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Scientific Note

Occurrence and symptom characterization of *Oligonychus grypus* Baker & Pritchard, 1960 (Acari: Tetranychidae) in sugarcane

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Abstract. The occurrence of phytophagous mites in Brazilian sugarcane crops has received limited attention but has increased over the past two decades. Among these mites, *Oligonychus grypus* Baker & Pritchard, 1960 (Acari: Tetranychidae), commonly known as the African sugarcane mite, is particularly noteworthy. Its populations have intensified, with high-density outbreaks associated with climate change and agricultural practices. In Brazil, the species was first identified in 1996 in Alagoas State. Under severe infestations, it causes extensive damage to leaf blades, producing yellowish to whitish spots that indicate its destructive potential. These injuries reduce crop yield and compromise the quality of raw material for industrial processing. This scientific note reports the occurrence of *O. grypus* in commercial sugarcane fields in the Ribeirão Preto region, São Paulo. It documents the symptoms and potential impacts on the crop, underscoring the importance of monitoring, given the economic significance of sugarcane production in Brazil.

Keywords: *Saccharum* spp., African sugarcane mite, *Oligonychus* spp., Emerging pests.

Brazil is a leading global sugarcane producer, with approximately 689.8 million tons harvested in the 2024/25 season. This production plays a critical role in the bioenergy, sugar, and ethanol sectors. Nationally, the state of São Paulo stands out as the primary producing region, boasting a highly advanced technological production system and high yields, which account for approximately 60% of the national output (CONAB 2024). However, there is growing concern over factors threatening crop productivity, particularly the increasing incidence of emerging pests.

Reports of phytophagous mites on sugarcane in Brazil have historically been rare. Nonetheless, over the past two decades, intense interventions and technological advances in crop management have contributed to the emergence of previously uncommon arthropod pests (Manhães et al 2015). Notable among these is the tetranychid mite *Oligonychus grypus* Baker & Pritchard, 1960 (Acari: Tetranychidae), commonly known as the African sugarcane mite. This species was originally described on the African continent, where it infests grasses (Poaceae), including sugarcane (*Saccharum officinarum* L.). In Brazil, Flechtmann (1996) was the first to report *O. grypus* on sugarcane in Alagoas State. Subsequent records documented its presence in Maranhão State (Moraes et al. 2024) and in São Paulo State, the main sugarcane-producing region, by Almeida et al. (2009).

Climate is a key factor influencing the occurrence of tetranychid mites in sugarcane, with outbreaks occurring predominantly during dry periods and under low relative humidity. These same climatic conditions have also facilitated the expansion of sugarcane cultivation in tropical regions. Consequently, recurrent outbreaks of phytophagous mites associated with sugarcane have been reported in countries such as Cuba and Brazil (Migeon & Dorkeld 2025). In addition to climate, the emergence of these mites appears to be strongly correlated with recent changes in crop management, including alterations in harvesting systems, insecticide use, and soil cover practices (Domingues et al. 2025).

In October 2022, observations were made in a commercial sugarcane production area near the city of Sertãozinho, São Paulo (21°12'06" S, 48°00'13" W; 581 m altitude) in the Ribeirão Preto region. In this first-cut sugarcane field, established with pre-sprouted seedlings, symptoms consistent with mite infestation were observed, including webs and low-density populations of spider mites. Leaf samples exhibiting suspected mite-related symptoms were collected and taken to the Acarology Laboratory at UNESP/FCAV, *campus* Jaboticabal.

In the laboratory, mites were extracted from the leaves under a stereoscopic microscope using fine single-hair brushes and mounted on permanent slides in Hoyer's medium, following the methodology described by Krantz & Walter (2009). Males were mounted laterally to facilitate observation of the aedeagus, while females were mounted dorsally.

Identification was performed using dichotomous keys (Beard et al. 2003) and supplementary descriptive material (Baker & Pritchard 1960). Based on the main morphological characteristics of the species, the mites were identified as *O. grypus*, which presents the distal portion of the aedeagus tapered, forming an obtuse angle near its midpoint (Fig. 1A). The empodial claw is sickle-shaped, with much shorter proximoventral spurs relative to the dorsal spur, each bearing two fine dorsal hairs near the apex (Fig. 1B) (Baker & Pritchard 1960). Females have a globose body and are generally larger than males, while males are smaller and have a tapered opisthosoma, showing clear sexual dimorphism (Figs. 1B-1C).

