Trevor & Leanne, Ian & Blythe Shadbolt

Ryegrass control reinforces importance of narrow windrow burning at harvest

Owners:	Trevor & Leanne and Ian & Blythe Shadbolt
Location:	Mukinbudin, Western Australia
Farm Size:	6085ha 90% cropping 10% fallow/sheep (sheep/cattle in feedlot situation)
Annual average rainfall:	275mm
Soil types:	Salmon gum, gimlet (clay loam)
Crop program (2017):	Wheat 3800ha, 550ha canola (reduced program due to seasonal conditions)
Typical Rotation:	Continuous wheat and as weed burden increases rotate to fallow or canola

Harvest weed seed control (HWSC) has become increasingly important for Ian and Trevor Shadbolt who farm north of Mukinbudin, in WA's eastern wheatbelt.

IMAGE: The Shadbolts' narrow windrow chute

Ian and Trevor Shadbolt began narrow windrow burning about eight years ago and after 3-4 years noticed a definite decrease in ryegrass numbers. In 2014 they opted to not use HWSC and quickly noticed that weed numbers had built up again and were once again putting pressure on their cropping program.

Two years ago, they began narrow windrow burning again with the view that HWSC control is a long-term strategy, something that you do every year. They now narrow windrow burn every crop harvested, with annual ryegrass the main target species. In years with dry starts, HWSC has become even more critical as weeds germinate later and often outside the activity of residual herbicides.

The narrow windrows following harvest

Modifications made to the windrow ensure that as much weed seed as possible is collected and deposited in the narrow windrow

In this low rainfall environment two things are critical to the success of their farm business. Dry sowing (to get a large area of crop in with one seeding machine at the right time) and lots of wheat.

Reducing the weed burden has definitely meant that paddocks are able to be sown to wheat for longer – their highest gross margin crop. It has also meant that they are less inclined to return some paddocks to pasture for livestock because the weed burden is lower and given the continuous cropping rotation over most of the farm, there is less feed available.

The Shadbolt's ideal scenario is to harvest paddocks with a higher weed burden first to collect weed seed before it sheds, however with a large program, this is not always feasible.

Harvest height has decreased from 20-25cm above the ground in previous years to now as low as possible (<10cm) to capture weed seed. The challenge is to capture ryegrass that grows in a prostrate fashion under low biomass crops or where wild oats shed.

Next year they intend to modify the header front to have a narrow knife guard and extended fingers to try and capture more biomass. This was something they had installed on a previous header front and after a season and a half with the current header and front, is something they feel will increase capture of weed and grain heads.

They are unsure of what else can be done to capture ryegrass that is below the header front. Wild radish seed capture is easier because it tends to stand up more than some of the grasses. Harvest speed is a balance between efficiency, sieve losses and collecting weed seed.

In low yielding crops, less than 1t/ha, they have noted that ryegrass can be hard to collect with the header front because it can grow sideways (prostrate). This prostrate growth habit is not necessarily always a genetic trait of their ryegrass, rather it is a natural response of most grass weeds when growing in low competition situations.

To improve crop competition and force ryegrass to grow upwards, they would like to consider a 10-inch row spacing (currently 12 inch) to increase crop competition. Trevor is confident that they are capturing most weed seed in the header comb, but he is concerned about making sure that weed seed is contained to the windrow so that it can be burnt.

A close up of the windrow chute

Harvesting at Shadbolts

They have found that weed seed will germinate in the crop in a 1-2 metre strip each side of the windrow. As a result, they have attached some rubber to the bottom of the chute to prevent weed seed getting caught in a cross wind and blowing away. Critical to weed control when windrow burning is burning windrows well.

Trevor and Ian are careful not to graze paddocks too hard and to burn before summer rainfall if possible.

Their best success burning has been to light up every 200m across the windrows, allowing the burning to be complete in a timely fashion while favourable weather conditions persist. The family has considered a chaff cart or baler and having the dual benefit of HWSC and the ability to use the chaff and straw in the feedlot. However, in the longer term will be watching the chaff decks and Harrington Seed Destructor and Seed Terminators closely. One thing is for sure, HWSC is part of their farming future. It is not a matter of will they use HWSC, it is a matter of which tool they will choose in the future.

The windrow chute with the narrow windrow formed.