Unit 1

Assisting in Veterinary Extension Services

Introduction

This unit is based on how animal health workers can promote approved technologies and practices among farmers and entrepreneurs for productivity enhancement and profitability of farming operations. It describes the guidelines for purchasing various farm inputs like feed, fodder, fodder seed, medicine, implements and machinery, etc. and how to minimise the cost of production of various farm outputs. The unit also focusses on Information and Communication Technologies (ICT), especially mobiles, which help to disseminate information to farmers.

Session 1: Promotion of Technologies and Good Practices in Livestock Farming

In India, livestock are reared mostly under traditional farming system. Livestock farming in the world has greatly benefitted by advancements in science and technology. These advances have been made in feeds and feeding of animals, prevention of diseases in animals, adoption of better farming systems, other farm practices and technologies for optimum utilisation of animal and

farm wastes. Fig. 1.1 describes some of the scientific advances and technologies, which have been adopted as standards in livestock productivity enhancement and profitability of farming.

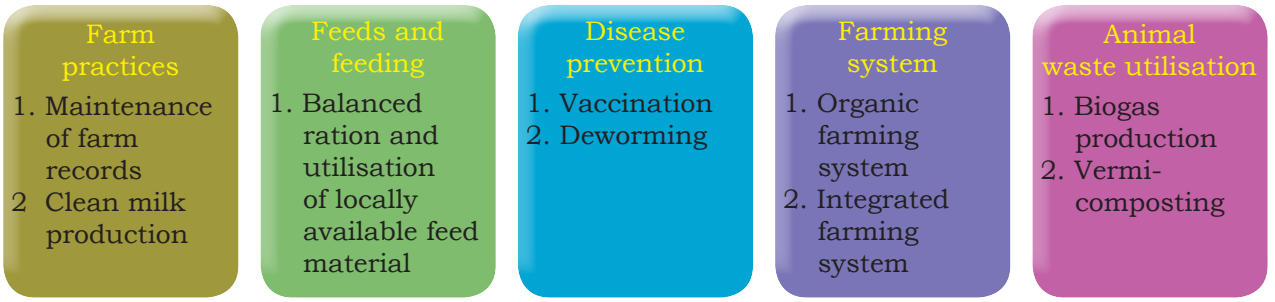

Fig. 1.1: Technologies and practices for productivity enhancement and profitability of livestock farming

The job role of animal health workers demands that they should have some understanding of science, belongingness to the community, and compassion for animals. Therefore, they should be inquisitive and always be on the lookout for new and approved technologies and practices that are profitable in livestock production and management. The technologies shown in Fig. 1.1 are not exclusive in any way.

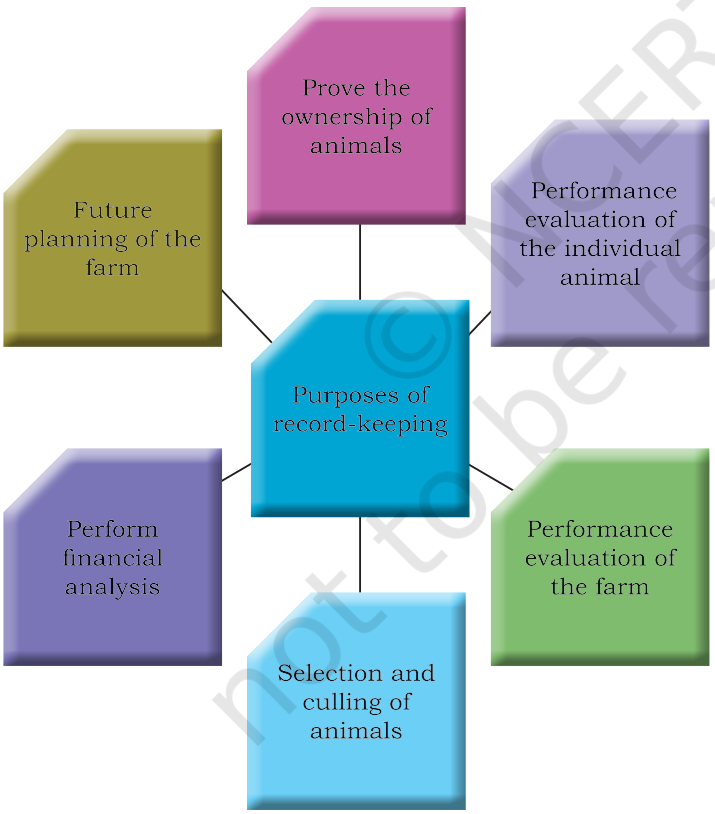

Fig. 1.2: Purposes of maintaining farm records

Farm practices

Maintenance of farm records

In India, a majority of the farmers do not maintain any farm records due to lack of awareness and illiteracy. Therefore, record-keeping is an essential part of livestock management. The success of livestock farming depends more on proper management than only on hard work. Farmers must guide their workers, livestock, etc., and use machines and available resources in best possible ways. Farmers generally remember important events and data but often,

but often, the other relevant information is easily forgotten. Information about animals, inputs and prices is useful for making farm management decisions. Recording can be done easily if animals have some form of identification. Thus, animal identification and maintaining the records are inter-related. The main purpose of record-keeping are shown in Fig. 1.2.

Farm records

A useful farm record should have the characteristics as shown in Fig. 1.3.

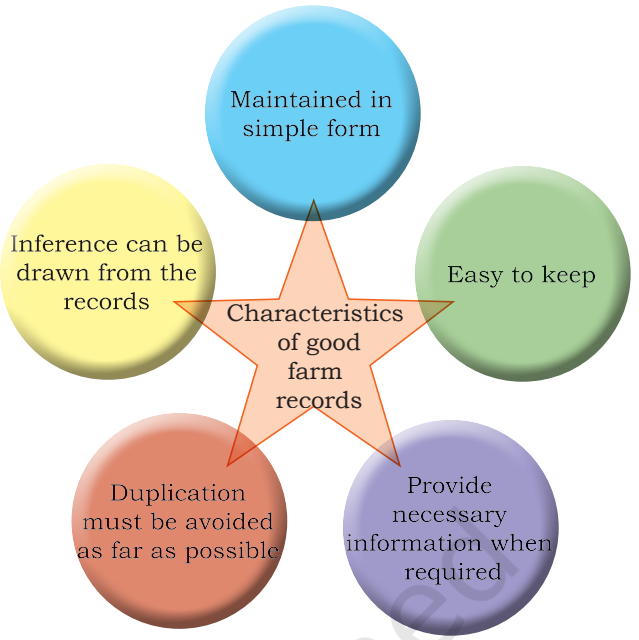

Fig. 1.3: Characteristics of useful farm records

Types of farm record

There are different types of record which are maintained in a livestock farm. The farmers should maintain the records relevant to their livestock farm. Records of a livestock farm can be broadly classified into three categories as shown in Fig. 1.4.

1. Technical records	2. Farm section records	3. Financial records
• Daily report register • Artificial insemination register or service • Calving register • Daily milk yield register • Feed stock register • Feeding records • Health records	• Fodder cultivation register • Field register • Labour register • Muster roll • Tractor logbook • Machinery and equipment book	• Store stock book • Attendance and pay record • Feed cost record • Veterinary expenses • Cost of fodder seeds • Equipment purchases

Fig. 1.4: Different types of record

Types of record-keeping

In livestock farm, records can be maintained in two ways.

(a) **Manual record-keeping:** In this system, the data are maintained in various types of registers and tables.

(b) **Electronic record-keeping:** In this system, farm data are maintained in a computer. Data compilation and retrieval is quite easy in electronically maintained records.

