



## OCCURRENCE OF INSECTS GALLS IN *TERMINALIA CHEBULA* RETZ. FLOWERS.

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### ABSTRACT:

The paper deals with the induction of galls in *Terminalia chebula* Retz. flower which is not much studied earlier. Although some work has been reported on infestation of galls in leaves of *T. chebulaby* trapsi. In the present study three forests have been studied for the extent of flower galls in *T. chebula* plant and attempt have been made to study the morphological and anatomical aspects of the galls.

**Keywords:** *Terminalia chebula* Retz., Galls, morphology, anatomy.

### INTRODUCTION:

*Terminalia chebula* Retz. is medicinally valued for its fruits rich in wide range of bioactive compounds. Gall formation in leaves of *Terminalia chebula* is common and it is induced by *Coryciotothrips inquilinus* and *Cecidomyllidae*. Several plants have been studied for infestation of insects in leaves, stem, roots, flower and fruit.

Gall is defined as “An abnormal growth of plants caused by other organisms”. The majority of plants galls are caused due to the irritation by insects, mites, bacteria, fungi, nematodes and other organisms. Its induction in plants is commonly stimulated by the mites and insects which are characterized by active dedifferentiation and growth of plants cells. A gall result from hypertrophy (over growth) and hyperplasy (excessive cell division) usually under the influence of parasitic organisms (Mani, 1973).

In plants, gall inducer insects includes Diptera, Homoptera, Coleoptera, Hymenoptera, Lepidoptera and Thysanoptera. Insects and mites galls are formed by their feeding or egg laying activity. Its formation take place in newly developing organs while mature plant tissues are generally unaffected (Robert et. al 2004). In India, galls are found in many groups of plants like Leguminaceae, Combrataceae, Malvaceae, Anacardaceae,

Lauraceae, Cucurbitaceae and Asteraceae (Mani, 1973).

### METHOD AND MATERIAL:

During the study, three forest areas in Gondia district were visited to observe the flower Galls in *Terminalia chebula* Retz. In each forest, 25 plants were randomly studied for the insect infestation in flowers. 20 inflorescences have been observed from each plant to find out the severity of galls.

Flowers from each individual inflorescence have been studied to find out the percentage of galls. The color, shape and size of galls have been noted in the field and brought to laboratory for further study. In laboratory, galls section have been taken and observed under microscope in 100X and 400X magnification to observed the anatomical changes with reference to the newly form healthy fruits.

### RESULTS AND DISCUSSION

Primarily these galls mimic like the figs of *Ficus* by its morphological appearance. These galls are induced in response to the feeding activity of insect larva. From the study it is observed that more plants of *Terminalia chebula* in Salekasataluka forest are infested with insects, as compared to plants in Amgaon and Deori Taluka, but more number of inflorescences are infested in Amgaon forest plants than the others. The galls are round in

shape, greenish pink color, size ranging between 0.2-1.5 cm.

Anatomically the galls showed the presence of larvae ranging from 2-7 numbers per gall (Photo A,B,C and D). These larvae modified the physiological process in flower related with development of normal fruits due to their extensive feeding activity. It induced the hypertropical growth of ovary which encircled the style. The infestation of insect may be take place before the fertilization of pollen grains to ovule, since no seeds development has been observed. T.S. of galls shows much larger cell size than the cells of normal premature fruit (Photo E and F), hypertrophy also noticed in the hairs present on galls as comparisons to normal premature fruits (Photo G and H).

The galls in flowers responsible to the reduce yield and quality of fruits in *Terminalia chebula* Retz. which ultimately will affect its regeneration potential. *Terminalia chebula* Retz. fruits are widely used in the preparation of drugs for the treatment of various ailments. In current study the exact insect for gall induction is not identified due to its occurrence only in larval stage. Its urgent need to study gall maker and its bioecology in *Terminalia chebula* flower galls, since it is not reported earlier.

