

With the concern about sprouted wheat due to the rains during harvest, have you wondered if sprouted wheat can be used successfully for wheat seed?

There was a study conducted in 1989 at Manhattan, KS that attempts to address that question. There had been considerable sprouting that year which was the impetus for the research. Samples of four wheat varieties were collected and separated into three sprouting levels (low or no sprouting; moderate-seed coat wrinkled; and severe-the seed coat was split open over the embryo or germ) based on visual ratings, test weight and falling number (Falling number is the time in seconds a plunger falls through a slurry of flour. If there is no sprouting the falling number will be high and if there is sprouting the falling number will be low, which means it doesn't take much time for the plunger to fall through the viscous slurry.) The objectives of this research were to determine if sprouted seed could be used for the upcoming fall planting and if the sprouted seed was stored for 27 months would it still be usable seed. The study had two major parts. The first part was determining germination levels and the second part determined greenhouse and field emergence rates of the three different seed sprouting levels.

Two germination tests were conducted. Germination of the wheat samples were tested after harvest by prechilling the seed at 41F for 5 days and incubating on moistened heavy paper at 59 F for 7 days. Also, an accelerated aging germination test was conducted, which subjects the seed to high temperatures (104 F) for 72 hours before prechilling and incubating. Greenhouse emergence was determined by placing seeds at four planting depths (1.5, 2.5, 3.75, and 5.0 inches) in sand. After the seed samples were stored for 27 months at room temperature, seeds were planted at a depth of 1.5 inches on a Geary silty clay loam soil.

In the first part of the study it was found that germination for all three sprouting levels that were prechilled was high after harvest ranging from an acceptable 86 % to 96 %. Generally, accelerated aging reduced germination by about 20 percentage points with the moderate and severe sprouting seedlots. In the second part of the study, emergence of the severely sprouted wheat planted at 1.5 and 2.5 inches was significantly lower than the less sprouted wheat. Emergence rates for the deeper plantings (3.75 and 5.0 inches) were considerably lower, but coleoptile length of the different varieties may have confounded the results. And after storage for 27 months the severely sprouted seed averaged 59 % emergence while the low-sprouted seed had 68 % emergence.

What's the bottom line?

In this study, the severely sprouted wheat, while it had a low falling number which indicates sprouting damage, had no plant parts visible; rather only the seed coat over the embryo or germ had split open. Therefore, the severely sprouted seed in this study actually would be considered to have only slight sprouting compared to sprouted seed with visible roots or shoots. But some interesting information can be gathered or inferred from this study: 1) Grain with a split seed coat over the germ can still be used for seed wheat, but take a germination test about a month after wheat harvest to determine its viability. 2) Grain with a split seed coat over the germ can be stored for a considerable time and still be viable, but take a germination test to be sure. 3) Test weight is not a good indicator of germination ability, because lower test weights can be caused by a number of factors that don't affect germination -take a germination test. 4) The visible plant parts of sprouted seed may be broken off during handling and could cause spoilage during storage rendering it useless as seed wheat, but take a germination test.

For more details about this research see:

Keeping Up With Research 115. Planting wheat seed damaged by sprouting before harvest. SRL 115. K-State Res & Ext.

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