



McDonald's Europe Flagship Farms

Dairy – Mike & Sue Tizzard, England

Introduction

Mike and Sue Tizzard run a successful dairy operation consisting of five separate dairy farms in the southwest of England. In this case study, he explains how he has built a profitable organic dairy business underpinned by carefully selected genetics, good animal husbandry and cost effective milk production.

The key initiatives undertaken by Mike, Sue and the farm staff are summarised as follows:

- Accurate financial forecasting and planning allows the business to undertake capital investments within identified time frames to help improve economic stability and long term commercial sustainability.
- The cows are fed a forage-based diet with the aim of reducing purchased feed requirements and growing more protein on farm. This is being achieved by increasing the clover content of pastures and growing Lucerne for grazing. This activity also supports improved soil fertility and pasture productivity.
- The herd consists of a cross breed between the British Friesian, New Zealand Friesian and Ayrshire breeds. This produces a small, hardy cow with good feet, fertility and longevity, that are suitable for optimising a pasture-based dairy system.
- Sexed-semen is used to inseminate the most efficient and productive cows in the herd, ensuring faster genetic improvement. This also allows the farm to use beef type genetics on the other cows, providing a higher value marketable calf. The use of sexed semen has achieved equivalent conception rates to standard semen and the farm estimates a saving of around £480 from producing a dairy heifer calf verses a dairy male.
- The Kingshay Dairy Management Tool is used to record and benchmark herd performance and manage costings.
- NMR provides monthly milk recording to monitor individual cow milk yield, milk solids and Somatic Cell Count (SCC).
- Agrinet is an online tool used to record grass growth measurement, which provides information to improve grazing management. Recording these data allows the farm to monitor performance, inform decisions, target resources and drive progress.
- Two kilometres of new cow tracks have been laid which have improved and increased access to pastures, whilst reducing soil compaction, and erosion. The herd spends an additional four weeks at pasture each season, saving us £12,000 each year on housing and feed costs.
- The herdsman is employed on a 365-day contract and is paid on a per litre of milk produced basis. This encourages the herdsman to optimise milk production, and a bonus is paid for achieving targets relating to herd health and grass productivity. This policy has helped to drive business objectives and employee engagement.



“Mike and Sue have been able to build a very successful dairy operation based upon a defined business strategy and a focus on financial forecasting and planning. Key outcomes and indicators are being monitored and measured which has provided detailed figures for benchmarking which identifies areas in need of improvement. Key business drivers have been established, such as producing more milk from forage which has resulted in targeted investments on farm to help improve this figure. All in all a very impressive farming business driven by great management and supported by a great team.”

Karl Williams, Flagship Farms Programme Manager, FAI

Summary of actions and benefits

The table below summarises the key areas of good practice displayed by Mike Tizzard, and the benefits (EN environmental / EC economic / ET ethical) that arise from taking these actions.

Action		Benefits
Management	Forage based diet	<ul style="list-style-type: none"> EN Nitrogen-fixing grass mixtures help to maintain and increase soil fertility EC Home-grown silage and cereals minimizes purchased feed costs ET Lucerne and clover provide a balanced protein supply in the diet
	Grass measurement	<ul style="list-style-type: none"> EN Avoids overgrazing and soil damage EC Provides information to optimise grass production and ensure management practices are targeted at specific issues
	Agrinet on-line management tool	<ul style="list-style-type: none"> EC Kingshay Dairy Manager (used on all farms) also allows us to benchmark Helps locate problems and drive improvement in practice
	Manure management	<ul style="list-style-type: none"> EN Paddock rotation and slurry application after grazing encourages new grass growth and allows time for nutrient uptake, preventing run-off EC Soil nutrient management ensures productive grass growth for the herd
	Cow tracks	<ul style="list-style-type: none"> EN Purpose built tracks reduce soil poaching and erosion from cows EC Allows access to pasture throughout the season and more efficient travel between pasture and the milking parlour ET Well maintained tracks reduce lameness incidence within the herd
	50 Point rotary parlour	<ul style="list-style-type: none"> EC Efficient milking increases the time the cows spend at pasture ET Increased grazing time allows for more natural feeding routines Reduced time in the collecting yard reduces incidence of lameness Reduced labour requirement at milking leaves more time to focus on overall herd welfare
	Milk and teat hygiene	<ul style="list-style-type: none"> EC Reduced mastitis levels and associated milk losses Average herd SCC is in the top banding at 160,000 last year ET Emollient spray improves teat condition Antibacterial spray limits bacterial infection post milking
	Sexed semen	<ul style="list-style-type: none"> EC Enables high genetic merit cows to be inseminated to produce heifer calves. Saving around £480 from successful replacement heifer births ET Avoids surplus births of dairy bull calves
Animal Health & Welfare	Cross bred genetics	<ul style="list-style-type: none"> EC Crossbred genetics ensure good hybrid vigour for a healthy, productive herd Breeding for small, hardy cows that utilize grass drives efficiency of the forage-based dairy system ET Selection for high fertility and healthy feet ensures a productive herd with low veterinary needs
	Herd Health Programme	<ul style="list-style-type: none"> EC Reduces expensive production losses and associated veterinary costs ET Helps monitor the incidence and prevalence of disease and ensures a targeted treatment strategy
	Benchmarking Herd Health and Performance Data	<ul style="list-style-type: none"> EC Helps inform management decisions Benchmarking of data provides information on areas which are potentially under-performing ET Regular monitoring of data ensures herd health and welfare is maintained and improved

