Teagasc
Agriculture and Food Development Authority

dairygold
Golden Valleys, Growing Naturally

NDC & Kerrygold
Quality Milk Awards

Teagasc National Milk Quality Farm Walk

On the farm of the 2017 NDC & Kerrygold Quality Milk Award Winners
John & Maria Walsh and family

Ballylomasna, Ballylooby, Cahir, Co. Tipperary

Wednesday, 4th July 2018

Contents

Welcome from:

Donal Mullane, Regional Manager, Teagasc Tipperary and Zoë Kavanagh, Chief Executive National Dairy Council

The NDC & Kerrygold Quality Milk Awards are an important acknowledgment of the unique knowledge base and excellent husbandry skills of Irish milk producers. They recognise the hard work of Irish dairy farmers and their commitment to the rigorous standards necessary to produce top quality milk. The combination of our natural grassland, sustainable farming practices and the passion and dedication of our farmers and their families means we can bring quality products to markets around the world, with absolute confidence and pride.

This award programme allows us to show consumers the excellent standards of pasture-based dairy farming practiced by Irish dairy farmers. The winners and finalists in these annual awards are reaching the top standards in terms of not just milk quality but also quality in a complete context, taking on board all of the components which drive best practice for Irish dairy farmers; they act as role models for the industry. It is not easy to get to the stage where they are today, but they have set a very high standard which farmers can aspire to.

Fourteen dairy farmers were shortlisted for inspection by an expert judging panel and prizes were awarded in a number of categories at an Awards Ceremony in October 2017. The Walsh family were awarded the top prize in the NDC & Kerrygold Quality Milk Awards.

Both Teagasc and Ornua would like to thank the Walsh family for hosting today's event. The performance of the Walsh farm is of the highest order and this event offers all dairy farmers the opportunity to learn the 'secrets of their success'. Visitors will not see any extraordinary activities or fancy ideas, just common sense and efficient sustainable dairy farming. You should be encouraged by the performance levels which can be achieved by a family dairy farm focussed on quality and efficiency.

Welcome from:

John O'Gorman, Chairman, Dairygold

Dairygold would like to congratulate the Walsh family on their outstanding achievement in winning the NDC & Kerrygold Milk Quality Awards in 2017. As you'll see here today, their passion and dedication to achieve and maintain the highest standards is evident in all aspects of their farm and family.

We are very proud of the Walsh family's achievement and the fact that the best quality milk in Ireland in 2017 came from a Dairygold farm. We are also pleased to be involved in today's event and to work with the NDC, Ornua, Teagasc and dairy farmers to highlight the many good dairy farming practices that are evident on the Walsh farm.

Today's event also highlights another important aspect of successful Irish dairy farming – the family farm. The family farm ensures that dairying is more than just a business, it's a way of life. It also acts as the primary training ground for all future generations of farmers. It is the foundation on which the Irish dairy industry is built and has become the lifeblood of rural life in Ireland. As a Co-Operative society Dairygold is strongly supportive of the family farm and all the benefits it offers our business, the dairy sector and rural Ireland in general.

To build a more sustainable Irish dairy sector we must begin on the family farm. When we see the levels of excellence in grassland management, herd health, breeding and milk production as displayed on the Walsh farm today we can be confident of the future of successful and sustainable dairy farming in Ireland. I would like to sincerely thank the Walsh family for hosting today's event and for opening up their wonderful farm to the public. They are tremendous ambassadors for Dairygold and Irish dairy farming in general.

I hope that you find today's events informative and useful. Enjoy the day.

Welcome from:

The Walsh family

We would like to welcome everyone here to Ballylomasna in South Tipperary. We hope that you find today interesting, informative and worth the journey.

Our story begins back in the early 1800s when the first Walsh's began farming here in Ballylomasna. Throughout the years since, the farm has changed and developed to where we are today and we will continue to develop and adapt into the future to progress the business further. We are a family farm where everyone pitches-in with milking, especially Claire at the weekends. Calf rearing is taken care of by Maria and Helena. Milk quality has always been something that we have strived to keep to the highest of standards. While it is not something that comes easy, we are both proud and taken aback to have had our efforts recognized by NDC and Kerrygold.

We would like to thank Dairygold for nominating us for the national competition and to William Ryan for the effort he put in throughout the competition and today. Today's event was the work of many and we would like to thank Dairygold, NDC and Teagasc for the time and work they have put in to make today possible.

Finally, we hope you enjoy the insight into how our farm works. Many of the things we do on this farm have been seen and learned from other farms and adapted to our system. If everyone could take something from today then it will have been a success.

Health and Safety

Figures published earlier in the year from the Health and Safety Authority show that farm safety has and continues to be a major concern for the industry.

In 2017, there were 24 deaths in agriculture, making it the eighth year in a row that the sector has recorded the highest number of work related fatalities. Between 2008-2017, the main cause of death in agriculture and forestry were tractor vehicle incidents, accounting for 30% of all fatalities.

With silage season upon us and as farmers begin to spend more time outside, it is important to take time to reflect on the safety measures that can be put in place to help make working on the farm safer.

Below are some useful tips which can be used to help ensure better farm safety across a range of farming activities.

Machinery

- Quad bikes have been described as the most dangerous machines on farms by a senior Health and Safety Authority inspector. Those operating quad bikes should have adequate training and wear a helmet for protection at all times
- Always ensure that the PTO and PTO shaft are covered properly and that you always disengage the PTO before you dismount the tractor
- Children must be at least 16 years old, have received adequate training and be under the supervision of a responsible adult before they are allowed to drive a tractor.

Silage safety

- Silage pits must never be overfilled
- On open silage pits, the sides and ends of the silage should be sloped off at a safe angle (less than 45 degrees)
- Never go underneath a silage cover once it has been put in place, as the lack of oxygen creates the risk of asphyxiation.

Fatigue

- Try to plan ahead and allocate enough time for work to be done in order to prevent excessive workloads and corresponding stress.

Risk Assessment

- Before carrying out a task, it is important to assess the risks and have an emergency/escape plan in mind.
- Outside of silage season, it is vitally important that all farmers conduct a risk assessment in order to understand the risk areas on your farm. This assessment will also help you to write a Safety Statement for your farm, which everybody on your farm should read and understand.

The Walsh Family Dairy Farm

Introduction

Ballylomasna, Ballylooby, Cahir, Co. Tipperary is home to John Walsh, his wife Maria, his mother Nancy, brother David and family, Brendan, Claire and Helena. In 2017, the family was awarded the top prize in the NDC & Kerrygold Quality Milk Awards. The Walshs milk 113 cows and their milk is supplied to Dairygold.

