Teagasc National Dairy Conference 2005

WINNING IN CHANGING TIMES

PROCEEDINGS

WEDNESDAY, 16 NOVEMBER 2005

THURSDAY, 17 NOVEMBER 2005

"Remember, it's ***Your Farm*** *and* ***Your Future*** *"*

Teagasc

Agriculture and Food Development Authority

National Dairy Conference

'Winning in Changing Times'

PROCEEDINGS

National Dairy Conference

16th November 2005

McEniff Ard Ri Hotel
Ferrybank
Waterford

National Dairy Conference

17th November 2005

Slieve Russell Hotel
Ballyconnell
Co. Cavan

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CONFERENCE PROGRAMME

Wednesday, 16th November 2005

9.00 am	**Introduction to Conference** John Moloney, CAO, Teagasc, Waterford
10.00 am	**Open Conference** John Browne, T.D., Minister of State at the Department of Agriculture & Food Chair Jim Flanagan, Director, Teagasc
10.15 am	**SESSION 1** **Irish Dairy Industry – Where to Now?** **Chair** Dr. Seamus Crosse, Director of Agricultural Research, Teagasc
	Options for Dairy Processing in Ireland John Malone (former DOA Secretary) Michael Magan (Dairy Farmer, Vice-Chairman, Lakelands Co-Op
	Maximising Milk Price – Processor John Moloney, C.E.O Glanbia plc
11.20 am	Tea/Coffee
11.45 am	**SESSION 2** **Irish Dairying – A Competitive Industry?** Chair T.J. Maher, Chairman, Agri-Aware
	Irish Dairy Farming – Can we Compete? Fiona Thorne/Billy Fingleton Teagasc Economists
	Maximising Milk Price – Producer Jack Kennedy, Irish Farmers Journal Tom O'Dwyer, Teagasc Dairy Specialist
12.45 pm	Lunch
2.15 pm	**SESSION 3** **Creating a Winning Environment** Chair James J. Brett, M.D Brett Group/ Teagasc Board Member

Getting There in the Face of Challenges
Brody Sweeney, Group Managing Director
O'Brien Sandwich Bars

Options for Dairy Farmers
Dr. Seamus Kearney
Teagasc Dairy Advisor, Waterford

My Future Options in Farming
Philip Donoghue, Dairy Farmer, Co. Carlow

3.30 pm	**SESSION 4**
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Thursday, 17th November 2005

9.00 am	**REGISTRATION**
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11.20 am	Tea/Coffee
11.50 am	**SESSION 2** **Pricing for Profit** Chair Pat Boyle, Director Advisory Services, Teagasc Milk Price for Farm Profit Jack Kennedy, Irish Farmers Journal Milk Price for Industry Profit Vincent Gilhawley, Chief Executive, Town of Monaghan.
1.00 pm	Lunch
2.30 pm	**SESSION 3** **Creating a Winning Environment** Chair Patrick Kelly, Dairy Farmer & Teagasc Board Member **Achieving our Goals** Mick O'Dwyer, Laois GAA Manager

	Investing Inside and Outside the Farm Gate Tom Clinton, Farmer/Entrepreneur, Former IFA President
3.30 pm	**SESSION 4**
	Exploiting our Competitive Advantage with Grass & Cows Chair Michael Magan, Vice Chairman, Lakeland Dairies
	Options to Improve Profit David Colbourne, Teagasc Dairy Adviser, Co. Cavan.
	The Potential from Breeding Eamonn Fagan, Dairy Farmer, EBI Regional Winner
	Principles of Dairy Cow Management in a Difficult Environment Brendan Horan, Research Officer, Teagasc, Moorepark
4.30 pm	**Close of Conference** Mr. Jim Flanagan, Director of Teagasc
4.35 pm	Tea/Coffee

Marketing of Dairy Products – some issues

by

Mike Magan, Vice-Chairman,
Lakeland Dairies

&

John Malone, Former Secretary,
Department of Agriculture

Terms of reference

- Focus on marketing
- Review current arrangements
- Identify issues
- Make suggestions
- Avoid rationalisation, processing costs
- Product portfolio did feature

Background

- Dairy industry significant in economy
- Small proportion of global production traded
- Regional markets; Irl. part of EU market
- Ireland; butter, smp, casein +cheese
- High dependence on butter; reasons for this.
- Export arrangements are critical
- Position of our competitors; scale

Environment

- Consumer trends—some contradictory
- Speed of change
- Features of EU—quotas---surplus
- Globalisation/Scale/Retail power
- Dynamics of relationships/back winners
- Industry position itself---smart selling

Policy Environment

- Role of EU/ 2005 a turning point on market supports
- Post intervention era
- WTO outlook? Pick our battles
- Exports—without refunds
- Importance of internal disposal scheme
- Strengths of the industry

Issues

- Continue to have a high dependence on butter
- Peak production / widen shoulders
- Role of Dairy Board--robust
- Winter butter!
- Match power of multiples
- Spend needed to put a new product on the market or to keep market share
- Should not put a product on market without resources

Issues

- R&D/Functional foods, bio-science
- Role of Teagasc—Specific requirements of individual processors
- Add value to protein / food solutions/health wellness etc
- Butterfat more difficult
- Element of risk involved; invest in technology
- Who can take risk?

Challenges

- Role of Dairy Board –use to best effect
- Various options
- Projects with members
- Clarify who does what
- Consolidate in base products
- Be best at butter
- Players with scale and resources
- Do more in cheese
- Need efficient high quality producer base
- Gain from pain!

Conclusions

- Policy landscape is changing
- No great appetite for big bang approach
- Consolidate processing of base products
- Involve Dairy Board in processing
- Renewed focus on marketing butter
- Reduce dependence on butter
- Scope for increased cheese production
- Explore options away from the British market

Conclusions

- Role for centralised marketing =Dairy Board
- Clarity as to role
- Upstream products /clear that a direct relationship between supplier and customer is required
- European industry will evolve
- Grasp opportunities

Conclusions

- Resources
- Capability
- Flexibility

Irish Dairy Farming – Can We Compete?

by

Fiona Thorne & Billy Fingleton
Teagasc, Rural Economy Research Centre,
Kinsealy, Dublin 17

Executive Summary - Key Take Home Points

- This paper examines the competitiveness of Irish milk production compared to that of ten EU and seven non-EU countries. The completed analysis was based on two main data sources – the Farm Accountancy Data Network (FADN) for years 1996-2003 and the International farm Comparisons Network (IFCN) for 2004.
- Results of the FADN data showed that the Irish competitive position for milk production compared to other EU countries was very positive when total cash costs were considered. This parameter excludes imputed charges for owned resources. Only one other EU country (Italy) showed cash costs a per cent of total output (profit margin) lower than in Ireland. Also, Irish cash costs per unit of production were the lowest of all the EU countries analysed. The analysis of the IFCN data confirmed the strong competitive position within Europe (in the short tot medium term). On a broader world-wide basis, Irish profit margins per farm compared more than favourably.
- As the opportunity costs of owned resources (land, unpaid labour and other capital invested) are not included in 'cash cost' calculations, the aforementioned competitive positioning can only be considered to be valid in the short to medium term. Hence, total economic costs which include imputed charges for owned resources were considered to examine the longer term outlook for the competitiveness of the sector. Using this measure, the competitive ranking for the Irish dairy sector slipped relative to the other countries. It was found that the main reason for the relatively higher economic costs on Irish dairy farms was due to the very high imputed land costs which apply here. These findings could be considered as a warning signal for the future competitive performance for the average sized Irish dairy farm. However, based on FADN data the competitive position of 'larger' Irish dairy farms (in the 50-99 dairy cow size category) did manage to maintain their competitive position within Europe even when total economic costs were considered.
- It was concluded elsewhere that part of the explanation of the deterioration of competitive ranking for the average Irish dairy farm when total economic costs are considered relates to '*the relatively low scale of primary agricultural activity in Ireland*' (Boyle, 2002, p.177). This result is indicative of the small scale farming that is predominant in the Irish dairy industry relative to competing industries. But, it could be concluded that as Irish dairy farming transforms to larger scale production the milk sectors competitive position will be strengthened and be better able to cope with a cost/price squeeze, given current projections for a decline in farm milk prices.

- In terms of productivity levels, using data from the FADN the analysis showed that productivity levels on Irish dairy farms was lagging behind competing EU countries during the period 1996 – 2003. Furthermore, land productivity measures for the average specialist Irish dairy farms declined over the period relative to the average of all countries in the analysis. However, no such significant relationship was found for the larger dairy farms in Ireland compared to the other countries examined.
- In conclusion, the results of this study provide a baseline position against which changes in competitiveness of Irish dairy farming can be measured. EU enlargement, trade liberalisation in the context of WTO negotiations and reform of the CAP will all have major influences on the competitive position of the Irish dairy sector, which can be monitored against the baseline position outlined by this research.

Introduction

The competitiveness of the European and International market for agricultural commodities, including dairy products, has been at the forefront of much debate in recent times in the context of recent reforms to the Common Agricultural Policy (CAP), increasing trade liberalisation brought about as a result of World Trade Organisation (WTO) negotiations, and increasing globalisation of the world economy (Newman and Matthews, 2004). Consequently, the objective of this research was to examine the relative competitiveness of Irish specialist milk producers vis-a-via selected EU and international countries for a baseline period, 1996 to 2004, to provide an insight into the ability of Irish producers to react to the aforementioned influences.

The EU countries chosen for comparison, within the European Commission's Farm Accountancy Data Network (FADN), included: Belgium, Denmark, France, Germany, Italy, the Netherlands, the UK, and Ireland. Country specific information on the extent of intra-EU trade of milk products is not available but over 85% of the EU production of butter and cheese is accounted for by the countries specified (Eurostat, 2003). Furthermore, additional analysis was conducted on 'representative' farm types from the International Farm Comparisons Network (IFCN), based on a number of major international milk producing countries, to determine the relative international competitiveness of 'representative' Irish specialist milk producers.

The data sources used and methodology involved in the computation of the various indicators of competitiveness used in the analysis are outlined in the following section. The results of the various indicators of competitiveness are then outlined and the conclusions from the research identified.

Measurement and Methods

Farm Accountancy Data Network (FADN)

The EU FADN located in Brussels, was the main source of the data used for this analysis. Data analysis was confined to specialist dairy farms as defined by FADN (Farm Type 411), on which the standard gross margin from dairying accounts for at least two-thirds of the farm total gross margin. This allows a greater degree of accuracy in the allocation of costs (which are presented on a whole farm basis from

FADN) to the dairy enterprise than would be the case if all farms with a milk enterprise were selected for analysis (Fingleton, 1995).

Two separate measures of cost comparisons were used for specialist dairy farms (farm type 411):

- Total costs as a per cent of dairy output, and
- Total costs per unit volume of milk production.

The value of dairy output was calculated as milk receipts plus dairy calf sales. Fingleton (1995) found that the omission of calf output values could inevitably effect dairy enterprise comparisons between countries. Subsequently, it was decided for this analysis that attempts would be made to include the value of calf output in the analysis. Whole farm calf sales were apportioned to the dairy enterprise based on the ratio of dairy cows to other cows on the farm. Due to data constraints it was only possible to include a value for dairy calf sales. It was not possible to impute a charge for calves born from the dairy and transferred to a beef enterprise.

Most studies, which examine the costs of milk production, are made on a raw milk volume basis, which does not account for possible variation in milk constituents between different countries (Fingleton, 1995). Results from these studies using this approach are biased in favour of countries where the levels of milk constituents are relatively low. To overcome this bias Fingleton (1995) measured unit costs per kilogramme of milksolids (i.e. butterfat plus protein). Average fat and protein percentages for each country were used to convert the milk volumes obtained from the FADN data into the equivalent quantities of milksolids. This approach was also adopted in this study. However, a higher weighting was applied to the protein content of milksolids than to the fat content. This weighting factor was applied to reflect the higher market value of milk protein. The average fat and protein percentages used for the analysis were obtained from Eurostat (Eurostat, 2005).

For the purpose of examining costs of production, costs were defined as:

(i) Total cash costs, which include all specific costs, directly incurred in the production of a given commodity, for example fertiliser, feedstuffs, seeds etc. plus external costs such as wages, rent and interest paid, plus depreciation charges.

(ii) Total economic costs, which includes all of the cash costs identified above, except interest charges, plus imputed resource costs for family labour, equity capital and owned land.

The calculation of total economic costs for each of the countries compared was one of the most problematic exercises in this analysis. If long-term competitiveness is to be examined the assumptions regarding the measurement of opportunity costs for family labour, owned land and other non-land capital must be defined and be as realistic as possible. The estimation of these opportunity costs must be considered carefully because the potential income of farm owned factors of production in alternative uses is difficult to determine. In the short run, the use of own production factors on a family farm can provide flexibility in the case of low returns when the family can chose to forgo income. However, in the long run opportunity costs must be considered because the potential successors of the farmer will, in most cases, make a decision to continue or exit the business after assessing the best alternative returns from own production factors, in particular for their own labour input. To indicate the effects of applying opportunity costs, these have been separated from cash costs in the figures outlined below.

Another important issue in measuring competitiveness is the distinction between the different levels of competitiveness. All too often research on the topic of competitiveness tends to focus on indicators of competitive performance and indicators of competitive potential are ignored (Harrison and Kennedy, 1997). Consequently, the indicators presented in this research go some way towards identifying the sources of competitiveness in addition to presenting results of competitive performance. The individual measures (i) costs as a per cent of output and (ii) costs per kg of milksolids provides an insight into the competitive performance of the countries examined, over the time period 1996 to 2004. However, they do not provide an insight into the sources of competitive advantage or disadvantage. Hence, partial productivity measures were considered as indicators of competitive potential.

The partial productivity indicators used in this analysis for the dairy sector were defined by Fingleton (1995). The measures relate to animal, land and labour productivities. They are:

- Milk yield per cow (kg)
- Milksolids per cow (kg)
- Stocking rate (LU/ha)
- Milk production per hectare (kg)
- Milksolids per hectare (kg)
- Milk production per labour unit (tonne).

International Farm Comparisons Network (IFCN)
In addition to the comparison of costs within Europe using data from the FADN, international cost competitiveness was examined using data form the IFCN (Hemme *et al.,* 2004). The IFCN is a world-wide partnership that links agricultural researchers, advisors and farmers to create a better understanding of milk production and the costs and returns of production world wide. The cost calculations within the IFCN network are based on individual representative farms, rather than on the results from stratified random samples of the population as is the case with FADN data. None the less IFCN data provides a source of data which can be used to examine the relative international competitiveness of 'representative' Irish milk producers. Data is assembled and analysed using a common methodological framework. Like the methods outlined above, IFCN data also presents costs as total 'cash' costs, which consists of expenses from the profit and loss account (cash costs, depreciation, etc.) and total 'economic' costs with opportunity costs calculated for farm-owned factors of production (family labour, own land, own capital).

Data from all farms in the IFCN are collected from specialist dairy farms actually in operation or from specialist farms modelled directly from regional dairy farming operations. It is fair to say that the methodological approaches towards improving the validity of comparisons, across the world wide countries participating, is still developing as the IFCN is of recent vintage. Therefore, it is probably more useful for those examining the results of the IFCN comparisons to view them as indicative of rather than as an absolute statement on the competitive position of a country's dairy industry. Keeping this in mind, we present comparative results for some important measures of financial and economic performance for the year 2004.

Results

FADN Results

The results for the dairy enterprise based on data from the FADN are presented in two sections: (i) partial productivity indicators and (ii) comparative costs of production.

<u>Comparison of partial productivity measures on EU specialist dairy farms</u>

In Figures 1a and 1b below the partial productivity indicators identified above are outlined for the eight EU countries compared in this analysis. The results are presented for all specialist dairy farms in the sample and weighted to estimates of population means. The results presented here for each of the countries is the average for the years 1996 to 2003 and indexed relative to Ireland.

Figure 1a ***Partial Productivity Measures for selected EU countries***

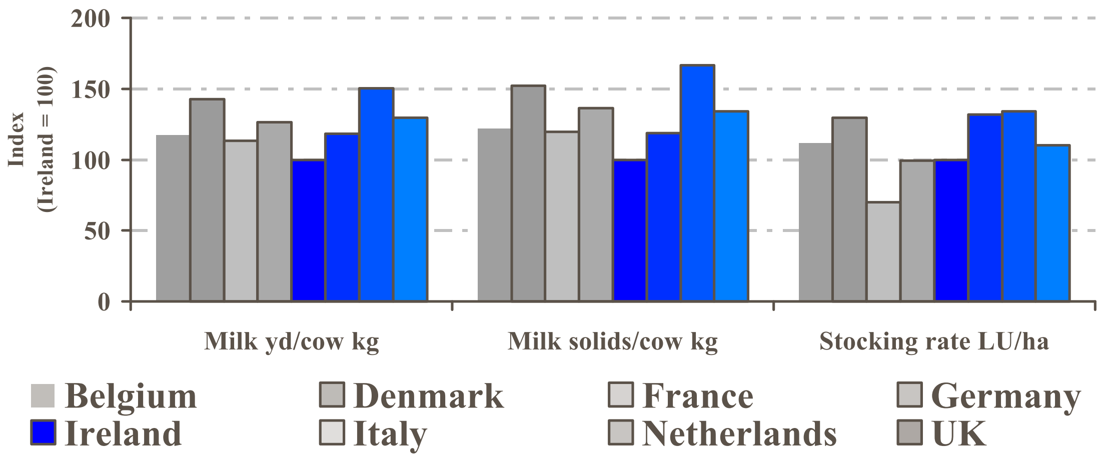
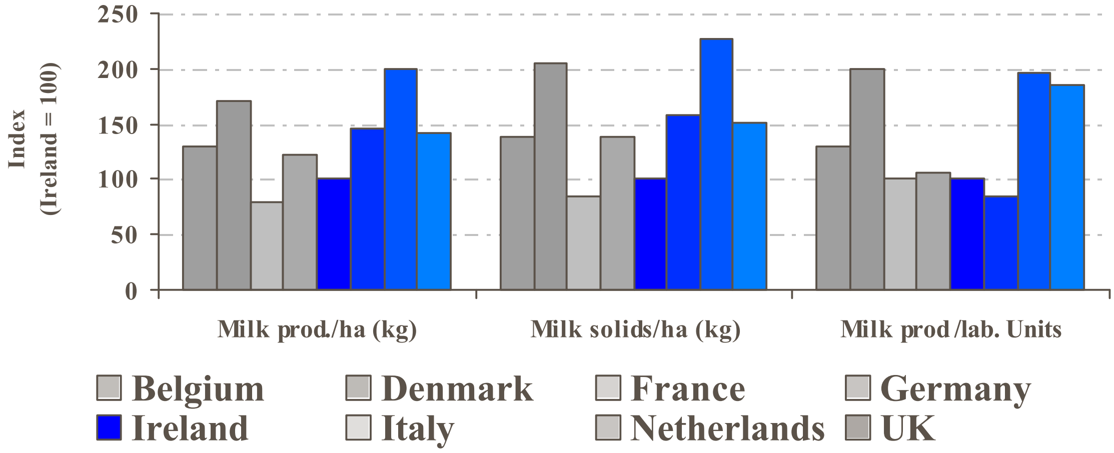


Figure 1a shows that average milk yields per dairy cow were much lower in Ireland relative to the other countries in the analysis. Average yields in the Netherlands and Denmark were substantially higher than the other countries in the analysis. Comparisons of milk solids per cow showed an even greater disparity between Ireland and the other countries. In particular, milk solids per cow in the Netherlands and Denmark were 66 per cent and 52 per cent higher respectively.

The levels of land productivity in the Netherlands and Denmark were also relatively high, at 34 per cent and 30 per cent higher than in Ireland. Only France and Germany had stocking densities equivalent or lower than Ireland.

Figure 1b ***Partial Productivity Measures for selected EU countries***



The combination of the generally lower stocking densities and lower milk yields for Ireland are aggregated in the next two measures of productivity. Milk production and milksolids per hectare were lower in Ireland than for all other countries with the exception of France. The Netherlands and Denmark again exhibited rates well in excess of the other countries examined, with milk production per hectare 70 per cent higher in Denmark and 100 per cent higher in the Netherlands compared to Ireland. Differences in milksolids per hectare were even more pronounced in other countries relative to Ireland, with levels in Denmark both more than double those recorded for Ireland.

The final partial productivity measure – milk production per labour unit was again highest in the Netherlands and Denmark, with levels in the UK also relatively high. Italy was the only country that exhibited lower labour productivity measures compared to Ireland, but average levels in France and Germany were very similar to that for Ireland.

All of the results presented in Figures 1a and 1b are calculated with respect to population estimates of all specialist dairy farms in the countries included. However, the results are influenced by distribution differences in the sample of farms included in the FADN survey for the different countries (Fingleton, 1995). For this reason the productivity indicators for farms with 50-99 cows were also examined in each of the countries. However, despite the variations in sampling procedures adopted in the FADN survey there was no evidence of pronounced differences in average productivity levels between the sub sample and the whole sample. In general, the productivity rankings between the countries were similar in the two samples but the relative differences between the countries tended to be reduced in the more homogeneous sample of the 50-99 cow farms. This case was particularly evident in the land and labour productivity measures, where the large disparities between the countries in the average sample of farms were reduced in the sub sample of 50-99 dairy cow farms size category.

The results presented in Figure 1a and 1b above show the average indicators of partial productivity over the period 1996 to 2003. However, the results for the individual years was examined using a linear regression model which was fitted to these results to measure the trend over time for Irish dairy farms in relation to the average for all countries examined. The average sample of all specialist dairy farms did show a significant trend over time for three of the six partial productivity indicators, namely: milk solids per cow, stocking rate per hectare and milk solids per hectare. Of these indicators, milk solids per cow for Irish dairy farms did increase significantly relative to the average of all countries examined; by on average 0.012 kgs per cow per year. In contrast, stocking rate (cows per hectare) and milk solids per hectare decreased relative to the average of all countries examined, by on average 0.01 cows per hectare and 0.09kgs of milk solids per hectare respectively, relative to the average, over the time period examined.

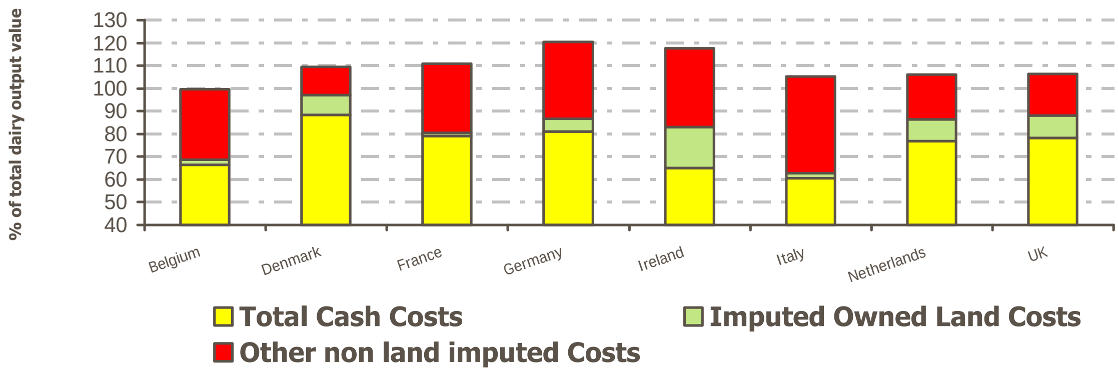
However, the sub sample of specialist dairy farms, with 50-99 dairy cows, did not show a significant relationship between any of the relative productivity measures in Ireland vis-a- via our European competitors. While there was a significant positive trend for these larger dairy farms within Ireland, with respect to milk yield per cow (+ 70.5 kg per cow per year), milk solids per cow (+10.5 kgs per cow per year) and milk production per labour unit (+7kgs per LU per year), relative to the average of all countries examined none of these relationships were significant.

<u>Comparison of costs and returns in selected EU dairy farms</u>
The first measure of comparative costs of production used in this analysis was costs as a per cent of total dairy output. Fingleton (1995) citing *Boyle et al., (1992)*, outlined the relevance of this measure, whereby '…*it reflects the resilience with which a sector of production could cope with a cost/price squeeze. If, for example, there was a substantial fall in milk prices, producers locked into a high cost structure would have much lower chances of survival, other things been equal'* (p.11). Given that current projections predict that Irish farm milk prices will be 15 per cent lower in 2012 from the average of 2000 to 2002 (Binfield *et al.,* 2003), this approach to measuring competitiveness seems appropriate.

Figure 2 below shows the cost/output results for the eight year average, for each of the selected countries, for all specialist dairy farms in the FADN sample. Cash costs and the imputed charges for owned resources are identified.

Figure 2 shows that the cash costs as a per cent of output were relatively low in Ireland over the period 1996 to 2003. Italy had the lowest cash costs as a per cent of output at 61 per cent, but the cost structure in Ireland and Belgium was only slightly higher at 65 and 66 per cent respectively. The highest cash costs as a per cent of output was experienced in Denmark where cash costs were 88 per cent of total output of the enterprise. Further analysis of the specialist dairy farms in the 50-99 dairy cow size category did not show substantial deviation from these results.

Figure 2 Cash and Economic Costs for all Specialist Dairy Farms in selected



EU countries (1996-2003)

When total economic costs are considered the competitive position of the selected countries changes. The competitive advantage experienced by 'average' Irish producers worsens when all imputed charges for owned resources are taken into consideration. Total economic costs as a per cent of output were highest in Germany where costs were 120 per cent of the dairy enterprise output. Ireland followed with the second highest total economic costs at 118 per cent of output. The main imputed cost that contributed to the relatively high total economic costs experienced in Ireland over the period was that for owned land. This was due to the relatively high imputed rental charge coupled with high levels of land ownership in Irish dairy production. The relatively low stocking rates and milk yields per hectare on Irish dairy farms over the period also must be considered as a contributing factor. However, it is worthwhile to note that when the imputed land charge for owned resources is not taken into consideration the relative competitive position of Irish dairy farms remains strong, with Irish farms showing one of the lowest cost to output ratios for the period 1996 to 2003.

The lowest total economic costs were experienced in Belgium, where nearly 1 per cent of dairy output remained as profit for dairy producers on average over the eight year period (i.e. total economic costs were 99 per cent of total dairy output).

When total economic costs were considered as a per cent of output for specialist dairy farms in the 50-99 dairy cow size category, the rank order changed from the average position shown in Figure 2. Total economic costs for this sample of farms were generally substantially lower then the average for all specialist farms. Total economic costs were reduced by 13 per cent for Italian farms when the sample of farms were examined which resulted in Italy replacing Belgium as the lowest economic cost producer. In addition, the competitive position of these larger Irish dairy producers (with 50-99 dairy cows) also substantially improved their competitive position relative to competing countries, compared to the average Irish producers; total economic costs as a per cent of output were reduced by 15 per cent on these farms relative to the average producer in Ireland, which ranked these larger Irish producers as the third lowest total economic cost producer relative to all countries examined.

It is worth noting here again, that when the imputed charge for owned land is excluded from the analysis the competitive position of Irish producers improves significantly. In this case these larger Irish producers actually appear as the lowest cost producer, with 14 per cent of total output remaining to remunerate the opportunity cost of owned land.

