IAFMM

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FISH MEAL FOR RUMINANTS - EFFECT ON RUMEN FUNCTION

In some trials with growing cattle, a supplement of fish meal has resulted in an increase in liveweight gain greater than the amount of fish meal fed! For example, in Bangladesh (1) calves growing at a rate of 50g grew at 196g per day when fed a supplement of 50g fish meal. A trial by the Agricultural Development and Advisory Service in the U.K. (2) found that beef cattle on barley/silage diet gaining 0.99kg per day liveweight grew at 1.33kg per day when fed a supplement of 0.25kg fish meal. It seems unlikely that responses of this magnitude could be due to protein from fish meal escaping rumen degradation (UDP), alone.

The answer may be in the rumen. Dr. Williams at the Rowett Research Institute (3) has found marked improvements in the fermentation of straw in the rumen of cattle receiving small amounts of fish meal. Improved fermentation would provide more feeding value from the straw, especially energy. This, in combination with fish meal protein escaping breakdown in the rumen, could account for the very marked responses to fish meal noted earlier.

Effects of small supplements of either starch or fish meal on the degradation (fermentation) of straw in the rumen of cattle, from Williams (3) :

Incubation time/hours	Basal diet, ammonia treated straw : Unsupplemented	Plus Starch	Plus Fish Meal	Significance
12	12.5^{a}	14.0^{a}	17.5^{b}	*
24	26.6^{a}	28.7^{b}	35.7^{c}	*
36	37.8^{a}	43.9^{b}	47.1^{c}	*
48	52.8^{a}	52.6^{a}	57.3^{b}	*
60	58.3	56.6	60.9	NS

(* $P<0.05$: N.S. not significant)

References

(1) SAADULLAH, M., HAGUE, M., VESTERGAARD THOMSEN, K., MOLLER, Ph.D., and NIEMAN SORENSEN, A. 1982. Response of calves fed ammonia treated straw to increasing levels of fish meal. In 'Maximum Livestock Production from Agricultural Land', Proceedings of the 3rd Seminar, 13th/18th February 1982 at Bangladesh Agricultural Research Institute, Joydebpur.

(2) KIRBY, P.S., OUTHWAITE, J.R., and JONES, T.O. A comparison of two types of fish meal as protein supplements for finishing British Fresian Steers given grass silage ad lib. Anim. Prod. 38 (3) In press.

(3) WILLIAMS, P.E.V., INNES, G.M., and MOOR, P.J. Supplementation of a diet of straw with starch or fish meal; effects on the degradability and rate of outflow from the rumen. Anim. Prod. 38 (3) In press.