

# Land Capability for Agriculture in Scotland



## The Macaulay System Explained

### The Macaulay System

There has long been a requirement for a better understanding of the inherent capabilities of land in Scotland for a range of different uses, especially agriculture. In the mid-1960s, the Macaulay Institute developed a Land Use Capability (LUC) system which was based upon a series of guidelines that allowed soil maps and other landscape and climatic information to be interpreted into land classification maps. In the early 1980s the LUC system was further developed and became the Macaulay Land Capability for Agriculture (LCA) classification. This is now the official agricultural classification system widely used in Scotland by agriculturalists, planners, estate agents and others as a basis of land valuation.

The LCA classification is used to rank land on the basis of its potential productivity and cropping flexibility. This is determined by the extent to which the physical characteristics of the land (soil, climate and relief) impose long term restrictions on its use.

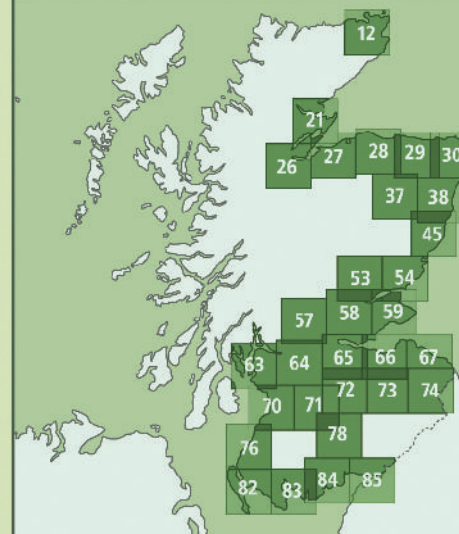
The LCA is a seven class system. Four of the classes are further subdivided into divisions. Class 1 represents land that has the highest potential flexibility of use whereas Class 7 land is of very limited agricultural value.

The LCA classification is applied through a series of guidelines that allows a high degree of consistency of classification between users. The classification is based upon a number of assumptions. These specifically include the potential flexibility of cropping and agricultural options, assuming a high level of management. However they exclude other factors, such as distance to market and individual landowner choices, all of which can influence actual land use decisions.

In this leaflet the thirteen classes and divisions of the Macaulay LCA system have been simplified into four categories which are broadly indicative of the land's agricultural capability:

- **Arable Agriculture (LCA classes 1-3.1)**
- **Mixed Agriculture (LCA classes 3.2-4.2)**
- **Improved Grassland (LCA class 5.1-5.3)**
- **Rough Grazing (LCA classes 6.1-7)**

### Buying your LCA Map



Maps of Land Capability for Agriculture (LCA) in Scotland are published at the scale of 1:50,000 and are available for the areas shown on the index map (left).

Another series of LCA maps is also available at the smaller scale of 1:250,000 and covers the whole of Scotland in seven map sheets.

*Further details about these maps can be found at the web address below:*

<http://www.huttonltd.com/products>



## Land capable of supporting **Arable Agriculture** (Class 1 to Class 3.1)



*Soils are deep, easily worked and exhibit free to imperfect drainage.*

Land in these classes, often referred to as prime agricultural land, is capable of being used to produce a wide range of crops. The climate is favourable, slopes are no greater than 7 degrees and the soils are at least 45cm deep and are imperfectly drained at worst. This land is highly flexible for other uses as well, such as for biofuel crops and woodland, although current management may make other options, such as heathland restoration, difficult in the short term.



*Land in these classes offer a wide range of cropping options.*

Map (right) shows the distribution of land capable of supporting arable agriculture in Scotland which covers 625,800 hectares or 8 per cent of Scotland's land area.



