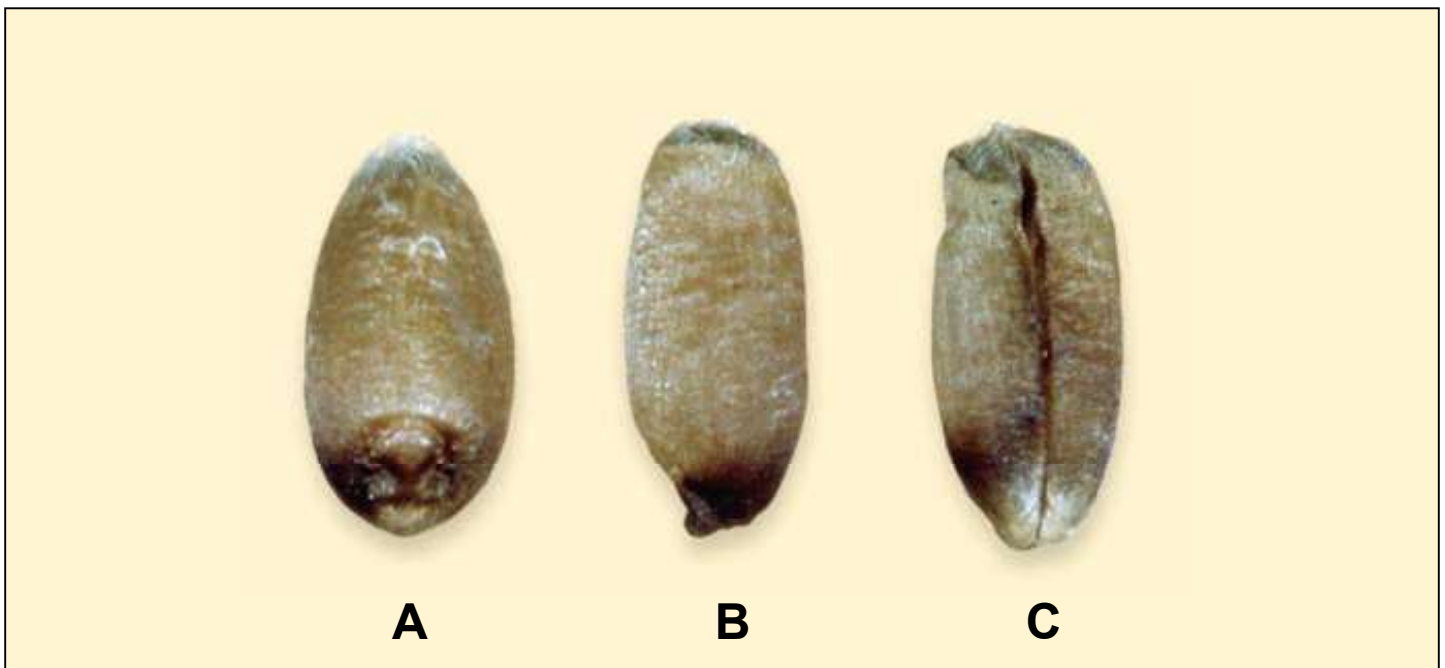


WHEAT



Definition of wheat

*Grain that, before the removal of dockage, consists of 50 percent or more common wheat (*Triticum aestivum* L.), club wheat (*T. compactum* Host.), and durum wheat (*T. durum* Desf.) and not more than 10 percent of other grains for which standards have been established under the United States Grain Standards Act and that, after the removal of the dockage, contains 50 percent or more of whole kernels of one or more of these wheats.*



BLACK TIP DAMAGE (FUNGUS)

Portion for Analysis: Approximately 15 grams

Kernels affected by black tip fungus to the extent that the resulting discoloration extends beyond the germ and continues around at least one cheek and into the crease, thus forming a “continuous band.” All conditions must be met to be considered damage.

Illustration shows from left to right:

Kernel A: The minimum degree of discoloration and amount of coverage required on the germ.

Kernel B: The minimum degree of discoloration required in the “continuous band” that extends around the cheek. The width of the band is irrelevant.

Kernel C: The minimum degree of discoloration required to extend into the crease. The amount of discoloration (area of coverage) is immaterial.

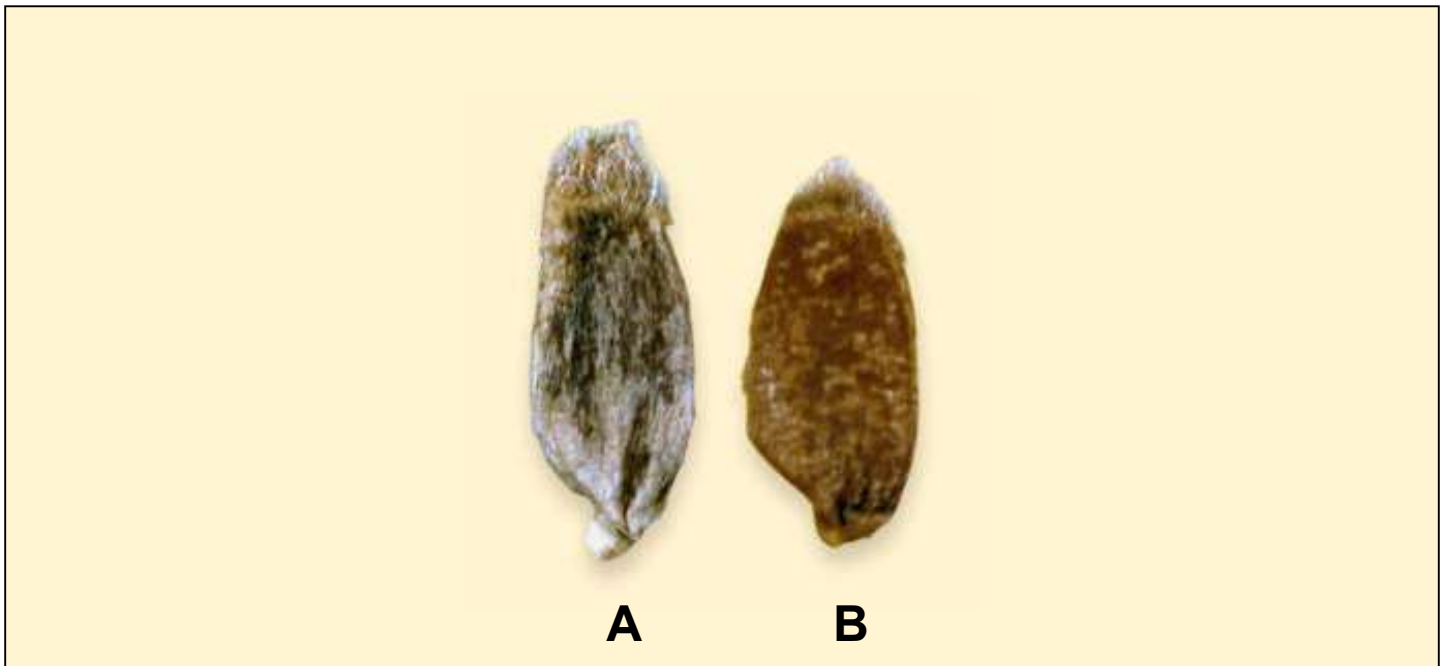


DHV

Portion for Analysis: Approximately 15 grams

Observe the following guidelines when determining dark, hard, and vitreous kernels (DHV) in Hard Red Spring Wheat.

