

Activity 9.1.2 The Meat We Eat**Purpose**

Livestock producers raise meat animals for consumption. The most common species raised for meat are cows, pigs, poultry, sheep, and goats. Various types of meat are derived from these animals. A processor can turn a pig into roasts, hams, chops, bacon and several other meat products. The USDA has set standards for cuts and quality. Consumers use these cuts and quality standards to evaluate a product that is not consistent. What is the difference between a rib-eye and a sirloin? Do prime steaks taste different than choice?

Taste is an important quality when evaluating meats, but it also varies greatly among individuals. Determining the “taste” or palatability of foods is important in the food industry. Sensory evaluation is one method of determining the palatability of meats. There are many types of tests used in sensory evaluation. Some tests compare the flavor of two different types of the same food while others use a tester’s preference to evaluate the taste of food. If given two different meats could you choose which one matches a reference meat?

Materials**Per student:**

- Meat samples
- 4 paper plates
- Glass of water
- Pencil
- *Agriscience Notebook*

Procedure

You will be sampling several cuts and kinds of meat. There will be a series of tests and evaluations provided by your teacher. Follow sampling instructions as given and record all results and comments on *Activity 9.1.2 Student Worksheet*.

Part One – Triangle Test

You will receive three samples of meat. Two of the samples will be the same product, while the third sample is different. You will taste each sample to determine which two are the same. This is a comparative test.

1. Obtain a paper plate from your teacher.
2. Draw a triangle in the center of your plate. See Figure 1.
3. Label the corners of the triangle A, B, and C.
4. Obtain meat samples from your teacher and place next to the corresponding letter.
5. Taste each sample. Pay attention to the flavor, aroma, texture, and tenderness as you chew each piece.
6. Try to identify which sample is different.

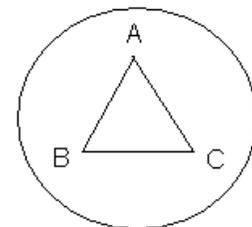


Figure 1. Plate Ready for Triangle Test

7. In the appropriate column in Table 1 of *Activity 9.1.2 Student Worksheet* place an **X** on the line of the sample you believe to be different.
8. Indicate the degree of difference and acceptability of the odd sample.
9. Dispose of the paper plate and other trash as instructed by your teacher.
10. Develop a conclusion about this test. Use the following questions to guide your conclusion.
 - What were you determining with the test?
 - Were you able to perform the test properly? Explain.
 - How else could you use this sensory test?

Part Two – Difference Testing

You will receive a reference sample and two unknown samples. One of the unknown samples is the same as the reference sample and your task is to determine which sample matches the reference sample. This is a comparative test.

1. Obtain a paper plate from your teacher.
2. Divide the plate into three sections. Label the first section “Reference”, the second section “Sample A”, and the third section “Sample B”. See Figure 2.
3. Obtain meat samples from your teacher and place next to the corresponding sample.
4. Taste each sample. Pay attention to the flavor, aroma, texture, and tenderness as you chew each piece.

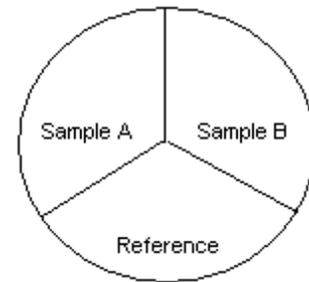


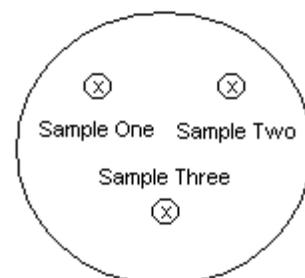
Figure 2. Plate Ready for Difference Test

5. Try to identify which sample matches the reference sample.
6. In the appropriate column in Table 1 of *Activity 9.1.2 Student Worksheet*, place an **X** on the line of the sample you believe to match.
7. Dispose of the paper plate and other trash as instructed by your teacher.
8. Develop a conclusion about this test. Use the following questions to guide your conclusion.
 - What were you determining with the test?
 - Were you able to perform the test properly? Explain.
 - How else could you use this sensory test?

Part Three – Scoring Difference

You will taste a sample and determine how tender or tough it is. This is based on your opinion and preference.

1. Obtain a paper plate from your teacher.
2. Label your plate with Sample One, Sample Two, and Sample Three. See Figure 3. The x marks where your sample will go, but you do not need to draw it in.
3. Obtain meat samples from your teacher and place next to the corresponding sample.
4. Taste Sample One. Pay attention to the flavor, aroma,



texture, and tenderness as you chew.

