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Weaver ants as bioindicator for rainfall: An observation

Surjyoti S. Bagchi

VIPL, Reliance Power, D-3, MIDC, Butibori, Nagpur

ABSTRACT

*Weaver ants (*Oecophylla *smaragdina) build their nest by binding fresh leaves with silk from their larva. They have a shade of red colour and are known for their painful, irritating sting. They built nests when relative humidity is high, ranging from a mean daily minimum of 54% to a mean daily maximum of 94%, during monsoon , before rainy season and off- seasonal rain. This humidity range is very much applicable to Central India especially Nagpur. Recent observation has shown that ant behaviour of building nest is related to rainfall and amount of rain in monsoon of Nagpur district can be predicted based on the size, shape, numbers and position of weaver ants' nests. This data is not valid in coastal region of India as the humidity is prevalent almost in all seasons.*

Keywords: Weaver ant, Biosensor, Rainfall, Nest formation,Nagpur district

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INTRODUCTION

Weaver ants, *Oecophyllasmaragdina* are reddish ants that live in the tropical forests of Africa, India many south-east Asian countries and Australia. *Weaver ant* is a genus of large arboreal ants of the African, Asian, and Australian tropics and belongs to the ant genus *Oecophylla*. There are about 18-20 known species of weaver ants from Africa to Asia in the tropics.Weaver ants are conspicuous insects best known for their remarkable nest construction using precise coordination. Weaver ant nests are made of living leaves that have been pulled together by the worker ants and securing them with silk from their larvae to form the nest walls. They may have several nests dominating a few trees at once. Colonies are territorial, covering several trees and containing dozens of nests. Weaver ants are utilized for biological control of pest insects in tropical plantation crops and as a valuable harvestable resource for human and animal consumption [1].It is observed that weaver ant is also acts as bio indicator in Central India.Mechanisms for integrating both traditional and scientific weather forecast systems would improve understanding of uncertainties and limitations to application of farm management.

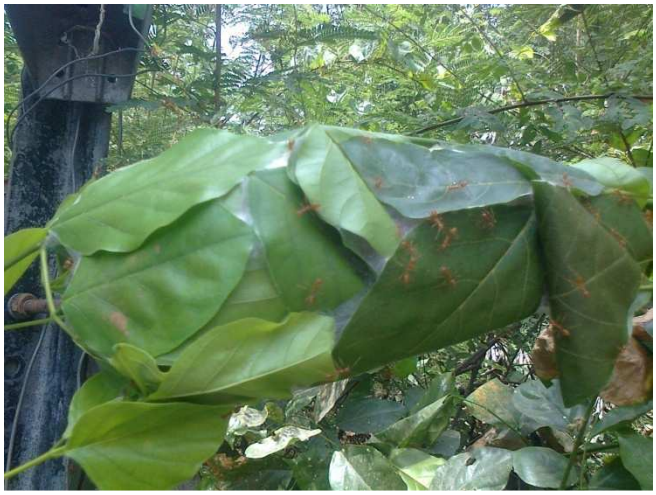
OBSERVATIONS

Weaver ants are known for their brilliant nest construction made only by the leaves stuck together with their larvae. These nests built by them provide a means of weather forecasting. The best time for making new nests is the beginning of the rainy season and off- seasonal rain, as the trees produce new growth flushes[2]. The ants' behaviour helps to predict the rainfall of the forthcoming days. For instance, weaver ants sense oncoming storms. They become very active and move from the weaker to the stronger branches of the trees[3]. Around three weeks before the arrival of the monsoon, weaver ants start building their colonies. If round and short nests are found at lower parts of the tress, they indicate less rain of less than 600 mm. Many oblong nets found at higher positions indicate heavy or more rain. If nests are found on both top and bottom trunk of the tree, it means erratic rainfall and drought at some of the places in Vidarbha .It happens in the year 2009 and 2014. Number of nests is directly proportional to amount of rainfall.If number of nests is found to be 17-18, average rainfall is 800-900 mm. More than 25 nests indicate heavy rainfall. Shape, position, average number of nests and amount of rainfall that year is mentioned in Table 1. This observation was duly acknowledged by The Times of India Nagpur edition .[4,5,6].

TABLE I:Average Number of Nest and Rainfall of Nagpur District

S.No	Year	Amount of rainfall (mm)	Shape of the nest	Average number of nests
1	2008	817.7	Oblong	17-18
2	2009	977.5	Oblong	19-20
3	2010	1234.7	Oblong	22-24
4	2011	935.8	Oblong	19-20
5	2012	1002	Oblong	20-22
6	2013	1419.4	Oblong	>25
7	2014	750	Oblong	14-15

Fig 1: Weaver ant nests



CONCLUSION

It can be concluded from the accuracy of forecast is about 85 % , Authors try to validated this potential indicator for Nagpur District from 2008 to 2014.

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