



Study of Pest on Banana of Shahada Tehsil Dist. Nandurbar Maharashtra

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Abstract : The banana plant, *Musa paradisiaca* is the world's largest herbaceous perennial plant and belongs to the family Musaceae. Banana is considered a globally important fruit. Bananas are the most important food crops in the world. The production of bananas continuously decreases due to the attack by insect pests. The insect attacked the banana on the rhizome, pseudo stem, leaf, and fruits. The most prominent species of insects that attacked bananas are banana weevil, pseudo stem weevil, banana scab moth, banana skipper, banana thrips and banana aphids. Thrips caused cosmetic damage directly to the fruits and reduced marketability. Shahada Tehsil is one of the leading areas of Banana cultivation in North Maharashtra. The present work was done in different sites of Shahada. Authors reported six species of insect pests on the Banana plant. Banana pseudo stem weevil, Corm Weevil, Banana aphids, Stem weevil, Rhizome weevil, and Thrips. All these species infect banana plants and cause huge economic losses to the cultivators. In Shahada severalty of these species are frequent each year, so the economic loss due to all these six species increasing continuously.

Key words: *Musa paradisiaca*. Banana pest. Pseudo stem weevil, Rhizome weevil

I. INTRODUCTION

The banana plant, *Musa paradisiaca* is the world's largest herbaceous perennial plant and belongs to the family Musaceae. Banana is considered a globally important fruit. Annually 142 million tons of bananas are produced in India. Bananas are the most important food crops in the world. The production of bananas continuously decreases due to the attack by insect pests. The insect attacked the banana on the rhizome, pseudo stem, leaf, and fruits. The most prominent species of insects that attack bananas are banana weevil, pseudo stem weevil, banana scab moth, banana skipper, banana thrips and banana aphids (William Tinzaara et al., 2021). Thrips caused cosmetic damage directly to the fruits and reduced marketability. Ant-attendance is a critical factor in the biological control of the banana aphid (Stechmann et al., 1996).

II. RESEARCH METHODOLOGY

Study Area:-

The present study was conducted at Shahada. Dist. Nandurbar. Maharashtra during October to February 2023. This area is famous for the cultivation of bananas due to the availability of water and soil quality.

Field Method:-

For good collection, two distinct standard methods were used. Pitfall traps were set up at all sites and were monitored every day. Apart from these, handpicking was also done. Sometimes shrubs and tree branches were heavily shaken so that beetles fell on already spread large white sheets. After the collection of each specimen author took photographs with a high-megapixel camera and, after photography released them into

the environment. Collected specimens were identified with the help of different sources of websites and identification guides.

III. RESULTS AND DISCUSSION

In the present study author reported the following six pests, which are predominant in banana plants.

1. Banana pseudo stem weevil BPW (*Odoiporus longicollis*)

In the last 5 years, it has become a very severe pest. It completes 2 life cycles in a year. The life cycle includes eggs, grub, pupa, and adults. The life cycle is completed in 21-23 days. The adult lives up to 90-120 days in the active stage. BPW is most prominently infested during the late pre-flowering stage culminates in the failure of ascending flower buds and peduncle (Padmanabhan et al., 2001).

Females make holes on the pseudo stem by making pinholes with the help of their snout and laying eggs in it. After hatching eggs grab bores into the pseudostem make tunnels and feed the internal, content on the pseudostem.

2. Corm Weevil (*Cosmopolites sordidus*)

It is commonly known as the banana root borer, it is a pest of banana cultivation & has a cosmopolitan distribution, being found in all parts of the world in which bananas are grown. The borer preferentially attacked the older corms as the exact age at which the damage was done could not be determined (Ittyeipe K., 1986). The life cycle includes eggs, grub, pupa, and adults. The life cycle is completed in 28 days. Larvae bore into the corm, damaging the root and vascular system, reducing nutrient and water uptake & weakening the stability of the plant (Twesigye 2018). The existence of density-dependent factors in weevil Oviposition, over 90% of the Oviposition occurred in the base of the pseudostem, with the remaining eggs found in the corm and roots near the soil surface (Abera AMK, 1999).

Control measures included crop rotation with non-host crops like paddy and sugarcane. Ensure proper fertilization and remove the weeds.

3. Banana aphids (*Pentalonia nigronervosa*)

Yellowish-green nymphs and adults suck cell sap and devitalize plants. It is distributed. The reproduction is parthenogenesis. Adult longevity varies from 8 to 26 days with an average of 14 days. Each female can lay 8-28 offspring with an average of 14 per female. Nymphs become mature in 12-15 days. Both adults and nymphs suck the sap from a lower portion of a leaf. It acts as vectors of cardamom mosaic (cattle disease).

