



## TERMITES DESTROYING STRUCTURAL WOOD ON COST BASIS IN HYDERABAD URBAN SYSTEM

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### **ABSTRACT**

*Survey was conducted on the Termites destroying structural wood during the year 2009-2011 in Hyderabad (Urban) of Andhra Pradesh. The results indicated that the cost of treatment of damage to structural wood in terms of repair in the Urban systems caused by different species of termite were recorded. The cost of treatment of damage exceed (5) five lakhs. Among the *O. colonics* caused the maximum loss in the urban system which was nearly one lakh in RCC which is maximum, while minimum loss was caused by *M.obesi* in both RCC and T.R.Houses.*

**KEY WORDS:** *Termite, Urban System, Treatment cost*

### INTRODUCTION:

Urban areas represent increasingly large and interconnected spaces in regional landscapes and are important for the spread of exotic species. Urban centers are the origin of commercial transport for a wide variety of material including forest and agricultural products. Urban areas are characterized by a wide spread destruction of a great deal of native vegetation thus affecting biotic components of the environment, which has led to the formation of many habitats through modifying the existing ones particularly with regard to insects.

Economically the damage termites cause to structures and buildings accounts for more than US 20 billion annually worldwide (S4-02). Termites cause substantial damage to residential and commercial buildings in the United States. It has been estimated that the cost for controlling termites and fixing the damage caused by them in the United States alone exceeds 2 - 3 billion dollars annually. The monetary

expenditure associated with termite damage and control in the United States was estimated at \$ 100 million to 4.4 billion annually according to the earlier reports Lund (1967), Ebeling (1968), based on prevention, control and repairs costs, Williams and Smith (1978) estimated that \$ 169 million was being spent by consumers in USA in 1976. In California subterranean and dry wood termites are responsible for 95% of all costs resulting from wood destroying insects. In addition to this structural wood is forcing more and more termites to search for wood buildings.

With the increasing demand in developed as well as developing countries the cost of timber for construction has also increased largely because of difficulty in getting timber from the inaccessible remote areas. The economics of situation must be considered carefully. People living in termite infested areas must now decide whether to bear the cost of expensive wood or total replacement of wood after the termite infestation or to bear the cost



of chemical treatment to protect the 'structural – wood' from termites. They may also have to consider whether they will be able to obtain sufficient timber for building a new house, if they allow termites to ruin their present establishments. Thus, in-depth research about diversity of termites destroying structural wood works in urban areas is very much needed.

At the outset a brief description of the study areas of Hyderabad Urban system and their environmental conditions are studied. The diversity of termite fauna attacking different structural - wood in different types of houses such as those made of Reinforced Cement Concrete (RCC) and those made of Tile-Roofed (TR), in different management of houses such as school buildings, banks, Government office buildings and Libraries in the Urban Systems, and the types of damage incurred to the indoor - wood works and to termites on structural wood in relation to various climatic factors such as rainfall, temperature and relative humidity are also described.

#### **MATERIAL AND METHODS:**

Extensive surveys were conducted periodically during January 2009 to April 2011, which includes regular monthly surveys followed by the keen observation of termite damage to different types of structural wood in Reinforced Cement Concrete (RCC) houses and Tile-Roofed (TR) houses present in various localities of Hyderabad (urban system). A total of 120 houses such as Government School Buildings, Libraries, Banks and Government office Buildings were inspected on a monthly basis in the entire urban system, selecting few standard houses of each type in a given locality. The house owners/persons

concerned were requested for their co-operation and required to provide information regarding the termite damage in their houses/offices. The indoor wood-works such as doors, frames, window panels, sashes, joists, rafters and well supporting, door and window supporting frames of Tile-Roofed houses were inspected for damage. Other cellulose materials such as books in libraries, wooden almirhas in government offices and banks including clothes used for wrapping the files in the offices and schools in all the two types of houses were also inspected for the signs of termite activity. The earthen-sheet covering, runways (shelter tubes) and small channeled holes on the wood works made by the termite's activity and damage were examined rending and exposing the interior portion using a sharp chisel. The presence of small mounds on the inner and outer walls and on the roof particularly on the top of the walls of these houses was also noted.

