

# Guide to good dairy farming practice

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## 2004



# Guide to good dairy farming practice

A joint publication of the International Dairy Federation  
and the Food and Agriculture Organization of the United Nations

**INTERNATIONAL DAIRY FEDERATION**  
**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**  
Rome, January 2004

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ISBN 92-5-105094-5

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# FOREWORD

Dairy farmers' production systems worldwide must be able to combine profitability with the responsibility of protecting human health, animal health, animal welfare and the environment.

In order to access markets successfully, all in the dairy supply chain must take up that responsibility, from the farmer producing the milk to the eventual customer.

Dairy farmers, as the primary producers in the supply chain, must be given the opportunity to add value to their product by adopting methods of production that satisfy the demands of processors and customers. In order to do this, individual dairy farmers need a single guide on how to achieve this at a practical farm level. This guide should follow a proactive approach rather than reactive.

The *Guide to good dairy farming practice* has been written in a practical format for use by farmers and should be seen as benefiting their business. When adopted it will support the marketing of safe, quality-assured milk and dairy products, and focus on the relationship between consumer safety and best practice at farm level.

The guidelines on individual practices have been drawn from existing schemes around the world but are not intended to be legally binding. They aim to provide a genuine framework for farm assurance schemes to be developed world wide and give the opportunity for individual countries to develop schemes that are specific to their social, environmental, welfare and economic needs.

## MISSION STATEMENT

To elaborate a practical, farm orientated, world wide achievable guide of production for dairy farmers covering different aspects of concern such as: animal health, milk hygiene, animal feeding and water, animal welfare and environment.

**Terrig G. Morgan**

Chairman of the IDF/FAO Task Force on Good Dairy Farming Practices

## ACKNOWLEDGEMENTS

The work on the guide was carried out by an IDF/FAO Task Force on Good Dairy Farming Practices between November 2001 and November 2003 comprising the following expert members:

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Special thanks must be given to Pamela Ruegg who devised the original guiding principles chart, and Helen Dornom assisted by Réjean Bouchard for compiling the information into a coherent document. Thanks also go to Pierre Doyle of IDF Canada for ensuring the translation of the document from English to French and Pedro Valentin-Gamazo of IDF Spain for taking charge of the translation to Spanish. Furthermore, the FAO Animal Production and Health Division is thanked for ensuring translation into Chinese and Arabic and undertaking the publication of the guide in all official working languages of FAO.

# Introduction

Dairy farmers are in the business of producing food. They aim to ensure that the safety and quality of their raw milk will satisfy the highest expectations of the food industry and consumers. On-farm practices should also ensure that milk is produced by healthy animals under acceptable conditions for the animals and in balance with the local environment.

The overarching principles applying to the production, processing and handling of all milk and milk products are:

- From raw material production to the point of consumption, all dairy products should be subject to a combination of control measures. Together, these measures (good agricultural practice – GAP and good manufacturing practice – GMP) should meet the appropriate level of public health protection.
- Good hygienic practices should be applied throughout the production and processing chain so that milk and milk products are safe and suitable for their intended use.
- Wherever appropriate, hygienic practices for milk and milk products should be implemented following the Annex to the *Codex Recommended International Code of Practice – General Principles of Food Hygiene*.
- GAP/GMP together should be effective.

All dairy farmers, suppliers to dairy farmers, milk carriers and hauliers, dairy product and food manufacturers, distributors and retailers should be part of an integrated food safety and quality assurance management system. Good farming practices underpin the marketing of safe, quality-assured milk-based products.

The role of dairy farmers is to ensure that good agricultural, hygienic and animal husbandry practices are employed at the farm level. The focus should be on preventing a problem (including animal diseases) rather than solving it after it has occurred.

Good dairy farming practices should contribute to ensuring milk and milk products are safe and suitable for their intended use.

*Note: A contaminant as referred to in this guide is “any biological or chemical agent, foreign matter, or other substance, not intentionally added to food, that may compromise food safety or suitability”.*

## **ABOUT THIS GUIDE**

Many dairy companies/cooperatives and countries are introducing on-farm quality assurance programmes aimed at assuring their consumers about the safety of their dairy products. This guide attempts to provide a generic framework for individual on-farm quality assurance programmes, focusing on both consumer safety and the image of the dairy sector.

The objective of the document is to provide a farmer-orientated guide to practices that are achievable all over the world covering those areas that are essential to manage.

The approach taken in this guide is to:

- highlight relevant areas on dairy farms that need to be managed;
- identify the objectives in dealing with each of these areas;
- identify GAP; and
- suggest control measures that can be implemented to achieve the objectives.

The focus is on the desired outcomes, rather than on specific, prescriptive actions/processes. The guide does not have any legal status and does not supersede national requirements.

## **GUIDING OBJECTIVE FOR GOOD DAIRY FARMING PRACTICE**

The guiding objective for good dairy farming practice is that milk should be produced on-farm from healthy animals under generally accepted conditions.

To achieve this, dairy farmers need to apply GAP in the following areas:

- animal health;
- milking hygiene;
- animal feeding and water;
- animal welfare; and
- environment.

For some of these areas, there are control points that must be managed to achieve defined outcomes. The guide contains guidelines specific to the five areas listed above but is not meant as a substitute for national legislation.

GAP also means that dairy farmers should ensure that appropriate records are kept, especially those that enable adequate traceability of:

- the use of agricultural and veterinary chemicals;
- the purchase and use of animal feed and
- the unique identification of individual animals.

Records should also be kept of:

- milk storage temperatures (when available)
- veterinary or medication treatments of individual animals.

The owner of a dairy farm should also ensure that people undertaking and supervising the milking operations and management of the dairy farm are skilled in:

- animal husbandry;
- the hygienic milking of animals;
- the administration of veterinary drugs;



- the activities undertaken on the dairy farm in relation to food safety and food hygiene; and
- health and safety practices relating to dairy farm operators.

Appropriate measures are also needed to maintain these skills through ongoing training.