- (1) Consider hard red spring kernels which are bleached but are hard, or hard and vitreous as DHV.
- (2) Consider hard red spring kernels which have cracks or checks that cause a cloudy or shadowy spot on the kernel but are otherwise dark, hard, and vitreous as DHV.
- (3) Consider kernels of Soft Red Winter wheat and Hard Red Winter wheat as DHV when they are dark, hard, and vitreous in texture.
- (4) Kernels which are yellow or contain a mottled spot (regardless of size), distinctly green immature kernels, severely affected by scab, sprouted, foreign material, and kernels of Hard White wheat, Unclassed wheat, Soft White wheat, and Durum wheat are not considered DHV.



FROST DAMAGE (DISCOLORED BLACK/BROWN)

Portion for Analysis: Approximately 15 grams

Kernels which are discolored black or brown and have a bleached or blistered appearance with dark lines showing through the sides of the kernels. Also, kernels are completely discolored black or brown.

Illustration shows from left to right:

Kernel A: Bleached kernels which are discolored black.

Kernel B: Kernels which are discolored brown.

Note: BOTH sides must be discolored equal to or greater than the kernels shown.

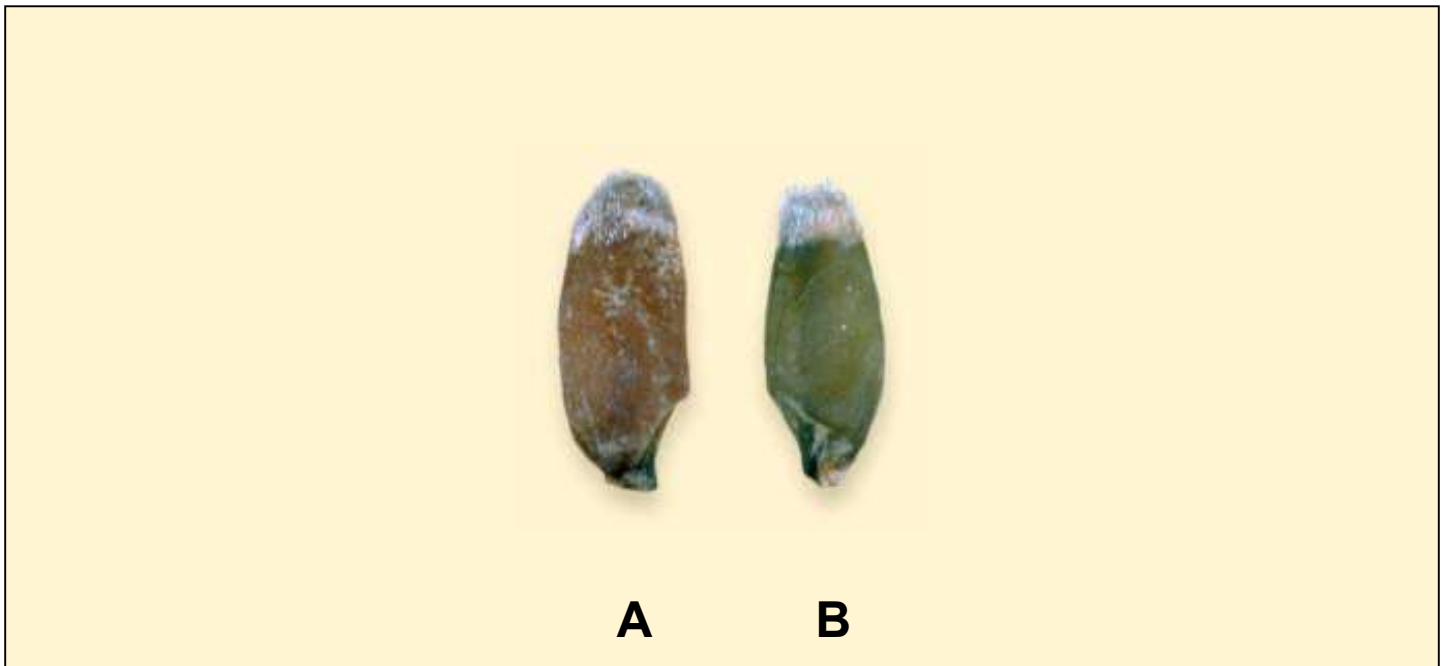


FROST DAMAGE (BLISTERED)

Portion for Analysis: Approximately 15 grams

Kernels which have frost blisters extending around the back and into the crease.

Note: Blister and wrinkle effect must be distinct.



FROST DAMAGE (CANDIED)

Portion for Analysis: Approximately 15 grams

Kernels with a wax-like or candied appearance that meet any of the following criteria shall be damage.

Illustration shows from left to right:

Kernel A: Kernel with brown discoloration.

Kernel B: Kernel with green discoloration.

Note: The discoloration on BOTH sides of the kernel must be equal to or greater than shown.



FROST DAMAGE (FLAKED)

Portion for Analysis: Approximately 15 grams

Kernels that have a portion of the bran coat flaked off due to frost. The flaked area singularly or in combination, must be equal to or greater than depicted.

Note: Evidence of frost must be present on suspect kernel(s). Do not confuse with kernels which have bran coat rubbed off due to handling.



GERM DAMAGE (BLEACH METHOD)

Portion for Analysis: Approximately 15 grams

Kernels and pieces of wheat which, after bleaching, have discolored germs that are as dark or darker than shown.

Discolored germs that do not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted. For example, when the degree of discoloration is twice that shown, only half of the germ area needs to be discolored.

Note: Seed coats that occasionally remain attached to the germ area after bleaching must be carefully removed. Scraping too deeply can destroy the evidence of damage and cause non-uniformity of interpretation.



GERM DAMAGE (SCRAPED)

Portion for Analysis: Approximately 15 grams

Kernels and pieces of wheat which have discolored germs that are as dark or darker than shown shall be damage. Scrape the germ carefully to avoid scraping too deeply and destroying the evidence of damage.

