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Ant visitors and ant pollination of *Jatropha curcas* L. at three localities in Sri Lanka

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Ant visitors (Formicidae) and the contribution of worker ant species to the pollination of *Jatropha curcas* L., a plant producing seeds that are considered a source of biofuel, at three localities of Gampaha district were investigated from April to September in 2017 by identifying and recording the number of individuals of each species and, conducting a bagging experiment in the field. Ants were surveyed three times during each vegetative phase, bud initiation phase, flowering phase and fruit initiation phase of two plants in Buthpitiya, Keragala and Dekatana from 08 - 11 a.m. and 2 - 4 p.m. Several workers of each species were preserved in 70% ethanol and identified. Field bagging experiments were conducted three times at each locality from April to August in 2017. An inflorescence comprising female and male initial floral buds on each of the two selected plants were covered using 25 x 20 cm green tissue net bags to prevent flying insects while another adjacent plant having initial floral buds in an exposed inflorescence served as the control. Species that crawled inside the covered inflorescence were identified. The experiment was continued until fruits appeared on the experimental and control plants. Mean percentage of fruits produced by female flowers was calculated. Air temperature, light intensity and relative humidity varied between 30 - 35°C, 15,000 - 25,000 Lux m⁻² and 70 - 75%, respectively. *Anoplolepis gracilipes* Smith F. in Formicinae, *Monomorium floricola* Jerdon and *Trichomyrmex destructor* Jerdon in Myrmicinae, *Tapinoma melanocephalum* Fabricius and *Technomyrmex albipes* Smith F. in Dolichoderinae and *Tetraponera microcarpa* Wu & Wang in Pseudomyrmecinae were listed. Significantly higher frequency (Chi-square test, $p < 0.05$) of *T. melanocephalum* than that of other species was recorded in Buthpitiya on each occasion. *T. melanocephalum* or *T. albipes* or *T. destructor* was observed on each covered inflorescence. Significantly lower and higher ($p < 0.05$) mean fruiting percentage than that of the control were observed for *T. albipes* and *T. destructor*, respectively while no significant difference was observed ($p > 0.05$) for *T. melanocephalum* showing that each ant species pollinated the flowers. Germination of pollen adhered to each ant species that was collected from *J. curcas* flowers and the pollen directly collected from the male flowers was studied by putting each in a cavity slide filled with 20% sucrose solution. Initial number of pollen grains adhered to each ant and the number germinated in two-hour intervals were counted. Mean germination percentage of 30%, 28% and 25% was observed for *T. melanocephalum*, *T. albipes* and *T. destructor*, respectively whereas that of 58%, 55% and 50% was observed for each set of the pollen grains of male flowers. Pollination of *J. curcas* by the three species observed in the bagging experiment was confirmed by this finding.

Keywords: Ant pollination, Formicidae, *Jatropha curcas*, pollen germination