### HOW ARE THE GUIDELINES PRESENTED?

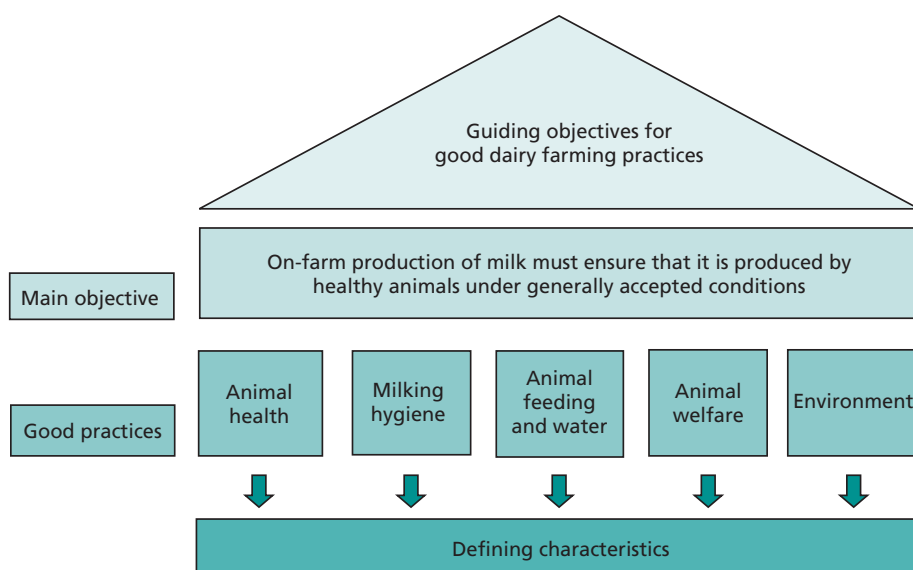
The Guidelines are presented in two forms:

- Good agricultural practice (GAP) and suggested measures are set out in tabular form for each key area: animal health, milking hygiene, animal feeding and water, animal welfare and environment.
- Individual Fact Sheets that provide more detail for each area, corresponding to the GAP.

In developing individual, company or country-specific guidelines for good dairy farming practices (or on-farm quality assurance programmes), reference should be made to:

- Codex Alimentarius: Food Hygiene and Basic Texts.
- Codex: Recommended International Code of Practice – General Principles of Food Hygiene.
- Codex: Draft Code of Hygienic Practice for Milk and Milk Products.
- Codex Code of Practice on Good Animal Feeding.
- FAO: Food Quality and Safety Systems – A training manual on food hygiene and the Hazard Analysis and Critical Control Point (HACCP) system.
- IDF GMP Code for Milking with Automatic Milking Systems (if relevant).
- OIE Code of Animal Health.

In developing these Guidelines, reference was made to a number of on-farm quality assurance programmes that are currently being implemented in a number of countries.



# Good agricultural practices

## 1. ANIMAL HEALTH

Animals that produce milk need to be healthy and an effective health care programme should be in place.

Good agricultural practice (GAP)	Examples of suggested measures to achieve GAP	Objective/Control measure
1.1 Prevent entry of disease onto the farm	1.1.1 Only buy animals of known disease status and control their introduction onto the farm 1.1.2 Ensure cattle transport on and off the farm does not introduce disease 1.1.3 Have secure boundaries/fencing 1.1.4 If possible, limit access of people and wildlife to the farm 1.1.5 Have a vermin control programme in place 1.1.6 Only use clean equipment from a known source	<ul style="list-style-type: none"> <li>– Keep animals healthy</li> <li>– Comply with national/regional animal movement and disease controls</li> </ul>
1.2 Have an effective herd health management programme in place	1.2.1 Use an identification system that allows all animals to be identified individually from birth to death 1.2.2 Develop an effective herd health management programme focused on prevention that meets the farm's needs as well as regional and national requirements 1.2.3 Regularly check animals for signs of disease 1.2.4 Sick animals should be attended to quickly and in an appropriate way 1.2.5 Keep sick animals isolated and separate milk from sick animals and animals under treatment 1.2.6 Keep written records of all treatments and identify treated animals appropriately 1.2.7 Manage animal diseases that can affect public health (zoonoses)	<ul style="list-style-type: none"> <li>– Detect animal diseases early</li> <li>– Prevent spread of disease among animals</li> <li>– Prevent transmission of zoonoses</li> <li>– Ensure traceability</li> </ul>
1.3 Use all chemicals and veterinary medicines as prescribed	1.3.1 Use chemicals according to directions, calculate dosages carefully and observe appropriate withholding periods 1.3.2 Only use veterinary medicines as prescribed by veterinarians and observe specified withholding periods 1.3.3 Store chemicals and veterinary medicines securely and dispose of them responsibly	<ul style="list-style-type: none"> <li>– Prevent occurrence of chemical residues in milk</li> </ul>
1.4 Train people appropriately	1.4.1 Have procedures in place for detecting and handling sick animals and veterinary chemicals 1.4.2 Make sure all people are sufficiently trained to carry out their tasks 1.4.3 Choose competent sources for advice and interventions	<ul style="list-style-type: none"> <li>– Follow correct procedures</li> </ul>

## 2. MILKING HYGIENE

Milk should be harvested and stored under hygienic conditions. Equipment used to harvest and store milk should be suitable and well maintained.

Good agricultural practice (GAP)	Examples of suggested measures to achieve GAP	Objectives/Control measures
2.1 Ensure milking routines do not injure cows or introduce contamination to milk	2.1.1 Uniquely identify individual animals 2.1.2 Ensure appropriate udder preparation for milking 2.1.3 Ensure consistent milking techniques 2.1.4 Separate milk from sick or treated animals 2.1.5 Ensure milking equipment is correctly installed and maintained 2.1.6 Ensure a sufficient supply of clean water	– Use suitable and well maintained equipment for milking and milk storage
2.2 Ensure milking is carried out under hygienic conditions	2.2.1 Ensure housing environment is clean at all times 2.2.2 Ensure milking area is kept clean 2.2.3 Ensure the milkers follow basic hygiene rules	– Harvest milk under hygienic conditions
2.3 Ensure milk is handled properly after milking	2.3.1 Ensure milk is cooled in the specified time 2.3.2 Ensure milk storage area is clean and tidy 2.3.3 Ensure milk storage equipment is adequate to hold milk at the specified temperature 2.3.4 Ensure unobstructed access for bulk milk collection	– Refrigerate and store milk under hygienic conditions

## 3. ANIMAL FEEDING AND WATER

Animals need to be fed and watered with products of suitable quality and safety.

Good agricultural practice (GAP)	Examples of suggested measures to achieve GAP	Objectives/Control measures
3.1. Ensure animal feed and water are of adequate quality	3.1.1 Ensure the nutritional needs of animals are met 3.1.2 Ensure good quality water supplies are provided, regularly checked and maintained 3.1.3 Use different equipment for handling chemicals and feed stuffs 3.1.4 Ensure chemicals are used appropriately on pastures and forage crops 3.1.5 Only use approved chemicals for treatment of animal feeds or components of animal feeds and observe withholding periods	– Keeping animals healthy with good quality feed – Preserve water supplies and animal feed materials from chemical contamination – Avoid chemical contamination due to farming practices
3.2. Control storage conditions of feed	3.2.1 Separate feeds intended for different species 3.2.2 Ensure appropriate storage conditions to avoid feed contamination 3.2.3 Reject mouldy feed	– No microbiological or toxin contamination or unintended use of prohibited feed ingredients or veterinary preparations – Keeping animals healthy with good quality feed
3.3. Ensure the traceability of feedstuffs bought off the farm	3.3.1 All suppliers of animal feeds should have an approved quality assurance programme in place 3.3.2 Maintain records of all feed or feed ingredients received on the farm (specified bills or delivery notes on order)	– Quality assurance programme of feed supplier

#### 4. ANIMAL WELFARE

Animals should be kept according to the following principles:

