UCD Lyons Systems Herd Annual Report 2025

Development of a Sustainable High-Output Grass-Based Spring Milk Production System

Summary of 2025 Findings and Research Plan 2026

- Production: Average herd production was 7,518kg milk and 620 kgs MS. Compared with last year's production of 6,748 kgs of milk and 563 kg MS, both milk yield and milk solids increased significantly.

- Grass: A total of 11.8 t DM/ha grass was grown on the milking platform with 10,363 kg DM/ha utilized (88%). In April two paddocks (12%) were reseeded.

- Fertility: Fertility performance was excellent again in 2025. Submission rate was on target at 91%, 6-week in calf rate was 83% and the empty rate was 9%.

- Research focus in 2025: 48 cows were assigned to a nitrogen (N) balance assessment, which involved feeding two concentrate types containing 12% and 14% crude protein in line with DAFM guidelines for derogation farms. The trial measured N excretion and dry matter intake during early, mid and late lactation. In parallel, a methane emissions trial was conducted as part of the DAFM-funded Rumenventory project in collaboration with Teagasc Moorepark. This study involved 53 cows, with methane data collected across the lactation to evaluate the seasonal methane profile of grazing dairy cows in a high-output system. Results of this research will be available during 2026.

- Research Focus for 2026: Research in 2026 will focus on the fundamentals of the system in terms of grassland management, strategic supplementation of native low protein concentrate and achieving fertility targets. This is a year of challenging milk price and concentrate supplementation will be flexible in response to this.

Overall Project Objectives

- To develop a profitable high-output grass-based spring milk production system.
- To incorporate the most recent advances in grassland management for dairy farms into a high-output system.
- Use a type of dairy cow that has good genetic indices for both milk production and fertility.
- Employ the best practices from nutrition research and dairy cow husbandry.
- Incorporate nutritional studies into a high-output system.
- To incorporate management technologies and system attributes that enhance the sustainability of dairy production.

System Targets and Genetics

The system targets are presented in Table 1. The average genetic merit of the herd in September 2025 is presented in Table 2. In the September 2025 evaluation, the overall herd EBI, herd milk sub-index and herd fertility sub-index are within the top 20%, top 1% and top 30% of national herd EBI respectively. In 2025, 15 dairy heifers were drafted into the herd. These included 7 home-bred heifers and 8 high-genetic merit heifers identified using ICBF data and subsequently bought off-farm. The feed budget (target and actual) is presented on a days in milk (DIM) basis and is shown in Table 3.

Table 1: System Targets

Parameter	Target
Stocking rate on milking platform	3.27 LU/ha
Stocking rate whole farm	2.07 LU/ha*
Milk yield kg/cow	7,500-8,000
Milk solids kg/cow	625 kg
6-Week in calf rate	75%
Concentrate (kg/cow/year)	1,500 kg
% diet as grazed grass	>51
% diet as grazed grass and grass silage	>75**

* Whole farm stocking rate calculated for 55 cows on 17.35ha MP + 10 ha for silage
**The annual feed budget contains >90% grazed grass + grass silage on an as-fed basis

Table 2: Herd EBI (September 2025 evaluations)

EBI	Milk	Fertility	Carbon	Calving	Beef	Maint.	Health	Mgt.
161 (Top 20%)	52 (Top 1%)	57 (Top 30%)	-2.17	29	8.5	3.4	13	0.06
	Milk kg	**Fat kg**	**Prot. Kg**	**Fat %**	**Prot. %**	**Calv int.**	**Surv. %**	
	138 (Top 10%)	8.2 (Top 10%)	7.2 (Top 10%)	0.05	0.04	-2.9	1.53	

Table 3: Feed budget for 2025 (target allowances and actual feed budget)

Days in milk	0-20	21-60	61- 90	91-120	121-180	181-240	241-270	271-305	306-343	344- 365	Target annual amount	Actual annual amount
Silage kg DM/cow/day	5	5	0	0	4	5	8	15	12	12	2.5t DM	1.89 t DM
Grass kg DM/cow/day	10	10	15	15	12	10	5	0	0	0	2.8t DM	2.84 t DM
Concentrate kg/cow/day	8	8	8	7	6	5	4	3	0	0	1.5-1.8t * As fed	1.62 t As fed

*In 2025 there was flexibility with the level of concentrate in the feed budget due to the high milk prices.

Production Performance 2016-2025

Table 4: Herd Milk Production Performance 2016-2025

Parameter	Target	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-year avg
Cow Numbers	-	58	60	59	58	57	57	57	56.21	57	54	57.3
MP ha	-	17.58	17.65	17.65	17.52	17.43	17.43	17.43	17.43	17.43	17.35	17.49
Silage ha	-	9	7	7	7	7	7	7	7	10	10	7.8
Whole Farm ha	-	26.58	24.65	24.65	24.52	24.43	24.43	24.43	24.43	27.43	27.35	24.99
SR on MP	3.27	3.3	3.4	3.34	3.31	3.27	3.27	3.27	3.22	3.27	3.11	3.3
SR Whole Farm	2.33	2.18	2.4	2.4	2.34	2.33	2.33	2.33	2.30	2.08	2.01	2.3
% Heifers	18-22	22.4	23.3	28	21	23	23	17.5	17.5	17.5	28	22.12
Average Lact. Days	305	301	305	305	304	305	298	293	294	291	302	300
Average Protein %	3.6	3.56	3.66	3.62	3.6	3.59	3.64	3.62	3.56	3.6	3.7	3.6
Average Fat %	4.5	4.51	4.48	4.54	4.53	4.56	4.46	4.50	4.59	4.77	4.53	4.55
Average SCC	<120,000	111,000	91,500	154,000	56,000	58,000	50,000	73,000	42,000	61,000	58,000	75,450
Yield/cow kg (305d)	7750	7441	7548	6680	7541	7771	7744	7234	7145	7095	7792	7399
MS/cow kg (305d)	625	592	602	558	597	621	630	580	580	579	629	597
Yield/cow kg (Actual)	7750	7407	7466	6790	7381	7503	7733	7010	7108	6748	7518	7266
MS/cow kg (Actual)	625	588	595	544	586	606	629	562	577	563	620	587
MS/ha kg MP	2043	1953	2023	1850	1940	1980	2057	1838	1884	1730	1930	1919
MS/ha kg WF	1456	1291	1428	1306	1371	1413	1468	1311	1368	1234	1224	1341

