

The monthly blood carotene and vitamin A determinations were analyzed statistically. These analyses showed that the carotene supplement significantly increased the carotene content of the cow's blood but did not produce a significant increase in the blood vitamin A values. The carotene supplement maintained blood vitamin A at a slightly higher level but the difference between the two lots was small.

The carotene supplement fed to the same cows during the two winter feeding periods and an additional breeding season produced no measurable improvement in calf production. There were no consistent differences in the body weights of the cows, birth weight of calves or gains made by the calves during the suckling period. Some calving difficulties were encountered and also a few cases of diarrhea in the calves but there was no apparent difference between the two lots in these factors.

The results of this experiment indicate that if mature cows obtain green feed during the early summer months they are not likely to suffer from a vitamin A deficiency during the remainder of the year. During the 1948-49 feeding period half of the cows were fed the carotene deficient ration for 253 days or over eight months. Although their blood carotene and vitamin A levels declined during this period, their body weights and calf production were not affected. These blood constituents normally drop during the winter as all practical winter rations are much lower in carotene than green spring and summer pasture. The addition of carotene either in oil or as supplied by alfalfa meal brought about no improvement.

### SUMMARY

The results of these studies indicate that a vitamin A deficiency is not likely to occur in beef cattle fed under practical western North Dakota conditions. Cows that had been on green pasture during the summer gave satisfactory production when fed a ration deficient in carotene for as long as eight months. The ration fed was adequate in energy, protein and minerals.

During periods of extreme drought a vitamin A deficiency may be more likely. This would be true only when very little green feed was available during the summer and poor quality roughage was fed during the remainder of the year.

### BANK-HELD CREDIT IN NORTH DAKOTA

A release dated September 5, 1950 from the news bureau of the American Bankers Association carries the following information on bank-held credit in North Dakota:

Total amount borrowed in 1949.....	\$53,898,000
Outstanding on January 1, 1950.....	26,661,000
Outstanding on January 1, 1949.....	21,203,000

The borrowings and outstanding amounts are the least in any of twelve North Central States, (Ohio, Indiana, Michigan, North Dakota, South Dakota, Minnesota, Wisconsin, Nebraska, Iowa, Illinois, Kansas and Missouri.) The South Dakota figures are roughly double those for North Dakota. (HLW).