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Author(s): Elio Cesar Guzzo, Aldomário Santo Negrisoni Júnior, Felipe Alfredo Cerón Martí, Marcela Alejandra Lemus, Daniel Benítez and Denise Navia

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FIRST REPORT OF THE ERIOPHYOID MITE *ABACARUS DOCTUS* (PROSTIGMATA: ERIOPHYIDAE) INFESTING SUGARCANE IN EL SALVADOR

ELIO CESAR GUZZO¹, ALDOMÁRIO SANTO NEGRISOLI JÚNIOR¹, FELIPE ALFREDO CERÓN MARTÍ²,
MARCELA ALEJANDRA LEMUS², DANIEL BENÍTEZ³ AND DENISE NAVIA^{4*}

¹Embrapa Tabuleiros Costeiros / UEP Alagoas, C. Postal 2013, 57061-970 Maceió, AL, Brazil

²Central Izalco, Km 62 ½, Carretera a Sonsonate, Cantón Huiscoyolate, Izalco, Sonsonate, El Salvador

³Ingenio Chaparrastique, Km 144 ½, Carretera al Cuco, Cantón El Jute, San Miguel, El Salvador

⁴Embrapa Recursos Genéticos e Biotecnologia, C. Postal 02372, 70770-900 Brasília, DF, Brazil

*Corresponding author; E-mail: denise.navia@embrapa.br

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The eriophyid mite *Abacarus doctus* Navia & Flechtmann (Acari: Prostigmata: Eriophyidae) was described from sugarcane from Costa Rica in 2011 (Navia et al. 2011). This species was the fourth in the genus *Abacarus* Keifer to be described from sugarcane and the first to be described from the Western Hemisphere. Before *A. doctus* was found in Costa Rica, *Abacarus sacchari* Channabasavanna 1966 was the only species of the genus reported from sugarcane in Neotropical areas, being reported in Brazil and some Caribbean Islands (Flechtmann & Aranda 1970; Amrine 2003). Although described in 2011,

A. doctus was first collected from sugarcane plantations in the Costa Rican Province of Puntarenas in 2008, where it was causing severe symptoms characterized by reddish or bronzed spots on the inner leaf surface (Navia et al. 2011). These authors reported that such symptoms could have been confused with those caused by rust fungi commonly associated with sugarcane.

In Jul 2010, eriophyid mites were observed infesting sugarcane on El Diamante farm, department of Ahuachapán (N 13° 46' 50.14" W 90° 05' 04.38", 11 m asl), in the western region of El Salvador, near the boundary with Guatemala (Fig. 1,

