

What is the potential issue with broadcast spreading of fertilizer?

Typically a single pass of a broadcast spreader produces higher application rates close to the spreader and lower rates further away from the spreader. Even application across the paddock is achieved by overlapping the spread pattern of the previous run. The distance between machinery runs to provide the overlap is called the bout width.

Uneven application means some areas of the paddock receive insufficient fertilizer and yield may be reduced in these parts of the field, while other areas receive more than the crop requires which may reduce yield, quality and profit in these parts of the paddock while significantly increasing the risk of off-site environmental damage. The effects of uneven fertilizer application over several seasons are compounded when spreading in controlled traffic farming systems (i.e. permanent wheel tracks where the crop zone and traffic lanes are permanently separated).

What is the purpose of Accu-Spread?

The Accu-Spread logo assures farmers and natural resource managers that they are using professional contractors who are applying the correct rate of fertilizer exactly where they want it in the landscape.



What is Accu-Spread?

Accu-Spread is a testing and accreditation program for professional contractors that ensures a spreading machine can apply fertilizer evenly across the paddock – optimising productivity and minimising environmental damage. It allows operators to determine what bout width to drive at to achieve the industry standard for spread pattern which is 15% coefficient of variation (CV) for fertilizers and 25% for lime and gypsum. CV is a measure of the evenness of the fertilizer application rate across a given spread width after overlap has been accounted for. CV is a useful indicator to guide machinery adjustments to achieve uniform spread at larger bout widths. Whilst the CV industry standard may not always produce the theoretical optimum bout width, it is a useful practical guide.

Different fertilizer products have different physical characteristics and so they spread differently. It's normal for the same machine to have different bout widths for each product. Driving accurate and consistent bout widths is critical to achieving an even spread job.

Farmers can have their own spreading equipment tested to help ensure an even spread pattern and optimise the return on their fertilizer investment.

For more information on Accu-Spread including lists of businesses with Accu-Spread certified equipment and Accu-Spread Testing Officers, go to www.fertcare.com.au and click on Accu-Spread.

What can an uneven urea spread pattern cost in a wheat crop?

Independent agricultural economist and modeller, Chris Lightfoot said, “**my analysis indicates uneven urea spreading on wheat can easily result in \$25 - \$40/ha reduction in wheat gross margin.**” This assessment is based on accepted nitrogen response functions, income and expenditure data. Clearly each situation is different, however this work shows the importance of even fertilizer broadcasting.

What are the main factors impacting on spread performance?

• Machine setup and maintenance

- Ensure there is no product build up on spreader components e.g. on spinners, chutes or splash plates. Clean the spreader regularly, both during and after use.
- Check the machine for general ‘wear and tear,’ replacing parts where appropriate e.g. worn or bent spinners and or vanes, splash plates or guide chutes with holes, dents or bent ends. Follow the manufacturer’s maintenance advice.
- Use the suggested spreader settings for each individual fertilizer product as a guide e.g. spinner speeds, gate opening, “drop on point” on the spinner & agitator etc. Check application rates and distribution before using the machine on significant areas.



• Fertilizer product characteristics

- The main product characteristics affecting spread patterns include product density, particle size (mean and distribution) and particle shape.
- Small particles will not travel far off the centreline of a spreader, whereas larger, spherical, denser particles will travel much further.
- Even within a specific type of fertilizer from the same supplier, loads can vary in product characteristics to some extent. A size guide box or particle sieves is a simple way to determine the size distribution of fertilizer particles and is regularly used by Accu-Spread contractors.
- How a machine responds to changes in product is very dependent upon individual machine design elements.

• Environment where the spreading is taking place

- Wind speed and direction in relation to direction of machine travel.
- Air humidity. Some fertilizer types absorb moisture from the air more readily than others.
- Ground conditions e.g. slope and evenness of the surface. Ground slope can influence the “drop on point” on the spinner which can distort the spread pattern or change flow rate. Spreader testing is typically done on flat ground.
- Crop or stubble height.

- **Operator competence**

- Basic fertilizer knowledge: fertilizer types, understanding product labels, bulk density, particle size distribution, Safety Data Sheets, factors which could lead to problems e.g. mixes of fertilizers with very different particle sizes or incompatible mixes and product handling e.g. avoid augers and double handling if possible.
- Spreading skills: Consequences of poor spreading (agronomic and environmental). Awareness of the influence of wind. Choosing an appropriate bout width. Being able to operate to a consistent bout width. Interpreting information to be able to know what settings on spreading machinery are needed for various fertilizers and fertilizer characteristics in order to achieve the correct application and bout width. Adjusting spreader equipment. Factors affecting the performance of the machine over time e.g. fertilizer build-up. Handling spillage.
- Safe driving skills

Preparing equipment for broadcast fertilizer spreading and Accu-Spread Testing

Please check the following before presenting your spreader for Accu-Spread testing:

Ensure there is no product build up on spreader components, e.g. on spinners or splash plates. The pictures below are examples of what to avoid.



Product build-up on splash plate



Product build-up on spinner vanes

Check the machine for general 'wear and tear', replacing parts where appropriate, e.g. worn or bent spinners and or blades, splash plates or guide flutes with holes, dents or bent ends. Follow the manufacturer's maintenance advice. The pictures below are examples of what to avoid.



Worn spinner vane tips



Worn spinner vane tips

Ensure the machinery is operating in a safe manner, e.g. safety guards are in place. The pictures below are examples of what to avoid.



PTO guard missing



Chain guard missing