Discolored germs that do not meet the minimum coverage requirement may be considered damage provided the degree of discoloration is greater than shown and the overall “prorated” appearance meets the minimum coverage and intensity level depicted.

For example, when the degree of discoloration is twice that shown, only half of the germ area needs to be discolored.

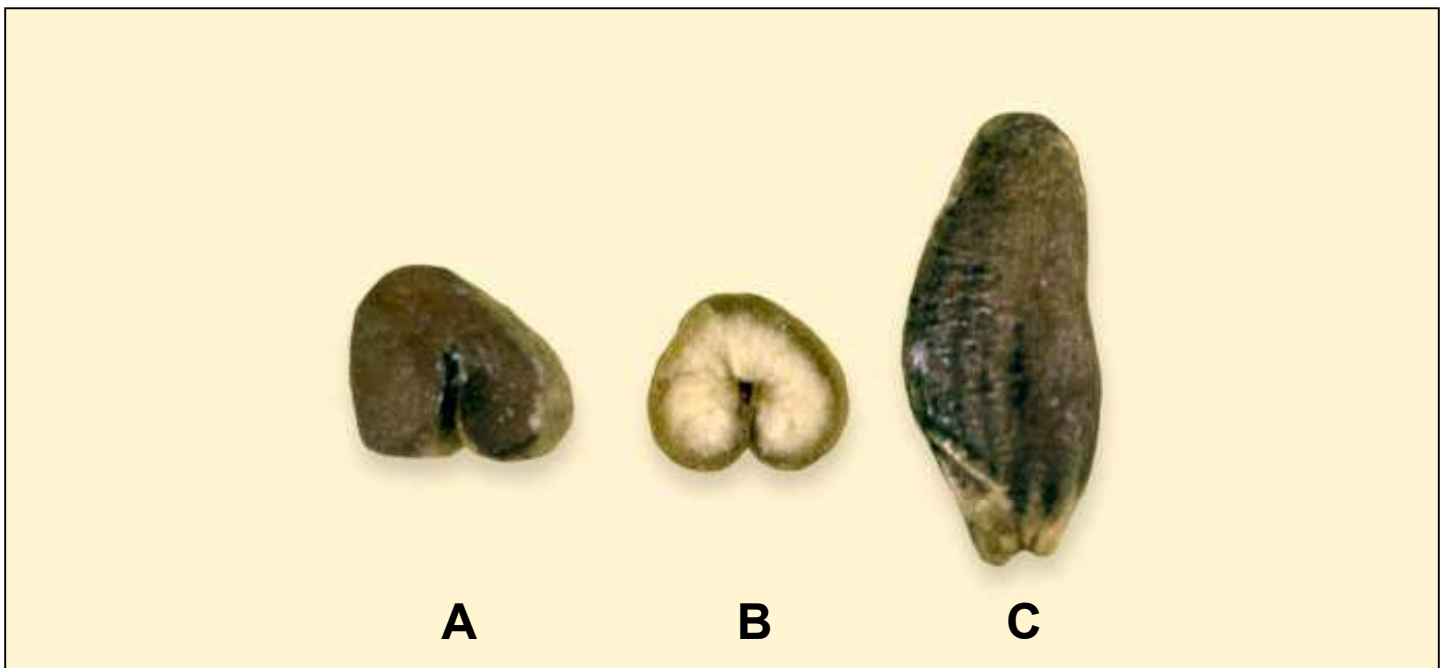


GREEN DAMAGE

Portion for Analysis: Approximately 15 grams

Kernels which are green (immature) in color. The green color must meet the minimum intensity shown on BOTH sides of the kernel. Also, there should be no yellow cast showing through the green.

NOTE: Do not confuse green damaged kernels with candied kernels (VRI W-3.1).



HEAT DAMAGE (DURUM)

Portion for Analysis: Approximately 50 grams

Kernels and pieces of kernels of wheat that are materially discolored to the extent shown. Cross-sectioning of whole kernels may be necessary to confirm that the face of BOTH halves are as dark as shown in Kernel A or B.

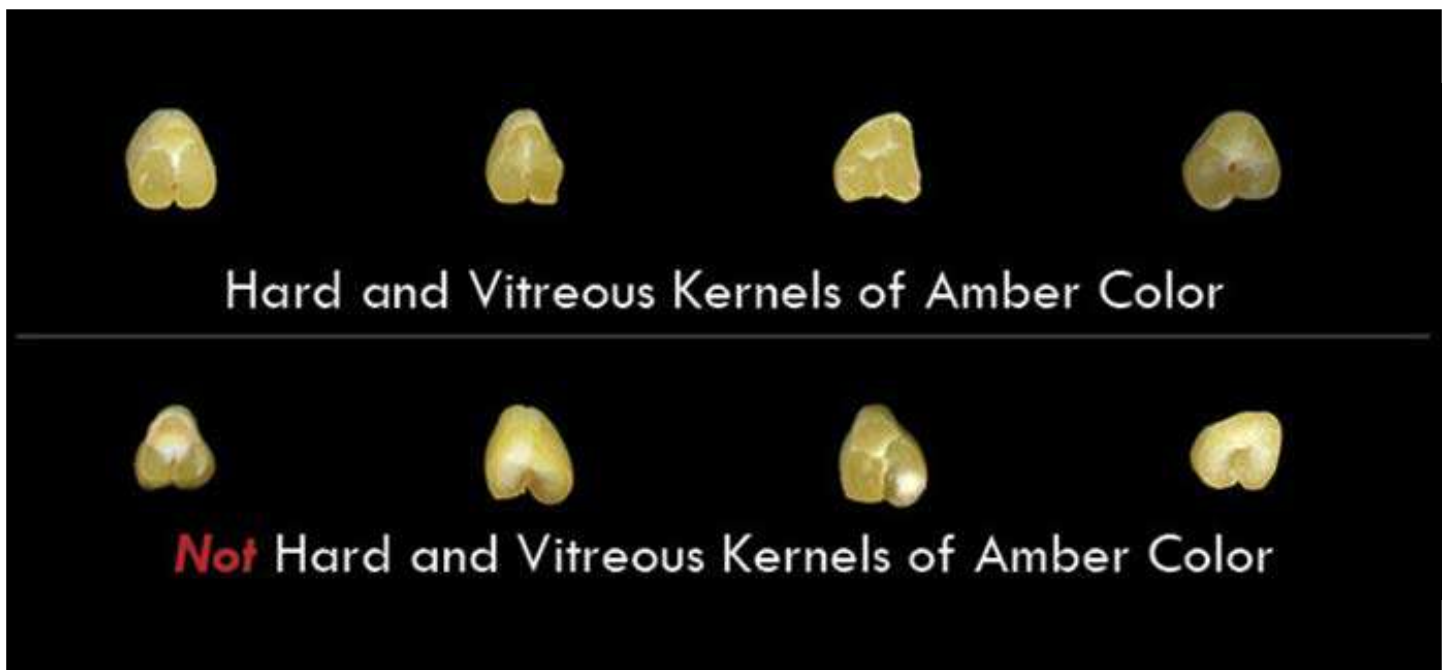
Illustration shows from left to right:

Kernel A: The minimum discoloration for cross-sectioned vitreous kernels.

