Crops and livestock

Scotland produces a range of crops and livestock. Our agricultural industry provides the basic ingredients for our food and drink industry, and is important for our health, environment and economy – particularly in our rural communities.

Summary

Key messages

- Agriculture is the main land use in Scotland, affecting nearly 80% of our land area.
- Scotland's climate, soils and topography affect the types of agriculture the land is able to support.
- Our best-quality land, capable of producing a variety of crops, is found along the east coast.
- Nearly 10% of our agricultural land produces crops, while almost 60% can only support rough grazing.
- Despite the small area of crops, its relative economic significance is high, accounting for 34% of our agricultural output.
- Scotland is famous for the quality of its livestock products, and maintaining quality is as important as quantity for the future health of the livestock industry.
- Scotland's agriculture is vital to our rural communities, providing much-needed employment and contributing to the rural economy.
- Much of Scotland's agriculture is only economically viable because of external support payments.
- Agriculture has an impact on the wider environment and it is important that land is managed sustainably so that it can continue to produce food in the future.

State and trend

State: Moderate - medium agreement, high evidence

Trend: Stable/declining - medium agreement, low evidence

There is an explanation of the diagram and further information on how we carried out the assessments on the summary pages.

- Our climate, topography and soils all affect what types of agriculture the land is able to support. Some land is suitable for growing crops, while some is suitable only for rough grazing.
- However, some agricultural sectors are in a better state than others. The state is assessed as 'moderate', which is an average of all sectors – crops and livestock.

- In the short term, from year to year, agricultural output is greatly affected by the weather. However, the longer term trend is assessed as stable / declining – again, this is across all agricultural sectors.
- We have stated how confident we are in the assessments based on the level of agreement between the specialists involved, and the quality and quantity of the supporting evidence.

Overview

Agriculture is the predominant land use in Scotland, with about 80% of our total land area used for this purpose. Scotland's climate, soils and topography (the slope of the land, which direction the land faces and how high it is) influence the distribution of different farming systems across the country. Most of our agricultural and horticultural crop production is located in the east of the country in coastal areas, while most of our dairy production is located in lowland grassland areas in the south-west. Large parts of the uplands are only suitable for rough grazing. These natural constraints, along with environmental and economic factors, affect the ability of Scottish farmers to increase food production while protecting our environment and landscapes.

Agriculture in Scotland

The total agricultural area in Scotland, including common grazings (areas of open land where the sheep and cattle owned by a number of different farmers or crofters graze together), totalled 6.19 million hectares (ha) in 2013, which is 79% of the total land area of Scotland.

Land capability

Our climate, topography and naturally acidic soil all affect what we are able to use the land to grow. All of these factors vary across the country, which results in a naturally diverse range of conditions suitable for different types of agriculture. Under the Land Capability for Agriculture (LCA) system, we classify land by taking into account what it could grow (its cropping flexibility) and how well it could grow it (its potential productivity) based on its physical characteristics (that is, its soil, the climate and its topography).

There are seven classes, class 1 being land capable of producing a wide variety of crops and class 7 being land of very limited agricultural value. Some of these classes have sub-classes to further distinguish the quality of the land.

Figure 1 shows the distribution of different classes of land across Scotland and illustrates that although poor-quality land (classes 5 to 7) covers most of the country, there is an area of high-quality land (classes 1 to 3.1) in the east of the country that provides many agricultural options.

