

Don't blame the system

'The best system of milk production' is a topic for debate that has swallowed up hours during discussion group meetings. Focusing on performance indicators is likely to be more useful regardless of the system you're in.

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followed, because of a herd fertility problem. Then it is probably just reflecting technical inefficiency. This distinction is rarely made when comparing systems at farm level. Similar problems arise when describing systems based on feed input per cow, without reference to a related metric like stocking rate. Applying arbitrary cut-offs to create systems out of such metrics is best avoided.

What does Teagasc Profit Monitor data reveal about different systems' performance?

Drivers of performance within a system, however defined, should be clear to help improve technical efficiency. Analysis of farm-level data across different systems is very useful for this purpose.

To illustrate, we recently looked at Teagasc Profit Monitor data from more than 900 farms, taking spring and winter production as examples of contrasting systems.

The aim was to see how measures of performance related to farm profit, and indeed if there were differences in what was important for profit within each system. Results are presented in Table 1, with profit measured as



margin per hectare farmed. The data clearly indicate that these two "systems", so often debated, are essentially the same in terms of what drives profitability. Milk volume per cow is less important than milk solids. Feed input per cow predicts very little in terms of profit. This is partially explained by the large range in milk solids output for a given level of feed among the farms in the analysis.

The metric of grass utilised per hectare – a measure of milk solids per hectare adjusted for feed input – stands out as very important for each system. This is not to say that it is the be-all-and-end-all for farm profit, but rather that it ranks of equal importance for farm profit among winter and spring systems alike.

The similarity in the degree of relationships is notable and can serve as

Achieving a more defined sense of system can give an individual farm identity and better clarity as to what the most important metrics of performance are for their own circumstances. However, the opposite and corresponding risk, is that too much emphasis is placed on the sense of difference between farms, where everything can be explained away as "part of the system".

This often leads to confusion as to where the effect of "performance" ends and the definition of "system" begins. For example, is "autumn calving" a system? Yes, if it is implemented at good technical efficiency to maximise a return on a milk pricing structure. On the other hand, if

Figure 1: Milk yield v gross margin

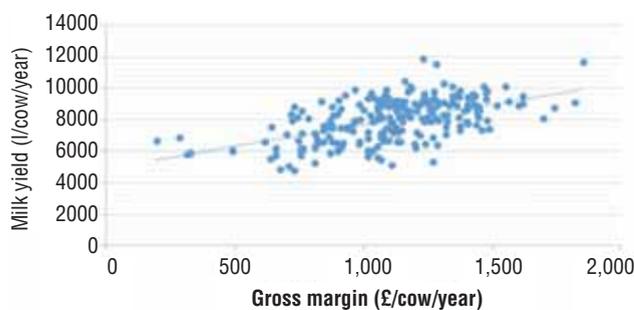


Figure 2: Concentrate v milk yield (2019/20)

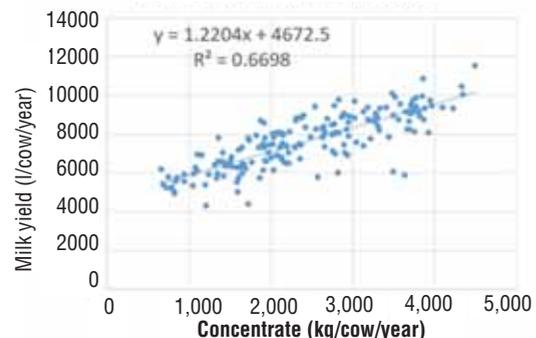




Table 1: Association between herd measures and profit for different dairy systems in eProfit Monitor

Herd measure	Spring herds	Winter herds	Comment
Litres per cow	11%	15%	Milk solids more important than volume
Milk solids per cow	21%	27%	
Feed per cow	0%	0%	Feed did not relate to profit
Fertiliser per ha	20%	21%	Better soil fertility?
Grass utilised per ha	63%	65%	Key measure for both systems

Results shown as a percentage rank. Under 20% denotes a weak association, 20% to 40% moderate, over 40% a strong association

Table 2: Summary of physical and financial performance of CAFRE benchmarked farms (2019/20)

