RQF LEVEL 4

FOPRT403

FOOD PROCESSING

Processing Roots and Tubers into Flour

TRAINER'S MANUAL

October, 2024

PROCESSING ROOTS AND TUBERS INTO FLOUR

KOICA Korea International Cooperation Agency

TQUM TVET Quality Management Project

2024

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ACRONYMS

%: Percentage

^{O}C: Degree Celsius

^{0}F: Degree Fahrenheit

AGR: Agriculture

ATP: Adenosine Triphosphate

C_2H_4: Ethylene

CA: Controlled Atmosphere

CBT/A: Competency Based Training and Competency Based Assessment

CCP: Critical Control Point

CIP: Cleaning in Place

CO_2: Carbon dioxide

COP: Cleaning Out of Place

ELISA: Enzyme-Linked Immunosorbent Assay

FAO: Food and Agriculture Organization

FIFO: First In First Out

FOP: Food Processing

H_20: Water

HCl: Hydrochloric acid

HPLC: High-Performance Liquid Chromatography

HQCF: High quality cassava flour

HQs: Head Quarters

IC: Indicative Content

Kg: Kilogram

pH: Potential of Hydrogen

PPE: Personal Protective Equipment

PRP'S: Pre-Requisite Programs

RFDA: Rwanda Food and Drug Authority

RH: Relative Humidity

RQF: Rwanda Qualification Framework

RTB: Rwanda TVET Board

SOP: Standard Operating Procedure

SSOPS: Sanitation Standard Operating Procedures

TQUM Project: TVET Quality Management Project

TSS: Total Soluble Solids

TVET: Technical and Vocational Education and Training

QAC: Quaternary Ammonium Compound

INTRODUCTION

This trainer's manual includes all the methodologies required to effectively deliver the module titled **" Processing Roots and Tubers into Flour."** Trainees enrolled in this module will engage in practical activities designed to develop and enhance their competencies.

The development of this training manual followed the Competency-Based Training and Assessment (CBT/A) approach, offering ample practical opportunities that mirror real-life situations.

The trainer's manual is organized into Learning Outcomes, which is broken down into indicative content that includes both theoretical and practical activities. It provides detailed information on the key competencies required for each learning outcome, along with the objectives to be achieved.

As a trainer, you will begin by asking questions related to the activities to encourage critical thinking and guide trainees toward real-world applications in the labour market. The manual also outlines essential information such as learning hours, didactic materials, and suggested methodologies.

This manual outlines the procedures and methodologies for guiding trainees through various activities as detailed in their respective trainee manuals. The activities included in this training manual are designed to offer students opportunities for both individual and group work. Upon completing all activities, you will assist trainees in conducting a formative assessment known as the end learning outcome assessment. Ensure that students review the key reading and the points to remember section.

MODULE CODE AND TITLE: FOPRT403 PROCESSING ROOTS AND TUBERS INTO FLOUR

Learning Outcome 1: Receive raw materials
Learning Outcome 2: Prepare roots and tubers
Learning Outcome 3: Make flour

Indicative contents
1.1 Preparation of Workplace **1.2 Checking quality of Roots and tubers** **1.3 Storage of raw materials**

Key Competencies for Learning Outcome 1: Receive Raw Materials

Knowledge	Skills	Attitudes
• Description of tools and equipment • Description of cleaning in processing roots and tubers into flour • Description of physical quality parameter of roots and tubers • Description of factors affecting deterioration of roots and tubers	• Selecting tools and equipment • Adjusting tools and equipment • Cleaning working area, tools and equipment • Arranging the workplace • Checking the effectiveness of cleaning • Checking physical quality parameters of roots and tubers • Storing of roots and tubers	• Being Curiosity about different tools and equipment and their functions. • Being responsibility taker for selecting the appropriate tools and equipment • Being strive to select tools and equipment • Being accurate in sorting raw materials based on size, quality, and other criteria. • Being attention to the details of the sorting process. • Being Consistency in sorting practices • Being diligent in cleaning tools and equipment

		• Being aware of safety precautions when using cleaning agents. • Having a critical thinking in evaluating the quality of raw materials. • Being good observer to identify defects or abnormalities. • Being organizer in storage practices. • Being careful in storing roots and tubers • Being Aware of storage conditions • Being vigilant in monitoring storage conditions • Being a Problem-solver to identify and address any issues that may arise during storage. • Being a record keeper of storage conditions to track the quality of the produce over time

Duration: 10 hrs

Learning outcome 1 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Describe correctly tools and equipment as used in processing roots and tubers into flour
2. Prepare properly working area for processing roots and tubers into flour according to standards operations procedures
3. Check effectively the physical quality parameters of roots and tubers according to acceptance criteria
4. Describe correctly the factors affecting deterioration of roots and tubers
5. Store correctly the raw materials used in processing roots and tubers into flour

Resources

Equipment	Tools	Materials
• Working table • Balance • PPE • Soaking tank • Washing tank • Dryer • Chopper • Grinder • Drying Belts • Filling machine • Packaging machine	• Brush • Sprayers • Buckets • Mop • Basins • Knives • Cutters • Sieves and Filters • Brooms • Dustbins • Towels	• Roots and tubers (cassava, Irish potato, yams, and sweet potatoes) • Cleaning agents

• Peeling machine • Blanching machine • Milling machine	• Aflatoxin tool kit • Cutting board	

Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- Make sure if there is workshop to be organized
- Make sure if there are roots and tubers to be stored
- Avail materials, tools and equipment and make sure that they are in good working conditions
- Prepare teaching aids and didactic materials (manuals/guides, photos) for receiving raw materials used in roots and tubers processing into flour.

Indicative content 1.1: Preparation of Workplace

Duration: 5hrs

Theoretical Activity 1.1.1: Description of tools and equipment used in process roots and tubers into flour

Notes to the trainer:

- Trainer may use small groups to describe tools and equipment used in processing roots and tubers into flour
- Trainer may avail photos and videos as didactic materials for tools and equipment used in roots and tubers processing into flour.