John took over the farm from his parents in 1997. The family had a herd of around 50 cows when quotas were introduced in 1984. The Walshs have become increasingly specialised in dairying and plan to phase out the majority of the drystock in the coming years. John has been a member of the Galtee Discussion Group since 1997 which he finds very useful in seeing how other people are managing different situations and coming up with new ideas. The Walshs also get valued support from the Teagasc advisory team.

The entire area farmed is 102 hectares (ha). The milking platform includes 53 hectares of owned land with the potential for the current land area to expand to 72 hectares. The overall stocking rate in 2017 was 2.11 livestock units (LU)/ha.

Besides John and Maria Walsh, one full-time person, Andrew Myles, is employed on the farm. Their son Brendan works off farm but is heavily involved in the day to day management of the farm. Contractors are employed to cut silage and for reseeding.

John believes that good breeding and calving practices are big considerations for quality dairy farming, saying that they actively aim for compact calving and try to avoid late calvers.

The Walsh family place a big emphasis on strong hygiene practices in the farm and on milk recording. Grass however is their key ingredient. They believe that keeping good quality grass in front of the cows for as long as possible in the year makes a big contribution to milk quality.

Herd Profile

The herd of black and white cows on the Walsh farm come from Holstein Friesian bloodlines with high EBI sires used for a long number of years.

Maintenance, solids percentages and kilogrammes and health are the main criteria when choosing bulls for breeding. The heifers introduced to the herd this year have higher genetic merit for milk solids production and fertility than the older cows.

The following is the ICBF Herd EBI Summary[1].

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Economic Breeding Index (EBI)
Herd Summary - May 2018

ICBF.com

Report Date: 12/06/2018 (May 2018 Evaluation)
Herd Owner: JOHN WALSH
Herd No: V2270900

1. EBI Herd Summary

Average EBI for all dairy cows with; (i) a known sire (or milk recorded progeny with a known sire) and (ii) are currently on your farm.

* Number of animals that are missing an EBI result

Animal Group	Num of Cows	Milk Kg	Fat %	Prot %	Surv%	CI Days	Milk % Cont	Fertility % Cont	Calv % Cont	Beef % Cont	Maint % Cont	Mgmt % Cont	Health % Cont	EBI €
Cows with EBI	115	36					€ 40	€ 54	€ 31	€ -8	€ 3	€ 1	€ 2	€ 124
Missing EBI*	0	6.6	0.09		1.5		28.3%	38.7%	22.3%	-5.8%	2.4%	0.9%	1.6%	
Total Cows	115	4.9	0.06		-2.8									
1st Lactation	30	56					€ 48	€ 54	€ 32	€ -11	€ 5	€ 1	€ 3	€ 133
		7.1	0.09		1.5		31.1%	35.3%	20.7%	-6.8%	3.3%	0.8%	2%	
		6.5	0.08		-2.9									
2nd Lactation	20	80					€ 47	€ 57	€ 32	€ -8	€ 1	€ -1	€ 2	€ 131
		7.9	0.08		1.8		31.6%	38.5%	21.9%	-5.5%	0.9%	-0.3%	1.1%	
		6.4	0.06		-2.8									
3rd Lactation	18	21					€ 38	€ 49	€ 35	€ -9	€ 6	€ 2	€ 4	€ 123
		6.1	0.09		1.4		26.6%	34.2%	24.6%	-6.5%	4.2%	1.4%	2.5%	
		4.6	0.06		-2.5									
4th Lactation	17	12					€ 37	€ 55	€ 35	€ -6	€ 3	€ 3	€ 3	€ 129
		7.7	0.12		1.6		26.4%	38.6%	24.6%	-4.5%	1.8%	1.9%	2.2%	
		3.8	0.06		-2.7									
5th Lactation (+)	30	8					€ 29	€ 54	€ 25	€ -6	€ 2	€ 1	€ 1	€ 106
		5.0	0.08		1.2		24.5%	46.2%	21.4%	-4.9%	1.4%	0.9%	0.7%	
		3.3	0.05		-3.1									

Buildings

- 16-unit milking parlour (built in 2008) – including 2 units added in 2017;
- 160[2] cow cubicles for cows and in-calf heifers with a further 36 cubicles for weanling heifers;
- Slatted tanks for approximately 80 beef LU;
- Sufficient slurry storage capacity for all animals on the farm.

1 ICBF report 17th May 2018.
2 60 of these are currently being constructed.

Farming System

The Walshs calve all their cows in the spring. This year calving started on 20th January and median calving date was 6th February. The plan for this year is to milk 113 cows. They will also graze 32 replacement heifer calves and 33 yearling replacement heifers on the farm along with approximately 55 LU of drystock on land mostly found away from the milking platform.

Grassland Management

For the Walsh farm the optimum use of grazed grass has been key in the growth and development of the business.

Grass quality has a major role in animal performance and the Walshs measure grass regularly to ensure the cows are grazing quality grass (1300-1600kg Dry Matter/Ha). In 2014, Brendan began grass measuring and since then the solid percentage and litres per cow has increased at a higher pace than previously seen. In general, a grass walk is carried out once weekly but from the second rotation until mid-August two walks per week are carried out. A total of 49 grass walks were carried out in 2017.

When the Walshs began grass measuring they were growing 10t DM/Ha and have increased this to 14t DM/Ha in 2017. While the 14 tonnes may seem modest, the Walshs are matching stocking rate to tonnes grown and as the business grows further a target of 16t DM/Ha has been set. To date (19/06/2018), 5t of grass DM/ha has been grown on the farm.

In general, the cows head to grass in late January and are housed again in early December. The Spring and Autumn rotation planners are used to ensure that the correct proportion of the farm is being grazed to ensure enough grass is available for the start of the second round in the Spring and that the correct area is being closed in the Autumn to allow for early spring grazing in the following year.

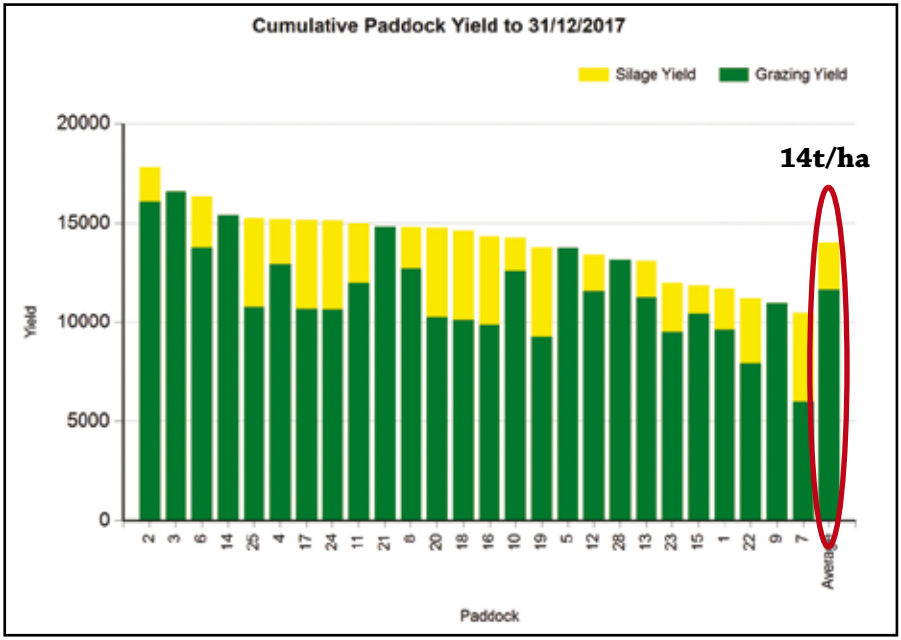
While this is a dry farm, the shoulders of the year can bring difficulties. The Walshs have an extensive roadway network, multiple access points into

