

# NATIONAL WORKING PARTY ON PESTICIDE APPLICATIONS

## An Assessment of AGDISP™ Ground for Determining the Downwind Spray Deposition from Boom Sprayers

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### SUMMARY

The movement of pesticide spray droplets outside of the application site during, or shortly after application can be reduced significantly by applying a range of drift reducing technologies and procedures. The recognition and assessment of these technologies during the registration of a pesticide product and at the time of application, provides the opportunity to increase the uptake and adoption of best practice spray management practices during agricultural and public health operations.

A series of field studies were undertaken to measure the deposition of spray droplets downwind of a boom sprayer fitted with a variety of hydraulic nozzles and under a range of meteorological conditions.

Deposition rates of sprays for various application scenarios, were compared with predictions made with the most recent version of the AGDISP™ Ground model (version 8.28) provided by the USDA Forest Service. Model input values applicable to the tank mixes, droplet size spectra (based on wind tunnel testing), meteorological conditions, release height, application volume rate and canopy height used in the field trials were used.

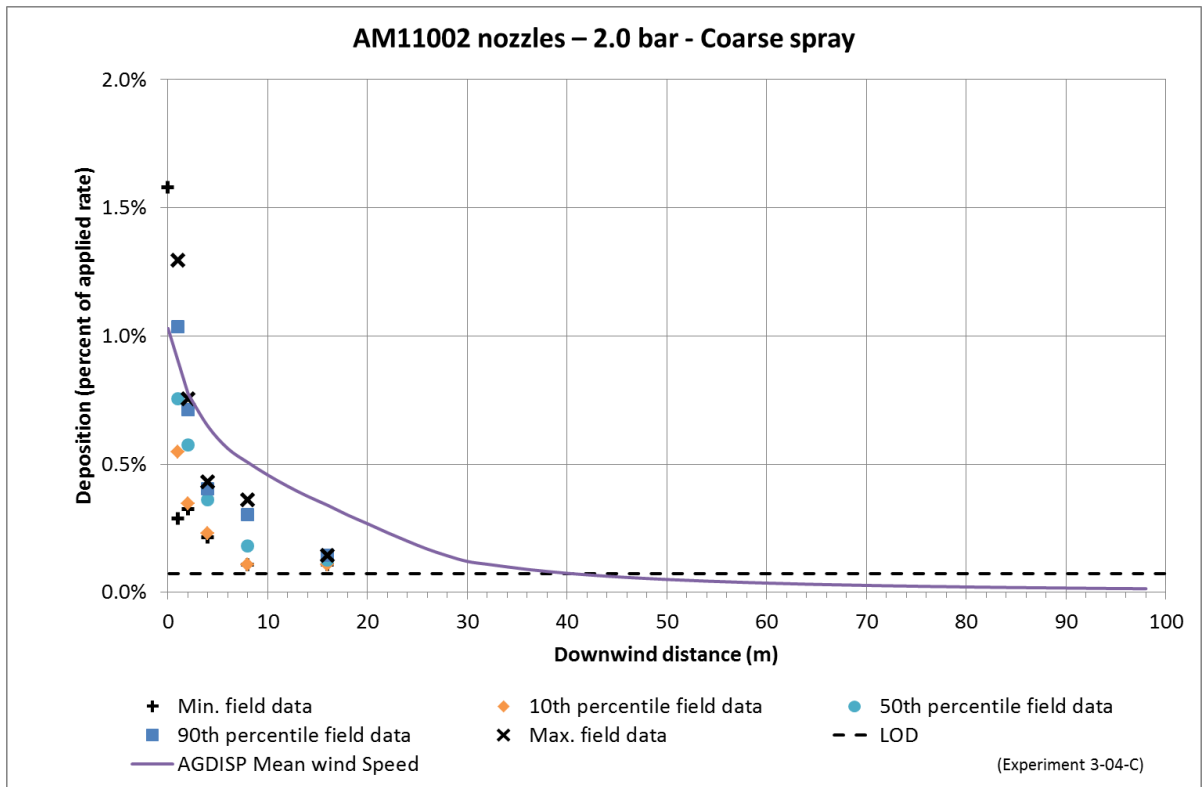
The downwind deposit from boom sprayers equipped with flat fan nozzles is compared with AGDISP™ model predictions in Figures 1 and 2. The graphs illustrate the deposition of spray expressed as percentage of applied rate, as a function of the distance downwind from the target area. The graphs show the average (50<sup>th</sup> percentile) as well as the 90<sup>th</sup> and 10<sup>th</sup> percentiles of spray drift deposits, measured from all replicate runs at each downwind distance for each treatment.

