



Starrett Family Dairy Farm

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Introduction

Richard Starrett and his wife Wendy farm in Killendarragh, Lifford, Co Donegal with their three children David (10), Holly (8) and John (4). Richard parents, John and Audrey, live alongside the family home. In 2020 the family was awarded the top prize in the NDC & Kerrygold Quality Milk Awards. The farm comprises of a spring calving dairy herd and they are supplying Aurivo Co-Op.

Richard took over the farm in 1994 when his father availed of the early retirement scheme. The herd at the time comprised of approx.70 cows. The herd has gradually expanded over the years and the Starrett family are currently milking 160 cows. Over the years Richard has focused on perfecting the basics and has put a huge emphasis on grassland management and herd breeding, using the top EBI bulls to produce high quality milk.

The farm currently consists of 64 hectares, made up of owned and leased land. The milking platform is 54 hectares. The overall farm stocking rate is 2.45 LU/ha and the milking platform stocking rate is 2.9 LU/ha. The heifer calves are contract reared off farm after weaning. Half of the 1–2-year-old heifers are also contact reared with the other half reared at home.

Carbon navigator, E-profit monitor, milk recording reports and bacterial culture and antibiotic sensitivity testing are all tools that are used for decision making.

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Environmental Measures

Environmental sustainability is a key focus for Richard and family on the farm. The following are some of the environmental measures that Richard carries out on farm.

- **Soil testing**

Soil sampling is carried out annually on the farm with fields sampled in a bi-annual rotation. Analysis is used to monitor pH status and P and K indices. Where deficits or maintenance are identified corrective action such as liming or applications of slurry or fertiliser is carried out. The farm has participated in the soil P build-up programme since 2018.

- **Nutrient Management Planning (NMP)**

Richard's farm has a Nutrient Management Plan which is updated regularly with new soil samples. This plan outlines the soil fertility requirements of the farm and recommends most efficient use of slurry and fertiliser on farm. The plan also maps the land block and identifies fields with lime, P or K requirements.

- **Low Emission Slurry Spreading (LESS)**

Richard has his own low emission slurry spreading equipment and all slurry on the farm is spread using a dribble bar. 70% of slurry spread on the farm is applied in the spring for most efficient use of nutrients. Slurry is also used to maintain P and K index in silage swards.

- **Use of protected urea**

The farm has used protected urea since 2018. Richard spreads protected urea throughout the grazing season.

- **Water supply**

The farm water supply is serviced by two wells, one is a deep borehole and the other a shallow well at the top of the farm. These two sources are sufficient to maintain the water supply throughout the farm. The water from the borehole is used in the plate cooler to cool the milk in the bulk tank and is then recycled to service cow drinkers.

- **Energy efficiency**

The milk collected in the bulk tank is cooled by a three-stage plate cooler and there are also solar panels on the farm which were installed in 2019. The solar panels have brought a saving €900 a year. The majority of electricity generated from the solar panel is used on the farm and household. The 5kw solar panel system provides electricity to operate the coolers in the parlour as well as heat the water.

- **Protection of farm waterways**

Livestock have no access to farm waterways in fields. All waterways are fenced off to protect the water quality and avoid pollution. All farm roadways have the correct camber and surface to prevent runoff to waterways. Water passes through the ultraviolet treatment system on his farm. Leak Free System - Lights installed in Richard's yard allowing him to measure water use. Richard is also participating in the ASSAP programme.

- **Hedgerow and conservation areas for habitat protection**

Hedgerows are managed on an annual basis to promote biodiversity on farm and also provide shelter to livestock. The farm has a significant number of large mature trees and also has a protected habitat at the lower end of the land block close to the River Finn - 2.72 hectares of conservation area is preserved for wildlife and habitats, dandelions grow here, grass is unfertilised.



Grassland and sustainable soil fertility

Richard often outlines how “sustainability is the biggest and most important aspect of farming”.