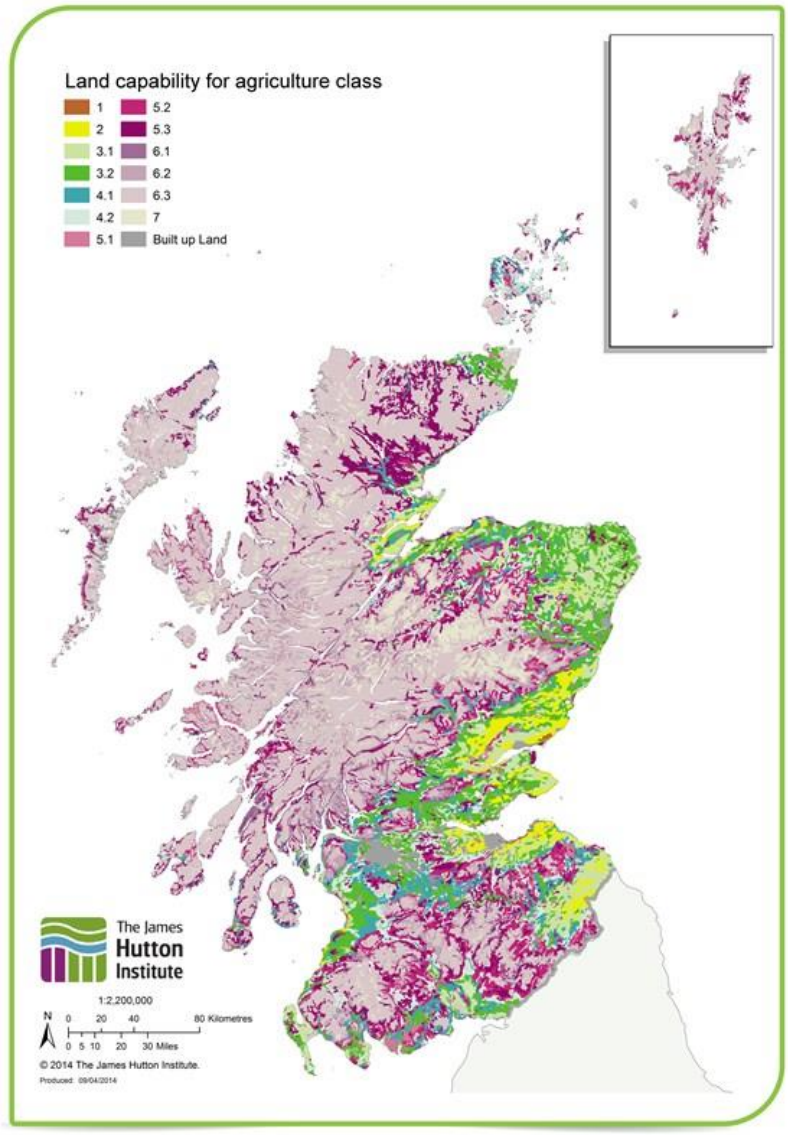

Figure 1: Land capability for agriculture in Scotland

There is a strong relationship between LCA and actual agricultural land use. Figure 2 shows that:

- cereals, other crops and horticulture are prevalent in land classes 1 to 3.1;
- grassland-based farming is more common in class 3.2;
- grassland-based farming dominates classes 4 to 5.1;
- rough grazing becomes increasingly more important in classes 5.2 to 7.

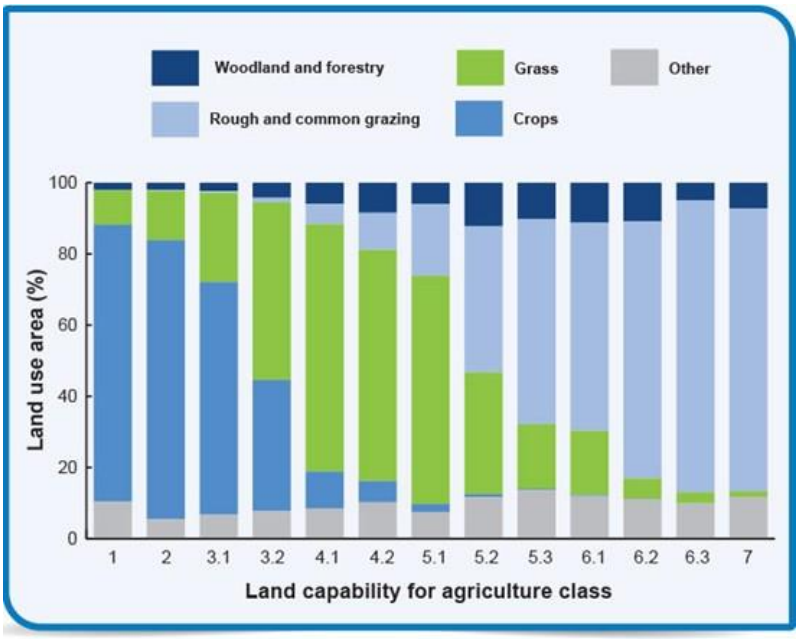

Figure 2: Agricultural land use in different land capability classes

Source: (modified from) The James Hutton Institute

In essence, land is being used in line with, or close to, its agricultural capacity.

