





Durum Wheat Kernel Discolorations

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Various fungal and bacterial organisms can affect quality and color of spring wheat and durum kernels. Kernel discolorations are particularly noticeable in durum wheat, although similar discolorations also are caused by the same disease organisms in spring wheats. The disease organisms frequently affect kernel quality during excessively wet weather during flowering or near harvest. The symptoms that these organisms cause on kernels can be distinguished upon careful examination. Differentiating among the causes of kernel discolorations is important, because some organisms affect market grade and quality or seed germinability more than others. Symptoms of seed quality problems caused by disease organisms include:

	Kernel Plumpness	Kernel Color	Kernel Vitreousness	Possible Causes	Possible Vomitoxin	Possible Consequences
 enlargement (25KB)	Shriveled	Normal	Vitreous	Various: severe leaf rust, stem rust, tan spot, Septoria leaf and/or glume blotch, root rot, (drought)	No	Reduced yields, lower test weight, possible reduced grade
 enlargement (23KB)	Shriveled	Chalky white, chalky pink or rose colored	Non-Vitreous	Scab* or Fusarium head blight (FHB) *sometimes called Gibberella or 'Gib'	Yes	Reduced yields, lower test weight, reduced grade, market discount for vomitoxin, reduced germination, seedling blight
 enlargement (18KB)	Normal	Uniform pink	Vitreous	Bacterial pink seed: caused by Erwinia rhapontici bacterium	No	Confused with scabby grain, lower market grade
 enlargement (23KB)	Plump to shriveled	Embryo tip black to brown or discolored into crease	Vitreous	Black point fungi: including Alternaria, Helminthosporium, tan spot fungus	No	Reduced test weight, reduced market grade, reduced germination, seedling blight



[enlargement](#)
(28KB)

Plump to slightly shriveled

Brown to black tip and reddish color non-uniformly "smudged" across seed

Vitreous

Red smudge:
The tan spot fungus causes seed infection called **red smudge***

No

Reduced yields, lower test weight, may be confused with scabby grain, reduced germination

*sometimes mistaken for scab (Gibberella)

Kernels that are scabby and non-vitreous will result in the lowest quality and poorest market grade and may contain vomitoxin. Scabby kernels also will have low germination percentages. Kernels with severe black point or red smudge may have discolored grain flour or semolina color, and may have poor germinability if used for seed. Pink seed due to a bacterial infection generally are not severely damaged by the infection, but the pink color is often confused with scab at the elevator and the pink color could be carried into the semolina. Shriveled seed with normal coloration and vitreousness may be docked for poor test weight at the elevator.



Red smudge (left) is sometimes mistaken for scab (right).

Photo by Jim Miller, USDA

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