Chaff lining for weed management at harvest

Location: Wharminda

Region: Eastern Eyre Peninsula

Industry: Continuous cropping

Issue: Herbicide resistance of weeds

Key Outcomes: Efficiencies made using a chaff deck to control weeds at harvest

Ian with the Emar Chaff Deck demonstrating how easy it was to install.

Last year's chaff lining

Background

Ian and Jackie Noble have cropped continuously for 15 years and have started to notice some herbicide resistance to the Group A and B herbicides in their system. Budgeting they could not justify the use of high priced chemicals in what had in recent years become year round weed control.

Windrow burning over 5000 ha three years ago was hard yakka and resulted in loss of vital soil nutrients, and had left Ian wanting to try something different to make efficiencies within his cropping enterprise.

The project

In the first year Ian set about researching online, via Twitter and reading through results of research conducted by GRDC and noticed most relevant information was coming out of Western Australia. Chaff lining appeared to be an attractive weed management tool. Ian proceeded to outline the pros and cons of adopting chaff lining:

Positives

- Low cost weed control option
- DIY options for making baffle plates at low cost
- No burning needed in the system (however the system can be reset in third or fourth years through burning as needed)

Constraints

- Weed seeds still stay in the paddock (longer lived seedbank)
- Residue will build up over time
- Not a lot of science backing for chaff lining effectiveness
- Better suited for controlled traffic situations
- Potentially sowing into high residue levels
- More suited to tyne seeders than to disc seeders.

In 2015 Crossville Agricultural Bureau organised a trip to Western Australia with support from Natural Resources Eyre Peninsula. Chaff lining was something most land manager's participating in the trip wanted to know more about. This trip highlighted to Ian that it was a path he would like to head down for his property. He purchased an Emar chaff deck through Primary Sales at a cost of $14,000, which included all belts, monitors and cameras.

Ian demonstrated how easily the chaff deck was to install on to the back of a header. It is ideal for use on most broad acre farms, especially those practicing controlled traffic farming.

Ian noticed that there was minimal additional cost to run the Emar Chaff Deck with only a small loss of horsepower.

"In the first year of using this unit the barley was slightly wet and too thick and resulted in blocking up the baffle plate (which separates the chaff and weed seeds).We had to adjust the home made baffle plate to allow for moving the additional bulk until the cereals dried out," Ian said.

Outcomes

Over the past two years Ian noticed that using controlled traffic lines (CTL) with chaff lining results in lower weed germination, however, he's now reaping crops closer to the ground, to get pick up more weed seeds. Stones are the main down side to this approach.

Chaff lining is showing positive results for rye grass and brome grass control.

Ian explained that using the chaff deck puts down layer upon layer of chaff and weed seeds, thereby preventing weeds from germinating as the weed seeds rot due to the trapped moisture.

Ian is hopeful to achieve a reduction in weed seeds to approximately 10% of the paddock, making it easier to concentrate follow-up weed control efforts into a much smaller and targeted areas.

It's envisaged that the bulk of weed seeds will be choked out by wheel compaction and future layers of chaff. Newly germinated weeds can then be targeted with a higher dose of herbicide in the narrow controlled traffic lines.

One of Ian's main concerns is: "When stopping in a paddock, for whatever reason, it is easy to block the spinners in the header. This creates basically a bale that is hard to access when clearing the blockages."

The future

Ian is planning on conducting a windrow burn in the third year of his rotation to reset the system however he is investigating a number of alternative option.

As part of his crop rotation, lentils and peas will be crop-toped, which will reduce the number of weeds. In doing so he may be able to avoid burning using this approach.

"The next step in my system, if needed, would be to purchase a Harrington seed destructor, which would mean that there would be no need for an autumn burn. This strategy will help maintain soil cover and there would be o be little to no loss of nutrients from burning the paddock," Ian said.