Land use

The proportions of various agricultural land uses in Scotland is shown in Figure 3. Nearly 60% of agricultural land in Scotland is covered by rough grazing (e.g. heather heathlands and grassy moorlands) and common grazings.

'Managed' grassland (that is, sown grassland, including permanent pasture and land used for grazing but not rough grazing) covers about 20% of our agricultural land. Most of this is found in the lowlands in south-west Scotland, where the majority of dairy farms are located. Crops cover about 10% of our agricultural land.

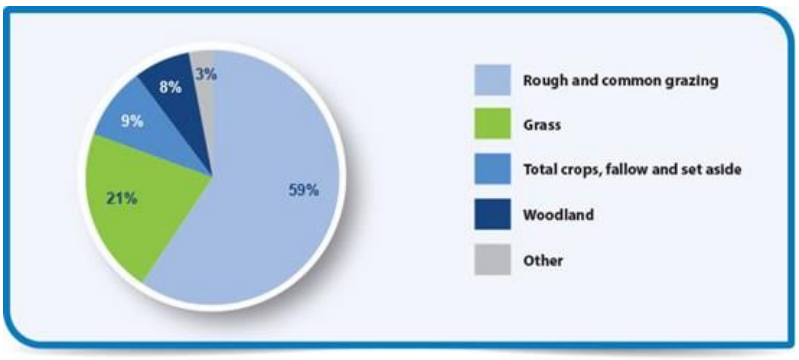

Figure 3: Agricultural area of Scotland by land use, June 2013

Economic importance of Scottish agriculture

Figure 4 shows how important each land use is in terms of its contribution to Scotland's total economic output from agriculture. While a large proportion of our economic output comes from livestock, we also have significant cereal, horticulture and potato sectors. So despite the relatively small area of land used to grow arable crops, its relative economic importance is high; 10% of the land produces 34% of the output.

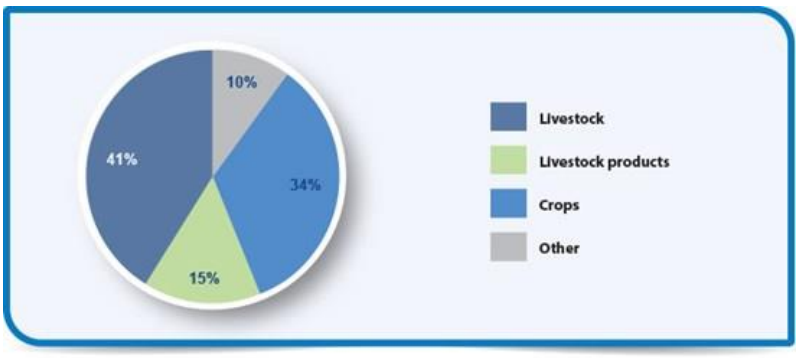

Figure 4: Relative importance of each sector to total economic output of agriculture in Scotland (2012)

Scottish agriculture had a gross output of £2.78 billion in 2012. Agricultural gross value added (GVA) is a measure of the contribution of agriculture to the Scottish economy. Agriculture accounted for 0.8% of Scottish GVA in 2012. However, this does not account for the fact that agriculture is the first stage of production for other industries, such as the food and drink industry. For example, exporting food and drink products added £4 billion to the Scottish economy in 2010. Without domestic agriculture, this additional value could not be achieved.

In addition, in 2012 Scottish farmers spent some £2.7 billion on inputs such as animal feed (£549 million), hired labour (£325 million) and fertilisers (£233 million). This also has a direct impact on other industries, such as road haulage, meaning the final contribution of agriculture to the Scottish economy is much larger.

There were a total of 67,400 people working on agricultural holdings in June 2013, accounting for around 2.5% of the active Scottish workforce. However, nearly 40,000 of these were occupiers and their spouses (employed full time and part time). The remaining jobs were distributed between full-time employees (13,500), part-time employees (7,500) and temporary positions (6,800). Nonetheless, this is a significant source of employment in rural communities. Agriculture, forestry and fishing accounts for 15% and 10% of employment in remote rural and accessible rural areas, respectively.

