

### Blood Selenium Levels in the U.S. Beef Cow/Calf Herd

Does giving selenium supplements to beef cattle assure adequate levels in their blood?

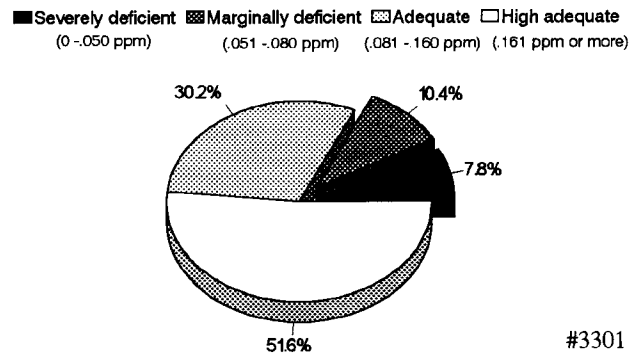
Since the 1950's, cow/calf producers have known selenium was an essential dietary element for cattle. Selenium deficiency can result in white muscle disease, retained placenta, infertility, abortion, or premature or weak calves.

The USDA's National Animal Health Monitoring System (NAHMS) tested whole blood samples from 2,216 cows and heifers in 253 herds during the 1992 Cow/Calf Health and Productivity Audit (CHAPA). CHAPA herds were from 18 states that contained 70 percent of the adult United States beef cow inventory in January 1993. Eligible producers expected at least half of their calves in 1992 from January through June and had at least five cows or heifers.

Of the whole blood samples collected from cattle during the CHAPA, 7.8 percent were classified as severely deficient for selenium, 0-.050 parts per million (ppm) (Figure 1). Another 10.4 percent were marginally deficient (.051 -.080 ppm). Most

Figure 1

Percent Individual Cattle Blood Selenium Levels

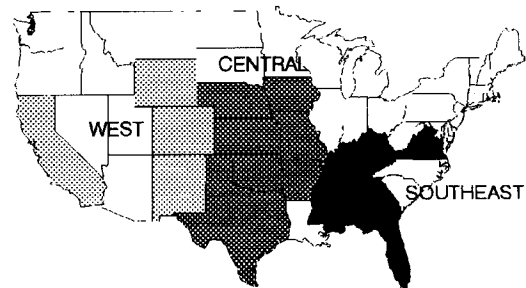
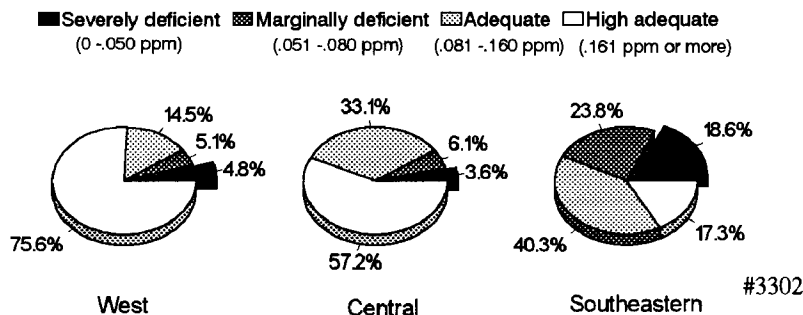


operations (85.0 percent) had no cattle considered to be severely deficient for selenium and only on 2.0 percent of operations were all cattle tested severely deficient.

These CHAPA results showed a wide variation among regions. Percentages of severely deficient cattle ranged from 3.6 percent in the central region to 18.6 percent in the southeast (Figure 2). Only 62.7 percent of the operations in the southeast had no animals in the severely deficient range compared to 89.7 percent and 94.6 percent in the west and central regions respectively.

Figure 2

Percent Individual Cattle Blood Selenium Levels by Region



The mean of all samples collected on a farm were used to classify each according to criteria used for the individual blood samples. Overall, 4.7 percent of operations were considered severely deficient and another 9.1 percent were marginally deficient. Regional differences in herd classifications are shown in Figure 3.

