Tetranychus bastosi Tuttle, Baker & Sales (Prostigmata: Tetranychidae) mites on *Jatropha curcas* (Linaeus) in Sergipe State, Brazil

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Abstract
Tetranychid mites represent important pests that attack different agricultural crops worldwide. In an evaluation of germplasm of physic nut, *Jatropha curcas* L. in the state of Sergipe, Brazil, the mites were observed on less vigorous plants with symptoms such as leaf blade reduction and curling. One hundred mites were collected from those plants and observed on microscope for taxonomic identification. The mites were assigned to the species *Tetranychus bastosi* (Acari: Tetranychidae). This is the first report of physic nut, *J. curcas* as host plant of *T. bastosi* in Brazil.

Key words: Physic nut, biodiesel, germplasm, spider mites

Ocorrência de *Tetranychus bastosi* Tuttle, Baker & Sales (Prostigmata: Tetranychidae) em *Jatropha curcas* (Linaeus) em Sergipe, Brasil

Resumo
Os ácaros tetraniquídeos representam importantes pragas para diversas culturas agrícolas por todo o mundo. Durante a prospecção de germoplasma de pinhão manso, *Jatropha curcas* L. no Estado de Sergipe, Brasil. A ocorrência destes foi observada em algumas plantas menos vigorosas e que apresentavam sintomas de redução e encarquilhamento do limbo. Foram coletados 100 indivíduos destas plantas os quais foram montados em lâminas de microscopia para a identificação taxonômica. Os ácaros foram identificados como pertencentes à espécie *Tetranychus bastosi* (Acari: Tetranychidae). Este é o primeiro relato em pinhão manso, *J. curcas*, como hospedeira para *T. bastosi* no Brasil.

Palavras-chave: pinhão-branco, biodiesel, germoplasma, ácaros

Received: 23 August 2009 **Accepted:** 13 April 2010

The physic nut *Jatropha curcas* L. can be considered one of the most promising oleaginous species of the Southeast, Center-West and Northeast of Brazil, as a petroleum diesel substitute. The crop grows spontaneously on low-fertility soils under an unfavorable climate for most traditional food crops. Doubtlessly, the rational cultivation of physic nut, based on enhanced techniques, may be counted among the most promising sources of oleaginous grains for burning fuel. Besides oil production, the physic nut can also be used for other purposes, such as partial substitution of wire in living fences, since animals avoid touching it, due to the caustic latex that drips from torn or wounded leaves; it can be used to support climbing plants such as vanilla (*Vanilla aromatica*), since the plant stem has a smooth and soft surface; and it can be used for sand dune fixation along the sea shore (Peixoto, 1973).

In Brazil, little is known about pests and diseases of cultivated physic nut or native germplasms that would affect the crop. So far, the mites have been cited as non-important plagues as for physic nut cultivation. However, its existence in naturally occurring plants and/or close to plantations can affect future plantations and contribute to an increase on pesticides. The characterization of pestsplagues and their probable hosts could contribute to a sustainable production of this crop. Knowledge on the mite fauna associated to physic nut is essential for future studies of agroecosystems management, since this plant can serve as host for phyllophagous mites or can shelter predatory mites that act as biological control agents of pests associated plagues.

For being a native and drought-resistant species physic nut is considered an agricultural option for the Northeastern Brazil (Arruda et al., 2004). It can be used on biodiesel production programs, opening perspectives for the increase of growing areas for this crop in the semi-arid Northwestern region (Purcino & Drummond, 1986).

The mites were observed in plants of the germplasm bank of the Federal University of Sergipe (UFS), in São Cristóvão County, Sergipe State, Brazil (10°55'32"S, 37°06'08"W; 47m asl). Little vigorous plants infested by mites were observed in three of the accessions, with symptoms of leaf blade reduction. The infested leaves were collected in plastic bags and transported to the laboratory of biotechnology of the UFS in styrofoam boxes. Around 100 mites were collected from these accessions (an average of 4 to 5 per leaf), which were photographed under a stereoscope microscope and immediately preserved in 70% ethyl alcohol solution, in plastic bottles.

The mites were mounted on microscope slides in Hoyer medium. Slides of males and females were prepared separately; females were mounted in groups of five, in dorsum-ventral position, and each male separately, in lateral position.

