

Farming since the Famine
Irish Farm Statistics 1847-1996



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Spreading retted flax, c.1912 Green Collection, WAG 1015, Ulster Folk and Transport Museum

Central Statistics Office

Illustrations

Spreading retted flax, Toome, County Antrim, c.1912 Green Collection, Ulster Folk and Transport Museum.

Steam thresher, c.1915 Bigger Collection, Ulster Museum.

Breaking clods on potato ridges, Glenshesk, County Antrim, c.1900 Welch Collection, Ulster Museum.

Goats, County Tyrone, c.1910 Rose Shaw Collection, Ulster Folk and Transport Museum.

1 Introduction

1.1 General Features

This publication reviews the areas under crops and the numbers of livestock and agricultural holdings in the State. The crop and livestock series cover the period from 1847 to 1996 while the holdings series are taken from selected years between 1855 and 1991. Figures for Ireland and Northern Ireland are given in Tables 10-17 of the Detailed Tables. The number of persons recorded in each Census of Population is given in Table 18.

The crop and livestock series which extends over 150 years is one of the oldest in the world. Sir Thomas A. Larcom initiated it in 1847 as part of his duties at the Board of Works. He had previously been responsible for carrying out the Ordnance Survey of Ireland during the period 1826 to 1842 and for the Census of Population in 1841. The Great Famine of 1846-1847 was a major factor prompting the commencement of the series. Comparable British returns, giving the acreages under crops and the numbers of livestock, did not commence until 1867. Credit for the series must also go to the farmers who supplied the figures, to the Royal Irish Constabulary and the Gardaí who collected them over most of the period and to the staff who processed them.

The earlier Reports in which the statistics were published described the agricultural conditions at the time with references to industrialisation, emigration, forestry, meteorology and other topics. Illustrative extracts for some of these topics are given in Section 4. The General Instructions to Enumerators for the 1900 enumeration together with some relevant statistical papers which illustrate the pre-famine agricultural situation, sampling methodology and other issues are reproduced in the Appendices.

The series are also available on the CSO databank - EireStat and on diskettes. The maps in this publication have kindly been produced by the Department of Geography, St. Patrick's College, Maynooth.

1.2 Terms and Abbreviations

The following terms and abbreviations are used in this publication.

Ireland :	All Ireland (32 counties);
State :	Republic of Ireland (26 counties);
Northern Ireland :	Northern Ireland (6 counties);
Ulster :	Cavan, Donegal and Monaghan (i.e. Counties in the Republic of Ireland);
DED :	District Electoral Division;
ha :	Hectare (2.4711 statute acres).

1.3 Survey Methodology

In June of each year from 1847 to 1918 members of the Royal Irish Constabulary collected particulars of crops and livestock on every farm holding in Ireland. From 1918 to 1923 during the War of Independence and the subsequent Civil War, a combination of postal surveys and returns obtained from representative farmers allowed estimates to be produced. In 1924 an enumeration was made in each District Electoral Division (DED) in which a police station was situated and in 1925 the system of complete enumeration for the whole country was reinstated and continued uninterrupted up to 1953, with members of the new police force, the Garda Síochána, acting as enumerators.

As a result of declining numbers in the Garda force in rural areas reductions in the enumeration were introduced in 1954. Relief was given to a number of Garda stations in which the strength was small. The net effect was to omit about 20 per cent of the DEDs; similar relief was given in 1955. In 1956 and 1957 the enumeration was restricted to approximately 25 per cent of the DEDs. In 1958 and 1959 around 60 per cent of DEDs were included in the sample. In 1960 a complete Census was again undertaken.

A full Agricultural Census was held at five yearly intervals between 1960 and 1980 inclusive with 50 per cent sample surveys in the intervening years and in 1981. The sample enumerations had a coverage of 25 per cent from 1982 to 1987.

From 1988 to 1990 the surveys were undertaken by post with the samples selected from a register compiled from the holdings in the DEDs that had been included in the ongoing sample enumerations. The changeover to postal surveys marked a fundamental change in the methodology and coverage of the surveys. This change is discussed more fully in Section 3.2.

After an eleven year lapse a full Census of Agriculture was held in June 1991. It was organised in conjunction with the 1991 Census of Population. Since 1992 surveys have been undertaken by post using the register of farmers compiled from the 1991 Census of Agriculture.

1.4 Published Sources

The following publications were the main sources used to compile the series from 1847 to 1960 (a fuller listing is given in Appendix 1):

Agricultural Statistics: 1847-1926, 1927-1933, 1934-1956 and 1960;
Agricultural Statistics Ireland Annual Reports: 1855-1920.

The various organisations responsible for the collection, processing and publication of the figures were:

1847-1850	Office of Public Works
1851	Census Commissioners
1852-1899	Registrar General
1900-1923	Department of Agriculture and Technical Instruction
1924-1948	Department of Industry and Commerce
1949 to date	Central Statistics Office

1.5 Crop and Livestock Categories

The *Detailed Tables* include figures on numbers of holdings, areas under crops and numbers of livestock. Twelve crop and ten livestock categories are given with figures at County level for most years. The categories and the level and period of availability are given in Table A:

Table A Availability¹ of crop and livestock statistics, 1847-1996

Category	Availability	No County figures
Corn crops	1847-1996	
Wheat	1847-1996	1921-24
Oats	1847-1996	
Barley	1847-1996	1921-24
Root & green crops	1847-1992	
Potatoes	1847-1996	
Turnips	1847-1996	1921-24
Sugar beet	1926-1996	
Flax	1847-1959	1921-24
Tillage	1847-1996	1921-24
Hay and pasture	1851-1996	1919-24
Crops and pasture	1851-1996	1919-24
Cattle	1847-1996	
Cows	1854-1996	1921-24
Sheep	1847-1996	
Ewes	1854-1996	1921-24
Pigs	1847-1996	
Female breeding pigs	1901-1996	1921-24
Poultry	1847-1996	1919-24
Goats	1847-1953, 1980, 1991-1996	1921-24,1933
Horses and ponies	1847-1996	1921-24
Mules, jennets, asses	1848-1953, 1960, 1975, 1980, 1988-1996	1921-24,1933

¹ *No crop estimates at county level are available for 1956 to 1957 and for 1977 to 1979. For all categories, no county figures are available for 1981 to 1990 and for 1992, 1994 and 1996.*

2 Commentary

The commentary on changes in the numbers of holdings, areas under crops and numbers of livestock refers to changes at State level (26 counties) rather than at All Ireland (32 counties) level.

2.1 Agricultural Holdings

Under the enumeration system (up to 1987) an agricultural holding was defined as consisting of all the land owned or occupied by one or more persons including land rented out in conacre (11 months system). An area threshold of 1 acre or more was applied as the minimum size of a holding.

Between 1855 and 1910 the number of holdings of 1 acre or more decreased from 419,500 to 404,000 or by 4 per cent. A change in the method of enumeration of agricultural holdings in 1910 resulted in a significant discontinuity. Previously where a holding crossed a townland boundary, each townland part was considered as one holding. From 1910 onwards this boundary was enlarged to the enumeration district (DED) which contained on average around 20 townlands. This methodology change had the effect of reducing the number of holdings by around 11 per cent. The relevant figures under the different methodologies are given for 1910 and 1913 in Table B.

Table B Holdings numbers under different methodologies, 1910-1913

Category	1910	1913	Percentage
1-5 acres	48,274	37,912	-21.5%
5-15 acres	115,882	95,976	-17.2%
15-30 acres	103,547	93,511	-9.7%
30-50 acres	58,728	54,949	-6.4%
50-100 acres	48,524	46,395	-4.4%
100-200 acres	20,486	20,579	0.5%
200 acres and over	8,602	9,626	11.9%
Total over 1 acre	404,043	358,948	-11.2%

Results from the new methodology were first published for 1913 and showed 358,900 holdings. The rate of decline was fairly even from then until 1955 when there were an estimated 313,300 holdings. Between 1955 and 1980 a further 50,000 holdings ceased operating.

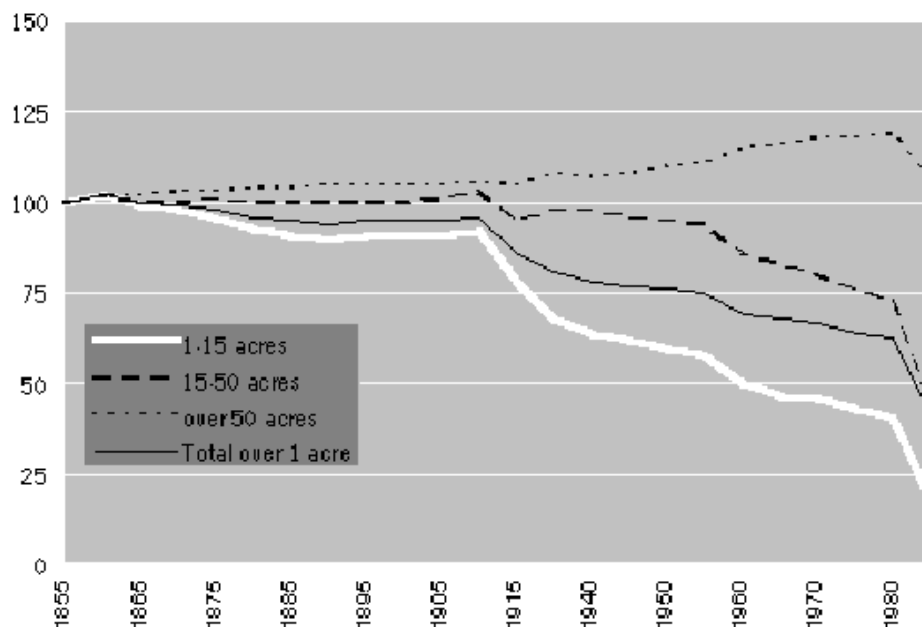
A change in definition and the adoption of a 1 hectare (ha) area threshold in the 1991 Census resulted in another major discontinuity in the series. A farm was defined in accordance with the definition adopted for the European Union surveys on the structure of agricultural holdings. Under this definition a farm could be composed entirely of land rented in and could also contain land located in different districts. For practical purposes only farms of at least 1 hectare (2.4711 acres) or those engaged in intensive production were included.

The 1980 EU Farm Structures Survey was conducted along broadly similar lines to the 1991 Census. An analysis of a sample of the 1980 returns using the farm and 1 hectare threshold approach showed that there were 223,500 farms. This was 40,000 less than the actual number of holdings estimated in the 1980 Census. Another 30,000 holdings would probably have been screened out in 1980 had the more rigorous field operation employed in 1991 been in operation then. Hence the new methodology was largely responsible for the decline from 263,600 holdings in 1980 to 170,600 farms in 1991. A further factor would have been the increase of 120,000 ha in the area under woods and plantation in the eleven year period.

The differences between the 1980 and 1991 Censuses of Agriculture are discussed more fully in the Detailed Results of the 1991 Census of Agriculture which was published in May 1994 (Pl. 0740). An extract from this Report is contained in Appendix 3.

Since 1991 estimates of the number of farms in the State have been made based on returns to the annual June postal surveys. There were an estimated 153,400 farms in operation in 1995. Tables 3, 6, 9, 12 and 15 give the numbers of holdings at State and other geographical levels.

Diagram 1 shows the number of holdings in particular size classes indexed to a base year of 1855.



There was a major change from tenant farming to farmers owning their own land during the period. While this change is not reflected in the numbers of holdings (tenant holders were regarded as the occupiers of holdings in the Enumerations), it may have encouraged farmers to invest in land improvements which may ultimately have resulted in higher yields from crops and livestock.

Gladstone's Land Act of 1881 set up the Land Commission and was generally seen as giving the farmer some security through fair rents and more tenure rights. Subsequent Land Acts assisted tenants with the purchase of their holdings. Land purchased under these Acts between 1870 and 1922 was sold at an average price of £9 per acre while land purchased after 1922 averaged £7 an acre. The lower price is explained by the land being of poorer quality. The 1978 Statistical Abstract explained the situation thus:

A main object of the principal Land Acts of this century has been the completion of tenanted land purchase. Through the operation of the earlier Acts (1870-1922) some 300,000 tenants were assisted in purchasing 11 million acres at a price of £100 million (average of 37 acres at £9 an acre).

Despite the vast amount of work done under these Acts, however, over 25 per cent of tenancies remained under landlords by 1923 and, as is only to be expected in such a residue, these tenancies comprise the most acutely uneconomic holdings in the State, situated mainly in Western areas where rundale (non-adjacent fields making up one holding) conditions predominate.

Since the passing of the 1923 Act some 114,000 tenancies comprising almost 3,126,000 acres have been purchased from landlords for about £21 million.

