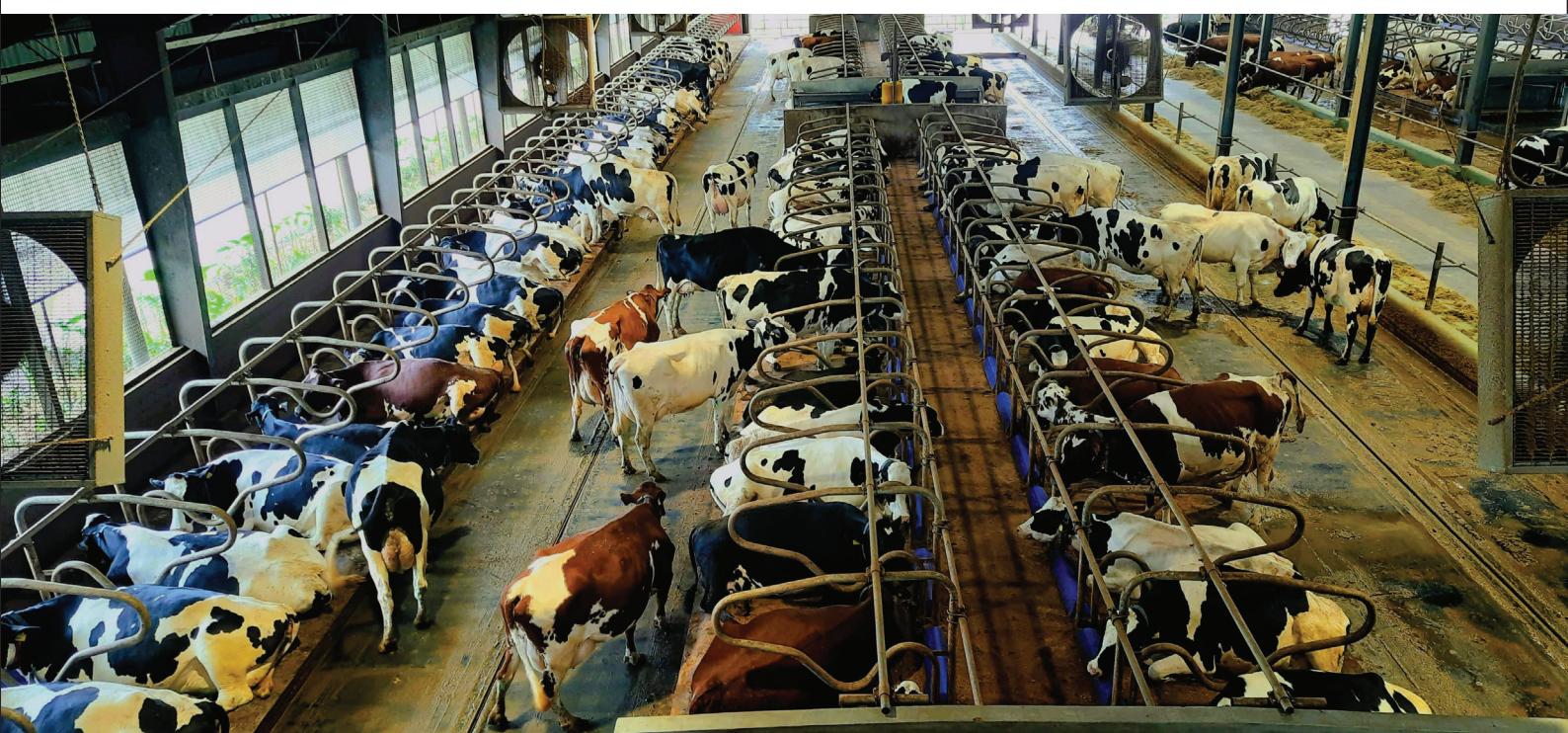


Code of Practice

for Ethical Milk Production, Collection and Marketing to Ensure the Quality of Milk in Sri Lanka



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Authors

Dr. D. C. Mudannayake, Senior Lecturer, Uva Wellassa University, Sri Lanka

Dr. A. M. N. L. Abesinghe, Senior Lecturer, Uva Wellassa University, Sri Lanka

Dr. R. M. H. Tharangani, Senior Lecturer, Uva Wellassa University, Sri Lanka

Mr. Ashoka Athapaththu, Milco (Pvt) Ltd., Sri Lanka

Collaborators

DevPro Guarantee Limited

Institute for Participatory Interaction in Development (IPID)

Review Panel

Prof. Janak K. Vidanarachchi, University of Peradeniya, Sri Lanka

Prof. Emeritus Thakshila Serasinghe, University of Ruhuna, Sri Lanka

Prof. R. M. C. Deshapriya, University of Peradeniya, Sri Lanka

Prof. Kavindra K. Wijesundara, University of Peradeniya, Sri Lanka

Prof. Deepthi Nayananjalie, Rajarata University of Sri Lanka

Prof. R. M. Amila S. Bandara, Sabaragamuwa University of Sri Lanka

Dr. Kumara Mahipala, Senior Lecturer, University of Peradeniya, Sri Lanka

Dr. S. J. M. R. R. Samarakoon, Additional Provincial Director, DAPH, Badulla, Sri Lanka

Dr. L. Manori P. Wijemanne, Dairy Engineering Specialist, Veterinary Research Institute, Sri Lanka

Dr. Hasitha Priyashantha, Milk Quality Expert, Federation of Swedish Farmers (LRF Dairy) Sweden.

Dr. Shishanthi Jayarathna, Lecturer, Folkuniversitetet, Uppsala, Sweden

Ms. Nayana Perera, Senior Manager/Innovations, Fonterra Brands PLC, Sri Lanka

Mr. Suneth Gunathilake, Manager R & D, Pelwatte Dairies, Sri Lanka

Mr. Rukshan Senevirathne, Assistant Manager, Fonterra Brands PLC, Sri Lanka

Mr. Chamila L. Rajapaksha, Dairy Herd Manager, Farm Solution Ltd, Ireland

Mr. Roshan Wijethilaka, Dairy Herd Manager, BLL Farm Trust, New Plymouth, New Zealand



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Preface

The dairy industry in Sri Lanka plays a vital role in ensuring national food security, improving rural livelihoods, and supporting the local economy. However, despite its significance, the industry faces numerous challenges, ranging from inconsistent quality standards and milk adulteration to gaps in animal welfare, hygiene, and operational practices. These issues are often rooted in the absence of a unified, practical, and ethical framework to guide stakeholders across the dairy value chain.

This Code of Practice has been developed to address that gap. It serves as a comprehensive and science-based document outlining the expected standards of behavior, technical practices, and ethical responsibilities within Sri Lanka's dairy sector, from farm-level production to raw milk Selling.

The preparation of this Code was initiated as a collaborative effort among Uva Wellassa University of Sri Lanka, DevPro Guarantee Limited, and the Institute for Participatory Interaction in Development (IPID), Sri Lanka. A multidisciplinary team of academics from Uva Wellassa University contributed to the development of this document, drawing on field experience, scientific evidence, and stakeholder consultations. The authors gratefully acknowledge the support and encouragement provided by the reviewing panel, comprising dairy experts from both academia and industry, and the Department of Animal Production and Health (DAPH), Sri Lanka, in making this initiative a reality.

We believe this Code of Practice will serve as a foundational tool to uplift technical and ethical standards, enhance milk quality and safety, safeguard animal welfare, and improve transparency and productivity in Sri Lanka's dairy industry. It is our hope that all stakeholders will embrace its principles and commit to building a more sustainable, fair, and competitive dairy sector for the country.

The Authors

Introduction

The dairy industry in Sri Lanka faces several challenges, including milk adulteration, spoilage during production, collection, and Selling. The lack of clear and direct guidance on critical areas such as housing, nutrition and health requirements, hygienic milk production, storage, and transport has led to significant issues within the dairy industry, resulting in a decline in milk quality. These issues can be classified as malpractices within the dairy supply chain, highlighting the urgent need for intervention by competent authorities such as the Ministry of Health (MoH), Ministry of Agriculture (MoA), Department of Animal Production and Health (DAPH), private dairy companies, and farmer federations.

This Code of Practice (CoP) aims to establish technical and ethical standards across the dairy industry, ensuring responsible practices from dairy production to Selling. The Code of Practice (CoP) serves as a framework of guidelines, technical and ethical standards, best practices expected behaviors and responsibilities within the dairy sector. Although Sri Lanka's dairy industry operates under existing policies and regulations, such as the National Dairy Policy, the Food Act, and the Animal Feed Act, a comprehensive Code of Practice does not currently exist. Such a document would play a critical role in establishing technical and ethical standards, ensuring animal welfare, environmental sustainability, and food safety, while improving milk quality, farmer productivity, and industry profitability.

Implementing a CoP for milk production, collection, and Selling will significantly enhance Sri Lanka's dairy industry. It will ensure ethical treatment of animals by promoting proper feeding, housing, and healthcare while improving milk safety and hygiene to reduce contamination risks. Additionally, it will increase farmer productivity and income, expand market opportunities, and strengthen the local dairy industry, reducing dependence on imports. Economically, it will attract investment, generate employment, and promote fair trade practices, fostering transparency in pricing, contracts, and business operations.

Scope

This Code of Practice applies to all individuals and entities in the production, handling, transportation, and Selling of raw milk in Sri Lanka. It specifically addresses medium and large scale farm operations that use stall-fed management systems. The Code encompasses the entire dairy value chain from dairy farms to milk chilling centers, and is applicable to dairy farmers, farm workers, milk producers, bulk milk collectors, transport operators, and owners and operators of milk collection and chilling facilities.

The Code provides practical, science-based guidelines to ensure that raw milk is produced, collected, transported, and stored under hygienic and ethical conditions. It promotes the adoption of best practices in cattle housing, nutrition and feeding, health management, milking operations, animal welfare, waste management, collection, transportation, storage, handling and procurement of raw milk.

This Code is intended to serve as a unifying document that complements existing laws, policies, and standards. It aims to enhance coordination and accountability among stakeholders, raise industry standards, and strengthen the credibility of Sri Lanka's dairy sector in both domestic and international markets.

Application of Code of Practice

This Code applies to all dairy farms, dairy farm workers, milk producers, bulk milk collectors, owners and operators of transport vehicles and milk chilling centers/ milk collecting points.

This Code of Practice provides clear, practical guidelines to ensure raw milk is produced, handled, and marketed responsibly from the farm to the milk chilling center. Applicable to every dairy operation, it sets out goals to uphold animal welfare, maintain strict hygiene, promote sustainable dairying, and ensure the transparent, safe trade of high-quality raw milk. It specifies the requirements for the establishment and operation of cattle sheds, milking parlours, milk collection and chilling facilities, storage facilities, and related equipment. Enforces thorough standards for animal nutrition and feeding, personal hygiene, equipment sanitation, and outlines waste-management practices. It also outlines precise steps for on-farm milk handling, storage, and transport, as well as requirements for milk collection points and chilling centers, including facility layout, equipment upkeep, sampling and testing routines, and milk procurement to ensure full traceability, transparency, and responsible dairy operations.



Objectives of the Code of Practice

- To establish a set of standardized ethical and operational guidelines to ensure the production, collection, handling, and Selling of high-quality, safe, and unadulterated milk.,
- To improve clarity and transparency of trade between dairy farmers and milk collectors.,
- To promote good hygienic practices, compliance with national and international quality standards, and accountability among all stakeholders in the dairy value chain., and
- To enhance consumer trust, protect public health, and support the sustainable development of the dairy sector by fostering a culture of responsibility.





1. Dairy Cattle Housing Requirements

1.1 General Requirements

Cattle housing must be designed, constructed, and maintained to ensure the health, welfare, and comfort of the animals. Facilities should provide adequate space, ventilation, natural light, and protection from extreme weather conditions. Housing systems must support cleanliness and ease of manure management, reduce stress and injury risks, and facilitate efficient feeding, milking, and handling. The layout should promote biosecurity and minimize contamination risks to ensure the production of safe, high-quality milk in compliance with national regulations and industry best practices.

1.2 Site Selection

1.2.1 Land and Soil Suitability

- The selected site shall consist of stable, well-drained soil such as loamy or gravelly types that provide a strong foundation for structures and reduce the risk of water stagnation or foundation damage. Marshy, clayey, sandy, or rocky soils should be avoided.
- The land shall be sufficient to accommodate all necessary buildings and future expansions.

1.2.2 Water and Drainage Facilities

- The site shall have a dependable and continuous supply of clean water to meet the requirements for drinking, cleaning, milk processing, and fodder irrigation. Preference should be given to sites with natural or permanent water sources.
- Efficient drainage systems shall be incorporated to divert rainwater and subsoil water away from buildings and pathways.

1.2.3 Environmental Protection and Comfort

- The site shall be protected from direct solar radiation and high wind exposure by establishing windbreaks using tall, fast-growing trees.
- The environment shall be free from industrial pollutants, offensive odors, excessive noise, and urban disturbances, as these factors negatively impact animal welfare, productivity, and reproductive performance.

1.2.4 Access to Infrastructure and Utilities

- The site shall have access to electricity for operating equipment, lighting, cooling systems, mechanized milking, milk chilling, and water pumping.
- Good transportation/ road access shall be ensured to allow efficient delivery of milk, feed, veterinary care, and farm supplies.

1.3 Cattle Shed Designing and Construction

Two main housing systems can be distinguished, namely;

1. Tie-up housing systems, and
2. Loose housing with cubicles.

1.3.1 Tie-up Housing System

In this system each cow is restrained in a stall and feed is delivered into a manger in front of the cows. Milking takes place individually in the stall and the manure is collected in a gutter. This method involves many disadvantages including;

- Cows can have hoof problems when kept for longer periods,
- Interferes with some management practices (Heat detection is difficult),
- Trampling of teats (adult animals can move laterally and trample the teats),
- Restricts natural movement and animal welfare concerns (Cows cannot move freely, lie down comfortably, or engage in social behavior, leading to stress and reduced welfare),
- Increases risk of contamination (manure accumulation in nearby gutters can compromise udder hygiene and milk quality),
- Makes cleanliness harder to maintain (maintaining optimal barn hygiene is more difficult compared to loose or free-stall housing systems),
- Reduces feed intake and milk production (Constrained animals may eat and ruminate less, leading to lower milk yields), and
- Impairs health and reproduction (Stress and discomfort can weaken immune function and reduce fertility).

