Cotton Research and Development Corporation
Plain English Summary 2001/02

Responsible Director: Neil Forrester

Project Title: Assessment of Endosulfan EC based on new NRA risk assessment criteria for Endosulfan ULV (UQ).

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Plain English Summary:

This report examines available deposition data and assesses the performance to two mathematical models in predicting the relative drift profile of ULV and EC formulations of endosulfan as used in the Australian cotton industry.

Results from algorithms should always be interpreted with care, particularly in the absence of reliable field data, however the findings from the study allow important observations to be made:

-If very small droplets are applied, (eg ULV with VMD of 67 µm) and very low downwind thresholds are required (eg. 0.05% applied rate), significant down wind buffers distances have to be establish within and around crops. Although the size of these areas increases with field source width, greater flexibility in spray drift management (eg in selecting wind direction) can sometimes be conferred as farm size increases.

-Downwind buffer distances can be substantially reduced if droplet size is increased. Assuming a threshold of 0.05% applied rate off target is required, a Gaussian model predicts that buffer distances can be reduced from approximately 2920m, to 600m when ULV (VMD 67µm) is compared to a LDP (VMD 332µm) aerial application. The AgDRIFT model predicts that 0.05% of the applied rate can be contained using a buffer distance of only 428m when an LDP VMD of 332µm is selected.

-When the influence of droplet evaporation is taken in to account, the AgDRIFT model suggests that a water based LV application (eg VMD 162µm at 20 L/ha) can generate significantly greater spray drift than ULV application ULV (VMD 162µm at 3 L/ha)

-Buffer distances could be reduced even further if narrower droplet spectra could be produced at the nozzle and lower release heights adopted, (eg helicopter application)

-Data presented in this report shows that the droplet size generated by an aircraft is highly dependent upon the airspeed surrounding the nozzle. If an aircraft is operated at too high an airspeed for a given hydraulic nozzle type or setting, the potential for spray drift is greatly increased

-Using existing technology, it is important that aircraft are configured very accurately for operations in cotton growing areas

-Significant potential exists to utilise the advantages of aerial application if the droplet production process can be refined and spectra narrowed.

The development of alternative, improved nozzle systems should be supported.