

Syllabus For Tal Gur and Tal Michri (Palm Jaggery and Palm Candy) Producer

Course Name	Tal Gur and Tal Michri (Palm Jaggery and Palm Candy) Producer
Sector	Food Processing
Course Code	FPT/2024/TGMP/313
Level	3
Occupation	Tal Gur and Tal Michri (Palm Jaggery and Palm Candy) Producer
Job Description	The course will introduce the essential concepts of understanding Palm tree, extraction of Palm juice and production of Tal Gur, Tal Patali and Tal Michri, methods of prevention of fermentation and packaging.
Course Duration	Total Duration 390 Hrs (T-30, P-240, OJT-60 and ES-60)
Trainees' Entry Qualification	Grade 10 OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs relevant experience OR 5th grade pass with 5 years relevant experience OR Previous relevant Qualification of NSQF Level 2 with one yr experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
Trainers Qualification	Diploma/Certificate course in Food Technology with 1 year experience in the relevant field OR Class 10 th pass with 3 years' experience in Tal Gur and Tal Michri manufacturing units

Structure of Course:

Module No.	Module name	Outcome	Compulsory/ Elective	Theory (Hrs)	Practical (Hrs)	OJT (Hrs)	Total (Hrs)
1	Palm Tree	Identify and differentiate male and female Palm tree	Compulsory	-	30		30
2	Pre-harvesting Management of Palm Tree	Follow the process of pre harvesting management of Palm Juice	Compulsory	10	50		60
3	Palm Juice Extraction	Demonstrate palm juice extraction process	Compulsory	-	60		60
4	Post Harvest Management of Palm Sap	Perform post-harvest management of Palm SAP	Compulsory	10	20		30
5	Jaggery and related products	Produce jaggery and other molasses-based candy	Compulsory	10	20		30

Module No.	Module name	Outcome	Compulsory/ Elective	Theory (Hrs)	Practical (Hrs)	OJT (Hrs)	Total (Hrs)
6	Post production management of Jaggery	Perform Quality checking followed by packaging and sealing of Jaggery produced.	Compulsory	-	30		30
7	Hygiene and Sanitation	Maintain hygiene and sanitation in Jaggery / Candy Producing unit	Compulsory	-	30		30
8	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	Compulsory	--	-	60	60
9	Employability Skill	As per guided curriculum	Compulsory	60	--	-	60
TOTAL:				90	240	60	390

SYLLABUS:**Module No. 1: Palm Tree**

Outcome: Identify and differentiate male and female Palm tree

Content:

- Both male and female palms bear spathes; they appear from the bases of the palm leaves towards the top of the palm tree.
- identification and differentiation of the male and female Palm tree.
- Although they are largely known for their distinctive foliage, these flowers generally grow in clusters under the leaves and are small and insignificant. Knowledge of awareness of flowering timing, management of the tree health and also taking care of the tree before extraction of the juice from Palm tree.

Module No. 2: Pre-harvesting Management of Palm Tree

Outcome: Follow the process of pre harvesting management of Palm Juice

Content:

- The preparation technique of the Palm tree for the collection of Palm juice or padani from the palm trees for the process of Palm Jaggery.
- Demonstrate preparation technique of the Palm tree for the collection of Palm juice or padani from the palm trees for the process of Palm Jaggery.

Module No. 3: Palm Juice Extraction

Outcome: Demonstrate palm juice extraction process

Content:

- Harvested by slicing a groove into the bark of the tree at a depth of one-quarter inch (6.4 mm) with a hooked knife and peeling back the bark. of Palm tree,
- Extraction of Juice from Palm tree,
- Quality parameters- Composition, Juice Brix by brix hydrometers and by hand refractometers, Pol and purity of juice, Phosphate in juice, calcium oxide in juice,
- Purification of Palm sap, Bottling of Palm sap, Boiling of juice and clarification

Module No. 4: Post Harvest Management of Palm Sap

Outcome: Perform post-harvest management of Palm SAP

Theory Content:

Important varieties of Palm sap, harvesting methods, harvesting schedule, harvesting precautions, ripening, post-harvest management

Practical Content:

Identification of important varieties of Palm sap and their characteristics

Determination of Palm sap maturity

Demonstration of post-harvest management

- Methods to minimize stale cane losses
- Peeling of Palm sap,
- Milling efficiency, Extraction of juice from Palm juice, Juice Brix by brix hydrometers and by hand refractometers, Pol and purity of juice, Non-sugar constituents in Palm juice
- Brix, Pol and purity of Masscults and Jaggery.
- Pol% bagasses, moisture%, bagasses, preparatory index
- Phosphate in juice, calcium oxide in juice

Module No. 5: Jaggery and related products

Outcome: Produce jaggery and other molasses-based candy

Theory Content:

- Palm juice is very much sensitive of heat and light, where bacterial effect leads to fermentation of the juice.
- the prevention of the fermentation process.
- Procedure for making of candy

Practical Content:

- Purification of Palm juice,
- Bottling of Palm sap,
- bottling equipment
- Demonstration of various clarifying and bleaching agents
- Extraction of juice and clarification

- Boiling of juice and clarification
- Making the molds
- Testing the quality of molasses
- Demonstration of different unit operation involved in Jaggery production
- Practice to operate machineries; controlling parameters
- Demonstration Various possible Products after Molasses making.
- Determination of purity of Molasses based products
- Making of candy

Module No. 6: Post production management of Jaggery

Outcome: Perform Quality checking followed by packaging and sealing of Jaggery produced.

Practical Content:

- Maintenance & cleaning operation of crushers, hoppers
- Demonstration of Grading of Palm Juice Jaggery (gur)
- Demonstration of Packaging and sealing of Palm Juice Jaggery (gur)
- Demonstration of Chemical treatment to prevent deterioration
- Cleaning operation of crushers, hoppers etc
- Practical exposure of waste disposal and effluent treatment
- Visit to cottage level Palm juice Jaggery production unit
- Follow the cleaning & sanitizing methods
- Prepare the Jaggery Inventory book

Module No. 7: Hygiene and Sanitation

Outcome: Maintain hygiene and sanitation in Jaggery / Candy Producing unit

Practical Content:

- Identify and use of PPE like gloves, hairnets, masks, ear plugs, goggles, shoes, etc.
- Illustrate hygienic production of food by inspecting raw materials, ingredients, finished products, etc.
- Elaborate housekeeping practices in designated area for materials/tools.
- Explain types of hazards such as physical, chemical and biological hazards and measures to control and prevent them.
- Conduct workplace checklist audits before and after work to ensure safety and hygiene.
- Determine the quality of food using criteria such as odour, appearance, taste and best before date, and take immediate measures to prevent spoilage.

Module 8: OJT

Outcome: Work in real job situation with special emphasis on basic safety and hazards in this domain

Practical Content:

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours**.)

Module 9: Employability Skills (60 Hrs)**Key Learning Outcomes****Introduction to Employability Skills**

Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship

Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century

Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills

Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting

Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills

Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion

Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy

Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills

Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship

Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service

Duration: 5 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs

Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Identify and differentiate male and female Palm tree	<p>After completion of this module students will be able to:</p> <p>1.1 Demonstrate the characteristics of male and female palms tree</p> <p>1.2 Identify and differentiate of male and female tree</p> <p>1.3 Identify and differentiate male and female palm tree based on visual cues such as spathes</p> <p>1.4 Exhibit the flowering patterns of palm trees</p> <p>1.5 Demonstrate the significance of flowering timing in the context of palm tree management</p>
2	Follow the process of pre harvesting management of Palm Juice	<p>After completion of this module students will be able to:</p> <p>2.1 Describe preparation technique for palm tree before collection juice for palm jaggery</p> <p>2.2 Recognize the potential environmental impact of the preparation technique</p> <p>2.3 Describe solutions to address common problems effectively</p> <p>2.4 Display the procedure to handling and using any equipment or tools associated with the preparation technique</p> <p>2.5 Maintain safety protocols during the practical demonstration to prevent accidents or harm</p>
3	Demonstrate palm juice extraction process	<p>After completion of this module students will be able to:</p> <p>3.1 Demonstrate accurate to slice a groove into the bark at the specified depth</p> <p>3.2 Implement proper safety protocols during the groove slicing process to prevent injury</p> <p>3.3 perform the groove slicing task efficiently</p> <p>3.4 Ensure the collected juice is of high quality and suitable for further processing</p> <p>3.5 Demonstration the purification process for palm sap, removing impurities</p> <p>3.6 Demonstrate proper techniques for bottling palm sap.</p> <p>3.7 Ensure consistency in the quality of the final product</p>
4	Perform post-harvest management of Palm SAP	<p>After completion of this module students will be able to:</p> <p>4.1 demonstrate the significant varieties of palm sap.</p>

