Malting Barley Method

Scope
- Predict barley malting quality.

Rapid Visco Analyser
The Rapid Visco Analyser (RVA) is a cooking stirring viscometer with ramped temperature and variable shear profiles optimized for testing viscous properties. The instrument includes international standard methods as well as full flexibility for customer tailor-made profiles. Combining speed, precision, flexibility and automation, the RVA is a unique tool for product development, quality and process control and quality assurance.

Description
This application describes the use of an RVA to rapidly estimate of the malting potential of a barley lot. For a given cultivar, barleys of known malting potential are tested and the results used to derive linear correlations between viscogram data (time to peak) and malting quality measurements. Barleys of the same cultivar but of unknown potential are then tested under the same conditions, and the measurements from the viscogram compared to those of the known samples to indicate the malting potential.

A close relationship has been demonstrated between the time to peak of the barley viscogram and the Coarse Concentrated Hot Water Extract (CCHWE) of the subsequent malt. The correlations are generally better than those with protein content.

![Graph showing the relationship between peak time and malt extract. Source: Stuart et al. (1997).](image)
Method
Rapid Single Temperature Test or Sensitive Ramped Temperature Test.

Sample Preparation:
4.00 g ground grain at 14% moisture and 24.0 ml distilled water.

Profile

<table>
<thead>
<tr>
<th>1. Rapid Single Temperature Test</th>
<th>2. Sensitive Ramped Temperature Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td><strong>Type</strong></td>
</tr>
<tr>
<td>00:00:00</td>
<td>Temp</td>
</tr>
<tr>
<td>00:00:00</td>
<td>Speed</td>
</tr>
<tr>
<td>00:00:10</td>
<td>Speed</td>
</tr>
<tr>
<td>00:03:00</td>
<td>Temp</td>
</tr>
<tr>
<td>00:03:06</td>
<td>End</td>
</tr>
</tbody>
</table>

Idle Temperature: 90 ± 1°C
Time Between Readings: 4 s

Measure

PTi: Time to peak (min)

The PTi is the RVA Barley Potential Index. Peak viscosity, breakdown, peak area, holding strength and final viscosity may also be recorded. Indicate which profile was used.

The malting potential calibration for the variety being tested must first be established. To do this, a number of barleys varying in known malting potential for the selected variety are tested as above. From the viscosograms, the peak viscosity, time to peak, breakdown, peak area, holding strength and final viscosity are measured. These parameters are fitted as dependent variables against conventional measures of malting quality using standard regression techniques. The log transformation may be used as appropriate. The most highly correlated visogram parameters may subsequently be measured in barleys of unknown potential for the same variety, using the regression equation to predict the potential malting quality of the sample. Good correlations have been established using time to peak.