

VETERINARY CALL

by Bob Larson, Kansas State University

Vitamin A

Vitamin A is important for vision, bone formation, growth, reproduction, skin and the health of many body tissues.

Cattle convert the carotene that is present in all green plants into vitamin A. Although carotene is plentiful in growing forage, it is not present to any extent in grains and oilseeds (yellow corn is the exception). Growing cattle, lactating cows and bulls require higher levels of vitamin A than mature dry cows.

Vitamin A deficiency is a concern when cattle are eating a high-concentrate diet, being fed a heavily processed diet (mixed with oxidizing minerals) or when eating feeds that have been stored for long periods of time. For cow-calf herds, a common problem is that vitamin A can be deficient in winter diets based on dormant winter forage or hay.

Carotene degrades in the curing and storage of roughages. Hays cut in the bloom stage or earlier and cured without exposure to rain or excessive sunlight retain most of their original carotene content. Hay cut in the seed stage and exposed to rain or to extended periods of sunshine lose most of the carotene content.

The degree of greenness in roughage is a fairly good indicator of its carotene content. Fortunately, the liver can store enough vitamin A to protect cattle from long periods of dietary scarcity (two to four months), so animals on green pasture can

often store sufficient reserves to help meet their needs during the winter-feeding period. However, drought conditions can cause grass to become dormant early in the grazing season and prolong the period of time cattle consume vitamin A-deficient forage.

Effects of vitamin A deficiency


While blindness is possible in cases of severe vitamin A deficiency, excessive tearing (watery eyes) in cattle also occurs. Vitamin A can also be identified in animals with rough, dry, faded and shaggy coats; overgrown hooves that are dry and brittle; and hooves with multiple vertical cracks.

Vitamin A deficiency has also been identified as a cause of weak calves at birth and infertility in both females (delayed or lack of ovulation, silent heat and early fetal loss) and bulls (abnormal semen). In addition, because vitamin A is important for the normal function of the tissues lining the respiratory tract, digestive tract and urinary tract, pneumonia, diarrhea and urinary tract stones are also seen in cattle with vitamin A deficiency.

It should be noted however, that although clearly identifiable cases of vitamin A deficiency are not particularly common, it is possible

for herds to not reach their potential reproductive performance, growth rate and health if the diet does not supply enough vitamin A.

As we move into the winter months when most cow herds will be receiving rations composed of dormant or stored forages, vitamin A supplementation should receive attention. Deficiencies can be corrected by increasing carotene intake by adding fresh, leafy, high-quality forages to the diet, by supplying vitamin A supplements in the feed or mineral or by injection of vitamin A preparations.

It is important to recognize vitamin A degrades fairly rapidly in feed and especially when mixed with minerals. Therefore, it is important to avoid relying on a mineral-vitamin mix that has been stored for many months to supply sufficient vitamin A. 

Editor's note: Robert L. Larson is a professor of production medicine and executive director of Veterinary Medicine Continuing Education at Kansas State University.