

Precision Agriculture in the paddock – grower experience

Darren Jensen, 'Grandview'

Mt Murchison, Queensland

Farming area: 790 hectares (ha) cultivation and 230ha grazing. Darren also share farms 120ha at Mt Murchison, 550ha at Jambin and 560ha at Thangool. Total cultivation is 2020ha.

Crops: Sorghum and mung beans in summer and wheat and chickpeas in winter when opportunity arises.

What changes have been made?

Prior to investing in a WeediT, chemical was one of Darren's largest expenses. 'I was using a CaseIH Patriot 4430 but had seen how much chemical could be saved by investing in optical spot spraying technology.'

'I looked at having Weedseeker 2 sensors retrofitted to my Patriot sprayer. This would have worked in theory as it would have been plug and play into the CaseIH Pro 700 monitor. However, this would have meant we would have had to rely on AutoBoom, an automated height control system that keeps the boom at optimal height. This system isn't reliable in contoured country on a suspended boom and so we needed a ground following boom as the cameras need to be between 900mm and 1100mm from the ground to be most efficient,' says Darren.

Darren also looked at a secondhand 24m WeediT, however, this wouldn't line up with his controlled traffic layout, with the first run in each paddock being only twice the planter width. 'The 24m width also wouldn't have allowed us to get over our country in the required time and there were no other secondhand machines available.'

As a result, Darren has bought a 36m trailing Croplands WeediT Quadro.

The WeediT has a 6000L main tank which is used to apply a residual whilst the smaller

1100L tank can be used to spot spray simultaneously as there are two separate pumps and two lines.



Figure 1: Croplands 36m trailing WeediT Quadro. Photo: Darren Jensen.

Benefits

'After investing in the WeediT we have reduced chemical application substantially as we are only spraying weeds and not bare dirt, sometimes spraying as little as 6% of the paddock.'

Darren's WeediT cost him \$320,000 and he estimates on chemical savings alone payback will take approximately 3 years with the added advantage of being able to use different modes of action on hard to kill or resistant weeds which are too expensive to use in a blanket spray. 'It's not just great for the pocket, but for the environment too' says Darren.

Using round figures, at 2L/ha x 2000ha x 5 passes x \$4/L = \$80,000 using a basic glyphosate spray with no other additives. Using the WeediT means that Darren only spends \$4,800, saving \$75,200 as he is only spraying 6% of his paddock.

Using a more realistic spray mixture such as propaquizafop for Feathertop, double knocked with paraquat as well as 2,4-D amine, fluroxypyr, metsulfuron or other mixtures depending on what weeds are being targeted, Sulphate of Ammonia, Liberate and so on, an average cost including one double

knock would be \$18 per application. This is a cost of \$180 000 where Darren estimates he sprays 10% of the paddock on average, meaning that it only costs him \$16,200, saving him \$16/ha.

The WeediT has four nozzles per camera at 20cm spacings along the boom. This means that larger weeds are seen on two cameras. This optimises the spraying zone and applies chemical at different trajectories and at higher rates, therefore spraying larger weeds with 250L/ha instead of 100L/ha. However, on other booms there is sometimes only one camera controlling one nozzle, meaning the bigger weeds don't get as much chemical applied, resulting in poorer control of larger weeds.

Issues

Darren has not yet had any issues with the WeediT, however, there have been some challenges.

'To achieve the best savings in chemical you have to be in the paddock as soon as possible to target weeds when they're small, meaning you are in the paddock more frequently,' says Darren.

As well as this, the WeediT can only travel at 25kph on the road and 15kph in the paddock whereas the Patriot does 55kph on the road and 25kph in the paddock so it takes longer to complete a fallow spray than it used to.

One problem Darren has found is that the boom cannot be lifted over shrubs or other small obstacles in the paddock. In some instances, he has had to think about other ways of weed control in these areas.

Future opportunities

Darren is not planning any upgrades yet, however, the WeediT has an extra blanket line so he can use the 1100 tank for spot spraying whilst applying a blanket spray with the 6000L tank. Darren is planning on trialling this after summer harvest this year.

Recommendations

'It is slower than a self-propelled and targeting weeds before they get too big will mean massive chemical savings, so don't buy a smaller unit if it won't allow you to get over the country quick enough.'

Ground following booms are prone to cracking and other damage in very rough ground conditions.

'If you don't have contour banks, but do have washouts, I think a suspended boom would be a great option.'



Figure 2: 36m trailing Croplands WeediT. Photo: Darren Jensen.