2.2 Crop Areas

Since 1847 there has been a dramatic decline in the area under the main crops with the 1996 estimate comprising only 26 per cent of the 1851 area. To see the extent of the changes in the individual crops, Table C shows the maximum and minimum values and the years in which they occurred.

The Agricultural Statistics Ireland Report for 1902 commented on the decline of around 50% in the area under tillage which occurred in the second half of the last century:

What is undeniable is that Irish agriculture has been diverted into a more or less one-sided line of growth by an unusual combination of causes of which foreign competition, chiefly in the matter of cereals and the demand of English and Scotch stock feeders for store cattle, are the chief external ones; while the agrarian unrest and the lack of security engendered thereby are probably the main intrinsic causes. I do not cite what is no doubt uppermost in the reader's mind as a prime cause of the decline of tillage, namely, the continuous rural emigration and the consequent scarcity of labour, because this deplorable drain is at once both cause and effect and because it is easier to see that it must necessarily have had a great influence than to assign to it its exact importance in bringing about the abandonment of arable land.

A decrease of over 3,700,000 consumers in sixty years (not to particularise the effect of this rural drain on the supply of agricultural labour) inevitably brought about a shrinkage of the cultivated area.

Table C Review of crop series at State level, 1847-1996

Category	Maximum		Minimum	
	Year	000 ha	Year	000 ha
Corn crops	1847	1,026	1994	276
Wheat	1847	272	1931	8
Oats	1852	672	1995	20
Barley	1980	366	1939	30
Root and green crops	1859	520	1991	79
Potatoes	1859	374	1991	20
Turnips	1853	128	1993	5
Sugar beet	1987	37	1931	2
Flax	1864	38	1958	0
Crops, fruit and horticulture	1851	1,420	1991	392
Hay and pasture	1905	4,416	1991	3,408
Crops and pasture	1872	5,250	1991	3,800

With the exception of brief periods affected by the two World Wars, the total area tilled remained fairly static in the first half of this century. However since then a sustained decline has again been observed and the total area tilled at present is only around half of what it was at the start of this century.

Table D shows the percentage distribution of the combined main crops area by province for selected years between 1851 and 1996 and the trend in this area at State level. There has been a significant change in the relative distribution of these crops. Leinster's share increased from 37 per cent in 1851 to 67 per cent in 1996. Connacht's share fell from 16 per cent to 2 per cent mainly due to a decrease in the area under potatoes from 61,500 hectares in 1851 to 900 hectares in 1996.

Data on crop yields were collected as part of separate surveys over most of the period. Results for selected periods are given in Table E and show that increases in crop yields were modest in the first 70-75 years but increased significantly since then.

Table D Distribution of main crops¹(1) area by Province and State trend

Year	State	Leinster	Munster	Connacht	Ulster	Trend
		Percentage share				
1851	100	37	33	16	14	100
1911	100	36	30	17	17	46
1936	100	38	30	16	15	44
1970	100	52	32	10	7	37
1980	100	60	29	6	5	39
1996	100	67	28	2	3	26

Table E Annual yield per statute acre at State level, 1851-1995

Crops	1851-1855	1924-1928	1991-1995
		hundredweight (cwt.) = (112 lbs.)	
Wheat	13.8	19.7	61.3
Oats	14.2	18.3	52.0
Barley	17.9	19.4	46.3
		tons (20 cwt.)	
Potatoes	5.5	5.5	11.2
Turnips	16.1	17.3	21.3

Corn Crops

The main corn crops sown in Ireland are wheat, oats and barley. In line with the trend in the total area tilled, corn crops have generally exhibited a continuous decline with some exceptional periods when acreages recovered. The area declined steadily from 1 million hectares in 1847 to just under 400,000 ha in 1898. There was little change in the acreage between 1898 and 1939 with the exception of the 1917-1921 period when acreage rose substantially as a result of Compulsory Tillage Orders.

Compulsory Tillage Orders also resulted in a substantial increase during World War Two. The 1940s were followed by generally declining areas up to 1996. Diagram 2 shows the acreages sown under wheat, oats and barley between 1847 and 1996 for the State.

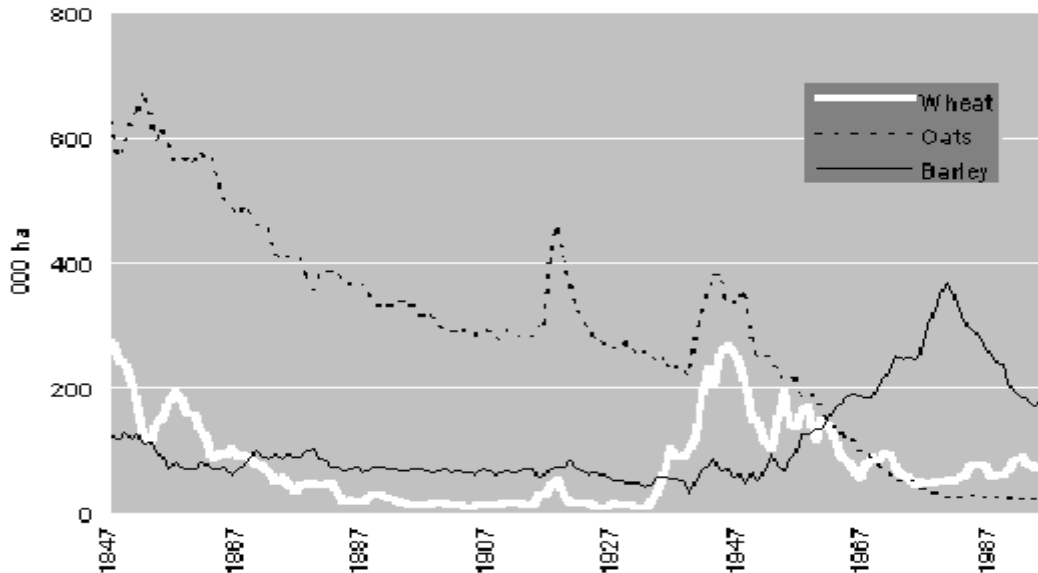
Wheat

There were 272,000 ha under wheat in 1847. By 1853 this had declined to 113,000 ha. Between 1853 and 1857 the acreage increased only to be followed by decreases until the 1880's. There was little change from then until 1933 apart from an increase during World War One.



Steam thresher, c.1915, Bigger Collection, BIG 24, Ulster Museum

Diagram 2 Area under corn crops at State level, 1847-1996



From 1932 to 1938 there were difficult trading relations with Britain largely as a result of the Irish Government's policy on the payment of land annuities. Penal duties were imposed on imports by both countries and these resulted in a substantial increase in the area sown. The 1927-1933 Report comments:

The substantial recovery from 1932 to 1933 in the area under corn crops was a direct result of legislation (Agricultural Produce (Cereals) Act) in 1933, which provided for a bounty on home-grown millable wheat to bring the price up to a fixed price per barrel. Restrictions were at the same time imposed on the importation of wheat, maize and certain feeding stuffs. Provision was made for a proportion of home-grown wheat to be used in the production of wheat meal and flour and increased provision was made for the proportions of home-grown grain to be incorporated in maize-meal mixtures for stock feeding.

Compulsory Tillage Orders were invoked in 1939 and continued with some modifications during the War. They obliged some occupiers to cultivate a certain proportion of tillage. The introduction of compulsory wheat growing in the Order for 1944 was necessary in view of the decrease in the area under wheat in 1943 and because of the country's increasing dependence on home-grown wheat for bread and flour requirements.

The recovery during the 1930s and World War Two was shortlived. The 268,000 ha recorded in 1945 declined to 103,000 ha by 1952. Another recovery during the late 1950s was followed by a decline through the 1960s and 1970s to 49,000 ha in 1981. Since then the area sown has expanded again and an estimated 86,000 ha was sown in 1996. This expansion has been in winter wheat with that area increasing from 19,000 ha in 1980 to 67,000 ha in 1996.

Oats

The long-term decline in tillage is associated more with oats than with any other crop. The highest recorded acreage was 672,000 ha in 1852. This was followed by a steady decline until World War One when 294,000 ha were sown. The 1920s and 1930s saw further contraction before some expansion during World War Two.

Following the second World War, the long term decline in oats resumed and continued, largely uninterrupted, to reach 25,000 ha in 1980. Since 1980 the area sown has stabilised around 20,000 ha or less than 4 per cent of the peak area sown in 1852.

Table F shows the relative area under wheat, oats, barley and potatoes per 100 hectares of crops, fruit and horticulture. The area under oats fell from 42 per cent of the area under crops, fruit and horticulture in 1859 to just 5 per cent in 1996.

Table F Selected crops area per 100 ha crops, fruit & horticulture

Area	Year	Wheat	Oats	Barley	Potatoes
State	1859	12	42	5	28
State	1926	2	42	9	24
State	1970	18	13	40	11
State	1996	21	5	45	6

Barley

Up to 1908 separate figures were shown for bere which is the Scottish name for a type of four-row barley, grown in the springtime. The acreages given for barley include the area sown under bere.

Barley is the predominant cereal crop of the 1990s comprising 61 per cent of corn crops in 1996. This situation is in marked contrast to 1847 when it was the minor cereal comprising only 12 per cent of corn crops. The area under barley fell rapidly from 121,000 ha in 1847 to 61,000 ha in 1866. There was a gradual decrease from 1870 until 1939 when 30,000 ha were sown. World War Two was the start of a sustained period of expansion with the acreage rising to 366,000 ha in 1980. The growth was mainly caused by an increased use of barley as an animal feedingstuff. The 1980 figure is a series maximum however 1981 was the start of fourteen successive annual decreases to a 1994 area of 170,000 ha.

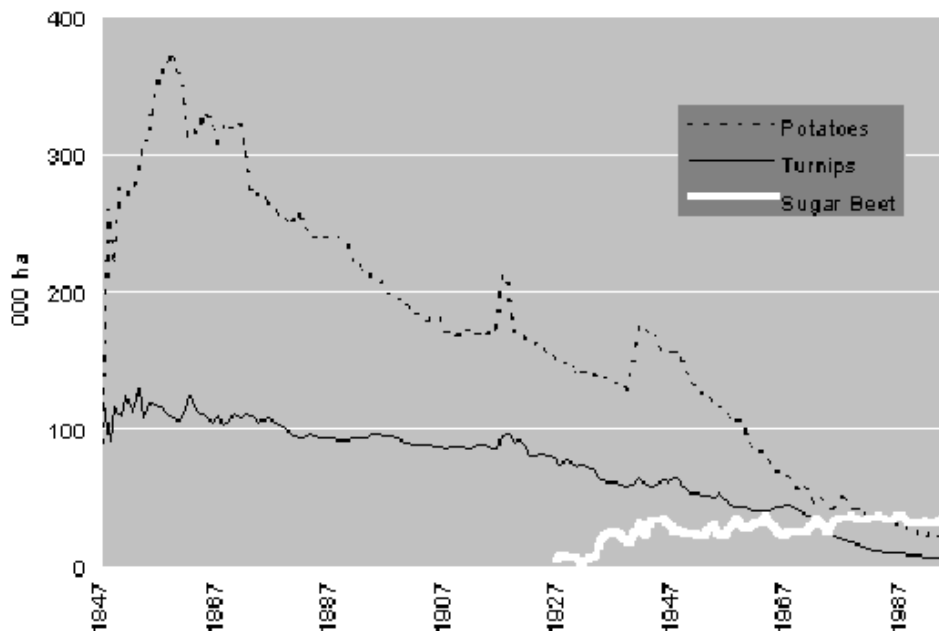
Root and Green Crops

The components of root and green crops have varied in minor respects throughout the series. The main components are potatoes, turnips, swedes, mangels, fodder beet, sugar beet and kale and field cabbage for livestock feeding. Other root and green crops include vetches, hops, rape, linseed, vegetables mainly for sale and kitchen garden produce. In the early years vegetables such as carrots, beetroots, parsnips and cabbages were also included and separately identified. However most minor crops were more usually collected under the residual category 'Other Root and Green Crops'. Maize may have been included before 1975. In years where flax or fruit were included these have been deducted.

Diagram 3 shows the acreages under potatoes, turnips and sugar beet. The 1859 root and green crops area of 520,000 ha is the highest on record. Acreage gradually declined from then onwards apart from some increases during both World Wars. The 1991 estimate of 79,000 ha is the lowest recorded area in the series.

'Other Root and Green crops' were not collected as a separate category in the 1991 Census of Agriculture. However the category 'Other Crops' has been used as an approximation in 1991 and 1992. In 1993 and later years the reform of the Common Agricultural Policy resulted in land that previously was used to grow cereals being returned as fallow or set aside land. Hence the area of 'Other Crops' rose from 5,300 ha in 1992 to 30,500 ha in 1993 which was larger than the combined area under potatoes and turnips. Because of this no total 'Root and Green Crops' figures have been given after 1992.

