

EFFECT OF SPRAY SOLUTION RECIRCULATION ON THE SPRAYER, CAUSED BY PUMPING, ON THE DROPLET SPECTRA GENERATED WHEN SPRAYING DIFFERENT SOLUTIONS

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Destaque: The polymer adjuvant was more sensitive to the shear caused by recirculation, providing droplet spectra more prone to drift.

Resumo: There is evidence that some polymers, used of adjuvants for dicamba plus glyphosate applications as one of the best options for drift reduction strategies, are subject to degradation and subsequent loss of drift reduction capability when recirculated through the spray pump. The aim of this work was to evaluate the interference of spray solution recirculation on the sprayer, caused by pumping, on the droplet spectra generated when spraying different solutions. A sprayer built to operate with piston or centrifugal pumps was used to simulate different intensities of pumping recirculation, providing 300 kPa to a nozzle inside a spray chamber. The volume median diameter (VMD) and the percentage by volume composed of droplets smaller than 150 μm (V150) were calculated for a TTI 11003 spraying tank mixtures of dicamba (2.0 L c.p. ha^{-1}) and glyphosate (3.0 L c.p. ha^{-1}). Four spray solutions were prepared: herbicides alone or mixed with adjuvants based on three technologies: guar gum (0.75% v v⁻¹), polymer (0.6% v v⁻¹) and methylated seed oil (0.1% v v⁻¹). All solutions received 0.5% v v⁻¹ of a volatility reduction adjuvant. Three recirculation levels were considered: 1 to 2.5; 4 to 6.9 and 16 to 20 cycles (one cycle means that the solution passed through the pump once). The results showed that the polymer adjuvant was more sensitive to the shear caused by recirculation, providing droplet spectra more prone to drift. Other adjuvants had less or no significant interference on their performance after being pumped. Differences between pump types were found depending on the type of adjuvant.

Palavras-chave: Herbicides, ; sprayer pump; adjuvant