Results show that with careful attention to the selection of input values and parameters, AGDISP™ Ground correlates well with field data. The work showed that, despite natural variation in deposit values caused by meteorological and application parameter variability, AGDISP™ Ground was capable of predicting the downwind deposition curve for boom sprayers. Use of AGDISP™ Ground would be extended by accessing comprehensive droplet size distribution data from wind tunnel studies and international databases.

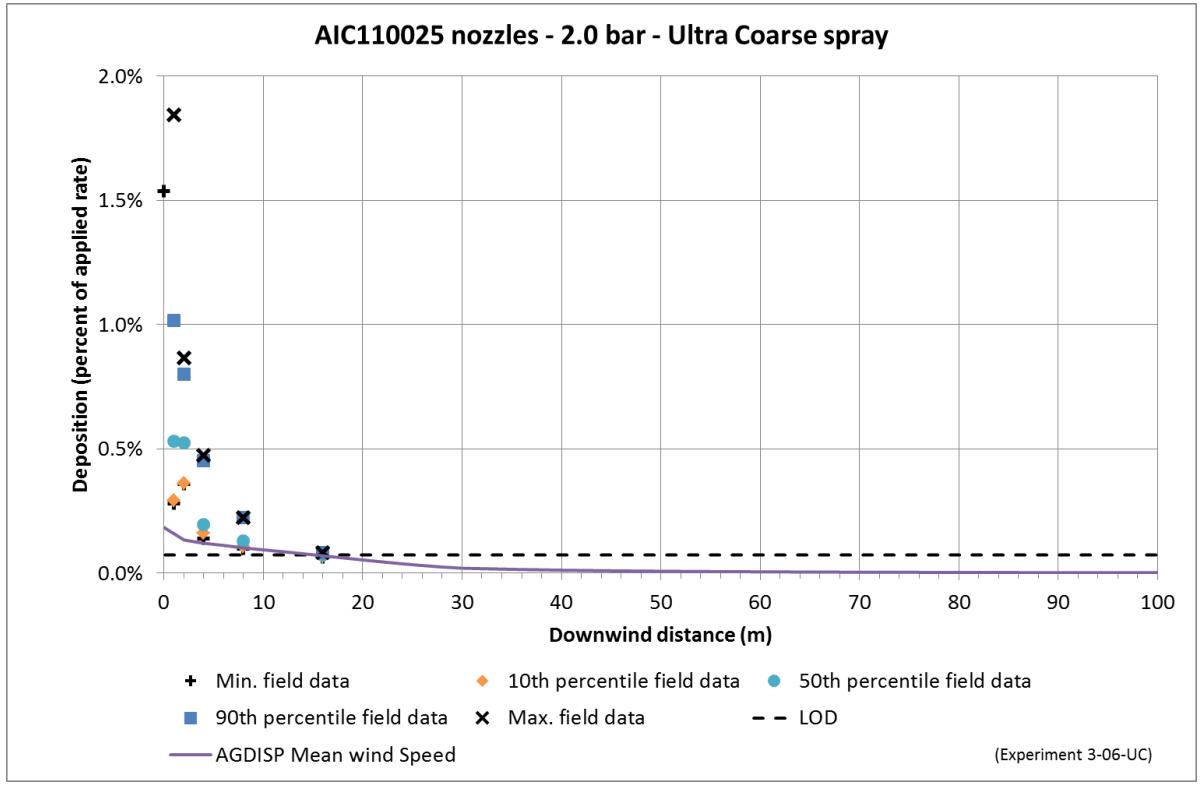
In its current phase of development, the data suggest that AGDISP™ Ground could be used for determining downwind spray deposition profiles of boom sprayers for regulatory and operational purposes, including the impact of drift reduction technologies.

This provides immense benefit to industry as regulators can apply more flexibility when conducting risk assessments compared to the current AgDRIFT® model which only allows consideration of the impact of very limited variables.





**Figure 1** Comparison of field data and AGDISP™ model predictions for AirMix flat fan (AM11002) nozzles operated at 2 bar pressure. (LOD = Level of Detection)



**Figure 2** Comparison of field data and AGDISP™ model predictions for TeeJet® Air Induction (AIC110025) nozzles operated at 2 bar pressure. (LOD = Level of Detection)