	Milk recording	<p>EC Data on each cow's milk yield and constituents helps provide targeted management decisions</p> <p>Monitor for subclinical mastitis infection (via SCC) enabling effective treatment and reducing disease spread</p> <p>ET Efficient treatment of individual cows</p>
	Market for dairy bull calves	<p>EC Provides a viable market for dairy bull calves</p> <p>ET Rose veal produced in co-operation with local young farmer</p>
Environment	Smart Heat boiler system	<p>EN Reduces energy requirements needed on the farm</p> <p>EC Heat recovered from milk is used to pre-heat hot water needed for planting washing</p>
	Variable speed parlour pump	<p>EN Reduces energy requirements needed on the farm</p> <p>EC Variable speeds improve energy efficiency and reduce electricity costs</p>
	Member of Environmental Management scheme	<p>EN Woodland and field margin management to improve biodiversity</p> <p>Increase insects and mammals providing food for bats and birds</p> <p>EC Monetary incentives provided by the scheme</p>
Business Planning	Dairy cooperative	<p>EC The business benefits from economies of scale and joint purchasing power, reducing buying costs</p> <p>Increased market presence provides increased economic stability and investment opportunities for the business</p> <p>ET The farms work together to share knowledge and support and drive best practice</p>
	Farmer discussion groups	<p>EC Attending discussion groups helps with knowledge transfer and good practice adoption</p>
	Fixed 365-day contracts	<p>EC Staff salaries are paid on a 'pence per litre produced' basis, with bonuses paid for achieving specific business targets</p> <p>Bonuses for herd performance and grass growth drives best practice</p> <p>ET Provides stability for the staff</p>

Background

In 1943, Mike's father started milking two cows behind the local pub in Milborne Port, Dorset, England, and subsequently acquired a small dairy unit called Venn Farm in Dorset. At the age of sixteen Mike began his farming career working alongside his father and two brothers on the farm. Then in 1989 Mike & his wife Sue took on the tenancy of a small dairy unit called North Wootton farm. Four years later in 1993 he went into partnership with his landlord to manage two additional dairy units in the Sherborne area; this rapidly expanded the business almost overnight.

Today, Mike and Sue run a farming operation covering five organic dairy farms. Lower Farm is the most recent acquisition to the group – a 220-hectare farm in Lillington, Dorset, and will be the focus of this case study.

Here they describe how they work closely with their staff to drive best management practice across the farms and to ensure they operate a profitable and successful dairy business.

How has your business expanded and what is the key to doing this?

In 2005 we purchased a young stock farm six miles away from North Wootton, which we now use to rear our replacement heifers. In 2008, we purchased a fourth dairy unit of 260 cows along with 140 hectares of land. Our fifth and most recent investment project was in 2011, when we purchased Lower Farm, at Lillington. We take a long-term approach to business management and insight, which has been critical in enabling us to expand and acquire additional businesses.

You mentioned your 'long-term approach to business management' – why is this important?

