Organic Dairy Feed Conference – conference report.

The IOTA Dairy cow feed conference (Berkeley 16th April 2009), sponsored by OMSCo, focused on the links between feeding and production, health and profitability. It drew together some of the leading specialists in dairy cow nutrition – researchers, advisers and farmers - and provided a unique opportunity to discuss, challenge and develop more effective feeding systems for organic dairy cows.

The key points from the day have been summarised in this report and some **practical recommendations identified in bold.**

There are a number of challenges facing the UK dairy industry as discussed by Neil Rowe of OMSCo, particularly the unreliability of the quality of compound feeds, high dependence on imported grains (48,000 tonnes annually to feed the OMSCo "herd") and the relatively high average levels of concentrate fed at 0.27kg/litre. Not only does this pose great logistical problems but there is a high risk of wild price fluctuations and unreliable provenance. Does it meet consumer expectations and is it really sustainable to rely on a high proportion of imported grains?

William Waterfield and Tom Phillips (both organic dairy advisors) established a number of key financial points:

Grazed forage is by far the cheapest feed; cost of pasture is 6p/kg DM whereas cost of purchased feed is 35p/kg DM. Making efficient use of grassland and silage by maximizing pasture consumption is the most important first step.

Total expenses should not exceed 60% of Gross Farm Income (of the dairy enterprise only).

The main factor limiting dairy farm profitability in the UK is that fixed costs exceed 15% GFI; tight control of costs throughout the business is vital.

Block calving offers potential for more targeted feeding and better time management, with possible savings of 4- 6 p/litre over all-year-round calving.

Efficient management of cows and forage is the crucial factor: pasture consumption per hectare is directly related to profitability, aim for a target of at least 7.4 tonne DM/ha. There is no correlation between milk yield/cow and profitability.

- **Set reasonable and achievable targets, benchmark performance against other farms and use discussion groups to support improved performance.**
- **Maximize use of grazed forage by:**

  Managing grazing precisely using sward height/yield monitoring

  Extended grazing

  Ensuring good cow tracks

  Daily paddocks
- **Block calving is important for precise cow management.**
- **Set a calving interval target of below 400 days.**

Mike Tame (organic dairy advisor) reviewed the results of organic dairy research. The single most significant factor affecting performance and profitability is forage; its efficiency of production, quality and utilization. Early in the season protein levels may be as low as 13%, increasing during the season to over 25 % in late summer; rations should be aimed at balancing grazing and silage accordingly. Subsequent comments from delegates suggest that protein levels are highly variable and are dependent on clover content and stage of growth. Feed self sufficiency is an aim of organic farming; farms growing the majority of own feed have the benefit of a reliable and known source of feed and greater resilience to market fluctuations but there is a need to develop the right system to suit the individual farm circumstances if profitability is not to be disadvantaged as a result of destocking.

- **Cut silage at the early heading stage – do not wait to bulk up, and take 2 or 3 cuts.**

- **Analyse grazing and silage quality throughout the year and balance the diet accordingly; grass/clover on its own is not necessarily sufficient for optimum rumen function.**

- **Develop greater self sufficiency by stocking to suit the buildings and land capacity, grow cereals on own or additional rented land or if necessary establish linked farms.**

Tom Tolputt (organic dairy advisor) described his experience in managing linked farms. Informal arrangements between arable oriented farms supplying grain to dairy farms works well provided the ground rules and pricing mechanism are established initially. One farmer delegate subsequently challenged organic dairy farmers to go much further, to develop a much greater level of self sufficiency either within the home farm or create long term partnership arrangements with others: yes there is great potential for other arrangements including exchanging manure as well as feed, offering even greater scope for more sustainable organic systems.

Tom also provided a paper on feeding without soya; key messages included producing higher quality high protein silage, use of beans and particularly peas and rape expeller and not forgetting the potential for alternative high protein forages such as Lucerne and kale. It is however unlikely that yields of over 7,000 litres can be sustained without the use of soya.

- **If you cannot produce cereals on your own farm establish a Link Farm (OMSCo suggests sourcing at least 90 percent of your feed from named farms within 100 miles, preferably 50 miles. That means buying no more than about 700kgs DM/ cow / year from unknown and distant sources.)**

- **Set appropriate yield targets, use the correct type of cow, use mixed forages to optimize rumen efficiency and aim to rely to the maximum extent feasible on home gown and local feeds.**

- **Rations without soya are possible.**

John Bax (ruminant specialist) provided a real insight into the working of the rumen and the delicate balance of nutrients, feed structure and feed type which is required if subclinical disease such as acidosis, lameness and infertility are to be avoided. Subclinical acidosis is a very widespread problem, largely unrecognized. During the dry period rumen papillae will naturally contract to half their size during the first 6 weeks; subsequently the whole focus of dry cow management must be on rumen management

and providing optimum conditions for the development of beneficial bacteria and growth of rumen papillae by calving. Aim for a stable rumen of pH 6.

