Sensory analysis of coffee

A tool for the commodity chain, from producers to roasters

The aroma, mouthfeel and taste of a cup of coffee depend on a multitude of factors: environmental effect, human intervention, blends of different origins, roasting, beverage preparation method, etc. A change in this complex chain leads to taste variations. In order to assess and quantify them, the product has to be tasted. Physical analysis of green coffees is not enough to determine the quality of a batch. It has to be completed by an organoleptic analysis of the beverage. Indeed, there is not always a relation between the number of defects and beverage quality. Whilst a so-called "stinker" bean may contaminate a packet of coffee, it is difficult to detect the difference between a batch containing less than 40% of beans with coffee berry borer damage, and a healthy batch.

What does sensory analysis of coffee involve?

Cupping has become a scientific method used to give a sensorial image of a product. It is used to:
• detect or measure sometimes tiny differences between products,
• describe a product and establish its sensory profile,
• assess the quality of a product or evaluate is acceptability to consumers.

The sensory properties of the product are assessed by a panel of 12 to 15 people trained in accordance with AFNOR standards. The sensory methodology uses a group of tasters as the "measuring instrument", in order to take the variability of individual consumer perceptions statistically into account. Statistical analyses indicate the reliability of the judges and of the results.

The type of test used and the appropriate statistical tools depend on the purpose of the tasting session. For example, a triangle test to check the conformity of a production batch with a standard, a descriptive test to compare batches of different origins.

The aims of sensory analysis
- Describe the coffee.
- Detect organoleptic defects and find the cause.
- Detect the effect of outside factors.
- Characterize coffees from different terroirs.
- Develop new products.
- Compare a coffee to market standards.

Tests of use to the entire commodity chain
• Producers and exporters can be trained in sensory analysis to learn how to identify good coffees and the main defects. This method stimulates their awareness of the impact of their cultural, technological and storage choices.
• Most traders organize tasting of the green coffees they receive.
• Industrialists test the quality of the batches marketed.
• Researchers use organoleptic testing to ascertain the impact of new varieties, cultural practices, etc.

A tool applicable in the field
Setting up an operational sensory analysis laboratory and training a panel of judges requires a good knowledge of techniques and practices. CIRAD experts operate in the field to support, select, then train panels. The reliability of a new laboratory can then be assessed through comparative tests with CIRAD. The CIRAD laboratory also takes trainees for long periods of training (two to six months) in coffee sensory analysis, tasting panel management and statistics.

For further information
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