

# Perennial Pasture Management Systems for Soil Carbon Stocks in Cereal Zones

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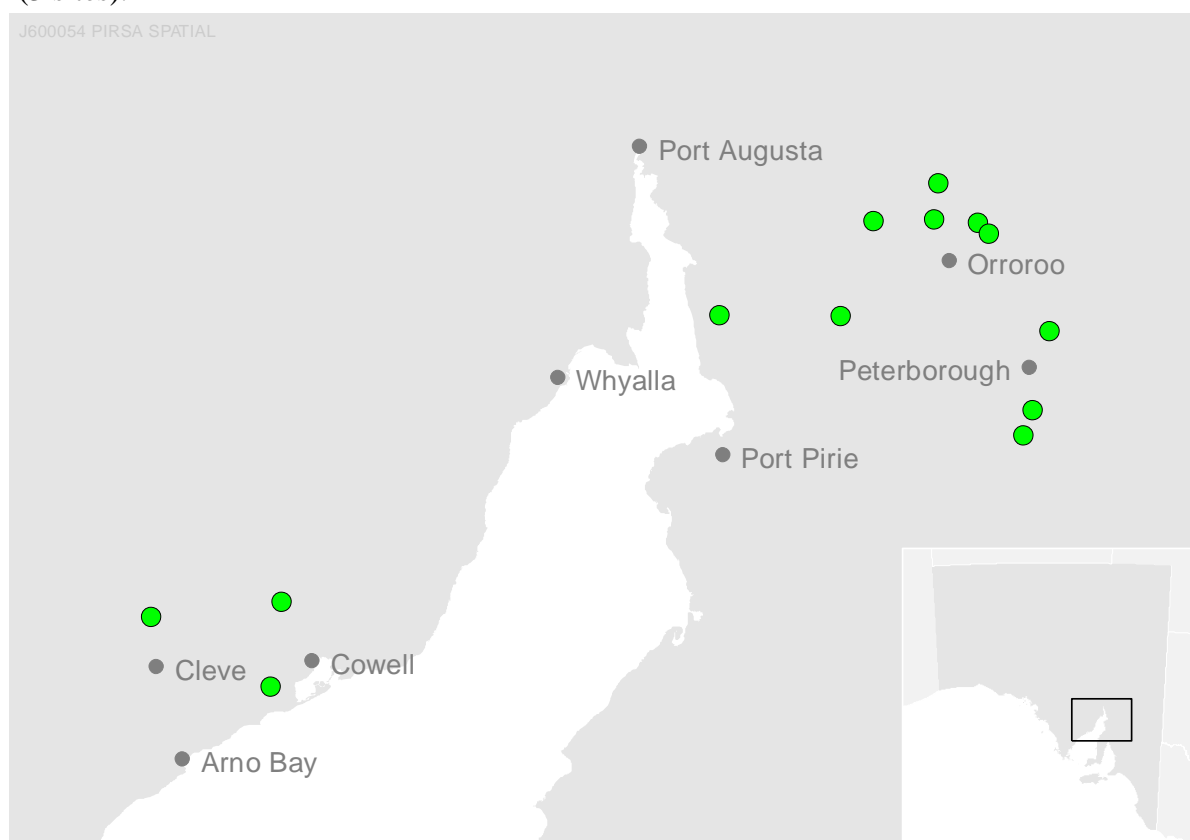
**Project Title:** Perennial pasture management systems for soil carbon stock in cereal zones, South Australia.

**Project Duration:** 2012-2015

Upper North Farming Systems received funding in June 2012, to trial and demonstrate on farm practices to increase sequestration of soil carbon in the Upper North and Eyre Peninsula of South Australia.

Thirteen (13) on farm demonstrations will trial a range of practices to increase sequestration of soil carbon, including:

1. Unviable cropping land managed for the introduction and/or increased levels of perennial component in pastures ( 3 sites)
2. Implementation of rotational grazing managed pasture for increased levels of cover and biomass (3 sites)
3. Degraded land managed for the introduction and/or increased levels of perennial component in pastures (4 sites)
4. Land managed for the introduction and/or increased levels of perennial component in pastures (3 sites).



**Figure 1:** Site locations of the 13 demonstration sites

These practices were chosen for their potential to increase Soil Organic Carbon (SOC) stocks from information produced by the CSIRO. The farm demonstration sites were all sampled for soil carbon stocks prior to the implementation of any changes in on-farm management to provide a baseline of SOC stocks. Mean SOC stocks (0-30 cm) were 29.2 t/ha with a range of 17.9 to 36.3 t/ha.

Project activities undertaken include:

1. Unviable cropping land: weed control undertaken in preparation for sowing perennial pastures/fodder options. Perennial options planted include Wallaby Grass, Windmill Grass and fodder shrubs.
2. Rotational grazing: large paddocks were sub-divided and additional watering points installed to enable short periods of high intensity grazing and long rest periods.



Large paddock divided for rotational grazing

3. Degraded land managed: two sites were treated with 5-10 t/ha of hay/straw as a soil ameliorant to improve soil cover and reduce salt drawn to the surface. Sites were planted with perennial pasture/fodder shrubs. At the third site, weed control was undertaken in preparation for sowing perennial pastures - Lucerne, Puccinella and Tall Wheat Grass and ripping for fodder shrubs. At the fourth site the degraded area was ripped to ~15 cm to capture water and seed and planted with Wallaby Grass to provide additional cover.



Site planted to Puccinella and Tall Wheat Grass

4. Land managed for increased perennial component: weed control was undertaken in preparation for sowing perennial pastures/fodder options. Pasture options sown include Fodder shrubs, Puccinella, Tall Wheat Grass windmill grass, wallaby grass and annual medic.

Demonstration sites are monitored annually for pasture and surface cover, biomass production and frequency of perennials. Soil sampling will occur again in late 2014/15 to determine any change in soil organic stocks as a result of the implementation of a change in management practice.