Kernel B: The minimum discoloration (creamy) for cross-sectioned non-vitreous kernels.

Kernel C: A suspect kernel that requires cross-sectioning.

NOTE: A kernel with a combination of vitreous and creamy discoloration meeting the VRI shall be heat damage.

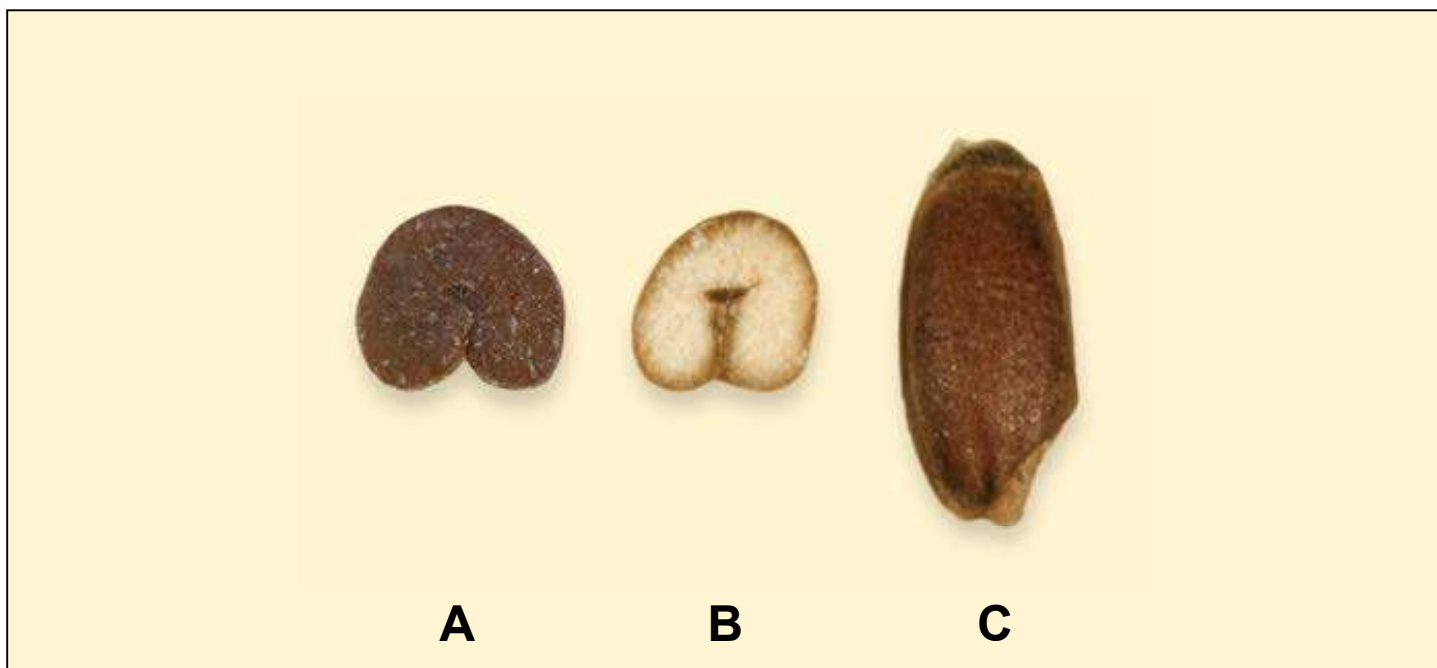


HVAC

Portion for Analysis: Approximately 15 grams

Observe the following guidelines when determining hard and vitreous kernels of amber color (HVAC) in Durum Wheat:

- (1) Consider Durum kernels which are bleached but which are hard and vitreous as HVAC.
- (2) Consider Durum kernels which have cracks or checks that cause a cloudy or shadowy spot on the kernel but which are otherwise hard and vitreous as HVAC.
- (3) Kernels with mottled or chalky spots, regardless of size, are not considered HVAC.
- (4) Distinctly green immature kernels, kernels affected by scab, sprouted kernels, foreign material, and all other classes of wheat are not considered HVAC.



HEAT DAMAGE (OTHER THAN DURUM)

Portion for Analysis: Approximately 50 grams

Kernels and pieces of kernels of wheat that are materially discolored to the extent shown. Cross-sectioning of whole kernels may be necessary to confirm that the face of BOTH halves are as dark as shown in Kernel A or B.

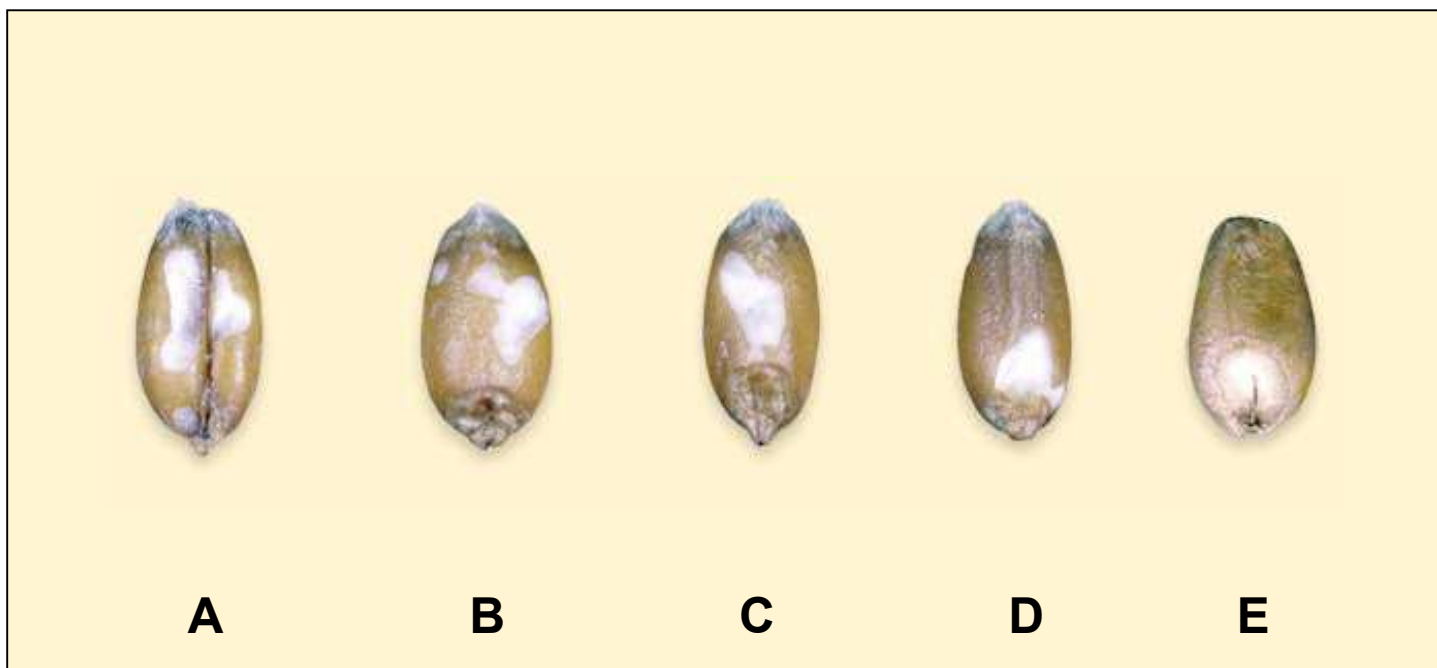
Illustration shows from left to right:

Kernel 1: The minimum discoloration for cross-sectioned vitreous kernels.

Kernel 2: The minimum discoloration (creamy) for cross-sectioned non-vitreous kernels.

Kernel 3: A suspect kernel that requires cross-sectioning.

NOTE: A kernel with a combination of vitreous and creamy discoloration meeting the VRI shall be heat damage.



INSECT CHEWED WHEAT (BUT NOT DAMAGED)

Portion for Analysis: Approximately 15 grams

Illustration shows from left to right:

Kernels A-D: Kernels which are slightly chewed by insects but are otherwise sound.

Kernel E: Kernel in which the germ has been chewed are sound unless otherwise damaged. Notice the nice even edge around the germ area and the visible crease.

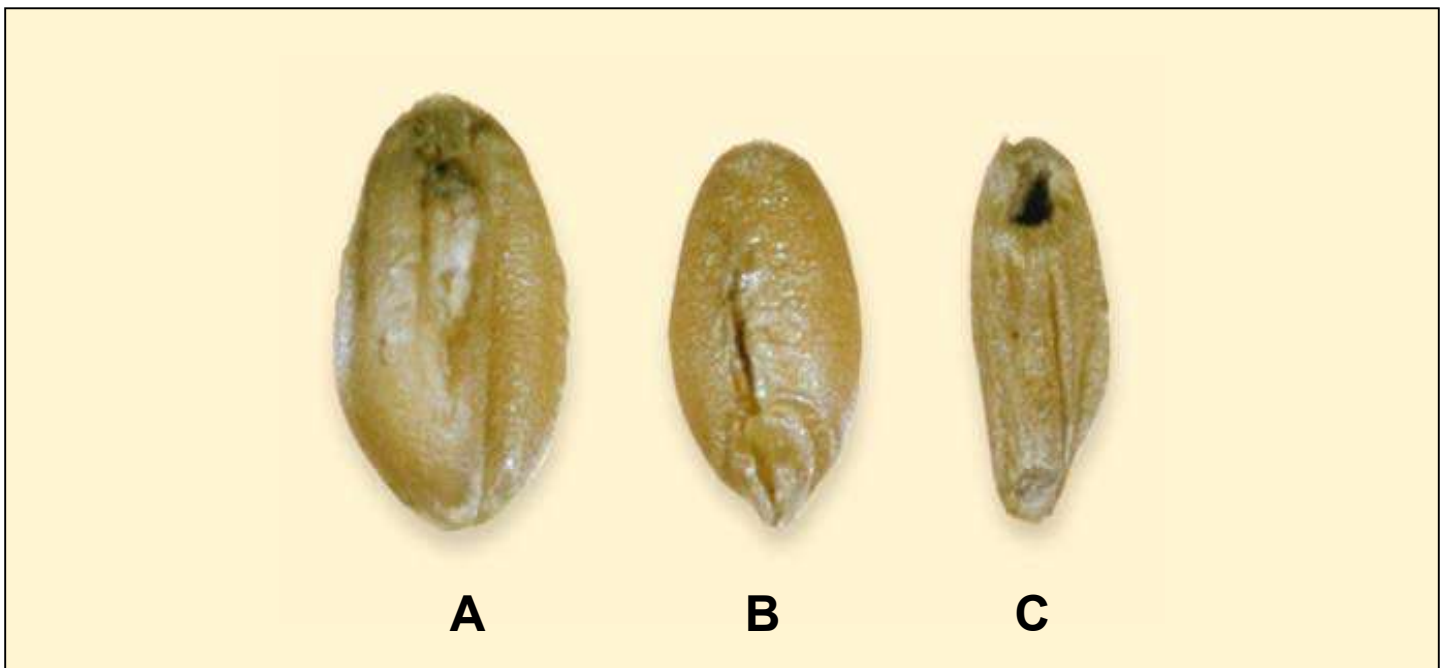


MOLD DAMAGE

Portion for Analysis: Approximately 15 grams

Kernels containing any amount of mold in the germ or an applicable amount in the crease (illustration shows minimum requirement) shall be damage. Scrape the germ carefully to avoid scraping too deep and destroying the evidence of damage.

NOTE: Mold occurs in many colors.



OTHER DAMAGE (MOLD)

Portion for Analysis: Approximately 15 grams

Kernels which are broken, cracked, or insect chewed and contain distinct mold on the exposed endosperm, regardless of size, are damaged.

Illustration shows from left to right:

Kernel A: Broken kernel containing mold.

Kernel B: Split bran coat containing mold.

Kernel C: Insect chewed kernel containing mold.

NOTE: Mold occurs in many colors.

