Agenda

C.R.E.A.M. Advisory Board Meeting

25th April 2007

	Speaker	Time	Location
Lunch for visitors		1.15	Manor Restaurant
Welcome		2.30	GRC Lecture Theatre
Chair person	**Andrew Lamberton (HND 3)**		
Review of previous minutes	Caryn Smyth (HND 3)		
Study tour report	Ross Murray (BSc 2)	2.35	
Milking and Health		2.45	
Rolling herd performance and lactation curves	Robert Mc Conaghy (HND 1)		
Veterinary and Health analysis	David Reynolds (HND 1)		
Feeding Team		3.05	
Current diet evaluation	Andrew Fyffe (HND 1)		
Performance of out of parlour feeders	John Graham (BSc 1)		
Finance and Promotion		3.25	
CREAM phosphorus balance	Lee Clements (HND 1)		
Goss margin analysis	Ronan Campbell (HND 1)		
Replacement rearing regime	Leiza Montgomery (BSc 1)		
Breeding Team		3.50	
Interim fertility results	David Clarke (HND 1)		
Future herd genetics	Andrew Shanks (BSc 1)		
Questions/Discussion time	***Board Members and attending staff.***	4.05	
Depart for C.R.E.A.M. unit		4.25	
			CREAM unit
Kingshay Parlour check results	Teresa Owens (BSc 1)	4.40	
ET programme/costs and recent ET work	Jason Irvine (BSc 1)	4.45	
High tea		5.00	**Manor Restaurant**

Milking and Health Team

CREAM herd Performance

Table 1. Physical herd performance for the period February 2006 to February 2007 compared to set targets and benchmarked herds over 9000 litres (n=10).

	February 2006	February 2007	Target	Benchmarked herds over 9,000 litres
Cows in herd	32	33	30	148
Calving (%)	107	122	N/A	N/A
Milk yeild/cow (litres)	9,825	10542	>10,750/cow/year	9,730
Concnetrate/cow (kg)	3,978	3698	3,500	3,497
Milk From Forage (Litres per cow)	987	2324	N/A	1959
Milk price (ppl)	16.92	16.89	N/A	17.95
Butterfat (%)	3.72	3.81	3.79	3.85
Protein (%)	3.02	3.00	3.10	3.17
SCC ('000)	106	62	<150	161
Bactoscan	N/A	13	<50	?

Table 1 demonstrates that milk yield per cow is over 700 litres higher than the same period last year; and herd production fell just 208 litres below this years target of 10,750 litres. Butterfat and protein concentration continues to need improvement within the herd. In recent years we have observed an increase in butterfat concentration however protein concentration remains relatively unchanged. It is hoped that with our continuing bull selection policy we will eventually reap the reward by increasing both these components in the milk, and so improve our Margin Over Concentrates (MOC). Table 2 illustrates a comparison of C.R.E.A.M's MOC for February

2006 and February 2007 compared to recent benchmarked figures for herds over 9000 litres.

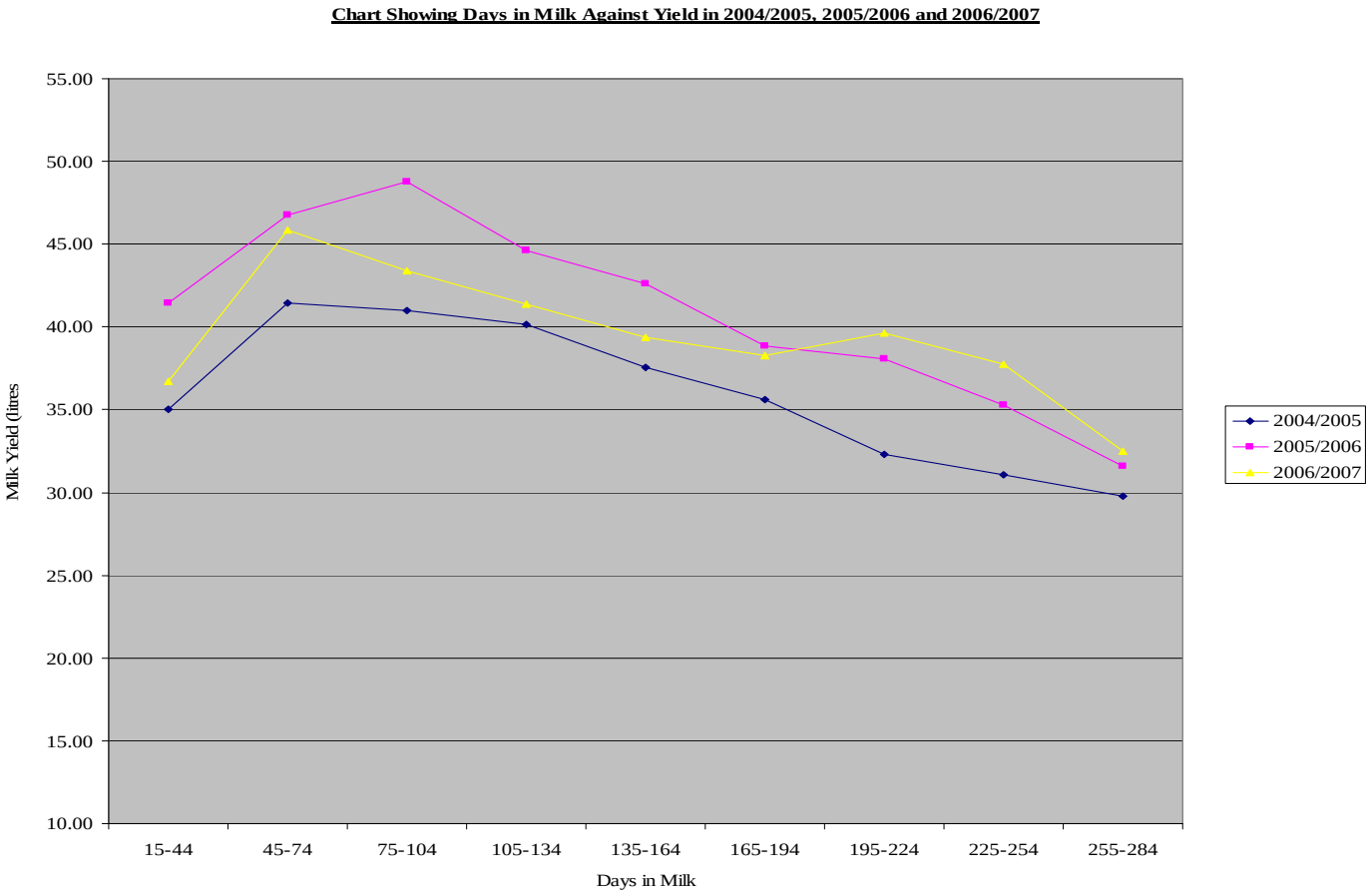
Table 2. C.R.E.A.M. herds rolling margin over concentrate for February 2006 and February 2007 compared to recent benchmarked figures for herds over 9000 litres.