	Average	Range	
		Bottom 25 %	Top 25 %
Physical performance			
Milk yield (l/ cow/ year)	7,696	7,201	8,186
BF %	4.09	4.04	4.09
Protein %	3.33	3.29	3.35
Replacement rate (%)	26.9	31.3	24.9
Concentrate (kg/cow/ year)	2,527	2,645	2,446
Financial performance			
Margin over concentrate (£/ cow)	1,440	1,221	1,616
Total variable costs (£/ cow)	942	999	879
Gross margin (£/ cow)	1,099	792	1,378

a common ground for progress among farms running ostensibly different systems. In other words, spend time debating the details and the practices, not how farms are “labelled”.

Joe Patton and Denis Nulty.

Feed efficiency and sustainability on Northern Ireland dairy farms

Dairy farming in Northern Ireland has operated de-facto in a “no quota” environment for over two decades now. In that time herd size, milk yield and concentrate input per cow have steadily increased.

Does forage utilisation also link to profit in this context? CAFRE benchmarking figures indicate that while improvements in net margin and sustainability on Northern Ireland dairy farms can be achieved through increases in milk output, such changes will only occur if this is accompanied by a focus on maximising feed efficiency.

Northern Ireland dairy farmers participating within the CAFRE Business Development Group programme have the opportunity to assess their physical and financial performance relative to peers, similar to Teagasc Profit Monitor.

Data is collected over a 12-month period and results are generally presented on a per-cow basis rather than per litre, as herd size and not milk quota is usually considered a limiting factor.



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A summary of the main physical and financial performance features collected for the 2019/20 season is given in Table 2, showing the performance figures for the average benchmarked farm as well as the top 25% and bottom 25% of recorded farms (based on net margin).

There is a range in performance across the farms, with the top 25% of benchmarked farms having higher levels of milk production, lower replacement rates and lower production costs, which in turn lead to a higher gross margin and net margin/cow.

Figure 1 shows that increases in milk yield/cow tend to be correlated with increases in gross margin/cow and this may help to explain the interest in increasing milk output in the Northern Ireland dairy industry.

It is also important to note that the efficiency with which milk is produced will significantly impact on financial performance.

In Figure 2 we see that while the average benchmarked farm fed 2,527kg concentrate/cow/year to produce 7,696l milk/cow/year, there was significant individual variation. Farms recording this level of feeding produced between 6,500 to almost 9,000l milk/cow/year. This had a major impact on the margin over concentrate/cow (MOC).



The efficiency with which milk is produced will significantly impact on financial performance

In general, farms exhibiting a higher MOC also tend to have a higher gross and net margin/cow. In terms of system of production, the data suggests that variation within systems is greater than the variation between systems.

Results from CAFRE benchmarking indicate that Northern Ireland dairy farms focusing on improving milk output must also ensure that feed efficiency is optimised to enhance the long-term sustainability of their businesses.

In effect, this means delivering more milk from better quality forages, and a more strategic use of feed supplements. This can be achieved through annual benchmarking and monitoring feed efficiency on a monthly basis; CAFRE provides an online feed calculator facility for this purpose.



Teagasc dairy advisor John Lawlor and Denis Nulty.

Farmer focus: Denis and Christy Nulty, Slane, Co Meath

A common trend among dairy farms is that they tend to repeat a similar version of their own system year on year. This is certainly not the case with Christy and Denis Nulty in Slane, Co Meath, who have steadily evolved their dairy enterprise through “two farms and four systems” since 2014.

In 2011, the father-and-son partnership were running a split-calving system combining feed inputs of grazing, maize/grass silage, plus approximately 1.8t concentrate per cow annually.

“The farming system had come about due to the volume-based liquid milk payment system in place and because of grazing land constraints around the parlour,” recalls Christy. “Our land tends toward heavy clay, so extra feeding is often needed in spring and late autumn.”

The grazing area was supported by external land used for replacement rearing, silage and maize.

Herd performance in those years reflected the excellent standard of management on the farm. Average milk production was 7,100l/488kg solids annually which at the time benchmarked in the top 10% nationally; the herd ranked similarly well in other management measures such as somatic cell count and age at first calving.

