



# INDUSTRY INSIGHTS

in Dairy  
Farming





# INDUSTRY **INSIGHTS** in **DAIRY FARMING**

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# 1

## MARKET DEFINITION

### 1.1 Scope of the Market

The dominant agricultural enterprise in the UK is livestock farming. It is critical for food security as well as for the rural economy's sustainability.

The UK's 14,550 dairy farms accommodate around 1.8M dairy cows that are kept in an average herd size of 125. Even though family farms vary in size, the average herd today is four times larger than the average herd of 30 cows back in the 1970s.

The total income from farming is £5,711M, rising by 45% compared to 2016 and contributing £10,285M to the national economy (Gross Value Added), which accounts for an increase of £1,756M (21%)

#### What drove this change?

An increase of £2,397M (10%) in gross output to £26,105M due to individual increases in crop output (11%), livestock for meat (7%) and livestock products (specifically, a 25% increase in the price of milk).

A weakening of the GBP caused a 3.0% increase in the value of payments under the Basic Payment Scheme.

Higher prices in animal feed, energy and fertiliser increased the cost of intermediate consumption by 4.2%.

The dairy farming industry literally feeds the country and, therefore, it is a crucial part of the nation's food security. Its value accumulates to £27.8B (taking into account both indirect and induced multiplier impacts) and ensures the prosperity of rural communities.

## Value of our Industry



**14.8%** of the value of agriculture produce at farm level.

**£8.8B** of sales at wholesale.

**£27.8B** aggregate turnover impact estimated once indirect and induced multiplier impacts are considered.

Source: The white paper pdf

The dairy sector plays a significant role in the UK.

Annually, the country's 13,000 dairy farmers produce 14 billion litres of milk that is worth £8.8B at wholesale level. More importantly, they take care of millions of acres of land and are among the world's most dedicated professionals.

## Key consumer facts

Domestic consumption of dairy products in the UK is strong with high levels of product penetration.

### KG per person per annum

(Source Dairy UK)



Liquid milk **103.9**



Cheese **13.4**



Butter **3.2**

### % people regulary

(Source Dairy Council)

**98%** eat or drink dairy products

**93%** consume fresh milk

**90%** consume cheese

**In 2014 the UK dairy industry exported to 135 different countries around the world**

(Source: HMRC)

Source: Leading-the-Way-growth-plan-booklet---July-2014-version pdf

## 1.2 Major Players

The average herd size for the top 20 farms is 460 cows, reflecting the increasing size of all dairy herds.

Other interesting figures include an average age at first calving of 25.2 months, a calving index of 392 days and an average milk production of 10,666 litres with 3.88% bf (body fat) and 3.22%protein.

| Business Name                  | Farm                  | Community           | Area               | Breed     | Cows |
|--------------------------------|-----------------------|---------------------|--------------------|-----------|------|
| <b>Alderston Farming</b>       | Alderston Mains       | Haddington          | East Lothian       | Jersey    | 313  |
| <b>J &amp; W Baillie</b>       | Hillhead of Covington | Biggar              | Lanarkshire        | Holsteins | 277  |
| <b>R &amp; L Barron</b>        | Darrahill             | Udny                | Aberdeenshire      | Holsteins | 291  |
| <b>A Colquhoun Ltd.</b>        | Dendoldrum            | Inverbervie         | Kincardineshire    | Holsteins | 695  |
| <b>Robert Wallace</b>          | Craigley Farm         | Gelston             | Kirkcudbrightshire | Holsteins | 594  |
| <b>Robert D Fleming</b>        | Hillhead              | Kirkpatrick Fleming | Dumfriesshire      | Holsteins | 276  |
| <b>Wm. Hamilton &amp; Son</b>  | Meldrum               | Blairdrummond       | Stirling           | Holsteins | 789  |
| <b>M/S Harvey</b>              | Drum Farm             | Beeswing            | Dumfriesshire      | Holsteins | 322  |
| <b>KSH Farmers Ltd.</b>        | Kennetsideheads       | Eccles              | Berwickshire       | Holsteins | 1096 |
| <b>Lakehead Farming Co</b>     | Lakehead Farm         | Closeburn           | Dumfriesshire      | Holsteins | 523  |
| <b>I Marr</b>                  | Cultercullen          | Udny                | Aberdeenshire      | Holsteins | 240  |
| <b>Fergus McDowall</b>         | Rerrick Farm          | Dundrennan          | Kirkcudbrightshire | Holsteins | 1000 |
| <b>R &amp; J McDonald</b>      | Kelloe Mains          | Duns                | Berwickshire       | Holsteins | 782  |
| <b>Mrs J C McLean</b>          | Mains of Culsh        | Newdeer             | Aberdeenshire      | Holsteins | 187  |
| <b>T &amp; C Owen</b>          | Potstown              | Lockerbie           | Dumfriesshire      | Hols/Jer  | 229  |
| <b>Slagnaw Farming Co.</b>     | Slagnaw               | Castle Douglas      | Kirkcudbrightshire | Holsteins | 526  |
| <b>Firm of J B Sloan</b>       | Panlands              | Johnstone Bridge    | Dumfriesshire      | Holsteins | 213  |
| <b>University of Edinburgh</b> | Langhill Farm         | Roslin              | Midlothian         | Hols/Nor  | 247  |
| <b>T &amp; A Wadsworth</b>     | Big Balcraig          | Whaphill            | Newton Stewart     | Holsteins | 322  |
| <b>Brian G Yates</b>           | East Logan            | Castle Douglas      | Kirkcudbrightshire | Hols/Jer  | 2    |