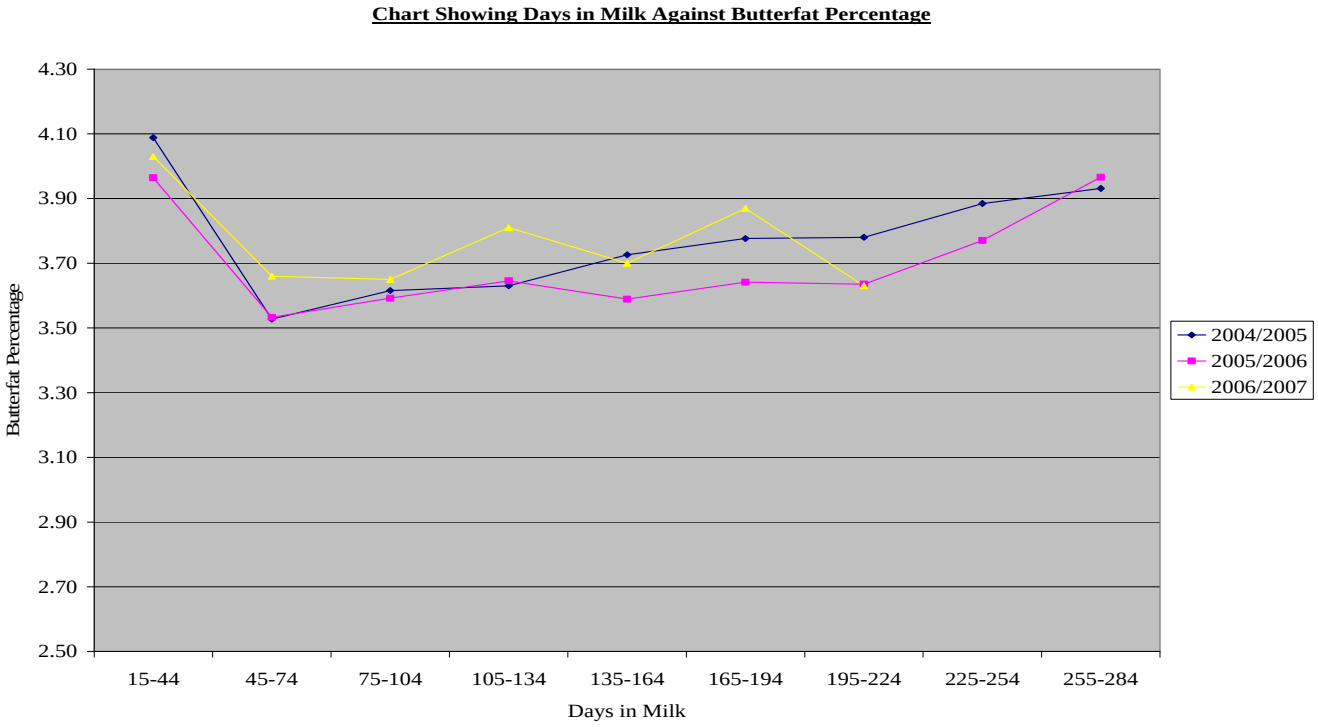
	C.R.E.A.M. Feb - 2006	**C.R.E.A.M. Feb - 2007**	**Benchmark herds Over 9,000 litres**
M.O.C./litre (p)	11.20	13.45	12.60
M.O.C./cow (£)	1,087	1,180	1,095

The herd has greatly improved its Margin Over Concentrate both on a per litre (up 2.25 pence) and per cow (up £80.00) basis, between February 2006 and February 2007. Much of this improvement can be attributed to the installation of out-of-parlour-feeders which allow for the precise allocation of concentrates to the cows that require additional feeding; and again this year very high dry matter silage of excellent quality. It is hoped that due to the combination of rising milk prices (this months United Dairy Farmer's auction averaged 20.24ppl) and the improved milk output from forage, (which has increased by 1,337 litres/cow from February 2006) and the continuation of C.R.E.A.M.'s present breeding policy (resulting in improved milk components) C.R.E.A.M's MOC will be improved further.

Lactation and Milk Composition Curves

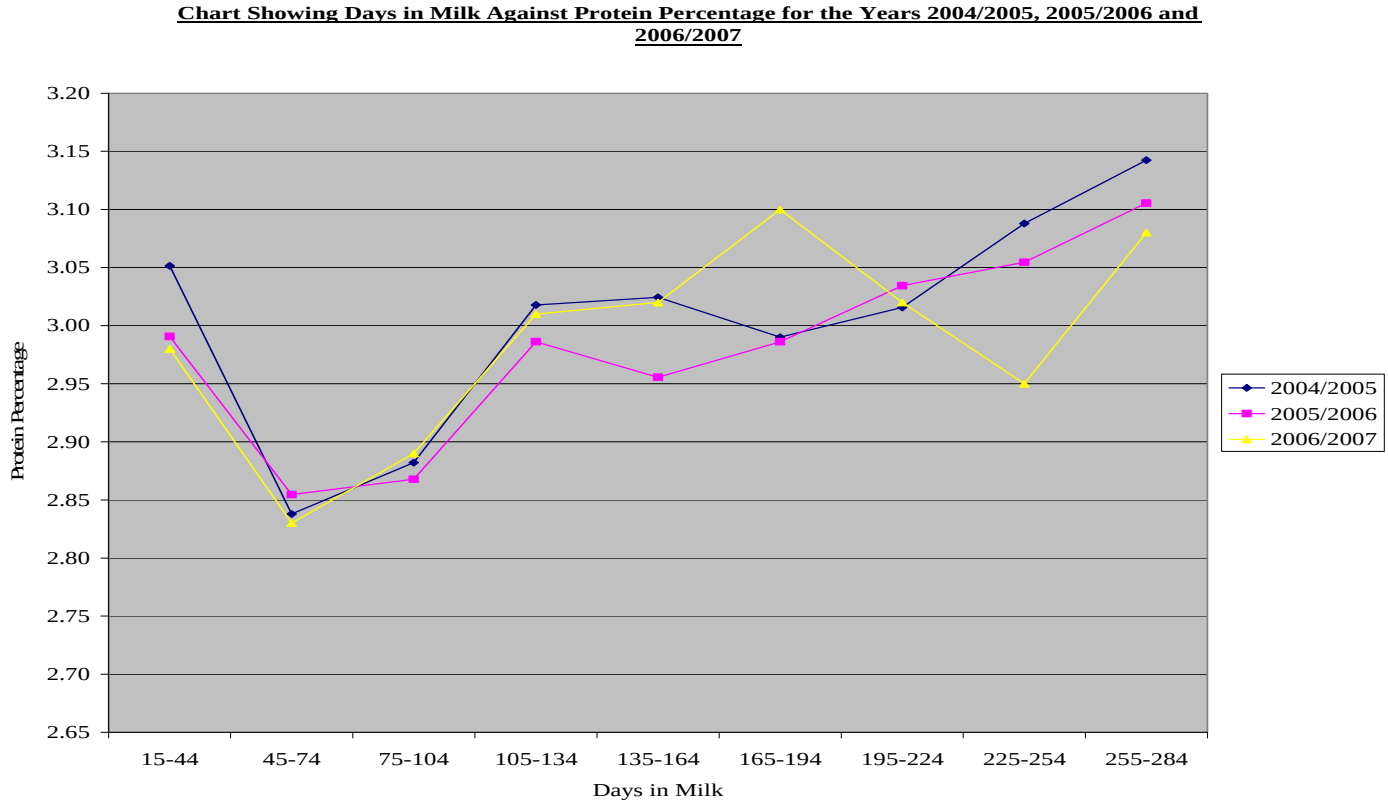
Graph 1. Average daily milk yield across lactation in 2004/5, 2005/6 and 2006/7.