As the subterranean termites usually enter the houses through the cracks in foundations, floors and walls they spread runways up to the structural wood (Johnson, 1981), such types of cracks either in foundation or floor or walls of houses were also inspected. The termites particularly the soldiers and workers damaging the articles were collected in 80% ethanol for species identification.

The intensities of the damage and deterioration were assessed by eye quantified on the basis of five damage classes (Williams, 1973) and recorded. It has been the usual evaluation method for field tests of wood samples. The five damage classes of structural wood were given numerical symbols as follows.

- (i) 'O' no attack



(ii) + a very less attack exploratory nibbles (10% damage)

(iii) + + Slight attack with the wood remaining serviceable (10% to 25% damage)

(iv) + + + moderate attack with wood rendered unserviceable (25% to 50% damage)

(v) + + + heavy attack with the wood rendered useless for any structural purposes (50 to 75% damage)

**RESULTS AND DISCUSSION:**

Various species of termites recorded within the limits of Hyderabad Urban system they belonged to one family Termitidae.

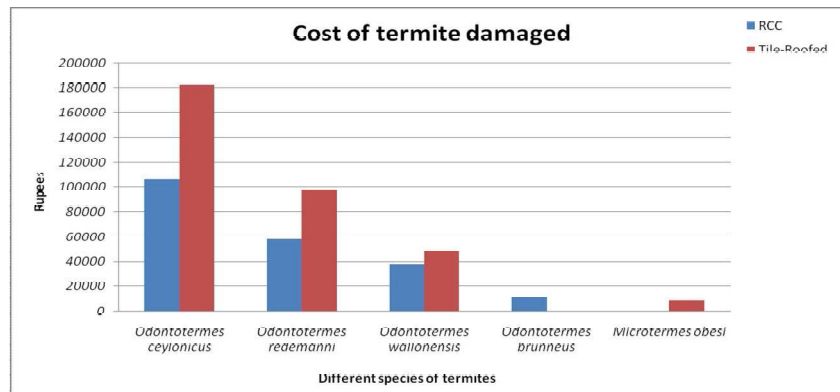
In Termitidae, *Odontotermes ceylonicus* (Holmgren) *Odontotermes redemanni* (Wasmann), *Odontotermes wallonensis* (Wasmann) *Odontotermes brunneus*

(Hagen), *Microtermes obesi* (Holmgren) were recorded. Of all these termites *Odontotermes ceylonicus*, and *Odontotermes redemanni* were recorded causing maximum damage and *Odontotermes wallonensis*, *Odontotermes brunneus* and *Microtermes obesi* causing minor damage to the structural wood of different types of houses.

Approximate cost of damage to structural wood in terms of damaged wood repair cost in the urban system by different species of termite presented in Table (1) revealed that the total cost of the damage exceeded (5) five lacs, among the termites *Odontotermes ceylonicus* caused the maximum loss in the urban system which was nearly two lacs in Tile-Roofed houses maximum, while minimum loss was caused by *Microtermes obesi* in Tile-Roofed houses.

**Table-1: Approximate cost of damage caused by termites (Wood damage and repair cost) in Hyderabad Urban System.**

Species	RCC houses	TR houses	Total Rupees
<i>Odontotermes ceylonicus</i>	1,06,500	1,82,500	2,89,000
<i>Odontotermes redemanni</i>	58,650	98,450	1,57,100
<i>Odontotermes wallonensis</i>	38,500	48,500	87,000
<i>Odontotermes brunneus</i>	10,500	--	10,500
<i>Microtermes obesi</i>	--	8,500	8,500
Total	2,14,150	3,37,950	5,52,100



Cost of termite damaged in rupees

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Dr.S.Venkata Rama Raju has been working as a faculty member in Biology and having more than 25 years of teaching experience. He attended for several conferences/seminars and submitted papers. He got National and state level Best Teacher Awards and Paryavarnamitra Award. He wrote text book for students in Biology and published articles in International and national Journals. He also attended several training programmes of his concerned.