

SENSORY QUALITY MEASUREMENT : THE CASE OF RED RIBBON BAKESHOP, Inc.

*55TH EOQ –BUDAPEST, HUNGARY
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*Dr. MIFLORA MINOZA-GATCHALIAN
CEO, QUALITY PARTNERS COMPANY, Ltd.*

*MARIFE CRUZ
Q.A. MANAGER, RED RIBBON BAKESHOP, INC.*



Fig. 1. RED RIBBON'S MEALS AND BAKERY ITEM SAMPLES

NEED FOR TRAINING AND CONSULTANCY ON SENSORY EVALUATION PROGRAM UPGRADING AT Red Ribbon Bakeshop, Inc. (RRBI):

The existing (2006) RRBI Sensory Evaluation Program needed rehabilitation to make it more stable and responsive. Specifically...

- ❖ There was an urgency to update information on the scientific approaches to sensory quality measurement.
- ❖ To strengthen the foundation for an efficient and effective sensory evaluation program
- ❖ Enhance the pool of trained panelists' capability to measure sensory characteristics of products during development, improvement, packaging, storage and distribution.
- ❖ Sharpen the tools for sensory quality measurement necessary for prediction of market performance or in the determination of comparative consumer acceptance versus competitors.

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BASIC SENSORY EVALUATION METHODS BSEM)

SENSORY EVALUATION **DEFINITION**

The Institute of Food Technologists' (IFT) Sensory Evaluation Division (USA) defined ***Sensory Evaluation*** as ...

"a scientific discipline used to evoke, measure, analyze and interpret sensations as they are perceived by the senses of sight, smell, taste, touch and hearing".

(Prell, 1976)

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WHAT IS QUALITY?...

QUALITY MEANS DIFFERENT THINGS TO DIFFERENT PEOPLE

BUT ISO 9000:2000 HAS A DEFINITION OF

QUALITY

“ABILITY OF A COMPLETE SET OF
REALIZED INHERENT
CHARACTERISTICS
OF A PRODUCT, SYSTEM OR
PROCESS TO FULFILL
REQUIREMENTS”

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Sensory Evaluation - a Requirement in DEVELOPMENT OF PRODUCT AND PROCESS SPECIFICATIONS

- Product Characterization
- Measurement of Quality Limits
(Raw material,
process requirements,
finished product characteristics).
- Standardization
- Finished product assessment



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NOW AVAILABLE

SENSORY QUALITY MEASUREMENT



Books are available at:

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811 Bantoc St. BP Homes, Q.C.
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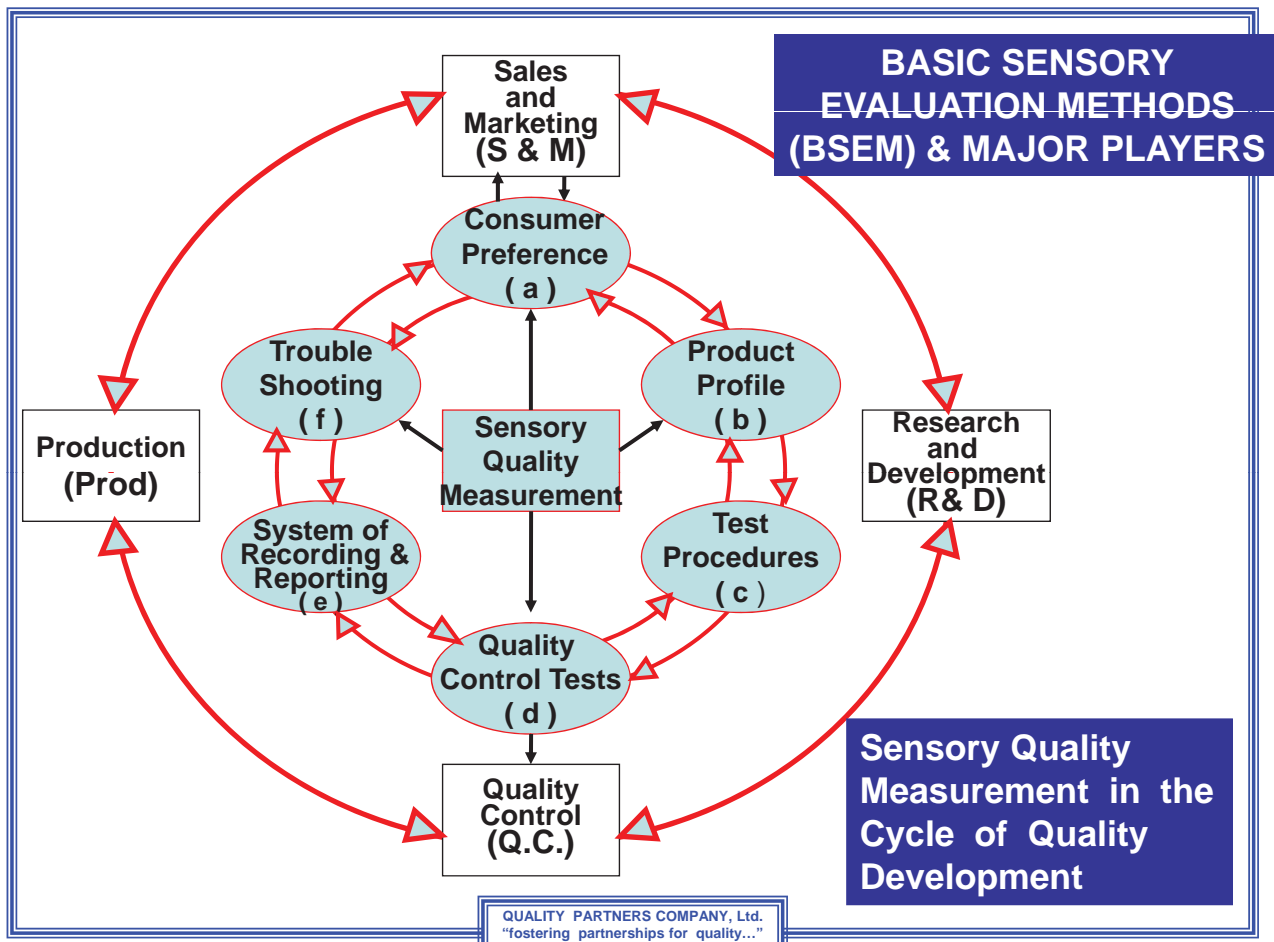
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**THIRD EDITION BY
Dr. MIFLORA M.
GATCHALIAN
CO-AUTHORED BY
DR. GRACE BRANNAN.**