We're always forecasting at least twelve months ahead and cash flows and budgets are always ready to be viewed with up-to-date information. With new projects we forecast at least two years ahead to ensure that funds are available to drive the business forward. This has become increasingly important as the business has expanded.



Detailed forecasting
and forward planning
has helped drive
business expansion

We also seek external advice when needed and have a farm consultant who visits the business every two months. He knows the business and how we work; he can challenge us effectively when needed and bring different ideas to the table.



Best Practices

What are the benefits of running five farms?

The five dairy farms operate as a cooperative, affording the business increased purchasing power and market presence. For most purchases we obtain three quotes, and for inputs like feed we group buy with other organic farmers to get the best price. We are able to leverage our size and benefit from the economies of scale, which allows us to control costs.



“We use local suppliers whenever we can and have established several long standing relationships with them”



Tell us about Lower Farm and what changes you have made since taking over?

Lower Farm was purchased in 2011 and we began the conversion to organic immediately. We have 450 British Friesian and cross-bred cows which are mostly autumn calving.

We milk twice a day, and when we started at the farm milking was taking up to eight hours a day – the parlour was old and needed replacing. So we installed a new 50-point rotary parlour which has reduced milking time by 50%, to four hours per day.

We have also installed over two kilometres of cow tracks, which has improved the cows' access to pastures. We focus on 'more milk from grass' and aim to have the cows out grazing at pasture for 20 hours per day during summer. The advantages of the new tracks mean soil compaction and poaching caused by the cows is kept to a minimum, and so soil erosion and run off from these areas has been reduced.



Benefits of well maintained cow tracks:

1. Better herd movement and reduced herd travelling time
2. Safe and comfortable walking over longer distances from the parlour
3. Increased grazing season (and therefore savings to feed costs)
4. Reduced foot damage and lower incidence of lameness
5. Better udder cleanliness
6. Less soil damage through compaction and poaching

(Source: DairyCo Healthy Feet Programme. Cow Tracks)

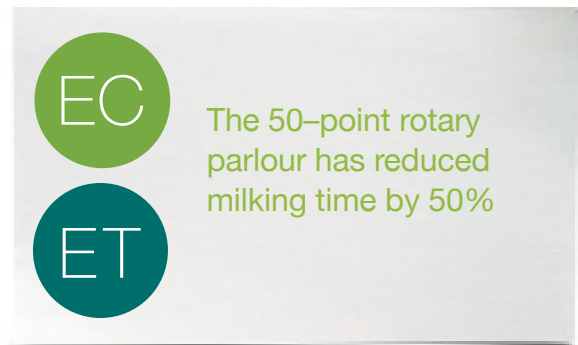
“By installing an extensive network of good cow tracks, we have gained four weeks of additional grazing per season. By allowing cows to spend more time at pasture has reduced labour input, feed, fuel, bedding, and slurry handling. Taking these reductions into consideration we have estimated savings of around £12,000 per year.”

Can you tell us more about the 50-point rotary parlour?

The rotary parlour has increased milking efficiency greatly and this has a number of benefits to the cows and therefore the businesses success. The reduced milking time has freed up a lot of the herd manager's time, which allows him to focus more on the overall health, welfare and management of the herd. Also, cows spend less time standing in the collecting yard waiting to be milked, which has been one factor in helping to reduce lameness.

The new parlour has an automatic identification system so the cows are provided with a specific amount of feed according to their lactation stage, and condition score. This helps maintain the ideal body condition to help with conception, and maintain the pregnancy. The auto-ID also enables cows to be automatically segregated, which means we can undertake artificial insemination, pregnancy checks or other treatments at the most appropriate time.

We also installed a 'smart heat' boiler system in the parlour to save water-heating costs. The system recovers some of the heat from the milk prior to it entering the bulk tank, and uses it to pre-heat the water for cleaning the plant. A variable speed vacuum pump was also fitted to optimise pump performance and reduce the amount of electricity needed to run the parlour.



“ Around 3000kWh of electricity have been saved by using a variable speed vacuum pump, this saves around £217 per annum, at next year's electricity prices this will be nearer £260 and is expected to increase further. ”



What are the benefits of 'more milk from grass' and how are you achieving this?