Therefore, the use of tie-up housing systems shall not be encouraged, as they pose significant challenges to animal welfare, hygiene, and overall production efficiency.

1.3.2 Cubicle Housing System (Loose Housing with Cubicles/Loose housing/ Free Stall Housing with cubicles)

In the cubicle housing system, also known as loose housing with cubicles, cows are housed in an open area where they can move freely and lie down in individual stalls (cubicles) designed to promote comfort and hygiene. Feed is provided in a common feed alley, and cows access water from shared water troughs. Milking is typically carried out in a separate milking parlour. This system supports natural animal behavior and enhances welfare, health, and productivity when properly managed (Figure 01).

- Cattle shed shall be designed, and constructed in a manner that:
 - (a) minimizes damage by dairy animals,
 - (b) prevents injuries to dairy animals, and
 - (c) minimizes the entering, nesting and breeding of pests.
- Cattle shed shall be constructed of materials that:
 - (a) are durable,
 - (b) will permit the effective cleaning of all surfaces, and
 - (c) are free of any toxic or noxious substances.

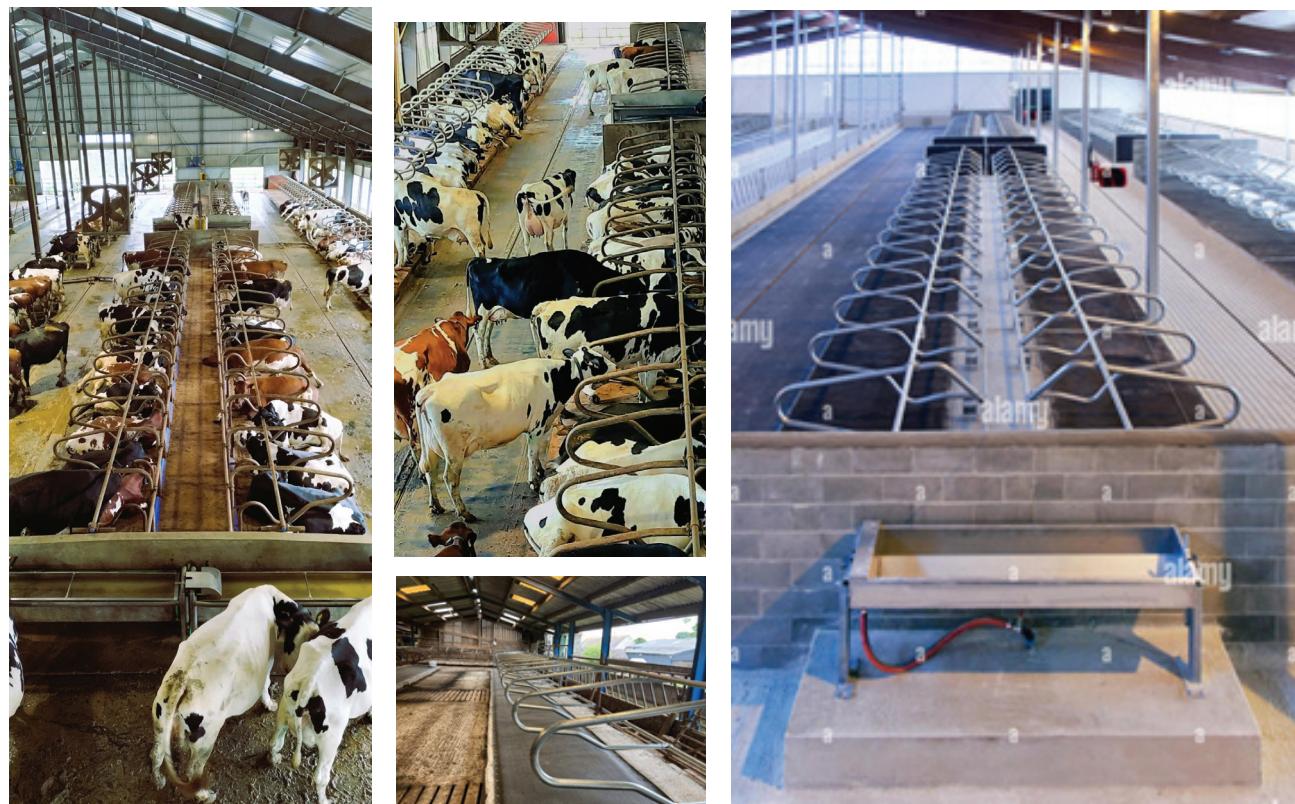


Figure 01. Cubicle Housing System (Loose Housing with Cubicles/Loose housing)

1.3.2.1 Key Considerations in Designing and Constructing Cubicle Housing System

Cubicle housing shall be consisted of individual stalls (cubicles) where cows can lie down comfortably, usually located within a large shed that provides shelter. Cows are free to move between cubicles, feeding areas, and water points

- ***House orientation***

The dairy cattle house shall be oriented in an east-west direction to minimize heat buildup and ensure better thermal comfort for the animals.

- ***Roofing***

The roofing of dairy cattle housing should be constructed using heat-reflective, locally available materials such as zinc-aluminum sheets with proper insulation to minimize heat stress.

An adequate roof overhang of 2 to 3 feet should be provided on all sides to protect the interior from rain and direct sunlight.

Ridge ventilation must be incorporated into the roof design to allow hot air to escape and ensure good airflow within the housing structure.

- ***Flooring***

The flooring in cattle housing shall be made of concrete with non-slip grooves to ensure the safety of the animals and prevent slipping.

A floor slope of 3-5% shall be maintained to facilitate efficient drainage of urine and water.

Bedding areas shall be covered with rubber mats or straw to provide comfort and reduce the risk of injuries to the cattle

- ***Walls and Fencing***

The walls of the dairy cattle housing shall be designed with a half-height structure made of brick or cement, while the upper portion should consist of mesh or timber to allow proper airflow and ventilation.

Gates and fences surrounding the housing shall be strong enough to contain the animals securely, yet safe to prevent injury to the cattle.

- ***Installing cubicle frames***

Cubicle frames in dairy cattle housing should be installed using durable materials such as galvanized steel or PVC pipes for long-lasting and hygienic partitions.

Each cubicle shall be designed with the correct dimensions, including appropriate height and accurate placement of the neck rail to ensure cow comfort and ease of movement.

The cubicle beds shall be filled with soft bedding materials or fitted with rubber mats to provide a comfortable resting surface and reduce the risk of injuries.

• **Feed and Water Facilities**

Feed mangers shall be constructed along the feeding alley to allow easy and organized access to feed for all cattle.

Water troughs shall be installed at convenient locations within the housing, ensuring that cattle have constant access to clean and fresh water (It is recommended to have one water trough per every 20 cubicles).

• **Manure removal**

Shall use a scraper or hand tools depending on the resource availability.

• **Biosecurity Measures**

Access to the calf and dairy cattle housing shall be restricted to authorized personnel only, minimizing the risk of introducing diseases through visitors or shared equipment.

Footbaths containing disinfectant shall be placed at all entry points to ensure that footwear is sanitized before entering the housing area.

Dedicated tools and personnel shall be assigned specifically to the calf or cattle housing units to prevent cross-contamination between different areas of the farm.

Table 1. Key components of a cubicle housing system

Component	Description
Cubicles (stalls)	Individual resting areas with bedding and neck rails.
Feed alley	Area where cows access feed along a manger.
Water troughs	Strategically placed for easy access (Every 20 cubicle shall have one water trough)
Loafing/Exercise area	Open space where cows can move freely.
Manure alley	Passageway for cows with a slope to drain waste easily
Ventilation system	Open sides, ridge ventilation, or fans to reduce heat stress.

Table 2. Recommended dimensions for cubicle housing systems

Facility	Recommended Space
Cubicle size (L × W) (Single row)	2.4 m × 1.2 m
Cubicle size (L × W) (Double row)	4.2 m × 1.2 m
Feed alley width	3.0 – 4.0 m
Resting alley width	2.5 – 3.0 m
Loafing yard (optional)	3.5 – 4.5 m ² per cow
Water trough Space	0.6 – 0.8 m per cow
Manager/Feed bunk width	0.6 – 0.75 m per cow
Manure alley width	2.5 – 3.0 m
Roof height	Eaves: 2.5 – 3.0 m, Ridge: 3.5 – 4.0 m
Slope for drainage	1:60 – 1:40 toward dung channels

Source: Ibrahim (2000), DAPH (2009)

1.3.3 Recommended Layout Zones of a Cubicle Housing System

1. Resting area (cubicles)
2. Feeding alley
3. Walking/ loafing alley
4. Watering points
5. Dung channel and collection area
6. Service area
7. Calf pen (separately located)
8. Sick animal pen (separately located)
9. Feed storage (Figure 02.)

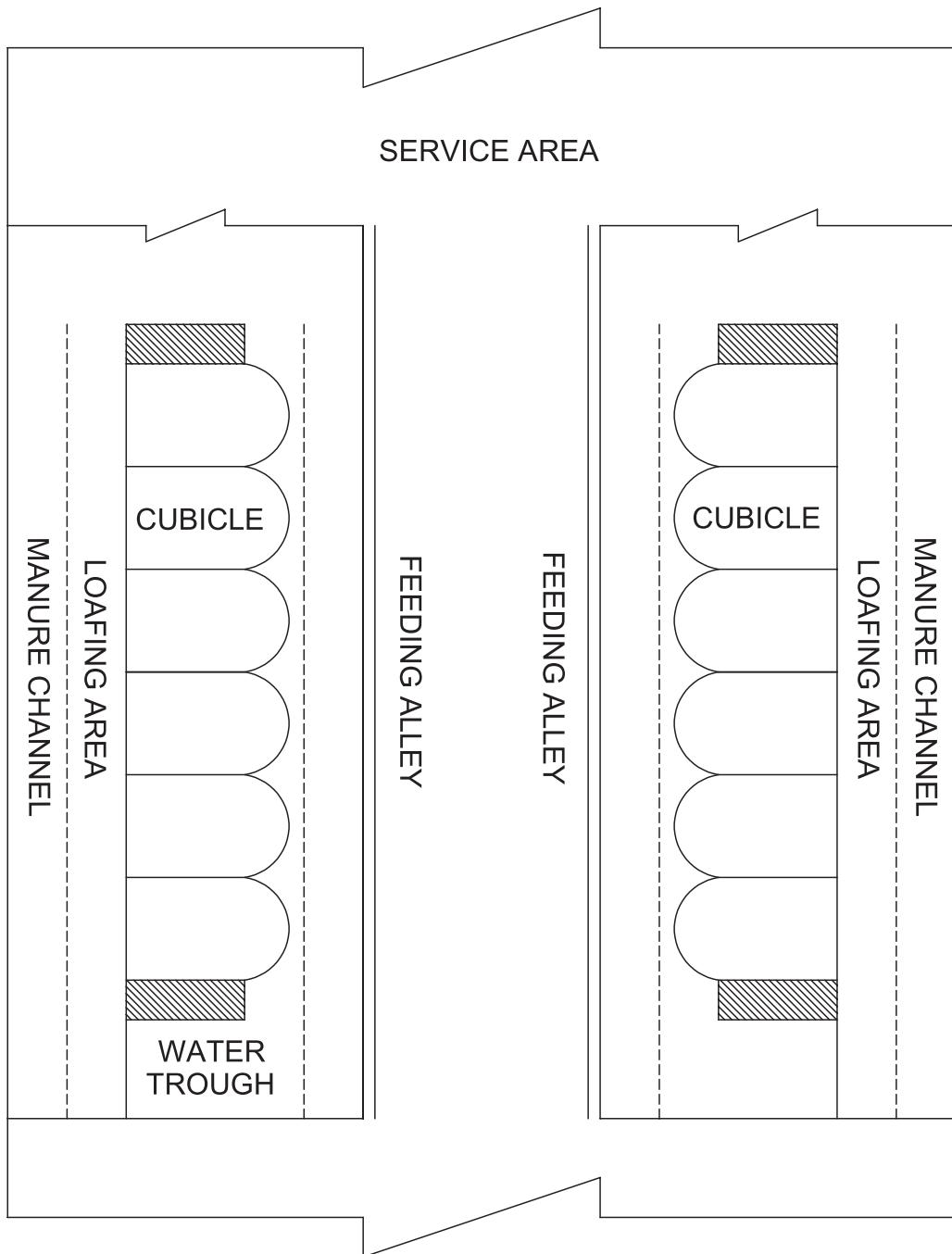


Figure 02. Floor Plan of a cubicle house for 12 cows

1.4 Housing for Calves

- Individual pens (calf pens) shall be provided for calves up to 8 weeks to minimize disease transmission and to facilitate close observation.
- Group housing shall be provided for calves above 8 weeks to allow social interaction and exercise.
- Group houses shall be well-managed to prevent overcrowding.

Table 3. Recommended design dimensions for calf houses

Component	Individual pen	Group pen (for 5-6 calves)
Pen size (L × W)	1.5 m × 1.2 m	3.0 m × 3.0 m (minimum)
Wall height	1.2 m	1.5 m
Roof height	2.5 m (eaves) - 3.5 m (ridge)	2.5 m (eaves) - 3.5 m (ridge)
Floor slope	1:40-1:60 toward drainage	1:40-1:60 toward drainage
Space per calf (group)	N/A	Minimum 1.5-2.0 m ² /calf
Feeding bucket stand	One per pen	Group feeder (with dividers)
Water access	Always available in a bucket	Clean troughs

Source: Ibrahim (2000), DAPH (2009)

Bedding

- Bedding materials such as straw, rice husk, coir dust, or sawdust shall be used to provide comfort and insulation for the calves.
- The bedding shall be replaced frequently to ensure it remains dry and clean, promoting calf health and hygiene.

