

# First record of *Caliothrips phaseoli* (Hood, 1912) (Thysanoptera: Thripidae) on *Arachis* spp. (Fabaceae) in Brazil

## Primer registro de *Caliothrips phaseoli* (Hood, 1912) (Thysanoptera: Thripidae) sobre *Arachis* spp. (Fabaceae) en Brasil

 RODRIGO SOUZA SANTOS<sup>1\*</sup>  ÉLISON FABRÍCIO BEZERRA LIMA<sup>2</sup>

<sup>1</sup> Embrapa Acre, Rio Branco AC, Brasil. [rodrigo.s.santos@embrapa.br](mailto:rodrigo.s.santos@embrapa.br)

<sup>2</sup> Universidade Federal do Piauí, Piauí, Brasil. [efblima@ufpi.edu.br](mailto:efblima@ufpi.edu.br)

### \* Corresponding Author

Embrapa Acre, Rodovia BR 364, Km 14, CP 321, 69900-970, Rio Branco, AC, Brasil. [rodrigo.s.santos@embrapa.br](mailto:rodrigo.s.santos@embrapa.br)

### Suggested Citation

Santos, R. S., & Lima, E. F. B. (2024). First record of *Caliothrips phaseoli* (Hood, 1912) (Thysanoptera: Thripidae) on *Arachis* spp. (Fabaceae) in Brazil. *Revista Colombiana de Entomología*, 50(1), e13135. <https://doi.org/10.25100/socolen.v50i1.13135>

Received: 14-Aug-2023

Accepted: 02-Dic-2023

Published: 28-Abr-2024

### Subject Editor

Alex Enrique Bustillo. Cenipalma, Manizales, Colombia.

### Revista Colombiana de Entomología

ISSN (Print): 0120-0488

ISSN (On Line): 2665-4385

<https://revistacolombianaentomologia.univalle.edu.co>

### Open access



BY-NC-SA 4.0  
[creativecommons.org/licenses/by-nc-sa/4.0/](https://creativecommons.org/licenses/by-nc-sa/4.0/)

Publishers: Sociedad Colombiana de Entomología  
SOCOLEN (Bogotá, D. C., Colombia)  
<https://www.socolen.org.co>  
Universidad del Valle (Cali, Colombia)  
<https://www.univalle.edu.co>

**Abstract:** The objective of this work was to establish the first record of *Caliothrips phaseoli* (Hood, 1912) (Thysanoptera: Thripidae); in forage peanut accessions in the state of Acre, Brazil. The specimens were collected directly from the leaves of infested plants grown in pots and under greenhouse conditions, preserved in 70 % ethyl alcohol, and mounted on slides to later be observed under a microscope. *Caliothrips phaseoli* is a polyphagous species considered an important pest in bean and soybean crops in Brazil. The insect feeds on forage peanuts causes chlorosis on the leaves and delays the development of infested plants, although no mortality was verified.

**Keywords:** Amazon, bean thrips, legume, phytophagous insect, Terebrantia.

**Resumen:** El objetivo de este trabajo es realizar el primer registro de *Caliothrips phaseoli* (Hood, 1912) (Thysanoptera: Thripidae); en accesiones de maní forrajero en el estado de Acre, Brasil. Los especímenes se recolectaron directamente de las hojas de las plantas infestadas cultivadas en macetas y bajo condiciones de invernadero, se conservaron en alcohol etílico a 70 %, y se montaron en láminas para posteriormente observarlos en microscopio. *Caliothrips phaseoli* es una especie polífaga considerada plaga importante en los cultivos de frijol y soja en Brasil. El ataque del insecto al maní forrajero provoca clorosis en las hojas y retrasa el desarrollo de las plantas infestadas, aunque no se verificó mortalidad.

**Palabras clave:** Amazonas, insecto fitófago, legumbre, Terebrantia, trips del poroto.

## Introduction

The variability of pastures cultivated in tropical regions is low, limiting the number of available cultivars and increasing the need to study genetically improved forage species to better adapt to the various edaphoclimatic conditions in Brazil (Jank et al., 2011). Thus, intercropping with legumes (Fabaceae) is an alternative that allows diversification, reduces the genetic vulnerability of pastures, and improves productivity (Annicchiarico et al., 2015).

In Brazil, species of the genera *Arachis*, *Pueraria*, and *Stylosanthes* have often been used in consortiums, mainly with African grasses such as *Panicum* and *Urochloa* (= *Brachiaria*) (Rocha & Valls, 2017; Valle et al., 2009).