Table 1.1: Different kinds of records maintained at animal farms

(a) Breeding record

S. No.	Cow tag number	Date of calving	Date of first heat after calving	First service			Second service			Third service			First pregnancy diagnosis		Second pregnancy diagnosis		Date on which further milking from cow stopped	Expected date of calving	Actual date of calving	Remarks, if any
				Date of service	Time of service	Bull tag number	Date of service	Time of service	Bull tag number	Date of service	Time of service	Bull tag number	Date	Pregnant / Non-pregnant	Date	Pregnant / Non-pregnant				
1																				
2																				
3																				
4																				
5																				

(b) Calving record

S. No.	Cow tag number	Date of calving	Bull tag number	Calf tag number	Sex of calf (M/F)	Weight at birth (kg)	Remarks, if any
1							
2							
3							
4							
5							

(c) Growth record of young animals

S. No.	Animal tag number	Date of birth	Weight at birth (kg)	Monthly body weight (kg)							Weight at first service (kg)	Weight at first calving (kg)	Remarks, if any
				1	2	3	...	22	23	24			
1													
2													
3													
4													
5													

(d) Lactation record

S. No.	Cow tag number	Total number of calvings	Date of calving	Date of drying	Lactation yield (litres)	Peak yield (litres)	Date of peak yield	Lactation length (days)	Dry period (days)	Remarks, if any
1										
2										
3										
4										
5										

(e) Daily feeding record for the month of ----------

S. No.	Date	Number of animals	Concentrate			Green fodder			Dry fodder			Others		
			Received	Issued	Balance	Received	Issued	Balance	Received	Issued	Balance	Received	Issued	Balance
1														
2														
3														
4														
5														

(f) Herd strength record maintained on a daily basis

S. No.	Date	Cows		Heifers	Young male	Bulls	Calves		Total number of animals	Addition of animals		Deduction of animals		Remarks, if any
		Milch	Dry				Males	Females		Number of animals	From where	Number of animals	From where	
1														
2														
3														
4														

(g) Record of daily milk yield for the month of ----------

S. No.	Cow tag number	Date of calving	Date																		Monthly total milk yield	Total lactation yield
			1		2		3		4		...		27		28		29		30		31			
			M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E		
1																								
2																								
3																								
4																								
5																								

(h) Vaccination record

S. No.	Date	Name of vaccine	Route of vaccination	Number of animals vaccinated	Tag numbers of animals vaccinated	Next due date of vaccination	Remarks, if any
1							
2							
3							
4							
5							

(i) Health check-up record

S. No.	Date	Name of test	Disease for which test is performed	Number of animals tested	Animal numbers	Next due date of check-up	Remarks, if any
1							
2							
3							
4							
5							

(j) Herd health record

S. No.	Date	Animal number	History	Symptoms	Treatment	Results (cured/ died)	Name of veterinarian	Cost of treatment	Remarks, if any
1									
2									
3									
4									
5									

Some specimen of different kinds of records maintained at the animal farms are given in Table 1.1. These specimen records are not exhaustive and the former may develop other records as per necessity.

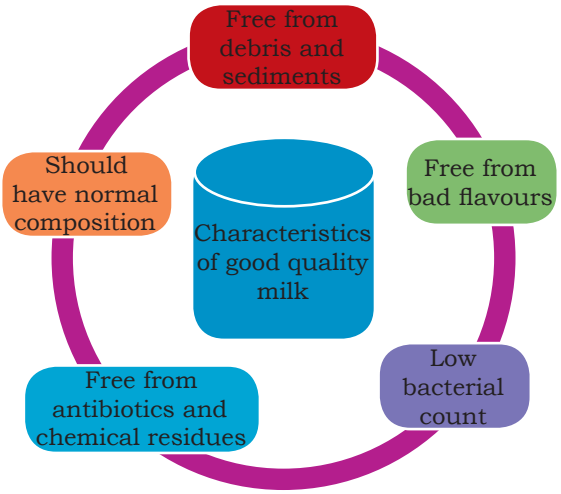

Fig. 1.5: Characteristics of good quality milk

Techniques of clean milk production

Clean milk is defined as milk drawn from the udder of healthy dairy animals, collected in clean milking pails, and free from unwanted objects like dust, dirt, flies, manure, etc. Clean milk has a normal composition, possesses a natural flavour and is safe for human consumption.

Characteristics of good quality milk

Good quality milk consists of the characteristics as shown in Fig. 1.5.

Sources of contamination in milk

Milk is usually contaminated through various sources, as depicted in Fig. 1.6.

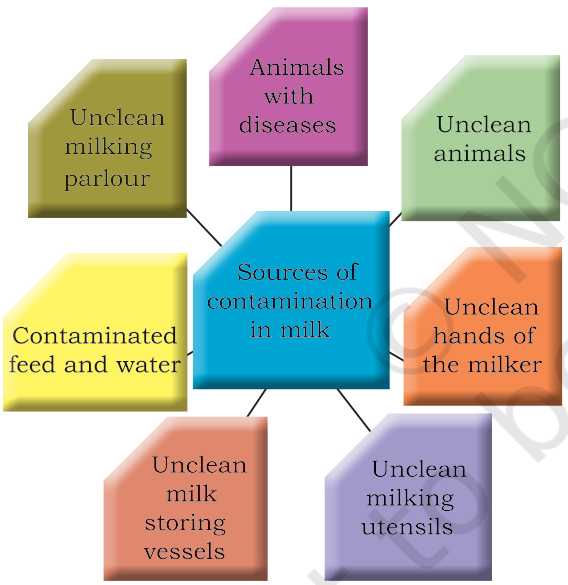

Fig. 1.6: Sources of contamination in milk

Need for clean milk production

Clean milk production is important for dairy farmers, milk product manufacturers and consumers. The reasons are given in Fig. 1.7.

- Required for production of good quality dairy products
- Safe for human consumption
- Transportation of raw milk over long distance
- Higher market value of milk

Fig. 1.7: Reasons for clean milk production

Balanced ration and utilisation of locally available feed material

A ration is the amount of feed an animal receives for consumption in a 24-hour period. A ration is balanced when it contains all the essential nutrients needed by an animal in the right proportions. A balanced ration provides protein, energy, and minerals in appropriate quantities. It also provides vitamins that come from dry, green fodder, concentrates, mineral supplements, etc., so that the animal can perform optimally and remain healthy.

Feeding alone accounts for more than 70 per cent of the total cost of animal production. To maximise profitability in animal production, the farmer needs to ensure that the animals receive the required quantity of nutrients, preferably from locally available feed resources, which are usually cheaper and easily available.

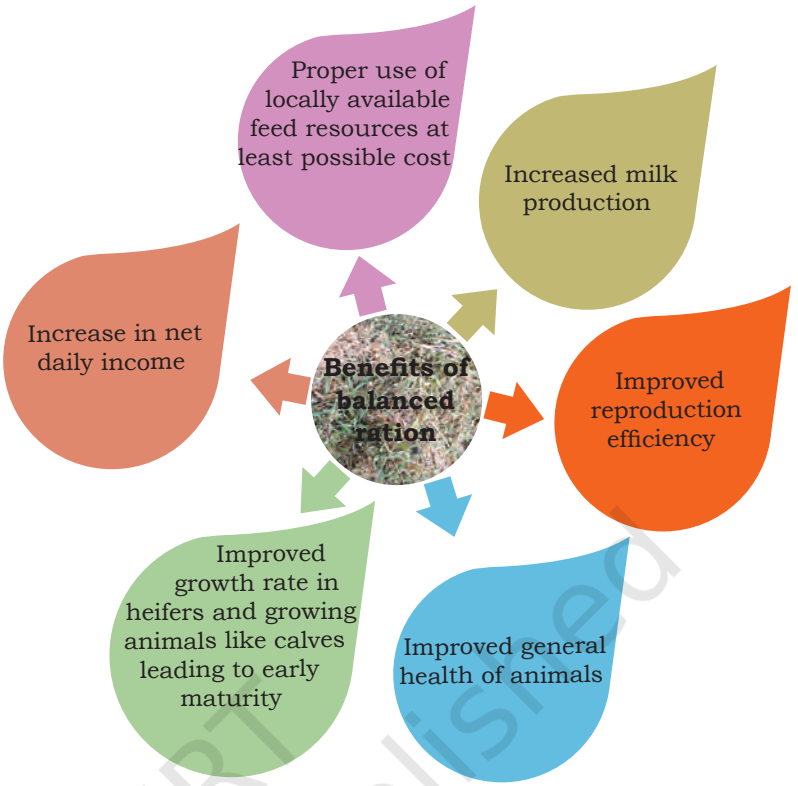

Fig. 1.8: Benefits of a balanced ration

Benefits of balanced ration

The animal's ration should be balanced in all nutrients to deliver the various benefits to the diary farmer as described in Fig. 1.8.

