

# RTB Breeding



## Activity n°3 :

## Evaluation of acceptability thresholds of key quality traits for the different RTB food products

### Online module n°3 : Hedonic Test

Deuscher Zoé  
Adinsi Laurent  
& Bugaud Christophe



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# Hedonic test = Consumer test

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**Reminder** : Test aimed at measuring the hedonic quality of a product by consumers on the basis of its sensory properties.

The results of these tests are valid at **a given time in a given place and context.**

**Objective** : Determine the appreciation and acceptability of products by consumers.

**How ?** These tests will be carried out in the form of questionnaires addressed to a hundred or so participants representative of consumers of the product.





## Module n°3

# Presentation

**RTB Breeding**

Reminder : Choice of products

Reminder : Choice of sensory attributes

Development of the questionnaire

1. Overall liking
2. JAR test
3. General questions

Preparing the consumer test

1. Team members
2. Material required
3. Preparing the consumer table
4. Pre-test to validate the questionnaire

Consumer testing in practice

1. Before the consumers arrive
2. When the consumers is here
3. When the consumer has finished analysing the various products
4. When the consumer has left

Results of a consumer test

Take home message



# Reminder : Choice of products



Study a **minimum of 6 contrasting samples** in total  
(named by a random three-letter code)



**Minimum 100 consumers** (preferably 125) per sample.  
A consumer can test a **maximum of 6 products at a time**



The experimental design must be **adapted**  
on a **case-by-case basis**



The **same raw materials** must be use for **all analyses**





# Reminder : Choice of sensory attributes



Depends on the product studied

Sensory attributes defined in RTBfoods product profiles

4 or 5 sensory attributes maximum

Establish a clear definition list for selected attributes



# Development of the questionnaire



Different parts in the questionnaire:

1. Overall Liking
  2. JAR test
- +
3. Questions on personal information and consumption habits of the product
- repeated as many times as there are samples : the questions should be duplicated in the questionnaire to match the number of samples tested*



The questionnaires are anonymous

Don't forget to number the questionnaires: each questionnaire number corresponds to a consumer.












# Development of the questionnaire

## 1. Overall liking

Ask consumers to give a score on a scale corresponding to their overall appreciation of the product in its entirety

- Use a scale from 1 to 9
- Precise what the different intensities on the scale correspond to
- Adapt the scale to consumers

1. Overall liking								
Ask the taster to tick the overall assessment that corresponds to the plantain sample								
1	2	3	4	5	6	7	8	9
								
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dislike extremely	Dislike very much	Dislike moderately	Dislike slightly	Neither like, nor dislike	Like slightly	Like moderately	Like very much	Like extremely



# Development of the questionnaire

## 2. JAR test

JAR = **Just About Right** : it determine the optimum levels of the intensity of a specific sensory attribute in a product

- Consumers are asked **whether a sensory characteristic of a product** (e.g., saltiness) is **too high, too low, or just about right**
- Use **2 to 5 important characteristics**
- **3 points scale :**

Not enough

☐

Just About Right

☐

Too high

☐

- Important to determine acceptability thresholds





# Development of the questionnaire

JAR in practice : For each sensory characteristic selected for the product, ask to the consumer if the sensory characteristic is **too high (too intense)**, **too low (not intense enough)** or **exactly the way he like it**.

How do you appreciate the Characteristic 2 of that product?

Too weak (not enough)

☐

As I like

☐

Too strong (too much)

☐

Example of question for boiled plantain :

How do you perceive the firmness of this boiled plantain?

*Ask the taster to taste and evaluate the consistency of the plantain*

Not firm enough

☐

As I like

☐

Too firm

☐

# Development of the questionnaire

## 3. General questions

### ➤ Personal information :



Gender



Nationality



Age



Education level



Marital Status



Occupation...

### ➤ Eating habits :

- ☐ How often do you consume ...?
- ☐ How do you mainly consume ....?
- ☐ What time of day do you eat ...?