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REVIEW OF BASIC TASTE SENSATIONS

- Basic taste
- Continuum of Sensory Attributes
- Physical and Hidden Attributes of Food

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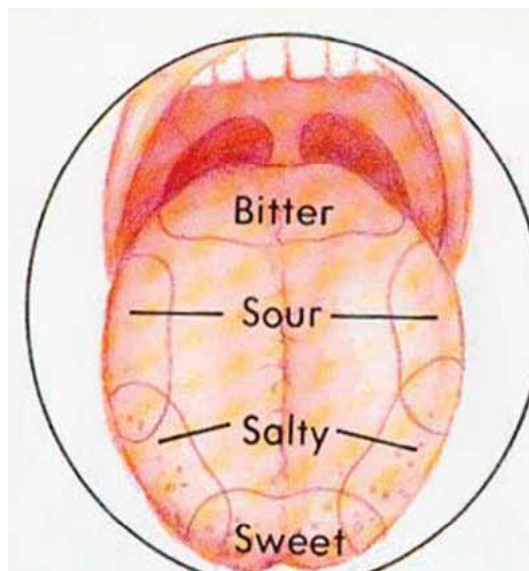


Figure 2.14: Taste Map

<http://www.kidcyber.com.au/IMAGES/tongue.jpeg>

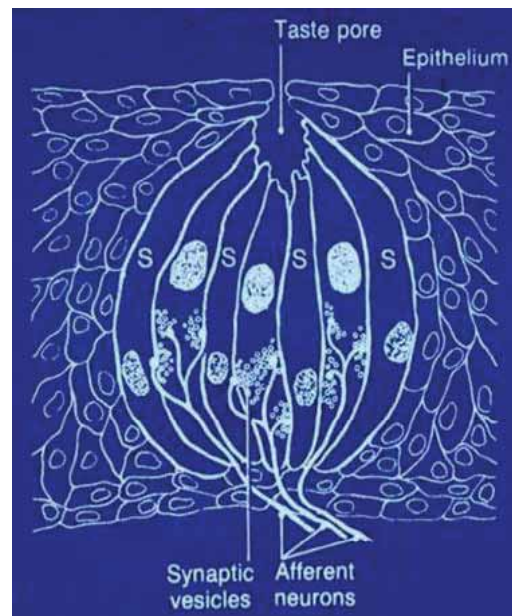
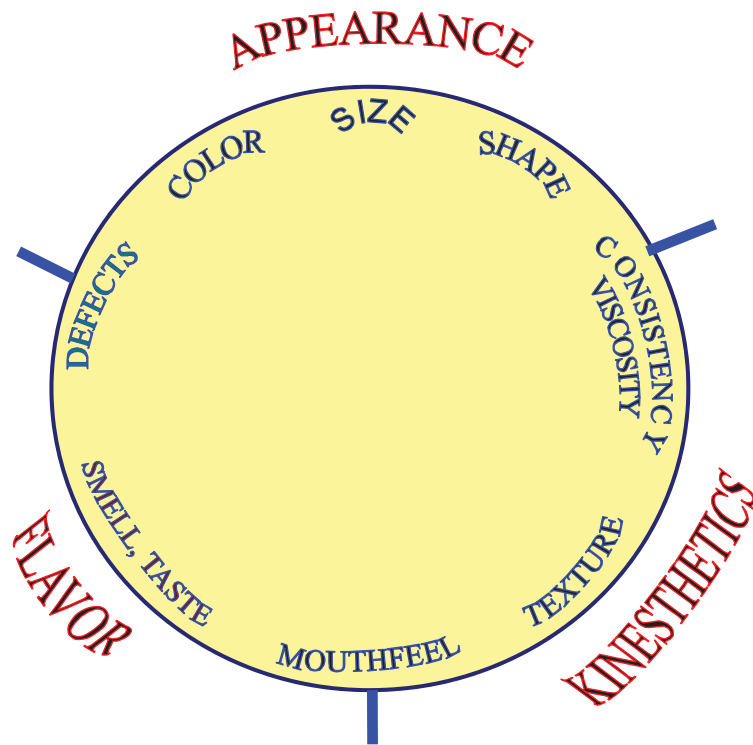


