EQUIPMENT FOR SPRAY PARTICLE SIZE ANALYZATION. Robert N. Klein and Jeffrey A. Golus, Professor and Research Technologist, University of Nebraska, North Platte, NE 69101.

Spray particle size affects both drift and efficacy of pesticides. Drift needs to be managed to acceptable levels as it may result in under or over application of chemicals and ineffective pest control. Drift may also cause losses and/or costly litigation if sensitive crops in adjacent fields are damaged and cause unintentional contamination of foodstuffs due to unacceptable pesticide residues. Drift may also contribute to pollution of air and water resources and may affect the health and safety of susceptible human and livestock populations. By obtaining maximum efficacy from the pesticide one may be able to reduce rates and/or improve performance.

A Symaptec Helos/KF particle analyzer is being used at the West Central Research and Extension Center in North Platte, NE to evaluate particle sizes of nozzle tips. The analyzer uses laser diffraction to determine particle size distribution. With the R6 lens, it is capable of detecting particle sizes in a range from 0.5 to 1750 microns. The system is comprised of: 5mw Helium-neon laser, adjustable measuring zone, multi element detector including an auto alignment system, high speed fiber optic data communication interface, and a computer with Windox 4 operating software for control and operation of the Helos central unit. The software also generates charts and graphs of selected measurements. The entire width of the spray plume is analyzed by moving the nozzle across the laser by means of a linear actuator. A 175 gallon tank is located outside the lab to dispose of the various mixtures used during the analyses. Droplet characteristics such as volume median diameter (VMD) and percent of volume 210 microns and less (particles most prone to drift) can be obtained. Particle size analysis will assist in interpreting plot data and correlating it with applications made by nozzles commonly used by farmers and commercial applicators.

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