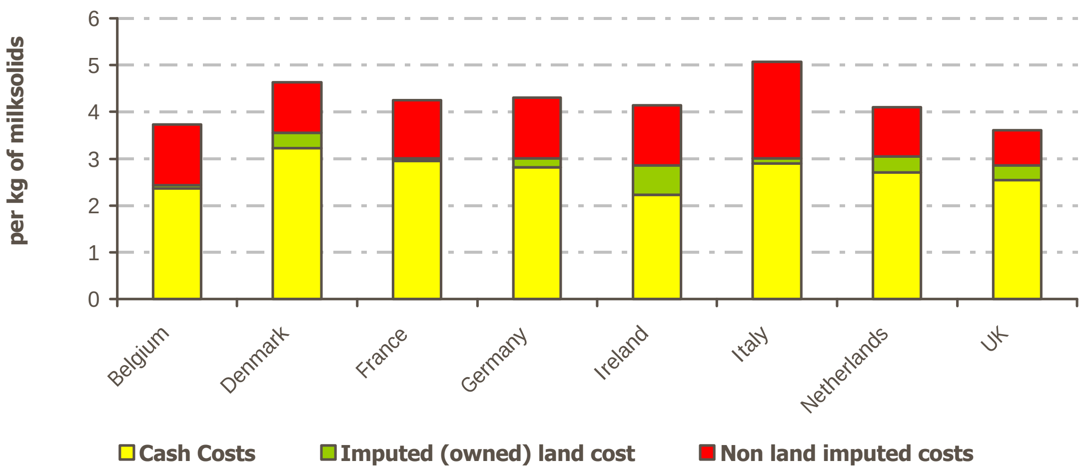
Based on the costs presented in Figure 2 a 'competitiveness index' (following Boyle *et al.*, 1992; Fingleton, 1995) was developed, whereby the cost:output ratio for Ireland was expressed as a per cent of the simple average of the cost:output ratios for all the countries examined. This index presents conflicting results depending on whether or not the imputed charges for owned land are included in the analysis. Ireland was at a competitive disadvantage relative to the average for all the countries studied, when total economic costs are taken into consideration. Over the period 1996 to 2003, 'average' Irish dairy farms had on average 7 per cent higher total economic costs relative to other competing countries in the EU, while total economic costs for the for the sub sample of dairy farms with 50-99 dairy cows were equal to the average of all countries examined. Furthermore, when the imputed charge for owned land was excluded from the analysis, this index showed that the 'average'

Irish dairy farm and the sub sample of larger Irish dairy farms had a competitive advantage relative to the average for the countries, with on average 3 per cent and 6 per cent lower economic costs (excluding owned land charges), relative to other competing countries. Again, these results seem to indicate that the opportunity cost of land has a major impact on the competitive position of Irish milk producers in the longer term.

The second measure of comparative costs and returns used in this analysis was costs (both cash and economic) per kg of milksolids produced. This measure takes into account the variation in the milk constituents (fat and protein) between different countries. The average cash and economic costs per kg of milksolids produced, over the period 1996 to 2003, for each of the countries in the analysis is presented in Figure 3. Further detail on the cost components of the cash and economic costs are presented for all specialist dairy farms and for the sub sample of farms in the 50-99 dairy cow size category can be obtained in Thorne *et al.,* (2004)

Figure 3 shows that consideration of the milksolids produced, has a considerable influence on the competitive position of the countries examined. Based on total cash costs per kg of milksolids produced, Denmark had the highest cost structure and Ireland had considerably lower average cash costs. On a total economic cost basis, the UK and Belgium had the lowest costs per kg of milk solids, Ireland was ranked in fifth position and Italy had the highest costs on an economic cost basis. Furthermore, when the sub sample of farms with 50-99 dairy cows were examined cash costs did not change noticeably but economic costs were reduced significantly for these farms. The magnitude of the differences was much less between the countries. The ranking between countries also changed with Ireland now exhibiting the second lowest total economic costs per kg of milk solids produced.

Figure 3 Cash and Economic Costs per kg milksolids for all specialist dairy farms – 8 year average (1996 – 2003)



The effect of imputed land costs on the long term competitiveness of Irish milk producers is again highlighted in this analysis. When these costs were excluded from economic costs Ireland appeared to be quite competitive, with the only the UK exhibiting lower costs than the average producer in Ireland, while for the larger sub sample no other country had lower costs than Ireland during the period 1996 to 2003.

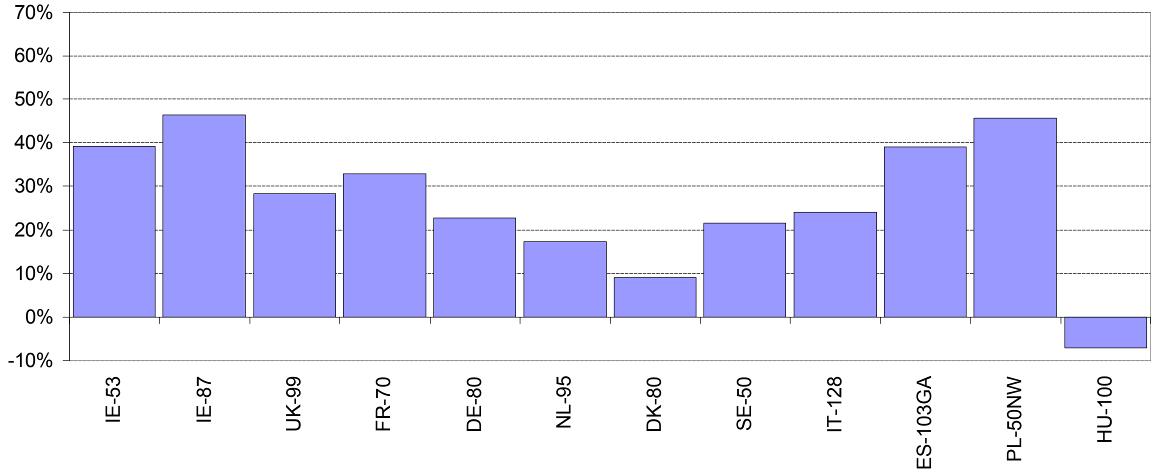
Based on the competitive index of total economic costs, it appears that Ireland was struggling to maintain competitive position over the time period. When the average sample was examined total economic costs per kg of milk solids were on a par with the average. However in the specialist sub sample average costs for Ireland were 5 per cent lower than the average for the competing countries. Furthermore, when imputed charges for owned land were excluded, the competitive position of the average sample and the sub sample for Ireland improved somewhat. In both cases costs were approximately 17 per cent lower than the average of the countries examined.

While the cost and return indicators presented in Figures 2 and 3 above represent average performance over the period 1996 to 2003 it is also important to determine whether or not the competitive position of Irish dairy producers has shifted over this time period. Hence, a linear regression model was fitted to this data to observe trends within the data. For the average sample there was no apparent significant trend over the period, whereas with the sub sample of larger producers there was a significant improvement in cash and economic costs per product volume for Irish producers relative to the average. Cash costs improved at rate of 2 cent per kg of milk solids per year and economic costs at a rate of 3 cent per year relative to the average of all countries.

IFCN Results
The comparisons from the IFCN data are presented on a 'two-tiered' basis. One group of comparisons include results from typical Irish specialist dairy farms of 'average' and 'larger' sizes shown with results from typical dairy farms in ten other EU countries, including two new member states.

In Figure 4 the first measure used for comparison is the profit margin achieved on the whole farm expressed as farm income as a per cent of total returns (output). This measure indicates how well placed typical farms would be if prices or costs moved adversely relative to each other especially in the short to medium term. This measure shows that typical Irish dairy farms appear to have a relatively good position compared to all other countries except for Spain and Portugal, which are showing similar results, i.e. from 40 per cent to 46 per cent of all output value was retained as farm income in 2004. In contrast farms in Germany, Netherlands, Denmark and Sweden are shown to be more exposed to income pressures if milk prices fall and/or costs rise. Typical farms in the UK and France were retaining around 30 per cent with Italy at a lower level.

Figure 4 Profit Margin of the Whole Farm (farm income as per cent of total returns): Ireland v other EU countries (2004)



In Figure 5 the same measure (profit margin) is again used to show how 'typical' Irish dairy farms compare with results which are second tier of important non-EU milk producing countries.

Figure 5 Profit Margin of the Whole Farm (farm income as per cent of total returns): Ireland v other non-EU countries (2004)

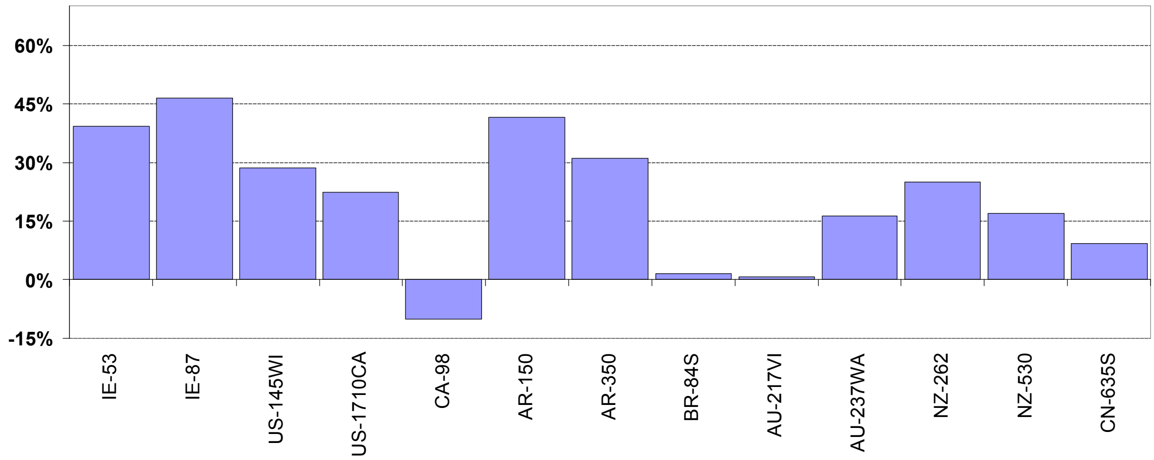
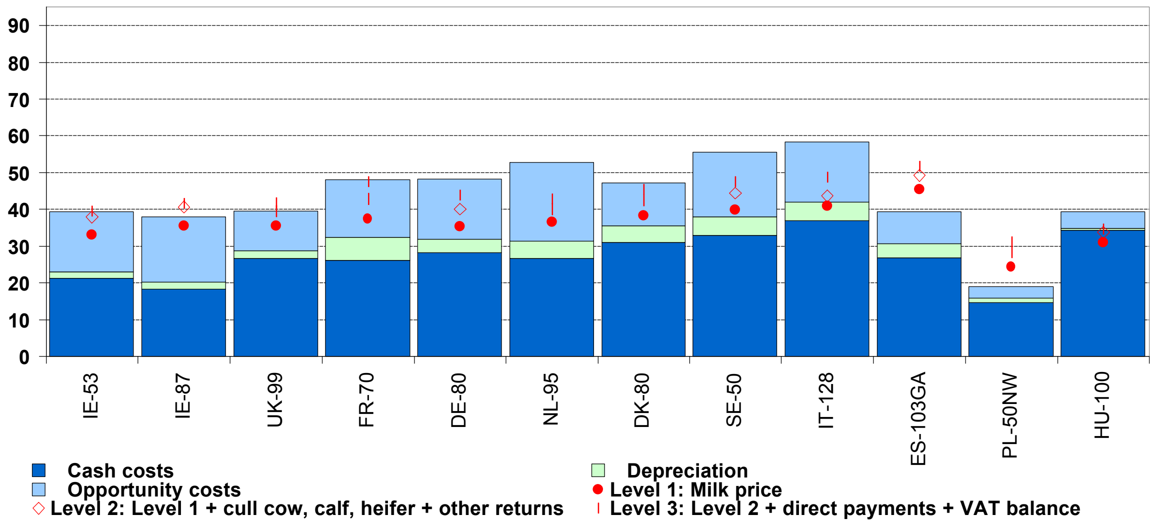


Figure 5 shows that in 2004 at least, the typical Irish farms were also in a relatively strong position compared to most other non-EU dairy countries with only Argentina showing comparable profit margin levels. The typical farm in the US and the typical average size farm in New Zealand were in intermediate positions with from 22 per cent to 28 per cent profit margins. But the results from typical farms in Australia, Brazil, the larger typical farm in New Zealand and in China were reported having below 20 per cent and some even below 10 per cent profit margins. Therefore, those farms would be more vulnerable to a cost/price squeeze.

The set of comparative results includes measures of total cash costs, depreciation and imputed charges (opportunity costs for own land, labour and other non land capital). Also shown are the level of milk prices and other non-milk returns for the dairy enterprise such as calf values and replacement costs. The combination of cash costs, depreciation and opportunity costs for owned factors of production equate to total economic costs of the dairy enterprise. Hence the following inter-country comparisons shown in Figure 6 and Figure 7 should provide further evidence as to the relative competitive strength of Irish dairying both within the EU and on a broader world wide front. The US dollar was chosen as the common currency measure for all countries results and in both Figures 6 and 7 the y-axis shows all measures expressed on US$ per 100kg milk (ECM).

Figure 6 shows that in 2004 Irish farms appeared to have relatively low cash costs per 100kg compared to virtually all other EU countries. Poland was the only country with lower unit cash costs in 2004. Spain, the UK, France, Germany, and the Netherlands had more 'intermediate' results, but unit cash costs were at the higher end for farms in Italy, Hungary, Sweden and Denmark. The addition of depreciation charges did not significantly alter the ranking between countries. However, when total economic costs were measured, the addition of imputed charges tended to push the Irish results closer to several other countries, most notably the UK and Spain. Total economic costs per unit of milk were notably lowest in Poland and also showed a substantial economic margin even with the much lower milk producer prices received in Poland. In all other EU countries, except Spain, total economic costs were in excess of milk prices received and only in Ireland, the UK and in France was the addition of other dairy enterprise returns significant to bring returns equivalent to or slightly exceed total economic costs. There were notable shortfalls between total returns and economic costs still existing in German, Dutch, Swedish and Italian typical dairy farms.

Figure 6 Total Costs and Returns of the Dairy Enterprise: Ireland v other EU countries (2004)



In Figure 7 the same measures are shown for comparisons between the Irish and non-EU typical dairy farms. It is perhaps important to remember that comparisons are made in US$ and exchange rate differences and movements in a particular year may unduly effect results.

Figure 7 Total Costs and Returns of the Dairy Enterprise: Ireland v other non-EU countries (2004)

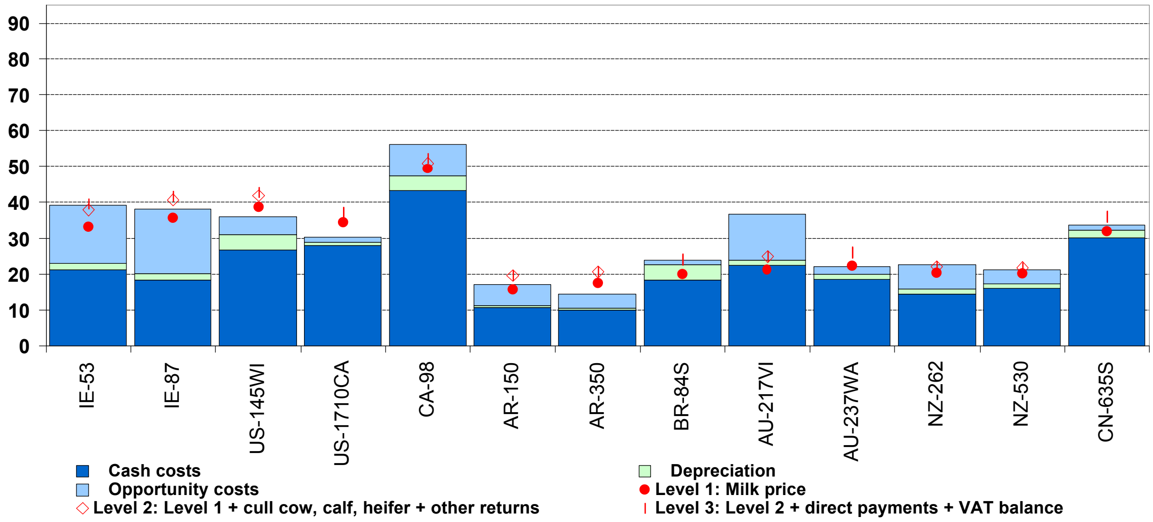


Figure 7 shows that cash costs per unit of milk production are reasonably positive for the Irish farms examined. Canadian dairying was shown to have by far the highest cash costs (and also the highest total economic costs) and the farms in the US also had relatively high cash costs, whereas the Australian, Brazilian and Irish farms had a similar intermediate level of cash costs. Furthermore, unit cash costs were substantially lower in Argentinean farms and also somewhat lower on the farms in New Zealand. However, Ireland's comparative position deteriorated very substantially when total economic costs were compared. Canada continued in first position with the highest economic costs but the Irish farms occupied the next highest position, with the Australian-Victoria and the US-Wisconsin typical farms at a slightly lower level. Typical farms in Argentina, New Zealand, Brazil and Western Australia exhibited the strongest long term competitive position in 2004. Finally, as in the Irish situation, there were only a few countries where the price of milk was greater than total economic costs per unit. These farms were in the US, Argentina and Western Australia. Perhaps surprisingly given the size of the dairy farms in New Zealand neither the 'average' or 'larger' typical farms could show a positive economic margin over milk price.

Discussion & Conclusions

In summary, it appears that for the period 1996 to 2004, the competitive position for Ireland, was positive when cash costs were considered in isolation from imputed charges for owned resources. Based on FADN data the only other EU country examined that had lower cash costs as a per cent of output was Italy, and Ireland actually appeared to have the lowest cash costs per product volume during the same period. Furthermore, based on data from the IFCN the competitive position for representative Irish dairy farms within Europe was again confirmed. Moreover, on a broader worldwide basis, representative farms in Argentina were the only farms that had higher profit margins than Irish dairy farms.

However, as the opportunity cost of owned resources are not included in this calculation this indication of future competitiveness can only be considered to be valid in the short to medium term. In the longer term adjustment within the sectors will be a reality, which will be dependent on relative resource use, and in this situation relative resource costs are needed to understand and analyse the adjustment process. Hence, total economic costs, which include imputed charges for owned resources, were considered to examine the longer-term outlook for the competitiveness of the sector. In doing so, the competitive ranking for the Irish dairy sector slipped relative to the other countries. These findings could be considered as warning signals for the future competitive performance for the average sized Irish dairy farm. However, based on FADN data the competitive position of the larger Irish dairy farms (in the 50-99 dairy cow size category) did manage to maintain competitive position within Europe even when total economic costs were considered.

Boyle (2002) concluded that part of the explanation of the deterioration of competitive ranking for the average Irish dairy farm when total economic costs are considered relates to '*the relatively low scale of primary agricultural activity in Ireland*' (p.177). This result is indicative of the small-scale farming that is predominant in the Irish dairy industry relative to competing industries. Furthermore, it could be concluded that larger scale producers in Ireland will be in a superior competitive position relative to the smaller scale producers in the long run, due to their ability to cope with a cost/price squeeze, given current projections for a decline in farm milk prices.

In conclusion, the results of this study provide a baseline position against which the change in competitiveness of Irish dairy farming can be measured. EU enlargement, trade liberalisation in the context of WTO negotiations and reform of the CAP will all have major influences on the competitive position of the Irish dairy sector, which can be monitored against the baseline position outlined by this research.

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Maximising Milk Price – Producer (Part 1)

by

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Executive Summary
The composition of Irish milk has changed in the last ten years – Irish dairy farmers are now producing milk with higher milk fat content (+ 0.27%) and higher milk protein content (+ 0.06%) than they did in 1995. Individual dairy farmers have made much progress in improving their milk protein content, but overall Irish dairy farmers have struggled to improve milk protein content by 0.01% per year. Irish milk composition is poorer than that of all EU neighbours – apart from the UK, where milk protein content is lower.

When you consider all of the factors which influence milk protein and fat content, it is not surprising that milk composition has been slow to change. Many of these factors are related to nutrition – early turnout to grass, grass allowance, silage quality, alternative forages and grass cultivars – but there are other influences – breed of cow, type of cow, mastitis and heifer rearing regime. A further complicating factor is that some of the factors examined in the second part of this paper have a significant effect on milk solids production but not on milk composition; if Irish dairy processors move to paying for kilograms of milk solids, then these factors will take on a new relevance.

Milk Composition and Quality – Factors within the Farmer's Control

Trends in Milk Composition

The milk protein content of Irish milk has increased from 3.24 % in 1995 to 3.30 % in 2004 – an increase of less than 0.01% per year (CSO, 2005). The milk fat content of Irish milk has increased from 3.58 % in 1995 to 3.75 % in 2004 – an increase of almost 0.02% per year (CSO, 2005). Compared to our European neighbours, we are producing milk with lower milk protein content than four other countries (Denmark, Germany, France and Netherlands) with only the UK producing milk with lower milk protein content. We are producing milk with lower fat content than five other countries (Denmark, Germany, France, Netherlands and UK). Of the countries listed in Table 2, only France has shown a large increase in milk protein content since 1995 (+ 0.25%) and only Ireland has shown a large increase in milk fat content since 1995 (+ 0.27%).

But many dairy farmers in Ireland have been making changes to their systems in an effort to improve their milk composition – in particular their milk protein content. Shanahan (2000) reported that the average milk protein content on the monitor farms increased from 3.17% in 1994 to 3.30% in 2000 – an increase of 0.13% or 0.026% per year. During the same period, milk fat content increased by 0.24% - from 3.52% in 1994 to 3.76% in 1999; this represents an increase of 0.048% per year. So if this type of progress can be made on certain farms, how come the national average milk composition has not been improving at a faster rate?

Table 1: Annual milk protein and fat content, 1995 – 2004 (CSO)

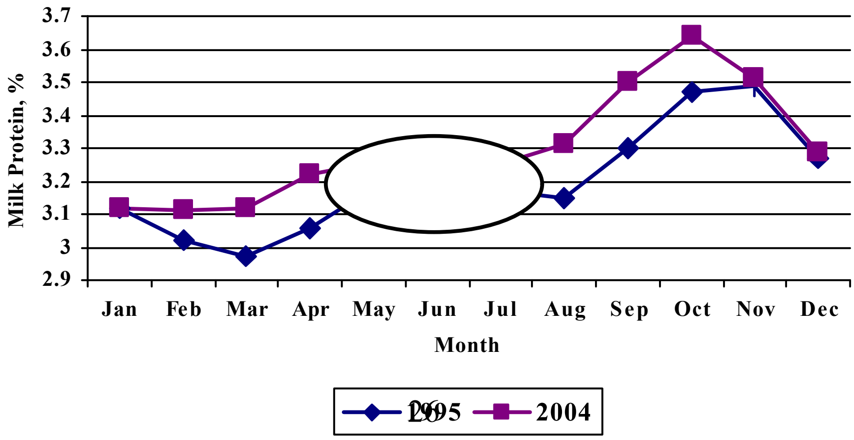
Year	Protein, %	Fat, %
1995	3.24	3.58
1996	3.21	3.59
1997	3.21	3.61
1998	3.24	3.67
1999	3.25	3.70
2000	3.27	3.70
2001	3.28	3.74
2002	3.27	3.73
2003	3.30	3.73
2004	3.30	3.75

Table 2: Annual milk protein and fat content for 2004 and difference since 1995 (Eurostat, New Zealand Dairy Statistics)

Country	Milk Protein, % (2004)	Difference since 1995	Milk Fat, % (2004)	Difference since 1995
Denmark	3.43	+ 0.02	4.31	- 0.04
Germany	3.43	+ 0.03	4.22	- 0.03
France	3.40	+ 0.25	4.07	+ 0.02
Ireland	3.30	+ 0.06	3.75	+ 0.27
Netherlands	3.49	+ 0.01	4.45	+ 0.05
UK	3.26	+ 0.02	3.99	- 0.06
New Zealand	3.58	+ 0.08	4.76	+ 0.01

If the monthly milk protein content of milk deliveries (CSO, 2005) is examined, an interesting picture emerges. The smallest increase in milk protein content occurred in the three months May, June and July. In most years, 40 per cent of the milk is produced and supplied in these months; therefore and change in milk composition in these months is going to have a large influence on the annual milk composition figures. On the other hand, there has been great improvements made in milk protein content in the months March and April – increases of 0.15% and 0.16% respectively since 1995. But the amount of milk supplied in these two months (20 per cent approximately) is less than that supplied in the three months of May, June and July. The change in milk fat content has been similar across the twelve months – ranging from an increase of 0.13% in May, June and January to an increase of 0.22% in March.

Figure 1: Monthly milk protein content, 1995 and 2004 (CSO)



So what then are the factors, which the farmer can influence that will improve milk composition? The next section of this paper will review the research carried out in this area. Much of this work was carried out in the 1980's and 1990's but is still very much relevant today.

Factors which influence Milk Composition

1. Age of the animal

Milk fat content is relatively constant for the first four lactations and then decreases gradually with age. Solids-not-fat (protein and lactose) decreases with age and the decrease occurs almost equally in lactose and protein (McDonald et al., 1995). The same authors (McDonald et al., 1995) state that the age frequency distribution of a herd may profoundly affect the composition of the mixed herd milk.

Figures from milk recording herds show a similar trend (Coughlan, 2005, pers. comm.).

Table 3: Annual average milk protein and fat content of milk recording herds by parity, 2004

Parity	Milk Protein, %	Milk Fat, %	Milk Solids, kg/cow
1	3.37	3.80	364
2	3.40	3.71	423
3	3.39	3.71	443
4	3.37	3.70	454
5	3.35	3.68	448
6	3.33	3.66	439
7	3.32	3.65	422
8	3.31	3.65	404
9	3.30	3.63	390
10	3.29	3.63	371

2. Month of calving and stage of lactation

Crosse and Dillon (1992) reported that there was a linear decrease in the yield of milk and of milk constituents with later calving. The analysis was carried out with four experimental herds attached to the Moorepark centre over a four year period.

Table 4: Effect of month of calving on milk yield, milk composition and lactation length

Month of Calving	Milk, kg	Fat, kg (%)	Protein, kg (%)	Lactose, kg (%)	Lactation Length (Days)
January	4,603	164 (3.56)	154 (3.35)	206 (4.48)	294
February	4,351	155 (3.56)	145 (3.33)	195 (4.48)	270
March	4,098	146 (3.56)	136 (3.32)	184 (4.49)	246
April	3,845	137 (3.56)	127 (3.30)	173 (4.50)	222

In an experiment carried out in the period 1989 to 1991 at Moorepark (Curtins' Farm), a herd with a later average calving date (15th March) produced similar yields of milk, fat and protein when compared to a herd with an earlier average calving date (20th January). The later calving herd had significantly higher milk fat and protein concentrations compared to the earlier calving herd (Dillon and Crosse, 1992).

Figures from milk recording herds also show that month of calving does have an effect on milk composition (Coughlan, 2005, pers. comm.). McDonald et al. (1995) state that advancing lactation has a marked effect on the composition of milk which is of poorest quality during that period when yield is at its highest. Both fat and protein content are low at this time and then improve gradually until the last three months of the lactation when the improvement is more rapid.

Table 5: Annual average milk protein and fat content of milk recording herds by month of calving, 2004

Month	Milk Protein, %	Milk Fat, %	Milk Solids, kg/cow
January	3.38	3.73	470
February	3.40	3.74	443
March	3.38	3.72	404
April	3.33	3.67	360
May	3.29	3.67	309

3. Early turnout to grass

Murphy and Fitzgerald (1998) reported on an experiment carried out by Dillon and Crosse (1997). Cows were either indoor full time on silage (720 g/kg DMD) ad libitum plus 6 kg concentrates/day or they had access to pasture from 27th February in 1993 or 11th March in 1994 until early / mid April. The inclusion of grass in the diet led to increased milk production, increased milk protein and milk fat content. Even at the low level of concentrate feeding, the milk composition was improved (and milk yield was either maintained, 1993, or improved, 1994). Milk solids production increased due to the inclusion ofgrass in the cow's diet.

Table 6: The effect of the inclusion of grass in the diet of the freshly calved cow

		Treatments			
	Year	GS +6kg conc.	GS+G +6kg conc.	GS+G +4kg conc.	GS+G +2kg conc.
Milk yield, kg/cow/day	1993	21.3	24.2	22.7	21.2
	1994	22.8	26.3	26.7	24.7
Fat, %	1993	36.3	36.0	37.5	36.9
	1994	36.1	38.2	38.0	37.5
Protein, %	1993	30.6	31.7	31.5	31.2
	1994	29.5	32.0	32.0	31.4

A more recent experiment was conducted by Kennedy at al. (2004) at Moorepark. The experiment was carried out from the 16th February to 4th April i.e. the period immediately after calving. Sixty-four cows were randomly assigned to one of two treatments.

