CAROTENE CONTENT OF TEXAS RANGE FORAGES

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CAROTENE is widely distributed in the plant kingdom and is an important source of vitamin A potency for domestic animals. According to some reports, range grasses or forages may not always afford sufficient carotene to satisfy the vitamin A requirements of grazing animals.

Hart and Guilbert (7) found range cattle suffered from vitamin A deficiency under natural range conditions following severe drought. Fraps, Copeland, and Treichler (2) reported that ordinary hays and fodders do not supply sufficient vitamin A to enable dairy cows to produce butter fat high in vitamin A. According to Myburgh (11), the carotene content of pasture plants in South Africa diminished rapidly as the plants matured or as they became dry during the winter season or during periods of drought. Atkeson, et al. (1) reported that pasture plants were relatively high in carotene during the early summer and fell off during the hot summer months. Smith and Stanley (12) found that blue grama grass was rich in carotene in the early stages of growth, but for the greater part of the year it was relatively low. Moon (9) reported that the carotene content of grass was depressed by drought and that stage of growth had much to do with the carotene content. Young grasses were higher in carotene than grasses in the blooming stage. Carotene was also less in plants that had been damaged by frost. Other workers have made like observations.

In the work presented here the object was to determine the carotene content of various range grasses in different stages of growth and conditions and to ascertain their value for satisfying the vitamin A requirement of grazing animals.

EXPERIMENTAL PROCEDURE

The range forages were collected during the summer and winter of 1941. The dried and dormant grasses were ground in a Wiley mill and placed in cold storage until after the carotene analyses were completed. The fresh green grasses were put in jars, covered with methanol, and stored in a refrigerator. On analysis the methanol was poured off, the residue ground in a food chopper, and carotene and moisture determined on it. Fraps, Meinke, and Kemmerer (6) have shown that methanol prevents the destruction of carotene in fresh green material and does not dissolve appreciable amounts of carotene. The crude carotene was determined by the A.O. A.C. method for carotene in dried hays and grasses. The crude carotene fraction of a limited number of the dried grasses was analyzed by the complete chromatographic method previously reported (5).

The carotene contents on the dry basis of fresh green forages arranged in Table 1 to show the distribution of the values of the various samples varied from 495