Feeding & Watering Arrangements

- Each calf shall be provided with an individual milk bucket to maintain hygiene and prevent the spread of disease.
- Starter feed shall be offered using separate troughs or buckets to encourage early feed intake and proper growth.
- Clean drinking water must be available to the calves at all times to support their health and hydration.

1.5 Dairy Cattle Barn Management

Dairy barn management shall comply with the national regulations of Sri Lanka's Animal Diseases Act, environmental regulations on waste management, occupational health and safety laws, and shall cooperate with veterinarians, livestock officers and public health inspectors.

1) Bedding Mangement

- Cows shall be provided with enough bedding to keep the cows comfortable, clean and dry.
- Prevent them from getting contact or pressure sores (from always lying same or cramped postions)
- Keep the cows, teats, udders and flanks clean.
- Bedding materials such as hard rubber mat, chopped straws, hsavings, saw dust, fine sand can be used.

2) Feeding and Watering (Refer section 02. Nutrition and Feeding Requirements)

- Provide balanced rations based on stage of lactation, health, and productivity.
- Ensure free access to clean drinking water for 24 hours daily.
- Store feed in a clean, dry, and pest-free area.
- Avoid feeding spoiled or contaminated feed.

3) Ventilation and Comfort

- Ensure proper ventilation and air circulation to reduce heat stress.
- Use fans, ridge ventilation, or open sidewalls if necessary.
- Provide access to loafing areas or exercise yards to promote movement.

4) Hygiene and Sanitation

- Clean manure and urine at least twice daily from all areas
- Wash and disinfect feed and water troughs regularly
- Maintain a routine cleaning schedule for cubicles, milking areas, and equipment.
- Dispose of manure in a hygienic and environmentally friendly manner (e.g., composting or biogas).

5) Milking Hygiene (Refer Section 6. Milking operation)

6) Record keeping

- Record keeping in dairy barn management shall be strictly maintained, covering animal identification and health, breeding and calving, milk yield, feed and supplement use, and all veterinary treatments etc. (Refer Annexure 02)
- Review records regularly to improve management and decision-making.

7) Biosecurity Measures

- Biosecurity measures shall be implemented and monitored in dairy barn to prevent the introduction and spread of diseases by limiting visitor access, maintaining visitor logs, using footbaths and hand sanitizers, cleaning tools and footwear, and quarantining new or returning animals before herd integration.

8) Animal Welfare Requirements (Refer Section 4. Animal welfare)

9) Staff Training

- All workers shall be regularly trained on cattle farm management and occupational safety (Refer Annexure 01)

2. Dairy Cattle Nutrition and Feeding Requirements

Proper nutrition and feeding management are essential for maintaining the health, productivity, and reproductive performance of dairy cattle. Dairy cattle nutrition and feeding practices encompass various aspects including feed/ Total Mixed Ration (TMR) formulation and diet preparation, proper feeding techniques, provision of drinking water and creating safe feeding environment.

Animal Welfare first!

- Feed Adequacy
- Feed Access
- No Starvation or Overfeeding

2.1 Feed/Total Mixed Ration (TMR) Formulation and Diet Preparation

- Dairy cattle shall be grouped based on the age (calves, heifers, adults), physiological status (dry, pregnant, lactating) and the milk production level (low, medium, high).
- Animals shall be provided with balanced forage-based diets preferably Total Mixed Rations (TMR) that meet all nutritional requirements according to the age, physiological status, milk production etc.
- TMR rations shall be formulated to different groups of animals to meet the National Research Council (NRC) nutritional requirements of the respective groups.
- Ensure engage trained professionals in TMR/diet formulation and feed evaluations. (Refer Nutrient Requirements of Dairy Cattle, 8th revised edition by National Research Council 2001, or any other reliable / recommended source)
- Make sure stay updated with advances in dairy nutrition science and feed technologies.
- TMR formulation shall take into account the nutritional requirements of maintenance, growth, pregnancy and lactation.
- Only the approved feed ingredients and additives shall be used in preparing TMR/diets (Animal Feed Act No 15 of 1986 (Sri Lanka).

- TMR/ diet shall be mainly composed with good-quality forages like green grasses, legumes, silage or hay to make up 60–70% of the total dry matter intake and the forage shall be selected based on the availability in the region
- Other feed ingredients used in the TMR/diet formulation, except forages, shall be stored safely until use.
- Avoid moldy, rotten, or chemically contaminated feed ingredients.

Avoid Mycotoxin in feed!

- Avoid soil contamination - a lot of molds come from soil, especially during harvest.
- Dry quickly - grains should be dried as fast and efficient as possible to below ~14% moisture for grains.
- Keep feed dry - moisture is the enemy. Silage should be at the right fermentation (low pH).
- Use airtight storage - oxygen promotes mold, so use sealed silos and bags.
- Monitor temperature of feed - heating can signal mold activity.
- Rotate feed in storage - don't let feed sit around too long.
- Clean regularly - feed bins, mixers, and storage areas should be cleaned to prevent mold buildup.
- Act quickly if you find high mold growth/ high mycotoxin levels - discard the feed

- Feed shall be stored dry, clean, and in pest-free conditions to prevent spoilage and contamination (Store feed preferably above floor level to prevent wetting and potential moisture contamination)
- Stored silages/other feed/ feed ingredients shall be regularly monitored and analyzed for mycotoxin control to minimize risk.
- Mineral mixtures- Balanced mineral mixture (as per availability) shall be included in the TMR/diet (salts shall be provided mixed into feed or as salt licks).
- Forages and TMR shall be analyzed for dry matter and nutrients (NDF, ADF, CP, CF, Ash and Minerals) at least monthly, and adjust as needed based on feed quality, cow performance, and other factors.

2.2 Feeding Animals

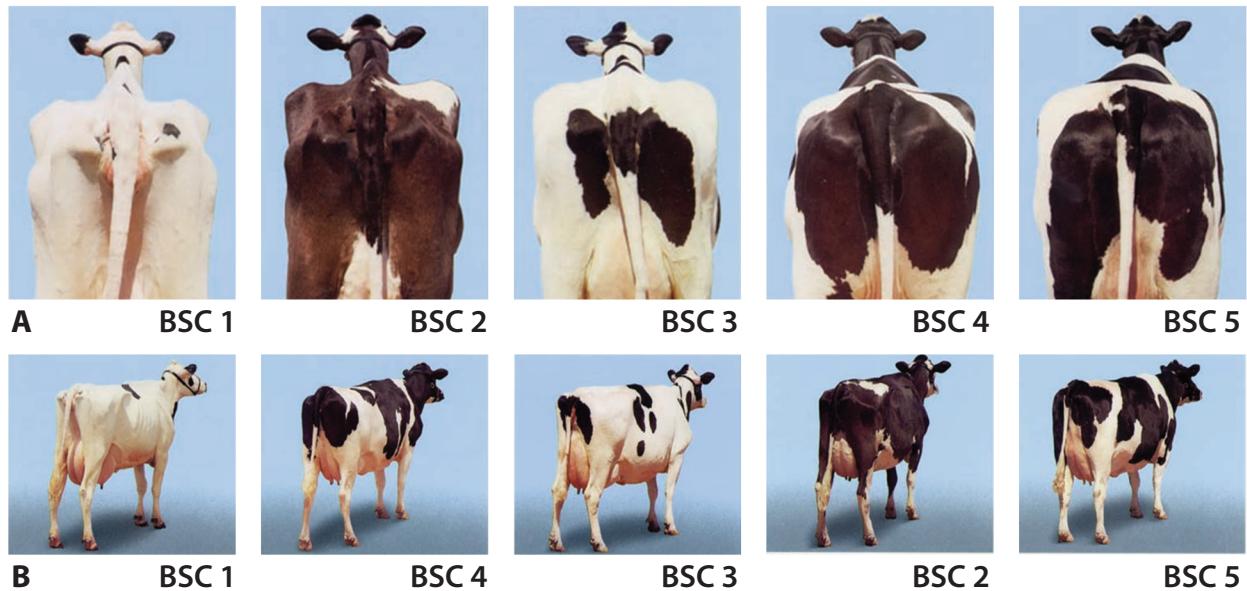
- A routine feeding schedule shall be followed, preferably two or three times daily, after milking.
- Ensure / keep feeding times consistent to reduce stress to animals
- Ensure all animals have equal and continuous access to feed and clean water.
- Animals shall not be deprived of access to feed.

- Avoid underfeeding or force-feeding.
- Make sure cattle feeding is well-managed to prevent nutrient waste and runoff. (Ensure manure output is monitored to help achieve this).
- Remove feed refusals regularly.
- TMR/Diets shall be supplemented with concentrates; energy- concentrates such as maize and barley and protein concentrates such as soybean meal and cottonseed cake depending on the availability
- Quantity of concentrates given shall depend on milk yield, preferably 1 kg concentrate per 2–2.5 liters of milk
- Feed amount shall be adjusted according to the production (Milk yield and stage of lactation) and condition of cows [body weight and body condition score (BCS)]. (Refer Table 04 and Figure 03. Body condition scores).

Table 4. Desired and reasonable Body Condition Scores (1-5 Scale) of dairy cattle

Time of scoring	Desired score	Reasonable range
Cows		
Calving	3.5	3.0-4.0
Peak Milk	2.0	1.5-2.0
Mid-lactation	2.5	2.0-2.5
Dry Off	3.5	3.0-3.5
Heifers		
6 Months	2.5	2.0-3.0
Breeding	2.5	2.0-3.0
Calving	3.5	3.0-4.0

Source - Kellogg (2010)



Adopted from Kellogg (2010)

Figure 3: Body condition scoring of cattle based on the (A) rear view (B) side view

2.3 Water

- Milk production and animal health are dependent on adequate hydration.
- Animals shall have access to an adequate supply of clean, fresh drinking water (non-detectable levels of fecal coliform bacteria per 100 mL (0 cfu/ 100 mL).
- Water quality is critical — check for contaminants like nitrates, bacteria, and minerals (like high salinity).
- Water shall be provided in troughs/tanks close to feeding areas.
- Water troughs/tanks shall be cleaned regularly (to avoid algae, mud, feed or manure buildup)
- Water requirements depend on age, body weight, production level, air temperature, humidity, dry matter intake, and dry matter content of the ingested feed. (Refer Table 5. Guide to the quantity of water).

Table 5. Minimum daily water requirement for dairy cattle

Cattle type	Quantity of Water (Litres) per day
Cows	50
Yearlings (within 1-2 years)	40
Weaners	25

Water intake depends on milk production!

High-producing cows need more water (up to 4–5 liters of water per liter of milk produced).

Source: Nutrient Requirements of Dairy Cattle, 8th revised edition NRC (2021)

2.4 Providing a Safe Feeding Environment

- Feeding areas in the cattle shed shall be kept clean and dry.
- Daily cleaning of feed bunks and mangers to prevent mold, bacteria, or leftover spoiled feed.
- Ensure the floor is dry to avoid slipping injuries.
- Feeding areas shall be separated from manure and wastewater.
- Feeding on bare ground shall be avoided; use feeding bunks/ alleys.
- Ensure adequate feeding space to reduce competition: 0–75 cm (2–2.5 feet) of bunk space per cow.
- Dominant cows shall not be able to block others
- Feeding equipment (feeders, troughs) shall;
 - Be smooth (no sharp edges)
 - Be firmly installed (no tipping or sliding)
- Feeding areas shall be kept well-ventilated to avoid heat stress.
- Ensure shade or shelter over feeding areas during hot or rainy weather.
- Clean water shall be kept close to feeding areas but separated from feed bunks to avoid spillage and contamination.

3. Animal Health requirements

Maintaining good animal health is essential for safeguarding the welfare, productivity, and longevity of dairy cattle. Effective health management includes regular monitoring, prompt treatment of illnesses, implementation of vaccination and parasite control programs, and maintaining clean and comfortable living conditions. A strong focus on preventive health practices supports sustainable dairy production and meets both industry standards and animal welfare expectations.

- A cattle shed shall be used only to house dairy animals being kept for the purposes of milking.
- Animals shall be kept clean all the time (hind legs, flanks, hips, udder).
- Producers shall not sell milk that; a) is obtained from an animal that shows evidence or visible signs of disease transmissible to humans by milk or that, b) adversely affects the quality or flavour of the milk.
- Animals rights shall be respected; all dairy cattle shall be treated with respect and compassion. Any practices that cause undue stress, harm or suffering shall be avoided.

3.1 Health Monitoring and Disease Prevention

- **Routine Health Checks:** Dairy animals shall undergo regular health checks by a qualified veterinarian to detect any signs of illness or disease at an early stage. Early intervention helps prevent the spread of disease within the herd.
- **Vaccination Protocols:** Cattle shall be vaccinated according to an established vaccination schedule to protect them from preventable diseases (e.g., bovine tuberculosis, brucellosis, and leptospirosis).
- **Health Records:** Maintain accurate health record for each animal, including vaccination history, treatment for diseases, and any signs

Recognizing Signs of Ill Health and Pain in Cows!!

- Unusual vocalization
- Dull and unresponsive
- Reluctance to be handled; rigid stance
- Abnormal posture (ex: lowered head)
- Grunting or grinding of teeth
- Kicking at the abdomen
- Lack of grooming
- Excessive licking around a wound
- Standing with legs crossed over
- Separation from the herd
- Unusual or aggressive behavior
- Loss of body condition
- Loss of appetite
- Constipation

of illnesses. These records shall be easily accessible for regular audits and for ongoing health management.

• Mastitis Prevention and Management:

Mastitis is a leading cause of milk contamination and reduced milk quality. Regularly monitor the udder health of cows, perform forestripping to detect early signs of mastitis, and promptly treat any infected animals.

- Implement a milking hygiene protocol, including clean teats and sanitized milking equipment.
- Ensure proper post-milking teat care, such as the use of post-dip disinfectants to prevent infection.
- Once calves have been separated from their dam (mother cows), they shall be kept in separate shed or box stalls when housed in the same facility as the milking herd.

Recognizing Signs of Ill Health Cont.