Treatment 1: Cows indoors full-time on a TMR diet; cows were offered 15% above their voluntary intake including 11 kg concentrates.

Treatment 2: Cows outdoors full-time after calving; cows were offered 15.1 kg grass DM plus 3 kg DM concentrates.

Table 7: Effect of feeding system on milk yield and composition in early lactation

	Treatment	
	Indoors	**Grazing**
Milk yield, kg/day	27.3	28.3
Fat, %	4.16	3.86
Protein, %	3.07	3.36
Lactose, %	4.87	4.90
Fat & Protein, kg/day	1.97	2.04

There was no significant difference in milk yield. Milk protein concentration was significantly improved (+ 0.29%) and milk fat concentration was significantly reduced (- 0.30%) under treatment 2 (grazing). This trial shows the improved performance that can be achieved with full-time access to grazed grass in early lactation (Kennedy et al., 2004, pers. comm.). A second finding from this experiment was the carryover effect on milk protein content observed in the weeks after the trial concluded. It took eight weeks for the milk protein content of the two herds to converge. This shows that as well as giving a positive immediate effect, grass in the diet of the freshly calved cow also has a positive medium term effect.

4. Grass Allowance

The nutritive value of the diet of cows fed on grazed grass can vary due to changes in grass supply or quality. This can adversely affect milk composition and its suitability for processing (O'Brien and Guinee, 1998). The effect of daily herbage allowance (DHA) on milk composition in mid-season lactation was explored in an experiment carried out at Moorepark in1997. Three groups of cows (on average 66 days in milk at the start of the experiment) were offered one of three DHA: 1) 16 kg grass DM per cow per day, 2) 20 kg grass DM per cow per day, and 3) 24 kg grass DM per cow per day. This would be typical of the variation in pasture allowance in Ireland in mid-lactation (O'Brien and Guinee, 1998).

Table 8: Influence of daily herbage allowance on milk yield and composition

	Daily Herbage Allowance (kg DM/cow)		
	16	**20**	**24**
Yield, kg/cow/day	19.3	21.2	22.0
Protein, %	3.20	3.32	3.41
Fat, %	3.82	3.90	3.79
Lactose, %	4.60	4.65	4.65

Increasing the daily grass allowance, from 16 to 20 kg DM per cow per day had a significant effect on milk yield and lactose content; the increase in milk fat and protein content was numerically, but not statistically, significant. Increasing the daily grass allowance, from 16 to 24 kg DM per cow per day, had a significant effect on milk yield, milk protein and milk lactose content. Increasing the daily grass allowance, from 20 to 24 kg DM per cow per day, had no significant impact on any of the variables listed in Table 8.

The results of this experiment showed that the differences observed in daily milk yield and composition were due principally to the difference in daily herbage DM intake. This experiment would suggest that a DHA of 20 kg DM per cow per day is adequate in mid-season.

In summarizing a number of grazing experiments carried out in 1995 and 1996, Maher et al. (1999), stated that there was no significant effect of grass allowance on milk fat content but that there was an obvious trend i.e. as grass allowance increased, milk fat content was reduced. The same authors also concluded that while offering the cows more grass on a daily basis may not resulting increased milk production, the protein content of the milk will be substantially improved.

5. The effect of a leader-follower system

A trial was carried over a two year period (1985 – 1986) to investigate the effect of a leader-follower system of grazing management on cow performance (Crosse and Fitzgerald, 1988). Cows were grazed as either leaders, followers or as a combined herd. The results in the table below compare the performance of the leaders with the combined herd. The fat, protein and lactose content of the leaders was higher than for the combined herd in 1986. In the first year of the experiment (1985), there was little difference in the fat content while the trends in the protein and lactose concentration were similar.

Table 9: The effect of a leader-follower system on milk yield and composition (1986)

	Leaders	Combined
Milk yield at grass, kg/day	14.85	13.45
Fat, %	3.74	3.53
Protein, %	3.54	3.42
Lactose, %	4.58	4.55

6. Silage quality

Patterson (1999) reported on the effect of rapid wilting and the use of an inoculant on milk yield and composition. Wilting produced significant increases in the concentration of butterfat and in the concentration of protein. The use of commercial inoculants had no effect on the concentration of butterfat or protein with either wilted or unwilted silage.

Table 10: The effect of wilting and inoculation (of grass silage) on milk composition

	Unwilted		Wilted	
	Control	Inoculant	Control	Inoculant
Butterfat, %	4.51	4.52	4.64	4.64
Protein, %	3.24	3.22	3.32	3.31
Lactose, %	4.88	4.89	4.91	4.90

7. Feeding in the dry period

Supplementing dry cows with a protein concentrate (either fishmeal or soyabean based) had no effect on milk yield, milk constituent yield or milk composition in the first 12 weeks of the subsequent lactation (Murphy, 1999). This author (1999) concluded that milk yield and composition are not affected by dry period protein supplementation when grass silage is the forage. Murphy (1999) also looked at supplementing the dry cow diet with straw. Feeding restricted amounts of a silage / straw mixture in the dry cow period results in a lower milk protein concentration in early lactation compared to feeding grass silage.

Keady (2005) found that increasing the energy intake in late gestation increased milk fat concentration and yield in the first sixteen weeks of the subsequent lactation. Milk, protein or lactose yield or the concentrations of protein or lactose were not altered. The author speculated that the higher milk fat concentration in cows fed the high energy diets in late gestation was probably due to these cows calving at a higher body condition score. The same study (Keady, 2005) examined the effects of altering the forage:concentrate ratio in the dry cow period. It was found that altering the forage:concentrate ratio had no effect on food intake or animal performance in the subsequent lactation.

8. Inclusion of maize or other alternative forages in the diet

Keady (2002) reported on work carried out in Hillsborough on including maize in the diet of the milking cow. In the experiment, maize made up 40% of the forage. The results showed an increase in both protein and fat composition when 40% of the forage was maize silage.

Table 11: The effect of maize when offered as 40% of forage on milk yield and composition

	Grass Silage	Maize (29% DM)
Feed intake (kg DM/day)		
Grass silage	10.9	7.4
Maize silage		4.9
Total	16.9	18.3
Milk, kg/day	26.8	27.8
Fat, %	3.98	4.15
Protein, %	3.15	3.23

O'Kiely and Fitzgerald (2001) reported that partially replacing good quality grass silage with good quality maize silage increased milk yield and milk protein concentration. An inclusion rate of 67 per cent maize silage was required to maximize the yield of fat and protein and milk protein concentration.

Table 12: The effect on animal performance of replacing good quality grass silage with increasing proportions of good quality maize silage

	Maize silage, %			
	0	**33**	**67**	**100**
Milk, kg/day	21.4	23.0	23.1	22.7
Fat, %	3.77	3.67	3.76	3.74
Protein, %	3.06	3.10	3.16	3.09
Milk solids, kg/day	1.46	1.56	1.60	1.55

A number of studies, including Sinclair et al. (2003), have shown that the inclusion of fermented WCW had no significant effect on milk production or composition. In one experiment (Sinclair et al., 2003), milk protein content was reduced significantly when low starch WCW was fed instead of good quality grass silage; milk fat content remained unchanged. In a second experiment by the same author (2003), milk composition was not significantly affected by the length of the straw (short v long) or the type of accompanying concentrate fed (fibrous v starchy) when WCW was fed on a 1:1 ratio with grass silage.

9. Breed of cow

A crossbreeding programme may allow dairy farmers to combine desirable traits and, at the same time, take advantage of hybrid vigour (Dillon et al., 2003). A study was set up in 2002 on the Ballydague Research Farm to examine the biological and economic efficiency of four breeds (Holstein-Friesian, Normande, Montbeliarde and Norwegian Red) and two cross breeds (Montbeliarde x Holstein-Friesian and Normande x Holstein-Friesian). Table 13 shows the results for year 2 of the study. As there was no significant difference between the low concentrate feeding system

(547 kg/cow/lactation) and the high concentrate feeding system (1,251 kg/cow/lactation), the results for the low concentrate feeding system are presented.

The highest milk protein content was recorded with the MB breed and the lowest with the MBX. Milk fat content also varied between the breeds but the difference was not significant. The milk protein content of the NMX was intermediate between the HF and NM while the milk protein content of the MBX was closer to the HF than the MB. This would suggest that milk composition, in this trial, was not influenced by hybrid vigour.

Table 13: Effect of dairy cow breed on milk composition

Breed	HF	MB	MBX	NM	NMX	NR
Milk protein, %	3.33	3.48	3.32	3.43	3.39	3.35
Milk fat, %	3.71	3.71	3.65	3.69	3.87	3.59
Milk lactose, %	4.69	4.81	4.72	4.93	4.79	4.63

10. Type of cow

It has been shown in New Zealand that the North American Holstein-Friesian cows produce more milk volume and protein yield but have lower concentrations of milk fat and protein than the New Zealand Holstein-Friesian (Horan et al., 2003). An experiment was carried out on the Curtins' Research Farm between 2001 and 2004. Three strains of Holstein-Friesian cows were used: 1) High production (HP) North American Holstein-Friesian cows, 2) High durability (HD) North American Holstein-Friesian cow, and 3) New Zealand (NZ) Holsteins. Cows were allocated to one of three feeding systems. The average results for milk composition for the four years of the trial are presented in Table 14; the results are for the high milk output from pasture system (MP) feeding system (Horan, 2005, pers. comm.).

The HP had the highest milk yield while all three strains had similar levels of milk solids production (506 – 509 kg). The New Zealand strain had the highest milk protein and fat content of the three strains on the trial. This difference in milk composition would lead to a difference in milk price of 3.0 cpl (under current the pricing structures).

Table 14: Effect of strain of Holstein-Friesian on milk yield and composition (MP feeding system)

Strain	HP	HD	NZ
Milk yield, kg/cow	6,748	6,656	6,293
Milk protein, %	3.45	3.56	3.65
Milk fat, %	4.06	4.09	4.39
Milk solids production, kg/cow	507	509	506

11. Mastitis and SCC

In a review of a number of experiments (Hortet and Seegers, 1998) found that the yield of milk, fat and protein dropped as a result of clinical mastitis. However fat percentage at lactation level increased or decreased (calculated changes were from – 0.06 to + 0.20 point of %). The protein percentage increased in one experiment but decreased in two other studies (calculated changes were from – 0.11 to + 0.05 point of %). The same authors (Hortet and Seegers, 1998) concluded that:

- Clinical cases are associated with a small decrease in milk fat percentage especially in the short term after an udder infection. The impact of this decrease on the whole-lactation percentage is dilute and can be considered almost trivial for short duration infection but important for persistent or frequently recurring infections.

- Clinical cases are associated with a very small increase of the protein percentage of milk, especially in persistent infections.
- For severe and long-lasting or for frequently reoccurring cases, a reduction of 0.10% fat and an increase of 0.05% protein could be expected, but the relevancy of accounting for them is lowered by the withdrawal from the marketed supply of the milk (due to treatments).

12. Milking interval

It was thought for many years that equal interval twice-a-day milking would produce a higher yield and improved milk composition than that obtained with unequal milking intervals. A study was undertaken at Moorepark to investigate the effect of unequal milking intervals on milk yield, composition and SCC. Sixty-six cows were assigned to two treatments for a four week period – mid April to mid May. Cows on treatments 1 and 2 were milked at intervals of 16:8 hours and 12:12 hours respectively. There was no difference between the 16:8 hour and the 12:12 hour interval for daily yields of milk, protein and lactose, but milk fat yield and concentration were reduced with the 12:12 hour interval. Daily protein and lactose concentrations were not affected by milking interval (O'Brien et al., 1998).

Table 15: The effect of milking at two different interval regimes on milk yield, composition and SCC

	Milking Interval	
	16:8 h	**12:12 h**
Milk yield, kg/cow/day	25.1	25.0
Fat, %	3.47	3.30
Protein, %	3.29	3.28
Lactose, %	4.52	4.56
SCC (x 10^3), cells/ml	141	156

13. Concentrate feeding level

The experiment referred to under point no. 7 above also looked at the effect of feeding system on milk production efficiency. The cows were allocated to one of three feeding systems: 1) high milk output per cow from pasture (MP), 2) high concentrate feeding system at pasture (HC), and 3) high milk output per unit area from pasture (HS). Concentrate supplementation averaged just less than 400 kg per cow per lactation for the MP and HS feeding systems and approximately 1,500 kg per cow per lactation for the HC feed system. The results in Table 16 are for the high durability (HD) strain; results for the other strains show a similar trend.

Feeding additional concentrates, in this case up to 1,100 kg extra, had no effect on milk composition (Horan, 2005, pers. comm.). As you would expect there was a milk yield response, in this case 1.00 kg milk per kg concentrates, leading to a higher level of milk solids production.

Table 16: Effect of feeding system on milk yield and composition (HD strain)

Feeding system	**MP**	**HC**
Milk yield, kg/cow	6,656	7,588
Milk protein, %	3.56	3.58
Milk fat, %	4.09	4.01
Milk solids production, kg/cow	509	576

14. Grass Cultivars
Gowen et al. (2002) concluded that late heading grass cultivars had a significant effect on milk, fat, protein and lactose yield in both years of a two year experiment looking at the influence of grass cultivars on animals performance (1999 and 2000). Protein concentration was significantly higher in 2000 on the later heading swards. The same authors (2002) concluded that there was no effect of ploidy (diploid versus tetraploid) on any of the milk production parameters.

Table 17: The effect of grass cultivar on milk yield and composition for 2000

Cultivar	**Millenium**	**Portstewart**	**Napoleon**	**Spelga**
Heading Date	Late	Late	Intermediate	Intermediate
Ploidy	Tetraploid	Diploid	Tetraploid	Diploid
Milk yield, kg/cow/day	21.9	21.9	20.3	20.7
Fat, %	3.98	3.95	3.95	4.00
Protein, %	3.46	3.45	3.40	3.37
Lactose, %	4.62	4.63	4.61	4.54

15. The effect of heifer rearing regime on milk yield and composition
The aim of a study carried out at the ARINI, Hillsborough research centre was to determine the effect of rearing regime, in terms of diet offered and target calving weight, on first lactation performance of high genetic merit heifers (Carson et al., 2003). Heifers were assigned to one of two rearing treatments: 1) target calving weight of 540kg, grass silage based diet during the winter and grass based diet during the summer, or 2) same forage base as treatment 1 plus concentrates, target calving weight of 620kg.

The heifers reared to calve at 620 kg (treatment 2) had a higher milk yield and milk solids production but poorer milk composition in their first lactation. In the second lactation, these animals had a similar milk yield and yield of milk solids but still had poorer milk composition than those reared to calve at 540 kg (treatment 1).

Table 18: Effect of rearing regime on milk yield and composition

Rearing Regime	**1**	**2**
Live weight, kg (24 months)	540	620
First lactation		
Milk yield, kg/cow	7,222	8,020
Fat, %	3.81	3.70
Protein, %	3.27	3.13
Fat & protein, kg	511	544
Second lactation		
Milk yield, kg/cow	8,909	9,319
Fat, %	3.91	3.63
Protein, %	3.35	3.26
Fat & protein, kg	645	638

16. Impact of lameness on milk composition
Juarez et al. (2003) reported on two experiments carried out with Holstein-Friesian cows; cows were house in free stall barns. In both experiments, milk yield decreased linearly as locomotion score increased (from 1 = normal; 2 and 3 = sub-clinically lame

and 3 and 4 = clinically lame). There was no effect on milk composition but the production of milk solids was reduced as locomotion score increased. The table below shows the results from one of the experiments reported.

Table 19: the effect of lameness on milk production and composition (Juarez et al., 2003 Experiment 1)

	Locomotion Score			
	1	2	3	4
Milk yield, kg/cow/day	46.8	45.7	43.3	41.3
Fat, %	3.63	3.57	3.63	3.66
Protein, %	2.82	2.89	2.86	2.78
Fat & protein, kg	3.02	2.95	2.81	2.66

17. Body Condition Score

Increasing the pre-calving body condition score (from 2.60 to 2.88) increased the yield of milk, fat and protein and fat content over the first eight weeks of the subsequent lactation; the protein content was not significantly changed by the change in pre-calving body condition (McNamara et al., 2001). In a separate study, Ryan et al. (2003) found that increasing body condition score pre-calving from 2.73 to 3.00 resulted in significantly higher daily milk yield during the first four weeks of lactation; milk yield was numerically greater over the first eight weeks. Yield of milk fat and protein was increased but there was no significant effect on milk composition.

Table 20: Effect of body condition score at calving on production in the first eight weeks of the subsequent lactation

	Treatment	
	A	**B**
BCS at calving	3.0	2.73
Milk yield, kg/cow/day	26.5	25.5
Milk fat, %	3.81	3.71
Milk fat, kg/cow/day	1.01	0.94
Milk protein, %	3.18	3.14
Milk protein, kg/cow/day	0.84	0.80

18. Summary

This paper attempted to highlight some of the many factors which can influence milk composition. Given the many factors which can have a positive or negative effect on milk composition, is it any wonder that Irish dairy farmers have struggled to increase milk composition, and especially milk protein composition, in the last 10 years? The table below summarises the factors covered in the paper.

Table 20: Summary of facto
composition

Factor			
1. Age			
2. Month of calving			
3. Early turnout to grass			
4. Grass allowance			
5. Leader – follower system			
6. Silage			
Wilting			
Inoculant			
7. Feeding in the dry period			
Protein inclusion			
Straw			
8. Alternative forage			
Maize			
WCW			
9. Breed of cow			
10. Type of cow			
11. Mastitis			
12. Milking interval			
13. Conc. Feeding level			
14. Grass cultivars			
Heading date			
Ploidy			
15. Heifer rearing regime	calving weight		
16. Lameness	No effect		
17. Body Condition Score	Tends to □ with higher BCS	er BCS	BCS

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Maximising Milk Price – Producer (Part 2)

by

Jack Kennedy,
Irish Farmers Journal

Executive Summary

- There is an urgent need to make milk payment schemes more related to market returns. Intervention support is declining and demand for 'food ingredients' particularly protein (casein) and to some extent lactose continues to rise.
- With the exception of liquid milk the value of milk is directly dependent on its solids content rather than volume. The true value of milk depends upon its composition and its end use.
- The average ratio of protein to fat value was about 60:40 however the highest ratio was almost 70:30 while the lowest placed equal values on fat and protein 48: 52. For many dairies fat and protein values combined only added to a proportion of the total milk price and further constant was added to give the total price.
- The inclusion of a positive constant for volume in many of the pricing policies. This fails to recognise that volume actually costs the processor.
- The omission of solids other than fat and protein from the pricing schemes. Even though fat and protein constitute the most valuable milk components to ignore other components is not fully reflecting true value. Lactose is an important component in WMP and SMP and that value should be reflected in the milk price.
- Operation of differentials as opposed to more transparent direct valuation of individual components (example; cents/kg x number of kg supplied). Use of a base price per gallon, all be with quality adjustments, tends to place the focus on price per unit volume. This may confuse producer incentives by reducing the perceived importance of milk solids.
- In Denmark the Danish Dairy Board (central agency) provides a guide line based on market information. There is no variation in fat and protein values. Has this a role to play?
- The value of milk to the producer depends upon its true value and the payment system adopted by the industry.
- The chosen selection criteria for milk quality and the genetic and environmental relationships will influence the rate of progress in milk quality.
- The current payment system adopted in New Zealand rewards producers on the basis of milk fat and protein yields less a volume-based penalty. The payment system sends price signals to the producer in relation to milk quality attributes.
- The current Irish payment system is a differential based system with wide variation between co-ops. There is also wide variation on the value of fat and protein between co-ops. There is no volume-based penalty. The payment system sends a wrong signal to the producer in relation to milk quality attributes.

Milk price for Farmer profit

Milk price is central to the relationship between the milk processor and supplier. Pricing schemes have developed over time reflecting an evolving value relationship between milk processor and producer in response to a changing market environment. Milk payment schemes should provide the means by which the price paid for milk at the farm gate is related to the market returns that can be obtained from that milk when processed into final product.

The producers' revenue from supplying milk is a function of the value of milk to the processing industry and the payment scheme used to reward producers (Garrick and Lopez – Villalobos, 1999).

Farmers who supply milk with higher solids levels provide dairies with a higher product yield from a given volume of milk (or provide dairies with less volume to handle for a given weight of product). Thus these farmers should be rewarded with a higher payment for a given volume of milk.

There are well-defined general principles that should apply in milk payment schemes. These involve (1) equity between producers, (2) efficiency in terms of promoting desirable feeding and breeding practises, and (C) consistency with developments in milk sampling and testing. The focus of this paper is on equity and the promotion of desirable feeding and breeding practises.

Current milk payment schemes in Ireland

Current milk pricing schemes operated by Irish dairies are essentially 'differential based' systems. Dairies determine a base price for a reference milk composition (example 3.6% fat and 3.3% protein) and a differential adjustment (up or down) in price per litre is made for each 0.1% in fat and protein that the individual farmers milk differs from the base composition. While there is consistency there is wide variation.

Currently in Ireland each individual dairy decides the basis for its own milk payment system. Although all now pay on the basis of fat, protein and occasionally lactose, the values attributed to these solids can vary substantially. Even between dairies with very similar product portfolios.

A review of milk payment methods for 13 dairies (those participating in KPMG/Farmers Journal audit) representing over 90% of the industry showed considerable variation between co-ops (see Tables 1 and 2). (Tables 1 to 13 in the appendix highlight the payment schemes in place in each of the co-ops investigated).

On average value for protein across the sample of 13 dairies was 0.44 c/kg per 0.1% per litre with a range from 0.38 to 0.50 cent /0.1% per litre. The average ratio of protein to fat value was about 60: 40 however the highest ratio was almost 66: 33 while the lowest placed equal values on fat and protein at a ratio of 48: 52.

This information in the appendix is available to each supplier but many do not realise how exactly or what weighting is on each component within milk. If we take the extremes for example, only 70% of the Lakeland milk price is based on fat and protein. Over 30% is based on a quality component price. In most other co-ops 100% is based on milk fat and protein and milk quality is subtracted or added on in a bonus/penalty scheme. The incentive for farmers supplying Lakeland to increase fat and protein is therefore a lot less than if a farmer was supplying a co-op where the weighting was 100% of fat and protein.

In tables 3 and 4 we show the economic benefit to increasing fat and protein percentage for each of the co-ops in the study. All co-ops are ranked based on their relative price increases for a farmer if he supplied milk of increasing protein (table 3) or fat and protein (table 4). We can clearly determine if a co-op has a large constant for something other than fat and protein then the incentive for the farmer to increase composition is much less.

At the extremes the difference for a farmer in Arrabawn who increased his protein percentage from 3.30% to 3.50% the benefit to his milk price would be 0.35 c/l. If that farmer was supplying Kerry he would have received 0.57 c/l increase in milk price.

The same issue emerges when we look at increasing fat and protein percentage. When we look at the extremes if a farmer in Lakeland increased composition from 3.40% protein and 3.70% fat to 3.50% protein and 3.80% fat he would receive an increase of 0.57 c/l. If that farmer was supplying Wexford he would receive an additional 0.83 c/litre in milk price.

Issues emerging from the Irish review

As shown in Tables 5, 6 and 7 there is considerable variation in fat and protein differentials applied by Irish dairy processors. Some of this variation can be explained by differences in product mix among companies but even allowing for this the range appears extreme. It remains unclear how Irish processors determine their values for fat and protein. ???

A proportion of Irish dairies include a significant positive constant in their milk pricing schemes (Table 8). This contrasts sharply with the payment schemes operated in the other countries where a negative term in pricing equation recognises the cost of handling and removing water in product manufacture.

Given the percentage of Irish milk sold as fluid the payment of a positive constant for volume is hard to justify. Also the inclusion of a positive constant in Irish payment schemes is an undesirable feature as it reduces the value placed on milk solids and thereby diminishes the incentive for improvement in fat and protein content.

Equity in milk pricing schemes

The pricing system should be fair to the farmer by ensuring that the price paid for milk reflects as accurately as possible the market returns that can be obtained from that milk in terms of processed product. As noted by Keane (1989, p4) "the basic principle for a payment scheme is that those suppliers with above average solids levels in their milk will generate a higher return from the marketplace and, in strict equity terms, should be entitled to a higher price/litre." In these terms a payment scheme should be inequitable if it results in some producers being paid more than the true value of milk according to its true composition while other producers are under paid for milk of better composition.

At the moment in Ireland there is cross subsidisation between producers as the payment for better protein and fat with less water is not reflected in the milk price that the farmer receives. How can you expect farmers to breed, feed and hope for better protein but not reward them by paying them more for the product produced?

In addition while producers are confined by the milk quota system in terms of volume and butterfat other milk solids are not penalised in this way. Producers should receive fair market value for non-fat (protein etc) milk solids allowing them to whereby the value of milk is determined from the yield of fat, the yield of protein and a discount for volume.

In general terms the payment system is as follows. First the export receipts minus the costs of transport, processing and marketing, are divided by the total yield of milk solids (fat plus protein) to obtain the net value per unit of milk solids.

Secondly, an analysis of the fat to protein relativity was undertaken, based on product values and fat and protein composition. These equations were then solved to obtain the fat and protein processor payments.

The payment values were the basis on which the New Zealand Dairy Board, along with the assessed processing costs relevant to their product mix, paid the processors. The processors then passed these payments on to producers, along with a volume discount.

The volume discount was obtained from an analysis of the volume-related costs, allowing the fat and protein producer payments to be developed.

Individual processors developed small variations to this system, and paid higher or lower values as a result of their own efficiencies and capital needs.

Farmers paid in two steps

The producers are usually paid in two steps. (a) An interim payment during the season. (b) A final payment at the end of the season when total realised returns had been calculated.

Currently in New Zealand

For the 2005/06 dairy season in New Zealand, Fonterra is paying for milk fat and protein in the ratio of 0.39 (i.e. a kilogram of milkfat is worth 39% as much as a kilogram of milk protein in the farm supply). Milk protein is measured as crude protein [total nitrogen in milk].

The volume charge currently applied to Fonterra's suppliers is 3.48 NZ cents per litre (€0.02/litre). An average litre of milk is worth about 33 NZ cents (€0.17 c/litre), so the volume charge is a significant element of the payment system.

The Fonterra payment system is due for a noticeable re-configuration for the 2006/07 NZ dairy season. Next year will see the introduction of a fourth element in the payment system. This fourth element will recognise the lower value of milk supplied at the peak of the season. Peak milk creates additional costs for the company compared to milk supplied in the pre- and post-peak periods.

Fonterra has also just started work on a full milk component payment review (the first of any depth since the introduction of payment for milk protein in the 1980's). It is expected this work will take approximately 12 months.

2) The Danish system – revised in October 2003

Following widespread industry consultation a major revision of the Danish payment scheme was completed in 2002 with adoption agreed to commence in October 2003, the start of the new milk year. Arla, which now comprises most of the industry, has agreed to adopt the scheme.

The aim of the model up to 2003 was to make payment between suppliers in a fair manner. In the new model the attempt is to lead milk production in a more market orientated direction. The new basis is on market analyses and the future expectations of development in the market.

The model encourages the production of concentrated milk and milk with a high protein content.

The version prior to October 2003 placed a value on fat based on the intervention price for butter less manufacturing costs. Value of protein was based on the intervention price for skim milk powder less manufacturing costs. There was a fixed deduction for milk treatment and collection. This old payments scheme from 1973 to 2003 was based on the intervention products, even though the Danish utilisation of milk is heavily weighted towards cheese (Keane, 2004).

