



The Outlook For Drying Corn This Harvest Season

BROOKINGS — When corn reaches maturity, the moisture content of the kernel is generally between 30 and 35 percent. The time of year corn or other grain reaches maturity and the weather conditions can have a major impact on how quickly the grain will dry to a moisture content acceptable for storage or sale, explains Bob Fanning, SDSU Extension Plant Pathology Field Specialist.

He references Ken Hellevang, Extension Ag Engineer at North Dakota State University, and an expert in grain drying and storage for the information included in this article. According to Hellevang, corn reaching maturity about October 1 will normally dry slowly in the field due to cool ambient temperatures. Standing corn in the field may dry about 1.5 to 3 percentage points per week during October and 1 to 1.5 percent per week or less during November, assuming normal North Dakota weather conditions.

"South Dakota conditions would be expected to allow the crop to dry somewhat more quickly," Fanning said. "Oct. 9, 2014, I helped hand harvest a corn fertility research plot in Lyman County. The corn was mature, and shelling out several ears revealed the moisture content as 21 percent."

Fanning added that there are likely some wetter and drier fields in the area.

While the price of corn and grain sorghum this season doesn't generate enthusiasm among farmers to dry grain, Fanning said field losses can still make it a smart choice. "Hellevang suggests that field drying is normally more economical until about mid-October, but if the crop remains wet after that, mechanical drying with added heat can be well justified," he said.

When considering leaving grain standing in the field to dry, Fanning reminded farmers to make sure stalks and shanks are strong. "Some extent of grain sorghum lodging is being reported, and the moisture during the growing season has caused a fairly high incidence of phomopsis in sunflower, which can result in lodging," he said.

CALCULATE COSTS
The propane cost to dry a bushel of grain one percentage point of moisture can be estimated by multiplying the propane cost per gallon by 0.02. One propane distributor reports propane at \$1.60 per gallon, which would result in \$0.032 per bushel per point of moisture or \$0.32 for 10 percentage points.

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BOB FANNING

By dividing the propane cost to dry grain by the grain price, you can calculate the percentage of grain loss that will equal the drying cost. Using \$1.60/gallon for propane, and \$2.50 per bushel for corn, $\$0.32/\$2.50 = 0.128$ or 12.8 percent. "Leaving grain in the field due to field loss may impact crop insurance/yield history," Fanning said.

POLY BAGS ARE A GOOD STORAGE OPTION

Remember that poly bags are a good storage option, but Fanning said they do not prevent mold growth or insect infestations. "Grain should be dry when placed in a grain bag if it is intended to be marketed or stored as grain. Storing grain in a bag at moisture contents above the recommended levels for short-term storage should be considered very short-term storage and only at near freezing temperatures," he said.

The recommended moisture levels for short-term storage vary by commodity and are as follows:

- corn — 15.5 percent
- grain sorghum — 13.5 percent
- non-oil sunflower — 11 percent

Fanning added that high moisture grain can be stored in polybags, but the grain will go through the ensiling process and its use will be limited to livestock feed. High moisture corn should be harvested between 24 and 33 percent moisture.

Corn above 21 percent moisture should not be dried using natural-air and low-temperature drying to minimize corn spoilage during drying. "Because the drying capacity is extremely poor at temperatures below 35 to 40 degrees, little drying is typically possible using a natural-air system after about Nov. 1," he said. "Adding heat does not permit drying wetter corn and only slightly increases drying speed."

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PHOTO: LORETTA SORENSEN

A Question Of Location

How Do Cattle Fare In Different Regions Of The Country?

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P&D Correspondent

Will cattle born and raised in the western United States thrive if they're transported to the east, and vice versa? Does forage type or quality have anything to do with their success?

All good questions with somewhat complex answers.

The short answer is, yes, cattle from the western U.S. will thrive in the east and vice versa. However, forage quality and availability is not the only factor that determines how well they perform in the move.

"To thoroughly answer these questions, you really need to define what area in the East or West you're talking about," Dr. William E. Pinchak, Ph.D. and Professor at Texas A & M AgriLife Research at Vernon, Texas, says. "There's a great difference between the desert areas of Nevada and introduced grasslands of Tennessee. But regardless of where cattle are transported, there are numerous factors affecting their performance."

Grasses across the United States are primarily one of two varieties: C-3 (cool season) or C-4 (warm season). Grass species vary from location to location, but they all work the same way to meet the needs of grazing animals.

