

American Chemical Society (ACS) Fall Meeting 2021

Session: Off-Target: Measurement & Management of Pesticide Drift & Volatility:
4:30pm - 6:00pm USA / Canada - Eastern - August 25, 2021 | Room: Zoom Room 03
Division: [AGRO] Division of Agrochemicals

Presentation Title: Lessons learned from two years of off-target movement field studies

Authors: Ben Brayden (bbrayden@stone-env.com), Naresh Pai (naresh.pai@bayer.com), Meghan Arpino (marpino@stone-env.com), Daniel Brese (dbrese@stone-env.com), Steven Callen (steven.callen@bayer.com), Les Carver (lcarter@stone-env.com), Dan Dyer (dan.dyer@bayer.com), Rachel Lightfoot (rlightfoot@stone-env.com), Thomas Orr (thomas.orr@bayer.com), Aaron Rice (arice@stone-env.com), Lance Schuler (lance.schuler@bayer.com), Brent Toth (brentt@stone-env.com)

Abstract: Reducing off-target movement of post-emergent herbicide applications is of interest to all stakeholders, whether to improve efficacy or mitigate non-target plant exposure. Field studies designed to monitor off-target movement typically focus on a single mode of transport. In 2019, Stone Environmental (Stone) and Bayer Crop Science (Bayer), with input from US EPA, designed a comprehensive field study plan to monitor potential off-target movement due to spray drift and volatility of a semi-volatile herbicide compound and to assess potential exposure to adjacent non-target plants. The study design, labeled as “hybrid study,” included an 8-hectare treatment area planted with an herbicide-tolerant crop situated in the center of a ~65-hectare field. The acreage surrounding the treatment area was planted with non-tolerant (sensitive) crops. Drift deposition and non-target plant exposure assessments from both spray drift and volatility were simultaneously conducted on all four sides of the treatment area. Air monitoring in the center and on the perimeter of the treatment area was conducted to support flux modeling. Sampling was conducted for 168 hours post-application, and plant effects assessments were completed prior to application and two and four weeks post-application. The extensive spatial and temporal data collection design proved effective but was resource intensive. In 2020, Bayer and Stone collaborated on a new study design, labeled as “mini-hybrid,” with targeted data collection refinements from lessons learned in 2019. The presentation will focus on the merits and challenges of each design and how ultimately the data necessary to inform risk assessments can be collected with this refined study design.