Key steps:

While delivering this activity, pass through the following steps:

Step1: introduce the activity and ask trainees to answer the following questions:

i. What could be the tools and equipment used in the processing of roots and tubers into flour?
ii. Based on the list of tools and equipment provided in question (i) what could be the use of each tool and equipment?
iii. What could be the safety precautions followed when using tools and equipment for processing roots and tubers into flour?

Step 2: Ask trainees to write the findings on papers, flip chart, blackboard or white board.

Step 3: Facilitate trainees to present their findings.

Step 4: Provide the expert view and clarify ideas by using didactic materials.

Step 5: Address any questions or concerns.

Step 6: Ask trainees to read the key reading 1.1.1 in trainee manual

Points to Remember

- While describing tools and equipment, consider their uses and functionality
- While using tools and equipment consider the cleanliness of tools and equipment, safety precautions

Practical Activity 1.1.2: Selection and adjustment of tools and equipment used in processing roots and tubers into flour

Notes to the trainer

- The trainer may use individualized method for demonstrating the selection of tools and equipment used in processing roots and tubers into flour
- Make sure tools and equipment to be selected are available in workshop for processing roots and tubers into flour

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop to select and adjust the right tools and equipment to be used while process roots and tubers into flour.
Step 2: Explain the task and provide clear work instructions (PPE, Time allocated)
Step 3: Demonstrate how you can select tools and equipment for process roots and tubers into flour, while demonstrating, explain clearly the criteria for selecting tools and equipment used in processing roots and tubers into flour and adjustment procedures
Step 4: Ask trainees to do the task individually
Step 5: Facilitate them by providing more explanations where necessary.
Step 6: Verify whether tools and equipment to be used in processing of roots and tubers into flour are correctly selected and adjusted and provide feedback on each trainee's product
Step 7: Ask trainees to read key reading 1.1.2 in trainee manual
Step 8: Ask trainees to perform the task provided in application of learning 1.1

Points to Remember

- For efficient and easy work, it is recommended to select the appropriate tools and equipment
- Ensure all equipment is regularly calibrated to maintain accuracy and consistency.
- Regularly clean and maintain equipment to prevent contamination and ensure efficient operation.

Theoretical Activity 1.1.3: Description of cleaning in processing roots and tubers into flour

Notes to the trainer:

- Trainer may describe cleaning in processing of roots and tubers into flour
- For effective delivering the use of pictures or videos as didactic materials is required.

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

i. What do you understand by cleaning agents?
ii. What could be the selection criteria of cleaning agents used in processing roots and tubers into flour?
iii. What are the factors affecting effectiveness of using cleaning agents?
iv. What could be the safety precautions that should be respected while using cleaning agents?
v. Which are the direction for using cleaning agent?
vi. What is the purpose of workplace arrangement?

Step2: Ask trainees to write the findings on papers, flip chart, blackboard or white board.

Step3: Facilitate trainees to present their findings.

Step 4: Provide the expert view and clarify ideas by using didactic materials.

Step 5: Address any questions or concerns.

Step 6: Ask trainees to read the key reading 1.1.3 in trainee manual

Points to Remember

- Use cleaning agents effectively and safely to maintain a clean and hygienic environment
- It's important to use cleaning agents that are approved for food processing to ensure the safety and quality of the final flour product.
- Choosing the appropriate cleaning method depends on the specific needs of the workplace, the types of surfaces, and the nature of the contaminants. Combining wet and dry methods can often yield the best results for maintaining a clean and safe work environment.

Practical Activity 1.1.4: Arranging the working area for processing roots and tubers into flour

Notes to the trainer

- Trainer may avail a disorganized roots and tubers processing workshop.
- The trainer may request every trainee to arrange roots and tubers processing workplace.
- Trainer may avail some video, pictures/drawing illustrating the process flow chart of processing of roots and tubers into flour

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop to clean and arrange the workplace.

Step 2: Explain the task and provide clear work instructions (PPE, Time allocated)

Step 3: Demonstrate how to clean and arrange the workplace. While demonstrating, explain clearly the process of cleaning and arrange workplace for processing roots and tubers into flour

Step 4: Ask trainees to do the task individually.

Step 5: Facilitate them by providing more explanations where necessary.

Step 6: Verify whether the workplace is well cleaned and arranged, and provide feedback on each trainee's product

Step 7: Orient trainees to read key reading 1.1.4 in trainee manual

Step 8: Ask trainees to perform the task provided in application of learning 1.1

Points to Remember

- Effective workplace arrangement and cleanliness are crucial for maintaining a productive, safe, and efficient work environment.
- Regular checks and adherence to the established procedures help ensure that the workplace remains well-organized and conducive to high performance.

Practical Activity 1.1.5: Checking cleanliness of workplace for processing roots and tubers into flour

Notes to the trainer

- The trainer may use individualized method for demonstrating how to check cleanliness of workplace for processing roots and tubers into flour
- The Use of photos and videos as didactic materials is required

 **Key steps:**

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop to check the cleanliness of workplace.

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how you can check the cleanliness of workplace for process roots and tubers into flour. While demonstrating, explain the procedures and methods.

Step 4: Ask trainees to check the cleanliness of workplace for process roots and tubers into flour and monitor the procedures.

Step 5: Verify whether the checking cleanliness of workplace for processing roots and tubers into flour is properly checked and provide feedback where necessary.

Step 6: Ask trainees to read key reading 1.1.5 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 1.1

 **Points to Remember**

- Maintaining cleanliness in a processing facility for roots and tubers is essential for ensuring food safety and quality.
- Utilizing of the checking cleanliness methods helps ensure that the workplace remains sanitary and meets health regulations.
- Regular inspections, testing, and adherence to established cleaning procedures are key to maintaining a safe and efficient processing environment.