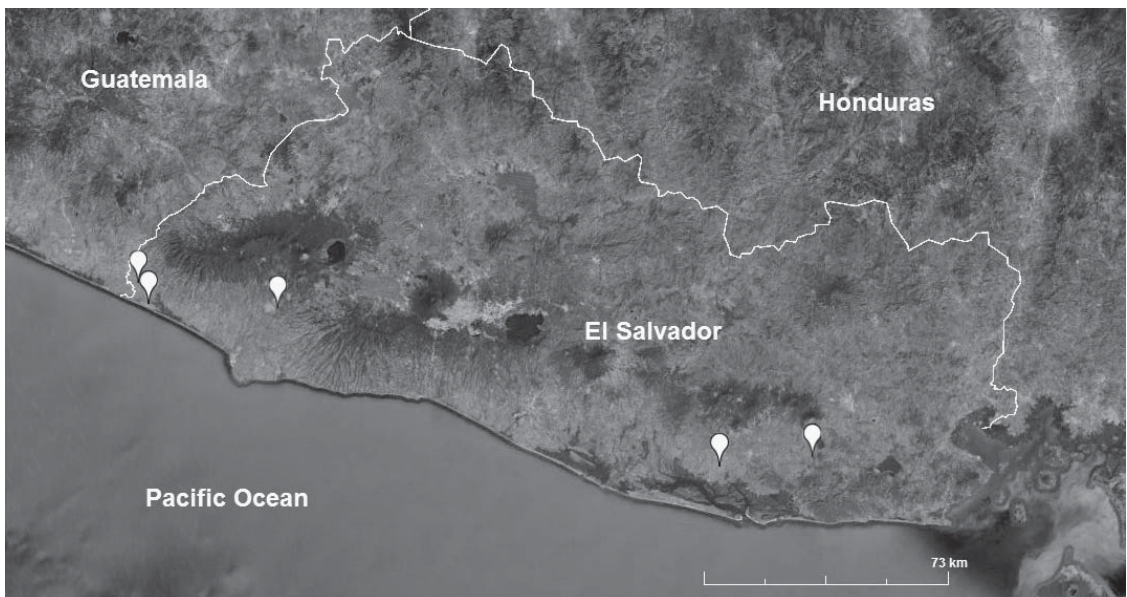


Fig. 1. Location of the sites where *Abacarus doctus* was found infesting sugarcane in El Salvador. (Source: Generated from Google Earth© 7.1.1.1871, Google Inc. 2013). A colored version of this figure can be seen online in Florida Entomologist 97(4) (December 2014) at <http://purl.fcla.edu/fcla/entomologist/browse>.

Suppl. Fig. 1). In 2011, the same eriophyid mite was observed in several other regions throughout the country, i.e., La Caprera farm, department of Ahuachapán (N 13° 43' 36.38" W 90° 03' 23.97", 6 m asl); Buena Vista farm, department of Sonsonate (N 13°42' 59.95" W 89° 42' 19.71", 239 m asl); El Tercio farm, department of Usulután (N 13° 18' 43.45" W 88° 31' 08.09", 57 m asl); and El Jocotal farm, department of San Miguel (N 13° 20' 11.59" W 88° 16' 11.60", 32 m asl). Sugarcane leaves infested by mites were collected and stored in ethyl alcohol (70%). About 50 specimens from each locality were then slide-mounted in modified Berlese medium (Amrine & Manson 1996) by a dissecting stereomicroscope. Identification was conducted by a combined phase-contrast and differential interference contrast microscope (Nikon Eclipse 80i, Nikon, Tokyo, Japan) by D. Navia. Slide-mounted specimens and digital images of taxonomic traits were sent to Dr. James W. Amrine Jr., West Virginia University, USA, who confirmed identification. Measurements were taken by a 100× objective. All mites were identified as *A. doctus* after being compared with type material of this species. However studied specimens showed a remarkable difference with *A. doctus* type material, absence of the tibial seta (*l'*) on the second pair of legs. The presence of this seta had not been observed on any eriophyid mite before *A. doctus* had been described from material collected in Costa Rica in 2008, and until then, such absence had been considered typical for all Eriophyoidea (Lindquist 1996). Navia et al. (2011) hypothesized that the presence of a tibial seta on leg II could be an atavistic character, that is, a reappearance of a previously suppressed seta, and thus a character state reversal and derivative. Absence of this seta in Salvadoran *A. doctus* populations indicates that it is probably an unstable character. Further studies involving morphological and molecular tools in a phylogenetic context should be conducted to investigate the occurrence of this character in *A. doctus*.

Symptoms associated with *A. doctus* in El Salvador were similar to those observed in Costa Rica (Suppl. Fig. 2 and Suppl. Fig. 3). Further surveys in El Salvador revealed that symptoms were widespread in several other sugarcane producing areas in the country, reaching about 26,000 ha. Infestations were observed mainly in the rainy coastal zone, with low altitudes (0 to 400-500 m asl) and relatively high temperatures (monthly averages ranging from 25.73 to 28.69 °C). Highest infestations were observed during the rainiest part of the year (from May to October) but distribution was aggregated and the species was found in little spots in sugarcane producing areas. Infestations were also higher in areas of soils with impaired drainage or waterlogged soils and more frequently observed on 3 of the most cultivated sugarcane varieties in El

Salvador, which are 'CP 72 2086'; 'MEX 79-431' and 'CP 89 2143', the last one being the most susceptible, and also in the promising variety 'PGM 89-968', which is about to be released for commercial use. Losses caused by this pest were not measured but it was noticed that when mite presence was visible, plants were wilted and leaves presented a generalized chlorosis.

