

BRITISH CROP PROTECTION COUNCIL  
CHEMICALS APPLICATION COMMITTEE  
CENTRAL TESTING SCHEME

**PROTOCOL FOR MEASUREMENT OF SPRAY DROPLET SPECTRA OF  
HYDRAULIC NOZZLES USING MALVERN EQUIPMENT**

**1. TEST CONDITIONS**

Malvern - 600 mm lens (or nearest available)  
- 500 sweeps  
- Modal independent programme (or Rosin Rammler if not available)

Fluid - Water + 0.1% 'Agral 90' 0 (registered trademark of ICI PLC PPD)

Nozzle positions - FLAT FANS      A - Short axis, centre-line, 300 mm from tip.  
B - Short axis, 25 mm from detectable edge,  
300 mm from tip.  
C - Long axis, 120 mm from tip.

Flat fan positions B & C are optional.

- HOLLOW CONES      - Centre-line, 120 mm from tip. If possible rotate  
through 360° during sampling.

(NOTE : Take care to avoid splashing or re-entry of droplets into laser beam)

Replicates - 2 nozzles x 2 replicates or 3 replicates of 1 nozzle.

**2. BCPC REFERENCE NOZZLES**

These will be supplied by BCPC. They should be set up to give the following outputs at the approximate pressures shown. As pressure gauges are not very reliable, collect and weigh the outputs to  $\pm 2.5\%$ .

BCPC REFERENCE NOZZLE	COLOUR	OUTPUT ml/min	PRESSURE bar	BCPC CATEGORY
A	Pink	480	4.5	FINE/VERY FINE threshold
B	Orange	830	3.5	FINE
C	Blue	1440	2.5	MEDIUM
D	Moss green	2580	2.0	COARSE

### **3 TEST PROCEDURES**

#### **3.1 Reference nozzles**

Obtain full droplet spectra for all-4 nozzles at stated outputs and pressures.

Plot percent cumulative volume against droplet diameter to construct reference chart.

#### **3.2 Test nozzles**

Obtain diameters for 10%, 50% and 90% cumulative volumes.

Plot onto the above reference chart.

Determine which is the closest reference nozzle curve.

Assign test nozzle and pressure to that category.

If Coincident with FINE/MEDIUM threshold, assign to FINE category.

If coincident with MEDIUM/COARSE threshold, assign to COARSE category

### **4 RESULTS**

All results from tests done to this protocol must be notified to the Secretary of the BCPC Central Testing Scheme.

Details and results required are:-

- Name and address of tester
- Lens size. Number of sweeps
- Programme used
- Nozzle position
- Test nozzles BCPC codes, test pressures
- VMD (DV 0.5), DV 0.1. DV 0.9, %<50 um, %<100
- If possible:- NMD (DM 0.5)

AFR/ESES/NK  
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