



Grazing Management Fact Sheet 3

Managing pastures improves soil health

Why

Perennial plant roots are the most effective soil conditioning tool available for graziers.

Plant roots are also a primary source of soil carbon and optimising soil carbon is the quickest way to restore soil health.

A greater density of perennial grass roots improves the porosity of the soil enabling increased rainfall infiltration.

What

Pasture management to control the grazing process has the potential to rapidly restore soil health. A healthy soil will consist of about 50% porosity—that is, air space that can potentially hold water. Grazing and managing recovery to maximise plant and pasture growth will also enhance root density and depth. The plant roots and associated biology have a key role in opening up soil to enhance porosity and increase soil carbon.

This is the third in a series of four fact sheets designed to provide a guide to increase pasture production and potential carrying capacity and at the same time improve the health of your land resource.

How

Deep rooted perennial grasses effectively open up the soil increasing porosity and the ability of the soil to hold water.

More roots in the soil profile means plants are better able to access soil nutrients and moisture and maintain growth for longer when soil moisture is limiting.

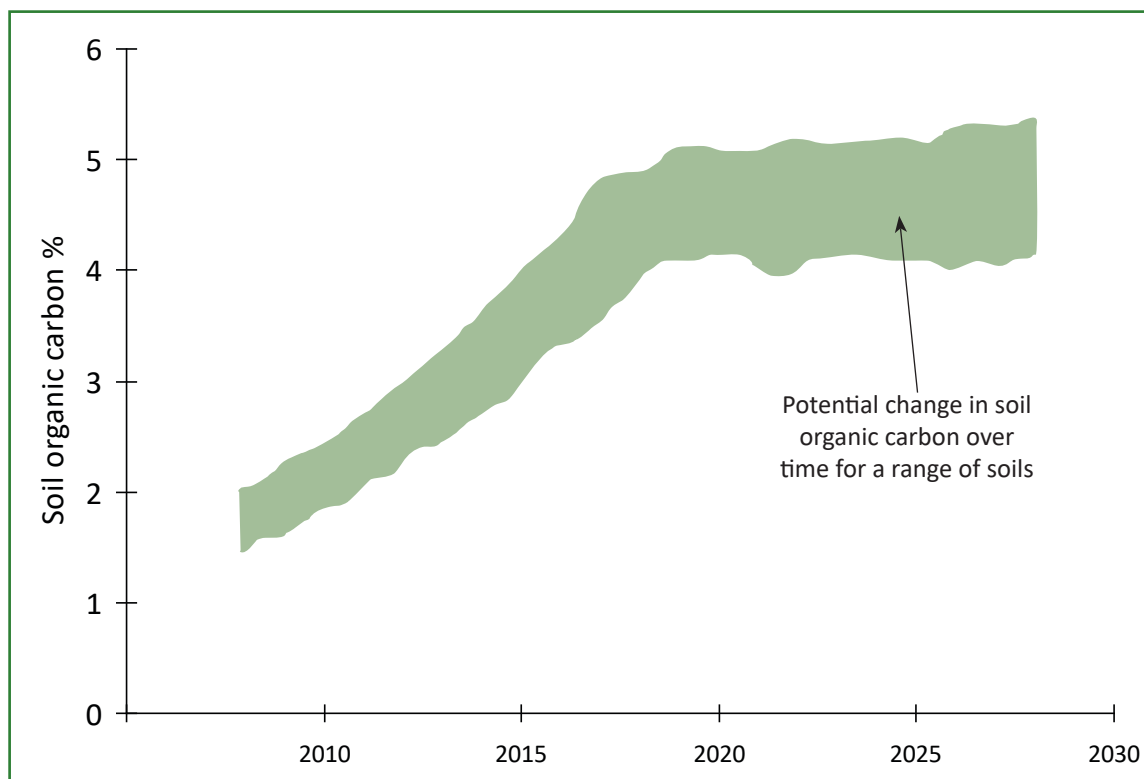
Plant roots and root exudates are the primary source of carbon inputs into soil. Planning the grazing to optimise pasture growth results in increased soil carbon.

Pastures in poor condition

- Low ground cover
- Reduced rainfall infiltration
- More rainfall runoff
- Low root biomass
- Poor soil structure
- Low soil porosity
- Low soil organic matter
- Low soil carbon
- Low soil biology
- Low fertility
- Poor nutrient cycling

Pastures in good condition

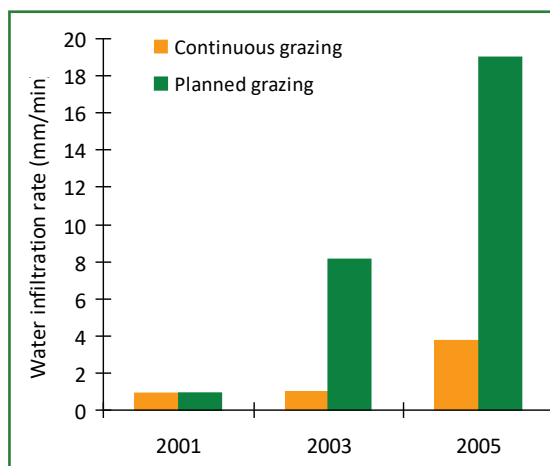
- 100% ground cover
- Maximise rainfall infiltration
- Minimise rainfall runoff
- High root biomass
- Enhanced soil structure
- Increased soil porosity
- Increased soil organic matter
- Increased soil carbon
- Increased soil biology
- Increased fertility
- Increased nutrient cycling



Above: The potential increase in soil carbon over time with application of appropriately planned grazing management to optimise pasture production and soil health. Over time, soil organic carbon levels will reach a new equilibrium level to reflect the potential of the environment. The potential rate of increase with planned grazing may be in the order of 10% of present levels per year, before reaching that new equilibrium.



Above: A well structured granite soil with high porosity, lots of air space, good root density and presence of soil invertebrates. The darker area toward the top layer of the sod indicates a high level of humus, decayed organic matter.



Above: Soil condition can change rapidly with changed grazing management. These results are from a paddock that was subdivided in 2001 and different grazing methods applied: continuous grazing for 9 months of the year versus planned grazing with high stock density in tune with pasture growth. After 5 years, the porosity of the soil increased markedly with planned grazing, as did water infiltration. The values are the averages of 15 replicates within each paddock. Source: Soil Water Solutions.

Tools available to assist in measuring herbage mass, calculating pasture growth rate and developing a grazing plan are available for download from www.aimsag.com.au and navigating to software.



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