The new scheme has a protein to fat ratio of 1.7 to 1 (or 63:37). This compares with the old model where the protein: fat ratio was only 1.35:1.

The fixed deduction for volume-based costs (milk treatment, milk transport etc) is equivalent to about 1.65 cent/litre (7.5 cent/gallon) is then taken off. This ensures that the basic values for fat and protein must be high so as to provide for this deduction. There are also premia expected to be around 18% added on for value and quality.

Table 9 shows a milk price comparison for a Danish farmer supplying milk of different composition and how that price is derived.

The Danish Dairy Board presents the payments guide, which is an authoritative and respected central agency in Danish dairying.

What are the options for Ireland?

The international Dairy Federation has outlined three fundamental principles as guidelines in relation to milk payments systems.

A payment scheme should: (a) Be fair and equitable to suppliers (b) promote the production of high quality milk and (c) be consistent with developments in milk sampling and testing (IDF, 1979 Grassland).

From a processor point of view, the Multiple Component Pricing (MCP) model **was** found to have an advantage in reducing variation in the cost of milk per unit of final product (Wallace, 2002).

The MCP system is product yield focussed so the price paid by the processor should reflect accurately the processed value of that milk according to solids composition. Wallace and Crosse (2002) summarised that it would be wrong to suggest that current pricing policies of Irish dairies are universally inefficient relative to MCP models. Performance of the differential based systems of about half of the Irish dairies was very good in rewarding composition according to product yield.

However for about one quarter of the dairies there were important deficiencies in terms of rewarding improvements in milk solids composition. The main reason for this was the inclusion of a positive constant in the milk pricing formula. In some cases this constant was over 30% of the milk price. The inclusion of a positive constant reduces the responsiveness of the pricing system to changes in composition, as price differentials for milk components are therefore lower.

For dairies with a constant below 5% efficiency in rewarding for composition is generally much better but the concept of negative constant to reflect the cost of handling volume (water) remains an issue that the Irish dairy industry must now consider.

Principles of Multiple Component Pricing

Multiple component pricing is defined as the pricing of milk directly on the basis of more than one component: such as fat and protein or fat, protein and lactose. The primary objective of multiple component pricing is that the price paid or received for milk reflect as accurately as possible the amount and value of products that can be made from it (Emmons et al 1990, Grassland). This is of particular relevance given the variation in milk composition both between producers and the fact that the yields of products such as butter, skimmed milk powder and cheese are directly dependent on the solids composition of milk supplied to the processor. The task of estimating component values based on their values within the marketplace is a difficult one.

A MCP system should ensure that the processor pays only what the milk is worth in terms of the amount and value of products produced.

While Irish dairies have for many years priced milk on the basis of fat and protein components, the industry has stopped short of implementing a comprehensive MCP system. What is different? (a) The inclusion of a positive constant for volume in many of the pricing policies. This fails to recognise that volume actually costs the processor.

(b) The omission of solids other than fat and protein from the pricing schemes. Even though fat and protein constitute the most valuable milk components to ignore other components is not fully reflecting true value. Lactose is an important component in WMP and SMP and that value should be reflected in the milk price.

(c) Operation of differentials as opposed to more transparent direct valuation of individual components (example; cents/kg x number of kg supplied). Use of a base price per gallon, with quality adjustments, tends to place the focus on price per unit volume. This may confuse producer incentives by reducing the perceived importance of milk solids.

Volume versus composition

Wallace (2002) maintains in the case of dairies with a large positive constant in their pricing equations, increased volume is rewarded over improvements in solids concentration. This issue can be examined using the MCP model. Two deliveries of milk were evaluated both containing exactly the same quantities (kg) of each milk component. One of the deliveries involved a volume of 1,100 gallons while the other had a volume of 1,000 gallons (see Table 10)

In this example the value of both milk pools in terms of processed product should be the same as they contain the same amount of milk solids and therefore will yield the same quantities of product. On top of this the delivery with higher volume will actually have higher costs in terms of transportation and fluid removal. As indicated the MCP system correctly identified the processed value of milk as exactly the same. In contrast when you have a constant > 15% in a differential pricing system the delivery with higher volume achieves a higher price for the farmer.

Incentives

The milk-pricing scheme has a pivotal role in signalling market values of individual milk components to the producer. The incentive structure provided by the pricing scheme should promote desirable changes in milk composition and provide opportunities for producers to enhance profitability through production of more valuable milk. While in the past butterfat was the most important constituent to the processor, changes in the market environment such as increased consumption of low fat products and cheese have meant that the value of protein has risen relative to that for fat.

Similarly the expansion in the food ingredients sector has increased demand for milk protein (casein) and lactose. It is important that the pricing system should adequately reflect changing market requirements and thereby signal these to producers.

Note: Every effort has been made to make the information as factual and as up to date as possible. There could be changes to milk pricing policies since paper was written.

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Table 1 Weighted averages (cent/ 0.1% per litre) for pricing schemes for dairies in the Irish Farmers Journal milk league May 2005

Dairies	Fat	Protein
Lisavaird	0.28	0.45
Barryroe	0.29	0.47
Bandon	0.25	0.44
Drinagh	0.35	0.47
Dairygold	0.26	0.46
Kerry	0.25	0.50
Glanbia	0.26	0.47
Lakeland	0.29	0.47
Connacht Gold	0.30	0.40
Town of Monaghan	0.36	0.40
Arrabawn	0.35	0.38
Newmarket	0.35	0.39
Wexford	0.29	0.48
Range	0.25 to 0.36	0.38 to 0.50
Average	0.30	0.44

Table 2 Relative weightings of Protein and Fat by Irish milk purchasers Irish Farmers Journal milk league May 2005

Dairies	Fat	Protein
Lisavaird	39	61
Barryroe	38	62
Bandon	36	64
Drinagh	43	57
Dairygold	36	54
Kerry	33	66
Glanbia	35	65
Lakeland*	38	62
Connacht Gold*	42	58
Town of Monaghan*	47	53
Arrabawn*	48	52
Newmarket	47	53
Wexford	38	62
Range	33 to 48	52 to 66
Average	40	60

* Base price not 100% on fat and protein

Table 3 showing the economic benefit (c/l) and ranking for increasing protein percentage for dairies in the study

Dairies	P 3.30% F 3.60%	P 3.40% F 3.60%	P 3.50% F 3.60%	Price Difference	Ranking
Kerry	28.17	28.74	29.31	0.57	1
Glanbia	26.96	27.51	28.05	0.54	2
Bandon	28.06	28.60	29.15	0.54	2
Wexford	28.32	28.85	29.39	0.53	3
Barryroe	28.21	28.74	29.27	0.53	3
Lisavaird	28.06	28.58	29.10	0.52	4
Dairygold	28.12	28.63	29.14	0.51	5
Drinagh	28.16	28.64	29.13	0.49	6
Newmarket	28.33	28.78	29.24	0.45	7
ConnGold	28.13	28.55	28.97	0.42	8
Town of Mon	28.25	28.65	29.04	0.40	9
Lakeland	26.80	27.19	27.57	0.39	10
Arrabawn	24.98	25.32	25.67	0.35	11

Table 4 showing the economic benefit (c/l) and ranking of increasing fat and protein percentage for dairies in the study

Dairies	Protein 3.4% Fat 3.70%	Protein 3.50% Fat 3.80%	Price Difference	Ranking
Wexford	29.15	29.98	0.83	1
Kerry	29.00	29.83	0.83	1
Barryroe	29.04	29.87	0.83	1
Bandon	28.88	29.71	0.82	2
Newmarket	29.15	29.98	0.82	2
Dairygold	28.94	29.77	0.82	2
Drinagh	28.98	29.80	0.82	2
Lisavaird	28.88	29.71	0.82	2
Glanbia	27.76	28.55	0.79	3
Town of Mon	28.97	29.69	0.72	4
ConnGold	28.81	29.50	0.69	5
Arrabawn	25.62	26.26	0.64	6
Lakeland	27.36	27.93	0.57	7

Table 5 Relative values of protein and fat

Protein as a percentage of fat and protein value	Dairies
< 55%	Dairygold, Monaghan, Arrabawn, Newmarket
55 –64%	Lisavaird, Barryroe, Bandon, Lakeland, Wexford
>65%	Glanbia, Kerry

Table 6 Variation in value of protein solids (%)

Protein: cents per 0.1%	
< 0.4	Arrabawn, Newmarket
0.4 to 0.45	Lisavaird, Bandon, Connacht Gold, Town of Monaghan
> 0.45	Barryroe, Drinagh, Dairygold, Kerry, Glanbia, Lakeland, Wexford

Table 7 Variation in value of fat solids (%)

Fat: cents per 0.1%	Dairies
< 0.25	None
0.25 to 0.3	Lisavaird, Kerry, Barryroe, Bandon, Dairygold, Glanbia, Lakeland, Wexford
> 0.3	Drinagh, Connacht Gold, Town of Monaghan, Arrabawn, Newmarket

Table 8 Dairies that have a constant as a percentage of total price (not 100% based on fat and protein composition)

Dairies
Lakeland, Monaghan, Connacht Gold, Arrabawn

Table 9 showing Milk Price comparisons with different composition for the new Danish payment scheme

Fat (%)		**3.70%**	**4.20%**	**6%**
Protein (%)		**3.10%**	**3.40%**	**4%**
Fat value	2.95	10.91	12.39	17.7
Protein value	5.01	15.54	17.05	20.06
Volume based costs	1.61	-1.61	-1.61	-1.61
Raw material value		**24.84**	**28.82**	**36.14**
Added value	15%	3.73	4.17	5.42
Quality premium	3%	0.75	0.83	1.08
Fixed costs per member	26.88	-0.14	-0.14	-0.14
Payment on account		**29.18**	**32.69**	**42.51**
End of year bonus	6%	1.49	1.67	2.17
Cash payment		**30.67**	**34.36**	**44.67**

Source DDB; Adopted from Keane 2004

Table 10 Volume and composition of two deliveries when constant significant included

	DA = 1100 gal @ 3.6%F, 3.3%P and 4.6%L	DB = 1000 gal @ 3.96%F, 3.63%P and 5.06%L
Milk (kg)	5,127	4,661
Fat (kg)	184	184
Protein (kg)	169	169
Lactose (kg)	236	235
True value in € (MCP)	1,109	1,109
Differential constant > 15%	1,097	1,074

Appendix

Milk Pricing Policy for Dairygold Co-op

- Base cash price May 2005 26.85 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition (fat and protein) with approximately 36% based on fat and 54 % on protein.
- Fat + 0.26 c/l for each 0.1%. Protein + 0.46 c/l for each 0.1%.

- **Bonus schemes:**
  (a) SCC: Bonus for less than 200,000 = 0.3 c/litre
  (b) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: Less than 50,000 equal base price; 50 to 75,000 = - 0.56 c/litre; 75 to 100,000 = - 0.70 c/litre; 100 to 200,000 = - 1.4 c/litre; 200 to 300,000 = - 2.79 c/litre; Over 300,000 = - 5.59 c/litre.
  (b) SCC: Less than 400,000 = no penalty; 400 to 600,000 = - 0.28 c/litre; 600 to 800,000 = - 1.12 c/litre; 600,000 plus = - 3.35 c/litre
  (c) Thermoduric bacteria: From 1 September 2005, for counts greater than 1,000/ml = - 0.3/litre
  (d) Sediments: For 'Disc C' or worse a penalty of 0.56 c/litre per month
  (e) Lactose: Greater than 4.20% = no penalty; 4.00 to 4.20% = - 1.75 c/litre; Less than 4.0% = - 2.0 c/litre

  Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Arrabawn Co-op

- Base cash price May 2005 26.30 c/l at 3.6% fat and 3.3% protein.
- Approximately 80% based on composition with approximately 48% (of this 80%) based on fat and 52% on protein.
- Fat + 0.35 c/l for each 0.1%. Protein + 0.38 c/l for each 0.1%.

- Balance of base price consists of;
  TBC: Two TBC tests averaging less than 50,000 = + 1.27 c/litre
  SCC: Minimum 1 test less than 300,000 = + 0.56 c/litre
  Hygiene registered (92/46) = + 1.0 c/litre
  Share bonus = + 0.73 c/litre

- **Bonus schemes:**
  (a) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: 101 – 200,000 = - 1.27 c/l; 201 – 300,000 = - 2.54 c/l; 301 – 400,000 = - 3.81 c/l; > 401,000 = - 5.08 c/l

  (b) SCC: 401 – 500,000 – 0.28 c/l; 501 – 600,000 = - 0.42 c/l; > 601,000 = - 0.84 c/l

  Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Bandon Co-op

- Base cash price May 2005 26.80 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition with approximately 36% based on fat and 64% on protein. (said 50:50)
- Fat + 0.25 c/l for each 0.1%. Protein + 0.44 c/l for each 0.1%.

- **Bonus schemes:**
  (a) TBC: If pass 3 TBC tests get 5 points for each test and if have 15 points no deduction. If average of 3 tests is less than 50,000 and none greater than 100,000 = + 0.56 c/l bonus.
  (b) SCC: Bonus for less than 200,000 (8 months) = 0.2 c/litre and Winter bonus (Nov/Dec/Jan/Feb) = 0.88 c/litre
  (c) Vat = 4.8%

- **Penalty schemes:**
  (a) SCC: Less than 400,000 = no penalty; 400 to 600,000 = - 1.0 c/litre; 600 to 800,000 = - 2.0 c/litre; 800,000 plus = - 4.0 c/litre
  (b) Lactose: Greater than 4.20% = no penalty; 4.00 to 4.20% = - 3.0 c/litre; Less than 4.0% = - 6.0 c/litre

  Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Barryroe Co-op

- Base cash price May 2005 26.95 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition with approximately 38% based on fat and 62% on protein.

- Fat + 0.29 c/l for each 0.1%. Protein + 0.47 c/l for each 0.1%.

- **Bonus schemes:**
  (a) **TBC**: If average 3 tests less than 50,000 and none greater 100,000 = + 0.56 c/l
  (b) **SCC**: Bonus for less than 200,000 (8 months) = 0.2 c/litre and Winter bonus (Nov/Dec/Jan/Feb) = 0.88 c/litre
  (a) Vat = 4.8%

- **Penalty schemes:**
  (c) TBC: Tested 3 times per month. Less than 100,000 = 5 points/test; 100 to 149,000 = 4 points/test; 150,000 to 249,000 = 3 points/test; 250 to 349,000 = 2 points/test; 350 to 499,000 = 1 point/test; Over 500,000 = 0 points/test. If pass 3 TBC tests get 5 points for each test and if have 15 points no deduction.
  Points deduction as follows: 15 points no deduction; 14 points = - 0.28 c/l; 13 points = - 0.56 c/l; 12 points = - 0.84 c/l; 11 points = - 1.12 c/l; 10 points = - 1.68 c/litre; 9 points = - 2.51 c/litre; 8 points = - 3.35 c/l; 7 points = - 3.91 c/l; 6 points = - 4.75 c/l; 5 points = - 5.59 c/litre; 4 points = - 6.68 c/l; 3 points = - 8.38 c/litre
  (d) SCC: Less than 400,000 = no penalty; 400 to 600,000 = - 1.0 c/litre; 600 to 800,000 = - 2.0 c/litre; 800,000 plus = - 4.0 c/litre.
  (e) Thermoduric bacteria: From 1 September 2005, for counts greater than 1,000/ml = - 0.3/litre.
  (f) Sediments: For 'Disc C' or worse a penalty of 0.5 c/litre for months supply**.**
  (g) Lactose: Greater than 4.20% = no penalty; 4.00 to 4.20% = - 3.0 c/litre; Less than 4.0% = - 6.0 c/litre

  Further penalties for Added Water and Inhibitors/Antibiotics

<u>Milk Pricing Policy for Connacht Gold Co-op</u>

- Base cash price May 2005 26.93 c/l at 3.6% fat and 3.3% protein.
- Approximately 80% based on composition with approximately 42% (of this 80%) based on fat and 58% on protein.
- Fat + 0.30 c/l for each 0.1%. Protein + 0.40 c/l for each 0.1%.
- Balance of base price consists of;
  TBC: 3.35 c/l
  Temperature: 0.56 c/l
  Farm Registration: 0.56 c/l.

- **Bonus schemes:**
  (a) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: Less than 50,000 equal base price; 51 to 100,000 = - 2.79 c/litre; 100 to 150,000 = - 1.95 c/litre;
  (b) SCC: Less than 400,000 = no penalty; 400 to 500,000 = - 0.28 c/litre; >500,000 = - 0.56 c/litre.

Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Drinagh Co-op

- Base cash price May 2005 26.88 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition with approximately 43% based on fat and 57% on protein.
- Fat + 0.35 c/l for each 0.1%. Protein + 0.47 c/l for each 0.1%.

- **Bonus schemes:**
  (a) **TBC:** If pass 2 tests (< 50,000) = 0.28 c/litre/test = 0.56
  (b) **SCC**: Bonus for less than 200,000 (8 months) = 0.2 c/litre and Winter bonus (Nov/Dec/Jan/Feb) = 0.88 c/litre
  (c) **Vat =** 4.8%

- **Penalty schemes:**
  (a) SCC: Less than 400,000 = no penalty; 400 to 600,000 = - 1.0 c/litre; 600 to 800,000 = - 2.0 c/litre; 800,000 plus = - 4.0 c/litre
  (b) Lactose: Greater than 4.20% = no penalty; 4.00 to 4.20% = - 3.0 c/litre; Less than 4.0% = - 6.0 c/litre

  Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Glanbia Co-op

- Base cash price May 2005 26.00 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition with approximately 35% based on fat and 65 % on protein.
- Fat + 0.26 c/l for each 0.1%. Protein + 0.47 c/l for each 0.1%.

- **Bonus schemes:**
  (a) Seasonality bonus: Suppliers with less than or equal to 16% of quota available supplied in June and greater than or equal to 3% in November. Only for milk with Lactose > 4.35%. Fund of 1 million euro for months October (30%), November (40%) and February (30%). Milk between 4% and 4.35% no bonus.
  (b) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: Less than 50,000 equal 5 points; 50 to 75,000 = 4 points; 75 to 100,000 = 3 points; 101 to 150,000 = 2 points; 200 to 300,000 = 1 point; Over 300,000 = 0 points.
  TBC: Standard = 10 pts; Grade 2 = 9 pts = - 0.6 c/l; Grade 3 = 7/8 pts = - 1.4 c/l; Grade 4 = 5/6 pts = - 2.8 c/l; Grade 5 = 3/5 pts = - 5.6 c/l; Grade 6 = 1/2 pts = -11.2 c/l; Grade 7 = 0 pts = - 14 c/l

(b) SCC: Less than 400,000 = no penalty; 400 to 500,000 = - 0.08 c/litre; 501 to 600,000 = - 1.7 c/litre; 600,000 plus = - 2.0 c/litre
(c) Thermoduric bacteria: From 1 July 2005, for counts greater than 1,000/ml = - 0.3/litre
(d) Lactose: For milk in October, November, December and January; 4.00 to 4.20% = - 2.00 c/litre; Less than 4.0% = - 4.50 c/litre

Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Kerry Co-op

- Base cash price May 2005 27.15 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition (fat and protein) with approximately 33% based on fat and 66% on protein.
- Fat + 0.25 c/l for each 0.1%. Protein + 0.50 c/l for each 0.1%.

- **Bonus schemes:**
  (a) Temperature bonus: Included in milk price (0.33 c/litre) for 4 °C ex farm and 6 °C at meter.
  (b) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: Less than 50,000 equal base price; 50 to 75,000 = - 0.33 c/litre; 75 to 100,000 = - 0.66 c/litre; 100 to 200,000 = - 3.0.
  (b) SCC: Less than 400,000 = no penalty; 400 to 500,000 = - 1.0 c/litre; 500 to 600,000 = - 2 c/litre; 600,000 plus =? c/litre

Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Lakeland Co-op

- Base cash price May 2005 26.61 c/l at 3.6% fat and 3.3% protein.
- Approximately 70% based on composition with approximately 38% (of this 70%) based on fat and 62% on protein.
- Fat + 0.29 c/l for each 0.1%. Protein + 0.47 c/l for each 0.1%.
- Balance of base price consists of;
  TBC: TBC tests averaging less than 50,000 = + 5.0 c/litre
  SCC: Test less than 400,000 = + 1.4 c/litre
  Regulation bonus = + 0.84 c/litre

- **Bonus schemes:**
  (a) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: Less than 50,000 equal base price; 51 to 76,000 = 3.6 c/litre instead of 5 c/l in base price; 76 to 100,000 = 2.2 c/litre instead of 5 c/l in base price; 100 to 151,000 = no 5.0 c/litre in base price; 151 to 250,000 = - 2.2 c/litre off base price.

(b) SCC: 400 to 500,000 = then 1.4 in base drops to 0.5 c/l; 5 to 600 = - 0.5 c/litre; 600,000 plus = - 0.7 c/litre (Therefore in total losing 2.1 c/litre off base price).

Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Lisavaird Co-op

- Base cash price May 2005 26.82 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition with approximately 39% based on fat and 61% on protein.
- Fat + 0.29 c/l for each 0.1%. Protein + 0.46 c/l for each 0.1%.

- **Bonus schemes:**
  (b) SCC: Bonus for less than 200,000 = 0.2 c/litre for 8 months of the year. Winter bonus (Nov/Dec/Jan and Feb) = 0.88 c/litre.
  (c) TBC: If average 3 tests less than 50,000 and none greater 100,000 = + 0.56 c/l
  (c) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: Tested 3 times per month. Less than 100,000 = 5 points/test; 100 to 149,000 = 4 points/test; 150,000 to 249,000 = 3 points/test; 250 to 349,000 = 2 points/test; 350 to 499,000 = 1 point/test; Over 500,000 = 0 points/test. If pass 3 TBC tests get 5 points for each test and if have 15 points no deduction.
  Points deduction as follows: 15 points no deduction; 14 points = - 0.28 c/l; 13 points = - 0.56 c/l; 12 points = - 0.84 c/l; 11 points = - 1.12 c/l; 10 points = - 1.68 c/litre; 9 points = - 2.51 c/litre; 8 points = - 3.35 c/l; 7 points = - 3.91 c/l; 6 points = - 4.75 c/l; 5 points = - 5.59 c/litre; 4 points = - 6.68 c/l; 3 points = - 8.38 c/litre
  (b) SCC: Less than 400,000 = no penalty; 400 to 600,000 = - 1.0 c/litre; 600 to 800,000 = - 2.0 c/litre; 800,000 plus = - 4.0 c/litre
  (c) Thermoduric bacteria: From 1 September 2005, for counts greater than 1,000/ml = - 0.3/litre
  (d) Sediments: For 'Disc C' or worse a penalty of 0.5 c/litre for months supply
  (e) Lactose: Greater than 4.20% = no penalty; 4.00 to 4.20% = - 3.0 c/litre; Less than 4.0% = - 6.0 c/litre

Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Town of Monaghan Co-op

- Base cash price May 2005 27.20 c/l at 3.6% fat and 3.3% protein.
- Approx 87% based on composition with 47% (of this 87%) based on fat and 53% on protein.
- Fat + 0.36 c/l for each 0.1%. Protein + 0.40 c/l for each 0.1%.
- Approx 13% of base price consists of quality;
  TBC: TBC tests averaging less than 50,000 = + 2.52 c/litre
  SCC: Test less than 400,000 = + 0.56 c/litre
  Registration bonus = + 0.28 c/litre

- **Bonus schemes:**
  (a) Vat = 4.8%

- **Penalty schemes:**
  (f) TBC: Grade based on 3 tests: Less than 50,000 equal 6 points; 51 to 75,000 = 5 points; 76 to 100,000 = 4 points; 101 to 200,000 = 3 points; 201 to 500,000 = 2 points; Over 501 – 999,000 = 1 point. > 1 million = 0 points.
  TBC: Standard = 18 pts = + 2.52 c/litre; 16 – 17 pts = 1.67 c/l; 14/15 pts = 0.84 c/l; 11/13 pts = 0 c/l; 8/10 pts = - 5.6 c/l; under 8 points = -11.2 c/l.
  (a) SCC: Less than 400,000 = 0.56 c/litre; 401 to 500,000 = 0 c/litre; 501 to 750,000 = - 0.56 c/litre; > 751,000 plus = - 1.12 c/litre
  Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Newmarket Co-op

- Base cash price May 2005 27.07 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition with approximately 47% based on fat and 53% on protein.
- Fat + 0.35 c/l for each 0.1%. Protein + 0.39 c/l for each 0.1%.

- **Bonus schemes:**
  (a) SCC: Bonus for less than 200,000 = 0.3 c/litre
  (b) Vat = 4.8%
- **Penalty schemes:**
  (a) TBC: Less than 50,000 equal base price; 50 to 75,000 = - 0.56 c/litre; 75 to 100,000 = - 0.70 c/litre; 100 to 200,000 = - 1.4 c/litre; 200 to 300,000 = - 2.79 c/litre; Over 300,000 = - 5.59 c/litre.
  (b) SCC: Less than 400,000 = no penalty; 400 to 600,000 = - 0.28 c/litre; 600 to 800,000 = - 1.12 c/litre; 600,000 plus = - 3.35 c/litre
  (c) Thermoduric bacteria: From 1 September 2005, for counts greater than 1,000/ml = - 0.3/litre
  (d) Sediments: For 'Disc C' or worse a penalty of 0.56 c/litre per month
  (e) Lactose: Greater than 4.20% = no penalty; 4.00 to 4.20% = - 1.75 c/litre; Less than 4.0% = - 2.0 c/litre

  Further penalties for Added Water and Inhibitors/Antibiotics

Milk Pricing Policy for Wexford Co-op

- Base cash price May 2005 27.06 c/l at 3.6% fat and 3.3% protein.
- 100% based on composition with approximately 38% based on fat and 62% on protein.
- Fat + 0.29 c/l for each 0.1%. Protein + 0.48 c/l for each 0.1%.

- **Bonus schemes:**
  (a) Vat = 4.8%

- **Penalty schemes:**
  (a) TBC: Tested 2 times per month (2 schemes summer and winter). 50,000 or under = premium; 51 to 100,000 = 3 points/test; 101,000 to 150,000 = 2 points/test; 150 to 300,000 = 1 point/test; Over 300,000 = 0 point/test.
  Points deduction as follows: Premium in summer is 2 tests less than 50,000 or a combination of 2 tests less than 80,000 = base price; Grade 1 is 5/6 points = - 1.39 c/l; Grade 2 is
  4 points = - 2.79 c/l; Grade 3 is 3 or 2 points from 2 tests
  = - 16.12 c/l; Grade 4 is 1 point from 2 tests = - 21.63 c/l; 0 points = no grade = - 24.42 c/litre.
  (b) SCC: One test per month; Less than 400,000 = no penalty; 400 to 700,000 = - 0.28 c/litre; Over 700 = - 0.56 c/litre. (Under review)

Further penalties for Added Water and Inhibitors/Antibiotics

Getting There in the Face of Challenges

by

Brody Sweeney
Chief Executive Officer and Founder,
O'Brien's Irish Sandwich Bars

Brody Sweeney is the founder of the award winning O'Brien's Irish Sandwich Bars and is famous for turning the Irish 'sanger' into an international brand - O'Brien's Irish Sandwich Bar. The Company specialises in made to order sandwiches and Gourmet Coffee, in a contemporary Irish setting, and has become one of Irelands most visible and successful export brands.

Brody Sweeney started tapping into his entrepreneurial flair and creative drive in his teens and experienced many near disasters before he started O'Brien's. Having been expelled from school at 16 for ' his wrong attitu
business degree, Brody used his practical approach and got hands on experience in business and franchising at his fathers franchising business Prontoprint.

Since the opening of the first Store in 1988, Brody and his management team have successfully opened over 260 outlets in Ireland, UK, the United States, Denmark, Australia and Asia (India, Singapore, Taiwan, Malaysia, Thailand, Indonesia and Saudi Arabia). The U.K. is the largest market with over 140 stores, mostly franchised. O'Brien's is the largest Gourmet Sandwich and Coffee chain in the U.K. and Ireland, and one of the fastest growing Restaurant chains in Europe. O'Brien's plan to grow to 1,000 stores over the next 5 years.

