

Flight Behavior of *Liriomyza trifolii* (Burgess) in Tomato Greenhouse: Analysis on Head Direction of Leafminers Caught on Yellow Sticky Trap

Jhi Hong Kim, Doo Hyung Lee and Kijong Cho

Division of Environmental Science and Ecological Engineering, College of Life and Environmental Science, Korea University

The number and head direction of *Liriomyza trifolii* (Burgess) caught on yellow sticky traps in tomato greenhouse were investigated for 8 weeks to find a flight pattern in tomato greenhouse. The traps were rolled into a cylindrical shape and placed just above the plant canopy level throughout this study. A grid of permanent sampling stations was established with one sticky trap per location. The sampling array in the test greenhouse (50m×100m) were laid out in a 10×20 grid pattern. The trap (14.8cm×9.5cm) was equally divided horizontally into upper, middle, lower sections. On each trap, head direction of individual leafminer was decided among three distinctive positions (up, neutral, down). The three positions were determined by examining the horizontal angle of leafminer's head direction from thorax. Proportion of the total caught leafminers was highest in upper section (79%) compared to middle (12%) and lower (9%) sections throughout the entire sampling period. In the upper section of the sticky trap, 51% of the leafminers were headed down compared to neutral (36%) and up (13%). In the middle section, 25% of the leafminers were down-headed compared to neutral (40%) and up (35%). In the lower section, 29% of the leafminers were headed down compared to neutral (36%) and up (35%). These results show significantly high proportion of the down-headed leafminers in the upper section of the sticky trap compared to other sections. In conclusion, large numbers of the down-headed leafminers in upper section of the sticky trap suggest that the general flight course of leafminers in tomato greenhouse would be from the top of the plant canopy to the lower parts of the plant. This activity might be due to the life cycle of leafminers and "complementary color effect" that occur in tomato greenhouse.

Key words: *Liriomyza trifolii*, head direction, yellow sticky trap, flight behavior