"Differences amongst forages are largely driven by environments where they grow," Pinchak says. "From New Mexico westward, the climate is very arid with low humidity and precipitation and high temperatures. Stocking rates in that area range from 40 acres per cow to as much as 200 acres per cow. Stocking rate is driven by the amount of forage produced in any given area. Constraints are caused by precipitation levels, temperatures and temperature patterns. East of Texas, beef producers can fertilize Bermuda grass and stock a cow to every acre. Carrying capacity of a forage base differs from place to place. But forage itself functions in a very similar manner."

The most important aspect of adaptation and performance for cattle moved to a new environment is to assure their immune system is prepared for stresses associated with long-haul transportation. Immune system function begins with the cow-herd where a complete vaccination and mineral program lays the foundation for calf health.

"Pre-weaning vaccination is vital to calf health," Pinchak says. "Post-weaning pre-conditioning or 30 to 45 days for weaning cattle before shipment is important to decrease losses in performance due to sickness or death. Yearling and older cattle should be on current

vaccinations and have been provided a complete mineral supplement program prior to shipment."

Environmental factors impacting bovine performance in different geographic areas include ability of the animal's immune system to respond to unknown viral or bacterial diseases, parasite load, temperature and humidity differences, and necessary adjustments to grazing habits and patterns.

"Actually, east-west moves don't require as much adjustment north to south or south to north moves," Pinchak says. "There have been a number of reciprocal studies between research centers in Florida, Texas, Montana and Nebraska to evaluate north-south movement of cattle. If cattle are moved eastward from Texas or Oklahoma, they don't have to make such drastic adjustments to temperature and humidity levels. If cattle are purchased in a southern state such as Florida and moved to a northern state like North Dakota, they experience major changes in environment."

In addition to temperature and humidity changes, cattle moved from warm climates with abundant moisture to drier, colder areas will undergo significant adaptations to winter conditions as well as introduction to numerous other unfamiliar conditions.

"In a warm, wet climate, internal and external parasite challenges are greater than those found in warmer, drier areas," Pinchak says. "In short term, 12 to 24 months, cattle going from cool, dry climates to warm, moist ones will likely encounter a greater parasite load than they're accustomed to. Their body condition may deteriorate to a greater degree in response to those challenges. Conception rates in heifers may also drop with dramatic environmental changes."

Cattle accustomed to abundant forage undergo a change in grazing habits if they're relocated to a more arid area and have to travel further to obtain necessary nutrition. That adjustment may also affect body condition and other health levels of the animal. Within a cattle herd, social adjustments will also occur.

"There's generally quite a bit of social jockeying that first year," Pinchak says. "That can happen on the same ranch when different cattle groups are combined. Disease such as foot rot could affect cattle taken from dry climates to a location with higher precipitation levels. Producers should be prepared to experience a lower level of performance for as much as a year in cattle that undergo these major environmental adjustments. They should

also consider that, in the first year of the move, weaning weights on calves may be lower. Good management practices that include thorough vaccination practices and a targeted mineral program can assist animals during the adjustment period."

Cattle require minerals in either macro (relatively large) or micro (small or trace) amounts. Minerals are key to their bodily maintenance and growth. Major minerals required by cattle include calcium, phosphorus, magnesium, potassium, sodium, chlorine and sulfur. Minerals needed in trace amounts are iron, zinc, manganese, copper, iodine, cobalt and selenium. In numerous areas of the U.S., plants are low in copper. Below normal zinc levels in plants are also found in scattered U.S. locations. Copper and zinc supplements should be considered with significant geographic moves.

In areas where hay supplements grazing, beef producers should consider the need for protein supplements which can improve performance when crude protein levels are less than 12 percent for lactating cows and growing cattle and below 7 percent for dry cows.

"Quite often, if protein isn't adequate, the rumen doesn't thoroughly digest grasses," Pinchak says. "It can be supplemented with products such as protein cubes or pellets. The most important factor to consider in selecting cattle for any specific location is to match both the genotype and phenotype of the animal to the resources you have. Meeting the animal's nutritional needs is critical to successful performance. Many things can affect that selection, including cow size. Cows consume between two percent and three percent of their bodyweight. A 1,000-pound cow needs between 20 and 30 pounds of grass per day. A 1,500-pound cow needs 30 to 45 pounds per day."

Milk production potential also increases a cow's nutrient requirements and needs to be factored into decisions to select cattle adapting to a specific environment. Higher nutrient and forage intake demands are major causes of poor reproductive performance in cows moved to a new region.

"To prepare cattle for a major environmental adjustment, make sure they have a highly functioning immune system," Pinchak adds. "Monitor mineral consumption to target specific consumption levels for individual cattle. Animals may adapt more readily in going from West to East because of the higher forage production rates per acre, but there's much more to the location change than just the forage."

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