



First report of *Megalurothrips usitatus* (Bagnall) (Thysanoptera: Thripidae) in *Solanum tuberosum* L. in Cuba

Primer registro de *Megalurothrips usitatus* (Bagnall) (Thysanoptera: Thripidae) en *Solanum tuberosum* L., en Cuba

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ABSTRACT: In potato crop, (*Solanum tuberosum* L.) different insects are presented that constitute pests, among those that are the thrips. The thrips are very small insects, of soft body, elongated and they cause direct damages when feeding of the plants. There are several species that are efficient vectors of emergent viral diseases that of great importance worldwide. The objective of this work was to determine and identify the thrips species that affect potato crop. Sampling was carried out on the “Las Papas” farm from the National Institute of Agricultural Sciences, to San José de las Lajas, Mayabeque province in the period from December 2022 to March 2023. The recollected thrips specimens were subjected to a conventional slide mounting technique and identified using taxonomic keys. The presence of *Megalurothrips usitatus* (Bagnall) (Thysanoptera: Thripidae) was recorded in the flowers of the cultivars, which constitutes a new species for potato crop in Cuba. Its knowledge contributes to avoiding negative boundaries between host crops and in turn facilitates the design of a strategy for pest management.

Key words: specimens, potato, thrips.

RESUMEN: En el cultivo de la papa (*Solanum tuberosum* L.) se presentan diferentes insectos que constituyen plagas, entre los que se encuentran los trips. Estos insectos son muy pequeños, de cuerpo blando, alargado y causan daños directos al alimentarse de las plantas. Existen varias especies que son eficientes vectores de enfermedades virales emergentes, de gran importancia a nivel mundial. El objetivo del presente trabajo fue determinar e identificar las especies de trips que inciden en el cultivo de la papa. Se realizaron muestreos en la finca “Las Papas” del Instituto Nacional de Ciencias Agrícolas, perteneciente al municipio San José de las Lajas, en la provincia Mayabeque, en el período comprendido de diciembre de 2022 a marzo de 2023. Los especímenes de trips recolectados se sometieron a la técnica de montaje convencional en láminas de portaobjetos y se identificaron mediante las claves taxonómicas. Se registró la presencia de *Megalurothrips usitatus* (Bagnall) (Thysanoptera: Thripidae), en las flores de los cultivares Rudolph, Alouette y Jolene, lo que constituye el primer reporte de una nueva especie asociada al cultivo de la papa en Cuba. Su conocimiento contribuye a evitar la colindancia negativa entre cultivos hospedantes y, a su vez, facilita el diseño de una estrategia para el manejo de la plaga.

Palabras clave: especímenes, papa, trips.

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INTRODUCTION

The potato (*Solanum tuberosum* L.) belongs to the Solanaceae family. It is the third most important food crop in the world in terms of human consumption after rice (*Oryza sativa* L.) and wheat (*Triticum aestivum* L.). World production of the crop exceeds 300 million metric tons, yields 12 to 15 times more per hectare and has higher calorie production per unit area (1).

Thrips are very small, soft-bodied, elongated and very agile insects belonging to the order Thysanoptera. They are composed of a large number of species that cause direct damage by feeding on plants, and several species are also efficient vectors of viral diseases.

Megalurothrips usitatus (Bagnall) is a species native to Asia. In December 2019, it was detected for the first time in Cuba, which caused severe damage to the bean crop (2). In Florida, United States, it was reported in March 2020 (3). This species continued its dispersal in the Americas, in Belize it was reported in March 2021 (4), in Honduras it was detected in 2021 (5), in Mexico it was observed in 2021 (6), and in Costa Rica it was observed in 2022 (7).

M. usitatus is a polyphagous species, causing damage to various plant species (8). It is considered an important pest of legumes (9), although it prefers to feed on several flowering plants, the flowering stage is the most susceptible to its attack and, during this stage, adults can become very abundant, often seen on flowers and more rarely on leaves (10). During its development it presents the following stages: egg, first and second instar larva, prepupa, pupa and adult. The prepupa and pupa are established in the soil and the adults emerge approximately five days later; its biological cycle, from egg to adult, varies according to the host (8).