# Development of the questionnaire

Example of questionnaire configuration (different pages):

## Information and consent form

Date: .....  
 Locality: .....  
 Investigator's name: ...  
**Questionnaire N°: 8**  
**Sample n°1 :**  
**Overall Liking**

1. Overall liking  
 Ask the tester to tick the overall assessment that corresponds to the plantain sample

1	2	3	4	5	6	7	8	9
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## JAR Test

How do you appreciate the Characteristic 2 of that product?

Too weak (not enough)	As I like	Too strong (too much)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How do you appreciate the Characteristic 2 of that product?

Too weak (not enough)	As I like	Too strong (too much)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 1

**Sample n°2 :**

## Overall Liking

1. Overall liking  
 Ask the tester to tick the overall assessment that corresponds to the plantain sample

1	2	3	4	5	6	7	8	9
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## JAR Test

How do you appreciate the Characteristic 2 of that product?

Too weak (not enough)	As I like	Too strong (too much)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How do you appreciate the Characteristic 2 of that product?

Too weak (not enough)	As I like	Too strong (too much)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 2

**Sample n°3 :**

## Overall Liking

1. Overall liking  
 Ask the tester to tick the overall assessment that corresponds to the plantain sample

1	2	3	4	5	6	7	8	9
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## JAR Test

How do you appreciate the Characteristic 2 of that product?

Too weak (not enough)	As I like	Too strong (too much)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How do you appreciate the Characteristic 2 of that product?

Too weak (not enough)	As I like	Too strong (too much)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 3

**General questions :**

**- Personal information :**  
 Gender, Nationality, Age, Education, Occupation...

**- Eating habits :**  
 Frequency, Way of consumption

...

Page 4

# Preparing the consumer test

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## 1. Team members

- ✓ A team leader
- ✓ Enumerators (5 to 10 persons). It can be food science students who are familiar with sensory evaluation and consumer testing or colleagues of the university
- ✓ Cook(s) (if needed)
- ✓ After the consumer testing: Data entry people (2-3) if possible: can enter data from the questionnaire into Excel



# Preparing the consumer test

## 2. Material required

	Tables and chairs to seat consumers + a table for sample preparation
	Cooler or other container for storing samples (hot or cold)
	Cutlery (if necessary), serving utensils adapted to the product (bowls, plates...) and napkin
	Markers to identify the product on the plate or bowl
	Glasses and drinkable water
	List of sensory descriptor definitions + Consents /explanation of the project + questionnaires (with pens or on tablets or phones)
	Garbage can (for waste disposal)
	Small gifts for consumers (a drink, a sweet, a bar of soap...)





# Preparing the consumer test

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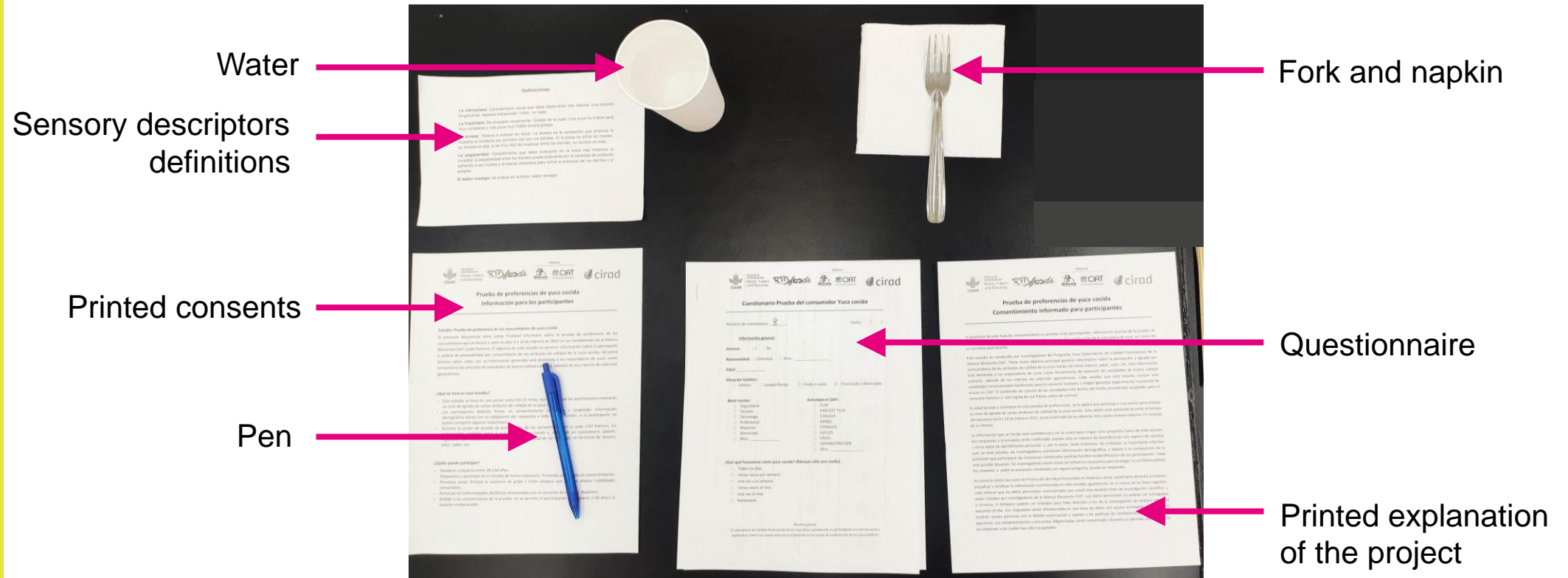
## 3. Pre-test to validate the questionnaire