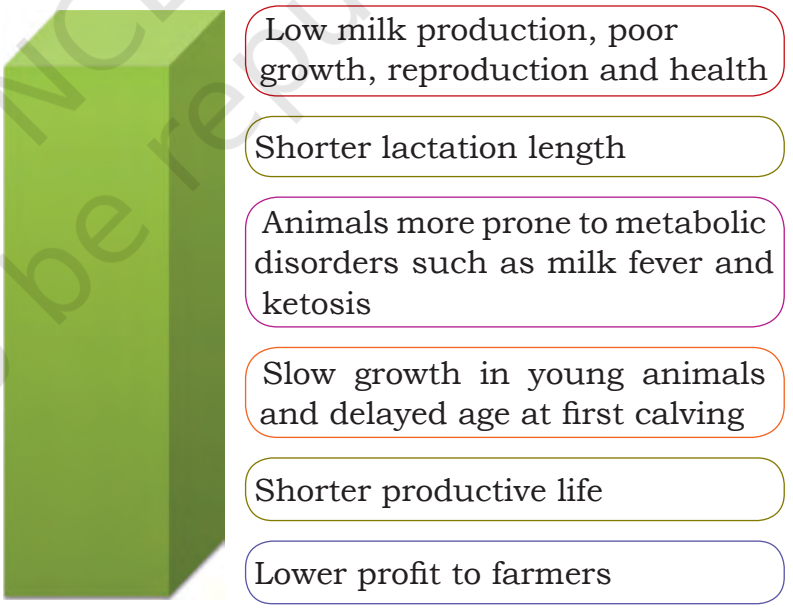

Fig. 1.9: Various unwanted outcomes of imbalanced animal ration

Imbalanced animal ration leads to various unwanted outcomes as shown in Fig. 1.9.

Disease prevention

Vaccination

A common proverb states that "prevention is better than cure". It means that instead of spending a lot of money on the treatment, it is always better to protect animals from diseases. Such an approach to animal health would cost much less. Vaccines are administered to prevent the occurrence of particular diseases. It is the only available method to prevent some bacterial and viral diseases. Routine vaccination of animals is often more affordable than paying for the treatment of sick animals.

Vaccines consist of killed or weakened microbes that stimulate an animal's immune system. When injected into the animal, these microbes do not produce that particular disease. Instead, their presence in the animal's body naturally starts boosting the animal's immune system. If a disease-producing microbe attacks the animal, its vaccination provides a strong defense to fight against that disease. Vaccines are environment-friendly and increase animal welfare by preventing their suffering.

Table 1.1: Vaccination schedule for cattle and buffaloes

Vaccine	Primary vaccination	Booster	Re-vaccination
Foot and Mouth Disease (FMD)	4 months of age and above	6 months after first dose	Biannual
Haemorrhagic Septicaemia (HS)	6 months of age and above	---	Annual
Black Quarter (BQ)	6 months of age and above	---	Annual
Anthrax	6 months of age and above	---	Annual
Brucella (once in a lifetime)	4-8 months of age (only in female calves)	---	

Parasite control

Parasites are organisms that live within or on the body of different animal species and may cause them harm. Parasites are broadly classified into two categories. They are ectoparasite and endoparasite. Ectoparasites,

for example, ticks, mites, etc., live on the outside or in the skin of the animals. Endoparasites are found within the animal's body and may be in the blood, tissue or gastrointestinal tract. Nematodes, Trematodes, Cestodes, and Protozoa are examples of Endoparasites.

Problems caused by parasites

Fig. 1.10(a) shows animals suffering from parasites. These parasites create a number of problems in livestock, which are described in Fig. 1.10(b).

Fig. 1.10(a): Parasites in animals

Control of parasites

The major aim of the parasite control programme is to minimise economic losses. The nutritional status of the animals has immense influence in reducing the effects of parasitism. Animals in good body condition, who receive a balanced ration, are often able to reduce the effect of endoparasites. Animals deficient in feed are unable to cope with parasitism and, in extreme cases, may die.

Parasite control programme mainly focusses on two areas: a) control of ectoparasites (external parasites), and b) control of endoparasites (internal parasites). The details of the parasite control programme have been discussed in Session 3 of Unit 2 of the *Animal Health Worker* textbook, Class IX.

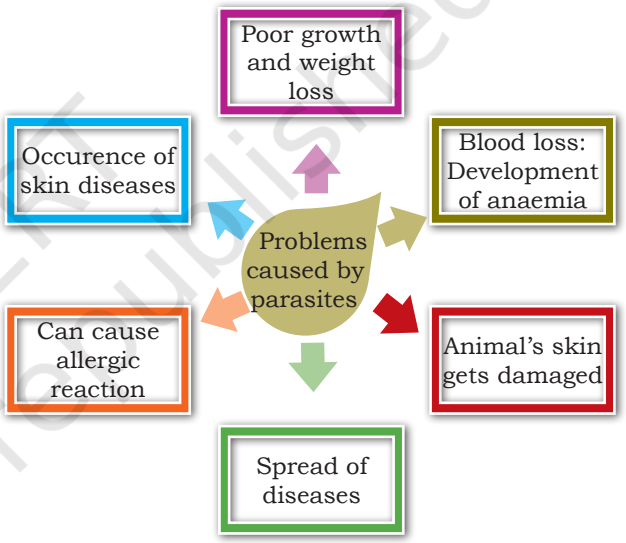

Fig. 1.10(b): Problems caused by parasites

Farming systems

Organic livestock farming

It is a system of livestock production that promotes the use of organic and biodegradable inputs from the ecosystem in all areas of animal production, including animal housing, nutrition, breeding and animal health. The aim of this kind of farming system is to use natural breeding methods, minimise stress, prevent diseases, avoid use of chemicals and allopathic veterinary

drugs (including antibiotics), avoid feeding products of animal origin (for example, meat meal) and ensure the maintenance of the health and welfare of the animal. Organic farming is practiced all over the world and more than 37.2 million hectares of agricultural land is managed organically. In India, organic livestock farming is also gaining popularity and in the year 2017-18, around 3.56 million hectares of land was registered under National Programme for Organic Production.