Brody recently launched his new book 'Making Bread' in June - the real way to start up and stay up in business'. Making Bread is more than a practical and easy-to-read guide that seeks to encourage people to take the huge step of setting up in business. It is the story of one man's dream, which nearly ended as soon as it begun, to build a successful international franchise.
Note: Brody Sweeney has waived his professional fees for this conference. Consequently, Teagasc have agreed to make a generous contribution towards a charity of Brody's choice – The Christina Noble Children's Foundation.

Options for Dairy Farmers

by

Seamus Kearney,
Dairy Advisor,
Teagasc Dungarvan

Executive summary

Dairy farming has always been a challenging and changing workplace. For those that succeed it has been a rewarding job. Dairy farming is now entering another period of change (2005-2014) with milk supports being gradually reduced in 2005, 2006 and 2007. In the face of falling milk prices and rising costs, dairy farmers are concerned about their future. The new challenge to you the dairy farmer is how to harness change in the post Fischler era to secure your future in farming.

Dairy farmers are currently looking at their options for many various reasons. These include income pressure from many sources, the advent of the Single Farm Payment and lifestyle pressures. Dairy farmers have overcome change in the past and will continue to overcome obstacles in the future with the support of their families.

Sit down with your family over the coming weeks and discuss where you as a family want to be in five years time. It's important to plan now and make sure all the relevant people in your household are involved. It will mean that everyone is working to a common 'focus'. When planning for the future you will have to look at the sources of income in your own household and examine which sources of income can be improved in the future. Some sources of income are already pre-determined so the main sources to look at will be farm income and off farm income.

When you decide to look at your options with the people that matter to you, it's a matter of sitting down and going through the *' five steps to success'*. By establishing your current situation and identifying your future family needs you will have a starting point and a finishing point for your family's next five-year journey. By examining all possible options that may suit your family you will give yourself a better chance of choosing the correct option to fit your family situation. Once having made the list of options, shortlist the ones most likely to suit you and examine them in detail. By doing this it will mean that your family is making the best-informed decision that it possibly can. Now you are in a position to make a decision to choose the option that best suits you, to achieve your future goals in dairy farming.

Why look at Options?

Looking at the bigger picture the number of dairy farmers in Ireland continues to fall, as it always has done. Back in 1983 just prior to the introduction of milk quotas Ireland had 86,300 farmers engaged in the production of milk (DAF). The eight years after quotas arrived saw a fairly dramatic exodus of dairy farmers, with the number of milk suppliers in December 1991 estimated to be 50,600. By 2000 the number of milk suppliers was at 29,071. Fast-forward to 2004 and the number of dairy farmers still producing milk stands at 23,767**.** Currently in the region of 1,400 dairy farmers, exit the dairy industry each year for a variety of reasons. This equates to four dairy farmers every day exiting milk production. So, for you to still be milking cows over twenty years after the introduction of quotas, shows that you have reached a significant goal in your life. Whether you know it or not, all of you must at some stage have said to yourself that in the year 2005 I will be milking cows. For those of you that want to stay in milk production over the next ten years, it will take a more detailed planning process to meet the next goal.

Many dairy farmers are now looking at their options for various reasons. The two main reasons that dairy farmers are looking at their options are the Single Farm Payment (SFP) and pressure on farm incomes. Many dairy farmers are asking if the SFP is an opportunity to be harnessed, or a threat to undermine future milk production. It means that dairy farmers are no longer tied to cattle numbers for premia. The SFP gives dairy farmers the opportunity to re-examine and change their farming systems for improved profit and an enhanced lifestyle.

We are now also heading into Ireland's second generation of farmers farming with milk quotas. The first generation, are looking to hand over the baton, but for many there isn't anyone to take the baton. Some of these older dairy farmers are wondering why are they continuing to milk cows if nobody will milk after them. Age or succession problems are the reason that some of these dairy farmers are looking at their options. Even younger dairy farmers with the lack of a successor are 'hanging in the Early Retirement Scheme. So as you can see there are various reasons why farmers are now, looking at their future options.

Where does household income come from?

For every dairy farm there are four different sources of income. These are namely (a). farm income, (b). direct payments, (c). state transfers, and (d). off-farm income. In most cases two of these sources of income (direct payments and state transfers) are now outside of your control as they are already fixed for your farm household. For 2004 the family farm income on dairy farms included €13,226 (NFS, 2004) which came from direct payments. These direct payments would have included livestock premia, Rural Environment Protection Scheme (REPS) payments, Disadvantaged Area Scheme (DAS) etc. The SFP and DAS has now fixed your direct payments for the years 2005 to 2012, so there will not be too much scope to improve direct payments outside of REPS. The SFP payable to dairy farmers in 2005 is predicted to be €13,370 per farm (Breen et al, 2003). Many other dairy farmers will also have REPS or DAS payments included in their farm income as future direct payments. State transfers such as children's allowance, old age pensions, carers allowances etc. are also predetermined by your families' age and circumstances. When looking at state transfers, 10.6% of all farm household income in 2000 came from this source (CSO, 2000).

This leaves two sources of income that can be changed to meet your family's goals in the future, namely farm income and off farm income. The National Farm Survey (NFS, 2004) shows that family farm income for 2004, on all dairy farms was €30,691. This figure included the €13,226 of direct payments mentioned earlier. The other source of income that you and your family have some control over is off farm income. This income is harder to define for dairy farms, as it can include operator and spouse/partner off farm income. In 2004, 46% of all dairy farm households had some form of off farm income coming into the household (NFS, 2004). Over 38% of spouses/partners worked outside of the farm to some degree, while over 14% of dairy farmers themselves earned an off farm income. Lets assume that the spouse/partner working off the dairy farm is earning the average industrial wage at €21,170 (CSO, 2005). So across all dairy farm households this would mean that the average off farm income earned by spouse/partner would be €8,045 (as 38% of households had spouses earning an off farm income). The average off farm income earned by operators working outside the dairy farm was in the region of €20,000 (NFS, 2004). This would equate to an average off farm income of €2,800 earned by the operator for all dairy farms (as 14% of households had the operator earning an off farm income).

So we now have a picture of the typical sources of income earned in the average earned dairy farm household in Ireland (table 1). The average milk quota is around 195,000 litres for the whole country.

Table 1. Income earned by the average dairy farm household in 2004

Farming activities		37.6%
Direct payments		28.5%
Operator – off farm income		6.0%
Spouse – off farm income		17.3%
State transfers		10.6%
Household income	**€46,461**	**100.0%**

Source: NFS and CSO

So while the SFP (direct payments in table 1) and state transfers are predetermined for the foreseeable future, you will have to look at farm income and off farm income to meet your family's future goals. The question is how are you going to change you household income to meet your family's future needs?

When to start the planning process?

In order to meet your family's future needs you will have to start planning now. As the great Roy Keane said, "If you fail to plan, you plan to fail". Planning is the cornerstone to everything successful. If you haven't a plan as to where you are going in the next five to ten years already, then you should be sitting down within the next few weeks to do so. The New Year is always a good time for completing such a task. The best thing about setting down a plan for the next five to ten years is that it will create a 'focus' for yourself and your family to work towards. Successfully meeting the end targets of a plan also gives a great sense of achievement for all involved.

Who should be involved?

Initially all the interested parties in your household should have an input into setting down what your farm household wants to achieve in the next five years. This way everyone feels involved, there is improved communication, and a greater sense of unity in meeting an agreed target. In most households in Ireland nowadays both people work outside of the house and farming is no exception. In many dairy farms the spouse/partner may work outside the farm, the operator works long hours, family time is limited and the whole family is stressed. If everybody is 'busy' but without a focus, nothing will change. By sitting down as a family and setting out goals that the family wants to achieve, life can become more managed. For example dropping an enterprise on the farm, cutting stock numbers, hiring farm relief, or even the spouse going part time in their job may all be solutions to giving the same income and a more balanced family lifestyle. In some cases sitting down with your children to do this exercise can highlight what they want to do in the long term, and it means that you are not guessing whether you have a successor to take on the farm or not. Later on when the plan becomes more definite others such as advisers, accountants, bankers, contractors and suppliers will become involved. All these people will have a major bearing on whether your plan can be achieved or not.

How to go about examining Your Farm Options?
Examining your farm options has to be done in *five steps*. These ***'five steps to success'*** are as follows:

(1). Establish your current situation,
(2). Identify your future needs,
(3). Examine all possible options,
(4). Evaluate 3 to 4 most likely options,
(5). Make a decision and implement it.

Step (1). Establish your current situation.
In order to know where you want to end up, you first need to know where you are. Dairy farmers are some of the most creative and resourceful individuals in Irish society. How many other people do you know complete six to seven different jobs each day? The following is a typical summer's day for a dairy farmer.

Table 2. Typical summer's day work for a dairy farmer

Task	Job Description
Milking cows	Production Manager
Deal with paperwork	Office Manager
Topping paddocks	Machine Operative
Tractor breaks while topping	Mechanic
Treat sick bullock	Vet/Stockman
Milking cows (relief milker)	Staff Manager
Tend to garden	Landscaper

When you look at the above list, which is just one day's work, you can see that dairy farmers are the CEO (Creative and Effective Organiser) of their dairy farm.

As well as establishing your own strength's you also need to look at the overall strengths and weaknesses of the farm and the farm family. For the farm look at

(a). Land base
- Is land in one block?
- Can cows graze all the land?
- Potential to access more land?
- Is land owned or rented/leased?

(b). Production costs
- Milk costs in cent/litre
- Drystock gross margin
- Replacement Heifers gross margin

(c). Stock numbers
- Dairy cow (how many to fill quota)
- Calves
- Replacement heifers
- Cattle

(d). Housing facilities
- Winter accommodation (expansion potential/REPS/Nitrate Directive)
- Feed storage

(e). Milking facilities

- Speed of milking
- Adequate for expansion?

(f). Paddock system and roadways

- Adequate for expansion/time efficient

This should give you a picture of all the strengths and weaknesses for your farm.

For your family look at the number of children, age and knowledge/education level for yourself and your spouse/partner, successor and living expenses. How many of you know what your household drawings for 2005 were? This is essential information, as you need to be able to predict from this figure what future drawings are likely to be. The easiest way is to operate a second 'household account'. You are then paid a monthly 'wage' into this account from the farm (business) a
account' is then used for running the household. It works a treat for those that use it.

It is only when you sit down and go through the list that you will realise that you have many more strengths than weaknesses in your possession. At this point list all the reasons you are farming and all the positive points to farming as well. What are the advantages to dairy farming? When asked this question the following are the list of answers usually given.

(1). I am my own boss.
(2). Healthy outdoor lifestyle.
(3). Family friendly job.
(4). Farming gives a sense of achievement.
(5). No traffic congestion on the way to the milking parlour.

While dairy farming can be challenging, when obstacles can be overcome it has many positives attributes (strengths).

Step (2). Identify your future needs.
How many people can actually say that they have taken the time to look at their family needs five years down the road. Looking at future needs means looking at financial and physical needs of the family. For example, will your children be in primary school, secondary school, third level education or working themselves in five years time? Each of these scenarios will have a major effect on your family needs in the next five years. If children are in primary school, it may mean organising your working day around school hours. If your children are in third level, it will put huge pressure on household income for the duration of their education. While if your children are working it will have implications as to whether they want to milk cows or not, which is going to have a huge bearing on what farm enterprises you continue with in the future. Also how old will you be in five years time? Will you be milking cows in five years time? What do you want for yourself and your spouse in five years time? It is only by sitting down with your family that everyone will know where your family wants to be in five years time.

When looking at future needs write down three to four of your family goals for the future, for example,

Increase family profit,
Farm for profit,
More time with family,
Farm within a sustainable system.

Now everyone is singing from the one hymn sheet and the whole family knows what needs to be achieved. This creates a 'focus' for everyone. All that needs to be finalised now is what will the financial needs of the family be in five years time. This can be done by taking 2005 household drawings, and adjusting them for inflation (say 3% per annum). For example if household drawings in 2005 are €36,000 then by 2010 household drawings will need to be €41,730. Of course other costs such as education will have to be added, especially if you are looking at third level education. So now you have a picture of what you need by 2010, both physically and financially. You now have your journey end point.

Step (3). Examine all possible options.

Having completed steps 1 and 2, you and your family will have both ends of your journey, i.e. the starting point and the finishing point. Now it's only a matter of deciding how are you and your family going to complete the journey. So what are your options? This step should not be too bad now, as you now know what you want in five years time. So let's start listing possible options. Write them all down, i.e. the good, the bad and even the mad options. This is important because even the maddest options may suit. So what are the options available to dairy farmers currently?

(a). Expand milk quota
- Restructuring (small amounts)
- Purchase quota (ceasing relative)

(b.). Partnerships
- Family partnerships (with children)
- Standard partnerships (with other dairy farmers)
- Other partnerships (land/labour with drystock farmers)
- Sharemilking
- Equity partnership

(c). Improve efficiency

(d). Improve EBI
- Extra milk solids (higher milk price)
- Fertility traits (more suitable cow)

(e). Heifer selling enterprise

(f). Bull selling enterprise

(g). Expand/Exit cattle enterprise

(h). Rural Environmental Protection Scheme

(i). Dairying and suckling

(j). Organic farming

(k). Once a day milking

(l). Off farm job
- Spouse (back to work)
- Operator (few hours a week/during dry period)

(m). Forestry

(n). Contract rearing
- Calves (save time)
- Heifers (same as taking land)

(o). Winterage
- Own land (reseeding and save housing costs)
- Neighbours/Tillage farmers land (use for three months)

(p). Add value to milk
- Farmhouse cheese
- CLA milk

(q). Alternative enterprises
- Old dwelling (holiday cottage)
- Stable horses for 'urban dwellers'
- Bed and Breakfast
- Farmhouse produce

(r). Lease farm
(s). Sell farm

As you can see there is a pretty exhaustive list of options that are available to dairy farmers. Not all will make sense in your situation, but there should be an option to suit everybody. For many choosing 2 to 3 complimentary options may be the way ahead. So that leads you into to step 4 i.e. evaluating options.

Step (4). Evaluating Options

The options you choose will depend on your age, family needs and land base available to dairy cows. Having made up your list of future likely options, reduce the list to three or four more practical options that suit your circumstances. Evaluate each of these options from a financial and physical point of view. The following would be an example of evaluating one likely option in further detail.

Example

Your uncle is getting out of milk and you have the chance of buying 113,500 litres of milk quota. You are already milking 272,400 litres on 40 ha. What are the implications of buying your uncles milk quota?

Table 3. Physical changes with extra milk quota

	Current	Proposed
Land	40 Ha	40Ha
Milk Quota	272,400	385,900
Dairy Cows	50	70
Calves	50	70
Cattle (1 to 2 years)	50	18

So cow numbers will have to increase by 20 cows. Cattle will have to be sold as yearlings, unless further land can be rented (depending on availability and price). Milking parlour will have to increase from 8 to 12 units. Existing milk tank of 3,178 litres will have to be changed to at least 4,500 litres. Luckily all the land is in one block so, it all can be grazed by the dairy cows. Buying the quota will rule you out of REPS, as your stocking rate will be too high.

<u>Financial changes</u>

The first financial change to look at is what extra income will be generated. In this case your variable costs of milk production are 8 cent/litre and your gross margin (GM) on keeping cattle from 1 to 2 years of age is €150/head, and your gross margin on keeping calves to 1 year is also €150/head. So what are the implications of the purchase of extra milk quota (table 4).

Table 4. Implications for purchase of extra milk quota to farm profit

Extra income	
113,500 litres @ 24.2 cent/litre	
15 extra yearlings @ €150 GM/head	
Total extra income	
Extra costs and loss of drystock GM	
Variable costs on 113,500 litres @ 8 cent/litre	
40 less 2 year olds @ €150 GM/head	
Total extra costs and loss of drystock GM	
Extra profit from changeover	

So the proposal is financially profitable, but what extra investment will be needed on the back of the purchase of the extra milk quota (table 5).

Table 5. Implications for the purchase of extra milk quota to capital investment

Capital investment	
Purchase milk quota @ 55 cent/litre	
Extend parlour by 4 units @ €2,500/unit	
New milk bulk tank	after DHS Grant €11,000
Purchase 20 Dairy Cows @ €1,250/head	
Total Investment	
Less sell 40 yearlings (reducing drystock)	
Total Net Investment Cost	

The total cost of borrowing €40,000 over 7 years at 5% is €6,915, which will have to come from the extra profit generated from the extra milk produced (€14,670). So after servicing the loan, the option of purchasing 113,500 litres will leave a net cash flow of €7,755 to you. This option is looking good so far. Now list all the advantages and disadvantages for the option.

Advantages.

(a). More profitable system than present.

(b). Simplier system (cattle to yearlings only)

Disadvantages.

(a). Extra investment costs.

(b). REPS ruled out with stocking rate.

(c). More calves to rear.

Now you and your family are more informed as to whether this option is the one to suit you. The same analysis would be applied to the other options you have short-listed.

Step (5). Make a decision and implement it.

Having done the physical and financial analysis on your chosen 3 to 4 options, you and your family are going to be faced with making a decision. Which option is the one that is going to help your family meet it's goals in the next five years? Usually the correct decision is the one that best fits with your goals and aims 'at the time that you make the decision'. All you can do is work with the factors that you have control over.

Conclusion

Dairy farming like all jobs has its rewards and challenges. By sitting down with the people that matter to you, and completing the *'five steps to success'* any challenge can be overcome. So you now need to

(1). Establish your current situation,
(2). Identify your future needs,
(3). Examine all possible options,
(4). Evaluate 3 to 4 most likely options,
(5). Make a decision and implement it.

At times it won't be easy but with the help of your family you can make dairy farming an enjoyable and profitable way of earning your living for the coming decade. Here's wishing you and your family a profitable and enjoyable next decade in dairy farming if you feel that is the best option that fits with your family's goals.

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MY FUTURE OPTIONS IN FARMING

by

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My name is Philip Donohoe and I hail from Goresbridge, a small village on the Carlow/Kilkenny border. I'm married to Michelle we have two young children. I have been farming since I left school in 1985 and when my parents retired ten years later, I took over control of the farm.

The farm itself consists of 120 adjusted acres of good dry land, all in one block. It is made up entirely of grass in 21 divisions of varying sizes and serviced by a central roadway. The farm carries with it a milk quota of approx. 63,000gals (286,000 litres). This is produced in a spring milking system supplying Glanbia Co-op. An eight unit-milking parlour, cubicles for 93 animals and a 4 span double-sided slatted shed are main facilities on the farm. All these buildings having been constructed in the late 70s or early 80s by my father. The stock numbers on the farm can vary slightly from year to year but approx.

Cows	60
0 – 1	60
1 – 2	60

Options in Farming

The title of my paper today is "My Future Options in Farming". At this point I would like to acknowledge the variety of options that are outside the farm gate and while they should not be over looked, they are outside the brief I have been given.

"Do what you've always done and you'll get what you've always got" is a saying I often like to quote. I'm sure we all agree that getting what we've always got is not sufficient going forward. Therefore it stands to reason that doing what we've always done is also not sufficient going forward. In other words, we have to change our farming systems if we want to increase our profits and maintain our standard of living.

When I was given this title I asked a friend and colleague what he considered my options to be? His reply was, my only option was to get more quota! In hindsight I believe he wasn't just referring to me, he was also referring to himself. And I bet if dairy farmers at this conference were asked where they thought their own options lie, most if not all would be based around more quota. This automatically leads to the follow-on question of why do we want more quota? The answer to this must be, to make more money and not just milk more cows. I believe that by identifying the real goal/objective of making more money, we have found the key to the door that is going to give us options. And at the same time takes us out of the frustrating rat race that is the quest for quota.

Current Performance

Okay, so how am I going to make more money, and how much more do I need to make? To answer these it is essential to know where I stand today financially and efficiently. This information is got from my profit monitor. Summarised as follows:

	C/L
Gross Output	30.70
Variable Costs	4.04
Common Costs	8.98
Common Profits	21.72

Beef gross margin excl. premia per Ha

To maintain my current spending power I have identified that my farm needs to make an extra €25,000 per year by 2010. The efficiency level on the farm while quite good, still has scope for improvement, with particular attention needed on my top line figure (Farm Output). After all if you don't turn it, how can you hold on to it.

When it comes to deciding what options are available to me, I believe that I don't have to do any ground-breaking research, or come up with totally new innovative methods of making money. The wheel does not need to be reinvented, because the options are already there. Every time we pick up a farming paper its full of trial results and the latest research information. All I have to do is refine the ones relevant to my farm. Sometimes as they say "we can't see the wood for the trees". We have got to take a leap of faith with our Dairy Research.

Option 1: Quota Purchase
Unfortunately I don't have any inside information on how much will be available to purchase over the next 5 years. So I am assuming amounts will continue to be small and I estimate 45,000 litres (10,000gals) over that period, at a cost of 12cent/litre, which is next years fixed price. So will I make any money from such a purchase and if so how much? Before I get into the costings it is important to know a few vital bits of information about my farm. All systems are in place to handle an extra 90,000 litres (20,000gals) without any capital cost needed. The bulk tank is big enough, the parlour is sufficient size and housing is in place. Therefore, the only costs associated with extra quota are the cost of the quota and the purchase of cows to fill it. All costings will be based on FAPRI milk price projections, which is 22cpl. But as my protein is currently 3.50% and my fat 4.10% I will receive a milk price of 2cpl above the base price. Therefore I am working off of a milk price of 24cpl. To price the cost of extra cows I am assuming that 9 cows at €1,000 each will fill the extra quota. So on a cent per litre basis the cost is 9,000/45,000 = 20 cent per litre. The final variable would be the timeframe of the investment. I'm taking it as a 5 year investment but that's completely up to the individual.

	cpl	
Milk Price	24	
Less Variable Costs	4	
Yearly Returns	20	
5 yr. Return		100
Less		
Cost of quota	12	
Cost of cows	20	32
5 yr. Profit		68
Profit per year	13.6	
GAIN		

When pricing quota purchase it is essential to compare it financially with existing beef performance. In an attempt to do that, I know that my beef enterprise is grossing €789 per Ha at a stocking rate of 2.4 LU/Ha. If that hectare was converted to dairying I'd have 2.4 cows milking 5,000 litres each or 12,000litres/ha returning €789. In other words there would be a margin of 6.5c/l (789 ÷ 12,000). Now, I have a benchmark to judge all quota investments from. If it doesn't gross more than 6.5c/l I won't do it. That floor is reached if you get 22c/l for milk and have variable costs of 9c/l which grosses just 6.6c/l. Again I'll point out that no capital costs are factored into these evaluations. Quota purchase can still be profitable with capital expenditure, but only at a reasonable price, only with low wintering options and only with a high level of efficiency.

Options 2: Fertility

Like most other farmers in the country I have not escaped the scourge of depleting fertility performance over the last numbers of years. This needs to be tackled on two fronts:

(i) Calving interval: which is currently 370 days
(ii) Replacement rate: which is currently 23%

Luckily work in Moorepark has led to these figures being quantifiable. Thus, in the case of calving interval, for every day your calving interval goes over the optimum of 365 days there is a loss of 0.12c/l over the entire quota.

In the case of replacement rate, for every percentage point you go over the optimum of 18% there is a loss of 0.14c/l over the entire quota.

Now that we have a fertility index built into the EBI Formula there is no excuse that with the use of high EBI Bulls with a particular focus on fertility, that I can't reduce my calving interval and replacement rate to the optimum levels. Thus, leaving me a gain over my new quota size of 331,000 litres.

Calving Interval:	5 days x 0.12c x 331,000 litres	=	
Replacement Rate:	5% x 0.14cent x 331,000 litres	=	______
	GAIN	**=**	

Option 3: Replacement Heifer Sales

With the development of the EBI index, and the ongoing improvements to it, added to the amount of on farm data being used to compile the figures, I believe that EBI will become increasingly important as farmer confidence in it grows. As my herd has a reasonably high average figure of 48, this is an area that can be cashed in on through the sale of high EBI heifers.

In a few years it should be possible to have 30 replacement units on the farm. 11 of those would be required for the dairy herd, leaving 17 to be sold as calved heifers assuming 2 would not make it to calving stage. There is no reason why all these animals should not be over 50 EBI and therefore command a premium price of approximately €1,100 each

Assuming the beef animals they would be replacing would be valued at €870 (600kg LW – KO 52% - to get them to 2yr. old this would leave a premium of €230 per head by 17 head.

GAIN €3,910.

Options 4: Beef Production System

The current beef production system has involved the finishing of all beef animals on the farm at 2yr. old. But a period of being a monitor farm for the joint Teagasc/Glanbia project during which time there was comprehensive weights recording highlighted some very interesting information to me. Again, information that was not new, just I never listened before. That information being:

(i) A calf will put on approx 0.75kg/day on good grass alone, eating about 3kg grass dry matter. While a 1½yr. old will roughly only put on the same weight on grass alone but eating about 8kg of grass dry matter. Therefore on a feed efficiency basis the calf is nearly 3 times better.

(ii) The finishing winter period throws off very little profit, if any.

So I intend to change my beef system. Buying 25 calves to bring numbers up to 100 (Bulling 60 cows & 30 heifers) and selling 50 of these in March/April and the remaining 20 in June/July with 30 replacements retained. This should keep my stocking rate constant. The change to farm profit should be as follows, assuming calves can be bought for €150 at 2 weeks old, 1yr. olds sold at €500 at a weight of 350kgs and 2yr. old sold at £1/lb (€2.80/kg)

	Calf 2 Beef	**100**
Calves		
Length of winter – days	100	75
SALES		
- 2yr.olds 30 x €870	26,100	
- 1yr.olds 70 x €500		35,000
Difference in meal costs 6 ton x €125		750
Difference in milk fed (2,000gals x 50cent/gal)		(1,000)
Difference in silage cost (15ton x €20)		(300)
Calf purchase 25 x 150		(3,750)
Gross	26,100	30,700

GAIN

Option 5: Cost Reduction

While costs on the farm are quite competitive there is no room for complacency and the battle to reduce costs continues. Over the next few years it is my intentions to reduce costs by a further 1 cent per litre. While efforts will be made on all fronts I believe the best prospects for this reduction are in my fixed costs, which don't rank as well as my variable costs. An example of these being, maintenance & repairs, insurance, car/electricity/phone, leases etc. A 1cent/litre reduction would leave a

GAIN €3,150.

Other issues:

Another obvious option is to join REPS. To comply with this I would have to drop 30LU of drystock which are returning a margin of €330/unit or €9,900 in total. This is more than what would be received under REPS €8,200. I know there would be a fertiliser saving under REPS , but there would also be compliance costs, therefore REPS is not an option for me at the moment.

These options appear to me to be my best road forward. But I must warn you that I don't consider them to be a blueprint for every dairy/beef farmer. It is up to each individual to do their own maths, with their own figures.

Speaking of maths the total gain of my options amount came to , which falls short of my target of €25,000. This does not unduly worry me "the problem is not to aim too high and miss, the problem is to aim too low and hit".
The figures used in my options were kept as simple as possible for presentation purposes and in reality some fine-tuning would need to be done. Also I would greatly appreciate your views on my options. Are the figures I used realistic? Have I missed anything? Or am I way off the mark altogether?

Attitude:
There is one other thing that is central to the whole area of progress and that is attitude. A positive attitude is absolutely vital. Because with a positive attitude you'll see opportunities where a person with a negative attitude will see obstacles. And we do have a lot to be positive about.

- We have a great working environment
- Own boss
- Great job satisfaction knowing all progress was our own doing as opposed to other jobs where you do what you're told like a monkey.
- We have a variety of skills and ability to make decisions.
- No commuting.
- Potential to earn more money than those in the workplace. Subject to efficiency.
- Assets to borrow against or sell. High net worth.