State

Scotland grows a wide range of crops and produces high-quality livestock and livestock products. However, not all of the land used for agriculture is cultivated; it includes large areas of moorland used as rough grazing for sheep and cattle. The areas and types of crops grown and livestock numbers have changed over time for reasons that include consumer preferences and changes in agricultural support payments. The main pressures on our agricultural industry are the impacts of climate change, the need to protect the environment from the effects of agriculture, and changes in agricultural support payments.

State

Not all of the 6.19 million ha of agricultural land in Scotland is cultivated. According to the Scottish 2013 June Agricultural Census, in June 2013:

- arable and horticultural crops cover about 10% (586,800 ha) of Scottish farmland;
- about 80% of the crops grown were cereals, with nearly three-quarters consisting of barley (339,100 ha), as well as considerable amounts of wheat (86,800 ha), oilseed rape (33,700 ha), oats (31,700 ha) and potatoes (29,100 ha);
- strawberries (912 ha), grown mainly under cover, generally provided the largest source of income in Scottish horticulture;
- grassland covered about 20% (1.32 million ha) of our agricultural land;
- nearly 60% (3.65 million ha) of our agricultural land is covered by rough grazing and common grazings;
- there were 1.8 million cattle; 40% of which were beef cattle and 15% dairy; 6.57 million sheep, 319,400 pigs and 14.17 million poultry.

Crops and livestock numbers fluctuate, and there have been some dramatic changes over time for reasons such as technological changes (such as new machinery), new cereal varieties, new crops and responses to changes in policy and incentives.

The amount of agricultural land in Scotland has declined from 6.39 million ha in 1982 to 6.19 ha today. There have also been changes in land use within the agricultural areas. For example, since 1982 the area used for arable farming has shrunk by about 120,000 ha and rough grazing has declined by about 880,000 ha, while the area of permanent grassland (sown grassland more than five years old) has increased by 290,000 ha.

Within the arable sector, there has been a large increase in wheat and a decline in spring and winter barley since 1982. Nevertheless spring barley remains Scotland's main arable crop. Oilseed rape was virtually unknown in 1982 in Scotland, but by 1994 it was sown in up to 70,000 ha; however, by 2013 this dropped back to just under half this figure. The area of potatoes has remained relatively stable at around 30,000 ha. Until the mid-1950s, oats were the dominant cereal in Scotland, occupying around 75% of the arable land; whereas now it only occupies 5%. The introduction of autumn-sown crops (such as winter wheat), changes in dietary preferences and responses to the market are responsible for these changes (Figure 5).

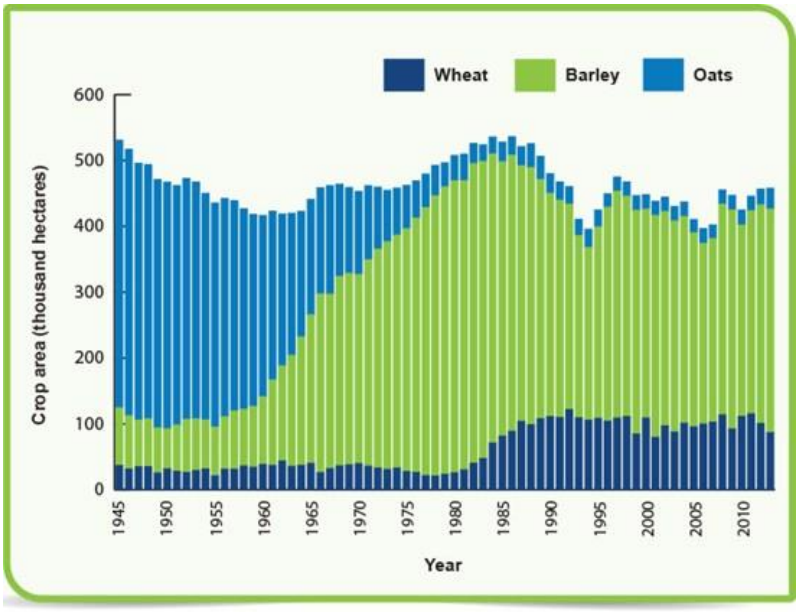

Figure 5: Changes in cropping areas from 1945 to 2013

Source: Scottish Government Agricultural Statistics

Cereal yields

Cereal production has been relatively stable over the last 20 years, varying between 5 and 7 tonnes per hectare per year depending on the weather. Despite recent poor yields, there is a long-term trend of increasing yields, with the recent 10-year average of 6.5 tonnes per hectare being 7% higher than the previous 10-year average. This long-term increase is likely to be due to more efficient farming practices as well as the development of higher-yielding crop varieties.