- Scouring (diarrhea)
- Not cudding (no regurgitating)
- Excessive nasal or eye discharges
- Excessive salivation
- Persistent coughing
- Rapid or irregular breathing
- Abnormal resting behavior
- Swollen joints
- Lameness or difficulty in walking
- Signs of mastitis (e.g., swollen, hot, or painful udder)

3.2 Controlling Zoonotic Diseases

- Effective Biosecurity Measures shall be implemented to prevent the introduction and spread of zoonotic diseases (diseases that can be transmitted from animals to humans).
- This includes limiting farm access to essential personnel.
- Practicing good hygiene, and ensuring proper quarantine procedures for new animals entering the herd.
- Ensure that farm workers are educated on the risks of zoonotic diseases and practice appropriate hygiene, including wearing protective gear (boots, gloves, masks, caps) when handling animals or milking.
- Regular health screenings for workers who handle animals shall be performed to detect any early signs of zoonotic disease transmission.

3.3 Disease Control and Reporting of Animal Health Issues

- Reporting illnesses: Any animal that shows symptoms of disease, abnormal behavior, or changes in milk production shall be immediately reported to the relevant authority (DAPH).
- In case of disease outbreak including contagious diseases that can affect both animal health and milk safety, farmer shall immediately report to the veterinarian for evaluation.

- Isolate sick animals: Animals showing signs of illness or infection shall be immediately isolated from the healthy herd to prevent disease spread, halting milk production if necessary.
- A producer shall clearly identify treated dairy animals that require milk to be withheld and maintain a record of all veterinary drug use.
- Maintain open and transparent communication about animal health issues with regulatory bodies, consumers, and stakeholders. Transparency in the management of diseases and treatment of animals ensures public confidence in milk safety.
- Record keeping: Maintain detailed records of all diagnoses, treatments, and health interventions to ensure effective disease management and traceability.

3.4 Ethical Use of Veterinary Drugs and Other Products

- Only drugs or products approved for administration to dairy animals under the Animal Disease Act No 59 of 1992 (Sri Lanka), Veterinary Drug Formulary 2014 (USA) shall be administered to a dairy animal.
- Medications, drugs and products shall be administered as prescribed by a veterinarian. If the medication is authorized for sale without a prescription, it shall be administered as directed by the manufacturer's instructions on the label.
- Responsible drug use: Veterinary drugs, including antibiotics, shall only be used when absolutely necessary and under the supervision of a licensed veterinarian. The use of antibiotics shall be in accordance with antibiotic usage protocols to minimize the risk of antimicrobial resistance.
- Follow proper dosage instructions and ensure a sufficient withdrawal period to avoid antibiotic residues in milk.
- External and internal parasites shall be controlled using tick and parasitic drugs or any other recommended methods, under the supervision of a licensed veterinarian (External parasites: ticks, lice, flies, mite; internal parasites: round worms, tape worms, liver flukes)
- Non-therapeutic drug use: The use of hormones or other non-therapeutic drugs (e.g., growth hormones) to enhance production is prohibited unless it is for specific medical purposes and in compliance with industry regulations.

3.5 Hygiene and Cleanliness

- The milking parlour, surrounding environment and milking equipment shall be kept clean and sanitized to prevent contamination of milk and to maintain overall animal health.
- Workers shall adhere to high standards of personal hygiene when handling animals or milking, including cleaning hands before and after milking, using gloves, using clean/ single use towels etc.

4. Animal Welfare requirements

The Sri Lankan dairy industry should uphold the highest standards of animal welfare as a fundamental component of responsible and sustainable dairy production. All stakeholders including dairy farmers, veterinarians, processors, and transporters should ensure that dairy animals are treated with compassion, dignity, and care throughout all stages of life.

4.1 General Principles

- Respect for animal rights: All dairy cattle shall be treated with respect, and compassion. Any practices that cause undue stress, harm, or suffering shall be avoided.
- Humane handling: Animals shall be handled gently to minimize stress, injury, and fear. Training for farm workers on proper handling techniques is essential to avoid rough treatment.
- Free from painful procedures: Procedures such as hoof trimming, and dehorning shall be done in accordance with the animal welfare standards. Pain relief shall always be administered when such procedures are carried out.
- Dairy animals should be provided with sufficient, nutritious food, clean water, appropriate shelter, and timely veterinary care to maintain optimal health and well-being.
- Animals should be safeguarded from pain, injury, fear, and distress, in alignment with the internationally accepted "Five Freedoms" of animal welfare.
- All operations involving animals should comply with relevant national animal welfare regulations and should strive to meet or exceed internationally recognized best practices.

Internationally recognized "Five Freedoms" of Animal Welfare

1. Freedom from thirst, hunger and malnutrition
2. Freedom from discomfort
3. Freedom from pain, injury and disease
4. Freedom to express normal patterns of behaviour
5. Freedom from fear and distress

4.2 Housing and Shelter

- Animals should be housed in clean, dry, and well-ventilated environments that offer protection from heat, cold, rain, and other extreme weather conditions.
- Facilities should allow animals adequate space to lie down, stand up, stretch, and move naturally and comfortably.
- Animal housing should be regularly cleaned, maintained, and designed to reduce the risk of disease and injury.

4.3 Nutrition and Water

- Animals should be provided with a balanced and appropriate diet that meets their physiological, reproductive, and production needs.
- Access to clean, safe, and fresh drinking water should be ensured at all times.
- Feeding and watering systems should be maintained in a hygienic condition and should allow all animals equal access, without competition or contamination.

4.4 Health and Veterinary Care

- Farmers and caretakers should observe/ monitor animals daily for signs of illness, injury, discomfort, or abnormal behavior and should seek timely veterinary attention when required.
- Promptly treat or isolate sick animals in a designated sick pen.
- Preventive healthcare measures such as vaccinations, deworming, disease surveillance, and regular hoof care should be implemented consistently.
- Proper records should be maintained for each animal, documenting health status, treatments administered, and veterinary interventions.

4.5 Handling and Transport

- Animals should be handled gently and respectfully to reduce fear and avoid causing injury or stress.
- The use of physical punishment or any inhumane methods should be strictly prohibited.
- Transport of animals should be conducted with appropriate planning, including provisions for rest, ventilation, temperature control, and safe loading/unloading practices to ensure animal welfare (Animal Transportation shall be in accordance with The Animal Act No 29 of 1958. Extraordinary 2009.11.26).

4.6 Breeding and Calf Management

- Breeding programs should prioritize animal health, welfare, and genetic diversity, avoiding practices that cause suffering, stress, or long-term health issues.
- Artificial insemination (AI) procedures should be performed by trained personnel using proper restraint and hygiene, with careful attention to minimizing stress and discomfort to the animal.
- Calves should receive adequate colostrum within the first few hours after birth and should be housed in clean, dry, and comfortable environments that support their early development.
- Early weaning or prolonged isolation of calves should be avoided unless medically justified or recommended by a qualified veterinarian.

4.7 End-of-Life Care

- Animals that are severely ill, injured, or unfit for recovery should be humanely euthanized by trained personnel, in accordance with accepted guidelines.
- Slaughter procedures should comply with both national legal frameworks and technical and ethical standards to ensure the process minimizes pain and distress.



5. Milking Area Requirements

Milking area shall be preferably consisting of an entrance, milking parlour, milk storage area, material storage area and office. (Refer Figure 4 . Milking area floor plan).

5.1 Entrance

An entrance shall contain:

- (a) foot bath,
- (b) doors and windows opening to the outside must be designed and maintained to minimize the entry of insects, birds, rodents or other pests,
- (c) a separate sink for washing hands, and
- (d) necessary materials for sanitary washing and drying of the hands (Refer Figure 4. Milking area floor plan).

5.2 Milking Parlour

A milking parlour shall:

- (a) be equipped with or have ready access to clean running water system having non-detectable levels of fecal coliform bacteria per 100 mL (0 cfu/ 100 mL) and that is protected from any source of contamination (sewage, other animal droppings, manure, feed materials and etc) for the water that comes in contact with milk equipment,
- (b) be equipped with pipes, high-pressure hoses/ high-pressure nozzles that are installed and arranged in a manner that permits proper cleaning of the parlour and equipment,
- (c) if necessary, be equipped with a ventilation system,
- (d) ensure sufficient natural or artificial lighting is provided in a manner that;
 - allows the person conducting the milking operation to see clearly,
 - ensure the cleanliness of the animals and udders, and condition of the milk while milking, and
 - perform milking operations in a sanitary manner.

- (e) have walls and ceilings that are;
 - covered with hard, smooth, cleanable, light-coloured, waterproof material, and
 - free of dents and cracks.
- (f) have the lower portion of the walls, above floor level, constructed of concrete or other impervious material (tiles, waterproof material),
- (g) be kept free of animals other than those of the dairy animals (pigeons, dogs, cats, civets, rodents),
- (h) be kept free of animals except during milking times,
- (i) have a wastewater drainage system,
- (j) the floor, ramps and platforms of a milking parlour shall;
 - be constructed of concrete or other impervious material,
 - be free of cracks and crevices,
 - be constructed to allow effective cleaning,
 - have covered drains, equipped with solid traps, and are sloped so as to flow into a wastewater drainage system, and
 - rubber flooring shall be used on the milking platform and in holding area to enhance animal welfare, hygiene and safety (rubber mats provide a cushioned, non-slip surface that reduce lameness and joint strain, improves cow comfort, minimize slipping accidents).
- (k) all milk handling lines, transfer lines, and in-line valves are to be clean-in-place, following the manufacturer's instructions for cleaning and disinfection,
- (l) milk transfer lines must have continual slope and be self-draining without sagging,
- (m) the oil used in air compressors must be food-grade and must be changed as recommended by the manufacturer,
- (n) air must be free of foreign material (e.g., rust, oil, heavy metals), water (i.e., condensation) and micro-organisms,
- (o) the refrigeration compressor, vacuum pump of the milking system, water heater and the water pump, shall be installed and operated in a manner that does not contaminate the milk, and
- (p) the milking parlour must be separated from the rest of the cattle shed by a holding area with a clean floor free from accumulation of manure (Refer Figure 4. Milking area floor plan).

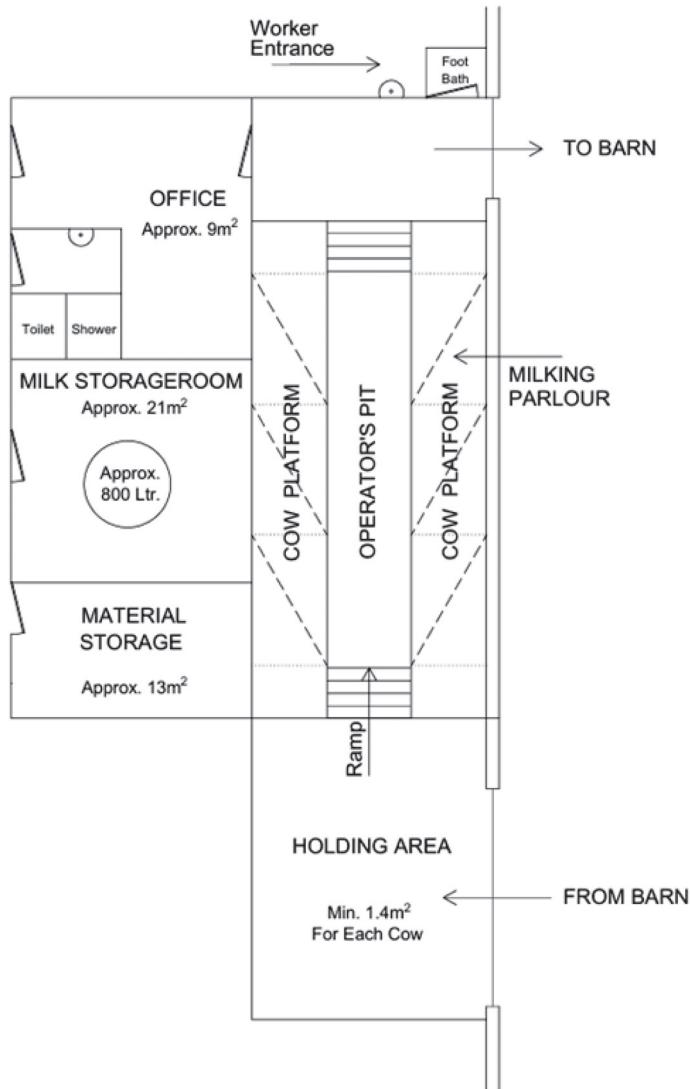


Figure 4. Floor plan of milking area

5.3 Milk Storage Room/Area

Milk storage room shall be sited in a clean area, away from obvious sources of contamination, and installed with bulk milk tank/s.

Milk storage room shall:

- (a) permit the installation of a bulk milk tank having free space around it to allow for the required operations such as inspection, transfer of milk and cleaning, and
- (b) consist of a ceiling which is high enough to permit the inspection and sampling of the milk as well as the reading and complete removal of the gauge or dipstick of the bulk milk tank.

The bulk milk storage area should be equipped with farm holding tank/s.

