

Soluble coffee sensory panel performance and training effectiveness assessments

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INTRODUCTION

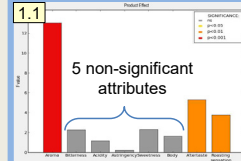
- Sensory panels are instrumental to control the quality of soluble coffee in the industry.
- Panel members must be able to describe the taste profile and its corresponding intensity.

GOALS

- Develop a framework to monitor the performance based on 3 aspects: Agreement among assessors, their Discrimination, and Repeatability skills.
- Evaluate how effective a training process was.

MATERIALS/METHODS

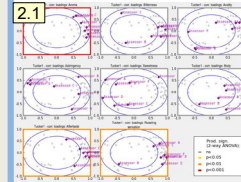
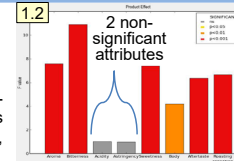
- 6 distinctive soluble coffee samples, prepared at 1.15-% concentration with boiling mineral water.
- 7-member sensory panel, previously screened.
- Panel gives scores from 0 (absence) to 5 (strong) to 8 attributes:
 - Aroma
 - Bitterness
 - Acidity
 - Astringency
 - Sweetness
 - Body
 - Aftertaste
 - Roasting sensation
- Scores were statistically analysed using PanelCheck software.
- Assessors are subsequently trained in 4 sessions, on cupping profiles and specific sensory attributes.
- After the training, cupping sessions, data collection and statistical analysis were repeated.
- Results were consolidated in an internally created three-level performance scheme.



RESULTS

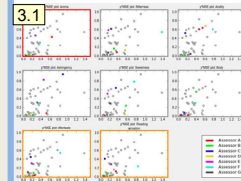
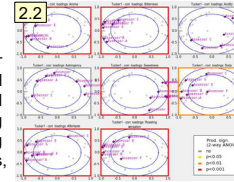
Figures 1.1 / 1.2: Overall evaluation of significance via 2-way Anova

Prior to training (1.1), there were 5 non-significant attributes. This number was reduced to 2 after the training (1.2), demonstrating the training efficiency.



Figures 2.1 / 2.2: Agreement of Assessors via Tucker-1 correlation loading plots

Each dot represents one assessor per attribute. The ideal scenario is that all assessors are placed between 2 circles and close as one cluster. Comparing performances before (2.1) and after training (2.2), there was an improvement in Bitterness, Sweetness, and Body.



Figures 3.1 / 3.2: Discrimination and Repeatability via p*MSE plots

Each dot represents one assessor per attribute. The ideal scenario is that all the assessors are placed on the lower left corner. At the upper right corner, the assessor will have poor Discrimination and Repeatability.

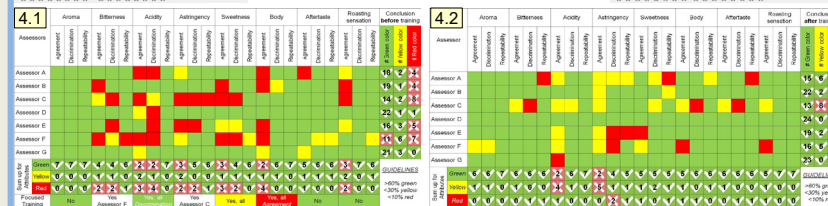
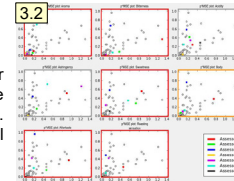


Figure 4.1 / 4.2: Panel's Performance

Statistical results were converted into a three-level scheme: GREEN: results fully meet the criteria (minimum 60%); RED: results fail to meet the criteria (maximum 10%); YELLOW: results partially meet the criteria (maximum 30%). Before training (4.1), assessors complied with the Repeatability scheme but not with Agreement and Discrimination ones. Only 2 out of 7 assessors fully met the required performance scheme. After training (4.2), 6 out of 7 assessors met the individual's performance scheme.

CONCLUSIONS

- It was possible to assess statistically a soluble coffee sensory panel's performance via PanelCheck software.
- Focused cupping was effective to train the sensory panel to agree on sensory profiles, discriminate samples and repeat results, increasing confidence on the QA and R&D sensory reports.

PERSPECTIVES

- Continuous panel training and bi-annual monitoring are advised.
- The performance scheme was apt to create measurable boundaries for the desired performance of panel members.

REFERENCES

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