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Description of Some Plant Galls Found in Nanded District of Maharashtra State

Dr.M.S.Siddiqui[1]

[1]Department of Zoology, Sharadchandra College Naigaon, Dist. Nanded- 431709, Maharashtra, India

ABSTRACT

This contribution includes the description of plant galls found in different parts of Nanded district of Maharashtra, India. these plant galls were collected from different parts of Nanded District viz. Bhokar, Khandar, Vishnupuri, Naigaon

KEY WORDS: Plant Galls, Nanded District, Maharashtra.

I. INTRODUCTION

Plant galls or tumors are abnormal growths are found on different plant parts. Almost all plant parts i.e. leaf, shoots, stems, roots and inflorescences develop plant galls. Plant galls develop as a interaction between organisms and plant. The organisms who cause plant galls are popularly known as Zoocecidia or Cecidozoa. The example of Zoocecidia are Protozoas, Nematodes, Mites and Insects. Plant galls are also caused by Phytocecidia like bacteria and fungi. Over 106 plant galls have been reported from Maharashtra which includes 37 plant galls from Marathwada region (Sharma R.M.2003 and 2009) . More than 25 plant galls previously reported from Nanded district so far.

Galls on Family Amaranthaceae

Eight galls known from this family at present include five stem galls, and one gall each on root, leaf and flower. Stem galls are caused by 4 weevils (Coleoptera) and one mite where as remaining three galls are accounted by one nematode, (root), one midge gall (flower) and one aleurodidae. Two new cacidomyiidae galls caused by contarinia asperae sp. now. And Lasioptera asperae Sp. Nov. are reported herewith.

Leaf gall of Achyranthes aspera (L) Contarinia asperae male female sp. nov. (Cecidomyliidae: Diptera)

Achyranthes aspeara (L) is a wild herb and is of medicinal importance. It is used as diuretic and laxative medicine. A new leaf gall is reported as under.

Description of gall : Leaf gall usually hypophyllous, globose or subglobose, ovioid or fusiform, solid, solitary, glabrous, indehiscent, large and irregular; persistent or subseculent swelling at the base of the midrib or of the main lateral veins, pale green on yellow when young, turns reddish brown towards maturity. Larval cavity single axial, long, monothalamous enclosing single a single maggot. Ostiole hypophyllous, generally single gall per leaf but many a times 2-3 galls found on single leaf. Size 7-10 mm long and 3-4 mm thick.

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Ecological notes: Gall formations were noticed during August-September months in both 2019, 2020. Emergence of adult noticed during October- November. Galls yellow of pale green initially becomes reddish brown on maturity. Usually gall cavity with single Maggots but sometimes may contain 2-3 maggots. Pupation in the gall.

This new midge gall reported for first time from Maharashtra and is collected from forest of Sitakhandi, Bhokar, kandhar (Dist. Nanded). Two midge fly species viz. male female sp. nov. And *Lasioptera asperae* male female sp. nov. Were bred from these leaf galls. Lasioptera species is believed to be gall former whereas Contarinia sp. is believed as an inquiline.

Distribution: Mani (1973) reported gall no. 523 and gall no. 815 as caused by Lasioptera and unknown Itonididae respectively on Achyranthes aspera Linn. From Coromamdal coast, but he could not rear adults from these galls and also did not describe the species.

Later Sharma R. M. (1976) bred adults from both stem and leaf galls on this host weed species as caused by lasioptera achyranthesae from University area, Aurangabad during 1976, 77, 78. This is new record of two galls midge flies bred from leaf gall on this host plant from study area.

Stem gall of *Achyranthes aspera* (L) (*Lasioptera asperae* male female sp.nov.) (Cecidomyliidae: Diptera) *Achyranthes aspera* Linn. is a wild herb and found all over the Maharashtra.

Description: gall solitary , globose or sub globose, elongated or elongated cylindrical, shiny, irregular, solid, hard, woody, costate, tomentose, indehiscent persistent ; young galls dark green, old galls turns yellowish-brown on maturity. Gall cavity long, unilocular and spacious and enclose generally a single larva. Pupation inside the gall, lot of excretory material found inside the gall. Size variable 1-2 cm long 15-20 mm thick, usually 3-4 galls may arise on a single twig.

Anatomical study: The central modularly part is dissolved due to the gall formation and the gall cavity shows a gradual proliferation towards the interior of the pith. However the epidermis, cortex, endodermis and part of the vascular bundle remain unaffected. On careful examination of the cortex it is revealed that the parenchymatous region of the cortex it is revealed that the parenchymatous region of the cortex is also on the verge of initiation of gall formation.