Forty-nine percent of all operations supplemented selenium for their herds. Nearly all of these (98 percent) used a mineral supplement with additional selenium. About 4 percent gave selenium injections and 4 percent added selenium to their cattle rations. Some operations used more than one method of supplementation. Supplementation was more common in the central and southeastern regions (54.7 and 61.4 percent of herds in these regions, respectively) than in the west (19.0 percent).<sup>1</sup>

Percentages of severely deficient cattle were lower in all regions for operations that supplemented selenium. Even on operations with some selenium supplementation, over 16 percent of individual cattle blood samples from the southeast were considered severely deficient (Figure 4).

CHAPA results showed that selenium supplementation does not ensure adequate selenium levels in all cattle. Inadequate supplementation levels for the herd's needs and erratic individual animal consumption are two possible explanations. Producers can look to their herd veterinarian for help in evaluating their individual herd's selenium level and related supplementation and other management practices.

Figure 3

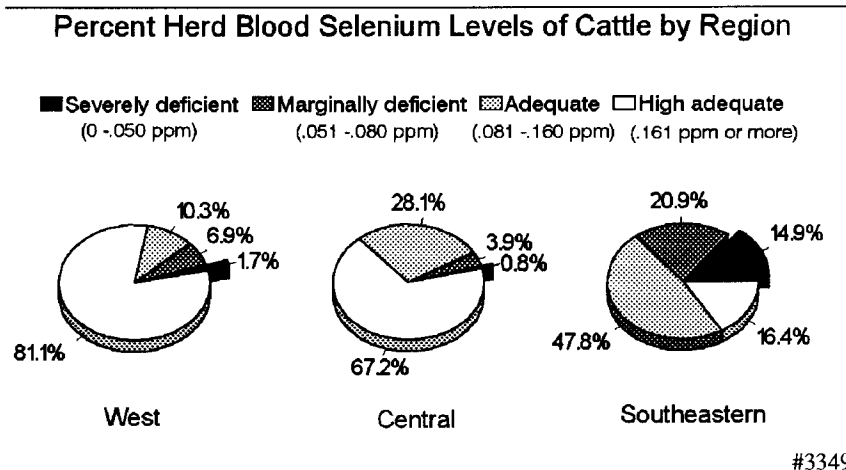
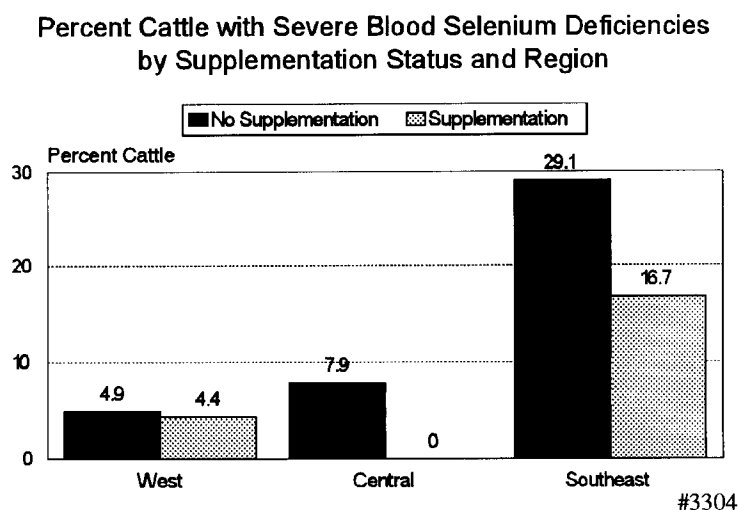


Figure 4



For more information, please contact:

Centers for Epidemiology and Animal Health  
 USDA:APHIS:VS, attn. NAHMS  
 2150 Centre Ave., Bldg. B, MS 2E7  
 Fort Collins, CO 80526-8117  
 (970) 494-7000  
 E-mail: [NAHMSweb@aphis.usda.gov](mailto:NAHMSweb@aphis.usda.gov)  
<http://www.aphis.usda.gov/vs/ceah/cahm>

N219.1096

<sup>1</sup> Analysis of forage samples collected during the CHAPA showed lower levels of selenium in the southeast region while levels were considerably higher in other areas of the U.S. (A copy of Forage Analyses from Cow/Calf Herds in 18 States by L. Corah and D. Dargatz is available from the address shown above.)