IAFMM

Fish Meal Flyer

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LOW COST MILK PRODUCTION FEEDING HIGH FORAGE/LOW CONCENTRATE DIETS - IS FISH MEAL THE KEY ?

EEC situation - emphasis on lower yields and reduced feeding costs

Up to the introduction of quotas to limit milk production in the EEC (April 1984) production of milk fat exceeded consumption by over 20%. From the introduction of quotas until October 1984 milk production decreased by approximately 2% compared with the same period a year earlier. The predicted decline for the milk production in the first year of milk quotas (April 1984 to March 1985) compared with the previous year is around 4%. Clearly, further cuts in milk production in the EEC will be required if surpluses are to be controlled at a lower level.

Pressure is now on milk producers in the EEC to reduce costs. These pressures are likely to intensify in the future. Further cuts in production are likely to be required. As feed costs account for over 60% of the cost of producing milk, it is not surprising that most producers are aiming to lower feed costs.

Forage - the cheapest source of nutrients

Fresh forage provides the cheapest source of nutrients for the dairy cow; nutrients from conserved forages such as silage and alkali treated straw cost approximately double, and those from cereal-based concentrates approximately four times the cost of nutrients from fresh forage. It has been estimated that the cost of a unit of metabolisable energy from grass, conserved forage and concentrates are currently 0.4, 0.8 and 1.4 US cents respectively in the UK. Consequently, the greater the nutrient contribution from forage, fresh or conserved, the lower will be the feeding costs, provided production of milk is not markedly reduced.

For the autumn calving cow, highest nutrient requirements are during the winter period when fresh forage is not available. However, if body fat laid down during the summer grazing period is utilised as a nutrient source in early lactation, feed costs can be reduced. Dr. Bob Ørskov from

the Rowett Research Institute, Scotland, has recently been advocating feeding strategies designed to mobilise stored fat in early lactation.

Utilising cow's body fat as an energy reserve

Fish meal can play an important role in manipulating body fat. Dr. Ørskov's work has shown that increasing the supply of undegraded dietary protein (UDP) beyond the rumen (with fish meal for example) stimulates mobilisation of body fat. Furthermore, diets with a high proportion of forage also encourage fat mobilisation. The extra energy provided by this mobilised fat requires additional high quality protein beyond the rumen for effective utilisation. This protein should be rich in the amino acids methionine, lysine, histidine and arginine. Fish meal appears a very suitable source of UDP for this purpose.

Alkali treated straw a cheap source of supplementary forage

If fresh and conserved forage is to contribute more towards the dairy cow's nutrient requirements the quality must be high. To produce high quality forage, with a high digestibility, slightly lower yields may have to be accepted. If dairy cow feeds are to contain higher proportions of forage, then alternative forms of forage may be required. Work with alkali treated straw indicates that this could supplement silage. It may have some beneficial effects in countering the acidity in the silage.

Comparing alkali treated straw and hay as the sole source of roughage in high roughage diets (50:50 roughage:concentrate ratio) milk production was only slightly reduced[1].

A trial at the Grassland Research Institute, U.K., with poor hay (similar to good straw), alkali treated, showed that when mixed with silage, dry matter intake from treated hay plus silage was slightly higher, but milk production was slightly lower[2].

Alkali treated straw is utilised more effectively in diets with a low starch content, containing feeds high in digestible fibre such as sugarbeet pulp, maize gluten feed and brewers grains. Although it may cause slightly reduced milk yields, it is a cost effective source of digestible roughage to augment farm produced roughages.

Fish meal supplementation of diets based on alkali treated straw has been shown to increase the rate at which the straw is degraded in the rumen. A trial at the Rowett Research Institute[3] showed that degradability of ammonia treated straw in the rumen was increased more with a supplement of fish meal than with a supplement of cereal (see Fish Meal Flyer No.2 Table). This indicates that fish meal should be a more effective supplement than cereals to improve digestibility of alkali treated straw.

Importance of checking cow's body condition

Increased use of high forage diets, and straw, are likely to lead to an increase in negative energy balance in early lactation. It is important to ensure the cow is in good condition at calving without being overfat, a condition score of 3 to 3½ being recommended for Friesian cows. Weight loss in early lactation should be controlled to about 0.5kg per day, with a total loss of 30kg to 50kg in the first few months of lactation. A condition score of 3 to 3½ can be restored at grass in late lactation and during the dry period.

Upgrading forage for dairy cows in developing countries

In areas of the world where the main forage available is poor quality hay or straw, alkali treatment and feeding with fish meal are likely to result in marked improvement in productivity. Dr. Orskov has been involved in a project in Bangladesh where low yielding cows fed alkali treated rice straw were fed 100g, 200g or 300g per day of fish meal. Milk yields on the treated straw were 4 litres per day. This increased to 6,8 and 10 litres per day respectively with the fish meal supplement. In Costa Rica work done about 15 years ago showed improved milk production from diets containing poor roughage (dried bagasse) and high levels of cane molasses when supplemented with fish meal in place of urea[4].

Role of fish meal in high forage diets

Increased negative energy balance in early lactation will result in a greater demand for high quality UDP as mentioned earlier. This can be met using fish meal to supplement low cost diets with high forage and low concentrate content to ensure body protein is not depleted with consequences of low milk fat and low fertility. Fish meal can be the key to manipulation of body fat reserves for low cost milk production from such diets.

REFERENCES

1. Ørskov, E.R. 1984. Feed Compounder. Nov. 1984.

2. Thomas, C., Aston, K., and Mason, V.C. 1984. Proc. 7th Silage Conf., Belfast.

3. Williams, P.E.V., Innes, G.M., and Moor, P.J. 1984. Anim.Prod. 38. No.3. 551.

4. Randel, P.F. 1970. J.Dairy Sci. 53, 1722-1726.