Figure 2.15: A taste bud

LOCATIONS OF BASIC TASTE SENSATION IN TONGUE & TASTE BUDS

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Continuum of sensory quality characteristics of food as perceived by man (Kramer,1983).

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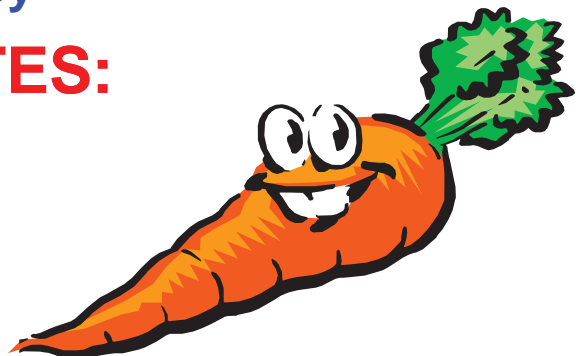
PHYSICAL CHARACTERISTICS:

- Color
- Flavor
- Aroma
- Texture/ Mouth-Feel/ Finger- Feel
- Viscosity/Consistency



HIDDEN ATTRIBUTES:

- Nutritional Value
- Microbial Safety
- Safety from Toxins



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STRENGTHENING THE FOUNDATION FOR SENSORY EVALUATION

TYPES OF SENSORY EVALUATORS

- Expert Judge
- Laboratory Panelist
- Consumer-type
- Consumers



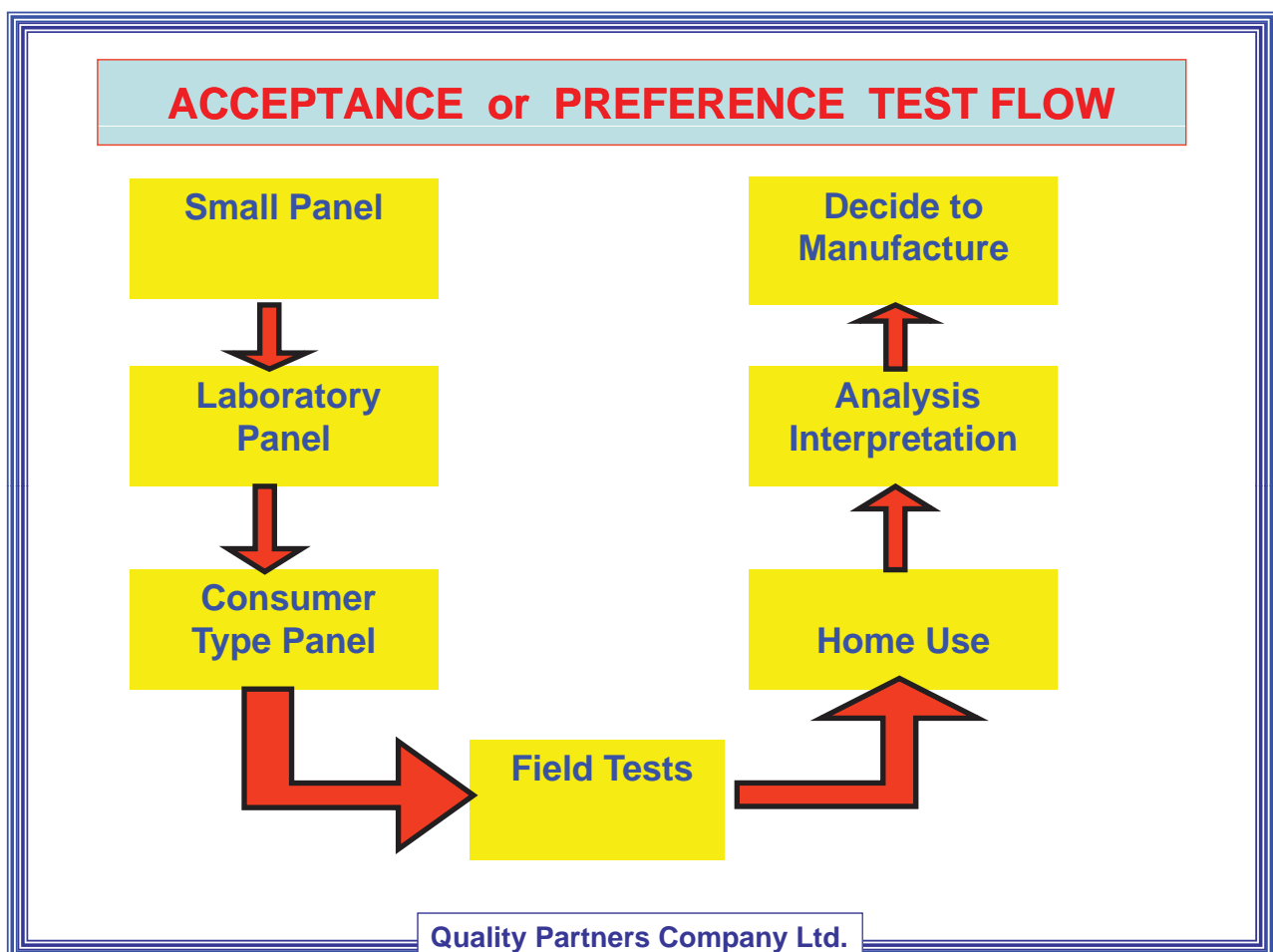
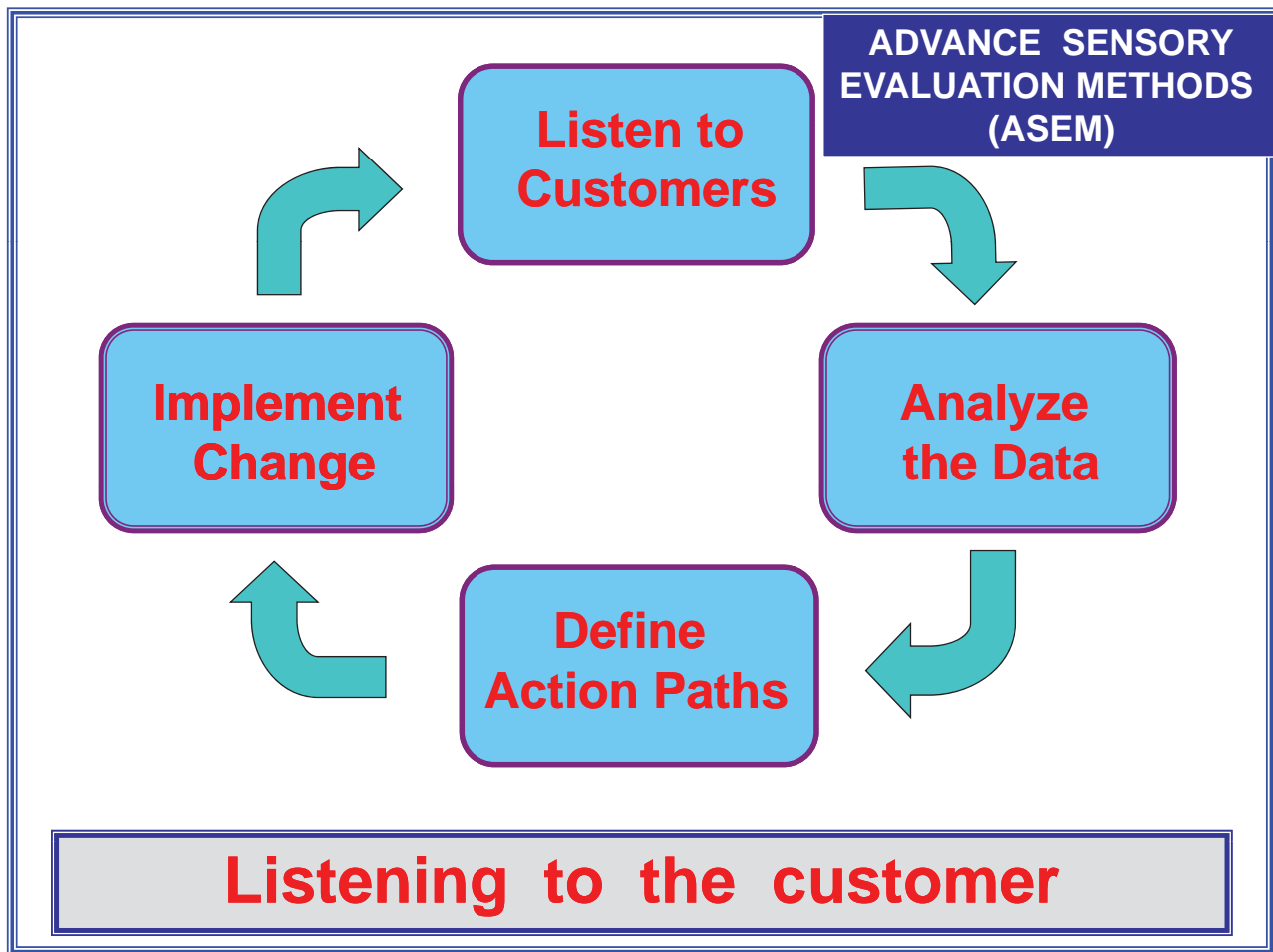
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MMG's 6 Ds of Scientific Reporting

