

Spray behaviour at reduced application volumes - LK0922

Sponsor: DEFRA

Partners: SRI; Syngenta Crop Protection UK Ltd; Hardi International; Lurmark Ltd; Cleanacres Machinery Ltd; Billericay Farm Services Ltd; Micron Sprayers Ltd; Crop Protection Association

Total project cost: £393k

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Abstract

Reducing water volume rates below 200l/ha is one of the most valuable methods of increasing work rates, thereby improving timeliness and efficiency of the spray application. There have been two limiting factors preventing volumes from being reduced: spray drift and a lack of reliable data concerning the consequences for efficacy. Spray drift can be overcome by recent developments in application. However, maintaining efficacy, is more difficult to assess generically since it depends upon a range of factors, including crop canopy, spray liquid, active ingredient and application technique.

There may be limits below which volumes cannot be reduced without compromising the quantity retained and/or the distribution of deposits on the target. These limits depend upon the application equipment and parameters used. The tank mix of formulations and adjuvants modify the quantity and distribution of deposit. The crop canopy (density, structure and surface) and the target site are also important factors, with target size being potentially crucial.

The project aims to identify the limits of acceptability for reduced water volume rates and provide scientific justification for their use and to provide the necessary information to assist users in determining the most appropriate application techniques to achieve reduced volume rates.

Scientific Objectives

- * To determine how changing application techniques to reduce water volumes affects the characteristics of the spray delivered to the crop.
- * To establish how the distribution of pesticide within crop canopies can be influenced by application parameters, crop canopy characteristics and spray liquid properties.
- * To consider the implications for biological efficacy
- * To provide information to determine acceptable limits to reducing water volumes

Work plan

There are five project phases.

1. Project establishment: to determine what has already been done, what model systems we use, what parameters we should measure and how we should measure them
2. Assessment of low volume techniques: to characterise the spray delivered to the canopy
3. Real crop experiments: to establish the effect of crop geometry, target surface and liquid properties on deposit
4. Field experiments: to assess efficacy.
5. Technology transfer: to deliver information to the users

Benefits

- * Greater acceptability and wider use of reduced volume spray application
- * Low volume application techniques appropriate to crop, pest and formulation
- * Clear environmental benefits: lower off-target contamination and lower overall inputs.
- * Scientifically-based information to assist in the development of control systems for sprayers

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