

Improving Spray Penetration and Reducing Drift with the Winglet Boom

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Trials were conducted to study spray deposition in the cotton canopy and downwind drift using a conventional boom and nozzle arrangement, in comparison with an experimental boom onto which 15 airfoil-shaped 'winglets' were attached. The aircraft used was an Ayres Turbo Thrush. Spray deposition was assessed by analysis of the fluorescent tracer distributed over cotton string placed in a cotton field, inside the canopy and on both sides of cotton leaves collected from the top and inside the canopy. Drift was compared by flying two aircraft simultaneously, each with its respective boom, flying 1 km apart at 90° to the wind direction, spraying water over horizontal and vertical water-sensitive card samplers. Droplet count was recorded from card sampler lines, located downwind at a distance of 50 m up to 200 m. Results have shown that the winglet boom, when operated 1 m above the canopy, produces a better deposit than the conventional boom and nozzle at various levels in the canopy, on the upper sides of the leaves; the deposit on the underside of leaves in the upper part of the cotton plant is also increased. More drift was detected with the conventional boom and nozzle arrangement on both vertical and horizontal targets.

KEY WORDS: Spray deposition; drift; airfoil; winglets; downwash.

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