Rule of thumb for pricing supplements

Farmers often ask how much should they pay for supplements, but this is similar to asking how long a piece of string is and then actually expecting an exact answer. The answer is then a rule of thumb, like guessing the length of a piece of string. Let me explain.

Supplements are mainly fed as an energy source in NZ, so comparisons will be based on energy values. Different supplements contain different levels of energy and should be valued differently.

For example, grains contain at least 12.5 MJ/kg ME, good maize silage about 10.8 MJ/kg ME, while low quality silage could be as low as 9 MJ/kg ME or less. Why would you pay the same per kg even though one supplement contains 40% more energy than the other?

A second important consideration is that supplements are utilised with different efficiency or degree of wastage. For example, silage fed out under wet conditions will not be utilised as efficiently as grain fed in-shed. This is reflected in the DairyNZ estimates that 20% of silage will be lost during feeding out in paddock, while in shed feeding results in losses of less than 5%. This changes the energy consumed per kg offered to 7.2 MJ/kg ME for poorer quality silage and 11.9 MJ/kg ME for grain. This means when offered in the same quantities, one feed provides 65% more energy than the other. The value of these feeds cannot be the same and a general price for all feeds is therefore impossible. Each feed needs to be considered on merit.

Another reason why a rule of thumb is flawed is that it assumes all MS to be of equal value. Starch based feeds like grain, will result in milk of significantly higher protein content. Milk protein has a financial value about 3 times more than milk fat. Using response rates in grams MS at an average milk price can therefore be misleading as it is the financial response that is important, not production in litres or milk solids. For example, PKE costs less than grain per unit of energy, but if grain produced more protein compared to PKE, the value of the response is different, making the lowest cost per MJME not necessarily the best buy. Grain may be lower per unit of starch.

Despite responses not being equally valued, farmers often ask what response can be expected from supplement. This is arguably one of the most contentious questions around supplements. There are many factors that affect the response rate and using results from experiments or system analysis can be very misleading. Extrapolating responses obtained under a certain set of circumstances to a farm with totally different circumstances can be misleading. Let's consider a few factors that affect response rates.

As stated above, different energy values and levels of wastage will result in different response rates to a kilogram of supplement offered.

The genetic ability or type of cow could also influence the response rates. The stage of lactation is yet another factor to be considered. Cows in early lactation will proportion more feed to milk production compared to cows at the end of their lactation. Enough protein in the diet will help promote milk production, while more carbohydrates or fat mat promote more body gain.

Another important determinant of response rate is how the supplement is used. If pasture is lacking, there will be less substitution compared to when the cow can meet her nutritional demands from pasture only. Supplement should be used to fill the gap between nutritional demand and that supplied by pasture. Feeding more than what is required to fill the gap, will simply increase the level of substitution (pasture wasted) and give poorer response rates. Using supplements to increase stocking rate will result in a portion of the supplement being used for maintenance, resulting in poorer response rates compared to supplement used to fill the gap or to increase production per cow.

There are a number of factors that can influence response rates achieved. Under estimating response rates can eliminate all supplementary feeding, while over estimating response rates will result in disappointing results. A number of NZ analyses suggests long term responses, over the whole lactation, averages between 80-100 grams per kg MS, but this can vary as described above. Typical responses seen on farms in practice from lower energy dense supplements like silage are 70-80 grams/kg DM, while 90-100 grams can be expected from more energy dense supplements like grain. It is hard to believe that supplements will give 55 grams response (as has been suggested) when pasture is lacking, especially when response to pasture in the diet is nearly double that.

To decide what price to pay for supplement does however depend on the expected financial benefit realised from a kilogram of supplement. Another often over looked fact is that response in grams of milk is not the only financial benefit. Maintaining lactation peak longer, improved reproductive performance, less empty cows, better 6 week in calf rate, better BCS at dry off and more days in next lactation are all added benefits not considered by short term experiments measuring only MS responses. Measuring only milk response is production driven and not profit driven.

When supplements are fed it is not only the cost of the supplement that needs consideration. There are other associated costs with feeding supplements like depreciation on extra equipment, or more electricity used as more feed is fed and production increases. Many of these “other costs” are inflexible in practice. Once equipment has been purchased, cutting back on supplements will not reduce the depreciation. Most farmers are not able to reduce labour costs simply by not using the automatic in-shed feeding system. Cutting back on supplements will produce less milk which will indeed require less electricity. On the other hand, less milk will increase all the fixed costs like interest, rates, wintering costs etc. on a per MS basis.

Ideally the consulting nutritionist should use all information relative to a particular farm, and model a system that produces the best profit with acceptable levels of risk, should the forecast milk price not realise. This becomes the annual strategic plan with feed budgets and projected profitability. Having the farm modelled makes it possible to accurately make tactical decisions should feed or milk prices change, rather than making knee jerk reactions.

Farmers need to be very careful before simply cutting back on feed costs. Savings must be greater than the loss of income or it will be counter-productive. With higher levels of debt, overhead costs are higher and too few MS can be detrimental to profitability. DNZ Economic survey data over the past 8 years shows that on average, higher input farmers are more profitable than low input farmers. Higher input farmers made 19% better ROA and grew their equity 45% more than low input farmers. On average, higher input farmers also have less debt than low input farmers per MS. The belief that higher input farms only work in years with a good milk price is simply unfounded.

Rules of thumb are fine for Mr Average – an average farmer, on an average farm, with average cows doing average production, with average inputs in an average area. For all the other farmers, a proper strategic plan with tactical alternatives is more a meaningful proposition.