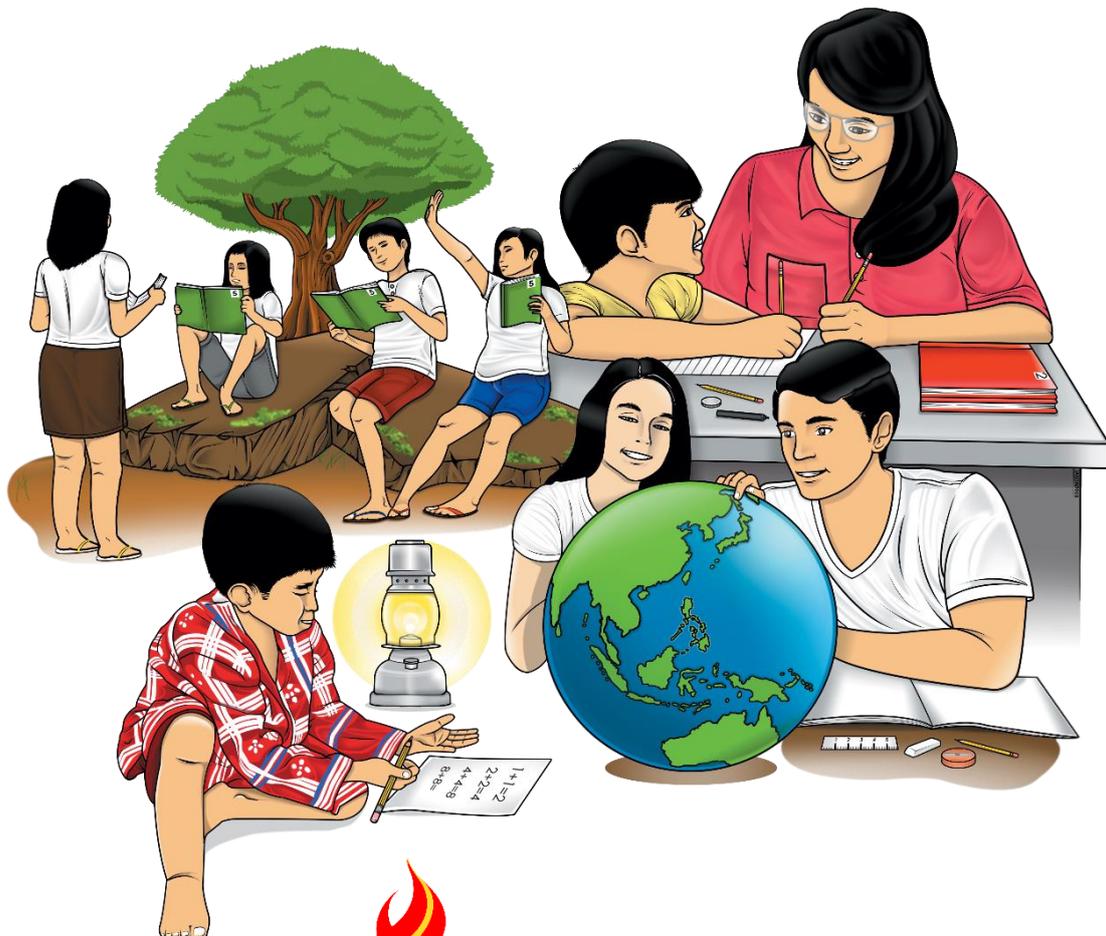


# Technology and Livelihood Education

## Quarter 1 – Module 4: Food Processing (Exploratory Course)



**TLE Food Processing – Grade 7/8 (Exploratory Course)**  
**Alternative Delivery Mode**  
**Quarter 1 – Module 4: CALCULATE THE PRODUCTION INPUTS & OUTPUT**  
**First Edition, 2020**

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**7/8**

# **Technology and Livelihood Education**

**Quarter 1 – Module 4:  
FOOD PROCESSING  
(Exploratory Course)**

# Introductory Message

For the facilitator:

Welcome to the TLE Food Processing Grade 7/8 Exploratory Course Alternative Delivery Mode (ADM) Module.

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:



### ***Notes to the Teacher***

This contains helpful tips or strategies that will help you in guiding the learners.

As a facilitator you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the TLE Food Processing 7/8 Alternative Delivery Mode (ADM) Module.

