# Population fluctuation of Orange headed leafhopper *Thaia subrufa* (Motsch.) (Homoptera: Cicadellidae) and its predators in rice in Mudigere, Karnataka

**D. Jemla Naik* and V.V. Belavadi**

***Zonal Agricultural Research Station, Mudigere – 577 132, Karnataka, India***

## ABSTRACT

*Orange headed leafhopper (OHLH), Thaia subrufa is a common pest in hill zone of Karnataka. Simultaneous occurrence of predators viz., several species of spiders C. lividipennis, Ophionea nigrofasciata, Paederus fuscipes in large numbers were also observed in fields. Nymphal population of OHLH had negative correlation (- 0.243) with spiders and positive correlation with other three predators. The adult population of OHLH had positive correlation with all the four predators.*

***Key words:*** *Thaia subrufa, Predators, rice*

Orange headed leafhopper, *Thaia subrufa* (Motsch.) have been recognized as an important pest of rice in hill zone of Karnataka. It was recorded earlier on summer paddy (Gavi Gowda *et al*., 1983, Chakravarthy 1987, Belavadi 1995 and 1996). It has become an important pest during wet season and causes severe losses by sucking plant sap. Belavadi (1995), recorded three species of predators viz., *Paederus fuscipes* (Curtis), *Ropalidia Montana* (Fab) and *Ophionea nigrofasciata* (Schmidt-Goebel) feeding on nymphs of *T. subrufa.* The role of predators in suppressing the populations of OHLH has not been assessed critically. The populations of OHLH along with the predators were assessed during January to December 1999.

The survey was conducted in the Zonal Agricultural Research Station Farm, Mudigere. Fields were planted with the variety CTH-1 and sweep net samples taken throughout the year in 1999 using standard sweep net at weekly intervals. Both adults and nymphs of OHLH along with predators were collected and brought to lab for counting and the data were subjected to statistical analysis.

The population of OHLH was observed throughout the year and the population of OHLH adults ranged from 1.8–121 per sweep in different months of the year (Table 1). The maximum OHLH adults were recorded during March and April and the minimum during July to September. The nymphal populations were observed in the month of March to November. The maximum population was observed in April and the lowest in July. Nymphs were absent during January and February.

The population of spiders, *Cyrthorhinus Reuter, lividipennis,* P. *fuscipes* and *O. nigrofasciata* increased as the population of OHLH adults and nymphs increased in the field. Kaushik and his associates (1986) had similar observations with the increase in leafhopper populations and planthopper populations. Tang and Zhou (1983) studied the ability of spiders to catch prey in rice fields, which included *Empoasca subrufa* (=*Thaia subrufa*) and other rice leafhoppers. Correlation between the adult populations of OHLH with C. *Lividipennis,* P. *fuscipes* and *O. nigrofasciata* and spiders showed positive correlation r=0.55, r=0.2404, r=0.546 and r=0.053 respectively. Correlation with populations of *C. lividipennis,* P. *fuscipes* and *O. nigrofasciata* with the nymphs OHLH also exhibited positive correlation (r= 0.5388, r= 0.5203, r= 0.273 respectively) whereas spiders populations exhibited negative correlation (r= -0.243) Table 1. Thus, spiders appear to exert negative pressure on the nymphal population of OHLH. Chakravarthy (1987) recorded two species of *Odonata,* one species of *Cyrtorrhinus* and twelve species of *Microvelia* as

**Table 1. Population of Orange headed leafhopper and its predators at Mudigere, Karnataka**

| Months | OHLH | | Predators | | | |
|---|---|---|---|---|---|---|
| | Nymphs | Adults | *C. lividipennis* | *P. fuscipes* | *O. nigrofasciata* | Several unidentified species of Spiders |
| January | 0 | 50.5 (44.4-56.2) | 3.15-(0-5.6) | 2.75(1-4) | 4 (1-7) | 9.5(5-13) |
| February | 0 | 36.55(22.4-59.4) | 2 (1-3) | 2.5 (1-5) | 0.5 (0-1) | 10.5 (8-14) |
| March | 13.6(13.8-44) | 54.15(37-67.9) | 4 (3-5) | 2.75 (1-4) | 1.5 (1-3) | 10.5 (3-19) |
| April | 45.4 (30.6-8.6) | 69.1 (40.6-95.8) | 7.25 (0-13) | 4.5 (1-8) | 4.5 (3-7) | 6 (3-10) |
| May | 27.65(10-70.8) | 56.75(23.4-121) | 5.25 (3-8) | 3.75 (3-5) | 1.75 (0-3) | 7 (4-10) |
| June | 3.55(10-70.8) | 13.75(6.6-22.4) | 4.5 (3-7) | 4.5 (3-8) | 3.5 (0-6) | 13 (10-17) |
| July | 3.55 (1.2-9.0) | 4.9(2.2-9.6) | 4.7 (3-7) | 2.75 (1-6) | 4.25 (1-8) | 8 (4-11) |
| August | 1.15(0.2-3.4) | 16.7(1.8-34.2) | 3.5 (1-5) | 3.25 (3-4) | 1.75 (1-3) | 6 (4-9) |
| September | 7.5(0.4-20.4) | 3.85(2-6.6) | 1.5 (0-6) | 0.75 (0-3) | 1.25 (0-4) | 7.5 (5-9) |
| October | 0.6(0.4-1.0) | 7.4(6.4-8.8) | 0.25 (0-1) | 0.75 (0-1) | 4 (3-4) | 5.75 (0-8) |
| November | 0.85(0.2-1.8) | 8(2.6-14.4) | 0 (0-0) | 0.5 (0-1) | 0.25 (0-1) | 8.25 (6-11) |
| December | 0.3(0-0.6) | 25.50(20.2-29.6) | 0 (0-0) | 0.85 (1-3) | 0 (0-0) | 8.5 (5-13) |
| Correlation coefficient | Nymphs | r = | 0.5388 | 0.5203 | 0.273 | -0.243 |
| | Adults | | 0.55 | 0.2404 | 0.546 | 0.053 |

(Figures in the parentheses are range values)

natural enemies of *T. subrufa* on both ratoon and main crop.

## REFERENCES


Belavadi VV 1995. National Agriculture Research Project, Annual Report of Zone-9, Mudigere. 60pp

Belavadi VV 1996. National Agriculture Research Project, Annual Report of Zone-9, Mudigere. 75pp

Chakravarthy AK 1987. Insect – pests on main and ratoon rice. IRR News letter. 12 (4): 35-36

GaviGowda, Jayaram KR and Nagaraju 1983. *Thaia subrufa* (Homoptera: Cicadellidae) Occurrence in Karnataka, India. IRR Newsletter 8(5): 17

Kaushik UK, Bhardwaj D, Dawar AD and Agarwal RK 1986. Relationship between plant hoppers, leafhoppers and the major predators in summer paddy. *Oryza* 23: 142-144

Tang JQ and Zhou HF 1983. Studies on the catching function of spiders in the paddy fields with Serological method. Natural Ene. Insects 5(4): 207-214


***THE ASSOCIATION OF RICE RESEARCH WORKERS GRATEFULLY ACKNOWLEDGES THE FINANCIAL ASSISTANCE GIVEN BY INDIAN COUNCIL OF AGRICULTURAL RESEARCH FOR THE PUBLICATION OF THIS JOURNAL - ORYZA***