

# Consumer Preference and Quality Criteria for Attiéké, a Fermented Ivorian Cassava Product

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## BACKGROUND

### Cassava Importance in Côte d'Ivoire

Cassava (*Manihot esculenta* Crantz) is a vital crop in Côte d'Ivoire, ranking as the first produced food crop before maize, yam, and rice. It is cultivated nationwide, except in the far north, and widely available in both urban and rural markets. While traditionally considered as a crop for lean periods and home consumption, the rising demand for processed cassava products such as *attiéké*, *placali*, and *foutou*, and *gari* in urban areas and export markets has created significant income opportunities.

### Attiéké's Role in Food Security and Economy:

*Attiéké*, a steamed and fermented cassava couscous, is the most widely consumed cassava product in Côte d'Ivoire. It is a staple food eaten with fish, chicken, or meat and vegetable sauces, making it essential for food security and maintaining purchasing power for vulnerable populations. Increasing demand for *attiéké* in cities and export markets has also led to the emergence of a faster, lower-quality version known as *garba*.

### Challenges in Cassava Cultivation and Attiéké Production

Cassava cultivation in Côte d'Ivoire is traditional, using low-yield cultivars (<15 t/ha) that are disease- and pest-susceptible but suitable for processing. National and international research efforts have introduced high-yield, disease-resistant varieties, but adoption is limited due to suboptimal processing and organoleptic characteristics.

### Need for Research

Despite efforts to improve cassava varieties and the *attiéké* production process, challenges remain in securing consistent, high-quality *attiéké*. Further research is needed to fully characterize the product, understand the relationships between raw material traits, processing efficiency, product quality, and sensory attributes that influence consumer acceptance.

### Study Objective

This study aims to identify *attiéké* sensory quality criteria important to consumers and determine their acceptability thresholds. Findings should support germplasm screening and facilitate the adoption of improved cassava varieties, contributing to enhance food security and economic opportunities.

## METHODS

### Plant Material

Six (6) cassava varieties (*Yace*, *Kolou*, *Yavo*, *Bocou5*, *Bocou6*, and *I083724b*) with contrasting performances from Centre National de Recherche Agronomique (CNRA) experimental plot in Bouake, Côte d'Ivoire were used.

### Consumer Testing

Consumer studies were conducted in six locations in and around the city of Bouake (rural and urban areas), with a total of 164 randomly selected *attiéké* consumers (47% females and 53% males).

\***Hedonic test** used to assess overall liking, using a nine-point scale (from 1 = dislike extremely, to 9 = like extremely),

\***JAR test** performed on fermented smell, texture in the hand and mouth, and sour taste using a 3-point scale (1 = too weak or not enough; 2 = just about right; and 3 = too high, too strong, or too much),

\***CATA test** performed on terms describing good or poor-quality attributes of *attiéké*,