The hand is one of the most symbolized parts of the human body. It is often used to depict skill, action and purpose. Through our hands we may learn, create and accomplish. Hence, the hand in this learning resource signifies that you as a learner is capable and empowered to successfully achieve the relevant competencies and skills at your own pace and time. Your academic success lies in your own hands!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:



***What I Need to Know***

This will give you an idea of the skills or competencies you are expected to learn in the module.



***What I Know***

This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correct (100%), you may decide to skip this module.



***What's In***

This is a brief drill or review to help you link the current lesson with the previous one.



***What's New***

In this portion, the new lesson will be introduced to you in various ways such as a story, a song, a poem, a problem opener, an activity or a situation.



***What is It***

This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.



***What's More***

This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.



***What I Have Learned***

This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.



***What I Can Do***

This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.



### **Assessment**

This is a task which aims to evaluate your level of mastery in achieving the learning competency.



### **Additional Activities**

In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned. This also tends retention of learned concepts.



### **Answer Key**

This contains answers to all activities in the module.

At the end of this module you will also find:

### **References**

This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!



3. In salting fish, how many grams of salt is equivalent to one cup?
  - a. 200 g
  - b. 250 g
  - c. 350 g
  - d. 450 g
  
4. Your teacher assigned your group to make mango jam in the laboratory room. What is the proportion needed for the mixture?
  - a. 1:1 and 1:1/2
  - b. 1:1 and 1:1/3
  - c. 1:1 and 1:1/4
  - d. 1:1 and 1:3/4
  
5. Using 1:3 ratio in salting fish, how many grams of salt is needed to salt a fish weighing 1,200 grams?
  - a. 250g
  - b. 300g
  - c. 350g
  - d. 400g
  
6. Fish, salt, sili, garlic, ginger are ingredients in making spicy bagoong. What do you call these ingredients?
  - a. input
  - b. foods
  - c. product
  - d. output
  
7. What do you call the total amount spent for goods or services including money, time, and labor?
  - a. input
  - b. cost
  - c. output
  - d. production
  
8. What is a collection of information about a study under investigation? It may be a number or a word.
  - a. cost
  - b. data
  - c. pictures
  - d. documentation
  
9. What is the term for a systematic procedure of producing a record for reference?
  - a. data
  - b. cost
  - c. measurement
  - d. documentation
  
10. Mango jam is the product of processing mango pulp, sugar and calamansi juice. What do you call this product?
  - a. input
  - b. cost
  - c. output
  - d. process
  
11. In making mango jam, what do you call the peel and seeds?
  - a. input
  - b. output
  - c. rejects
  - d. spoilage
  
12. What is the term referring to the combined cost of raw materials and labor incurred in producing goods?
  - a. cost
  - b. input
  - c. output
  - d. production cost
  
13. What is the term that means to count, record, or list systematically?
  - a. calculate
  - b. compute
  - c. record
  - d. tabulate

14. What is the amount spent for buying raw ingredients?
- a. cost
  - b. input
  - c. production cost
  - d. raw food cost
15. What term refers to the number of finished products after computing for the production output and input?
- a. input
  - b. output
  - c. product
  - d. yield



## ***What's In***

In your previous lesson, you have learned how to tabulate recorded data in the production of processed food. Let's recall the lesson by answering the activity below:

### **Activity 1: Name that Term**

Direction: Read and analyze the sentences or statements below. Then, identify the term being described and asked. Write your answer on the space before each number.

- \_\_\_\_\_ 1. The ratio and proportion of salt to fish in making Kench.
- \_\_\_\_\_ 2. In fermenting fish, what is the ratio of salt and fish?
- \_\_\_\_\_ 3. In the 1:3 ratio of brine, how many percent of salt content is mixed to water if salt weigh 250g and 750g water.
- \_\_\_\_\_ 4. What are the three different brine concentration used in salting and curing fish?
- \_\_\_\_\_ 5. In sugar concentrate, what is the ratio and proportion needed?



## ***What's New***

After answering the activity above, let us now gain new knowledge thru this module. The next activity will help you achieve a better understanding about this lesson. Are you ready? Let's begin!

