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ALIGNING SENSORY AND ANALYTICAL BEST PRACTICES FOR MONITORING BEER FLAVOUR STABILITY

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Understanding consumer preferences, achieving better drinkability, freshness, longer shelf life and batch-to-batch consistency are essential requirements for all producers. Beer flavour is not static; it is in a constant state of change requiring sensory analysis at each stage. Therefore aligning pre- with post-production best sensory and analytical practices will ensure high quality and stability across the market.

This study describes the sensory and analytical investigation of 12 different brands, represented with 9 different batches analysed at critical control points in the production and subsequently monitored after bottling in period of 6 months. In total 1944 samples have been tasted by a professional, expert panel. The analytical investigation was focused on method which measures the radicals produced during oxidation.

The results will highlight the range and intensity of beer ageing off-flavours in each brand. The findings will then be used to advise the producer about prevention steps needed in earlier stage of production and maximise freshness, drinkability and product stability on the market.

Additionally, comparing tasting results with analytical data for selected off-flavours will bring about a best practice sensory panel training criteria and methods for tasting and profiling of samples.

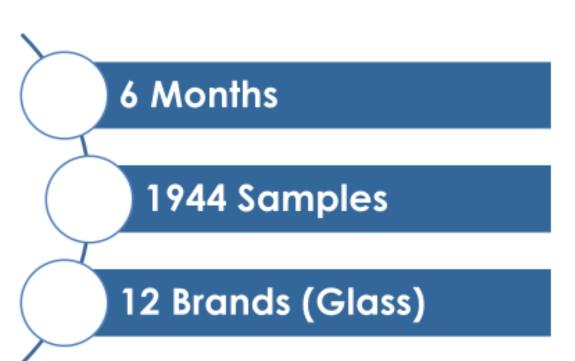
Tasters have been trained and validated on 150 GMP Flavour Standards which are used globally by professional sensory panels within the beverage industry. The panel also compared analytical data available with some of the non-conformances detected in this study.

The project aims are to show real-world, practical examples of how sensory and analytical practices can be used together to monitor beer flavour stability and improve beer ageing in early stages of production and in the end preventing faults and recalls on the market.

Materials and Methods

Six breweries
Nine batches per brand
Samples have been Tasted every 4th week in period of 6 months
Stored at room temperature
12 Beer brands (all belonging to category of light lagers)