Grassland management has been a huge focus for the Starrett family, particularly since Richard took over management of the farm. It has been a key element of driving stock performance and milk quality on the farm. Grass growth is managed in a paddock grazing system. Grass is measured weekly. In high growth periods the paddocks ahead of the cows are measured mid-week to ensure that cows are entering paddocks at the target pre grazing height. A grass wedge is produced on PastureBase and Richard finds the PastureBase app particularly useful in the day to day management of grass. In 2020 34 grass covers were measured on the farm. The total dry matter produced on the farm was 13.9t DM/ha. This was made up of 11t DM/ha of grazing grass and 2.9t DM/ha from surplus bales. Grazing began on the 6th of March 2020 and finished on the 14th of November 2020, a total of 253 days at grass

for the year. Peak growth for the full block was achieved on the 27th of June 2020 when an average growth rate of 101 kg DM/ha per day was recorded on the farm.

Richard has his own subsoiler on farm and soil is aerated as required. The poorest performing fields are identified through PastureBase and are targeted for reseeding on an annual basis. There are a number of reseeding methods used on the farm including conventional plough and min till/direct drill.

Sustainable grass growth is achieved across the farm using soil fertility tools such as soil sampling, nutrient management planning and use of slurry and protected urea. Richard maximises the proportion of grass in the diet of his milking cows and improved soil fertility and grassland management has allowed for a targeted concentrate input over the years.

Animal Health, calf rearing and animal welfare

There has always been a strong focus on animal health and welfare on the Starrett farm. This starts with suitable animal housing and infrastructure. Good ventilation, natural light and clean cubicle beds are key to promoting good health and cow comfort. Sufficient space in collecting yards, exit yards and in housing also adds to cow comfort and welfare. Combining these factors all help to promote longevity in the herd and the average lactation number of all the cows in the herd is currently 4 with the replacement rate at 14%. Calves have access to outdoors from birth, weather permitting.

Richard works closely with his local veterinary practitioner to compile a herd health plan for the farm, which is updated accordingly. Below is a snapshot of the vaccination programme on the farm which highlights Richard’s attitude of “prevention is better than cure”.

Vaccination	Timing
Bovine Viral Diarrhoea (BVD)	End of March/April (6 wk pre breeding)
Leptospirosis (Lepto)	Same time
Infectious Boine Rhinotracheitis (IBR)	June/ Start of Dec (housing)
Selective Dry Cow Treatment	At dry off

The farm is equipped with sufficient cubicle and feed space for all cows in the herd. In 2019, a new collecting yard was built to improve cow flow at milking time. In 2021 the parlour was upgraded to include milk meters, ACR’s, an automatic dump line and pivot bailing system.

The Starrett’s built their calf shed to the south east side of the farm which allows for excellent ventilation and airflow. This promotes good calf health and reduces the risk of pneumonia. The automatic calf feeder greatly reduces labour input and reduces stress on calves at feeding also.

Labour

Richard and Wendy both work full time on the farm and David is their full time employed farm worker. Richard always emphasises the point that good labour is a vital element in the success of the farm and he is very lucky to have good labour input. Richard also employs casual relief milkers every second weekend. In the spring, Richard engages an agricultural college student seeking professional work experience. Often these students prove to be an excellent asset to the system, particularly in the busy spring period, and they sometimes return as relief milkers after their work experience is finished.

The oldest pair of Richard’s three children, David and Holly, are both involved in helping on the farm, particularly in the areas of calf rearing and milking. Richard is very encouraging of his children to be a part of the farm business and encourages them to learn and develop. Holly’s favourite job on the farm is teat spraying post milking in the parlour.

Contractors play a key role in the farm, particularly during silage making season. Richard harvests most of the silage on the farm himself. Contractors harvest approximately 30% of the silage and spread slurry using an umbilical system .

Richard’s brother George Starrett is the contract heifer rearer for the farm. George rears all of the heifer calves each year and also rears half of the 1-2 year old replacement heifers.

The close knit team surrounding the Starrett farm from their own family members, employed labour and local contractor is a key driver to the success of the system on farm.

Herd breeding and performance

When Richard took over the running of the farm, he was a member of a Teagasc discussion group facilitated by then local adviser Seamus Culhane. There was a strong emphasis on EBI and breeding within this group. This has had a long-lasting effect on the quality of genetics and success of breeding in the Starrett herd. Richard attributes his farm’s success to his breeding strategy and focus on genetic merit over the years.

Below is a table from Richard’s current herd of cows and young stock. The table outlines his current herd EBI. A big focus is placed on milk, fertility and health sub-indices. The breakdown of the milk sub index is also very important. Richard does not strive for massive kgs of milk, instead he is looking for high percentages of fat and protein.