### **Activity 2.1: Word Scramble**

**Direction:** Arrange the jumbled letters to form the correct words described in each item.

1. Something that enters a process from the outside and is acted upon or integrated in the main body of data.

*UPTIN* \_\_\_\_\_

2. A written record showing the input-output relationship in determining the yield from a certain procedure.

*DTOONPUCIR ORPTER* \_\_\_\_\_

3. It is anything produced especially through a process, a product, or a yield.

*UPTUTO* \_\_\_\_\_

Guide questions:

1. What were the words you formed in question no.1, no. 2 and no. 3?

2. What do you expect to learn from this lesson?

---

## Activity 2.2: A Helping Hand

**Direction:** Read the text below and provide answers to the questions that follow.

Jose is an industrious boy. He helps his mother in household chores and in their livelihood of making processed food. One day his mother was preparing to make Mango Jam. She asked Jose to list down the raw materials and ingredients for the food she was preparing. These include 1 cup of mango pulp, 1 cup of sugar and 1 teaspoon of calamansi juice. Help Jose accomplish his task by completing the table below:

Mango Jam



Ingredient	Quantity
1.	
2.	
3.	

Guide questions:

1. Why do you think it is important to gather and record data for processed food?

---

2. What could happen if your data is inaccurate?

---

Were you able to complete the table and provide answers to the questions? Great work! You may now proceed to the next activity.



### ***What Is It***

Read the next set of information and be ready to learn more about the lesson.

#### **Definition of Terms**

<b>Concentration of a solution</b>	the amount of solute present in a given quantity of solvent.
<b>Conversion</b>	a change from one state or position to another or from one form to another

<b>Cost</b>	the total amount spent for goods or services including money, time, and labor
<b>Data</b>	a collection of information about a study under investigation. It may be a number (quantitative) or a word (qualitative)
<b>Documentation</b>	systematic procedure of producing a record for reference
<b>Input</b>	something that enters a process from the outside and is acted upon or integrated in the main body of data
<b>Measurement</b>	a way of comparing certain attribute of an object with some given standard
<b>Output</b>	anything produced especially through a process, a product, or a yield
<b>Production Cost</b>	the combined cost of raw materials and labor incurred in producing goods
<b>Production Report</b>	a written record showing the input – output relationship in determining the yield from a certain procedure
<b>Raw food cost</b>	the amount spent for buying raw ingredients
<b>Recording</b>	the process of capturing data or translating information to a recording format stored on some storage medium, which is often referred to as a record
<b>Semi-permeable membrane</b>	a material that allows molecules of one kind to pass through it but prevents the passage of other kinds of molecules
<b>Solution</b>	a homogenous mixture of substances with variable composition
<b>Tabulate</b>	to count, record, or list systematically

### Calculating Data on Raw Materials or Ingredients Consumption and Corresponding Percentage Equivalent in Line with Enterprise Requirement

Data gathering on raw materials and ingredients is necessary in order to compute and calculate production input and output of the finished product. The following are examples of data that are gathered based on the products to be done.

#### 1. Pickled Mixed Vegetables

Data:	Item	Weight
	Sugar	250 g
	Vinegar	250 ml
	Salt	15 g
	Carrots	150 g
	Sayote	250 g
	Bell pepper	75 g
	Garlic	50 g
	Ginger	50 g
	Onion	75 g



#### 2. Smoked Fish

Data:	Item	Weight
	Bangus	1 kg
	Salt	250 g
	Water	800 ml



### 3. Mango Jam

Data:	Item	Weight
	Mango pulp	1 cup
	Sugar	1 or $\frac{3}{4}$ c
	Calamansi juice	1 tsp



### 4. Fermented fish

Data:	Item	Weight
	Fish or alamang	4 kilos
	Salt	1 kilo



### 5. Pickled Fish

Data:	Item	Weight
	Fresh milkfish	1 kilogram
	Vinegar	1 cup
	Calamansi juice	$\frac{1}{2}$ cup
	Soy sauce	$\frac{1}{2}$ cup
	Salt	5 tbsp
	Sugar	5 tbsp
	Black pepper	1 tbsp
	Garlic (minced)	1 tbsp

## Actual Spoilage or Rejects

Actual spoilage or rejects and their corresponding percentage depend on the product to be made.

