LOW COST COW/CALF PRODUCTION

The Bulletin ***For Alumni Of The School***

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Expectations! Whose?

"Supplementation of grazing beef cattle is necessary when nutrients are not provided by the basal forage in adequate balance and(or) quantity to meet animal requirements and(or) performance expectations[1]*."* That is not a bad statement but we need to take some exceptions. First, the cattle do not need supplementing; the forage does. The part about the forage (not providing the proper nutrient balance and/or quantity of nutrients) is good. The last bit (where supplementation may be needed to meet performance expectations) sounds an alarm. Whose expectations -- the cow's or management's? When management wants cattle to perform in excess of that provided by forage, we're talking weight gain. That equates to energy supplementation.

Wheaties are out

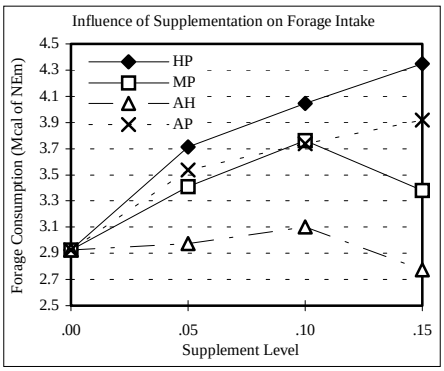
Not too long ago we were formulating grain-containing supplements for forage. Rumen pH was the only concern. Remember, it should not drop below 6.2. If it descends farther, cellulase will be deactivated, the forage will not be utilized and forage consumption will decline. The NEm from the forage, together with the energy supplied by the grain, could never be accounted for by animal performance. Last year, research from Oklahoma State and Australia suggested that fiber digestion was impeded with no more than one pound of grain starch per day. During the last several Schools we've said - NO GRAIN. When our business is forage utilization, grain supplementation is too risky.

Just a teeny-tiny bit

The authors of the opening statement conducted a nice bit of research at Kansas State. They fed all the tall grass-prairie hay that 575 lb Hereford X Angus steers could eat. The dormant hay, sheared to 3" length, contained 1.9% crude protein and 45.5 ADF. *(Extrapolating NEm from ADF results in a value of 0.44 Mcal. That is very high energy relative to protein content.)* Then the researchers limit-fed four supplements at four different levels. The supplements were alfalfa hay (**AH**), alfalfa pellets (**AP**), moderate protein with grain (**MP**) and high protein with grain (**HP**). The level of feeding was based on body weight and the crude protein content of each supplement. The steers were fed .05, 0.10 or 0.15% body weight of crude protein. The daily levels of each are presented in the following table. Now that we know the amount of each supplement the steers received, what did they do for forage consumption? All supplements, with

Pounds of Supplement Fed Daily				
Level	.00	.05	.10	.15
HP	0.00	0.87	1.75	2.62
MP	0.00	1.63	3.27	4.90
AH	0.00	1.66	3.33	4.99
AP	0.00	1.75	3.51	5.26

one exception, increased forage consumption above no supplementation. The results are pictured below. The HP supplement was the best. It increased forage consumption at all three levels. This was followed by AP and then the MP. The MP supplement performed similarly to the AP



for the first two levels. The highest level, α5 lb, was too much. AH increased consumption ever so slightly at the first two levels but appeared to substitute for the prairie hay at the highest level.

How about the grain?

Both the MP and HP supplements contained varying proportions of milo and soybean meal (SBM). The MP consisted of 81.8% milo and 18.2% SBM while HP contained 40.2% milo and 59.8% SBM. The consumption of each (at the different treatment levels) is shown in the following

Daily Consumption of Milo and SBM (lb)			
Level	0.05	0.10	0.15
Moderate Protein (MP)			
Milo	1.34	2.67	4.01
SBM	0.30	0.59	0.89
High Protein (HP)			
Milo	0.35	0.70	1.05
SBM	0.52	1.05	1.57

table. Grain consumption varied from a low of 0.35 lb from the HP to 4.01 lb from the MP. It appears that only the 4 lb level interfered with forage consumption.

Well, Diven???

Employing the equations for energy consumption we studied in the School, these steers should consume approximately **6.8 Mcal** with forage of this quality. To do so, however, all nutrients must be available in precise amounts. The one nutrient that is most limiting is degradable protein. If the forage is to be consumed at maximum, there is a daily requirement for 0.266 lb of degradable protein above the piddly amount from the forage. This is equivalent to 0.7 lb of SBM. The question is - How much better would the response be to SBM supplementation with the absence of grain? The steers in this study consumed a maximum of only **4.35 Mcal of NEm**.

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[1] Stafford, S.D., R.C. Cochran, E.S. Vanzant and J.O. Fritz. 1996. Evaluation of the potential of supplements to substitute for low-quality, tallgrass-prairie forage. J. Anim. Sci. 74:639.