

# Preharvest Sprouting or Weathering of Grain Sorghum



Throughout Louisiana, grain sorghum producers know that inclement weather at harvest time increases the chance for preharvest sprouting of grain sorghum. Preharvest sprouting is defined as the germination of physiological mature or ripe grain before harvest.

Preharvest sprouting of grain sorghum occurs during a period of prolonged rainfall, high humidity, high temperature and alternate periods of wetting and drying that last for several consecutive days. Weather variables that affect the amount of preharvest sprouting include the amount of rainfall, humidity, temperature and wind.

Visual confirmation of sprouting includes the protrusion of the radicle through the seed coat (photos 1 and 2). Following several days of dry weather, the radicle becomes shriveled and inconspicuous except on closer inspection.

Typical changes that occur as grain sorghum weathers include changes in the kernel, causing breakdown of kernel structure and eventual loss of viability. Weathered grain is usually discolored externally, has a dark discolored embryo, and the inside of the kernel is chalky in appearance due to partial hydrolysis of starch and protein.

The most obvious damaging effects of sprouting are yield losses due to shattering and lower grades and test weights. A lower grade will result in a lower price per bushel of grain sorghum. Also, the growth of fungi can occur, increasing the incidence of mycotoxins (photo 3). Periods of damp or wet weather can provide ideal conditions for the development of the many fungi capable of growing on the grain. The fungal type that is most active at any time depends on the indigenous fungal population, moisture levels of the grain, temperature, humidity and physiological characteristics of the grain.

The conditions that favor sprouting often compound the problem by delaying harvest. At harvest time, weathered grain tends to be trashier and has a higher percentage of fines and broken kernels. Fungicide applications are not practical or economical for managing



*Photo 1. Preharvest sprouting is defined as the germination of physiological mature or ripe grain before harvest. Visual confirmation of sprouting includes the protrusion of the radicle through the seed coat.*



*Photo 2. Sprouted grain sorghum heads under prolonged humid and rainy conditions.*

grain molds. Mold-resistant hybrids may be available, and planting these hybrids is the only management option.

Differences in the ability of grain sorghum hybrids to resist field deterioration have been documented. Certain plant and kernel characteristics provide resistance to field deterioration. Characteristics that can affect the amount of weathering include: open heads with seed completely enclosed with long papery glumes; seed color; seed size; and seed with thin, smooth, translucent pericarp.

To evaluate grain sorghum hybrids on weathering, favorable environmental conditions for weathering must occur. In general, subjective field ratings of hybrids can provide reliable information on weathering; however, conclusions may be confounded by differences in maturity and interactions of diseases and insects. For example, a late-planted or late-maturing sorghum hybrid may not show signs of sprouting as severely as others. This hybrid may not be genetically resistant, but merely escaped extensive deterioration because it was less mature and not exposed to the adverse environment as long. Therefore, maturity must be considered when evaluating for weathering. **All grain will weather with prolonged exposure to inclement weather.**

Grain sorghum is not significantly altered nutritionally by weather damage. For livestock-feeding purposes, only slight differences in nutritive value or chemical composition have been found when comparing nonweathered and weathered grain sorghum. Also, livestock and poultry feeding trials have shown that weathered grain sorghum does not hinder animal performance.

Few remedies are available for preventing preharvest sprouting when weather conditions promote germination. Prompt harvest of the grain is usually the best solution to prevent sprouting but this is easier said than done in our environment. Also, grain sorghum can be harvested when it is wet (high moisture) but it must be dried, which is an extra expense.



Photo 3. The discolored seeds were obviously heavily damaged by fungi.

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