Preparing for Breeding Success

Joint Development Programme

Edition 2

Spring Management Series 2023

Farmer Focus

Andrew & Philip Smith
Farnadolly, Crossdoney, Co. Cavan

Farm Profile

Due start of Calving: 2nd February

% of herd calved: 80%

With 80% of the herd calved in just over 6 weeks, Andrew and Philip have completed their first milk recording in order to determine the effectiveness of their dry cow period, and to aid in the selection of cows to receive both sexed and conventional dairy A.I. this coming breeding season.

"When selecting cows for sexed semen this breeding season, milk recording data combined with EBI and fertility records on farm were used to select the top cows in the herd". When compiling a list of cows suitable to receive sexed semen, Andrew has selected an extra 25-30% of cows over and above the number of sexed straws purchased to ensure he has enough cows suitable due to the timing of insemination being more sensitive, and ensuring cows are cycling regularly, with no health issues in the correct BCS.

Onset of heat		Time of AI
13:00	19:00	09:00
16:00	22:00	12:00
19:00	01:00	15:00
22:00	04:00	18:00
01:00	07:00	21:00

When selecting cows for conventional dairy semen this breeding season, Andrew has selected cows performing above average in the herd, focusing on Protein %, and kg Ms delivered. When selecting for sexed semen, Andrew takes this process further and consults his fertility records and EBI report, in order to select early calving, and high fertility sub-index cows.

Farmer Focus (Continued)

"With the addition of automated heat detection in 2022, combined with me completing an A.I course, I aim to complete inseminations twice delay to maximise the chances of cows falling into the time brackets for sexed semen. Combining this with the information available to me through the automated heat detection, my timing of A.I. for sexed semen should be more accurate."

Heifer Protocol

With the heifers being grazed on two separate out-farms, Andrew plans to synchronise the heifers on a Fix Time A.I. (FTAI) programme, and A.I. with conventional semen. "We had a poor conception rate to first service with the heifer in 2022, and I am reluctant to use sexed semen on them until we can improve our conception rates to conventional first."

All heifers that repeat will be served with an easy calving high DBI A.I bull, followed up with high DBI stock bulls being used to mop up.

Beef Bull Selection

When selecting beef sires this spring, Andrew has selected a panel of 3 bulls. Bull 1 he has prioritised easy calving, while also maximising carcass weight, and conformation for use on his repeat heifers, and smaller first lactation cows. Bull 2 he has more emphasis placed on carcass weight and conformation while also maximising calving ease for used on second lactation plus cows, while bull 3 is for use on mature cows only with emphasis placed on calf quality, while ensuring to not jeopardise calving difficulty.

Cow Selection, Heifer Protocols, Beef Sires

With step 1 bull selection completed on the majority of farms, attention has now shifted onto step 2 in ensuring a successful breeding season, cow selection and heifer protocols.