	Richard’s Herd	National Average	Richard’s Herd Position Nationally
Herd EBI	€199	€124	Top 1%
Herd Milk	€67	€39	Top 2%
Herd Fertility	€82	€58	Top 2%
2020 Calves EBI	€227	€164	Top 4%
2021 Calves EBI	€273	€180	Top 2%

Richard uses the ICBF Sire Advice tool to help select sires for the herd each year. The cows are ranked on high and low kgs of milk, fat and protein percentage and then suitable sires selected. The Sire Advice tool (see 2021 summary below) also alerts users to inbreeding issues.

	EBI(€)	EBI Sub Index							PTA's						CI days	SU %
		Milk (€)	Fert (€)	Calv (€)	Beef (€)	Maint (€)	Mgmt (€)	Hlth (€)	M Kg	F Kg	P Kg	F+P Kg	F %	P %		
All Cows in Herd	199	67	88	35	-15	15	3	5	49	10.5	8.4	18.9	0.15	0.12	-4.7	2.4
Predicted 2022 Calves	261	89	115	44	-12	13	4	9	56	14.6	10.9	25.5	0.22	0.16	-6.4	2.8
Bulls Weighted Averages	323	112	142	53	-9	10	4	12	62	18.7	13.3	32.1	0.28	0.19	-8.1	3.2

Expansion and quality milk production

The following table details the annual milk volume and composition for the Starrett farm between 2014 and 2020. Milk solids produced per cow has increased by 161 kg per cow over the period. This was achieved through a range of factors including quota abolition, improved genetics, grassland management and targeted inputs of concentrates/bales in poor weather conditions.

Year	Litres/cow	KG/MS/Cow	Butterfat	Protein	Lactose	SCC	TBC
2014	5391	433	4.18	3.62	4.85	136	14
2015	5692	476	4.35	3.77	4.86	104	15
2016	5808	493	4.46	3.77	4.85	109	14
2017	6031	506	4.35	3.8	4.87	149	14
2018	6574	557	4.41	3.82	4.79	135	9
2019	6513	564	4.41	3.9	4.75	129	9
2020	6837	594	4.52	3.92	4.74	134	8
2021 YTD							

Cows were milk recorded five times in 2020. This is an excellent measure to aid in identifying cows suitable for selective dry cow therapy, removal of cows from the bulk tank and culling.

Chlorine free detergent has been adopted across the milking plant. Richard is using an approved product and is following the recommended routine as per advice from the product manufacturer.

Selective dry cow therapy (SDCT) has been carried out on farm since 2017. Richard selects cows for SDCT based on milk recording results. Richard selects cows for this drying off method if they have a SCC of less than 150,000 cells/mL and no clinical signs of mastitis.

Gloves are worn at every milking. The cow's teats are cleaned where necessary and checked for mastitis. After milking, the cows are teat sprayed before exiting the parlour.

The cows are milked in a 21 unit Dairymaster parlour. ACR's along with a well laid out collecting yard and exit yards make the milking process very seamless for both the cows and the workers.

Farm roadways and yards are maintained in a clean state. The collecting yards and exits yards are scraped and washed down daily.

Technology on the farm

Richard has installed a number of technologies in the milking parlour including ACRs, backing gates with a bell indicator as it moves, a camera in the pit that allows him to keep an eye on the dairy whilst milking in case of a tank overflow or milk leakage. Richard also recently installed a cluster flush system that automatically cleans and disinfects each cluster between individual cow milkings, previously he was doing this manually for cows with high SCC.

Richard uses a backlatch on the paddock gates. This is an excellent tool to assist management in poor weather conditions as it allows cows to access the cubicle house and avoids poaching of paddocks overnight. It is connected to a sim card allowing Richard to text the backlatch system to release the spring loaded gate.

Richard uses an automatic calf feeder to rear his calves. This is a recent addition to the farm which gives consistency to the calf rearing. The feeder reduces the labour input during the morning and evening which are the busiest periods on farm. Calves have access to a paddock while still using the automatic feeder.

Richard has adopted the MOO monitor's technology for his cows to record fertility and herd health. The monitors are connected to his Kingswood package on his phone and laptop. Richard also uses PastureBase as his grassland measurement and management tool.

