

Native Grass Soil Aeration Trial

COUNCIL NAME

Murray River Council

WEB ADDRESS

<https://www.murrayriver.nsw.gov.au/Home>

SIZE

11,865 square kilometres

POPULATION

12,000

Overview of the project

Murray River Council (MRC) has received funding from Local Government NSW for the [Building Our Communities in Advance Project](#) that supports the Murray River Council (MRC) [Adverse Event Plan](#) (AEP) which prepares for the impact of adverse events – be it drought, flood, fire or pandemic. Western Murray Land Improvement Group (WMLIG) has been partnering with MRC to support the drought preparedness element of the AEP by working with Don and Joanne Hearn, who own the property “Restdown”.

This project builds on resilience principles and strategies of the AEP that are; **‘plan in the good times to be prepared for the bad times’**, **‘continuous learning and improvement’**, **‘build resilience with adaptive methods’**, and **‘build the capacity of the community’**.

The Hearn’s are regenerative, organic beef farmers who invested in a soil aerator several years ago to improve soil health, moisture holding capacity and reduce reliance on chemical inputs, and ultimately increase productivity and profitability of their native pastures. These pastures are low maintenance but fulfil the nutritional needs of his cattle, as well as access to niche higher value add market via a paddock to plate pathway. See [Restdown Organic Winery & Beef Farm](#)

The “Aervator” is a novel proprietary soil aerator (See [Farmtech GH Series Aervator](#)) designed to reduce soil compaction allowing water, air and nutrients to penetrate more readily to the grass root zone. This process is designed to propagate the growth and activity of aerobic bacteria which then improves soil quality, cycles nutrients, and improves water infiltration which helps develop vigorous deep root systems in plants assisting with drought resistance. Deep rooted plants also have far greater uptake of minerals and trace elements resulting in healthier livestock.

To compliment soil aeration, the Hearn’s have completed cell grazing fencing infrastructure that allows crash grazing followed by a three-month rest period for pasture regeneration between grazing.



The Hearn’s have been an advocate of native pastures, and the ability of endemic annual and perennial plant species to take advantage of out of season rainfall events, especially summer dominated C4 grasses present on the farm, such as windmill grass that produces fodder over summer. C4 grasses fill a typical feed gap in the region in which the climate dictates a winter dominated rainfall, however this rainfall pattern has been moving in the last few decades with increased rainfall occurring in other seasons. In the Murray Murrumbidgee Region, all models agree that winter and spring rainfall will decrease and summer and autumn rainfall will increase especially along the Murray. Refer to [Murray Murrumbidgee climate change snapshot](#). As native grasses respond well to unseasonal episodic rainfall events more-so than improved pasture species, they will be suited to expected changes in rainfall, and therefore build drought resilience in a livestock grazing system.

The project aligns with the NSW DPIE [Western Enabling Regional Adaptation](#) report regarding a change model for mixed farming land management in the Riverina Murray region. Workshops identified transition pathways that will continue to build resilience in mixed farming systems including additional revenue streams from new service markets (such as solar and **carbon farming**, and **low input farming systems**) to complement traditional farming enterprises and consolidate viability by supplementing farm incomes. The widespread adoption of agro-ecological production principles supported by a rich regional knowledge base will underpin natural resource sustainability.

REFERENCES

Murray
Murrumbidgee
Climate change
snapshot – Office of
Environment and
Heritage

NSW DPIE Report,
Western Enabling
Regional Adaptation

This project objectives align to the [Murray River Council Community Strategic Plan 2018-2028](#). In particular:

- Encourage and develop community initiatives to enhance and protect the natural environment.
- Increase community awareness and education about the value of the natural environment.

This project objectives align to the [Murray Local Land Services Strategic Plan \(July 2021 - June 2026\)](#) and vision for 'resilient communities in productive healthy landscapes', in particular:

- LANDSCAPE MANAGEMENT:
 - Conduct programs and partnerships that grow primary industries productivity and healthy environments.
 - Support native vegetation management that delivers economic, social, cultural and environmental benefits.

Measures of success: Ecosystem health ✓ Resilience of significant species ✓ Appreciation of nature ✓ Change in vegetation management

- PRIMARY PRODUCTION:
 - Improve the long-term viability of regional farming businesses and the natural assets that underpin them.

Measures of success: ✓ Grower confidence in long-term viability of farm businesses ✓ Condition of soil and vegetation on-farm.

How the project was carried out

Soil aeration began in September 2021 which was a little later than anticipated because of rain delays. The project has funded dry matter data collection and testing from trial sites on the property to compare soil aeration treatments against untreated control areas to ascertain the effectiveness of the soil aerator. Murray Local Land Services (MLLS) have been providing in kind agronomic support to WMLIG in the project.



Trial site samples (dry matter tests) were taken from three different times of the year. The initial cutting was on the 6th of October 2021, about 2 weeks after aeration was completed. This was followed by two other samples taken on the 22nd of December 2021 and the 11th of February 2022.

A YouTube video has produced.

Outcomes now and in the future

Trial results comparing the soil aerated site to the control (untreated) site have not provided a statistically significant outcome over the seven month trial period, which is suspected to be due to the immaturity of the trial at this stage. WMLIG believes this is a consequence of trial learnings and timing of sampling not being optimal. On one occasion sampling was conducted not long after grazing, which distorted dry matter results.

Benefits and lessons learned

Anedotely the landholder has seen improved productivity and water infiltration across the farm. Trial data collected to date has not indicated a statistically significant difference between the treatment and control plots being monitored. Change in soil structure, soil biology, litter decomposition, improved soil carbon, moisture holding capacity and subsequent nutrient cycling takes time.

WMLIG would like to continue ongoing monitoring of the soil aerator trial sites to ascertain change over the longer term, develop reports and conduct a field day to the broader community in the future.

More Information

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