Table 5: 2025 Grassland Management

Grass Production Parameter	
Opening cover on 7th Jan 2025 (kg DM/ha)	929
Total grass grown (kg/ha)	11,776
Total number of grazings	7.1
Closing cover on 1st December 2025 (kg DM/ha)	727
Stocking rate on MP	3.11
Nitrogen (kg N/ha MP)	208
Phosphorus (kg P/ha MP)	0
Sulphur (kg S/ha MP)	16
Potassium (kg K/ha MP)	93
Turnout by day	6th February
Turnout full time	4th March
Housed by night	23rd October
Full time housing	25th November
Total days at grass	284
Silage (bales) on MP (kg/ha)	1,531
Herbage utilized kg/ha	10,363
Grazed grass utilized t/cow	2,838
Grazed grass utilized t/ha	8,832
Milk from forage (kg)	4,040
Average concentrate consumed (kg/cow as fed)	1,739
Average silage consumed (kg/cow DM)	1,878

Table 6: Grassland Production Performance 2016-2025

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	10-year average
Grass grown kg/ha	13,060	14,000	11,700	14,535	13,633	13,807	12,102	10,956	9,275	11,776	12,484
Silage on MP (kg/ha)	1,710	2,000	1,410	1,979	1,428	1,421	2,854	814	963	1,531	1,611
Herbage utilized kg/ha	11,417	12,200	10,030	13,528	12,122	11,598	10,977	10,496	8,320	10,363	11,105
Grazed Grass utilized/ha	9,707	10,200	8,620	11,549	10,713	10,177	8,123	9,682	7,357	8,832	9,496
Grazed Grass utilized/cow	2,942	3,000	2,535	3,489	3,243	3,112	2,484	2,684	2,249	2,838	2,858
Milk from forage (kgs)	4,400	4,400	3,548	4,381	4,612	4,829	3,860	4,009	3,718	4,040	4,180
Nitrogen MP kg/ha	235	260	265	250	235	210	182	179	222	208	225
Nitrogen whole farm kg/ha	219	237	229	231	195	188	159	156	177	169	196
P MP kg/ha	9.3	8.6	8.9	10	14.6	25.3	0	0	45	0	12
K MP kg/ha	32	44	112	120	85	95	29	47	112	93	76

Breeding 2025

Table 7: Fertility performance of the herd 2016-2025

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Number of cows bred	58	59	55	58	57	57	57	57)	56	55
Submission rate 21 d%	91	90	96	95	91	95	87.5	89	89	91
First service conception rate %	43	49	69	60	74	72	79	70	56	68
6-week pregnancy rate %	59	54	83	79	87	87	84	84	71	83
Empty rate of total cows %*	9 (5/58)	15 (9/59)	13 (7/55)	12 (7/58)	9 (5/54)	7 (4/57)	10.5 (6/57)	8.8 (5/57)	16 (9/56)	9 (5/55)

Table 8: 2025 Bull List

FR1132	PLAIN-KNOLL HURLEY
FR1311	SMASH
FR9842	BALLYDEHOB RINGO
FR9881	LISDUFF NAPOLEON
FR1500	VATLAND GROVES
FR7623	NORTONHILL SUMERIAN

Breeding was all by A.I and was done twice daily.

Table 8. Average EBI and sub-indices values of bulls used in 2025 breeding season

EBI	Milk	Fert.	Carbon	Calv.	Beef	Maint.	Mnmgt.	Health	Milk	Fat	Prot.	F+P	F	P
€	SI	SI	SI	€	€	€	€	€	kg	kg	kg	kg	%	%
267	78	96	-11.8	47.3	-10.2	-4.2	1.2	26.1	301.5	23.9	16.8	40.7	.20	0.11

These bulls were selected for high milk fat and protein milk PTA to ensure the milk fat and protein % stay positive in addition to selecting for good health and high fertility sub-index values. An increased focus has been put on selecting bulls with a high PTA for milk and a lower maintenance value as we continue to try and breed animals with the genetic and physical potential to meet our systems targets. From the 28th of April, selected beef bulls were used for the remainder of the breeding season. The beef bulls being used are LM2010 (Raffertys Immanuel), LM7416 (Powerful Proper), LM7713 (Birchpark Rufus), LM9577 (Drumline S 1185), THZ (Towthorpe Dubai), LM4184 (Loyal) and AA7506 (Tower Tommie).

Dissemination in 2025

- Weekly notes and annual report published on the UCD Lyons Farm website:
  https://www.ucd.ie/lyonsfarm/research/dairyresearch/systemsresearchherd-weeklynotes/

- Industry and farmer groups were being hosted on request throughout the year. This has been limited by the TB restriction placed on the dairy herd at Lyons during 2025.

Research Team

Prof Karina Pierce, Prof Finbar Mulligan, Dr Zoe McKay, Prof Michael Wallace, Prof Alan Fahey, Dr Kate McCarthy, Ms Niamh Dooley, Ms Yvonne Kavanagh, Mr Fergal Monaghan, Prof Emmet Kelly and Prof Eoin Ryan.

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