

# Malting Barley Quality Analysis

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# Understanding analysis factors

- \* Barley quality analysis
  - \* Testing for malt potential
  - \* Variety and management factors impact
- \* Malt quality analysis
  - \* Testing for ability to produce a quality beverage
  - \* Variety, management and malting factors impact

# Quality Basics

- \* Lot of pure variety
- \* Free of foreign matter
- \* Free of disease
- \* Acceptable protein level
- \* High germination potential
- \* Plump and uniform



*Good quality malt only comes  
from good quality barley.*

# Sampling

- \* Obtain a representative sample
- \* Consider a composite sample

# Damaged kernels



Heated

# Damaged kernels



Peeled

# Damaged kernels



Smut



# Damaged kernels



*Fusarium*

# Damaged kernels



Frost

# Damaged kernels



Sprouted

# Moisture

- \* Target < 13.5% for good storage
- \* High moisture promotes microbial growth and germination loss
- \* When drying grain, use caution with heat



# Protein

- \* Preferred levels determined by type and use
- \* Many factors impact
- \* High protein limits extract potential
- \* Typical method requires near infrared technology



# Germination

- \* **Germinative energy** – Will the barley germinate now?
- \* **Germinative capacity** – Is it dead or just dormant?
- \* **Water sensitivity** – Is special care required for steeping?
- \* **Sprouting/pre-germination** – What is the long-term storability of the barley?

# Germination energy

- \* 100 kernels germinated under controlled conditions
- \* Kernels inspected for visible signs of germination
- \* Confidence levels increase with replicated testing



# Germinative capacity

- \* 100 kernels in 100 ml 0.75% hydrogen peroxide
- \* 48 hour test at room temperature
- \* Drain, remove, and count germinated kernels



# Sprout damage

- \* Excessive moisture prior to harvest
- \* May be detectable at severe levels
- \* Use Falling Number or Rapid Visco Analysis (RVA) to determine
- \* Heavy impacts to storability

# Uniformity

- \* Various sized screens are used
- \* Plump barley is desirable > 85% over 6/64" screen



# Deoxynivalenol (DON)

- \* Mycotoxin produced by *Fusarium*
- \* Can survive the brewing process – gushing
- \* Most maltsters reject > 0.5 ppm
- \* Various technologies exist
- \* Rapid tests are available



# Take home messages

- \* In-house grain analysis very expensive, equipment > \$100,000
- \* Quality peace of mind = priceless
- \* Limited fee for service labs

# Thank you!

- \* Many thanks to:
  - \* Aaron MacLeod – Canadian Grain Commission
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