2022 BARLEY
PEARSE FAMILY FARMS (VIC)
CERT NO. PD22002

CO_2e Emissions Calculation Report

Certified Sustainable.

Sustainable Management

Certified Sustainable requires Certified Farmers to undertake at least five (5)regenerative practices to improve soil stability, water cycles, and climate outcomes. This certified grower has provided evidence for:

01. Minimum Tillage

Soil tillage, when undertaken routinely, is known to have detrimental effects on soil structure, soil microbiology populations and reduces soil organic carbon, emitting CO2.

02. Reduced Synthetic Inputs

Synthetic products can have a detrimental impact on the environment, so reducing these lessens negative impacts on soil biology and waterways as well as radically reducing greenhouse gas emissions.

03. Minimum 30% Ground Cover

Keeping cover on the soil helps to, reduce evaporation, keeps the soil cool and provide food and a habitat for microorganisms.

04. Strong Crop Rotations

Implementing strong crop rotations helps to benefit soil structure, breaks disease cycles, and can provide valuable natural nutrients.

05. Non-GMO/Nil Reportable Residues

All food and beverage commodities from Non-GMO feedstock. Tested at NATA certified laboratory for over 270 chemical analytes. (2.)

(3.) Evidence gathered to meet the Certified Sustainable PRODUCER STANDARD V15.1
https://cssb.deakin.edu.au/standards/

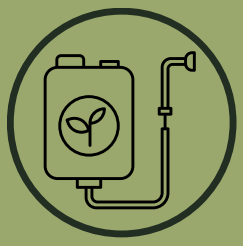
The Mount paddock :
Total emissions per tonne 80.7kg

Fertilisers 19.14kg/t

Synthetic fertilisers are heavy energy users and Greenhouse Gas emitters producing CO2, NH4 (28 x CO2 persisting 10 years) and N2O (265 x CO2 persisting 100 years)

Crop Residues 29.9kg/t

Crop residues, although important to natural nutrient and carbon cylcing , emit CO and NH4 when metabolised by soil microbes.



Crop Protection 26.37kg/t

Synthetic crop protectants and herbicides are high energy users in production and thus a high greenhouse gas emitter.

Fuel 8.87 kg/t

Fossil fuel based energy sources, used in management and production of the crop.

