



## XVII<sup>th</sup> World Congress of the International Commission of Agricultural and Biosystems Engineering (CIGR)

Hosted by the Canadian Society for Bioengineering (CSBE/SCGAB)  
Québec City, Canada June 13-17, 2010



### THE EFFECT OF FAN FREQUENCY ON THE DROPLET SPRAYING SWATH OF AIR-AIDED SPRAYER

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#### CSBE101336 – Presented at Section III: Equipment Engineering for Plant Production Conference

**ABSTRACT** The range of droplet deposit is influenced by the wind speed of the air-aided sprayer. The spraying experiment was carried out by using concentration of 1g/L solution being mixed colorant Rhodamine-B with water instead of pesticide. Spray test sampling region was a sector area in ground, anterior of the wind cylinder spout. At each sampling point, a glass slide (7.5cm × 2.5cm) was placed in order to collect droplets. The droplet depositing on sampling points was calculated using the fluorescence spectrophotometer. When spraying, the power supply frequency of fan was regulated from 50Hz, 49.5Hz down to 44.5Hz, in increments of -1Hz. Each spray testing period was 30s. The test results indicated: (1) About 97.4% of the droplet deposition fell between the range of two parallel line shifts away from the wind cylinder axes ±2m. (2) When wind speed is less than 0.3m/s, the influence of outside wind on the droplet deposition is quite small in front of the spout (within 8m), but with increased outside wind the droplet drifting directionally to wind in the area is far from the spout (>8m). (3) As the fan power supply frequency is reduced, the droplet transmission distance of air-aided sprayer is shortened.

**Keywords:** Air-aided sprayer, Spraying swath, Droplet deposition, Variable frequency