

# Nozzle calculators for droplet size prediction

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Droplet size and spectra produced from various nozzles and aircraft is important to both drift and efficacy. The objective of this article is to provide growers, aerial operators, agronomists and researchers with links to valuable information available on the internet concerning nozzle calculators and droplet spectra information.

This information is necessary to understand the resulting efficacy and possible drift from an application. AEMS has recently developed DriftManager (see January–February issue of The Australian Cottongrower) — a risk assessment software package which requires knowledge of droplet VMD and relative span.

The United States Department of Agriculture (USDA) has worked extensively on the development of calculators for all hydraulic nozzles. These are presented on the USDA website under the section on Areawide Pest Management Research (<http://apmru.usda.gov>).

The extensive aerial application section under this division (see <http://apmru.usda.gov/areawide%20cris.htm>) contains valuable material on all aspects of application technology, with specific reference to application technology for cotton.

The USDA has also been involved in research on CP Nozzles. The CP nozzle website provides information on droplet spectra size specific for CP nozzles and these can be seen at [www.cproductsinc.com/dropletcalc.htm](http://www.cproductsinc.com/dropletcalc.htm) and [www.cproductsinc.com/dropletcalc2.htm](http://www.cproductsinc.com/dropletcalc2.htm).

## HYDRAULIC NOZZLE CALCULATOR

In Australia, AEMS has a hydraulic nozzle calculator developed for all available data, across all hydraulic nozzles and formulations. This shows conclusively that the major factor affecting droplet VMD is airshear. Airshear is the effect on the droplet after release into the airstream. The calculator can be used to provide



Predicting droplet size from various nozzles is important in drift management.

a simple estimate of droplet VMD, with accuracy for any nozzle and formulation to within 15 per cent.

Jones Air ([www.jonesair.com.au](http://www.jonesair.com.au)) has a calculator specific for the Jones Air Rotating Boom Apparatus (JARBA) and flat fan nozzles.

While there is sufficient information on hydraulic nozzles, the information on rotary nozzles is limited. But we have developed a rotary nozzle calculator that can be used in the development of drift profiles using DriftManager for clients.

The models discussed here are important in providing all relevant industry personnel with information on droplet spectra from various nozzles. There are numerous websites and information sources available on application technology and all of the information should be used to assist with queries on efficacy and drift.

A copy of the AEMS rotary atomiser and hydraulic nozzle calculators can be obtained by e-mailing AEMS on [aems@bigpond.com.au](mailto:aems@bigpond.com.au). For further information contact AEMS on phone: 07 4613 0455 or Graham Barrett (**Spraycheck**, [spraychk@netwit.net.au](mailto:spraychk@netwit.net.au)) on phone: 02 6361 1550.