 **Application of learning 1.1.**

In your roots and tubers processing workshop, request each trainee to do the following tasks:

Task1: Select tools and equipment for process roots and tubers into flour

Task 2: Adjust tools and equipment for process roots and tubers into flour

Task 3: Clean workplace, tools and equipment

Task 4: Arrange the roots and tubers processing workshop

Task: Check cleanliness of workplace for processing roots and tubers into flour

Checklist

SN	Criteria	Indicators	Yes	No
1	Tools and equipment are appropriately selected	1.1. Tools are selected		
		1.2. Equipment are selected		
2.	Tools and equipment well are adjusted	2.1.Tools are adjusted		
		2.2.Equipment are adjusted		
3.	Workplace , tools and equipment are properly cleaned	3.1. workplace is cleaned		
		3.2. Tools are cleaned		
		3.3. Equipment are cleaned		
4.	Workplace are well arranged	4.1. Tools are arranged		
		4.2.Equipment are arranged		
5	Cleanliness of workplace are well checked	5.1. Visual inspection is used		
		5.2. Swab testing is used		

Indicative content 1.2: Checking Quality of Roots and Tubers

Duration: 2 hrs

Practical Activity 1.2.1: Checking physical quality parameters of roots and tubers

Notes to the trainer

- The trainer may use individualized method for demonstrating how to check physical quality parameters of roots and tubers
- The trainer may avail tools, materials and equipment to be used in checking the physical quality parameters of roots and tubers
- The trainer may use photos and videos as didactic materials in checking the physical quality parameters of roots and tubers

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop to check physical quality parameters of roots and tubers.

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how you can check physical quality parameters of roots and tubers While demonstrating, explain the procedures and methods.

Step 4: Ask trainees to check physical quality parameters of roots and tubers and monitor the procedures.

Step 5: Verify whether the checking of physical quality parameters of roots and tubers are properly checked and provide feedback where necessary.

Step 6: Ask trainees to read key reading 1.2.1 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 1.2

Points to Remember

- Regular inspection and adherence to best practices in handling and storage are key to maintaining the physical quality of roots and tubers.

Application of learning 1.2.

Organize a field visit in roots and tubers processing plant located in your school district and request every trainee to check physical quality parameters of roots and tubers and prepare a report.

Checklist

SN	Criteria	Indicators	Yes	No
1	Physical quality parameters of roots and tubers are well checked	1.1.Appearance is checked		
		1.2.Texture is checked		
		1.3. Free from contaminants are checked		
		1.4.Ripeness and Maturity are checked		
		1.5.Internal quality is checked		
		1.6. Handling and storage are checked		
2	Study field report is well done	2.1.Companies identifications are mentioned		
		2.2 Key competencies gained are described		
		2.3. Recommendations are given		

Indicative content 1.3: Storage of Raw Materials

Duration: 3 hrs

Theoretical Activity 1.3.1: Description of the factors affecting deterioration of roots and tubers

Notes to the trainer:

- The trainer may use small group for describing the factors affecting deterioration of roots and tubers
- The use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following question:

i. What could be the factors affecting deterioration of roots and tubers?

Step2: Ask trainees to write the findings on papers, flip chart, blackboard or white board.

Step3: Asks trainees to present their findings and choose the correct ones.

Step 4: Provide the expert view and clarify ideas by using didactic materials.

Step 5: Address any questions or concerns.

Step 6: Ask trainees to read the key reading 1.3.1 in trainee manual

Points to Remember

- To maintain the quality of roots and tubers throughout their storage life, it is recommended to apply proper storage techniques, and consistently monitoring storage conditions

Practical Activity 1.3.2: Storing of roots and tubers

Notes to the trainer

- The trainer may use individualized method for demonstrating how to store roots and tubers
- The trainer may avail tools, materials and equipment to be used in roots and tubers
- The Use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the food processing workshop to store roots and tubers

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how you can store roots and tubers While demonstrating, explain the procedures and techniques.

Step 4: Ask trainees to store roots and tubers and monitor the procedures.

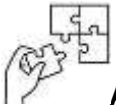
Step 5: Verify whether the storing roots and tubers are properly stored and provide feedback where necessary.

Step 6: Ask trainees to read key reading 1.3.2 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 1.3

Points to Remember

- Remember to manage harvest time, optimal storage conditions
- Process harvested roots within 24 hours for best quality and maximum recovery of processed products
- Proper storage of roots and tubers is important to maintain their quality and prevent spoilage before processing into flour.



Application of learning 1.3.

In your roots and tubers processing workshop ask every trainee to store the following roots and tubers:

1. Cassava
2. Sweet potatoes

Checklist

SN	Criteria	Indicators	Yes	No
1	Roots an tubers are well stored	1.1.Cassave are cleaned		
		1.2.Sweet potatoes are cleaned		
		1.3.Storage containers are selected		
		1.4.Storage location is determined		
		1.5.Temperature is controlled		
		1.6. Humidity is controlled		
		1.7. Record keeping is done		

Learning outcome 1 end assessment

Written assessment

A. Multiple Choice Questions

Read carefully the statements below and answer by circle the correct letter

1.Which tool is used for removing the outer skin of roots and tubers?

A. Slicer
B. Peeler
C. Grinder
D. Dryer

Answer: B. Peeler

2.What is the primary purpose of a washing machine in the processing of roots and tubers?

A. To slice the tubers
B. To remove moisture from the tubers
C. To clean the roots and tubers
D. To pack the flour

Answer: C. To clean the roots and tubers

3.When selecting equipment for processing roots and tubers, which of the following is **NOT** selection criteria?

A. Efficiency
B. Color of the equipment
C. Durability
D. Ease of Maintenance

Answer: B. Color of the equipment

4.What is a key safety precaution when using a grinder?

A. Keeping hands away from moving parts
B. Using excessive force
C. Not wearing gloves
D. Overloading the machine

Answer: A. Keeping hands away from moving parts

5.Which cleaning method is best for removing sticky substances from surfaces?

A. Dry method

B. Wet method
C. Both methods are equally effective
D. None of the above

Answer: B. Wet method

6.What is a common factor that accelerates the deterioration of roots and tubers?

