Hanging out for a Harrington!

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Pinnaroo farmer Wade Nickolls has made some significant progress on weed control using a chaff cart. However, problems with burning chaff dumps have caused a rethink of his strategy. The plan is now to acquire an integrated Harrington Seed Destructor as soon as they are available with windrow burning filling the gap in the interim.

Wade, his brother Chad and their families are the fourth generation of Nickolls to farm this still expanding property. Their father Jeff remains involved in the business. Cropping and hay production are the main enterprises with livestock greatly minimized these days. Wade says that it would be 'an easy life' if they could just grow wheat every year but "we have an emphasis on trying to remain sustainable and that means not just trying to farm straight out of a chemical drum. We want other options in our rotation to keep the weeds at bay."

The Nickolls crop 4500ha of mainly sandy loam soils about 15km south of Pinnaroo in 330mm annual rainfall (250mm GSR). They concentrate on making the most of all of their moisture and this is reflected in good yields.

Rotations are not fixed but the aim is to grow a legume or canola followed by a couple of cereals and then back to hay, legume or canola crops. Paddocks are treated according to their individual needs. Regular contracts for export and domestic hay help to keep paddocks free of troublesome weeds.

Machinery

As far as machinery goes, Wade says, "we like only having one of everything but everything has to do more hours." Their seeder is a 16m Horwood Bagshaw PSS tyned machine which runs 24 hours a day when possible. The Nickolls were interested in a disc but having a variety of soils including some difficult non-wetting white sand made justifying two seeding machines problematic.

The John Deer 4940SP sprayer is supplied from a batching tank on a truck. A chaser bin and a couple of trucks keep the John Deere S680 with a 40ft (12m) draper front busy during harvest.

Haymaking gear is often second hand to avoid overcapitalizing. "We like to do it all ourselves because as soon as you start paying contractors you are starting to throw your profits out the door, we reckon. We do use a few other people to cart hay but we cart most of it ourselves."

Chaff cart

As a means of incorporating additional mechanical weed control to complement the frequent use of chemicals, the family used a Riteway chaff cart for more than four years towed behind a 9760 John Deer header.

It was an older style machine with a small auger to take the chaff off the sieves into a pulley driven blower directed into the cart. “It used to mash it up pretty well even though today there are better belt driven designs which leaves chaff coarser for a better burn.”

“You don’t clean a paddock up in one year but over a period of time we could see that our paddocks were definitely getting better.“

Why a chaff cart?

The Nickolls decided to purchase a chaff cart originally because they were concerned about their reliance on chemicals. “All we seemed to be doing was farming out of a drum and we just hated the idea of not having a mechanical way to deal with weed seeds.”

They avoided burning paddocks when they could but getting rid of some chaff and some weed seeds occasionally seemed like a reasonable option. The sheep were gone, hay cutting had been introduced and “we just needed one more tool to keep the grass weeds at bay.”

Stubble height / header efficiency

In order to capture the most weed seeds, stubble was often cut as low as 10cm. The straw does go back on the ground but the process through the header can slow harvesting significantly. The same year that the chaff cart was introduced, Wade bought a chaser bin which offset the slowdown from the chaff cart.

“Now if we were buying a chaff cart it would just make sense to purchase a bigger capacity harvester because it does take significant horsepower to process the amount of straw you need for good weed seed collection. Go bigger than you think you need at the time.”

Was it working?

Wade says that it was hard to quantify how effective the cart was but they could see that as long as they got to the paddocks before too much rain had caused the seeds to contact the ground it was working. “Basically, if you got the seeds in the front of the header you could clear out the grain and it would go in the chaff heaps.”

“Our weed numbers were definitely declining. We were probably growing three to four cereals with a chaff cart and getting away with it. But it still probably worked better where we grew enough break crops or legume crops to help control the weeds as well.”

"Even if it were catching 5-10% seed then it's better than nothing. Realistically though, it was probably catching 70-80% of the seeds. Every seed you catch is one you don't have to treat with chemical in the paddock. The cart definitely works!"

What weeds was it best on? Worst?

Ryegrass was the main target weed for the cart and it worked well on that species. Wade says that the cart was very effective on brome grass too because it is so easy to thrash out of the straw, provided you can get it in the header front.

Barley grass, which is not a big problem on the property, is a difficult one for the chaff cart because "it's gone before you get there."

"You still get losses of self sown grain out the back of your header which isn't good because that obviously grows in your paddock the next year. It's important to set the header up correctly."

The Nickolls don't have radish on the property but Wade is sure the cart would be effective on it. They are already finding it works on some Group B resistant turnips, which are starting to appear.

"Chaff carts are not bullet proof but I figure if you are catching more than you are leaving behind you are gaining a bit of ground, aren't you?"

What did you do with the residue?

