



CASE STUDY

AVOCA



Property Profile

Name: Craig, Donelle & Nathan Forsyth

Annual Rainfall: 400 mm

Soil Types: Sand

Enterprise: Beef Cattle

Background

'Avoca' is a 3600-hectare property owned and operated by Craig, his wife Donelle, and their son Nathan. The Forsyth's run a beef breeding and background program on Avoca.

The family, who have been farming at Avoca since 1978, operate a breeding program with Angus cross Black Simmental cattle, while the rest of the operation consists predominately of backgrounding pastoral cattle.

The Forsyth's are major advocates for sustainable and productive farm management, and are always interested in learning and trialling new ways to improve their farming operation.

Avoca, in the shire of Irwin, is one of the six farms that soil sampling was completed on through this project.

Soil samples

Through the CSBP NDVI system, the Mingenev Irwin Group identified four focus areas across two paddocks at Avoca. For both of the paddocks, these areas were recognised as the low and high areas of production.

At each one of the four sites, multiple cores were taken to a depth of 60 cm. These were then compared to one another to identify the constraints that the soils held.

Each site was tested using a full comprehensive soil test in the top 10 cm, and standard tests at depth, mainly exploring pH, Nitrogen, Phosphorus, Potassium, and Salinity.

The Forsyth's, when asked what their main area of issue for production was, indicated it was decreased pasture growth and diversity due to soil constraints. Craig said they consider it to be a major problem on their property and '*one of the biggest drivers of production loss*'.

Throughout the 2023 season, after the initial soil samples were taken, the Forsyth's did not make any changes to their system, and did not apply any fertilisers or soil conditioners.



Results from the samples

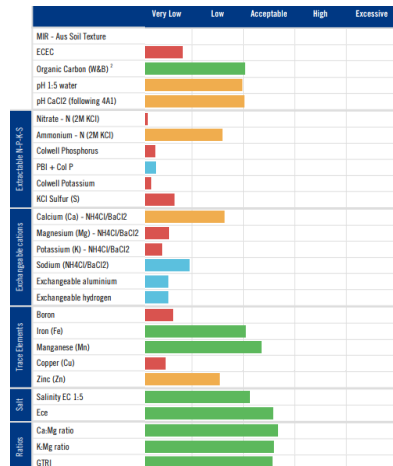
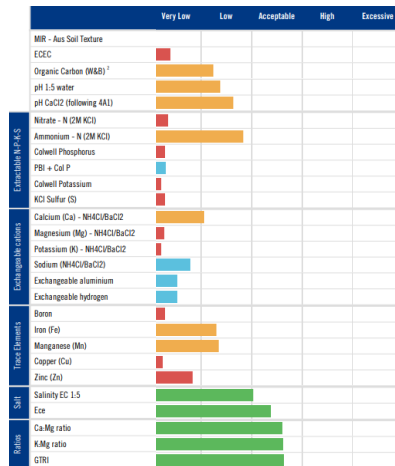


Figure 1 & 2: Results from Site 1, 2023 (left), compared 2024 (right)

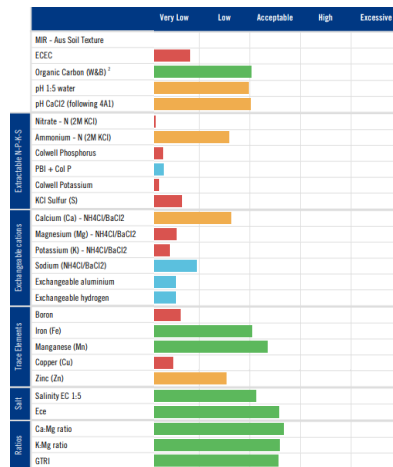
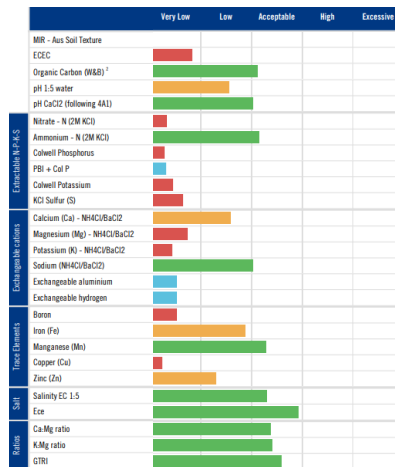