- The questionnaire can be pre-tested with a few consumers (5-10) for testing the logistics
- The pre-test is also useful to train the enumerators (students in food science) and translators in accompanying the consumer in understanding the different tests and give their view on the product
- Choose a convenient location, different from the location for the real testing
- Refine the questionnaire if necessary



## Consumer testing in practice

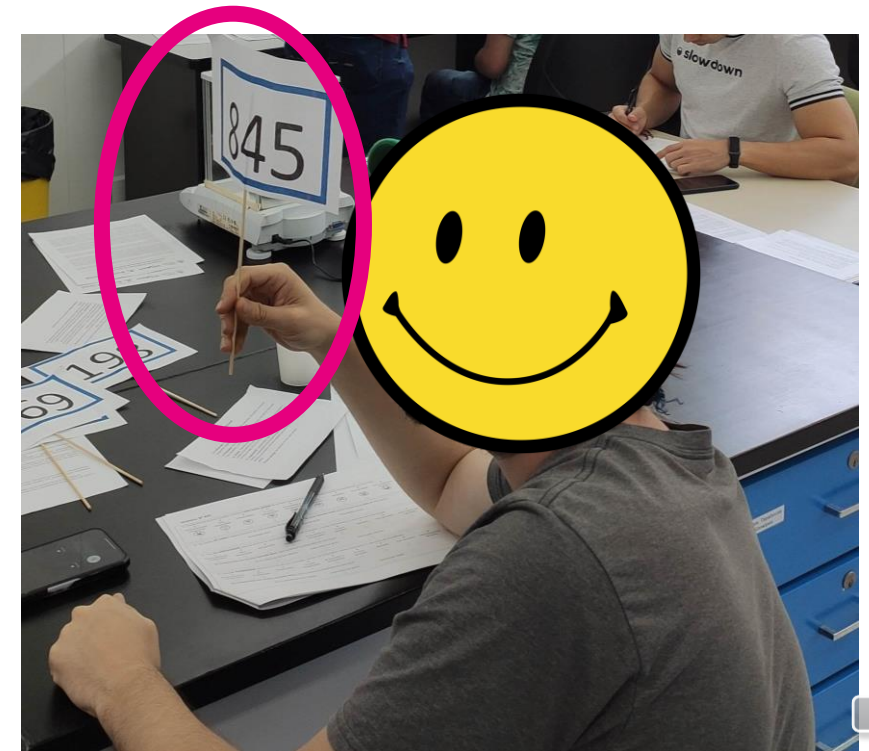
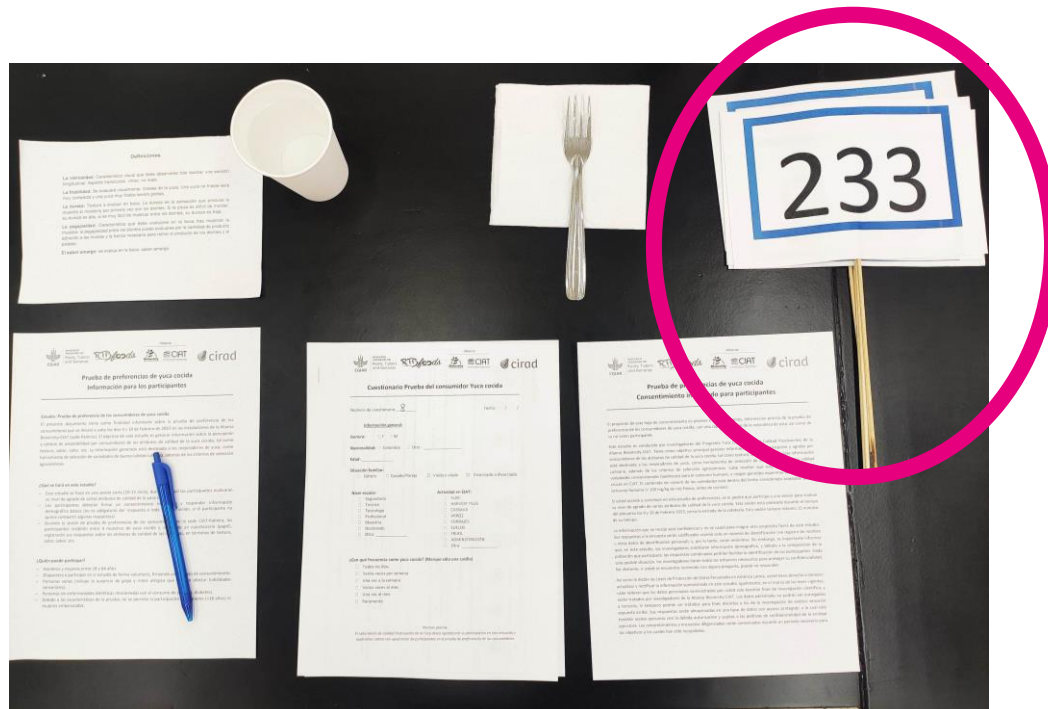
### How to set the table



