

Wide Open Agriculture – Assessing Crop Rotations



The Customer

Wide Open Agriculture (WOA) is an ASX-listed company with a mission to cut the carbon emissions of food production. It works with local suppliers who use regenerative agriculture to create premium beef, lamb, poultry and pantry staples.

The Challenge

After engaging Downforce Technologies to complete soil organic carbon (SOC) monitoring on a number of its supplier farms, it wanted to know more about the impact of crop rotations on carbon levels. Based in Western Australia, it was particularly interested in water retention.

“The more organic carbon you have in soil, the more water holding capacity you have,” says Craig Pensini, Impact Co-ordinator at WOA. “We go through these long dry summers, and the more water you can hold in your soil when it rains, the better for those dry periods.”

The first Downforce SOC assessments showed how land management practices had increased carbon levels on WOA’s farms, which spurred it to look at other farming areas and partners, and ways to further improve land use.



The Solution

As part of this process, WOA asked for an assessment for McAlpine Farms, in the northern wheat belt of Western Australia. McAlpine grows Australian sweet white lupins in rotation with cereal grains and canola, and WOA wanted deeper insight into the impact.

While lupins fix nitrogen, they are also recognised as useful for improving the soil’s general health. It was hypothesised that soil carbon levels would increase in the year lupins were grown or in subsequent years.

Downforce developed a digital twin of McAlpine Farms to evaluate the SOC storage and, combining this analysis with annual cropping and paddock data, created a tailored assessment showing the impact of rotations from 2017-2022.

The Result

WOA could see that paddocks where lupins were grown showed a small but consistent increase in SOC, and by assessing the crop rotations across the whole property they were able to identify the impact of other land management practices on carbon levels.

They found SOC increased in paddocks where canola rotated into pasture, barley was rotated into barley, and canola was rotated into lupin. These findings inspired the company and their farmers and they have continued to use Downforce’s web application to monitor SOC, giving them hard numbers to improve their planning and decision making.

“If you have an interest in knowing what’s going on below the soil surface, if you’re really keen to understand how you can monitor improvement within your soil and your soil health then using Downforce Technologies is a really, really good first step.”

Craig Pensini, WOA