A. Proper ventilation
B. Low humidity
C. High temperature
D. Clean storage environment

Answer: C. High temperature

7.Which storage technique is most effective for prolonging the shelf life of roots and tubers?

A. Storing in direct sunlight
B. Keeping in a dry and cool place
C. Placing in an airtight container
D. Freezing without proper wrapping

Answer: B. Keeping in a dry and cool place

8.When checking the cleanliness of the workplace, what is a key visual indicator of cleanliness?

A. Presence of dust and debris
B. Spotless and organized surfaces
C. Uncovered waste bins
D. Overflowing storage containers

Answer: B. Spotless and organized surfaces

9.What tool can be used to measure the moisture level of roots and tubers?

A. Thermometer
B. Moisture meter
C. Hygrometer
D. Sieve

Answer: B. Moisture meter

10. Which physical quality parameter of roots and tubers assesses their firmness?

A. Shape
B. Color
C. Texture
D. Moisture level

Answer: C. Texture

B. Fill-in-the-Blank Questions

Fill in the blank by using the following words: **Water, Compatibility, Surface, cleaning agents, Degreaser, Efficiency, Gloves, safety, Miller or Grinder**

1. The primary function of a _____ is to convert dried root and tuber pieces into flour.

Answer: Miller or Grinder

2. In the wet cleaning method, surfaces are cleaned using _____ and _____.

Answer: Water, cleaning agents

3. When selecting cleaning agents, one important criterion is _____ to ensure they are suitable for the surfaces being cleaned.

Answer: Compatibility

4. Safety precautions for using a peeler include wearing _____ to avoid cuts.

Answer: Gloves

5. A key factor affecting the effectiveness of cleaning is the type of _____ used.

Answer: Surface

6. A _____ is used to remove heavy grease and oil deposits from equipment.

Answer: Degreaser

7. The purpose of arranging the workplace is to improve the _____ and _____ of the processing line.

Answer: Efficiency, safety

Practical assessment

UMWUMBATI COMPANY located in Gatsibo district is a company that wants to process cassava into flour. Recently, the company received tools and equipment for processing flour but the company's workers do not have knowledge and skills of preparing workplace, checking quality parameters of cassava roots and storing cassava roots

You as an assistant technician in roots and tubers processing you are requested by the production manager to demonstrate to their workers the following tasks within 4 hours:

Task 1: Prepare work place for cassava processing

Task 2: Check quality parameters of cassava roots

Task 3: Store cassava roots

Checklist

SN	Criteria	Indicators	Yes	No
1	Workplace are well prepared	1.1.tools and equipment are cleaned		
		1.2.Tools and equipment are arranged		
2.	Quality parameters of cassava roots are well checked	2.1 Maturity of cassava is checked		
		2.2 Freshness of cassava is checked		
		2.3 Decaying of cassava is checked		
3	Cassava roots are properly stored	3.1. Storing location is respected		
		3.2. Storing container is selected		
		3.3.Storing conditions are respected		

Further information to the trainer

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Indicative contents

2.1 Peeling of Roots and tubers

2.2 Roots and tubers fermentation and blanching

2.3 Dry Roots and tubers

Key Competencies for Learning Outcome 2: Prepare Roots and Tubers

Knowledge	Skills	Attitudes
• Description of peeling methods of roots and tubers • Description of fermentation methods of cassava • Description of drying methods of roots and tubers	• Peeling of roots and tubers • Soaking of roots and tubers • Blanching of roots and tubers • Fermenting cassava roots • Washing of roots and tubers • Drying s of roots and tubers	• Being aware of safety precautions • Being Attention to detail in washing roots and tubers • Being good hand-eye coordinator for tasks like peeling and washing. • Being patience and a willingness to wait results from fermentation • Being observer changes in the roots and tubers during processes like fermentation and drying • Being familiar with basic food processing techniques, such as peeling, soaking, blanching, fermenting, and drying

Duration: 15hrs

Learning outcome 2 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Describe correctly the peeling methods of roots and tubers used in processing roots and tubers into flour
2. Peel correctly roots and tubers used in processing roots and tubers into flour
3. Describe correctly the fermentation methods used in processing roots into flour
4. Ferment effectively cassava roots into flour
5. Blanche correctly roots and tubers for processing roots and tubers into flour
6. Describe correctly the drying methods for roots and tubers processing into flour
7. Dry effectively roots and tubers for processing roots and tubers into flour

Resources

Equipment	Tools	Materials
• Washing machine • Fermentation tank • Soaking tank • Peeling machine • Blancher • Conveyor belt • Working table • Weighing scale • PPE • Drying beds • Dryer	• Brush • Buckets • Mop • Basins • Knives • Cutters • Sieves • Dustbins • Sheeting	• Roots and tubers (cassava, Irish potato, yams, and sweet potatoes • Potable water • Labels • Cleaning agents

Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- Avail organized workshop
- Avail materials, tools and equipment and make sure that they are in good working conditions
- Prepare teaching aids and didactic materials (manuals/guides, photos)

Indicative content 2.1: Peeling of Roots and Tubers

Duration: 2 hrs

Practical Activity 2.1.1: Peeling of roots and tubers

Notes to the trainer

- The trainer may use individualized method for demonstrating how to peel roots and tubers
- The trainer may avail tools, materials and equipment to be used in peeling roots and tubers
- The Use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop and peel roots and tubers

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how you can peel roots and tubers While demonstrating, explain the procedures and methods.

Step 4: Ask trainees to peel roots and tubers and monitor the procedures.

Step 5: Verify whether the peeling roots and tubers are properly peeled and provide feedback where necessary.

Step 6: Ask trainees to read key reading 2.1.1 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 2.1

Points to Remember

- Be careful, do not remove too much peel to avoid too much wastage. Weigh all peels and grade outs
- Grading and peeling can be done at the same time
- Peeled roots should not be left more than an hour in washing water to avoid fermentation

- The peeling machine should not remove more waste than manual peeling
- Following proper procedures and techniques for manual and mechanical peeling methods, you can effectively prepare roots and tubers for further processing or consumption.