# 2

## MARKET INSIGHTS

### 2.1 Current Market Scenario

Dairy farming accounts for 13.9% of the total value of UK agricultural production for 2016, and 32% in Wales for 2017. Despite a recent improvement in the global supply/demand balance and increasing farmgate prices, the number of dairy farmers in Wales continues to decrease.

However, due to the Brexit, the dairy sector in Wales is expected to face fewer challenges as its market is less dependent on EU subsidies and exports than the beef and sheep industry, and is more dependent on the price of milk and local demand.

**The UK average price of milk in February 2018 was 29.64 pence per litre (ppl).**  
This was 2.17ppl (8%) higher than in February of the previous year.

**In February 2018, the average yield per cow stood at 27.54 litres/day,** a 0.2% decline compared to February 2017.  
This results in a total average monthly milk value that reaches £40,869, which is £3,678 (9.9%) more than the previous year.

**The UK dairy industry is 77% self-sufficient,** according to a Rabobank report. As a range of policy measures is subject to EU intervention, the Brexit will have an impact on access to funding, subsidies and quotas.

The ONS business survey reveals that UK dairy processors employ 26,000 people.

**51% of raw milk in the UK goes to liquid milk and 27% to cheese.**  
**62% of manufactured cheese.**

(Source: Defra)

Dairy processors successfully improve their sustainability through the Dairy Roadmap. Achievements include:

- All top five processing companies have a CMP (Carbon Management Programme)
- 88% of processing plants have an EMS (Environment Management System)

- Reduction in waste to landfill by 73% since 2006
- 15% recycled material included in high-density polyethylene (HDPE) milk bottles

## 2.2 Technological Innovations

- The increased incorporation of computers into the day-to-day management of dairy herds is a growing trend, as it improves record keeping and paves the way for the next step that will include the use of precision dairy farming technologies. Precision dairy farming technologies measure physiological, behavioural and production indicators for individual animals. A combination of good management practices and technology guarantee competitiveness and financial security in a volatile environment.
- Technology is taking over the market, from robotic milking to automatic scratchers. The next step is a fully automated system where the cows choose when they want to get milked.
- In many farms, cows have microchips or collars that monitor their health and wellbeing, which also help identify any changes in the herd's health quickly and efficiently.
- Farmers use technology to monitor when the cow is about to go into labour.

### Technologies available to farmers fall into categories including:

- Production- in-parlor controls and monitors
- Animal health- mastitis, rumen health, metabolic disorders and body temperature
- Environmental- temperature and milk line vacuum
- Nutrition- individual feeders, mixing equipment and water supplies
- Fertility- estrus and calving detection

As technology advances, new kinds of methods for monitoring new parameters will arise.