## Land capable of supporting **Mixed Agriculture** (Class 3.2 to Class 4.2)



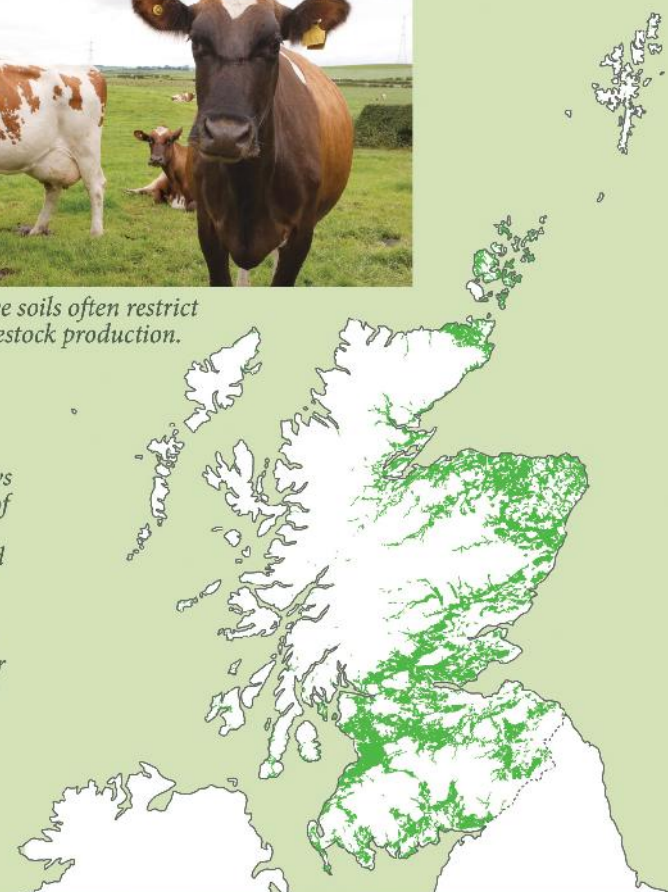
*Class 3.2 land with mixed farming comprising improved grassland and cereals.*

Land in these classes is capable of being used to grow a moderate range of crops including cereals (primarily barley), forage crops and grass. Grass becomes predominant in the rotation in class 4.2 whilst other more demanding crops such as potatoes can be grown in Class 3.2. The climate is less favourable than on prime land, slopes up to 15 degrees are included and many soils exhibit drainage limitations.



*Moisture retentive soils often restrict agriculture to livestock production.*

Map (right) shows the distribution of land capable of supporting mixed agriculture in Scotland which covers 1,541,100 hectares or 20 per cent of Scotland's land area.





## Land capable of supporting **Improved Grassland** (Class 5.1 to Class 5.3)



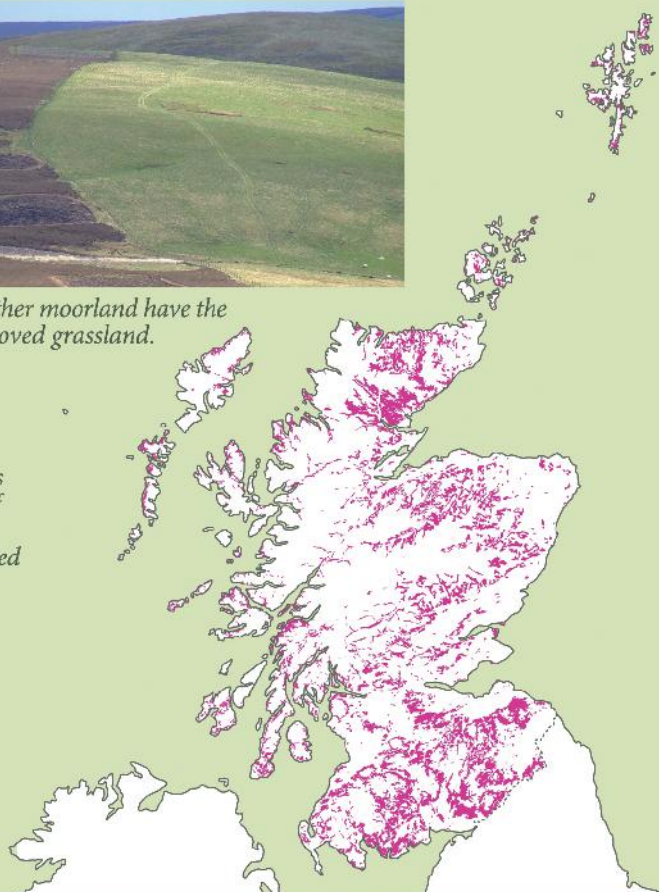
*Land limited to grass production by slope limitations.*

Land in this class has the potential for use as improved grassland. A range of different limitation types, either operating singly or in combination, can restrict the land capability to this class. These limitations include climate, slope, wetness, and often a heterogeneous pattern of conditions that render even occasional cultivation unsuitable. Land which has had this potential for improvement exploited is much more productive than land which remains in its unimproved state.



*Some areas of heather moorland have the potential for improved grassland.*

Map (right) shows the distribution of land capable of supporting improved grassland in Scotland which covers 1,405,700 hectares or 18 per cent of Scotland's land area.



