



Potato Soil Health Fact Sheet

Key Points

- **Build and maintain soil structure** by avoiding traffic when wet and minimising tillage.
- **Organic matter** is critical for soil health. **Keep something growing** or covering the ground as much as possible. **Manage cover crops** and select the right one for the job. **Utilise biofumigant crops** for potential disease control.
- **Useful measures for monitoring soil health include:** basic soil chemistry tests, PreDicta Pt, aggregate stability and soil mapping (EM38).
- **Financial benefits** (both on and off farm) may result from improved soil health practices.

Principles for improved soil health and management

Understanding and managing all the interacting components of soil health - the physical, biological and chemical factors - is essential to create robust and productive soils that are able to sustain commercial potato production.

Managing soil health as a complete package using a 'farming system concept' is essential for long term soil health. This means that farming practices outside of the potato crop, such as cover crops and pasture rotations, have as much a role to play as the management during the life of the potato crop.

This factsheet identifies principles and strategies that can be used to improve soil health management in a potato cropping system.

Building and maintaining soil structure

Avoid traffic when soils are wet.

Traffic (both machinery and livestock) compacts the soil. Traffic impacts may be restricted to decline of surface structure (light traffic, low ground pressure) or may penetrate to depth (heavy machinery).

Use seasonal controlled traffic farming (SCTF) if you can. Tillage destroys soil internal channels, aggregates, roots, organic matter and fungi. The less traffic and less tillage, the easier it is to build structure. This is a major challenge in potato production, but should be possible for other crops in the rotation.

SCTF requires satellite guidance and matched implement working widths, recognising that integrating harvest machinery is a challenge in mixed cropping systems.

Aim for a “potato farming system” which encourages practices outside the potato crop to improve soil health

Organic matter and cover crops

Organic matter is critical for soil structure, biology, aeration, infiltration, nutrient and water retention, internal drainage and soil resilience.

- Keep something growing in, or covering, the soil as much as possible to minimise erosion and maintain root channels.
- Biofumigant crops must be incorporated for maximum benefits.
- Manage cover crops as you would a cash crop.
- Use the most suitable cover crop mix that does the job you want - a legume for nitrogen, a tap-rooted species for ‘biological tillage’, a vigorous grass species for bulk production of fibrous roots and a thick stand to out-compete volunteer potatoes.



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Soil tests

Basic soil chemistry tests are important to monitor crop nutrient requirements. In particular,

- Take note of **carbon levels** and how they change over the long term – they are a good surrogate measure of soil health.
- **PreDicta Pt** can quantify key soil borne pathogen levels and provide a measure of disease risk. Look out for new tests that quantify beneficials/microbial activity and arthropod presence.
- **Aggregate stability** provides a measure of soil structure and resilience to physical stresses such as wind and water erosion. Consider including this as an additional soil test.
- **Soil mapping (EM38)** can identify changes in soil type, moisture and salinity, and so help in irrigation management and drainage, which are important aspects of soil health in some environments.

Advantages of improved soil health

- **Reduced Rotation length** may be possible, such as reducing from 5 to 3 years (financial benefit).
- **Easier leasing of paddocks** with good soil health compared to a degraded, unhealthy over-cropped site.
- **Increased value on farm** and throughout the food chain with environmentally focused accreditation systems.
- **Decreased input costs** (fuel, labour) resulting from less tillage, lower powered implement demands.

Further resources for soil health information

- [Soil Wealth](#)
- [Soil First Tasmania](#)
- [Soil Health Resource – Victorian Department of Primary Industry](#)
- [Soil Biology and Health - Stirling - GRDC](#)
- [Soil Quality Australia](#)
- [Soils are alive](#)
- [Healthy soils - farm ute guide](#)
- [Soils Alive - Understanding and managing soil biology on Tasmanian Farms](#) (Tasmanian DPIWWE)
- [Organic amendments & soil organic matter](#)
- [Soil health for vegetable production in Australia](#)
- [No Till Veggies](#)
- [Integrating sustainable soil health practices into commercial vegetable farming](#) (Hort Innovation)
- [Soil Management – Vegetables](#) (WA)

Dr Robert Tegg
Tasmanian Institute of Agriculture
Robert.tegg@utas.edu.au
Tel: +61 3 6233 6830

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