

# Productive Saltland Pasture for Southern WA

## MLA PDS PROJECT L.PDS.2203

THIS PRODUCER DEMONSTRATION SITE PROJECT AIMS TO IMPROVE LAND MANAGERS KNOWLEDGE AND SKILLS IN THE ESTABLISHMENT, MANAGEMENT, AND BENEFITS (PROFITABILITY, PRODUCTIVITY, AND SUSTAINABILITY) OF SALT-TOLERANT FORAGE SYSTEMS ON MODERATELY SALT-AFFECTED LAND. THE OBJECTIVE OF THIS PROGRAM IS TO ESTABLISH 150 HECTARES OF SALT-TOLERANT FORAGE PASTURES ON 6 LOCAL SITES TO DEMONSTRATE VARIATION IN PRODUCTIVITY OF KEY SHRUB AND UNDERSTORY VARIETIES AND A Paddock SCALE INCREASE LATE SUMMER/AUTUMN (FEBRUARY – APRIL) BIOMASS PRODUCTION AND SOIL ORGANIC CARBON AND TOTAL CARBON.

THIS PROJECT IS FUNDED THROUGH MEAT AND LIVESTOCK AUSTRALIA (MLA) PRODUCER DEMONSTRATION SITES (PDS) PROGRAM, A CONTINUATION OF GILLAMII'S COMMITMENT TO THE REMEDIATION OF SALT-AFFECTED LAND INTO PRODUCTIVE PASTURE SYSTEMS FOR LIVESTOCK GRAZING. IN-KIND SUPPORT HAS BEEN PROVIDED BY DPIRD, CSIRO, HOST AND CORE PRODUCERS, THANK YOU TO ALL WHO HAVE BEEN INVOLVED.

### PROJECT UPDATE

In Spring last year 4 sites, totalling 66 hectares, were established with perennial salt-tolerant pastures in collaboration with 3 host farming families. There are two additional sites to be established in August this year, bringing the total area to 150 hectares.

The sites are located throughout the Broomehill-Tambellup and Cranbrook shires, ranging from valley floors to areas further up the landscape in the transition zone of productive to salt affected soils. The motivation of producers to develop these areas into salt-tolerant pastures systems is to use both surface and ground water to manage the site's local salinity, while keeping the areas as productive paddocks, part of their various livestock enterprises.



Core producers, DPIRD and Gillamii staff at one of the PDS sites discussing solutions

On the 23rd of June 2022 a group of local producers and Department of Primary Industries and Regional Development (DPIRD) staff, hosted by Gillamii, spent the day visiting the sites to workshop ideas for pasture establishment. The aim of the workshop was to utilise the knowledge of Gillamii's producers, experienced in productive saltland pastures, and connect them with the new PDS producers, aided by expertise from DPIRD. The group discussed the best pasture mixes, site design and establishment plan, tailored to local conditions and based on producer experiences. Salinity (EC), pH, elevation as well as indicator species had been analysed prior to the workshop to provided information to support decision making on the day.

The outcome of these workshops were 4 different site designs and species mixes, two comprising of pastures with pre-established saltbush, one to be direct seeded with saltbush alleys and a pasture understory and the remaining to be planted with saltbush seedlings in alleys with a volunteer pasture understory.



Gillamii Project Officer observing pasture establishment in October 2022

Direct seeded saltbush germinating

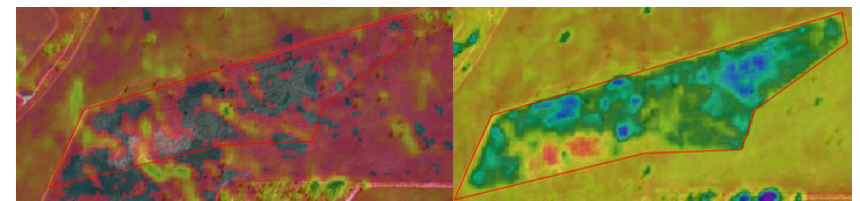


December 2022 (Three months after establishment)

April 2023 (Seven months after establishment and two grazes)

Since establishment last spring, all sites have had successful establishment and survived the first and very dry 2022-23 summer-autumn period. The two complete pasture sites had such successful establishment that they were grazed twice within the first 6 months of establishment. The remaining two sites with juvenile saltbush require stock to be excluded for the first year to allow proper establishment of the fodder shrubs.

