



Study finds deficiency of important trace minerals may be widespread

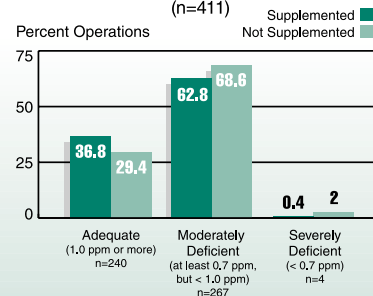
As part of its decade-long series of surveys on U.S. cattle-management practices, researchers from USDA's National Animal Health Monitoring Service drew blood samples from cows in 411 operations in the 23 top cow/calf states. They then measured those 3,902 samples for their levels of two important trace minerals—zinc and copper—to help judge whether the typical operation's cattle are receiving sufficient levels.

The findings

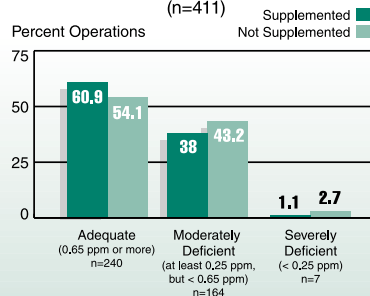
- When researchers averaged the mineral levels in all the blood samples from each tested operation, they found that 65.9 percent of operations were either moderately or severely deficient in zinc (figure 1).
- The average copper concentrations in the blood samples showed that 41.6 percent of the operations were either moderately or severely deficient in copper (figure 2).

- Even those operations that on average tested adequate in mineral levels had some animals that were deficient. The study found that fully 93.9 percent of operations had at least one moderately or severely zinc-deficient animal. And 85.4 percent of all operations had at least one animal either moderately or severely deficient in copper.
- While the study found no regional variations in zinc levels, operations in the West generally showed lower average serum copper concentrations... about 10 percent below the average for both the Midwest and South (figure 3).

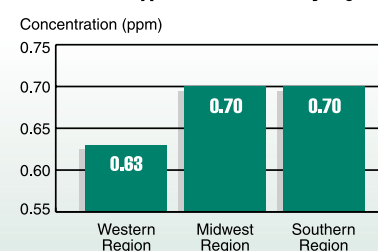
1. Percent of Operations by Serum Zinc Concentration Level and by Supplementation
(n=411)



2. Percent of Operations by Serum Copper Concentration Level and by Supplementation
(n=411)



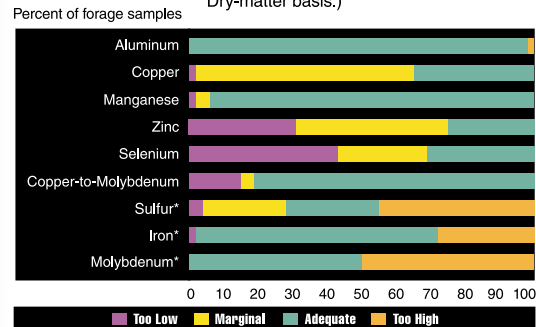
3. Serum Copper Concentrations by Region



SAMPLING SHOWS YOU CAN'T ALWAYS RELY ON FORAGE, EITHER

Most decisions to supplement trace minerals usually revolve around the operation's forage-base quantity and quality. Yet a similar 1999 USDA-NAHMS survey that sampled 709 forage samples from 678 producers found a large portion of those samples were either marginal or deficient in the key trace minerals. Research from the mid-1980s showed that common processed feedstuffs can also vary widely in expected values for key trace minerals.

Trace mineral levels in forages relative to cattle requirements
(Based on sampling of 11 forage types from 678 operations. Dry-matter basis.)



*Levels high enough to typically antagonize copper absorption are classified "too high."
Source: Forage Analyses from Cow/Calf Herds in 23 States, USDA-NAHMS, April 1999.

Management implications

It's important to remember, the research authors point out, that the largest losses suffered by both zinc and copper deficiency are the ones you seldom see directly—lower growth rates, poorer feed efficiency, reduced reproduction and a weaker immune system that leaves calves vulnerable to disease, both on the ranch and in the feedlot.

They advise that today's intensively managed cow/calf operations include regular nutritional analysis to assess trace-mineral status of their animals and forage. Where indicated, adequate quantity and quality of mineral supplementation should be provided.

Bear in mind, though, that the quality of that supplement is important to ensuring adequacy in cattle. The study authors noted that even though 63 percent and 64 percent of the study respondents already provided supplemental zinc and copper, respectively, even those supplemented operations showed patterns of deficiency.

Those results point out the fact that not all sources of supplement are equal. Bio-availability and palatability may differ and thus change the amount of nutrients consumed. University research has shown that CRYSTALYX® low-moisture blocks, for instance, contain a more available form of

phosphorus and are more palatable to encourage sufficient intake. Extended periods of supplementation may be necessary to overcome deficiency. Still, they note, "...if no supplementation had been provided to any cattle, the percentage of operations considered deficient...likely would have increased."

Have needs changed?

Some beef research nutritionists now raise the question as to whether the pace of change in the industry has out-run old recommendations for minerals, leaving today's cattle marginally deficient. They cite:

- More intensive genetic selection.
- More management pressure at the cow/calf level, including intensive grazing of both improved and native grasses.
- Higher stress on calves and yearlings shipped to feedlots at a younger age.
- Better understanding of differences in breed and animal requirements.

Coming next in

It's possible to jump start stressed calves going on feed with good supplementation. It can make a significant difference in pulls and death loss, one recent field trial shows.



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STRATEGY: WHERE TO START?

Suspect you might be suffering mineral deficiency? Begin your supplement strategy with a plan:

- Analyze overall nutrition first. Feed represents the largest variable cost on beef operations, yet survey data estimate that less than 10 percent of cow/calf operations evaluate their feedstuffs' nutritional content. Only 22 percent balance the rations on their operations. That leads to waste.
- Work with your herd veterinarian, feed supplier or nutritionist to diagnose "silent" subclinical deficiencies. Part of your herd-health program should include periodic evaluation of trace mineral status of animals and forage, using statistically reliable sampling and and test selection that ensures you're getting results you can use reliably.
- Use records. Herd history is essential to diagnose trace-mineral problems. Include production records for at least the past three years, with special attention to changes in disease incidence and reproductive efficiency.
- Don't assume all mineral supplements are equal. Choose a reputable manufacturer who backs the product line with research results, strict quality-control guidelines that ensure label accuracy, and cost/return data proving the value of the program.
- Monitor the costs and returns of a supplement program—including your time, hired labor and cost to operate equipment. (Look for more on this subject in an upcoming Supplement Strategies.) Pay particular attention to the cost per head per day to supplement. Today's supplements vary widely in the success of the mechanisms used to control intake. Thus, simply comparing them based on cost per ton is not the best method.