

LOW COST COW/CALF PRODUCTION

The Bulletin For Alumni Of The School

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What's It Gonna Be?

To Ignore Is To Err

Back in 1974, Dr. Wise Burroughs of Iowa State U. predicted that 13.05% of TDN reaches the small intestine as microbial protein. Since microbial protein is formed only from dietary degradable protein, then the above should suggest something about the degradable protein requirement. *Any fool can figure this out. But not this fool.* Those of you who are using the Paul Weiss method (The Bulletin, March '97) of calculating TDN and NEm from your forage analyses see that the two values are quite similar numerically. Accordingly, if you multiplied the pounds of TDN consumed by 0.1305, you should approximate the daily requirement for pounds of degradable protein. Calculating the same product using NEm, as we do in the School, will result in a similar value. In the March '98 issue of The Stockman GrassFarmer¹, we wrote about a study of degradable protein requirements carried out at Kansas State U. The researchers fed cows a low-quality prairie hay and infused sodium caseinate (milk protein that is 100% degradable) into the rumen. They observed that as the amount of degradable protein increased, up to a point, the consumption and utilization of the forage increased. *Makes sense.* The K-Staters found the relationship between NEm consumed and degradable protein required to be 12% - not too different from the old work in the 70's.

Then Why 0.07?

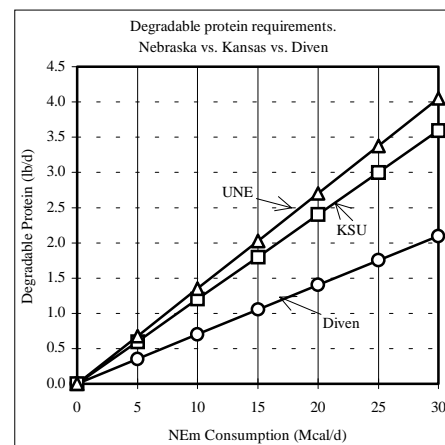
Several years ago we compiled the first Student Manual for the School. We extrapolated the degradable protein requirements from 1982 writings of E.R. Ørskov. Most of his work was done with barley-fed sheep. The Nutritionist's bible, Nutrient Requirements of Beef Cattle, gave short shrift to the rumen microbial requirements for degradable protein. Nevertheless, we estimated the requirement to be 3% of the NEm consumed. Then a competent report, with all-forage diets, came out of Australia. We raised our requirements to 7% of the NEm consumed.

Two reports^{2,3} of research with cows grazing dormant forage in the Sandhills of Nebraska are now available. University researchers have, at their disposal, the knowledge and means to make measurements that ranchers do not. With some finagling around, they can measure forage dry matter consumption. The basis for these two studies was forage organic matter consumption (forage dry matter without the mineral). The source of degradable protein used was corn steep liquor, a by-product of the corn wet milling industry. All of the protein contained in corn steep liquor is degradable. The levels of degradable protein fed were 0, 29, 65 and 100% of an estimated daily requirement of 1.28 lb. As the supplemental degradable protein was increased, forage organic matter consumption increased to a point. As shown in the following table, there was no increase in forage organic matter intake as rumen degradable protein was increased from 1.31 to 1.46 lb per day. Thus, the

	Treatment			
	0%	29%	65%	100%
Cow Weight, lb	1179	1167	1186	1200
Forage OM Intake, lb	16.3	17.5	22.8	22.9
Supp RDP Intake, lb	0	0.23	0.36	0.51
Forage RDP Intake, lb	0.68	0.73	0.95	0.95
Total RDP Intake, lb	0.68	0.96	1.31	1.46

level of 1.31 lb of degradable protein and a consumption of 22.8 lb of organic matter were maximum for this quality of forage and these cows. This amounts to a degradable requirement of 5.7% of organic matter consumption. To convert consumption to an NEm basis, we used their values for Crude Protein, NDF, ADICP and NDICP. With forage analyses from area ranches, we substituted for missing values of EE, Ash and Lignin. We then estimated the NEm content to be 0.44 Mcal. Daily NEm consumption was 9.71 Mcal, using the NEm consumption formula from the School and cow frame size 5. Converting this value back to dry matter, estimated consumption was 22.1 lb. We arrive at the

same place although getting there by different routes. The end result is that the research indicates a degradable protein requirement of **0.135 lb degradable protein per Mcal of NEm consumed**. The following graph compares us with them. **We're wrong!!!**



Rumors

"Commenced calving 2nd calf heifers May 28. 100 percent on the ground within 18 days." Thank you, Jeff Nauman, Oregon.

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¹ Diven, R.H. 1998. Recommended daily allowances for a rumen paceman. The Stockman GrassFarmer, 282 Commerce Park Drive, Ridgeland, MS 39157. Vol 55, #3 pp 35.

² Hollingsworth-Jenkins, K.J., T.J. Klopfenstein, D.C. Adams and J.B. Lamb. 1996. Ruminally degradable protein requirement of gestating beef cows grazing native winter sandhill range. J. Anim. Sci. 74:1343.

³ Lardy, G., T. Klopfenstein, D. Adams, J. Lamb and D. Clark. Rumen degradable protein requirement of gestating summer calving beef cows grazing dormant native sandhills range. 1997 Nebraska Beef Report.