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ABSTRACT BOOK

Welcome Message

The world is going through a rapid change, with increase in demand for food and for agricultural goods. This was happening before the pandemic, but with the challenges and the changes brought by the pandemic, the pace increases a lot. The challenges facing agriculture today is very high, with the increase in demands due to the increase in global population, that reached 8 billion people this year.

Besides the demographic changes, the climate and the stressors behind climate change is another challenge that agriculture is facing, and weeds are one of the most important biological factors affected by these changes.

To cope with the challenges faced by agriculture in this century, weed scientists are bringing to the table novel ways to manage this important agricultural pest.

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Spray drift study from mesotrione and rimsulfuron+thifensulfuron-methyl to various crops

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Herbicides are the most frequently used method for weed control. Off-target movements follow every herbicide application. Because the launch of ALS- and HPPD-tolerant crops will increase the treated area, there is a need to point out the possible negative consequences of any particle drift from those herbicides. The gap in the existing literature suggests that this issue needs to be addressed. Since drift can injure susceptible crops, reduce pesticide efficacy, and increase environmental pollution, it must be minimised. Drift happens with every pesticide application and must be mitigated. Various factors influence drift such as nozzle type, working pressure, and boom height, can be managed. Others, such as wind, are not easy to manage. In our study, an herbicide tank-mixture of mesotrione with rimsulfuron plus thifensulfuron-methyl was sprayed in a low-speed wind tunnel to simulate drift. The airspeed was set at 4.4 m s^{-1}, representing the labelled upper limit for applications. The herbicide solution was sprayed through XR and TTI nozzles. Eight crops (cantaloupe, cotton, green bean, pumpkin, soybean, sunflower, wheat, and watermelon) were exposed to herbicide drift treatments and biomass data were collected 28 days after the applications. Droplet size spectra and tracer depositions were evaluated for each nozzle. Tracer deposition was higher in all downwind distances (0.5, 1, 2, 3, 4, 6, 9, and 12 m) from the XR nozzle in comparison to the TTI nozzle. Therefore, greater injuries were recorded for applications with the XR nozzle and lower injuries for applications through the TTI nozzle from 1 to 12 m downwind. Soybean and wheat were the two most tolerant crops, while the two most susceptible were cantaloupe and green beans. Because drift can injure crops, it is very important to mitigate drift in mesotrione and rimsulfuron plus thifensulfuron-methyl applications. This can be done by selecting the appropriate nozzle and ensuring optimal distances between crops.

Keywords: Crop; herbicide; injury; nozzle; off-target movement; vegetable.