- Freedom from thirst, hunger and malnutrition
- Freedom from discomfort
- Freedom from pain, injury and disease
- Freedom from fear
- Freedom to engage in relatively normal patterns of animal behaviour

Good agricultural practice (GAP)	Examples of suggested measures to achieve GAP	Objectives/Control measures
4.1 Ensure animals are free from thirst, hunger and malnutrition	4.1.1 Provide sufficient feed (forage and/or fodder) and water every day 4.1.2 Adjust stocking rates and/or supplementary feeding to ensure adequate water, feed and fodder supply 4.1.3 Protect animals from toxic plants and other harmful substances 4.1.4 Provide water supplies of good quality that are regularly checked and maintained	<ul style="list-style-type: none"> <li>– Healthy, productive animals</li> <li>– Appropriate feeding and watering of animals</li> </ul>
4.2 Ensure animals are free from discomfort	4.2.1 Design and construct buildings to be free of obstructions and hazards 4.2.2 Where relevant, provide adequate space allowances and clean bedding 4.2.3 Protect animals from adverse weather conditions and the consequences thereof 4.2.4 Provide housed animals with adequate ventilation 4.2.5 Provide non-slippery floors	<ul style="list-style-type: none"> <li>– Protection of animals against extreme climate conditions</li> <li>– Provide a safe environment</li> </ul>
4.3 Ensure animals are free from pain, injury and disease	4.3.1 Have an effective herd health management programme in place and inspect animals regularly 4.3.2 Protect against lameness 4.3.3 Lactating animals should be milked regularly 4.3.4 Do not use procedures and practices that cause unnecessary pain 4.3.5 Follow appropriate calving and weaning practices 4.3.6 Have appropriate procedures for marketing calves 4.3.7 When animals have to be killed on-farm, avoid unnecessary pain 4.3.8 Avoid poor milking routines as they may injure cattle	<ul style="list-style-type: none"> <li>– Justified and humane actions</li> <li>– Good sanitary conditions</li> </ul>
4.4 Ensure animals are free from fear	4.4.1 Provide competent animal husbandry skills and appropriate training	<ul style="list-style-type: none"> <li>– Absence of ill-treatment</li> <li>– Security of animals and farmer</li> </ul>
4.5 Ensure animals can engage in relatively normal patterns of animal behaviour	4.5.1 Have herd management and husbandry procedures that do not unnecessarily compromise social activity	<ul style="list-style-type: none"> <li>– Freedom of movement</li> <li>– Preserve gregarious behaviour and other behaviours, such as preferred sleeping position</li> </ul>

## 5. ENVIRONMENT

Milk production should be managed in balance with the local environment surrounding the farm.

Good agricultural practice (GAP)	Examples of suggested measures to achieve GAP	Objectives/Control Measures
5.1 Have an appropriate waste management system.	5.1.1 Ensure wastes are stored to minimize the risk of environmental pollution 5.1.2 Manage pastures to avoid effluent runoff by spreading farm manures in accordance with local conditions	– Limit the potential impact of dairy farming practices on the environment.
5.2 Ensure dairy farming practices do not have an adverse impact on the local environment	5.2.1 Contain dairy runoff on-farm 5.2.2 Use chemicals (fertilizers, agricultural and veterinary chemicals, pesticides, etc) appropriately to avoid contamination of the local environment 5.2.3 Ensure overall appearance of the dairying operation is appropriate for a facility in which high quality food is harvested	– Presenting a positive image of milk production practices.
5.1 Have an appropriate waste management system.	5.1.1 Ensure wastes are stored to minimize the risk of environmental pollution 5.1.2 Manage pastures to avoid effluent runoff by spreading farm manures in accordance with local conditions	– Limit the potential impact of dairy farming practices on the environment.

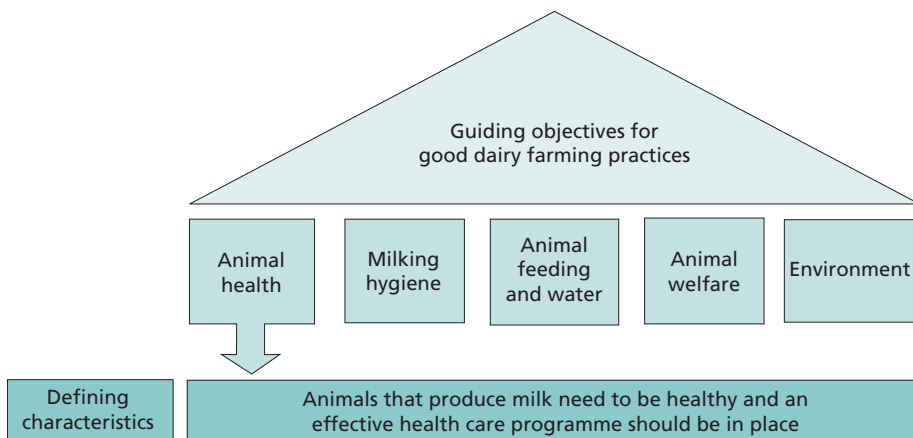
# Fact sheets

## 1. ANIMAL HEALTH

This Fact Sheet describes Good Agricultural Practices (GAP) to ensure animals that produce milk are healthy and there is an effective health care programme in place. The GAP may be superseded by national, international or market demands in many dairy-producing countries.

The suggested GAP for animal health are set out under the following headings:

- 1.1. Prevent entry of disease onto the farm.
- 1.2. Have an effective herd health/disease management programme in place.
- 1.3. Use veterinary drugs as prescribed by veterinarians or as specified on the label .
- 1.4. Train all people appropriately.



## **1.1 Prevent entry of disease onto the farm**

### ***1.1.1 Only buy animals of known health status and control their introduction onto the farm***

The most effective way to prevent the movement of infectious diseases is to keep a closed herd. This means no new animals enter the herd and previously resident cattle do not re-enter after they have left the herd. This is difficult to achieve in practice, so strict control of any animal introductions is essential. Increased risk of disease may also occur when animals share grazing or other facilities.

Prior to being introduced to the farm, all cattle should be screened for diseases, especially those common to their area of origin and new location. This means all cattle should have:

- an identification system to enable trace back to their source (a birth to death identification system); and
- some form of Vendor Declaration that lists the disease status of cattle and any appropriate treatments/vaccinations, etc, that have been or are being carried out (this means potential sellers of cattle must keep appropriate permanent records of diseases and treatments).

Where health status is unknown, cattle to be introduced to the farm should be kept under quarantine separate to the existing herd for an appropriate length of time. Keep records of all animal movements to and from the farm.

### ***1.1.2 Ensure cattle transport on and off the farm does not introduce disease***

Potential buyers of live cattle should always ask and be told if the animals are sick or diseased. Preferably, no sick or infirm cattle should be transported live. A suitably trained operative or a veterinarian should carry out any killing required on-farm. All dead animals should be removed or buried according to local regulations.

