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Association of ants and the cotton mealybug, *Phenacoccus solenopsis* (Tinsley) population and its influence on the spread of mealybugs in the home-gardens

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Abstract

The cotton mealybug, *Phenacoccus solenopsis* (Hemiptera: Pseudococcidae), is one of the most notorious invasive pests and it causes severe damage to vegetable crops and ornamental plants of home gardens because of its polyphagous nature. Fire ant, *Solenopsis geminata*, is predominant in tending the mealybug for the sugary secretion and helps the mealybug to spread from plant to plant and also protects them from the natural enemies. This study was conducted in Eastern Sri Lanka to study the interaction of the two insect species and to find out the ant species that cause the dispersal of the mealybug. The survey was conducted at twenty selected home gardens with 20 potted and 20 soil-planted *Hibiscus rosa-sinensis* plants of similar size, which were maintained under similar conditions. Potted plants were protected from the entry of ants. All the plants were observed and the mealybugs and ants were counted weekly for six months. The results revealed that H. Sinensis plants with *P. solenopsis* colonies were mainly attended by four ant species, *Solenopsis geminata* (Fabricius), *Meranoplus bicolor* (Guerin-Meneville), *Tapinoma melanocephalum* (Fabricius) and *Monomorium floricola* (Jerdon). Among them, *S. geminata* exhibited the highest percentage association (78.45%) with the mealybug. The average size of the ant attended

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(62.6) and unattended (35.4) mealybug populations were significantly different. The number of mummified mealybugs were counted and compared in order to determine the influence of ant population on the activity of parasitoids. A significant difference in parasitizing mealybugs in the ant attended (24.05%) and unattended (68.30%) colonies was observed. Control of the predominant *S. geminata* in the home garden plants could help the gardeners to control the spread of the mealybug and to obtain the maximum benefit through parasitoids in controlling the mealybug.

Key words: *Phenacoccus solenopsis*, *Solenopsis geminata*, parasitoids