

SPRAY PARTICLE SIZE AND DISTRIBUTION WITH VARIOUS NOZZLE TIPS, PRESSURES, HERBICIDES AND ADDITIVES. Robert N. Klein, Jeffrey A. Golus and Susan L. Horne, Professor, Research Technologist and Student, University of Nebraska, North Platte, NE 69101.

In 1987 the British Crop Protection Council adopted the spray droplet classification primarily to enhance efficacy. They use the term Spray Quality for droplet size categories. In 2000, the American Society of Agricultural Engineers Pest Control and Fertilizer Committee developed ASAE S572, Spray Nozzle Classification by Droplet Spectra, primarily to control spray drift. This standard defines spectrum categories for the classification of spray nozzles, relative to specified reference fan nozzles discharging spray into static air, or so that no stream of air enhances atomization. The droplet spectra produced by single elliptical orifice reference nozzles with specified liquid mixture, flow rates, operating pressures and spray angles, are specified by the standard to establish the threshold of division between nozzle classification categories. Generally the standard is based on spraying water through the reference nozzles and the nozzles to be classified. However, spray solution properties may affect droplet sizes. Most classifications of nozzles have been done with just water.

Research has been conducted with a Sympatec Helos KF Analyzer. The system uses laser diffraction to determine particle size. With the R6 lens, it can determine particle sizes in a range from 0.5 to 1770 microns. A study was done to determine the particle size distribution of glyphosate and ammonium sulfate with and without different adjuvants. Spraying Systems Extended Range, Turbo TeeJet, Turbo Flood and Air Induction nozzles were used. Both the herbicide and adjuvants affected particle size. Some nozzles are affected more than others, and would result in the nozzle receiving a different droplet spectra classification.