paddocks and two water troughs per paddock which help in the allocation and utilisation of grass while minimising the damage done to the soil and sward. In the last few years the Walshs have installed 3 permanent spur roadways. These have proven to be an excellent investment and have allowed the Walshs to get cows to grass on days they wouldn't have been able to in past years.

The increase in grass grown since 2014 can be attributed in the main to the improvement in soil fertility. Firstly, the Walshs went about improving the pH of the soil and now all paddocks are at the optimum pH. Phosphorus and Potassium followed with paddocks lying between index 3 and 4 for phosphorus and index 2 to index 4 for potassium. The Walshs plan to apply potassium to the deficient paddocks in the autumn.

Reseeding along with the improvement in soil fertility has resulted in the improvement in grass grown. The Walshs aim to reseed at least two paddocks on the milking platform and one on the out farm each year. The varieties used are picked on quality and spring growth.

Grass Growth per paddock 2017 on the Walsh farm.



Financial Performance

Outstanding milk production and fertility have the potential to deliver high profits. This is being achieved on the Walsh farm, through a combination of high production at low cost. This can be clearly observed in the profit monitor analysis of the farm as shown in the following table.

Costs and profitability of the Walsh dairy enterprise in 2017.

	€/ha	€/cow	c/litre
Output			
Co-op price			38.9
Gross output	5,348	2,360	39.47
Variable costs			
Feed	272	120	2.01
Fertiliser	225	95	1.66
Vet	161	71	1.19
AI	41	18	0.30
Contractor	225	99	1.66
Other variable costs	383	174	2.82
Total variable costs	**1,307**	**577**	**9.64**
Fixed costs			
Hired labour	235	103	1.73
Machinery	183	81	1.35
Interest	29	13	0.21
Car/ESB/Phone	46	20	0.34
Depreciation	248	110	1.83
Other fixed costs	497	219	3.68
Total fixed costs	**1,238**	**546**	**9.14**
Net profit	2,804	1,237	20.69

**There is no account for any family or own labour in these figures*

Milk Quality on the Walsh Farm

Introduction

The Walshs were the winners of the 2017 NDC & Kerrygold Quality Milk Awards competition. That's why you are here today. This competition rewards excellence in SCC levels, TBC and Thermoduric readings in raw milk as well as a number of on farm factors. This raw milk is processed into products which are sold on the international markets. It is the first link in the chain. So, what has marked this farm out as National Winners of this prestigious competition? Firstly, let's look at the trends in volume and quality supplied to Dairygold over the past number of years.

Volume, composition and quality of milk supplied by the Walshs since 2011.

Year	Litres Supplied	Av. Cow No.	Fat (%)	Pr. (%)	Milk solids (kg/cow)	TBC[3]	SCC[1]	Thermoduric[1]	Dairygold Balanced Scorecard
2011	421,755	97	4.12	3.44	339	10	128	46	54.3
2012	424,255	97	4.13	3.49	343	11	134	82	54.55
2013	432,267	93	4.06	3.49	361	5	144	13	54.98
2014	416,498	96	4.25	3.56	349	4	107	83	54.95
2015	549,589	103	4.32	3.68	440	4	91	17	55
2016	574,213	109	4.36	3.63	433	7	107	2	55
2017	618,555	110	4.34	3.70	466	5	77	5	55

The Walsh family has produced milk with consistently low SCC (Somatic Cell Count) and TBC (Total Bacterial Count) levels over the years. Limited access to quota has meant that there was little increase in supply between 2011 and 2014 but a 50% increase in the volume sold since then. Composition of the milk sold has also improved over the 7-year period with fat and protein content increasing by 0.09% and 0.14% respectively. Average annual SCC varied from 107,000 and 144,000 over the 2011-2014 period but with quota removal has decreased to 77,000 in 2017.

3. '000 cells/ml

Dairygold's Balanced Scorecard sets an exceptionally high bar for a consistently high level taking into account all aspects of milk quality on a monthly basis. The Walsh family has consistently been among Dairygold's highest performers who achieve the maximum of 55 points for producing milk of the highest standards each month.

Monthly volume, composition and quality of milk supplied by the Walshs in 2017.

Month	Litres	Fat (%)	Pr. (%)	TBC[1,4]	SCC[1]	Thermoduric[1]	Dairygold Balanced Scorecard
Jan	877	3.91	3.27	0	69	0	55
Feb	31,562	4.55	3.28	7	79	0	55
Mar	63,330	4.49	3.30	4	98	13	55
Apr	81,172	4.10	3.47	4	80	0	55
May	84,143	3.99	3.61	2	68	0	55
Jun	77,314	4.11	3.65	2	69	0	55
Jul	80,102	4.14	3.73	5	70	0	55
Aug	68,371	4.36	3.84	13	66	0	55
Sep	58,740	4.65	4.07	3	79	0	55
Oct	49,532	4.94	4.22	3	85	46	55
Nov	22,550	5.19	4.13	7	111	0	55
Dec	862	-	-	8	138	0	55
Av.	**618,555**	**4.34**	**3.70**	**4.69**	**77**	**5.01**	**55**

4 Test 1/2

Monthly volume, composition and quality of milk supplied by the Walshs in 2018 to date.

Month	Litres	Fat (%)	Pr. (%)	TBC[1,5]	SCC[1]	Thermoduric[1]	Dairygold Balanced Scorecard
Jan	1,812	4.35	3.41		57	0	55
Feb	43,426	4.47	3.41	4	85	65	55
Mar	70,029	4.42	3.23	2	62	0	55
Apr	82,521	4.29	3.42	2	62	0	55
May	92,135	3.97	3.61	8	53	6	55

Practices and routines

All cows are milk recorded. John considers a cow with SCC reading of over 100,000 as a problem cow. Such cows will receive dry cow treatment at drying off as detailed further in the drying off procedure detailed below. A summary of the annual milk recording results are as follows.