### Explanation of the location and parameters measured by each technology:

#### Location of Technology:

**Bulk tank**- in bulk tank

**Ear**- mounted to the animal's ear

**In-line**- between milking unit and bulk tank

**Leg**- mounted to animal's leg

**Milking unit**- on milking cups, inflations, shell, or claw of milking units

**Neck**- mounted to, or going around, the animal's neck

**Parlour**- utilised in, or near, the parlour

**Rumen**- inserted orally and residing in the reticulorumen of an animal

**Rump**- mounted to the rump of an animal

**Vagina**- vaginal insert

## Parameter measured:

**Animal position/location** - locates animals within a facility or pasture

**Blood content in milk** - determines general udder health and SCC (Somatic Cell Count) by monitoring the blood content in milk

**Body weight** - detects changes in animals' total weight to evaluate the health and efficiency of feed nutrients' conversion to milk

**Cow activity** - collects two-dimensional and three-dimensional animal movement data to monitor health and estrus behaviour

**Feeding behaviour** - monitors eating events and durations to observe health, behaviour or estrus

**Fertility hormones (e.g. progesterone)** - determines reproductive performance by quantifying the amounts of circulating reproductive hormones and determining oestrous or pregnancy

**Jaw movement/chewing activity** - tracks eating events and rumination as indicators of animal health along with nutritional and reproductive performance

**Lameness** - monitors animal mobility

**LDH (Lactate dehydrogenase)** - detects changes in LDH levels to predict udder health

**Lying/standing behaviour** - collects activity levels and three-dimensional movements of animals for monitoring their health, comfort and actions

**Mastitis** - detects changes in whole udder or individual quarters for infections

**Milk components (e.g., fat, protein)** - quantifies and monitors milk constituents

**Milk conductivity** - determines changes in milk ionic concentrations to indicate milk fat, protein, lactose or somatic cell counts

**Milk flow** - milk produced in a given amount of time that is generally used for automatic take-offs, preserving teat ends

**Milk time** - monitors the time a cow or each individual quarter spends milking

**Milk yield** - amount of milk given by individuals or groups of animals

**Rumen pH** - health through monitoring of rumen pH

**Rumination** - determines health and oestrous by quantifying eructation

**Somatic cell count** - determines udder health through the somatic cell count of milk originating from all or individual quarters of the cow

**Standing heat** - records events where a cow or heifer stands to be mounted

**Temperature** - determines oestrous, calving, stress or general health of an animal by monitoring temperature in the ear, rumen, vagina or milk

**Vacuum in milk line** - preserves teat ends by monitoring fluctuations in vacuum strength present at the teat ends

## 2.3 Government Regulations and Initiatives

The government and the European Commission are supporting the industry through the current financial difficulties (€500M EU dairy package, UK tax measures) and focus on improving its resilience to future volatility.

**Farming unions and the whole industry also expect to see further actions in the following areas:**

- Improving price reporting so that farmers can manage their own risks
- Increased responsibilities for the Groceries Code Adjudicator
- Country of origin labelling for dairy products
- Longer-term contracts
- Providing a clear strategic direction by the UK Food and Farming Strategy

## The areas of government actions currently include:

### Promoting trade:

A trade delegation visited China in November 2015. It included eight British dairy businesses to promote British products in China's growing market.

### Government procurement:

Publishing details of central government catering contracts to bring transparency to the market and help dairy farmers prepare and compete for contracts.

### Supply chains:

Bringing more fairness and transparency to the supply chain in the EU using the success of the Groceries Code Adjudicator as a model that could benefit the whole continent.

### Labelling:

Defra (The Department for Environment, Food & Rural Affairs) focuses on establishing more consistent labelling and branding of British dairy products. This will make it easier for businesses and consumers to know when they are buying British.

## Role of the Groceries Code Adjudicator

The Groceries Code Adjudicator (the GCA) is the independent regulator, ensuring that regulated retailers treat their direct suppliers lawfully and fairly. It oversees the relationship between supermarkets and their suppliers and enforces the Groceries Supply Code of Practice.

## Milk Contracts and the Dairy Code

The Dairy Industry Voluntary Code of Best Practice on Contractual Relationships (the Dairy Code) was published in September 2012 after the milk crisis. A separate code applies to Northern Ireland. It enables dairy farmers and processors to develop strong relationships of mutual understanding and trust as it sets out minimum good practice in terms of dairy contracts.

## Producer Organisations

Any group of dairy farmers located in England, Wales, Scotland or Northern Ireland can apply to the Rural Payments Agency to become a Dairy Producer Organisation (DPO). A DPO can negotiate contracts for the delivery of milk on behalf of its members.