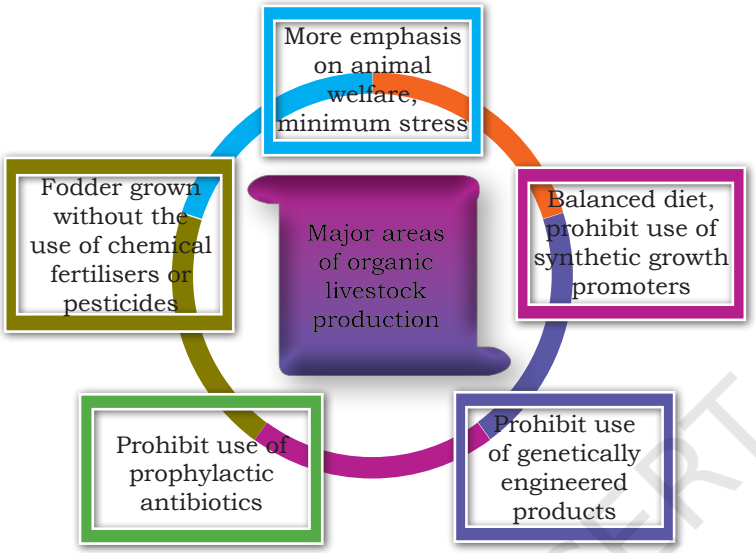

Fig. 1.11: Important areas of organic animal production

The primary characteristics of organic livestock farming include well-defined standards and practices, which can be verifiable. In organic livestock farming, more attention is being given to the areas shown in Fig.1.11.

Organic farming system begins with the maintenance of health of the soil and ends with the availability of organic

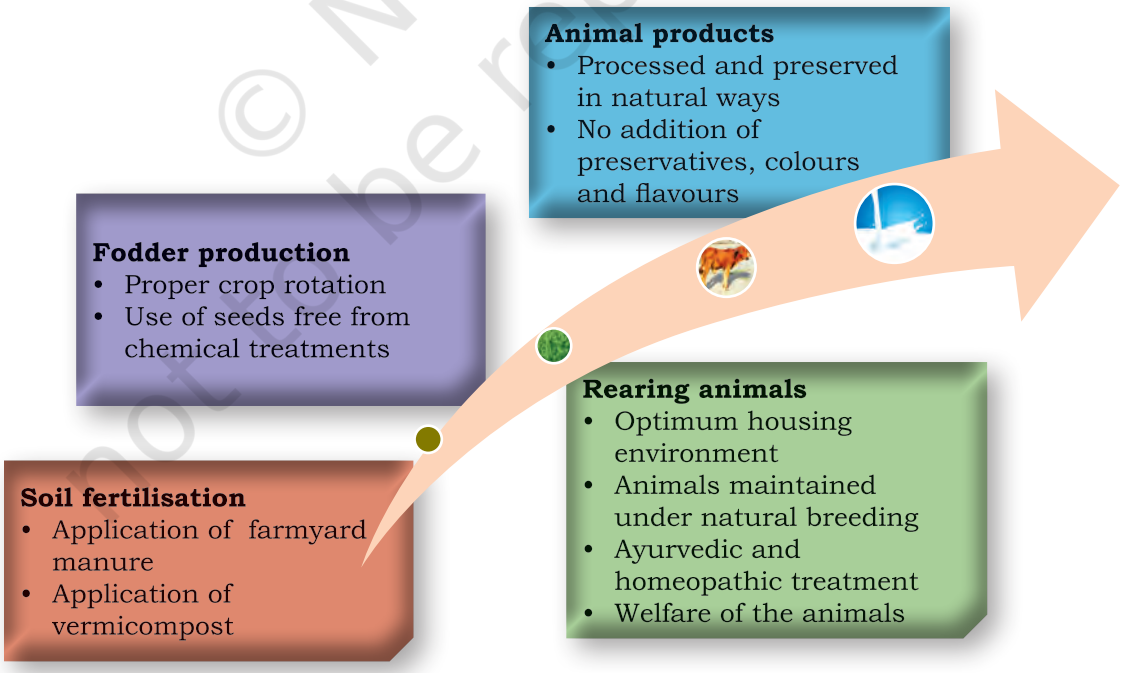

Fig. 1.12: Different stages in organic livestock production

livestock products to the consumer. Fig. 1.12 depicts the basic concepts of organic livestock production by showing different steps of the total production cycle.

Record-keeping in organic farming

Maintenance of detailed records of various farm activities is the most important criteria of organic farming. Farm records not only help in better management of the farm but are also important to verify the organic status of production, harvesting, and handling practices associated with animals. An organic farm must maintain information related to every possible record like date of birth, sex, colour and other individual identification marks of the animal, productive and reproductive performance, details of cropping scheme and fodder production, and details of veterinary interventions, etc.

Standards of organic livestock production

A farm may be considered as organic if it meets the criteria mentioned in a set of guidelines known as 'organic standards'. The quality of production under organic management is ensured through certification procedures using internationally accepted standards. Organic certification guarantees both, quality of the

Permitted farm practices	Farm practices not permitted
• All animals should be born and raised in organic farms. • Breeds, adaptable to local conditions, should be chosen. • Natural breeding is preferred but artificial insemination is allowed. • Livestock should be fed 100 per cent organically grown feed of good quality. • All ruminants should have daily access to roughage. • There should be emphasis on natural medicines and methods, including homeopathy, ayurvedic, unani and acupuncture. • Vaccination of animals on the recommendation of a veterinarian and as per legal requirements.	• Embryo transfer techniques are not allowed. • Mutilations (castrations, tail docking of lambs, dehorning) are not allowed. • Hormonal treatment and induced birth are not allowed unless needed by individual animals for medical reasons and under veterinary advice. The following feeds and feed supplements are not permitted: a) Synthetic growth promoters or stimulants, b) Artificial colouring agents, c) Urea, d) Farm animal by-products (for example, abattoir waste) for feeding, e) Pure amino acids, f) Genetically engineered organisms or their products.

Fig. 1.13: Farming practices permitted and not permitted in organic livestock farming

production process as well as that of the products. Organic milk, meat and eggs are produced, harvested, preserved and processed according to verifiable organic standards. In India, Agricultural and Processed Foods Export Development Authority (APEDA) under the Ministry of Commerce, Government of India is the controlling authority for organic certification.

Farm practices included in organic livestock production

A comparative description of permitted and prohibited practices in organic livestock farming system, are given in Fig. 1.13.

Integrated livestock farming

Integrated farming systems involve simultaneous farming of crops, animals and fish together in a synergistic way, which results in greater total output than the sum of their individual output. In this system of farming, by-products of one sub system are used as inputs by another sub system. Thus the system eliminates the problem of waste disposal and also maintains ecological sustainability.

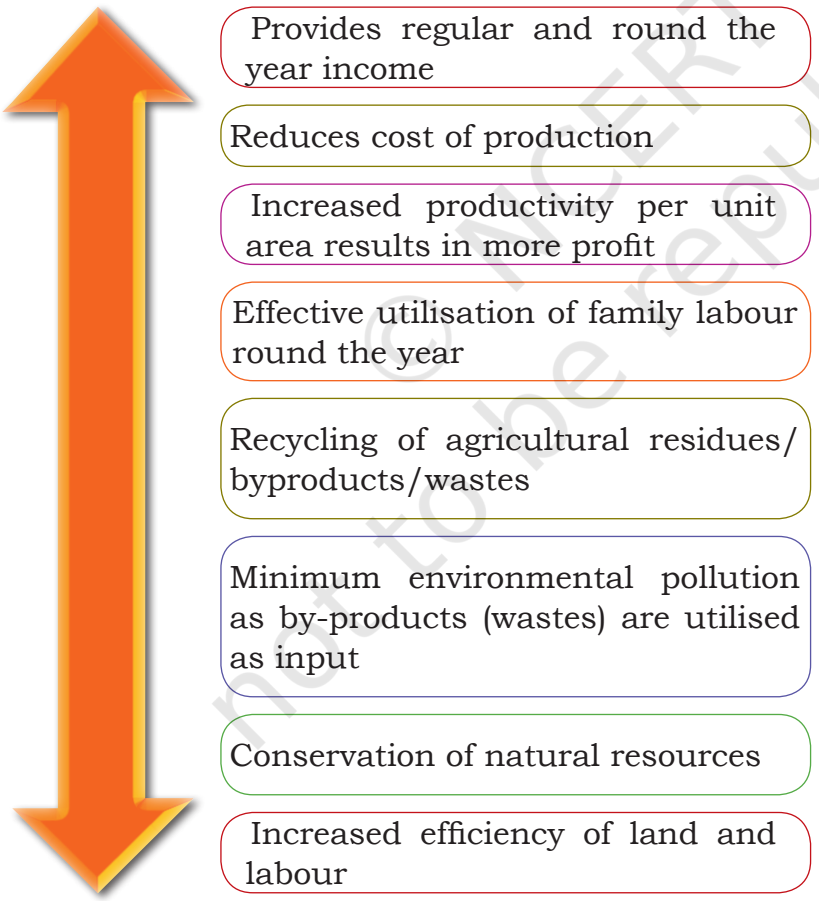

Fig. 1.14: Benefits of integrated livestock farming

Benefits of integrated livestock farming

Fig. 1.14 depicts how integrated livestock farming is beneficial for the farmers in various ways.

