### Agricultural Marketing Service

**Creating Opportunities for American Farmers and Businesses** 

# HVAC in Durum Wheat

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# Hard and Vitreous Kernels of Amber Color (HVAC)

- HVAC (Kernels that are 100% Hard and Vitreous of Amber Color) - Vitreous is the characteristic which gives the wheat kernels a hard, glossy appearance
- NON-HVAC Soft durum kernels that lack the hard vitreous characteristic, or semi-hard kernels that contain soft chalky spots
- How HVAC is Determined Visual inspection on a 15-gram portion

#### **SUBCLASS**

Durum wheat is divided into three sub-classes based on the percentage of HVAC in the representative lot

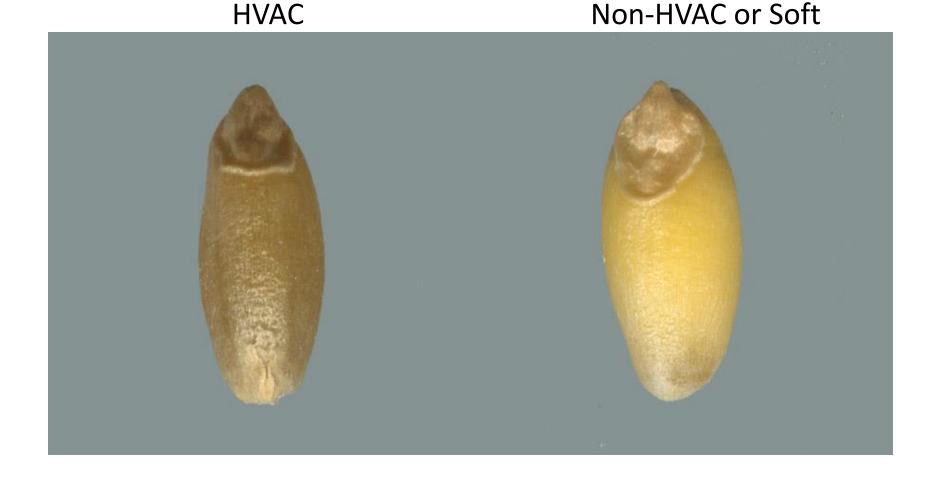
<u>Hard Amber Durum Wheat</u> Durum wheat with 75 percent or more of hard and vitreous kernels of amber color

<u>Amber Durum Wheat</u> Durum wheat with 60 percent or more, but less than 75 percent of hard and vitreous kernels of amber color

<u>Durum Wheat</u> Durum wheat with less than 60 percent of hard and vitreous kernels of amber color

Even though durum is certified by subclass, contracts may dictate specific limits

#### Vitreous and Non-Vitreous Kernels



### Non-HVAC Kernels with Soft Spots



### Non-Difficult HVAC Samples



High HVAC %

#### Challenging HVAC sample



- Weather-affected kernels
- Require more time to locate and cross-section difficult kernels
- Samples of this appearance are more subjective and can result in more inconsistencies

### What is FGIS doing to Improve HVAC Results?

- Monitoring programs in place for inspectors and Quality Assurance Specialists (QAS)
- Referee samples used to assess inspector and QAS ability
- Conduct annual grain grading seminars for QASs
- Provide on-site training for inspectors and elevator personnel
- Conduct research on alternative methods for HVAC determination

## QAS Alignment to the Board of Appeals and Review (BAR) for 2018

Overall QAS HVAC alignment 96%

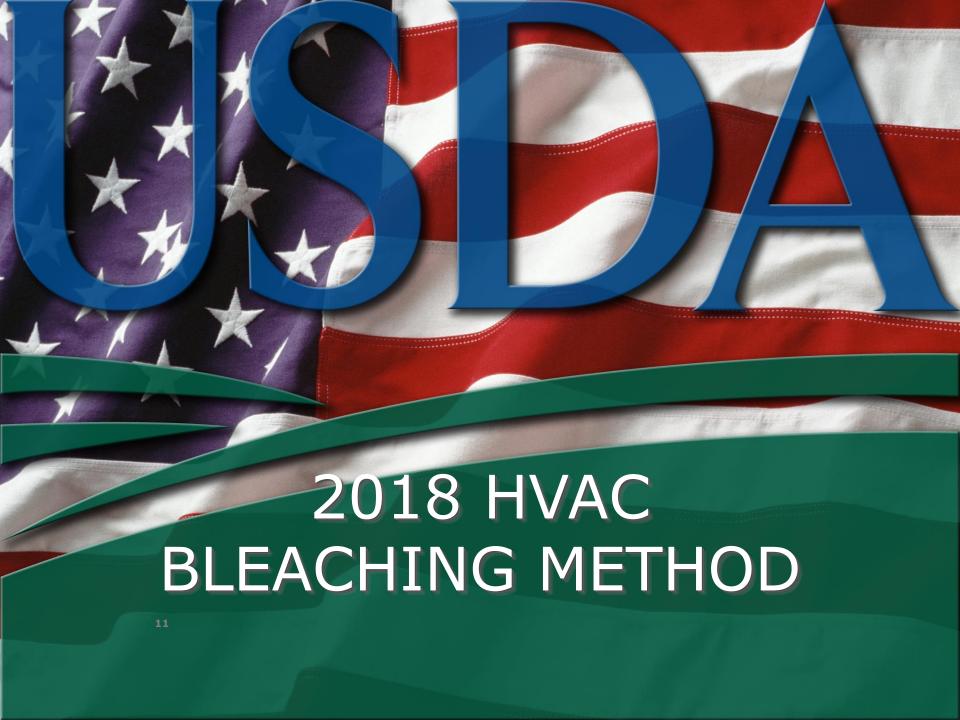
In 2018 the BAR issued three Referees

- 1. 84.7% Accuracy
- 2. 96.4% Accuracy
- 3. 96.8% Accuracy

The BAR's monitoring program is used to align QASs to the BAR who in turn align their agency inspectors

# Domestic Inspection Operations Office (DIOO)

- Four on site visits with agencies and issued referees
- All four agencies independently averaged over 95% accurate
- Overall average of 96.7% accuracy
- 859 samples were evaluated by DIOO for HVAC in 2018
  - 93.6% Accuracy



#### Potential Benefits of Bleaching

- Produces a bright vibrant kernel
- Makes difficult weather-affected kernels easier to separate
- Potentially minimizes inspector variation and increases accuracy and consistency
- FGIS to explore using the bleach method with imaging technology

#### **Natural vs Bleached**

**Natural** 



Bleached w/ Potassium Hydroxide (KOH)



#### **Questions?**