For example, in mango jam, spoilage refers to the peel of mango and seeds. The products left during packing are not classified as spoilage rejects. In pickled fish, the skin of the calamansi, garlic and the intestinal organ of fish are included in the spoilage. In smoked fish, the intestinal organ is the reject. Lastly, in fermented fish and other fishery product, small seashell, small stone and seaweeds are the spoilage.

Spoilage also is defined as the wastage or loss of material that occur during the manufacturing process.

Below is the formula for getting the percentage of actual spoilage:

$$\text{Actual Spoilage} = \frac{\text{Total Number of Spoiled Units}}{\text{Total Number of Units Produced}} \times 100 \%$$

## Actual Yield and Recoveries

Yield refers to the number of finished products after computing for the production output and input.

Here's the formula for getting the percentage yield:

$$\text{Percentage of Yield} = \frac{\text{Production Output}}{\text{Production Input}} \times 100 \%$$

### Record's Calculated Data

Reports or records based on the data gathered and computed on production output, input, actual spoilage, rejects, actual yields or recoveries are kept for documentation purposes. This will be the basis for determining the progress of whatever products to be done on process.

Study the sample production report for smoked fish below.

### Example of Production Report

Production Name : Smoke Fish	
Production Date : May 21, 2020	
Materials/Ingredients:	
Bangus	220 grams
Salt	500 grams
Production Input	720 grams
Weight of Spoiled Materials	50 grams
Production Output	670 grams
Percentage of yield	$\frac{\text{Production output}}{\text{Production Input}} \times 100\%$
	$\frac{670 \text{ grams}}{720 \text{ grams}} \times 100\%$
	$0.93 \times 100\%$
	<b>93%</b>
Number of yield	$\frac{\text{Production output}}{\text{Weight of the Product}}$
	<b>4</b>
Problem Encountered: NONE	

## Let Us Remember

Production report needs proper and correct noting, documenting, recording and presenting of data based on the basic accounting procedure. Accuracy in report preparation must always be observed in order to have ready record for future use or reference.



## What's More

**Good job!** You have answered the previous activities. Now, let's study more.

### Activity 3.1: Spoil It!

**Direction:** Compute for the percentage of spoilage or rejects.

Example: Given: 500g sardines (for smoke fish)  
50g internal organs

$$\text{Calculations: } \frac{50\text{g}}{500\text{g}} \times 100\% = \boxed{10\%}$$

Ingredients/ raw materials	Spoilage/rejects	Percentage of spoilage/rejects
1. 1 kg milkfish	250g	
2. Mango 500g	50g	
3. Dilis 200g	30g	
4. Vegetables 2kg	400g	
5. Galonggong 800g	200g	

**Activity 3.2: In and Out!**

**Direction:** Calculate the production input and output and percentage of actual yield and recoveries.

Example: Production name: Smoked Fish  
 Production Date: May 26, 2020  
 Materials/ingredients



Bangus	=	250g	
Salt	=	550g	
Production Input	=	800g	
Weight of Spoiled Materials	=	-50g	
Production Output	=	750g	
Percentage of Yield	=	$\frac{\text{Production Output}}{\text{Production Input}}$	x 100%
Percentage of Yield	=	$\frac{750\text{grams}}{800\text{grams}}$	x 100%
Percentage of Yield	=	.93% x 100%	
Percentage of Yield	=	93%	

Given: Production Name: Fermented Dilis  
 Materials /Ingredients:

Dilis	=	400g
Salt	=	100g
Weight of spoiled materials	=	20g

1. Given: Production Name: Smoked Fish  
 Raw materials/ ingredients:

Sardines	=	350g
Salt	=	700g
Weight of Spoilage	=	75g



## ***What I Have Learned***

### **Activity 4: Sum It Up!**

Direction: Read and answer the following questions.

1. Why do you need to convert weights and measurement into the same unit before computing the percentage of spoilage, production input, production output and percentage of yield?

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2. How do you compute percentage of spoilage?

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---

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3. How do you calculate the production input and output?

---

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---

4. How do you compute the percentage of yield?

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---

---

5. Why is it Important to record and document production input?

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## What I Can Do

Congratulations on making it this far! Now, let us apply what you have learned.

