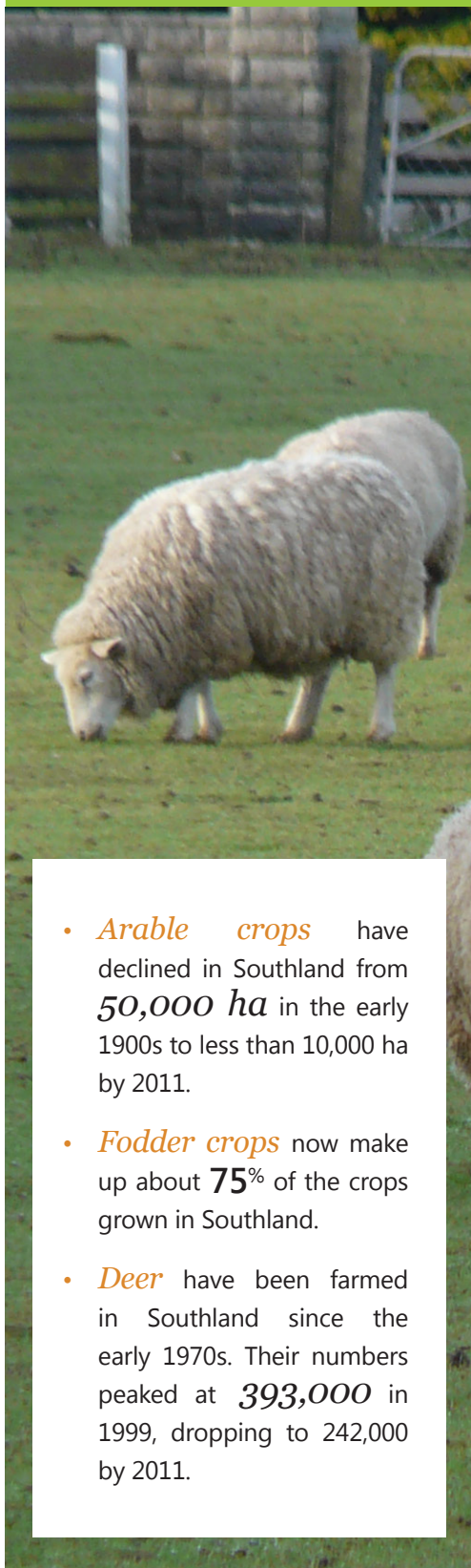




Learn more about the environment and find out what Environment Southland's scientists are up to.

Land Use Change – Agriculture

The changing face of farming in Southland



Southland was colonised relatively early in New Zealand's history and has undergone a dramatic change in vegetation cover over the past 150 years.

From the 1860s to the late 1900s, European settlers and their descendants converted about 43% of mainland Southland to pasture and forestry, resulting in the dramatic loss of native vegetation. By 1985 agricultural expansion into undeveloped areas had largely stopped. However, how we have used agricultural land has changed significantly over recent years. For example, the biggest land use change over the past 20 years has been the conversion of sheep and beef farms to dairy farms.

Early expansion

Large tracts of Southland were once forested, with very few tussock grasslands in southern and western parts. From the 1870s, increasing prices for wheat, meat and dairy saw the rapid expansion of farming across the Southland region.

Areas such as the Waimea Plains were developed for cereal production, while large tracts of forest were cleared for agriculture on the Southland plains. Until this time, extensive agriculture had been limited to the tussock grasslands of northern Southland, which were easier to convert.

The first dairy 'boom'

The first dairy herd was developed in the region in about 1880. Between 1890 and 1932 the dairy industry experienced its first period of significant expansion or 'boom'. The first dairy factory in Southland opened in Edendale in 1882 (today, occupied by the Fonterra Milk Processing Plant) and by 1932 the province had 80 dairy factories. Even though this is described as a 'boom' period, there were still less than 100,000 dairy cows in the region.

The first dairy boom ended during the mid-20th century, when many dairy farmers switched to sheep farming as meat and wool prices climbed. In the 50 years from 1920, cow numbers in Southland declined five-fold while sheep numbers increased four-fold (see Figure 1).

Agricultural expansion – 1920-1970

Agriculture in Southland continued to expand into more isolated areas from 1920 to 1970. The introduction of aerial top-dressing allowed pasture to be developed in increasingly remote areas. In addition, advances in farm machinery and drainage techniques resulted in significant areas of swampland being drained for pasture.