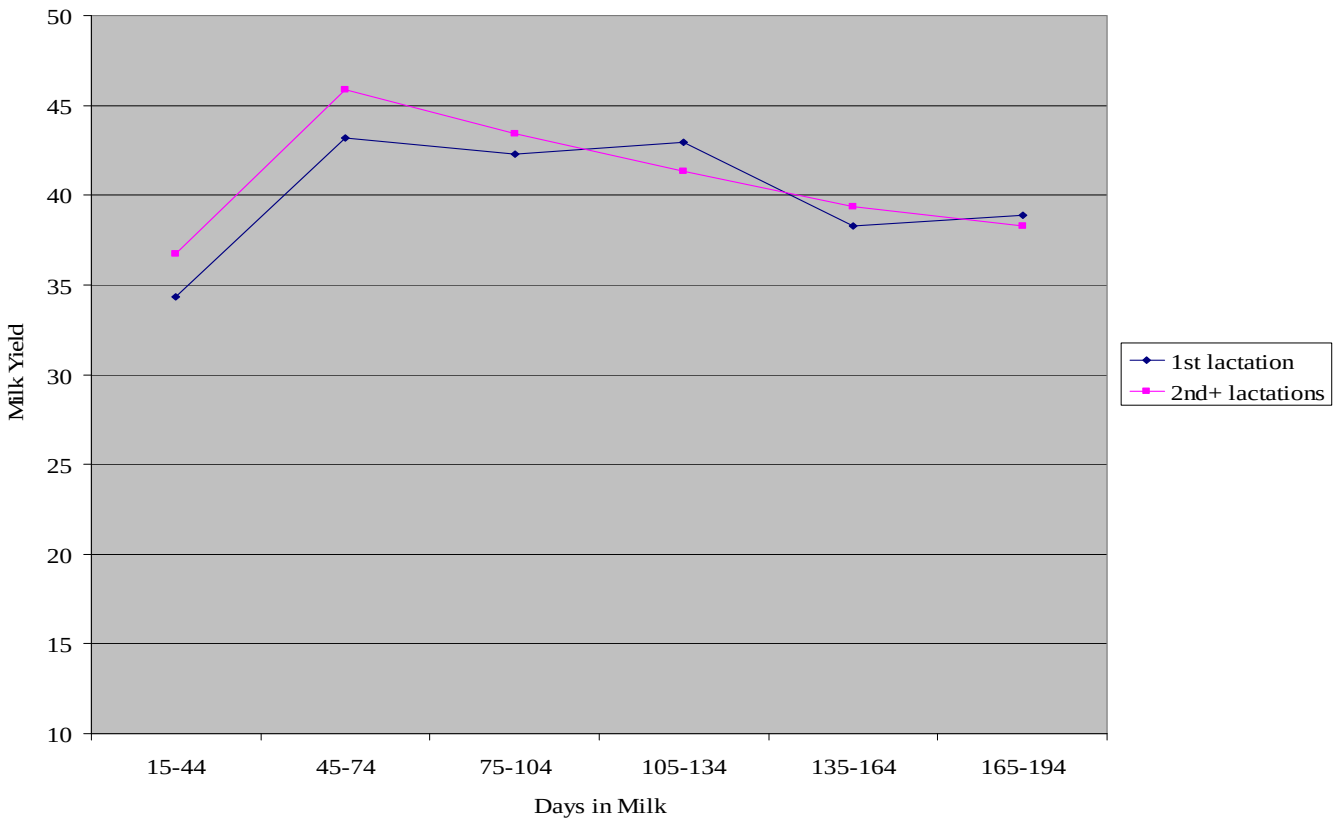




Graph 2. Average butterfat percentage of cows in the years 2004/2005, 2005/2006 and 2006/2007.

Graph 3. Average protein percentage of cows in the years 2004/2005, 2005/2006 and 2006/2007.





Graph 4. Lactation curve of first lactation heifers and 2nd lactation+ cows.

Veterinary and health analysis

The C.R.E.A.M project records all veterinary and health treatments within the herd. As a result areas requiring attention and cows with repeated health problems can be identified and actions can be taken to make improvements to the herd. It also allows the herd to be benchmarked against published UK health data.

In dairy herds throughout the United Kingdom (UK) there are three main areas giving rise to health issues and these can be more pronounced in high yielding herds such as C.R.E.A.M. These include mastitis, lameness and stomach/digestive upsets (to be addressed in the slide presentation at the Board Meeting).

A further veterinary issue facing the C.R.E.A.M. herd, along with most other dairy herds in the United Kingdom, is fertility. Over the past three decades, several changes have occurred within the dairy industry in the United Kingdom (UK). One of the more striking changes being that there has been a considerable move away from traditional British Friesian genetics, with the introduction of North American Holstein genes with high genetic merit for milk production traits. It is estimated that the proportion of these animals in the national herd has increased from zero in 1975, to approximately 80% in 1997 (Royal *et al.*, 2000). This has resulted in a high yielding dairy cow, which has been selected solely for productivity. During this selection, the trait of fertility has largely been ignored, leading to

inherited poor fertility within the Holstein breed. This trend is becomingly increasingly obvious on many dairy farms throughout the UK. Between 1975 and 1998, conception rates in the UK have declined at a rate of 1% per year (Rogers *et al.*, 1999). This is clearly demonstrated in terms of long periods of anoestrus post partum or between cycles and a persistent corpus luteum resulting in extended intervals from calving to the first oestrus cycle and reduced ability to retain a viable foetus. Royal *et al.* (2000) have shown that the combined incidence of these conditions in cows has risen from 12% to 44% over the previous twenty years. Within the UK, it has been estimated that extending the calving interval (CI) costs the farmer an added £4 per cow per day (Stott *et al.*, 1999). CAFRE Fertility benchmark figures have estimated that infertility costs the average 100 cow herd as much as £18,000 per year. With respect to the incidence of these problems the C.R.E.A.M. herd is no exception. The herd vet visits the unit once per week and the students present any cows requiring examination. It is the job of the supervisory students to identify any cows which have not commenced cycling by 42 days post calving, those which are cycling irregularly, those which had started to cycle and subsequently stopped and those which have cycled again post insemination. The vet subsequently administers treatments required according to the problems revealed upon examination.

