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# Multiple correspondence analysis to uncover associations among cheese´s sensory variables

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## INTRODUCTION

In order to characterize major defects appearing in ewe's milk cheeses, a trained panel performed a sensory quality control analysis for eight parameters (shape, rind, paste colour, internal openings, texture, odour, flavour and aftertaste) in 1958 randomly sampled cheeses over five years, indicating the presence or absence of defects in each case. The panel detected 48 different types of defects through this period.

## DATA ANALYSIS

To perform an exploratory study of the sensory defects and thus understand the complex relationships among them, a multiple correspondence analysis (MCA) was performed using the XLSTAT software (version 2011.2, Addinsoft).

The high number of variables makes it difficult to interpret the factorial axes so the number of variables was reduced taking into account their frequency of occurrence (only defects with frequency >3% were introduced). In addition, some parameters were grouped to avoid a redundant effect (odour, flavour and aftertaste were grouped into a single parameter called flavour).

## RESULTS

The final 15 sensory defect types introduced were grouped by the MCA in five factors that explained the 73.39% of the total inertia.

| | F1 | F2 | F3 | F4 | F5 |
|---|---|---|---|---|---|
| **Ajusted inertia** | 0.003 | 0.001 | 0.000 | 0.000 | 0.000 |
| **Ajusted inertia (%)** | 45.662 | 19.251 | 5.386 | 2.476 | 0.615 |
| **Accumulated %** | 45.662 | 64.913 | 70.299 | 72.774 | 73.389 |

Table 1: Percentajes of inertia of de first 5 factors in the MCA

**F1 y F2: 64.91 %**

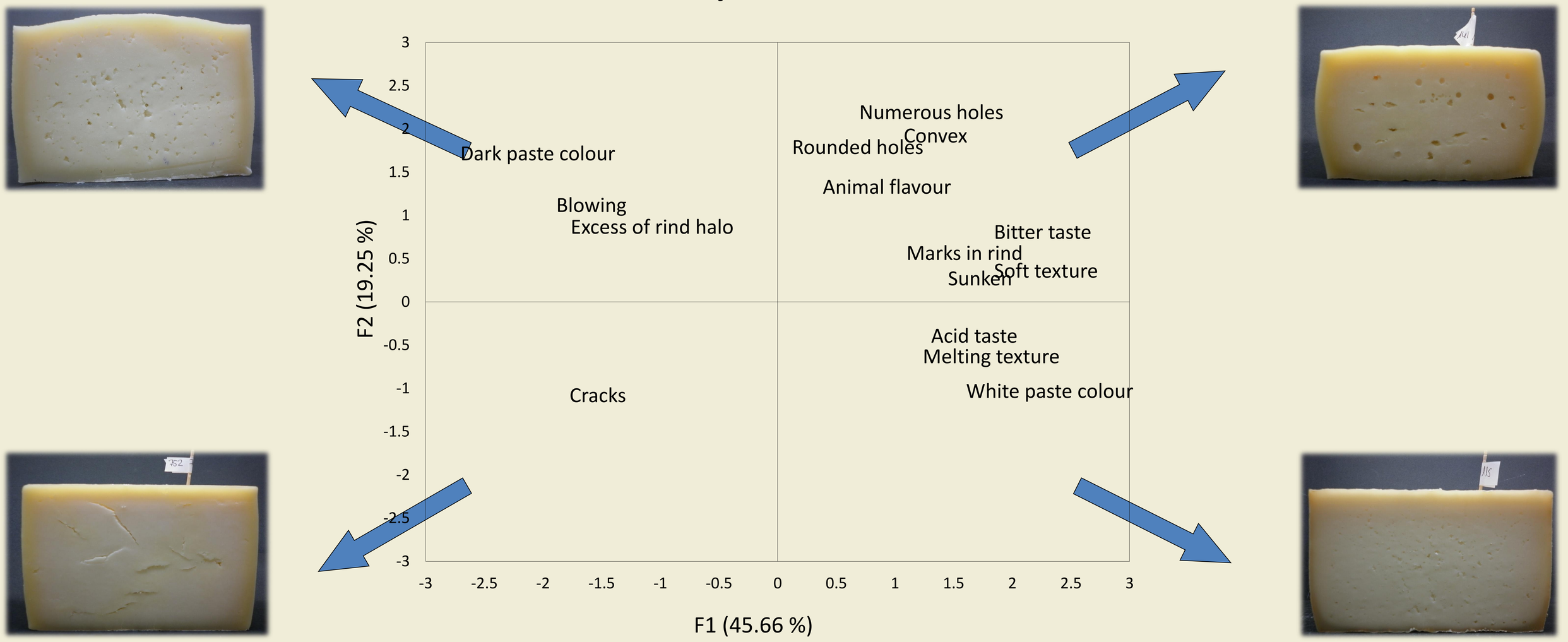


Figure 1: Correspondence map where the variables are displayed on the first two axes.

## CONCLUSION

MCA is a good tool to use with sensory data due to its often categorical nature which allows to summarize the associations between those sensory data and makes them more easily interpretable. It also allows the reduction of the dimensionality of data to a more easily interpretable number of dimensions.

The introduction of supplementary variables in the analysis could allow to know the association between the defects and technological factors as kind of starter, rennet type or ripening time.

This type of analysis may help finding the causes and solutions to improve the sensory quality of food.

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