The disposal of diseased and dead animals should be done in a way that minimizes the risk of disease spread, for example transport vehicles should not pick up dead or diseased cattle from one farm and move to another farm to pick up, without taking appropriate actions to minimize the risk of spreading disease.

### ***1.1.3 Have secure boundaries/fencing***

Contain animals appropriately to ensure there is no risk of disease spread between farms and within farms.

### ***1.1.4 If possible, limit access of people and wildlife to the farm***

People (and vehicles) visiting a number of farms may spread disease between the farms. Restrict access to an 'as needs' basis and put in place appropriate processes to minimize disease spread (for example keep tanker tracks or tyres/milk pick up tracks or tyres clear of faecal contamination). Use protective clothing and footwear and keep records of all visitors as appropriate. Disease can be spread from and to humans and wildlife.

### ***1.1.5 Have a vermin control programme in place***

Ensure that appropriate vermin controls are in place in all areas where vermin could introduce disease (for example milking shed, feed storage, animal housing). Vermin includes wild animals as well as rodents, birds and insects.

### ***1.1.6 Only use clean equipment from a known source***

Ensure all equipment is clean and you know the history of where the equipment comes from and how it has been used. Take extra care with shared or borrowed equipment.

## **1.2 Have an effective herd health management programme in place**

### ***1.2.1 Use an identification system that allows all animals to be identified individually from birth to death***

Cows should be easily identifiable by all people who come in contact with them. The systems used should be permanent and unique allowing individual animals to be identified from birth to death. Examples of identification systems include ear tagging, tattooing, freeze branding and microchips.

### ***1.2.2 Develop an effective herd health management programme focused on prevention that meets the farm needs as well as regional and national requirements***

Herd health management programmes should consist of treatment plans to deal with any currently occurring diseases as well as a preventive programme. A preventive programme should cover all aspects of the hygienic production of milk as well as all dairy farm management practices.

Where effective vaccines are available, they may be used to increase resistance to disease.

Prophylactic treatments may be required as protective measures when no viable alternative strategy exists.

Develop effective herd health treatments in consultation with appropriately skilled people such as veterinarians.

### ***1.2.3 Regularly check animals for signs of disease***

Observe all animals regularly and use proven methods to aid in detection and accurate diagnosis of infectious disease. Some useful tools may include rectal thermometers, observations of cow movements and body condition, and examination of foremilk. Many diseases are associated with the reproductive cycle – detailed breeding records should be kept and animals observed at appropriate stages.

Lameness should be investigated to determine underlying causes so that animals can be treated and further cases can be prevented.



#### ***1.2.4 Sick animals should be attended to quickly and in an appropriate way***

Treat all disease, injury and poor health by proven methods after accurate diagnosis. Treat diseased animals appropriately to minimize the prevalence of infection and the source of pathogens.

#### ***1.2.5 Keep sick animals isolated and separate milk from sick animals and animals under treatment***

To minimize the spread of disease, keep sick animals isolated from other cattle on the premises. Follow appropriate procedures to separate milk from sick animals and animals under treatment (.for example milk those animals last into a separate vat or container). Provide separate facilities if possible.

#### ***1.2.6 Keep written records of all treatments and identify treated animals appropriately***

It is important that all outside people (for example veterinarians, etc) and any others involved with handling dairy cattle on the farm know what treatments have been given to cows. Put in place an appropriate system to readily identify treated animals (for example paint udders treated for mastitis).

#### ***1.2.7 Manage animal diseases affecting public health (zoonoses)***

Keep zoonoses in animals at a level that is not a health hazard to people, avoid direct transmission through appropriate management practices and prevent contamination of milk.

### **1.3 Use all chemicals and veterinary medicines as prescribed**

#### ***1.3.1 Use chemicals according to directions, calculate dosages carefully and observe appropriate withholding periods***

Residues of any chemical administered have the potential to damage milk markets. Farmers should manage the use of all chemicals to prevent:

- unacceptable chemical residues occurring in milk; and
- unsuitable chemicals adversely affecting animal health and productivity.

Be aware of all chemicals that may leave residues in milk. These may include detergents, disinfectants, anti-parasitics, antibiotics, herbicides, pesticides and fungicides.

Farmers should:

- use chemicals only for the purpose for which they are approved – lactating cows should never be treated with veterinary products that are not recommended for treatment of cows producing milk supplied for processing or otherwise used for human consumption;
- read the label – it should contain all the information about legal and safe use of the chemical;
- follow the advice given on the label and any chemical data sheet or risk assessment;
- observe withholding periods (the minimum times when milk should not be sold for human consumption after application of chemicals).

### ***1.3.2 Only use veterinary medicines as prescribed by veterinarians and observe specified withholding periods***

*Note: Veterinary medicines are chemical and biological products sold for the treatment of animals where evidence of proven efficacy and safety have been examined by independent review bodies to ensure that the products are suitable for their purpose. These medicines may require a prescription from a veterinarian to allow purchase and to confirm that their use is appropriate.*

Use medicines to treat animals after veterinary advice. Only use officially approved medicines at the recommended doses and treatment regimes according to the label or as advised by a veterinarian. The use of medicines contrary to the label recommendations is termed 'off-label use' and may require additional milk withholding times. In the event that off-label use is essential to treat specific conditions it must only occur under strict veterinary supervision and in compliance with national/regional regulations.

All veterinary medicines and chemicals intended for treatment of food-producing animals should have a withholding period stated on the label. If label directions are not strictly followed, the stated withholding period will not be valid.

### ***1.3.3 Store chemicals and veterinary medicines securely and dispose of them responsibly***

Store chemicals and veterinary medicines securely to ensure they are not used inappropriately or do not unintentionally contaminate milk and feed. They should also be disposed of in a way that will not cause contamination to animals or the farm environment.

## **1.4 Train people appropriately**

### ***1.4.1 Have procedures in place for detecting and handling sick animals and veterinary chemicals***

It is important to ensure a consistent approach to herd health, so people need to be aware of and understand the animal health strategy of the farm.

It is good practice to have a written procedure on how to carry out a task in a controlled and repeatable manner. It should cover all requirements to carry out the task, including details of process, equipment and materials, including any relevant risk and safety problems.

### ***1.4.2 Make sure all people are sufficiently trained to carry out their tasks***

Training is an ongoing process and all people should undergo continued training/improvement. People should be competent to understand the reasoning behind actions. This should also help monitor procedures and provide feedback for continual improvement. Identify who is responsible for particular actions.

### ***1.4.3 Choose competent sources for advice and interventions***

Choose competent/registered professionals to undertake treatments, etc. Only seek and act on advice from sources and individuals that are properly qualified.

