

THE SELECTION OF SPRAY NOZZLE TIPS TO MAXIMIZE EFFICACY WHILE MANAGING DRIFT. Robert N. Klein, Jeffrey A. Golus, Amanda S. Cox, Professor, Technician, Technician, University of Nebraska, West Central Research and Extension Center, North Platte, NE 69101

Most spray nozzle tips used in the application of pesticides produce a distribution of droplet sizes. The droplet sizes produced by a nozzle tips are affected by many factors besides the nozzle tip design. These include: pressure, pesticide formulation and adjuvants. Because different nozzle tips are affected differently by pesticide formulation and adjuvants, equipment such as lasers used to evaluate the particle size distribution of the spray solution are very valuable. Spray droplet size affects efficacy of the pesticide and spray drift. Contact herbicides with the same carrier rate will need a smaller droplet size than translocated post-emergence herbicides. Nozzle tips which produce the smallest amount of a spray volume in small droplets (those susceptible to drift or evaporation) are preferred unless the particle size is too big for the coverage needed for efficacy. Many of the new nozzle tips designed to reduce drift can aid in increasing the performance of a pesticide if the correct selection is made. Some of these new nozzle tips, such as the venture, need to be operated at higher pressures than many operators are accustomed.

The introduction of extended range nozzle tips in the venturi types has allowed the lowering of pressure. For example the particle size of an AIXR11004 nozzle at 2.8 bars vs. an AI11003 nozzle at 4.8 bars (both from Spraying Systems) have almost identical spray particle sizes with water and 0.65 L of Roundup WeatherMax in 94 L/ha of water + 2% v/v AMS. The amount of the spray volume in 210 microns and less was almost identical for these two nozzle tips at the pressure of 2.8 bars and 4.8 bars.

Nozzle tips with the tip being built into the cap and with automatic spray alignments are usually the applicators best choices. Ceramic is also usually the best choice of spray nozzle tip material when available.