

An Evaluation of Wheat Pastures as Related to Metabolic Anomalies in Cattle

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Approximately one million head of cattle graze winter wheat pastures in Oklahoma annually. Wheat forage is of high nutritive value for the grazing ruminant. Nevertheless, approximately 3 percent of the cattle grazing this forage die annually. Stocker cattle usually die of bloat, and mature cows die of tetany. Studies were undertaken to compare the health, performance and tissue composition of mature beef cattle while grazing wheat forage with and without dietary supplements and to evaluate forage composition as related to animal health, performance and tissue composition of cattle.

Thirty-two head of aged, pregnant Hereford and Angus cattle were obtained from the Meat Animal Research Center at Clay Center, Nebraska. These cows were allocated to four treatments: supplemental calcium, magnesium, potassium or no supplement while grazing wheat pastures from December 6, 1979, to April 23, 1980. Blood and plant samples were obtained weekly in December, March and April and biweekly in January and February. Cerebrospinal fluid samples were obtained 6 times during this period. Plants were sampled by hand collection of forage from grazed pasture, by animal sampling and collection after removal of the contents of the rumen and reticulum via a rumen fistula and from non-grazed forage grown under a cage in the experimental pastures. Forage procured by these three methods was divided. Half was freeze-dried, and half was dried at 65°C. The forage was analyzed for dry matter, ash, *in vitro* digestibility, lipids, individual fatty acids from carbon 12 to 18 in length, sodium, potassium, calcium, magnesium, aluminum, iron, nitrates, transaconitic acid, nitrogen, phosphorus, total nonstructural carbohydrates and alkaline ash. Plant malic acid will yet be determined. Cattle weights were obtained at each plasma and plant sampling. Blood and cerebrospinal fluid were analyzed for calcium, magnesium, potassium, glucose, urea nitrogen and lactic acid. In addition, the blood was analyzed for phosphorus, alkaline phosphatase, hydroxy proline, beta hydroxy butyric acid, packed cell volume and parathyroid hormone.

Data from these analyses are currently being evaluated in relation to tetany in cattle. Some of the cattle developed tetany in the middle of March. Preliminary evaluation indicates that both plant and blood composition changed greatly at the time of tetany.