



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

Hardin County Extension News Release

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Late Wheat Harvest Grain Quality Concerns

Hardin County – Because of the continued rains in the area, wheat harvest will likely be late again this year. Throughout the state, the crop is now ready for harvest in some fields, but will likely not be cut until the first or second week of July or even later, depending on weather and field conditions. A late harvest combined with excessive rainfall will mean more time for late-season mold growth, mycotoxin accumulation, test weight reduction, and sprouting, all of which together could result in poor overall grain quality.

Test weight is one of the grain quality traits most likely to be affected by harvest delay and wet conditions. Low test weights usually occur if grain is prevented from filling completely or maturing and drying naturally in the field. Rewetting of grain in the field after maturity but prior to harvest is one of the main causes of reduced test weight. When grain is rewetted from rains, the germination process begins, causing starch to be digested. This leaves small voids inside the grain which decreases test weight. Additionally, grain will swell each time it is rewetted and may not return to its original size as it dries which also reduces the test weight. As a result, the enlarged kernels will take more space but weigh the same, allowing fewer kernels to pack in the measuring container, therefore lowering the test weight.

Rain and harvest delay may also lead to pre-harvest sprouting in some varieties. Sprouting is characterized by the swelling of kernels, splitting of seed coats, and germination of seeds within the wheat heads. Some varieties are more tolerant to sprouting than others, and for a given variety, sprouting may vary from one field to another depending on the duration of warm, wet conditions. Sprouting also affects grain quality. Once moisture is taken up by mature grain, stored sugars are used up for germination, which also leads to reduced test weights. Even before visual signs of sprouting are evident, sugars are depleted and grain quality is reduced. Since wheat varieties differ in their ability to take up water, their drying rate, the rate at which

sugars are used up, and resistance to germination, grain quality reduction will vary from one variety to another.

In addition to sprouting, the growth of mold is another problem that may result from rain-related harvest delay. To fungi, mature wheat heads are nothing more than dead plant tissue ready to be colonized. Under warm, wet conditions, fungi readily develop on wheat heads, resulting in a dark moldy cast being formed over the heads and straw. This problem is particularly severe on lodged wheat, which happens when weather causes the plant to be blown over. In general, the growth of blackish molds on the surface of the grain usually does not affect the grain.

However, the growth of pathogens, usually whitish or pinkish mold, could result in low test weights and poor overall grain quality. This happens in fields with a disease called head scab, where vomitoxin may build-up to high levels in the grain, leading to further grain quality reduction and dockage. Even in the absence of visual head scab symptoms, the fungi that produce vomitoxin may still colonize grain and produce toxins if harvest is further delayed.

In order for farmers to minimize grain quality losses, it is best to harvest wheat on the first dry-down. Harvesting at a slightly higher moisture level (18% for example) may also be useful for minimizing quality losses, particularly those associated sprouting and mold growth due to rainfall and harvest delay. However, if grain is harvested at moisture above 15%, it should be dried down below 15% before storage to minimize mold growth and mycotoxins in storage.

Article written by Pierce Paul and Laura Lindsey, OSU Extension (CORN 2015-19) and edited by Mark Badertscher, OSU Extension – Hardin County.