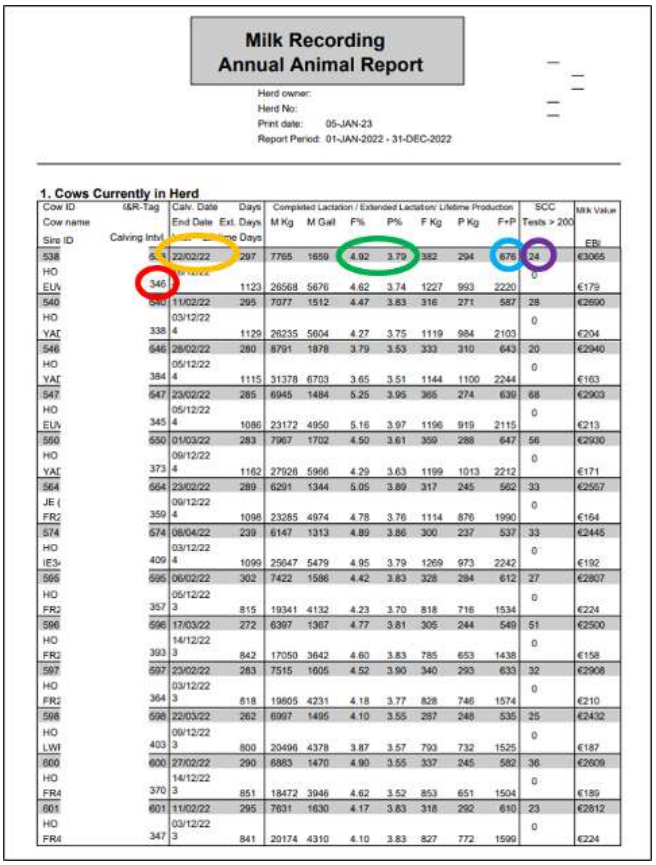
Cow Selection

While sire selection is critical to maximise the genetic gains made by the future replacement heifers over and above the current herd, they only make up 50% of the equation. Ultimately when maximising the gains in your replacement heifers, cow selection makes up the remaining 50% in their genetic variation. By selecting the bottom 20-50% of cows within the herd for beef mating, the rate of genetic gain and therefore the performance and profit driven by the herd is exponentially sped up.

When selecting cows suitable to breed replacement heifers for the herd, there are two major reports required - the herd's milk recording reports, combined with the herd's EBI report. With the use of these reports combined with excellent on-farm records of problem cows (Mastitis, lameness, poor udders, temperament, etc.), the genetic gain made by the next generation of replacements of the herd will be accelerated.

When identifying cows for dairy A.I. the milk recording annual animal report is excellent as it presents both milk and fertility data for every individual cow in the herd in one report. Presented in the image across is an example of this report and highlighted is the critical information from this report, (**Calving Interval**, **Calving Date**, **Milk Protein & Butterfat %**, **Kg Ms**, and **SCC**). Within this report the aim is to identify animals performing firstly in the top 25% of the herd on milk performance while calving within the first 6 weeks of the calving season, and with a low SCC. Following on from this, the aim is then to identify animals performing above herd average in the above listed categories.

Depending on the use of sexed semen in the herd, the percentage of cows needed to be selected for dairy A.I. will vary from 30% to 50% in a non-expanding herd, assuming the heifers are receiving dairy A.I. This then allows the bottom 50-70% of the herd to be selected for beef mating from day 1 of the breeding season.

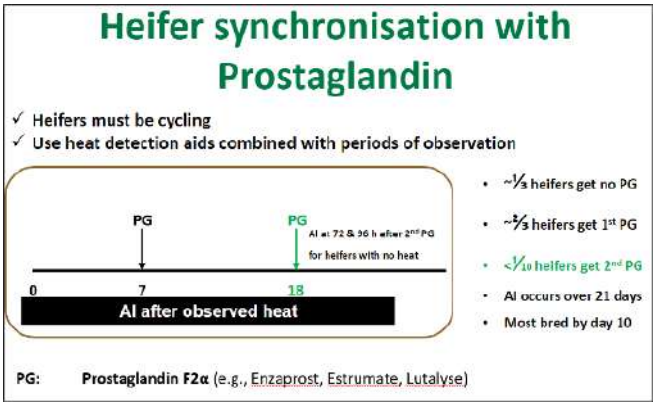


Milk Recording
Annual Animal Report

Herd owner:
Herd No:
Print date: 05-JAN-23
Report Period: 01-JAN-2022 - 31-DEC-2022