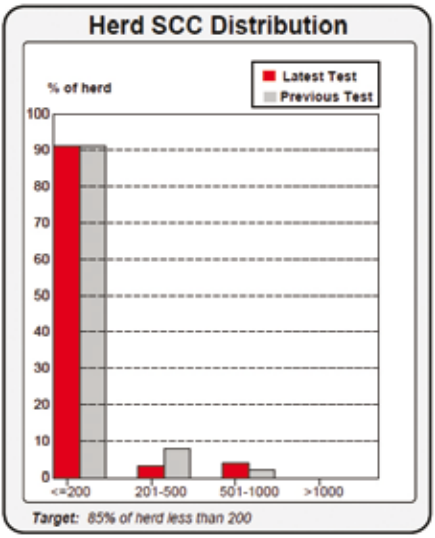
Milk Recording

Annual Milk Recording Report 2017 - Herd Summary.

Group	No. of cows	Average days in milk	Completed Lactations Only M Kg	M Gall	F%	P%	F Kg	P Kg	F+P Kg	SCC	Milk Value* EBI
Overall	107	281	6633	1417	4.30	3.67	285	243	529	74	€2515
		305 CI: 375	6923	1479	4.32	3.7	299	256	555		€92

The results show that on average the herd spent 281 days in milk production and had an average SCC of 74,000 cells/ml which is very similar to the 77,000 cells/ml co-op average for the farm in 2017. A more detailed analysis of the herds SCC position in April 2018 is presented in the following table.

Distribution of cows into chronic, cleared, recent and uninfected categories from milk recording reports
(Source: Milk Recording CellCheck Report, April 2018).



This report shows that over 90% of the herd had a SCC of <200,000 cells/ml in the April 2018 recording.

Milking Practices

1. Drying off.

No more than 20 cows are dried off on any one day. Before drying off cows are milked as normal and after breakfast cows earmarked for treatment are dried off.

- First calvers are dried off from early November onwards, depending on Body Condition Score (BCS).
- Cows are dried off using BCS, yield and expected calving date.
- Cows with BCS less than 2.75 are dried off.
- Cows milking less than 9 litres/day are dried off.
- Last year cows remaining in milk were dried off on December 8th.

- Cows are milked twice a day until drying off. Excess udder hair, tails and rumps are clipped on the day before cows are dried off. John does this to help improve hygiene around drying off and because it clearly identifies dried off from in milk cows.

  b. For the past two winters (2016/17 and 2017/18) the Walshs have implemented a selective dry cow treatment approach.

  - Cows with cell count of less than 80,000 cells/ml over the whole lactation (based on 4 milk recordings) and no cases of mastitis during the current or the previous lactation are teat sealed only. Sureseal teat sealant was used last winter. John likes to put this group of cows out to grass after treatment until they are well dried off before housing.
  - A short acting dry cow antibiotic (Noroclox) was administered as well as the teat sealant to cows with an average SCC of more than 80,000 but had one or more SCC test result of over 100,000 during that or the previous lactation.

- The balance of the herd, (approximately 1/3), was treated with a long acting dry cow antibiotic (Cepravin) as well as the teat sealant. Only one cow calved with clinical mastitis in spring 2018 and she had received this treatment in winter 2017 but had a history of mastitis in the previous lactation.
- In-calf heifers are not teat sealed pre-calving. The Walshs have had no cases of mastitis in such animals around calving. However, before the herd is dried off the in-calf heifers are fed in the parlour 3 times a week to familiarise them to the routine.

c. The dry period
   - Procedure during housing – pre-calving. Cubicle beds are limed and cleaned once a day during housing.

d. Procedure Post Calving in 2018
   - Cubicle beds were limed and cleaned twice a day.

2. Managing freshly calved cows

- Cows calve in the boxes close to the milking parlour.
- At morning or evening milking freshly calved cows are milked and their milk fed to their own calf.
- Her tail and the back of the udder are trimmed.
- She joins the milking herd and her milk is withheld from bulk tank for 4 days.

3. Managing cows with mastitis

- Cows being treated for mastitis are milked into a dump bucket.
- The affected quarter is treated with an appropriate lactating cow mastitis tube, (currently Ubro Yellow) based on sensitivity analysis as directed.
- The appropriate withdrawal period (5½ day for Ubro Yellow) is observed following administration of the final tube.
- Before milk is let back into the tank, the cow is CMT tested. All cows under treatment wear a leg band. Their tag number, treatment administration and withdrawal dates are written on a whiteboard in the milking parlour.

4. Milking Procedure

- Teats are washed and dried with disposable paper towels if necessary or not washed if clean.
- All cows are foremilked to check for signs of mastitis.
- Clusters attached.
- Clusters removed manually when milking is complete.
- Deosan teat foam post milking teat spray applied.

5. Machine Maintenance and Washing Procedure

Milking Parlour

- Liners are changed twice a year (early February; early July).
- Milking Machine is serviced once a year.
- The Walshs own well water supplies the dairy and this is tested every three years.

Detergent Wash Cycle Routine

- Wash outside of clusters and cups put on.
- Rinse parlour with 14 Litres (L) of cold water per unit.
- Remove milk sock and replace with new sock.
- Daily hot wash of 200 L (75ºC) with 300g of Deosan D90 every morning. Recycle for 8 minutes. This solution is used again for washing after evening milking and then run to waste.
- Rinse with 14 L of cold water per unit after detergent cycle.

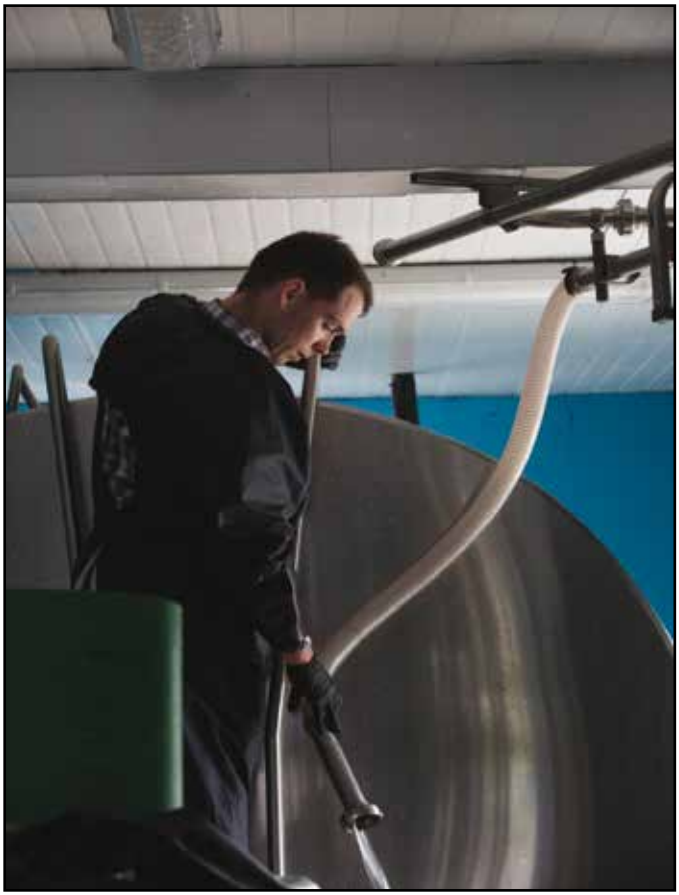
Descale Cycle Routine

A hot descale is used once a week as follows;