Livestock numbers

Scotland is famed for the quality of its meat and livestock production, and this takes up a much larger proportion of Scotland than crop land (Figure 3). Between 1982 and the present day, cattle numbers have fallen by around 500,000 to 1.8 million. Dairy cattle account for much of this figure, with numbers falling by 40% to around 265,600 in 2013. However, dairy production has not necessarily fallen by a similar amount due to factors such as cattle weight increasing and better feed.

The most significant change has been in sheep numbers, which have fallen from almost 10 million in 1991 to 6.57 million in 2013. Longer-term trends are shown in Figure 6.

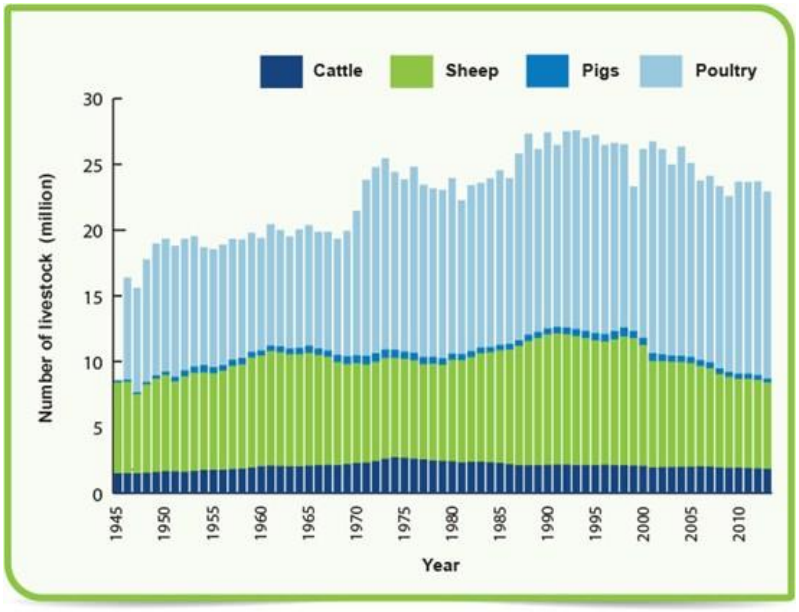

Figure 6: Changes in livestock numbers from 1945 to 2013

Source: Scottish Government Agricultural Statistics

There has been an acceleration in the decline of livestock numbers in Scotland since 2005, when the amount of agricultural support received by farmers was no longer tied to the amount of crops they grew or the number of livestock they kept on their farms.

This was particularly noticeable in the uplands and islands. In some areas there has been an almost complete removal of livestock.

Figure 7 illustrates the reductions in sheep numbers across the country between 1997 and 2013.