#### CONCLUSION:

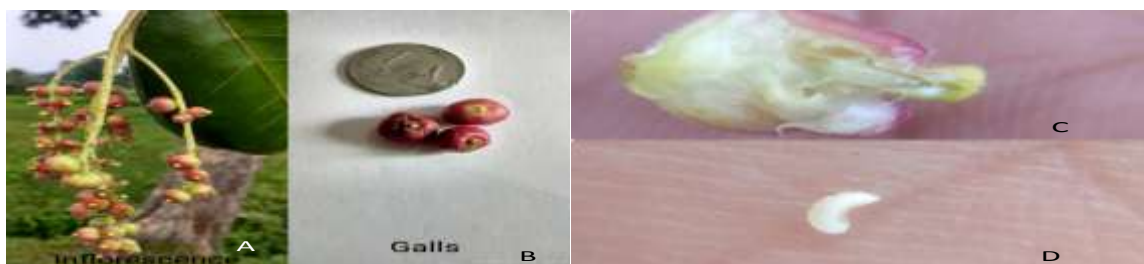
Floristic exploration of the district provides complete angiosperm plant wealth. The flora includes herbs, shrubs, trees, climbers, twiners and lianas. The most dominant flora includes herbs which are 58.28 % of total angiosperm flora. The species belonging to dicotyledons are more common as compared to monocotyledons. Poaceae family found largest among the angiosperms with respect to total number of genera and species and the family Papilionaceae among the dicotyledons. While the *Ipomoea* is the largest with respect to total number of species. Out of total angiosperm flora studied 12.58% flora found rare in its occurrence in the district.

#### REFERENCE :

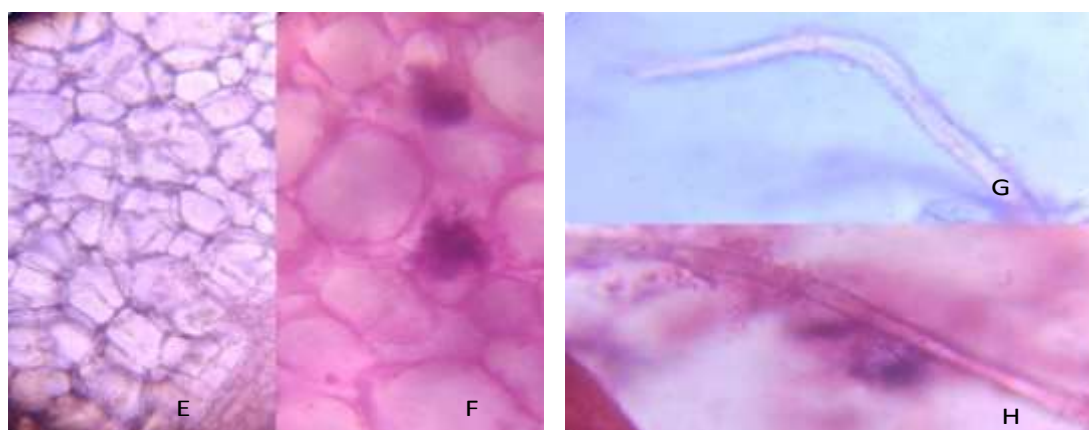
- Mani, M.S. 1973. Plant galls of India, Macmilian Company of India Ltd., Delhi, Madras, Bombay, Calcutta. Pp. 354.
- Stone, G. N., and K. Scho" nroge. 2003. The adaptive significance of insect gall morphology. *Trends in Ecology and Evolution* 18:512-522.
- Butani, D. K. 1979. *Insects and fruits*. Periodical Expert Book Agency, Delhi. ppA15
- K. Shivaramu, P.V. Rami Reddy, M.A. Suryanarayana 2013. Infestation of gall thrips, *Coryciodothrips inquilinus* A. on *Terminalia chebula* Retz., a medicinally important Plants; *Pest management in Horticulture ecosystem*; Vol.19, No. 2, pp 261-263.
- M. S. Uma, Abraham Vergees 2008. An overview of some galls on some selected trees in India, *Pest management in Horticulture Ecosystem*, Vol.14, No.2, pp 210-221.
- V. Krishnan, M. Gopi and S. Amerjothy 2011. Morphological diversity of some newly recorded plants galls in Tamil Nadu, India. *Indian Journal of Science and Technology*, Vol.4 , No.9.
- Borror, D., DeLong, R.A.S. 1992. *An introduction to study of insects*. Sixth edition. Harcourt Brace College publishers, New York.

Forest	Infested plants* (out of 25)	Infested Inflorescences* (out of 20)	% of Infested flowers in Inflorescences.
Salekasa	10	4.6	97 %
Amgaon	3	5.3	82%
Deori	7	4.4	87%

**Table:- Occurrence of Galls in *Terminalia chebula* Retz. flower**  
(\* mean value of the population)



**A-** Inflorescence with galls, **B-** Flower Galls, **C-** Dissected gall, **D-** Insect larva



**E-** T. S. of normal premature fruits, **F-** T. S. of Gall, **G-** Normal fruit trichome, **H-** Gall trichome.