

Sensory Science -Meats-

Dr. Gregg Rentfrow, Ph.D.

**Assistant Extension Professor – Meat
Department of Animal and Food Science**

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

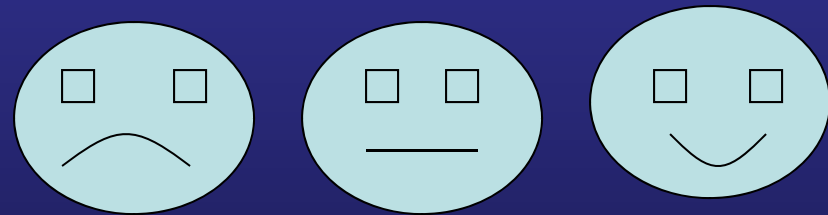
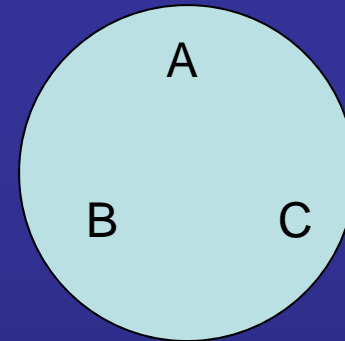


Trained Taste Panel

- **We can ask more precise questions from these panelist**
 - **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

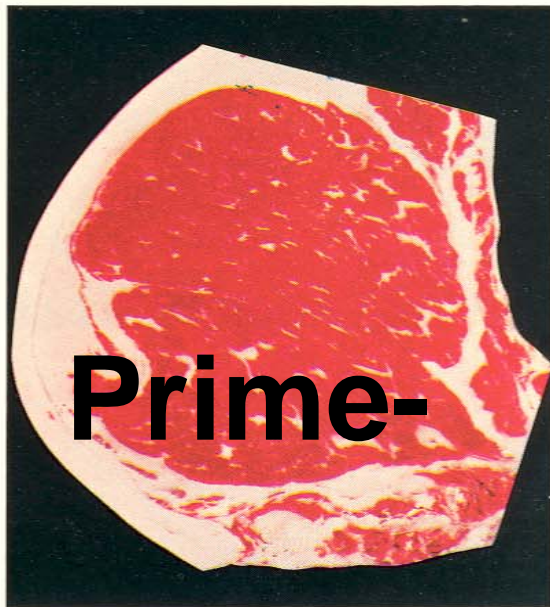


**Other Factors to consider
and/or to control**



Prime^o

Moderately Abundant



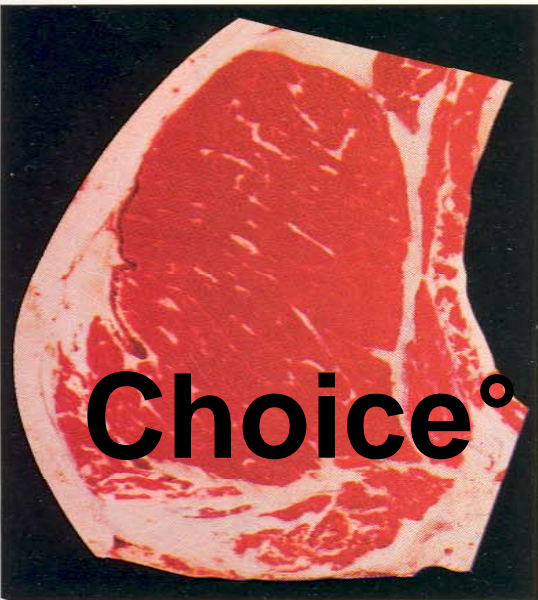
Prime-

Slightly Abundant



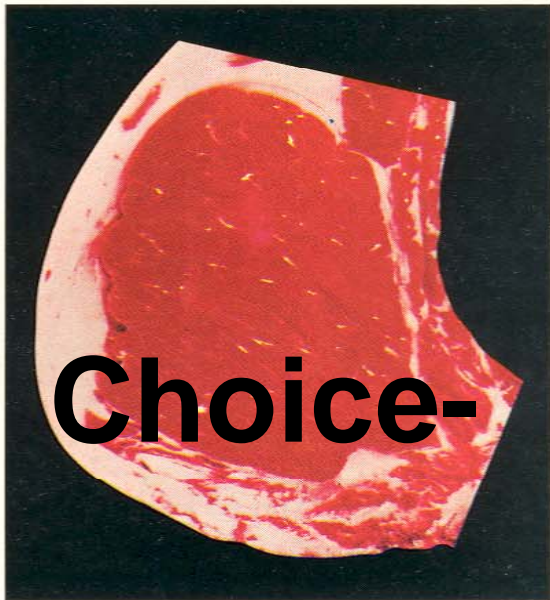
Choice+

Moderate



Choice^o

Modest



Choice-

Small



Select

Slight

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