Examples of important livestock-based integrated farming system commonly practiced in India

Duck-cum-fish farming—This type of integrated farming is managed in such a way that the by-products of

duck farming (droppings) are utilised for direct or indirect consumption by fish. During the day the ducks are left at a nearby water source like a pond and are kept in pens at night. Duck droppings fall directly into the water and act as feed for the fish. On the other hand, ducks consume mosquitoes and other insects, like, larvae, tadpoles, snails (growing in water), etc., which also serve as vectors (disease transmitting organism) both for humans and animals. This type of farming is popular in West Bengal, Bihar, Odisha, Andhra Pradesh, Kerala, Assam and other North Eastern states. On an average, 250 ducks per hectare are recommended for duck-cum-fish farming.

Cattle/buffalo-cum-fish farming—In this type of farming, manure from farm animals is used as feed for fish. An adult cow weighing about 400 kg excretes about 8 tonnes of dung and about 5,000 liters of urine annually. This system not only provides fish to the farmer but also provides milk on a daily basis. This increases the farmer's revenue and reduces the working capital. Cattle sheds are built in the vicinity of the fish ponds for easy supply of manure. Manure is channelised directly into the ponds, which serve as excellent food for fish. The manure also indirectly works as a source for growth of plankton in the pond. A unit of 5–6 cows can provide sufficient input for a one-hectare fish pond. However, excess manure supply to the pond is restricted, otherwise, it can create water pollution.

Pig-cum-fish farming— Pig manure is a suitable supplementary feed for some fishes. Pig manure is rich in nitrogen and phosphorus and helps in fast growth of fish. The undigested solid feeds present in pig dung serve as a direct food source. A pig house (sty) is constructed near a pond, thus, channelising manure directly into the pond. In some cases, pig manure is fermented for some days and then channelised into the pond. About 30 to 40 pigs are recommended for a one-hectare pond.

Animal waste utilisation

Environmental degradation is a major threat to the world. Usually, a large volume of organic matter, generated

from livestock farms is dumped locally, which emits a foul smell and pollutes the soil and water. Therefore, emphasis is placed on proper utilisation of waste. The following are some of the methods, which can be employed for proper utilisation of farm waste.

Biogas production

Biogas is a mixture of various gases produced by the breakdown of organic matter in anaerobic conditions (absence of oxygen). A major component of these gases is methane that constitutes 50 to 65 per cent of the gaseous mixture.

Manure generated at the livestock farm can be used as raw material for biogas production. Biogas is an odourless and colourless gas. Biogas is about 20 per cent lighter than air and has an ignition temperature in the range of 650° to 750°C. Therefore, it produces a clear blue flame, similar to that of LPG during combustion.

A biogas plant (Fig. 1.15) produces biogas and slurry, which is one of the major products from a biogas plant. Biogas slurry is a good quality organic fertiliser.

Fig. 1.15: A biogas production unit

Uses of biogas

Biogas produced from a biogas plant can be used for the following purposes.

Cooking can be done through biogas. A 2 cubic metre capacity biogas plant can meet the energy needs of a family of four persons.

Lighting can be done with specialised (silk mantle) lamps using biogas. The requirement of gas for a 60 W lamp is 0.13 cubic metre per hour.

Power generation with a dual fuel biogas engine can help replace up to 80 per cent of diesel. Nowadays, diesel engines have been modified to run on 100 per cent biogas. Petrol and CNG engines have also been modified to run on biogas.

Vermicomposting

It entails the use of earthworms for composting organic waste. In vermicomposting, earthworms are used to convert organic material (usually waste) into humus-like material. The aim is to process farm waste as quickly and efficiently as possible.

Fig. 1.16: Earthworms used to prepare vermicompost

Earthworms can consume practically all organic matter. Their daily consumption of waste is almost equal to their body weight. Thus, one kilogram of earthworms can consume one kilogram of waste every day. Vermicompost is nothing but the excreta of earthworms, which is rich in humus and nutrients. The excreta (castings) are rich in various soil nutrients like nitrogen, potassium, phosphorus, calcium and magnesium. Castings contain, 5 times the available nitrogen, 7 times the available potassium, and 1½ times more calcium than is available on good topsoil. *Eisenia foetida* and *Lumbricus rubellus* (red worm) species of earthworms are commonly used for vermicomposting. Earthworms not only convert garbage into valuable manure but also keep the environment healthy. Fig. 1.16 shows earthworms preparing vermicompost.

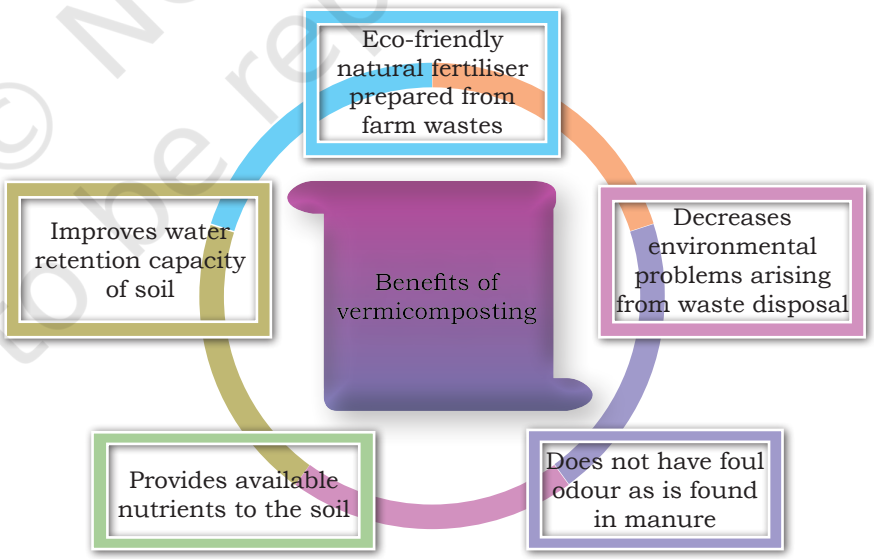

Fig. 1.17: Benefits of vermicomposting

Benefits of vermicomposting

Fig. 1.17 shows the various advantages of vermicomposting.

Practical Exercise

1. Visit any biogas plant. Note down important parts of the biogas unit.
2. Visit a vermicompost unit. Note down different steps of vermicompost production.
3. Visit any established livestock farm. Check the various records maintained and their entries.