The treatments administered include the following:

Prid: This is a Progesterone Releasing Intravaginal Device. Progesterone is a steroid hormone produced naturally by the corpus luteum on the ovary during the oestrous cycle. Exogenous progesterone is released at predetermined

rates and mimics the luteal phase of the oestrous cycle. It is left in place for either 8 or 12 days. When removed after 8 days administration of prostaglandin will effectively control the cycle by controlling the demise of any existing corpum lutea. The combination of the prostaglandin and the progesterone enables the oestrous cycle to be controlled effectively regardless of the stage of the cycle.

Estrumate: is a synthetic form of prostaglandin and causes regression of the corpus luteum, between the 5th and the 16th day of the oestrous cycle, inducing heat 2 to 4 days after the injection. Endocrine changes are similar to a normal luteolysis and oestrus. Various syncronisation techniques using prostaglandin are used, notably a double injection with an interval of 10–12 days, since typically only 60% of animals respond to a single injection.

Receptal: This is a form of Gonadotrophin releasing hormone (GnRH), which improves ovulation and reduces the calving to conception interval. It is also used on cows with cysts to shrink the cysts.

Metricure: this is an antibiotic preparation delivered into the uterus for cows with a dirty calf bed. This happens when the cow/heifer holds her cleanings.

Table 3. Table demonstrating the number of induced and natural heats in the C.R.E.A.M. herd over the previous year.

Induced heats April 06-March 07	Natural heats April 06-March 07
22	42

Table 3 demonstrates that 34% of the total number of heats observed in the herd are a result of synchronisation by the vet. Upon examination of the interim fertility report (presented by the Breeding Team; page 29) the fertility of the herd has improved compared to the previous year. Conception rate based on a 60 day non return rate is currently 61% and submission rate is 76%, which for a high yielding herd such as C.R.E.A.M. is very impressive. Although a number of the observed heats are as a result of synchronisation by the vet, fertility within the herd does not appear to be a major problem.

Feeding Team

Diet evaluation

Table 4. Analysis of the silage, whole crop wheat and concentrates currently offered.

	Dry Matter (%)	ME (MJ/kg DM)	Crude Protein (%DM)
Silage (*)			
Sept-Dec	39.5	11.4	13.4
Jan-Feb	34	12.1	16.2
March-Present	38	11.5	15.4
Whole Crop (*)	52	10	7.2
Blend	87	13	28%(fresh)
Nut	87	13	18% (fresh)

(* - Source Hillsborough Feeding Information Service)

The current TMR ration being offered to the C.R.E.A.M herd consists of the following –

- 33kg 2nd cut grass silage
- 6.5kg wholecrop wheat
- 0.5kg hay
- 0.5 kg molasses
- 28% Crude Protein blend
- 18% Crude protein parlour nut.

This is calculated to provide maintenance plus 28 litres and 25 litres for heifers. This ration is calculated at 17.4% CP. Over and above this level of production the cows are offered 0.45kg of concentrate per litre of milk. The first 6 kg of this is offered through the parlour with the remainder being fed through the our of parlour feeders (OOPF).

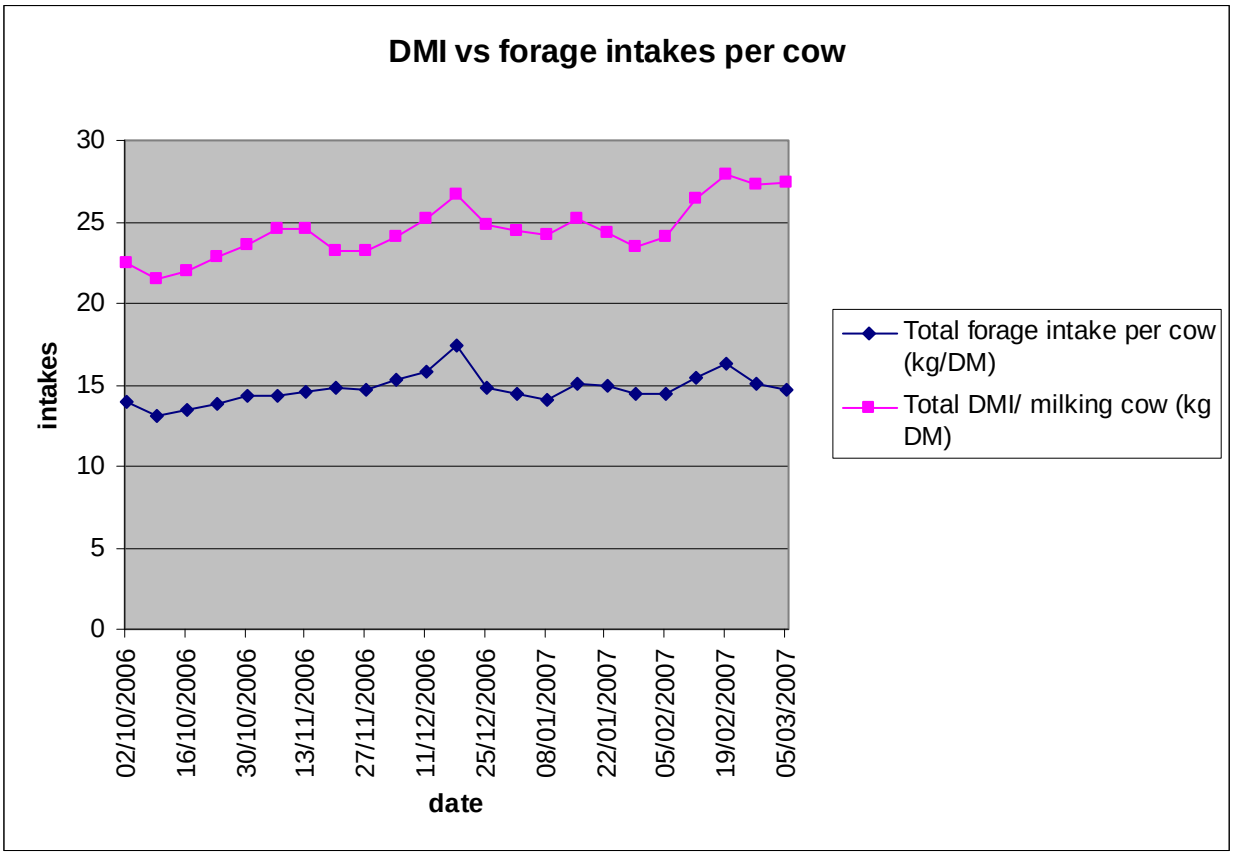
This means that a cow producing 40 litres, being topped up in the parlour with 18% protein nut will receive 5.4kg nuts in the parlour, giving an overall protein ration percentage of 18%.

