

FERTILISER SPREADERS



CHOOSING, MAINTAINING & USING



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*For spread pattern test kits, a specialised on-farm calibration
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PART A - CHOOSING A MACHINE

There are several factors that need to be considered when purchasing a fertiliser spreader. For example:

BOUT WIDTH

- ▶ Check the ease and method of bout-width adjustment. Some machines have a maximum bout width of 12 metres and cannot be used for wider tramline widths.
- ▶ If the means to change the bout width is not included as standard, consider the extra costs that may be incurred buying the extra parts required to make the adjustment.

ACCURACY

- ▶ Check that the machine will work with an acceptable level of precision at the bout widths required and with the range of fertilisers normally used. It is most important that the recommended rate of application is achieved.

SPREAD PATTERN

- ▶ The shape of the spread pattern is important because it is that which determines the area of overlap and evenness of spread. The fact that a machine can throw fertiliser over a required area does not necessarily mean that it will give an **even** application.

HEADLAND SPREADING

- ▶ Consider the need for an effective headland spreading mechanism. This may be in the form of a mainframe tilting device, a different disc or different vanes on the disc, or a cut-off or deflector mechanism in the spreading system. Check whether this is built-in or an extra to be purchased.

CONSTRUCTION AND HOPPER CAPACITY

- ▶ Inspect the interior of the hopper to see that it is smooth, well constructed and non-corrodible. Consider the cost of replacement of wearing parts. Check the cost of vanes and disc or spout.
- ▶ Ensure that the hopper capacity is sufficient bearing in mind that wide bout widths and long runs require a large capacity.

WORKING HEIGHT

- ▶ Check the working height of the machine (according to manufacturer's instructions) to ensure that it is compatible with the working height of the tractor to be used and, if PTO driven, check that the PTO shaft can work within its limits of angle at the extremes of working height, in particular for late top dressing. Also, consider whether the machine returns back to the pre-set working height after filling.

PNEUMATICS

- ▶ The distribution of outlets should be sufficiently spaced to give an even overlap at all rates. If deflector plates are turned up, which on most machines is necessary for late top dressing, the spread pattern may be affected by strong winds.
- ▶ Check the type of feed mechanism. It is always better to have fertiliser fed directly into the spreader pipe outlet, particularly if used over undulating ground.

SETTINGS AND CALIBRATION

RATE CALIBRATION

Does not guarantee an even rate of application over the field.
(only the correct amount)

SPREAD PATTERN CALIBRATION

Should be carried out with EACH TYPE OF FERTILISER to ensure an even rate over the field.

- ▶ Check the **application rate** (the flow onto the distribution mechanisms).

Use a rate calibration kit. Check that it is supplied with the machine and is straight-forward and easy to use. Ensure that the lowest rates the machine can apply are appropriate to the bout widths to be used. At wider bout widths there may be a limit to the rate that can be applied evenly. (This can be overcome with some machines).

Tables provided by spreader manufacturers give guidance only to setting up a spreader ready for use. Calibration and tray tests are necessary.



Rate calibration using the manufacturer's rate check kit.

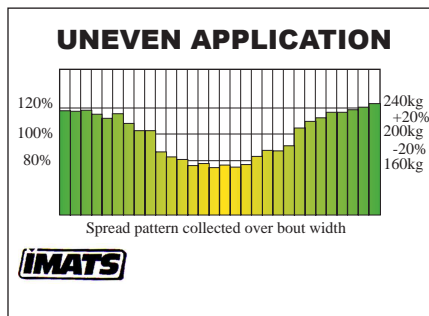


Spread pattern tray testing using a DIY tray test kit (available from IMATS)

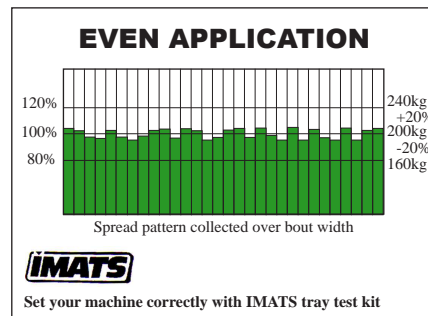
- ▶ Check the **Spread Pattern** (throw from the distribution mechanism). **Use a tray test.** Ensure that the spread pattern will remain the same even when different application rates of the same product are used. If a change in rate alters the spread pattern check how easy it is to re-calibrate the spread pattern. Note, that if the spread pattern is not retained, a further full tray test will be necessary.