Figure 3 & 4: Results from Site 2, 2023 (left), compared 2024 (right)

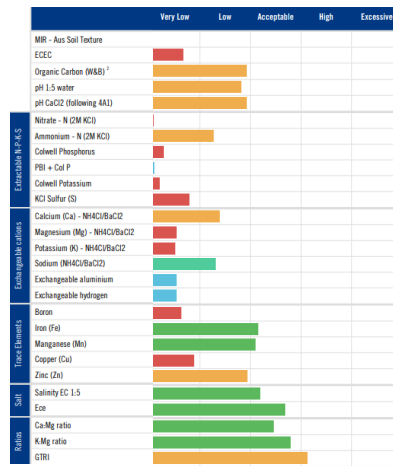
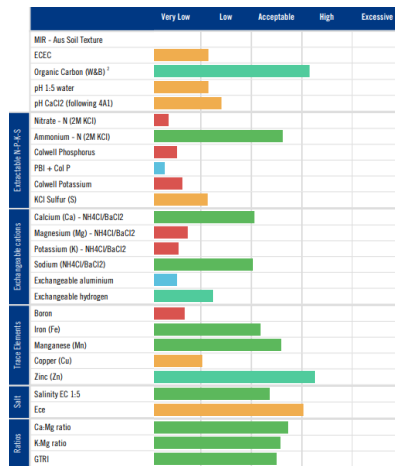


Figure 5 & 6: Results from Site 3, 2023 (left), compared 2024 (right)

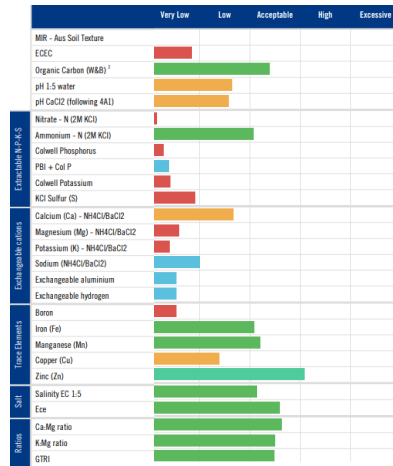
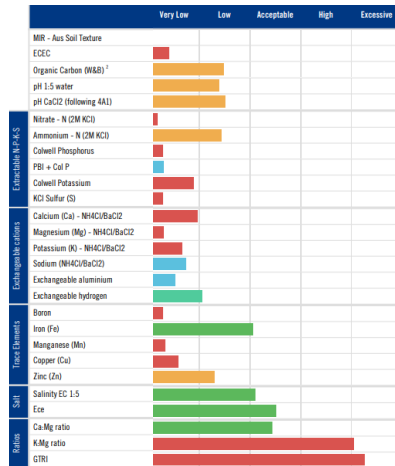


Figure 7 & 8: Results from Site 4, 2023 (left), compared 2024 (right)

The main constraints

Soil infertility and water repellence are two of the prominent soil constraints present at Avoca. Over the years, the Forsyth's have undertaken a number of measures to try and remediate these constraints.

The Forsyth's have experimented with a range of methods to try to improve soil fertility. In the past, in a bid to increase ground cover in paddocks where the soil surface was heavily exposed, the Forsyth's have sown large quantities of perennial grasses and shrubs. By having living plants in the soil year-round has increased soil fertility and provides sufficient ground cover. Which in turn helps to mitigate wind erosion.

The Forsyth's have also encouraged the growth of annual pastures to increase their ground cover, feed base and mitigate soil erosion.

In the past, they have applied clay with the aim to retain more water and overcome non-wetting soils. They have also previously sown pastures within the furrows to obtain establishment of Perennials. These perennials have ultimately helped in relieving water repellence throughout the soil.

The next chapter

Looking forward, the Forsyth family wish to continue their efforts to improve the soil health across Avoca. Continuing to improve the overall soil health and increase the organic carbon in their soils.

They aim to achieve this through lime application and utilising more appropriate fertilisers that suit their production system and soil type.

Craig is continually working towards his goal of achieving 1 kg of liveweight gain/hectare/ mm of rain/ year which he believes he will achieve through continually improving soil quality across his property.