

COMPARISON OF CONTROLLED DROPLET AND CONVENTIONAL  
APPLICATION OF POST-EMERGENCE HERBICIDES

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*Abstract.* Controlled droplet application is a concept of spraying using rotary atomisers to produce a defined and restricted range of droplet sizes, whereas conventional hydraulic nozzles produce a wide spectrum of droplet sizes. The advantages of controlling droplet size are better plant coverage with possibly enhanced pesticide efficacy and a significant reduction in spray volume.

Seven trials were conducted during 1980-81 to compare the effectiveness of controlled droplet with conventional application of postemergence herbicides in controlling broadleaf weeds. The effects of varying the volume of spray liquid and reducing the herbicide rate were measured. Each herbicide was applied at three rates (recommended, three-quarters and half the recommended rate) in three volumes of spray liquid. The volumes were 200 L ha<sup>-1</sup> applied with hydraulic nozzles at a pressure of 210 kPa, and 40 and 20 L ha<sup>-1</sup> applied by rotary atomizers adjusted to produce droplets with a volume mean diameter of 250 micron.

The weeds assessed were common thornapple (*Datura stramonium*), hairy wandering jew (*Commelina benghalensis*) and anoda weed (*Anoda cristata*) and the herbicides applied were bentazone, dinoseb, 2,4-DB and acifluorfen. Visual ratings of weed control were taken 5 to 21 days after spraying.

Lowering the rate of herbicide reduced the degree of weed control irrespective of the application method. There was no tendency towards better control at lower rates with controlled droplet than with conventional application, indicating that the recommended rate of postemergence herbicides should not be reduced when using controlled droplet application.

Efficacy of the herbicides was maintained when the volume of spray liquid was reduced from 200 to 20 L ha<sup>-1</sup>. These results show that controlled droplet application technology can be used successfully for foliar applied herbicides in low spray volumes. Advantages of this significant reduction in spray volume are the improved logistics of the spraying operation and the possibility of using better quality water.