Application of learning 2.1.

In your roots and tubers processing workshop ask every trainee to do the following tasks:

Task1: Peel cassava roots

Task 2: Peel sweet potatoes

Checklist

SN	Criteria	Indicators	Yes	No
1	Cassava and sweet potatoes are properly peeled according to peeling guidelines	1.1 peeler is selected		
		1.2 Cassava roots are peeled		
		1.3 Sweet potatoes are peeled		
		1.4 Peels are weigh		

Indicative content 2.2: Roots and Tubers Fermentation and Blanching

Duration: 9 hrs

Practical Activity 2.2.1: Fermenting cassava roots

Notes to the trainer

- The trainer may use individualized method for demonstrating how to ferment cassava roots
- The trainer may avail tools, materials and equipment to be used in fermenting cassava roots
- The Use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the food processing workshop and ferment cassava roots
Step 2: Explain the task and provide clear work instruction (Task, PPE, Time allocated)
Step 3: Demonstrate how you can ferment roots and tubers While demonstrating, explain the procedures and methods.
Step 4: Ask trainees to ferment cassava roots and monitor the procedures.
Step 5: Verify whether the fermenting cassava roots are properly fermented and provide feedback where necessary.
Step 6: Ask trainees to read key reading 2.2.1 in trainee manual
Step 7: Ask trainees to perform the task provided in application of learning 2.2

Points to Remember

- Managing the following factors: temperature pH level, moisture content, microbial activity, odour and appearance, duration (time, you can ensure that the cassava roots are effectively fermented, resulting in a safer, more flavourful, and better-textured product.
- It's important to follow safe practices during fermentation, as improper handling can lead to foodborne illness. Always ensure that the fermentation containers are clean and that the water used is safe for consumption.

Practical Activity 2.2.2: Blanching roots and tubers

Notes to the trainer

- The trainer may use individualized method for demonstrating how to blanch roots and tubers
- The trainer may avail tools, materials and equipment to be used in blanching roots and tubers
- The use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop and blanch roots and tubers

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how you can blanch roots and tubers While demonstrating, explain the procedures and methods.

Step 4: Ask trainees to blanch roots and tubers and monitor the procedures.

Step 5: Verify whether the blanching roots and tubers are properly blanched ed and provide feedback where necessary.

Step 6: Ask trainees to read key reading 2.2.2 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 2.2

Points to Remember

- Managing the temperature pH level, moisture content, microbial activity, odour and appearance, duration (time), you can ensure that the cassava roots are effectively fermented, resulting in a safer, more flavourful, and better-textured product.
- Use clean, potable water for blanching to avoid introducing any unwanted flavours or contaminants.
- Ensure uniform sizing of roots or tubers for even blanching. Cut larger pieces into smaller uniform sizes if needed.
- Follow specific blanching guidelines for each type of root or tuber, as times can vary significantly.

Application of learning 2.2.

Organize a field visit in cassava processing plant located in your school district and ask trainees to participate in fermentation process of cassava roots and prepare a report.

Checklist

SN	Criteria	Indicators	Yes	No
1	Cassava roots are well fermented	1.1 cassava roots are soaked		
		1.2 Fermentation conditions are monitored		
		1.3Fermented cassava are achieved		
2	Study field report is well done	2.1.Companies identifications are mentioned		
		2.2 Key competencies gained are described		
		2.3. Recommendations are given		

Indicative content 2.3: Dry Roots and Tubers

Duration: 4 hrs

Practical Activity 2.3.2: Drying of roots and tubers

Notes to the trainer

- The trainer may use individualized method for demonstrating how to dry roots and tubers
- The trainer may avail tools, materials and equipment to be used in drying roots and tubers
- The Use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop and dry roots and tubers
Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)
Step 3: Demonstrate how you can dry roots and tubers While demonstrating, explain the procedures and methods.
Step 4: Ask trainees to dry roots and tubers and monitor the procedures.
Step 5: Verify whether the drying of roots and tubers are properly dried and provide feedback where necessary.
Step 6: Ask trainees to read key reading 2.3.1 in trainee manual
Step 7: Ask trainees to perform the task provided in application of learning **2.3**

Points to Remember

- For HQCF (High quality cassava flour) load cake maximum 5Kg per square meter
- Ensure drying platforms are maintained in good condition
- Periodically treat wooden platform for termites
- Clean tarpaulin regularly and store in clean condition
- Clean solar dryer regularly
- Oven drying requires careful monitoring to prevent burning or overheating

- Oven drying requires careful monitoring to prevent burning or overheating. It is energy-intensive compared to sun drying and may heat up the kitchen. Using a dehydrator or convection oven can be more efficient for this purpose.

Application of learning 2.3.

Organize a field visit in roots and tubers processing plant located in your school district ask every trainee to participate in drying process cassava roots and prepare a report.

SN	Criteria	Indicators	Yes	No
1	Cassava roots are properly dried according to drying conditions	1.1Drying method is chosen		
		1.2 Drying conditions are monitored		
		1.3Dried cassava is achieved		
2.	Study field report is well done	2.1.Companies identifications are mentioned		
		2.2 Key competencies gained are described		
		2.3. Recommendations are given		

Learning outcome 2 end assessment

Written assessment

A. Multiple Choice Questions

Ready the statements below and answer by circling the correct corresponding letter

1. What is the primary purpose of peeling roots and tubers?
    A. To enhance flavor
    B. To remove dirt and skin
    C. To increase shelf life
    D. To improve color

Answer: B. To remove dirt and skin

2.Which of the following is a manual method of peeling roots and tubers?

A. Using a peeler
B. Using a mechanical peeler
C. Using a chemical solution
D. Using a high-pressure washer

Answer: A. Using a peeler

3.Which tool is commonly used for manual peeling?

A. Knife
B. Slicer
C. Grinder
D. Dryer

Answer: A. Knife

4.Mechanical peeling involves the use of which type of equipment?

