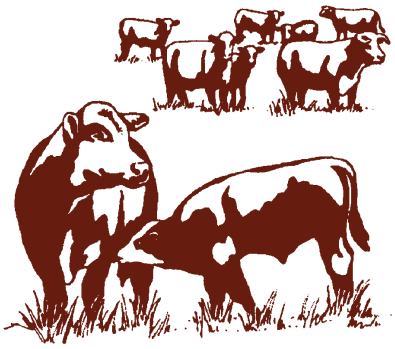

Beef Cattle Handbook

BCH-5122 Product of Extension Beef Cattle Resource Committee

Feed Value of Old Corn

Ivan G. Rush, Extension Beef Specialist, University of Nebraska

Research has shown that shelled corn stored seven years was equal in feeding value to corn stored for nearly one year for cattle feeding (Ohio Experiment Station 1961). USDA laboratory experiments found no loss in energy value in samples stored for as much as six years. A slight but non-significant decrease in protein efficiency occurred in corn stored for periods up to six years.

Earlier USDA workers (1942) reported that significant decreases in protein value for rats occurred with storage. These occurred at a rapid rate during the early storage period, prior to six months, but at a slow rate from six to 24 months. Much of the decrease in protein efficiency could be attributed to a decrease in palatability of the stored grain.

These data indicate the feeding value of old corn (both protein and energy) to be nearly comparable to corn produced the previous season, providing that the stored corn has been kept free from insect or other damage during storage. From the nutritive standpoint, the major loss during storage is the carotene (pro-vitamin A) content.

Though all or practically all the pro-vitamin A value is lost in corn stored for more than one year, supplemental vitamin A needs can be provided by synthetic vitamin A at low cost—a fraction of one cent per bushel.

Reduced palatability of the old corn should not be a major problem with proper management. Some reduction in corn consumption (compared to feeding new corn) should result from the lower moisture content of the old corn without reduction in intake of feed nutrients. For example, new corn containing 15% moisture, 8.5% crude protein, and 70 Mcal of net energy (NEg) would have 9.0% crude protein and 74 Mcal NEg at 10% moisture content.

Because old corn will most likely be dry and hard, it is recommended that the corn be processed before feeding. If fed whole, experience indicates that intake will decrease and feed efficiency will be poorer. Either coarsely rolling or grinding will usually be adequate. Perhaps using grain conditioners and adding water will be of additional benefit. If processed as dry corn, then fines may be more of a problem, which need to be dealt with by mixing with wet feeds such as corn silage, wet distiller products, liquid supplements, etc., or fat. If it becomes necessary to change to old dry corn, it should be made gradually over a period of several days.

Feed value of corn that is damaged by insects, mold, heat, or spoilage will probably be greater than the appearance would indicate. Insect damage does not usually result in an appreciable decrease in protein or energy of the remaining product. Molded or heated grain is often equal, or only slightly lower, in feed value where palatability is not a major problem.

References

1. Cabell, C.A. and N.R. Ellis, "Feeding Value of Stored Corn," *Journal of Animal Science,* 14:1167, 1955.
2. Jones, D. Breese, J.P. Divine, and Chas. E.F. Gersdor, "The Effects of Storage of Corn on The Chemical Properties of Its Proteins and On Its Growth Promoting Value," *Journal of Cereal Chemistry,* 19:819, 1942.
3. Ohio Agricultural Experiment Station, "Feeding Values of 1954-1960 Corn Found to Be Equal," *Feedstuffs*, Vol. 33, No. 52, page 26

Author:
Ivan G. Rush, Extension Beef Specialist, University of Nebraska

This publication was prepared in cooperation with the Extension Beef Cattle Resource Committee and its member states and produced in an electronic format by the University of Wisconsin-Extension, Cooperative Extension. Issued in furtherance of Cooperative Extension work, ACTS of May 8 and June 30, 1914.

BCH-5122 Feed Value of Old Corn