To optimise condition score management, three feeding groups have been set up on the C.R.E.A.M. computer through the ration calculator software. These are:

i. Main Milking group
ii. Thin Milking group
iii. Late lactation group, (cows whom are close to drying off)

Maintenance plus levels are adjusted accordingly over the 3 groups.

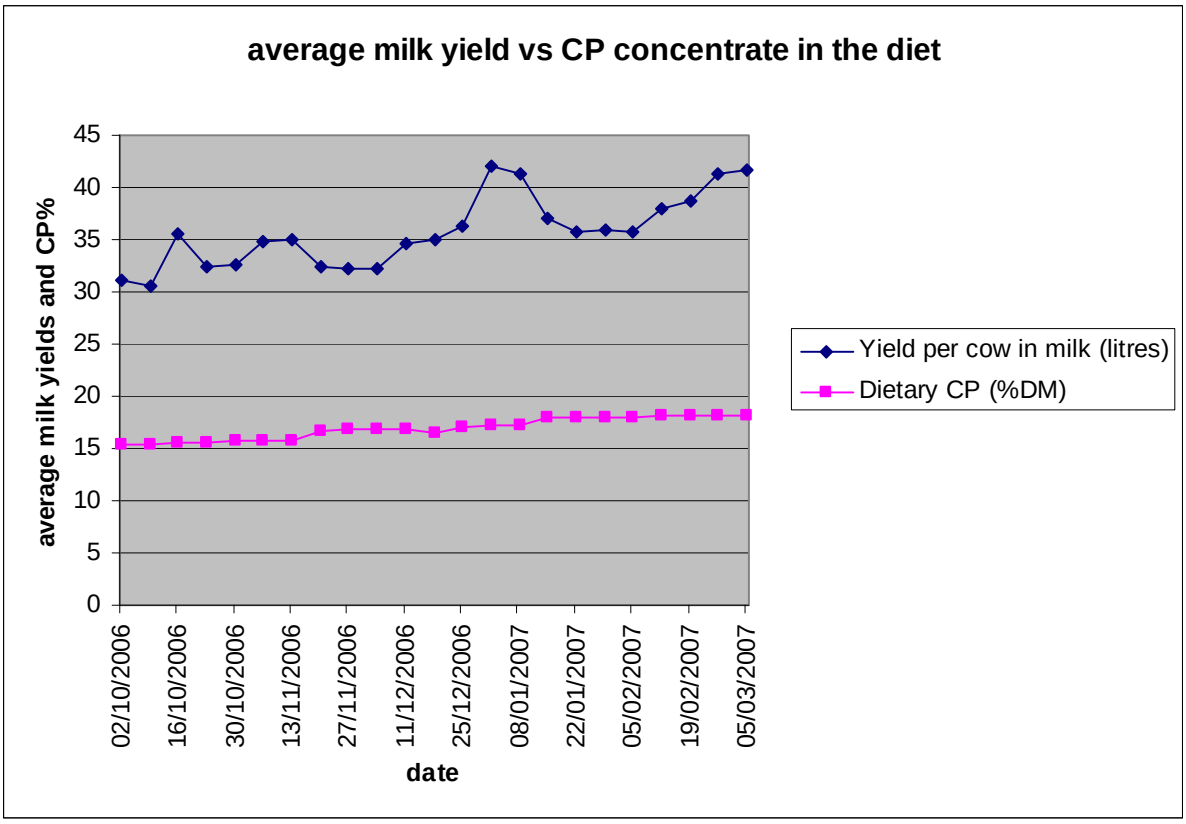
Graph 5.Total DMI/milking cow and daily average yield during the housed period.



As cows began to calve down and enter peak yield at the start of October there was an increase in yield per cow. During the Christmas period a new silo pit of first cut silage was opened for feeding. This silage had an excellent crude protein level in excess of 16% and following a visit from the herd nutritionist, it was decided that the CP level of the blend should be reduced from 33% to 28%. In mid February following another visit from the dairy nutritionist the crude protein level of the blend was decreased to 24%. The decision was made that a higher level of concentrates should be

fed through the TMR to try and increase overall dry matter intakes and hopefully improve the average body condition score (BCS) of the early lactation cows. This has lead to an increase in the average daily milk yield.

Graph 6. Average milk yield and crude protein concentration of the ration over the 2006-2007 housed period.



Through continued use of the ration intake spread sheet, dry matter intakes are recorded on a daily basis. The spread sheet also calculates the adequacy of the diet in terms of energy and protein levels to ensure it meets the average milk yield of the herd and as a result calculates the average predicted weight loss or gain within the herd. Changes to feeding levels and

type of concentrate will be based on this information along with the monthly BCS. Since housing in September the herd has been on average gaining weight suggesting that most of the herd is in a positive energy balance, which is in contrast to previous years. It must be remembered however that due to the nature of the spread calving pattern within the herd there is likely to be a large deviation from this figure for individual animals at any given time. It is feasible to say that the positive weight gain observed may be attributed to the introduction of the out of parlour feeders, which target meal feeding to production levels (refer to subsequent section).

Out of Parlour Feeder Update

The aim of the installation of the out of parlour feeders (OOPF) was to offer the concentrate portion of the milking cows ration in a more efficient manner. Offering concentrate to those cows which required extra feeding and minimise the wastage of concentrate fed to later lactation cows. In the past late lactation cows would have been receiving the same TMR as those cows that were in peak lactation. This was a very rich diet and often meant that cows were finishing lactation over conditioned.

The feeders were installed in April 2006; now that they have been in use for a full year we can see how they have been a benefit to the management of the C.R.E.A.M. herd.

The amount of concentrate fed in the year previous to the installation of the O.O.P.F's was 4045 kg (April 2005 – March 2006). In the current year, when the O.O.P.F's were in use (April 2006 – March 2007) the amount of concentrate fed per cow was reduced by 688 kg to a figure of 3357 kg. This figure is well within the set average target of 3500 kg/cow/year. When this saving is multiplied by the average number of cows (33) we can see that a remarkable 22.704 tonnes less meal was fed to the cows within the C.R.E.A.M. unit.

The initial cost of the O.O.P.F's was £8000. Due to the reduction in concentrate fed a remarkable £3337.50 (average concentrate price of £147) was saved in the past year. Assuming that this will remain the quantity of concentrate fed in coming years the O.O.P.F's will have recuperated their cost in 27 months.

