

“WHEN THE GAME SLOWS DOWN” – USING HIGH SPEED VIDEO TO UNDERSTAND APPLICATION TECHNOLOGY. Gregory K. Dahl, Joe V. Gednalske, and Eric Spandl. Research Manager, Manager of Product Development and Agronomist, Winfield Solutions LLC, St. Paul, MN 55164.

Evaluating changes in droplet size, spray distribution and drift reducing technologies and presenting results to a diverse audience that includes spray applicators can be a challenge. Evaluating spray distribution and droplet size quantitatively by laser spray droplet analyzer provides concise measurement of treatment effects. However, presentation is generally limited to tables or graphs. Current technology has allowed us to develop visual evaluations that support the laser analysis.

Laser droplet analysis was done with TeeJet AI, AIXR, and XR nozzles and various spray mixtures. Spray mixtures included water alone, a simulated glyphosate adjuvant system, and the simulated glyphosate adjuvant system with a modified vegetable oil deposition aid and drift control adjuvant or a guar-type adjuvant. A factorial arrangement of nozzle type, wind absence or presence, and spray mixtures were used for photographs and video. A high speed Hasselblad 553 camera and a Prism SPOT strobe provided pictures illustrating individual droplets within a spray pattern. Spray patterns were recorded with a high-speed video camera and played back in slow motion to show droplet distribution and movement.

The high speed photography and video provided excellent detail of the spray droplets and distribution in the spray patterns that are not seen in real time. Nozzles, spray mixtures, and wind significantly impacted results. Differences among treatments were clearly illustrated using video or photography and correlated well with the laser analysis. The proper nozzle and a drift reducing adjuvant significantly reduced the amount of fine droplets.