A. Handheld peeler
B. Automated peeling machine
C. Blanching tank
D. Fermentation vessel

Answer: B. Automated peeling machine

5.What is the purpose of fermenting cassava roots?

A. To enhance texture
B. To remove toxins
C. To improve color
D. To increase sweetness

Answer: B. To remove toxins

6.Which fermentation method involves submerging cassava roots in water?

A. Dry method
B. Wet method
C. Mechanical method
D. Manual method

Answer: B. Wet method

7.What condition is crucial to monitor during cassava root fermentation?

A. Size of roots
B. Temperature and humidity
C. Color of roots
D. Shape of roots

Answer: B. Temperature and humidity

8.What is the purpose of blanching roots and tubers?

A. To soften them
B. To stop enzymatic activity
C. To enhance flavor
D. To remove skins

Answer: B. To stop enzymatic activity

9.Which method is used to perform blanching of roots and tubers?

A. Boiling in water
B. Drying in the sun
C. Grinding
D. Peeling

Answer: A. Boiling in water

10. Which drying method uses natural sunlight?

A. Sun drying
B. Oven drying
C. Freeze drying
D. Dehydration

Answer: A. Sun drying

B. Fill in the blank questions

Fill in the blanks by using the following words**: Temperature, large, dry, high, reduce, specialized, wet, stop, controlled, water, natural sunlight, toxins, manual and automated**

1. The _____ method of peeling involves the use of a hand tool to manually remove the skin of roots and tubers.

Answer: Manual

2. Mechanical peeling typically requires the use of _____ equipment to automate the peeling process.

Answer: Specialized

3. In cassava root fermentation, the _____ method involves fermenting roots in a water-filled container.

Answer: Wet

4. The primary goal of blanching is to_____ enzymatic activity that can cause spoilage.

Answer: Stop

5. During fermentation, it is crucial to monitor _____ and humidity to ensure proper fermentation conditions.

Answer: Temperature

6. Sun drying involves exposing roots and tubers to _____ to remove moisture.

Answer: Natural sunlight

7. Oven drying provides a _____ environment for drying roots and tubers quickly and evenly.

Answer: Controlled

8. Cassava roots fermentation aims to remove _____ that are toxic if consumed raw.

Answer: Toxins

9. Blanching roots and tubers is often performed by boiling them in _____.

Answer: Water

10. Mechanical peeling uses _____ machines to efficiently remove the skins from large quantities of roots and tubers.

Answer: Automated

11. The _____ method of fermentation involves drying cassava roots in an open environment.

Answer: Dry

12. The purpose of drying roots and tubers is to _____ their moisture content to prevent spoilage.

Answer: Reduce

13. Blanching is typically done at a _____ temperature for a short period to ensure effectiveness.

Answer: High

14. Fermentation conditions should be monitored for proper _____ and humidity levels.

Answer: Temperature

15. Mechanical peeling is ideal for _____ scale operations due to its efficiency.

Answer: Large

Practical assessment

Cassava fermenter Company located in Rusizi district opened new branch in Nyamasheke District. Two weeks ago, it has received a request from UBURYOHE milling company to supply 100 kg of dried cassava to it. Because of insufficient workers, the Manager of company ordered you, as an assistant Technician in roots and tubers processing to support it to solve this above-described issue by doing the following tasks within 5 hours.

Task1: Peel cassava roots

Task 2: Ferment cassava roots

Task 3: Dry cassava roots

Checklist

SN	Criteria	Indicators	Yes	No
1	Cassava roots are well peeled	1.1.Peeler is selected		
		1.2. cassava are peeled		
2.	Cassava roots are well fermented	2.1. Fermenter is selected		
		2.2 Fermentation conditions are respected		
		2.3. Cassava roots are fermented		
3	Cassava roots are well dried	3.1. Dryer is selected		
		3.2. Drying conditions are respected		
		3.3. Cassava roots are dried		

Further information to the trainer

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Indicative contents
3.1 Grinding of Roots and tubers
3.2 Checking Quality of flour
3.3 Packaging of roots and tubers Flour

Key Competencies for Learning Outcome 3: Make Flour

Knowledge	Skills	Attitudes
• Description of quality parameters of roots and tubers flour • Identification of packaging material • Description of labelling requirement	• Grinding roots and tubers • Checking quality of roots and tubers flour • Selecting packaging materials for roots and tubers flour • Filling roots and tubers flour • Sealing roots and tubers flour • Labelling roots and tubers flour • Storing roots and tubers flour	• Being curiosity about the different grinding methods and their impact on the final product. • Being detail-oriented in milling process • Being Cleanliness in milling and packaging • Being methodical in labelling • Being Diligent in labelling • Being Environmental awareness on packaging material • Being Aware on storing conditions • Being Responsible to ensure if the products are stored

Duration: 15 hrs

Learning outcome 3 objectives:

By the end of the learning outcome, the trainees will be able to:

1. Grind properly roots and tubers for processing roots and tubers into flour
2. Check correctly the quality parameters of roots and tubers flour according to specific guidelines
3. Select appropriately the packaging materials for roots and tubers flour
4. Package properly roots and tubers flour according to packaging requirement
5. Label correctly packaged roots and tubers flour according to labelling requirements
6. Store properly roots and tubers flour according to storage conditions

Resources

Equipment	Tools	Materials
• Packaging machine • Dryers • Conveyor belt • PPE • Weighing scale. • Grinder • Filling machines • Sealing machine	• Sieves • Basket • Moisture meter • Aflatoxin tool kits.	• Dried roots and tubers • Disinfectants • Packaging materials (Sacks, Polyethylene bags, Paper packaging material) • Labels

Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- Avail an organized workshop
- Avail materials, tools and equipment and make sure that they are in good working conditions
- Prepare teaching aids and didactic materials (manuals/guides, photos) for storing roots and tubers flour

Indicative content 3.1: Grinding of Roots and Tubers

Duration:5 hrs

Practical Activity 3.1.1: Grinding of Roots and tubers

Notes to the trainer

- The trainer may use individualized method for demonstrating how to grind roots and tubers
- Avail tools, materials and equipment to be used in grinding roots and tubers
- The use of videos as didactic materials is required while grinding roots and tubers

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop to grind roots and tubers

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how to grind roots and tubers while demonstrating, explain the procedures and methods.