### Quantitative Descriptive Analysis (QDA)

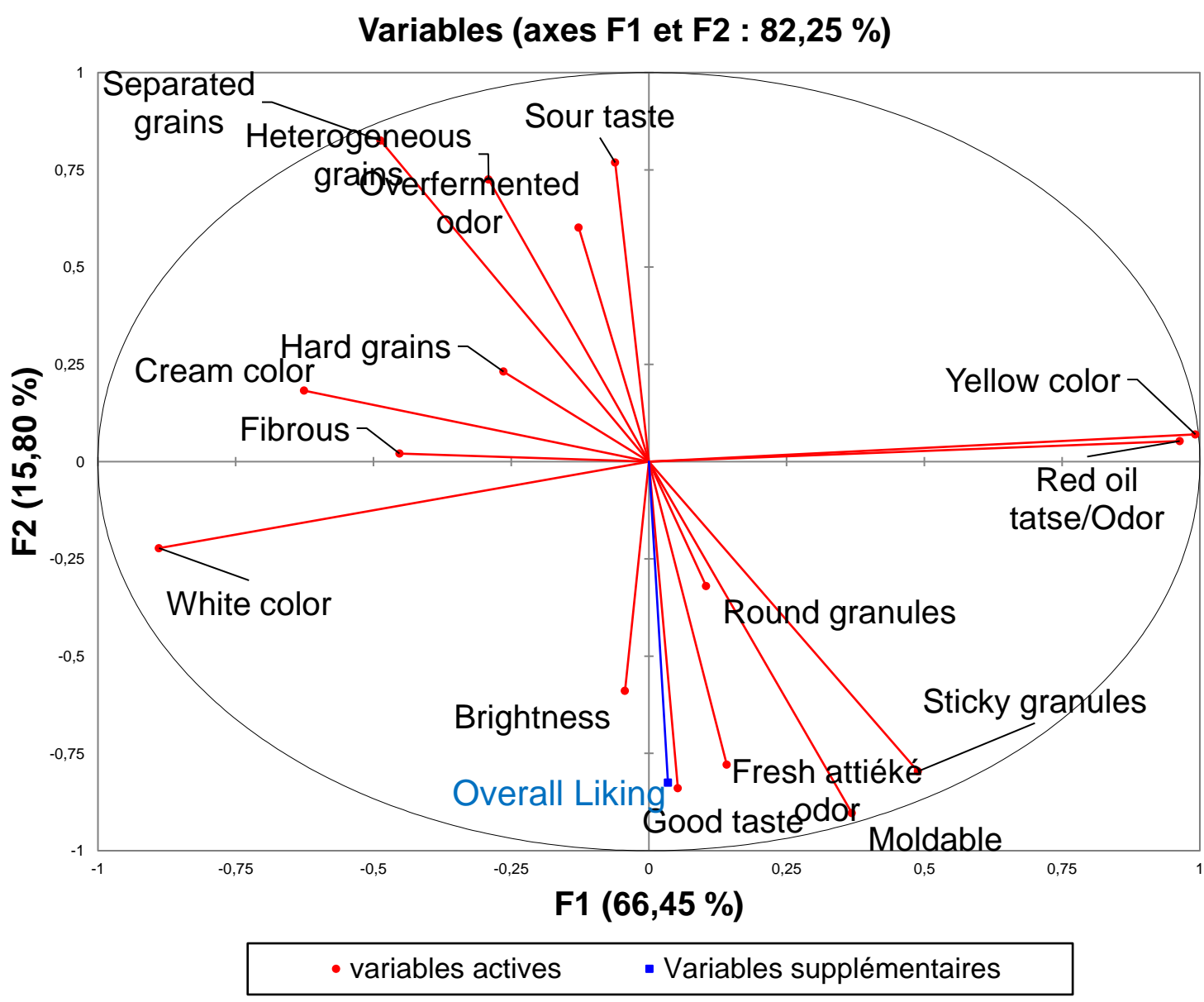
QDA performed using a validated RTBfoods SOP (<https://doi.org/10.18167/agritrop/00607>).

Scored attributes: sourness, moldability, brightness, stickiness, fermented taste and odor, fibers, and cohesiveness on a scale of 0 to 10 by trained panelists.