- Wash outside of clusters and cups put on.
- Rinse with 14 L of cold water per unit.
- Remove milk sock and replace with new sock.
- Descale with 600ml of Deosan Acidbrite Descaler to 200l of hot water (75ºC).
- Rinse with 14 L of cold water.
- Hot detergent wash of 200 L (75ºC) with 300g of Deosan D90. Recycle for 8 minutes.
- Rinse with 14 L of cold water.

Bulk Tank

- Main wash (70ºC) of 400 ml of Universan CF (3 in 4 washes)
- Descale wash (70ºC) of 500 ml of Deosan acidbrite descaler (1 in 4 washes)



High Standards at Every Step on the Walsh Farm

Milk quality is much more than just milk composition. Solids are crucial but now customers want to know if the production base is clean, safe and sustainable. Therefore, high quality milk is also about hygienic facilities, good animal welfare and herd health on a safe farm with good environment practices.

Milking Routine

- Gloves are worn at every milking.
- Every cow gets checked and dry wiped with a paper towel if teats are dirty. If teats are very dirty, the cows are washed and dried.
- Texts from Dairygold are used to monitor SCC from one collection to the next.
- If a text showing a high cell count comes from Dairygold, suspect cows are checked to find the high cell count cows and quarters. Identified quarters are then treated immediately.

Cow Cleanliness

- Farm roadways and yards (entrances and exits) are kept clean and scraped/washed down to prevent build-up of excess dirt to prevent teats becoming dirty.
- When milking cows are housed, cubicles are scraped down twice a day and limed.
- Calving sheds are cleaned out and disinfected once a week during the calving season.

Milk Quality

The following pages provide helpful guidelines to achieve higher quality milk.

1. Somatic Cell Count (SCC)

Ireland has a reputation for producing dairy products of the highest quality. We can produce milk from a grass based diet which gives our dairy products a unique taste and texture. Producing milk that meets the required standards with regards to SCC, TBC, Thermodurics, Lactose and TCM will ensure that we can continue to compete on a world market.

What is SCC?

Somatic Cell Count occurs due to a high number of white blood cells present as a result of a bacterial infection of the udder.

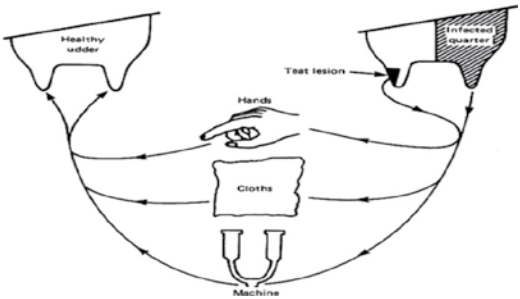
- Clinical mastitis – clots / flakes / a watery appearance in milk.
  - Can be classified as mild / moderate / severe.

- Sub clinical mastitis – Inflammation of the mammary gland.
  - No visible appearance.
  - Cow produces less milk and milk quality is reduced.

Contagious Mastitis

Spread from cow to cow via milk operator's hands, common udder cloth or the clusters (Diagram 1). The aim is to reduce the spread of infection using pre and post disinfection at milking.

The following diagram illustrates the ways in which contagious bacteria can be transmitted.



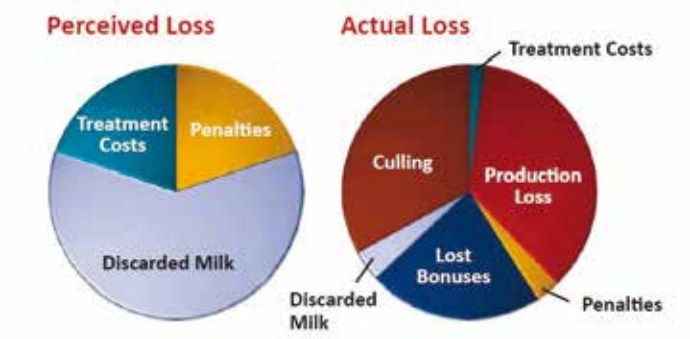
Environmental Mastitis

This is caused by unhygienic facilities and the environment.
To help prevent environmental mastitis:

- Clean cubicles (lime daily)
- Run scrapers 6 times daily
- Clean holding yards and roadways
- Keep milking equipment clean

What does mastitis cost?

The pie charts below compare the difference between milk suppliers perceived loss versus the actual loss associated with the incidence of mastitis in milking herds.



The cost of culling and the loss of milk production are two significant losses which are hidden.

The table below shows the impact of different levels of SCC on two similar farms with 94 cows (40 hectares) where SCC is 150k and 350k cells per ml.