Check Your Progress

A. Multiple Choice Questions

1. Records are maintained in organic livestock farms for _____
   (a) productive performance
   (b) reproductive performance
   (c) both a and b
   (d) none of the above
2. Milk is considered as clean milk when it is procured _____
   (a) from a clean animal (b) in a clean environment
   (c) in clean utensils (d) all of the above
3. Feeding alone accounts for about _____ per cent of the total cost of animal production.
   (a) 20 (b) 40 (c) 50 (d) 70
4. In India, the controlling authority for organic certification is _____
   (a) Agricultural and Processed Food Products Export Development Authority (APEDA)
   (b) ICAR (c) FSSAI (d) MoAFW
5. Which of the following is allowed in organic livestock farming?
   (a) Artificial Insemination
   (b) Hormonal treatment
   (c) Synthetic growth promoters
   (d) Embryo transfer

B. Fill in the Blanks

1. Recording can be done most easily if animals have proper _____.
2. A ration is the amount of feed an animal receives in a _____ hour period.
3. Organic livestock farming is a system of livestock production that promotes the use of _____ inputs.
4. In integrated farming, by-product of one enterprise is used as _____ by another enterprise.
5. Vermicomposting is the process by which _____ are used to convert organic material (usually waste) into humus-like material.

C. Mark True or false

1. In India, a majority of the farmers maintain farm records.
2. Calving register is considered as a financial record.
3. Clean milk is free from unwanted objects.
4. Vaccines are administered to prevent the occurrence of particular diseases.
5. Embryo transfer techniques are not allowed in organic livestock farming.

Session 2: Assisting Farmers in Quality Farm Input Selection and Procurement

Relevant knowledge

Like any other shop or factory, a farm is a business where inputs are required for livestock production. Farmers too, like other businessmen, want to make a profit, which is made when the selling price of output is more than the money spent on the input.

The resources used in livestock farming such as animals, equipment (tools and implements), chemicals, feeds, fodder and fodder seeds are collectively called farm inputs. In a farm, a large quantity of these inputs is used. These have to be stored on the farm before being used. Expensive equipment is required to be maintained when not in use to increase its life. Fig. 1.18 describes various inputs required for a livestock farm and the output generated from it.

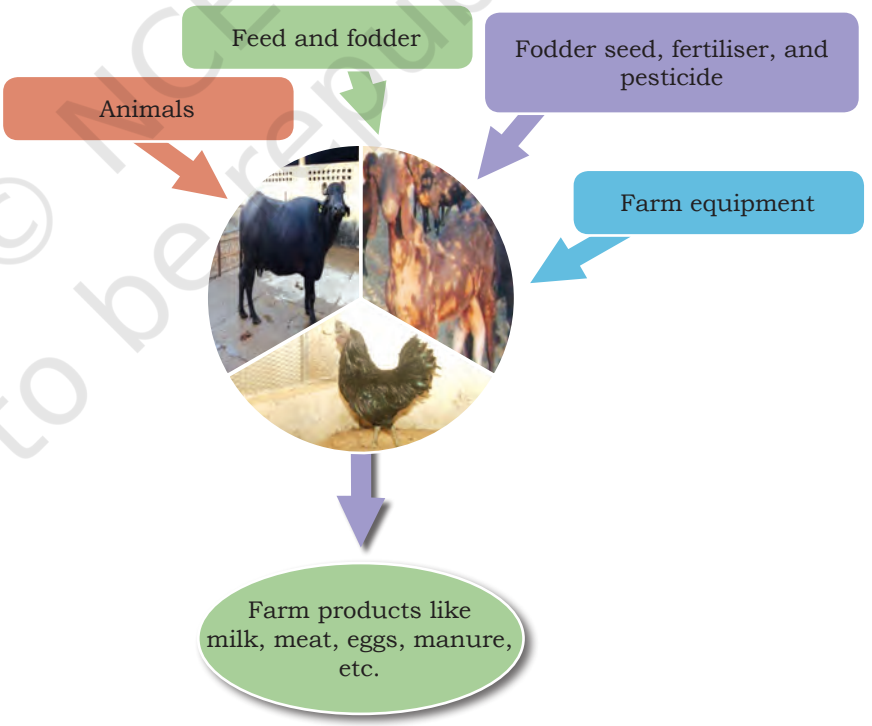

Fig. 1.18: Inputs and outputs of a livestock production system

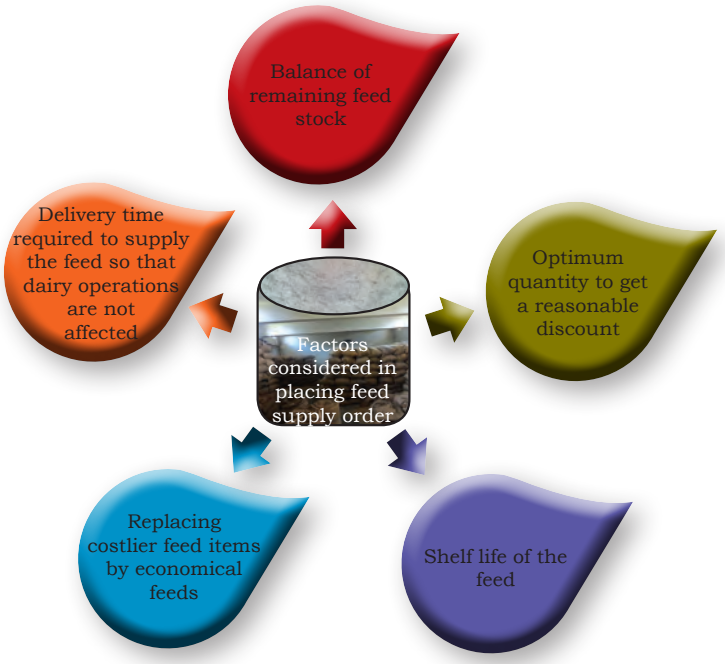

Fig. 1.19: Factors to be considered before placing a fresh order for feed supply

Selection and procurement of feed and fodder

Feed requirement of the animals and procurement of feed stuff depends upon the following factors:

(a) nutritive value of the feedstuff
(b) protein quality of the feedstuff
(c) feed requirement of different categories of animals
(d) feed supplements
(e) major ingredients in feed

Based on the understanding of these factors, the requirement of animal feed is calculated on a daily or monthly basis. Attention is also paid to the factors described in Fig. 1.19 while placing supply orders for feed items.

Broadly, three categories of feed and fodder are required for a dairy farm—green fodder, dry fodder (hay, straw) and concentrate (Fig. 1.20). If sufficient land is available, a dairy entrepreneur can grow green fodder in their own farm. Dry fodder like hay can be prepared in one's own farm from the cultivated green fodder and stored for future use. Straw is an agricultural byproduct,

Concentrate mixture in a gunny bag

Green fodder (jowar)

A heap of wheat straw

Green fodder (berseem)

Fig. 1.20: Broad categories of feed and fodder

which is available only at the time of harvesting of crops. Therefore, it would be economical for the farmer to store sufficient quantities of straw on the farm for future use. concentrates are prepared by mixing a number of feed ingredients to maintain the nutritional balance of the ration. All feed ingredients required for preparation of the concentrates may not always be available locally and, therefore, need to be purchased through suppliers. Special care is taken to ensure that the feed items are in good condition. It is ensured that no mouldy or sub-standard feed items are used in the feed preparation.

The various activities included in procurement, checking and receiving of animal feed in a dairy farm are explained with the help of Fig. 1.21.