We might not have all the knowledge to avail fully of all options yet but we can educate ourselves. Anyone who thinks education can be expensive should see how expensive ignorance is. Trust me I Know. I just have to look at my figures 5-10 years ago.

Bigger picture:
What about the bigger picture? Of course I have dreams and expectations that are bigger than what I have outlined here today. And while I don't know exactly how they will present themselves, I certainly will keep my eyes open for such opportunity or series of opportunities, and I hope I will see it when it does come. While it is impossible to put an exact timescale on such an event it is vital that I don't get disillusioned and frustrated or I may miss the boat. In the meantime I can stay motivated by setting goals that I do have control over, and can achieve like those already mentioned. The business philosophy is simple, maximise profit from the farm and use the free cash only in high return areas.

Message to industry leaders:
I feel I can't let this opportunity slip without a word to the industry leaders here today. While we talk of options you should realise that we as farmers can only avail of options but you as leaders can create options. And I call on you to do just that lead and create.
Summary:

- Be Positive
- Identify real goal – Financial
- Set realistic but tough target
- Look at all areas of your business
- Keep an eye on the bigger picture
- Be business like in your evaluations
- You'll never get anywhere new if you travel the same road.

The 3500 Kg Milk Solids Lifetime Target.

by

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Executive Summary

The current direction in animal breeding is to use economic indexes based on farm profitability. Breeding values for output traits (milk, fat, protein) have been around for some 30 years now. They have helped increasing lactation yields. In the Netherlands lactation solids have increased from 320 kg in 1960 to almost 700 kg in 2005.
In the last 10 years most breeding programmes have changed emphasis from single trait selection for production to a more balanced selection for profit. This change was driven by the increased emphasis on cost reduction and the introduction of evaluations for 'new' traits like longevity, fertility and udder health. Most of the economic value of these traits comes from cost reduction.
In the future these traits will become even more important because of political regulations and food chain issues. All this will result in an economic index that puts more emphasis on health & fertility, longevity at the cost of production. As a result the increase in lactation yields might reduce but lifetime yields definitely will increase because of lower replacement rates and less health & fertility problems.
The current Dutch dairy cow produces 2200 kg of solids in 3 years and 4 months. Over the last 5 years there was an annual increase of 60 kgs of solids. Extrapolating this increase means that by the year 2025 the average Dutch cow should be able to produce 3500 kgs of solids.

Past

Up to the mid 90's most of the attention in dairy cattle breeding was aimed at increasing output traits. Breeding values for production traits were available in all of the major dairy countries. Conformation breeding values were available as well and were used to improve udder, feet & legs and body traits. Of course genetic improvement and management improvement should go hand in hand and together these improvements increased production yields drastically. Table 1 shows the increase in lactation yields in the Netherlands over the last 45 years. The amount of milk per lactation doubled in this time period. Fat percentage increased by .55% and protein percentage increased by .15%. Altogether the kg of milk solids more than doubled from 320 kg in 1960 to almost 700 kg in 2005. This is for sure quite an achievement. One of the downsides of this production increase can be seen from table 1 as well. The average lactation length increased by 40 days as well, indicating that fertility might have deteriorated. Average calving interval is now 411 days. The Dutch production system is not seasonal and therefore this calving interval is less of an issue compared to seasonal production systems.

By the mid 90's farmers started to call for a change in breeding programmes. They felt that production was at an acceptable level and that production increase became less important. With increasing farm size the time spent per cow decreases and therefore farmers were looking for trouble free cows. These cows should be able to look after themselves and still produce good lactation yields with acceptable calving intervals. Translating this into individual traits means that cows should have low mastitis incidence, low lameness, good conception rates, low somatic cell counts, low metabolic disorders, good calving ease, low stillbirth rates and good lactation yields.

Overall this would ensure low replacement rates and, combined with good lactation yields, high lifetime yields.

Table 1. Average lactation yield of Dutch dairy cows.

year	lactation length	kg milk	% fat	% protein	kg fat+protein
1960	306	4420	3.85	3.34	318
1965	304	4370	3.95	3.35	319
1970	305	4639	3.96	3.33	338
1975	307	4902	3.98	3.40	362
1980	311	5466	4.05	3.38	406
1985	304	5559	4.16	3.39	420
1990	312	6873	4.38	3.46	539
1995	328	7508	4.46	3.50	598
2000	336	8418	4.37	3.48	661
2005	346	8788	4.40	3.49	693

Around that same time genetic evaluation centres introduced breeding values for the above mentioned traits. This of course is a prerequisite for genetic improvement of these traits. Most of the major dairy countries had genetic evaluations for longevity, fertility, udder health and calving traits by the late 90's.

Present

Todays breeding programmes are focussed on improving farm profitability. EBI in Ireland, NM$ in USA and DPS in the Netherlands are examples of total merit indexes based on farm profitability. With the help of these indexes farmers should be able to breed future generations of trouble free cows with a good production. The current Dutch cow population is the first generation of cows selected on DPS. Bulls selected according to these new breeding goals become available from this year on. The new breeding goal is more or less aiming at high lifetime yields. Table 2 shows these yields.

Dutch cows culled in 2005 had a lifetime yield of almost 2200 kg milk solids. The cows were almost 1,100 days in milk and produced 27,700 kg of milk with 7.9% solids. What is especially interesting in table 2 is the trend in lifetime yields. In the last 10 years lifetime yields for milk solids increased by 300 kg and all of this gain comes from the last 5 years! Between 1995 and 2000 the lifetime yield remained constant at 1,900 kg milk solids. Although milk production per lactation was still increasing the lifetime yield did not increase anymore. The decrease in total days in milk is the reason for that. It shows that simply looking at milk yield per lactation is only part of the picture. An overall profitable cow should be able to produce good lactation yields for many lactations.

Between 2000 and 2005 the cows showed an increase in both lactation milk yields and total days in milk. Together they are responsible for the large increase in lifetime yields. Percentage of solids per kg of milk remained constant at almost 8% per kg of milk. An extra increase in lifetime milk solids could therefore be achieved when solids per kg of milk increase as well.

It would be tempting to explain the increase in lifetime yields in the last 5 years by the new breeding goal. Of course this is highly overestimating the importance of genetic improvement. The increase in lifespan is probably due to economic factors. The costs of raising young stock has increased due to environmental legislation and due to the lower prices for culled cows. Because of this the number of young stock has decreased and this immediately causes an increase in lifespan.

Table 2. Lifetime yields of Dutch dairy cows

year	total days milk	in kg milk	% fat	% protein	kg fat+protein
2005	1,071	27,701	4.42	3.49	2,190
2004	1,057	27,080	4.42	3.49	2,140
2003	1,037	26,358	4.42	3.49	2,083
2002	1,004	25,401	4.41	3.48	2,004
2001	990	24,980	4.40	3.48	1,970
2000	967	24,044	4.40	3.48	1,895
1999	976	23,883	4.42	3.48	1,888
1998	998	24,125	4.44	3.49	1,912
1997	979	23,255	4.45	3.50	1,848
1996	1,001	23,410	4.45	3.49	1,860
1995	1,038	23,950	4.46	3.49	1,904
1994	1,003	22,924	4.45	3.48	1,819
1993	1,006	22,666	4.44	3.47	1,793
1992	996	22,132	4.41	3.46	1,743

The increase in milk production is due to genetics and due to the increase in lifespan. A larger proportion of the cow population finishes lactations 4, 5 and higher and these lactation yields are higher simply because the cows are mature.

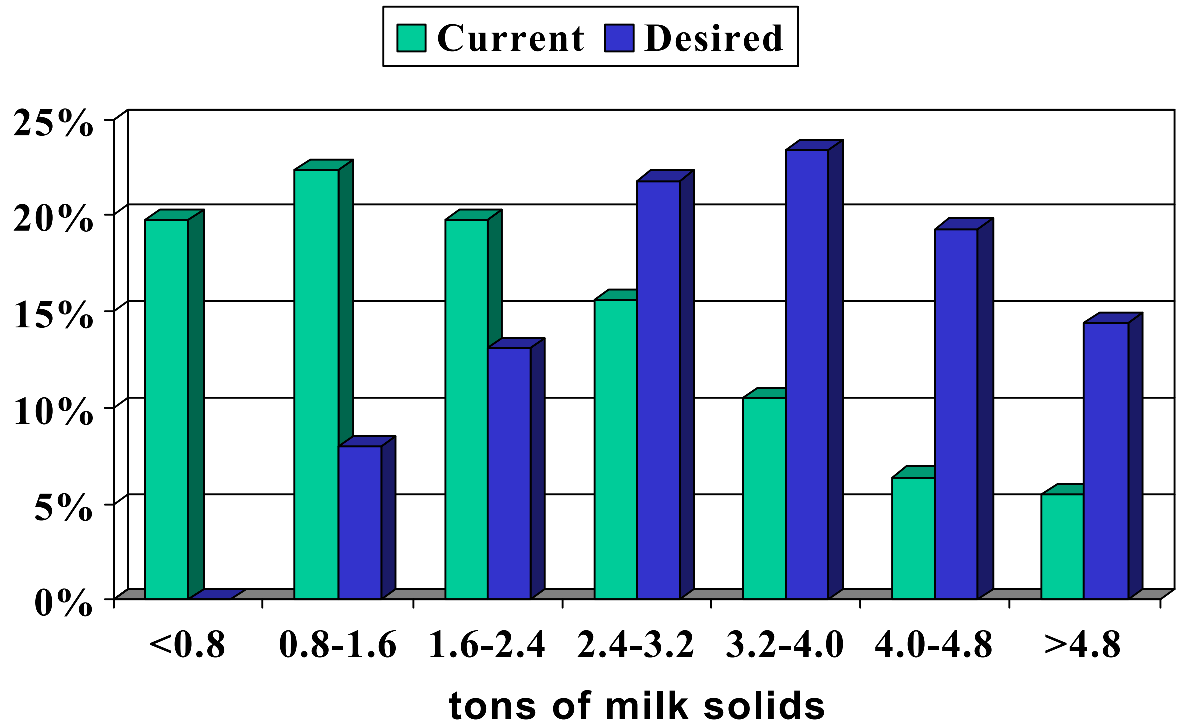
Future

In the future health & fertility traits will become even more important. The two main reasons for that are political regulations (animal welfare, environmental legislation, general food law) and food chain issues ultimately resulting in consumer confidence in dairy products. Farmers, dairy cattle improvement organisations and dairy processors will have to join forces to meet these new demands. First and foremost there should be an economic drive for each of the three participants to do their part of the job. This drive already exists for EU regulations and for retail prices as well, e.g. high calcium milk. The price difference should be reflected in dairy processor payment schemes to make sure that farmers benefit from it as well. For that farmers will have to produce milk that meets the processor's demands. One of those demands will be recording health and welfare traits to meet quality assurance schemes. EU regulations will require this recording as well. This data could and should also be used for herd management and breeding purposes to make the most of it. Dairy cattle improvement organisations should incorporate this data in their genetic evaluations and breed bulls that improve these traits. Besides health and welfare traits it is also likely that new output traits like fat composition and nitrogen efficiency will appear. These traits will also be incorporated in breeding programmes. Efficiency of breeding programmes will increase because of the use of new technologies like gene technology. Using this technology it will become easier to meet new market requirements.

All this will result in an economic index that puts more emphasis on health & fertility, longevity at the cost of production. As a result the increase in lactation yields might reduce but lifetime yields definitely will increase because of lower replacement rates and less health & fertility problems. Altogether this should mean that milk solids lifetime yields will show a large increase.

The current Dutch dairy cow produces almost 2200 kg of solids. Over the last 5 years there was an annual increase of 60 kgs of solids. Extrapolating this increase means

that by the year 2025 the average Dutch cow should be able to produce 3500 kgs of solids.
This is indeed very ambitious but a simple look at the facts already shows the possibilities of reaching this goal. Figure 1 shows a distribution of lifetime kg milk solids of Dutch cows culled in 2005. This data shows that already 18% of the Dutch cows have a lifetime milk solid production of at least 3500 kgs. To get the average at 3500 kgs means that almost 50% of the animals have to produce more than 3500 kgs instead of the current 18%.
The desired distribution for reaching an average of 3500 kgs is shown in this figure as well. It is simply a matter of reducing the percentage of low lifetime yields.



By 2025 the average Dutch cow should be able to produce almost 5 lactations of 9000 kgs of milk with 8% milk solids, resulting in a lifetime yield of 3500 kgs milk solids.

Challenging Grassland Management Practices

by

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Executive Summary

1. Profitable milk production in Ireland is broadly based on the selection of a dairy cow suitable to milk production from pasture and the provision of sufficient quantities of high quality pasture to produce quality milk at lowest cost.

2. The implementation of simple robust grassland management principles is the central component essential to profitable production on all Irish dairy farms both now, within a quota regime and also in potential future milk production scenarios free from the limitations of quota. For maximum profitability, grass produced on the dairy farm must be used efficiently before other feeds can be incorporated into the system successfully.

3. Grazing management targets are based on the ability of the manager to competently estimate the amount of grass on the farm and react to make changes in times of surplus or deficits

4. In autumn, a budget must be prepared to ensure adequate grass is available to feed the herd cheaply into the autumn and to facilitate early turnout where possible in springtime. Paddocks must be closed from mid-October to ensure pasture is available in spring.

5. In spring, the first rotation must last until mid-April, excessive pasture damage must be avoided and postgrazing height must be maintained at 5cm to ensure pasture quality is high during the second rotation (breeding season).

6. Mid-season management must aim to maximise animal performance while maintaining pasture quality. High pre-grazing yields (>1,800 kg DM/ha) must be avoided. Topping and silage conservation should be used as tools to correct poor pasture quality.

7. The single most effective tool in maximising pasture quality is grazing intensity. It is essential that postgrazing height must be maintained at 5cm during the first and last rotations in each year. Concentrate supplementation can ensure that animal performance is not dramatically reduced during these periods.

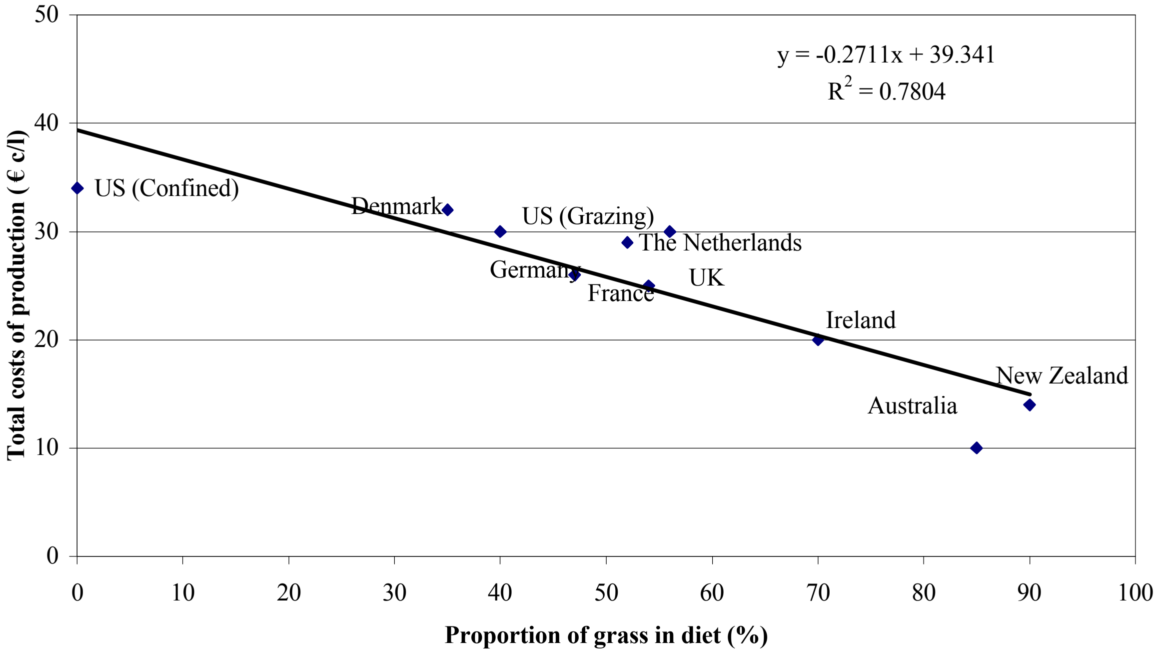
8. The selection of a dairy cow that can deliver high performance from this system is the second essential component. Such a cow must produce high yields of high composition milk over a persistent lactation from pasture, calve each year at the optimum time and maintain adequate body condition throughout lactation.

Introduction

The Irish dairy industry will experience considerable change in the years ahead. Among the main catalysts of change, reform of EU agricultural policy is anticipated to result in a reduction in dairy product prices paid to dairy farmers (Binfield et al., 2003). The challenge for Irish dairy farmers is to increase the competitiveness of their businesses through increased scale in the long term but also through increased innovation and efficiency within their current operations. The production and utilisation of grass has a central role in maintaining the competitiveness of the Irish dairy industry. Economic analysis (Shalloo et al., 2004) shows that maximum profitability within Irish milk production systems can only be achieved through the optimum management of pasture both within the current quota regime and within future scenarios where additional quota maybe available to Irish dairy farmers. The ability of progressive dairy farmers to maximise the performance of their herds from grazed grass produced within the farm gate will be a significant factor deciding the success of their business in the future.

The significance of good grassland management is now recognised as more producers attempt to incorporate grass in dairy cow diets. Figure 1 shows the relationship between costs of milk production per litre and the proportion of grazed grass in the dairy cow diet (Dillon et al., 2005) across a variety of production systems and countries.

Figure 1. Relationship between total costs of production and proportion of grass in cows diet



This relationship suggests that regardless of country or quota existence, a 10% increase in grazed grass in the feeding system will reduce the cost of milk produced by 2.5 cent/litre. Consequently one strategy to reduce the impact of reduced milk price is to continue to increase the grazed grass proportion of the diet. Irish dairy farmers can reap greater benefits from improved pasture management compared to any of our main competitors on world markets through the uptake of better grass management techniques.

The objective of this paper is to discuss:

- The evolution of best grazing management practices in recent years,
- The potential performance from pasture as currently practiced,
- How difficult grazing conditions can be overcome
- The opportunities and challenges facing grassland systems of production

Recent trends in Grassland Management Practice

There have been many changes to grassland management in the past decade. Falling farm gate prices and rising costs have required increased production efficiency on Irish dairy farms to resist the fall in farm income. More emphasis is now placed on technology to extend the grazing season earlier into spring and later into autumn to reduce the requirements for alternative higher cost feeds. Early turnout (post calving) is now normal practise on many farms and clear benefits have been observed (Dillon et al., 2002). Autumn management has also evolved with higher farm grass covers built to provide a supply of grass into November and some pastures closed to store grass over the winter to have herbage available in spring for grazing.

The evolution of management practice within Moorepark since the mid- 1980s is summarised in Table 1. Over the 20 years, mean calving date has been delayed, and stocking rate has been reduced to facilitate the incorporation of a greater proportion of grazed grass in the diet of the dairy herd. The current grazing season length is 290 days, with the main increase in the number of grazing days realised through earlier spring turnout. The grass growth potential of the sward has increased, achieved mainly through reseeding of older pasture and through the more efficient use of artificial and organic fertilizer. There has been a consistent reduction in the proportion of second cut grass silage taken, as the demand for silage has been reduced with extended grazing.

Table 1. Observed changes in the standard Moorepark system (MacCarthy, 1984) and the current Moorepark system for spring milk production (Horan et al., 2005)

	1984	2004	Difference
Mean calving date	2-Feb.	24-Feb.	+22 days
Stocking rate (LU/ha)	2.91	2.5	-0.41
N input (kg N/ha)	423	280	-143kg
Grazing season length	250	290	+40days
Turnout by day	10-Mar.	10-Feb.	+27 days
Turnout full time	1-Apr.	10-Feb.	+49 days
Housing date	15-Nov.	25-Nov.	+10days
Silage area - First cut (%)	43	40	-3%
Silage area - Second cut (%)	33	15	-18%
Annual Animal Diet			
Grass (t DM/ cow)	2.8	3.9	+1.1
Silage (t DM/ cow)	1.5	1.0	-0.5
Concentrate (t DM/ cow)	0.75	0.35	-0.4

The Moorepark Pasture Management System Guidelines.

Table 1 shows the change in focus within our pasture-based system at Moorepark in recent years. For any farmer committed to feeding cows efficiently from grass, the successful adoption of the system as practiced at Moorepark requires the development of skills to competently estimate herbage mass in each individual paddock on the farm and use this information to achieve both short (day to day) and medium term (weekly and monthly) targets that are critical to the success of the system. Such skills can only be learned from farm discussion groups or by calibrating using measurement equipment.

For the purposes of describing grassland measurement guidelines the grazing season can be divided into three critical management periods.

1. Autumn/Winter (August 1st to Housing)
2. Spring – Rotation 1 (Turnout to April 15th)
3. Main grazing season (April 20th to August 1st)

1. Autumn/Winter (late August to December)

This is the start of the grassland season. The aim of this period is to maximise the amount of grass utilised in the period September to December, while at the same time finish the grazing season with the desired farm grass cover. The decisions made on the farm during autumn will have a major impact on the success of the farmer at extending the grazing season into the autumn as well as increasing grass availability next spring and deciding when the herd can be turned out to pasture. <u>It is absolutely essential that a grass budget be prepared to set the targets for the amount of grass that is required on the farm from August through to May of the subsequent year.</u>

The farm specific factors requiring consideration when making such decisions at this time of the year include: the stocking rate, growth rates, calving pattern and expected length of the grazing season. As a guide for dairy farmers, Table 2 illustrates key target grass covers for a farm stocked at 2.5 cows per hectare, growing 14.5 tons of grass DM per year, with a mean calving date of February 10th and a grazing season extending from early February until late November. The targets described are based on the entire grazing area being available in late autumn and early spring with first cut silage taken on 40 % of the farm on May 25th from silage ground closed since April 10th.

Table 2. Target grass covers for autumn and spring.

Date	Stocking rate (LU/ha)	Target average farm cover kg DM/ha	Target cover per cow kg DM/cow	Event
09/08	2.5	848	342	
27/09	2.5	1336	536	Peak cover- demand passes supply
15/10	2.5	1283	517	First paddock closed for winter
15/11	2.5	650	262	Supplement introduced
22/11	2.5	560	224	House by day and night
07/02	2.5	661	264	Cows out to grass by day
14/03	2.6	880	342	Cows out full time
09/05	4.2	990	236	Supply exceeds demand

For those operating under different conditions (stocking rates, growth rates, calving pattern and grazing season lengths), it will be necessary to adjust the feed budgets and target covers. The realisation of these targets may require feed supplementation in years of poor growth or at times of poor grazing conditions. For those operating on calving patterns that are more spread out through February, March and April, or at lower overall stocking rates, an earlier spring turnout date than that shown will be achievable. It will also be possible at lower stocking rates to maintain the herd at grass for a longer period in autumn. The objective of budgeting grass in this manner is to provide adequate grass to the herd, while having sufficient grass to maintain the herd at pasture late into the autumn.

The following key objectives should be used during the Autumn/Winter:

- Rotation length should be increased from 24 days in mid-August to 40 days in mid-September to build the average farm cover.
- Highest average farm cover should be achieved in mid to late September at which point a cover of up to 1,400kg DM/ha is manageable. (On wetter soils this target needs to be adjusted downward based on the length of the grazing season.)
- The first paddock stopped for the spring should be closed on October 15th, in later regions closing may begin earlier as this will compensate for lower subsequent autumn and spring growth. Isolate some suitable dry paddocks for early grazing. Most of the herbage available for grazing next spring will be the grown once these paddocks have been closed
- Each 1 day delay in closing from October 10th to December 11th reduces spring herbage mass by 15 kg DM/ha
- Aim to have at least 60% of the farm closed by the end of the first week of November.
- All paddocks should be grazed to a post-grazing residual cover of 200 -300 kg DM per ha during the last rotation to encourage winter tillering
- Avoid reducing the farm cover below 500 kg per hectare in autumn or re-grazing pastures that have been closed.

2. Spring (February to late April)

The aim at this period is to achieve a satisfactory balance between the somewhat conflicting objectives of maximising the amount of grazed grass in the cows diet while at the same time having a farm grass cover of >950 kg DM/ha by late April. The management factors that will have the largest influence on the quantity of grazed grass consumed/cow over this period are stocking rate, calving pattern, autumn closing cover, silage ground availability and spring nitrogen. With very variable spring grass growth rate, weekly monitoring will be required and actions must be taken quickly to achieve targets. Preparing a budget (,such as that displayed in Appendix 1) to ration grass supply to the dairy herd during the first rotation will facilitate early grazing. At Moorepark, early grazing is further facilitated by grazing a proportion of silage ground twice (immediately at turnout and again in early April) before closing this area for silage. During the first rotation, it is desirable that paddocks be grazed out to a target post-grazing height of 5cm during the first rotation or if conditions are very wet during the second rotation. This grazing severity can be achieved comfortably without detriment to animal performance when cows are supplemented with 3-5kg of concentrate. This ensures high quality regrowths will be available during the breeding season (April 20th to July 15th).

The following key objectives should be used during the spring:

- For average farm cover targets see Table 2.
- Target post-grazing height of 5cm.
- The available grass supply should be budgeted with the first grazing rotation to finish between the 10th and 20th of April.

- Late turnout with large farm grass cover can often lead to poor grass utilisation and subsequent poor pasture quality.
- Good grazing management practises such as block grazing and a good farm road network will reduce the risk of soil damage during this period.

3. Main Grazing Season (May to August)

The objective over this period is to achieve high cow performance from almost a complete grass diet. Animals must be supplied with adequate allowances of high quality pasture during the breeding season to achieve good conception rates. In general, grass supply is not restricted on farms from late April onwards with good management. Pasture quality improvement may therefore offer potential to further advance animal performance from pasture. Current research findings suggest that for each 1-unit increase in OMD, GDMI is increased by 0.20kg. Many herbage allowance studies have been undertaken both at Moorepark and abroad, showing that increasing herbage allowance above 25kg DM per cow per day results in only small increases (<0.05kg) in animal intake and therefore our aim must be to increase the quality of the grass (increased leaf proportion) allocated rather than the quantity offered.

Monitoring of farm grass cover every 10 to 14 days will assist management by identifying surpluses and deficits early thereby allowing quicker correction. This will allow decisions to be made to alter grass supply sufficiently early e.g. stocking rates adjusted or supplements introduced. Excessive topping during the main grazing season should be avoided as it is very labour intensive and delays pasture regrowths by up to four days. (On average, one round of topping should be sufficient from mid-May to late June.) Where topping is carried out, ensure that the pasture is topped to a height of 6cm. One option to improve mid-season pasture quality on farms is to alternate paddocks that are in first and second cut silage, grazing after grass from first cut silage with the herd and taking second cut silage from poorer quality grazing paddocks.

The key grassland management guidelines for this period are;

- Farm grass cover should be maintained at 200 to 220 kg DM/cow on the grazing area during the main grazing season.
- Using normal grass growth rates, a stocking rate of 4.2 cows/ha from mid April to early June is sufficient to adequately feed cows at pasture.
- Pre-grazing yields should be maintained at 1400-1800 kg DM/ha to ensure that post grazing height targets are achieved.
- Where pasture quality is good, post grazing heights of 5-6cm are achievable without detriment to animal performance
- Pastures with high post grazing residues (>350 kg DM/ha)/high post grazing height (>7.5 cm) should be topped.
- Avoid grazing excessively low pre-grazing heights as this will result in inadequate animal intake and reduced animal performance.
- Use grass measurements to identify grass surpluses and deficits.