Diagram 3 Area under root and green crops at State level, 1847-1996





Breaking clods on potato ridges, c.1900, Welch Collection, WOI/56/25, Ulster Museum

Potatoes

The potato crop is associated with one of the most tragic events in Ireland's history - the famine of the late 1840s when millions of Irish people died of starvation or emigrated. Potatoes and oats had been a mainstay of the diet and when a number of blights ruined the potato harvests, the result was famine on a tragic scale.

Bourke (1959) analysed a survey of the potato crop undertaken by the Royal Irish Constabulary in 1846. The results of his analysis indicated that the acreages for 1844-1846 were 785,308 ha, 829,875 ha and 656,014 ha respectively. While some caution should be attached to these estimates, particularly those for 1844 and 1845 as they were collected retrospectively, they place a broader context on the 1847 figure. Bourke also estimated a pre-famine potato balance sheet. From a total production of 15 million tons, he estimated that the three principal uses were as human food (47 per cent), animal feed (33 per cent) and as seed (13 per cent). A further 2 per cent was accounted for by exports and a balancing 5 per cent was attributed to losses or waste.

The potato blight in 1846 caused the area under potatoes to be untypically low at 89,000 ha in 1847 due to a lack of potato seed. By 1848 the potato acreage had recovered to 258,000 ha and by 1854 the area sown exceeded 300,000 ha.

Map A shows the proportion of potatoes per 1,000 ha of Crops, Fruit and Horticulture in 1859 when the potato acreage reached its highest value in the series at 374,000 ha. From then onwards the potato acreage began to decline with the exception of the World War years. In 1897 the area sown was under 200,000 ha. The area went below 150,000 ha in 1927 and below 100,000 ha in 1960. By 1972 the area was at 44,000 ha and this declined to 24,000 ha by 1996.

Turnips

Chart (1908) mentioned that the growing of turnips was encouraged as a valuable feed for livestock and that a considerable crop was grown at the beginning of the eighteenth century. The highest turnips acreage on record is 128,000 ha in 1853. After 1862 the area declined apart from the War years when increases were recorded. In 1926 the acreage went below 80,000 ha for the first time. By 1961 it was down to 39,000 ha and then reached an all-time low of 5,000 ha in 1993.

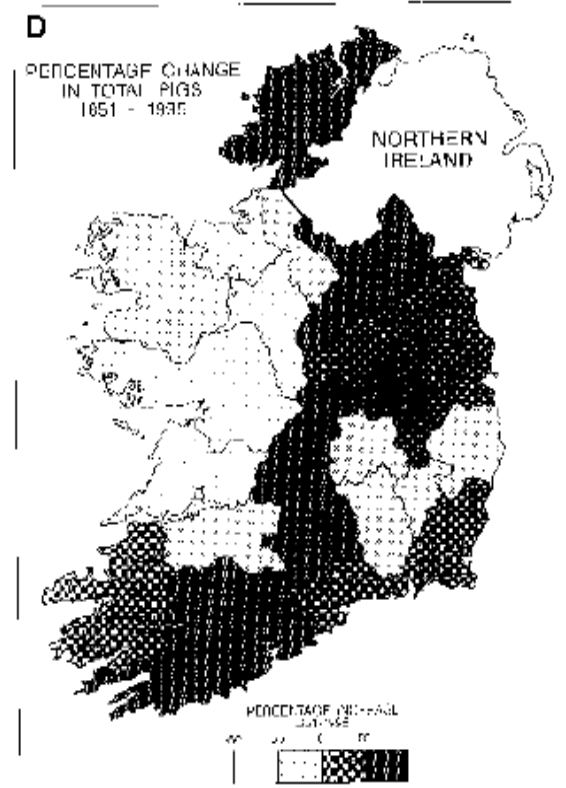
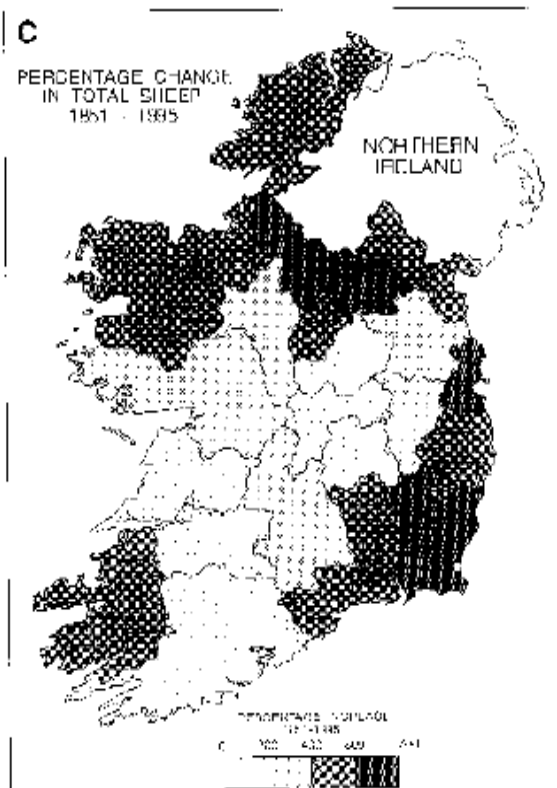
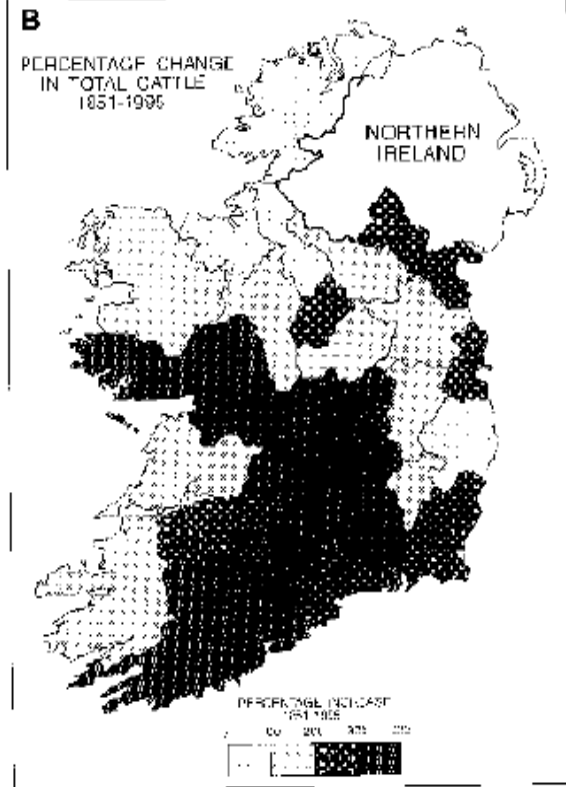
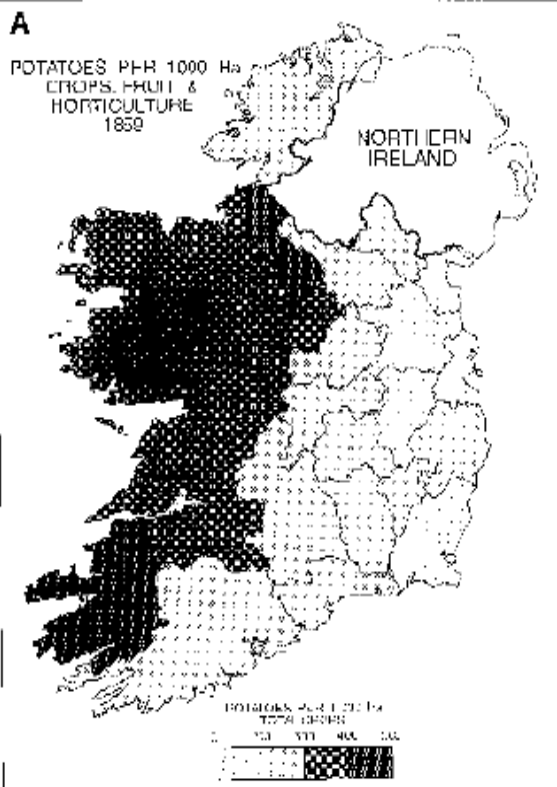
Sugar Beet

Under the provisions of the Sugar Beet (Subsidy) Act, 1925, licence to manufacture sugar from sugar beet grown in Saorstát Éireann was granted by the Government to the Irish Sugar Manufacturing Co. and it was arranged that a factory would be erected in Carlow in time to deal with the 1926 crop.

The first recorded acreage was 4,000 ha in 1926 followed by 7,000 ha in both 1927 and 1928. In the spring of 1931 a dispute arose between the growers of sugar beet and the Irish Sugar Manufacturing Company regarding the price to be paid for the crop then due to be sown. Negotiations took place between the parties but without success. Consequently the area devoted to the sugar beet crop in 1931-32 declined by 65.2 per cent.

In 1933 Comhlucht Siúicre Éireann Teoranta was established. The new company took over the Carlow factory and had new factories built at Mallow, Thurles and Tuam in time for the 1934 harvest. There was a large increase from 6,000 ha in 1933 to 18,000 ha in 1934. By 1941 over 32,000 ha was planted.

Diagram 3 shows that since 1941 sugar beet has been relatively stable in terms of area sown. Most of the crop is grown on contract for the sugar company and the area is consistently above 30,000 ha. Of the 32,000 ha sown in 1995, most was grown in Cork (11,100 ha); Wexford (7,500 ha) and Carlow (4,000 ha).



Maps produced courtesy of Department of Geography, Maynooth.

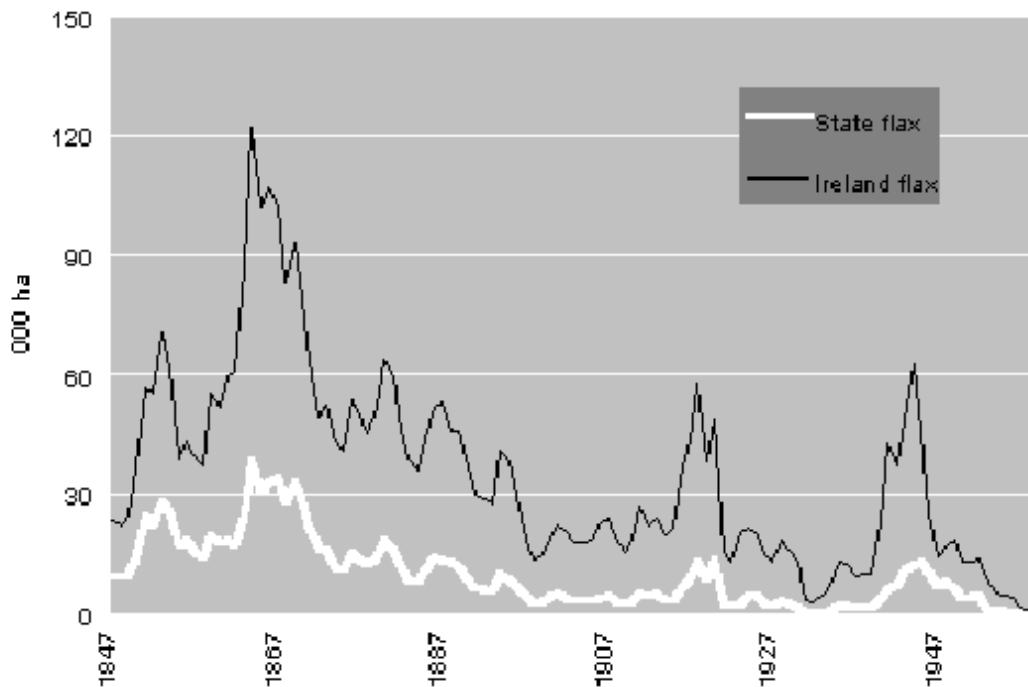
Flax

Flax was separately identified in the Enumerations from 1847 to 1959. It was predominantly grown in Northern Ireland. The highest area recorded in the State was 38,000 ha in 1864. By 1900 this had fallen to 4,000 ha. There was some expansion during World War One (13,000 ha in 1918) but by 1939 the area was down to 2,000 ha.

The area under flax showed a very marked increase after 1939 resulting from the offer of guaranteed prices to growers by the British Ministry of Supply. Increased flax production resulted in the repair of scutching mills which had been idle for years. In February 1943 a Flax Development Board was set up to foster flax production, e.g. by making grants towards the cost of erection and repairing of scutching mills and the provision of technical instruction. After the war the area declined rapidly and the series was discontinued in 1960.

Diagram 4 shows the area under flax for the State and for the 32 counties of Ireland between 1847 and 1959.

