Texas Cooperative EXTENSION
The Texas A&M University System

Panhandle Ag Extra

December, 2004 Volume 6, Issue 4

Dr. Brent Bean
Agronomist, Texas Cooperative Extension,
6500 Amarillo Blvd. West, Amarillo, TX 79106
Email: b-bean@tamu.edu/ Ph: 806-677-5600

Fall weather has played havoc on farming schedules throughout the area. In Amarillo, November was the second wettest month on record. Although most corn has been harvested, isolated fields are still present with farmers waiting for an opportunity to harvest. A considerable amount of sorghum, sunflower, and cotton acreage remains in the field. This newsletter will address weathering affects on grain sorghum.

Weathered Grain Sorghum

In the past one of the most serious threats to late harvested grain sorghum was the loss of grain due to lodging. Certainly this is still a potential problem, but gains in standability of our grain sorghum hybrids through breeding efforts has greatly reduced lodging. I have been pleasantly surprise at how well sorghum is still standing in many fields. The fields where significant lodging has occurred are primarily those that were planted at too high of a plant population under dryland conditions. The grain itself can normally withstand a few days of wet conditions without a significant drop in yield or quality. However, prolonged rainfall, high humidity, high temperature and alternate periods of wetting and drying will eventually degrade both grain yield and quality. Unfortunately this degradation is now occurring in some sorghum fields. Weathered grain is usually dark and discolored in external appearance, has a dark, discolored germ, and the inside of the kernel is chalky due to partial breakdown of the starch and protein.

In 1976, in the Coastal Bend area, excessive rainfall (12 - 20 inches) occurred over a three week period just as the grain sorghum crop was ready to harvest. Our cool temperatures should lessen the impact of wet weather on grain sorghum compared to what was observed in the Coastal Bend area. However, summaries derived from observations and subsequent research studies in 1976 should give us the basis for making predictions concerning our 2004 Texas High Plains crop. The following is a summary of a 1976 variety and planting date trial:

- Some hybrids were much more weather resistant that others.
- Yield was reduced 11 to 41%, with and average loss of 25 % for early planted sorghum and 14 % for later planted sorghum.
- Before the rains kernel damage ranged from 0 to 4.8% broken kernels and test weight ranged from 56 to 60 pounds. All the grain graded No. 1 or No. 2. Grains harvested after the rains contained from 9 to 85% damaged kernels with 4 to 27 % broken kernels, with most test weights less than 55 pounds per bushel. Average reduction in test weight of the early planted sorghum was 5.3 pounds and of the late planted was 6.4 pounds. All the weathered grain was 'Sample' grade.
- Weathered grain was 'chalky' in appearance and softer than normal.

Individual producers reported 20 to 50 percent losses in yield from grain shattering, reduced test weight, kernels sprouting, and mold.
Chemical composition of the weathered grain did not differ greatly from the nonweathered grain as

indicated by average values for 12 lines grown at a Corpus Christi test nursery. Weathering did not significantly decrease the proportion of crude protein and fat, however, ash content was significantly increased (Table 1). Starch content was not affected. It is possible that grain deterioration has a desirable affect on digestibility since endosperm components are partially broken down making them more accessible to digestive fluids and enzymes.

Table 1. Effect of weathering on chemical composition of sorghum grain.

	Nutrient, %				
Grain[1]	Moisture	Protein	Fat	Fiber	Ash
Nonweathered	13.9	10.7	3.1	2.3	1.7
Weathered	12.5	10.5	3.0	2.4	1.9

[1] Average if 12 lines grown at Corpus Christi.

Mold

Sorghum seed from grain elevators in the Coastal Bend area where weathered grain was delivered was examined for the presences of toxin producing molds. The most commonly detected fungi were members of the genera Fusarium and Alternaria. The aflatoxin producing fungus Aspergillus flavus, was detected in 1 percent of the sorghum seed. The grain was not actually tested for the presence of aflatoxin. The presence of these fungi in grain fields was observed prior to the rains, but became quite active once the fields became warm and damp for a prolonged period of time.

If excessive mold is present, caution should be taken in feeding the grain.

Feed Value

A feeding trial to dairy cows showed little effect of weathered grain on feeding value. Consumption of weathered grain was 2.27 pounds per 100 pounds of body weight per day compared to 2.35 pounds for nonweathered grain. Milk yield and % milk fat was 55.52 pounds and 3.22% for weathered grain and 55.8 pounds and 3.13% for nonweathered grain.

Weather damaged grain sorghum was compared to nonweathered No. 2 grain sorghum for feeding light weight beef heifers in an 84-day feeding trial. The difference in daily gain between heifers fed only nonweathered or weathered grains was negligible (2.04 vs 2.00 pounds daily). Feed per pound of daily gain was also very similar. Dust was a potential problem, but could be controlled with the addition of water. No evidence of mycotoxicosis was revealed by pathological examination of livers and kidneys at slaughter.

Summary

In summary, it appears that our fall wet weather may very well have a detrimental effect on grain sorghum yield and grade. However, feeding value will unlikely be affected. Grain color has little to do with the quality of the grain. If grain has excessive mold, caution should take place in feeding livestock. Samples can be sent to the Texas A&M Research and Extension Center Plant Diagnostic Lab for identification of mold.