

Building a CART: Data Management for Spray Drift Hazard Assessment

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ABSTRACT

An Agrichemical Management System (AMS) is proposed to manage information related to spray drift hazards associated with agricultural and horticultural spraying. The development, a series of databases and predictive models, currently known as CART (Cumulative Agrichemical Residue Tracking), provides significant challenges in the size and quantity of data from attribute (e.g. agrichemicals, operational details), spatial (e.g. cadastral, soils, hydrology) and temporal (e.g. weather, spray events) databases. To add to the complexity of the system, models to predict spray deposition, retention and dissipation need to be integrated to provide information for hazard assessment to both Operators and Regulators.

Sprayer Operators are in fact the only people who directly impact on spray drift hazard and they are the initial targets of this AMS. A quantum of predictive information has been developed on spraying but the information is not available to the Operator at the time of planning to spray. Regulators, such as Regional Councils and ERMA, would also like to understand the impact of changes in land use and chemicals on their assessment of spray drift hazards.

The data structures and processes of such a system need to be robust and flexible enough to handle the large range of scenarios relating to where and how spraying is carried out. This presentation looks at a possible structure linking the spatial and temporal aspects of the system and some of the processes that may be some help in assessing the hazards of spray drift. Using the framework of this system, multiple models for deposition, retention and dissipation can also be tested and compared in an endeavour to improve their predictive performance.

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Keywords and phrases: Spatio-temporal databases, spray drift, agrichemicals, data structures, deposition models.