- **Silage chop length should be at least 6 cms.**
- **Multiple forages including whole crop and fodder beet as well as white clover and red clover silage are particularly valuable in optimizing rumen function.**
- **Cereals must not be over processed: use crimped or rolled, feed in a well mixed ration with long forage on a little and often basis.**

Tim Downes (organic dairy farmer) provided an example of an organic farm putting into practice many of the recommendations coming out of the day:

- Weekly sward measurement.
- Cows bred for a forage-based system, including some cross breeding.
- Long chop silage picked up with a forage wagon.
- Red clover leys, white clover leys and cereal/legume whole crop.

Consequently he is achieving a stocking rate of 1.6 LU/ha, 6,500 litres/cow, 670 kg concentrate per cow, 4,750 litres/cow from forage, replacement rate of 18% and no use of milking cow antibiotics.

David Beever (dairy cow nutritionist) supported the high fibre strategy for feeding cows and emphasized the importance of thorough mixing of winter feeds but stressed the need to avoid over-mixing which can all too easily result in destroying the feed structure. He challenged organic farmers by stating that forage quality is poorer than from conventional farms. The Feed Conversion Efficiency index which he has been developing provides a useful means of assessing the efficiency and performance of a herd.

Dirk Zaaijer (Dutch vet) focused on dry cow management and the importance of monitoring the health of the cow by observation; her coat and condition and studying, feeling and smelling the dung. (Delegates suggested that a scoring/record system would be useful). 70% of health problems are related to nutrition. If the dry cow is managed correctly cow health will be improved throughout lactation and mastitis, infertility and lameness will be minimized.

- **Assess the dung of all cows on a daily basis.**
- **Assess rumen fill and rumination rate daily.**

- **Ensure that the cow is dried off in the correct condition score 2.5 or 3 by condition scoring 6 weeks before drying off and adjusting the diet accordingly.**
- **With dry cows limit the consumption of grass to 2.5 kg DM/day by restricting grazing and supplementing with low digestibility haylage, whole crop or straw and cereals for at least 6 weeks pre calving.**

There was discussion during the day about cross breeding. Cross breeding does improve fertility and some other characteristics, due to heterosis. Two or three way crossing can be useful, particularly as a means of developing a suitable type of cow for high forage systems where the herd is starting with very high genetic merit Holsteins, which are unsuitable for lower concentrate rations due to their requirement for high density rations. However cross breeding is not a substitute for good nutrition and is not an essential for all situations.

Improving the quality and utilization of forage was an underlying feature of all the presentations. There are commercial farms achieving 4,500 litres from forage per cow and 6,500 litres from forage per hectare. What is the potential for organic farms in the future?

Many of the speakers demonstrated the link between feeding and health, both from the perspective of the physiological functioning of the rumen and the practical steps that can be taken by farmers to provide the best diet for organic dairy cows. The organic standards provide both detailed requirements and broad organic principles of organic dairy management; the underlying importance of soil management, working towards closed systems, meeting the needs of the cow, emphasis on high forage rations and the links between diet and health. This conference explored the principles of dairy cow feeding and provided guidelines with a focus on both health and production.

In organic farming there are of course many different ways in which this can be achieved, according to individual farm circumstances, cow type and personal preferences. It is up to individual farmers to work out what this means for them in terms of the whole farming system and the daily practice.

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Appendix 1. Useful References

Cow Signals: a practical guide for dairy farm management. Jan Hulsen Pubs. ROOD bont

Reviews of organic research on the following topics: Dairy cow nutrition, Grass clover and herbal leys, Financial performance, Soil management, Whole-crop management, Protein crops, Cereal crops and Dairy cow breeding. All available on http://www.organicadvice.org.uk/reviews.htm

Appendix 2. Dry cow management: additional points from Dirk Zaaijer

The goal of any dry cow programme is to calve down without problems, without milk fever, without retained cleansings and perform to expectation. To achieve this we need carefully controlled dry cow rations and we need to be able to monitor the effects of the dry cow rations. Cow signals like rumen fill, dung consistency and digestion are important tools we can monitor on a daily basis. Experience has taught us that we can work with one dry cow ration from drying off up until calving.

The daily observation and interpretation of rumen fill, dung consistency and digestion of the dry cow, is essential to understand the relation between consumed feed components, digestion and dung production. A full rumen with a score of 4 or more, together with a dung consistency of 3 (custard like) and digestion of 1(everything completely digested) suggests a balance between intake of components, digestion and passage rate of the feed through the digestive system.

To achieve this situation, the right balance between sugars and rumen fermentable starches need to be provided in relation to 12 % of mainly rumen degradable protein. The mineral balance is also of critical importance. The ratio between calcium, potash, phosphorus and magnesium is essential to prevent milk fever, one of the most common metabolic diseases, with a high level of negative carry over effect on subsequent fertility, amongst other things. For the precise energy/ protein and mineral calculations a computer programme is needed to support the observed characteristics of the feeds and the chemical analyses of the forages. In general it is best to keep the cows on a controlled ration for day and night, with the possibility to roam outside in a bare field. Under some conditions it might be possible to strip graze, but it requires far more management skills to achieve the desired effects.

At conferences farmers ask what they can do on their own farm. The problem is that every farm is different, the forages and mineral analyses are different. It is inevitable for an adviser to be on the farm to observe the forages and the animals and make a careful evaluation before he or she can give specific advice about how to feed the dry cow.

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