1. Cows Currently in Herd

Cow ID / Cow name / Sire ID	I&R-Tag / Calving Intvl	Calv. Date End Date	Ext. Days	Days	Completed Lactation / Extended Lactation/ Lifetime Production M Kg	M Gall	F%	P%	F Kg	P Kg	F+P	SCC Tests > 200	Milk Value EBI
538	5	22/02/22		297	7765	1659	4.92	3.79	382	294	676	24	€3065
HO												0	
EUV	346			1123	26568	5676	4.62	3.74	1227	993	2220		€179
540	540	11/02/22		295	7077	1512	4.47	3.83	316	271	587	28	€2690
HO		03/12/22										0	
YAL	338	4		1129	26235	5604	4.27	3.75	1119	984	2103		€204
546	546	28/02/22		280	8791	1878	3.79	3.53	333	310	643	20	€2940
HO		05/12/22										0	
YAL	384	4		1115	31378	6703	3.65	3.51	1144	1100	2244		€163
547	547	23/02/22		285	6945	1484	5.25	3.95	365	274	639	68	€2903
HO		05/12/22										0	
EUV	345	4		1086	23172	4950	5.16	3.97	1196	919	2115		€213
550	550	01/03/22		283	7967	1702	4.50	3.61	359	288	647	56	€2930
HO		09/12/22										0	
YAL	373	4		1162	27928	5966	4.29	3.63	1199	1013	2212		€171
564	564	23/02/22		289	6291	1344	5.05	3.89	317	245	562	33	€2557
JE (		09/12/22										0	
FR2	359	4		1098	23285	4974	4.78	3.76	1114	876	1990		€164
574	574	08/04/22		239	6147	1313	4.89	3.86	300	237	537	33	€2445
HO		03/12/22										0	
IE3	409	4		1099	25647	5479	4.95	3.79	1269	973	2242		€192
595	595	06/02/22		302	7422	1586	4.42	3.83	328	284	612	27	€2807
HO		05/12/22										0	
FR2	357	3		815	19341	4132	4.23	3.70	818	716	1534		€224
596	596	17/03/22		272	6397	1367	4.77	3.81	305	244	549	51	€2500
HO		14/12/22										0	
FR2	393	3		842	17050	3642	4.60	3.83	785	653	1438		€158
597	597	23/02/22		283	7515	1605	4.52	3.90	340	293	633	32	€2908
HO		03/12/22										0	
FR2	364	3		818	19805	4231	4.18	3.77	828	746	1574		€210
598	598	22/03/22		262	6997	1495	4.10	3.55	287	248	535	25	€2432
HO		09/12/22										0	
LWI	403	3		800	20496	4378	3.87	3.57	793	732	1525		€187
600	600	27/02/22		290	6883	1470	4.90	3.55	337	245	582	36	€2609
HO		14/12/22										0	
FR4	370	3		851	18472	3946	4.62	3.52	853	651	1504		€189
601	601	11/02/22		295	7631	1630	4.17	3.83	318	292	610	23	€2812
HO		03/12/22										0	
FR4	347	3		841	20174	4310	4.10	3.83	827	772	1599		€224



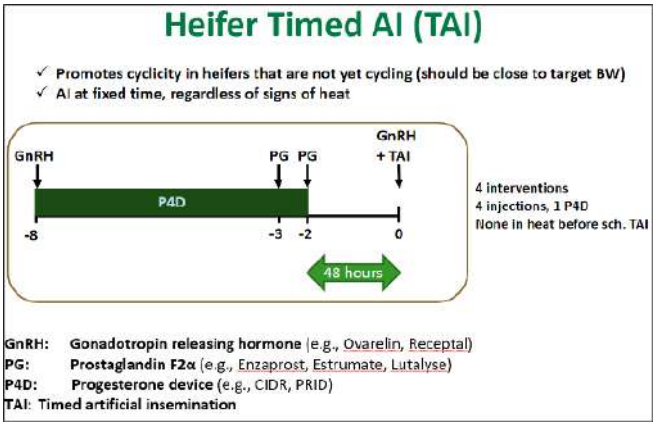
Heifer synchronisation with Prostaglandin

- ✓ Heifers must be cycling
- ✓ Use heat detection aids combined with periods of observation

PG
PG
AI at 72 & 96 h after 2nd PG for heifers with no heat
0
7
18
AI after observed heat

- ~⅓ heifers get no PG
- ~⅔ heifers get 1st PG
- <1/10 heifers get 2nd PG
- AI occurs over 21 days
- Most bred by day 10

PG: Prostaglandin F2α (e.g., Enzaprost, Estrumate, Lutalyse)



Heifer Timed AI (TAI)

- ✓ Promotes cyclicity in heifers that are not yet cycling (should be close to target BW)
- ✓ AI at fixed time, regardless of signs of heat

