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WINTER SUPPLEMENTATION OF CATTLE, PART III: COST

Last month we examined the basics of energy and protein requirements for supplementing cattle. We looked at the following factors: (1) the size of the cattle, (2) the stage of pregnancy or lactation, and (3) the available forage (amount and quality). Let's go back to our example and examine costs of various forms of supplements. We will use an average milking ability cow of 1,325 lbs. on dry foothill feed as the example again (her requirements are listed in the table in last month's magazine). The dry foothill feed is 55% TDN and 8.5% crude protein. **Since the dry feed is low quality feed, we will assume the Maximum DMI is 1.5%; therefore, 1,325 lbs BW X 0.015 = 20 lbs. DMI of the foothill feed. The feed is 55% TDN; therefore, 20 X 0.55 = 11 lbs. TDN versus the 13.7 TDN requirement or *2.7 lbs. TDN short* of meeting requirements.** This is the amount of TDN needed for supplementation to meet her requirements. If we wanted to supplement with medium quality alfalfa (58% TDN), we would need about 4.6 lbs. of medium quality alfalfa hay per day on a dry matter basis, or 5.2 lbs. as fed. If we use molasses (72% TDN), we would need 3.75 lbs. of molasses (dry matter) to meet this energy requirement.

Looking at the protein requirements for this same cow, the 20 lbs. of DMI times the 8.5% crude protein yields 20 lbs. X 0.085 = 1.7 lbs. total protein or about *0.6 lbs. of protein short* (total protein requirements are 2.3 lbs. from the table in last month's column). The 4.6 pounds of alfalfa (17% crude protein) would have 4.6 lbs. X 0.17 = 0.78 pounds of protein, which meets the 0.6 lbs. additional protein necessary. Using molasses (5.8% crude protein) the 3.75 lbs. X 0.058 = 0.22 lbs. of supplemental protein, which is short of the 0.6 lbs. of protein needed.

Now, what is the cost of these two "supplements" for our needs. Not the cost per ton or the cost per block! What is the cost of what we really need to balance the nutritional needs for our example? We will use some current low cost or commodity cost figures for both the alfalfa and the molasses. Alfalfa = $85 per ton and molasses = $65 per ton, both on an as fed basis. From the example above, the amount of alfalfa we needed to meet energy requirements was 5.2 pounds (as fed), at $85 per ton (or 4.25 cents per pound) this would be 5.2 pounds X 4.25 cents/pound = 22 cents per day for the alfalfa. Using the molasses we would need to meet energy requirements from the above example, which was 3.75 pounds, remember this is dry matter molasses and as fed molasses is 25% water; therefore, we would need to feed 5 pounds of molasses which costs $65 per ton (or 3.25 cents per pound). The molasses cost would be 5 pounds X 3.25 cents/pound = 16.25 cents per day. Remember, the molasses that met energy needs for our example was short on protein (about 0.4 pounds of protein short); therefore, additional molasses will have to be fed or the molasses will need to have added protein formulated.

As prices change, there is a need to recalculate the cost of supplementation. Remember, always go back to the requirements of the animals as the "gold standard". We can't simply compare the cost of feeds per ton to make our decision. We are literally comparing apples and oranges in that case and invariably will make mistakes that end up costing us more or failing to meet the nutritional needs of our cattle. Use a step by step approach to supplementation such as the one outlined below to help make these decisions.

1. Estimate the Maximum Dry Matter Intake of the available forages and the nutrition (energy, protein) that the cattle can receive from what is available. Your livestock advisor can be very helpful with this part of the consideration as most counties have data compiled from many locations and years.
2. Based on the cattle weights, age, pregnancy status, milking ability, growth, etc. calculate the nutritional requirements and compare this to the maximum intake from available forage (step 1 above).
3. Determine the amount of each supplement (hay, molasses, corn, soybean meal, etc.) needed to meet requirements.
4. Compare the costs of each supplement you want to consider.
5. Estimate any potential storage losses of the supplements.
6. Compare labor costs and convenience factors of various supplements, these are also important costs.
7. Monitor the health and productivity of the cattle to be sure the supplementation works. I have heard folks complain about the "tough winter" as the cause for poor cattle health or productivity. Sometimes it is just a "tough supplementation program".
8. Put together your team of experts to help you with this important task. Your livestock advisor, your veterinarian, and others should be consulted on this part of planning.

An important part of monitoring health and productivity for Spring calving herds is the health of the calves. Total diets low in protein decrease the quantity and quality of colostrum and this results in more sick and dead calves, as they are more

susceptible to neonatal diseases such as scours and pneumonia.
With the Fall rains and subsequent growth of grass in the foothills, the need for supplementation will decrease. In those years when the rains do not come as expected, the need to supplement may continue or increase as the dry forage is consumed. On the other hand, in northern California when it snows, the entire diet may need to be supplemented. Thus, the amount needed to supplement is an ever-changing target; but, with the right tools you can hit it every time.

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