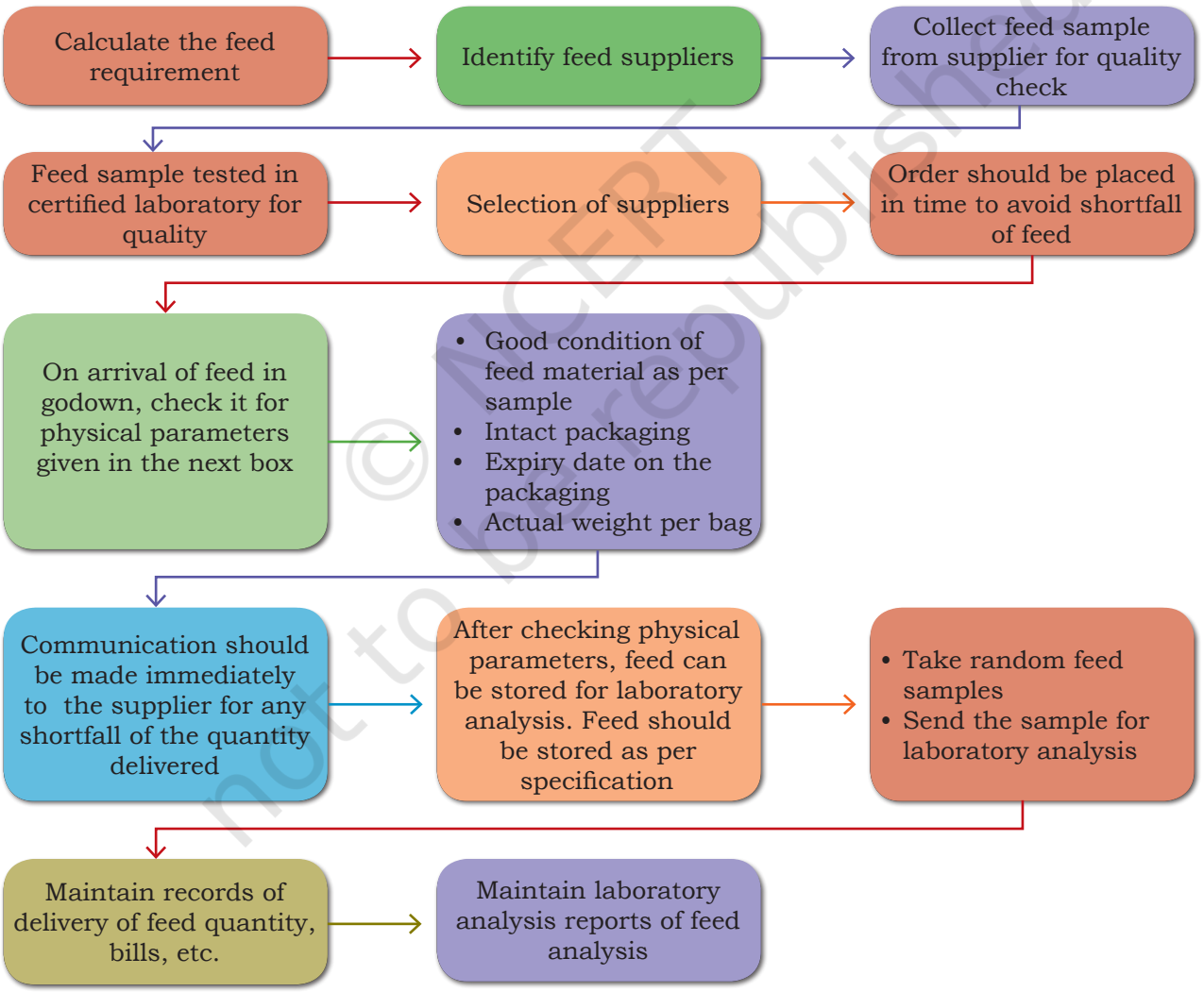

Fig. 1.21: Flow chart describing procurement, checking and receiving of animal feed in a dairy farm

Procurement of fodder seeds, fertilisers, and pesticides

All fodder seeds, fertilisers, and pesticides have an expiry date. For example, if the pesticide has passed the expiry date, it may not contain the correct concentration of active ingredients. Lack of proper concentration of active ingredients will lead to a loss in pesticide efficacy. The solvents in the compound may also evaporate during storage, causing the formulation to become over-concentrated. This will lead to too much active ingredients being applied on a fodder crop, which in turn can harm animals.

Like any other seeds, fodder seeds have a shelf life. Depending on the storage conditions, the viability of seeds can vary. For purchasing of fodder seeds the following points are considered:

Berseem seed

Oat seed

Sorghum seed

Maize seed

Fig. 1.22: Seeds of common fodder crops

(a) Seeds should be purchased well before the fodder growing season.
(b) Always use a recommended variety of fodder seeds as per local climate and adopt recommended seed rate and other package of standard practices to be followed.
(c) Always procure certified seeds from authorised agencies and store the seeds in a cool, dry and clean place.
(d) Always use treated seeds for sowing and test for quality parameters like purity, germination, etc., before sowing.

Figure 1.22 presents the seeds of some common fodder crops and Fig. 1.23 shows common fertilisers used in fodder crop production.

(a) Urea

(b) DAP (diammonium phosphate)

(c) Farmyard manure

(d) Vermicompost

Fig. 1.23: Common fertilisers (a & b) and organic manures (c & d) used in fodder crop production

Procurement of farm equipment

Every farm requires machinery and equipment for day-to-day operations. However, the requirements depend upon the level of mechanisation and the scale of operations. Some common machinery and equipment like chaff cutter, milking pails, milk cans and minor implements are essentially required for every livestock farm.

In hot climatic conditions, it is essential to install fans and cooling devices in the dairy animal sheds to protect them from the heat stress. As the size of the farm increases, milk coolers, electricity generator sets, etc., are very essential for the farm. A vehicle is also essential for the purchase of inputs and selling of farm produce to the market. Besides this, tractors along with implements are required for the cultivation of fodder crops and their harvesting, transportation, chaffing, etc.

It should be ensured that appropriate machinery and equipment is purchased as per the farm size. Machinery and equipment can also be used by custom hiring or sharing by groups of farmers in the nearby areas. Government grants help farmers who seek assistance in procuring machinery. Some grants also provide funding for purchase of farm equipment. Following incentives are offered by the government for the purchase of machinery and implements.

Incentives for purchase of agricultural machinery and implements

To make available various agricultural implements and machines at cheaper rates, assistance in the form of subsidy at the rate of 25 per cent to 50 per cent of the cost of equipment is available to all categories of farmers. These are available under various schemes of the Department of Agriculture and Cooperation such as Macro Management of Agriculture, National Food Security Mission, *Rashtriya Krishi Vikas Yojana* (RKVY) and National Horticulture Mission, etc.

Incentives for setting up custom hiring centres of agricultural machines

Incentives in the form of subsidy are supported through the RKVY and macro management schemes so that

the established farm machinery companies can make available costly equipment to the farmers. Such an approach, supplements the efforts of the government in extending appropriate mechanisation in the country, makes available different input supply and services to needy farmers and provides profitable employment to rural unemployed youth. This results in timeliness of farm operations, ultimately leading to increase in production and profit.

Procurement of animals

Purchase of new animals is a common practice for livestock farms. Animals can carry diseases without showing any visible signs. Hence, there is a need to examine new animals carefully before introducing them to the existing herd to avoid an outbreak of a new infection to the existing farm animals. As mentioned earlier in the book, 'prevention is better than cure' which reveals that prevention methods are much better to keep away any problem than finding solutions for them later. Treating new animals is cheaper and easier than managing a new disease in all animals of the farm.

Before inclusion of new animals to the existing farm, the following points should be considered.

(a) It is always better to purchase livestock from reputed farms and thoroughly inspect them before signing the deal.
(b) During transportation of animals, proper cleaning and hygienic measures should be ensured.
(c) New animals should be isolated for 30 days (quarantine period) before mixing them up with the existing farm animals.

Practical Exercise

Visit any livestock farm. Note down the important body parts of different livestock species.

Talk to the animal workers about day-to-day handling of animals and note down their practical feedback.