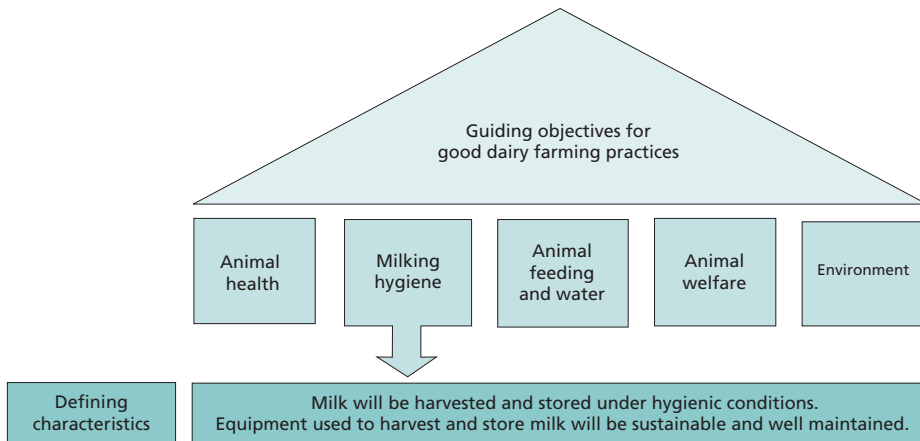
## 2. MILKING HYGIENE

Milking is the most important single activity on the dairy farm. Consumers demand high standards of milk quality, so milking management aims to minimize microbial, chemical and physical contamination. Milking management covers all aspects of the process of obtaining milk from cows quickly and effectively, while assuring the health of the cows and the quality of the milk.

Consistency in the day-to-day implementation of milking procedures is an important part of Good Agricultural Practices (GAP) for milking.

This Fact Sheet describes GAP to ensure milk is harvested and stored under hygienic conditions, and equipment used to harvest and store milk is well maintained. The suggested GAP for milking hygiene are set out under the following headings:

- Ensure milking routines do not injure cows or introduce contaminants in milk
- Ensure milking is carried out under hygienic conditions
- Ensure milk is handled properly after milking



*Note: These GAP do not cover automatic milking for which IDF has published a separate “Code of Good Hygienic Practices for Milking with Automatic Milking Systems”, Bulletin of the IDF No. 386/2004, ISSN 0250-5118.*

## 2.1 Ensure milking routines do not injure cows or introduce contaminants to milk

### 2.1.1 *Uniquely identify individual animals*

Cows should be easily identifiable by all people who come in contact with them. The systems used should be permanent and unique allowing individual animals to be identified from birth to death.

Individual cows that need to be identified for specific reasons ( for example fresh, dry, treated cows, or cows with abnormal milk through disease or animal treatments such as antibiotics) should be additionally identified.

### 2.1.2 *Ensure appropriate udder preparation for milking*

Only milk cows with clean, dry teats:

- wash and dry dirty teats;
- dry wet teats and udders before milking;
- have clean water available throughout the milking time.

Check udder and teats for any changes (for example clinical mastitis). Before a cow is milked, the foremilk should be extracted and checked for abnormalities. This may be a requirement in national legislation.

### 2.1.3 *Ensure consistent milking techniques*

Ensure good milking techniques; incorrect techniques can result in a higher mastitis risk and injury to the cow.

The correct technique is to:

- prepare cows well before milking;
- avoid unnecessary air ingress at cup attachment, if applicable;
- minimize overmilking;
- remove cups gently, if applicable.

### 2.1.4 *Separate milk from sick or treated animals*

Cows whose milk is unfit for human consumption should be milked last or with a separate bucket or system. Discard abnormal milk in a manner appropriate to the risk posed.

### 2.1.5 *Ensure milking equipment is correctly installed and maintained*

Ensure milking equipment is clean before each use. If mobile milking equipment is used, this may mean cleaning between each use.

Manufacturers' and local, regional or national recommendations should be followed for construction, installation, performance and maintenance of the equipment used for milking. Follow the manufacturers' instructions when using cleaning and disinfecting agents on milking equipment. Materials used for milking equipment that come into contact with milk and with cleaning and disinfecting fluids should be made from adequately resistant materials and should not impart a taint to milk.

Cleaning and disinfecting agents should be chosen and used to ensure that they do not have an adverse effect on the milk.

Follow the manufacturers' instructions when using chemicals, pesticides or cleaning agents in the dairy and the milking shed. Store all chemicals, other than those in routine use, in a lockable area away from the dairy. Where required, all vermin, bird and insect control methods or products must be approved for use.

### *2.1.6 Ensure a sufficient supply of clean water*

A sufficient supply of clean water should be available for milking operations and for cleaning equipment that comes into contact with milk.

## **2.2 Ensure milking is carried out under hygienic conditions**

### *2.2.1 Ensure housing environment is clean at all times*

A high standard of cleanliness should be maintained at all times in the housing area, where used. The housing area should be:

- designed to provide good drainage and ventilation and to avoid animal injury
- of suitable size and designed to match the size of the animal.

All stalls and beds should be kept clean and dry, with adequate bedding. Regularly clean or scrape passageways to remove manure.

### *2.2.2 Ensure milking area is kept clean*

The milking area should be designed to allow it to be kept clean and tidy. It should:

- be easy to clean;
- have a clean water supply;
- have waste handling facilities;
- have sufficient temperature regulation and light.

Construct collecting yards to enable a high standard of cleanliness to be maintained.

### *2.2.3 Ensure the milkers follow basic hygiene rules*

The milker should:

- wear suitable and clean working clothes;
- keep hands and arms clean especially when milking;
- cover cuts or wounds;
- not have any infectious disease.

## **2.3 Ensure milk is handled properly after milking**

### *2.3.1 Ensure milk is cooled in the specified time*

Cool milk as soon as possible after milking to the required storage temperature and within the specified time. Cooling times and storage temperatures should conform to limits set by national legislation.

### *2.3.2 Ensure milk storage area is clean and tidy*

Milk should be stored away from the milking area. The milk storage area should:

- be clean and clear of accumulated rubbish, any products or chemical substances not in constant use and any feedstuffs;

- have hand washing and drying facilities;
- be easy to clean and have a pest control system

### ***2.3.3 Ensure milk storage equipment is adequate to hold milk at the specified temperature***

Ensure milk storage equipment is cleaned before each use, preferably immediately after milk collection.

The storage equipment should be capable of holding milk at required temperature until collection time, and be constructed in materials that do not taint the milk.

Bulk tanks should be built to recognized standards and milk refrigeration systems should have a regular maintenance and service programme to prevent breakdowns. The bulk tank should be equipped with a thermometer to check the temperature of the milk and appropriate records kept of storage temperatures. Ensure that all the equipment is working properly.