To confirm the damage potential and monitor symptom development, some mites were transferred from symptomatic leaves to healthy pre-sprouted sugarcane seedlings of cultivar CV7870, planted in 5-liter pots filled with a 1:1:1 mixture of soil, sand, and cattle manure. The infested plants were monitored daily. Initial lesions appeared on older leaves approximately 15 days after infestation. After about 30 days, symptoms progressed and became widespread throughout the plants, coinciding with an increase in mite population density.

After its occurrence was identified in production areas, the African sugarcane mite was also detected on sugarcane plants grown in greenhouses at the Department of Plant Health, College of Agricultural and Veterinary Sciences (UNESP/FCAV), *campus* Jaboticabal. The same diagnostic procedure was applied, and slides were prepared and examined to confirm the species as *O. grypus*. All sugarcane plants were potted and originated from pre-sprouted seedlings supplied by

commercial nurseries in São Paulo State. *Oligonychus grypus* were found on the following varieties: CTC 4, CTC 2994, CTC 6928, CV 7870, SP 80-3280, IAC-SP 015503, and IAC91-1099.

Spider mites feed by inserting their stylets into plant tissue, piercing cells, and extracting their contents (Moraes et al. 2024). In the genus *Oligonychus* Berlese, 1886, a notable characteristic is their preference for the adaxial (upper) leaf surface, particularly under heavy infestations—a behavior also observed in the African sugarcane mite. This feeding severely damages the palisade parenchyma, causing cell depletion and functional collapse of the plant tissue (Moscardi et al. 2012). Such damage can impair plant development and reduce productivity.

At the onset of infestation, *O. grypus* preferentially colonizes the abaxial (lower) leaf surface, which offers greater protection from weather and predators. The first symptoms appear along the central vein as small, translucent spots. As the population grows, the mites spread to the adaxial (upper) surface, producing more extensive and visible lesions (Fig. 3). These initial spots enlarge into severely damaged

