

Control flow valves, compression sprayers and a mix on demand system

We are always pleased to receive comments on any of our content. Prompted by correspondence following an article, in our December 2012 issue ('Indoor Residual Spraying', page 308) which featured the use of a control flow valve (CFV), we felt a follow up article would be in order to help address some of the questions raised. Professor Graham Matthews explains more.

Although the article featured indoor spraying, in treating for mosquitoes, the same principles of using a CFV apply to other users of compression sprayers and generally on other equipment, where the pressure is liable to change during a spray application. By using a CFV, the operator has a constant pressure at the nozzle that ensures the output remains the same during an application and also ensures that the droplet spectrum does not change.

Control flow valves are made by several manufacturers, but the preferred type has a fixed pressure setting that cannot be changed while spraying. One manufacturer has 4 colour coded CFVs; namely yellow (1 bar pressure), red (1.5 bar), blue (2 bar) and green (3 bar), so that the user can select the most suitable for a particular application. Generally the yellow CFV is designed for herbicide application, while the blue valve is most suited for fungicide application. The red valve is the most used as it provides a compromise between the 1 and 2 bar pressures. The green valve is less suited for use on a compression sprayer as the tank pressure has to be kept above 3 bar but it can be used where there is a mechanised pumping system. A major advantage of spraying at low pressure, is that the spray emits a much lower volume in very small droplets (<100µm) so the risk of inhaling spray is reduced



Spray rig on open deck truck fitted with CF Valves

in comparison with a spray applied at 4 bar pressure.

A range of compression sprayers are used by professional pest control companies to treat range of surfaces within buildings to control cockroaches and other pests. With all compression sprayers, the tank pressure decreases as the spray liquid is applied. Thus over time, the output of spray per minute decreases as the tank pressure drops and the droplets on average increase in size. The angle of spray from the nozzle will also decrease. By adding a CFV to the lance adjacent to the nozzle, the spray delivery remains at a constant rate until the tank pressure is insufficient to open

Calibration of a Sprayer:-

$$\frac{\text{Flow rate (litres/minute)}}{[\text{swath width (metres)} \times \text{Speed of travel (m/min)}]} = \text{Volume application rate (l/m}^2\text{)}$$



Example range of CFV nozzles