Step 4: Ask trainees to grind roots and tubers and monitor the procedures.

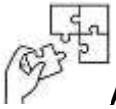
Step 5: Verify whether the roots and tubers are properly ground and provide feedback where necessary.

Step 6: Ask trainees to read key reading 3.1.1 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 3.1

Points to Remember

- While grinding roots and tubers:
- ✓ Always use clean equipment and hands to avoid contamination.
- ✓ Adjust the grinding method or equipment settings to achieve the desired texture, whether coarse or fine.
- ✓ Handle hot or freshly ground roots and tubers carefully to avoid burns or injuries.
- ✓ Ensure equipment is cleaned after each use, particularly after milling other products
- ✓ Ensure equipment is maintained or regularly serviced



Application of learning 3.1.

In your roots and tuber processing workshop ask every trainee to grind roots and tubers

Checklist

SN	Criteria	Indicators	Yes	No
1	Roots and tubers are grinded according to product specification	1.1 Grinder is selected		
		1.2. Size reduction is done		
		1.3. Ground roots and tubers are obtained		

Indicative content 3.2: Checking Quality of Flour

Duration: 3 hrs

Practical Activity 3.2.1: Checking quality parameters of roots flour

Notes to the trainer

- The trainer may use individualized method for demonstrating how to check quality parameters of roots flour
- Avail tools, materials and equipment to be used in checking quality parameters of roots and tubers flour
- The use of photos and videos as didactic materials is required in checking quality parameters of roots and tubers flour

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop and Check quality parameters of roots and tubers flour.

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated).

Step 3: Demonstrate how you can check roots and tubers flour while demonstrating, explain the procedures and methods.

Step 4: Ask trainees to check quality parameters of roots and tubers flour and monitor the procedures.

Step 5: Verify whether quality parameters of roots and tubers flour are properly checked and provide feedback where necessary.

Step 6: Ask trainees to read key reading 3.2.1 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 3.2

Points to Remember

- Regular testing and proper quality control during production can help maintain high standards for root and tuber flour.

Application of learning 3.2.

Organize a field visit in roots and tubers processing plant located in your school district and ask every trainee to check quality parameters of roots and tubers flour and prepare a report.

Checklist

SN	Criteria	Indicators	Yes	No
1	Quality of flour is well checked according to product specification	1.1. Moisture content of flour is checked		
		1.2.Fineness is checked		
2.	Study field report is well done	2.1.Companies identifications are mentioned		
		2.2 Key competencies gained are described		
		2.3. Recommendations are given		

Indicative content 3.3: Packaging of Roots and Tubers Flour

Duration: 7 hrs

Theoretical Activity 3.3.1: Identification of packaging material used in processing roots and tubers into flour

Notes to the trainer:

- Trainer may use small group for identification of packaging material used in processing roots and tubers into flour
- The use of photos of packaging material used in processing roots and tubers into flour as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

i. As experienced in packaging, what could be the packaging materials for roots and tubers flour?
ii. What could be the selection criteria of packaging material used in processing roots and tubers into flour?

Step2: Ask trainees to write the findings on papers, flip chart, blackboard or white board.

Step3: Asks trainees to present their findings and choose the correct ones.

Step 4: Provide the expert view and clarify ideas by using didactic materials.

Step 5: Address any questions or concerns.

Step 6: Ask trainees to read the key reading 3.3.1 in trainee manual

Points to Remember

- Selecting packaging material for roots and tubers flour, helping to maintain the quality and shelf life of flour.

Practical Activity 3.3.2: Filling and sealing roots and tubers flour

Notes to the trainer

- The trainer may use individualized method for demonstrating how to fill roots and tubers flour
- Avail tools, materials and equipment to be used in filling roots and tubers flour
- The use of videos as didactic materials is required for filling roots and tubers flour

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop and fill roots and tubers flour

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how you can fill roots and tubers flour While demonstrating, explain the procedures and methods.

Step 4: Ask trainees to fill roots and tubers flour and monitor the procedures.

Step 5: Verify whether the roots and tubers flour are properly filled and provide feedback where necessary.

Step 6: Ask trainees to read key reading 3.3.2 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 3.3

Points to Remember

- While filling roots and tubers flour:
  - ✓ Use polyethylene lined bags to prevent moisture ingress into the flour
  - ✓ For correct stock rotation and quality control, bags should be labelled with the processing date

- ✓ Regularly calibrate the machine to ensure accurate portioning and prevent overfilling or underfilling.
- ✓ Seal the packages securely to protect the flour from contamination.
- ✓ In a manual system, the operator fills packages on scale in order to ensure accuracy.
- ✓ Use a machine that measures the correct quantity of product required for each individual bag/closure.

Theoretical Activity 3.3.3: Description of labelling requirements of packaged roots and tubers flour

Notes to the trainer:

- Trainer may use small group for description of labelling requirements of packaged roots and tubers flour
- The use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

i. What could be the labelling information present on label of packaged roots and tubers flour?
ii. As experienced in labelling, explain the labelling methods you can use in labelling roots and tubers flour
iii. What are the label design considerations?

Step2: Ask trainees to write the findings on papers, flip chart, blackboard or white board.

Step3: Asks trainees to present their findings and choose the correct ones.

Step 4: Provide the expert view and clarify ideas by using didactic materials.

Step 5: Address any questions or concerns.