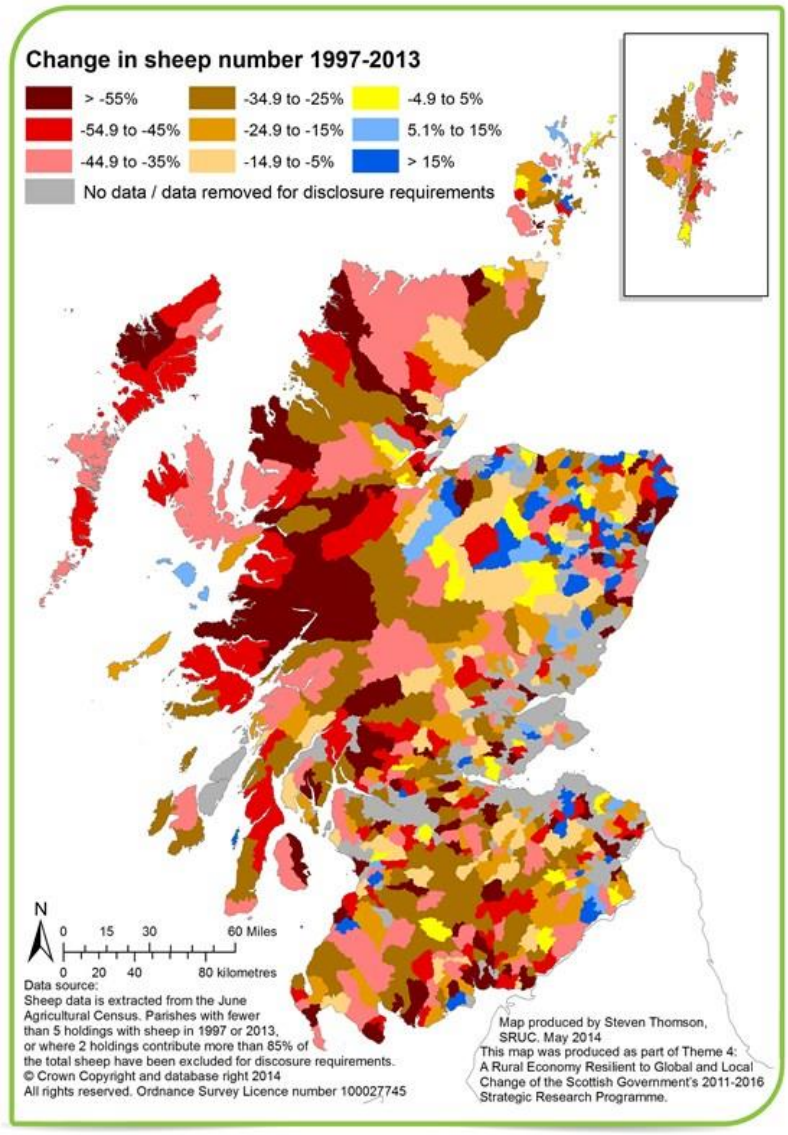

Figure 7: Change in sheep numbers across Scotland between 1997 and 2013

Production

The amount of meat produced from cattle, sheep and pigs has remained relatively stable over the last 10 years; however, the amount of poultry meat has decreased. Beef accounted for more than half of the production by weight (around 180,000 tonnes), which is twice as much as poultry and three times as much as lamb and pork. At the same time, the value of these products has increased, with the output value of cattle increasing from just over £300 million to just over £600 million.

Milk production has been fairly steady over the last 10 years, but has increased in value.

Pressures on Scottish agriculture

There are environmental, social and economic pressures on the production of crops and livestock in Scotland, including changing weather patterns, the need to protect the environment, and changing support payments.

Climate change

Scotland's climate has changed over the last century and is projected to change in future. We can expect to see:

- hotter, drier summers;
- milder, wetter autumns and winters.

There could be a number of benefits to agriculture, such as:

- a longer growing season;
- improved grass and crop growth leading to higher yields;
- opportunities to grow a wider range of crops.

However, there may also be a number of damaging effects, such as:

- reduced field access for grazing, manure spreading and cultivation, due to wetter soils in autumn;
- reduced crop and grass yields due to drought in spring and summer;
- more crop disease and damage from insects due to milder winters failing to kill these insects and microorganisms;
- new and more aggressive pests and diseases in crops and animals; for example, liver fluke in cattle and sheep;
- the introduction and spread of non-native plant species;
- increased soil erosion.

For example, over the past 20 years liver fluke disease in cattle and sheep has increased 10-fold in Scotland and is now a significant cause of loss of livestock. This increase is partially due to increasingly mild, wet winters, and current projections are for the risk to become more widespread with climate change.

Environmental protection

Agricultural activities can affect water, air quality and the climate, as well as the land itself and the wildlife it supports. Increasingly, farmers must balance agricultural production with environmental protection.

Regulations and codes of practice are in place to ensure the environment is protected from any potentially damaging impacts of agricultural operations. These can limit crop and livestock production; however, in general they ensure that the environment is managed in a sustainable way that makes sure we will be able to produce food in future.

Agricultural subsidies

Much of Scotland's agriculture is only economically viable because of European support payments. These payments allow livestock production in areas that otherwise would not be economically viable; however, changes to these payments can affect crop and livestock production. For example, the dramatic reduction in sheep numbers in the uplands was a direct result of changes to support payments in the mid-2000s.