# 3

## MARKET DYNAMICS

### 3.1 Drivers

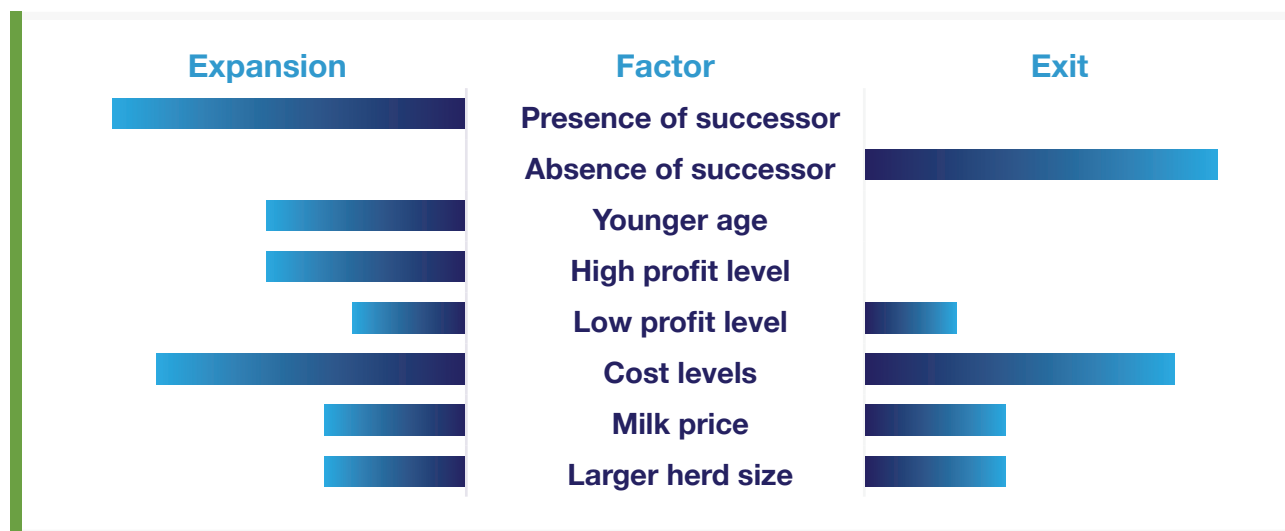
- In 2004, UK dairy farmers received a total of €119 million in direct aid from the EU, from a total of €970million.
- The British dairy industry spends millions on advertising. In 2012, it spent £124.2 million, 44% of which advertised yoghurt products.
- The UK dairy industry is promoted and supported by the DairyCo, the Dairy Council and Dairy UK.
- DairyCo is a non-profit organisation that is a levy-funded division of the Agriculture and Horticulture Development Board (AHDB). One of their main strategies is to “promote the positive perception of dairy farming with the general public”.

Factors that impact the decision of whether to expand, contract or leave the dairy industry vary by farm, but can still be split into two main categories.

Social drivers are related to personal circumstances and every individual producer’s outlook.

Economic drivers are related to business performance and how it reacts and develops in the wider economic environment.

The table below lists the main social and economic factors and the degree of impact they have on producer decisions to expand or leave the industry.



#### a. The social drivers include:

**Succession** – The presence of a successor is the biggest single factor affecting business intentions.

**Age** –Younger farmers tend to be more business focused and more likely to be looking to expand production.

**Education** – Farmers aiming to expand tend to have higher qualifications than those looking to leave the industry.

## b. The economic drivers include:

**Profit** – Farms with high levels of profit were more inclined to consider expansion but farms with lower profits were also prepared to expand, hoping to increase profit levels.

**Cost levels** – Input prices are a major driver influencing decisions.

**Milk price** – Commonly quoted as a major factor.

**Herd size** – There is a range in profitability at all herd sizes, indicating that while larger herd sizes offer the potential to increase profits, the actual profit levels achieved are determined by other factors.

**Family labour** – Businesses with a higher proportion of family labour were found to be more likely to be looking to expand.

The British Dairy Industry Sustainable Growth Plan is based on the three pillars of sustainability: economic, social and environmental, aiming to “eliminate the UK Dairy Trade Deficit by 2025”.

