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Assessment of weed species as floral resource providers for parasitoids and other insects

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Provision or promotion of floral resources is an accepted practice to conserve parasitoids in agricultural lands as a strategy of biological control of insect pests. Weeds in farmlands are one of the good floral resources for parasitoids, but not all the weeds are suitable in this purpose. Hence, the objective of this study is to identify the weed species that provide floral resources to parasitoids and other common insects.

Sixty different weed species belonging to 18 families were surveyed around Peradeniya in agricultural lands and in University Park area. The insects visiting flowers were sampled using sweep nets around 10.00 am in sunny days. Collected insects were processed and separated into taxa. In addition, insects visiting ten weed species were sampled through out the day at hourly interval. Morphology of flowers and parasitoids were examined microscopically to examine possible relationships.

The total number of insects sampled from each weed species varied significantly among weeds. The highest is 95 insects per sample that was colleted on *Euphorbia heterophyla* while the least number, 12, was collected on *Tephrosia purpurea.* Of the insects visited weeds, 60% was dipterans and 24% was hymenopterans. The average number of insects collected per family per plant significantly varied among families. Family Verbenaceae attracted 9.6% of dipterans and hymenopterans while Families Euphorbiaceae, Convolvulaceae, Oxalidaceae, and Malvaceae attracted 8.5, 8.2, 7.8, and 7% of hymenopterans and dipterans respectively. The hymenopterans which includes parasitoids and bees, heavily visited some weed species: *Commelina benghalensis, Thunbergia alata, Argyraea populifolia,* and *Abutilon indica.* Of those hymenopterans, 57, 43, 37, and 37% were parasitoids. In contrast, certain weed species had low (<10%) numbers of hymenopteran visitors: *Polygonum chinensis, Cassia tora, Solanum nigrum* and *Oxalis latifolia*. Hymenopterans collected from weed species that had higher percent of visitors mainly belong to three families: Braconidae, Ichneumonidae and Eulophidae. Of the insects collected throughout the day, 71% of parasitoids visited in the morning. This trend was common for all the weed species sampled. The total number of parasitoids visited weeds was positively correlated with corolla depth (R^2=82%), diameter of upper (R^2=77%) and lower (R^2=89%) rim of corolla. The weeds around farmlands contribute for the survival of insects including the parasitoids. Weed species beneficial for parasitoids could be promoted as a measure of conservation of parasitoids.

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