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The Predatory Mite *Amblyseius tamatavensis* (Blommers) (Acari: Phytoseiidae)[1]

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This publication is intended for the public, UF/IFAS Extension agents, and growers to provide an overview of predatory mite *Amblyseius tamatavensis*. This information includes the description, lifecycle, and potential for this predatory mite to be used as a biological control agent for hemipteran pests.

Introduction

The predatory mite *Amblyseius tamatavensis* (Blommers) belongs to the order Mesostigmata and the family Phytoseiidae (Figure 1). This family is important because it includes commercially available biological control agents and natural enemies of plant-feeding mites and small, soft-bodied insects (Döker et al. 2018). *Amblyseius tamatavensis* is a generalist predatory mite, and it has been found in many cropping systems feeding on small hemipteran insects and pollen when prey is not present (McMurtry et al. 2013).

Figure 1. Long Z5 setae of *Amblyseius tamatavensis* (Blommers) indicated with black arrows. The setae are visible with a 40x hand lens.
Credit: Yisell Velazquez-Hernandez and Maria A. Canon, UF/IFAS Tropical Research and Education Center

Identification

Amblyseius tamatavensis was first described from kaffir lime (*Citrus hystrix* DC; Sapindales: Rutaceae) on the island of Madagascar. The main character used for identification is the spermatheca, a sack where females store and collect the sperm after mating (Figure 2.4) (Döker et al. 2018). Like many mites, adult *A. tamatavensis* females have short, stiff hair on their exoskeletons. These hairs are called setae. *Amblyseius tamatavensis* has a pair of very long setae on the lower part (posterior) of its body. These are called Z5 (Figure 2.1). Its spermatheca is elongated with a tube-shaped structure called calyx, that directs the sperm to the sack (Figure 2.4). The area where the mite's anus is located, also known as ventrianal shield, is not vase-shaped, but it rather has a trapezoid shape (Figure 2.2).

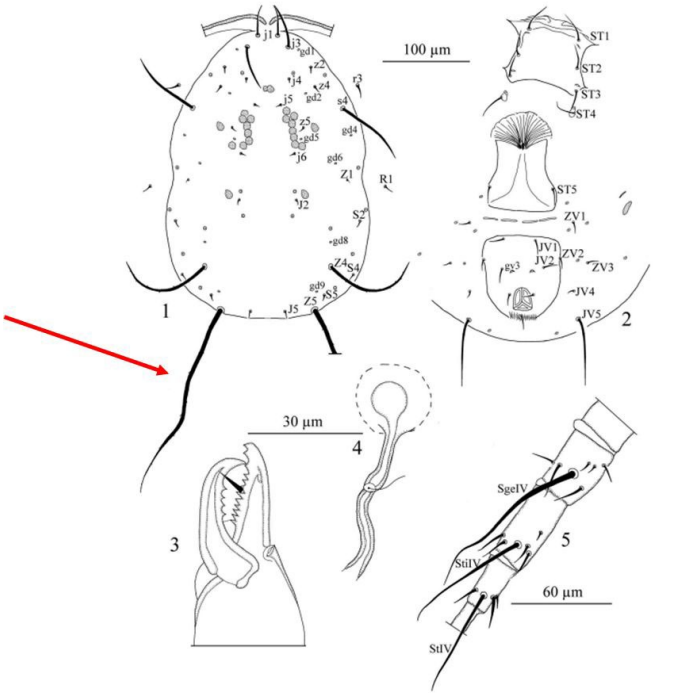

Figure 2. Blommers, female: 1. Dorsal shield, red arrow shows the long Z5 setae; 2. Ventral idiosoma; 3. Chelicera; 4. Spermatheca; 5. Leg IV.
Credit: Döker et al. 2018, used with permission

Adult *A. tamatavensis* females lay their eggs on the undersides of leaves. When *A. tamatavensis* mites have been feeding on whiteflies, their eggs can sometimes be found in the exuvia (molted exoskeletons) of emerged adults. The white and oval eggs take approximately 2–3 days to hatch at 26.7°C (80.06°F).

Figure 3. Eggs laid by *Amblyseius tamatavensis* (Blommers) females in emerged ficus whitefly *Singhiella simplex* (Singh) exuvia.
Credit: Yisell Velazquez-Hernandez, UF/IFAS Tropical Research and Education Center

Amblyseius tamatavensis larvae are six-legged and transparent to white in color. This is a non-feeding stage. Within one to two days, larvae molt to the protonymph stage and begin to feed. Protonymphs and deutonymphs have four pairs of legs and continue to increase in size.

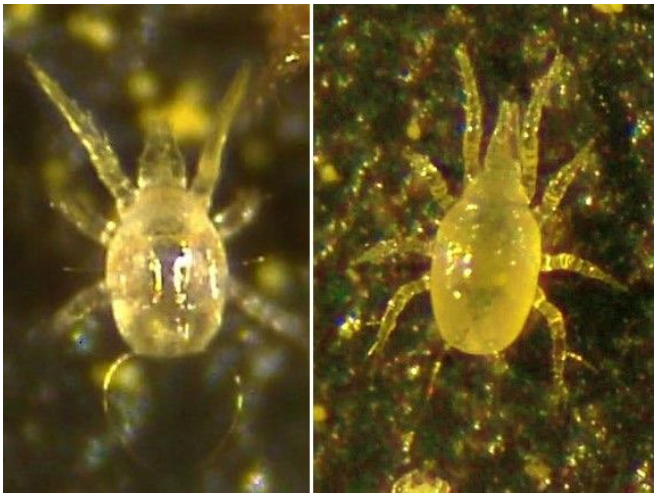

Figure 4. Larva (left) and nymph (right) of *Amblyseius tamatavensis* (Blommers).
Credit: Yisell Velazquez-Hernandez and Maria A. Canon, UF/IFAS Tropical Research and Education Center

Adult females are approximately 0.1 mm (0.004 in) long and are slightly larger than males. Males and females may be light reddish to dark red; however, color varies based on food source, including prey.

