

# Facilitating and Learning Materials

NATIONAL CERTIFICATE LEVEL 2

TRADE AREA:

## CASHEW VALUE CHAIN

UNIT 10:

**PROCESSING OF CASHEW APPLE JUICE**



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LO 2	DEMONSTRATE SKILLS FOR PASTEURIZING CASHEW APPLE JUICE
LO 3	DEMONSTRATE SKILLS FOR BOTTLING CASHEW APPLE JUICE
LO 4	DEMONSTRATE SKILLS FOR STORING CASHEW APPLE JUICE BEVERAGES IN CASHEW PROCESSING

## INTRODUCTION



Cashew apples are not just harvested for the nuts that they produce, the cashew apples themselves have value. They can be eaten fresh, juiced, preserved or dried. The cashew apple's juice can be used to make drinks (natural or fermented) and the fruit pulp can be made into jelly, syrup, candied fruit, and preservatives.

Many cashew farmers miss the opportunity to gain more income as they waste the potential of the use of the cashew apple. Learning how to process the fruit to produce juice is only part of the way to improving profitability. The cashew juice then needs further processing in order to be sold.

This unit focuses on the clarification, pasteurization, bottling and storage of cashew apple juice.

## 1. Processing of cashew apple juice



### 1. Demonstrate skills for clarifying of cashew apple juice

#### PC (a) Clarification of cashew apple juice

Clarification of the cashew apple juice is the process of removing all extra fibers and unwanted materials from the juice.



#### PC (b) The importance of clarification

Clarification of the apple juice makes it safe to drink and removes the unwanted materials and fibres from the juice.





### PC (c) Explain the clarification methods

The following are the three main methods of clarification of cashew apple juice:

- Mechanical: This is the use of machinery to clarify the cashew apple juice
- Manual: This is the use of hands-on methods such as straining
- Chemical: this is the use of chemicals to break down the unwanted materials to clarify the cashew apple juice



### PC (d) Factors to consider in clarifying cashew apple juice

The factors to consider are as follows:

- Tannin content in the fruits
- Quantity of juice
- Source of cashew apple



**PC (e) Use of tools and materials for clarification +**

**PC (f) Perform clarification of cashew apple juice**



**Situation:** You have recently juiced a cashew apple, and you need to use materials and tools to clarify the cashew apple juice. The necessary materials are gelatine and the tools are a sieve/strain.

**Instructions:**

1. Using a sieve/strain and gelatin, clarify cashew apple juice
2. Using any clarification method, clarify cashew apple juice from two hundred (200) cashew apples

**Performance Criteria:**

1. Tools and materials were used correctly based on chosen method
2. Set up clarify machine correctly
3. Cashew apple juice was clarified
4. PPE were worn
5. Workplace and equipment cleaned after activity

Use the checklist to follow the stated steps demonstrating the use of equipment for cashew apple juice clarification. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Use tools and perform clarification	Rate
1. Set up machine to do cashew apple juice clarification	
2. Use of equipment is demonstrated for clarification	
3. A sieve/strain and gelatine were used correctly	
4. Cashew apple juice was clarified	
5. PPE is worn	
6. Workplace and equipment is clean after clarification activities	

## Self-assessment

1. Define clarification of cashew apple juice.

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2. Why is clarification important?

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3. What are the clarification methods?

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4. What are the factors to consider in clarifying cashew apple juice?

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## 2. Demonstrate skills for pasteurizing cashew apple juice

### PC (a) Pasteurization of cashew apple juice

Despite the fact that cashew apple juice is made of important nutrients, it has one weakness: its high alterability. This condition requires special maintenance in terms of pasteurization and storage. Pasteurization deals with heat treatment to a temperature ranked among 60 and 100°C. In fact, it aims at destroying all harmful microorganisms.



Pasteurization of cashew apple juice means the heating of the juice to 75°C for a period of 5 minutes.

### PC (b) Importance of pasteurization in cashew apple juice processing

Pasteurization in cashew apple juice processing is important because it:

- Removes harmful organisms
- Ensures it is safe to drink
- Increases the longevity of the cashew apple juice
- Improves the quality and flavour of the cashew apple juice

### PC (c) Factors to consider in pasteurization

The factors to consider are:

- Type of bottling process
- Type of bottles to be used for storage



### PC (d) Methods of pasteurization

The pasteurization methods are as follows:

- Heating with stove
- Use of pasteurization machines

### PC (e) Outline the procedures for pasteurization

The pasteurization rate is 75°C over 5 minutes. This can be done over a stove after clarification or pasteurization machines can be used. When handling the equipment and machinery, it is important to follow the instructions provided in the user manual.



Sample of a pasteurizing machine

### PC (f) Undertake pasteurization of cashew apple juice



**Situation:** You have recently clarified cashew apple juice, and you need to pasteurize the cashew apple juice.

**Instructions:**

1. Using any pasteurization method, pasteurize the clarified cashew apple juice

**Performance Criteria:**

1. Tools and materials were used correctly based on chosen method
2. Clarified cashew apple juice was pasteurized

Use the checklist to follow the stated steps demonstrating the use of equipment for cashew apple juice pasteurization. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Use tools and perform clarification	Rate
1. Set up machine to do cashew apple juice pasteurization	
2. Use of equipment is demonstrated for pasteurization	
3. Cashew apple juice was pasteurized	
4. PPE is worn	
5. Workplace and equipment is clean after pasteurization activities	

## Self-assessment

1. Define pasteurization of cashew apple juice.

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2. Why is pasteurization important?

