

# Thiamine deficiency in cattle can cause nervous disorder

LANCASTER — What are the consequences of thiamine (Vitamin B<sub>1</sub>) deficiency in fattening beef cattle? Without adequate

thiamine, cattle lose appetite, stop growing, weaken, and are likely to have a severe nervous disorder, bovine polioencephalomalacia. Among other things, this disorder, called PEM or BPE for short, causes blindness, failure of the rumen to contract, convulsions, paralysis and death.

Cattle may receive thiamine in two ways in their feed and from bacterial synthesis in the rumen. However, under certain conditions, cattle may not

get sufficient thiamine to promote growth at peak efficiency. Neither source guarantees they'll get the required levels. So to compensate for potential thiamine losses, supplemental thiamine is recommended when PEM occurs or is suspected.

Even though this essential B-complex vitamin is found in feedstuffs like leafy green plants and whole grains, studies that link thiamine deficiency to PEM indicate moldy hay, straw and certain plants contain

thiaminase, a thiamine antagonist.

Thiaminase is an enzyme that destroys thiamine and can reduce a feed's thiamine content.

In addition, bacterial synthesis of thiamine in the rumen has been found to vary considerably in cattle fed a variety of roughage and grain products. It has been estimated that only eight mg of thiamine is produced in the rumen during 24 hours.

In a study measuring the influence of physical form of grain and roughage on thiamine content in the rumen, thiamine levels varied by a 40-fold differential.

There are other situations where supplemental thiamine is advisable too. For example, sick animals, off feed for several days,

have reduced rumen function.

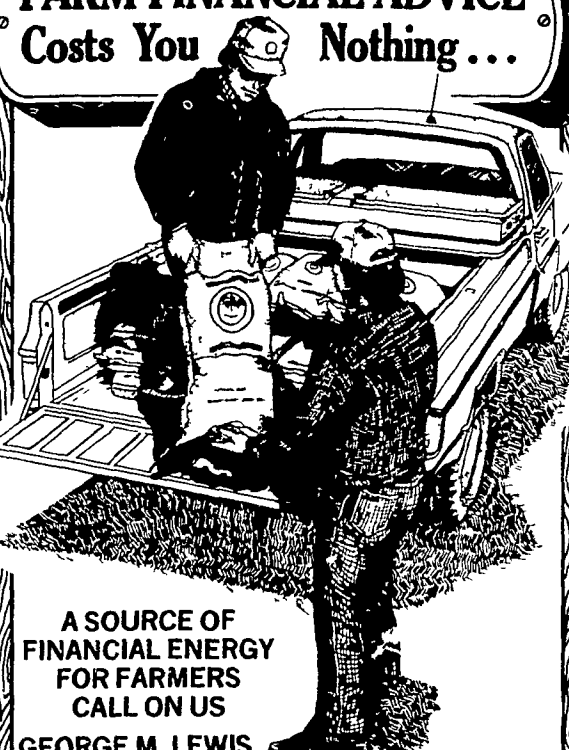
Fermentation in the rumen decreases 10 percent to 15 percent, the rumen protozoa count may fall to zero, and the bacterial count may drop to one percent of normal. These changes may reduce rumen synthesis of thiamine, requiring supplemental thiamine to make up the loss.

Non-ruminating calves also have a great need for thiamine in the diet. Post-weaning is a stressful period in a calf's life.

Studies have shown that supplemental thiamine helped calves achieve faster weight gains and better feed conversion.

These calves required fewer days of treatment for disease than stressed calves not given supplemental thiamine.

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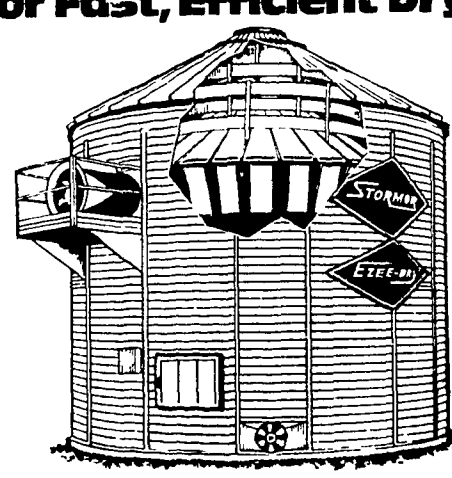
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