Figure 5. Adult female (top) and eggs (bottom) of *Amblyseius tamatavensis* (Blommers).
Credit: Yisell Velazquez-Hernandez and Maria A. Canon, UF/IFAS Tropical Research and Education Center

Distribution

Amblyseius tamatavensis has been reported from approximately twenty tropical and subtropical regions worldwide in various natural and agricultural habitats. Populations of this mite have been reported in many countries including Australia, Benin, Brazil, Burundi, Cameron, Cook islands, Cuba, Dominican Republic, DR Congo, Easter Island, Fiji, Ghana, Guadeloupe, Indonesia, Japan, Kenya, Madagascar, Malawi, Malaysia, Marie-Galante, Martinique, Mauritius, Mayotte island, Mozambique, Nigeria, Papua New Guinea, Peru, Philippines, Reunion Island, Rwanda, Singapore, South Africa, Sri Lanka, Taiwan, Thailand, Uganda, the United States, Vanuatu, Venezuela, Vietnam, and Western Samoa (Demite et al. 2024). In the United States it was reported for the first time in Homestead (Miami-Dade County), Florida in 2018 (Döker et al. 2018). In 2024, it was subsequently reported in Lake and Saint Lucie Counties (Demard et al. 2024).

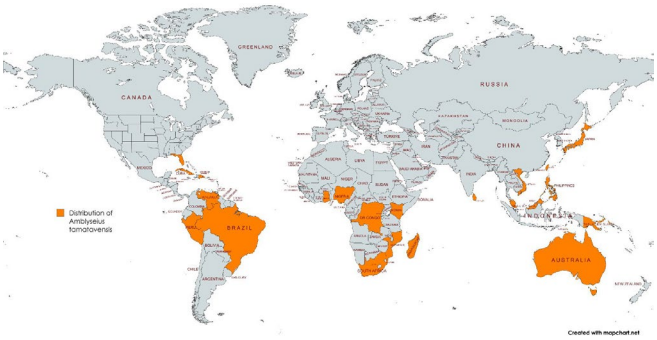

Figure 6. Worldwide distribution map of *Amblyseius tamatavensis.* The map was generated on March 4, 2025. Credit: Maria A. Canon, UF/IFAS Tropical Research and Education Center (https://www.mapchart.net/)

Economic Importance

Interest in phytoseiid mites for biological control has increased with the shift toward more sustainable pest management practices. Some phytoseiid species can be specialist or generalist feeders (McMurtry et al. 2013). Worldwide there are approximately 2,700 species and 91 genera of phytoseiid mites described (Chant and McMurtry 2007). Research has found that predatory mite *A. tamatavensis* could be an effective biological control agent for sweet potato whitefly (*Bemisia tabaci* [Gennadius]) biotype B in Brazil (Cavalcante et al. 2016). In Peru, *A. tamatavensis* was found feeding on eriophyid mites (*Phyllocoptruta oleivora* [Ashmead]) and western flower thrips (*Frankliniella occidentalis* [Pergande]) in citrus (Jorge et al. 2021**)**. Ho and Chen (2001) also reported that *A. tamatavensis* could be an effective predator for melon thrips (*Thrips palmi* Karny) pests in Taiwan.

Amblyseiustamatavensis has been found feeding on different whitefly species, making it a potential predatory mite for a biological program. It has been found consuming eggs of sweetpotato whitefly on economically valuable host crops such as cotton, solanaceous crops, and melons (Barbosa et al. 2019). *Amblyseius tamatavensis* was also found feeding on plants infested with banded-wing whitefly *Trialeurodes abutiloneus* (Haldeman) in south Florida (Döker et al. 2018). South Florida populations of *A. tamatavensis* are being used to perform predation experiments on the fig whitefly *Singhiella simplex* (Singh) on weeping ficus (*Ficus benjamina*) (Figure 3).

With insecticide resistance on the rise for whitefly pests, alternative management practices, such as biological control, should be considered. Research has shown that *A. tamatavensis* can be mass reared on factitious prey (*Thyreophaguscracentiseta*; Acari: Acaridae) (Massaro et al. 2021). Once it has become commercially available, *A. tamatavensis* can be released and used in augmentative biological control programs to manage hemipteran pests in different cropping systems. Since *A. tamatavensis* naturally occurs in Florida, growers and landscaping companies can conserve its populations by following sustainable practices against arthropod pests that include pruning, and selection of biorational pesticides rather than conventional pesticides. As a generalist predator, *A. tamatavensis* can feed and survive on pollen. Therefore, stakeholders interested in enhancing an *A. tamatavensis* population on their crops may wish to consider using cattail (*Typha* sp. L.) pollen that is available in the market.

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