### ***2.3.4 Ensure unobstructed access for bulk milk collection***

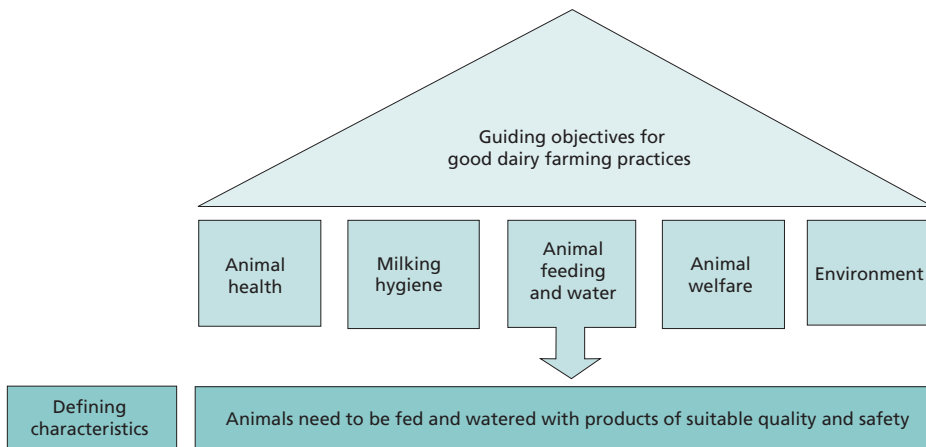
Provide unobstructed access to the milk storage area to enable the safe collection of milk. Access to the milk collection areas should be free of animal pathways.

### 3. ANIMAL FEEDING AND WATER

An animal's health and productivity, along with the quality and safety of her milk, depend on the quality and management of the feed and water. Milk quality can also be affected adversely by the quality of water used to clean milking equipment and the milk house. If the water is contaminated, the contaminants may cause milk safety and quality to suffer.

This Fact Sheet describes Good Agricultural Practices (GAP) for managing the safety of feed and water supply for dairy cattle. The suggested GAPs are set out under the following headings:

- Ensure animal feed and water are of adequate quality.
- Control storage conditions of feed
- Ensure the traceability of feedstuffs bought off farm



### **3.1 Ensure animal feed and water are of adequate quality**

#### ***3.1.1 Ensure the nutritional needs of animals are met***

Animals should be fed sufficient feed and water daily, according to their physiological needs. The quality and quantity of the feed, including appropriate fibre, should reflect the animal's age, body weight, stage of lactation, production level, growth, pregnancy, activity and climate.

#### ***3.1.2. Ensure good quality water supplies are provided, regularly checked and maintained***

Fence stock water supplies to protect them from unintentional contamination. Water supplies should be clear and free of excrement.

Many contaminants can enter water supplies and threaten the health or safety of people, livestock and the milking equipment rinsed with the contaminated water. The most common contaminants include pathogenic microorganisms (for example *Escherichia coli* bacteria) as well as toxic chemicals such as pesticides, petroleum and solvents, and nitrates.

If there are any concerns about the suitability of water for use as stock water, contact the relevant authorities and have your water tested.

#### ***3.1.3 Use different equipment for handling chemicals and feed stuffs***

Never use equipment or facilities meant for dairy use to mix agricultural chemicals and/or veterinary chemicals – residues can remain on equipment or allow cross-contamination through spills, air dispersal, back-siphoning effects, etc.

#### ***3.1.4 Ensure chemicals are used appropriately on pastures and forage crops***

Maintain stringent paddock records of all chemical applications to crops and pastures, and ensure withholding periods are closely observed. Always follow the label for application rates and withholding times. Note and follow 'Days Before Grazing' intervals before allowing animals access to a treated field for grazing. Follow 'Pre-harvesting Intervals' or 'Days To Harvest' for forage fields.

Check pasture for signs of pesticide drift. Look for herbicide injury symptoms on forage plants. If symptoms are present, investigate further before allowing animals to graze.

Be aware of the potential for spray drift when applying agricultural chemicals to pastures/crops. This applies to neighbouring farms also. Take adequate precautions when allowing stock to drink the water after spray applications.

Find out about the past and present use of chemicals on your farm and neighbouring properties as spray drift may be a potential source of residues. When buying pasture/land, always obtain information on the paddock's previous history of agricultural chemical use and/or a soil/plant test, if required.

#### ***3.1.5 Only use approved chemicals for treatment of animal feeds or components of animal feeds and observe withholding periods***

Only chemicals approved for use in dairy operations should be used and managed



in a manner that avoids their accidental introduction into the feed and water and, as a result, into milk.

Use chemicals in accordance with manufacturers' recommendations. Check labels of all chemicals that are to be used around, on or in feeds or pastures for compatibility with food-producing animals, withdrawal requirements for milk, and proper application rates and concentrations of products.

Withholding periods may also apply to pastures, forage crops and stored grains if they have been treated with an agricultural chemical. In this case, the withholding period is the minimum period of time that must elapse between the treatment of the pasture, crop or grain and when it can be grazed or harvested for feeding to stock, whichever is applicable. Different withholding periods may apply if the crop is also intended for human consumption.

## **3.2 Control storage conditions of feed**

### ***3.2.1 Separate feeds intended for different species***

No animal material should be included in dairy cattle feed rations. National regulations need to be observed.

### ***3.2.2 Ensure appropriate storage conditions to avoid feed contamination***

Ensure animals are not able to come into contact with contaminants in areas where these products are stored and mixed. These areas should be well ventilated as toxic fumes may be given off. Ensure that feed is protected from contaminants. Store and handle pesticides, treated seeds, medicated feed and fertilizers properly. Store herbicides separately from other agricultural chemicals, fertilizers and seeds.

*Provide an appropriate vermin control programme for stored feed.*

Hay and dry feeds should be protected from a moist environment. Silage and other fermented crops should be kept under hermetically sealed conditions.

### ***3.2.4 Reject mouldy feed***

Avoid feeding any mouldy stockfeed to milking cows (take particular care with brewers grain, silage, hay, sugar beet pulp and grain) as these can contain poisonous fungal toxins that can be transferred to milk.

## **3.3 Ensure the traceability of feedstuffs bought off the farm**

### ***3.3.1 All suppliers of animal feeds should have an approved quality assurance programme in place***

If you buy in feed, ensure the feed supplier has an assurance programme in place, can monitor appropriate residues and diseases and can trace the ingredients used back to their source. Ask for relevant Vendor Declarations.

### ***3.3.2 Maintain records of all feed or feed ingredients received on the farm (specified bills or delivery notes on order)***

Have an appropriate system in place to record and trace all feed or feed ingredients received onto your farm. Make sure you can identify and trace all treatments applied to feeds on-farm (including crop and grain treatments).

