



National Agricultural Traceability Grants Program – Regulatory Technology Research and Insights Grant Round: Rice Growers Limited grantee summary

Author: Rice Growers Limited

SunRice Carbon Emissions Traceability Pilot

Funded by the National Agricultural Traceability Grant, SunRice, working in collaboration with OpenSC (Open Supply Chains), conducted a pilot project to develop a digital traceability platform for carbon emissions in rice production.

Australia produces some of the highest-yielding rice in the world with among the lowest associated emissions. However, verifying these emissions and tracing them from paddock to consumer has historically been a challenge.

Project objective

The primary goal of this pilot was to develop a platform that enables SunRice to automatically calculate and verify carbon emissions in rice production. Traditionally, this process relied on growers manually reporting data such as sowing dates, sowing methods and irrigation practices. Validation required physical inspections, and data collection was often incomplete and burdensome for growers.

Pilot design and methodology

This pilot aimed to automate the detection of farming practices at the paddock level and apply a standardised methodology to calculate emissions at the farm level. The platform was designed to monitor, validate and report emissions within a season, and to compare farms to identify changes in practices and reductions in emissions.

The first phase focused on detecting and calculating emissions based on irrigation practices using remote sensing. OpenSC utilised historical grower data, including sowing methods and dates to support this effort.

Geospatial data processing was developed using satellite imagery and vegetation indices to generate Normalised Difference Vegetation Index images that could automatically detect irrigation events. To address the challenge of cloud cover, an algorithm was created using spatial and temporal interpolation techniques.

A time series model was built and iteratively refined to improve accuracy. The model was trained using rule-based adjustments and validated against existing geospatial and field data to finalise a classification method.

Importantly, the model was designed to comply with regulatory requirements for reporting scope 3 emissions, ensuring alignment with carbon accounting standards.

Traceability through the value chain

The OpenSC platform integrated data from Australian Grain Storage (AGS) and SunRice mills to trace rice harvested from individual paddocks through the entire value chain. Although harvested paddy rice is co-mingled upon delivery to AGS, each bin can be traced through the milling process. Emissions can be tracked at a mass balance level and attributed to the final product.

Outcomes and future potential

SunRice is exploring the potential to make on-pack emissions claims, offering transparency to consumers and potentially gaining a competitive advantage over other rice brands.

The Rice Extension team has leveraged the pilot's outputs to raise awareness among growers about practices that can reduce emissions and create additional value.

The pilot has been a success and is likely to be extended to include the Deniliquin milling operation. It also holds promise for application in SunRice's international milling operations.

Acknowledgement of Country

We acknowledge the continuous connection of First Nations Traditional Owners and Custodians to the lands, seas and waters of Australia. We recognise their care for and cultivation of Country. We pay respect to Elders past and present, and recognise their knowledge and contribution to the productivity, innovation and sustainability of Australia's agriculture, fisheries and forestry industries.

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