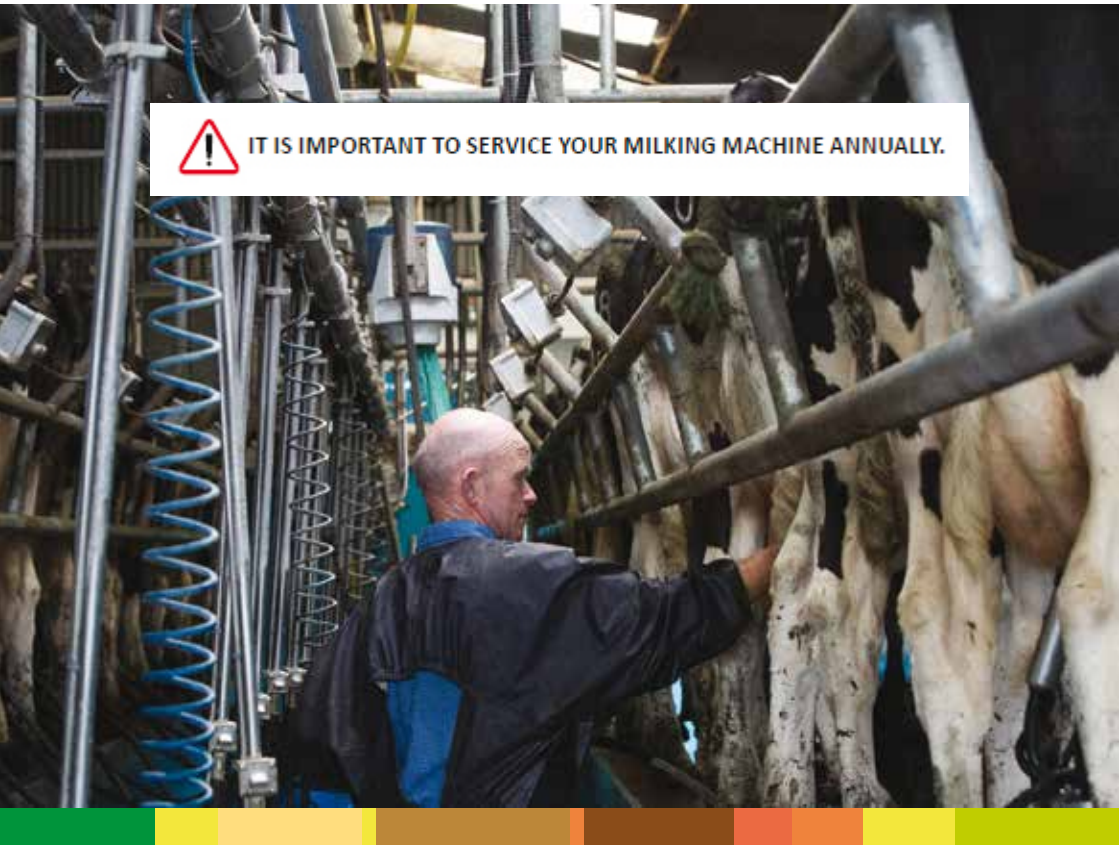
	150,000 cells/ml	350,000 cells/ml
Milk Sold (kg)	524,614	516,198
Total Milk Solids (kg)	36,995	36,380
Culling (%)	20	26
Total Costs (€)	€164,994	€173,536
Milk Receipts (€)	€146,717	€141,279
Profit (€)	€26,771	€16,936
Profit (kg MS)	0.51	0.33

Difference in profit = €105/cow

Milking Machine Faults

The operation of the milking machine can influence the level of SCC in the herd. Some of the more common faults are as follows:

- Incorrect pulsation ratios
- Stray current
- Incorrect vacuum setting
- No milking machine test report available
- Blocked claw piece (air bleed)
- Long milk tubes dipping too low in pit
- Worn or twisted liner
- Milk not entering the milk line from the top
- Milk pump unable to clear jar
- Cluster removers set properly



Milking Practice Issues

The routine of the milker has an influence on SCC and the level of mastitis in the herd.
The following are practical steps that can be taken to reduce SCC.

Guidelines to Reduce SCC

- Eliminate stress issues e.g. stray voltage /high vacuum
- Eliminate damage to teat ends
- Wear gloves
- Use effective Dry Cow Therapy with Teat Sealer. Use Culture and Sensitivity Test
- Milk record to identify chronic cows and cull accordingly
- Do not over-milk
- Pre \ Post Spraying \ Cluster Dipping
- Breed sufficient number of replacement heifers
- Service Milking Machine Annually
- Change Liners every 6 months or every 2,000 milkings

Steps to minimise teat end damage

- Do not take clusters off under vacuum
- Do not lean on clusters
- Do not have excessive air loss at cluster change
- Do not over milk (9 mins/ Row)

California Mastitis Test

The use of the California Mastitis Test (CMT) is an ideal way to identify high SCC cows or high quarter and can also be used to check if treatment has been successful.

2. Total Bacterial Count (TBC)

The microbial quality of milk is an important measure and it is associated with a number of farm management practices. TBC is an indicator of on-farm general hygiene conditions, milking equipment cleanliness and milk storage (temperature and time).

Factors that influence TBC:

General Hygiene

- Animal Housing
- Milking machine equipment
- Bulk tank
- Farm infrastructure and roadways

Milk Cooling

- Milk needs to be cooled quickly (ideally within 2 hours) and cooled to a max temperature of 3.5^{o}C

Wash Routines

- Correct wash procedure and rate of detergent used

Guidelines to reduce TBC

- Regular hot detergent wash @ 75^{0}C minimum
- Weekly descaling of machine and tank
- Frequent inspections of bulk tank and machine
- Use new filter sock at every milking
- Use correct rates of detergent and/or descaler
- Servicing of bulk tank and milking machine
- Check expiry dates of detergent
- Monitor cooling performance of bulk tank
- Washing of dump line/dump bucket
- Max of two washes for each detergent mix

3. Thermoduric Bacteria

Thermoduric bacteria are heat resistant bacteria that have the ability to survive the industrial pasteurisation process. They are spore forming bacteria which cause significant problems for food manufacturers such as reduced yield for cheese/powders. They are typically present in soil, faeces, silage, milking equipment and/or animal bedding.

Steps to Control Thermoduric Bacteria

- Clean udders prior to milking
- Hot detergent washes greater than 75ºC
- Weekly acid descale washes of machine and bulk tank
- Replace cracked or worn rubberwear

4. Lactose Level

Late lactation milk supplies can have low lactose levels causing problems in product quality, flavour and stability. Low lactose levels can incur penalties and impact your Balanced Scorecard.

How to avoid low lactose levels

- If silage has to be fed ensure it is of high quality
- Feeding 2 kg of concentrates per day helps maintain Lactose levels
- Dry off low yielding cows (less than 9 litres per day)

5. Trichloromethane (TCM)

TCM content in dairy products especially butter is now a very important quality parameter. Achieving the correct level is essential from a market place perspective. Given the increased focus on this issue among our key international customers, Dairygold will continue the TCM Testing Programme and education awareness at farm level.

Key Messages

- Chlorine residues from detergents and sterilising agents form a compound called Trichloromethane (TCM) in milk
- TCM concentrations in Irish products can cause marketing difficulties in countries to which Irish products are being exported
- Cleaning and disinfection in the milk production process on your farm is critically important in maintaining the required TCM levels in the milk.

TCM levels

The target level required in milk at farm level is **less than or equal to 0.00155 mg/kg.**

Guidelines to reduce TCM

DETERGENTS

- Ensure products have a low chlorine content (<4%). Follow carefully manufacturer's instructions or guidelines on product labels. Only use detergent and sterilising agents from Teagasc Recommended List.

WASH ROUTINE

1. Pre-Rinsing
   - 14 litres of water per cluster and drain.

2. Detergent Cycle
   - 9 Litres of water per cluster with correct rate of detergent per cluster.

3. Post Rinsing
   - 14 litres of water per cluster and drain.
   - It is NOT recommended to add chlorine to the final rinse. Peracetic acid can be used.