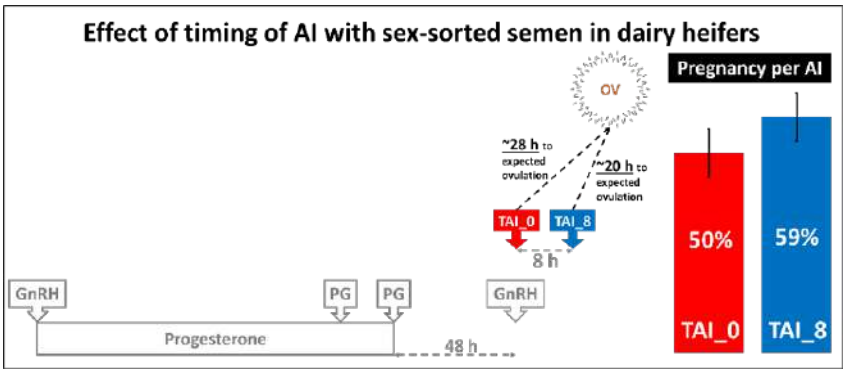
GnRH
PG PG
GnRH + TAI
P4D
-8
-3 -2
0
48 hours

4 interventions
4 injections, 1 P4D
None in heat before sch. TAI

GnRH: Gonadotropin releasing hormone (e.g., Ovarelin, Receptal)
PG: Prostaglandin F2α (e.g., Enzaprost, Estrumate, Lutalyse)
P4D: Progesterone device (e.g., CIDR, PRID)
TAI: Timed artificial insemination

Heifer Protocol

The decisions made surrounding breeding season management of the maiden heifers are critical to maximising the genetic gains achieved within the next generation of replacements for the herd. The maiden heifers should be the highest animals in the herd for genetic merit, and breeding future replacement heifers of this higher genetic merit animals, allows the herd to accelerate their genetic gains.



Unfortunately 42% of replacement heifers entering herds in Lakeland Dairies are stock bull bred. This is costing suppliers €6,063 per year in lost milk revenue compared to 100% A.I. bred replacements, without calculating the loss in genetic gains by the herd. All efforts must be made to ensure all replacements are A.I bred on farm.

When preparing a breeding plan for replacement heifers, on farm beef and dairy stock bulls are often used to breed the maiden heifers to reduce workload, as heifers tend to be reared on outside blocks of ground, away from the home farm. Presented above are two synchronisation protocols to reduce workload. Ensure at least one round of dairy A.I. is used on the heifers, followed by a high DBI stock bull. When adopting these synchronisation protocols on-farm, it is critical to ensure enough bull power is available to breed the heifers that repeat to the first serve, or heifers whose repeat cycles are served to A.I. Also presented is the recommended programme for use with sexed semen on heifers. This programme delays insemination by 8hrs and trials have shown a 9% better conception rate to sex semen.

- **Beef Sire Selection**

With beef A.I. being used from mating start date, this affords the herd owner the opportunity to selectively breed groups of animals to different beef sires, in order to maximise calf quality, while matching cohorts of cows to sires of suitable calving difficulty. Each farm should be selecting 3-4 beef A.I. sires for use on their herd. 1.) A.I. sire suitable for maiden heifers, when selecting these sires prioritise calving ease with a high reliability (<5.5% on dairy heifers) 2.) A.I. sire suitable for 1st/2nd lactation cows, traits prioritises when selecting these A.I. sires should be carcass weight (9kg +) and carcass conformation, while holding calving difficulty below 2.5% on dairy cows. 3.) A.I. sire suitable for mature cows should be selected with a calving ease of <3.5% and carcass weights 14kg +. Within the Lakeland Dairies catchment there are cows that can be selectively mated to higher calving difficulty sires, but within the targets set out above and across all breeds, calf quality and calving ease can both be achieved. By selecting at least 3 beef sires the mature cows can be mated to a sire capable of producing a higher quality calf, while not compromising on calving ease on smaller cows and heifers.

When selecting these A.I. sires the **Dairy Beef Index** (DBI) gives an excellent breakdown of each of the traits suppliers should be selecting on. These traits include calving difficulty, gestation length, carcass weight, & carcass conformation. The aim when selecting these sires should be to maximise carcass weight and conformation, while selecting suitable calving difficulty's for each of the fore mentioned groups of animals. Breeding a higher quality calf with better carcass weights does not compromising on calving difficulty or gestation length.

Lakeland DAIRIES

teagasc
Agriculture and Food Development Authority

Joint Development Programme

Lakeland Dairies/Teagasc Joint Development Programme has produced this Spring Management Series. Our advisors are currently available by phone to discuss all farm related matters.

- Susan Casey 087 099 5359
- Owen McPartland 087 330 2254
- Michael Monahan 087 188 3803