

## Cost vs. Benefit of Purchasing Various Supplements

Barry Yaremcio

Feed test results provide an indication of the quality of feeds available for use this winter. Balancing the rations is the next step, which included the portioning of limited feed supplies to different classes of livestock on the farm. Determining the number of animals that can be fed over the winter is part of the decision making process.

Once the basics are established on how many animals can be fed, the next step is to determine, what type of supplement or mineral product is needed to provide minerals, vitamins and trace minerals needed to meet animal needs. It is often a point of consternation when choosing what to use because each company "has the best" product to use. Convenience, effectiveness of the product and cost are things to consider before making the purchase.

With hay and silage in limited supply (and high cost) the option of feeding a straw and grain ration to pregnant cows is a viable alternative. But, there are some nutritional problems that need to be addressed:

Straw typically is high in fibre, low in energy, protein, calcium and magnesium. A rule of thumb is that straw should not be fed at levels more than 1.5% of body weight. To be safe, depending on the type and age of the straw, intakes could be only 1.25% of body weight. Using a 1400 pound animal, straw intake can be anywhere from 17 to 21 pounds per day (dry basis). This example may be applicable in many operations this winter to feed pregnant cows. Along with the straw, it is necessary to include roughly 10 pounds of barley or 11 pounds of oats to meet energy requirements.

The straw grain ration mentioned above supplies roughly 6.5% protein on a dry basis. A cow in mid pregnancy requires 7% and in late pregnancy requirements increase to 9%. What to use to increase protein content in the ration? Adding two (2) pounds of peas in mid pregnancy and five (5) pounds in late pregnancy will meet protein requirements. One (1) pound of canola meal in mid pregnancy and three (3) pounds late pregnancy will also work. Cost per bushel of peas is 10.3 cents per pound, canola meal 14.2 cents per pound. A 32% supplement is designed to be fed at 1 pound per head per day and is roughly 25 cents a pound. One pound of 32% is not adequate to meet protein requirements for a late pregnancy cow. A combination of supplement and peas or canola meal will be required.

The cost per pound of protein supplied should be calculated to minimize cost. Peas contain 24% protein. A tonne of pea grain contains 528 pounds of protein per tonne. With a price of \$235 per tonne, the cost per pound of protein is 44 cents per pound. Canola meal at 38% protein contains 837 pounds of protein per tonne. At a cost of \$315 per tonne, cost per pound of protein is 37 cents.

To calculate the amount of macro mineral, trace mineral and vitamin supplied by a product, two things are required. First, what is the expected intake of the mineral or supplement being considered? Second, what is the concentration of the nutrient being evaluated? The nutrient concentrations on the tag or label are listed as a percent for the macro minerals (calcium, phosphorus, salt, magnesium and potassium), mg/kg for the trace minerals (copper, manganese, zinc, selenium, iodine and cobalt) and International Units per Kg or IU/kg for the vitamins (A, D, and E).

For the macro minerals, multiply the inclusion rate of the product in grams by the concentration of the nutrient. For example, if the product is fed at 100 grams per day and contains 16% calcium, multiply 100 grams by 0.16 ( $16\% / 100 = 0.16$ ) to determine that the product will supply 16 grams of calcium. For the straw grain ration mentioned above, a high calcium product such as a 24:3 mineral, or even limestone is needed. A 1:1 and 2:1 mineral is not adequate to meet animals' requirements.

For the trace minerals and vitamins, multiply the inclusion rate of the product in kg by the concentration of the nutrient. For example, if the same product is fed at 100 grams and the copper has a concentration of 3000 mg/kg, multiply by the intake in kg ( $100\text{ g} = 0.1\text{ kg}$ ) by 3000 to determine the product will supply 300 mg of copper.

When comparing what mineral to use, knowing what is needed to balance the ration and hand calculations can be time consuming. The use of a ration balancing program such as Cowbytes can compute what is needed in short order and the contribution of nutrients from different feeds, how to put the blend together and what purchased product to use is made much easier than doing it by hand.