

Seasonal Incidence of Banana Scales (*Aonidiella orientalis* New Stead.) and Mealy Bugs (*Planococcus citri* Risso.) on Banana

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Abstract

In the first year (2002-2003) the peak incidence of scales (*Aonidiella orientalis* New Stead.) was recorded (10/half leaf) during January 2003 and minimum population (4.2/half leaf) during August 2002. During the second year (2003-2004) the maximum population was recorded (8.2/half leaf) during November 2003 and minimum population (4.2/half leaf) during August 2003. The scale insect population had negative correlation with minimum temperature, maximum temperature, rainfall, sunshine hours and wind velocity. The population had positive correlation with maximum relative humidity and minimum relative humidity. Similarly the maximum incidence (6/half leaf) of Mealy bugs (*Planococcus citri* Risso.) was recorded in first year (2002-2003) during December 2002 and minimum (1.8/half leaf) during February 2003. In the second year (2003-2004) the peak incidence was recorded (8.5/half leaf) during November 2003 and minimum incidence (3/half leaf) during October 2003 and April 2004. The incidence of mealy bug population negatively correlated with minimum temperature, maximum temperature, minimum relative humidity, rainfall and wind velocity where as positively correlated with maximum relative humidity and sunshine hours.

Key words : Banana, *Aonidiella orientalis*, *Planococcus citri*, Seasonal incidence, Weather parameters.

Banana are the fruit of genus *Musa* (family : *Musaceae*), which are cultivated primarily for food and secondarily for the production of fibers. Banana fruits are good source of vitamin B6 and a good source of vitamin C, potassium, dietary fiber and manganese.

Several insect pests, diseases and nematodes hinder the production of banana. Of them, insect pests play a major role in reducing yield and quality. More than 180 species of insect pests have been recorded on banana world over (1). Among the suck-

ing insects scale, *Aonidiella orientalis* and mealy bug. *Planococcus citri* play role in hindering growth of the plant and reducing yield. Hence, to understand the pattern of seasonal incidence present investigation was undertaken.

Methods

The present investigations on seasonal incidence of scale insects (*Aonidiella orientalis* New

Table 1. Seasonal incidence of insect pests of banana at GKVK, Bangalore, during 2002–2004.

Insects pests	May 2002	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 2003	Feb	Mar	Apr
Scale insect	–	–	–	4.2	5.0	9.0	6.2	8.50	10.0	8.2	–	–
1 (<i>Aonidiella orientalis</i> New Stead.)	2003								2004			
(No./half leaf)	–	–	–	4.0	6.2	6.0	8.2	5.5	7.5	–	–	–
Mealy bug	2002								2003			
2 (<i>Planococcus citri</i> Risso.)	–	–	–	–	–	–	–	6.0	3.4	1.8	4.0	–
(No./half leaf)	2003								2004			
	–	–	–	–	–	3.0	8.5	3.2	5.5	4.0	6.50	3.0

Table 2. Correlation between population density of insect pests of banana and weather parameters during 2002–2004. *Significant at 5% level ($P < 0.05$). **Significant at 1% level ($P < 0.01$).

Species of insect pests	Temperature (C)		Relative humidity (%)		Rainfall (mm)	Sunshine hours	Wind velocity km/h
	Mini-mum	Maxi-mum	Mini-mum	Maxi-mum			
1 Scale insect <i>Aonidiella orientalis</i> New Stead.	-0.613**	-0.664**	0.493*	0.558**	-0.075	-0.003	-0.503*
2 Mealy bug <i>Planococcus citri</i> Risso.	-0.663**	-0.083	-0.194	0.062	-0.440*	0.566**	-0.453*

Stead.) and mealy bugs (*Planococcus citri* Risso.) were carried out at GKVK, Bangalore, Karnataka during 2002-03 and 2003-04. Field observations were recorded on 20 plants were randomly chosen for recording the number of insects from three leaves selected from top, middle and bottom portion of each plant were counted. The numbers of these insects were recorded at fortnightly intervals. The observations of two fortnights constituted the monthly averages.