The mites were identified under a phase-contrast microscope and the most important taxonomic structures, such as the female's spinneret and the male's aedeagus, were photographed (Figure 1A and 1B). The females spin webbing with the spinneret and the ratio width: length is an important characteristic underlying the identification of *Tetranychus* species. Similarly, the aedeagus is extremely important for taxonomy since it has a different shape in each species of the family. In the identification of the species these structures were visualized by an image capturing system, composed of a digital camera linked to the microscope and microcomputer (Figure 2A and 2B).

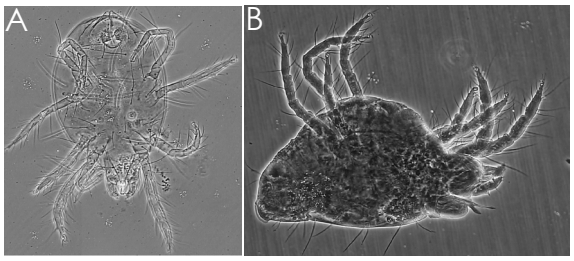

Figure 1. Female in ventral view (A) and general view of the male in lateral position (B).

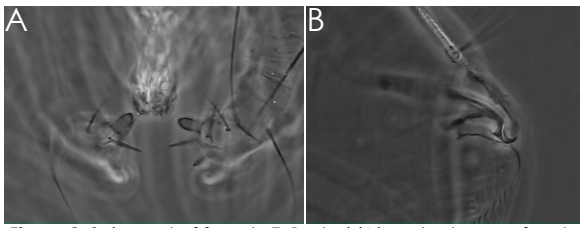

Figure 2. Spinneret of female T. Bastosi (A) and edeago of male T. Bastosi (B).

The red-colored mites were found on the leaf underside, initially along the mid-vein and, with the increasing number of insects, distributed across the whole leaf blade. The presence of webbing and white-grayish and silvery spots were observed along the mid-vein on the leaf underside. The blades of the attacked leaves were slightly undulated and withered when infested by dense populations.

The mites were identified as *Tetranychus bastosi* (Tuttle et al., 1977). This Tetranychidae was described based on specimen collected in red mulberry *Morus rubra* L. (Moraceae), in Crato, Ceará State, and stored in the collection of the "Escola Superior de Agricultura 'Luiz de Queiroz'", University of São Paulo, Piracicaba County, São Paulo State, Brazil. Furthermore, in Ceará, the occurrence of *T. bastosi* was reported on slender amaranth, *Amaranthus viridis* L.; hairy beggartick, *Bidens pilosa* L.; on, *Hyptis suaveolens* Poit.; sweet potato, *Ipomoea batatas* (L.) Lam.; *Ipomoea glabra* Choisy; *Jatropha gossypifolia* L.; dwarf mallow, *Malva rotundifolia* L. and on mulberry, *Morus nigra* L. Two years after the description of *T. bastosi*, the mite was reported by Bastos et al. (1979), also in Ceará, where it infested manihot seedlings, *Manihot pseudoglaziovii* Pax &

Hoffmann, in Fortaleza.

Moraes & Flechtmann (1980) also reported the frequent infestation of physic nut by *T. bastosi* and mentioned that the mites spin a considerable amount of webbing, which induces the yellowing and, occasionally, premature leaf death of this typical host of the northwestern vegetation.

Moraes & Flechtmann (1981) discovered new hosts for *T. bastosi*: papaya, *Carica papaya* L., in Paraíba and Pernambuco States; *Erythrina* sp., in Rio Grande do Norte State; pinhão roxo, *J. gossypifolia,* in Bahia and Pernambuco States; an unidentified *Jatropha* species, in Paraíba and Pernambuco States; maniçoba, *M. pseudoglaziovii,* in Pernambuco State; common bean, *Phaseoulus vulgaris* L., in Pernambuco State; castor-bean, *Ricinus communis* L.,in Pernambuco State; and, *Turnera* sp., in Pernambuco State.

Due to dense populations of *T. bastosi* observed here and the damage they cause to physic nut plants, this *Tetranychidae* mite is considered a potential pest for the crop, which is currently nationwide in full expansion. Studies into the biology of the mite, its host, phenology, as well as natural associated enemies are therefore essential with a view to the determination of management practices of the crop.

Acknowledgements

We would like to acknowledge to Prof. Dr. Carlos Holger Wenzel Flechtmann for his collaboration as for the mite identification and for bibliographical support; to the biologist Glauce Policárpio da Costa Gonçalves, Embrapa Cenargen, for mounting the microscope slides; and to the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for the scholarship of the first author.

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