IREDELL BREWERS UNITED
EDUCATION COMMITTEE
PRESENTS:

BREWING WITH WHEAT
Topics

- Comparison of Wheat and Barley
- Different Wheat Malts
- Wheat in the Brewhouse
Comparison Wheat and Barley

The process of creating malted wheat is the same as malted barley.

Like barley wheat is harvested, cleaned and then filtered through screens to remove the chaff to prepare it for the malting process.
Comparison Wheat and Barley

Both have most of the same key components

BRAN
The fiber-rich outer layer that protects the seed and contains B vitamins and trace minerals.

ENDOSPERM
The middle layer that contains carbohydrates and proteins.

GERM
The small nutrients rich core that contains phytonutrients, vitamin E, B vitamins and healthy fats.
Comparison Wheat and Barley

- Wheat
  - has no husk like barley
  - has a more rounded kernel
  - is higher in protein and starch
  - less cellulose and lipids
    - lipids: oils, waxes, steroids, vitamins, etc
    - cellulose: primary component of plant cell walls

Wheat

Barley
Comparison Wheat and Barley

Like barley wheat’s kernel is soaked in cool in water where tiny sprouts fed by starches will begin to grow or germinate.
Comparison Wheat and Barley

1. **Germination is Halted:** The water is then drained from the wheat grain to halt the germination process.

3. **Starch is Locked In:** Since the plant will no longer continue to grow the grain's starch reserve is preserved and available to the brewer.
The grain is then placed in a large kiln (very large oven) to be dried.
## Different Wheat Malts

<table>
<thead>
<tr>
<th></th>
<th>Lovibond</th>
<th>Flavor</th>
<th>Unique Characteristics/Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Red</strong></td>
<td>2.3</td>
<td>Creamy, sweet, malty, wheat flour</td>
<td>Use as part or all of base malt in wheat beers. Runs efficiently through the brewhouse with slightly higher protein than White Wheat Malt. Often used in Hefeweizen and other traditional wheat styles due to a distinctive, characteristic wheat flour flavor. Improves head and foam retention in any beer style.</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>2.5</td>
<td>Sweet, malty, wheat, mild bread dough</td>
<td>Use as part or all of base malt in wheat beers. Improves head and foam retention in any beer style.</td>
</tr>
</tbody>
</table>
## Different Wheat Malts

<table>
<thead>
<tr>
<th>Product</th>
<th>Use</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pale Wheat Malt</strong></td>
<td>• Wheat Beer</td>
<td>- typical top-fermented aroma</td>
</tr>
<tr>
<td></td>
<td>• “Hefe-Weizen”</td>
<td>- a slimmer, more sprightly beer</td>
</tr>
<tr>
<td></td>
<td>• “Kölsch”</td>
<td>- produces superb wheat beers with aromas appropriate for styles</td>
</tr>
<tr>
<td></td>
<td>• “Altbier”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• top fermented “Schankbiere”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Light Beer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• alcohol-reduced Beer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• non-alcoholic Beer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ales</td>
<td></td>
</tr>
<tr>
<td><strong>Dark Wheat Malt</strong></td>
<td>• Dark Ale</td>
<td>- promoted fullness</td>
</tr>
<tr>
<td></td>
<td>• “Hefe-Weizen”</td>
<td>- emphasized typical wheat malt aroma</td>
</tr>
<tr>
<td></td>
<td>• Dunkel-Weizen</td>
<td>- enhanced color</td>
</tr>
<tr>
<td><strong>CARAWHEAT® Caramel Wheat Malt</strong></td>
<td>• top-fermented beer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Alt Beer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dark Wheat Beer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Stout</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Porter</td>
<td></td>
</tr>
<tr>
<td><strong>Chocolate Wheat Malt (roasted malt)</strong></td>
<td>• top-fermented beer</td>
<td>- intensified aroma of dark top-fermented beers as well as improved color</td>
</tr>
<tr>
<td></td>
<td>• Stout</td>
<td>- mild roast aroma</td>
</tr>
</tbody>
</table>
## Different Wheat Malts

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Use</th>
</tr>
</thead>
</table>
| Hard | • Higher protein content than soft wheat.  
     • Hard kernel and coarser flour          | Used in bread making       |
| Soft | Finer particulate size and makes a more powdery flour | Used for cakes and cookies |
Different Wheat Malts

**Flaked**
- Flaked wheat is more expensive but easier to handle in the brewhouse.
- It does not need to be crushed.

**Wheat Extract**
- Wheat processed into a syrup concentrate.

**Raw**
- Used in Germans beers to make beers that are less sweet, full bodied and crisp. Use soft wheat. Raw hard wheat is tough to mill.

**Flour**
- Used in Europe to improve head retention.
- Mix in mash at no more than 10% of grist.
- Use cake flour. It is made with soft wheat which has less protein.
Wheat in the Brewhouse

American wheat beers are 70% wheat & 30% barley

Bavarian wheat beers are 50% wheat & 50% barley

You can make a wheat beer with 100% of the mash grist as wheat.
Wheat in the Brewhouse

CONS:
• Hazier Beer, but desirable in some styles.
• More gluten
• Longer lautering time

The higher the % of wheat the longer the lautering time:

• wheat doesn’t have husks which act as a natural filter
• wetting barley before crushing can reduce pulverization making up for wheat’s lack of husk. Adding rice hulls works too.
• continuously cutting the mash with rakes is how big breweries prevent stuck mashes when brewing with wheat

• wheat has more protein which can gum up and clog a mash tun
• a protein rest at 127 degrees will break down the proteins
Wheat in the Brewhouse

**PROS:**
- Higher protein level enhances head retention
- Increased beer’s mouthfeel
- Takes less time to steep because of no husk
  - they soak up water quicker.
- Shorter modification time than barley
References