### 1. Economic

- Improve our international competitiveness at all levels of the supply chain
- Increase our share in the domestic and international markets
- Exploit more market opportunities
- Build supply chain relationships based on collaboration, partnerships and trust

### 2. Social

- Constantly improve standards of animal health and welfare
- Provide an attractive and rewarding career for candidates
- Produce safe and nutritious food
- Communicate a consistent and positive image of the industry and its products

### 3. Environmental

- Promote the sustainable use of natural resources
- Minimise the industry's environmental footprint
- Protect and enhance biodiversity
- Protect and enhance the social and natural value of our landscapes

## 3.2 Restraints / Industry Challenges

Key determinants of restraints and challenges in the dairy business' growth

**Profitability and profits**

**Milk prices**

**Herd sizes**

**Herd efficiency**

**Herd age**

**Support payments**

**Other income sources  
(farming and non-farming)**

**Climate change**

**Brexit**

**Supply & production**

**Fuel prices**

**Number of producers**

**Milk contracts**

### Weaknesses

- The milk production system in many parts of the country is still dominated by low yielding animals.
- Poor road conditions, power supply and underdeveloped milk collection systems remain a major challenge for the supply of good quality raw milk.
- Maintenance of cold chain is still underdeveloped.
- Low penetration of scientific dairy farming, clean milk production and value chain.
- Unstable milk production pattern, along with regional imbalance of supply and species-wise variation (buffalo, cow, goat, etc.).
- Absence of reliable milk production data and lack of investments in dairy research.

### Threats

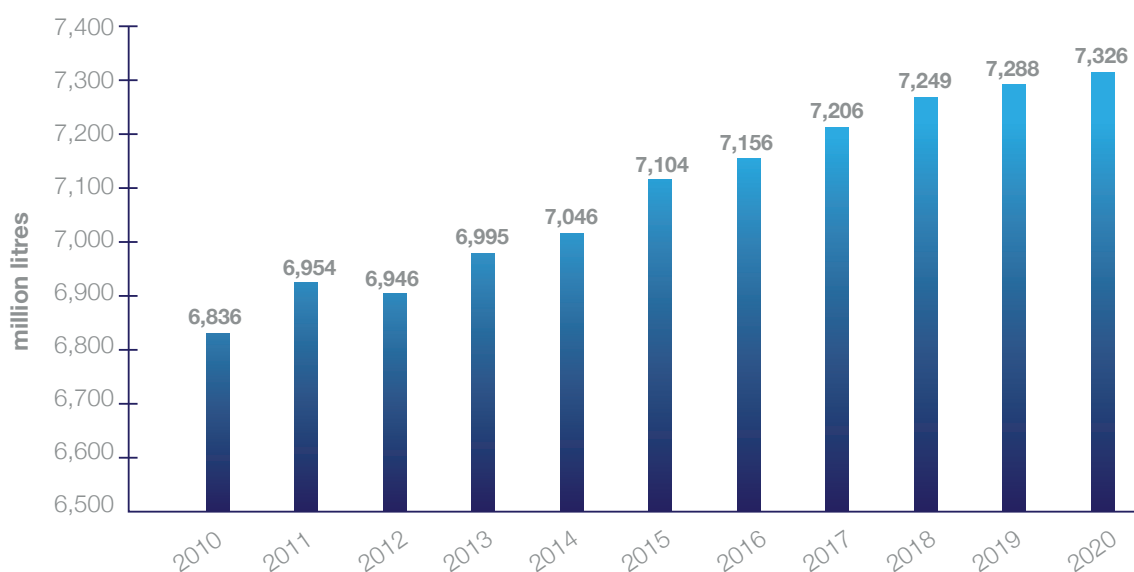
- Excessive grazing led to degradation of land.
- Crossbreeding to raise milk productivity could lead to disappearance of valuable indigenous breeds.
- Organised dairy industry handles only 15% of the milk produced due to lack of cost-effective technologies, mechanisms and quality control measures.
- Lack of awareness among farmers about quality parameters such as chemical contaminants and antibiotics.
- Middlemen still control a very large proportion of the milk supply chain.
- Entry of multinationals could result in a large portion of milk being diverted towards value added products that affect the availability of liquid milk supply for mass consumption.

