

STUDY OF MEALY BUGS INFESTING ON SOME MAJOR CROP OF MUL REGION IN CHANDRAPUR DISTRICT, MAHARASHTRA, INDIA

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Abstract: A pest is any animal or plant harmful to humans or human concerns. The term is particularly used for creatures that damage crops, livestock, and forestry or cause a nuisance to people, especially in their homes. Mealybugs are recorded as serious pest and usually found feeding in colonies in somewhat protected areas such as between two touching fruits, in the crown of a plant, in branch crotches, on stems near soil, or between the stem and touching leaves. The field survey of host plant of Mealybug was carried out from July, 2021 to April, 2022. In present study total 11 species of mealybug were observed in 26 host plant in and around Mul region.

Keywords: Diversity, Mealybugs, Infestation, Crops, Mul region.

INTRODUCTION

Mealybugs are in the insect family Pseudococcidae and part of the superfamily Coccoidea, which also includes armored scales, soft scales, and cottony cushion scale. Mealybug bodies are distinctly segmented and usually covered with wax. Older individuals may have wax filaments around their body margins. In some species the filaments are longer in the rear and can be used to help distinguish between different species. Mealy bugs are soft, oval, wax-covered insects that feed on many plants in garden, landscape, and indoor settings. Usually found in colonies, they are piercing-sucking insects closely related to soft scales but lack the scale covers. Like soft scales, they can produce abundant honeydew and are often associated with black sooty mold. Mealy bugs are favored by warm weather and thrive in areas without cold winters or on indoor plants. A few mealy bug species feeds on roots. While adult females are wingless and similar in shape to nymphs, adult male mealybugs, which are rarely seen, are tiny two-winged insects with two long tail filaments. Many mealybug species can reproduce asexually without mating.

About 275 species of mealybug known to occurs in the continental United State. In Indian diversity accounts to 409 species under 166 genera spread over 14 families and 14 sub-families (Varshney, 2002) and other scattered literature. Mealybug infestation has also been reported in storage of tuber crop like arial yam, elephant fruit yam, colocasia cassava etc. (Keraba, 2011)

feeding due to Mealybug, reduce plant vigor and the honeydew secreted promotes the growth of a black sooty mold that interfere with photosynthesis and affect fruit quality (Gullan and Martin, 2009). In Chhattisgarh, Mealybug infestation was observed on almost all crops including cereals, legumes, oil seed, vegetables, fruits, ornamentals, medicinal and weed.

Biological control of Mealybug has been widely studied since the early twentieth century, due to the economic important and invasive habit of this family (Mckenzie, 1967). They have a wide variety of predatore including: coccinellids, coleopterans, lacewing of the families chrysopidae, conioptrygidae and hemeobiidae, flies of the families cecidomyiidae and chamemyiidae, anthocorids bugs, lycaenids, lepedopterons and phytoseiid mites (Franco et al., 2000).

MATERIAL AND METHOD

Study Area

A survey was conducted in research field near by area of Mul Tehsil from July, 2021 to April 2022 which is located altitude 20.070 N and 79.670 E. Survey of different host range of mealybugs attacking on commonly grown cereals pulse, oil seeds, vegetables, flower, fruit, ornamental plant were observed of the various host plant. Three different farm sites were selected consist of 12.3 hectares for collection. Mealy bugs were collected from different part of the plant like leaves, stems, flower and seeds. The collected sample were preserved then identified with the help of Book and literature. The sample consisted mostly of adult females' immature instar of mealybug.

OBSERVATIONS

Total 11 species of mealybug belong to pseudococcidae family were observed in different host plant in and around Mul region. In the comparative studies of host range of mealybug in Mul that plant species such as guava, hibiscus, mango, papaya, Rose, Karanji, Tomato, Brinjal, Citrus, Sugarcane, Tulsi, China rose, Champa, Cow pea, Khattabhaji Cotton were identified as common host of mealybug. Overall, from the present studies a total of 26 plant species belonging to 18 families were recorded as host for mealybug.(Table No 1) In Malvaceae (3 plant species)and Fabaceae (4 plant species), Asteraceae (3 plant species), Solanaceae (2 plant species), Caricaceae (1 plant species), Anacardiaceae (1plant species), Rutaceae (1plant species), Poaceae (1plant species), Apocynaceae (1 plant species) , Araceae (1 plant species), Rosaceae(2 plant species), Lamiaceae (1 plant species),Cucurbitaceae (1 plant species), Bromeliaceae(1 plant species), Grapevines (1 plant species), Nightshade (1 plant species).

