# POPULATION DYNAMICS OF GALL FLY, *P. Matteiana* (KIEFFER & CECCONI) ON DIFFERENT CULTIVARS OF MANGO

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## *ABSTRACT*

***The study on population fluctuation of mango gall fly, P. matteiana (Kieffer & Cecconi) and its co-relation with weather parameters was carried out during the year 2012-13 and found that the infestation of mango gall fly was observed throughout the year. The gall fly infestation was recorded maximum (46.75%) in Kesar variety while, it was the minimum (18.43%) in Totapuri. Maximum leaf infestation of P. matteiana was recorded during the month of March while minimum infestation was recorded during the month of August. The correlation study indicated that the infestation of mango gall fly had significant positive correlation with sunshine hours. While, temperature, relative humidity, wind velocity and rainfall had significant negative correlation with the infestation of mango gall fly showed that when the temperature, relative humidity, wind velocity and rainfall increased the infestation of gall fly was decreased and vice-a-versa. While, sunshine hours increased infestation of mango gall fly also increased and vice-a-versa.***

***KEY WORDS: Gall fly, P. matteiana (Kieffer & Cecconi), Population fluctuation, Correlation***

## INTRODUCTION

Mango (*Mangifera indica* L.), occupies a pride place amongst the fruits grown in the country. The mango which belongs to the family Anacardiaceae is an important tropical and subtropical fruit crop. It is being grown in India for more than 4000 years (Candolle, 1904). Mango gall fly, *Procontarina matteiana* (Kieffer & Cecconi) Cecidomyiidae : Diptera) was considered as minor pest of mango is now becoming a major pest of mango. It is commonly called mango midge fly due to their close association with leaves as well as fruits. The infestation of this insect is increased day by day in mango orchard of north Gujarat region and farmers are facing the problem to control this insect. Severe infestation of this insect was found on the leaves and ultimately reduces the crop yield. Looking to the importance of this insect the present investigations on population dynamics of *P.* matteiana and its co-relation with weather parameters was carried out at Horticultural Instructional Farm, S. D. Agricultural University, Sardarkrushinagar, Gujarat.

## MATERIALS AND METHODS

The population fluctuation of *P. matteiana*, was studied on Mango in relation to weather parameters during January to December, 2012 at Horticultural Instructional Farm, S. D. Agricultural University, Sardarkrushinagar. To study the population fluctuation of *P. matteiana*, on mango, ten years old nine cultivars

of mango *viz*., Kesar, Amrapali, Sonpari, Rajapuri, Totapuri, Dasheri, Mallika, Begampali and Local were selected. Four trees of each cultivars was randomly selected from the orchard and number of healthy and gall fly infested leaves/shoots/tree were counted at week interval from all the direction (East, West, North, South).

## RESULTS AND DISCUSSION

From the result It can be seen that an average per cent infestation of mango gall fly was found maximum (46.75%) in Kesar while, minimum (18.43%) per cent infestation was observed in Totapuri and were followed by Rajapuri (44.00%), Begumpali (36.16%), Sonpari (34.28 %), Local (32.02%), Amrapali (32.45%), Mallika (31.07%) and Dasheri (28.39%).

The data presented in Table 1showed that the infestation of gall fly on mango was found throughout the year. Two peaks ($12^{th}$ standard week and $46^{th}$ standard week) of mango gall fly infestation were observed during the study period. The higher leaf infestation was observed during the initiation of flowering stage to the marble fruit stage and it declined gradually from stone sized fruits which coincide with vegetative stage.

The effect of abiotic factors *viz.*, temperature (Min., Max. and Av.), relative humidity (Min., Max. and Av.), sunshine hours, rainfall, rainy days and wind velocity on population of citrus leaf miner was determined through correlation analysis.

The result on correlation study clearly indicated that infestation of mango gall fly had significant positive correlation with sunshine hours. While, temperature, relative humidity, wind velocity and rainfall had significant negative correlation with the infestation of mango gall fly. Thus, when the temperature, relative humidity, wind velocity and rainfall increased the infestation of gall fly was decreased and vice-a-versa. While, when sunshine hours increased, infestation of mango gall fly also increased and vice-a-versa. The rainfall and maximum temperature did not show any significant correlation on population of mango gall fly. Kumar *et al.* (2012) recorded highly significant positive correlation of sunshine hours with infestation of mango gall fly. Whereas, it was negative with temperature (minimum and average), relative humidity (Max., Min and Av.), wind velocity, rainfall and rainy days. Similarly, gall intensity indicated significant and negative correlation with temperature (Min. and Av.), relative humidity (Max., Min. and Av.), wind velocity, rainfall and rainy days.

## CONCLUSION

From overall results it can be concluded that when the temperature, relative humidity, wind velocity and rainfall increased the infestation of gall fly was decreased. While, the higher the sunshine hours the infestation of gall fly was observed higher in different mango cultivars.

## REFERENCES

Candolle, D.E. (1904). Origin of cultivated plants. Kegal Plants Trench and Co., London. p. 468.

Kumar, S. and Patel, A.T. (2012). Abundance of mango leaf gall midge in relation to major abiotic factors and crop stages International Conference on Agricultural & Horticultural Sciences Hyderabad International Convention Centre, India. *Agrotechnol*, **1** (2) : 1-2.

**Table 1. Correlation between infestation of gall fly and weather parameters on different mango cultivars**

| Varieties | Weather Parameters | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Temperature (°C) | | | Relative Humidity (%) | | | Sunshine hours ($X_7$) | Wind velocity ($X_8$) | Rainfall ($X_9$) |
| | Min. ($X_1$) | Max. ($X_2$) | Av. ($X_3$) | Min. ($X_4$) | Max. ($X_5$) | Av. ($X_6$) | | | |
| **Kesar** | -0.490** | -0.027 | -0.336* | -0.656** | -0.282* | -0.566** | 0.508** | -0.268 | -0.297* |
| **Rajapuri** | -0.526** | -0.117 | -0.396** | -0.629** | -0.279* | -0.546** | 0.502** | -0.203* | -0.305* |
| **Sonpari** | -0.402** | 0.128 | -0.214 | -0.663** | -0.155 | -0.517** | 0.739** | -0.425** | -0.381** |
| **Dasheri** | -0.434** | -0.096 | -0.327* | -0.501** | -0.090 | -0.378** | 0.337* | -0.473** | -0.229 |
| **Mallika** | -0.503** | -0.047** | -0.352* | -0.017 | -0.633** | -0.437** | 0.570** | -0.438** | -0.406** |
| **Amrapali** | -0.028 | 0.523** | 0.195 | -0.567** | -0.143 | -0.446** | 0.730** | -0.427** | -0.415** |
| **Begumpali** | -0.388** | -0.02 | -0.266 | -0.511** | -0.278* | -0.466** | 0.519** | -0.348** | -0.293* |
| **Totapuri** | 0.025 | 0.449** | 0.201 | -0.412** | 0.035 | -0.265 | 0.516** | -0.492** | -0.303* |
| **Local** | -0.152 | 0.184 | -0.02 | -0.433** | -0.207 | -0.383** | 0.338* | -0.437** | -0.180 |

** Significant at 5 % level (r = 0.2732)*
*** Significant at 1 % level (r = 0.3542)*

*[MS received: September 11, 2013 ]* *[MS accepted: December 10, 2013 ]*