- D₁ Define your problem.
- D₂ Design a plan to solve the problem.
- D₃ Develop data collection approaches.
- D₄ Describe results of collected data.
- D₅ Derive conclusions and recommendations.
- D₆ Develop report and action plans.

MMG = Miflora M. Gatchalian

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STEPS IN PRODUCT PROFILE DEVELOPMENT

STEP 1. RECRUITMENT OF PANELISTS — NO → REJECT (R)



STEP 2. RELIABILITY MEASUREMENT — NO → R



STEP 3. SELECTION (*Reliability Index 75%*) — NO → R



STEP 4. TRAINING (*Language Development*) — NO → R



STEP 5. PILOT TESTING (*Descriptive Score Sheet*) — NO → R

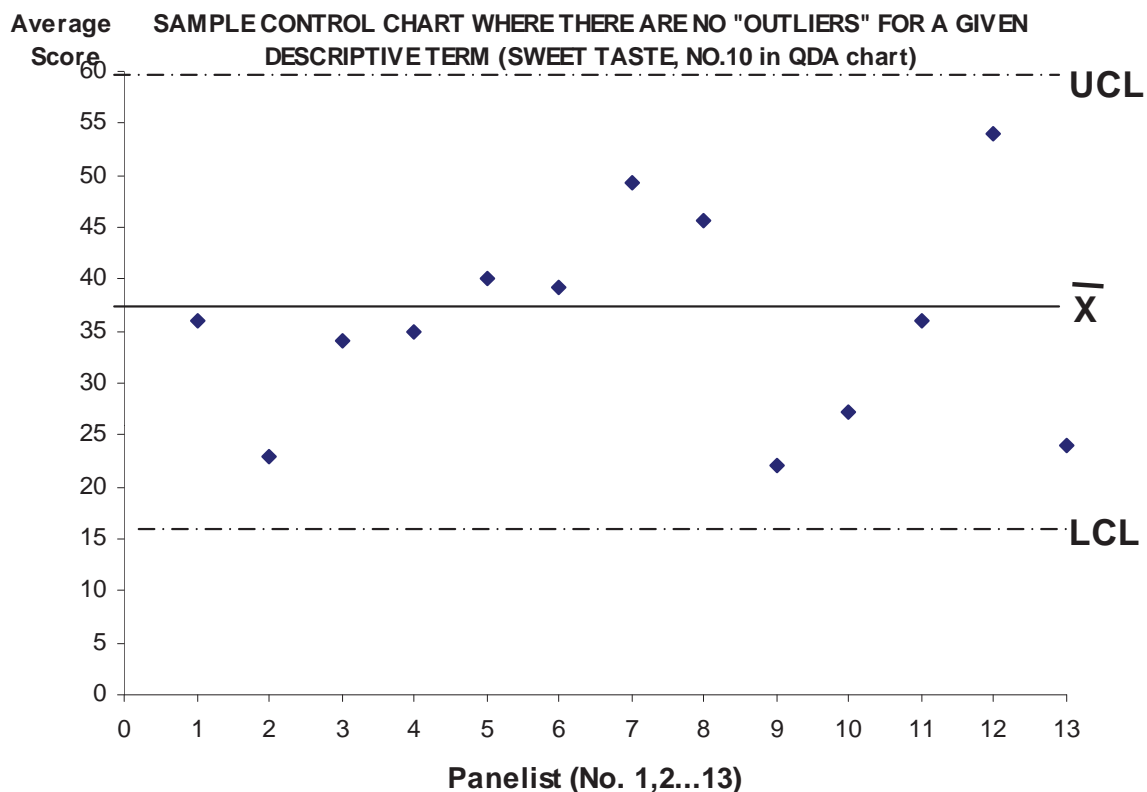


STEP 6. REFINEMENT OF DSS IN STEP 5 (*Series of pre-tests*)