As part of this project both pasture and livestock parameters are being monitored (2022-2027) to demonstrate the key benefits of these systems. Parameters include: soil organic carbon, biomass (summer-autumn period), pasture nutrition (summer-autumn period), grazing days, live-weight gain and cost-benefit analysis. Please see following page for how the sites are progressing. Measurements are been taken during the summer-autumn period each year.



NDVI imagery of one of the pasture sites for March 2022 and March 2023 (surrounded by crop stubble) indicating the increase in green biomass during the summer-autumn period

A field walk is planned for spring this year, with two more field walks throughout the project as the sites develop and producers and their livestock fully utilise the sites. These field walks will showcase the pros and cons of the different systems as well as be an opportunity to discuss how the sites perform on paper vs real farmer accounts of practical management and utilisation.

**SAVE THE DATE: PASTURE FIELD WALK  
20TH SEPTEMBER 2023**



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NOTE: ANALYSIS WAS CONDUCTED DURING THE SUMMER AUTUMN PERIOD

## Perennial Pastures



In the first year of establishment the crop stubble has outperformed the pasture in total kg/ha of biomass, however nutritional value is looking increasingly positive, with chicory and lucerne having a noticeably higher % of Dry Matter Digestibility (71.8%) and Crude Protein (19.4%)

### SUMMARY (2 SITES)

**Baseline Pasture/Crop in Summer-Autumn:** Barley crop stubble with surrounding old man saltbush  
**New Established Species:** Megamax Panic, Howlong Cocksfoot, Lucerne SARDI 7 Series 2, Commander Chicory, Tall Fescue, Tall Wheat Grass and Puccinellia  
**Cost/Hectare:** \$528.00  
**Average Annual Grazing Days:** To be analysed  
**Year 1 Summer-Autumn Biomass/FOO:** Overall biomass per hectare decreased (grazed once in the 6 months since it has been established). Therefore in the first year establishment when specifically focusing on total biomass, stubble outperformed the saltland pasture, with a 4.6 - 107% decrease in total biomass per hectare within the first year of establishment  
**Nutrition:** -4.2% to +5.2% change in ME (Mj/Kg), 18% - 93% increase in Crude Protein  
**Average Liveweight Gain:** To be analysed  
**Cost-Benefit Analysis:** To be analysed



## Direct Seeded Saltbush & Understory

### SUMMARY (1 SITE)

**Baseline Pasture/Crop in Summer-Autumn:** Volunteer pasture consisting of Toad Rush, Barley and Rye Grass  
**New Established Species:** Balansa Clover, Tamargee Kikuyu, Puccinellia, Rhodes Grass and Tall Wheat Grass with direct seeded dual saltbush alleys (Old Man, River and Wavy Saltbush)  
**Cost/Hectare:** \$466.50  
**Average Annual Grazing Days:** Grazing has been differed to allow for adequate saltbush establishment  
**Biomass & Nutrition:** This site increased it's total biomass per hectare by 80% in the first year since establishment  
**Nutrition:** 22% Increase in ME (Mj/Kg), 6% decrease in Crude Protein  
**Average Liveweight Gain:** To be analysed  
**Cost-Benefit Analysis:** To be analysed



Lowest cost system with biggest increase (114%) in digestible summer-autumn biomass when compared to the original volunteer pasture

## Saltbush Seedlings & Volunteer Pasture



### SUMMARY (1 SITE)

**Baseline Pasture/Crop in Summer-Autumn:** Volunteer pasture consisting of Barley Grass, Puccinellia, Broome Grass and Rye Grass  
**New Established Species:** Old Man Saltbush, Melaluca and Eucalyptus seedlings  
**Cost/Hectare:** \$1326.00  
**Average Annual Grazing Days:** Grazing has been differed to allow for adequate seedling establishment  
**Year 1 Summer-Autumn Biomass/FOO:** This site increased it's total biomass per hectare increasing by 50.4% in the first year since establishment  
**Nutrition:** 8.7% Increase in ME (Mj/Kg), 4% decrease in Crude Protein  
**Average Liveweight Gain:** To be analysed  
**Cost-Benefit Analysis:** To be analysed