Milk from forage and especially milk from grass are key drivers to profitability in our system. We can grow grass and forage on the farm very efficiently and this enables us to control our feed costs and produce milk more economically. We grow all our own silage and the cereals we grow are regularly whole-cropped for silage rather than being harvested for the seed, which allows us to make use of the whole plant. We try to grow as much forage as possible with the aim of reducing purchased feed requirements.

“More milk from grass is a key driver to profitability.”

How are you improving grass management and production?

Good grass management is key to the business and the herd managers are incentivised to regularly monitor and measure grass growth throughout the season. Measuring grass growth allows us to make management decisions based on facts. We can recognise periods when we have excess growth and can harvest the field for silage, or plan for when we may have a shortage.

The information gathered on the pastures is entered into an online program called Agrinet, all the herdsman are able to access this data and monitor their performance against each other. We also review all the data and measurements at the end of each season to identify which pastures have not performed as expected and these are considered as high priorities for reseeding, soil analysis or other corrective measures.

To make the most of our grazing and pastures the herd manager attends a DairyCo grazing discussion group. They meet every six to eight weeks to discuss best practice and potential challenges we may face. This has definitely helped us to improve our knowledge and grassland management.

“Herds producing ~2000 litres more milk per cow from grazed grass can save 1.3 pence per litre on purchased feeds, creating a profit of 0.7pence per litre.”

Source: DairyCo Feeding + Feeding Improvement Programme



By measuring grass growth we can manage periods of excess growth and plan for future shortages



One of the biggest challenges to being self-sufficient in feed is protein, how do you manage this?

All of our grass leys have a high percentage of clover within them to improve the levels of protein in grazed forage as well as improving the soil fertility of the pastures. We have even been growing Lucerne for five years and saw great success in 2013 through the dry summer – the deep-rooted and drought-resistant crop meant we were still able to graze the herd on it.



Lucerne has around a crude protein content of around 18–22% making it an important source of protein

Source: EBLEX 2014



Alongside organic manures, N-fixing crops like lucerne and clover play a central role in improving soil quality

How do you optimise manure management on the farm?

Manure is one of our most important resources so it's important to get the application quantities and timing just right to optimise its use. We apply slurry to the fields after they have been grazed in order to encourage new grass growth and we allow adequate time to elapse to ensure any residues on the pasture have dispersed prior to the cows entering the paddock again. As the land is in a cropping rotation this also means that the nutrients are spread evenly across all the land.

You mentioned 'cross bred genetics', what are you using and why?

We want to run our dairy systems as efficiently as possible, so we need a cow with good hybrid vigour, excellent fertility and feet. We also want a small hardy cow that can utilize grass well. With this in mind, the British Friesian X New Zealand Friesian X Ayrshire is the route we are taking. Breeding is always a long term plan as it takes the time to change a herd's genetics and to get these animals into the herd, so we are looking two years ahead. We are on a liquid milk contract and so we are trying to find a balance between milk solids and litres of milk produced.



Our cross bred cows are small and hardy and utilize grass efficiently, whilst selection for excellent fertility and feet helps to maintain a healthy and productive herd

What breeding decisions are you taking to improve fertility?

Our heifers have been calving down at 27 months – we are slowly reducing this and our target is to get heifers calving down at 24 months. This means that the animal is more likely to complete her first lactation and has a higher chance of staying in the herd until at least her fifth lactation. We have started reducing this by pregnancy testing the heifers and removing animals which fail to become pregnant within the allotted timescales. This means we are removing the less fertile animals and those that are more likely to have further complications later on.

Fact: herd replacement costs

Rearing heifers represents ~20% of dairy farm expenses – selecting for cows that are fertile, healthy and long-lived is vital to recover this investment

(Source: DairyCo (2011) Managing herd Replacements. Rates and Costs).

You're trialing sexed semen on the herd. What benefit does this have?



Utilising sexed semen has meant that we can ensure our best cows are calving down with a heifer calf. This really helps to speed up the process of improving the genetics we want within the herd. Having a higher chance of getting a heifer calf means one less dairy bull calf and we have more replacements to keep the business moving forward. The semen straws cost around £10 more than our conventional ones but we have calculated this saves us around £480 if we can get a heifer calf over a bull calf. The conception rates have so far proved to be very similar to conventional semen, so we've been impressed with the results.