#### 4. ANIMAL WELFARE

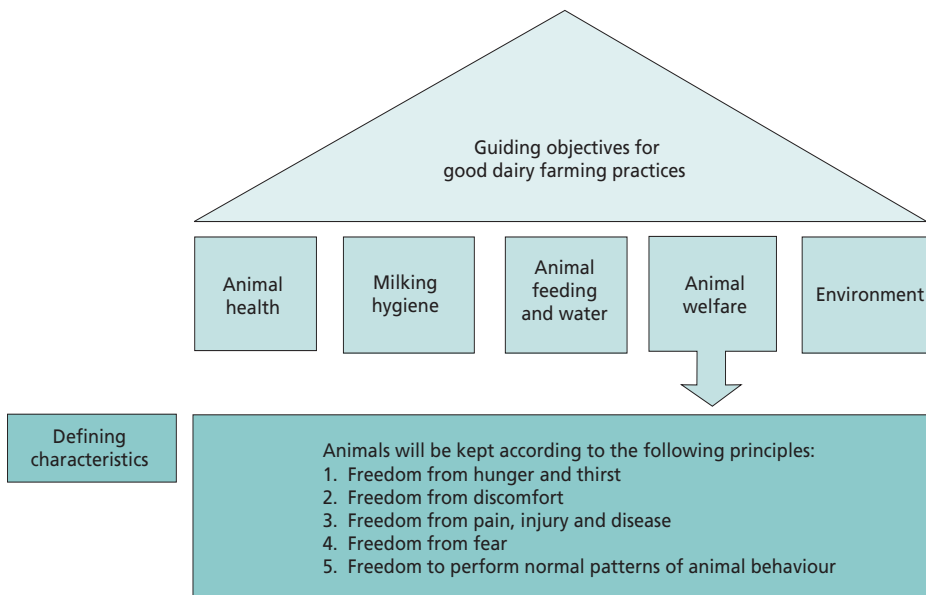
In essence, animal welfare is the application of sensible and sensitive animal husbandry practices to the livestock on the farm. Animal welfare is primarily concerned with the well-being of the animal.

In general, consumers perceive high animal welfare standards as an indicator that food is safe, healthy and of high quality. Animal welfare standards have been incorporated into most on-farm food quality and food safety schemes.

Animal welfare codes usually list five basic freedoms that should underpin best farm practice in relation to animal welfare. These five freedoms provide a comprehensive overall concept of animal welfare.

This Fact Sheet describes Good Agricultural Practices (GAP) for animal welfare. They are set out to reflect the five basic freedoms:

- Ensure animals are free from thirst, hunger and malnutrition
- Ensure animals are free from discomfort
- Ensure animals are free from pain, injury and disease
- Ensure animals are free from fear
- Ensure animals can engage in relatively normal patterns of animal behaviour



## **4.1 Ensure animals are free from thirst, hunger and malnutrition**

### ***4.1.1 Provide sufficient feed (forage and/or fodder) and water every day***

When feeding animals, they should be given sufficient feed, based on their physiological needs (according to age, body weight, stage of lactation, production level, growth, pregnancy, activity and climate). The quality of the feed needs to be considered. If animals are on poor quality pasture, additional forage may be required to meet the animals' needs.

Consider the quality and nutrient content of fresh or preserved forage according to the animals' needs. Animals should be fed a balanced diet (including sufficient fibre).

Animals should have access to clean water.

### ***4.1.2 Adjust stocking rates and/or supplementary feeding to ensure adequate water, feed and fodder supply***

Due consideration should be given to the number of animals, physiological needs and nutrient quality of feeds when determining stocking rates, and all animals should have access to sufficient daily water.

### ***4.1.3 Protect animals from toxic plants and other harmful substances***

Protect animals from access to toxic plants. Do not feed animals mouldy feeds.

Store chemicals securely to avoid contamination of pastures, and observe proper withholding periods for pasture and forage treatments.

### ***4.1.4 Provide water supplies of good quality that are regularly checked and maintained***

Cattle should have free access to a clean fresh water supply. Regularly clean water troughs or drinkers and inspect them to ensure they are fully functional. The water supply should be adequate to meet peak animal requirements, that is drinkers should fill sufficiently quickly to avoid any animals in a group remaining thirsty. All reasonable steps should be taken to minimize the risks of the water supply freezing or overheating, as appropriate.

Runoff from effluent and chemical treatments of pasture and forage crops should not enter stock water supplies.

## **4.2 Ensure animals are free from discomfort**

### ***4.2.1 Design and construct buildings to be free of obstructions and hazards***

Consideration should be given to the free flow of animals when designing and building animal housing and/or milking sheds. Avoid dead ends, and steep and slippery pathways.

### ***4.2.2 Where relevant, provide adequate space allowances and clean bedding***

Avoid overcrowding of animals, even for short periods. Animals should have clean bedding, whether this is through straw (or equivalent) bedding or clean pastures.

#### ***4.2.3 Protect animals from adverse weather conditions and the consequences thereof***

As far as practicable, protect animals from adverse weather conditions and the consequences thereof. This includes such stress factors as weather extremes, forage shortages, unseasonal change and others causing cold or heat stress. Consider shade or alternative means of cooling (for example misters and sprays), shelter (for example windbreaks) and additional fodder. Have plans for protection against natural disasters, for example fire, drought, snow, flood; include provision of high ground in case of flood, provide adequate firebreaks and have evacuation provisions.

#### ***4.2.4 Provide housed animals with adequate ventilation***

All animal housing should be adequately ventilated allowing sufficient supply of fresh air to remove humidity, allow heat dissipation and prevent build-up of gases such as carbon dioxide, ammonia or slurry gases.

#### ***4.2.5 Provide non-slippery floors***

Floors should be constructed to minimize slipping and bruising due to rough uneven floors. Unsuitable floors may inhibit mounting or lead to injuries during mating.

### **4.3 Ensure animals are free from pain, injury and disease**

#### ***4.3.1 Have an effective herd health management programme in place and inspect animals regularly***

Animals should be regularly checked to detect injury and/or disease. See the Animal Health Fact Sheet for further details.

#### ***4.3.2 Protect against lameness***

Laneways, yards, milking stalls and housing should be constructed to minimize the incidence of lameness. Cows should be fed to minimize lameness. Lameness should be investigated to determine underlying causes and treated appropriately.

#### ***4.3.3 Lactating animals should be milked regularly***

Establish a regular milking routine that recognizes the stage of lactation and does not overly stress the animals.

#### ***4.3.4 Do not use procedures and processes that cause unnecessary pain***

People carrying out veterinary related tasks should be able to demonstrate competency, especially for procedures that could cause suffering for example disbudding/dehorning, castration, etc. Adhere to national regulations with respect to these and other practices (such as hot branding, tail docking, amputations, etc). Good hygiene is essential for surgical-type procedures. Consider alternative animal husbandry practices if appropriate.

#### ***4.3.5 Follow appropriate calving and weaning practices***

Develop an appropriate calving plan that considers such issues as choice of bull (for ease of calving); safe calving facilities; and regular checking of animals to ensure prompt, experienced help if required.

Calves should have access to colostrum soon after birth.

#### ***4.3.6 Have appropriate procedures for marketing calves***

Newborn calves should not be offered for sale until sufficiently hardy (for example adequate body weight and dry navel). Appropriate transport conditions should also be followed. Follow national regulations, if applicable.

#### ***4.3.7 When animals have to be killed on-farm, avoid unnecessary pain***

When it is necessary to kill sick or diseased animals, or those in pain, it should be done in such a manner as to avoid unnecessary pain.

#### ***4.3.8 Avoid poor milking practices as they may injure cattle***

Poor milking practices can affect cow well-being and production. Milking equipment should be well maintained and regularly serviced.

