New Acids Give Corn Storage Alternative, Better Feed Value

Preservation and storage of high moisture corn with naturally-occurring acetic and propionic acids is a new and efficient method of feeding livestock, scientists report at Pennsylvania State University.

Until now, artificial drying or storage in air-tight containers has been essential to avoid spoilage in shelled and ground corn averaging 25 per cent moisture content.

Such preservation with mixtures of acetic and propionic acids increases the feed efficiency of corn fed to beef cattle and sheep, according to Dr. L. L. Wilson and Dr. T. A. Long of the Department of Animal Science at Penn State.

In studies just completed, they also found that the cost per bushel of treating the grain is similar, or slightly higher, than the cost of drying field-shelled corn. The new process sprays shelled ground corn with mixtures containing about 1.6 per cent, by weight, or acetic and propionic acid.

In the Penn State experiments, acid-treated corn was placed on a barn floor. There was no spoilage observed in either acid-treated corn or sorghum.

Such grains are normally harvested when the moisture content is about 25 per cent and then are dried to 14 per cent moisture. Some air-tight storage is used to prevent spoilage of such high-moisture grains.

Metabolism studies with lambs found that digestibility of acid-treated, high-moisture corn was not significantly different than digestibility of dried shelled corn.

More protein was digested and retained in the lambs' bodies when the animals were fed acid-treated, high-moisture corn than when fed ensiled, high-moisture corn without acid. The ration contained 30 per cent ground hay and 70 per cent ground corn.

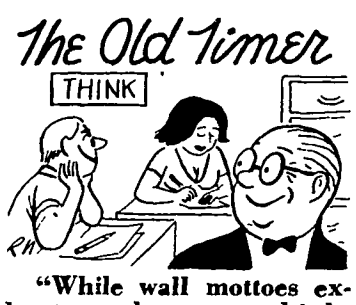
In a study comparing steers fed the dried shelled corn versus the acid-treated, high-moisture corn, feed efficiency was increased nearly five percent with acid treatment. The cattle ate about two per cent more acid-treated grain dry matter than the dried shelled corn.

The steer experiments indicated that acid-treated, high-moisture corn can produce slightly greater weight gains and slightly better feed efficiency than the dried shelled corn. Average daily gains of the steer group fed acid-treated, high-moisture corn were 2.59 pounds per head per day, compared with 2.42 pounds per head per day for the steers fed dried shelled corn.

Treated corn was also tested in poultry rations by Dr. R. M. Leach and Dr. O. D. Keene of the Department of Poultry Science. While there was no effect on growth rate, the rations containing acid-treated grain showed a five per cent loss in feed efficiency. This decreased feed efficiency may have resulted from moisture content of the grain rather than from acid treatment, the scientists point out.

Certain precautions are necessary in handling and storing acid treated corn. The acids, particularly acetic, are corrosive. Metal or concrete storage facilities should be protected with plastic linings.

Combinations of acetic and propionic acids are available commercially, and an applicator is also on the market.



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