### Activity 5: Apply It!

**Direction:** Calculate the production input and output and the percentage of yield for the given situation.

In your food fish processing class activity your group is assigned to make smoke fish. The materials and ingredients and its quantity of making smoked fish are:



Milkfish	=	200 grams
Salt	=	500 grams
Water	=	1,600 ml
Internal organs	=	50 grams



## Assessment

**A. Direction:** Fill in the blanks with the correct term. Select your answer from the choices inside the box. Write your answer in your test notebook.

Salt	smoked fish	product
Finished product	fermented fish	

1. Data gathering on raw materials and ingredients is necessary to compute and calculate production input and output of \_\_\_\_\_.
2. \_\_\_\_\_ is the chief preservative in curing fish through salting and smoking.
3. Actual spoilage rejects and their corresponding percentage depend on the \_\_\_\_\_ to be made.
4. In \_\_\_\_\_, the intestinal organ is the reject.
5. In \_\_\_\_\_, and other fishery product, small seashell, small stone and seaweeds are the spoilage.

**B. Direction:** Read and analyze the questions, select the letter of the correct answer and write it in your test notebook.

6. What is the term refers to something that enters a process from the outside and is acted upon?
  - a. input
  - b. output
  - c. production
  - d. yield
7. How many grams is 7 kilos of mango?
  - a. 1000 grams
  - b. 6,000 grams
  - c. 7,000 grams
  - d. 7,500 grams
8. What is a written record showing the input – output relationship?
  - a. documentation
  - b. production input
  - c. production output
  - d. production report
9. Which of the following is not an example of spoilage?
  - a. skin of calamansi
  - b. intestinal organ of fish
  - c. seeds of mango
  - d. mango pulp
10. The total weight of a fish bought is 500 grams. What is the percentage of spoilage if the intestinal organs weigh 50 grams?
  - a. 10%
  - b. 10.5%
  - c. 11%
  - d. 20%

**C. Direction:** Compute for the percentage equivalents of spoilage.

Raw materials/ingredients	Spoilage	Percentage of spoilage
11. 2 kilograms Small shrimps	500grams	
12. 1 kilogram dilis	250grams	
13. 1 kilogram milkfish	200grams	
14. 3 kilograms mango	600grams	
15. 4 kilograms assorted vegetables	800grams	



### **Additional Activities**

Good job! You have come to the last part of this module. I hope you have learned a lot about calculating inputs and outputs in food processing. To further enhance your understanding about this lesson, practice some more with the next activity.

#### **Activity 6: Do It Yourself**

**Direction:** In your home make homemade bagoong or any fruit jam (like mango jam, pineapple jam or coconut jam). And do the following:

1. Gather and record data,
2. Calculate the production input and output and percentage of yield.
3. Make a production report

References:

Learning Module in Food Fish Processing, pp. 73-101

Competency-Based Learning Materials Year 2, pp. 96-100



# Answer Key

No.	What I Know	What's In	What's New	What's More
1.	C	1:7	Input 51	Mango Pulp, 1 cup 25%
2.	A	1:4	Production Report	Sugar, 1 cup 10%
3.	B	25%	Output	Calamansi Juice, 1 teaspoon 15%
4.	A	1:9, 1:4, 1:3		
5.	A	1:1 & 1:1 ¾		
6.	A			25%
7.	C			
8.	B			
9.	D			
10.	A			
11.	D			
12.	A			
13.	D			
14.	C			
15.	A			

**Activity 3.2**

1. Production Name: Fermented Dillis  
Materials and Ingredients  
Dills  
Salt  
Production Input = 400g  
= 100g  
= 500g  
Weight of Spoiled materials = -20g  
Production Output = 480g  
Percentage of Yield =  $\frac{480g}{500g} \times 100\%$   
Percentage of Yield = 96%

2. Production Name: Smoked Fish  
Materials and Ingredients  
Sardines  
Salt  
Production Input = 350g  
= 700g  
= 1,050g  
Weight of Spoiled materials = 75g  
Production Output = 975g  
Percentage of Yield =  $\frac{975g}{1,050g} \times 100\%$   
Percentage of Yield = 92.85%

**A. Assessment**

1. Finish product 6. B  
2. Salt 7. C  
3. Product 8. B  
4. Smoked fish 9. D  
5. Fermented fish 10. B

**B.**  
11. 25% 6. B  
12. 25% 7. C  
13. 20% 8. B  
14. 20% 9. D  
15. 20% 10. B

**C.**

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