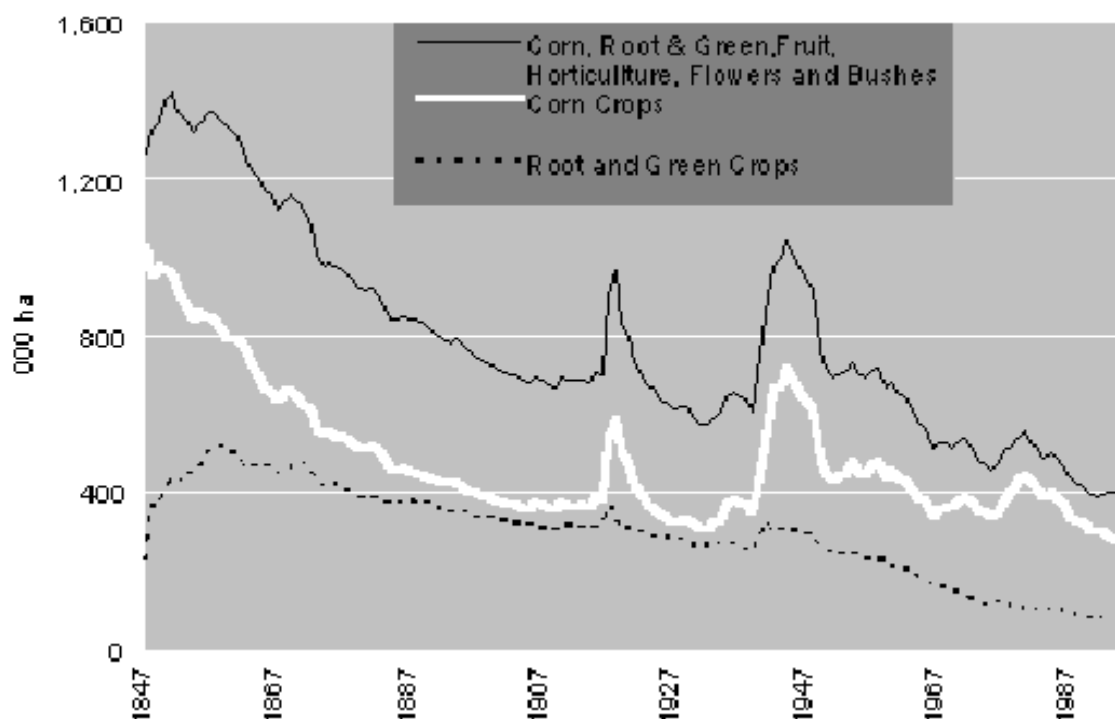
Diagram 4 Area under flax at State and Ireland level, 1847-1959



Crops, Fruit and Horticulture

This category is composed of corn crops, root and green crops, fruit, horticulture, flowers and bushes and flax. Diagram 5 shows the trend over the period. As expected the early years of the series are the highest with the record acreage sown in 1851 of 1,420,000 ha. The area tilled was under 700,000 ha at the start of World War One but a brief recovery brought the area back to 964,000 ha in 1918. The decline continued during the 1920s and 1930s with only around 600,000 ha sown at the outbreak of World War Two. Another brief recovery brought the area to 1 million ha but over the next 40 years the area again declined. By 1996 it was down to 406,000 ha.

Diagram 5 Trend in selected crops at State level, 1847-1996



Hay and Pasture

Hay and pasture have been combined in this publication. The combined series stood at 3,438,000 ha in 1851. It increased quickly to 4 million ha in 1860 and then slowly to the highest recorded area of 4,416,000 ha in 1905. From then until 1991 the series generally remained above 4 million ha except during both World Wars.

The 1991 Census estimate of 3,408,000 ha represents a substantial discontinuity in the series. The reasons have been alluded to earlier in the commentary on 'agricultural holdings' and are elaborated in more detail in Appendix 3.

The area under hay and pasture was 3.4 million ha in 1851 and 3.5 million ha in 1996. However the area under hay increased from 429,000 ha in 1851 to 1.3m ha in 1996 with a compensating reduction in pasture.

The distinctions between hay, silage, pasture, rough grazing land and grazed mountain land are imprecise. Hay has been defined at various stages to include some or all of meadow, clover, rye grass for seed and grass for silage. Hay included rye grass for seed from 1957 onwards. The Statistical

Abstract for 1972-1973 noted that prior to 1969 some of the area under grass for silage may have been returned as pasture. In the 1991 Census of Agriculture the area under silage was separately identified. Pasture was not enumerated before 1851. In principle rough grazing land, whether in use or not, was not to be included with pasture. However it was not always possible to be consistent with this definition. An extract from the 1884 Report refers to a paper concerning the accurate recording of waste land.

Concerning the question of whether waste land is increasing or decreasing in Ireland an extract from a paper read by Dr Grimshaw before the Statistical and Social Inquiry Society of Ireland is cited. The first section looks at the decrease in waste land between 1841 and 1871 and then at the increase between 1871 and 1881. On this increase he notes 'from the year 1876 up to the present year, the returns apparently point to a steady increase of waste land' and from this apparent fact the lamentable conclusion has been arrived at that Ireland is steadily 'going back to bog and waste'.

The real facts are these: In the earlier days of the collection of agricultural statistics it was thought unnecessary to go into too minute detail and thus if a grazing farm on a mountain side had a strip of barren mountain land at the top and a little bit of marsh at its lowest level, the whole area would be probably put down as grass. No doubt nearly all was grass but the stony part and the marshy part were practically useless and therefore the area of such a farm should have been divided among all these elements and only the usable grass included as pasture. For some years prior to 1876, greater care was enjoined on the enumerators and land not actually used for grazing or other purposes, was, unless of good quality, classed as waste.

In 1877, in accordance with the increased accuracy demanded by advancing knowledge, a still further detail was insisted on and the enumerators were required to ascertain, as nearly as possible, the amount of land available for use and how it was employed and also how much bog, marsh and barren mountain land was actually in the area of each farm. It has been this picking out of little scraps of waste of all kinds that has during the past few years apparently so much diminished the land in use in Ireland.

Another element which produces apparent fluctuation in the amount of waste land is, that where livestock are very plentiful, lands which are almost waste are temporarily used during the fine summer months, when the acreage of the country in use is enumerated. Thus we find in 1880, 1881 and 1882 when there was a diminution of cattle and sheep, especially of the latter, the waste apparently increased.

Grazed mountain land was enumerated separately from 1906 to 1917 but not included with pasture. Pasture was not enumerated between 1919 and 1924 although an estimate for pasture at State level for 1921 was made in 1945 and the other years were estimated for this publication.

Pasture figures for 1960 onwards are not strictly comparable with previous years because of the discontinuation in 1960 of an adjustment introduced to counteract the tendency to understate the area of crops and pasture arising out of the Compulsory Tillage Orders of World War Two. Farmers were obliged to cultivate cereals on a certain proportion of their land. To reduce this there was an incentive to regard rough grazing land as of insufficient quality to yield a reasonable crop even if cultivated with care. The farmer thereby reduced his area of eligible land.

In 1975 the area of rough grazing in use was recorded separately. It is clear from the returns that in the absence of a specific heading for rough grazing in use, some rough grazing was included as pasture in previous years. Consequently earlier figures for pasture are not strictly comparable.

2.3 Compulsory Tillage Orders

After the opening early in 1917 of unrestricted German submarine warfare an Order was made under the Defence of the Realm Act requiring all occupiers in Ireland of 10 acres or more of 'arable' land to 'cultivate' in 1917 one-tenth of such land in addition to whatever amount they cultivated in 1916. No one was required to till more than 50 per cent of the arable land of his holding. Land under first or second year's hay or pasture was held to be included in the part tilled.

The Emergency Powers (No 12) Order, 1939 (Compulsory Tillage Order) obliged every occupier of ten or more statute acres to cultivate an area equivalent to at least one-eighth of such land.

The Emergency Powers (No 53) Order, 1940, (Amendment Order), 1941 required every occupier of ten or more statute acres of arable land to cultivate in 1941 one-fifth of the area of such land. Certain exceptions to the order were allowed: they related to the special needs of industrialists, livestock traders, butchers, owners of stud farms, racing executives, licensed trainers, owners of school and playing fields, show societies and sports clubs. The requirement was gradually raised until in 1944 and for some years afterwards the tillage quota amounted to three-eighths of the arable land with an allowance for tillage newly laid down to grass. From 1944 it became compulsory to grow wheat with the quota for each holding varying from one-tenth of the arable land in the best wheat growing counties to one-twenty-fifth in the least suitable areas.

For the purpose of the Compulsory Tillage Order, arable land was regarded as 'land which if cultivated with reasonable care would yield a reasonable crop'. Since farmers had to till a certain proportion of their holdings there was a tendency to reduce the amount of agricultural land which they returned to the enumerator. Consequently the acreage under crops and pasture actually returned by the enumerator fell artificially during the war years. The cause of this tendency was recognised and it was decided to adhere with minor modifications, to the pre-war acreage of crops and pasture and only the adjusted figures have been published.

In the 1945 Statistical Abstract a comparison was made between the two World Wars and of the widely dissimilar conditions which prevailed in the two periods. Large quantities of fertilisers and foodstuffs for human and animal consumption continued to be imported all through the first World War. In the second World War the country had to rely on its own resources and hence the war had a more noticeable effect on Irish agriculture. The maintenance of bread supplies depended on vastly increased home production of wheat and this became the primary aim of the tillage drive, with the result that the acreage more than doubled in three years.

2.3 Livestock Numbers

Table G shows the maximum and minimum numbers of livestock recorded under each category and the associated year. Cattle, sheep and pig numbers in the 1990s are higher than at any time previously. In contrast horses, goats and mules are at relatively low levels.

Diagram 6 shows the trend in the numbers of cattle, sheep and pigs between 1847 and 1996.

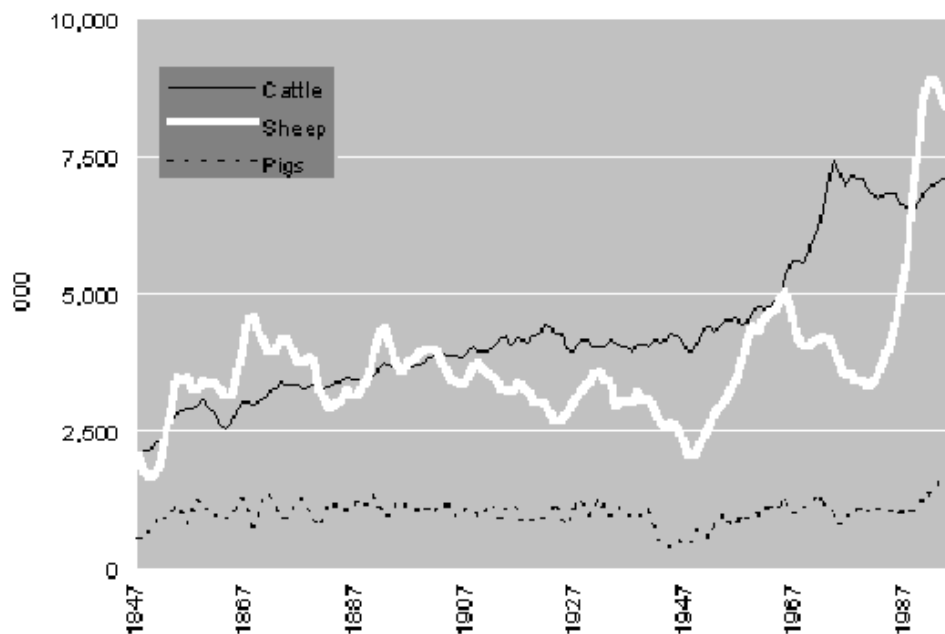
Cattle

Cattle numbers increased from 2,005,000 in 1847 to 4,962,000 in 1964. This expansion was at a steady rate with occasional temporary downturns (1860s, 1920s, 1940s). In 1965 numbers rose by 8 per cent. Following a collapse in prices in 1974, numbers fell back to around 6.5 to 7 million up to the late 1980s. In recent years numbers have risen again reaching an all-time high of 7,423,000 in 1996. Map B shows the percentage change in cattle numbers at county level between 1851 and 1995.

