

INTRODUCTION

WHAT IS LAND CLASSING?

Land classing is a fundamental step in developing a Whole Farm Plan. By identifying areas with similar land and soil types you are better able to make informed decisions on what land use is best suited to a certain area. Land classing determines land and soil with similar agricultural potential and similar management requirements.

The benefits of land classing

The land classing process also helps you to decrease your financial and environmental risks by:

- Using the land within its capability so as to minimise land and water degradation.
- Identifying areas where the intensity of cropping or grazing may be inappropriate.
- Identifying areas that are under utilised.
- Matching inputs (e.g. fertilisers and chemicals) with outputs (level of production).
- Developing a farm layout that will facilitate your day to day management as well as management through climatic extremes (droughts and wet periods).

As part of a Whole Farm Planning or Property Management Planning program, land classing can assist you to be more strategic with your management decision making.

For example, a management system that includes a common whole of farm superphosphate program, does not take into account that some areas may need more superphosphate to optimise profitability, and some may need less. Such a blanket approach to management increases the financial risk of farming. Environmental risks are also increased. Excess nutrients not being used for production are potentially being lost to ground or surface waters. Land classing in the Whole Farm Planning process allows you to identify areas that require different management.

Land classing involves identifying constraints that will affect production or result in land degradation. Some of these are inherent limitations, that is, they cannot be easily changed, therefore they dictate how the land can be managed. By giving your land limitations, the strengths of your land can be assessed, enabling you to objectively assess your farming operation.

LAND CLASSING KIT FOR FARMERS

This booklet is designed for you, the farmer. It allows you to identify the limitations of your land and soil in a systematic and rational way. You will utilise your knowledge of the farm, assisted by a few simple rules and tools.

To identify the different land classes requires you to work through a number of ordered steps. The flow diagram (Figure 1) provides you with a summary of the land classing process. A more detailed description on how to work through each step is provided in this booklet.

When you have worked your way through these steps, you will have a plan of your property. The plan will be divided into areas with similar land and soil characteristics, and a list of any limitations associated with the land units. You will have identified whether or not you have non-agricultural areas, arable or non-arable areas using an eight class rating system.

The limitations of your land are important. If you can overcome these limitations by management then you may be able to improve the potential economic output of the land.

The limitations will always be there. Through better management you may improve the drainage of grazing land and then be able to crop the land. However it will always revert back to grazing land if you discontinue the higher level of management i.e. the improved drainage.

SUMMARY OF THE STEPS INVOLVED IN LAND CLASSING

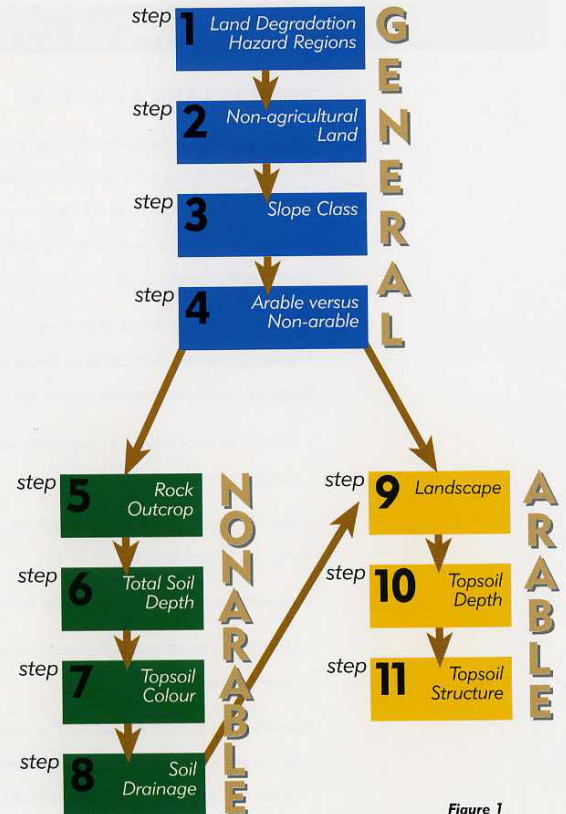


Figure 1

LAND CLASSING PRINCIPLES

The main aim of land classing is to ensure that your land and soil is not being used beyond it's capability.

This is achieved by looking at three fundamental aspects of the land:

- the land degradation hazard,
- the landscape features, and
- soil properties.

Land degradation hazard

Assessing the land degradation hazard of an area requires combining the climate (rainfall and temperature) which determines the length of growing season, the landform (such as hills or mountains), the geology and the common soil types.

Some areas that have low rainfall and high temperatures generally have a short growing season. If this is combined with certain landforms, geology and soil types, this area would have a high land degradation hazard. This leads to gentler slopes (e.g. 10%) in low rainfall areas having a higher degradation hazard than an area that has a higher rainfall and longer growing season.

Landscape

The lie of the land (topography) influences a number of factors, including the flow of water (surface and groundwater), depth of soil, and management difficulties with respect to the access of machinery. Land degradation, particularly soil erosion and mass movement (land slips), is strongly dependent upon slope in addition to the climate.

Soil

Soil characteristics (in conjunction with landscape and climate factors) primarily dictate how productive an area is, and the types of crops and pastures that can be grown. Some soils are more prone to degradation (such as erosion), which can be compounded by climate and landscape factors.

When land classing, the depth of soil, drainage of the soil, and topsoil properties are important aspects to consider as they impact on productivity and also potential degradation.