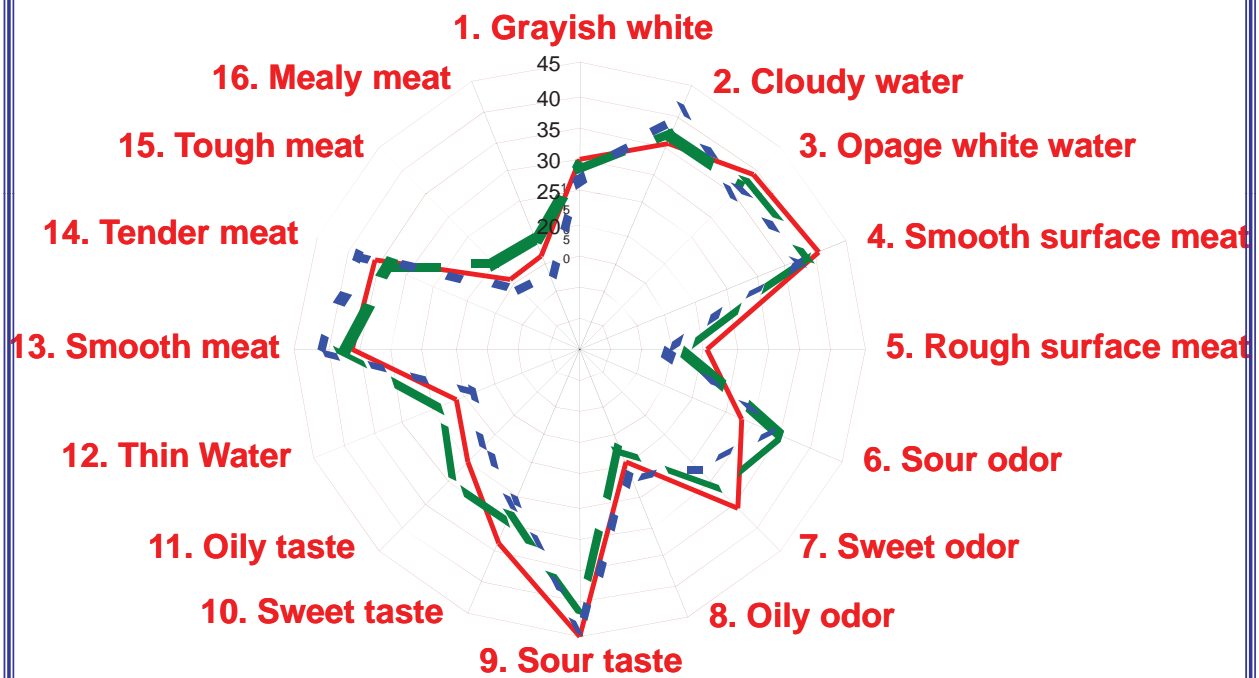


STEP 7. APPLICATION ON TEST PRODUCTS, DATA ANALYSIS AND DEVELOPMENT OF QDA (*Quantitative Descriptive Analysis*)

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Profile by QDA of fresh young coconut meat and water in three trials
(average of panelist scores per trial for each descriptive term).

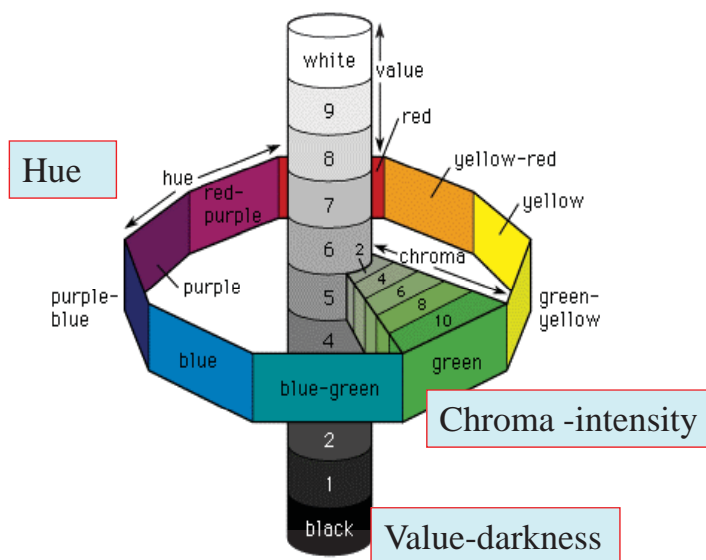
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ANCHORING SENSORY QUALITY WITH PHYSICO-CHEMICAL TESTS