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3. What are the pasteurization methods?

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4. What are the factors to consider in pasteurizing cashew apple juice?

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### 3. Demonstrate skills for bottling cashew apple juice

#### PC (a) Bottling of cashew apple juice

Bottling cashew apple juice means putting the juice into containers for retail sale to consumers.



#### PC (b) Importance of bottling

Bottling the cashew apple juice is important because it helps the preservation of the juice, protects it from bacteria and makes it easy for consumers to drink.

#### PC (c) Factors to consider in bottling

The factors to consider when bottling cashew apple juice are the quantity of juice you have to bottle, the size of the bottles and what the bottles are made of. If you have a relatively small quantity, then it isn't necessary to have a piece of equipment such as a bottle filling machine.



Example of a bottle filling machine

Other factors to consider are as follows:

- Price
- Temperature of juice
- Material

**PC (d) + (f) Demonstrate the use of equipment and materials used for bottling cashew apple juice + PC (f) Bottle cashew apple juice**



**Situation:** You wish to bottle cashew apple juice after pasteurization and need to learn how to bottle cashew apple juice.

**Instructions:**

1. Select all necessary equipment
2. Prepare the equipment to do bottling
3. In an actual or simulated environment, demonstrate the safe and correct use of equipment and materials and bottle cashew juice

**Performance Criteria:**

1. Equipment selected
2. Equipment and materials used correctly and safe
3. Cashew apple juice was bottled
4. PPE is worn
5. Workplace and equipment is clean after pasteurization activities

Use the checklist to follow the stated steps demonstrating the use of equipment for cashew apple juice bottling. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Use tools and perform bottling	Rate
1. Set up machine to do cashew apple juice bottling	
2. Use of equipment is demonstrated for bottling	
3. Cashew apple juice was bottled	
4. PPE is worn	
5. Workplace and equipment is clean after bottling activities	

**PC (e) Outline the procedure for bottling**

1. Obtain tools and equipment for bottling
2. Sterilize the bottles
3. Pour cashew apple juice either by hand or by machine
4. Seal the bottles correctly



**Self-assessment**

1. Define bottling of cashew apple juice.

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2. Why is bottling important?

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3. What equipment and materials are used for bottling?

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4. What are the factors to consider in bottling cashew apple juice?

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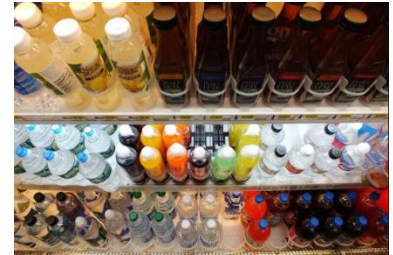




## 4. Demonstrate skills for storing cashew apple juice beverages in cashew processing

### PC (a) Storage of cashew apple juice beverages

Storage of cashew apple juice beverages means keeping the beverage in either sealed glass or plastic bottles in a refrigerator or cold room at recommended temperatures of 0°C to 5°C.



### PC (b) Importance of appropriate storing

Appropriate storing is important because it prevents fermentation of the juice (the juice turning into alcohol) and extends its shelf life (the amount of time the juice stays good to drink before it is consumed).



### PC (c) Factors to consider in storing cashew apple juice beverages

The type of container the beverage is to be stored in (preferably glass or plastic).

The temperature at which the beverage should be kept (between 0°C to 5°C).

The factors to consider are as follows:

- Shelf life
- Preserve
- Quality
- Security



### PC (d) Equipment and materials used for storing

Equipment and materials:

- Warehouse
- Curtains
- Pallet



**PC (e) Outline the procedure for storing cashew apple juice beverages**

Once the cashew apple juice has been bottled, it needs to be stored safely in a refrigerated environment. They can be stored in an upright position in a refrigerator or a cold room.

**PC (f) Store cashew apple juice beverages**



**Situation:** You have recently bottled cashew apple juice and you need to store it.

**Instructions:**

1. Store the bottled cashew apple juice from the previous learning outcome

**Performance Criteria:**

1. Cashew juice carefully loaded and transported to chilling rooms
2. Correct equipment use for transportation
3. Chilling rooms well prepared and temperatures set correctly
4. Cashew apple juice was correctly stored

Use the checklist to follow the stated steps demonstrating the use of equipment for cashew apple juice storage. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Use tools and perform storage	Rate
1. Use of equipment is demonstrated for preparing, pelleting and storing of bottled apple juice	
2. Chilling rooms correctly prepared	
3. Cashew apple juice correctly stored	
4. PPE is worn	
5. Workplace and equipment is clean after activities	

### Self-assessment

1. Define storage of cashew apple juice.

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2. Why is storage important?

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3. What are the equipment and materials used for storage?

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4. What are the factors to consider in storing cashew apple juice?

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## REFERENCES

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2. <https://www.accessagriculture.org/download-request/3952/video>
3. <https://www.youtube.com/watch?v=9yeWYRbu3p0>