Productivity Highlights

No 18 November 2005

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Uniformity of liquid and topdressed solid fertilisers

Background

Liquid fertilisers, whether applied through the seeder or boomsprayer, can be applied more rapidly and uniformly than topdressed solid fertilisers.

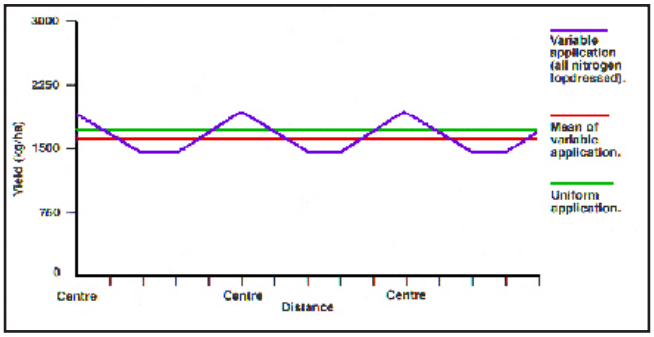
Uneven solid fertiliser application, especially topdressed sulfate of ammonia, often results in waves of good and poor growth within the paddock and inefficient fertiliser utilisation.

Depending on the individual paddock circumstances, uneven fertiliser application can reduce crop performance and profitability considerably (by up to $15/ha).

Key Results

- Solid fertiliser spreaders rely on overlapping swaths (usually 15-25m) for uniform application, which is not possible at the edges of the paddock. The area of the crop edges that receive less than the desired application depends upon the paddock size and shape (eg a 10m edge will amount to six per cent of a square 50ha paddock and if the paddock is rectangular in a 1:5 ratio the edge area increases to 7.5 per cent).
- Trees, dams or other obstacles increase the proportion of crop where overlapping is not possible.
- In the main parts of the paddock, uneven applications through spreaders can result from:
  - fertiliser properties;
  - wind speed and direction;
  - humidity;
  - slope;
  - machinery bounce;
  - calibration;
  - spinner speed;
  - maintenance; and
  - inconsistent driving, resulting in poor overlap.

Boomsprayer applications of Flexi-N provide even coverage right to the edge of the paddock compared to topdressed urea.



In this trial, 70kg/ha of lost production in wheat rotations cost the farmer $11.20/ha (wheat at $160/tonne).
Source - WA Department of Agriculture, Badgingarra.

- Variations in applications of 15 per cent or less are generally considered adequate. However, some spreaders have varied by as much as 46 per cent in controlled field trials.
- The graph above illustrates the difference in yields across a nitrogen responsive paddock when spread accurately and inaccurately. Variable nitrogen application will create peaks and troughs within a paddock. If these variances are averaged, yield is up to 70kg/ha less than even applications of nitrogen.

Summary

Liquid fertilisers provide greater accuracy when spreading. Boomsprayers are equipped with foam markers and increasing numbers now use GPS technology to ensure uniform application. The application of liquids through seeders also provides even application.

Topdressing solid fertilisers can result in uneven application and lost productivity.