Size sorter for size classification

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*Hue, value and chroma relationship
for the Munsell color disc.*

The Munsell book of colors

Visual aids to color measurements

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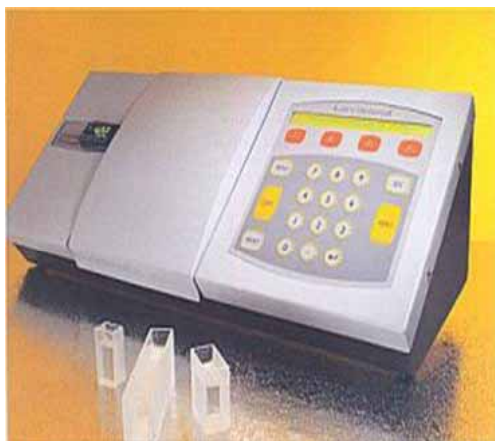


Figure 2.7 a: Lovibond Tintometer
<http://www.wacotab.com/color.htm>



Figure 2.7b DU 800 Spectrophotometer:
<http://www.beckman.com>

Color standard measurements for sensory comparison

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Brookfield Viscometer, measures viscosity of liquids .



Consistometer, measures flow of fluids

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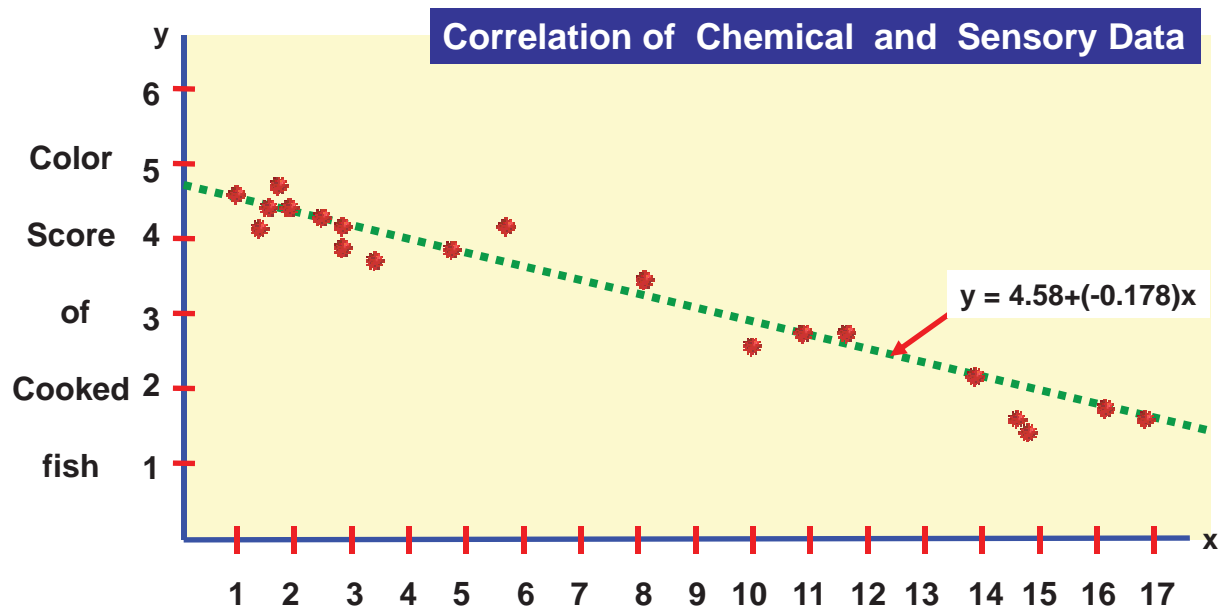
ENHANCING THE POOL OF PANELISTS

Panelist Selection, Training, and Calibration

- a) Determine discrimination capability
- b) Determine performance in recognition tests for flavors / odors, etc.
- c) Observe relative performance (compared with other panelists)
- d) Know panelist's personal qualities



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TRIMETHYLAMINE OF RAW FISH

Fig. 10 .2. Scatter diagram of x and y values (*) and regression line [$y=4.58 + (-0.178) x$] for the relationship between TMA of raw fish (x) and color score of cooked fish (y)