Overcoming the Constraints of Wetter Soils and Climate

On wetter land, extended grazing will pose greater challenges and soil structure damage can last into subsequent rotations. Good grazing management practises will reduce the risk of soil damage during such periods. Increased emphasis on management factors, such as farm infrastructure (farm roadways, paddock access, water points) is critical in achieving high grass DM intake under difficult climatic conditions. The target in such environments must be to access as much pasture as possible from the cow roadway thereby minimising cow traffic on previously grazed surfaces. Secondly, the development of grazing strategies that reduce the risk of damage such as on off grazing, back fencing and strategically utilizing drier paddocks must be considered in poorer conditions. Such environments may require additional concentrate supplementation to ensure animal performance is not reduced and additional corrective topping of paddocks where increasing grazing residuals are inevitable. In the longer term, the selection of a smaller live weight dairy cow capable of good milk production and fertility is desirable on wetter soils.

Achieving high performance from Pasture - The dairy cow for this system.
One of the main factors influencing the performance and success of our system now and into the future is the genetic make-up of the dairy herd. There is now strong evidence to show that the cattle that are genetically best suited to non-grazing systems are not best suited to grazing systems, an interaction between genotype and feeding system (Dillon et al., 2005b). Successful grazing systems require dairy cows that are capable of achieving large intakes of forage relative to their genetic potential for milk production so that they are able to meet their requirements almost entirely from grazing.

Until recently milk yield has been the main objective criterion for selection. Overwhelming evidence now shows that selection solely on production traits results in reduced herd health, fertility and welfare (Pryce and Veerkamp, 2001; Evans et al., 2002; Horan et al., 2004) with a reduction of 1% in calving rate to first service for every 1,000kg increase in phenotypic milk yield (Evans et al., 2005). Reproductive performance affects the amount of milk produced per cow per day of herd life, breeding costs, rate of voluntary and involuntary culling, and the rate of genetic progress for traits of importance (Plaizier et al., 1997) and consequently results in a reduction in the overall profitability of a dairy herd (Britt 1985, Dijkhuizen et al, 1985, Lopez-Villalobos et al., 2000). In Ireland, the relative importance of fertility is higher because milk production is based to a large extent on seasonal pasture production systems and thus profitability is influenced by the ability to calve cows rapidly at the optimum time.

Since 2001, the Economic Breeding Index (EBI) has been developed in Ireland to identify genetically superior animals to increase profitability within Irish dairy herds (Veerkamp et al., 2002). The EBI is currently composed of five sub-indexes (relative emphasis in parenthesis): milk production (49%), fertility/survival (32%), calving performance (8%), beef performance (6%) and health (5%). The EBI rewards animals whose progeny have a long herd life, annually producing a large quantity of high composition milk within a 365-day calving interval, are easy calving and have progeny who themselves calve easily in the future and exhibit large carcase weights of good conformation. In 2006, approximately 30% of replacements entering Irish dairy herds will have originated from AI sires, with the remainder resulting from the use of stock bulls of low genetic potential (DAFF, 2005).

Irish dairy producers must select for a cow suitable to our system and this will not be possible using stock bulls of inferior genetic potential. In summary, our evaluations show that the critical genetic characteristics desirable for profitable dairying in Ireland include:

- the capability to produce high yields of fat and protein over a persistent lactation from a predominantly pasture diet based
- the capability for good reproduction and health to: maximise productivity by maintaining a pre-dominantly mature dairy herd, reduce the number of replacement animals that must be reared, calve cows quickly at the optimum time, walk long distances and produce high quality milk.
- the capability to survive fluctuations in feed supply and maintain adequate body condition throughout lactation on pasture
- the capability to achieve high grass DM intakes in order to attain high milk output without depleting body reserves
- the capability to survive in a larger herd, requiring lower labour input per kg of milk produced

For Irish dairy farmers, these criteria can only be achieved by selecting animals on the EBI index with a high genetic potential for both production and fertility traits.

Animal Performance from Pasture

Optimum animal performance from pasture is shown in Table 3 with a more detailed breakdown of how this performance is achieved shown in Appendix 2 at the end of this document. This data clearly shows the benefits of high herd EBI on animal performance as well as the importance of high milk composition and good fertility on overall farm profit.

Table 3. *The effect of strain of Holstein-Friesian on animal performance in two pasture-based feeding systems at Moorepark (2001-2005).*

Feed system*	**MP**			**HC**		
Strain	**HP**	**HD**	**NZ**	**HP**	**HD**	**NZ**
Herd EBI (€/lactation)	51	58	75	51	58	75
Average Age (Lactations)	2.6	3.2	4.3	2.6	3.2	4.3
Milk Production						
Milk (kg/cow)	6,748	6,656	6,293	7,724	7,588	6,553
Milk solids (kg/cow)	507	509	506	582	576	535
Milk solids (kg/ha)	1,252	1,258	1,250	1,439	1,423	1,322
Fat (g/kg)	40.6	40.9	43.9	40.0	40.1	44.5
Protein (g/kg)	34.5	35.6	36.5	35.4	35.8	37.2
Lactose (g/kg)	46.3	46.6	46.7	47.7	47.1	47.5
Lifetime milk solids (kg/cow)	1,229	1,535	2,128	1,402	1,777	2,247
Reproduction						
6-week pregnancy rate (%)	53	64	71	53	64	71
Empty rate (%)	26	14	9	26	14	9

Replacement Rate (%)	33	23	18	33	23	18
Farm Profit** (	**7,669**	**19,897**	**20,939**	**11,719**	**19,196**	**15,873**

* MP system = 300kg concentrate per cow at 2.5cows/ha; HC system = 1,450kg concentrate per cow at 2.5 cows/ha. **Farm Profit excludes SFP and includes full labour charges.

Currently, the national average milk yield per cow is 4,749kg of milk with average composition of 3.74% butterfat and 3.30% protein (Fingleton, 2003). This equates to average milk solids production of 334kg per cow or 635kg per hectare of land, approximately. Similarly, a review of herds participating in the DairyMIS recording system by Moorepark for 2004 had average milk production of 5,800kg at 3.87% butterfat and 3.44% protein, corresponding to total milk solids production per cow of 424kg. Clearly, making the transition from the prevailing levels of animal performance on Irish dairy farms to that shown in Table 3 through genetic selection and improved grassland management practice as described above would result in significant increases in farm profitability.

Where must grazing research go next?

The nutritive value of herbage gives an indication of its potential value to grazing animals but its feeding value (nutritive value×intake) is of most importance. Grass based systems in the future will be required to achieve higher animal performance from grazed grass (measured in terms of milk solids per cow and per hectare) over a longer grazing season. This will increase the importance of characteristics such as high DM intake, maintenance of digestibility during primary growth, high nitrogen use efficiency and high nutritive valve.

Animal production from grazed pasture could be improved through increased use of herbage species or varieties with increased intake and digestibility potential. Traditionally plant breeding objectives were mainly focused on increasing DM yield and pest and disease resistance with little emphasis on factors that effect animal performance and the characteristics of animal produce. New varieties are described on the basis of heading date, total annual yield, ground score, spring growth and autumn growth. However, three of the above characteristics are based solely on DM yield. It is clear that a more descriptive recommended list is required by the industry where more definite measurements are made i.e. sward quality is now more easily measured.

The ability to avail of the increased profitability of pasture-based systems may be curtailed by land costs (both rental and purchase). Access to land at economically feasible prices is crucial to the future success of pasture based dairy systems. High land prices reduce the potential return on investment from our production systems. The development of efficient profitable pasture-based systems incorporating greater proportions of supplementary feeds in the diet is a major new focus of our research agenda. Such systems must be clearly defined to ensure that supplementation is efficient and does not lead to a reduction in pasture utilization on the dairy farm. It is envisaged that the cost of conserved forages will continue to increase due mainly to increases in contractor charges associated with inflation in labour, energy and machinery costs. The profitability of supplement inclusion will be determined by the milk to concentrate price ratio and the level of additional milk production achieved in response to supplementation. If the market value of the additional milk achieved outweighs the costs of supplement inclusion and pasture utilisation is not compromised, higher supplementation levels will yield greater farm profit. However, if milk price continues to decline, the economic feasibility of concentrate use within the dairy feed budget declines as the marginal benefit of increased milk output is outweighed by the cost of the additional supplementation.

Nutrient management presents major challenges for pasture-based agriculture. Our production systems must be environmentally sustainable and increased nutrient efficiency (both in terms of organic and artificial) could substantially improve farm profitability. Under current consideration in the EU is the Nitrates Directive (91/676/EEC) which states that 'the amount of livestock manure applied to land each year, including by the animals themselves, shall not exceed 170kg organic N per hectare', (OJEC, 1991, 91/L375/EEC; 7). Such legislation is likely to reduce production efficiency and potential profitability and may lead to higher input systems incorporating crops such as maize silage in the dairy diet. The implementation of such legislation in grazing systems could reduce profitability and limit the potential for future expansion. This legislation will require that high levels of individual animal performance be achieved from pasture, as excessive stocking rates will not be permitted.

The variability in sward growth rate is one of the factors which results in poor or variable utilisation of herbage produced on-farm, as farmers are unable to manage grazing with precision. By increasing predictability of grass growth and animal requirement, feed budgets can be drawn up with confidence. Taking this a stage further, decision support systems can be designed, based on growth models, describing the interaction between the herbage produced and the animals' intake, to be used as a grazing management aid. Long term feed budgeting will entail a yearly feed budget-taking cognisance of total herd feed demand, the grass production potential of the farm and also the requirement for purchased fertilizer and concentrate. The development of reliable easy to use decision support tools will encourage greater reliance on grazed grass and greater connection between researchers, extension advisor and dairy farmers.

Conclusion

There is considerable scope to improve animal performance from grass-based systems given recent developments in our understanding of management factors that influence grass intake. Efficient exploitation of grass by grazing will require the development of grazing systems designed to maximise daily herbage intake per cow while maintaining a large quantity of high quality pasture over the grazing season. Grazing systems will not be limited by peak DM production during the peak two to three months of the grazing season as high animal performance from pasture will supersede high animal performance per hectare. Daily grass intake will be maximised by adhering to important sward characteristics such as maintaining a high proportion of green leaf within the grazing horizon and allocating an adequate daily herbage allowance. The challenge for the future will be to develop swards through management and grass breeding that will maintain high DM intake while at the same time result in low residual sward height. Likewise in the future the cow genotype must be compatible with the system of milk production. The development of reliable easy to use decision support tools that facilitate increased reliance on grazed grass to be used by farmers and extension services will contribute to optimising grazed grass based systems of milk production.

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Appendix 1. *Spring Feed Budget for a typical Dairy herd*

	A	B	C	D	E	F	G			H	I	J
Week	Grass	Grazing	Total	Growth	No.	Growth/	Cow diet			Demand/	Total avail	Predicted
	Cover	Area	Available		of	Week	kg DM			Week	Weekend	Cover close
	(kg DM/ ha)	(ha)	(kg)	(kg DM /day)	Cows	(kg DM)				(kg DM)	(kg DM)	(kg DM/ha)
Formulas:			=A x B			=B x D x 7	G	Sil	Con	= E x G x 7	= (C + F) - H	= I / B
02/02/04	640	16.92	10828.8	3.2	4	379.0	0	13	6	0	11208	662
09/02/04	662	16.92	11207.8	7.8	15	923.8	6	8	6	630	11502	680
16/02/04	680	16.92	11501.6	15.0	22	1776.6	6	8	6	924	12354	730
23/02/04	730	16.92	12354.2	22.0	27	2605.7	6	8	6	1134	13826	817
01/03/04	817	16.92	13825.9	27.0	30	3197.9	11	3	6	2310	14714	870
08/03/04	870	16.92	14713.8	35.0	35	4145.4	11	3	6	2695	16164	955
15/03/04	955	16.92	16164.2	40.0	37	4737.6	16	0	4	4144	16758	990
22/03/04	990	16.92	16757.8	45.0	38	5329.8	16	0	4	4256	17832	1054
29/03/04	1054	16.92	17831.6	57.0	39	6751.1	16	0	4	4368	20215	1195
05/04/04	1195	9.3	11110.9	63.0	39	4101.3	18	0	2	4914	10298	1107
12/04/04	1107	9.3	10298.2	69.0	40	4491.9	18	0	2	5040	9750	1048
19/04/04	1048	9.3	9750.1	75.0	41	4882.5	18	0	2	5166	9467	1018
26/04/04	1018	9.3	9466.6	79.0	42	5142.9	18	0	2	5292	9318	1002
03/05/04	1002	9.3	9317.5	91.0	42	5924.1	18	0	0	5292	9950	1070
10/05/04	1070	9.3	9949.6	89.8	42	5846.0	20	0	0	5880	9916	1066
17/05/04	1066	9.3	9915.6	97.0	42	6314.7	20	0	0	5880	10350	941
24/05/04	941	9.3	8750.7	101.0	42	6575.1	20	0	0	5880	9446	859

Appendix 2. Curtins Farm Moorepark Herd Average Performance from Pasture through lactation (2001-2004).

Month	Supplement level (kg DM/cow/day)	Milk yield (kg/cow/day)	Fat (%)	Protein (%)	Lactose (%)
February	4.6	18.3	4.54	3.48	4.71
March	5.4	25.4	4.41	3.27	4.85
April	1.8	26.9	4.03	3.36	4.85
May	0	25.0	3.88	3.39	4.80
June	0	22.0	3.90	3.38	4.74
July	0	20.4	3.91	3.48	4.68
August	0	18.8	4.05	3.59	4.64
September	0	17.3	4.28	3.75	4.65
October	0	15.2	4.56	3.97	4.62
November	0	11.2	4.95	4.21	4.52
December	0	8.6	4.89	3.90	4.57

Competitive Dairying – The Northern Ireland Experience

by

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Can I commend your organising committee for choosing such a theme for your annual conference – Winning in Changing Times. As you read this paper I trust you understand why I consider adopting a winning attitude within your business area is so important. I have been asked to specifically address the issue, Competitive Dairying – the Northern Ireland Experience. This title might suggest all was and is well within the Northern Ireland dairy industry. However producers and processors alike in Northern Ireland will say they face real pressures to remain competitive and there is a lack of secure and sustained profitability and this is restricting necessary reinvestment. I would surmise similar comments could be made about any dairy industry in Western Europe.

It is certainly not my intention to suggest that the dairy industry in the North has got it right at farm level and today I simply present the "blue-print" for you to follow South of the Border. Far from it, there are significant differences in relation to the milk quota regime, which have influenced the direction taken in each region. However I will seek to identify the key drivers behind the major structural and production changes which have occurred within Northern Ireland dairy farming since the introduction of milk quotas. By doing so, perhaps some of the mistakes which have been made can be avoided by ROI producers.

While reviewing historical data is interesting and provides trends and indicators as to what the future may hold, this is only accurate if there is stability and the status quo remains. However all of agricultural is in a period of major change. Dairy farming faces a reformed agricultural support policy with new drivers for success. It is therefore necessary to harness recognised modelling techniques to allow "what if" scenarios to be explored and valued judgements made against the predicted outcomes. It is this information, which will be of much more interest to this audience. While not providing a guaranteed outcome various sets of circumstances can be modelled with results available and the individual farmer can assess how applicable / appropriate they are for the particular farm situation. The final decision as to the route to follow will depend on what is viewed as the most limiting resource on the farm i.e. land, milk quota, labour or capital. However very often it is the attitude adopted to overcoming problems or being able to take the opportunity when it is presented is the limiting factor to farm development.
A sensitivity analysis can be completed with risk and personal attitude taken into account to provide a winning formula in a time of change.

Agriculture and particularly dairy farming is a dynamic and changing industry it has been and will continue to be so. Structural change is not a new phenomenon. Review the statistical data for any farming industry in Western Europe and this is clearly evident.

However, what is worth noting is the pace of change. In business it is not possible to stand still. If you do so, one of two things will happen. Either the business will be overtaken by the competition, become non-viable and cease production. Or if sufficient financial reserves have been built up and the owner enjoys being part of the business world, it will remain as a hobby but unlikely to be passed on as a profitable and sustainable business to the next generation.
Change is part of everyone's life, it is a challenge and how you approach and deal with the challenge will dictate the level of success achieved.

Background to Northern Ireland Agriculture

Agriculture in Northern Ireland is three times more important to the economy, accounting for 2.5% in 2003 of Gross Value Added (GVA) as compared to the United Kingdom as a whole. In Republic of Ireland the equivalent figure for agriculture as a percentage of GVA is 3% highlighting the importance of agriculture both the North and South of the Ireland.

In Northern Ireland the total agricultural area is just over 1 million hectares equating to 80% of told land area, with 70% of the 1 million hectares classified as LFA. The total number of farm businesses is just over 28,000 and is 6% less than in 2000. Average farm size is currently 38 hectares slightly larger than Republic of Ireland at 32 hectares, but significantly smaller than the United Kingdom where average farm size is 56.5 ha, Conacre land attributes for a third of the land farmed annually in Northern Ireland and has enable some farms to expand without the capital investment in land purchase. It is anticipated conacre values will fall post MTR allowing those who wish to expand to do so at more competitive land prices.

Of the 28,000 farms in Northern Ireland only 3,710 or 13% are classified as medium or large businesses with 2,633 of these dairy farms. Dairy farming provides on-farm employment for approximately 10,000 people including dairy farmers, other family members and employees. It produces added value of over £170 million annually. In addition the dairy herd produces 80% of the milk used by the Northern Ireland milk processing sector, which employs over 2,300 people and contributes added value of £70 million annually to the Northern Ireland economy. When the supply of inputs e.g. feed, fertilizer, machinery, equipment etc is also taken into account it is evident that the dairy sector contributes to more than the £240 million added value each year. Therefore the ability of Northern Ireland dairy farmers to compete successfully has a significant impact beyond the farm gate in terms of employment and added value to the economy.

<u>The Structure of Dairy Farming in Northern Ireland</u>

In 1984 when milk quotas were introduced there were 8,083 dairy farms with an average herd size of 37 cows, producing on average 4,630 litres per cow in Northern Ireland. In ROI there were over 78,000 farms with 1.53 million cows. The average herd size was 19.5 producing 3,810 litres per cow. Over the 10 year period 1984 – 1994 in Northern Ireland, the total number of dairy cows reduced by 25,000 to stand at just over 270,000. There were almost 2,000 less dairy farms equating to on average 200 dairy farms leaving the industry each year. Average herd size and milk yield per cow only increased marginally to 44 cows and 4,930 litres respectively.

Northern Ireland had an initial milk quota allocation of 1,322m litres. However due to

EU imposed cuts by 1993/94 the regional quota had fallen to 1,283m litres. Farmers had opted for a grass based production system seeking to maximise margin per litre. However with pending deregulation of milk marketing and the strengthening of milk price dairy farmers sought to increase output from the dairy herd. The availability of milk quota particularly from England coupled with positive encouragement from milk processors meant significant quantities of milk quota were purchased. Specific loans from either the banks or milk processors were set up with repayments periods over 5 years at 1% over bank lending rate readily offered to dairy farmers wishing to expand. For the 2004/05 milk quota year, the volume held by Northern Ireland dairy farmers is 1,763m litres reflecting a 37% increase since the 1993/94 milk quota year. Whereas in the previous 10-year period only small increases had been recorded in herd size and milk yield the period 1994-2004 significant changes at farm level have occurred. Herd size increased year on year by on average of 1.5 - 2 cows with herd size now standing at 63 cows while milk yield per cow averages 6,270 litres across all herds and this data is summarized in Table 1. From 1984 to date the number of farms with dairy cows has almost halved. In ROI the recorded decrease is even more significant with two-thirds fewer producers with just less than 27,000 farms with dairy cows in 2004.

Table 1. Number and size of dairy farms in Northern Ireland 1984-2004

	1984	**1994**	**2004**
Total Number of Dairy Farms	8,083	6,179	4,577
Total Number of Dairy Cows'000	298	273	289
Average Herd Size	37	44	63
Average Milk Yield Per Cow (l)	4,630	4,930	6,270

There is a wide range in herd size in the Province with 171 farms milking 9 cows or less but 100 farms now milking 200 cows or more. The definite trend is towards fewer farms with larger herds and is highlighted in Table 2. For the last full year of data the 798 largest dairy farms produced more milk than the 3,111 "smallest". Some time should be taken to reflect on this as the implications for future development within dairy farming are socially and economically far reaching.

Table 2. Distribution of Farms and Dairy Cows in Northern Ireland 2004

Herd Size	Number of Farms	Number of Cows	% Change in number of farms 1993-2003
1-19	572	6,734	-57
20-49	1,649	56,839	-46
50-69	791	46,154	-5
70-99	767	62,723	+22
100+	798	115,846	+112

As dairy farms specialize and get larger it puts into perspective the challenges, which must be addressed in developing social and economic policies in line with EU initiatives even within a small EU region like Northern Ireland. While average herd size has increased by 1.5 - 2 cows in Northern Ireland over the last 10 years the rate of increase has varied across countries. Just over 12% of dairy farms in Co Fermanagh milk 70 cows or more and the County has an average herd size of 40 cows. While in Co Down average herd size is 82 cows and almost 50% of the herds in the County milk 70 cows or more.

What Factors Encouraged Northern Ireland Dairy Farmers To Expand?

Some of the main factors, which have contributed to the increase in output at farm level are given below. These may provide an explanation as to how expansion has taken place and pointers for those considering expansion in future years.

- A milk quota regime in the United Kingdom allowing quota trading.
- The availability of milk quota from mainland UK farmers ceasing production.
- Positive encouragement from milk processors to increase output.
- Expansion funded out of farm profits.
- Dilution of overhead costs through increased output
- Favourable borrowing terms from several sources of finance.
- Economics of scale for the best use of on-farm resources.
- Land prices limiting increase in farm size, dictating increased output per cow.
- Availability of "grazeable acres" within easy access of the milking parlour.
- Milk Price / Meal Price Ratio improving the economics of meal feeding.
- Seasonal milk pricing allowing profitable winter milk production.
- Competitive costs of alternative compared to grazed grass.
- Dairy cows genetics.
- The cost of marginal litres of production.
- Flexible and adaptable management systems harnessing dairy genetics.
- Adopting innovative technology.
- Work ethos of the farmer.

Benchmarking

Expansion of milk production has occurred in Northern Ireland but is the more competitive and better equipped to face the challenges, which lie ahead? The results from benchmarking will help to answer this question. At the request of Northern Ireland dairy farmers, ancillary industry leaders and the farming unions, Greenmount developed a dairy benchmarking program for use by all dairy farmers in the Province. The program is simple and straight-forward to use. It allows farmers to quickly and easily identify the strengths and weaknesses of their own farm business when compared to farms of similar scale and production system as well as "best-in-class" industry standards.
Through the links with European Dairy farmers (EDF) and the International Farm Comparison Network (IFCN) farmers can compare themselves against any dairy farming industry in the world. In an EU context the top 25% of Northern Ireland benchmarked farms are as competitive as any producer from another country and well able to face the future with confidence.

The information presented at the Conference will use data from these benchmarked farms to demonstrate the level of expansion and development, which is possible. Therefore it needs to be noted these farms are not representative of the whole Northern Ireland dairy farming sector as Greenmount predominately works with the farmers who wish to develop and go forward. Benchmarking has been available since 1999 with 12% of total Northern Ireland milk production now benchmarked. A considerable number of farmers have used the system each year. These form a valuable resource as "core" farms, where trends can be quickly noted regarding development at farm level year on year.
Over the last six years these common or "core" farms have increased herd output by almost 35% through a combination of more cows and higher milk yield per cow. This

is despite a collapse in spring milk price and the difficulties presented by atrocious weather conditions during the summer and autumn of 2002. Remember also as dairy farming is a cycle there was a carry over of the effects of the very poor weather into 2003 as evidenced by both grazing and silage sward damage and poor cow condition.
What if these farms had not expanded? If the herds had maintained output at 1999/00 levels compared to 2004/05, herd profitability would be almost £17,000 less at £39,450 compared to £56,500. Even assuming costs of production could be reduced by 1ppl on these already efficient farms herd profitability would still be close to £10,000 less.

As is clearly evident the availability of milk quota has allowed the on–farm expansion of milk production in Northern Ireland. But what is the impact on profitability depending on different limiting resources. To answer this question I have considered the results from benchmarked farms who are in the top 10% of their chosen system of milk production i.e. a spring calving grass based system or a high input high output autumn calving system. The efficiency targets set for each system are listed below.

	Spring Calving Grass Based	**High Input / High Output**
Milk Yield (l)	6,000	12,000
Concentrate Feeding (kg)	250	3,000
Stocking Rate CE/Ha	2.5	2.8
Total Costs of Production ppl	8	11

However to date these challenging targets have not been achieved. The results from the top 10% of dairy farms on benchmarking are 5,600 litres from 600 kilos and 9,800 litres from 2,800 kilos of concentrate feeding for the two systems.
Table 3 summarizes the financial performance of these systems at a milk price of 17ppl (25c / l at current exchange rate).

Table 3. The Financial Performance of Dairy Systems

	5,600 l	**9,800 l**
	Milk Price 17ppl	
Output	890	1,565
Variable Costs / Cow	275	663
Variable Costs / Litre	4.9	6.8
* Overhead Costs / Litre	4.0	3.6
Profit / Litre	8.1	6.6
To generate £25,000 require		
Milk Quota (litres)	309,000	379,000
Herd Size (cows)	55	38
Land Required @ 170kg/Ha	29	20

*** excluding own and family labour**

The results in Table 3 shows that grass based systems maximize margin per litre. But I pose the question do grass based systems maximize farm profit and allow expansion of the farm business? The answer I feel depends on what is the farm's most limiting resource. In Northern Ireland with land the most limiting resource increasing milk output per cow and per hectare has allowed dairy farm incomes to improve against a backdrop of lower milk prices. Additional milk sales have been

achieved through harnessing dairy cow genetics coupled competitive variable input costs e.g. alternative forages and concentrates, allowing overheads to be spread over more litres.
Using the data from the top 10% of farms in each system and the economic principle of maximize output to the most limiting resource the following conclusions can be made.

- ❖ Only where milk quota is the most limiting resource is herd profitability increased under the grass based system.
- ❖ Where land is limiting, profitability can be increased by over 20% by opting for more milk output per cow.
- ❖ At 170 kg of N per hectare, and cow numbers limited then the high output system again produces the most profit per herd.
- ❖ Only at milk prices of less than 12ppl (17.5c/l) does the grass based system become "more profitable". However at this price it is unlikely there would be any farmers continuing with milk production.
- ❖ As milk price increases above 17ppl (25c/l) the differential between the two systems widens. The high output system provides the opportunity to significantly earn more money.
- ❖ Increasing scale of production will become more important in the future i.e. efficiently increasing milk sales from the farm both quantity and quality. The high output system provides a greater opportunity to do so.

<u>Know Your Costs of Milk Production</u>

The results from benchmarking show a wide variation in performance and emphasises the importance of knowing the costs of production at individual farm level. Industry averages are useful as trend indicators but no farm business planning for a secure, profitable and sustainable future should use anything less than their own herd and farm performance results. <u>I re-emphasise when planning ahead for a competitive future only use your own farm data.</u>

A survey conducted by the RABDF at the Dairy Event in Stoneleigh 2004 indicated that two-thirds of milk producers in England and Wales do not know the costs of production. This is why in conjunction with dairy farmers who had completed benchmarking and were wanting to develop the farm further, Greenmount developed the Business Challenge for Dairy Farmers. The "Challenge" deals with such issues as the differences between cash and profit, planning for profit and growth of the farm and financing development and expansion.

As already indicated the results from Greenmount Benchmarking show a wide range in both physical and financial performance as highlighted by these few figures listed and emphasise the importance of understanding business management. Milk sales per cow per year varies from 3,810 – 10,150 litres, concentrate feeding 175 – 4,100 kilos and profit per litre ranging from –2 to 10ppl demonstrating the need for farmers to know their own farm business situation.
Dairy farmers who are remaining within the industry and wanting to improve their competitive position have a number of major decisions to make in the immediate future including:

- ➢ use of the SFP to support farm activities or to invest off farm;
- ➢ level of capital expenditure to meet environmental/cross compliance standards;
- ➢ investment to reduce high cost labour input on low return jobs.

