

## **Droplet Spectra Analysis of RAD Technology Aerial Rotary Nozzles**

### **Project Summary**

The Wind tunnel research facility located at the University of Queensland, Gatton campus and funded by the University of Queensland and the Cotton Research and Development Corporation was used to measure the droplet size generated by a RAD technology aerial rotary nozzle.

The project compared the droplet spectrum (by volume) emitted by a RAD aerial rotary atomiser mounted on a standard bracket, a RAD atomiser mounted on a extra long (XL) bracket and a Micronair AU5000 nozzle mounted in a high velocity airstream. The influence of air speed and liquid flowrate on the droplet spectrum (by volume) emitted by a RAD aerial rotary atomiser with extra long (XL) bracket mounted in a high velocity airstream was also determined.

The droplet size (VMD) results and rotational speeds were summarised into composite graphs that can be easily interpreted by aerial operators.

The following conclusions were drawn from this test program.

- The RAD nozzle produces larger droplet sizes than the AU5000 for any given rotational speed
- There is no difference in droplet size generated by a RAD nozzle mounted in a standard bracket and a RAD nozzle mounted in an XL bracket
- Increasing rotational speed (by decreasing blade angle) decreases droplet size
- Increasing air speed decreases droplet size for all nozzle type and settings tested.
- Flow rate has little influence on droplet size (there is a trend to slightly increase size with increasing flowrate)
- Increasing flowrate through both rotary nozzles decreases cage rotational speed
- A blade angle setting of 1 on the RAD nozzle (rpm > 10,000) should not be used on fixed wing aircraft.