Abstract No: 397 *Natural Sciences*

Effect of dengue insecticide fogging on cashew pollinators and other non-target insects

N.W.N.P. Nugapola[1, 2], W.A.I.P. Karunaratne[2], M.D.B. Perera[3], W.A.P.P. De Silva[2] and S.H.P.P. Karunaratne[2*]

[1]Postgraduate Institute of Science, University of Peradeniya, Sri Lanka, [2]Department of Zoology, University of Peradeniya, Sri Lanka, [3]Regional Office, Anti-malaria Campaign, Kurunegala
[*]shppkaru@yahoo.com

Cashew, *Anacardium occidentale* (Anacardiaceae) is one of the most traded nuts grown in tropics. In Sri Lanka, cashew cultivators complain that the recent decline in cashew production is due to low pollination resulted from continuous insecticide fogging operations made to control dengue vectors. Present study was aimed to assess the effect of widely used Pesguard FG161 (d-tetramethrin 4% +cyphenothrin 12%) fogging, on cashew pollinators and other non-target insects in a high cashew growing area.

Six fogging trials were conducted in two community settings *i.e.* urban and village, in Batticaloa, between 6.30 - 8.30 a.m. during June, 2015 to February, 2016 to cover the cashew flowering season. In each trial, Pesguard FG161 was sprayed for 8 minutes using a pulse jet thermal fog generator according to the recommended methodology in an area of 200 m² and the insects knocked down on randomly spread polythene sheets were collected after 30 minutes. Insects recovered 24 hours and the dead were separately recorded and identified up to the family level.

Cashew plants were spread over village area and few plants were found in town area. During the six fogging trials, 1,708 knocked down insects were collected from 60 m^2 area of polythene coverage and 7.1% of them recovered within 24 hrs. Significant differences of knocked downs, mortalities and affected insect families between the two sites were analyzed by two-way ANOVA using Minitab 15 statistical software package. Results shows that knocked downs and mortalities between the two sites were not significantly different ($P>0.05$). Highest mortalities in the town area was from the family Sminthuridae (Collembola) (28.8%) followed by Formicidae (Hymenoptera) (16.0%), and Cicadellidae (Hemiptera) (9.1%), in village area, highest mortality was from Aleyrodidae (Hemiptera) (30.8%) followed by Cecidomyiidae (Diptera) (8.0%) and Sciaridae (Diptera) (7.2%). From the total mortalities, 33.3% were potential cashew pollinators (wasps 6.5%, ants 8.6%, thrips 7.1%, dipterans and coleopterans 11.2%) and only 0.3% was mosquitoes *i.e. Aedes albopictus* (2), *Culex quinquefaciatus* (2), and *Armigerus subalbatus* (2). Although mortality percentages of each insect family differ between the two sites, insect diversities of the two sites were only slightly different (H' town =2.73 and village=2.89).

The study shows that insecticide fogging seriously affect the insect pollinators and can make a significant impact on cashew production, if operated during the flowering season. This has to be taken into consideration in planning vector mosquito control programs and the indiscriminate fogging practices should be avoided.

Financial support given by the National Research Council (NRC Grant No. 14-94) is highly appreciated.