Bulk milk tank-

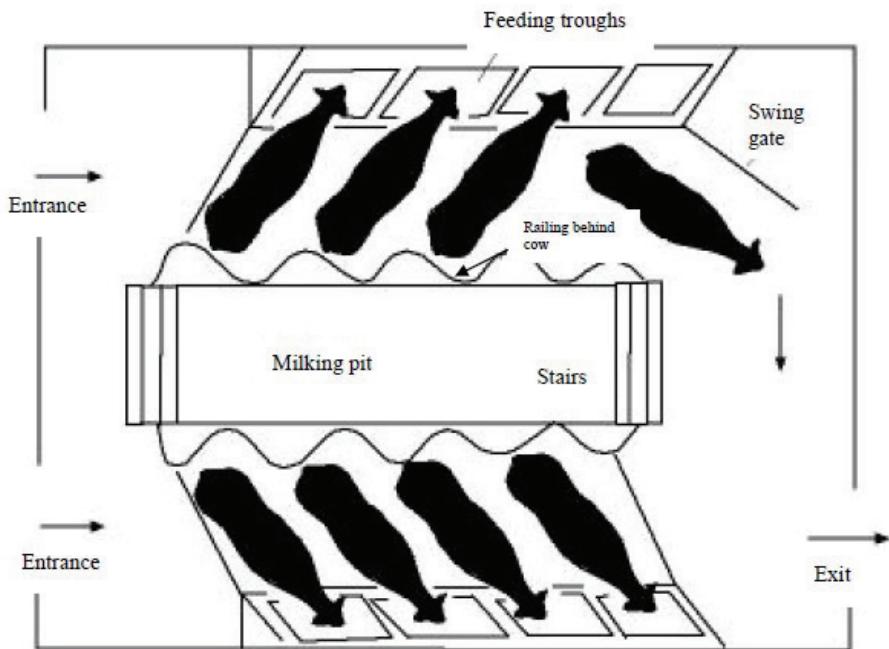
A bulk milk tank installed in the milk storage area shall:

- (i) be used exclusively for the storage and cooling of milk,
- (ii) have a sufficient capacity to hold the milk between pickups,
- (iii) milk shall be passed through a chiller before entering a bulk milk tank (Ex. Plate chiller, Glycol chiller),
- (iv) be equipped with a dipstick or gauge to permit determination of the volume of milk contained in the tank on the basis of the calibration table bearing the same serial number as the dipstick or gauge and the tank,
- (v) have mechanical agitation capable of restoring uniformity of all milk constituents throughout the tank without splashing or churning of the milk,
- (vi) be equipped with intermittent controlled agitation that provides a minimum of five (5) minutes of agitation every hour to keep the milk homogeneous,
- (vii) be suitable for cooling the milk and maintaining it at a temperature between 0-4°C (greater than 0°C and less than or equal to 4°C until collection),
- (viii) be equipped with a thermometer showing the temperature of the milk contained in the tank
- (ix) be equipped with an outlet cap,
- (x) when milk is shipped from the bulk milk tank, the milk storage area must have a wall-mounted hose port near the tank outlet, which shall be kept closed when not in use,
- (xi) bulk milk tank shall be installed inside the milk storage area. In case if a portion of the tank is extended outside/ outdoors, it must be protected from animals and vehicles by design with appropriate weatherproof installations (appropriate roof / covering),
- (xii) bulk milk tank shall be cleaned and sanitized (Refer section C: SOP for cleaning washing and disinfection of utensils, equipment and tanks used in milk collection chain, DAPH) following each complete transfer of milk to the milk transport vehicle (bowser/ truck) or any other time that the tank is emptied,
- (xiii) the storage facilities shall have been inspected and authorized by the DAPH, and
- (xiv) bulk milk tank shall be cooled to 10°C or less within one hour, and further cooled to a temperature of greater than 0°C and less than or equal to 4°C within two hours after the completion of milking.

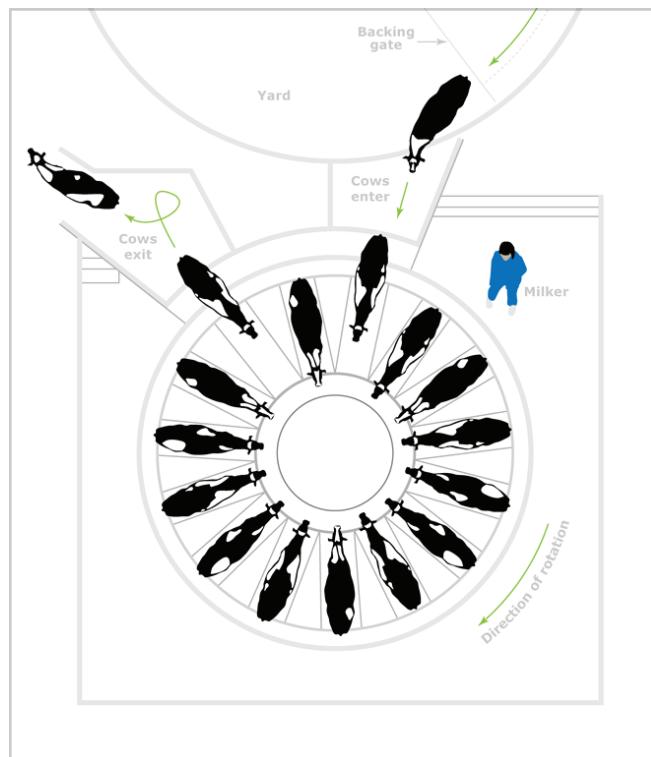
5.4 Material Storage Area

- (a) Separate storage room/area should be provided to store cleaning, sanitizing, and detergent materials and equipment used in the milking and milk handling.
- (b) Lockable cupboards, stands or shelves of non-corrodible material located off the floor to store the materials, and equipment used in the production and handling of milk.
- (c) All cleaning materials shall be stored in a location and manner that will not contaminate the milk.
- (d) Pesticides, fly repellents or other toxic products, other than those that are directly related to the operation of milking, shall be stored separately in a labelled, closed lockable cupboard in the material storage area, so that will not contaminate the milk.
- (e) All veterinary drugs stored in material storage, shall be kept in a separately labeled, closed cupboard or refrigerator to prevent contamination of milk.
- (f) Where a facility is provided with a washroom, the washroom shall be located and maintained so that it does not act as a source of contamination for the milk or equipment.





A Herringbone milking parlour



A Rotary milking Parlour

6. Milking operation

The premises, materials and equipment of the cattle shed and milking parlour shall be kept clean and maintained in good and operational condition.

Important!!

- Maintain a regular and consistent milking schedule in the farm.
- Preferably, use the same milking team in the farm.
- Always follow the same sequence of steps during milking.
- Avoid introducing stressful activities such as vaccination, hoof trimming just before milking.
- Soft, calming music can help encourage milk let-down in during milking.
- Feeding cows in-shed during milking promotes steady milk-let down and reduce stress.
- Maintain record keeping.

6.1 Animal Health and Cleanliness

- Ensure cows are healthy and free from infectious diseases (e.g., mastitis, tuberculosis).
- Trim udder hair and tail hair regularly to avoid dirt accumulation.
- Ensure milk from treated animals is withheld until the withdrawal period is complete (Refer withdrawal periods prescribed by the respective drug/anbiotic manufacter).
- Cows undergoing treatment with veterinary drugs shall be clearly and visibly identified to ensure that milk is withheld until the full withdrawal period has elapsed.
- Such treated animals shall be marked using one or more of the following methods:
 - Tail painting with bright, non-toxic colors.
 - Udder painting or spraying, especially on treated quarters.
 - Leg bands or ankle straps in a distinct color indicating treatment.
 - Temporary chalk markings on the flank, back, or rump.
- In addition to physical markings, treatment records shall be maintained in written or electronic form and shall be accessible to all relevant personnel.

- A combination of identification methods is strongly recommended to minimize the risk of mistakenly milking treated animals into the bulk tank.
- Markings shall remain visible for the entire duration of the withdrawal period and be removed or updated only upon completion.

6.2 Milking Environment

- Milking shall be done in a clean, well-ventilated, and dust-free area.
- Ensure the milking area is dry and free from cow dung, feed waste, and pests, before milking.
- Avoid, wet slippery or muddy floor in the milking area.
- Prevent animals from lying down in mud or contaminated areas before milking.
- Keep the milking area quiet and calm without sudden movements (minimize noise from loud machinery and shouting etc)

6.3 Personal Hygiene

- Milkers must wear clean clothes (milking aprons/overalls) and keep nails short and clean.
- Preferably use disposable gloves during milking. Gloves shall be cleaned and sanitized with a hand sanitizer before milking and after handling each cow.
- If bare hands are used, they shall be washed thoroughly with soap and water before milking and after handling each cow.
- Avoid milking if the milker has open wounds or contagious illnesses. In a case where the person has a minor open lesion, wear a waterproof dressing that prevents contamination of the milk.
- No smoking, eating, or drinking in the milking area.
- Avoid coughing or sneezing over the animals or milk—use a mask if ill.
- Remove jewelry, especially rings and bracelets, which can harbor bacteria and injure the udder.
- Ensure all milkers are trained in hygiene practices and understand the importance of cleanliness.
- Regularly update training as part of quality assurance.

6.4 Milking Equipment Sanitation and Maintenance

- (a) Milking machines, and filters must be thoroughly cleaned and sanitized daily before and after each milking (Refer section B: Milking Machine: SOP for cleaning washing and disinfection of utensils, equipment and tanks used in milk collection chain, DAPH).
- (b) Use food-grade sanitizers and rinse with clean water after disinfecting.
- (c) Dry equipment properly to prevent microbial growth.

- (d) Milking machine shall be periodically checked.
 - Rubber liners and milk tubes of milking machines shall be checked for cracks, wear or build ups.
 - Rubber liners and milk tubes shall be replaced as recommended by the manufacturer.
 - Inspect and clean all parts of the milking machine (teat cups, claw, liners, milk pipelines, vacuum lines, vacuum regulator, pulsators, filters and receiver jars) regularly following the manufacturer's instructions.
 - Lubricate moving parts according to manufacturer's recommendations.
 - Calibrate vacuum and pulsation systems monthly according to manufacturer's recommendations.
- (e) Maintain a sanitation and maintenance log book (with date, task completed, person responsible)
- (f) Record any equipment part replacements and breakdowns.

6.5 Milking Procedure

(a) Before Milking

- Handle animals calmly to avoid stress or injury.
- Check for signs of mastitis injury or abnormal behavior before milking.
- Clean udders and teats with sanitized dry cloths or single use udder wipes and a sanitizing solution. (water shall not be used before milking)
- Teat dipping using approved pre-dip solutions (iodine based, chlorine based etc.).
 - apply the pre-dip solution to cover at least the bottom half of the each teat.
 - allow contact time of 20-30 seconds for effective disinfection.
 - wipe teats dry with a clean towel before attaching the milking machine or hand milking (Use individual towels or disposable wipes for each cow to avoid cross-contamination).
- Fore stripping- fore strip 2-3 streams of milk from each teat in to a strip cup to check for signs of mastitis (fore stripped milk shall be discarded) (Figure 5. Strip cup test).
- Milk stripping shall not be done into the hand, during the milking routine.



Figure 5. Strip cup test



Figure 6. California Mastitis Test (CMT) kit

(b) During Milking

Use clean milking equipment/ utensils/ milking machine

In machine milking -

- Follow a consistent milking routine (preparation, attachment, detachment, post-dip)
- Do not attach machines to dirty or wet teats.
- Attach the teat cup properly within 1 minute to ensure continuous milk flow
- Ensure the vacuum pressure is correct and teat cups are aligned well to avoid teat injury or contamination (check for any squawking sound, which indicate poor teat cup attachment or damaged liners).
- Check milk flow and adjust milking unit as needed.
- Milking operation must be completed by 4-6 minutes.
- Milking unit shall be removed after complete milking.
- Make sure to properly shut off vacuum and to remove the milking unit promptly to prevent over milking.
- Automatic take off settings should be accurate to prevent over milking.
- Regular replacement of milk filters is recommended to maintain hygiene and milk quality.

A standard maintenance schedule for the milking machine shall be implemented, outlining the key components to be checked on a daily, weekly, and monthly basis to ensure milk quality and equipment longevity. A checklist shall be used, and maintenance records shall be accurately maintained (Refer annexure 05)

In hand milking - Use an appropriate hand milking method which is consistent and gentle to avoid damage to the udder of the animals and make sure complete milk let let down (Refer Figure 7. Hand milking methods).

- Avoid over-milking or under-milking to maintain udder health.
- Avoid contamination (prevent dirt, hair, or manure from falling into the milk).
- Don't allow milk to touch the outside of the teats or cow's skin.



Figure 7. Hand milking Methods

(c) After Milking

- Post-Milking Teat Dipping (Dip each teat in an approved disinfectant immediately after milking).
- Regularly check for signs of mastitis or other infections and keep records
- Allow the cow to stand for 30 minutes after milking to let the teat canal close, reducing infection risk.
- Feed or water cows post-milking to encourage standing.
- Identify and segregate cows with abnormal or mastitic milk.
- (California Mastitis Test (CMT) shall be ideally carried out once in every month to identify subclinical mastitis using the CMT test (Figure 6. CMT test)).
- Clearly mark infected animals or keep them in a separate group.
- Use separate equipment for infected cows.
- Do not mix abnormal milk with bulk milk.
- Filter/ strain milk and cool it to 4°C immediately after milking to inhibit bacterial growth.
- Store milk in sanitized containers.
- Avoid contact of milk with bare hands or unclean containers.
- Keep detailed records of machine maintenance, cow treatments and milk quality test results.

7. Milk Storage Containers/ Utensils

7.1 Milk Storage Container Requirements

- All equipment used for collecting, cooling, holding, storing and transferring milk shall:
 - (a) be made of stainless steel (SS) 304G, 316G specifically designed for dairy use,
 - (b) be used only for that purpose,
 - (c) be maintained to ensure they are in working order, and
 - (d) have surfaces that come into contact with milk which are:
 - constructed of non-corrodible materials,
 - smooth and free of cavities and open seams,
 - non-toxic and resistant to damage from detergents and sanitizers, and
 - unaffected by milk and do not adversely affect the safety and quality of the milk.
 - (e) reusable milk storage containers/ milk transfer containers/ milk cans shall be thoroughly cleaned, sanitized, dried / sundried after emptying and before next use,
 - (f) the containers which are improper/ non-food grade shall not be used (Refer Figure 08).
(ex: un covered containers (bucket, bowls), used paint buckets, oil cans, used mineral water bottles, used detergent containers, aluminum containers, clay pots etc.)



Figure 8. Proper and improper milk storage cans/containers

- In the past, Aluminum and plastic cans were commonly used for transporting milk. However, stainless steel cans are now preferred due to their superior durability, ease of cleaning, and resistance to rust and contamination. Therefore, it is recommended to replace Aluminum and plastic cans with stainless steel cans to ensure milk quality and safety.
- The containers shall be easy to clean, and have sufficient brim space/wide opening which facilitate proper manual cleaning (Refer Figure 8).
- Containers shall be stored in a way that both exteriors and interiors remain clean and free of contaminants (stored turned upside down), above the ground level (Figure 9).