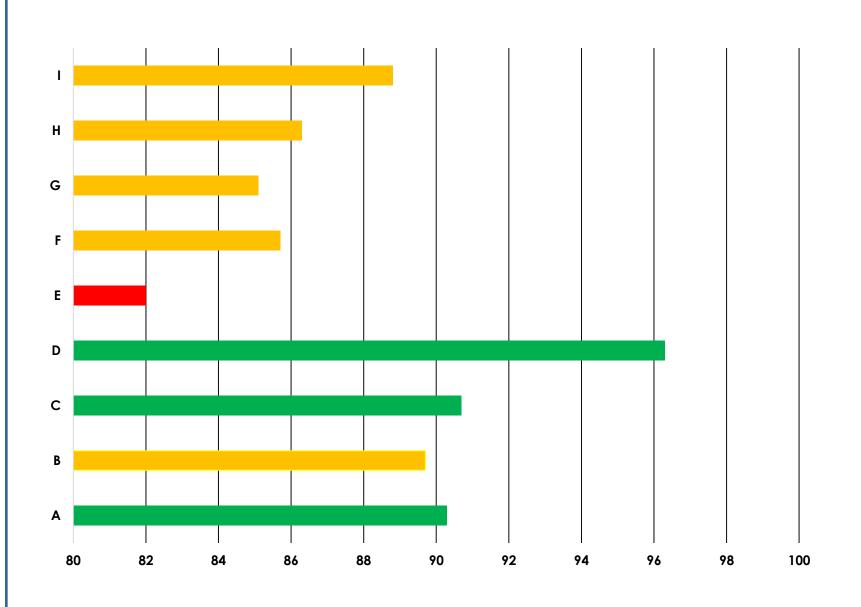
Study Scenario



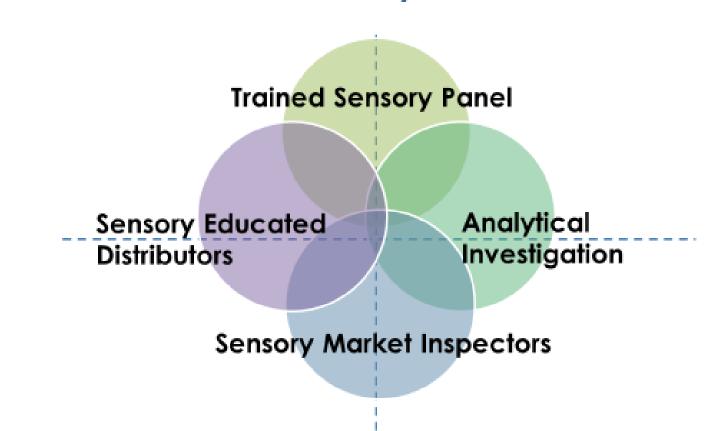
Detailed Sensory & Descriptive Analysis



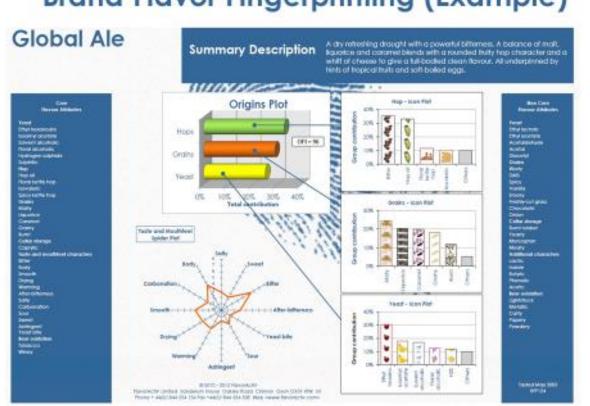
Brand (A-I) consistency in %



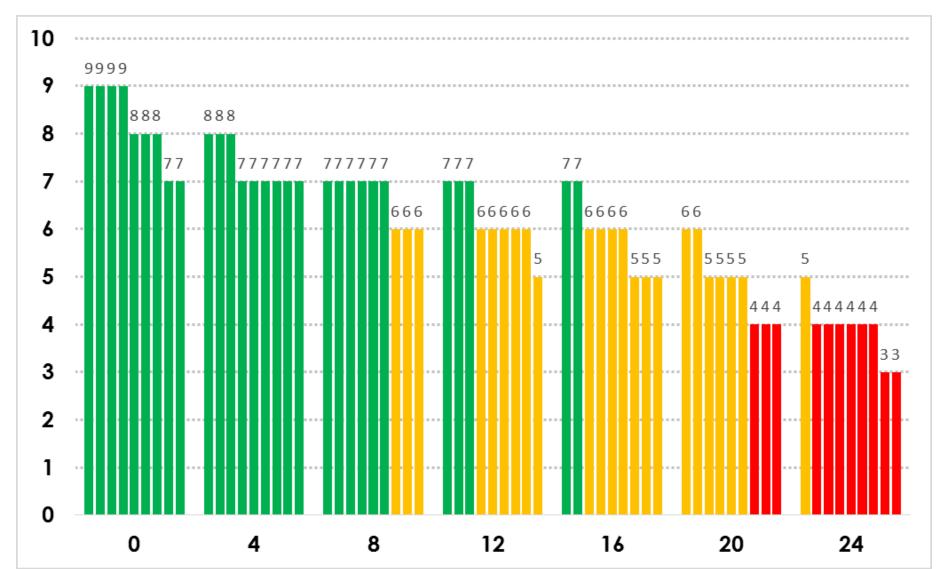
Good Sensory Practice



Brand Flavor Fingerprinting (Example)



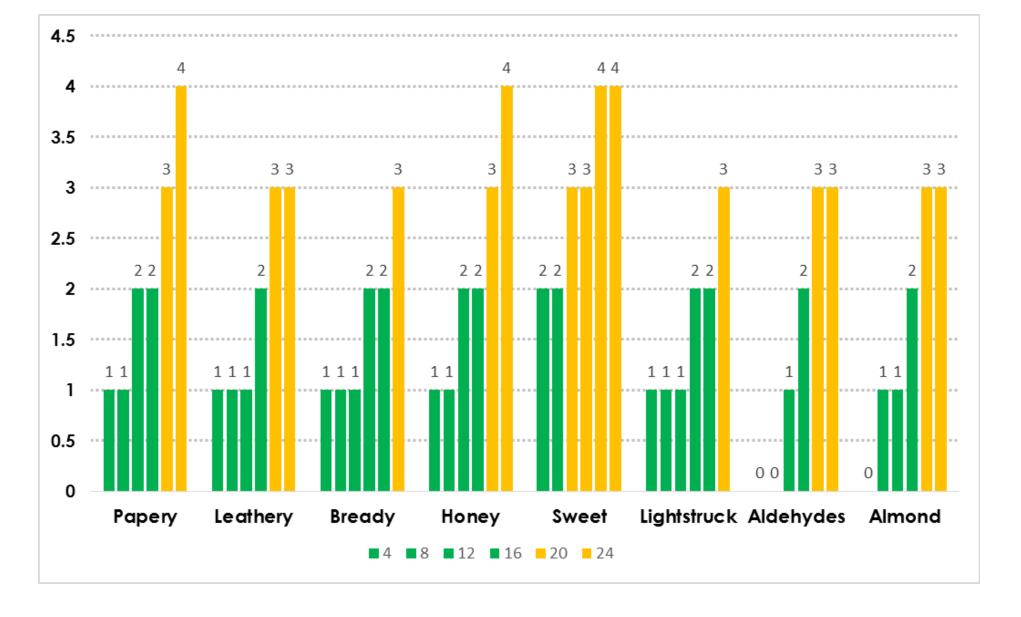
Quality Index (0-10) distribution per weeks (0-24)



Conclusions

- Only 3 out of 9 brands showed batch to batch consistency higher than 90% - consistency is related to sensory analysis of finished product release vs. targeted product profile
- Brand consistency in general is much higher before the 20th week of production, although shelf-life of the different brands used in this study is from 6-9 months
- Majority off-flavours occur post production due poor storage conditions
- Key Off-flavours intensity increases rapidly after 16th week of production
- Brand consistency and quality showed higher performance in Brown, followed by Green glass packaging
- Analytical investigation seems to be critical in early stages of production to determine the shelf-life of the beer
- Use the raw materials and brewing processes to optimise the positives flavours and reduce off-flavours
- Sensory should focus on Market samples investigation and distributors education.

Off-flavours Creation and Intensity (0-10) per week (0-24)



Dominate Off-flavours in %

