Stuart McAlpine - Soil Health Champion

Stuart's Story

Stuart McAlpine runs a 5,000 ha farm in Buntine, in the Northern Agricultural Region of Western Australia. The property has a wide mix of soil types with Stuart mainly growing cereal crops, as well as running sheep.

Stuart's leading edge farming practices earnt him selection as the Northern Agricultural Region's 2015 Soil Health Champion. As part of this role, Stuart recently presented at the 2015 Talkin' Soil Health Conference in Kojonup.

What makes him different from many other farmers is his adoption of a biological farming system. In 2007, Stuart began his move from a high input conventional farming system to a more biological approach with much lower inputs.

"My philosophy is that you can't ignore any of the three factors of soil health – the chemical, physical and also the biological".

Motivation for Change

Stuart said the motivation for change came from the 2006/2007 season, which was dry and required high input costs to achieve a good crop. Stuart began to question the reduction in productivity and came to the realisation that he needed to focus on soil health. This would be especially important if he wanted to keep adapting to changing rainfall patterns.

Changes Made

Over time, Stuart has progressively changed his practices to encourage biological activity in the soil. He now uses a biological stimulant product, which acts as a carbon source and stimulates the growth of soil microbes.

Stuart said he has significantly reduced the amounts of inorganic fertilizer, herbicides and pesticide applications. In fact, he has not used an insecticide since 2008.

He also continues to address soil acidity – through the application of a liquid soluble lime, in addition to spreading and incorporating solid lime.

Herbicide application remains one of his biggest costs, and he has been focusing on crop rotation, spot spraying and hand-pulling as a more integrated approach to reduce the weed seed bank.

Stuart McAlpine in his Canola crop.

Outcomes

"I have had amazing results, the differences are obvious. I have increased yield and you can see the changes in the soil and root systems," he said.

CASE STUDY

Northern Agricultural Catchments Council

"People started to question how I had done it. They would wonder whether I had deep-ripped because the soil became softer than others in the area."

Mr McAlpine said the biggest change has been in the organic carbon levels in the soils. They have risen in 0-10cm deep, but most of the gains have come in the deeper soil profile.

"I am excited by these changes because it is actually quite a lot of carbon," he said.

"The growth of roots in the A horizon used to be only 10 cm deep, but now it is 20 to 25cm in some places which is really exciting."

The changes have resulted in improved soil structure, which has been driven by increased biological activity and increased organic carbon levels. The soil has become soft and friable year round.

From the farm business perspective Stuart has been able to significantly reduce his risk by greatly reducing fertiliser cost. This has been especially important with very low rainfall in recent seasons. (Averaged only 150ml growing season rainfall 2012-2014).

"Clay areas were sticky when wet and hard as a bitumen road when dry, now they feel like potting mix".

The Future

Going forward, Stuart is considering going back to more grazing, and to putting-in perennial pastures. Stuart believes this would, "further increase biological diversity and further reduce risks such as herbicide resistance."

NRM outcomes

- Increased water infiltration, particularly in heavier soils (30% of property is heavier clay loams).
- Improved soil structure, particularly in heavier soils.
- Much reduced compaction.
- Increased biodiversity – e.g., termites and echidnas.
- Reduced wind and water erosion due to the increased root matt holding soils together.
- Increase water-holding capacity of lighter soils.
- Hugely reduced chemical usage – Stuart has not used insecticide in eight years due to increased natural resilience.

Key Messages for Farmers

Stuart's take-home messages for other farmers:

"Really focus on improving the function of the soil. By concentrating on the biological aspects as well as the chemical and physical, you can achieve greater efficiency and really reduce input costs."

"We need to realise that when we don't use fertilizer efficiently, we do a lot of damage to the soils".

More Information

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