## Land capable of supporting only **Rough Grazing** (Class 6.1 to Class 7)



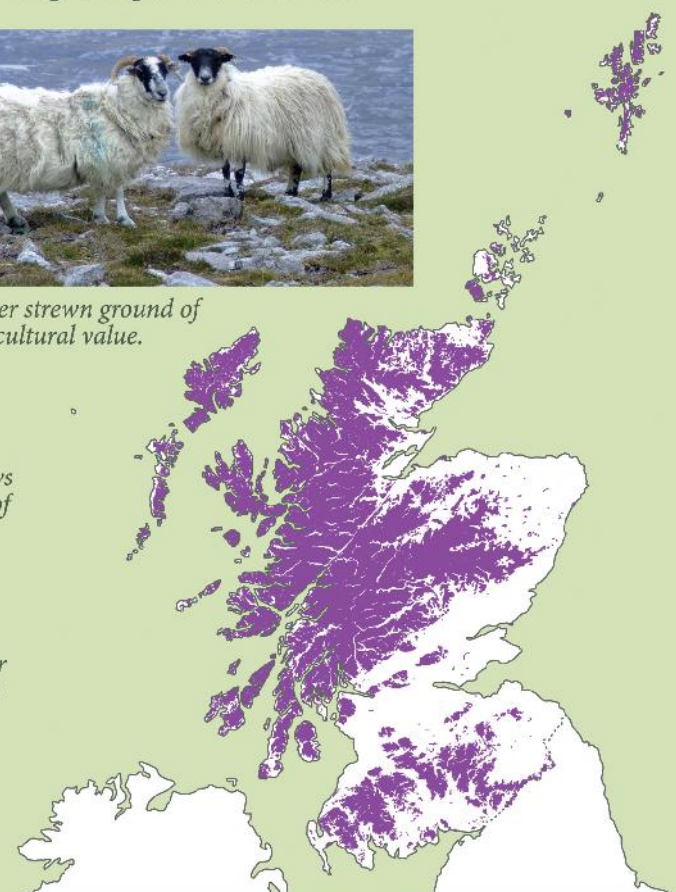
*Steep rocky ground under rough grassland provides high quality rough grazing.*

This land has very severe limitations that prevent sward improvement by mechanical means. This land is either steep, very poorly drained, has very acid or shallow soils and occurs in wet cool or cold climates zones. In many circumstances, these limitations operate together. The existing vegetation is assessed for its grazing quality (Class 6.1 is of high grazing value for example) but Class 7 land is of very limited agriculture value. Nonetheless, this ground often has a high value, for example in terms of storing carbon in its organic soils and supporting rare species and habitats.



*Rocky and boulder strewn ground of very limited agricultural value.*

Map (right) shows the distribution of land capable of supporting only rough grazing in Scotland which covers 4,035,800 hectares or 51 per cent of Scotland's land area.





# Land Capability for Agriculture in Scotland

## Land capable of supporting Arable Agriculture

- Class 1** land is capable of producing a very wide range of crops and there are no or only very minor physical limitations affecting agricultural use.
- Class 2** land is capable of producing a wide range of crops, there are minor physical limitations affecting agricultural use and the land is highly productive.
- Class 3.1** land is capable of producing a moderate range of crops with high yields of cereals and grass, potatoes and other vegetables are also grown.

## Land capable of supporting Mixed Agriculture

- Class 3.2** land is capable of producing a moderate range of crops with an increasing trend towards grass within the rotation.
- Class 4.1** land is capable of producing a narrow range of crops; enterprises are based primarily on grassland with short arable breaks.
- Class 4.2** land is primarily suited to grassland with some limited potential for other crops (barley, oats and forage crops).
- Unclassified land.**
- Build-up area.**

## Land capable of supporting Improved Grassland

- Class 5.1** land is capable of use as improved grassland; establishment of the sward and its maintenance present few difficulties.
- Class 5.2** land is capable of use as improved grassland; sward establishment presents no difficulties but physical limitations can cause maintenance problems.
- Class 5.3** land is capable of use as improved grassland and although the sward can be established, deterioration can be rapid due to a range of factors.

## Land capable of supporting only Rough Grazing

- Class 6.1** land is capable of only rough grazing due to intractable physical limitations; the semi natural vegetation provides grazing of high value.
- Class 6.2** land is capable of only rough grazing due to intractable physical limitations; the semi-natural vegetation provides grazing of moderate value.
- Class 6.3** land is capable of only rough grazing due to intractable physical limitations; the semi natural vegetation provides grazing of low value.
- Class 7** land is of very limited agricultural value and use is restricted to very poor rough grazing.

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