### **4.4 Ensure animals are free from fear**

#### ***4.4.1 Provide competent animal husbandry skills and appropriate training***

Good animal husbandry is a key factor in animal welfare. Without competent, diligent care of animals their welfare will be compromised.

A competent operator should be able to:

- recognize whether or not the animals are in good health;
- understand the significance of a change in the behaviour of the animals;
- know when veterinary treatment is required;
- implement a planned herd health management programme (for example preventive treatments or vaccination programmes if necessary);
- implement appropriate animal feeding and grassland management programmes;
- recognize if the general environment (indoors or outdoors) is adequate to promote good health and welfare;
- have management skills appropriate to the scale and technical requirements of the production system; and
- handle animals compassionately and in an appropriate manner, anticipate potential problems and take the necessary preventive action.

Operators should be familiar with and comply with all relevant national regulations and key industry standards/assurance schemes relating to product quality/safety, etc. Operators should ensure records are maintained to demonstrate compliance with regulations or assurance schemes. People already involved in animal management/husbandry should keep themselves updated on technological developments that can prevent or correct welfare problems.

## 4.5 Ensure animals can engage in relatively normal patterns of animal behaviour

### 4.5.1 *Have herd management and husbandry procedures that do not unnecessarily compromise social activity*

Cattle are gregarious animals. Use herd management and husbandry procedures that do not unnecessarily compromise social activity, for example sleeping positions or mating. This also means sufficient space should be provided.

During the daily inspection(s) of animals, check for any abnormal behaviour.

Ensure each animal has adequate space to feed appropriately and actually is feeding. Failure by an animal to feed may be an early indication of illness.

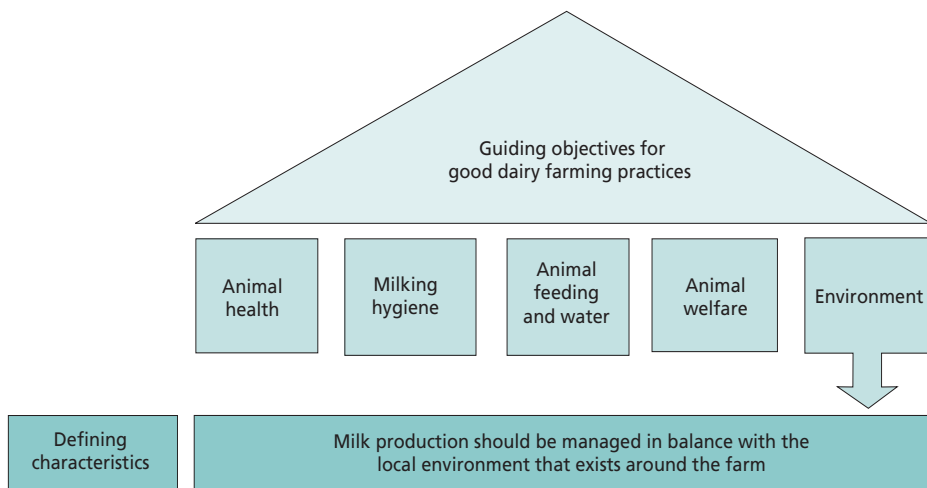
Stock bulls should be managed and handled in a manner that promotes good temperament.

## 5. ENVIRONMENT

Increasingly, consumers are concerned that the production of food is undertaken in harmony with the environment. To meet these concerns it is important that farmers produce milk in a way that minimizes any damage to the environment. The biggest potential source of environmental damage is from pollution caused by manures, slurry, silage liquor, etc.

The suggested Good Agricultural Practices for the Environment are set out under the following headings:

- Have an appropriate waste management system.
- Ensure dairy farming practices do not have an adverse impact on the local environment.



## 5.1 Have an appropriate waste management system

### 5.1.1 *Ensure wastes are stored to minimize the risk of environmental pollution*

Waste storage areas for example: manure heaps and slurry stores, should be sited appropriately. Regularly inspect permanent slurry stores and manure heaps for signs of leaks and impending structural failure to minimize the risk of runoff polluting the environment. Ensure other wastes such as plastic silage wrap are disposed of appropriately to prevent pollution of the environment.

### 5.1.2 *Manage pastures to avoid effluent runoff by spreading farm manures in accordance with local conditions*

Consider weather conditions and soil types before spreading manures. Use appropriate measures for example. wider buffer zones, to prevent manure from entering watercourses.

Consider adopting a manure management plan that identifies areas where there is a high risk of pollution on the farm. If spreading manure to land, follow statutory rates of application.

All organic manures – including slurries – should be incorporated into soil as soon as is practical, taking account of soil conditions and prevailing weather conditions. Manure and fertilizer should not be applied to waterlogged, steep or frozen ground where there is a risk of runoff.

A simple waste management plan will help identify when, where and at what rate to spread manures, slurry and other organic wastes to minimize the risk of causing pollution.

Waste management plans should give due consideration to:

- avoiding possible pollution of watercourses, ponds, lakes, reservoirs, wells, boreholes, underground water (shallow soils, fissured rock)
- avoiding potential pollution of habitat areas (e.g. woodlands, protected or recognized flora or fauna zones)
- ensuring that adequate buffer zones (non-spread areas) are maintained near vulnerable or sensitive areas (e.g. water sources, habitat areas)
- timing and level of application on sloped ground, heavy or impermeable soils and areas subject to flooding
- optimum application levels on areas that have a high soil fertility status (e.g. high soil phosphorus)
- current or impending weather and soil conditions at the time of application (frost, frozen ground; heavy rainfall waterlogged soils)
- national and regional environmental controls.

## 5.2 Ensure dairy farming practices do not have an adverse impact on the local environment

### 5.2.1 *Contain dairy runoff on-farm*

Farmers should adopt systems that avoid the potential for the contamination of the local environment.



Storage facilities for oil, silage liquor, soiled water and other polluting substances must be located in a safe place and precautions must be taken to ensure that accidents do not result in the pollution of local water supplies.

Avoid using or disposing of agricultural or veterinary chemicals where drains, surface water or ground water can enter the local environment.

***5.2.2 Use chemicals (fertilizers, agricultural and veterinary chemicals, pesticides, etc.) appropriately to avoid contamination of the local environment***

The term 'agricultural chemicals' includes farm chemicals (for example pasture sprays, herbicides and grain protectants) as well as detergents and sanitizers used in the dairy. Ensure safe and secure storage of farm chemicals away from the dairy.

Use only registered chemicals in the dairy and on the farm; read the label and strictly follow the instructions, including adhering to withholding periods, when using agricultural chemicals.

Ensure safe disposal of expired or defective chemicals and empty chemical containers.

***5.2.3 Ensure overall appearance of the dairying operation is appropriate for a facility in which high-quality food is harvested***

To limit the potential adverse impact of dairying on the landscape and to provide a positive image of dairy production, dairy farmers should ensure that access roads to their farms and the farm surroundings are clean, sheds are correctly maintained and that access roads used by cattle are free of effluent.