In addition to Costa Rica and El Salvador, it is possible that *A. doctus* is also present in other sugarcane producing countries of Central America, e.g. Honduras and Nicaragua, which are near the reported occurrence areas, and in Guatemala, which is very close to the El Salvador infested areas. Since mites are extremely small (around 200 µm in length), easily overlooked, and their symptoms are often confused with other phytosanitary problems, their presence may have been unnoticed. It would be important to conduct further surveys in Central America to determine the status of *A. doctus*.

There is no information on whether *A. doctus* is a native or introduced species in Neotropical areas (Navia et al. 2011). This minute mite can be easily disseminated through sugarcane propagation material. It is extremely important to adopt phytosanitary measures to avoid this pest's wider spread to other sugarcane production countries around the world, even though its pest status has not yet been confirmed.

We are deeply grateful to Dr. James W. Amrine Jr., West Virginia University, USA, for confirming the identification of the mite populations in El Salvador. Also we are very grateful to Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) of Brazil, for research support and scholarship.

SUMMARY

This is the first report of *Abacarus doctus* Navia & Flechtmann in El Salvador and the second report of this species in the world. Morphological variability between Salvadoran population and the type material is pointed out and detailed studies are suggested to allow a better understanding of this variability with regard to Eriophyoidea systematics. Field observations on *A. doctus* infestations in El Salvador are presented, and the need for further studies of its status as a pest in El Salvador and on its possible occurrence in other sugarcane-producing countries in Central America are elaborated.

Key Words: Eriophyoidea, systematics, rust mite, Central America, *Saccharum*, bronze spots

RESUMEN

Este es el primer reporte de *Abacarus doctus* Navia & Flechtmann en El Salvador y el segun-

do en el mundo. Variabilidad morfológica entre poblaciones salvadoreñas y el material tipo son apuntadas y estudios detallados que permitan una mejor comprensión de su significado en la sistemática de los Eriophyoidea son sugeridos. Observaciones de campo acerca las infestaciones de *A. doctus* en El Salvador son presentadas así como la necesidad de evaluaciones adicionales sobre el status de la plaga en El Salvador y su posible presencia en otros países productores de caña de azúcar en América Central.

Palabras Clave: Eriophyoidea, sistemática, ácaro de la roya, América Central, *Saccharum*, manchas de color bronce

REFERENCES CITED

- AMRINE, J. W. JR., AND MANSON, D. C. M. 1996. Preparation, mounting and descriptive study of Eriophyoid mites, pp 383-396 *In* E. E. Lindquist, M. W. Sabelis and J. Bruin [eds.], Eriophyoid Mites: Their Biology, Natural Enemies and Control. Elsevier, Amsterdam.
- AMRINE, J. W. JR., STASNY, T. A. H., AND FLECHTMANN, C. H. W. 2003. Revised keys to the world genera of the Eriophyoidea (Acari: Prostigmata). Indira, West Bloomfield, MI, USA. 244 pp.
- AMRINE, J. W. JR. 2003. Catalog of the Eriophyoidea. A working catalog of the Eriophyoidea of the world. Available at: <http://insects.tamu.edu/research/collection/hallan/acari/eriophyidae>. (Accessed 31-I-2013)
- FLECHTMANN, C. H. W., AND ARANDA, B. R. C. 1970. New records and notes on eriophyid mites from Brazil and Paraguay, with a list of Eriophyidae from South America. *Proc. Entomol. Soc. Washington* 72: 94-98.
- LINDQUIST, E. E. 1996. External anatomy and notation of structures, pp. 3-31 *In* E. E. Lindquist, M. W. Sabelis and J. Bruin [eds.], Eriophyoid Mites: Their Biology, Natural Enemies and Control. Elsevier, Amsterdam.
- NAVIA, D., FLECHTMANN, C. H. W., LINDQUIST, E. E., AND AGUILAR, H. 2011. A new species of *Abacarus* (Acari: Prostigmata: Eriophyidae) damaging sugarcane, *Sacharrum officinarum* L., from Costa Rica - the first eriophyoid mite described with a tibial seta on leg II. *Zootaxa* 3025: 51-58.