Figure 9. Cleaned stainless steel milk cans on a drain rack.

7.2 Cleaning Procedure for Milk Containers/ Utensils

All used milk containers/ utensils shall be cleaned following the standard cleaning procedure described in SOP (Standard Operating Procedure) for cleaning, washing and disinfection of utensils, equipment and tanks used in milk collection chain, DAPH) to ensure proper hygiene and safe reuse.

Water used for washing shall be free of fecal coliforms with a limit of 0 cfu/ per 100 mL (water used for washing in farm/MCP/MCC/MPP are supposed to test for microbiology routinely) (SLSI, WHO and Sri Lanka Health Ministry Regulations).

I. Pre-rinse

- Use water/ lukewarm water (about 40°C) to rinse the cans immediately after milk is emptied.
- Avoid hot water at this stage to prevent protein from sticking to the surface.

II. Washing with detergents

- Use hot water (at least 50-70°C) and a food-safe detergent.
- Scrub interior and exterior surfaces thoroughly using a non-abrasive brush or sponges to clean:
 - Inside the can focusing lid and rim, seams and corners, and,
 - Outside the can focusing handles and brim where residues can hide.
- If using a CIP (Clean-in-Place) system, follow the manufacturer's concentration and temperature guidelines.

III. Rinse

- Rinse with clean potable water to remove detergent residues, and,
- Check for remaining foam/slippiness to make sure all the detergents have been removed.

IV. Sanitize

- Use a food-grade sanitizer (e.g., chlorine-based, para-acetic acid),
- Follow the proper dilution rate and contact time (1 to 2 mins) as per label, and,
- Boiling water shall be used if no sanitizers are available.

V. Drying

- Invert the cans to allow complete drainage and air-drying /sun drying
- Ensure the drying area is clean and away from dust or pests, and,
- Clothes shall not be used for this purpose.

VI. Storage

- Store the cleaned milk cans inverted in a clean, dry, and covered area, and,
- Avoid contact with animal, and insect or dust (Refer figure 9).

8. Handling Storage and Transportation of Raw Milk by Dairy Farmers to the Milk Collecting Points (MCP)

8.1 Handling and Storage

- Handling and storage of milk shall be conducted in a manner to avoid mechanical disturbances (churning) and contamination (physical/chemical) and minimize any increase in the microbiological load of milk.
- Milk shall be stored in clean, covered, stainless steel containers or stainless-steel bulk chilling tanks immediately after milking (Figure: 9).
- Milk tanks and cans shall be used only to store raw milk.
- Containers/ cans used for on-farm milk storage shall be washed and sanitized thoroughly after each use and must be kept strictly away from contaminants. (Refer section 3.3 cleaning procedure for milk storage containers/utensils).
- Cleaned milk storage cans/containers shall be completely drained and dried before next use (Refer section 7.2).
- Milk shall be transported to the milk collection point (MCP) within one hour or Milk chilling center (MCC) ideally before two hours (Refer Standard Operation Procedure (SOP) for hygienic milk handling and transportation from farm to milk collecting point/milk receiver, DAPH).
- Evening milk shall be stored in a refrigerator and maintained at a temperature between 0-4°C (greater than 0°C and less than or equal to 4°C until collection), ideally in an enclosed container with mandatory intermittent agitation (in every 3-4 hr interval) with a clean stainless steel or food-grade, long-handled spoon/ plunger.
- Evening milk shall not be mixed with morning milk during the transportation to MCP or MCC. (Refer Standard Operation Procedure (SOP) for hygienic milk handling and transportation from farm to milk collecting point/milk receiver, DAPH).
- On the farm, raw milk shall not be stored in the same refrigerator with other domestic items. A separate/exclusive refrigerator shall be used for storing raw milk.

- Farmers shall strictly avoid storing evening milk overnight without refrigeration and agitation.
- Farmers shall deliver raw milk to the nearest designated Milk Collection Centre (MCC) and shall not bypass nearby MCCs.

8.2 Transportation

- Bulk milk collection shall be only done by licensed/ registered bulk milk collectors.
- Milk cans/ containers shall be protected from direct exposure, heat, dust, animals, flies, and dirt during transportation.
- Milk cans/containers shall not be placed directly on the ground or near sources of contamination at any time, including during loading and unloading.
- Only designated clean areas shall be used for loading and unloading milk at the collection point.
- If possible, farmers shall use cool transport methods to keep the milk from getting warm during transportation (specially in warmer weather) (ideally use a vehicle with a canopy).

8.3 Handling of Rejected Milk

- If raw milk is rejected due to non-compliance with the Milk Collection Point's (MCP) quality requirements, the farmer shall be responsible for transporting the rejected milk back to the farm premises.
- Rejected milk shall be disposed in a manner that prevents contamination of surface water, groundwater, or surrounding environments.
- Farmers shall implement appropriate disposal methods—such as a waste management system, composting, use in biogas units, or soil incorporation—while complying with environmental and public health standards.

9. Operational and Hygienic Requirements for Milk Collection Points (MCP) /Milk Chilling Centers (MCC)

- Milk Collection Points/ Milk Chilling Centers shall be located in areas that minimize the risk of contamination from chemicals, pests, biological agents, and other hazardous substances.
- Buildings shall be of appropriate construction and maintenance standards to protect milk from contamination.
- Milk storage vessels, including cans, shall be properly cleaned and air-dried after each use to prevent microbial contamination (Refer section 3.3).
- Practical arrangements shall be implemented to maintain milk quality such as installation and use of appropriate methods like mini chillers, Bulk Milk Coolers (BMCs) and refrigerators.
- In locations electricity is not reliably available, alternative and regenerative cooling technologies such as adsorber-based mini chillers or insulated milk storage tanks with chilled brine solution shall be adopted to ensure effective temperature control and quality preservation of milk.
- Strict personal hygiene, cleaning, and sanitation protocols shall be followed by all personnel handling milk.
- A traceability procedure/mechanism shall be established and implemented for all milk collectors and suppliers to ensure proper tracking and identification of milk from the source to the Milk Collection Point (MCP) or Milk Collection Center (MCC).

9.1 Facility

9.1.1 *Location of MCP/ MCC*

- Milk shall be delivered to the Milk Chilling Centre (MCC) within two hours of collection from the farm, or within one hour if collected through a Milk Collection Point (MCP), to ensure milk quality and freshness.
- Shall be located in a clean, free from stagnant water, waste dumps, and other sources of contamination (such as smoke, offensive odors, and dust).

- Shall be located in an area which is accessible to bowsers/other heavy vehicles.
- Shall be a permanent facility, and well-maintained.
- Shall be equipped with a portable water supply.
- Shall be equipped with three phase electrical power supply.
- Shall be bound securely to prevent entry of animals and pests.
- Roads surrounding the MCC building shall be concreted, tarred, or turf-covered.

9.1.2 Layout and Structural Design requirements of MCP/MCC

- Designing and construction of the MCP/MCC shall be done in accordance with Code of Hygenic Practices for Dairy Industry SLS_872 – 2009.
- MCP/MCC shall include a reception area for raw milk, handwashing stations, designated zones for testing and sampling, a milk storage area for short-term cold storage of raw milk, a can washing station, storage for detergents and sanitizing solutions, a resting area, storage area for other materials (cattle feed, etc.), and PPE (Personal Protective Equipment) storage area.
- Facility shall be well-ventilated either naturally or mechanically.
- Adequate washing facilities shall be provided at entry points for cleaning of hands.
- Effective pest control procedures shall be implemented and maintained at the MCP/MCC
- Washbasins shall be supplied with detergent, disinfectants, and hygienic drying options (e.g., dryers or single-use towels).
- Premises shall be well-lit using natural and/or artificial lighting.
- Pest control
- Drainage systems shall be well designed to prevent contamination of milk or equipment.
- Milk Collection Centres (MCCs) shall be equipped with CCTV surveillance systems and access control mechanisms to prevent unauthorized access and potential sabotage.
- Electricity generator facility should be available.

9.1.3 Cleaning and Sanitation of MCP/MCC

- Buildings shall be maintained in a clean and sound condition at all times.
- Adequate cleaning and disinfection facilities shall be available.
- A reliable supply of clean water shall be ensured.
- Cleaning agents and disinfectants shall be securely stored.
- The effectiveness of cleaning procedures shall be verified periodically through lab tests (microbiological tests).
- Cleaning schedules shall be introduced, maintained and monitored.

9.2 Equipment

The MCP/MCC shall be equipped with adequate and properly maintained milk-handling accessories such as;

Bulk milk chilling tanks including all the accessories,
Milk weighing scale,
Strainers,
Milk sampling table,
Sampling tools and measuring jars,
Bench with lab equipment (lactometer, pH meter, centrifuge, water bath, milk analyzer and required glassware should be available),
Reagent bottles,
Detergent and sanitizing solution storage,
Drying racks for utensils,
PPE hanging/storage,
Refrigerator for sample storage,
First aid kit, and
Lockers for personal items.

- MCP/MCC shall have an uninterrupted 24-hour electricity supply, including a standby generator to maintain continuous operation and prevent compromise to milk quality.

9.3 Milk Collection and Handling Requirements

- Milk shall be accepted only in clean, stainless steel food grade containers that are properly covered and free from visible contaminants.
(Aluminum and plastic cans were once used for milk transport, but stainless-steel cans are now recommended due to their durability, hygiene, and resistance to rust. Thus the replacing older containers with stainless steel helps maintain milk quality and safety).
- Foreign matter (flies, straw, dung, etc.) in raw milk shall not be tolerated; such milk shall be rejected.
- All milk shall be filtered through a clean strainer before acceptance.
- Evening milk stored unrefrigerated overnight shall not be accepted.
- Personnel and vehicle access to the MCP/MCC shall be managed to ensure hygienic handling of milk. Access routes shall be kept clear of potential contaminants.
- Prior to collection, the MCP/MCC operator shall inspect each producer's milk to verify that it is free from obvious signs of spoilage or deterioration. Milk showing signs of spoilage or deterioration shall not be accepted.

- Sampling of milk, where necessary, shall be strictly performed to avoid introducing contaminants.
- All milk samples shall be transported at an appropriate cold temperature (4°C) until analysis.
- Milk collection personnel shall receive adequate training in the hygienic handling of raw milk.
- Milk collection personnel shall wear clean clothing and maintain personal hygiene during operations.
- Milk collection activities shall not be performed by individuals at risk of transferring pathogens to milk. Appropriate medical screening and follow-up shall be conducted in the case of suspected or confirmed infections.

9.4 Transport and Delivery Requirements

9.4.1 *Transportation of Milk*

- Milk transport cans/bowsers shall be used exclusively for the transport of raw/chilled milk.
- Milk transport cans/bowsers shall be maintained to avoid raw milk from possible contamination.
- Milk transport bowsers shall be able to maintain raw milk temperature at 4°C until delivery to the dairy plant.
- A temperature drop validation and certification procedure shall be established for milk transporting bowsers to ensure that cold chain integrity is maintained during transit.
- Milk transport bowsers shall be properly insulated and prevent a rise in raw milk temperature of more than 1°C over a 24-hour period.
- Where necessary, relevant milk transport bowser shall be equipped with a separate compartment to hygienically store suction hoses, milk pumps, and related equipment.

9.4.2 *Bowser Cleaning*

- All surfaces and equipment that come into contact with raw milk shall be made of corrosion resistant, non-toxic materials. They shall be smooth, free of cavities, open seams, loose particles and resistant to damage from cleaning agents, sanitizers.
- Milk transport bowsers shall ideally be cleaned using CIP (Clean-in-place) methods rather than manual cleaning.
- Milk transport bowsers shall include a sufficient number of spray balls to allow proper cleaning in place (CIP) and sanitization.
- Milk transport bowsers and associated equipment shall be cleaned and sanitized soon after unloading of milk or at least once every 24 hours, or more frequently as necessary, to prevent contamination of milk.
- Cleaned milk transporting bowsers shall be verified by the Quality Assurance (QA) team and securely sealed prior to loading to ensure hygiene and prevent contamination.

9.5 Testing and Quality Control

9.5.1 Milk Testing Requirements

- Each batch of milk received at the Milk Collection Point (MCP), Milk Chilling Centre (MCC) shall be tested for appearance, odor, temperature, fat content, solids-not-fat (SNF), and adulterants.
- MCP/MCC shall preferably possess Ultrasonic milk analyzer/ Lacto-scanner or equivalent facility for quick analysis of fat, solids-non-fat (SNF), proteins, lactose, added water, temperature, freezing point, pH, solids, conductivity as well as density.
- Standard Operating Procedures (SOPs) shall be established and followed for all sampling and testing activities at MCPs and MCCs (Refer Standard Operation Procedure for receiving, handling, storing and dispatch milk at milk collecting points and Standard Operation Procedure for receiving, handling, storing and dispatch of raw milk at Milk Chilling Center, DAPH).
- Personnel conducting milk testing shall be adequately trained, certified, and authorized.
- All testing equipment shall be regularly calibrated, maintained, and verified for accuracy.
- Test records shall be accurately maintained, transparent and made available/ communicated to the respective milk producer,

9.5.2 Milk Sampling

Every batch of milk received at an MCP/MCC, shall be properly sampled and tested according to approved protocols.

- Milk shall be thoroughly mixed in cans or bulk tanks to ensure even dispersion of milk fat before taking any sample.
- Plungers or dippers shall be used for sampling milk from milk cans to ensure representative sampling for quality investigation.
- All milk samples shall be transported and kept at an appropriate cold temperature (4°C) until analysis.

Sampling Milk for Microbiological Testing

Dippers used for sampling utensils shall be sterilized in an autoclave or pressure cooker for at least 15 minutes at 120°C before use.

On-site sterilization shall be performed using 70% alcohol swabs, flaming, or scalding in hot steam or boiling water for 1 minute to prevent contamination.