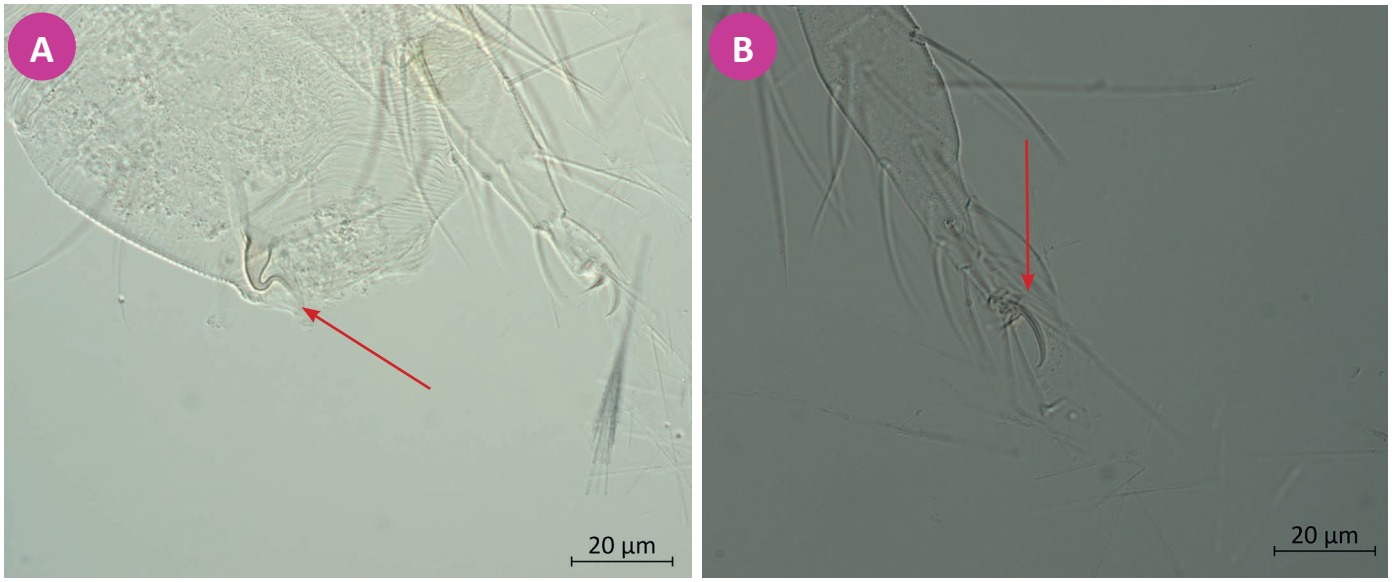

Figure 1. A) Detail of male aedeagus (red arrow). B) Sickle-shaped empodial claw with shorter ventral spurs and two fine dorsal hairs at the apex (red arrow).

Figure 2. A) *Oligonychus grypus* Baker & Pritchard, 1960 (Acari: Tetranychidae) egg laid on a layer of webbing. B) Female infesting the abaxial surface of the leaf. C) Male on the abaxial surface of the leaf.

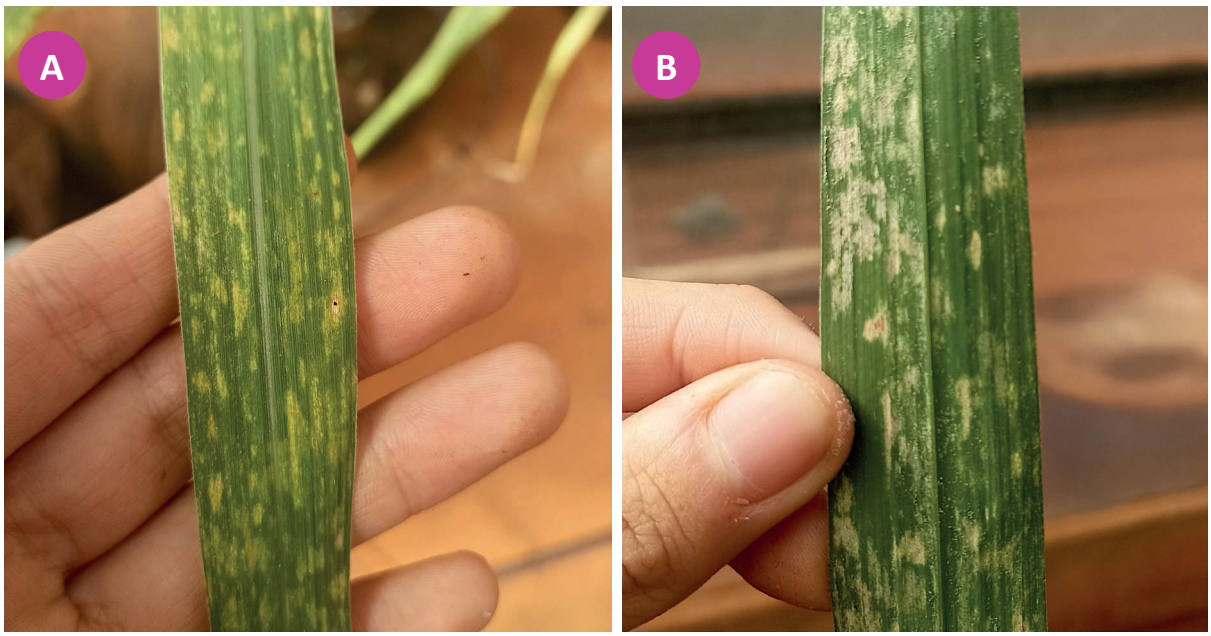

Figure 3. Symptoms presented by plants under attack by Oligonychus grypus Baker & Pritchard, 1960 (Acari: Tetranychidae). A) Adaxial (upper) surface of the leaves, with a high density of mites and webs. B) Detail of the abaxial (lower) surface, the preferred site of occurrence of the species.

areas, displaying a characteristic, intense "mottling" with yellowish to whitish discoloration distributed across both sides of the leaf blade.

This species produces abundant webs with important ecological functions. The webs extend along the leaf blade, protecting mites from predators and water droplets and preventing the establishment of other species in the same area. Oviposition occurs beneath the web mass, providing shelter and protection, particularly for immature stages. According to Moraes et al. (2024), eggs of the genus *Oligonychus* are generally spherical or globose, featuring an arista that serves as a web attachment point. Egg coloration changes with embryonic development but is typically greenish (Fig. 1A).

