



Client Update

2018 Milk Solids

November 2018



As more UK dairy processors focus their payment schedules around milk solids rather than volume, is it time to re-think dairy economics beyond pence per litre?

Assuming that this payment approach will continue, should we be thinking about new ways of monitoring farm performance and target setting? Already there is confusion – should farmers be targeting high percentage solids to deliver a higher milk price per litre, or should they target high volume to maximise total solids yield and, therefore, returns?

This business note aims to review the economics and clarify the discussion. We have used Arla's payment scheme but similar principles will apply to other milk buyers who use constituent-based payment schedules.

Ultimately, we need to change our way of thinking and the day-to-day metrics we use to ensure we have the correct business tools.

Where are we now?

It would be fair to say that today's markets are giving slightly mixed messages. Producing a fixed kg of solids will actually achieve a slightly higher income in £/cow and £/kg solids if produced through additional litres and lower milk quality %, based on the Arla July 2018 pricing schedule.

This issue is also rising up the agenda in the US where for so long everyone thought it was just a matter of producing milk volume.

Table 1 – Different metrics for assessing performance derived from a costed dataset

| Physical performance | | | |
|---|------------------|-------------------|-------------|
| Average Butterfat % | 3.90 | | |
| Average Protein % | 3.25 | | |
| Solids per Cow (kg) | 749 | | |
| Milk sold (litres) | 3,453,791 | | |
| Average Herd Size | 332 | | |
| Calculated Yield Per Cow (Milk Sold - litres) | 10,291 | | |
| Farm Area | 186 | | |
| | ECM (litres) ppl | ECM (kg) p/kg ECM | £/kg solids |
| Total cost of production | 31.45 | 32.34 | 4.23 |
| Net cost of production | 25.76 | 26.49 | 3.46 |

- Addendum
Based on benchmarked figures 2017-18.
Shown as Energy Corrected Milk (ECM) where milk is standardised to 4% & 3.3%.

New ways to look at COP?

The question, therefore, is should we be looking at performance in terms of fat and protein production and would this also help prepare herds for future markets where milk volume may not be the ultimate business target, and total milk solids production may become more important?

Table 1 (see below) gives a farm cost breakdown by litre, energy corrected milk (which partially accounts for constituent content) and by kg solids..

The current market messages are valuing fat over protein as consumers have come back to consuming more butter and dairy fat products. However, the global availability of protein is forecasted to be restricted in the long run, which means that protein prices are likely to trend upwards over the longer term.

So, should we be driven by kg milk solids?

Yes, definitely, since output measured in kg of solids is a key profit driver. The more kgs of butterfat and protein produced at an economic cost of production the better.

The key consideration, however, is how those kilograms of milk solids are produced – on some farms this may be achieved by selling more litres of milk at lower milk quality. For example, if you can increase yields and maintain butterfat and protein, that's great. If, as typically happens, milk constituents fall then calculate the kg of solids to work out if you are selling more per cow, per hectare or per £ invested, maximising your returns to the most limiting factor on the farm.

* ECM (Energy Corrected Milk)

This is a widely used conversion that enables comparison between all herds and breeds no matter what the milk quality. Milk is standardised to 4% butterfat and 3.3% protein. If we have two 150 cow herds but one is a Holstein herd and the other a Jersey herd it is not a fair comparison to use litres alone, as the Jersey herd will have lower litres per cow, but a much higher percentage of solids.

However, if we use ECM then the solids (or the energy to produce them) is taken into account. This is shown in the example below:

| | Holstein | | Jersey | |
|--------------------------|----------|-----------|---------|-----------|
| | per cow | herd | per cow | herd |
| Herd size | | 150 | | 150 |
| Milk production - litres | 9,500 | 1,425,000 | 7,300 | 1,095,000 |
| Butterfat % | 4.00 | | 5.85 | |
| Protein % | 3.30 | | 4.5 | |

Energy Corrected Milk (ECM) to 4% butterfat and 3.3% protein

| ECM - litres | 9,500 | 1,425,000 | 9,500 | 1,425,066 |
|--------------|-------|-----------|-------|-----------|
|--------------|-------|-----------|-------|-----------|



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Tables 2 and 3 illustrate this point.

Table 2: Solids for typical UK herds

| Yield Kgs | 6,000 | 8,000 | 10,000 |
|--|-------------|-------------|-------------|
| Butterfat % | 4.2 | 4.1 | 3.9 |
| Protein % | 3.4 | 3.3 | 3.25 |
| Kg milk solids | 456 | 592 | 715 |
| £ Milk income/cow | 1,770 | 2,299 | 2,781 |
| Milk p/kg vol | 29.49 | 28.73 | 27.8 |
| Milk £/kg solids | 3.88 | 3.88 | 3.89 |
| Milk solids/kg liveweight @ 650kg | 0.70 | 0.91 | 1.10 |
| Output per cow/day | | | |
| Kg solids/cow/day over 305 days | 1.5 | 1.94 | 2.34 |
| Output £/cow/day over 305 days | 5.8 | 7.54 | 9.11 |

What this demonstrates is that it is easy to follow the wrong performance measurement when considering milk solids. Many operators who want to maximise their milk price will opt for the production of higher constituent percentages. However, based on maximising output per cow then often the best returns come from lower constituent percentages, resulting in a lower milk price per litre but with more overall volume and therefore greater total solids output, delivering greater overall returns.

What's key is that farm businesses need to establish their limiting factor - for example, land, cow places, capital - and establish how to maximise returns to their own limiting factors. To assess the best approach for their herd they need to monitor the current cost of producing solids if on a solids-based contract and establish the marginal costs of increasing their returns at varying values for solid components.

Table 3: Solids targets for higher performance herds

| Yield Kgs | 6,000 | 8,000 | 12,000 |
|--|-------------|-------------|-------------|
| Butterfat % | 4.5 | 4.4 | 3.9 |
| Protein % | 3.6 | 3.5 | 3.25 |
| Kg milk solids | 486 | 632 | 858 |
| £ Milk income/cow | 1,883 | 2,450 | 3,337 |
| Milk p/kg vol | 31.38 | 30.62 | 27.8 |
| Milk £/kg solids | 3.87 | 3.88 | 3.89 |
| Milk solids/kg liveweight @ 650kg | 0.75 | 0.97 | 1.32 |
| Output per cow/day | | | |
| Kg solids/cow/day over 305 days | 1.59 | 2.07 | 2.81 |
| Output £/cow/day over 305 days | 6.17 | 8.03 | 10.94 |

Summary

- Constituent-based milk payment schedules are more common and are likely to remain.
- It is, therefore, important to consider farm performance in terms that include milk solids, rather than simply volume
- As always, different milk payment schedules will encourage different behaviour. Whilst it is important that farms consider performance in terms of milk solids, care is required, as some schedules will favour the production of more milk volume at lower constituent percentages, resulting in higher overall fat and protein yield, whilst other schedules may not.
- Farms must establish their own limiting factor – land, cow places, labour – and then consider the most profitable way to maximise income from milk solids.
- The longer term planning that businesses need to undertake encompasses genetics and feeding but wholesale changes to farm systems are often not necessary. Evolution not revolution is required on most farms that are getting the message on solids.



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