



## Low cost cage for rearing of American serpentine leaf miner, *Liriomyza trifolii* (Burgess) (Diptera: Agromyzidae)

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**ABSTRACT:** A simple low cost cage for rearing of American serpentine leaf miner, *Liriomyza trifolii* (Burgess) was designed, providing better aeration and penetration of light. This cage is very useful for multiplying insects during off season. ©2014 Association for Advancement of Entomology

**KEY WORDS:** *Liriomyza trifolii*, Agromyzidae, low cost rearing cage

*Liriomyza trifolii* (Burgess) (Diptera: Agromyzidae), commonly known as the American serpentine leaf miner, is a serious pest of vegetable and ornamental plants. It is a native of Florida in United States of America and Carribean Islands (Spencer, 1973). This insect was introduced to India in 1990's. Since then the pest distribution has been reported on 79 species of crop plants (Srinivasan *et al.*, 1995).

The incidence of *L. trifolii* varied in different seasons. The infestation of *L. trifolii* occurred from October to May in Kerala with maximum infestation in the months of January, February and March and (KHDP, 1998), whereas Karnataka the peak incidence was reported to during May to September (IIHR, 1998) and very low during the rainy season. In order to have *L. trifolii* for laboratory studies, a low cost rearing cage was fabricated.

Cowpea (*Vigna unguiculata*) seeds (var. Anaswara) were sown in plastic pots of height 6 cm and diameter 6.5 cm. When the seedlings were nine days old, they were covered with polythene covers with pin holes. Adults of *L. trifolii* were released in the ratio of 2 ♂: 1 ♀ into the covers and these were tied tightly to the plastic pot to prevent the escape of adult flies. The pinholes in the polythene covers facilitated aeration and prevention of moisture accumulation inside the polythene covers. Female flies oviposited on the leaves.

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In order to get more larvae, the seedlings were changed once in two days. The development of mines was observed. The pre pupae emerged from the mines in five to six days and pupated inside the polythene covers within few hours. The pupae were collected with the help of camel hair brush and placed in small glass vials, and kept at room temperature till the adult emergence. The emerged adults were again released to cowpea seedlings to maintain the laboratory culture of the insect. Cotton soaked in honey solution mixed with Vitamin E was given as food for the adults. Cotton pieces soaked in this solution were placed inside the polythene bags.

A rearing cage of size 40×30×30 cm<sup>3</sup> was fabricated with cardboard, polythene sheet and muslin cloth to rear *L. trifolii* during the off season when population of leaf miner adults was very low in the field. The front side of cage was provided with a circular opening of 17 cm diameter and a muslin cloth sleeve was stitched and pasted around the opening. This opening was used for handling the insects and plants inside the cage. The distal end of cloth sleeve was kept closed while not in use. A window of size 22×13 cm<sup>2</sup> was cut on the sides of the cage and was closed by fixing muslin cloth. Two rectangular windows of 14 cm length and 12.5 cm breadth were cut on the back side and top of the cage were covered with plastic sheet and perforated for aeration and also for the entry of sunlight. The joints of the cage were carefully sealed from inside. Similar cage were used for parasitization studies for leaf miner by Bordat *et al.* (1995).

Cowpea seeds (var. Anaswara) were sown in disposable cups of 6 cm height and 6.5 cm diameter. Three fourth of the cup was filled with potting mixture prepared in the ratio 1:1:1 with soil, sand and cowdung. Three seeds were sown in each cup. Nine days old seedlings were used for the culturing of *L. trifolii*. After the adult emergence, the flies were separated as males and females based on the absence or presence of ovipositor at the tip of abdomen.

Ten to fifteen pairs of newly emerged adults were released in to the rearing cage for oviposition. Steps in the mass rearing of *L. trifolii* are given in Plate 1.

Maximum number of larval mines observed from an infested plant was 30 and a total of 520 maggots were obtained within four days from 45 seedlings after two days of release of 10 to 15 pairs of adult flies from a single cage. One adult female lays a maximum of 48 to 50 eggs during its life span and the peak egg laying was noticed on the 2<sup>nd</sup> day after mating with an average of 19.6 eggs closely followed by the third day (Smitha, 2003). Multiple mating has also been reported.

The design of this rearing cage is very simple, providing better aeration and penetration of light. This cage is very useful for multiplying insects during off season. More number of plants can be infested with a few adults. More trials are needed to standardize the optimum number of adults to get maximum number of progenies.

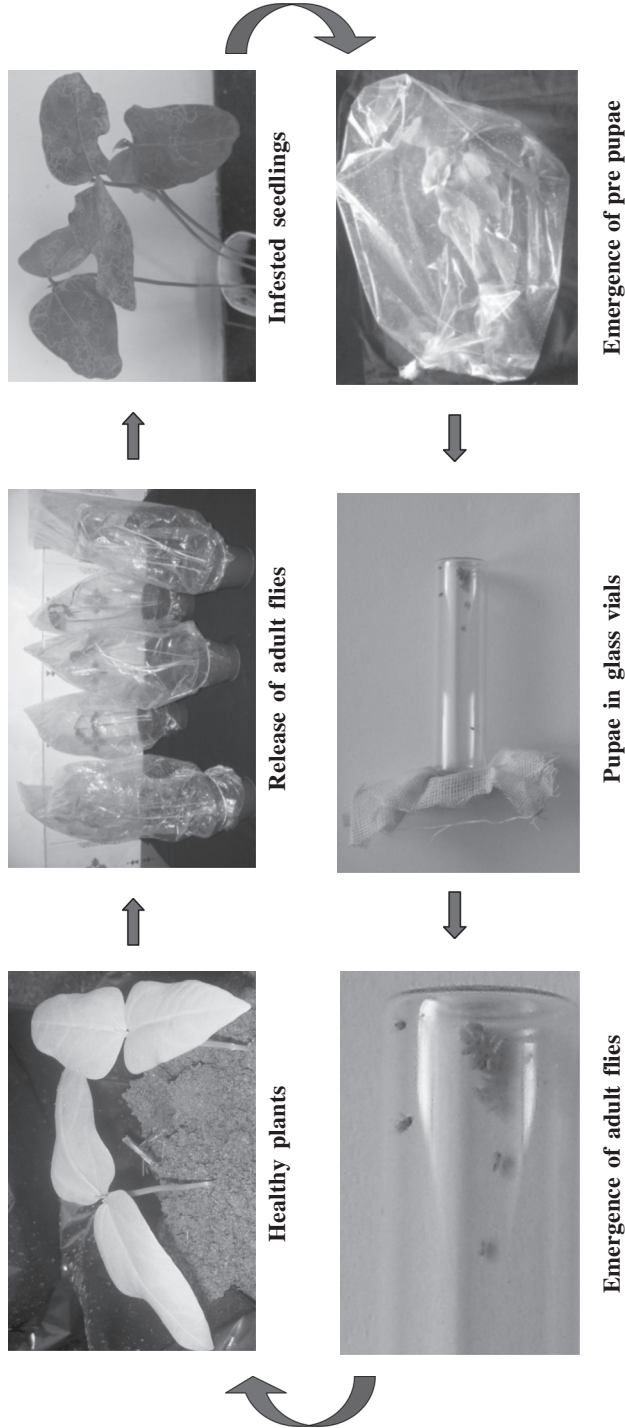


Plate 1. Steps in the mass rearing of *Liriomyza trifolii*

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