High densities of this tetranychid on sugarcane leaves negatively affect plant development, as observed in other crops. To date, besides *O. grypus*, only one other tetranychid, *Schizotetranychus saccharum* Flechtmann & Baker, 1975 (Acari: Tetranychidae), has been reported damaging sugarcane. Feeding damage reduces the photosynthetic area, which in turn diminishes tillering and stalk diameter (Fig. 4). Pest mite infestations can lead to substantial economic losses and significantly impair sugarcane productivity for industrial processing (Silva & Andrade 2022).

Given the economic significance of sugarcane as one of Brazil's major crops, identifying and managing factors that threaten productivity and raw material quality is critical. The increasing occurrence of the African sugarcane mite in production regions remains poorly understood within the industry. Although several factors may explain its presence, studies on this species in sugarcane are scarce. Therefore, further research is needed to advance the understanding of this mite in sugarcane cultivation, given the strategic importance of the Brazilian sugar-energy sector.

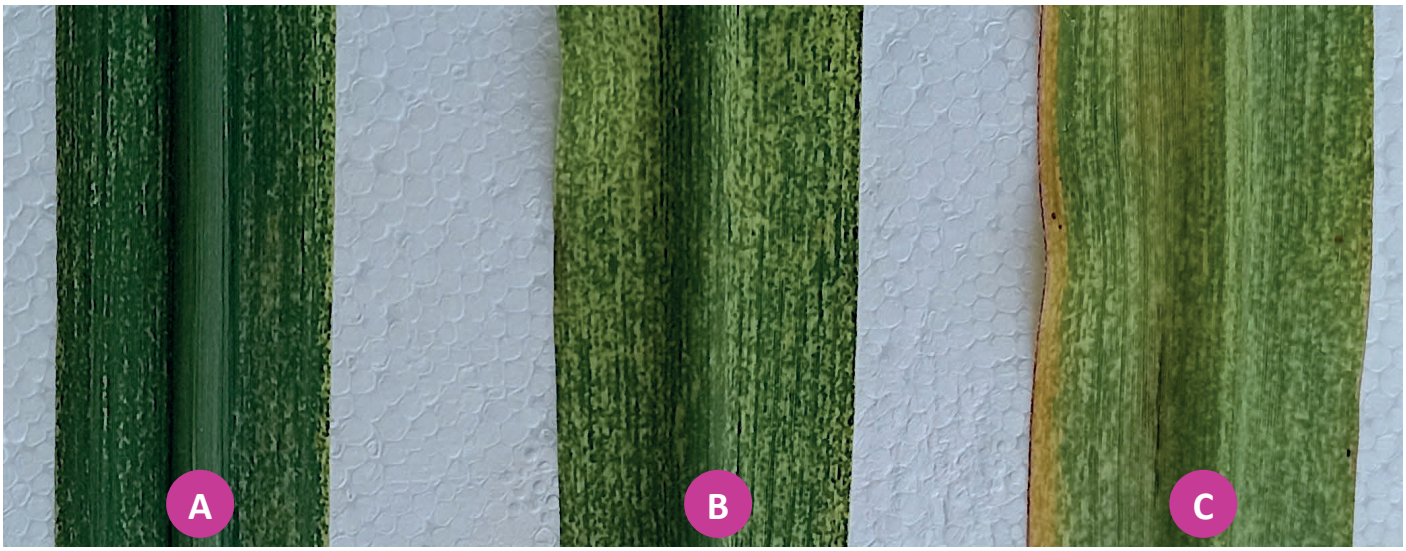

Figure 4. Evolution of lesions caused by *Oligonychus grypus* Baker & Pritchard, 1960 (Acari: Tetranychidae) on sugarcane. A) Early lesion symptom, small spots distributed throughout the leaves and few mites. B) Intermediate lesion, partial yellowing throughout the leaf. C) Leaf with advanced-stage lesions, symptoms of intense "mottling" and senescence, in addition to a high number of mites and webs.

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Authors' Contributions

GR: Conceptualization, Investigation, Writing - original draft. DJA: Conceptualization, Investigation, Writing - review and editing.

Conflict of Interest Statement

The authors declare no competing interests.

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