Table G Review of livestock series at State level, 1847-1996

Category	Maximum		Minimum	
	Year	'000	Year	'000
Cattle	1996	7,423	1847	2,005
Cows	1996	2,413	1864	1,056
Sheep	1992	8,908	1849	1,632
Ewes	1992	4,756	1948	877
Pigs	1996	1,621	1944	381
Sows	1996	178	1944	38
Poultry	1930	22,900	1847	4,630
Goats	1891	282	1980	9
Horses and ponies	1921	490	1988	59
Mules, jennets & Asses	1911	267	1995	7

Diagram 6 Numbers of cattle, sheep and pigs at State level, 1847-1996



The counties with the largest relative increases were Kilkenny (446 per cent), Offaly (442 per cent) and Tipperary (441 per cent) with Dublin at 108 per cent showing the smallest increase. Table H shows the trend in cattle numbers for the counties with the largest and smallest relative increases between 1851 and 1995 while Map B shows the situation for all counties.

Table H Index of cattle trends in selected counties

County	1851	1911	1936	1970	1980	1995
Index (1851 = 100)						
Kilkenny	100	198	209	325	390	446
Offaly	100	175	202	364	455	442
Tipperary	100	217	232	344	395	441
Dublin	100	161	168	149	110	108
Leitrim	100	117	108	133	147	116
Donegal	100	115	103	118	136	135

Table I shows that Munster increased its share of cattle numbers from 37 per cent in 1851 to 43 per cent in 1995 against a backdrop of a 306 per cent increase in overall cattle numbers over the same period.

Table I Distribution of cattle by Province and State trend

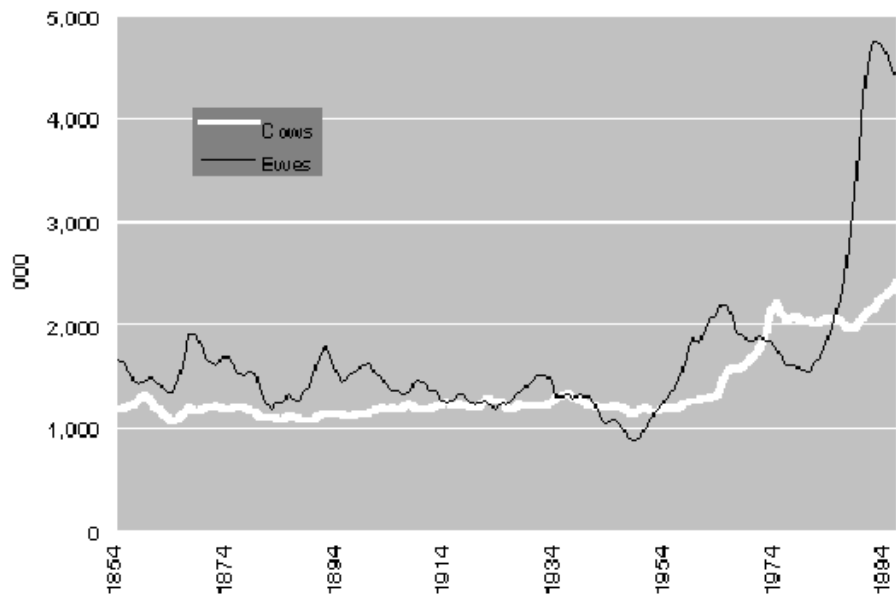
Year	State	Leinster	Munster	Connacht	Ulster	Trend
		Percentage share				
1851	100	30	37	20	13	100
1911	100	31	40	19	10	170
1936	100	31	41	19	9	173
1970	100	32	40	19	9	256
1980	100	31	41	20	9	297
1995	100	31	43	18	9	306

Cows

Cows were enumerated for the first time in 1854. Heifers-in-calf were not enumerated separately until 1908 and were probably up to then included in cows even though there are some contradictory notes on this. At that stage they accounted for around 6 per cent of cow numbers hence pre 1908 figures are not strictly comparable with subsequent years to that extent. Up to 1960 some culled cows may have been included with cows. From 1960 to 1974 culled cows were included with other cattle while from 1974 onwards they were included with cows.

In 1854 there were 1,177,000 cows recorded. One hundred years later this number was essentially unchanged at 1,204,000. The 1847-1926 Agricultural Statistics Report commented that the increase in cattle numbers was due to a reduction in the slaughter and general mortality of calves rather than to a corresponding rise in cow numbers. As with cattle the 1960s were a period of rapid expansion with 1974 numbers reaching 2,208,000. This level was not exceeded until 1993. In 1996 record numbers were estimated at 2,413,000. The expansion occurred in the beef cow herd with the number of beef cows increasing from 460,000 in 1980 to 1.1 million in 1996. Diagram 7 shows the numbers of cows and ewes recorded between 1854 and 1996 in the State.

Diagram 7 Numbers of cows and ewes at State level, 1854-1996



Sheep

In 1847 sheep numbers were 2,046,000. By 1868 this had more than doubled to 4,580,000. Numbers fluctuated between then and World War Two going as low as 2.7 million in 1923 but they always remained below the 1868 level. During the 1940s numbers fell back to 1847 levels but then in the 1950s and early 1960s numbers rose to over 5 million in 1965. Another period of decline brought numbers down to 3,292,000 in 1980 but since then there have been huge increases with 9 million almost being reached in 1992. Map C shows the percentage change in sheep numbers at county level between 1851 and 1995 while Table J shows the changing profile at province level.

Ewes

Ewes were first enumerated in 1854. There was uncertainty about whether culled ewes were included in the figures. Based on the enumerator instructions they were probably included between 1854-1900 and excluded from 1901.

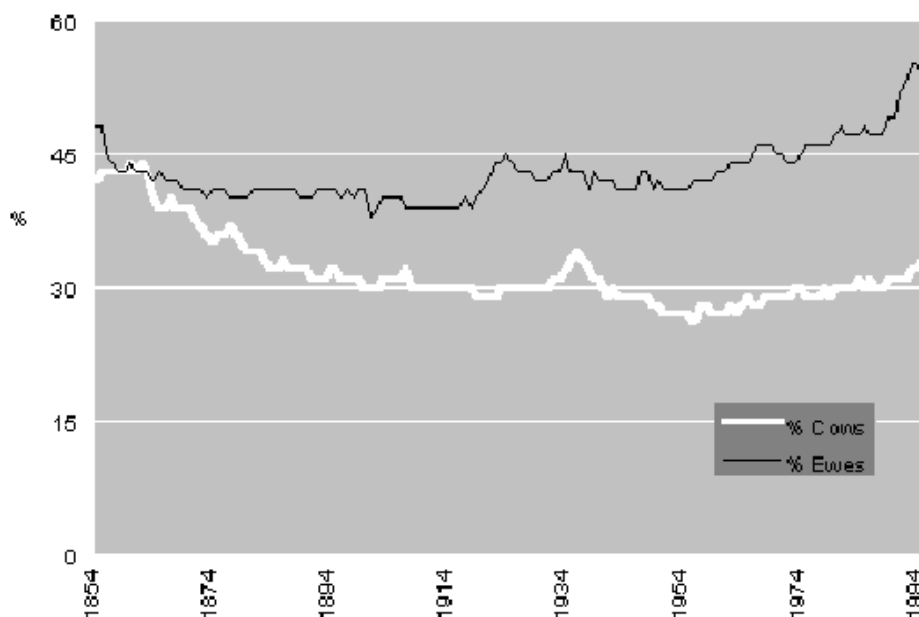
In 1854 there were an estimated 1,671,000 ewes in the State. In 1981 this figure was 1,619,000 with the 2 million mark exceeded only briefly in the early 1960s and numbers dropping below 1.1 million during the 1940s.

From 1982 numbers expanded rapidly with a record 4,756,000 estimated in 1992. Diagram 8 shows the proportion of cattle and sheep accounted for by cows and ewes for the period 1854 to 1996.

Table J Distribution of sheep by Province and State trend

Year	State	Leinster	Munster	Connacht	Ulster	Trend
		Percentage share				
1851	100	38	27	29	5	100
1911	100	38	23	33	5	180
1936	100	37	21	35	7	155
1970	100	37	18	37	8	207
1980	100	34	20	35	11	167
1995	100	39	21	29	11	425

Diagram 8 Cows and ewes as a percentage of cattle and sheep

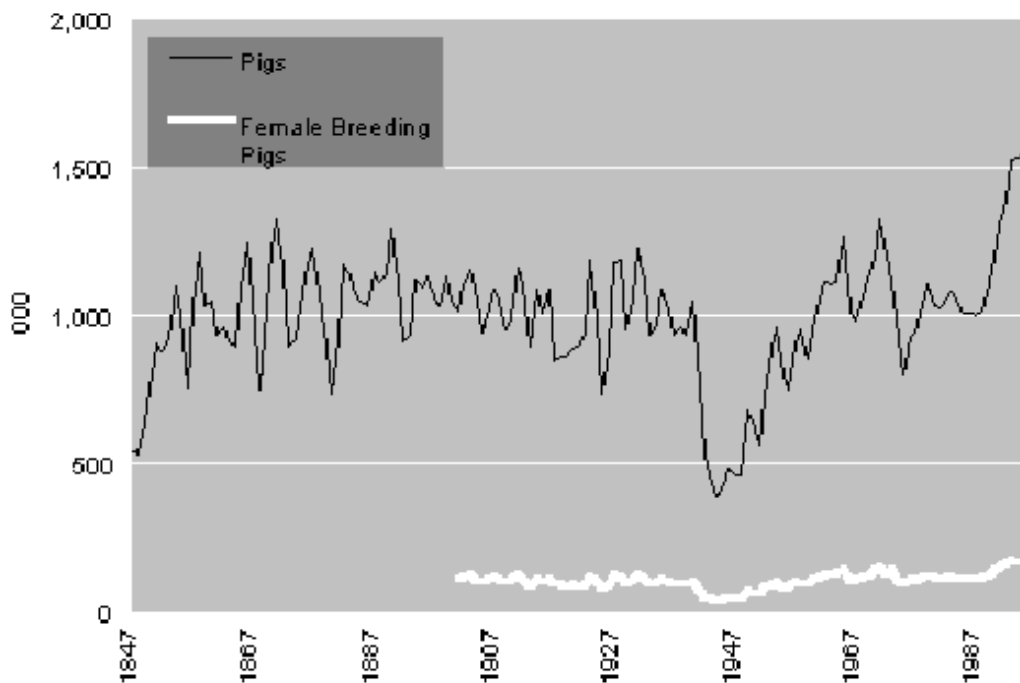


Pigs

Diagram 9 shows the trends associated with pig numbers at State level. An early peak in the series in 1871 at 1,325,000 was not equalled until 1971 (1,322,000). A collapse in pig prices towards the end of 1923 resulted in a decline in pig numbers from 1,186,000 in June 1923 to 732,000 in June 1925. Numbers recovered quickly when Britain banned the import of pork from mainland Europe for disease reasons. There was a major decline during World War Two when a shortage of feedingstuffs was the cause. From the late 1980s numbers have expanded considerably to 1,621,000 in 1996. Map D shows the percentage change in pig numbers at county level between 1851 and 1995.

The CSO December livestock survey results traced the recent 'industrialisation' of pig production. A special size of herd analysis in 1973 indicated that the average pig herd size was 29. Ten years later this had increased to 114 and the latest results for 1995 show a figure of 520. In 1996 the three Ulster counties accounted for 25 per cent of pig numbers.

Diagram 9 Numbers of pigs and female breeding pigs, 1847-1996



Female Breeding Pigs

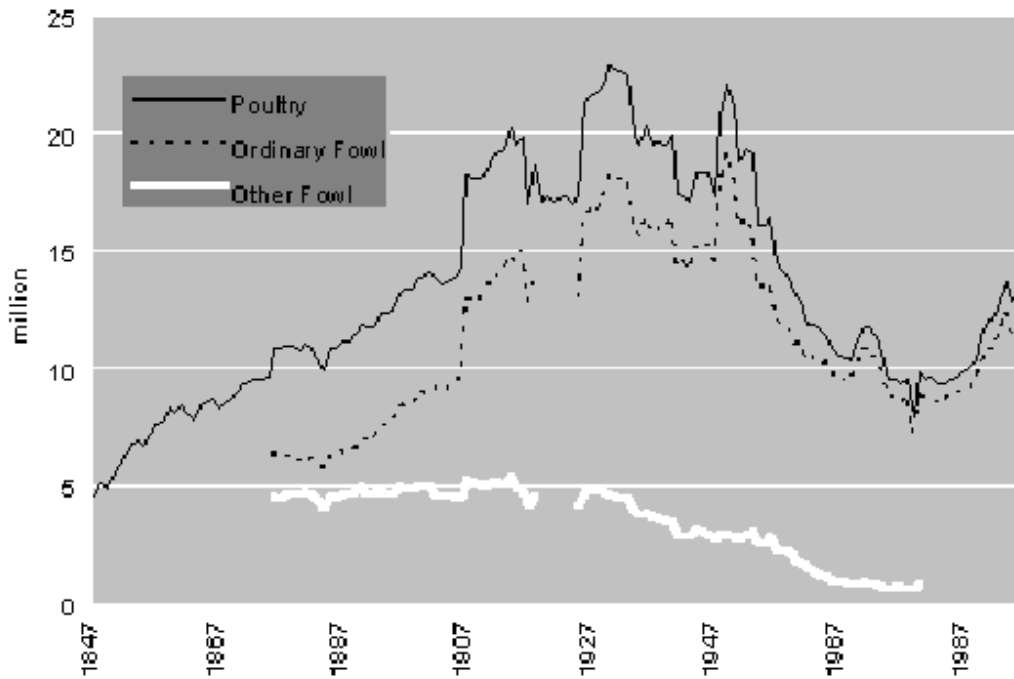
Figures for female breeding pigs are available from 1901 when numbers were estimated at 108,000. The category includes sows in pig, gilts in pig, other sows for breeding and gilts not yet served. Numbers remained largely unchanged up to 1940 when 103,000 were recorded. The lowpoint of the series was in 1944 at 38,000 but numbers rose again during the 1950s and 1960s to 148,000 in 1971. Since the late 1980s numbers have increased with 1996 reaching a highpoint at 178,000. Gilts not yet served were not included before 1973.



