Equipment costs are an important consideration. The storage of high moisture grain in trench type facilities as well as air tight structures is a definite possibility.

Additional Information

Net energy values and volatile fatty acid production as affected by the processing methods used in this experiment will be reported later. The experiment itself is also being repeated. In addition, a trial is now in progress in which the following milo processing methods are being compared in a high concentrate (90 percent) ration: coarse grinding, fine grinding, dry rolling, steam process-flaking, reconstituting-rolling, and reconstituting-fine grinding.

Note: The particle size of milo, as influenced by the methods of processing, is illustrated in Figure 1, on page 101.

Influence of Level of Nitrogen Application to Wheat Pasture on Vitamin A Status of Beef Calves

Gale Thompson, S. A. Ewing and Robert Renbarger

Some producers have reported the occurrence of vitamin A deficiency symptoms among beef cattle grazing wheat pasture that had been fertilized with 50 or more pounds of actual nitrogen. The experiment reported is the first of a series of tests concerning level of nitrogen fertilization and the vitamin A status of calves grazing the forage.

Procedure

Twenty weaner heifer calves were selected from the Ft. Reno herd to serve as experimental animals. Five of the twenty heifers were selected at random for liver biopsy to obtain the initial levels of liver vitamin A and carotene prior to the grazing season. The remaining 15 calves were allotted to three groups and assigned to three wheat pasture fields which had been seeded with 16 lbs. of nitrogen per acre in a starter application. One field (control) received no additional nitrogen and the other two received applications of either 34 or 84 pounds of additional nitrogen after the wheat was up and prior to the beginning of the grazing season in November. As a result the three experimental pastures received 16, 50 and 100 lb. of actual nitrogen per acre prior to the grazing period. The stocking rate was approximately 1.1 acres per head. The grazing period consisted of 121 days from November 17, 1965 to March 18, 1966. The forage was sampled for nitrate analysis at the beginning and end of the grazing season and at one point (January) within the grazing period.

Blood samples were collected for plasma vitamin A and carotene analysis at the beginning and end of the grazing period as well as at an interim point (January) within the period. Liver samples were collected by biopsy technique from all calves at the end of the test to determine liver vitamin A and carotene levels.

Results

The results of this test are summarized in Table 1. It is readily apparent from the data that the vitamin A status of calves, reflected by either blood or liver levels of carotene and vitamin A, increased at approximately the same rate for all treatment groups. The nitrate content of the wheat forage was directly related to the level of nitrogen application. The highest concentration of nitrate was observed in the sample collected in January from the plot which had received the 100 pound nitrogen application. This level, however, is below what is normally considered a toxic level and apparently had no important influence on the status of vitamin A nutrition of the calves consuming the pasture.

Table 1. Influence of Nitrogen Fertilization of Wheat Pasture on the Vitamin A Status of Beef Calves.

LOT NO.	1	2	3
Total nitrogen applied/acre, lbs.	16	50	100
WEIGHTS:			
Initial wt. (11/17/65) lbs.	434	434	434
Final wt. (3/14/66) lbs.	588	557	562
PLASMA CAROTENE:			
Mcg./100 ml. (11/17/65)	354	488	343
Mcg./100 ml. (3/18/66)	1648	1880	1612
Difference	+1294	+1392	+1269
PLASMA VITAMIN A:			
Mcg./100 ml. (11/17/65)	25.88	30.20	29.16
Mcg./100 ml. (3/18/66)	56.10	61.60	53.30
Difference	+30.22	+31.40	+24.14
LIVER CAROTENE:			
Mcg./gram (11/3/65)	*5.2	*5.2	*5.2
Mcg./gram (3/18/66	14.7	19.4	16.2
Difference	+ 9.5	+14.2	+11.2
LIVER VITAMIN A:			
Mcg./gram (11/3/65)	*68.6	*68.6	*68.6
Mcg./gram (3/18/66)	153.3	161.1	156.7
Difference	+84.7	+92.5	+88.1
FORAGE NITRATE:			
PPM—Dry Matter (11/17/65)	35	140	245
PPM—Dry Matter (1/1/66)	210	245	1485
PPM—Dry Matter (3/22/66)	280	280	560

*Based on values observed for random sample biopsied at the beginning of the test period.