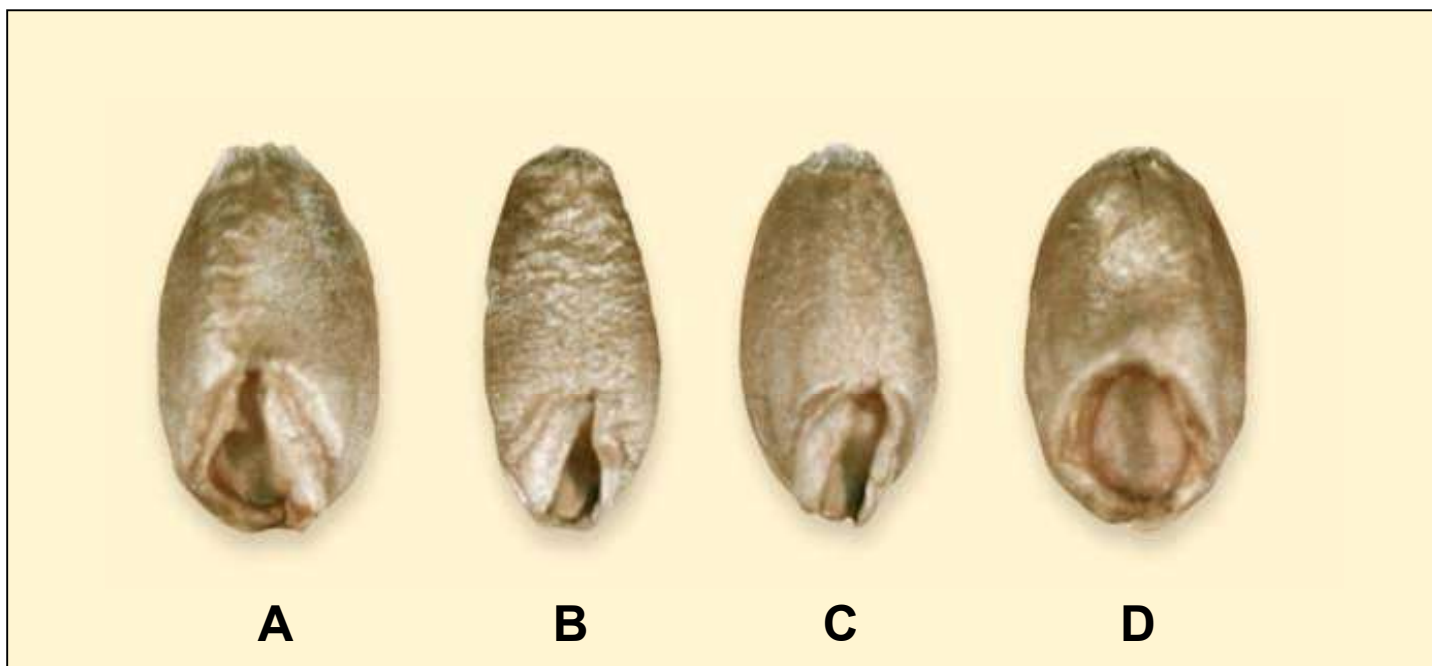


SCAB DAMAGE

Portion for Analysis: Approximately 15 grams

Kernels and pieces of wheat which have a dull, lifeless, chalky appearance. To function as scab damage, the entire surface area must meet the minimum appearance criteria shown. Kernels meeting this criteria sometimes contain a pinkish mold.

NOTE: Kernels which do not meet these requirements should be examined for the presence of mold (refer to VRI W-4.1, "MOLD DAMAGE").



SPROUT DAMAGE

Portion for Analysis: Approximately 15 grams

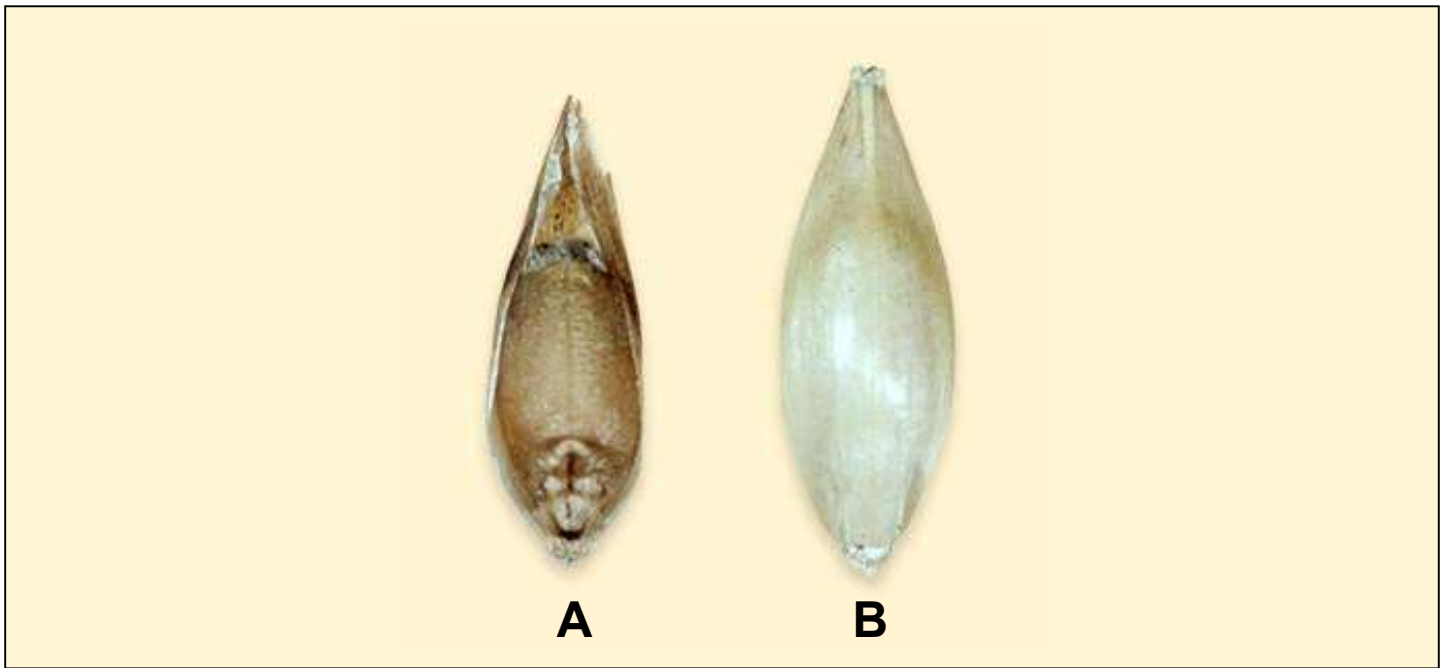
Kernels in which the germ cover has broken open due to germination. The sprout may be intact and visible or, due to handling, may have broken off. The noticeable movement/growth of the “sprout” within the germ area indicates that sprouting has occurred. The “sprout” may move towards the top or bottom of the germ or lift upward leaving space between the sprout and germ cavity. It is not necessary for the “sprout” to extend beyond the germ area to be considered sprout damage. Illustration shows from left to right:

Kernel A: The sprout is broken off leaving part of the germ cover over the socket area.

Kernel B: The germ cover is broken open with a sprout showing at the bottom.

Kernel C: The germ cover is broken open with a sprout showing at the top.

Kernel D: The sprout is broken off leaving no germ cover over the socket area. Sprout sockets typically resembles a “horse collar”.