Poultry

From 1907 onwards a more complete recording of young poultry (hatched during January to 1 June of the enumeration year) was introduced. Accordingly the difference between the 1906 estimate of 14,260,000 and the 1907 figure of 18,200,000 (+28 per cent) represents a substantial discontinuity in the series. Diagram 10 illustrates the discontinuity at State level.

Diagram 10 Numbers of poultry, ordinary and other fowl, 1847-1996



Numbers rose rapidly from 4.6 million in 1847 to 22.9 million in 1930. There was a rise in the number of poultry in the late 1940s after a period of decline between 1933 and 1943. A Poultry Development Scheme was set up in 1948 with substantial grants on offer for the establishment and equipment of hatcheries, egg supply farms and pedigree breeding stations. Hoctor (1971) outlines the favourable response to this initiative. Unfortunately much of the progress was undone when increased production in Britain resulted in lower prices for Irish producers. Nevertheless, today's commercial poultry industry had begun. The numbers halved from 21 million in 1950 to around 11 million in the mid 1960s. They were then steady until a recovery commenced in the late 1980s.

The relative share of poultry numbers accounted for by the three Ulster counties has increased from 14 per cent in 1851 to 52 per cent in 1996.

Goats

The number of goats rose from 141,000 in 1847 to 278,000 in 1854. Numbers decreased again to 1847 levels by 1863. From then there was a steady increase with 282,000 recorded in 1891. Numbers steadily declined to 46,000 in 1953. In 1916 a more detailed classification was introduced resulting in a more complete enumeration of kids. Goats were not enumerated after 1953 except in 1980 and from 1991 onwards with the 1996 figure estimated at 15,000.

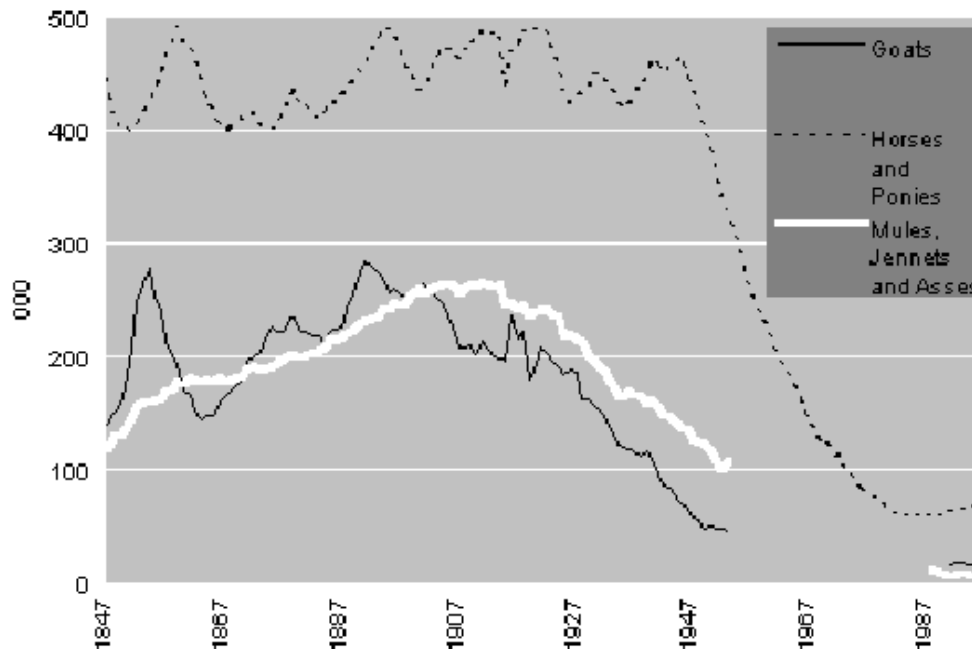


Goats, c.1910, Rose Shaw Collection, MS 357, Ulster Folk and Transport Museum

Horses and Ponies

The 1847 figures include mules. Figures for horses probably excluded ponies for 1847 to 1900. In the 1901 instructions the enumerators are asked to note that 'horses will in future include ponies'.

Diagram 11 Numbers of goats, horses and mules, jennets & asses



The number of horses and ponies was relatively stable from 1847 to 1947 fluctuating between 400,000 and 500,000. Farm mechanisation and increasing use of other means of transportation caused a rapid reduction in numbers to 98,000 in 1974. Recently numbers have risen again partially as a result of investment in riding schools. Diagram 11 shows the numbers of goats, horses and mules, jennets and asses at State level.

Mules, Jennets and Asses

This series rose steadily from 131,000 in 1848 to 265,000 in 1914 before decreasing again to 109,000 in 1953. The series was discontinued between 1954-1987 with the exception of 1960, 1975 and 1980. With the changeover to postal surveys in 1988, the series was recommenced. The pre-1906 figures may exclude Jennets.

3 Methodological Aspects

3.1 Estimates and Revisions

In the 1847-1926 Report, State figures for 1848 were estimated to include figures for Tipperary, Waterford and the Dublin Metropolitan area even though these regions were not enumerated in 1848. It was not possible to collect figures for Tipperary and Waterford because of the 'rising' by William Smith O'Brien. County estimates for Tipperary and Waterford have been made in a manner compatible with the State figures in the 1847-1926 Report.

In some years certain variables were revised at State level only and not at county level. A proportional adjustment was made to each county for these years so that the county estimates agree with the State figure. For 1919 and 1920 an adjustment was made for cows, ewes, sows, horses and ponies and mules, jennets and asses. For 1920 this was also done for barley, turnips and corn crops. For 1971 to 1974 the adjusted categories were cows, cattle, sheep and ewes.

The need for revisions at State level for the years 1971 to 1974 was explained in the 1977 Statistical Abstract:

The revisions arose from the differences between the June 1975 preliminary and final results. The preliminary estimates were derived from a sample which was the last in a series of samples, matched on a year to year basis, extending back to the 1970 full Census of Agriculture. It has been assumed that, for each category of cattle and sheep, differences between the June 1975 preliminary and final figures resulted from a gradual accumulation of discrepancies over the inter-censal period.

The June 1971 to 1974 revisions have therefore been obtained by distributing retrospectively, on a decreasing scale, the total 1975 revisions. It is not possible to revise the individual county estimates and it should be noted therefore that the sum of the county data for cattle and sheep already published for each of the years 1971 to 1974 inclusive does not correspond with the revised State totals.

In some years figures for certain, mainly minor, categories were not available. This sometimes prevented the calculation of an aggregate item such as crops and pasture. To complete the series, estimates at State level have been made for most of these items by smoothing them with figures for adjacent years. Pasture and crops and pasture were estimated for 1919 to 1920 and for 1922 to 1924. Goats and mules, jennets and asses were estimated for 1933. For 1977 to 1979 the following were estimated: corn crops; root and green crops; turnips; crops, fruit and horticulture; hay; pasture and crops and pasture. Sugar beet was estimated for 1979.

For Northern Ireland figures for pasture and crops and pasture for 1918 to 1922 and for ewes for 1940 to 1943 and for 1953 to 1957 have been estimated for this publication. In addition, the holdings figures for Northern Ireland for 1965 are actually 1966 figures while the 1991 figures relate to farms not holdings. Between 1970 and 1975 a number of statistically insignificant holdings with less than 10 acres were taken off the Northern Ireland agricultural census register. A further number with less than 6 hectares (15 acres) were removed between 1975 and 1980.

3.2 Data Collection System

3.2.1 Full Annual Enumerations, 1847 to 1953

In each year from 1847 to 1918 the Royal Irish Constabulary collected particulars of areas under crops and of the numbers of each description of livestock on every farm in Ireland. The only years in this period for which complete particulars were not collected were 1848 and 1882. Owing to political unrest returns were not obtained in 1882 for Counties Clare and Limerick.

Up to 1856 the returns were obtained during the months of August and September. From 1858 onwards the returns were collected from the beginning of June as that was considered the most suitable time to ascertain the acreage under crops and the number of livestock.

In 1900 the Department of Agriculture and Technical Instruction for Ireland took over responsibility for the agricultural statistics. The instructions to Enumerators for that year are reproduced in Appendix 2. The following extract from the 1900 Report summarises the data collection system:

This is the first yearly Report of this kind issued by this Department. These statistics have been continuously collected for each year since 1847, when the system was first organized by Captain Larcom, R.E., at the time a Commissioner of the Board of Public Works (afterwards Sir Thomas Larcom, Under Secretary for Ireland), at the suggestion of the Earl of Clarendon, then Lord Lieutenant for Ireland. In 1851 the Census Commissioners conducted the inquiries on which the Report was based and since then successive Registrars-General have prepared and issued the Annual Reports on Agricultural Statistics, the last report of the series having been issued in April, 1900, by the present Registrar-General, Mr Robert E Matheson. The Agriculture and Technical Instruction (Ireland) Act, 1899 [section 2(c), 62 & 63 Vic., ch. 50], transferred, "the powers and duties of the Registrar-General for Ireland and the Irish Land Commission with reference to the collection and publication of statistics relating to agriculture and of returns of average prices of agricultural produce".

No material change has been made in the method of collection of these statistics since 1847, as the system, then adopted, of utilizing the services of such well-organised and efficient forces as the Royal Irish Constabulary and the Dublin Metropolitan Police has been found by experience to give, on the whole, most satisfactory results. The members of these bodies still act to the number of about 3,300 as enumerators of Agricultural Statistics in their several districts. The blank forms are despatched from this Department to the District Inspectors - who act as Superintendents of their districts - in May (for returns as to extent of area under crops) and in October (for returns as to produce of the crops) and are distributed by them to those members of the Force who have been selected as Enumerators. The actual collection of the information is carried out during the months of June and October - the information being obtained by personal inquiry by the Enumerators of the holder or occupier, or some other responsible person in a position to know the facts.

The names of the persons giving such information must be entered on the form by the Enumerators in a column arranged for that purpose. These entries, I may add, amount to well over half-a-million names. The Tables relating to the produce of the crops as well as those relating to the area under crops have been carefully compiled from information obtained by the Enumerators from practical farmers and other persons qualified to form an opinion as to the area and yield in that Poor Law Electoral Division for which they were requested to afford the information. The names and residences of the parties so co-operating and assisting are also stated by the Enumerators on the returns. The Enumerators, on completing their returns, forward them to the District Superintendent, who despatches the complete returns for his district to this Department early in July and November. As the information in the returns is

collected and tabulated by police districts, the returns have to be checked and sorted in the central office with a view to their being compiled by unions and counties as published in the official reports.

Preliminary statements under the titles, "General Abstracts showing the Acreage under Crops, also the Number and Description of Live Stock" and the "Extent in Statute Acres and Produce of the Crops", are published at as early a date as possible after the receipt of the complete returns. This year these preliminary publications appeared in August, 1900 and January, 1901 respectively. The figures in these preliminary returns are however, subject to revision and it is only in the Annual Report that the statistics can be taken as the final estimates for the particular matters dealt with.

The 1917 estimates were not finalised until 1921 partly due to the depletion of the Department's statistical staff by the World War and the deployment of resources required to meet an increased demand for statistical information. In 1917 the collection of statistics became increasingly difficult and alternative methods had to be devised for the years 1919 to 1924 inclusive. The 1920 and 1927-1933 reports described some of the difficulties:

Complete returns were obtained in 1918 but the farmers understated their areas under crops and accordingly sample methods had to be used for correcting the crop areas for that year; in 1918 the returns collected in Ireland by the police enumerators at the farms were subjected to a special check by an independent survey of a sample of representative districts in each county. This survey was carried out by the official inspectors appointed under the Corn Production Act 1917, on the enforcement of compulsory tillage.