4. Bulk Tank
   - Correct amount of rinse water and detergent should be used (For a 10,000 litre bulk tank, 1% water = 100 litres. 0.6% detergent = 600ml).

Actions to reduce TCM if greater than 0.00155mg/kg

- Ensure that there is no chlorine residue after washing of tank and machine is complete.
- Adequate rinsing and accurate use of detergent will help.
- As with any test failure consult with your bulk tank/milking machine technicians/ milk advisor.
- Do a retest to confirm expected improvement.

Milk Recording

Advantages of Milk Recording

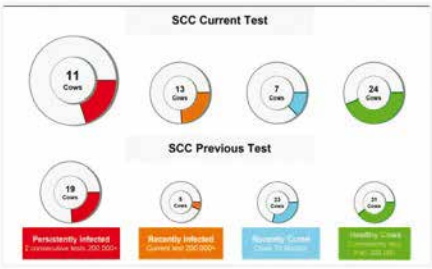
- Herd Management Information
- Individual cow milk volume, Fat, Protein, SCC
- On-line reports
- Individual Cow and Herd Summary Report
- SCC Report

Reduce your SCC and increase profits

Reducing SCC from 350,000 to 150,000 increases profit per cow by €105, that's an increase of €10,500 for 100 cows. More milk is produced from low SCC cows. It reduces culling, provides a more mature herd and peace of mind.

Identify your SCC issues

- New infections in the dry period- Cows
- 1st lactation heifers calving down with mastitis
- Cure rate over the dry period
- Identify chronic cows spreading infection
- Ongoing monitoring



Maximise the KGs and € value of milk solids sold

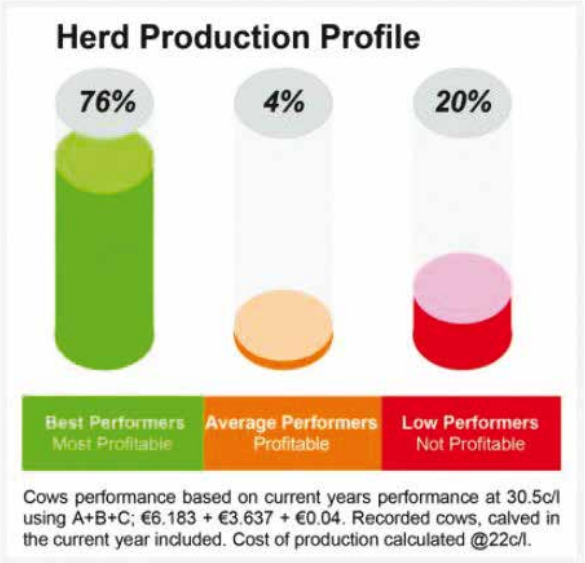
The average supplier is delivering 390kg whereas the top 10% are delivering 480Kgs. At €4/Kg the difference is €360 a cow and €36,000 in a 100 cow herd. Increasing the fat and protein in the milk greatly increases milk price. Increasing from 4.0 to 4.2 % fat and 3.5 to 3.65% protein will add 1.7c/litre. This is worth €10,200 in a 100 cow herd.

The main factors affecting Kgs of milk solids delivered are:

Genetics, SCC, Lactation Profile, Nutrition - Energy Balance / BCS, Parasites / Disease.

Using milk recording you can select the best herd of healthy, high genetic merit cows to milk, the best females to breed from and avoid carrying unprofitable cows.

New ICBF report format features



Lactose Management

Since the abolition of quotas, this has become an increasingly common issue now as herdowners tend to milk cows in late lactation with reduced concentrate levels as a result.

Milk Co-Ops apply a deduction in milk price when milk lactose falls below 4.2% and milk collections are suspended when lactose falls below 4.0%.
Milk recording can help maintain lactose levels by:
Drying off

- Cows producing less than 8-9 Ltrs/day
- Cows with high SCC cows
- Cows less than 4.3% lactose

Drying off Decisions

From earlier milk recordings this season, February, March and April you can establish the following facts. Better decision making this Autumn.

Did I achieve a good cure rate? - over 85% in the dry period last year

If I did not achieve a cure rate in excess of 85% last season, I need to improve it this season. Either the dry cow therapy was not appropriate, the dry period was not long enough or the dry off procedure was not executed correctly.

Did I achieve a low SCC in my 1st lactation heifers calving down?

If I did not, I need to look at the heifer housing and calving facilities the 3 weeks before and 1 week post calving.

Did I get any new infections in my cows over the dry period?

If this is an issue, I need to look at the dry cow housing.

Identify the chronically infected cows for culling from the current problem cow report, those that have had more than 2 tests over 250,000 last year, did not achieve a cure rate over the dry period and are high SCC again this year with more than 2 tests over 250,000. These need immediate culling as they are spreading the infection, infecting low SCC cows and eating into profits.

Use milk recording to do a meaningful sensitivity and culture. Select out 5 high SCC cows infected this season from the current problem cow report and CMT these cows to identify the infected quarter(s), collect a sterile sample and do a culture and sensitivity, and finally talk to your vet about the most appropriate treatment.

Culling Decisions

The average cost of keeping a cow is €1,200. Cows in the top 25% produced €360 more milk sales than the bottom 25% of cows- ICBF data 500,000 cows.

Cows that are not covering their costs are a drain on profits- they need to be identified and culled.

The cull price of one unprofitable cow could pay for the milk recording cost of an entire herd of 100 cows.

Breeding Decisions

Herdowners who are milk recording are in a position to make better breeding decisions

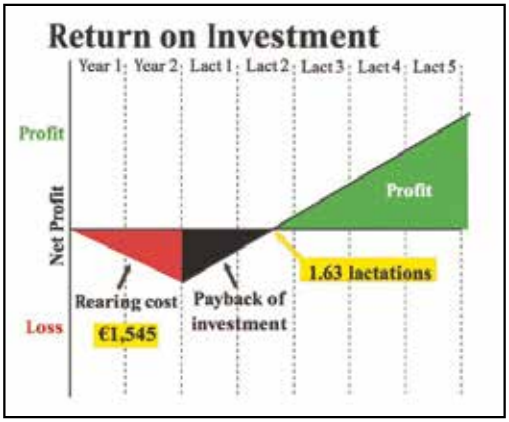
- Breed your replacements from your most profitable cows to avoid carrying passengers
- Use Munster sires to breed the highest genetic merit replacements

Selection of incalf heifers

Herdowners who are milk recording and using Munster's top AI sires have a greater selection of replacement heifers to choose from.

'Breed the best to the best' still holds true today.

