

# Soils of the Mornington Peninsula

Fact Sheet series for the  
Small Rural Landholder Network

**SHARE : LEARN : ACTION**



## What soil do I have on my property?

### **Managing soil is a complex issue.**

Do I have a sandy soil with good drainage but poor fertility?

Do I have a red to brown volcanic loam soil that appears to be more fertile?

Perhaps I have a gravelly granitic clay soil?

This fact sheet explores the major soil types across the Mornington Peninsula and discusses their properties in terms of what enterprises they might best support.

All rural landholders should be aware of their soil types and how best to manage them. Given that the earth's topsoil ranges from 1cm or less to 40cm there is a responsibility of landowners to ensure that this precious resource is well managed.

## Soils are derived from rocks

The oldest rocks on the peninsula were deposited under the sea and date from the Ordovician period (510 -435 million years ago), and the Silurian period (435 to 405 million years ago). These sediments were later uplifted, folded and faulted.

During the late Devonian period (about 370 million years ago), molten material in the form of granite intrusions punched their way through the early Ordovician and Silurian sediments to become the landform we see at Mt Martha and Arthurs Seat. Formed deep under the earth's surface erosion has now exposed them.

Basaltic rocks are the next oldest rocks on the peninsula extruded from volcanoes during the Tertiary period between 20 and 40 million years ago. These have resulted in the red to brown Ferrosols and Chromosols seen across the Flinders and Red Hill areas.

Most of the Tertiary sediments seen on the peninsula comprise ferruginous gravel, sand and clays dating from 23 to 5 million years.

Quaternary sediments are the youngest sediments and are comprised of alluvial material from creeks and drainage lines, coastal dunes and dune fields.

## Rocks weather to soils

Through the agency of weathering, chemical, physical and biological elements combine to render ancient rocks into

finer particles that together with organic materials form the basis of the soils and soil profiles that we see today.

## The Landscape

The landscape of the Mornington Peninsula varies due to its geological history from rolling volcanic hills throughout the interior, craggy granite outcrops, sandy flats in the lowlands and the Moorooduc plains through the middle of the region.

It is these landforms characterised by a range of micro climates which provides the basis for the diversity of horticultural and agricultural enterprises.

## Land classing

Land classing ranks land on its suitability for agricultural and horticultural production. It also identifies land more suited to non-agricultural activities.

Land evaluation includes assessment of the biophysical, economic and social factors that potentially could constrain the use of the land for horticulture and agriculture.

Knowledge of the landscape described above will dictate the relative suitability of land for these activities and will help with the development of plans for sustainable production.

Agricultural production on the peninsula is largely determined by the soils and their inherent fertility. Horticulture and vineyards for example are mainly based on the red volcanic soils.



# Soils of the Mornington Peninsula

COMMON  
GROUND



## Practical resources

The Department of Environment and Primary Industries (DEPI) Victorian Resources Online Gateway can provide detailed information on the geology and geomorphology of the Mornington Peninsula which informs readers how the peninsula was formed and as a result how the different soils of the region came into existence.

The DEPI Victorian Resources Online Gateway also provides a Land Classing kit which explains how to identify and classify landscapes which can assist land owners in their whole farm planning ensuring the appropriate sustainable land use for their property.

The Mornington Peninsula Shire Agricultural Audit is a detailed document describing the diversity of agricultural and horticultural production across a range of landscapes emphasising its role as a major producer in Victoria.



### **For general information contact**

Rural Business Officer  
Mornington Peninsula Shire  
ph 1300 850 600  
agriculture@mornpen.vic.gov.au

**SHARE : LEARN : ACTION**

## Soils of the peninsula

The soils of the peninsula due to their geological history vary in their structure, texture, fertility and water holding capacity.

There are a number of soil mapping units that comprise the major landforms seen in the region and it is the characteristics of these units that identify them with specific production systems.

Seven of these units provide soils responsible for the majority of agricultural production. They include:

### ***Bittern (Bi)***

The Bittern mapping unit is the major unit with soils that are dark greyish brown fine sandy loams to fine sandy clay loams. Structure is fine with an acid pH around 5.9. The soil has supported pasture production but with the addition of fertilisers and organic matter they can be highly productive and continually cultivated. The unit now supports intensive horticultural production with a wide range of vegetables and orchard crops being produced.

### ***Boneo (Bo)***

The Boneo surface soils are low fertility, low water holding, loamy sands.

These soils are low in nutrients with a pH around 7. The addition of fertiliser and irrigation however has allowed the all year around production of vegetables.

### ***Langwarrin (Lw)***

The Langwarrin surface unit generally consists of grey or light grey loam to silty loam with a depth of about 150 mm deep.

These soils are generally well drained although the clay subsoil can slow infiltration.

The soils have been used for grazing, but viticulture on the slopes has become viable enterprises.

### ***Cranbourne (Cr)***

The surface soils of the Cranbourne mapping unit are typically very acidic with a pH around 4.5 to 5.0.

Soil texture is sandy meaning low water holding capacity. The addition of organic matter and irrigation has meant that these soils can be extensively cultivated and highly productive. Intensive horticulture is occupies much of this landscape.

### ***The Cups (Cp)***

An area of landscape known as "The Cups" is comprised of undulating dunefields. As a landclass it is not suitable for horticulture but can carry livestock.

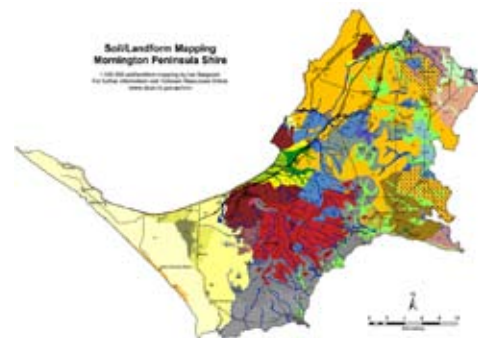
### ***Red Hill (Rh)***

The red volcanic soils of the Red Hill area (described as red ferrosols) are deep, have good structure, drain well and are highly fertile. They are widely used for vineyards, orchards and berry production.

### ***Rosebud (Ro)***

The Rosebud surface unit consists of low fertility dark grey sands to 300mm with an acid pH of around 5.5-6.0.

Grazing occupies much of this landscape but areas near Boneo Road have been transformed into productive horticulture with the addition of organic matter, fertilisers and irrigation.



### **Disclaimer: Mornington Peninsula Shire (MPS)**

All effort has been made to give true representation, provide accurate information and apply comprehensive knowledge to this document. However, MPS does not guarantee the accuracy nor the conclusions drawn from this information and therefore should not be relied upon solely for decision making purposes.