Preservation of Milk Samples

- For fat testing, milk samples shall be preserved with potassium dichromate (0.5 mL of 14% solution in a 0.25 L sample bottle). If Potassium dichromate is not available, samples shall be transported at 4°C using ice-box

- They shall be warmed in a water bath at 40°C, cooled to 20°C, mixed, and then used for fat and other quality determination.
- If testing cannot begin immediately, the sample shall be cooled to 4°C and kept cool until analysis can be performed.
- For field sampling at MCP/MCC, ice boxes with ice packs shall be used to maintain the temperature of the milk sample during transport.

Sample Labelling and Record Keeping

- Samples shall be clearly labelled with the farmer's name or code number/ registration number for traceability.
- Records of dates, places, and sample details shall be kept in standard data sheets, in a dry and organized manner.

9.5.3 Routine Testing at MCPs and MCCs

Testing Schedule

A testing schedule shall be established to ensure timely and consistent testing of milk samples for quality.

Processor must ensure that representative samples from milk received at MCP/MCCs are examined at least once per month.

Following tests shall be conducted on received raw milk,;

- Fat content,
- Lactometer reading,
- SNF content,
- Clot-on-Boiling test (CoB),
- Alcohol precipitation test (at least 68% alcohol),
- Titratable acidity,
- Keeping quality tests,
- Presence of preservatives,
- Presence of other milk adulterants,
- Bacterial count, and
- Somatic cell count.

Samples must be collected by qualified personnel or under the supervision of authorized MCC/MCP staff.

Laboratory and Reporting Responsibilities

All examinations must be performed by laboratories designated under the applicable authority.

Laboratories shall report all test results promptly to the producer/ FMS (Farmer Managed Society)

Testing for the Presence of Preservatives / Inhibitors

(Ex: Hydrogen peroxide, Hypochlorite, Benzoic acid, Formic acid, Salicylic acid, Sodium bicarbonate, Sodium citrate)

If preliminary testing at MCP/MCC, indicates a violation of the preservative/ inhibitor standard:

- The concerned party must notify the farmer/FMS/Collector immediately,
- A confirmatory sample shall be submitted to a designated laboratory for further testing, and
- Confirmatory results shall be reported to both the purchaser and inspector without delay.

9.6 Hygiene and Personnel Practices

- All MCP/MCC staff shall maintain personal hygiene, including clean uniforms, head covers, and trimmed nails.
- Milk handlers shall not work if they have open wounds, infections, or communicable diseases.
- Eating, smoking, or spitting shall be strictly prohibited in milk-handling areas.
- Training on hygienic milk handling and sanitation shall be provided regularly to MCP/MCC personnel.

10. Milk Procurement

All dairy farmers, MCP, MCC, transporters, processors, and distributors shall comply with the national milk quality standards established by SLS 181:2008 and DAPH.

10.1 Milk Supply Agreement

- All milk shall be purchased under a milk supply agreement that complies with the code which fulfils with all the contractual and pricing requirements.
- Milk Chilling Centres shall establish formal milk supply agreements with farmers to ensure transparency, traceability, and quality assurance in milk procurement.
- The milk supply agreement shall be available in two forms based on the scale of milk production;
 1. Exclusive agreements: These shall apply to small and medium-scale farmers, whereby the farmer agrees to supply milk exclusively to a single processor or Milk Chilling Centre during the agreed period.
 2. Non-exclusive agreements: These shall be applicable to large-scale producers supplying more than 1,000 litres of milk per day, allowing them the flexibility to distribute milk to more than one processor.
- Milk Supply Agreements shall be written in Sinhala and Tamil (English can be optional if needed).
- All agreements shall be documented, signed by both parties, and periodically reviewed to ensure compliance with applicable regulations and standards
- Processors shall ensure agreements cover all circumstances in which milk will be purchased considering the factors such as; quality of milk, flat and seasonal milk supply, disease outbreaks and other relevant instances,
- Processors shall be responsible for determining the price of milk under their milk supply agreements (Annexure 04. Sample Milk supply agreement). Milk supply agreements shall specify a minimum milk price subjected to declared quality standards.
- A written record of the agreement, any amendments, or termination to the farmer shall be sent within 90 days. If the supply period is 90 days or longer, reasonable efforts shall be made to get the farmer's written acknowledgement that the record is complete and accurate.

10.2 Milk Pricing

A standardized price incentive analysis methodology shall be followed across the dairy sector to monitor and assess market competitiveness, producer incentives, and policy impacts.

Base milk prices shall be based on the following key quality parameters:

- Fat content, and
- SNF content.

A milk price incentive mechanism shall be implemented if any organization expects quality improvements in raw milk procurement. Such incentives shall be calculated based on following parameters;

- Keeping Quality (KQ), measured by the Resazurin Dye Reduction Test (DRT) or Microbial Quality, based on Total Plate Count (TPC) results.,
- Absence of adulterants (preservatives, inhibitors, antibiotics, and mycotoxins)), and
- Somatic cell count levels.

The incentive scheme shall be transparent, consistently applied, and communicated clearly to all milk suppliers

10.2.1 Fat and SNF Based Pricing Structure

- Price adjustments shall be made based on fat and SNF content.
- The base price for milk shall be established with the pricing formula based on fat and SNF content (Price formula should be regulated and set by appointed authorized body led by DAPH).
- Bonuses or penalties shall be applied for each 0.1% increase or decrease in total solids (TS).

10.2.2 KQ-Based Pricing Adjustments

Dye Reduction Tests (DRT)

Milk quality shall be categorized based on the DRT results, with the following incentives:

Table 6. Proposed incentive payments based on DRT results

Color Indicator	KQ Class	Milk Quality
Purple/Blue (No reduction)	Class 1	Excellent Quality (Fast Reduction)
Light Purple	Class 2	Good Quality (Moderate Reduction)
Light Pink	Class 3	Acceptable Quality (Slow Reduction)
Pink/White (Complete reduction)	Class 4	Poor Quality (Very Slow/No Reduction)

Developed based on FAO resources (Draaiyer et al., 2009)

Within one year of implementing the Code of Practice (CoP), Class 1, 2, and 3 milk will be eligible for price incentives. After this period, price incentive payments shall be restricted to KQ Class 1 milk only. KQ Class 4 milk (showing poor quality or no reduction) shall be rejected.

Alcohol Precipitation Test (APT)

- Milk shows negative results for alcohol precipitation test shall qualify for price incentives or bonuses.
- Within one year of implementing the Code of Practice (CoP), 68% alcohol precipitation test (APT) negative or above milk will be eligible for price incentives. After this period, price incentive payments shall be restricted to 72% APT negative or above milk only.

10.2.3. Microbial Quality-Based Incentives

Under ideal conditions, the following incentive schemes based on Total Plate Count (TPC) shall be implemented to further strengthen raw milk quality improvement efforts.

Milk with lower microbial counts shall receive additional bonuses as given in Table 7.

Table 7. Proposed incentive payments based on TPC results

TPC Range (cfu/mL)	Bonus Adjustment
≤ 100,000	Highest Quality Bonus
100,001 – 300,000	Medium Quality Bonus
300,001 – 500,000	Standard Base Price
> 500,000	Milk shall be rejected or penalized

Developed based on FAO resources (Draaiyer et al., 2009)

- The results from these tests shall be used to determine microbial quality-based incentives for farmers.
- In the absence of laboratory facilities, rapid microbial testing kits (based on dye reduction or pH indicator methods) shall be used for field-based testing of milk quality. These kits shall allow for quick evaluation of KQ and microbial load at the farm gate or MCP/MCC. These kits shall be designed for easy use by farmers and milk collectors without the need for specialized laboratory facilities.
- Farmers MCP and MCC operators shall be trained to use these kits to assess milk quality, particularly Keeping Quality (KQ), based on microbial load and milk freshness.
- Mobile testing units equipped with basic microbial testing kits, operated by an independent governing body, shall be scheduled to visit Milk Collection Centers (MCCs) on rotation. These units shall be responsible for conducting rapid microbial tests.

10.2.4 Annual Dairy Price Incentive Report

An authorized body led by the Department of Animal Production and Health (DAPH) shall be responsible for compiling and publishing the Annual Dairy Price Incentive Report.

Scope and Content of Annual Dairy Price Incentive Report

The report shall include:

- An analysis of domestic milk prices at both the farm gate and wholesale levels, including regional and seasonal variations.
- A summary of policy support measures and price-related incentives offered to producers, especially those linked to milk quality improvements.
- Annual statistics on milk production volumes, quality parameters, and progress in value chain development.

Use of Incentive Payments as a Proxy Indicator

- The report shall adopt the total annual incentive payments made to producers as a proxy indicator of pricing support and quality enhancement.
- Incentive payments may include bonuses based on fat and SNF content, hygiene compliance, bulk milk supply, or other quality-linked criteria.
- Milk processing companies, cooperatives, and relevant industry stakeholders shall be required to share verified data on such incentive schemes and total annual disbursements.
- The analysis shall examine trends in incentive payments, their alignment with quality benchmarks, and regional disparities in access to such incentives.

Validation and Reporting

- The line ministry shall oversee the verification and validation of data submitted by private and public stakeholders, in coordination with DAPH.
- The finalized Annual Dairy Price Incentive Report shall be made publicly available to ensure transparency and encourage sector-wide accountability.
- Based on the findings, the authorized body shall provide recommendations to:
 - Strengthen price incentives for quality production,
 - Identify gaps in current incentive structures, and
 - Support a more inclusive and sustainable dairy pricing system.

10.2.5 Documentation and Traceability

- Records of milk volume, quality parameters, milk rejection quantities, farmer identity, and payment details (base price and price incentives) shall be accurately maintained by MCP's and MCC's.

- All documentation shall be updated daily/ periodically and stored securely at MCP's and MCC's for audit purposes.
- Digital record-keeping systems shall be encouraged where feasible.

10.2.6 Ethical Conduct

- All dairy farmers shall be treated with respect and fairness.
- Transparent systems shall be used at MCP's and MCC's for grading, pricing, and payments.
- No milk shall be rejected by MCP's and MCC's without valid reasons and proper documentation.
- Any grievance or dispute raised by farmers shall be addressed formally and promptly by relevant processor under the guidelines issued by appointed authorized body led by DAPH.

11. Waste Management

Milk Chilling Centers and associated dairy farms shall ensure that all forms of waste and effluent (including those generated from raw milk handling, equipment washing, floor cleaning, sanitation activities, animal waste, and milk rejection) are responsibly collected, treated, and disposed of in accordance with the environmental standards prescribed by the Central Environmental Authority (CEA), Sri Lanka.

Parameters such as Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), pH, and oil and grease content shall be maintained within the allowable limits to prevent environmental contamination.

11.1 Water Use Efficiency

- Water use shall be minimized to reduce the volume of effluent generated and improve the water use efficiency.
- Divert rainwater away from cattle yards to keep the area dry and clean.
- Dry scrape the cattle shed to break up manure and solids waste before washdown.
- Where practical and suitable, use harvested rain water, only for washing down of yards, cattle sheds and irrigation of pasture lands.
- Conduct regular water quality testing's.
- Replace or repair leaking taps/pipes/gutters.
- Train staff to minimize water use during milking and washdown.

11.2 Solid Waste Management

- Utilize a solids separation system that matches the management preferences, proposed reuse system, and is effective for the volume of effluent being generated.
- Solid waste shall be directly drainage from cattle sheds and yards to a central location to collect and manage solids.

11.3 Waste Milk Disposal Protocol at Milk Chilling Centers (MCCs)

- Effluent discharge shall comply with the Guidelines for Industrial Effluent Discharge Standards published by Central Environment Authority (CEA).
- MCCs shall establish an appropriate effluent treatment system (e.g., sedimentation, aeration, or biological treatment) based on the scale of operation and nature of discharge.
- Untreated or inadequately treated wastewater shall not be discharged into natural water bodies, public drainage systems, or soil without CEA's permission/approval.
- All milk that was rejected due to non-compliance with the established quality parameters, whether at the point of reception or after storage shall be handled and disposed of in a manner that ensures environmental protection and public health safety.
- Milk rejected at Milk Collection Point (MCP)/ Milk chilling Center (MCC) under any circumstances, shall be recorded and discarded at a designated waste Milk pit within the MCP/MCC premises, which shall be properly designed and maintained to prevent contamination of surface and ground water.
- Where such waste management facility is not available, the rejected milk shall be handed over to a licensed waste collection service (such as a gully bowser) for safe off-site disposal at an approved location.
- The waste treatment facility shall be physically separated from milk handling and processing zones and shall be clearly marked, secured, and equipped with access restrictions.
- In the event of chilling tank milk rejection, the full contents shall be safely emptied and disposed of in accordance with the above procedures.
- Rejected milk cans shall not be sent back to the MCP; instead, they shall be retained at the MCC, thoroughly cleaned, and sanitized before being reused.
- All instances of milk rejection and disposal shall be documented in a disposal log that includes the source, volume, reason for rejection, date/time, and method of disposal.
- These records shall be reviewed regularly as part of the MCC's quality assurance and traceability systems.

Annexure 01.

