RAW MILK HANDLING

ISCED UNIT CODE: 0721 351 01A

TVET CDACC UNIT CODE: DA/CU/PM/CR/01/4/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Handle Raw Milk

Duration: 160Hours

Unit Description

This unit specifies the competencies required by a Dairy Plant Technician Level 6to handle raw milk. It involves procuring, grading and preserving raw milk

Summary of Learning Outcomes

By the end of this unit, the learner should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Procure Raw milk	40
2.	Grade Raw milk	30
3.	Bulk raw milk	30
4.	Preserve Raw milk	30
1.	Dispatch of Milk	30
Total		**160**

Learning Outcomes, Content, and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Procure Raw Milk	1.1 Sources of Raw milk 1.1.1 Dairy Cattle 1.1.2 Dairy Goats 1.1.3 Dairy Camel	• Written tests • Interviews/ Oral questions • Practical

	1.2 Milk –cost determination 1.2.1 Feasibility study 1.1.1.1 Milk collection sites 1.1.1.1 Milk collection routes 1.1.1.1 Milk collection systems 1.1.1.1 Milk market prices 1.1.1.1 Risk analysis 1.3 Raw -Milk supply agreement 1.3.1 Raw milk supply agreement content 1.1.1.1 Quantity 1.1.1.1 Terms of payment 1.1.1.1 Delivery methods 1.1.1.1 Quality 1.1.1.1 Delivery time 1.1.1.1 Penalties 1.4 Review period Raw milk delivery 1.4.1 Raw Milk storage and transport conditions 1.4.2 Hygiene standards in raw -milk delivery	• Individual/group assignments • Case Studies
2. Grade Raw Milk	2.1 Raw Milk Sampling 2.1.1 Definition of terms 2.1.2 Methods of sampling 2.1.3 Sampling procedures 2.2 Grading tools, equipment and materials 2.2.1 Alcohol gun	• Written tests • Interviews/ Oral questions • Practical reports • Individual/group assignments • Case Studies • Third party report

	2.2.2 Plunger/stirrer 2.2.3 Lactometer 2.2.4 Thermometer 2.2.5 Centrifuge 2.2.6 Clarifier 2.2.7 Lovi bond Comparator 2.2.8 Ethanol 2.2.9 Resazurin solution 2.2.10 Antibiotic test kit 2.2.11 Aflatoxin test kit 2.2.12 Phenolphthalein Indicator 2.2.13 Sodium hydroxide 2.2.14 A.I 2.3 Raw milk quality Tests 2.3.1 Organoleptic 2.3.2 Clot On Boiling 2.3.3 Compositional test 2.3.4 Resazurin test 2.3.5 Alcohol test 2.3.6 Lactometer test 2.3.7 Antibiotic test 2.3.8 pH test 2.4 Receiving Raw milk 2.4.1 Raw milk measurement 2.4.2 Raw milk Quality inferences 2.5 Raw Milk Record keeping 2.5.1 Factors to consider in record keeping	

	2.5.1.1 Quantity 2.5.1.2 Quality 2.5.1.3 Supplier 2.5.1.4 Date and time 2.6 Cleaning and sanitation of Grading tools and Equipment's 2.6.1 Materials and Equipment's for cleaning 2.6.2 Personal Protective Equipment's 2.6.3 Methods of cleaning 2.6.4 Cleaning procedures 2.7 Smart and Sustainable Systems 2.7.1 AI application 2.7.2 Sustainable waste disposal	
3. Bulk raw milk	3.1 Concepts of Bulking 3.1.1 Definition of terms 3.1.2 Bulking Equipment's 3.1.2.1 Vat 3.1.2.2 Cans 3.1.2.3 Silo tanks 3.1.3 Bulking Methods 3.1.3.1 Batch bulking 3.1.3.2 Continuous bulking 3.2 Bulking Records Documentation 3.2.1 Quantity of raw milk received 3.2.2 Quality parameters 3.2.3 Farmer records	• Written tests • Interviews/ Oral questions • Practical reports • Individual/group assignments • Case Studie • Third party report

	3.3 Hygiene and sanitation of bulking equipment 3.3.1 Cleaning materials, tools and equipment 3.3.2 Cleaning process 3.3.3 Sanitation methods 3.4 Smart and Sustainable Systems 3.4.1 AI application 3.4.2 Sustainable waste disposal	
4. Preserve raw milk	4.1 Raw milk cooling parameters 4.2 Temperature 4.2.1 Time 4.2.2 Temperature-time controls 4.3 Raw milk cooling process 4.3.1 Definition of terms 4.3.2 Chilling methods 4.3.3 Refrigeration 4.4 Monitoring of the cooling process 4.4.1 Cooling time 4.4.2 Agitation 4.4.3 Temperatures 4.5 Evaluate chilling process	• Oral questions • Written assessment • Portfolio of Evidence • Practical assessment • Third party report
5. Dispatch Raw Milk	5.1 Raw milk quality analysis 5.1.1 Alcohol test 5.1.2 Lactometer test 5.2 Raw milk measurement 5.2.1 Raw Milk Record keeping 5.2.2 Record keeping 5.3 Cleaning and sanitation of chilling equipment 5.4 Raw milk stock	• Oral questions • Written assessment • Portfolio of Evidence • Practical assessment • Third party report

Suggested Methods of Instruction

- Demonstrations
- Group discussion
- Direct instruction
- Role playing

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	**Learning Materials**			
1.	Textbooks		5 pcs	1:5
2.	Production Manuals		5	1;5
3.	PowerPoint presentations	For trainer's use		
4.	Projector		1	1;25
5.	Assorted Flash Cards		5	1;5
6.	Whiteboard		1	1;25
7.	Rolls flip charts		1	1;25
8.	Assorted color of whiteboard markers	For trainers Use		
B	**Learning Facilities & infrastructure**			
1.	Lecture/theory room		1	1:25
2.	Workshop		1	1:25
3.	Laboratory		1	1:25
4.	Site/industry		1	1:25
C	**Consumable materials**			
1.	Ethanol		1ltr	1:5
2.	Resazurin solution		10mls	10:5
3.	Antibiotic test kit		1	1;5
4.	Phenolphthalein Indicator		10 mls	10;5
5.	Sodium hydroxide		500ml	500mls:5
6.	Raw milk		500mls	500;5
D	**Tools and Equipment**			
1.	Alcohol gun		5 pcs	1:5
2.	Lactometer		5pcs	1;5

3.	Thermometer		1 pcs	1:5
4.	Centrifuge		5 pcs	1:25
5.	Clarifier		5pcs	5:5
6.	Lovi bond Comparator		1 pcs	1:25
7.	Refrigerator/cold room		1 pcs	1:25
8.	Stop watch		5pcs	1:5