

PEST ALERT

FDACS-P-02137

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Florida Department of Agriculture and Consumer Services Division of Plant Industry

Megalurothrips usitatus (Bagnall), Asian bean thrips, Oriental bean flower thrips or bean flower thrips

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INTRODUCTION

On March 3, 2020 a sample of thrips collected on snap beans, *Phaseolus vulgaris* L. (Fabaceae), in Miami-Dade County was submitted to the Florida Department of Agriculture and Consumer Services (FDACS) Division of Plant Industry (DPI) for identification. These thrips were associated with substantial damage to bean flowers, buds and leaves (Fig. 1-2). A preliminary identification as *Megalurothrips usitatus* (Bagnall) (Thripidae) was communicated by Dr. Joseph Funderburk (UF/IFAS; Quincy, Florida) and later confirmed by DPI taxonomists based on two males and a female examined under compound microscope, and DNA barcode sequences from four individuals. This is the first record for *M. usitatus* in the continental U.S. The species is native to Asian tropics, with a current distribution ranging from Pakistan to Fiji and from Japan to Australia. The species was also recently identified in Cuba (Mound 2020, personal communication). Barcode sequences from specimens collected in Miami-Dade County are identical to those found in populations in Indonesia, China and Australia, indicating they belong to a highly invasive lineage moving throughout East Asia. This is an important pest of beans in Taiwan and continental China. In Taiwan, the damage produced by *M. usitatus*, in combination with other thrips species, can reduce yield by 30 percent (Chen 1980).

IDENTIFICATION

Females and males differ in size and color (Fig. 3). Females are nearly 2 mm long, black with white or yellowish intersegmental bands; antennae are black except for third segment (arrow Fig. 3); wings are banded black and white (Fig. 4), with a wide light band at base and another wide light band near wing tip; when alive, the light basal band contrasts strongly against the darkness of the body (Fig. 5); setae between posterior ocelli are long and easily seen under a dissecting microscope (Fig. 6). Males (Fig. 3) are just over 1 mm long, slender and yellowish in color; wings and head setae are similar to the females, but contrast of wing banding pattern is less sharp. Young larvae are yellow but gradually turn red as they mature.

HOSTS AND DAMAGE

The preferred host of Asian bean thrips is snap beans, but other reported hosts include: peanuts, soybean, pigeon pea, black eye peas (cowpea), lima bean, other legumes and even potatoes. Damage is produced by direct feeding of larvae and adults on flowers (Figs. 1–2), leaves and pods, and by oviposition on flowers and pods. This species does not transmit tospoviruses.

LIFE HISTORY

Length of life cycle is host and ambient temperature dependent. In continental China, *M. usitatus* completes the life cycle in 9-10 days when reared on snap beans at 76°F (Tang et al. 2015). Eggs are inserted into flowers, pods and leaves. After three days, larvae hatch to feed on leaves and flowers. Larvae go through two molts in 3–4 days, mature then drop to pupate in the soil. Moist, sandy soils are preferred by pupae. Soils with low humidity (2 percent or less) and porosity result in high (77 percent) pupa mortality (Chang 1989). Pupal stages last 2–3 days, after which newly hatched adults climb plants again to feed on pollen, mate and oviposit. Larvae are randomly distributed on leaves and flowers, but adults aggregate following pheromones released by males (Li et al. 2019). Reproduction may be asexual by parthenogenesis or sexual. On average, mated females lay 112 eggs, whereas unmated females lay 195 eggs. Mated females live 16 days, unmated females live 21 days. Adult males live 15 days (Tang et al. 2015). Larvae die shortly after hatching if temperature is 86°F or higher (Chang 1987). The adult population peaks during host blooming period, and the number of larvae peaks a week after adult maximum. Peak dispersion flight takes place two weeks after peak in adult population (Chang 1987).



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COLLECTING

Methods for collecting include: by hand, beating plants on a light color tray and picking up individuals with a fine brush wetted in alcohol; or by collecting flowers directly into vials with alcohol. General sampling in the field can be done with white or blue colored sticky or water traps.

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Figure 1. Damage to snap bean leaves and stems, Miami-Dade County, Florida.
Photo by Michael Herbert, Glades Crop Care, Inc.

Figure 2. Damage to flowers and buds.
Photo by Michael Herbert, Glades Crop Care, Inc.

Figure 3. *Megalurothrips usitatus*; male on left, female on right. Arrows show black antennae except for third segment.
Photo by Felipe N. Soto-Adames, FDACS-DPI

Figure 4. Detail of female forewing.
Photo by Felipe N. Soto-Adames, FDACS-DPI

Figure 5. Living *M. usitatus* feeding on snap bean leaf.
Photo by Michael Herbert, Glades Crop Care, Inc.

Figure 6. Lateral view of *M. usitatus* female showing long ocellar setae.
Photo by Felipe N. Soto-Adames, FDACS-DPI