A spreader that is set to apply the correct application rate will not necessarily spread the fertiliser evenly and in the right place. Tray tests show where the fertiliser is “thrown” from the machine. The benefits of tray testing the spread pattern are illustrated here:

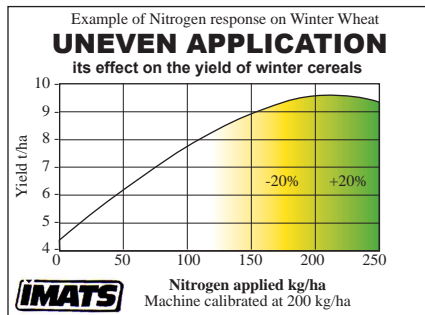
BEFORE:



AFTER



THE CONSEQUENCES:



NOTE: An operators manual should be provided which explains how spread pattern errors can be corrected.

PART B - SERVICING AND MAINTAINING THE MACHINE

Once purchased, it is important that the spreader is properly maintained, e.g.

- ▶ Grease all points.
- ▶ Apply oil, or oil and diesel mix to discs or spreader plates to protect them but never apply rubberised protective coatings as these affect the spread pattern.

REMEMBER:

- ▶ **Before carrying out maintenance operations involving hot work such as welding, ensure that hollow sections and other areas where fertilisers may accumulate are completely free of material. Failure to do so can cause fertiliser decomposition with the evolution of gases which in extreme circumstances can lead to an explosion.**
- ▶ Vanes and discs are precision parts which cannot be welded or hammered to effect a repair: if worn or damaged they should be replaced with manufacturer's parts.

DAILY

- ▶ Wash out after use. Never leave fertiliser in the spreader overnight, it will cake and clog and accelerate corrosion.
- ▶ Check bout width and rate setting (damp conditions will affect flow rate and the spread pattern).
- ▶ Check for wear and functioning of discs, vanes, agitators, spouts and spreader plates and feed roller condition on pneumatic machines. If worn replace with manufacturer's recommended parts.
- ▶ Check spinner speed using an electronic tachometer, or check the tractor P.T.O shaft speed at the recommended engine revs.

PART C - USING THE MACHINE

SAFETY

- ▶ Ensure that PTO safety guards and all other safety guards are in place.
- ▶ Never make adjustments to the machine with the tractor running.
- ▶ Never allow anyone to ride on or in the hopper.
- ▶ Never push damp fertiliser through: agitators can trap feet and hands.
- ▶ Never work underneath an unpropped hopper or machine.

SPREAD PATTERN CALIBRATION AND MACHINE SETTINGS

Check the spread pattern (tray test) throughout the season:

- ▶ Every time a different type, brand or batch of fertiliser is used.
- ▶ When using headland equipment.
- ▶ If spreader has been serviced or parts replaced.

Appearances can be deceptive. All these products produce a different spread pattern. Each product should be tested for evenness of spread.



Note: A full set of calibrated trays covering the full width should be used to give the lapped spread pattern. Leaving gaps between trays can give misleading results.

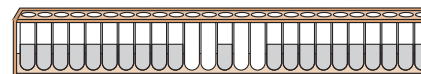
Fertiliser should not be spread in windy conditions.

Consider purchasing your own tray test equipment and ensure operators are properly trained.

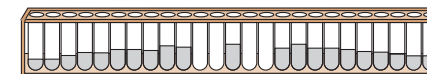
ACHIEVING A GOOD OVERLAP PATTERN

- ▶ Several factors can distort the spread pattern from the ideal. Some examples are given below of the results of a fully lapped tray test.

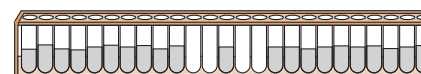
Target Ideal



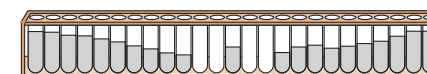
Too Narrow



Acceptable



Too Wide



Spread patterns should be tested using a full set of trays and by carefully following instructions. Adjustments should be made as necessary according to machine and test kit manuals.

Working Height.

Set the working height taking account of the height of the crop, remembering also to allow for any depression of the tyres under a load, the extra depth that the tractor wheels might sink into the soil and the depth of tramlines.

Working Angle.

Check that the machine is level from side to side and set at a front to rear slope as specified by the manufacturer for the material and bout width being used.

PTO.

Check that the recommended PTO speed selected at the tractor actually matches the PTO speed at the shaft. Also ensure that the tractor tachometer is reading correctly. Alternatively, if systems are hydraulically driven, check the disc speed.

Forward Speed Selection on Gravity-Fed Spreaders.

The forward speed selected should allow the rate of flow of fertiliser from the hopper to be maintained regardless of the terrain.

IN THE FIELD

Headlands.

- ▶ With most machines of the spinning disc type, fertiliser is thrown backwards the same distance as it is from the centre to one side. Therefore, care should be taken when going in and out of work on headlands to avoid either overdosing in the field or putting fertilisers into hedges and watercourses.