Figure 3. Plate Ready for Scoring Difference

- Rank the sample between extremely tender and extremely tough as it tastes to you.
- In the appropriate column in Table 1 of *Activity 9.1.2 Student Worksheet*, place an **X** on the line of the scale that is appropriate to your evaluation.
- Repeat steps 4 – 6 for Sample Two and Sample Three.
- Dispose of the paper plate and other trash as instructed by your teacher.
- Develop a conclusion about this test. Use the following questions to guide your conclusion.
 - What were you determining with the test?
 - Were you able to perform the test properly? Explain.
 - How else could you use this sensory test?

Part Four – Affective Sensory Evaluation

You will taste samples and determine their flavor, juiciness, and tenderness as well as give your overall impression of the sample. Try to determine the type of meat and the cut and grade of each sample.

- Obtain a paper plate from your teacher.
- Obtain meat samples from your teacher and label each sample as you place it on your plate.
- Taste one sample. Pay attention to the flavor, aroma, texture, and tenderness as you chew each piece.
- Determine the flavor, juiciness, tenderness and your overall impression of the sample. Use the coding key provided in the student worksheet to determine the score of the sample in each category.
- Record your observations in Table 2 of *Activity 9.1.2 Student Worksheet*.
- Record the type of meat and the cut and grade you believe the sample to be.
- Repeat Steps 3 – 5 for each sample your teacher provides.
- Dispose of the paper plate and other trash as instructed by your teacher.
- Develop a conclusion about this test. Use the following questions to guide your conclusion.
 - What were you determining with the test?
 - Were you able to perform the test properly? Explain.
 - How else could you use this sensory test?

Conclusion

- How did the type of test influence your thoughts as you sampled the product?
- Why is sensory evaluation not the most reliable test for palatability?

Name: _____

Activity 9.1.2 Student Worksheet

Table 1. Sensory Evaluation

Triangle Test	Difference Test	Scoring Test																																						
Taste the samples in the order indicated and identify the odd sample.	Select the sample that matches the reference sample.	Taste the samples in the order indicated and check the box that best describes your feelings about the sample.																																						
A B C Indicate the degree of difference between the duplicate samples and the odd sample. Slight _____ Moderate _____ Much _____ Extreme _____	Sample A Sample B	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;"></th> <th style="width: 10%; text-align: center;">1</th> <th style="width: 10%; text-align: center;">2</th> <th style="width: 10%; text-align: center;">3</th> </tr> </thead> <tbody> <tr><td>Extremely tender</td><td></td><td></td><td></td></tr> <tr><td>Very tender</td><td></td><td></td><td></td></tr> <tr><td>Moderately tender</td><td></td><td></td><td></td></tr> <tr><td>Slightly tender</td><td></td><td></td><td></td></tr> <tr><td>Slightly tough</td><td></td><td></td><td></td></tr> <tr><td>Moderately tough</td><td></td><td></td><td></td></tr> <tr><td>Very tough</td><td></td><td></td><td></td></tr> <tr><td>Extremely tough</td><td></td><td></td><td></td></tr> </tbody> </table>		1	2	3	Extremely tender				Very tender				Moderately tender				Slightly tender				Slightly tough				Moderately tough				Very tough				Extremely tough					
	1	2	3																																					
Extremely tender																																								
Very tender																																								
Moderately tender																																								
Slightly tender																																								
Slightly tough																																								
Moderately tough																																								
Very tough																																								
Extremely tough																																								
Acceptability Odd sample more acceptable _____ Duplicate samples more acceptable _____																																								
Conclusion	Conclusion	Conclusion																																						

Coding Key for Affective Sensory Evaluation							
Score	Flavor	Juiciness	Tenderness	Overall Impression	Type of Meat	Cut and Grade	Comments
Coding Key					Choices Beef Chicken Lamb Pork	Please refer to the list of possible cuts provided by your teacher.	Additional Comments
5	Extremely intense flavor	Extremely juicy	Extremely tender	Extremely good			
4	Very intense flavor	Very juicy	Very tender	Very good			
3	Moderately intense flavor	Moderately juicy	Moderately tender	Moderately good			
2	Slightly intense flavor	Slightly juicy	Slightly tender	Slightly good			
1	No flavor	Not juicy	Not tender	Not good			

Table 2. Affective Sensory Evaluation

Rate each sample on a scale of 1-5 (see Key above) for flavor, juiciness, tenderness, and your overall impression. Try to determine the type of meat of each sample and the retail cut. If applicable, predict the quality grade of the sample.							
Sample	Flavor	Juiciness	Tenderness	Overall Impression	Type of Meat	Cut and Grade	Comments
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							