



Manaaki Whenua
Landcare Research

Tools to help manage your soils

A Sustainable Farming Fund Project



In the paddock

Bucket test app for irrigator performance

Maintaining efficient irrigation is essential to the good management of irrigated soils. Soils that are over irrigated, and are saturated or have ponding, are vulnerable to compaction, and the resulting lack of aeration prevents roots from breathing and reduces plant productivity.

In addition to regular checks of your irrigator and soils, the bucket test app can be used to measure the distribution uniformity of your irrigator. The app walks you through a performance assessment, provides the results instantly to your phone, and emails a report to you. The app is available for all irrigation system types except drip-micro. The results can be used to improve irrigation performance and help maintain good soil health.

To download the app, search for 'Check-It Bucket Test' on Google Play or iOS App Store.

A basic 'how to' guide has been put together by IrrigationNZ and can be downloaded from:

https://www.irrigationnz.co.nz/PracticalResources/GMP/Attachment?Action=Download&Attachment_id=393

The IrrigationNZ website also has a number of useful tools and information under the 'Scheduling' section, such as the 'Soil moisture monitoring guide': <https://www.irrigationnz.co.nz/PracticalResources/GMP/Scheduling>

Visual Soil Assessment (VSA)

The Visual Soil Assessment (VSA) series of field guides have been developed to help land managers assess soil quality easily, quickly, reliably and cheaply on a paddock scale. VSA is based on visually scoring key indicators of soil quality and incorporating them in an easy-to-use scorecard. The soil indicators are supported by plant performance indicators, which link soil condition to crop production.

The soil indicators are underpinned by extensive research and linked to economic performance. Importantly, though, the indicators used are generic and have the advantage of being largely independent of soil type. This enables VSA to be applied throughout New Zealand.

VSA is self-explanatory and its use does not require special training or technical skills. Although the field guides contain a wealth of information about soil quality and its fundamental importance to sustainable resource management, the information is expressed in a simple and concise way and will provide a useful educational tool.

Visual Soil Assessment field guides can be downloaded from the Manaaki Whenua website:

<https://www.landcareresearch.co.nz/publications/books/visual-soil-assessment-field-guide/download-field-guide>

Pocket guide to determine soil risk for farm dairy effluent (FDE) application

Soils across New Zealand have been classified into high and low soil risk categories for farm dairy effluent (FDE) application. A field guide is available that will take you step by step through the process of working out the soil risk for a farm or area. The guide can be downloaded from the DairyNZ website:

<https://www.dairynz.co.nz/publications/environment/pocket-guide-to-determine-soil-risk-for-fde-application/>

In the office

S-map Online

S-map is Manaaki Whenua's ongoing project to map New Zealand's soil resources at 1:50,000 scale. S-map Online can be accessed on your phone to learn about the soils in your area and access information about these soils.

Once logged in you can use the *Locate me* button on the screen to see what soils are present in your vicinity, or type the address into the search bar. Use the *Add soil summary* button to add a location pin and to access the information for each soil. These pins can be saved and named so that you can access this information at a later date, and/or view it from a PC using the same log in details.

<https://smap.landcareresearch.co.nz/>

S-map Online soil fact sheets

Soil fact sheets (or soil reports) contain information about the key properties of a soil, along with information derived from a suite of models that classify various environmental risks. The data available on each fact sheet includes information on soil physical properties, soil classification, and land management risks.

If you want information about a certain soil type, you can click on the soil name under the summary function. Alternatively, go to the *Factsheets* button and type in the name of the soils you are interested in (e.g. Lismore). <https://smap.landcareresearch.co.nz/factsheets/>

SINDI

SINDI (soil **indicators**) is a web-based tool designed to help you interpret the quality or health of a soil you have sampled. Enter values for fertility, acidity, organic resources, and physical quality attributes measured on your property to see how they compare with the recommended ranges for different soil types and land-use categories.

<http://sindi.landcareresearch.co.nz/>

Soils Portal

The Manaaki Whenua Soils Portal provides you with access to information held by Manaaki Whenua on New Zealand's soils. There is a wealth of information about understanding soils and their properties, types of soils, the history of soil science in New Zealand, and the current and historical soil-naming schemes used in New Zealand. You can also access data from the National Soils Database, Fundamental Soils Layers, Digital Soil Surveys and S-map database.

<https://soils.landcareresearch.co.nz/>

DairyNZ website

The DairyNZ website contains a number of information sheets on sustainable land management, under the 'Environment' section. Of interest for soil management are the sections on effluent systems, nutrient management, and land management. The land management section contains guides on the areas that pose the greatest risk of sediment and phosphorus loss. Useful tools include the 'Pocket guide to determine soil risk for farm effluent application' (FDE), described above, and the 'riparian planner' tool, which helps create a riparian management plan.

<https://www.dairynz.co.nz/environment/>

Foundation for Arable Research (FAR) website

The FAR website contains links to a number of useful tools and articles for arable farmers under the 'Resources' section. Useful tools include the 'Soil water budget tool' and the 'DIY mini soil visual assessment'. Information sheets are also available on soil compaction, and the benefits of soil carbon in cropping systems.

<https://www.far.org.nz/articles/categories/1/resources/tags/11/environment/33/soil>

Beef+Lamb New Zealand website

The Beef+Lamb website contains a number of useful tools and articles for sheep and beef farmers under the 'Managing our soils' section. Of particular interest is the 'Understanding your soils' online learning module, and a fact sheet on soil characteristics important to management.

<https://beeflambnz.com/knowledge-hub/topics/managing-our-soils>

Which tools to use when?

I have a farm audit coming up

S-map, Bucket test app, DairyNZ riparian planner

I am looking at upgrading my irrigation system

S-map, soil fact sheets, SINDI, Bucket test app, DairyNZ farm dairy effluent guide

I am entering farm information into Overseer

S-map, soil fact sheets

I want to assess the quality of my soils

Visual Soil Assessment (VSA) field guides, SINDI

I want to learn more about my soils

S-map, soil fact sheets, Soils Portal, Visual Soil Assessment (VSA) field guides

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