Some of the residue from the cart was fed to stock but as numbers dwindled less was required and Wade says, "It was hard work." Most of the chaff dumps had a fire break put around them and were left until autumn to try to burn them.

Dropping them in heaps at harvest time was pretty easy but getting them all burned without neighbors getting upset and risking fires getting away was starting to become, "a logistical nightmare."

"We were the only ones in the district burning rows of heaps. Sometimes the wind would suddenly drop off and all of a sudden it would just go straight at someone's house. People would get upset and I could see their point of view. It became a social issue and you don't want to annoy your neighbors that much."

When it came time to upgrade the header they sold the old one with the cart. Thinking about the problems with burning chaff dumps and the likely cost of a larger capacity cart hovering around $80k gave Wade cause to reconsider his strategy.

Harrington Seed Destructor

"Although it would have been difficult logistically, it would have been ideal if we could have picked that chaff up and put it through a big mill to smash it up, destroy the seeds and then return it to the paddock. Essentially, that's what the Harrington Seed Destructor will do."

Whether it is a trailed behind unit or one integrated with the header, the Nickolls see it as the next step to help control weed seeds mechanically. “We don’t see being able to change our chemical usage at all, especially the first few years because the weeds have plenty of generations in the soil. You can just deal with it at harvest time and you have finished, you’ve destroyed the weeds and you don’t have to worry about burning and all those jobs in the autumn when it starts getting busy.”

“If you only have a couple of paddocks it’s ok but you start burning thousands of hectares then all of a sudden it’s a big job and you might get a rain at the wrong time making it hard to deal with. With the Harrington you can just deal with it at harvest and it’s a job crossed off. We see most of our gains by trying to be more efficient and it’s just another way of doing that.”

Another advantage of the HSD is that the organic material does not go up in smoke. It all goes back on the paddock. Even the potentially self-sown grain seeds are rendered non- viable and become less of a problem for summer weed control and the following crop.

“Our ideal aim is to get a seed destructor inside the harvester and I know they are working on them. We just hope they are affordable when they are released. If they are going to be half the price of a new header that is pretty unachievable but if they can get them down to a reasonable price then it will be a bit silly not to have one in your harvester.”

Wade suspects it will still be 4-5 years until harvester integrated HSDs are commercially available. “It would be great to see the whole production of them fast forwarded a bit because I see them as one of the most innovative things to come along for farmers in a long time. The quicker they can come out for everyone to use, the more sustainable farming is going to be in Australia.”

Interim – burning windrows

The wait for the Harrington and the risk of burning chaff dumps has left Wade with the decision to burn windrows for the next four to five years. Unlike chaff dumps, windrows burn much more quickly. It takes about three hours to burn windrows in a 200ha paddock compared with three days to burn the dumps from the same paddock. “Once the windrows are out at night you can forget about that paddock but you really have to keep watching the chaff dumps.”

“Because the windrows burn quickly the smoke isn’t as much of a problem. Of course, it burns all the straw as well and I don’t like the idea of that but I just see it as a means to an end at the moment to keep these weeds under control. Our soils are getting better but I do like to leave as much stubble behind as we can.”

Inducing population of short or sprawling weeds?

"A ryegrass plant is adaptable in that it will go along the ground if it has to and try to avoid a cutter bar! We are going to select for shorter and early maturing ones, aren't we? The more we can deal with the better and realistically, if we can get 80% of the grass in the front of the header all the time, even after rain, then that last 20% we will deal with in other ways. Weed populations are always a numbers game. If you only have 20% to deal with you can probably do a better job."

Wade says that chemicals and hay cutting are good ways to deal with that last 20%. He sees hay as more effective than livestock for controlling weeds. "We spray under the cutter bar with glyphosate and again later on if it shoots back. As I see it, if you grow these weeds you might as well make hay and get paid for them! If you can make money out of a problem, it's a win isn't it? Every plant you sell is one you don't have to deal with next year."

Is mitigating viable seed set in the paddock a cost effective strategy?

In the end, as with most things in farming, it comes down to dollars and cents. The Nickolls paid around $35k for their chaff cart but Wade says if they had to spend say, $250k for a Harrington he's not so sure he would.

"It's going to take me a while to justify that and pay it back. If it's under $100k over 5-10 years then that seems like a good investment. You're never going to really quantify it, you're just going to have to justify it to yourself and say 'righto, this is the way we want to go'. If they price themselves out of the market, farmers won't be able to afford them. A lot of people have two headers. Imagine if you had to go and buy two Harringtons; half a million dollars sitting on the back of a header used for four weeks a year!"

"That is why windrow burning has taken off the last 3-4 years, because it's so cheap. You just have to make yourself a shoot out the back of the header and burn the rows later on. If they could get an integrated destructor priced around $100k – I think that might work. If you had two years of farming left you're not going to think about it but if you are looking at farming for 20 years I can see that as a worthwhile purchase."