

## Precision Agriculture in the paddock – grower experience

### Ray Wilkie, 'Wilco Farming' Biloela, Queensland.

**Farming area:** 1500 hectares (ha).

**Crops:** Cotton, Mungbeans and Sorghum in summer and Wheat, Barley and Chickpeas in winter when opportunity arises.

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#### What changes have been made?

Ray was using a John Deere 4940 self-propelled sprayer in his weed control program, however with a run of dry years it was becoming uneconomical to spray low weed populations with a blanket application.

As a result, Ray was spraying less frequently, meaning the weeds present were larger and more mature, requiring an increased amount of herbicide to control them. Hard to control weeds such as Feathertop Rhodes grass were not being effectively controlled with this approach and relying on the same chemicals repeatedly caused the Wilkie family to become concerned about developing herbicide resistance.

To manage these problems, Ray began looking at optical spot spraying technology.

'We looked at the Weedseeker technology, however they only retro-fit the technology and don't do standalone machines. I didn't want cameras on the self-propelled as I don't believe you can keep the boom at a consistent enough height to keep the cameras accurate,' describes Ray.

As a result of this, at the end of July 2019 Ray purchased a 24m Croplands WeediT with red light technology. From his research he found that it best suited his needs and was available as a standalone rig. Ray still uses his John Deere 4940 for blanket and in-crop sprays.



Figure 1: 24m Croplands WeediT with red light technology. Photo: Ray Wilkie.

#### Benefits

The biggest benefit Ray has seen since purchasing the WeediT has been the savings made in chemical, where Ray has cut back to 10% sprayed area in his paddocks. However, this hasn't resulted in a 90% saving due to the use of more expensive chemicals.

'We use about 20-25% of what we used to use, and it is doing a better job. Not only this but by diversifying our chemicals we are hopefully reducing the likelihood of resistance.'

In an 80ha paddock spraying glyphosate and fluroxypyr with water conditioners and adjuvants Ray calculated that a blanket spray application would cost him \$1500, based on average prices. In comparison, the WeediT allows him to reduce his application volume to 40L from 160L of glyphosate and from 32L to 5L of fluroxypyr. This reduces his cost to \$315, which is a saving of \$14/ha.

As well as this, the cameras are mounted 1.1m high and the nozzles are spaced 650mm apart.

'The ground following boom allows the height to be controlled so there is little variation,

allowing the cameras to stay consistent the whole time. One camera controls four nozzles, meaning that larger weeds are picked up by two nozzles, instead of one so that 200L of chemical is applied instead of 100L.'

The WeediT cost him \$220,000, where Ray estimates that the payback will be in 2-3 years just in savings made in chemical costs if he was to do 5-6 sprays over a year across the whole property.

## Issues

So far there have not been any issues with his WeediT, however Ray has found that trying to work out how much chemical to put into the tanks without having any leftover at the end of his spray has been challenging compared to preparing a blanket spray application.

As well as this, Ray has found that it can be harder to judge the ends of the boom and as there is no breakaway section like a normal boom the damage can be worse if you hit something. As well as this, the WeediT can't be lifted over fences or obstacles. Ray has said that it also takes some getting used to when folding the boom as 'the ground following booms can't fold into cradles like regular booms.'

Ray has also done some contract spraying with his WeediT in sorghum stubble and had to adjust the sensitivity back as there was some misfiring due to shading in the stubble. However, he has not found this to be an issue in his wheat stubble. He believes that mounting the cameras in the centre may resolve the issue further.

Ray said that not having flow rate control means that he can only spray at 14-16km/hr with the WeediT, which is slower than their self-propelled sprayer they use for blanket spraying. Spraying at more than 16 km/hr

means that pressure needs to be manually increased to maintain output.

'The monitor is also very basic and doesn't have coverage maps so you have to manually turn off the spray on the headlands, otherwise it will spot spray what has already been done,' says Ray.

## Future opportunities

Ray is considering trialling different chemicals in his fallow sprays and is interested to see if he can use alternative single knock herbicides to control Feathertop Rhodes grass.

He would consider upgrading to 36m as it would allow him to drive on his tram tracks on the headlands instead of on the guess row which reduces extra unnecessary tracks. The main reason he purchased the 24m was because it was a demo machine available to be delivered immediately. Ray would also get the blue light cameras to stay up to date with the latest technology.

## Recommendations

Ray suggests that if you are looking at purchasing a WeediT, 'consider going the 36m as it covers more ground as you can't go as fast in the WeediT as you can in a self-propelled sprayer.'

As well as this, he recommends not getting a dual boom.

'The idea is to put out a residual herbicide, like Dual Gold, whilst spot spraying but from my experience it antagonises most knock down herbicides and should be applied in a separate application. As well as this, for the extra cost of a dual line you are not going to do a blanket spray if you have a self-propelled that is faster and more comfortable,' says Ray.

