Building Research Partnerships with the Food Industry: A Case Study

Dr. Amalia Scannell
Mobile: 00353 (0) 86 6085520
Email: amalia.scannell@ucd.ie
Overview

• Sensory Science Research in UCD

• Reaching out to Food Industry (SFNI research)

• Reaching out to UCD (EI research)

• Help us to help you
Sensory Panels

In Sensory Analysis the ‘panel’ is the tool we use to

- to measure the sensory attributes of a product
- to determine whether differences exist between products/ formulations
- to determine whether a product is acceptable or preferred etc.
SENSORY PANELS

Analytical
Trained/selected panel
Objective
Quantitative

Descriptive Tests

Affective
Consumer/user groups
Subjective/Hedonic
Quantitative & Qualitative

Acceptability/preference tests

Discrimination/Difference Tests
Reaching Out To the Food Industry:

Department of Agriculture FIRM Funded project
SFNI: Emerging Techniques in Sensory Science

Building a research partnership with Waterford Blaa Bakers’ Association:
• Recently awarded PGI status
• Not formally characterised
1. Is Blaa Unique?
2. What Makes Blaa unique?
3. What do Consumers think?

1. Trained panel – characterise product
2. Test products – rate attributes
3. Ask the punters – Consumer testing
• Grouping and place samples on a Nappe (white A1 sheet) for each specific Sensory Modalities (appearance, aroma, flavour and texture).

• Panellists also asked to use descriptor words to explain the location of the samples

• 10 samples including Blaa.

• Trained panel of 11 people. Age range 20 to 65.

• Asked to place the samples on the sheet; similar samples placed close together and different samples placed far apart.
The proximity of the samples to each other indicates the level of association with each other.
Findings: Main Sensory Characteristics

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Aroma</th>
<th>Flavour</th>
<th>Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Flour</td>
<td>• Floury</td>
<td>• Burnt</td>
<td>• Easy to Clear</td>
</tr>
<tr>
<td>• Dark Crust</td>
<td>• Fresh Bread</td>
<td>• Toasted</td>
<td>• Chewy</td>
</tr>
<tr>
<td>• Dark Crumb</td>
<td>• Toasted</td>
<td>• Floury</td>
<td>• Crispy Crust</td>
</tr>
</tbody>
</table>
Appearance
Texture

UCD Institute of Food and Health

Crispy Crust
Easy to Clear
Chewy

BLAA A
BLAA B
BLAA C
BLAA D

Crusty White Roll
Warburton’s White Roll
Aerated Roll
Soft White Roll
White Snack Roll

Claggy/Sticks to Mouth
Soft Crumb
Compact
Doughy Bap
Tesco Large White Bap
Scotch Morning Roll
What Makes Blaa Unique? QDA

Generating a Lexicon

Agreeing definitions and Scales

Testing Project Samples
<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Definition</th>
<th>Protocol</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of Flour Dusting</td>
<td>How much flour there is on all surfaces.</td>
<td></td>
<td>43-96</td>
</tr>
<tr>
<td>Darkness of Flour Dusting</td>
<td>How dark the flour dusting is.</td>
<td></td>
<td>13-97</td>
</tr>
<tr>
<td>Amount of Exposed Crumb</td>
<td>How much crumb is visible externally.</td>
<td></td>
<td>26-91</td>
</tr>
<tr>
<td>Amount of Browning</td>
<td>How much browning there is on the surface.</td>
<td></td>
<td>29-99</td>
</tr>
<tr>
<td>Darkness of Browning</td>
<td>How dark the surfaces are.</td>
<td></td>
<td>26-99</td>
</tr>
<tr>
<td>Size</td>
<td>How much surface area the bread occupies.</td>
<td></td>
<td>53-99</td>
</tr>
<tr>
<td>Depth</td>
<td>How thick the roll is from top to bottom.</td>
<td></td>
<td>50-97</td>
</tr>
<tr>
<td>Amount of Cracks</td>
<td>How many cracks are visible on the top surface (Crack = broken surface).</td>
<td>Look down at the plate.</td>
<td>13-92</td>
</tr>
<tr>
<td>Smoothness of Top Crust</td>
<td>How smooth or even the top surface is.</td>
<td></td>
<td>17-93</td>
</tr>
<tr>
<td>Smoothness of Bottom Crust</td>
<td>How smooth or even the bottom crust is.</td>
<td>Pick up, turn over and look at base. Dust off any excess flour.</td>
<td>26-84</td>
</tr>
<tr>
<td>Shape Name</td>
<td>Decide what the shape is.</td>
<td>Check the box question</td>
<td>-</td>
</tr>
<tr>
<td>Uniformity of Shape</td>
<td>How uniform the shape of the sample is.</td>
<td>Look down at the plate.</td>
<td>45-86</td>
</tr>
</tbody>
</table>
Amount of Flour Dusting

![Graph showing the amount of flour dusting for different blaa types.](image)
What do the Consumers think?  Consumer study

• **A:** UK consumers not previously exposed to Blaa

• **B:** Irish consumers (users vs non users). To be done next weekend at the Waterford Harvest Food Festival.

• **115 untrained** volunteer consumers, on the basis of eating white bread rolls at least once a week (UK) and **122** familiar with product.

• The consumers were aged between 18-70 and there was a balanced male-female ratio. Three Waterford Blaa products were used for this test.
Consumers were to rate how much they liked each Blaa overall and also to give the overall liking of a range of selected appearance, aroma, flavour and texture attributes.

Consumers were also asked their opinion about key sensory characteristics of the samples using Just About Right Scale (JAR).

ANOVA was used to determine if consumers differed significantly in their liking for the Blaa products.
Attributes affecting liking: FLOUR

• Appearance – Amount of Flour Dusting

• Texture – Mouth coating with Flour

➤ An increased amount of flour and mouth coating correlated with a decrease in liking.
➤ UK consumers felt that there was too much flour on the products.
UK consumers
Blaa A (P= 0.035):

Waterford Consumers
Blaa A (p<0.0001)
• Reaching out to UCD Institute of Food and Health:
  • Consumer tests for SMEs
  • Product Optimisation
  • Shelf Life Analysis
  • Food Safety
  • Developing new methods
  • Training New Panels
How To Get Involved

• Have you got a food innovation problem you need help to solve?

• Research partners:
  • Enterprise Ireland Innovation Voucher
  • National Funding : Department of Agriculture
  • Safefood
  • Intertrade Ireland
Would you like to get involved as an Industry partner on one of our Food Science Degree modules?

- **3rd yr Product development** (12 wk project  Sept - Dec)
  Contact Prof. Mick O Sullivan

- **3rd yr Professional Work Experience**
  Contact Prof. Jim Lyng

- **Final year Project**  24 week thesis
  Contact Dr. Nigel Brunton

- **Final year Food Sector Entrepreneurship** (12 wk project Sept-Dec)
  Contact Dr. Amalia Scannell

- **Final year Design Thinking for Food Packaging** (12 week project Jan - April)
  Contact Dr. Amalia Scannell