In the present work are shown the results obtained during the samplings carried out in potato, with the objective of determining and identifying the thrips species that affect the crop.

MATERIALS AND METHODS

Sampling was carried out in the potato cultivars: Rudolph, Gaselle, Atlas, Alouette and Jolene, in the farm "Las Papas" belonging to the National Institute of Agricultural Sciences, San José de las Lajas municipality, Mayabeque province, which is located at 23° 00' north latitude and 82° 12' west longitude and 138 m.a.s.l., in the period from December 2022 to March 2023.

The thysanoptera were collected on a weekly basis starting seven days after plant sprouting. The tapping technique was used on a white cardboard, which was placed under the leaves and flowers. With the help of a fine brush 000 RG 595, the insects were captured and placed in bottles with 70 % alcohol for their conservation (11). The bottles, duly identified, were transferred to the Entomology Laboratory of the Research Institute of Plant Health (INISAV according its acronyms in Spanish). The adult specimens were clarified in a 10 % KOH solution for 10 minutes and subjected to the conventional mounting technique on slide slides, for which the AmScope stereo microscope was used.

Identification was performed with an optical microscope (OPTIKA) and they were photographed with an OLYMPUS digital camera, model TG-4, at different magnifications according to the structure to be highlighted. The taxonomic keys were consulted (12-15). Once the specimens were identified, they were deposited in the entomological collection of INISAV.

RESULTS AND DISCUSSION

In the samplings conducted, the thrips species identified were: *Frankliniella cephalica* Crawford, *F. schultzei* Trybom and *Thrips palmi* Karny, which were previously reported (16,17). In addition, *Megalurothrips usitatus* (Bagnall) (Thysanoptera: Thripidae), was detected on flowers of Rudolph, Alouette and Jolene cultivars, where female and male adults were found. In the Atlas and Gaselle cultivars, which did not flower, the presence of *M. usitatus* was not observed, confirming the species' preference for this plant organ (18). The characteristics of the specimens studied correspond to those described by some authors (12-15).

Among the taxonomic characters of *M. usitatus* are the eight-segmented antenna with bifurcated cones in segment II and IV; antennal segment VI with sensory cone outside and very elongated, the wings with the setae of the first row interrupted, pronotum with two long posteroangular setae, the IX tergite in the male has finer median setae (Figure 1).

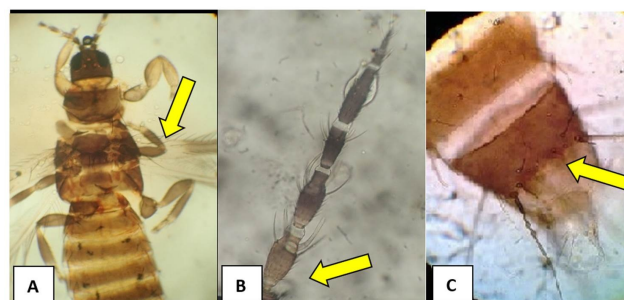


Figure 1. Taxonomic characters of *Megalurothrips usitatus* found in potato cultivation in Mayabeque, Cuba. A): Forewing vein with short space without setae. B): Antennal segment III clear. C): IX abdominal tergite of the male with medium fine setae

In Cuba, 58 hosts of *M. usitatus* have been recorded, belonging to 23 botanical families. In this sense, the Fabaceae, Asteraceae and Cucurbitaceae families present the highest number of host species. In the Solanaceae family, it was only recorded in bell pepper (*Capsicum annuum* L.), tomato (*Solanum lycopersicum* L.) and eggplant (*Solanum melongena* L.) crops (19,20), so it is affirmed that this result constitutes a new record of *M. usitatus* in potato (*Solanum tuberosum* L.) crops in Cuba.

The presence of *M. usitatus* in the potato crop constitutes a potential source of infestation, its knowledge contributes to avoid negative contiguity between host crops and, at the same time, facilitates the design of a strategy for the management of the pest.

CONCLUSIONS

M. usitatus constitutes a new species of thrips isolated on potato *Solanum tuberosum* L., in Cuba, thus increasing the record of the thrips entomofauna in the crop. The presence of *M. usitatus* in flowering cultivars affirms the preference of the species for this plant organ.

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