THRESHED & UNTHRESHED KERNELS

Portion for Analysis: Material passing over the riddle

When performing a dockage determination in wheat, threshed kernels that pass over the riddle are not considered dockage. Unthreshed kernels are considered dockage. Kernels with one or less glumes attached shall be considered as threshed kernels. Kernels with more than one glume attached shall be considered as unthreshed kernels. Illustration shows from left to right:

Kernel A: This kernel illustrates a threshed kernel with one glume attached.

Kernel B: This kernel illustrates an unthreshed kernel with more than one glume attached.

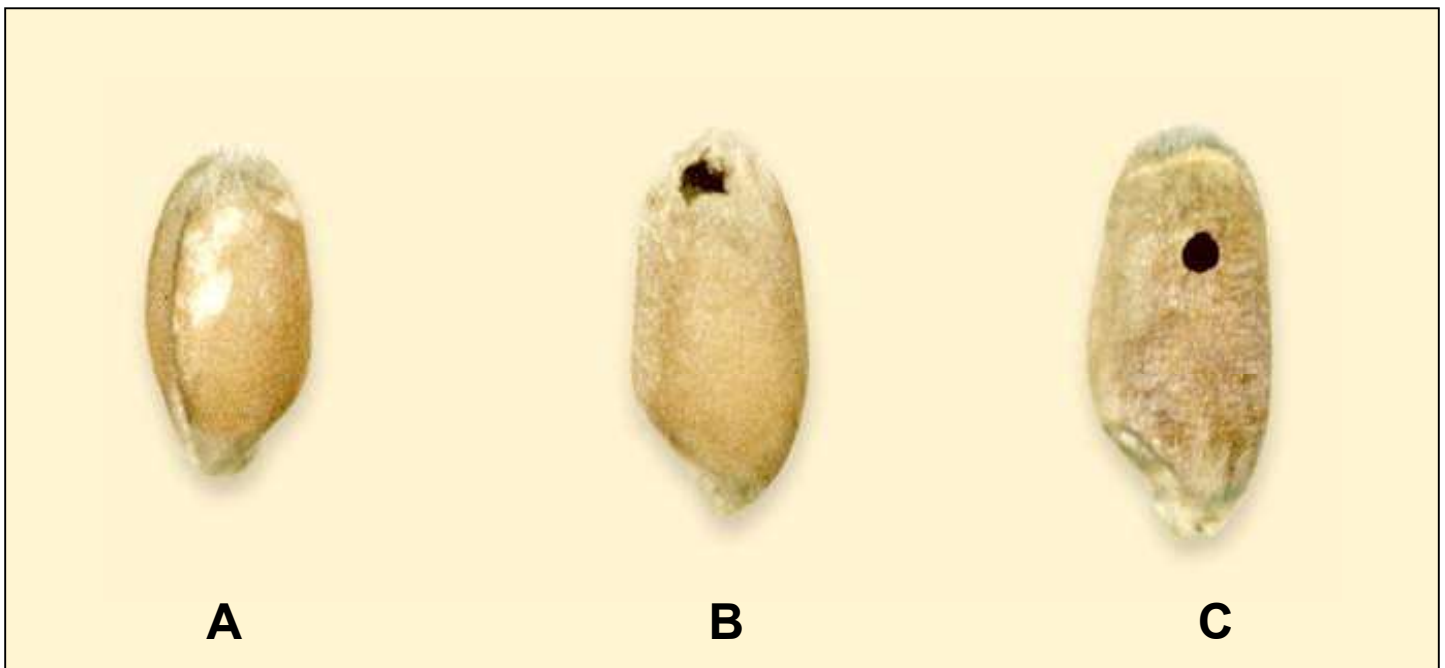


FOREIGN SUBSTANCE (PINK WHEAT)

Portion for Analysis: Sample as a whole

Consider wheat kernels with any discoloration caused by treatment with a fungicide or similar substance as unknown foreign substance. This print illustrates one type of treatment and does not show the amount of coverage. Kernels that contain seed treatment may or may not illuminate under a black light.

NOTE: Some molds will glow under a black light and should not be considered treated seed.



WEEVIL OR INSECT-BORED

Portion for Analysis: Approximately 15 grams

Kernels and pieces of wheat kernels and other grains which have been bored or tunneled by insects are considered damage.

Illustration shows from left to right:

Kernel A: Kernel which has been tunneled.

Kernels B & C: Kernels which have been bored.

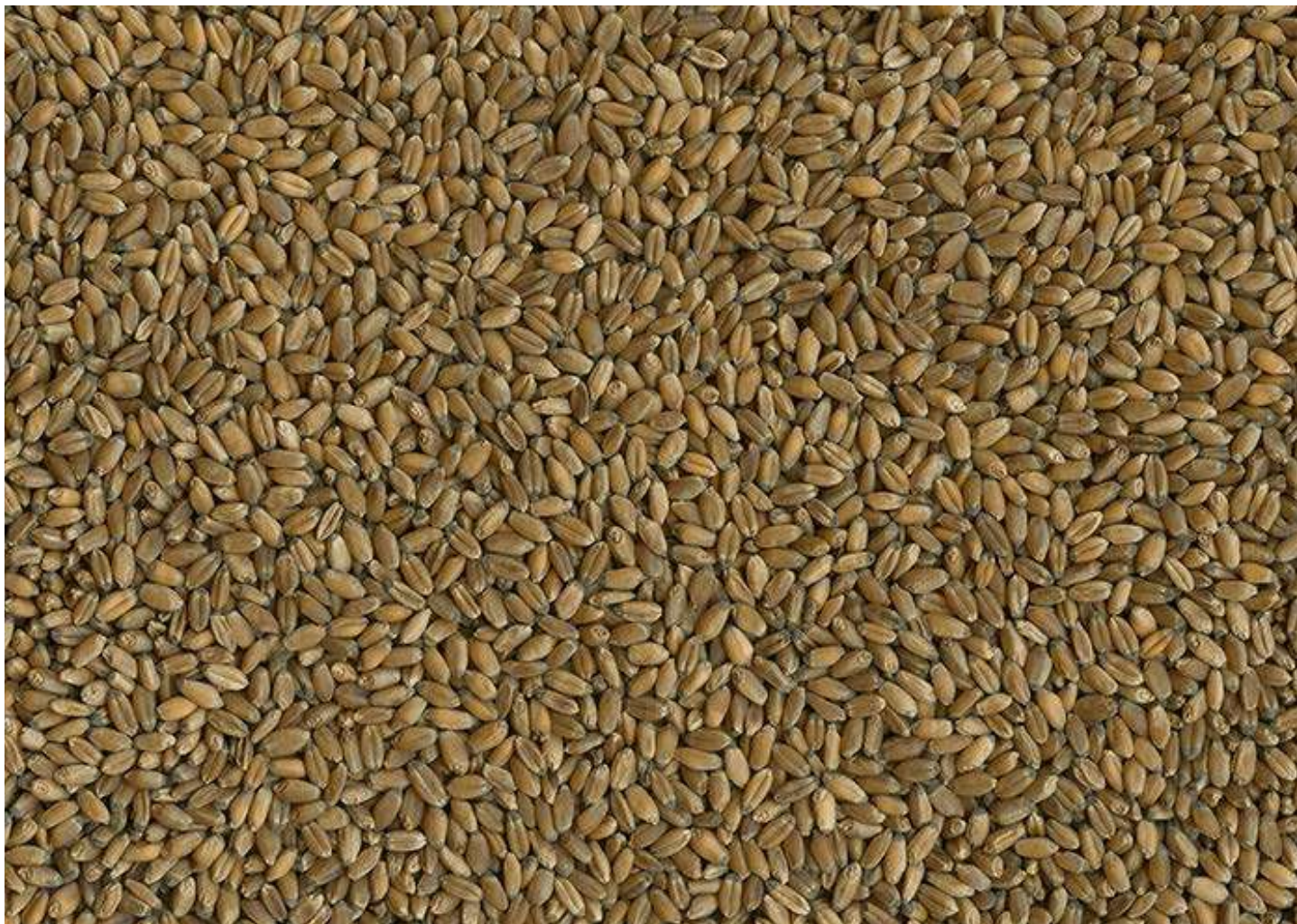
NOTE: Pin holes in the germ area **MUST** be examined further to determine if penetration extends into the endosperm.