## Consumer testing in practice

When consumers are **self-sufficient on the questionnaire**, it is possible to **print signs with the sample numbers**.

→ When consumers want the next product, all they have to do is lift the panel and an interviewer will bring it to them.



# Consumer testing in practice

## 1. Before the consumers arrive :

- Set up all the equipment
- Brief the team, everyone must know their role

## 2. When the consumers is here :

- Welcome the consumers and seat them
- Explain the consent procedure
- Explain the project, the various stages of the consumer test. The enumerator must clearly explain, and translate if necessary, the questions in the questionnaire and the definitions of the sensory attributes
- Explanations should preferably be given in the consumer's language





# Consumer testing in practice

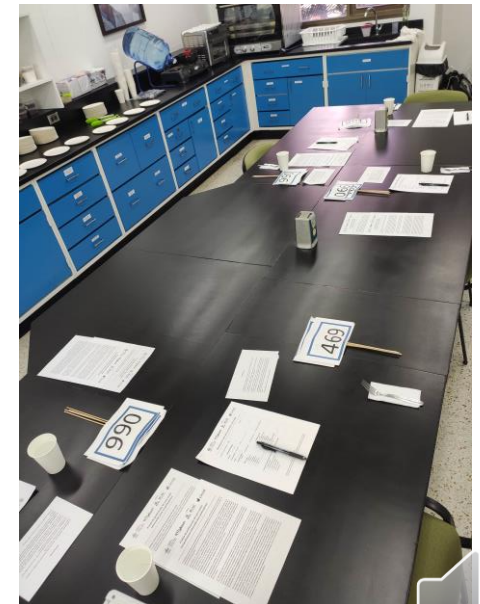
- Run all the tests in the questionnaire (Overall liking and JAR) on one product, then move to the second, and so on
- Test each product in the order indicated on the questionnaire
- If necessary, record the consumer's answers
- The enumerators must never influence the consumer's judgement or rating

