

Analysis of Spatial Pattern of Thrips (Thysanoptera: Thripidae) on Greenhouse Cucumbers Using Dispersion Index and Spatial Autocorrelation

Kijong Cho, Jung-Joon Park and Jong-Kwan Kim

Department of Agricultural Biology, Korea University

Studies were conducted in three commercial cucumber greenhouses to examine thrips seasonal and spatial patterns on Cheju Island, Korea, in 1996. Leaf and flower samples were taken to determine the thrips species and stage complexes inhabiting on cucumber plants. Adult thrips were the most dominant stage in flowers and the majority (54-65%) of adult species was *Frankliniella occidentalis* (Pergande), whereas immature (82-85%) was the dominant stage in leaves with the exception of house GA (42%) where *Thrips tabaci* Lindeman was the most abundant adult thrips species. To determine the spatial distribution patterns of thrips within plant and field, at least 55 leaf samples which were regularly spaced within a greenhouse were visually inspected from the 1st, the 7th and the 15th leaves assigned from the top plant canopy. Each leaf position was located at 1.8, 1.0 and 0.3 m from the ground level, respectively. Taylors power law indicated that the counts of thrips on leaves were aggregated, regardless of thrips stages and leaf positions. Autocorrelation analysis, which is based on the relative position of samples revealed the different spatial distribution patterns among the leaf positions with the exception of house GA where a nonsignificant spatial relation was detected. In general, the counts of thrips were nonrandomly distributed on the 7th leaf position, whereas the counts were randomly distributed on the 1st and 15th leaf positions. Correlograms, plots of autocorrelation coefficients as a function of distance classes, suggested the presence of a single or multiple gradients within the sample portion of the greenhouse, depending on thrips stages. Our results suggest that Taylors power law cant detect the spatial relation in data sets accurately and testing correlograms for significance is more accurate to describe the spatial distribution patterns of thrips.