

NOTE: **A New Pest, *Liriomyza trifolii*, on Cotton in the Büyük Menderes Valley, Turkey**

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The study was conducted to evaluate *Liriomyza trifolii* (Burgess) in the cotton fields of the Büyük Menderes Valley, Turkey, from 1999 to 2000. Leaves were sampled weekly from the middle of June to the middle of August and kept in the laboratory to observe emerging leafminers. Leafminers were initially found on cotton leaves from 35 to 66 days after sowing. The numbers of larval mines varied from one to four per leaf. The largest number of infested leaves was observed in Aydın (Center), where 18.8% and 17.7% of the sampled leaves were infested in 1999 and 2000, respectively. We conclude that *L. trifolii* is a potential pest in the cotton fields of Turkey and more research is needed.

KEY WORDS: *Liriomyza trifolii*; serpentine leafminer; cotton; *Gossypium hirsutum*; Turkey.

Liriomyza trifolii, the serpentine leafminer, has spread virtually worldwide and infests crops and weeds (4). The primary form of damage is caused by the mining of leaves by larvae, which results in destruction of leaf mesophyll. The mine becomes noticeable about 3 to 4 days after oviposition and increases in size as the larva matures. Both leaf mining and stippling, caused by adult females feeding on leaf sap, can depress the level of photosynthesis in the plant. Extensive mining also causes premature leaf drop, which can result in lack of shading and in sun burn of some fruits. Wounding of the foliage also allows entry of the causal agents of bacterial (2) and fungal (1) diseases.

The leafminer has recently begun causing damage in the fields of cotton-producing countries (3,6,7). In Turkey *L. trifolii* was observed for the first time in 1998 in cotton fields of Aydın (Center) (personal observation). The aim of this study was to investigate the infestation of cotton by a new pest, *L. trifolii*, in the Büyük Menderes Valley, Turkey.

The study was conducted from 1999 to 2000 in non-insecticide-treated fields of Nazilli-84 cotton (*Gossypium hirsutum* L.). The monitoring

was conducted at four locations (Söke, Aydın-Center, Nazilli and Sarayköy) in the Büyük Menderes Valley. Three fields at each location were monitored and each field was between 2.5 and 5 ha. In Söke, cotton was planted on May 1, 1999 and May 10, 2000; in Aydın (Center) on May 1, 1999 and May 13, 2000; in Nazilli on May 3, 1999 and May 10, 2000; and in Sarayköy on May 13, 1999 and May 17, 2000. One hundred and eighty leaf samples (two leaves from the lower, middle and top canopy of each plant), from 30 plants in each field that were infested with leafminers, were randomly collected each week from the middle of June to the middle of August at each location. The leaves were kept in a plastic container at $25 \pm 1.0^\circ\text{C}$ and 65% relative humidity. A sheet of absorbent paper was placed between all the leaves in the plastic container to prevent contact and the possibility of mold growing in the humid conditions. The infested leaves were kept in the container for 3–4 weeks to allow adults to emerge. Adult flies were sent to a specialist for identification. Data were analyzed by one-way analysis (ANOVA) and separated by the Tukey-Kramer multiple range test in the SAS computer program (5).

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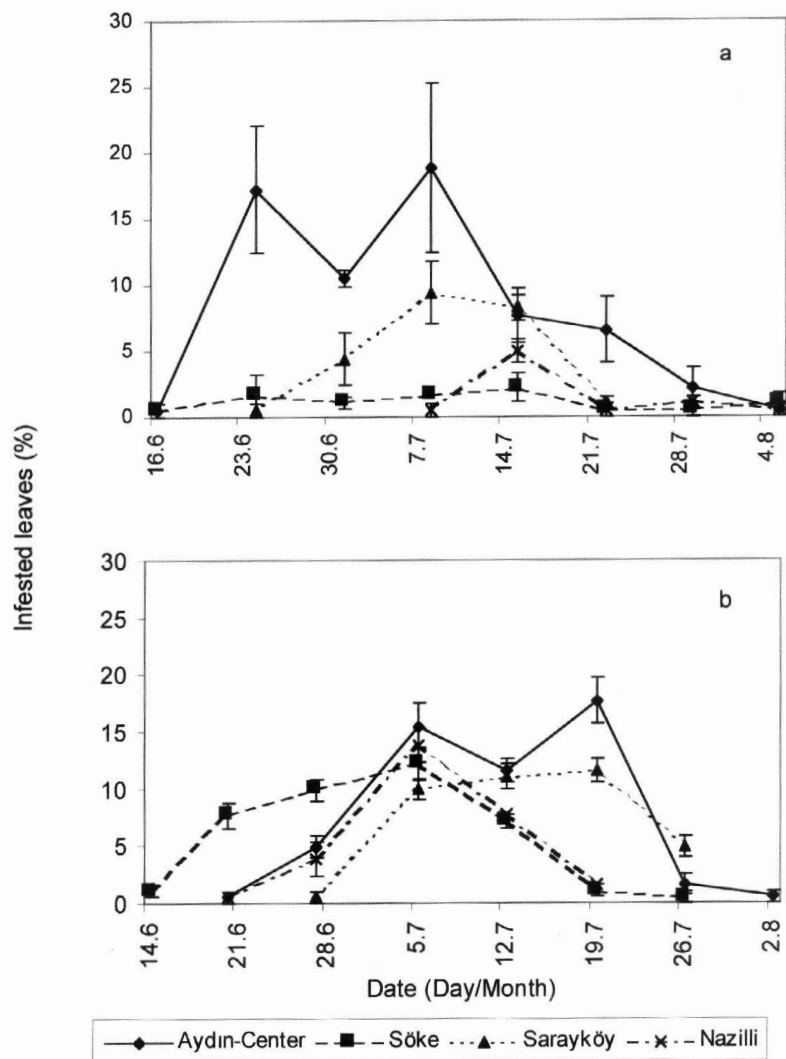


Fig. 1. Leaves infested with *Liriomyza trifolii* at four locations in the Büyük Menderes Valley. Bars indicate \pm S.E. ($P < 0.05$). a, 1999; b, 2000.

There were more infested leaves in 2000 than in 1999, with statistically significant differences between years ($F=8.651$; df: 1, 189; $P=0.004$). The number of infested leaves varied with location, with statistical differences among locations ($F=14.019$; df: 3, 189; $P=0.001$) (Fig. 1). The highest percent of infested leaves was observed in Aydın, with 18.8% and 17.7% in 1999 and 2000, respectively. The number of infested

leaves changed from week to week and statistical differences were found among them ($F=16.652$; df: 8, 189; $P=0.001$). The highest number of infested leaves was observed between June 23 and July 14 in 1999 and between July 5 and 19 in 2000 (Fig. 1). The serpentine leafminer was initially found between 35 and 66 days after sowing, depending on the year and location. Patil *et al.* (3) and Srinivasan *et al.* (8) observed leafminers

infesting plants 30 and 40 days after sowing, with leaves from the lower canopy having more larval mines. Additionally, Sohi *et al.* (6) found that *L. trifolii* fed successfully on cotton from the cotyledonary stage to vegetative phase until the first half of August in cotton fields of Punjab, India, and that the incidence of the pest varied with planting date and locality. The attack was confined to lower canopy leaves; cotyledonary

leaves were preferred for oviposition. Results from the present study are in agreement with these from reported investigations. Cotton fields in the Büyük Menderes Valley of Turkey have been infested with a new pest, *L. trifolii*, that might be a potential pest in the cotton fields of Turkey. More research is needed for other cotton varieties and regions of Turkey.

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