

LECTURE - BIOLOGY OF GALLS

DIVERSITY OF GALLS: DRY FOREST X RAIN FOREST

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The estimation of gall-inducing insects range from 21,000 to 211,000 species. Therefore the studies of gall-inducing insects and their host plants are fewer in dry forest compared to rain forest. Tropical dry forests represents almost 42 % of the tropical forests distributed in Africa, Asia, Oceania, Mesoamerica and South America. Caatinga is the largest areas of continuous seasonally dry forests that is located in northeast Brazil. Despite its ecological importance, there are few studies on galling insects and the association with their host-plants. A scientometry review for the period of 30 years recorded 182 papers, which dealt with insect galls in Brazil. The review highlight the Southeast region to concentrated the published papers, probably due to the highest number of research group studying biology galls.

The northeast brazilian region is cover by Atlantic forest (rain forest) and Caatinga (Tropical Dry Forest). Although the Caatinga occupies more than 50% of this region of Brazil, it still less studied when compared to the Atlantic forest. Thus the question is the Caatinga presents low gall richness or is less study in comparison to other Brazilian ecosystems? The first paper investigated the fauna of gall-inducing insects in plants from environments with different intensities of anthropic action in the Caatinga region of Xingó hydrelitic. The researche recorded 25 morphotypes of galls in 18 host species of eight plant families (Anacardiaceae, Asteraceae, Bignoniaceae, Boraginaceae, Euphorbiaceae, Fabaceae, Laminaceae and Verbenaceae). The family

Fabaceae bears the largest number of morph-species of gall, with six morphotypes and *Cenostigma pyramidale* (Tul.) E. Gagnon & G. P. Lewis (*Caesalpinia pyramidalis* Tul) presents four morphotypes. In another study of the richness of gall-inducing insects in the tropical dry forest. The authors recorded 64 different types of galls of 48 species of host plants belonging to 17 families and 31 genera. in the vegetation of caatinga of Pernambuco. The host plant families that had a greater number of species of galls were: Fabaceae (23.44%), Euphorbiaceae (14.06%), Boraginaceae (6.25%), Malpighiaceae (6.25%) and Myrtaceae (6.25%). Few years later in Bahia State, one study was conducted in areas of Caatinga with different degrees of anthropogenic impact. They described twenty gall morphotypes on nine plant host belonging to eight families: Annonaceae, Bignoniaceae, Capparaceae, Convolvulaceae, Euphorbiaceae, Fabaceae, Rubiaceae and Sapindaceae. A most complete inventory of the diversity of galls was conducted in areas of Caatinga of Bahia state. This study recorded 91 different types of gall of 67 plant species of 54 genera belonging to 19 families (Anacardiaceae, Bignoniaceae, Boraginaceae, Cannabaceae, Capparaceae, Celastraceae, Combretaceae, Convolvulaceae, Euphorbiaceae, Fabaceae, Malpighiaceae, Malvaceae, Myrtaceae, Rhamnaceae, Rubiaceae, Rutaceae, Sapindaceae, Solanaceae and Verbenaceae). The family Fabaceae (39,6%) bears the largest number of galls morphotypes followed by Bignoniaceae (19,8%).

Therefore, there are more studies conducted in rain tropical forest: Amazonia forest and Atlantic forest. For example, an inventory of gall inducing insects and their host plants in a urban fragment of Atlantic forest of Pernambuco (387,4 ha) recorded thirty and two morphotypes of galls had been associated with 13 families of host plants: Burseraceae (24,1%), Lecythidaceae (20,4%), Annonaceae and Melastomataceae with 11,1% each. A most wide study of the Atlantic forest of Pernambuco recorded one hundred thirty-six different morphotypes of insect galls on 79 host plant species of 53 genera belonging to 35 plant families. The study reported the host plant families with the largest number of galling species were: Lecythidaceae (6.6%), Myrtaceae (6.6%), Nyctaginaceae (6.6%), Burseraceae (5.9%), Clusiaceae (5.2%), Fabaceae (5.12%), Lauraceae (5.2%), Melastomataceae (5.2%), Polygonaceae (5.2%), Rubiaceae (4.4%). To other studies conducted at a 3500-ha remnant of in the Atlantic Forest (Alagoas) was recorded 50 gall morphospecies on 37 host plant species, the most important plant families were Melastomataceae (32%) and

Miconia prasina (Melastomataceae) was the host plant that had the highest number of individuals with galls (21).

The number of studies conducted in Caatinga are extremely limited. One explanation could be that in general the most of studies were done close to the research center most of far from the Caatinga areas. Fortunately, nowadays new researches groups studying the biology of galls inducers and host plants are forming in university and research center located close to Caatinga. (Supporting information: FACEPE, CNPq, CAPES).