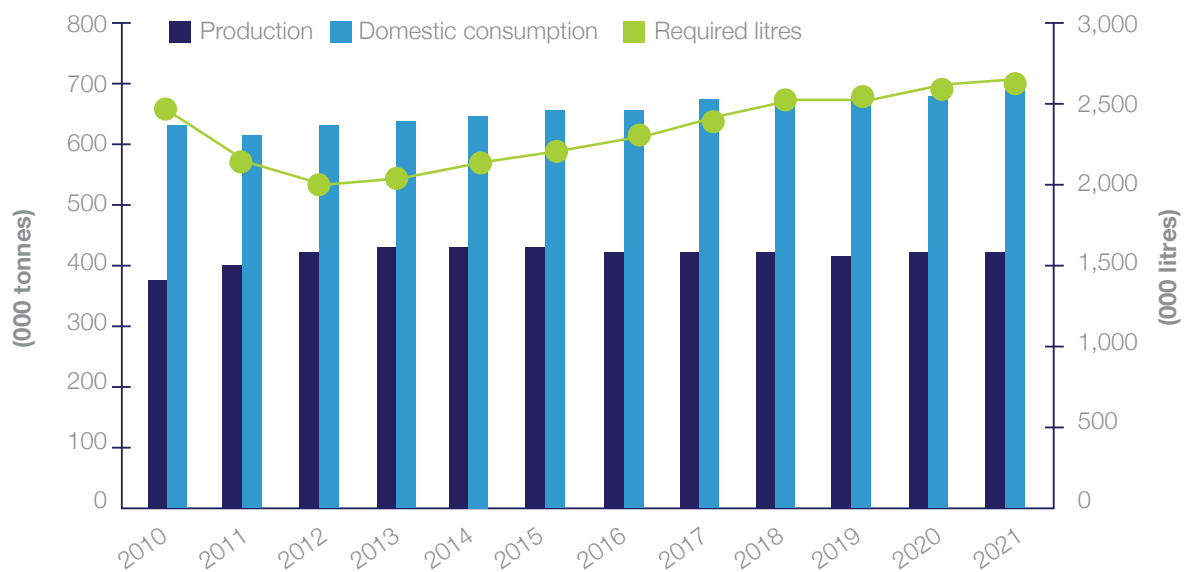
### 3.3 Opportunities / Investments

A bright future for dairy production is rising as global demand will continue to grow for years to come. Increased wealth (especially in developing nations), population growth and changing dietary habits mean greater demand for dairy products.

- Investment opportunities are increasing
- Expanding markets will increase job and self-employment opportunities
- Demand for dairy products is income elastic
- Improved export potential for milk products
- UK consumers continue to support dairy loyally
- The world will be consuming an extra 304 million tonnes of milk (295 billion litres) annually by 2030
- Continuous growth in the volume and value of milk, cream, cheese, yoghurt, butter and organic dairy products sales

**UK consumption of liquid milk (2010-2020)**





**Domestic production and consumption, self sufficiency of cheese in millions of tonnes (2010-2021)** (source Defra and DairyCo)

Source: NFU-Dairy-Strategy-'Compete-to-Grow' pdf

## Farms need to invest in:

- Continuous improvements in efficiency and productivity
- Better management practices
- R&D and knowledge transfer
- Productive capital and infrastructure
- Skills and training
- Liquid milk processing infrastructure
- New butter manufacturing capacity
- Improved infrastructure in cheese supply chains & cutting and maturation facilities
- The promotion and development of strong performing brands

# 4 | COMPETITIVE LANDSCAPE

## 4.1 Mergers & Acquisitions, Joint Ventures, Collaborations and Agreements

### Mergers and Acquisitions:

- Arla Foods UK acquired Yeo Valley Diaries
- Dairy Crest's Dairy Operations was acquired by Saputo

### Joint Ventures:

A joint venture is a business structure that allows dairy farmers to continue trading with all of the tax advantages while allowing them to partly retire from daily activities. There are three major types of joint ventures:

## Contract Farming, Equity Partnerships and Sharemilking

### The benefits of a joint venture include:

- Tax benefits – relief in both income tax and capital taxation
- Trading with less daily responsibilities and workloads
- More effective use of equipment and machinery
- Access to skilled labour and know-how
- Access to land and capital, allowing easier business growth
- More marketing and input buying strength
- Leisure and lifestyle benefits

# 5

## RECRUITMENT CHALLENGES & FACTS

A survey conducted towards the end of 2017 at over 1,000 UK dairy farms that produce over 2.23 billion litres of milk (15% of the country's annual volume) reveals that more than 50% of dairy farmers experience difficulties in recruiting staff.