In 1919 an attempt was made for the first time to obtain, by post, signed returns from all farmers with holdings of one acre and upwards. These returns were compared with the former police returns. Many of the returns had to be discarded. There still remained more than half the holdings in each locality for which reliable comparisons of changes in areas under crops and in the numbers of livestock were available. Proportionate changes were assumed to have taken place in the remainder of the holdings. All the figures for livestock in 1919 and the areas under hay in the same year are estimates based on the signed returns obtained from farmers. The inspectors appointed by the Department to check claims made by corn growers in connection with the Government guarantee of prices of cereals produced in 1919, were instructed to mark during the Summer of 1919 on these 25" Ordnance Survey Maps each field in their districts on which a corn crop, a green crop, flax or fruit was grown, indicating the name of the crop. In this manner exceedingly accurate statistics were collected for these crops in 1919 for each rural district in Ireland with the exception of a few mountainous districts on the Western seaboard. For the statistics of the latter districts for 1919 the ratio method above was relied upon.

In 1920 it was not found practicable to obtain particulars of either crops or livestock on all farms. The Department confined their efforts to obtaining such information as was sufficient to determine reliable estimates. Very large numbers of farmers of every class in every district in Ireland - farmers whose signed returns for 1st June 1919 were known to be reliable - were called upon to furnish through the post signed returns of their crops and livestock on 1st June 1920. Each return for 1920 was compared with the corresponding return for 1919. About 10% of the pairs of returns had to be discarded as being non-comparable owing to changes in areas of holdings etc. The remaining returns for 1920 were summarised for each county. From these summaries was calculated the percentage change from 1st June 1919 to 1st June 1920, in the area under each crop and in the number of each class of livestock in each county. The percentage changes for each county were assumed to have been general for all farms in that county and were applied to the total figures for crops and livestock in 1919 in that county.

The system was continued for Ireland in 1921 and for Saorstát Éireann in 1922, 1923 and 1924. In the earlier years the returns used in the estimate represented 20 per cent or more of the holdings in the country over 1 acre, while towards the end of the period owing to a reduction in the returns that could be used on account of changes in the holdings or other cause of non-comparability, the returns used represented about 15 per cent of the holdings.

In 1924 in addition to the returns obtained from the representative farmers, the traditional enumeration was resumed by the Garda Síochána but only to a limited extent. In that year a complete enumeration of holdings was conducted in every DED in which a Garda Station was situated. In the following year the system of complete enumeration for the whole country was reinstated. The complete enumeration for 1925, together with the enumeration for selected DEDs in 1924 and 1925 allowed a correction factor to be applied to the county estimates for each year from 1919 to 1924. The system of complete enumeration continued uninterrupted up to 1953.

3.2.2 Sample Enumerations, 1954 to 1987

Arising from the reduction in the Garda force throughout the country and following representations received from the Garda Commissioner certain reductions in the enumeration were introduced commencing with the year 1954. Relief was given to a number of Garda Stations in which the strength was small. The net effect was to omit from the enumeration in 1954 about 20 per cent of the District Electoral Divisions; similar relief was given in 1955.

In 1956 following a Government decision the compilation of Agricultural Statistics was restricted to approximately 25 per cent of the District Electoral Divisions. The DEDs enumerated were those in which Garda Stations were situated. They formed the sample from which the preliminary estimates for the State as a whole were prepared. A special analysis, undertaken in 1949, comparing the provisional and final results for a number of years showed that although the sample DEDs were not selected formally at random they behaved as a random sample. A copy of this special analysis 'Sampling Methods applied to Irish Agriculture' by R. C. Geary is reproduced in Appendix 4. Geary (1949) examined the reliability of the preliminary estimates made from a sample of DEDs prior to the definitive results becoming available from the full enumeration. The method involved multiplying the ratio derived from the sample of identical DEDs in two consecutive years by the result of the complete enumeration in the earlier year. This ratio method became the basis for estimating the annual results when full enumerations were not undertaken.

In 1958 and 1959 the proportion of DEDs included in the sample was 60 per cent. In 1960 a Census was again undertaken of the whole country with the exception of the Dublin Metropolitan Garda District. Estimates were made for the approximately 1,500 holdings in this area on the basis of previous knowledge and various trend indicators. A factor supporting the holding of a census in 1960 was the recommendation of the Food and Agricultural Organisation of the United Nations that a World Census of Agriculture be taken around that year.

From 1960 onwards Civilian Enumerators increasingly replaced the Gardaí because of the pressure of other work and the closure of a large number of small rural police stations. The Civilian Enumerators were supervised by a local Garda Sergeant.

A full Census was taken at five-yearly intervals between 1960 and 1980 inclusive. Sample surveys with a 50 per cent coverage were taken in the intervening years and in 1981. From 1982 to 1987 these annual sample surveys had a coverage of 25 per cent.

3.2.3 Postal Surveys, 1987 to 1996

In July 1987 a small pilot postal survey of 476 holdings was undertaken. This was the first step in a major restructuring of the agricultural statistics system. The objectives were to move from an interview based system to a postal method and at the same time, to change the observation unit from a holding to a farm. With the latter change, farmers provided details for the land they farmed even if they did not own it. On the other hand, if a person owned land but rented it all out then he or she did not complete any farm return. This contrasted with the old system where all activity was returned as if it was undertaken by the person who owned the land.

Half of the traditional enumeration areas (322 DEDs) were covered by a postal sample survey in December 1987 and again in June 1988. The other 322 DEDs were surveyed using the traditional enumeration system. The 1989 and 1990 surveys were undertaken entirely by post.

After an eleven year lapse a full Census of Agriculture was held in June 1991. It was organised in conjunction with the fieldwork phase of the 1991 Census of Population and involved the use of about 1,300 field staff (interviewers and supervisors). From 1992 onwards the surveys were undertaken by post using the register of farmers compiled from the 1991 Census of Agriculture. A description of the Census methodology including the new definition of a farm is given in Appendix 3.

The development of the postal system and the conduct of the 1991 Census of Agriculture were partially funded by special EU funds provided under Council Decisions 88/390 and 89/623.

3.3 Definition of a Holding

Up to 1987 an agricultural holding was defined as consisting of all the land owned or occupied by one or more persons which:

was used wholly or partly for agricultural or livestock production; was operated, directed or managed as a single unit by one or more persons; consisted of one or more pieces in the same neighbourhood and operated as a single holding or property.

The gross area of each crop was recorded. Hence all headlands, fences, ditches etc. attributable to each field were included with the area under the crop.

Land let in 'Conacre' or on the 11 Months System was included in the total area of the holding of the rated occupier of the land. Hence it was not included in the holding of the person to whom it had been let. Land held in commonage was excluded because it was not part of a holding.

Because of a change in the method of enumeration of agricultural holdings, a significant discontinuity occurred in 1910. Where a holding crossed certain geographical boundaries, it was considered as more than one holding. This situation was explained in the 1914 Agricultural Statistics Ireland Report:

Each enumerator of Agricultural Statistics is allotted a certain number of townlands - about twenty on an average - and is required to state the particulars for each holding in these townlands. Until the year 1910 he was required to furnish a summary for each townland showing inter alia the numbers of holdings in that townland classified according to area. As regards a holding which lay partly in one townland and partly in another the enumerator was instructed to treat each part as a separate holding for the purpose of the townland summaries, as he had to account for the whole area of the townland. He had further to furnish a special return of such holdings as crossed townland boundaries, so that in arriving at the true number of holdings in a poor law union, a county, a province and in Ireland allowance could be made for the excessive number arrived at by totting the townland sheets. This, a perfect check in

theory, did not work out satisfactorily, as it was found that many divided holdings were not included by the enumerators in the special return just referred to.

Accordingly in attempting to arrive at the true number of holdings in a poor law union, county etc. the allowance that could be made for divided holdings was too low and the resulting figure for the number of holdings too high. Moreover the allowance to be made for divided holdings would vary from year to year with the efficiency of the enumerator and accurate returns would bring about a decrease on paper although in the meantime the true number of holdings might have actually increased. In these circumstances it was considered that the best index of increase or decrease in the number of holdings from year to year was furnished by the figures which were obtained by compiling the townland summaries and which showed the number of entire holdings and parts of holdings in each townland.

In 1910 a change was made in the form of the summary returns furnished by enumerators. The new system was continued up to 1987. The 1914 Report explained the change:

The unit of area for statistical purposes was changed from the townland to the enumeration district (DED), a district coterminous with townlands but including about twenty townlands on an average. Holdings, of course, cross the boundaries of enumeration districts but the question of allowing for these divided holdings now naturally presents considerably less difficulty than before. The enumerator still considers for the purpose of his summary return each part of a holding that lies in his enumeration district as a separate holding. The sum of the numbers of these holdings and parts of holdings in say a Poor Law Union is naturally considerably smaller than the sum of the numbers of entire holdings and parts of holdings returned on the townland summaries for 1909 and previous years. The new totals are nearer to the true number of holdings than the old totals. A smaller correction has to be made and as the returns furnished for this purpose are fewer and more nearly accurate now than formerly, it has been determined to publish the figures showing as closely as possible the true number of holdings. The publication of these new figures has been delayed until experience had shown that they were reliable.

In the 1991 Census of Agriculture a farm was defined in accordance with the definition adopted for the European Union surveys on the structure of agricultural holdings namely:

a single unit, both technically and economically, which has a single management and which produces agricultural products

A farm could now be composed entirely or partly of land rented in whether on short or long term lease and could also contain land located in different districts. Only farms of at least 1 hectare or those engaged in intensive production were included. Periodic analyses using this 'farm' approach had been undertaken as part of the EU surveys on the structures of agricultural holdings. These surveys had essentially been special samples within the normal June surveys. O'Hanlon and Treacy (1985) analysed the 1980 Census of Agriculture using this approach. The results showed a decrease from the 263,600 holdings recorded in the Census to 223,500 actual farms.

A methodology note from the 1991 Census of Agriculture is reproduced in Appendix 3. A more rigorous field operation further reduced the number of farms in the 1991 Census by around 30,000. Hence the combined effect of the new methodology was a reduction of around 70,000 units.

4 Special Features of Earlier Reports

The Annual Reports in the nineteenth and early twentieth centuries regularly contained commentaries on special topics of general agricultural and economic interest. They are included in this publication as a means of illustrating the general agricultural and economic conditions at the time. They are not statistically representative in that they mainly only relate to material that was included in the Reports for certain years.

4.1 Noxious Weeds and Insects

The early Reports regularly contained comments on the damage to crops caused by weeds and insects. The following example is taken from the Agricultural Statistics of Ireland 1874 Report:

There can be no doubt that if due attention were bestowed on the destruction of weeds, the lands of Ireland would afford a largely increased yield; but, unfortunately, luxuriant crops of weeds, which are to be seen in almost every part of the country during Summer and Autumn, not only rob the farmer himself, but often inflict a vast amount of injury on his neighbour. It has been estimated that the money loss to this country from the above cause exceeds a million and a half.

The 1889 Report contained the following advice on noxious insects:

The ravages of noxious insects are frequently mentioned in the notes of the Superintendents of Enumeration. These insects have hitherto attracted but little notice in Ireland as compared with Great Britain and foreign countries. Mr. Matheson, the Secretary to this Department, has given a great deal of attention to the natural history of insect pests and the injuries inflicted on crops by them and has kindly placed at my disposal some valuable notes which he has compiled with regard to this subject, accompanied by illustrative drawings. I propose as soon as possible to publish these notes with the view of supplying the Superintendents of Enumeration and others interested in the question with accurate information regarding noxious insects.

A 'Special Report on Insects, Fungi and Weeds injurious to Crops' was issued in 1900 by the Secretary of the Department and several references were included in the notes of the Superintendents of Enumeration.

The 1893 and 1895 Reports localised some of the incidences of crop damage:

In Clontarf District, Dublin County - I have heard some complaints from farmers in the neighbourhood of Raheny, complaining of their potatoes being injured by wire worm.

In Chancery Lane District (Suburban portion of), Dublin Metropolitan Police - the carrot yield was not quite as good as last year, owing to the damage done to the young sprouts by the 'blue-fly', on account of the summer being so warm.

In Killadysert District, Clare County - The turnip and mangold crops seem to have suffered by wire-worm to a noticeable extent and the oat crop in some places appears also to have been affected when coming over the ground. The cabbage crop was also injured by caterpillars, of which there were great numbers this year.

In Millstreet District, Cork County, W.R. - The oat crop suffered in the early part of the season from 'wire-worm', which cut the young blades of the oats.