Finance and Promotion Team

Phosphorous Balance

This is the balance between phosphorous (P) entering and the amount leaving a farm/enterprise. P enters the farm in most bought in feeds for livestock including concentrates, forages and bedding like straw as well as in artificial (inorganic) fertilisers. Outputs of P from the farm include milk, calves, cull cows and breeding stock when they are sold as the P within them leave the farm.

Currently the P levels in the soil on most farms in NI are relatively high. Estimates given at the DARD/UFU slurry event at Greenmount in April 2004 indicated a total surplus of 9000 tonnes of P in Northern Ireland when comparing total P input to crop requirement. Fifty years ago soils were deficient in P and fertilisers were designed to combat this problem. These fertilisers are still being used today, leading to ever increasing P levels in the soil. This had lead to lakes such as Lough Erne and Lough Neagh becoming nutrient enriched or eutrophic.

A DOE/DARD report concluded that in 2002 agriculture was responsible for 62% of the P found in Lough Neagh and 73% of P found in Lough Erne. It is a requirement in the EU to have a P balance not exceeding +10kg/ha by 2010 and +6kg/ha by 2012.

<u>Phosphorous balance for the C.R.E.A.M. herd Jan. – Dec. 2006</u>

P INPUTS

Artificial Fertilisers Containing P

Currently on the FDC all grassland has no phosphorous applied in artificial fertilisers.
Total P input from fertiliser applied = 0

Concentrates

Meal bought in for C.R.E.A.M. from 1st Jan. to 31st Dec. 2006

COWS
P content of concentrates (fresh weight) = 4.7g/kg or 6kg/tonne
126 tonne fed x 4.7kg P/tonne = 592kg P fed to cows

HEIFERS
Fed a total of 8.3 tonne
P content of 5.9kg per tonne = 8.3 x 5.9 = 49kg P fed to heifers

Total P from concentrates = 641kg

STRAW

P content of Straw = 2g/kg or 2kg/tonne
3.7 tonne of straw used (feed and bedding) x 2kg = 7.4kg P from Straw

Total P inputs to the C.R.E.A.M. enterprise:
= Fertiliser P + Concentrate P + Straw P
= 0 + 641 + 7.4
= 648.4kg P input

P OUTPUTS

MILK

1kg P/1000 litres Milk

Milk produced from C.R.E.A.M. = 329, 526 litres sold

= **329.5kg P from milk**

DROPPED CALVES

0.5kg P per Calf

Number sold off the enterprise = 17

= 17 x 0.5kg

= **8.5kg P output in calves**

CULL COWS

Level of P in Cull Cows = 4.8kg P/ cow

Number of cull cows sold = 9 cows

= 9 x 4.8

=**43.2kg P output in cull cows**

Total P Output:

= Milk + Calves + Cull Cows

= 329.5 + 8.5 + 43.2

= **382kg P output**

P Balance = (input – output)

= 648.4kg – 382kg

= + 226kg of P imbalance

P balance per hectare = $\frac{\text{total imbalance}}{\text{Area Farmed}}$

= $\frac{226\text{kg}}{23}$

= + 11.5kg/ha

Options available for lowering surplus Input of P:

There are 4 methods that we can use to lower the P levels within a dairy system. These are;

- Lowering levels of P in concentrates
- Lowering the amount of concentrates fed/cow/year
- Lowering the stocking rate of the farm
- Exporting slurry/nutrients off the farm

The first two of these are most applicable to the C.R.E.A.M. herd.

Gross Margin Analysis

				2006/07 £/Cow	2005/06
Milk Output	*10394*	*litres @ppl*	15.40	1822	1722
Calves				223	191
Less Replacements			less	237	208
Total Output				**1807**	**1705**
Meal Fed	3.45	Tonnes @ £	147	507	617
			plus straights @ £	30	35
			plus mins @ £	11	8
Grassland Costs				67	69
Vet and Medicines				128	129
A.I.				25	45
Sundries				178	136
Quota leasing				0	1
Total Variable Costs				**946**	**1040**
Total Variable Costs per Litre		**10394**	**Litres**	**9.10 ppl**	**10.33 ppl**
Gross Margin per Cow				**861**	**666**
Gross Margin ppl				**8.29**	**6.61**
Stocking rate				2.04	2.04
Gross Margin / Hectare				1758	1358
Average herd size				33	31
Calving index				409	413
Replacement rate				24%	29%
Milk Quality			Protein	3.00 %	3.02
			Butterfat	3.82 %	3.72

Dairy Heifer Rearing Regime

To establish a cost effective rearing system for high production dairy heifer replacements, the following targets are set:

- Heifers to calve down at 2 years old
- Weight pre calving weight = 600kg, following weight targets, shown in Table 5.

The benefits of this are:

- Savings in rearing costs
- Fewer replacements on the farm at any one time, thus less land and labour required
- Maintains a set calving pattern within the herd

Table 5. Target live weights for heifers.

Stage	**Liveweight (Kg)**
Birth	45
4 Months	145
10 Months	265
15 Months (1st insemination)	390
24 Months (pre calving)	600

Management Programme

Feeding Management

- Calves receive colostrum as soon within the first six hours. The calves continue to receive milk for up to seven days. Calves are get milk replacer after seven days and a coarse calf concentrate mix.
- Silage is offered at calf weaning. Target age at weaning is 6 – 8 weeks. Intakes of coarse calf mix at weaning are on average 1kg/head/day.
- Amounts of coarse calf mix are increased to 2 kg/head/day and ad lib silage with a concentrate supplement. Supplementation levels vary according to performance.
- The silage for the heifers has a high dry matter of >25%, a good intake value of 80+ and an ME of 11.0 +.

Grazing

- Effective grassland management is vital to successful rearing of replacement heifers. Improvements in grazing management result in reductions in concentrate inputs and rearing costs.
- A Leader-Follower grazing system is used. The young calves form the Leader group, and the in-calf heifers are the Follower group.
- Turn out generally occurs during early to mid May. To minimise stress during turnout calves move into a sheltered area for a few days before being moved out. Setbacks at turnout can decrease target weights resulting in animals calving over 2 years old, or being too small to suit the system.

- Grass intake is maximised by maintaining grass quality throughout the grazing season, provide high quality, leafy swards.
- Parasites are controlled using a pour on treatment, which is given at 5 and 13 weeks post turnout. Animals are sprayed with fly repellent at every 2 weeks.
- 1st season grazing calves are fed up to 2kg/calf/day of 20% CP heifer-rearing compound (reduced to 1kg/day in June). 2nd season grazing heifers are in-calf so concentrates are reduced approaching turnout. Target growth rates are 0.80 - 0.85 kg/animal/day.
- These calves are normally housed in early to mid October.

Housing

Young calves are housed in individual straw bedded pens until 10 days old. After a few weeks the calves are moved to kennel housing. This provides good ventilation, comfort mattress cubicles, solid floors and an easy feed passage.