Due to its importance, studies on forage peanuts, *Arachis* spp. (Fabaceae) have been conducted in Brazil to provide highly productive, resistant, and nutritional quality cultivars (Assis & Valentim, 2009). However, expanded use of this forage is limited by the scarce knowledge about the phytosanitary problems associated with its cultivation. In this context, entomological evaluation is necessary for the launch

of new *Arachis* cultivars, as it aims to understand the associated arthropods, as well as their population and damage levels (Fazolin et al., 2011)

Currently, the economically important arthropods for forage peanuts recorded in the Brazilian state of Acre are *Oligonychus gossypii* (Zacher, 1921), *Mononychelus planki* (McGregor, 1950), *Tetranychus urticae* Koch, 1836, *Tetranychus ogmophallos* Ferreira & Flechtmann, 1997 (Acari: Tetranychidae), *Brevipalpus phoenicis* (Geijskes, 1939) (Acari: Tenuipalpidae), *Cerotoma arcuata tingomariana* Bechyné, *Diabrotica speciosa* (Germar, 1824) (Coleoptera: Chrysomelidae), *Dysmicoccus* sp. (Hemiptera: Pseudococcidae), *Gargaphia paula* Drake & Ruhoff, 1965 (Hemiptera: Tingidae), and *Enneothrips enigmaticus* Lima, Alencar, Nanini, Michelotto & Corrêa, 2022 (Thysanoptera: Thripidae) (Fazolin et al., 2011, 2015; Guidoti et al., 2014; Lima et al., 2022). The objective of this study was to make the first record of the association of a species of thrips in forage peanut accessions in Brazil.

### Material and Methods

In September 2022, an inspection of greenhouse-grown forest peanut accessions (10°01'S, 67°42'W, 168 m a.s.l.) was carried out in the Embrapa Acre experimental field (Figure 1A) in Rio Branco, State of Acre, Brazil. In several accessions, obvious damage was observed on the leaflets of the referred crop (Figure 1B). In the field, the presence of thrips was verified using a pocket magnifying glass (10X); the incidence was significant, with the highest density found in the adaxial part of the leaflets.



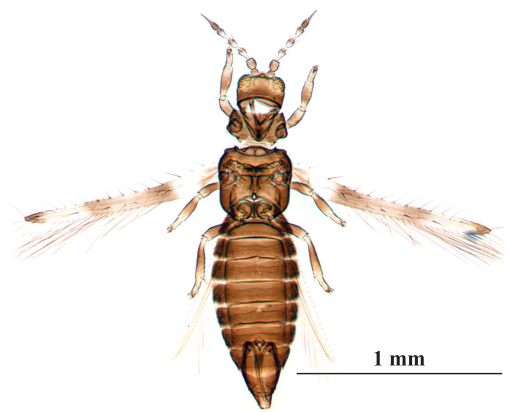
**Figure 1.** *Arachis* (Fabaceae) accessions in rectangular plant pots in a greenhouse (A). Close-up of forage peanut leaflets with injuries caused by thrips (B).

Twenty rectangular pots were randomly inspected, and individuals were collected with a fine brush, counted, and placed in a bottle containing ethyl alcohol (70 %). Subsequently, the specimens were slide-mounted on glass slides and sealed with a cover slip in mounting medium following the methodology proposed by Mound and Marullo (1996) and identified based on Lima et al. (2020, 2022). Voucher specimens were deposited in the Natural History Collection of the Federal University of Piauí (CHNUFPI), municipality of Floriano, State of Piauí, Brazil.

### Results and Discussion

The species was identified as *Caliothrips phaseoli* (Hood, 1912) (Thysanoptera: Thripidae) (Figure 2), which has been recorded in Argentina, Brazil, Costa Rica, Cuba, Ecuador, Mexico, Paraguay, Peru, Panamá, United States, and Uruguay (Lima, 2023). In Brazil, it has already been recorded in the Northern (Acre), Northeastern (Ceará, Bahia, Piauí, Sergipe, Pernambuco, and Maranhão), Central-western (Mato Grosso and Goiás), Southeastern (Espírito Santo, Minas Gerais, São Paulo, and Rio de Janeiro), and Southern (Rio Grande do Sul, Paraná, and Santa Catarina) regions (Lima, 2023).

*Caliothrips phaseoli* is the most common species of the genus in Brazil. It is distinguished from *Caliothrips fasciatus* (Pergande, 1895) and *Caliothrips insularis* (Hood, 1928) (Thysanoptera: Thripidae) by the transversely striated carving on the lateral thirds of abdominal tergites (Cavalleri et al., 2018).