Results and Discussion

Seasonal incidence of mealy bugs (*Planococcus citri* Risso.) and Oriental yellow scale (*Aonidiella orientalis* New Stead.) was studied and data are presented in Table 1.

Oriental Yellow Scale : Aonidiella orientalis New Stead.

The number of scales per half leaf was 4.2 to 10.0 during 2002-03. In the first year (2002-03) the minimum incidence was recorded (4.2 / half leaf) during August 2002 and maximum population (10/half leaf) during January 2003. Whereas in second year (2003-04), the pest population varied from 4.0 to 8.2 per half leaf of the plant, with a peak (8.2/half leaf) during November 2003. The maximum population of scales was recorded during January 2003 (10.0/half leaf) and minimum during August 2003 (4.2/ half leaf). Mani and Krishnamurthy (2) also recorded as a pest of banana. Similarly Rajagopal and Krishnamurthy (3) reported the occurrence of oriental yellow scale on many fruit crops including banana.

The scale insect population had a highly significant negative correlation with minimum temperature

($r = -0.613$), maximum temperature ($r = -0.664$) and wind velocity ($r = -0.503$). Also the population had highly significant positive correlation with maximum relative humidity ($r = 0.558$) and minimum relative humidity ($r = 0.493$) (Table 2).

Mealy Bug : Planococcus citri Risso.

The incidence of mealy bugs varied from 1.8 to 6.0 per half leaf during the first year (2002-03, which commenced from December 2002 and continued up to March 2003. The maximum incidence was recorded (6.0/half leaf) during December, 2002 and minimum (1.8 / half leaf) during February, 2003. However, in second year the mealy bugs attacked the crop at later stages. The incidence was 3.0 to 8.5 per half leaf, which commenced from October 2003 and continued up to April 2004. The maximum incidence was recorded (8.5/ half leaf) during November, 2003 and minimum (3.0/ half leaf) during October 2003 and April 2004. Similar results was observed by Sugimoto (4) *Planococcus minor*, *Pseudococcus elisae* and *Aspidiotus coyphae* on two species of Cavendish banana and many species of local banana. Matile and Williams (5) also reported three species of Pseudococcids damaging the banana in Nigeria.

The mealy bug population had a highly significant negative correlation with minimum temperature ($r = -0.663$) and significant negative correlation with rainfall ($r = -0.440$) and wind velocity ($r = -0.453$). Further, the bug had highly significant positive correlation with sunshine hours ($r = 0.566$) (Table 2).

References

1. Simmonds N. W. 1966. *Bananas*. 2nd edition. Longmans, green and Co., Ltd., London, UK. 512 pp.

2. Mani M. and A. Krishnamurthy. 1996. *Aonidiella orientalis* (New Stead) (Diaspidiae : Homoptera) and its natural enemies found on sapota, ber, custard apple and banana. *Entomon* 21 : 273—274.
3. Rajagopal D. and A. Krishnamurthy. 1996. Bionomics and management of oriental yellow scale, *Aonidiella orientalis* (New stead) (Homoptera : Diaspididae) : An over view. *Agric. Rev. Karnal* 17 : 139—250.
4. Sugimoto S. 1994. Scale insects intercepted on banana fruits from Mindanao Is, The Philippines (Coccoidea : Homoptera). *Res. Bull. Pl. Prot. Ser. Japan* 30 : 115—121.
5. Matile F. D. and D. J. Williams. 1995. Recent outbreaks of mealy bugs on plantain (*Musa* spp.) in Nigeria including a new record for Africa and description of a new species of *Planococcus ferris* (Homoptera : Pseudococcidae), *Planococcus ferris* (Homoptera : Pseudococcidae). *Bull. De-la Societe Entomologique France*. 100 : 445—449.