“The herd had the capacity for litres and delivered quite well on it,” recalls Christy.

“Our biggest challenge was getting cows back in calf. We were carrying over about 20% cows every year to keep them in the herd and that was probably taking about 800 litres per

cow off our annual milk sales.”

The first major step-change in systems came in around 2014-15, when their outside land block about 5km away was identified for development as a second milking unit for the post-quota era. “We had been talking for a while about a second unit versus further increasing home stocking rate,” explains Denis.

“A few things fed in to our thinking. Firstly, we had a good base in winter milk but knew this volume would be pretty much capped, so expansion was more likely to be spring based. Second, the milk payment had moved to A+B-C on all litres so we could still increase milk sales per cow in a grazing system. And, finally, when we did the figures, the cost of drawing home feed to support the extra cows would have been more than the cost of repayments on a new parlour.”

Taking all that into account, the Nultys set about equipping the out-farm with paddock and roadway infrastructure, a milking parlour, plus winter accommodation.

“This farm is fairly similar in scale to the main block, but on earlier ground,” notes Christy. “The whole farm plan gradually evolved into aiming for a block autumn calving system at home, with a block spring system away. We felt this would keep both units easier to run.”

As the development plans took shape, Denis and Christy had built cows numbers significantly in preparation for stocking the new unit. This resulted in a few seasons of running a very high stocking rate system of close to seven cows per hectare, albeit as an interim step.

“We ran that version for a while and gained a bit of experience of it,” Denis says. “I suppose for us, the big lesson was that grazing behaviour of the cows will often frustrate your

NULTY HERD PERFORMANCE

John Lawlor, Teagasc dairy advisor in Drogheda, notes that herd performance per cow has improved for the Nultys since the changes to system were made. "Milk solids output has actually risen to 560kg per cow on average" says John. "This puts the herd in the top 10% among its peers."

"It is difficult to get an exact split on the figures, but the estimate is that the autumn cows are sitting at around 600kg milk solids and spring cows at 535kg; meal input is about 1.8tonne and 1.1t, respectively, with maize silage also fed to the autumn group."

"In both yards, EBI has delivered more milk value per cow, while grass in the diet has cut the feed bill, despite what look like very different systems," he adds.

Does this tally with the trends in John's clients in Louth and Meath? "There is a strong base of higher input farms in this catchment area. Those who incorporated EBI and grazing have benefitted in terms of milk sales over feed cost. Why wouldn't they?"

attempts to feed the diet you have on paper, which over time leads to loss of confidence in grazing."

He explains further: "At that stocking rate you will be buffer feeding every day of the season. The cows get used to the notion of maize and meal, and on wet days especially they would often stand waiting at the gap rather than grazing."

"The grass can get soured over time with high stocking density too, and you won't be taking out any surplus paddocks to freshen the sward either, which all dampens grass intake. In hindsight, we may have been as well off keeping half the herd in, and letting the other half settle into routine grazing. It probably would have saved on the extra labour of buffering as well."

Once the new facility was ready to go, Christy and Denis saw their plan kick into place. The home farm now runs a block autumn calving herd (September to November) at around 3.7 cows per hectare grazing while the spring-calving unit runs at 3.4 cows per hectare; outside blocks continue to supply additional silage, maize and replacement heifers leaving the overall farm stocking rate at 2.25 LU per hectare. All cows calve at home

and spring cows are moved to the spring farm within five to 10 days after calving.

"The spring calvers are sent off to exile and the autumn calvers stay at home to be well looked after," smiles Christy.

"In truth, we were delighted with the change to more grazing across the farm. There was some concern about how our type of cow would function in a grass-plus-parlour meal situation, but they have beaten our expectations to be fair."

"Breeding through EBI for more medium size, milk solids and fertility has helped. You can see that coming in the younger cows. Fertility is slowly turning and we have brought calving interval back to 390 days. The same trends apply in the autumn group too."

In conclusion, having run four systems in 10 years then, what are Denis' three takeaway messages?

"Breed a high solids cow that is easier to put in calf."

"Cows aren't fed on paper – figure out the practicalities before ramping up stocking rates too much."

"It might be cheaper to move the cows to the grass than the grass to the cows."

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