**Figure 2.** Photomicrograph of a female *Caliothrips phaseoli* (Thysanoptera: Thripidae).

In the state of Acre, *C. phaseoli* has already been recorded in association with mint, *Mentha* sp. (Lamiaceae) by Santos and Lima (2016), and on cultivated sunflower, *Helianthus annuus* L. (Asteraceae) by Santos (2021). It is a polyphagous species reported as a pest of several plants, feeding preferentially on leaves of legumes (Fabaceae) (Lima et al., 2013), and considered an important pest of bean and soybean crops in Brazil (Monteiro et al., 1999). This species has been recognized in peanut, *Arachis hypogaea* L. (Fabaceae) in Brazil for a long time, although it is considered to have no economic importance in crops established in the field.

Although the death of infested plants was not observed in forage peanuts, the damage caused by the attack (average of nine insects per plant) of *C. phaseoli* causes weakness,

yellowing, and delay in plant development. Species identification in peanut crops is an important step to recognizing potential pests of this crop which, in Acre, positively impacted the livestock production chain of around R\$ 82.3 million in 2018 (Sá et al., 2019). In addition, this legume can be used for hay production, in protein banks, as green cover in perennial species crops, and as ornamental plants in town squares and gardens (Valentim, 2011).

Until now, there was only a record of *E. enigmaticus* associated with forage peanuts in Acre (Fazolin et al., 2015), which is considered the main pest of the peanut plants, *A. hypogaea* in Brazil (Lima et al., 2022).

Currently, a total of 27 phytosanitary products are registered with the Ministry of Agriculture and Livestock for the control of *C. phaseoli* in soybean crops in Brazil (Agrofit, 2024). However, none of these products are recommended for forage peanuts, considered a crop with insufficient phytosanitary support in Brazil. Thus, it is recommended that these products be tested experimentally in terms of their efficiency in the cultivation of forage *C. phaseoli* in the various edaphoclimatic conditions of Brazil.

## Conclusions

Forage peanut (*Arachis* spp.) is a host of *Caliothrips phaseoli*, causing delayed plant development under semi-field conditions and reported for the first time in Brazil.