Breeding

The target age for first insemination of heifers is 15 months. Using sires selected for easy calving. A sweeper bull is also used on any heifers not holding to a 2nd insemination.

Calving

The target age at calving is 24 months with a target body condition score of 3.0.

To assess heifer performance changes in DLWG are monitored closely and are used to adjust concentrate feeding levels as required.

Financial Summary

The average total cost on these benchmarked farms to rear a replacement heifer was £745/heifer. This was made up of variable costs of £322 and overhead costs of £423. Adding a land charge of £232/ha & family labour, the breakeven value is £840/heifer.

Table 6: Associated costs of heifer rearing.

Financial Performance (£ / heifer)	Average Benchmarking Farms	Top 25 % Benchmarking Farms
Heifer Output	699	798
Forage Costs	94	76
Concentrate Costs	130	106
Total Variable costs	322	253
Total Common Overhead Costs	313	243
Total Overhead Costs	423	310
Net Profit	-46	236
Number of heifers sold/transferred out	30	33
Meal fed kg / heifer	861	729

Breeding Team

C.R.E.A.M Fertility Performance 2006/07

Table 7. C.R.E.A.M. interim fertility analysis figures

	Target	CREAM 05/06	**CREAM Interim 06/07**	Top 10 FB* herds in terms of milk yield
Calving index	420	426	**409 (projected)**	413
Submission rate	70	71	**76**	62
Days to first service	70	74	**74**	83
Heat detection rate	64	70	**41**	68
Heat detection accuracy (HDA)	38	60	**6**	
HDA <18	10	8	**0**	6
HDA 18-24	60	38	**6**	34
HDA 25-35	10	12	**53**	17
HDA 36-48	10	18	**25**	16
HDA >48	10	25	**16**	27
Conception rate % (all services)	40	39	**61**	41

**FB – Fertility benchmarked*

Calving Index

Calving index is the primary measure of fertility traditionally used. It is the interval in days between successive calvings for a herd (or group) of cows. Ideally this should be as close to 365 days as possible but in higher yielding herds such as C.R.E.A.M. a longer interval is acceptable.

While calving index is a good guide to fertility it has two major weaknesses:

1) It does not take into account cull cows
2) Cows with long and short calving intervals are hidden in the overall average

Calving index will also be affected by other fertility parameters such as submission rate and conception rate.

Heat Detection Efficiency

a) Submission Rate

Submission rate is a measure of heat detection efficiency calculated as a proportion of cows served over the number eligible for service. In Fertility Benchmarking Online these are calculated throughout the breeding season in a series of successive 3-week periods based on voluntary waiting period, (60 days for CREAM) and breeding start date.

b) Interval to first Service

The target interval to first service is calculated by adding half the length of an oestrus cycle to the voluntary waiting period. With a voluntary waiting period of 60 days the Target Interval to First Service for CREAM is 70 days.

c) Heat Detection Rate

Heat detection rate is a method used to access heat detection efficiency. It is based on the average interval between services giving an indication of the number of missed heats. Eg a cow with an interval of 21 days would not have

missed any heats, while cows with intervals of 42 and 63 days would be assumed to have missed 1or 2 heats.

d) Heat Detection Accuracy

This is another method of assessing Heat Detection Efficiency using inter-service intervals. Ideally cows should not repeat but if they do it should be 18-24 days after service. Intervals outside this indicate poor heat detection or irregular cycles. The target heat detection accuracy is approx 60% of heats falling within the 18-24 day period.

Conception Rates

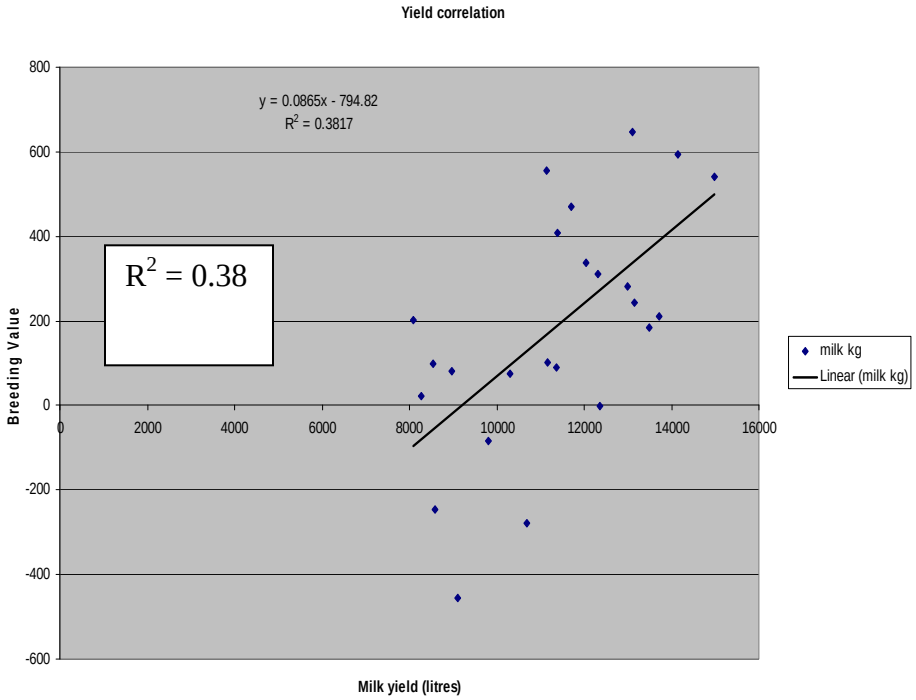
This is worked out as a % of cows that hold to service based on pregnancy diagnosis. The conception rate displayed in the interim report (Table 7) is calculated using a 60 day non return rate as the breeding year is not yet complete and not all cows have been pregnancy diagnosed in calf yet.

Herd Genetics

Table 8. Herd PTA figures for the current milking herd, replacements and predicted milking herd between August 2007-August 2008.

