Report of the turnip aphid, *Lipaphis erysimi* (Kaltenbach, 1843) from Missouri, USA

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Abstract: The turnip aphid, *Lipaphis erysimi* (Kaltenbach, 1843), is one of the most destructive pests in the United States. It has been reported in 33 states, but had not been reported in the state of Missouri. In this study we report this species for the first time in Missouri.

Key words: Cauliflower mosaic virus (CaMV), Lipaphis erysimi, turnip aphid, virus vector

Introduction
The turnip aphid, *Lipaphis erysimi* (Kaltenbach 1843) is one of the most destructive pests of the mustard family (Brassicaceae). This aphid typically infests mustard, radish, shepherd's purse, turnip, watercress, and other crops in the United States of America (USA) (Allen and Harrison 1941; Buntin and Raymer 1994; Jessie 2013), Canada (Caesar 1927), India (Verma and Singh 1987), and other parts of the world (Prasad 1988; Begum 1995; Liu et al. 1997; Yue and Liu 2000). It regularly causes heavy direct and indirect losses to growers of mustard crops in the southern USA (Allen and Harrison 1941). Outside of the South, significant damage has also been reported in the states of Maine, Connecticut, New York, New Jersey, Maryland, Pennsylvania, Delaware, Indiana, Ohio, Michigan, Wisconsin, Illinois, Nebraska, Kansas, New Mexico, Colorado, Wyoming, Arizona, Utah, Idaho, California, and Washington (Distribution Maps... 1965). Furthermore, the turnip aphid has been shown to transmit about 13 different viruses, including important viruses of the Brassicaceae, such as *Beet mosaic virus*, *Cabbage black ring spot virus*, *Cauliflower mosaic virus*, and *Radish mosaic virus* (Kennedy et al. 1962). Several management approaches have been applied to lessen damage from turnip aphids in the states where aphids exist. Some aphid-resistant turnip cultivars have been bred and grown in several places (Kennedy 1978). Until this study, the turnip aphid has not been formally reported in the state of Missouri (Leonard 1959, 1963). In this study, we identified the turnip aphid, *L. erysimi*, on turnips *Brassica rapa* var. *rapa* ’Just Right’ and ’Kale Redbor’ *Brassica oleracea*, for the first time in Missouri.

Materials and Methods
An aphid infestation of turnips (*B. rapa* var. *rapa* ’Just Right’) was noticed inside the greenhouse of the University of Missouri – Columbia, in July 2014. Samples of winged and wingless adults were collected and stored in 95% ethanol at 4°C until identification. In October 2014, other samples of the same type of aphids were also collected from *B. oleracea* ‘Kale Redbor’ plants located in a garden of the University of Missouri – Columbia campus, in October 2014. The aphids were immediately identified. In the greenhouse, the aphids were reared on turnip plants (25±2°C and 16 : 8 of light : dark cycle). A stereomicroscope with 40× magnification was used to identify the specimens following the key of Blackman and Eastop (1994).

Results
*Lipaphis erysimi* has so far been reported on the mustard family from 33 USA states, but not Missouri. The important identification characters are discussed here. Turnip aphids were found as large colonies on the lower leaf surface (Fig. 1). Cornicles are not dark and elongate (longer than the cauda) (Fig. 2). The cauda is distinct and tongue-shaped. The antennae are long with six segments. A stereomicroscope with 40× magnification was used to identify the specimens following the key of Blackman and Eastop (1994).
Cauliflower mosaic virus to five turnip plants. Lipaphis erysimi is widely distributed in the USA, Canada, China, India, and many other countries (Caesar 1927; Allen and Harrison 1941; Verma and Singh 1987; Prasad 1988; Bath et al. 1989; Buntin and Raymer 1994; Begum 1995; Liu et al. 1997; Yue and Liu 2000; Jessie 2013). This species attacks plants from the mustard family and some other members from different crops. This is the first formal identification report of the turnip aphid from Missouri, USA.

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References