Ecological notes: Gall formation noticed during September-October months in the study duration. The young galls similar to that of the nodes and cannot be easily identified initially. Young galls are dark green and old galls turns brownish on maturity. Pupation takes place inside the gall.

Distribution: Mani (1973) collected stem galls on this host weed from Coromandal coast probably caused by Lagioptera (?) but could not rear and did not describe cecidozoa,but Sharma (1976, 77, 78) reported stem and leaf galls on this host weed from Aurangabad (M.S.) caused by *Lasioptra achyrantesae.*

A new gall reported for the first time from Sitakhandi forest Dist. Nanded. Maharashtra State, India. Causative midge flies i.e. *Lasioptera asperae* sp. nov. is a new cecidozoa for the science.

Galls on Family Boraginaceae

Seven galls reported from this family include three leaf, three flower and one root galls. These galls are caused by mites (3 galls), midges (2 galls) and two beetles. The galls have partly Ethiopian and some have Malayan affinities.

New galls on three new hosts are described herewith.

Petiole gall of *Cordia Obliqua* Frost. (Unknown beetle: Coleoptera) *Cordia Obliqua* Frost, a common forest tree from this part of Maharashtra is of medicinal importance. Leaf extract of this tree is used for treating cough and chest related problems. Gall caused by an unknown beetle is reported herewith.

Description of gall: Petiole gall caused by unknown beetle is found extensively on this host tree. The gall is ovoid or fusiform, solid, woody, single, spacious larval cavity contains a single grub, gall size variable, 16-20 mm long and 5 mm thick; initially gall is green, however turns yellowish towards maturity.

Anatomical study: In the presence of petiole gall, the bark is seen intact. The pith and medullar parenchyma including phloem is affected and central portion of the pith cells is completely dissolved to form larval cavity. Moreover it is indicated that soft parenchymatus cells are greatly affected and lignified vascular tissue are found intact.

Ecological notes: The gall formation was noticed during August-September months during study period of 2019, 2020. Initially the gall looks like an ordinary petiole and appears green in colure but later it becomes larger, swollen and turns pale yellowish on maturity. Pupation occurs in the soil. Emergence was noticed during November-December.

Distribution: Present gall is the first record of caused by a beetle from this region of India. It is reported from forests of Bhokar, Barul, and from S.R.T.M.Univerrcity area (Dist. Nanded).

Earlier a mite gall caused by *Eriophyes cordiae* Nelepa on cordia myxa Linn was reported from different parts of India. The present beetle gall on this new host tree i.e. *Cordia oblique* Frost is reported for first time from this part of India, and is new to the science.

Stem gall on *Cordia oblique* Frost.

A new stem gall on this host tree i.e. *Cordia oblique* caused by an unknown beetle is reported herewith. This host tree is medicinally important one. Leaf extract of this tree is used for treating cough and chest problems.

Description of gall: Localized of extensive swelling on the old as well as terminal branches, hard, solid, woody, subglobose, fusiform, moniliform; initially dark green but later on turn yellow or straw colored towards maturity; larval cavity single, irregular, spacious, encloses many grubs. Galls of variable size, ranging from 50-60 mm long and 10-15 mm thick.

Ecological notes: These galls were collected and studied during 2018, 2019, 2020. The gall formation was noticed from late October each year. Initially the galls are green but later on turn straw colored towards maturity, single, spacious, larval cavity with many grubs. Pupation outside the gall, emergence during November/ early December each year.

Distribution: Earlier a mite gall caused by *Eriophis cordia* Nelepa galling *C. myxa* Linn. Was reported from different parts of India.

Present stem gall caused by an unknown beetle is the first report of gall on this new host plant from Maharashtra & India. Grubs present inside these galls confirm about beetle as the causative organism.

Pouch gall on leaves of *Cordia dichotama* Frost (Unknown Eriophyes sp: Acarina :)

Cordia dichotama frost is common forest tree that is found in the forest of Kandhar (Dist. Nanded). The host tree has medicinally. Leaf paste is used as a dressing for pustular eruption on the face. Bark is mild tonic and astringent. Fruits are used for treating cough and uterus, chest problems.

A new mite gall on the leaves of this hosts tree is reported herewith.