A control measure includes deep clean cultivation using healthy and paste-free suckers. Remove the affected plants and do not take up rattan and intercrops. The postharvest method involved prewashing in a mild detergent or soap solution, opening tight bracts, followed by a 5-minute dip in an insecticidal soap or soap-pyrethroid combination at the label rate eliminates most aphids (Hansen et al., 1992).

4. Steam weevil (*Odoiporus longicollis*)

The banana stem weevil or banana pseudostem borer, *Odoiporus longicollis*, is one of the most important pests of bananas and planting. The adult weevils are black colored & measure 23-39mm. The weevils are predominantly nocturnal inhabitants, although during cloud days and cooler months. The life cycle consists of eggs, grub, pupa, and adults and is completed in 44 days. The average lifespan of the species is one year. The nature of damage observed was grub bore into pseudostem-making tunnels. Cutting holes were found on the outer surface and exudation of the plant was the initial symptom. A blackened mass comes out from the boreholes. Wilting of the plant occurs. chitinase and protease.

A control measure includes removing dried leaves periodically and keeping the field clean. Up root-infested trees, chop picked, and burn. Management of weevil pests using chemical methods is harmful to the environment, and cultural methods are also partially successful. Therefore, an alternative approach of plant defense mediated by endophytic fungi to control banana stem borer larvae is necessary, which could affect the extracellular enzyme (Alagesan Alagersamy et al., 2019).

5. Rhizome weevil (*Cosmopolites sordidus*)

The most destructive pest is widely distributed in all banana-growing areas. The adult weevils (10 -13mm) are shiny reddish-brown to black, with a long and curved snout. The life cycle is completed in 30 to 40 days. The life cycle consists of eggs, grub, pupa, and adults. The majority of eggs are deposited in the crown area of the rhizome followed by the remaining surface area of the rhizome, the walls of abandoned

larval tunnels in the rhizome and pseudostem, and the leaf sheaths. 58% of the eggs found were considered accessible to egg predators (Koppenhofer A.M. 1993).

The nature of damage observed was grub bore into the pseudostem and rhizome. The grubs of corn weevils attack the plants by feeding on the corn portion and making boreholes holes and tunnels in the corn.

A control measure includes Selecting a healthy sucker and plant. To irregular the life cycle follows crop rotation. Removal of the pseudostem and trimming to the rhizome also control the infection of pests.

6. Thrips (*Chaetanaphothrips signipennis*)

The adult there are slender 15mm long creamy yellow to golden brown with delicate feather wings. The adult thrips a characteristic longitudinal black strip down the middle of the abdomen. Two eyes-like dark patches at the base of the wings are characteristics of adult rust thrips. Banana rust thrips can be differentiated from the other two species by clear differences in body features (specifically, the presence of body hairs and glands in females that are only visible microscopically (Sakimura 1975). These patches can be used to distinguish from the small banana flower thrips. The life cycle consists of eggs, larvae, pupa, and adults. The entire life cycle is completed in 28 days.

This pest has been found in citrus & some native plants but the main host is banana-major and frequently fed by an adult and nymphal stages cause the damage.

IV. CONCLUSION

Insects are responsible for two major kinds of damage to growing crops. First, is direct injury done to the plant by the feeding insect, which eats leaves or burrows in stems, fruit, or roots. There are hundreds of pest species of this type, both in larvae and adults, among orthopterans, homopterous, heteropterans, coleopterans, lepidopterans, and dipterans. The second type is indirect damage in which the insect itself does little or no harm but transmits a bacterial, viral, or fungal infection into a crop. Examples include the viral diseases of sugar beets and potatoes, carried from plant to plant by aphids. Although most insects grow and multiply in the crop they damage, certain grasshoppers are well-known exceptions. They can exist in are relatively harmless solitary phase for a number of years, during which time their numbers may increase.



Fig.1. Pseudostem in damaged stems

Fig.2. Corm Weevil damage

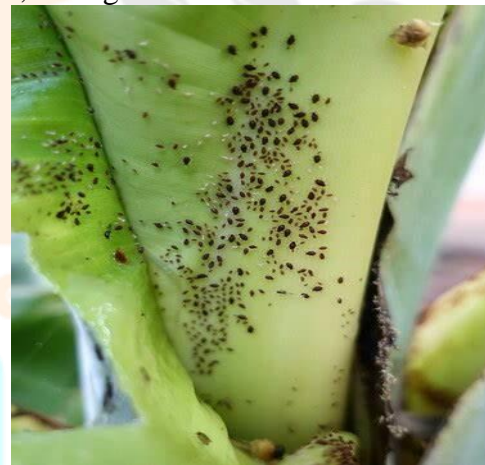


Fig. 3 Banana Aphid damage in stem

Fig. 4 Nature of damage of Banana fruits by Thrips.





Fig. 5 Leaf damage by Thrips.

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