Proposed List of Training Requirements For Dairy Farm Stakeholders

Dairy Farmers / Farm Owners

- Basic dairy cattle management
- Animal nutrition and feeding practices
- Reproductive management and artificial insemination
- Animal welfare and ethical farming standards
- Calf care and young stock management
- Mastitis prevention and udder health
- Milk hygiene and quality control
- Record keeping and farm management
- Financial literacy and cost management
- Manure and waste management
- Digital tools in dairy farming
- Pasture and fodder management
- Sustainable and environmentally friendly farming practices

Farm Workers / Attendants

- Daily care and handling of dairy animals
- Milking techniques (manual and machine-based)
- Minor repair and maintenance of equipment
- Cleanliness and sanitation
- First aid and emergency animal care
- Proper feed mixing and ration distribution
- Identifying sick animals and reporting issues
- Calf care and young stock management
- Heat detection

Extension Officers (LDI's)

- Communication and farmer/ adult education skills

- Demonstration of best practices on-farm
- Advisory services for improving productivity
- Reproductive technologies and AI techniques
- Technology transfer and innovation adoption
- Policy updates and regulation awareness
- Data collection, analyzing and reporting skills
- Digital tools in dairy farming
- Basic animal health and disease outbreaks

Milk Collectors / Transporters

- Milk hygiene and contamination prevention
- Cleanliness and sanitation
- Proper milk storage and cold chain maintenance
- Record keeping and traceability
- Customer service and communication skills

Dairy Cooperative Members / Managers

- Milk hygiene and contamination prevention
- Cleanliness and sanitation
- Milk testing methods
- Leadership and governance training
- Milk pricing, Selling,
- Minor repair and maintenance of equipment
- Cooperative finance and auditing
- Conflict resolution and stakeholder engagement
- Record keeping, stock maintenance

Youth and Women in Dairy

- Entrepreneurship and agribusiness development
- Value-added product processing (e.g., yogurt, cheese)
- Digital tools in dairy farming
- Gender-sensitive approaches in dairy value chains

Veterinarians

- Advanced disease diagnosis and treatment protocols
- Vaccination and deworming schedules
- Reproductive technologies and AI techniques
- Data recording and analysis for herd health
- Training farmers on biosecurity and herd health plans
- Development planning and monitoring and evaluation skills

Annexure 02

Required List of Essential Farm Records

Animal Identification Records (for individual cow)

- Animal ID number (ear tag or tattoo)
- Birth date
- Breed
- Source/purchase details (if not born on the farm)

Breeding and Reproduction Records (for individual cow)

- Heat detection dates
- Insemination dates and method (natural or AI)
- Sire used
- Pregnancy diagnosis results
- Previous calving dates/ expected date of calving
- Calving ease and any complications
- Number and sex of calves born
- Breeding schedules and plans

Milk Production Records (for individual cow)

- Daily, monthly or annual milk yield per cow
- Lactation cycle number
- Mastitis or other udder health issues
- Milk rejection or withdrawal periods (due to medication, etc.)

Health and Treatment Records (for individual cow)

- Vaccination schedule and dates
- Deworming records
- Disease history (incidences of disease out breaks)
- Treatments given (medications, antibiotics, dosage, duration)
- Surgical procedures (e.g., dehorning, C-section)
- Withdrawal periods for treated animals
- Veterinary visits and reports

- Mortality and post-mortem records
- Animals culled (with reasons: low production, infertility, disease)
- Dates and causes of death
- Post-mortem findings (if applicable)

Feeding and Nutrition Records (for individual cow/ herd)

- Feed types and quantities given
- Pasture or grazing rotation plans
- Ration formulations
- Supplement or concentrate use
- Feeding schedule
- Feed testing results (nutritional analysis, mycotoxins)
- Daily feed intake (group/individual if feasible)
- Body Condition Scores (BCS)

Growth and Weight Records (for calves and young stock)

- Birth weight
- Weaning weight
- Periodic weight checks
- Growth rate

Financial Records

- Income from milk sales (or other related income)
- Animal sales and purchases
- Feed costs
- Veterinary expenses
- Labor and maintenance costs

Inventory Records

- Number of animals by category (lactating, dry, calves, heifers, bulls)
- Equipment and machinery inventory
- Feed stock and supplements in storage

Farm Operation Records

- Equipment maintenance logs
- Cleaning and sanitation schedules
- Waste and manure management logs (Volume and frequency of manure collection, Method of storage and disposal, Use in biogas or as fertilizer)
- Pest control logs
- Staff duty rosters

Milk Chilling Center Records

- Milk reception records (Date and time of milk arrival, milk supplier/farmer ID or collection center name, Quantity of milk received, temperature at reception, initial quality test results, any rejections and reasons for rejection)
- Quality testing records (Platform test records, Laboratory test results (microbial load, somatic cell count, presence of adulterants, antibiotic residues), fat, SNF, density)
- Temperature logs (milk storage temp, chilling temp)
- Milk dispatch records
- Equipment maintenance & calibration Records (Chiller unit maintenance logs, generator usage logs)
- Cleaning and sanitation schedules and checklists (CIP records)
- Legal & Regulatory Records (Milk supply/purchase agreements)
- Milk quality audits and inspection reports
- Inventory and utility records (Cleaning chemical usage, filter replacements)

Annexure 03.

Composition of Proposed Appointed Authorized Committee Lead by DAPH

• Chairperson	- Director General- DAPH/ or nominated personal from the DAPH
• Representative	- Ministry of Agriculture, Livestock, land and irrigation
• Representative	- Consumer Affairs Authority
• Food safety officer	- Ministry of Health
• Representative	- Sri Lanka Standard institution (SLSI)
• Representative	- Veterinary Research Institute (VRI)
• Representatives	- Leading private/ government dairy processors
• Manager	- Milk Chilling Center
• Representative	- Dairy farmer cooperative society
• Representatives	- Dairy science expert academic from a recognized university•
• Representative	- NLDB
• Representative	- Extension officer (LDI)

Annexure 04.

Milk Supply Agreement

This Agreement is made and entered in(place)... on ... (date),(Month),(year).....

By and Between

(Name of the supplying Company).....(Company Registration No.....) Company incorporated under the companies Act No ,07 of 2007 in the Democratic Socialist Republic of Sri Lanka and affiliated to the Ministry of Defense in the said Republic of Sri Lanka and having its Registered Office at(Address)..... (hereinafter referred to as the party of the First part, which expression as herein used shall where the context so requires or admits shall mean and include the said(Name of the supplier)....., its successors and permitted Assign) of the Party of the First Part.

(Name of the purchasing Company/Buyer).... (Company Registered No) in the Democratic Socialist Republic of Sri Lanka and having registered Office at(Address)..... the said Republic of Sri Lanka (hereinafter referred to as the "party of the Second part" which expression as herein used shall where the context so requires or admits shall mean and include the said (Name of the purchasing Company/Buyer....., its successors and permitted Assigns) of the Party of the Second Part.

In consideration of the mutual covenants and agreements set forth herein, Seller and Buyer hereby agree as follows;

1. Supply of Milk:

Supplier agrees to sell and deliver, and Buyer agrees to purchase, all milk required for Buyer's processing plant located at [Plant Location]. Milk shall meet quality standards outlined in Annex A the supplier handbook contained for SLS standards for raw milk.

2. Price and Payment:

Buyer shall pay Supplier based on [Pricing Formula]. Supplier will invoice Buyer monthly, and Buyer shall pay via [payment method] within [number] days of receipt.

3. Delivery and Transportation:

Supplier is responsible for transportation and bears all risks until delivery at the Milk Collecting point or Milk Chilling Centre. Buyer and Supplier shall coordinate delivery schedules periodically.

4. Quality Assurance:

Milk must comply with all applicable laws and regulations, and meet quality specifications set forth in Annex A. Buyer reserves the right to reject non-conforming milk prior to acceptance.

5. Term and Termination:

This Agreement shall commence on [Start Date] and continue until [End Date], unless terminated earlier by either party with [Number] days written notice.

6. Title and Risk of Loss:

Title and risk of loss pass to Buyer upon successful quality testing and unloading at the Plant.

7. Insufficient Milk Supply.

If Seller fails to supply sufficient Demand Milk for a 02 weeks period, Buyer may terminate this Agreement.

8. Confidentiality.

Buyer and Seller agree to keep the terms and conditions of this Agreement confidential. Nothing in this Agreement shall prevent either party from disclosing the existence or terms and conditions of this Agreement.

Breach of agreement

9. Entire Agreement:

This document constitutes the entire agreement between the parties and supersedes all prior agreements.

10. In Case of a Breach of Contract (Ex: non-payment, missed deliveries)

The milk supply agreement should clearly state definitions of breach, a correction period, penalties, termination rights and dispute resolution steps.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first written above.

[Supplier Name]

By: _____

Name:

Title:

[Buyer Name]

By: _____

Name:

Title:

Interpretations

Ad libitum: In accordance with desire: Relative to nutrition of animals ensuring availability of food 24 hrs/day.

Adulterants: A substance added to another that may compromise the safety or effectiveness.

Alcohol Precipitation Test (APT): A rapid, simple method used to evaluate the stability of milk proteins.

Animal welfare: An animal is in a good state of welfare if it is healthy, comfortable, well nourished, safe, able to express innate behavior, and if it is not suffering from unpleasant states such as pain, fear, and distress.

Antibiotic Residues: The presence of traces of antibiotics or their derivatives in milk.

Antibiotic: A metabolic product of one microorganism or a chemical that in low concentrations is detrimental to activities of specific other microorganisms. Examples include penicillin, tetracycline, and streptomycin.

Bedding: Material used to absorb moisture and/or provide cushion. It is easily cleaned to provide a clean, dry surface and reduce the incidence of mastitis. Possible bedding materials include: rubber mats, straw, sawdust, wood chips and sand.

Biological Oxygen Demand (BOD): The amount of oxygen consumed by bacteria and other microorganisms while they decompose organic matter under aerobic (oxygen is present) conditions at a specified temperature.

Biosecurity: Any of a broad range of practices enforced at a dairy farm to prevent transmittal of pathogens from other sources by feed, cattle, people, or other animals.

BMCs: Bulk Milk Coolers.

California Mastitis Test (CMT): A method for estimating the cellularity of milk in cows where milk is mixed with a reagent and changes in viscosity are graded to indicate the potential for infection and inflammation

Calves: Male or female bovine animals up to the age at which they are weaned.

Cattle: Cattle are large domesticated ruminant mammals of the species *Bos taurus*, kept for milk, meat, hides, and as draft animals. In this code, "cattle" is used to refer to cattle of all ages.

CEA: Central Environmental Authority of Sri Lanka

Chemical Oxygen Demand (COD): The amount of oxygen required to break down the organic material via oxidation.

Chiller: A machine that removes heat from a liquid via a vapor-compression, adsorption refrigeration, or absorption refrigeration cycles.

Clean-In-Place (CIP): A set of activities conducted to properly clean all or part of a process system as it sits in place, without removing or disassembling piping or equipment to accommodate the cleaning.

COB: Clot on Boiling test.

Concentrate: A feed high in nitrogen-free-extract (NFE) and total digestible nutrients (TDN) and low in crude fiber (less than 18 percent). Included are cereal grains, soybean oil meal, cottonseed meal, and byproducts of the milling industry such as corn gluten and wheat bran. A concentrate may be low or rich in protein.

Contagious: Disease that can be passed from one cow to another through a number of possible ways.

CoP: Code of Practice

Cow: A mature female bovine

Dairy cow: A female bovine specifically bred and managed for the production of milk intended for human consumption, or for raising replacement dairy heifers to sustain the dairy herd.

Dairy farm: a farm where dairy animals are kept for milking and from which milk is sold for human consumption, and includes all buildings, yards and premises occupied or used in connection with the production of milk

DAPH: Department of Animal Production and Health, Sri Lanka.

Dye Reduction Test (DRT): An indirect method of assessing the microbiological quality of milk.

Farmer Managed Society (FMS): A group or association of farmers

Fiber: The cellulose portion of roughages (forages) that is low in total digestible nutrients (TDN) and hard to digest by monogastric animals.

Forage: Roughage of high feeding value. Grasses and legumes cut at the proper stage of maturity and stored to preserve quality are forages.

Free stalls: Resting cubicles or cowstalls in which dairy animals are free to enter and leave, as opposed to being confined in stanchions.

Heifer: A bovine female less than three years of age who has not borne a calf. Young cows with their first calves are sometimes called first-calf heifers.

Inhibitors: Substances that are capable of halting microbial growth.

Keeping Quality (KQ): The length of time milk remains in good quality and otherwise palatable and suitable for direct consumption.

Lactation period: The number of days an animal secretes milk following each parturition. Usually 11 to 12 months.

Mastitis: An inflammation of the mammary gland caused from trauma or an infection, leading to abnormal and decreased milk production.

Milk Chilling Center (MCC): A place where milk from multiple MCPs or directly from farmers is chilled, stored in bulk tanks, and tested for quality before sending to processing plants.

Milk Collection Point (MCP): The point where milk is brought from the farm to the dairy for selling.

Milk let-down: An automatic natural reaction that causes the milk to be pushed out through the udder.

Milk Processing Plant: A facility where raw milk is received, processed, and converted into various dairy products.

Milk Procurement: The process of collecting milk from farmers or dairy producers and transporting it to processing plants or other milk collection points.

Milk Stripping: Take the teat between thumb and pointing finger, squeeze and pull the hand down while squeezing and letting the teat slip between the thumb and finger.

Milking Parlour: An isolated room or separate building to which cows kept for milking.

Mycotoxins: Toxic and/or carcinogenic compounds produced from various fungi species.

Personal Protective Equipment (PPE): Clothing and equipment that is worn or used in order to provide protection against hazardous substances or environments.

QA: Quality Assurance.

Ration: The total amount of feed provided to an animal in a 24-hour period, formulated to supply all the essential nutrients required for maintenance, growth, reproduction, and production.

Raw milk: Milk that has not been pasteurized.

Silage/Ensilage: Green forage, such as grass or fodder such as field corn or sorghum, that is chopped into a silo, where it is packed or compressed to exclude air and undergoes an acid fermentation (lactic and acetic acids) that retards spoilage.

SLSI: Sri Lanka Standards Institution.

Solids-Non-Fat (SNF): All solids in milk other than fat.

Standard Operating Procedure (SOP): A set of step-by-step instructions for performing a routine activity.

Sterilization: The statistically complete destruction of all microorganisms including the most resistant bacteria and spores.

Strip Cup Test: A simple screening test for mastitis in dairy cows, in which the first few streams of milk from each teat are stripped into a strip cup (a shallow cup with a black mesh or plate) to check for abnormalities such as clots, flakes, or watery milk.

Total Mixed Ration (TMR) /Complete ration: A blend of all feedstuffs (forages, grains, mineral mixtures etc,) into one feed. A complete ration fits well into mechanized feeding and the use of computers to formulate least-cost rations.

Total Plate Count (TPC): A test used to count the number of bacterial colonies in the media being tested.

Total Solids (TS): The amount of non-water substances present in a milk sample or a milk product.

Total Suspended Solids (TSS): Non-settleable solid particles found in water.

Udder: The encased group of mammary glands provided with teats or nipples as in a cow.

Withdrawal Period: Time required after the last drug treatment to lower drug residues to acceptable levels. These times are established according to label directions.

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