How do you market the dairy bull calves and beef animals?

As we have faced some TB restrictions over the years and had no real outlet for our dairy bred bull calves, we set up an RSPCA Freedom Foods–accredited rose veal outlet with a local young farmer. He takes all of our dairy bred bull calves through the calving season and rears them onto seven months of age. Veal seems to be seeing greater popularity with the improved welfare standards and its health benefits.



Our beef calves are either sold directly to other farmers after they have been through TB isolation units or at the local market. We ensure all the animals are well looked after during transport by using our own transportation as well as a local RSPCA Freedom Foods–accredited haulier to move our stock.

What measures do you use to monitor the performance and welfare of the herd?

At Lower Farm and across all of our dairies we monitor lameness cases, culling rates, herd fertility and calf mortality rates. We contract a milk recording service which comes to the farm once a month and takes a milk sample from all milking cows, meaning we have up-to-date data regarding the cell count status of each cow (to detect subclinical mastitis infection), as well as their yield in both litres and solids. We also undertake a quarterly test on a sample of milk taken from the bulk tank which is part of our Herd Health Programme.

All the farms use the Kingshay Dairy Manager tool to track her performance including milk production, feed inputs and cow and calf reporting. Sharing this data between farms means we can benchmark against the group and highlight areas that need investigating or where practices have been successful. Relating this information back to financial figures specific to milk yield losses for the herd really brings home the message of how much a condition such as lameness or mastitis costs the business in 'hidden' terms.

How has monitoring herd health data helped to improve the farm's management practices?

Having accurate herd data allows us to target our time and inputs more effectively and monitor management changes over time. For example, the herd manager monitors cow mobility and identifies animals that require action; we then employ the services of a professional foot trimmer to undertake the necessary work. Lameness incidence within the herd is currently falling and is 10% lower than the national average.

Mastitis is also a key focus for the farm. From milk recording data we can see if a cow has sub-clinical mastitis and needs treatment. Those with consistently low Somatic Cell Count (SCC) (as well as other positive traits) may be selected for breeding replacements.

Mastitis levels in the Lower Farm herd are 11 cases per 100 cows and we keep levels low by operating a good parlour routine. Maintaining good teat condition and keeping the teats clean are major factors. We dry or wet wipe the teat prior to milking depending on the time of year, we are careful not to over milk as this causes teat end damage and is a route for infections to develop. The cows at the end of milking then have their teats sprayed with an emollient rich, anti-bacterial solution that keeps their skin supple and clean. In the past twelve months our average somatic cell count has been 160,000, putting us in the top milk quality banding.

EC

ET

In the past twelve months our average somatic cell count has been 160,000, putting it in the top banding

Fact: the cost of mastitis

Studies estimate that each mastitis case can cost a herd yielding 6500L ~ £270 in lost yield, treatments and time – these hidden costs can be very significant within a business

(Source: Kingshay, adapted Kossaibati, MA & Esselmont, RJ, 1997)



How do you use milk testing to support the herd's health programme?

We take a sample of milk on a quarterly basis from the milk bulk tank to test for four infectious diseases found in cattle – Johnes, BVD, IBR and Leptospirosis. Monitoring and preventing these diseases are really important for protecting the health of the cows and against unnecessary production losses for the business. All of the animals are vaccinated annually against BVD, and we have foot dips in place on all of the farms to aid biosecurity. Leptospirosis and IBR are tested for bulk milk and all our farms test individual cows for Johnes on a quarterly basis. At present around 3% of all our milkers have a high prevalence of Johnes. Since testing began all high cows have a red tag in their ears and are calved separately from the rest of the herd to prevent spread. No colostrum is used from these cows. If these cows have any other issues we will cull them as soon as possible.

Fact: Johnes Disease

Research by NMR and Reading University have shown separately that Johnes infected cows show a 20% reduction in milk yields, longer calving to conception periods and increased risk of mastitis versus non-infected cows with somatic cell counts 1/3 higher in infected cows

(Source: NMR)

What benefit do you get from sharing this data between the farms?



