TEXAS A&M AGRILIFE EXTENSION

Sprouted Wheat for Feeding Cattle

Ted McCollum III, PhD, PAS-ACAN
Extension Beef Cattle Specialist
Texas A&M AgriLife Extension Service
Amarillo, TX

Moist conditions and delayed harvest may lead to sprouting of wheat in the head. Generally, sprouted grain is unsuitable for use in the milling, brewing, and food industries. However, sprouted grain can be fed to livestock.

The germination process produces heat, carbon dioxide and moisture and hence might slightly reduce the energy density of the sprouted grain. However, animal feeding trials indicate that the feeding value of the sprouted grain is not greatly reduced, if at all. In some instances, it appears that sprouting may slightly improve the feeding value. Substantial sprouting will involve some reduction in energy available per kernel, while slight to moderate sprouting will have less effect on the feeding value of sprouted grains. Spoilage and inventory loss are concerns. Handling, storage, and expedited use are required to minimize deterioration and loss.

Points:

1. Sprouting causes only slight, if any, reduction in feeding value. Bushel weight may be used as a rough indicator of feeding value, but in most cases the value of the sprouted grain is similar to sound grain. Test weights below 50 lbs are a better indicator of reduced feeding value.
2. Sprouted wheat should be processed similar to non-sprouted wheat. Wheat grain should be cracked, rolled, or flaked prior to feeding to increase digestion and utilization..
3. Follow feeding recommendations (maximum levels, etc.) normally used for feeding wheat. The starch in wheat is highly fermentable in the rumen. To avoid founder, acidosis, and bloat adapt cattle to wheat grain consumption - start with about 25% wheat in a mixed diet or controlled delivery. Limit the amount of wheat grain in the diet - 40% of the moisture free diet can be a target for producers that have less experience feeding wheat.
4. Check for mold. If there is any question about the presence of molds or toxins, have the grain screened by the Texas Veterinary Medical Diagnostic Laboratory or another analytical laboratory.
5. Sprouted grains may have a higher moisture content which can lead to spoilage and mold growth during storage. Check the moisture before storage. Moisture tests off the field can be misleading and moisture can vary depending on the degree of sprouting. North Dakota State University research suggested that 1-1.5% moisture should be added to actual moisture reading of sprouted grain. Take steps to reduce the moisture level prior to storage or store the sprouted grain in way that will limit spoilage.

Options for Effective Storage:

1. For minimum storage loss, aerating is the best option. Dry the grain down to 18% moisture.
2. If moisture is approaching 20%, it is strongly recommended not to store grain in bins. If possible, store grain where it can be turned and exposed to air circulation. This will be a challenge during the hot, humid months of late spring and early summer that are approaching.
3. Grain can be ensiled in conventional silos or silage bags. For best results, the grain needs to be rolled or ground before being placed in a bunk, silo, or bag. Whole grain will not pack well and will trap excess oxygen and increase spoilage. Grain going into oxygen-limiting silos does not need to be ground. Moisture content should be a uniform 25-35% for good ensiling. Uniform moisture may be a problem with sprouted grain. Drier grain will not ensile well and result in storage losses. Follow good management practices for silage (i.e. covering, packing, proper feedout etc.)
4. Moisture levels, storage method, environmental conditions, and the projected feedout time may call for the use of a preservative (propionic acid, ammonia). The amount of propionic acid applied depends on grain moisture content, length of storage and temperature. As a guideline, grain with 30% moisture is treated with 1.25% propionic acid (100%) by weight for a year's storage (3 gallons/ton wet grain). The amount of acid can be reduced by half if the storage period is less than 6 months. Propionic acid corrodes metal and should not be applied to grains stored in metal silos or bins. For ammoniation, apply ammonia at 2.3% of dry matter content of grain. Grains stored outside would have to be covered and all precautions taken to exclude oxygen from the pile to ammoniate the grain. Both options, ammoniation and propionic acid treatment, can be used as a preservative for grain to be used for cattle feed, but not for sale at grain elevators.
5. If forage crops are available for ensiling, the grain can be ensiled with the forage crop. Either mix the sprouted grain with the forage that is being ensiled or layer the grain into the bunk or silo as the forage is being ensiled.

For further assistance, contact your local Texas A&M AgriLife Extension Service office, or Ted McCollum III, Extension Beef Cattle Specialist, Amarillo, at ft-mccollum@tamu.edu.