

FEED LOT[®]

FEEDER INFORMATION HIGHLIGHTS

Accurately Controlling Grain Moisture Content

Report by James I. Sprague, Ph.D. Livestock Nutritionist

Reasons for controlling moisture

Many loads of grain that arrives at feedlots are below 15 percent moisture. The standard for feedlot rations is from 18 to 20 percent moisture as fed. The reasons for controlling moisture are: (1) improved feed production, (2) control of fine particles, (3) increased palatability of the grain, (4) economic reasons of improved feed efficiency of the grain and (5) reduced shrinkage.

The moisture content of inbound grain at feedlots is variable. Some grain is very dry from long storage time or excessive drying; whole grain at harvest time will contain excess moisture. Controlling the moisture content before steam processing helps mill operators produce a more uniform flake of the grain.

Three steps in determining and controlling moisture

Most feedyards have moisture testers for their inbound grain, but that is only the first step. The second step is to determine the moisture in the grain being delivered to the feed processing area. (The grain may be either dry rolled, steam processed or even corn that is fed whole.) The third step



The system monitors the moisture, and incorporates the correct amount of moisture and surfactant to the selected settings on the control panel.

is to adjust the grain moisture content just before it is processed with accurate pumping and metering equipment. A surfactant needs to be added with the extra moisture.

A system...monitoring, adding moisture, and a surfactant

David Greer, founder of AgriChem has developed and refined a method of in-line monitoring the moisture in grain as it: (1) comes down a spout, (2) moves on a conveyor belt, or (3) moves across an auger. This monitoring system is then integrated with controls to add the correct amount of moisture. The moisture can be controlled to within 0.5 percent. Plus their system is also capable of adding surfactant along with the additional water. The trade name of their surfactant is Grain Prep[®]. It is a sarsaponin based wetting agent.

AgriChem's first application, according to Dave Greer, was at a commercial feedlot in 1987. They have five patents of their products, including their flush mounted moisture sensor and online moisture density sensor awarded in 2002.

Although controlling moisture is usually considered for steam processed grain, however there are other applications. Crushing or crimping of "tempered" grain (with out steam) is one example where the accurate control of moisture is needed. Dry rolling operations and feeders who feed whole corn may also find applications for improving the palatability of their grain. Other applications of their technology are monitoring and controlling moisture in a mixer, and controlling moisture during pelleting of supplements and rations.



Willis Lampe of Pratt Feeders demonstrates the in-line moisture sensing unit. The unit is mounted high in the feedmill in the stream of grain.

Use of day tanks to control moisture

Another application is the use of "day tanks" to hold grain for one day before either dry or steam processing. (Day tanks were used by the old time flour millers to "temper" the wheat before milling.) With the use of day tanks, the moisture can be brought up to as much as 18 to 20 percent moisture. Then subsequent flaking or dry rolling can be achieved very efficiently.

Installation considerations

Mr. Greer explains the in-line monitoring sensor is mounted high in the feed mill while the controllers of the moisture addition are located in a control room of the feed mill. Planning of the installation is essential to prevent retrofitting later. ♦

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