

***Cordyceps* sp. (ASCOMYCOTA: HYPOCREALES) PARASITISM ON ANT IN
THE NORTHEAST OF BRAZIL**

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Resumo: Esta Comunicação Científica registra a ocorrência do fungo entomófago *Cordyceps* sp. parasitando formiga no Nordeste do Brasil. O fato foi observado em uma reserva de Mata Atlântica, no município de Camaragibe, estado de Pernambuco, Brasil. O parasitismo foi observado durante período chuvoso de 2017. Tratava-se de um fungo com poucos registros de ocorrência e este é o primeiro feito no Nordeste brasileiro.

Termos para indexação: Controle biológico, fungo entomófago, fungos parasitos de insetos.

Abstract: This Scientific Communication is aimed to register the occurrence of the entomophagous fungus *Cordyceps* sp. parasitizing ant in the Northeastern of Brazil. The phenomenon was observed in an untouched rainy forest area in Camaragibe country, State of Pernambuco, during the raining season of 2017. This fungus has low occurrence index in this country and this is the first report registered in this area.

Index terms: Biological control, entomophagous fungi, parasitic fungi of insects.

Cordyceps (Fr.) Link is an entomophagous fungus with many species, estimated over 400 (SUNG et al., 2007). Most of these species have been recorded associated to predation or parasitism of insects (HYWEL-JONES, 1995) and other arthropods (SOSA-GÓMEZ; LASTRA; HUMBER, 2010). Specificity in these associations has been stressed by authors even though a group of this fungus species has been reported affecting closely related preys and hosts (SUNG et al., 2007;

SHRESTHA et al., 2016). *Cordyceps* spp. are teleomorphs of more than 25 anamorph forms equally entomophagous or entomopathogenic, including *Beauveria* spp., *Isaria* spp., *Lecanicillium* spp. and *Metarhizium* spp. All these genera are largely used as biological control agents of agricultural insect pests (SUNG et al., 2007).

The genus *Cordyceps* has a cosmopolite distribution with most of the species reported in subtropical and tropical

zones, especially in East and Southeast Asia (SUNG et al., 2007). Evans and Sanson (1984) pioneering described this fungus and its anamorphs and the relation with ant parasitism in different ecosystems. The objective of this Scientific Communication was to report the occurrence of the fungus *Cordyceps* sp. in the Northeast of Brazil preying on ant (Formicidae). The finding occurred in a tropical rainforest location (Visgueiro Acreages), in the “Vale dos Macacos”, Camaragibe county, State of Pernambuco (PE), Brazil (Lat 08°01'18", 34°58'52" W), during the rainy season (May to July), 2017. Evans and Sanson (1984) pioneered the reports of *Cordyceps* spp. and its anamorphs in tropical rainforest. In the present study, the collected material, still under field conditions, was kept in a Petri dish to be examined, in the same day and seven days later, in this case after a period in incubations under moist chamber conditions. The local of the analytic work was the *Laboratório de Fungos Fitopatogênicos e Biocontroladores* (Plant Pathogenic Fungi and Biocontrol Agents Laboratory), of the Departamento de Micologia da Universidade Federal de Pernambuco (UFPE), in Recife, PE, Brazil. So, initially, after a close microscopical examination on the gross morphology of the insect and the fungus, by means of standard procedures, the material was kept under moist-chamber condition, inside of a

sterilized Petri dish, containing wetted cotton with distilled water. This experimental system was maintained in a 28°C environment, for seven days. The cotton was carefully wetted every other day. The objective of this procedure was to observe the development of new fungus structures. In figure 1 it is possible to be observed two long stromata, in different stages of development, protruding from the insect's thorax, almost totally consumed by the fungus. Apparently, the abdomen, was intact. The two fungus stromata were not fully developed and did not held asci with ascospores. Consequently, the identification at species level of the fungus was not conclusive. All these observations were carried out and photo documented shortly after the collect. Seven days later, the material under moist chamber conditions was examined. In the first sight it was seen a vigorous white mycelium mat developed over the insect body, but no asexual reproductive structures of the fungus were formed (Figure 2). According to the literature, the incubation period for *Cordyceps* spp. lasts up to three weeks when news spores are formed and dispersed in the environment, resulting in new insect contaminations. The genus *Cordyceps* also has been largely investigated as chemical control agent producer for several human diseases and disorders (YUE et al., 2013).

Figure 1- *Cordyceps* sp. preying on an ant (Formicidae). It may be observed that the insect thorax fully consumed by the fungus, the preserved abdomen and two long and vigorous stromata (arrows). (Image= 10x).



Figure 2- Mycelium mat developed over the insect thorax and head, after five days under moist-chamber conditions. Two small arrows indicate new borne stromata protruding from the insect head. The abdomen seemed to be intact. (image=10x).



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