If this is followed by genomic selection of the entire group, it will allow the selection of traits that you cannot see but will contribute handsomely to profit - Kgs of milk solids and fertility.



Sustainability and SDAS

Walsh Farm Sustainability Performance

Based on survey data collected at Walshs last SDAS audit it is clearly evident that the dairy enterprise on this farm is efficient and sustainable. The Carbon Footprint on this farm is 0.99KgCO2E/KgFPCM. This impressive figure is significantly lower than the national average which currently stands at 1.07 KgCO2E/KgFPCM.

In order to understand what is driving the low carbon footprint we should look at the total farm emissions and what is contributing to this total. Farm emissions can be divided in to a number of categories including:

- Cattle feed
- Manure
- Fertiliser production and application
- Forage and feed
- General farm emissions

Using a number of the categories above we can take a more detailed look at where efficiencies achieved by the Walshs are resulting in a good sustainability performance.

Emissions associated with manure/slurry are approximately 80% that of the national average. The reason behind this relates to the timing of slurry spreading for the most part. On this farm 70% of the slurry is spread in the Spring and the remainder is spread in early summer. Getting slurry out early in the year results in lower emissions associated with slurry as there are less atmospheric losses of nitrogen, better absorption of nutrients by grassland and also the emissions associated with slurry storage are greatly reduced.

Similarly, if we look more closely at emissions from fertilizer production and application, we can see again that efficiencies on this farm are resulting in 20% less emissions when compared to the national average for this category. Each fertilizer type has a different emission factor associated with it depending on the makeup of the fertilizer. The reason being that the process of manufacturing the different types of fertilizer has different energy demands and different ingredients.

The Sustainability Survey and Carbon Navigator

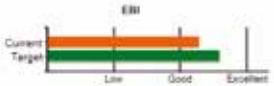
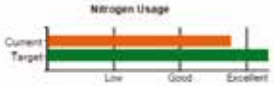
The Sustainability Survey and carbon foot printing process conducted by Bord Bia is unique to any other Quality Assurance and Sustainability scheme in operation. It is a demonstration of how the entire dairy industry is working together to ensure that Irish dairy farms maintain and build on their current position as the most carbon efficient producers in the EU. The rollout of the SDAS and conducting the Sustainability Survey allows the following.

- Accurately calculate the Carbon Footprint for every farm participating.
- Provides feedback to participants which indicates to them how they compare with their peers.
- Measures greenhouse gas emissions using the Carbon Navigator on GHG emissions and how they can be reduced by making operational changes on farm efficiency and profitability.

The Carbon Navigator tool was developed by Bord Bia and Teagasc to measure GHG emissions. It focuses on five measures that farmers can target to achieve improved efficiency. These five measures are as follows:

- Grazing season - Increased days at grass
- EBI - Increased genetic merit of herd
- Nitrogen efficiency - Urea v's CAN
- Slurry usage - Spread more in Spring
- Energy efficiency - Reduce energy usage

Information collected during the SDAS audit is used to assess the performance of each farm under these measures. This allows farmers and advisors to see how the farm compares with its peers. Based on the current performance, the farmer can then set targets and input them to the Carbon Navigator tool. The tool will then indicate how much emissions can be lowered by and how much profitability could increase by if these targets are reached.

Year 2017		Current	Target	Chart	GHG change	€ benefit
Grazing season length	Turnout Date - Part Time	25/Jan	25/Jan		0%	€0
	Turnout Date - Full Time	20/Feb	20/Feb			
	Housing Date - Part Time	30/Nov	30/Nov			
	Housing Date - Full Time	10/Dec	10/Dec			
EBI	EBI	124	140		-3.2%	+€1952
Nitrogen Efficiency	Stocking rate (Kg N / Ha grass)	205.00	220.00		-2.8%	+€2210
	Chemical N used (Kg N / per Ha) : Urea	110.00	130.00			
	Ammonium N	146.00	110.00			
	Import (+) or Export of Org Manure N/Ha	0.00	0.00			
	Meal feeding Kg / Cow	320.00	300.00			
	Milk output / cow (Kg milk solids)	495.00	510.00			
Slurry Spread Timing	% in Spring	80	90		-0.9%	+€353
	% Summer following 1st cut	10	0			
	% Later in Summer	10	10			
	Application Method	Splash Plate	Trailing shoe			
Energy Efficiency	Plate Cooler Present	☑	☑		-0.4%	+€767
	Average Temperature of Milk after Plate Cooler	16.0	10.0			
	Variable Speed Vacuum Pump	☐	☑			
	Method of Water Heating	Electricity	Electricity			

Update

Lean Farm

Dairygold is the first Co-Operative in Ireland to successfully pioneer the widespread application of lean tools at farm level. This will benefit farmers by helping them to streamline work practices, improve farm safety and quality, and create a better work-life balance.

Lean is an approach most commonly used in manufacturing to drive continuous improvements and efficiencies that utilise less time, effort and resources thereby giving greater returns.

Dairygold's Continuous Improvement (CI)/lean journey began in 2011, with support from Enterprise Ireland, when Dairygold commenced to apply lean principles across our processing and supply chain operations. Through this Continuous Improvement (CI)/lean programme, Dairygold examined each element of its processes to identify problems and in turn solutions. Transforming the ways in which it thinks and works has delivered greater efficiencies and financial savings for Dairygold.

Believing that such learnings should be extended beyond its factory floors, Dairygold implemented a pilot programme at farm level in 2017. With the guidance and support from its CI coaching staff and Milk Advisors, a pilot group of farmers of varying scale and herd size implemented lean tools and techniques over a period of six months.

The results of the pilot programme clearly demonstrated that the application of lean principles on-farm also offers significant efficiencies and benefits such as improvements in farm safety and quality, better resource efficiency, time-saving as well as reduced stress and physical labour. Based on the positive results and feedback achieved, Dairygold strongly felt the initiative should be extended to its broader organisation and as such it was pleased to roll-out Leanfarm to all its Members earlier this year.

Educational training sessions have commenced and are being made available to milk suppliers across Dairygold's catchment area. This Continuous Improvement/lean knowledge-sharing programme is in line with Dairygold's objective to help Members such as John Walsh maximise their return from farming.

For more information visit www.dairygoldagri.ie/leanfarm or call 1890 200 840.


BENEFITS
18
18 DAYS
Number of labour days saved
€1440
Average cost saving
116 km
Reduction in walking distance
93%
Of farmers saw safety improvements
100%
Recommended to farmers
2,900
All Dairygold milk suppliers can avail of Leanfarm training
STATISTICS GATHERED FROM A 6-MONTH PILOT PROGRAMME WITH FARMERS OF VARYING SIZE AND SCALE

NOTES

NOTES


NDC &
Kerrygold
Quality
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Quality
Milk
Awards