In Cappawhite District, Tipperary County, S.R. - In a few cases the oat crop was injured by being attacked in the early spring by the 'red-worm' or 'wire-worm'.

In Ballynacarrigy District, Westmeath County - Regarding special injury to crops by insects, none suffered any save the turnips, one half of which were destroyed by the 'Fly'; if its ravages could be prevented it would be an invaluable boon to agriculturists every year.

4.2 Weather

The early Reports contain a considerable amount of detailed meteorological information. The extracts reproduced here illustrate the type of information which was provided.

The Report for 1887 contained extracts from a research Paper by Barrington on the drought of 1887 and some of its effects on Irish Agriculture:

January was about average as to rainfall and temperature, the number of rainy days being slightly below the average. February was very dry and slightly colder than usual. March had a deficient rainfall and was decidedly cold. April was very dry and the coldest April since 1860, with the exception of April 1879. May was dry and rather cold. Then came a great change. On Sunday, June 5th, the temperature rose and for the remainder of the month we had a combination of heat and drought, which lasted until July 10th. No record exists of such a hot and dry June in the south and south-east of Ireland. For thirty-four consecutive days a blazing sun shone like a fire-ball in the cloudless sky. Not a drop of rain fell, except a sprinkle on one day. It was at the period of the year when the nights were shortest and the sun was at its maximum altitude; there was little dew. After the cold, dry spring, vegetation was backward and all thought it would be a late harvest. The ground was parched at the commencement and the herbage stunted by cold wind. Then came the period of fierce heat and the sun played on the pastures, the corn and the young turnips; the grass was burned brown; the corn, stimulated by high temperature and sunshine, shot prematurely into ear, at a height of six inches and though the harvest was expected to be late on June 1st, the fields were turning yellow in the second week in July. The succulent and tender young turnips were shrivelled and scorched and if a few survived, they quickly succumbed to the fly and the Aphis, or plant louse.

Table K presents annual averages for inches of rainfall, number of rainy days and air temperature for Dublin from the 1896 Report are given below. The period covered is 1876-1896.

Year	Rainfall inches	Rainy days number	Air temperature °F
1876	32.663	195	49.1
1877	32.146	229	48.7
1878	28.262	202	48.6
1879	28.858	208	46.4
1880	34.512	188	48.9
1881	27.033	198	47.7
1882	31.184	227	48.9
1883	29.351	188	48.2
1884	20.467	187	49.6
1885	26.614	198	47.6
1886	32.966	220	47.9
1887	16.601	160	48.3
1888	28.679	190	47.8
1889	27.272	193	48.9
1890	27.562	200	49.8
1891	27.820	184	49.1
1892	25.644	196	48.1
1893	20.493	174	51.2
1894	29.261	209	49.9
1895	31.242	194	48.8
1896	26.901	194	50.4

The final extract is from Hootor (1971):

Crop yields tended to drop as the war went on. The scarcity of fertilisers was, of course, one reason for declining yields but there were two freak years - 1946 and 1947 - when weather was the main cause. In 1946 crops developed poorly because of harsh weather in May and broken sunless weather in June and early July; then from about mid-July there came abnormally wet weather which flooded fields and flattened corn crops, making harvesting exceedingly difficult. The old grazing areas of the midlands were in the worst plight and at one period a loss of about 100,000 tons of grain appeared likely. How to get sufficient labour to cope with the very abnormal conditions was the core of the problem. A call to the cities and towns to send out volunteers to save the harvest met with a ready response. Officers of the Department and of Committees of Agriculture took a leading part in organising the voluntary campaign.

A special harvest bureau was set up in Dublin to serve the area within a fifty-mile radius of the city where the harvesting problem was especially difficult. There was no dearth of volunteers. From all classes of the community they came. Army lorries carried factory workers, shop assistants, road workers, bank officials, civil servants and local government employees as well as soldiers, to the harvest fields. Many business firms released their workers and in some instances transported them in their own lorries to the scene of action. The Irish Red Cross provided rations for the volunteer workers. The indoor officers of the Department, many of whom were country-born, showed particular enthusiasm and girls as well as men left their desks in Merrion Street to bind corn and make stooks in the farms of Meath and Westmeath. It was a fine national effort and as a result of it most of the harvest was saved. Crop returns were, however, well below normal, the yields of wheat, oats and barley being only 14.4 cwts, 16.6 cwts and 16.8 cwts per statute acre respectively.

4.2 Emigration

The third-quarter of the nineteenth century in Ireland was predominantly marked as a period of emigration. As people left both the supply of agricultural labour to cultivate crops and the demand for this agricultural produce diminished. The collection of emigration statistics started in May 1851. Table 12 (taken from the 1872-1874 Report) shows the number of emigrants who left Ireland between 1851 and 1874. For comparison the population counts from the 1851 Census of Population are also given.

Table L Emigrants in the period 1 May 1851 to 31 December 1874

County	Males	Females	Total Population 1851	
Leinster	234,476	212,691	447,167	1,672,738
Carlow	10,149	9,438	19,587	68,078
Dublin	36,368	29,853	66,221	405,147
Kildare	12,414	10,481	22,895	95,723
Kilkenny	26,379	24,623	51,002	158,748
Laoighis	17,783	16,653	34,436	111,664
Longford	17,930	16,512	34,442	82,348
Louth	14,807	16,036	30,843	107,662
Meath	23,769	21,857	45,626	140,748
Offaly	19,666	18,657	38,323	112,076
Westmeath	17,827	15,659	33,486	111,407
Wexford	26,980	24,248	51,228	180,158
Wicklow	10,404	8,674	19,078	98,979
Munster	420,826	390,584	811,410	1,857,736
Clare	44,031	44,306	88,337	212,440
Cork	153,626	139,533	293,159	649,308
Kerry	54,679	51,388	106,067	238,254
Limerick	59,409	58,226	117,635	262,132
Tipperary	73,462	68,509	141,971	331,567
Waterford	35,619	28,622	64,241	164,035
Connacht	149,435	144,621	294,056	1,010,031
Galway	51,585	49,550	101,135	321,684
Leitrim	18,680	17,883	36,563	111,897
Mayo	35,084	34,346	69,430	274,499
Roscommon	28,945	27,202	56,147	173,436
Sligo	15,141	15,640	30,781	128,515
Ulster	376,357	286,391	662,748	2,011,880
Antrim	95,721	65,750	161,471	360,204
Armagh	32,961	24,093	57,054	196,084
Cavan	35,338	32,881	68,219	174,064
Derry	31,778	24,177	55,955	192,022
Donegal	37,129	30,043	67,172	255,158
Down	56,824	35,662	92,486	320,817
Fermanagh	17,008	16,234	33,242	116,047
Monaghan	26,415	22,577	48,992	141,823
Tyrone	43,183	34,974	78,157	255,661
Not specified	61,701	48,847	110,548	
Other Countries	19,059	8,892	27,951	
Ireland	1,261,854	1,092,026	2,353,880	6,552,385



4.4 Forestry

Inquiries into Forestry Operations were instituted in 1890 in response to a demand for statistics on the sector. The results of the Inquiries were given in the General Abstract of Forestry Operations in Ireland (32 counties) for the year ended 30th June 1890. The subjects of investigation were planting, felling and uses of felled timber. The collection of the detailed forestry statistics ceased in 1917. The Agricultural Statistics Report for 1900 included a table on forestry data collected as part of the 1841 Census of Population. The figures relate to the area of woods and plantations in 1841 classified by species and by when the trees were planted.

Table M Woods and plantations area (acres) by tree type, 1841

Planting period	Oak	Ash	Elm	Beech	Fir	Mixed	Total
Prior to 1791	22,784	2,677	497	939	1,612	76,587	105,096
1791-1800	1,493	927	135	384	1,243	22,399	26,581
1801-1810	1,327	689	134	342	2,691	31,087	36,270
1811-1820	1,393	679	131	279	5,496	42,878	50,856
1821-1830	1,342	442	140	730	7,684	51,456	61,794
1831-1840	1,197	628	380	600	6,513	55,689	65,007
Total	29,536	6,042	1,417	3,274	25,239	280,096	345,604

Table N shows the number of trees planted in Ireland in selected years classified by species and the corresponding area that these trees were planted on. The figures were taken from the Forestry Operations in Ireland 1890-1899 Report and various Agricultural Statistics Reports.

Table N Number of trees planted by species and related area

Species	1891	1900	1910	1917
Larch	692,111	583,685	1,287,584	644,701
Fir	306,281	225,467	372,352	503,496
Spruce	144,471	115,718	364,590	239,700
Pine	161,100	56,871	101,310	113,175
Oak	69,964	10,023	22,575	12,100
Ash	52,290	19,470	25,406	40,425
Beech	73,557	25,053	26,524	28,170
Sycamore	49,805	21,376	12,164	5,290
Elm	18,596	1,750	1,084	7,700
Other Trees	145,022	22,397	13,304	33,255
Mixed Trees	2,304,279	161,734	331,020	89,580
Number of trees	4,017,476	1,243,544	2,557,913	1,717,592
Area Planted (acres)	1,886	629	1,174	1,134

The number of trees felled both for clearance and for thinning plantations amounted to 1,351,775 in 1891 which is considerably below the 4 million trees planted as given in Table N. The area returned as cleared was 1,191 acres. Of the 1,351,775 trees felled, 324,340 were used for 'proppings', which appears to have been the chief purpose to which the timber of almost all descriptions was used for. Larch was the main timber used for paling.

Table O Uses of felled trees, 1891-1917

Uses	1891	1900	1910	1917
Total Felled	1,351,775	1,156,959	755,863	1,769,803
Propping	324,340	458,089	489,206	838,308
Sleepers	15,768	2,715	31,935	54,885
Paling	88,028	29,277	30,298	93,046
Spools	8,056		2,054	790
Fuel	29,446	15,588	12,268	14,159
Furniture & Building	8,577	10,411	34,476	13,286
Carts & Wagons	7,702	7,488	14,303	17,205
Clog Soles	293	2,170	8,820	4,001
Ship Building	5,245		3,760	21,405
Telegraph/Telephone Poles			672	
Boxes & Packing Cases			53,043	34,269
Other Specified Uses	24,609	56,880	1,300	657,182
Unspecified	839,711	574,341	73,728	21,267

4.5 Agricultural Machinery

The 1895 Report summarised the number of agricultural machines for selected years in Ireland. Table P illustrates the type of agricultural machinery in use in the second half of the nineteenth century.

Table P Number of agricultural machines, 1865-1895

Implement	1865	1875	1886	1895
Bone crushing machines	18	13	3	1
Churning machines	848	2,953	2,653	3,241
Furze cutters	355	2,822	231	281
Grubbers	812	741	225	465
Harrows (steam)	0	1	2	0
Hay, chaff & straw cutters	1,208	1,425	254	376
Hay collectors & rakes	2,478	5,618	3,525	7,184
Hay-making machines	1,797	3,597	1,982	968
Hoes	23	8	0	15
Land rollers	507	444	44	96
Manure distributors	0	17	6	15
Mowing & reaping machines	1,085	10,016	9,014	14,704
Oat pressers	17	124	40	18
Oil cake breakers	72	128	47	57
Ploughs (steam)	0	8	5	3
Potato diggers	10	15	175	477
Reaping machines	413	2,903	1,855	2,795
Root pullers	27	20	4	1
Root pulpers	909	2,089	261	944
Scufflers	155	165	23	57
Threshing machines	9,180	12,410	7,043	8,546
Turnip, corn & sowing machines	3,224	4,543	1,398	2,342
Turnip slicers & root cutters	792	1,621	593	819
Turnip thinners & rakes	12	15	6	2
Winnowing machines	1,016	2,118	975	1,441
Total	24,958	53,814	30,364	44,848

4.6 Males Engaged in Farmwork

The 1934-1956 Report contained a summary of the numbers of males engaged in farmwork in the State for selected years. Both permanent and temporary non-family workers are included. The 1912 figures are taken from the 1847-1926 Report which also shows that there were 215,352 females employed in that year. Figures for more recent years in Table Q are taken from various annual Statistical Abstracts. The dramatic decrease in the number of males engaged reflects the reduction in the number of holdings; the mechanisation of agriculture and the change from tillage to livestock.

Table Q Males engaged in farmwork, 1912-1979

Year	Family	Non-family	Total
1912	455,215	191,430	646,645
1929	417,901	148,120	566,021
1934	425,832	153,577	579,409
1939	394,927	135,972	530,899
1944	384,189	141,958	526,147
1949	357,003	124,821	481,824
1954	317,063	104,246	421,309
1959	299,200	89,900	389,100
1964	275,600	67,900	343,500
1969	240,800	47,200	288,000
1974	210,200	33,800	244,000
1979	186,000	26,300	212,300

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