Diversification of land use was also occurring at this time, for example with horticulture and agroforestry.

- **Arable crops** have declined in Southland from **50,000 ha** in the early 1900s to less than 10,000 ha by 2011.
- **Fodder crops** now make up about **75%** of the crops grown in Southland.
- **Deer** have been farmed in Southland since the early 1970s. Their numbers peaked at **393,000** in 1999, dropping to 242,000 by 2011.

The changing 'face' of farming

Sheep farming dominated rural Southland during the 20th century, with sheep numbers peaking at over 9 million in 1984. Dairying was relatively minor during this time (see Figure 1).

However, the deregulation of the agricultural sector and subsequent removal of subsidies in the early 1980s changed the 'face' of farming in Southland. Farmers were looking at other ways to increase productivity, resulting in the expansion of deer farming and forestry.

Subsequently, sheep numbers in Southland began to drop, from 9 million in 1985 to 4.15 million in 2011.

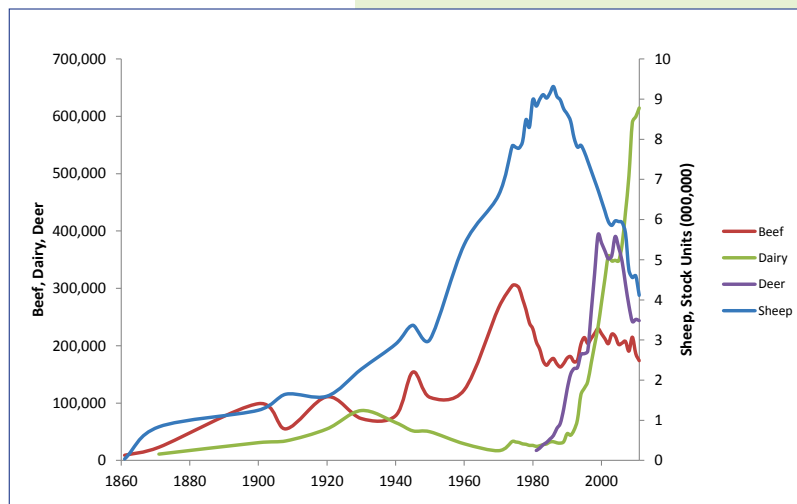


Figure 1: Stock numbers in New Zealand 1860-2011. (Note: beef, dairy and deer numbers – refer left axis, sheep numbers – refer right axis.) Source: Statistics New Zealand, Agriculture Statistics.

The rise of the dairy cow

The 1990s saw the start of dramatic changes to farming in Southland. Cheap land prices and rising international prices for dairy products resulted in the rapid conversion of sheep and beef farms to dairy farms. In 2010/11, the average Southland herd size was 555 cows – over four times that before the 1990s 'boom'.

With the increase in dairying came an increase in fodder crops. Typically, dairy farmers in Southland require the equivalent around 12-20% of their farm area in winter forage crop. This equates to about 20,000-30,000ha of crops required to support Southland's current dairy herds.

Sheep and beef farms also grow fodder crops as supplementary feed. In total it is estimated that Southland grew between 54,000-64,000 ha of crops in the 2010-11 season.

Impacts on the environment

Intensive agriculture has put our natural systems under a pressure that they've never had to cope with before. Environmental pressures from these land use changes can be severe. The large scale loss of indigenous vegetation across the region has accelerated erosion processes, reduced biodiversity and led to the increased sedimentation of the region's waterways.

The recent shift to high nutrient loss, intensive land uses such as dairying, winter cropping and intensive sheep and beef farming, has meant that we are seeing significant declines in soil and water quality across the region.

Protecting our land and waterways

Scientists at Environment Southland have found that Southland's water quality has been declining in intensively farmed lowland catchments throughout the region.

However, by better understanding the changes in land use that have occurred in the region and their environmental effects, we can be more effective with resource management planning and decision-making.

It's important that any future changes in land use and intensification are carefully managed to protect Southland's soil, water, air and biodiversity resources for future generations to utilise and enjoy.

For further information, or to read the **Land Use Change in the Southland Region** report, go to www.es.govt.nz

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