HARD WHITE WHEAT COLOR

Portion for Analysis: sample as a whole

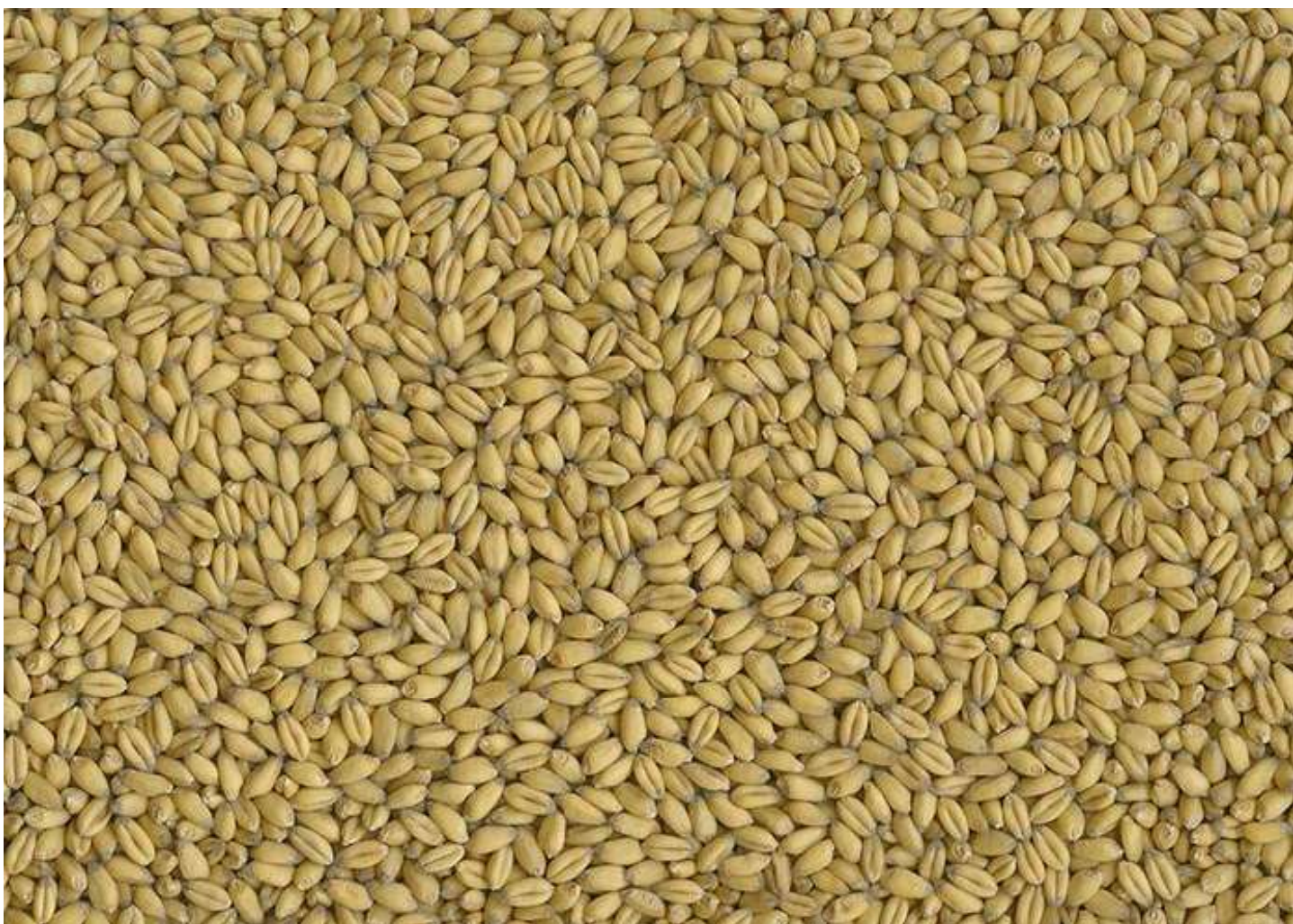
In the U.S., the bran or seed coat color of Hard White wheat (HDWH) varies in color. While this wheat class is widely recognized for its superior milling and baking qualities, to achieve desired milling and baking performance, some domestic and international customers prefer HDWH with a light seed coat color. To provide a basis for communicating color preference to perspective suppliers, customers may request the use of the above visual color standard to distinguish between light and dark colored HDWH. When requested, inspectors will visually examine the market sample, comparing its overall color to that depicted, and will certify in the remarks section of the certificate whether the color meets (as light or lighter) or exceeds (darker) the declared standard.



TAGGED ENDS (SMUT) RED

Portion for Analysis: sample as a whole

Wheat containing tagged ends (spores of smut in excess of a quantity equal to 30 smut balls shall be graded smutty. Graded lots of wheat meeting the criteria for smutty are to be qualified on the pan ticket and certificate with the special grade designation "Smutty".



TAGGED ENDS (SMUT) WHITE

Portion for Analysis: sample as a whole

Wheat containing tagged ends (spores of smut in excess of a quantity equal to 30 smut balls shall be graded smutty. Graded lots of wheat meeting the criteria for smutty are to be qualified on the pan ticket and certificate with the special grade designation "Smutty".