



## **Background**

Fogging is a robust sampling method that collects a range of canopy-dwelling arthropods. It has been used before in multiple tropical studies, including those based in oil palm (e.g. Turner & Foster 2009).

## **Methods**

The tree closest to the centre of the vegetation plot is identified using a GPS. This is the focus of the collection. One day before fogging, ropes are tied between the central tree and six surrounding trees at approximately breast height (so fogging trays will hang above the lower vegetation). Fogging takes place between 6:45 and 10:00am, when wind disturbance is less. On the morning of the fogging, six trays (diameter 110cm), with bottles containing 75% alcohol at their base, are hung alternatively one metre and three metres away from the trunk of the tree. This ensures capture of insects from both the trunk and the fronds.

Before fogging, air temperature at breast height and canopy openness (measured using a densiometer with the recorded standing with their back to the tree, facing N, E, S and W) is recorded, as well as plot number, tree number and date and time of fogging.

A 'Pulsefog Rolidor 25 EC' fogging machine, filled with 7:1 diesel : insecticide ('Lamba sihalotri' containing 25g/l of synthetic pyrethroid insecticide), is used to fog the area above the trays for approximately 1.5 minutes, making sure that fog coverage of the tree is complete, with the operator moving around to compensate for wind. After the fogging is complete the team moves onto the next plot, aiming to complete six plots each morning.

The trays are left for at least two hours to allow the insects to fall after fogging. They are then collected by gently tapping the sides of the trays so that the insects fall into the bottle at the base. The screw at the base of the trays is carefully checked and tapped over the bottle during this procedure to ensure any insects trapped there are collected. A label is then placed in each bottle with plot number, tree number, date of fogging, time of fogging, tray number (1-6), and whether tray was close (C – 1 meter away) or far (F – 3 metres away) from the oil palm trunk.

Bottles are transported back to the lab for processing. Here any insects are removed from the bottle, sorted to order and counted before being stored in plastic tubes in 75% alcohol. As with the combination traps, ants, will subsequently be identified to species and beetles to family and morphospecies. A mounted collection of the different species found will be deposited at SMARTRI to aid future identification.

## **Status**

One round of fogging has already taken place (September 2013) and the insects are in the process of being identified. Fogging will be repeated once a year throughout the project

## **References**

Turner EC & Foster WA (2009) The impact of conversion of primary rainforest to oil palm plantation on the arthropod fauna of a common epiphyte in Sabah, Malaysia. *Journal of Tropical Ecology* 25, 23-30.