Mineral Test Panels

After Nov. 1 our mineral test and reporting panels will be reformatted with new combinations of tests and expanded reporting formats. These new panels will make a distinction between nutritionally essential minerals and toxic elements. Major changes will include:

Nutritionally essential mineral serum test combinations that consist of:

A. A selenium & copper combined panel

The selenium and copper panel includes the two micro minerals most likely to be deficient in the diets of cattle and other grazing animals. Serum copper concentration is not a sensitive measure of copper status, but serum concentrations in the deficient range are good indicators of dietary insufficiency. Serum selenium status, in contrast, is a good indicator of selenium nutritional status and serum concentrations in the physiological range vary in an approximately linear relationship with dietary selenium intake. Use this test for diagnostic investigation of conditions such as poor growth, infertility, retained placenta, opportunistic bacterial infections, neonatal death loss, and abortion. This test is also useful for routine monitoring of trace-mineral status, especially in grazing animals, or other animals on allforage diets.

B. A primary trace nutrient panel

The primary trace mineral panel includes selenium and copper as well as non-heme iron, zinc, manganese, molybdenum, and cobalt. These are the major trace minerals essential in the diets of all animals. The sensitivity of serum concentration as a measure of dietary intake varies among the minerals, but low concentrations are indicators of either insufficient dietary intake, or impaired digestive availability. Use this test in cases of general ill thrift and depressed feed intake, disturbances of energy metabolism such as ketosis and fatty liver, infertility, abortion, neonatal death loss, anemia, and dermatological problems.

C. An expanded electrolyte panel

The expanded electrolyte panel includes calcium, phosphorus (inorganic phosphate), magnesium, sodium, potassium, sodium-potassium ratio, and chloride. Of these minerals, only serum magnesium is a sensitive indicator of nutritional status. The other minerals in this panel are better indicators of metabolic state and adequacy of homeostatic responses. Use this test for diagnosis of metabolic disease, electrolyte disturbances, and dietary magnesium deficiency. When testing dairy herds for calcium metabolic status it is best to sample animals within twelve hours after calving.
Interpretations of nutritionally essential mineral serum test results will follow the format currently used for selenium. This includes:

1) **Grouping by age category.** Young animals and fetuses, in general, have different reference ranges for serum mineral concentrations, compared to adults.

2) **A deficiency value.** Animals with serum mineral concentrations below this value are at risk of deficiency signs or disease. All animals with serum values below the deficiency value should receive dietary supplements to correct the problem. Additional diagnostics may also be necessary to further define the problem.

3) **An adequate range.** Animals with values in the adequate range can generally be assumed to have sufficient supplies of the mineral tested. No clinical response should be expected if additional quantities of the tested mineral are added to the diets of animals with test results in the adequate range.

4) **A marginal range.** The marginal range is not explicit in the report, but some animals will have serum mineral concentrations greater than the deficiency value, but less than the lower end of the adequate range. The status of the animals for minerals testing in this interval is marginal. They may make subtle clinical responses to dietary supplementation of the tested mineral.

**In addition, two new whole blood heavy metal panels that consist of:**

A heavy metal panel and an expanded heavy metal panel - Use these tests if concerned about poisoning from common toxic elements. The expanded heavy metal panel also includes less common toxic elements. All serum minerals determinations are also available as “single element” requests, if desired, for toxicologic diagnosis as well as for research projects. For more information regarding specific availability, please contact the lab directly at (517) 353 1683. We are looking forward to growing our relationship with you as we find new ways to enhance your experience with DCPAH.