Other pressures

Pressure for land, which is often high-quality land, continues around our towns and cities, and loss of high-quality land could reduce the amount of land available for crowing crops. There is a target to expand woodland by 10,000 ha each year over the next 10 years, and this is likely to lead to the loss of some agricultural land. Scotland has ambitious renewable-energy targets, and any future expansion of crops grown for energy could reduce the number of crops grown for food.

There are a range of other factors that don't necessarily affect our ability to produce food, but can affect how and what is produced. For example, supply chains, consumer pressure and the need to be able to trace crops and livestock can all affect how and what food is produced.

What is being done

For Scotland to continue to produce enough good-quality food, we must maintain our agricultural production. At the same time, we have to manage our land sustainably so that it will continue to provide food in the future. We also have to protect human and animal health, as well as the wider environment. Legislation and policies are in place to help us achieve these goals.

Policy and legislation

The main policy intended to protect food production and encourage sustainable land management is the Common Agricultural Policy (CAP). The CAP provides a programme of agricultural support throughout the European Union (EU). Without the support of the CAP, few of Scotland's farms would be viable and much of Scotland's land would be unproductive. The rural economy would also suffer significantly.

There are two main parts to the CAP. The first (Pillar 1) provides direct support payments, such as the Single Farm Payment Scheme, which is currently worth about £0.5 billion a year to Scotland's farmers. The second (Pillar 2) supports the Scotland Rural Development Programme.

The Single Farm Payment is a direct payment linked to meeting environmental, public, animal and plant health and animal welfare standards and the need to keep land in good agricultural and environmental condition.

The Scotland Rural Development Programme (SRDP) is a programme of economic, environmental and social measures designed to develop rural Scotland. It includes the Less Favoured Area Support Scheme and is partially funded under Pillar 2 of the CAP.

Much of Scotland is designated as a Less Favoured Area (LFA) – that is, an area in which agricultural production or activity is more difficult because of natural difficulties; for example, difficult climatic conditions or low soil productivity. These difficulties result in a significant risk of the agricultural land being abandoned, with knock-on effects on the rural economy, degradation of the environment and the loss of rural landscapes.

The SRDP also supports schemes intended to improve the wider environment; that is, water, air and soil quality, as well biodiversity and climate.

These policies ensure Scottish farming can continue to produce high-quality crops and livestock and protect our food supply (and other industries that rely on it, such as the food and drink industry).

Protection of agricultural land

Scottish Planning Policy recognises that prime agricultural land is an important resource and should be protected from development. The policy is currently under revision, and there may be further protection of agricultural land in future.

The importance of agricultural land is also recognised in the Scottish Government's land use strategy, which states that we should continue to ensure that our prime agricultural land retains its capacity for food production. This means that the main focus of woodland creation (one of the aims of the strategy) will be away from prime agricultural land.

Environmental protection

As well as protecting our food supply, we need to ensure that land is managed well and that the wider environment is protected so that we can continue to produce food in the future. Regulations and codes of practice protect the environment from a range of agricultural activities. Some examples of the types of legislation, the activities affected and the protection for the environment are given in Table 1.

Table 1: Examples of regulations and codes of practice in place to protect the environment from potentially damaging agricultural activities.

Regulation or code of practice	Agricultural activity affected	Part of the environment protected and from what
The Action Programme for Nitrate Vulnerable Zones (Scotland) Regulations 2008	Nitrogen fertiliser applications.	Protects groundwater from nutrient input.
The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (incorporating the diffuse pollution general binding rules)	Various – cultivation and livestock management.	Protects the water environment from diffuse pollution.
Pollution Prevention and Control (Scotland) Regulations 2012	Intensive poultry and pig farming.	Protects habitats, land and water from input of nutrients and acids.
Waste Management Licensing (Scotland) Regulations 2011 Sludge (Use in Agriculture) Regulations (1989 and later amendments)	Application of organic materials to land.	Protects soils from accumulations of potentially toxic elements and nutrients (and, thus, human and animal health).
Farming for a better climate	Various land-use and land-management practices.	Reduces the impact of agriculture on climate change.
Prevention of environmental pollution from agricultural activity (PEPFAA) code	Various land-use and land-management practices.	To protect the wider environment from agricultural pollution.