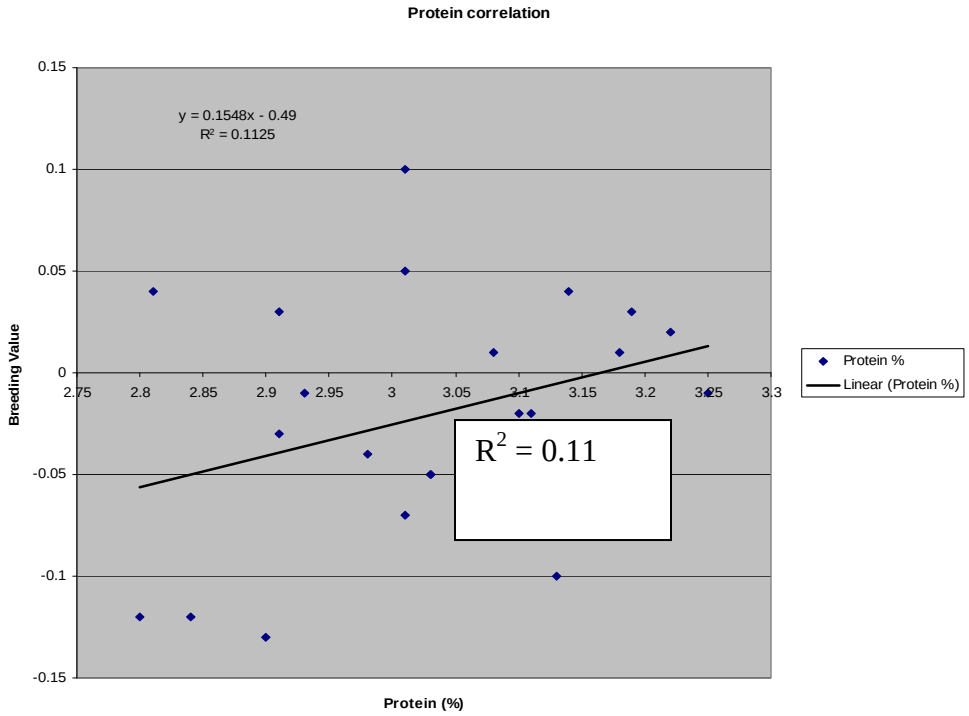
	Butter Fat PTA (%)	Protein PTA (%)	Yield PTA (kg)	PLI
Current Herd	0.03	-0.01	160.51	18.05
Replacements	0.07	0.03	92.00	25.61
Predicted average for Aug 07- Aug 08	0.04	0.01	168.19	58.81

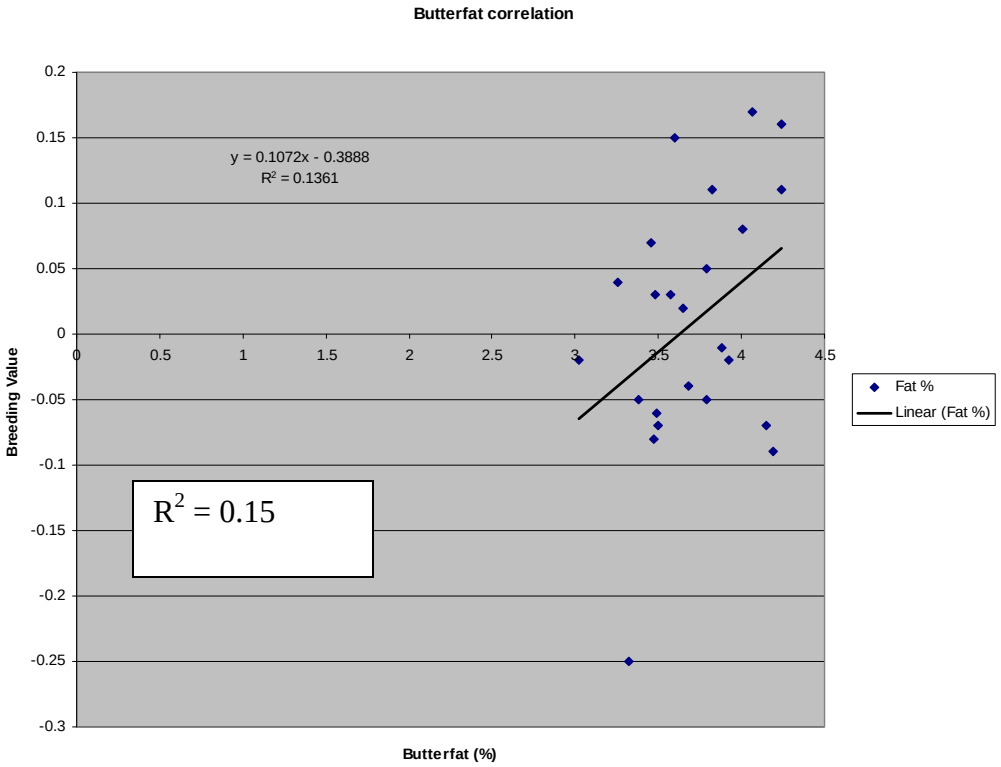
Table 8 shows how the PTA's of the Cream herd will increase in the future, with the sale of poor component cows and the addition of higher quality component heifers coming through. The three graphs below demonstrate the correlation between the milk yield and components compared to the breeding value or PTA figure of the C.R.E.A.M. cows currently milking. The graphs demonstrate that there is extremely poor correlation between predicted production figures and actual performance figures. Due to this fact it is important to examine the performance of cows and relatives of heifers before selecting animals for sale based solely on poor component PTA figures.



Graph 7. Actual yield compared to PTA for C.R.E.A.M's current milk yield.

Graph 8. Actual milk protein concentration compared to protein PTA.





Graph 9. Actual milk butterfat concentration compared to PTA figures for the cows currently milking.

Embryo transfer work in C.R.E.A.M.

Why use embryo transfer in C.R.E.A.M.?

There are 2 main reasons for considering the use of embryo transfer in the C.R.E.A.M. herd. Firstly, it is an excellent demonstration of new technology for students. Secondly, key performance targets for the C.R.E.A.M. herd include 10,750 litres milk produced per cow per year with a weighted rolling herd average butterfat 3.79% and protein 3.10%. While good milk composition is being achieved in the highest yielding benchmarked dairy farms the set protein targets for C.R.E.A.M. may not achievable in the next 5 years with the current genetics in the herd. The use of new technologies such as embryo transfer work could increase the rate of genetic progress within the herd. Current herd genetic reports demonstrate that although the herd is on average positive for butterfat, the average PTA for protein is still negative.

Previous ET work.

In May 2005 C.R.E.A.M. purchased and implanted 6 embryos. The associated costs are detailed below:

Purchase 6 embryos @ £300 each	£ 1,910
Preparation of recipients @ £15/recipient	£ 90
Vet visit fee	£ 75
Embryos transferred @ £42/transfer	£ 252
TOTAL	**£ 2,327**

This resulted in one heifer and one bull with the PTA figures presented below:

Table 9. PTA figures for current and future C.R.E.A.M. embryos compared to contemporary young stock

PTA	**Milk**	**Fat %**	**Protein%**	**PLI**
Creamer Goldwyn Looking ET	192	0.23	0.08	60
Contemporary young stock	160.5	0.07	0.02	26
Embryo; Mascol X Creamer Goldwyn Looking ET	329	0.18	0.09	74

To take advantage of the excellent genetics provided by the introduction of this heifer to the herd, Creamer Goldwyn Looking ET was flushed in March (sire: Mascol). This resulted in 6 embryos which were implanted in beef heifer recipients.

The costs associated with this ET work was substantially lower as there was no initial cost of purchasing the embryos. Embryo purchase normally equates to the majority of cost incurred to the farmer. C.R.E.A.M. needs to constinue the introduction of improved genetics through ET work at in the future.

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