Step 6: Ask trainees to read the key reading 3.3.3 in trainee manual

Points to Remember

- While labelling packaged roots and tubers flour:
- ✓ Use appropriate labeling methods like sticker labels, pre-printed packaging, or direct printing.
- ✓ Ensure labels are clear, compliant with regulations, and durable.
- ✓ Labelling not only helps in meeting regulatory requirements but also provides important information to consumers and enhances the product's marketability**.**

Practical Activity 3.3.4: Storing roots and tubers flour

Notes to the trainer

- The trainer may use individualized method for demonstrating how to store roots and tubers flour
- Avail tools, materials and equipment to be used in storing roots and tubers flour
- The use of photos and videos as didactic materials is required

Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to go in the roots and tubers processing workshop and store roots and tubers flour

Step 2: Explain the task and provide clear work instruction (PPE, Time allocated)

Step 3: Demonstrate how you can store roots and tubers flour While demonstrating, explain the procedures and methods.

Step 4: Ask trainees to store roots and tubers flour and monitor the procedures.

Step 5: Verify whether roots and tubers flour are properly stored and provide feedback where necessary.

Step 6: Ask trainees to read key reading 3.3.4 in trainee manual

Step 7: Ask trainees to perform the task provided in application of learning 3.3

Points to Remember

- While storing roots and tubers flour:
  - ✓ Store bags off the ground using pallets
  - ✓ Keep perimeter around the bags accessible for inspection
  - ✓ Follow 'First in, First out' rule in storing roots and tubers flour

Application of learning 3.3.

Organize a field visit in the roots and tubers processing plant and ask every trainee to perform the following tasks and prepare a report

Task 1: Select packaging material for roots and tubers flour

Task 2: Fill the roots and tubers flour

Task 3: Label packaged roots and tubers flour

Task 4: Store roots and tubers flour

Checklist

SN	Criteria	Indicators	Yes	No
1	Roots and tubers flour are well packaged according to product specifications	1.1. Packaging material is selected		
		1.2. Root and tuber flour is filled		
		1.3. Packaged root and tuber flour is labelled		
		1.4. Root and tuber flour is stored		
2	Study field report is well done	2.1.Companies identifications are mentioned		
		2.2. Key competencies gained are described		

		2.3.Recommendations are given		

Learning outcome 3 end assessment

Written assessment

A. TRUE OR FALSE QUESTIONS

The following questions are related to identification of packaging material used in packaging roots and tubers flour. Answer by **TRUE** if the statement is correct and **FALSE** if the statement is wrong.

1. Plastic bags are commonly used for packaging roots and tubers flour because they are moisture-resistant and cost-effective.

Answer: True

2. Glass jars are the best packaging option for bulk quantities of roots and tubers flour due to their strength and moisture barrier properties.

Answer: False (**Glass jars are good for small quantities, not bulk quantities.)**

3. Paper bags, when used for packaging roots and tubers flour, do not require any additional lining or protection against moisture.

Answer: False (Paper bags often need a liner to protect against moisture.)

4. Packaging material for roots and tubers flour should have strong oxygen barrier properties to prevent oxidation and spoilage.

Answer: True

5. Recyclability and sustainability are important considerations when selecting packaging materials for roots and tubers flour to minimize environmental impact.

Answer: True

B. MULTIPLE CHOICE QUESTIONS

Ready the statements below and answer by circling the correct corresponding letter:

1.Which labelling technique is effective for providing long-lasting information on packaging?

A. Handwritten Labels

B. Heat Transfer Labels

C. Paper Stickers

D. Plastic Stickers

Answer: B. Heat Transfer Labels

2.What is the ideal storage condition for roots and tubers flour to prevent spoilage?

A. Warm and Humid Environment
B. Cool and Dry Place
C. Direct Sunlight
D. Freezer

Answer: B. Cool and Dry Place

3.What is a key aspect to check when assessing the quality of roots and tubers flour?

A. Brand Label
B. Moisture Content
C. Packaging Design
D. Production Date
E. **Answer: B. Moisture Content**

4.Which method is commonly used for sealing packaging of roots and tubers flour to ensure freshness?

A. Adhesive Sealing
B. Tape Sealing
C. Heat Sealing
D. Clipping

Answer: C. Heat Sealing

5.Fineness of flour can be assessed by:

A. Sieving
B. Tasting
C. Smelling
D. Visual inspection

Answer: A. Sieving

C. Fill in blank questions

Read the following statements concerning store of roots and tubers flour and fill in the gap the appropriate words **(Airtight, low, dark)**

1. To prevent moisture absorption and mold growth, root and tuber flour should be stored in an environment with _____ humidity.

Answer: Low

2. To protect root and tuber flour from light exposure, it is recommended to store it in a _____ environment.

Answer: Dark

3.To maintain the quality of root and tuber flour, it is important to use _____ containers to prevent air exposure.

Answer: Airtight

Practical assessment

KAHEMU Cooperative located in RUHANGO District, RUKARANGE Sector is one of the cassava flour suppliers to GS RARO in reference to the awarded tender of three years. Currently, the students are complaining about cassava flour quality based on ineffective milling. To overcome this, the cooperative is willing to recruit a qualified technician in cassava flour processing. As an assistant technician in cassava flour processing, you are hired by the production manager and requested to perform cassava flour processing as demonstration to the cooperative workers by producing one (1) sac of 5kg cassava flour with white color, moisture content ranging between 12-13%, packaged in laminated sac. The task should be performed within four (4) hours.

Checklist

SN	Criteria	Indicators	Yes	No
1	Cassava flour are well packaged according to product specification	1.1.Packaging material is selected		
		1.2. Cassava flour is filled		
		1.3. Cassava flour is sealed		

		1.4. Cassava flour is labelled		
2	Cassava flour are well stored according to product specification	2.1. Pallets are used		
		2.2. Spacing between items is respected		
		2.3. Temperature is respected		
		2.4.Cassava flour is stored		

END

Further information to the trainer

Apata, D. F., & Babalola, T. O. (2012). The Use of Cassava, Sweet Potato and Cocoyam, and Their By-Products by Non - Ruminants. *International Journal of Food Science and Nutrition Engineering, 2*(4), 54-62. Retrieved 12 29, 2024, from http://article.sapub.org/10.5923.j.food.20120204.02.html

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