## 3. When the consumer has finished analysing the various products :

- The enumerator thanks them and offers them a small gift

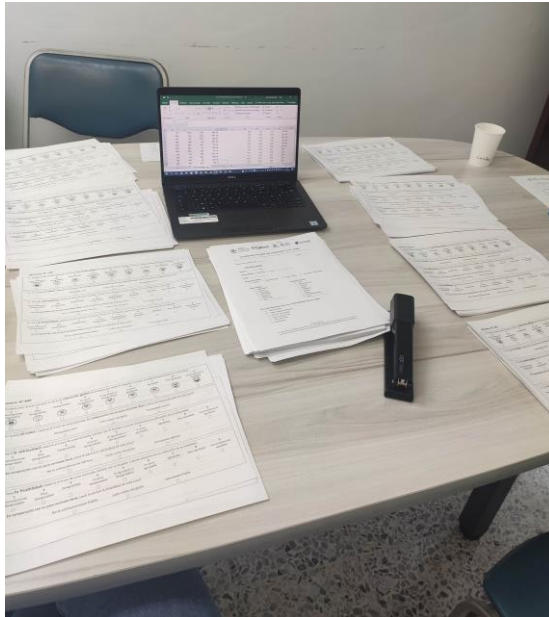
## 4. When the consumer has left :

- The table is cleared
- The completed questionnaire is put away
- The table is prepared again to welcome the next consumer





# Results of a consumer test



After the consumer test:

- Recovering all the questionnaires
- Enter the data in Excel :

**Overall liking :**  
note from 1 to 9

**JAR test :**  
Not enough → 1  
Just about right → 2  
Too strong → 3

	Sample 1 Overall liking	Sample 1 JAR Sweet	Sample 1 JAR Firmness	Sample 2 Overall Liking	Sample 2 JAR Sweet	Sample 2 JAR Firmness
Consumer 1	8	1	2	5	2	3
Consumer 2	7	1	3	5	3	2
Consumer 3	6	2	2	2	3	3
Consumer 4	7	2	3	3	2	3



# Results of a consumer test

	Sample 1 Overall liking	Sample 1 JAR Sweet	Sample 1 JAR Firmness	Sample 2 Overall Liking	Sample 2 JAR Sweet	Sample 2 JAR Firmness
Consumer 1	8	1	2	5	2	3
Consumer 2	7	1	3	5	3	2
Consumer 3	6	2	2	2	3	3
Consumer 4	7	2	3	3	2	3

JAR Table

Consumers	Samples	Sweet	Firmness
1	1	1	2
2	1	1	3
3	1	2	2
4	1	2	3
% consumers Not enough	Sample 1	30 %	16 %
% consumers JAR	Sample 1	46 %	54 %
% consumers Too much	Sample 1	34 %	30 %

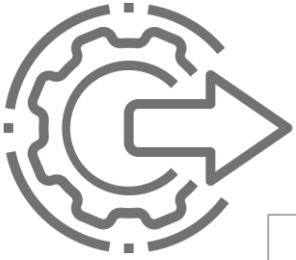
For one sensory attributes

For the firmness

Samples	Not enough	Just About Right	Too much
1	16 %	54 %	30 %
2	10 %	25 %	65 %
3	10 %	85 %	5 %
4	41 %	43 %	16 %

# Results of a consumer test

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## Outputs of a consumer test :

1. A mean **overall liking score** for each of the products.
2. A **segmentation of consumers into groups** of similar acceptance patterns regarding the products using a Hierarchical Cluster
3. A determination of the **optimum level of intensity** for some sensory characteristics of products by using a JAR scale.
4. An inventory of **consumption habits**





# Take home message !

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**RTB Breeding**

- ☐ Minimum **100 consumers** (125 is better) (naïve people, no training)
- ☐ Preferably in **one location at time**
- ☐ **Outdoor** test
- ☐ Need **equipment** and a **team** for logistic
- ☐ Maximum of **6 samples per consumer**
- ☐ **4 or 5 sensory attributes** maximum, with a clear definition
- ☐ 3 types of questions : **Overall liking** + **JAR test** + **General questions**



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See you soon for the next module  
Thank you !



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