



## Original Research Article

### Studies on the incidence of white fly in Pongamia tree garden

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#### ABSTRACT

##### Keywords

Pongamia,  
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factors

*Pongamia Pinnata* ( *Leguminosae*, Subfamily *Papilionoideae* ) is another oil plant tree which can provide higher yield per Ha, it is a deciduous tree that grows to about 15-25 meters with standing temperatures slightly below 00 to 500c and a minimum annual rainfall of 500 mm the tree grows wild on sandy and rocky soils, Pongamia seed oil as a biofuel has physical properties very similar to conventional diesel. A field experiment was conducted to study the major insect pest. Field Experiment was conducted to study the incidence of major insect pests In Pongamia tree garden. The study revealed that from May-August 2013 Intensive studies on the incidence of white fly family *Aleyrodidae* was Undertaken at monthly intervals and the weather condition was recorded. The incidence of white fly was maximum in May and June months and least incidence was observed in the months of July and August

## Introduction

*Pongamia pinnata* ( *Leguminosae*, Subfamily *Papilionoideae* ) is a medium sized tree that generally attains a height of about eight meters and a trunk diameter of more than 50 cm. The trunk is generally short with thick branches spreading into a dense hemispherical crown of dark green leaves. Flowers borne in racemes, are pink, light purple, or white pods and usually contain a single seeds are 10-20 cm long, and light brown in color. Native to humid and subtropical environments, pongamia thrives in areas having an annual rainfall ranging from 500 to 2500 mm in its natural habitat, the maximum temperatures range from 27 to 38<sup>0</sup>c and the minimum 1 to 16<sup>0</sup>c penguin can grow

on most soil types ranging from stony to sandy to clay. The natural distribution of pongam is along coasts and river banks in India and Burma. Pongam is commonly used as fuel wood quality timber, it thick yellow-orange to brown oil is extracted from seeds the oil of pongam is also used as a substitute of diesel, lubricants, pesticides, fodder and soil fertility ( Karanj et.al., ).

The white flies comprising only the family *Aleyrodidae* are small hemipterans white flies typically feeds on the underside of plant leaves white flies feed by tapping into the phloem of plants, introducing toxic saliva and decreasing the plants

overall turgor pressure (Hunter, W.B. et.al., 1998) white flies share modified forms of hemimetabolous metamorphosis in that the immature stages begin life but soon attack to a host plant the stage before the adult is called a pupa. (Mollison B 1990) Insect resistance plants are an important component of integrated pest management (IPM). It contributes helpfully in IPM in two ways reduce quantum of insecticides and improve performance of natural enemies in plants. Meteorological parameters play a pivotal role in the biology of any pest ( Narendra Reddy et.al., 2001 ).The major constraints in the economic cultivation of pongamia, pest infestation causes considerable losses and Chemical control is widely used means of managing Insect pests in (Dadmal et.al., 200).

Keeping in view the prevalence and the destruction caused by whitefly. It was felt very essential to studies on the incidence of pests in the pongamia tree garden.

### Materials and Methods

The Incidence of pests white fly in the garden in Kanakapura, Ramanagara Dist., Bangalore, Karnataka, India for the month of May-August 2013 at monthly data on different abiotic parameters were recorded.

A field experiment was conducted in a randomized block design table-1 & 2, . The cultural practices except plant protection measures were followed as per the crop production guide for horticultural crops, (K. Elanchezhan et al., 2008). In each pongamia garden, five micro plots were prepared (Four in the corner and one in the middle of the garden). Twenty trees were randomly selected in each micro tree for observation of pest incidence (20x5=100 plants per garden). The Percentage of pests were calculated by

using the formula

$$\text{Percentage of pest infestation} = \frac{\text{Total No of infested tree}}{\text{Total No of tree survived}} \times 100$$

Atmospheric conditions (i.e., temperature, rainfall and relative humidity) that existed during the course of studies was also recorded to correlate their influence on the incidence of pests. (Chandrakala 1995) The data obtained were statistically analyzed using “F” test (Asthana and Srivastava, 1967)

### Results and Discussion

The notable findings observed in the field survey are incorporated in .The results indicated that maximum infestation of white flies was found to be in the month of May 2013 (20.25%) and June 2013 (24.22 %) when the maximum and minimum temperature, rainfall and relative humidity was 28<sup>0</sup> C, 18<sup>0</sup> C, 2mm, 5mm, and 58% and 72% respectively. While it was minimum in July 2013 (10. 23%) & August 2013 (8.10%) when the maximum and minimum temperature, rainfall and relative humidity was 30<sup>0</sup> C 22<sup>0</sup> C, 22mm, 40mm, 50% & 60% respectively. Analysis of Variance on the incidence of whitfly are indicated in Table 1 & 2.

The correlation coefficients between the incidence of white fly and the abiotic factors of the environment viz., temperature (maximum & minimum) rainfall & relative humidity are presented in table 2.

Maximum temperature had a significant negative relationship with the incidence of white fly whereas there was no – significant negative relationship between their incidence and rainfall and relative humidity. Earlier it was reported that the location of germinivirues in the white fly Hunter et.al., 1998.

**Table.1** Analysis of Variance on the Incidence of white fly on pongamia pinnata tree

Sl. No.	Source of Variation	Mean sum of squares for white fly	Mean sum of squares for white fly
1	Month	663.47**	529.81**
2	Error	39.33	27.93
3	C.D. at 57 for with in year	3.89	3.28

\*\*Significant at 1% level.

**Table.2** Correlation co-efficients for incidence of white fly on pongamia tree garden during the studies (May2013 – August -2013).

White fly	Maximum temperature	Minimum temperature	Rainfall	Humility
Incidence white fly %	- 0.5120*	-0.2155*	0.3144	0.3700

\* Significant at 0.1% level.

## References

- Asthana. B.N, and Srivastava. S.S, (1967) Applied statistics of India Chaitanya publishing House, Allahabad, PP 120-185
- Chandrakala, A.C (1995) Survey of foliar fungal diseases of mulberry in Bangalore, Kolar and Tumkur Districts of Karnataka M.Sc., Dissertation, Bangalore University, Bangalore PP 27-28.
- Dadmal, S.m, Nemade S.B and Akhare M.D 2004, a field Screening of brinjal cultivars for resistance to *Leucinodes orbonalis* Guen pest management in horticultural Eco systems, 10(2): 145-150
- Eric.T natwick, Frank.G.Zalon Surveying sweet potato white fly in the imperial valley California Agriculture March-April-1984;11.
- FAO 2005, FAO Statistics, URL: [Http://www.fao.org](http://www.fao.org).
- Hunter, W.B, Hiebert, E.Webb,SE, Tsai J.H., & J.E.Polston1998. Location of germinivirues in the white fly Bemisia tabaci ( Homoptera : Aleyrodidae ). Plant disease, Vol- 82; 1147-115.
- Karanj. Honge, Aceite Del Cojinete Del Arbol 1-5.
- Mollison B.A. Practical guide for a sustainable future, Island press, 1990, Washington. P.60.
- Narendra Reddy, C. Yesbir Singh, Prem Dureza and Vijai, S.S., 2001. Bioefficacy of insecticides, bio-pesticides and their combination against pad borers in pigeon pea. Indian journal of Entomology, 63(2): 137-143.