Electricity 0kg/t

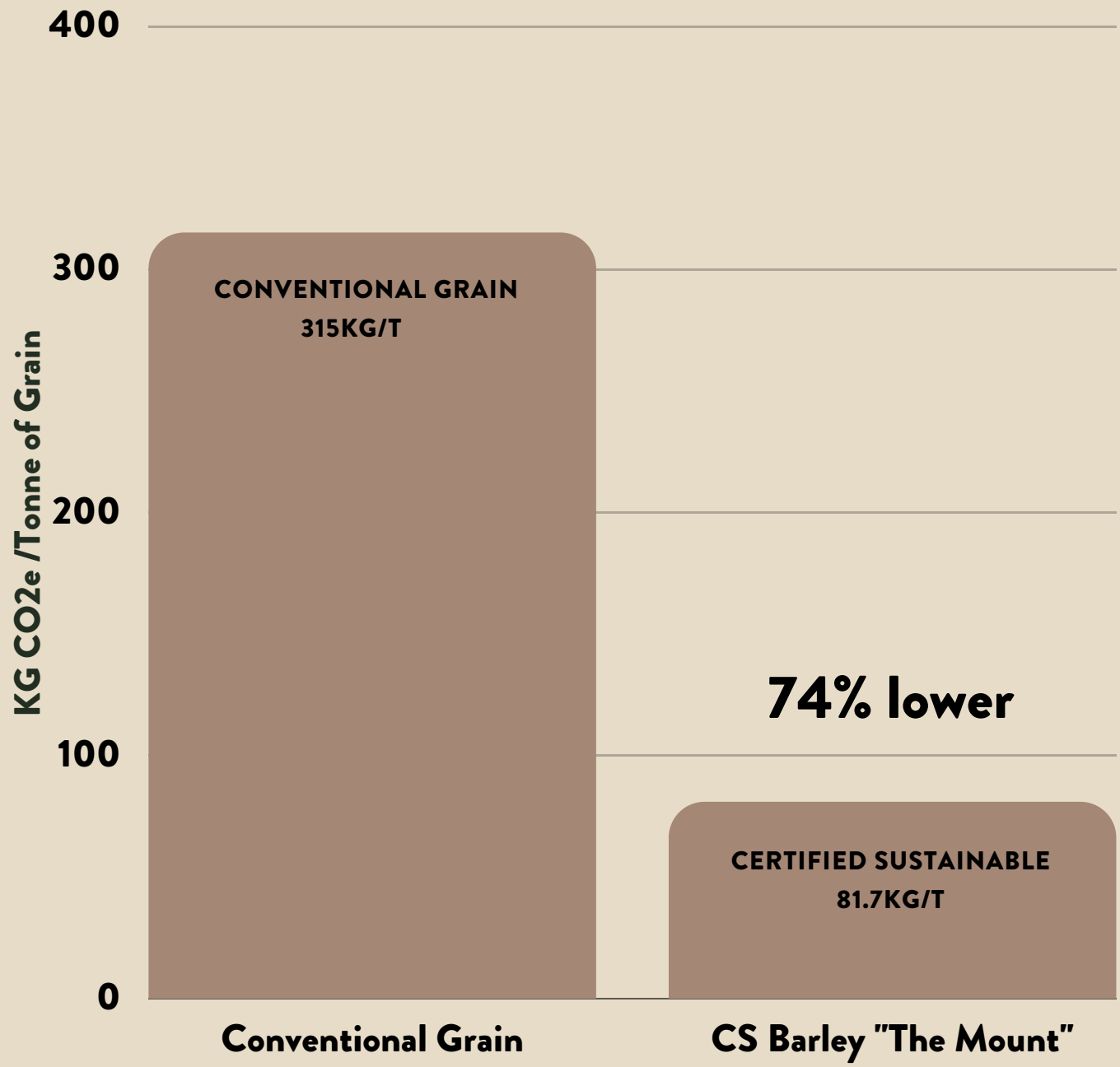
Sequestration in trees 4.48kg/t

1. Data derived from 2023 audit, entered into PICCC calculator
Audit report number:PD2200222

Comparing Averages

GRDC and CSIRO published a report in February 2022 showing the cradle-to-gate baseline average CO2e emissions per tonne of grain grown in Australia of 315kgCO2e/tonne of grain.

Based on data collected from cropping records audited and filed with audit report #PD220222 the emissions for malt barley from The Mount Paddock (including sequestration from vegetation) is 81.7kg CO2e/t.



4. https://grdc.com.au/about/our-industry/greenhouse-gas-emissions/GRDC_MainFinalReport_170122_CONFIDENTIAL.pdf

Seasonal Impacts

2022 season was an unusually wet and cold year with less sunshine days and increased soil saturation. A late hailstorm damaged approximately 1/3 of this crop significantly reducing yield, thus increasing emissions/tonne of harvested crop,

01. Rainfall

With unusually high rainfall, a late planting was experienced as well as some flooding and soil saturation that inhibited growth

02. Temperature

The increased rainfall and cloud cover led to unusually low average temperatures, and less sunny days lowering photosynthetic potential

03. Crop Health

Increased weed germination and excess moisture led to more applications to deal with advanced weed pressure.

References:

1. PICCC Primary Industries Climate Challenges tools https://www.piccc.org.au/resources/Tools
2. Agrifood Laboratories Residue Report NRS Program 49+Glyphosate report#J2211-0526
3. PRODUCER STANDARD V15.1 https://cssb.deakin.edu.au/standards
4. GRDC/CSIRO https://grdc.com.au/about/our-industry/greenhouse-gas-emissions/GRDC_MainFinalReport_170122_CONFIDENTIAL.pdf