Table 1: Mealy bugs species infesting host plant at level L-low, M-Medium and H-High

Sr No	Species	Host common name	Infestation level
1.	<i>Ferrisia virgata</i>	Guava	L
2.	<i>Psuedococcus longispinus</i>	Citrus, Grapes	L
3.	<i>Planococcus Citri</i>	Papaya, Mango	H, L
4.	<i>Planacoccus solani</i>	Sweet Pepper and Chilli Pepper	M, L
5.	<i>Saccharicoccus sacchari</i>	Sugarcane	L
6.	<i>Dysmicoccus brevipes</i>	Pineapple	M
7.	<i>Phenococcus solenopsis</i>	Brinjal, Hibiscus, Tomato	H, L, H
8.	<i>Drosicha mangiferae</i>	Mango	L
9.	<i>Nipeacoccus viridis Newsted</i>	Citrus, Grapes, Hibiscus, Papaya and Rose	L, M,
10.	<i>Paracoccus marginatus</i>	Papaya, Citrus, Mango, as well as Hibiscus, Cotton, Beans, Peas and Sweet Potato	H,L,L,L
11.	<i>Maconellicoccus hirsutus or Phenococcus hirsutus</i>	Hibiscus, Citrus	M,L

RESULT AND DISCUSSION

The field survey of host plant of mealybug was carried out July, 2021 to April 2022. In which 30 plant species were observed for the survey of host range of mealybug. A total of 26 plant species belonging to 18 families were identified as host. In the comparative studies of host range of mealybug in plant species such as Guava, Hibiscus, Mango, Papaya, were identified as common host of mealybug. Overall, from the present studies a total 11 species of mealybug belong to pseudococcidae family were observed of 26 plant species belonging to 18 families as host for mealybug.

Similar studies reported by Nagrare *et. al.* (2014) carried out twenty- six random survey that recorded three mealybug species as minor pest of cotton in India. *N. viridis*, *F. virgata*, *M. hirsutus* among these species, *N. viridis* was found to be next most widely distributed mealybug species after *P. solenopsis*. *P. solenopsis* and *D.neobrevipes* are recorded as serious pest in some part of the world (APHIS 2001, Beadsley, 1993: Hayat M (2009), Sether DM, Hu JS (2002), Hodgson *et. al.* 2008). *P.solenopsis* is a serious polyphagous pest species, especially for cotton, in the South Asia region , In Pakistan , this species occurs across at least 45000Km² of cotton field (anonymous 2005). It is still unclear whether the two pest species of mealybug *P. solenopsis* and *D. neobrevipes* would threaten agriculture and or horticulture in the Japanese

environment. Japan has already reported (Kawai S 1980, Uesato T, Kondo T, Unruchi C, Willims DJ 2011))

Ferrisia virgata is a striped mealybug belonging to the pseudococcidae family. *F.virgata* parasitize different crop including cotton ,guava plant . The species was discovered and described by Theodore Dru Alison cockerell in 1893. In 2012, Kaydan and Gullan published a taxonomic review of the genus *ferrisia Pseudococcus longispinus* is a longtail mealybug is found every continent except Antarctica. It is a common greenhouse pest around the world, but can also be found outdoor in warm climate (Tenbrink and Hara2007).

The pink mealybug *maconellicoccus (Phenacoccus) hirsutus* (Green) (*Pseudococcidae: Hemiptera*) occur in more than 13 countries but has a major pest status only in Egypt and India. Hibiscus by *P. solenopsis* and *P. marginatus* and Karanji infested by *P.solenopsis* by an unidentified mealybug species. Present investigation helps to farmer and fruit seller for protection, prevention and precaution from pest mealy bugs.

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