MATERIALS FOR GETTING STARTED

You will need:

Plan of your property
 Permanent markers (red, black, blue and green)
 2 overlay sheets (e.g. acetate sheets)
 Adhesive tape
 Shovel or auger
 Ruler
 Tape measure
 Water bottle
 Clinometer (see back cover)
 Cotton or string and a weight
 Pen and paper



An aerial photograph of property

Plan of your property

You will require a map or aerial photograph of your property at an appropriate scale. These are available from Quasco VicImage, Clarendon Street, Southbank, Victoria 3006
 Telephone: (03) 9682 3330 Fax: (03) 9682 3335

The appropriate scale depends on the size of your property.

Property Size	Recommended scale of aerial photograph
Less than 50 ha	1:1 000 (1 cm = 10 m)
50 - 100 ha	1:2 000 (1 cm = 20 m)
100 - 200 ha	1:4 000 (1 cm = 40 m)
200 - 1 000 ha	1:5 000 (1 cm = 50 m)
> 1 000 ha	1:10 000 (1 cm = 100 m)

Land classing is easier when you take the plan to the paddocks. You should laminate your plan to protect it.

Permanent markers

You will need 4 thin permanent markers that can write on plastic. Thin permanent markers can be found at good business supply shops or some newsagents. The four colours used in this booklet are commonly available in a pack of four permanent markers.

The land classing steps are easier to follow when they are colour coded. We recommend

Black for property boundary, slope classes and landscape boundaries.

Red for land class boundaries and land class labels.

Blue for arable versus non-arable outlines on overlay 1, and the topsoil depth exercise.

Green for existing property boundary on an overlay.

Overlay Sheets

You will require two overlay sheets that cover the whole of the plan. Acetate sheets available from good newsagents are ideal.

Adhesive tape

You will need adhesive tape to attach your overlays to the plan.

Shovel

For some of the soil assessments you may need to dig a shallow hole. You will require a shovel or an auger.

Ruler

A ruler will help you establish the depth of topsoil in the cropping steps.

Tape measure

A tape measure will be useful in the total soil depth and topsoil depth steps.

Water bottle

A small spray bottle of water is required for the topsoil colour step.

Clinometer

You are required to assess the slope classes on your property. To assist you with this there is a 'clinometer' on the back cover of this booklet.

Cotton or string

A length of cotton or string needs to be attached to the clinometer.

Weight

You will need to use a weight to weigh the string down on the clinometer.

'Blu Tack' is ideal, as it will stick to paper making it easier to read your slope class.

Pen and paper

This will be useful for any additional notes you want to make.

HOW DO I USE THIS BOOKLET?

In order to make this booklet easier to use the three major sections are colour coded. The colour coding makes it easier for you to know which steps you need to do and which ones you may be able to skip (refer to Figure 1).

This booklet consists of three main sections:

- Gathering general property information
- Determining the non-arable land classes
- Determining the arable land classes

Gathering general property information (Steps 1-4)

In this section you will gather some background information that you will require in the following steps. You will also establish areas that are non-agricultural (Land Class 8), or have steep slopes (Land Class 7).

Step 4 will direct you to the non-arable or arable section, whichever applies to your property. Everyone is required to work through this section.

Determining non-arable land classes (Steps 5-8)

In this section you will establish the appropriate land class (Land Class 5 to 7) for areas that are non-arable.

You do not need to work through this section for any areas in Step 4 that you establish as clearly arable land.

Determining arable land classes (Steps 9-11)

In this section you will establish the appropriate land class (Land Class 1 to 4) for arable land.

You only need to work through this section once you have worked through the non-arable section and found that you have arable land or you have been directed here from Step 4.

Appendices

Appendices A and B provide a guide to the land classing process and what the codes mean. You may need to refer to these throughout the land classing process.

WHAT DO THE LAND CLASSES MEAN?

The classes you will establish relate to the number of land use options available based on the potential productive capacity of the land and the susceptibility for land degradation.

Land Class 1 has the widest range of potential options available whilst Land Class 8 has the least range of potential land use options. It is important to note that land use options will also be affected by climatic factors such as rainfall, temperature and frost. These factors are not considered as part of the land classing process.

Throughout the land classing process you should refer to the land class definitions in order to familiarise yourself with the different land classes. At the end of the land classing process you will be able to identify your property using some or all of the land classes outlined as follows.



ARABLE LAND - Land with many potential land use options**Land Class 1:**

Land suited to a wide range of uses especially horticulture and cropping. Very high levels of production possible with standard management levels. Land degradation is possible if the land is poorly managed therefore conservation land management practices are recommended.

Land Class 2:

Land suited to a wide range of land uses including horticulture, cropping, grazing and farm forestry. Low risk of land degradation but still requiring high levels of management for production and protection of the land.

Land Class 3:

Land suited to a wide range of land uses including less intensive horticulture, cropping, grazing and farm forestry. Moderate risk of land degradation requiring very high levels of management such as conservation tillage and maintenance of a vegetative cover on the soil surface.

Land Class 4:

Semi-arable land. Land suitable for a range of land uses including occasional cropping, grazing and farm forestry. High risk of land degradation requiring the highest level of management for arable land such as conservation tillage, maintenance of a vegetative cover on the soil surface, and surface water control.

NON-ARABLE LAND - Land with fewer land use options**Land Class 5:**

Land suitable for less intensive agriculture such as high density grazing or farm forestry and cultivation associated with pasture development.

Land Class 6:

Land suitable for grazing or farm forestry. Low capability to resist land disturbance such as cultivation due to physical features of the land and erosion risk. Good management required to preserve vegetative cover.

Land Class 7:

Land suitable for low density grazing or low intensity farm forestry. Very low capability of supporting a diverse range of agriculture. Good management required to preserve vegetation cover.

NON-AGRICULTURAL LAND**Land Class 8:**

Land incapable of sustaining agricultural production but may be suitable for activities such as low intensity farm forestry, revegetation or wildlife shelters.

Not all farms will have all these land classes. Some farms may have only two or three land classes.