields

INTRODUCTION

Banana cultivation (*Musa* spp.) is constrained by problems of pests and diseases. In Anjangaon, farmers ignore these problems due to lack of financial resources needed to apply control measures or overlook them due to lack of knowledge of protection practices. When yields are unacceptably low, some farmers abandon banana cultivation. This has led to dwindling number of farmers involved in the production of banana and low annual production outputs in Anjangaon. The banana weevil (*Cosmopolites sordidus*) has been identified as the most important insect pest of banana and plantain (Gold, 1998; Gold et al., 2001) in Africa. Weevil damage limits smallholder and export productions in many sub-Saharan African countries (Jones, 2000; Umeh and Onukwu, 2002).

In addition to the banana weevil, other insect pests such as termites (*Microtermes* spp.) are considered occasional pests in plantain and banana production. Their populations vary from place to place. However, their occurrence in plantain and banana farms may become a concern especially during periods of drought and dry seasons.

Banana is the most important fruit crop in India and accounts for 31.7 percent of the total fruit production. It is widely cultivated in varying agro climatic regions under different systems of production. Banana research in India is directed towards increasing the production and productivity. However, banana cultivation continues to face several pests and diseases which affect the production and productivity. Nevertheless, conservation and characterization of genetic diversity, improvement of cultivars with resistance to biotic and abiotic stresses, production technology for high productivity with export quality fruits and better post harvest technology
needs more systematic research.

Material and Method:

The field studies for recording the pest diversity and Diseases on Banana plants were conducted in Pandhari –Achalpur taluka District-Amaravati during the period March,2014-March,2015 to record the distribution of banana as well as insect pest associated with the plant along with their mode of damage. The insects along with their immature stages were collected by traditional methods of hand picking and by using hand nest from study area. Collected insect were killed using ethyl acetate and pinned ,stretched and finally dried for about half and hour at 35 to 40 ^{0} avoid fungal infection .General morphological description of all the stages of insect pest were made under different magnification of stereoscopic microscope.

Symptoms:

Banana weevil attack has been reported to interfere with root initiation, kill existing roots, limit nutrient uptake, reduce plant vigour, delay flowering and increase susceptibility to other pests and diseases. Yield reductions are caused by both plant loss (plant death, rhizome snapping, toppling) and lower bunch weights. Loss of more than 50% of the plant crop to banana weevil has been recorded.

Distribution:

The BRB is believed to have originated in South and South East Asia, which is also the centre of origin of the present day bananas and plantains. This insect is found in India, China, Malaysia, Indonesia and Thailand and is a key pest of bananas and plantains, posing a great threat to banana production systems in these countries (Valmayor *et al.* 1994).

Pest density may vary from field to field. The weevil prefers plantains and highland bananas, particularly 'Pome' types. Total crop failure will result in farms where the weevils are not managed efficiently. Such crop failures are not uncommon in banana production systems in India.

Life History-

The banana weevil (*Cosmopolites sordidus* Germar) weevil is a pest on banana and plantain throughout the tropics. Farmers participating in a rapid rural appraisal of pest management practices in plantain and organic banana in the indigenous territories ranked the banana weevil as the worst pest in their farms (Polidoro et al. 2008). While the banana weevil is not considered an important pest in commercial banana plantations (Ostmark 1974), it has eluded control in smallholder production systems (Karamura and Gold 2000).

Damage caused by the larvae, which tunnel into the banana or plantain corm, can reduce yield and plantation life, and heavy infestation can lead to crop failure in newly planted fields (Gold et al. 2001). Yield loss can also occur through toppling of damaged plants (Gold et al. 2001). Control methods vary in efficacy, and currently include synthetic pesticides (Sponagel et al. 1995), cultural controls such as farm sanitation (Masanza et al. 2005) and pseudostem traps (Gold et al. 2002), biological control with entomopathogens (Treverrow et al. 1991, Nankinga and Moore 2000) or myrmicine ants (Castineiras and Ponce 1991), host plant resistance (Kiggundu et al.2003), botanical pesticides such as neem (Musabyimana et al. 2001), and mass trapping with pheromone lures (Alpízar et al. 1999, Tinzaara et al. 2005b).

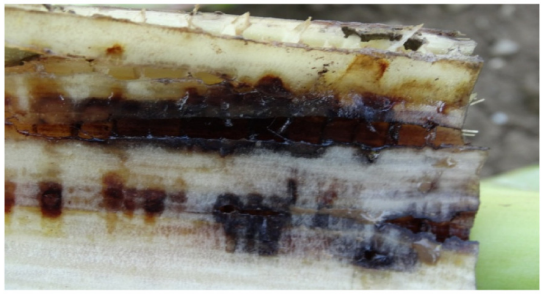
However, banana production systems vary widely throughout the tropics, and each control method must be evaluated under local agroecological conditions to determine its efficacy for smallholder production (Gold et al. 2001). No previous studies exist on banana weevil damage levels in that research area, and the few previous studies on banana weevil control methods are unpublished and cannot be located.

Result and Discussion:

India is credited as the largest producer and last two decades has witnessed increasing trend recording high growth rate, which has been possible due to adoption of improved production technologies like high density planting, use of in-vitro plants, fertigation and management of insect pest and disease. However, there is a regional disparity in adoption of technologies indicating variation in productivity level ranging from 7.9 to 61.27 tonnes per hectare, but still there is a wide gap between the potential yield and the average yield obtained in farmers' field. This would need immediate attention so that production could be increased from the same area by increasing productivity.

There are many gaps in the knowledge of the Banana root borer that require further investigation. For example, population dynamics and bionomics of the pest are not well understood and studies on yield loss due to the Banana root borer are incomplete.The effect of different banana production systems on Banana root borer populations must also be studied and economic threshold levels should be estimated for the Banana root borer in these different production systems.

Mature larvae of banana weevil - *Cosmopolites sordidus*



Banana weevil damage showing to rhizome

Mature larvae of Banana weevil damage feeding on residual rhizome

Banana weevil- *Cosmopolites sordidus* Germar

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