Check Your Progress

A. Multiple Choice Questions

1. Procurement of feedstuff depends upon _____
   (a) nutritive value (b) protein quality
   (c) moisture content (d) all of the above
2. Which of the following resources is used in livestock farming?
   (a) Machinery (b) Feed
   (c) Labour (d) All of the above
3. During purchase of fodder seed, which of the following is required?
   (a) Seed should be purchased well before the fodder growing season
   (b) Use recommended variety of fodder seeds as per local climate
   (c) Seeds should be tested for quality parameters like purity, germination, free from weed seed, etc.
   (d) All of the above
4. In a hot climatic condition, which of the following is required to maintain better milk production?
   (a) More feed to the animals (b) Cooling system
   (c) Cleaning of animals (d) None of the above
5. Which of the following is considered dry fodder?
   (a) Hay (b) Silage
   (c) Freshly chopped greens (d) None of the above

B. Fill in the Blanks

1. Isolate new animals for _____ days (quarantine period) before mixing them up with the existing farm animals.
2. Lack of proper concentration of active ingredients will lead to a loss in pesticide _____.
3. RKVY stands for _____.
4. _____ is used for chaffing of green fodder.
5. Like shops and factories, a farm is a _____.

C. Mark True or false

1. Profits are made when the selling price of output is more than what is spent on the input.
2. Pesticides, fertilisers and fodder seed have no expiry date.
3. Animals can carry diseases without showing any visible signs.
4. In a livestock farm, a required quantity of concentrate mixture can be stored for a period of one year.
5. Concentrates are prepared by mixing a number of feed ingredients to maintain the nutritional balance of the ration.

Session 3: Information and Communication Technology (ICT) in Animal Husbandry Extension Services

Relevant knowledge

Animal husbandry extension activities include transferring knowledge and skills to farmers, advising and educating them in decision making and encouraging animal husbandry development. Livestock extension activities are not well-developed in India to effectively meet the requirements of livestock farmers. This happens mainly due to poor infrastructure and high costs of delivering information and skills.

Farmers need to be updated on modern technologies and management practices of livestock production on a regular basis to remain competitive. Fig. 1.24 depicts the information that is required on a regular basis by the farmers for profitable animal husbandry.

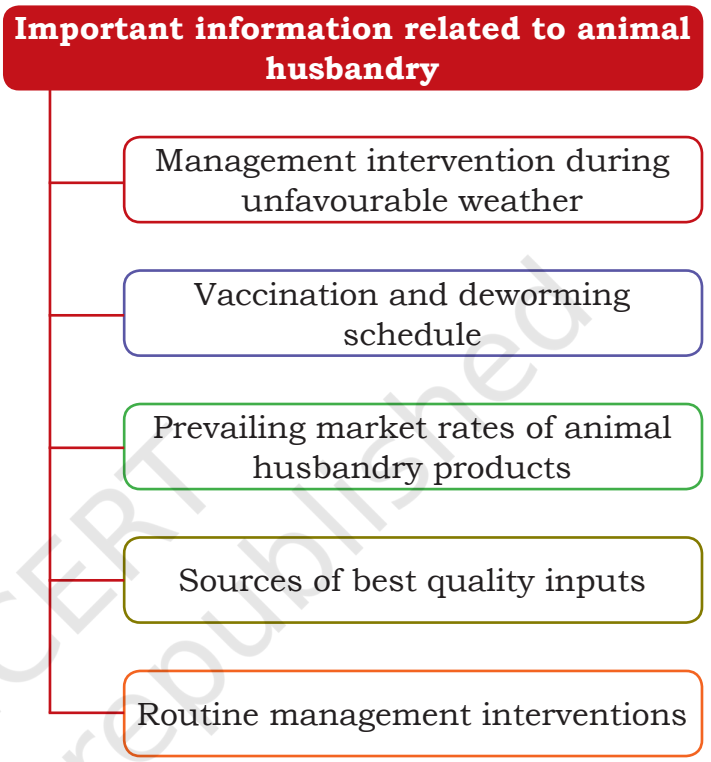

Fig. 1.24: Important information related to animal husbandry

Agencies providing livestock extension services in India

The following agencies are instrumental in providing information and skills related to livestock production and management (See Fig. 1.25).

Information and Communication Technology (ICT) is an important tool for providing animal husbandry-related information and services. The information required for the farmers includes farm inputs supply, disease control, marketing of products, availability of latest technology, etc. ICT includes the use of computer, the Internet, geographical information service, mobile phone messages, etc.

Fig. 1.25: Agencies responsible for livestock extension services in India

Use of mobile phones in extension services in animal husbandry

A very large number of small and marginal livestock farmers are, increasingly, being empowered through the convenience and affordability of mobile technology. For many farmers, mobile phones have become essential tools that have strengthened business ties and opened up new opportunities.

Mobile technologies have reduced transaction costs and increased the reach of banks and microfinance institutions, allowing them to effectively serve smallholder farmers across remote areas. This includes using mobile phones to provide farmers with information about livestock operations like vaccination, deworming in their locations, helping farmers to share price and market information via SMS and learn livestock management practices by speaking with an animal husbandry expert at a call centre.

The rapid rise and proliferation of mobile technologies has also resulted in new analytical business tools and calculators to equip farmers and self-help groups with production and sales data to help them in making business decisions.

The use of mobile phones is growing rapidly even in the remote rural areas. The exceptional speed of adoption of mobile phones has great potential to disseminate innovative farm practices as well as farmers' knowledge and awareness. Mobile phones with the help of SMS, audio and video, manages help to spread information and skills related to animal husbandry.

Initiatives by the central government

The central government has taken the following initiatives towards animal husbandry extension services.

(a) The farmers can contact the nearest Kisan Call Centre (KCC) on toll free number 1800-180-1551 for answers to their specific queries through the KCC agents or through senior experts from 6 am to 10 pm on all days of the year.
(b) Enable participation in exposure visits and trainings for progressive farmers.
(c) Provide selected information and services from the web through interactive SMS on farmers' mobiles.
(d) Enable access to a farmer's portal to get location specific information (including a package of practices (having a detailed list of the steps followed), list of dealers, crop advisories, etc.), directly or through an Internet kiosk.
(e) Provide advisories and services from SMS portals for farmers after getting registered through KCC or Common Service Centre or Pull SMS by registration at 51969 or 9212357123.
(f) Help farmers get price information for their produce available on the Agmarknet website (www.agmarknet.nic.in) or through KCCs or SMS.
(g) Buyer-seller portal is available at www.farmer.gov.in/buysell.htm.

Practical Exercise

1. Note down how mobile services help numbers in dissemination of information.
2. Surf the Internet and find out the recent initiatives of the government.

Check Your Progress

A. Multiple Choice Questions

1. Mobile phone helps in the extension services, because _____.
   (a) it provides direct connectivity
   (b) it is affordable
   (c) it is accessible in remote areas
   (d) all of the above
2. The contact number of Kisan Call Centre is _____.
   (a) 1800-170-1551
   (b) 1800-180-1331
   (c) 1300-180-1551
   (d) 1800-180-1551

3. The information required by the farmers includes _____.
   (a) farm inputs supply
   (b) disease control
   (c) marketing of products
   (d) all of the above
4. Which of the following disseminate the information and skill in mobile phones?
   (a) Audio
   (b) Video
   (c) All of the above
5. Information and Communication Technology (ICT) includes _____.
   (a) computer
   (b) SMS
   (c) audio and video massages
   (d) all of the above

B. Fill in the Blanks

1. For prevention of diseases _____ is done in animals.
2. _____ enabled SMS, audio and video, help to disseminate information and skills related to animal husbandry.
3. _____ activities include transferring knowledge and skills to farmers, advising and educating farmers in decision making and promoting animal husbandry development.
4. Under the central government initiative, a farmer can get the price information of their produce on _____ website.
5. KCC stands for _____

C. Mark True or false

1. Farmers need to be updated on modern technologies and management practices of livestock production on a regular basis to remain competitive.
2. Livestock extension activities are not well developed in India.
3. ICT includes the use of computer, the Internet, geographical information service, mobile phone messages, etc.
4. ICAR involves trading of animals.
5. KVK stands for Krishak Vigyan Kendra.