Sensory Science
-Meats-

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Sensory Science

• Fairly young science
• Currently being used throughout the industry
• Food Industry; puts a more human element to taste, tenderness, juiciness, and overall acceptability
• Subjective Measurements
Sensory Science

- Food Industry
- Untrained sensory or taste panels
  - Conduct consumer panels in grocery stores or restaurants
  - Very informal
  - Not a lot of questions asked
  - Take the Pepsi Challenge
Sensory Science

- Trained sensory or Taste panel
- Individuals trained to act as one
- Could be 6 + members per panel
- Trained for one commodity
- Meat
Trained Taste Panel

• We can ask more precise questions from these panelists:
  – Beef Flavor Intensity
  – Amount of Connective Tissue

• Can be a mixture of men and women:
  – Texas A&M all women

• Women tend to have more keen senses; especially smell and taste
Most common score cards

• Triangle Test
  – 3 samples, 2 alike
  – Ask which one is different

• Hedonic Scale
  – Usually for untrained panels
  – Smiley faces or check if strongly like, dislike, etc

• Line Scale
  – Used for trained panels
  – 15 cm line that panelist mark

Very Tough

Very Tender
Meats Sensory

• How to design a sensory experiment for meats
  – Taste Panel
  – Visual
  – Odor
Taste Panel

• What factors do you think we should control?
  • Internal Temperature
    – 70°C (Medium)
  • Lighting (Red)
  • Size of Sample
  • Rinse between samples
    – Water or Apple Juice
Visual Panel

- What factors do you think we should control?
- Lighting (1300 LUX)
  - Light Box
- Packaging
- Casing
- Temperature
- The number of questions

- Example Score Card
- Percentage of discoloration
- Color
- Reddish Pink to Gray
- Cherry-Red to Dark Brown
- Would you buy
Odor Panels

• What factors do you think we should control?
• Outside odors
• Specific instructions
  – What odor to detect
  – Rancid odor
• Odor from a cloth swatch
Other Factors to consider and/or to control
Beef Quality Grades

• Consumer Preference Panels
  – Control Quality Grade
• Sometimes you cannot control the Quality Grade
  – Co-variant
Round Sausage

- Steep in water
- Large Diameter
  - Should you cook to 70°C?
- Casing
  - Beware of case hardening
  - Practice
- Serve a consistent size
- Hot Dogs cook to a consistent time
Ground Meats

- Hamburgers or Fresh Sausages
- Cook to safe temperature
- Consistent diameter and thickness
- Cook on a specific temperature
- Cook to a consistent time
Processed Meats

- Ready to Eat
- Bologna, Summer Sausage, Liver Sausage
- Slice to consistent thickness
- Consistent amount
- Apple Juice
Evaluating the Consumer

- Want the consumers thoughts on a product
  - Preliminary Product Testing
  - Meets Expectations
  - Final Testing

- Two Types:
  - Qualitative
  - Quantitative
Qualitative Tests

- May not be used for sensory evaluation
- Guidance
- Focus Groups or One on One Interviews
- Determine the customers' wants
- What needs are not being met
Qualitative Tests

- Must ask the right questions
- Cannot lead the customer
- Must appear neutral
- Should not be done in a group setting
- If so, never ask for a visual vote
Quantitative Testing

- Most commonly used consumer test
- Products likability
- Which sample is preferred
- Can be conducted in a central location or in-home studies
Types of Quantitative Tests

- Intercept Tests
  - Quick test
  - Ask only a few questions
  - 5 minutes or less
  - Product must be prepared in that time frame
  - Grocery stores, fairs, shopping malls, etc
Types of Quantitative Tests

• Pre-recruited Tests
  – Products that require more time to prepare
  – Consumers are given instructions on when and where to participate

• In-home Tests
  – Family products, at-home storage, use on day 2
  – Specific instructions
  – Loose control
Conducting a Quantitative Test

- Must fit the target audience
- Number of consumers
- Preliminary Testing = 75 to 100 people
- Expectations Testing = 100 to 200 people
- Final Testing = 100 to 200 people
- Making claims = 300 to 800 people
  - 4 out of 5 dentists prefer ....
  - 8 out of 10 mom prefer the .....
Conducting a Quantitative Test

• Questionnaire should be easily understood

• Use specific language
  – Flavor Intensity
  – How much more would you be willing to pay for ....

• Stay away from “industry terms”
  – Grind Size
  – Connective Tissue