According to the survey, 11% of employees were non-UK nationals and almost 17% of dairy businesses employ foreign workers.

More than half of these workers are in skilled positions of herd managers or herdsman.

| Region           | No. of farms surveyed with labour | Total workers | Total non-UK workers | % of non-UK workers |
|------------------|-----------------------------------|---------------|----------------------|---------------------|
| Scotland         | 108                               | 500           | 66                   | 13                  |
| Northern Ireland | 38                                | 90            | 5                    | 6                   |
| North West       | 178                               | 854           | 89                   | 10                  |
| North East       | 76                                | 337           | 5                    | 1                   |
| West Midlands    | 107                               | 437           | 39                   | 9                   |
| East Midlands    | 54                                | 243           | 7                    | 3                   |
| East Anglia      | 9                                 | 55            | 7                    | 13                  |
| Wales            | 137                               | 567           | 91                   | 16                  |
| South West       | 258                               | 1,197         | 152                  | 13                  |
| South East       | 41                                | 205           | 46                   | 22                  |
| Not specified    | 12                                | 150           | 14                   | 9                   |
| <b>Total</b>     | <b>1,018</b>                      | <b>4,635</b>  | <b>521</b>           | <b>Avg 11.2%</b>    |

Source: [https://www.farminguk.com/News/Survey-predicts-cliff-edge-shortage-of-labour-for-UK-dairy-farms-post-Brexit\\_48457.html](https://www.farminguk.com/News/Survey-predicts-cliff-edge-shortage-of-labour-for-UK-dairy-farms-post-Brexit_48457.html)

The dairy sector directly employs over 70,000 people in farms and in processing plants. Subsidiary industries provide additional employment as their profitability relies on a healthy dairy industry.

### Dairy industry employment

**23,000**  
Employed by processors



**50,000**  
Employed on farms



### Recruitment Challenges and Risks:

- Dairy farming requires a steady level of labour all year round, unlike other types of agriculture. It is an important pillar of the country's economy. Therefore, the inability to recruit trained (or untrained) workers will affect operating costs, driving them up. If Brexit proceeds, the difficulty to employ EU workers and the absence of a domestic alternative will have a big impact in the sector and in the viability of many individual businesses.
- The UK dairy sector is engaging in a range of training and knowledge transfer initiatives to better equip future farmers and workers with skills that will be vital in the future.
- The skills shortage, especially in the technical areas of production, as well as technological progress called for better-trained and skilled employees. To tackle this challenge, the industry initiated Project Eden, a world-class, three-year degree course at Reaseheath College that aims to equip young people with exceptional skills in the sector.

# 6

## KEY FINDINGS SUMMARY

- UK's 13,000 active dairy farmers produce over 14 billion litres of milk annually, worth an overwhelming £8.8B at wholesale level.
- Higher milk prices and higher output doubled the average English dairy farmer's income during the last financial year.
- UK dairy processors employ 26,000 people.
- According to a Rabobank report, the country's dairy industry is 77% self-sufficient.
- Computers, robotics and cutting-edge technology are being used.
- The Government and the European Commission have implemented measures to support the industry through the current financial fluctuations.
- Expanding markets will create enormous job and self-employment opportunities.
- Investment opportunities follow the economy that increases at the rate of nearly 8% of the GDP.
- Dairy farming requires a steady level of labour all year round, unlike other types of agriculture with a seasonal workforce.
- 11% of employees are non-UK nationals and almost 17% of dairy businesses employ foreign workers.

# 7 | SOURCES

Department for Environment, Food  
& Rural Affairs - Challenges and  
Opportunities Facing UK Livestock

The British Society for Animal  
Science - Income from Farming in the  
United Kingdom

DairyCo

Dairy UK

AHDB

Dairy Farm Guide

Farming UK

NFU

This is Dairy Farming / Technology

Robotic and Information Technologies  
in UK Dairy Farming - University of  
Hull

Dairy Global



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