The availability of relevant and accurate information is essential to do so.

Future "Quotas"Potentially Limiting Competitive Expansion

Previously farmers in Northern Ireland considered milk quotas as the major limiting constraint on the growth of their business. However this would no longer be applicable. Other limiting factors or "Quotas" will restrict on-farm development in the future.

Land has and always will be a constraint due to expense, availability and accessibility. Grazeable acres and the logistics of moving cows and farm machinery, with high volumes of commuter traffic on rural roads, is curtailing development.

Environmental legislation linked to the Nitrates Directive, will introduce a stocking rate limitation as a result of total N output per dairy cow. If Nitrates were the only environmental restriction dairy farmers in Northern Ireland were facing, they would continue to increase milk yield per cow through higher feed input to enable total milk sales from the farm to grow.

However of particular relevance to Northern Ireland is the role played by excess phosphorous in the eutrophication of water. A target has been set for farms to be in phosphorous (P) balance in the future. To minimise the environmental effects of phosphorous leaching from the soil, the measures to be introduced may limit the level and type of concentrate fed on dairy farms in conjunction with the use of zero P compound fertilizers. As purchased concentrate feed is a major source of P this may place a limit or "quota" on the level of concentrate used and require improved nutritional efficiency of the total diet. A clear indication from farmers is without this restriction of concentrate feed levels the likely scenario was to increase concentrate feeding allowing an increase in both milk yield per cow and stocking rate resulting in a higher milk output per hectare. This did not require the renting or purchasing of additional land and thus overall farm profitability could be improved. But what would be the environmental outcome – little improvement indeed possible further deterioration in water quality. Therefore a combination of nitrogen and phosphorous restrictions is recognised by the EU as the most likely to yield the greatest environmental benefit to water quality.

What is clear in Northern Ireland is that the proposed Nitrates Action Plan will have a major impact on a number of specific dairy systems. The low input, high grass system popular on some farms, depends on being able to maximize margin per litre and operate at high stocking rates to generate acceptable total farm profits. The organic N limit will significantly reduce the profitability of these farms.

Full details of the Nitrates Action Plan are to be published in the near future in Northern Ireland.

Balancing all these factors, likely to influence Northern Ireland dairy farms, the system, which provides the best opportunity for farm development, is a high output forage-based system. However, to achieve the results and benefits from such a system will require new innovative thinking coupled to a flexible and adaptable business attitude to the management of the whole farm business. Table 4 provide the targets, which farmers should aim for. Are they to challenging? A can do attitude will ensure success. Table 5 puts these targets in perspective.

Table 4 Dairy Production System Targets

Herd Average 8,000 l @ 4.2% B.F. and 3.5% Protein
5,000 l from forage feeding 1,350 kilos concentrate
Variable and Overhead Costs 9ppl.
Peak to Trough Ratio May / November 1.2 / 1

Table 5 Dairy Production System Targets in Perspective

Performance Based on Milk from Forage Greenmount Benchmarking 2004/05

	Top 25%	Bottom 25%
Milk Yield (l)	6716	6369
B.F. %	3.93	3.87
Protein %	3.27	3.19
Concentrates / Cow kg	1341	2186
Milk from Forage l	3731	1511
Variable and Overhead Costs ppl	10.75	13.1

As already indicated the availability of quality labour is a limiting factor or "quota" on dairy farms. The routine job of milking cows in the parlour may not be the most skilled. However the management of today's cow to produce high yields of milk to meet market specification and ensure fertility, healthy and welfare requires the full attention of the farmer. This is what the dairy farmer is good at and should concentrate on. Capital investment in the future must seek to free up time from routine, mundane, low return jobs – your time and the time of your staff is valuable.

A few farmers have commenced contract heifer rearing but the calf is leaving the farm at 6-12 weeks. Too late! When is the major input of time in calf rearing – the first 1-21 days? Under a suitable arrangement the calf could leave the farm within the first few days and free up valuable labour.

My colleagues in the arable sector inform me that a 10t / ha crop of wheat or 45-50t / ha of forage maize does not happen by chance. Only professional growers who pay attention to detail achieve such high levels of performance – they focus on what they are good at.

The dairy farmer should enter into a contract arrangement to gain the benefits of alternative forage for his dairy herd harnessing the skills of the arable farmer. Quality forage can be achieved at competitive cost and can lead to improved cow performance through stimulating dry matter intake for yield, compositional quality and body condition. In addition other benefits may follow, minimising traffic hassles by taking only one cut by a professional contractor with less silage machinery on busy roads several times during the summer months. This again will free up the scarce resource of labour and indeed may allow time to enjoy the family.

Third party farm partnerships may not be in the thinking or make-up of the Northern Ireland farmer but they operate successfully in other countries. Economics of scale dictate that where increased utilization of a capital resource can be achieved you improve the return on investment.

More than one farmer could use a modern milking facility, cow accommodation and slurry system. Marginal costings would favour this development. If for example three, 40-60 cows herds co-operated, you might have the 150-cow herd housed and milked on one farm, forage production on another and dry cows and young stock on the other. Each farmer, enabled to focus on the tasks they prefer or are good at, and perhaps only milking one weekend in three. Or by agreement perhaps one member of the partnership employed off-farm while still owning a dairy herd. I do not minimize the number of issues needing to be addressed, but it is still a feasible option for the future if creative thinking is used. Remember we are in a new era and we need to be flexible in our approach to problem solving.

In the future successful dairy businesses will:-

- focus on year on year growth of the farm business
- concentrate on what they are good at, specialize and harness the skills of others.
- continually develop business management skills ensuring investments yield a positive return on capital and time
- encourage "new thinking" onto the farm to challenge "this is the way I have always done it" mentality, dairy farming needs innovation
- no business can stand still, the business will either die or be left behind
- target top 25% performance from a high output high forage system
  – THERE IS NO FUTURE IN BELOW AVERAGE PERFORMANCE
- benchmark to know how the farm is performing and what is achievable
- benchmarking in Northern Ireland highlights a 4ppl differential in the value of milk sold, so focus on breeding, feeding and herd management to improve milk composition
- invest off-farm where a profitable and mature farm is managed thus improving business wealth, but only do so if you enjoy and are comfortable in this environment
- adopt a "can do" philosophy, get out of dairy farming if you feel dissatisfied with your lot and it is always somebody else's fault
- enjoy being a dairy farmer with a confident, positive and realistic approach to your business
- invest time and money in you and your family

If we are entering a new era then it is time for new thinking.

Options to Improve Profit

by

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Introduction

As we approach the end of 2005, many dairy farm families are asking themselves what the future holds. The Single Farm Payment (SFP) system and decoupling of premia from production are changing the need to farm as intensively as before to draw down the maximum premia payments.

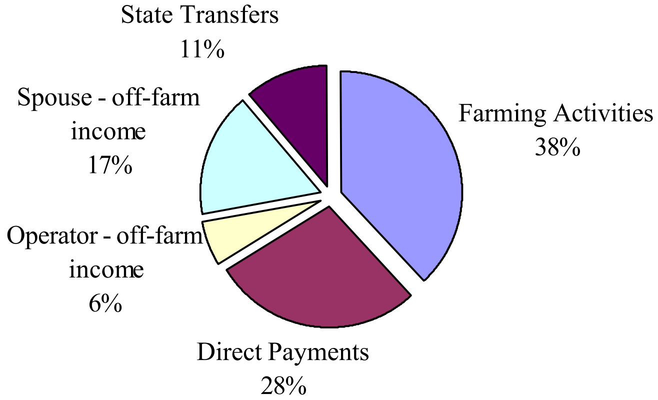
As always however, all farms are subject to the effects of inflation on farm input prices and household income. While most people are aware of the effect of inflation on the cost of living, few realise that to maintain their current standard of living, household income will have to rise by 5 per cent per annum - by over 34 percent by 2010. How will this happen on your farm? What will you do if household income is insufficient to meet your family's requirements?

Sources of household income

Have you sat down recently and calculated your household income? Many dairy farmers will have a good idea of their farm income and the value of their SFP but what about the other sources of household income? Why is it important to know this figure? The answer to this question should be obvious when you realise what household income is used for. It is used to meet the family living expenses, meet loan repayments, pay tax, make pension contributions and pay medical insurance (VHI, BUPA, Vivas etc).

Using data from the Teagasc National Farm Survey and the CSO Household Budget Survey, we can estimate the make-up of household income in an average dairy farm household (see Figure 1).

Figure 1. Sources of household income on the average dairy farm in 2004.



There are four possible sources of household income:
1) Farm income
2) SFP
3) State Transfers
4) Off-farm income.

The SFP and the value of state transfers that will be received by any farm in the future are relatively fixed. In 2004, they made up 39% of household income on the average dairy farm. The SFP is based on historical premia applications and the milk quota held on March 31st 2005. The level of state transfers – Children's Allowance, Farm Assist, and Contributory Pensions – will be decided by the Minister for Finance and your family circumstances.

Therefore for most dairy farm households, options to increase household income will be narrowed down to two – off-farm income or on-farm income.

Extra off-farm income could be as a result of an off-farm job for the farmer, their spouse or another family member. Some dairy farmers may invest money off-farm and benefit from this. However, if household income is currently tight, your off-farm investment must deliver an annual cash flow immediately rather than at some date in the future.

Extra on-farm income can emanate from four possible sources on the dairy farm:
1. Expansion – of the dairy, cattle or replacement enterprises. But large amounts of quota aren't readily available in all co-op areas. Dairy farmers who receive quota must carefully examine the costs of expansion – any capital investments must be carefully planned.
2. Partnership – either with a non-relation (Standard) or with a son /daughter (Family).
3. Efficiency – may be achieved by reducing costs or by increasing output. Focussing on lifting the EBI of the dairy herd will lead to increased profits for your farm through its effect on milk production and fertility. Increasing the amount and quality of grass in the diet are two major areas where output can increase and costs can be cut.
4. Alternatives – there are a long list of options under this heading, including REPS, forestry, farmhouse cheese, rural tourism, organic farming etc. You must decide which alternative is most suitable for your farm.

Case study

The following case study examines some of the options available to improve farm income on a mixed dairy and cattle farm run by a full-time farming couple with three primary school going children. Currently they farm 72.6 hectares including 25 hectares of rented land. They have a milk quota of 345,000 litres. Their 2004 Profit Monitor analysis showed that they had a common profit of 19.47 c/litre and common costs of 10.99 c/litre. Currently they fill the quota with 59 cows and finish all beef cattle at 24 months of age. The milking parlour is relatively modern 9 unit herringbone with a 3,600 litre bulk tank. They have cubicle spaces available for 100 cows and 600 m^3 slurry storage is currently available. To date they have not joined REPS.

The options examined are as follows:

Option 1. No change to current system;
Option 2. Drop 22 hectares rented land and cattle carried to 18 months;

Option 3. Increase to 69 cows (same yield/cow, 60,000 litres milk quota purchased over 5 years), 22 hectares of the rented land is dropped and cattle are carried to 18 months;

Option 4. Option 3 + REPS. Replacements only reared; all other animals sold as calves (an average calf price of €150 was assumed);

Option 5. Option 4 + increased efficiency of milk production worth 3 c/litre between 2004 and 2010. This can be achieved by improving calving interval and reducing replacement rate;

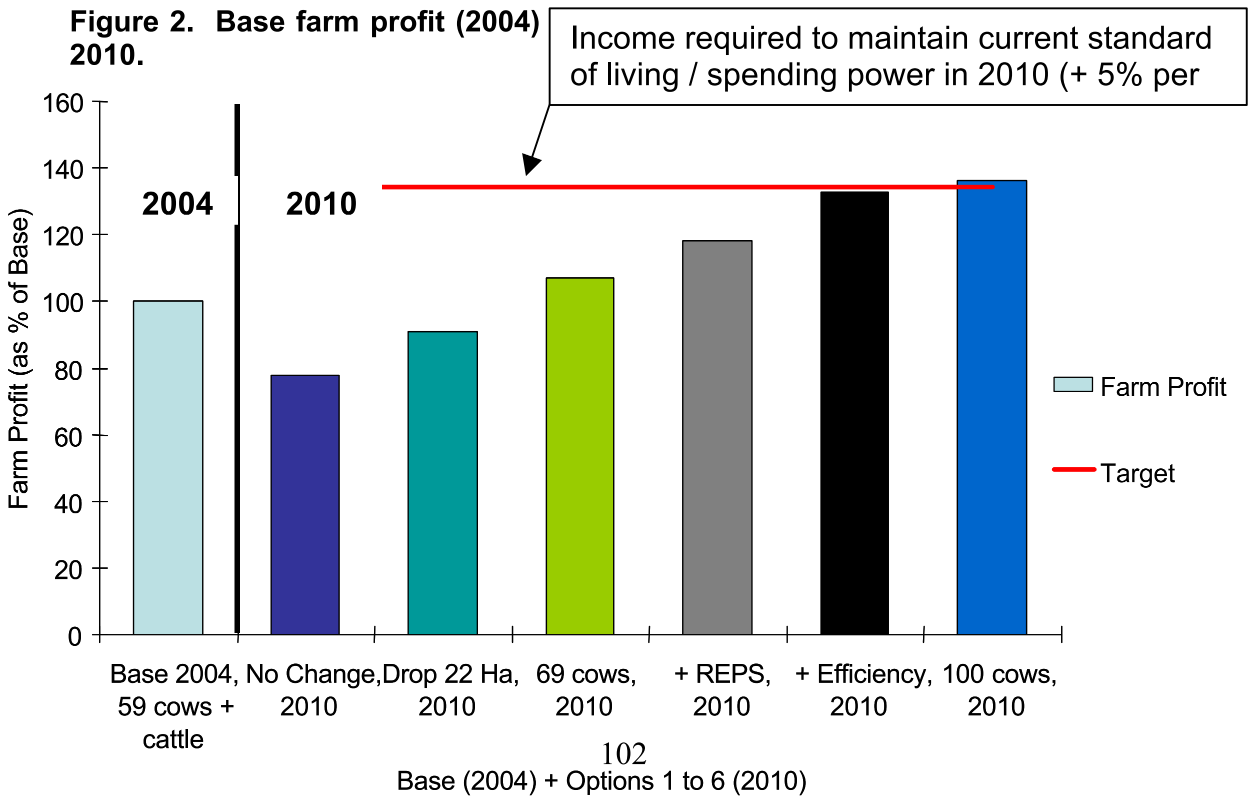
Option 6. Cow number is increased to 100 cows (same milk yield), the cattle enterprise is eliminated, 34 replacement units and 19.2 hectares are rented (to maintain a similar stocking rate to the base position in 2004.

The options are arranged in a step-wise progression i.e. Option 3 builds on Option 2, Option 4 builds on Option 3, Option 5 builds on Option 4. Options 1 and 6 are 'stand-alone' options. All options are evaluated on the basis of the income earned in 2010.

The following assumptions were made:

- The base costs and prices received were taken from the 2004 Profit Monitor report;
- All options were examined for 2010;
- Variable costs were assumed to increase by 8% and fixed costs by 16% by 2010;
- Milk price was expected to fall by 10%; cull cow price was expected to rise by 3.6%, calf price was expected to fall by 10% and store cattle price was expected to fall by 5-6% by 2010.
- Borrowings were required under the various options examined:
  - Milk quota was costed at €0.10/litre
  - Additional cows were costed at €1,200 each
  - Additional cubicle spaces were costed at €500/space
  - Additional slurry storage was costed at €60/m^3 (net of grant)
  - Additional units in the parlour were costed at €3,000/unit (net of grant)
  - A new bulk tank was costed at €9/gallon (net of grant)
  - It was assumed that the money was borrowed for 10 years at 5% interest rate

Figure 2. Base farm profit (2004) 2010.



Implications of the case study

- Household income (in this case farm income) must increase by 5% per year to maintain your relative purchasing power into the future. This is required to meet the combined effects of an inflation rate of 3% and a tax rate of 40%.
- Household income needs to increase by 34% by 2010 because the 5% increase in income needed compounds to 34% over 5 years.
- In Option 1, where no change occurs, profit drops by 24% in 2010 due to rising costs and a falling milk price.
- In Option 2, changing the system of cattle rearing practiced on the farm and dropping most of the rented land results in a higher profit than the static Option (Option 1). However this still represents a reduction of 11% in income compared to the income earned in 2004.
- Purchasing and producing extra quota (as well as the changes made under Option 2) will improve the profit situation further; profit will be up 4% in 2010 compared to 2004.
- Entering REPS (as well as the changes made under previous options) will have a positive effect on profit. Profit will increase by 15% in 2010 compared to the income earned in 2004.
- Option 5 - adding an efficiency improvement to the changes already made will again improve the profit position. Profit will increase by 30% compared to 2004.
- Option 6 – increasing cow number to 100 plus replacements only, shows a 32% increase in profits compared to 2004.

The only two options that achieved the target of over 30% increase in income over the 2004 income earned are Options 5 and 6. Both of these options yield similar levels of profit. However cash flow is better under Option 5 **and** farm borrowings are significantly lower under Option 5.

The specific details of Option 5 are as follows:

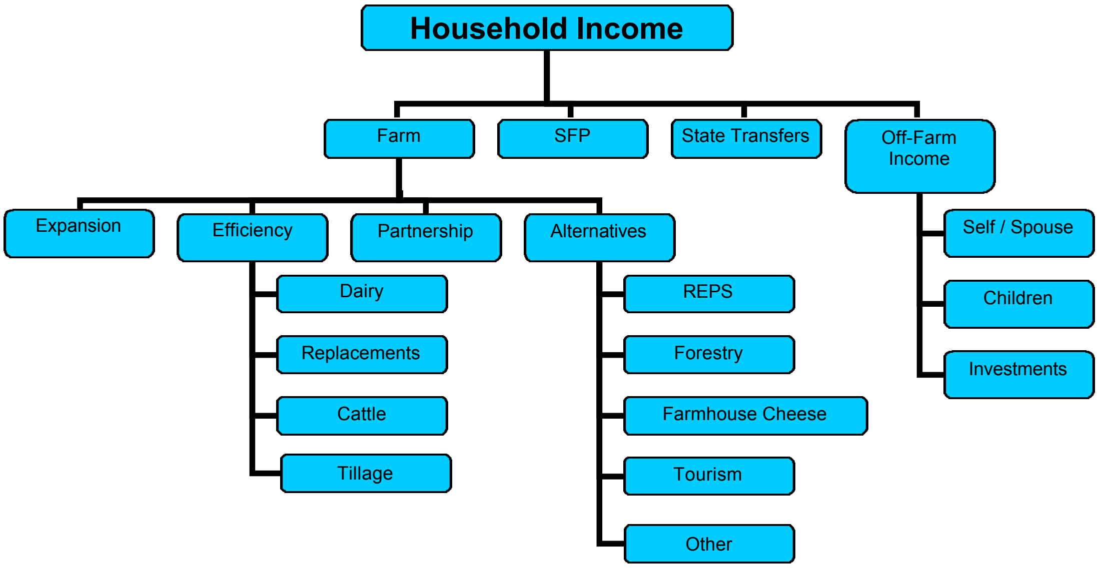
- 51 hectares including 3 hectares rented (20 hectares silage made);
- 69 cows (same average yield), 14 replacement units maintained, all cattle sold off;
- Stocking rate 1.78 LU/Ha (1.39 acres/LU);
- REPS participant: REPS compliance of €2,000 assumed
- Efficiency of 3 cent per litre assumed; worth €12,088.
- Investment required includes milk quota purchase (58,218 litres), 10 cows, 2 extra units in the milking parlour and a new bulk tank.

Conclusion

Household income needs to increase if the current purchasing power is to be maintained. On many dairy farms, one option alone will not lead to increased income but rather a combination of two or three options. Expansion alone will not be enough for most dairy farmers.

Establish what your own household income and the proportion of it that comes from the different sources outlined in this paper. How are the demands on your household income likely to change over the next number of years. Talk to your Teagasc dairy advisor now for further details on the Options Programme for Farm Families. Now is a time of great change, but change brings opportunity for those who can see it.

Figure 3: Diagram of sources of household income and opportunities for change



The potential from breeding
- a farmers perspective

by

Eamonn and Anne Fagan
Lough Ree House, Glasson, Athlone, County Westmeath

Background

I come from Glasson in County Westmeath and have been farming full-time since my parents transferred ownership of the farm to me in 1983. Our farm was then a drystock farm. We established a milk quota of 59,000 litres in 1984.

We now farm 102 adjusted hectares of land in four divisions. We own 64 hectares of land in two divisions. Almost 55 hectares of this is around the milking parlour and runs down to Lough Ree. Another 20 ha of land is leased on a long term basis since 1995 with a milk quota of over 180,000 litres. The other 18 hectares of land are leased on the 11 month system.

Because the farm is in four blocks, silage is cut at home and on the owned section two miles away. The herd is 100% spring calving. Calving starts in late January. In 2005 our median calving date was February 26th. Cows go to grass effectively as they calve to keep costs down and increase milk protein content. Our overall stocking rate is 2 LU/ha. All replacement heifer calves and approximately 30 male beef are reared and surplus calves are sold off the farm at two weeks of age.

In the past we were solely expansion-focused and placed milk yield first on our list of priorities. Our aim then was to sell as much milk as possible. Infertility became the main reason for cows leaving the herd. Despite careful use of records, tail paint and teaser bulls, we have experienced empty rates of up to 20% over the past number of years. This was a real cost on our farm as the price we are receiving for our culls seemed to be dwindling. More and more of those in calf were in poor condition at drying off and in need of meal feeding to put condition on during the dry period.

What I need the EBI system to deliver

To stay profitable in the future, I need a cow that:

- Is fertile and will go back in calf
- Is easily maintained, remains in good condition throughout her lactation and does not need feeding during the dry period to put condition on;
- Will produce 6,000 to 6,500 litres of high fat and protein milk per lactation.

In other words, I need a cow that will leave me more money in my pocket and is less hassle to look after along the way. Firstly I will present the details of the current herd EBI and then I will review the ways in which I believe that EBI is now starting to impact on fertility and milk production on my farm.

Current EBI of the herd

The genetic potential of the herd is presented in Table 2.

Table 2. EBI of the herd by lactation number and sub index (ICBF, Sept 2005).

	EBI (€)	Milk SI (€)	Fertility SI (€)	PD Milk/Fat/Pr (kg)	PD Surv (%) / CI (days)
Overall herd	44	28.2	15.5	105 / 6.2 / 5.2	0.6 / -1.3
Dairy cows	58	37.9	18.4	98 / 9.2 / 6.1	0.8 / -1.5
First lactation	44	31.2	12.3	129 / 5.7 / 6.3	0.6 / -0.8
Second lactation	41	27.7	14.1	146 / 4.8 / 6.1	0.4 / -1.4
Third lactation	29	14.2	15.4	66 / 4.0 / 2.6	0.5 / -1.5
Older cows					
Replacement heifers	51	42.9	8.3	152 / 8.7 / 8.1	0.4 / -0.5
Yearling heifers	58	41.4	14.6	153 / 9.8 / 7.5	0.6 / -1.1
Weanling heifers					

The overall EBI of the herd is €44, which is an increase of €10 over the October 2004 figure. Some of this increase is because we introduced the first big group of high EBI heifers this spring and some because the bulls we've used in the past have had an increase in their EBI. The in-calf heifers have an average EBI of €51 and the heifer calves have an average EBI of €58. These animals will increase the EBI of the herd even further in years to come.

What the subindices of the herds EBI is showing is that we still have a milky herd e.g. the PD for milk is 105kg. At the same time the herd now has a reasonable subindex for fertility as well with a PD of 0.6% for survival and –1.3 days for calving interval. There does not seem to be much difference between the groups of older cows and the first lactation animals in the fertility subindex. I believe that this is because the less fertile cows in the older groups (apart from the second lactation group) have culled themselves from the herd by being empty at the end of the breeding season.

What we like most about EBI is that it is putting breeding firmly into farmers' hands. Because progeny testing is now based across all herds in milk recording, we're seeing much more information on fertility coming through. Because most of the information is coming from commercial herds like our own, we believe that its much more applicable to the ordinary dairy farmer. This year we decided to get involved in the G€N€IR€LAND programme. Because we are quickly increasing EBI, we will need different high EBI bulls to breed the next generation of cows while maintaining a high rate of EBI increase. Participating in the programme should help to speed up the process of identifying these sires.

Fertility

Fertility is the possibly the most important way in which EBI is starting and will continue to lift profitability on our farm. The data for the fertility performance of the herd is presented in Table 2.

Table 2. Average calving interval, 6 week in calf rate and empty rates for the herd between 2002 and 2005.

	2002	2003	2004	2005 (est)
Calving interval	383	374	376	378
6 week in calf rate (%)	40	51	56	61
Empty rate (%)	17	20	18	12

We believe that EBI is starting to have an effect on herd fertility this year as an increasing number of high EBI animals enter the herd. Last year we had an empty rate of 18% and a calving season this year lasting 21 weeks. This year our empty rate is 12% and our calving season next spring will last for just over 15 weeks. The proportion of animals calving early on in the calving season is also increasing as our 6 week in-calf rate has increased to over 60% for next spring. With more high EBI replacement stock entering the herd over the next couple of years, we believe that this can help us to achieve our aim of reducing empty rate to below 10% and the calving season to 13 weeks.

Milk production

Details of herd size, milk production, days at grass and concentrate fed over the past number of years are presented in Table 1.

Table 1. Changes in herd size, milk production, days at grass and concentrate input on the farm between 2002 and 2005.

	2002	2003	2004	2005 (est)
Cow number	93	113	121	125
Milk sales (litres)	529,000	691,000	709,000	770,000
Milk yield (litres)	5,994	6,231	6,006	6,200
Milk protein (%)	3.36	3.32	3.38	3.38
Concentrate fed (kg/cow)	862	1,120	704	750
Days at grass	292	289	293	293

Both cow number and quota have increased rapidly over the past number of years. We now fill a quota of over 770,000 litres supplying milk to both Lakeland Dairies and Connacht Gold. The dairy herd has grown by a third since 2002 to 125 cows. We are currently milk recording through our 16 unit milking parlour with electronic milk meters.

Overall milk yield has remained static over the past number of years and protein content has been maintained or slightly increased. Over the next couple of years I believe that improved fertility should result in a 5-10% increase in average milk yield in the future because as the herd matures, an increasing proportion of herd will be older and producing more milk per lactation.

Concentrate input has almost halved since 2003 and will hopefully remain low as EBI starts to have an impact on the maintenance requirements of the herd. Part of the reason for the high levels of meal feeding in years gone by was due to feeding cows during the dry period to put on condition.

Profit

Ultimately improved fertility and good levels of milk production should lead to better profit. The changes in common cost and profit on our farm over the past number of years are presented in Table 3.

Table 3. Trends in common cost and profit on the farm between 2002 and 2005.

	2002	2003	2004	2005 (est)
Gross output (c/litre)	28.16	26.90	29.33	28.5
Common cost (c/litre)	13.25	12.68	14.30	13.0
Common profit (c/litre)	14.91	14.22	15.03	15.5

Rapid expansion is costly and has had an impact on the costs of milk production on our farm. Output has been affected by a high replacement rate directly through replacement costs and indirectly through its effect on milk yield per cow. I believe that this year we are starting to turn the corner as herd size stabilises and the continued lower meal feeding level reduces the cost of milk production.

The future

When selecting sires we will pay more attention to the milk subindex of the EBI. Having focused in the last couple of years more on the fertility side, I intend to look back towards the milk production side of the equation again. At least with a better developed EBI system in place it should be possible to select bulls that maintain or further improve fertility at the same time.

The G€N€IR€LAND programme now needs to start delivering results. High EBI progeny tested bulls need to start to appear in the next number of years. The opportunity is there for Ireland to produce cows and bulls that suit grass based milk production systems anywhere in the world. Better breeding is and will continue to be an essential part of the profitability on our farm and on farms across the country.

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