The wealth of experience within the team means we can all help when there is an issue – we try and encourage 'competition' to drive the business forward as a team

Sharing data between the dairy units helps to identify best practice so we can make faster improvements. We have herd manager meetings once a month and regular social outings throughout the year. The wealth of experience within the team means we can all help when there is an issue, or just discuss why one herd is out performing another. We try and encourage 'competition' in this way it helps drive the business forward.

Lower farm operates a 365-day contract for the herd manager – what advantages does this have?

The contract is agreed in advance and negotiated every year and includes any additional staff costs, and relief milker expenses. This is paid on a pence per litre basis meaning that all workers are focused on optimising milk production. There are also additional bonuses for making sure calf mortality is low, measuring grass growth, ensuring adequate heifer replacements are born and optimising land productivity are key drivers to our business.

The herd managers are highly skilled and we continue to work with them to develop their skill sets.

What do you see as the important area for investment for the business?

Investing in staff and making time to listen to them – our regular meetings enable everyone to have their say and feel valued. It also makes sure that everyone has the same vision for the business moving forward – working together as a team is a real benefit. Investment in things that benefit the staff and make their lives easier as well is important as it makes the staff feel appreciated. The team social events are also important to give that thanks – without them we couldn't do what we do.

We have minimal staff turnover and even several members of the same family working for us – which I hope shows that we do something right!

What environment schemes is the farm engaged in?

The farm is registered with the Organic Entry Level Stewardship (OELS), which provides a monetary incentive to set up natural protection areas on the farm to help protect local flora and fauna. This covers everything from protecting in-field trees to having wide margins on the field boundaries. We are also managing the woodland at Lower Farm and we have FWAG status on three of our dairy farms. The Arla environmental meeting has been useful in providing easy management tips to benefit both the business and the environment.



How have these schemes improved the wildlife habitats on the farm?

The trees and field margins increase the natural habitats for small mammals and insects, which in turn provides a food source for bats and birds. We often see unusual species such as Golden Plovers and Brown Gloved hares on our land. Managing the Lower Farm woodland has helped encourage traditional British species and control those species that over-compete. Thinning the wood also allows sunlight through, creating new habitats and encouraging bluebells and other wild flowers on the woodland floor.



What other environmental improvements is the business undertaking?

We are always looking for ways to improve our environmental efficiency and recognise that many resource-saving schemes also save the business cost. We think it's important to look at all the renewable energy technologies as they can save the business cost in the long run. We are lucky that we can try things on one dairy and if we are impressed – roll this out. I also think that environmental aspects of farming will be looked at more in the future due to CAP reforms and public pressure.

We have also undertaken several years of greenhouse gas assessments on the beef from our cull cows. Meat that has come from cull cows has a very low level of CO₂ attributed to it. Our cows currently have 10 kg of CO₂ for each kg of deadweight which is minimal when compared with industry averages.



Appendix – Good Practice Matrix for Mike & Sue Tizzard

The following matrix has been developed by McDonald's to help assess the sustainability of the agricultural production within the supply chain. Flagship farms have been identified that demonstrate best practice in one or more of the 17 key areas in the matrix, whilst also operating to general high agricultural standards in all other areas.

A ✓ in the matrix below indicates good practices demonstrated in this case study.

Ethical (acceptable practices)

Human health & welfare ✓ i Employee health & welfare ✓ ii Food safety	Animal health & welfare ✓ i Nutrition ✓ ii Medication & growth promoters iii Genetic selection ✓ iv Animal cloning v Husbandry ✓ vi Transport vii Slaughter	Business ethics & supplier relationships Rural landscape preservation ✓
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Environment (protecting the planet)

Climate change i Greenhouse gas emissions ii Energy efficiency ✓ & renewables	Natural resources – water i Water pollution ii Water usage efficiency Natural resources – air i Air emissions Agrotechnology i Agrochemical usage ii Bioconcentration & persistent organic pollutants iii Genetically modified organisms	Ecosystem protection ✓ i High Conservation Value Land (HCVL) ✓ ii Habitat & species preservation ✓ Waste i Production waste ii Hazardous waste iii Waste to landfill
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Economics (long-term economic viability)

Sufficient high quality production ✓ i Producer income security & access to market ✓ ii Agricultural input costs ✓ iii Crop & livestock disease ✓	Community investment ✓ i Local employment & sourcing ✓ ii Support for community programmes
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