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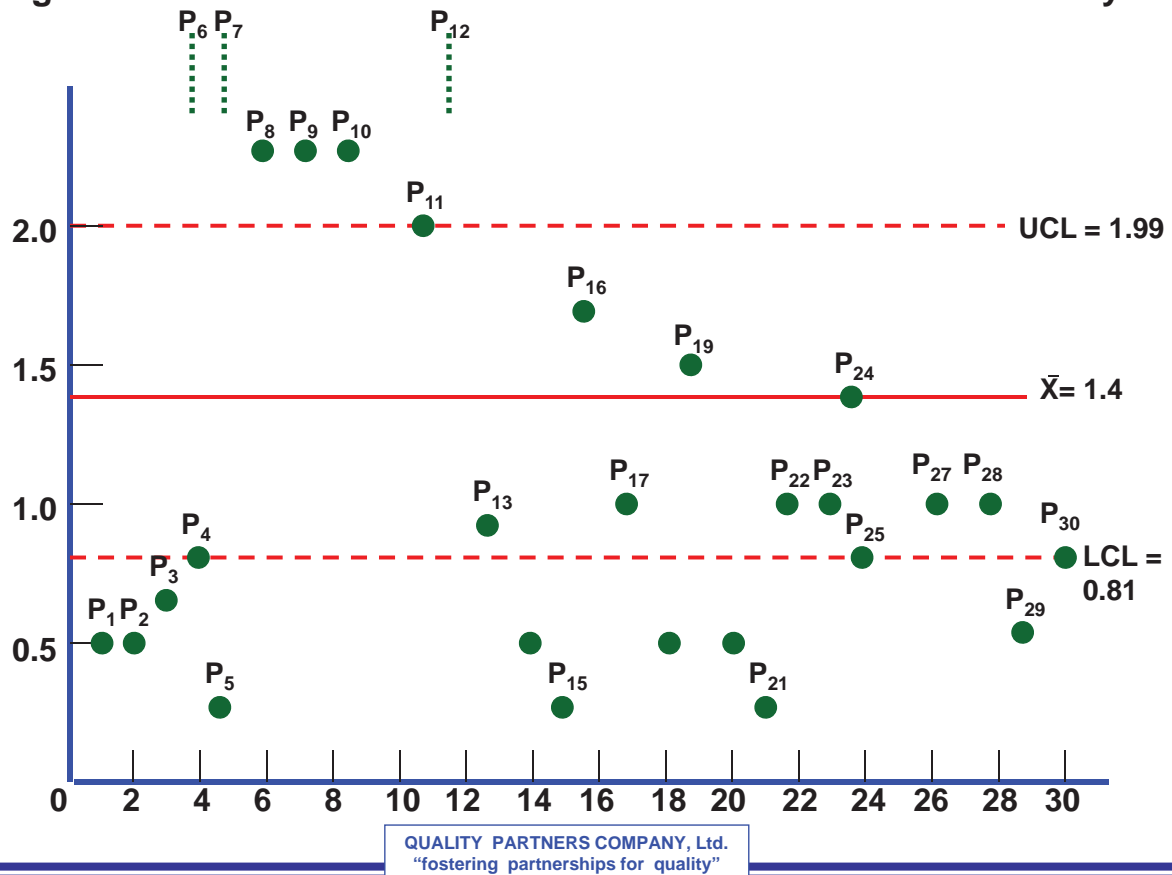
SHARPENING THE TOOLS FOR SENSORY QUALITY MEASUREMENT



TASTE THRESHOLD DETERMINATION BY SERIAL DILUTION TO DETERMINE COMPARATIVE PANELIST SENSITIVITY TO A SELECTED BASIC TASTE (FOR CALIBRATION PURPOSES)

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Figure 3. Confidence interval for bitter taste to measure sensitivity.



DESIGN OF EXPERIMENTS (DOE – CLASSICAL) AT RED RIBBON BAKESHOP, INC. September 24-26, 2008



CARD-DROP EXPERIMENT BASED
ON CUSTOMER REQUIREMENTS

MMG'S* 7DS IN EXPERIMENTAL DESIGNING

D1 = DEFINE THE PROBLEM



D2 = DETERMINE OBJECTIVES



D3 = DEVELOP EXPERIMENTAL PLAN



D4 = DO THE EXPERIMENT



D5 = DESCRIBE RESULTS



D6 = DERIVE CONCLUSIONS



D7 = DEVELOP ACTION PLANS

*MMG = MIFLORA
M. GATCHALIAN

QUALITY PARTNERS COMPANY LTD.
"Fostering Partnerships Through Quality"



** Ms Marife Cruz and *Dr. M.M. Gatchalian (co-authors)

POOL OF TRAINED SENSORY PANELISTS WHO WERE
PART OF COMPANY PARTICIPANTS OF THE THREE-YEAR
TRAINING AND COACHING ACTIVITIES AT RRBI

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**THANK YOU
AND
GOOD DAY!!!**

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