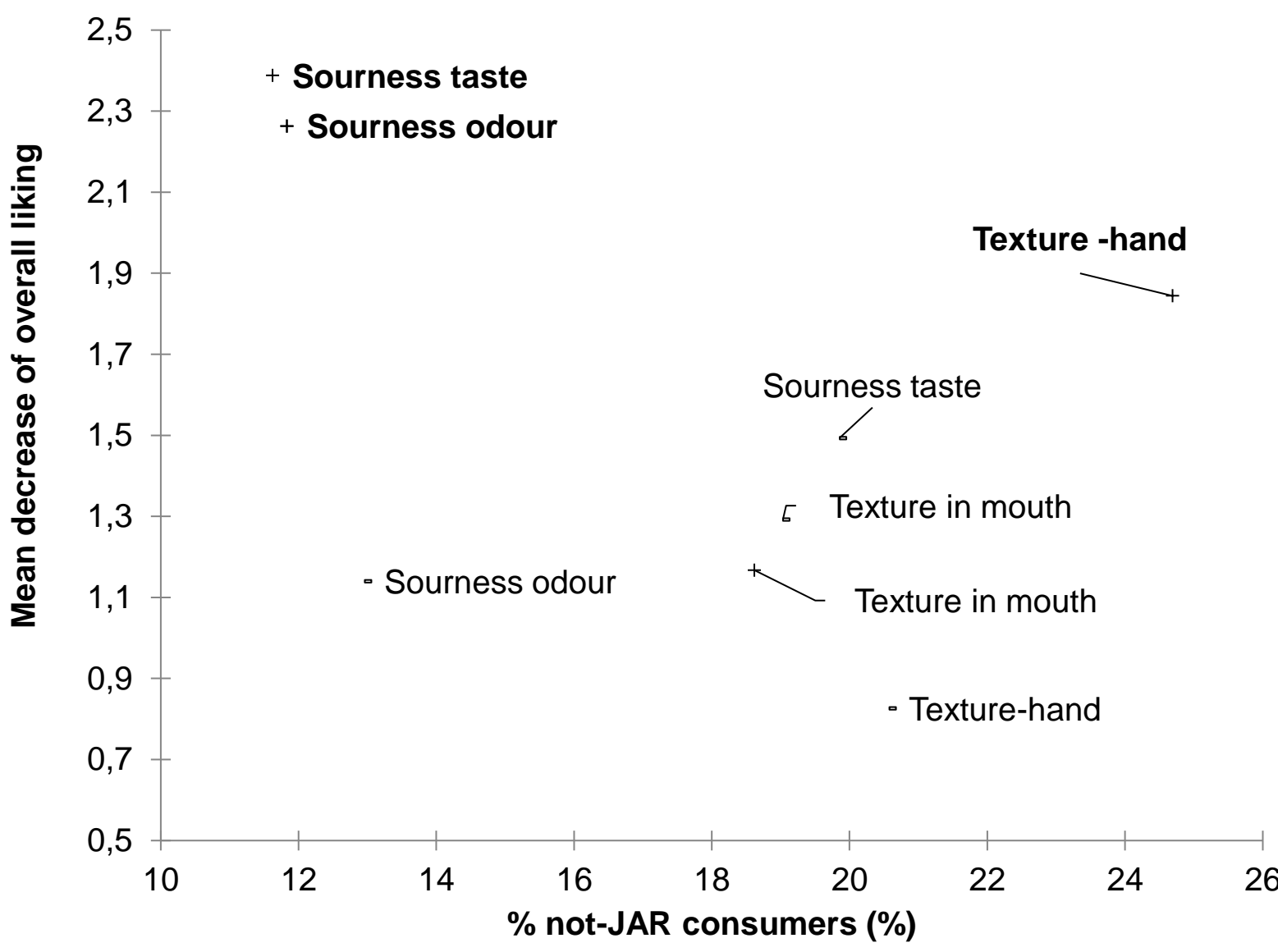
## RESULTS

**Table 1: Discrimination power of *attiéké* descriptors**

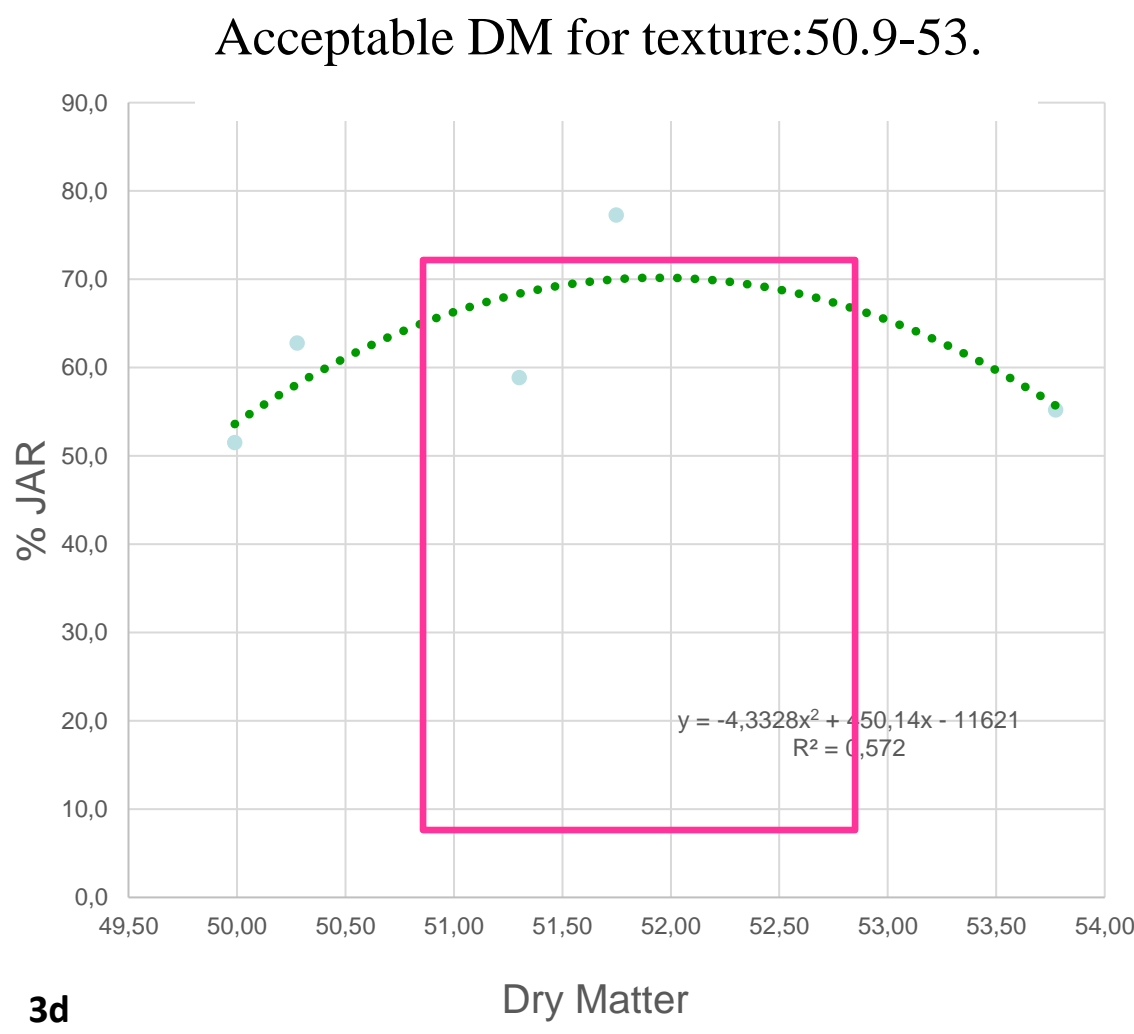
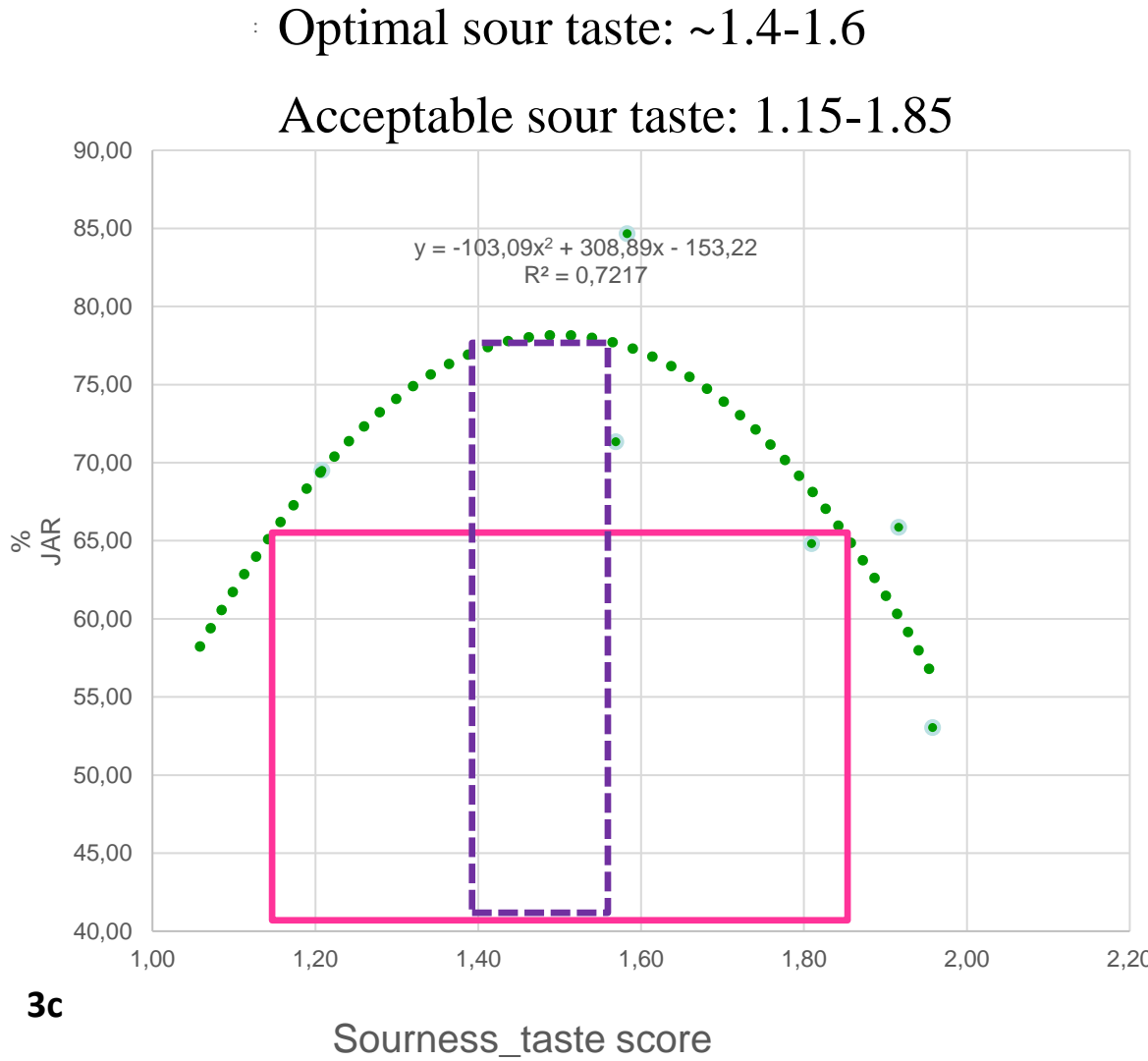
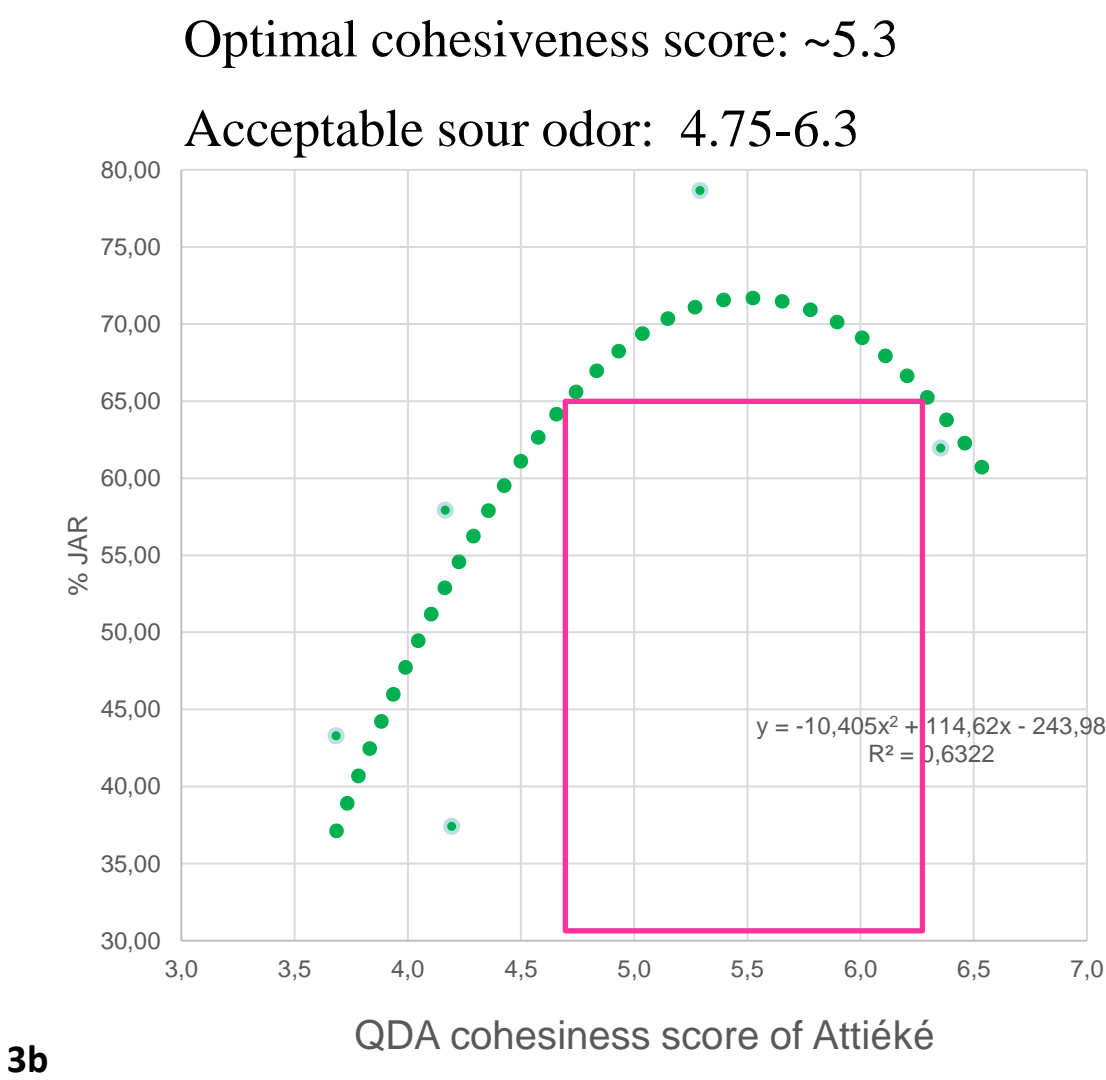
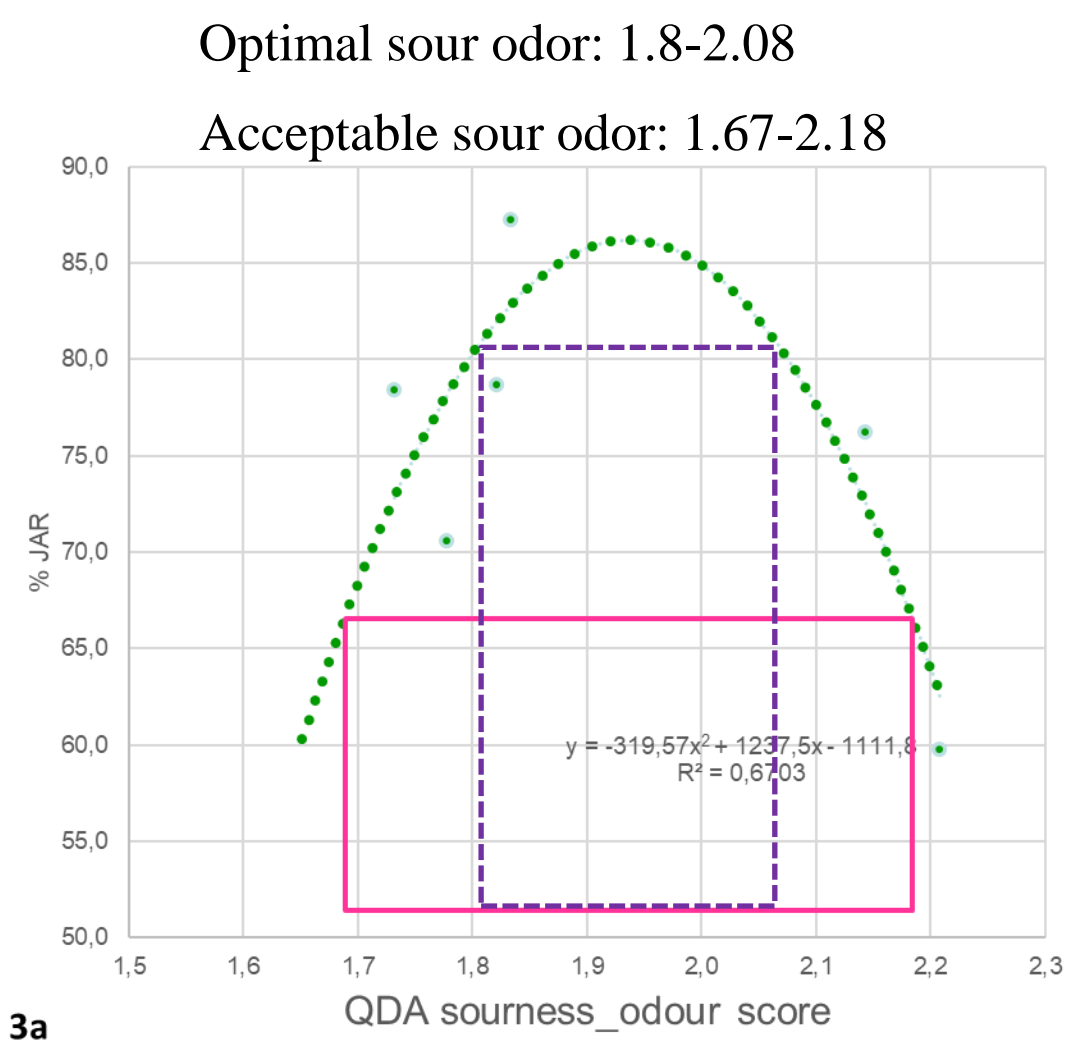
Attributes	Test Values	p-values
Color	6.967	0.000