Module No.	Outcome	Assessment Criteria
		4.2 Explain various harvesting methods employed for palm sap extraction 4.3 Describe the ideal harvesting schedule for different palm sap varieties 4.4 Identify important palm sap varieties based on their characteristics 4.5 Explain the methods to minimize losses related to stale cane 4.6 Execute proper techniques for peeling palm sap. 4.7 Measure Juice Brix, Pol and purity using brix hydrometers and hand refractometers 4.8 Measures phosphate and calcium oxide levels in palm juice
5	Produce jaggery and other molasses-based candy	After completion of this module students will be able to: 5.1 Describe the procedure to how palm juice is sensitive to heat and light 5.2 Explain various methods and technique for preventing the fermentation process 5.3 Explain the impact of environmental factors on palm juice 5.4 Identify the preventive measure to control heat, light and bacterial contamination during the handling of palm juice 5.5 Demonstrate the methods for testing the quality of molasses 5.6 Demonstrate various unit operations involved in jaggery production 5.7 Describe the methods to determine the purity of products derived from molasses
6	Perform Quality checking followed by packaging and sealing of Jaggery produced.	After completion of this module students will be able to: 6.1 Identify and select the maintenance and cleaning operations for crushers, hoppers and related equipment 6.2 Describe the grading process for palm juice jaggery (gur) 6.3 Demonstrate the packaging and sealing methods for palm juice jaggery 6.4 Name the chemicals used and their impact on product stability 6.5 Prepares a jaggery inventory book with accuracy and attention to detail.
7	Maintain hygiene and sanitation in Jaggery / Candy Producing unit	After completion of this module students will be able to: 6.1 Demonstrate hygienic production of food by inspecting raw material, ingredients and finished product. 6.2 Demonstrate the use of safety equipment. 6.3 Carry out workplace checklist audit before and after work to ensure safety. 6.4 Perform documentation of raw material, packaging material, process and finished products. 6.5 Perform the storage of raw material, finished

Module No.	Outcome	Assessment Criteria
		products and allergens separately. 6.6 Perform labelling of raw material and finished products and store them in designated area.
8	OJT	Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)
9	Employability Skill	As per guided curriculum

List of Tools, Equipment & materials needed for 30 Trainees (Practical)

Sl. No	Item	Quantity
1.	Sickle and climbing equipments and collection clay pot	500 Nos.
2.	Load carrying machine 1 tonnes	02 Nos.
3.	Juice collection tank	02 Nos.
4.	Pumping machine 5 HP	02 Nos.
6.	Materials handling devices for carrying different materials	02 Nos
7.	Oven	25 Nos.
8.	Fine sieving	500 No
9.	Spoon & spatula	60 Nos
10.	Cooling Tray	200 Nos
11.	Tool cabinet, Funnel & Knife	100 Nos
12.	First aid box	02 Nos
13.	bottle	5000 Nos
14.	Weight Box	02 Nos
15.	Hydrometers	As required
16.	Other common facilities for training	As required

Sl. No	Item	Quantity
17.	General requirements like vessels, balances, trays, waterstor container, mould, boiling pan, cutting knife, table, different etc. (To be shared)	As required
18	Crusher	1
19	Hopper	1

Marks Distribution

Outcome	Outcome Code	Total Th marks	Total Pr marks	Total OJT marks
Identify and differentiate male and female Palm tree	FPT/1111/OC1	0	90	0
Follow the process of pre harvesting management of Palm Juice	FPT/1111/OC2	50	110	0
Demonstrate palm juice extraction process	FPT/1111/OC3	0	130	0
Perform post-harvest management of Palm SAP	FPT/1111/OC4	50	70	0
Produce jaggery and other molasses-based candy	FPT/1111/OC5	50	70	0
Perform Quality checking followed by packaging and sealing of Jaggery produced.	FPT/1111/OC6	0	90	0
Maintain hygiene and sanitation in Jaggery / Candy Producing unit	FPT/1111/OC7	0	90	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	FPT/1111/OC8	0	0	150
Employability Skills – 60 Hrs	DGT/VSQ/N0102	50	0	0