Description of gall: Epiphyllous, yellowish or pale green, fizz gall, often leading to formation of pustule like pouch galls, with a large hypophyllous ostiole, cavity lined by white or brown long hairs, hairs unbranched twisted, gall 3-4 mm diameter.

Ecological notes: The gall formation was noticed during November-December months during 2019, 2020. Galls initially simple outgrowth but later develop into a pouch gall. Young galls dark green or yellowish while pale green towards maturity.

Distribution: Earlier Acarina gall, caused by *Eriophyes cordiae* Nelpa was reported galling leaves of Cordia myxa Linn from different parts of India.

A mite gall is reported on a new host plant species i.e. *eordia dichotame* Frost from forests of Barul, Kalamber, Kandhar (Dist. Nanded) (M.S.), India.

Galls on Burseraceae Of the four galls known at present galling the members this family, two Eriophyds, one psyllid and one cecidomyiidae galls are reported from India. Three leaf and one inflorescence galls are reported so far. One known psyllid gall and one known midge gall are reported from this study area.

Leaf gall of Garuga pinnata Roxb. (phacopterian lentiginosomus Buckton, Homoptera) *Garuga pinnata* Roxb is a common forest tree that occur in tropical forest of Kinwat, Bhokar, Kandhar, Sitakhandi (Dist. Nanded). The leaves and branches are used as a fodder for Elephant and cattle etc.

Description of gall: Leaf gall, simple, epiphyllous, free, or clustered and bunched; ovoid, subcylinderical, or subglobose, unicellular gall, strongly constricted basally in to a short neck like stalk inserted in cup like tumescence of covering outgrowth from leaf blade, on midrib or large side veins, usually close to leaf base. The young galls are conspiously yellow and smooth, become yellowish green during growth and turn tinted reddish towards , maturity; galls with reticulate surface and with many radiating veins. A single leaf may usually have 2-3 galls but some times over dozen galls may be found bunched together. Gall cavity spacious, with a 1 or 2 nymphs and adult of psyllid. On maturity, galls dehiscence irregularly above and allow the escape of adult bug, which has been emerged much earlier but remains imprisoned inside the gall. Gall 20 mm long and 10 mm in diameter.

Ecological notes: The gall formation was observed during June – July months of 2019, 2020. Generally on both young and older leaves. Matured galls are tinted red in color. Spacious gall cavity contains 1 or 2 nymphs and also adult psyllid.

Distribution: Earlier this known gall was reported from different parts of India. This is the first report of this Psyllid gall from forests of Kandhar and Bhokar forest (Dist. Nanded) of Maharashtra, India.

Leaf gall of *Garuga pinnata* Roxb. *Lasioptera garugai* Deshpande et. el. And *Garugadiplosis brevipalpi* Deshpande et. el.

This is the first record of cecidomyiid gall on Garuga pinnata Roxb reported from forests of Kandhar and Gangakhed.

Description of gall: Leaf gall, epi-hypophyllous, more pronounced on lower side of the blade, sessile, simple, ovoid, of globose, smooth, persistent gall, occurs on midrib, vein or veinlets, initially green but turns reddish brown on maturity. Gall cavity unilocular enclosing one or two maggots inside. Fully formed gall measured 7-8 mm in diameter, 3-7 galls may arise on single leaf. Exist holes circular, mostly on under surface.

Ecological notes: The gall formation was noticed during July-August months of 2019, 2020. Emergence usually during September. Few galls remains persistent even after defoliation.

Distribution: This leaf gall, a first cecidomyiid gall on this host plant, was reported from forests of Bhokar, Sitakhandi & Kinwat by Deshpande et. el. In 2003. Two gall midge flies were reared from this leaf gall. Viz. *Lasioptera garugai* and *Garugadiplosis brevipalpi.* The first one is believed to be a gall former while the latter as an inquilines. The present gall is now reported from the forest of Kandhar (Dist. Nanded) Maharashtra, India. Two gall midge flies viz. *Lasioptera garugai* and *Gargodiplosis brevipalpi* were reared from this leaf gall.

II. RESULT AND DISCUSSION

As data collected by author on plant galls shows that there are numerous types of plant galls found in Nanded district. These plant galls are from Different families of Angiosperms. Yet lot of scope for study of plant galls from study area.

III. CONCLUSION

From above result and discussion it is clear that Nanded district has rich biodiversity of plant galls . The places viz. Vishnupuri, Bhokar, Khandar, Naigaon, Ardharur has numerous types of plant galls. These plant galls may be pest of various cops.

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