Fibers	5.547	0.000
Red oil Odor	5.154	0.000
Sour taste	4.703	0.000
Red oil taste	4.558	0.000
Moldability	2.293	0.011
Homogeneity	2.144	0.016
Brightness	2.007	0.022
Attiéké_Odor	1.963	0.025
Sour Odor	1.751	0.040



**Figure 1: PCA of sensory attributes**



**Figure 2: Mean decrease of overall liking scores of *attiéké* and Not-JAR responses**



**Figure 4: Relationship between JAR responses cited by consumers and sour odor (a), cohesiveness (b), sour taste (c) score evaluated by QDA and attiéké dry matter content (d)**

## CONCLUSION and RECOMMENDATIONS

- Color, fiber content, sourness and moldability are discriminant attributes of *attiéké*
- Texture (cohesiveness of granules) and sourness are the key attributes driving the acceptance of *attiéké*.
- Biochemical analysis showed

- Positive correlation\_ *attiéké* pectin content and *attiéké* cohesiveness ( $r=0.6$ ;  $p<0.05$ )
- Negative correlation\_ raw cassava DM ( $r=-0.7$ ;  $p<0.01$ ) and *attiéké* cohesiveness and moldability

==== Pectin content and dry matter are important physico-chemical characteristics controlling *attiéké* texture

PERSPECTIVES: Further investigation between raw cassava biochemical components and *attiéké* sensory characteristics

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