## References

- Agrofit – Sistema de agrotóxicos fitossanitários. (2024). Available at: [http://extranet.agricultura.gov.br/agrofit\\_cons/principal\\_agrofit\\_cons](http://extranet.agricultura.gov.br/agrofit_cons/principal_agrofit_cons) [Date: 10 March 2024].
- Annicchiarico, P., Pecetti, L., Abdelguerfi, A., Bouzgaren, A., Carroni, A. M., Hayek, T., M’Hammadi Bouzina, M., & Mezni, M. (2011). Adaptation of landrace variety germplasm and selection strategies for lucerne in the Mediterranean basin. *Field Crops Research*, 120(2), 283-291. <https://doi.org/10.1016/j.fcr.2010.11.003>
- Assis, G. M. L. de, & Valentim, J. F. (2009). Programa de melhoramento genético do amendoim forrageiro: avaliação agrônômica de acessos no Acre. Amazônia: *Ciência & Desenvolvimento*, 4(8), 207-215. <https://www.embrapa.br/en/busca-de-publicacoes/-/publicacao/659037/programa-de-melhoramento-genetico-do-amendoim-forrageiro-avaliacao-agronomica-de-acessos-no-acre>
- Cavalleri, A., Linder, M. F., Mendonça Jr., M. S., Botton, M., & Mound, L. A. (2018). Os tripses do Brasil. Available at: <https://www.thysanoptera.com.br/autores/lista> [Date: 10 March 2024].
- Fazolin, M., Marcolino, E. F., & Mataveli, M. (2011). Potencial do ataque de pragas em *Arachis pintoi* cv. BRS Mandobi. In: Produção de sementes de *Arachis pintoi* cv. BRS Mandobi no Acre. Rio Branco: Embrapa Acre (Sistema de produção, 4). Available at: <https://ainfo.cnptia.embrapa.br/digital/bitstream/doc/913652/1/24115.pdf> [Date: 10 March 2024].
- Fazolin, M., Vasconcelos, G. J. N. de, Lima, E. F. B., Santos, R. S., & Azevedo, H. N. de. (2015). Reconhecimento de artrópodes de importância econômica para o amendoim forrageiro. Rio Branco: Embrapa Acre. 66 p. (Documentos, 137). <https://www.embrapa.br/en/busca-de-publicacoes/-/publicacao/1032774/reconhecimento-de-artropodes-de-importancia-economica-para-o-amendoim-forrageiro>
- Guidoti, M., Santos, R. S., Fazolin, M., & Azevedo, H. N. de. (2014). *Gargaphia paula* (Heteroptera: Tingidae): First host plant record, new geographic data and distribution summary. *Florida Entomologist*, 97(1), 322-324. <https://doi.org/10.1653/024.097.0152>
- Jank, L., Valle, C. B., & Resende, R. M. S. (2011). Breeding tropical forages. *Crop Breeding and Applied Biotechnology* (n.s.), 11, 27-34. <https://doi.org/10.1590/S1984-70332011000500005>
- Lima, E. F. B., Monteiro, R. C., & Zucchi, R. A. (2013). Thrips species (Insecta: Thysanoptera) associated to Fabaceae of agricultural importance in Cerrado and Amazon-Caatinga ecotone from Brazilian Mid-North. *Biota Neotropica*, 13(2), 283-289. <https://doi.org/10.1590/S1676-06032013000200027>
- Lima, E. F. B., O’Donnel, C. A., & Miyasato, E. A. (2020). The Panchaetothripinae (Thysanoptera, Thripidae) of Brazil, with one new *Caliothrips* species. *Zootaxa*, 4820(2), 201-230. <https://doi.org/10.11646/zootaxa.4820.2.1>
- Lima, E. F. B., Alencar, A. R. S., Nanini, F., Michelotto, M. D., & Correa, A. S. (2022). “Unmasking the villain”: integrative taxonomy reveals the real identity of the key pest (Thysanoptera: Thripidae) of peanuts (*Arachis hypogaea*) in South America. *Insects*, 13(2), 120. <https://doi.org/10.3390/insects13020120>
- Lima, E. F. B. (2023). *Caliothrips phaseoli* (Hood, 1912). Available at: <http://fauna.jbrj.gov.br/fauna/listaBrasil/FichaPublicaTaxonUC/FichaPublicaTaxonUC.do?id=69594> [Date: 10 March 2024].
- Monteiro, R. C., Mound, L. A., & Zucchi, R. A. (1999). Thrips (Thysanoptera) as pests of plant production in Brazil. *Revista Brasileira de Entomologia*, 43, 163-171. <http://hdl.handle.net/102.100.100/206053?index=1>
- Mound, L. A., & Marullo, R. (1996). The thrips of Central and South America: an introduction (Insecta: Thysanoptera). *Memoirs on Entomology International*, 6, 1-487.
- Rocha, R. A., & Valls, J. F. M. (2017). O gênero *Arachis* L. (Fabaceae) no Rio Grande do Sul. *Revista Brasileira de Biociências*, 15(3), 99-118. <https://www.seer.ufrgs.br/index.php/rbrasbioci/article/view/114614/61920>
- Sá, C. P. de, Andrade, C. M. S. de, & Valentim, J. F. (2010). Análise econômica para a pecuária de corte em pastagens melhoradas no Acre. Rio Branco: Embrapa Acre. 5 p. (Circular técnica, 51). <https://www.embrapa.br/en/busca-de-publicacoes/-/publicacao/859145/analise-economica-para-a-pecuaria-de-corte-em-pastagens-melhoradas-no-acre>
- Santos, R. S., & Lima, E. F. B. (2016). Registro de tripses (Thysanoptera: Thripidae) em hortelã (*Mentha* sp.) no estado do Acre. Rio Branco: Embrapa Acre. 18 p. (Boletim de Pesquisa e Desenvolvimento, 54). <https://ainfo.cnptia.embrapa.br/digital/bitstream/item/148305/1/26135.pdf>
- Santos, R. S. (2021). Primeiros registros de tripses (Thysanoptera: Thripidae) associados ao girassol no estado do Acre. *Agrotropica*, 33(3), 229-234. <https://ainfo.cnptia.embrapa.br/digital/bitstream/item/230347/1/27261.pdf>
- Valentim, J. F. (2011). Introdução. In: Produção de sementes de *Arachis pintoi* cv. BRS Mandobi no Acre. Rio Branco: Embrapa Acre (Sistema de produção, 4).
- Valle, C. B. do, Jank, L., & Resende, R. M. S. (2009). O melhoramento de forrageiras tropicais no Brasil. *Revista Ceres*, 56(4), 460-472. <https://www.redalyc.org/articulo.oa?id=305226808013>

## Origin and Funding

The study is not financially supported by any party, it was carried out with the Institution’s own generic resources.

## Author’s Contribution

The first author was responsible for collecting insects and writing the manuscript.

The second author was responsible for the taxonomic identification of insects and writing the manuscript.

## Conflict of Interest

The authors declare no conflicts of interest.