



Eyre Peninsula
Agricultural Research Foundation Inc.

Making the change to fluid fertilisers - Baldock

Case Study May 2015

KEY POINTS

- Yield increases with fluid fertiliser cannot be expected on certain soil types.
- Fluids allow flexibility to strategically and easily apply trace elements.
- Buffering of water is important when mixing products.
- Extra labour is required in order to mix and transport fluid products.
- Logistical challenges at seeding surround the need for an additional truck to transport fluids.

Background

The Baldocks manage 5600 arable hectares north west of Kimba near Buckleboo. After getting out of sheep in 2009, they crop between 4800-5000 hectares annually.

Why the shift to fluids was made

Following three years of drought and the application of blanket rates of fertiliser, in 2009 the Baldocks decided to try variable rate technology for both fertiliser and seed. By applying no fertiliser on the heavier soils and increasing rates on better growing soil, they felt that gross margins could be improved. In addition, using a no-till system and with zinc responsive soils, the Baldocks felt that spraying zinc on the soil surface was not a good option, and that putting it down the tube would be better.

The Baldocks were aware, through their involvement with the Buckleboo Farm Improvement Group (BIG FIG) and SARDI Minnipa Agricultural Centre, that their soils were not responsive to liquid P like grey calcareous soils.

The 2009 season was profitable and provided the opportunity to purchase a new air cart for 2010, which was when they started to put other nutrients down the tube.

"The shift to fluids allowed us to more strategically target our trace element applications."

FAST FACTS

Farmer: Graeme and Heather, and Tristan and Lisa Baldock

Location: North-west of Buckleboo, SA

Property size: 5600 hectares

Soil type: Red-brown sandy loam, grey sandy loam

Avg. annual rainfall: 295 mm

Avg. growing season rainfall: 210 mm

Main crops and yields: Wheat 1.4 t/ha, barley 1.5 t/ha, field pea 0.8 t/ha and canola as an opportunity crop



Tristan Baldock, Buckleboo

The fluid system

The Baldock's unit was purpose-built with LQS systems (liquid injection pump and control modules that can be retrofitted) on both the air cart and seeder bar. They initially used only zinc sulphate mixed with water and the system performed well. In 2011 the Baldocks began adding UAN and fungicides. They occasionally had issues with some mixes turning to 'sugar' and blocking filters and terminal jets, so they changed to a capillary-type system, also a LQS product. This was done at the same time as upgrading the seeder bar to a Seed Hawk. All cereals and canola are sown with fluids. The Baldocks also conduct their own on-farm trials comparing crops with and without fluids.

While UAN is more expensive per unit than urea, the Baldocks feel it better suits their system.

"As almost continuous croppers, nitrogen is an issue so we've elected to use a base fertiliser of DAP and support it with extra UAN for more nitrogen."

Advantages

The fluids system allows the easy application of fungicides and the Baldocks have found that not having to spray for rust in some years has been an advantage. The use of fluids has allowed the easy and efficient application of zinc, a deficient trace element in the Baldock's soil types.

"We now apply zinc every year whether we need it or not because it is cheap and easy. This is maintaining a good level of zinc in the soil."

Learning points

Like any system change, there can be initial issues that contribute to the learning experience. For the Baldocks, most of these related to compatibility issues with mixing. They say when using zinc on its own, the system worked well and was simple.



Full sowing system set up



Sowing point



Fluid cart and seeder box

It wasn't until they started mixing UAN and fungicides that they began to have problems.

"In the past we have had all sorts of trouble with mixing products resulting in blocked filters and nozzles. Since then we have learnt about buffering the water first, but it would have been good if we had researched that earlier!"

Agitation and ensuring the fluids are thoroughly mixed can be problematic. However, one of the biggest disadvantages of the Baldock's system is that when the rate of fertiliser is varied, the rate of fungicide and the trace elements is also varied, meaning rates could not be changed independently. Having only one solution on board has caused them to investigate how they can adapt the system.

Other drawbacks Graeme identified to the use of fluids in their farming system included:

- The expense of using UAN (per unit) compared with urea.
- To keep the supply of product up to the seeder at sowing time requires another labour unit, equivalent to at least a 0.5 full-time role.
- Logistics can be more difficult to manage, such as when needing to shift the extra truck in the paddock.

Future plans

The Baldocks are looking at splitting the application of fluids, particularly when using fungicides, to ensure that half is pushed below the seed and half is applied on top of the seed. This will mean adjusting the delivery system by splitting the line and putting another delivery hose on each tyne. However if this cannot be done simply, a duplicated system would need to be set up on the bar, resulting in further costs. Even so, the Baldocks will continue to use a fluid system.

"Now the system is set up and infrastructure is in place we just need to do minor modifications to improve efficiency. This year we have added another cartage tank and 'quick mix' hopper to the truck and greatly improved our agitation system on the air cart. We anticipate new insecticides, fungicides and fertiliser products being available in the future."

Further information

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