

Determine Emission Reduction Using Totally Impermeable Film and Waiting Period for Tarp Cutting in a Large Field Fumigation Trial

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PROJECT SUMMARY

Objectives:

- Determine the emissions of soil fumigants when using a totally impermeable film (TIF) to cover treated fields.
- Determine when the tarp can be cut to avoid high worker and by-stander exposures to off-gassed fumigant(s) collected under tarp.
- Compare the ambient air monitoring with soil flux chamber monitoring method.
- Provide data to regulatory authorities to assess whether TIF tarps can be used to reduce fumigant emissions and protect workers and by-standers.

Background:

What makes soil fumigants such valuable tools in soil pest management – their mobility – is also what makes them difficult to manage for by-stander safety and air quality. Due to these concerns, the use of soil fumigants is being ever more limited by both EPA and CDPR.

Recently developed tarps have shown the ability both in the lab and the field to essentially prevent most off-gassing of applied soil fumigants. These totally impermeable tarps (TIF) could be used to reduce the emission exposure concerns.

However, there is concern about worker exposure when cutting the tarps, and whether the cumulative emissions are really reduced in terms of reducing VOC emissions.

The results of this study demonstrated that atmospheric peak and total emissions of chloropicrin and 1,3-dichloropropene under TIF are negligible when tarp splitting is extended to ten days for chloropicrin and 15 days for 1,3-dichloropropene. Relative to previous flux studies with standard PE tarp, TIF reduced total emissions by more than 5X. Emissions from the tarp edge was insignificant (<1%). This project provided policy makers and regulatory agencies with the information for the safe use of TIF for emission reduction.

This project confirmed that fumigant concentrations under TIF are higher and more uniform than concentrations found under standard tarp, which provides better and more consistent efficacy to control soilborne pests and weeds.

The project also found that emissions data collected with the flux chambers are similar to data collected with the ambient air monitoring method.

As this is a larger effort, ABC is a co-funder with the USDA-ARS, California Strawberry Commission, and CDPR.

Project Cooperators: David Sullivan, Sullivan Environmental, Alexandria, VA; Suduan Gao, USDA/ARS, Parlier, CA; Randy Segawa, California Dept. of Pesticide Regulations; Michael Stanghellini, TriCal, Inc.

For More Details, Visit

- Poster location 2, Exhibit Hall, Session 1; or on the web (after January 2012) at AlmondBoard.com/AICposters
- Project Progress Report on 2010 – 2011 Annual CD (10-AIR9-Ajwa/Sullivan); or on the web (after January 2012) at AlmondBoard.com/ResearchReports
- Related Projects: 11-AIR5-Gao